



融跃财经  
RONGYUE FINANCE

# Financial Reporting and Analysis

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Study Session NO.	Subject	Weighting ( % )
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- **Study session 6**

- **Los 21 Financial Statement Analysis: An Introduction**
- Los 22 Financial Reporting Mechanics
- Los 23 Financial Reporting Standards

# Financial reporting

- **Financial reporting**

- “Provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity.”
- “Those decisions involve buying, selling or holding equity and debt instruments, and providing or settling loans and other forms of credit.”

- **Users**

- **Investors, Creditors, Other interested parties**

- **Financial statement analysts**

- Use financial statement data to evaluate a company’s past performance and current financial position in order to make economic decisions.
- Form expectations about a company’s future performance and financial position.

# Financial statements

- **Balance sheet** ♥

- **Concepts**

- Presents a company's **current financial positions** by disclosing the resources the company controls and its obligations to lenders and other creditors ***at a specific point in time.***

- **Asset**

- The resources the company controls at a specific point in time.

- **Liability**

- The obligations to lenders and other creditors at a specific point in time.

- **Owner's equity**

- The excess of assets over liabilities, owner's residual interest on the company.

- **Asset=liability + owner's equity**

- **Income statement** ♥

- **Concepts**

- Present information on the financial results of a company's business activities over a period of time.

- **Revenue**

- Revenue arises in the ordinary activities of the business.

- **Other income**

- Gains do not arise in the ordinary activities of the business.

- **Expenses**

- Include cost of sales, administrative expenses and etc.

- **Net income = revenue + other income - expenses**

- **Cash flow statement** ♥

- **Operating cash flow** include the cash effects of transactions that involve the normal business of the firm.
- **Investing cash flow** are those resulting from the acquisition or sale of property, plant, and equipment; of a subsidiary or segment; of securities; and of investment in other firms.
- **Financing cash flow** are those resulting from issuance or retirement of the firm's debt and equity securities and include dividends paid to stockholders.
- How an activity is classified depend on the nature of the firm.

- **Financial statement notes** (footnotes)
  - Disclosures that provide further details about the information summarized in the financial statements.
  - The fiscal period covered by the statements and the inclusion of consolidated entities.
  - Provide **accounting methods, assumptions, and estimates**.
  - Provide business **acquisitions or disposals**, *legal actions*, *employee benefit plans*, **significant customers**, sales to related parties.



- **Statement of comprehensive income**

- Concepts

- All items that impact owners' equity but are not the result of transactions with shareowners

- **Net income from income statement**

- **Other comprehensive income**

- Currency translation gains or losses
- Actuarial gains or losses
- Available-for-sale gains or losses

- **Statement of changes in equity**

- Changes in the owner's investment in the business over time.

## Example from curriculum P33

Sennett Designs (SD) sells furniture on a retail basis. SD began operations during December 2009 and sold furniture for 250,000 in cash. The furniture sold by **SD was purchased on credit for 150,000** and delivered by the supplier during December. The credit terms granted by the supplier required SD to **pay the 150,000 in January** for the furniture it received during December. In addition to the purchase and sale of furniture, in December, **SD paid 20,000 in cash for rent and salaries**.

1. How much is SD's **profit** for December 2009 if no other transactions occurred?
2. How much is SD's **cash flow** for December 2009?
3. If SD purchases and sells exactly the same amount in January 2010 as it did in December and under the same terms (receiving cash for sales and making purchases on credit that will be due in February), how much will the company's profit and cash flow be for the month of January?

**Solution to 1 :** SD's profit= $250,000-150,000-20,000=80,000$ .

**Solution to 2 :** The cash flow= $250,000-20,000=230,000$ .

**Solution to 3 :**

2010 profit= $250,000-150,000-20,000=80,000$ .

2010 cash flow= $250,000-150,000-20,000=80,000$ .

- **Management's commentary or Management's discussion and analysis (MD&A)**
  - Effects of **inflation** and changing prices if material.
  - Impact of **off-balance-sheet obligations** and contractual obligations
  - Accounting policies that require significant **judgment** by management.
  - Forward-looking expenditures and divestitures.
  - Company's objectives, strategies, and significant risks.
- **Proxy statement**
  - The election of board members, **compensations**, management qualifications, and the issuance of stock option.

- **Audit's report** ♥
  - **Objective**
    - Ensure that the financial statements are fairly presented.
  - **Unqualified opinion** indicates that the auditor believes the statements are from material omissions and errors.
  - **Qualified opinion**: the statements make any exceptions to the accounting principles.
  - **Adverse opinion**: the statements are not presented fairly or are materially nonconforming with accounting standards.
  - **Disclaimer of opinion**: the auditor is unable to express an opinion.
    - Under GAAP, the auditor must express an opinion on the firm's internal controls.
      - Internal controls ensure that the company presents accurate financial statements.
      - Internal controls are the responsibility of management.

## Financial statement analysis framework

- State the objective of the analysis
- Gather data
- Process the data
  - **Ratios and forecasts**
- Analyze and interpret the data
- Report the conclusions or recommendations
- Update the analysis (follow up)

## Example from curriculum P74,9.10.18

1. **Accounting policies, methods, and estimate**s used in preparing financial statement are most likely found in the :  
A. Auditor's report      B. management commentary.      C. notes to the financial statements.
2. Information about management and **director compensation** would least likely be found in the:  
A. auditor's report      B. proxy statement      C. Notes to the financial statements.
3. **Ratios are an input into** which step in the financial statement analysis framework?  
A. process data.      B. collect input data.      C. analyze/interpret the processed data.

**Solution to 1:** C

**Solution to 2:** A

**Solution to 3:**

C. Ratios are the result of process data, the input of analyze data.

## Summary

- Financial reporting
- Financial statements
  - **Balance sheet** ♥
  - **Income statement** ♥
  - Statement of comprehensive income
  - Statement of changes in equity
  - **Cash flow statement** ♥
  - Financial statement notes (footnotes)
  - Management's commentary or Management's discussion and analysis (**MD&A**)
  - **Proxy statement**
  - **Audit's report** ♥
  - Financial statement analysis framework



- **Study session 6**

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- **Los 22 Financial Reporting Mechanics**
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## Financial statement elements

- **Financial statement elements**

- Assets are the firm's economic resources.
- Liabilities are creditor claims on the company's resources.
- **Owner's equity** is the owners' residual claim on a firm's resources.
- Revenue
- Expense

- **Accounts**

- Provide individual records of increases and decreases in a specific asset, liability, owner's equity, revenue, or expense.

- **Contra accounts** are accounts that deducted from other accounts

- **Accumulated depreciation-PP&E**
- **Bad debt allowance**-Account receivable
- **Valuation allowance**-DTA

- **Assets** are the firm's economic resources, usually classified by liquidity.

- Cash and cash equivalents
  - Maturities are less than 90 days.

- **Accounts receivable**

- **Allowance for bad debt**

- **Inventory**
- Financial assets are marketable securities.
- **Prepaid expenses** will be expenses on the future.
- **Property, plant, and equipment**
  - Gross value
  - **Accumulated depreciation**
  - Net PP&E
- **Intangible assets**
  - Do not have a physical form, such as patents, trademarks, licenses, and goodwill.
- **Investment in affiliates**
- **Deferred tax assets**

- **Liabilities** are creditor claims on the company's resources.
  - **Accounts payable**
  - **Financial liabilities**
    - Short-term notes payable
  - **Unearned revenue**
    - Revenues that will recognized in the future.
  - **Income taxes payable**
    - The taxes accrued during the past year but not yet paid.
  - Long-term debt
    - Bonds payable
  - Deferred tax liabilities

- **Owner's equity** is the owners' residual claim on a firm's resources.
  - Capital
    - Par value of common stock.
  - Additional paid-in capital
    - Proceeds from common stock sales in excess of par value.
    - Share repurchases are in the contra account "**treasury stock**"
  - **Retained earnings**
    - **Cumulative net income that has not been distributed as dividends.**
  - **Other comprehensive income(OCI)**
    - Foreign currency translation
    - Pension liability adjustments
    - Unrealized gain or loss on available for sale
  - **Comprehensive income= net income + OCI**

- **Revenue**

- **Sales**

- Revenue from the firm's day-to-day activities.

- **Gains**

- Increases in assets from transactions.

- **Investment income**

- Interest and dividend income.

- **Expense**

- **Cost of goods sold**

- Selling, general, and administrative expenses.

- **Depreciation and amortization**

- Tax expense

- **Interest expense**

- Losses

- Decreases in assets from transactions.



- Equations

- Basic accounting equation

$$\text{Assets} = \text{liabilities} + \text{owner's equity}$$

- Expanded accounting equation

$$\text{Assets} = \text{liabilities} + \text{contributed capital} + \text{ending retained earnings}$$

$$\text{Assets} = \text{liabilities} + \text{contributed capital}$$

+ beginning retained earnings

+ revenue

- expense

-dividends

## Example from curriculum P91

Canon is a manufacturer of copy machines and other electronic equipment. Abbreviated balance sheets as of 31 December 2004 and 2005 are presented below:

	31 Dec 2005	31 Dec 2004
Assets		
<b>Total assets</b>	4,043,553	3,587,021
Liabilities and stockholders' equity		
Total liabilities	1,238,535	1,190,331
Total stockholder's equity	?	2,396,690
<b>Liabilities and stockholders' equity</b>	4,043,553	3,587,021

1. Determine **the amount of stockholders' equity** as of 31 December 2005.
2. Calculate and contrast the **absolute change in total assets** in 2005 with the absolute change in total shareholders' equity in 2005.
3. Based on your answer to 2, state and justify the relative importance of growth in stockholder's equity and growth in liabilities in financing the growth of assets over the two years.

### **Solution to 1:**

- Equity= $4,043,553-1,238,535=2,805,018$  million.

### **Solution to 2:**

- Total assets increased by  $4,043,553-3,587,021=456,532$  million.
- Total stockholder's equity= $2,805,018-2,396,690=408,328$  million.
- Total assets grew by more than total stockholder's equity  $456,532>408,328$ .

### **Solution to 3:**

- Total liabilities increased by the difference between the increase in total assets and the increase in total stockholder's equity.

## Example from curriculum P92

An analyst has collected the following information regarding a company in advance of its year-end earnings announcement

- Estimated net income=150
- Beginning retained earnings=2,000.
- Estimated distribution to owners=50

The analyst's estimate of **ending retained earnings** should be closest to:

- A. 2,000                  B. 2,100.                  C. 2,150.

### Solution:

$$2,000+150-50=2,100.$$

## Example from curriculum P92

An analyst has the following information:

- Liabilities at year-end=1,000;
- Contributed capital at year-end=1,000;
- Beginning retained earnings=500;
- Revenue during the year=4,000;
- Expenses during the year=3,800.
- There have been no distribution to owners. The analyst's estimate of **total assets at year-end** should be closest to:  
A. 2,300.            B. 2,500.            C. 2,700.

### Solution:

C. The ending retained earnings= $1,000+1,000+700=2,700$ .

## • **Double-entry accounting** Double-entry accounting

- A transaction has to be recorded in at least **two accounts**. An increase in an asset account must be balanced by a decrease in another asset account or by an increase in a liability or owners' equity account.

### Example from curriculum P99

1. File documents with regulatory authorities to establish a separate legal entity. Initially capitalize the company through deposit of 150,000 from the three owners.

Dr: cash 150,000; Cr: contributed capital 150,000.

2. Set up a 100,000 investment account and purchase a portfolio of equities and fixed securities

Dr: Investment 100,000; Cr: cash 100,000.

3. **Pay 3,000 to landlord for office**. 2,000 represents a refundable deposit, and 1,000 represents the first month's rent.

Dr: deposits 2,000; prepaid rent 1,000; Cr: cash 3,000.

4. **Purchase office equipment** for 6,000 in cash. The equipment has an estimated life of two years with no salvage life

Dr: equipment 6,000; Cr: cash 6,000.

5. Receive 1,200 cash for **one-year subscription to the monthly newsletter**.

Dr: cash 1,200; Cr: unearned fees 1,200.

6. Purchase and receive 500 books at a cost of 20 per book for a total of 10,000. Invoice terms are that payment from IAL is due in 30 year. **No cash changes hands**. These books are intended for resale.

Dr: Inventory 10,000; Cr: accounts payable 10,000.

7. Spend 600 on newspaper and trade magazine **advertising** for the month

Dr: advertising expense 600; Cr: cash 600.

8. **Borrow** 12,000 from a bank for working capital. Interest is payable annually at 10%. The principal is due in two years.

Dr: cash 12,000; Cr: bank debt 12,000.

9. Ship first order to a customer consisting of five books at 25 per book. Invoice terms are that payment is due in 30 days. **No cash changes hands.**

Dr: Account receivable 125; Cr: Revenue 125;

Dr: Cost of goods sold 100; Cr: Inventory 100.

10. Sell for cash 10 books at \$25 per book at an investment conference.

Dr: Cash 250; Cr: revenue 250;

Dr: Cost of goods sold 200; Cr: Inventory 200.

11. Hire a part-time clerk. The clerk is hired through an agency that also handle all payroll taxes. The company is to pay 15 per hour to the agency. The clerk works fix hours prior to 31 January, but **no cash will be paid until** February.

Dr: payroll expense 90; Cr: accrued wages 90.



12. Mail out the first month's newsletter to customer. This subscription had been sold on 3 January.

Dr: unearned fees 100= $1/12 \times 1200$ ; Cr: fee revenue 100.

13. Review of the investment portfolio shows that 100 of interest income was earned and the market value of portfolio has increased by 2,000. the balance in the investment account is now 102,100. the securities are classified as trading.

Dr: Investment 100; Cr: Interest income 100.

Dr: Investment 2,000; Cr: unrealized gains 2,000.

14. 3,000 was paid to the landlord for office, including a 2,000 refundable deposit and 1,000 for the first month's **rent**. Now, the first month has ended, so this rent has become a cost of doing business.

Dr: rent expense 1,000; Cr: prepaid rent 1,000.

15. Office equipment 6,000 has an estimated life of two years and no salvage value. Now, one month has ended, so a portion of the **equipment cost** has become a cost of doing business.

Dr: Depreciation expense 250; Cr: Accumulated depreciation 250=6,000/24.

16. The company borrowed 12,000 from a bank on 15 January, **with interest payable** annually at 10% and the principal due in two years. Now one-half of one month has passed since the borrowing.

Dr: Interest expense 60=12,000\*10%/2; Cr: Interest payable 60.

- **Accrual accounting**

- **Accrual accounting** requires that revenue is recorded when the firm earns it and expenses are recorded as the firm incurs them, regardless of whether cash has actually been paid.

- **Unearned revenue**

- The firm receives cash before it provides a good or service to customers.

Dr: cash Cr: Advance from customers

- **Accrued revenue**

- The firm provides goods or services before it receives cash payment.

Dr: Receivable Cr: sales; Receive cash, Dr: cash Cr: Receivable

- **Prepaid expense**

- The firm pays cash ahead of time for an anticipated expense.

Dr: Prepayment Cr: cash

- **Accrued expense**

- The firm incurs expenses that have not yet been paid.

Dr: expense Cr: Payroll payable

- **Other adjustment**

- Most assets are recorded at **historical cost**. However, some assets are required to reflect their **current values**. We need to update these asset's values which are called **valuation adjustments**, gains or losses are recorder on the I/S or other comprehensive income.

- **The flow of information in an accounting system**
  - **Journal entries** record every transaction.
    - A list of all the journal entries **in order of their dates** is called the general journal
  - **General ledger**
    - Sorts the entries in the general journal **by account.**
  - **Initial trial balance**
    - **Recorded at the end of accounting period**, if any adjusting entries are needed, they will be recorded in an adjusted trial balance
  - **Adjusted trial balance** is presented in the financial statements.

## Summary

- **Financial statement elements**

- Assets
- Liabilities
- Equity
- Revenue
- Expense

$Assets = liabilities + contributed\ capital + ending\ retained\ earnings$

$Assets = liabilities + contributed\ capital$

+ beginning retained earnings

+ revenue

- expense

-dividends

- **Double-entry accounting**

- **Accrual accounting**

- **Unearned revenue**

- **Prepaid expense**

- **Other adjustment**

- **The flow of information in an accounting system**

- **Study session 6**

- Los 21 Financial Statement Analysis: An Introduction
- Los 22 Financial Reporting Mechanics
- **Los 23 Financial Reporting Standards**

## Objectives

- The objectives of financial reporting

- Provide useful information for **making decisions** about investing in or lending to the firm.
- Provide **consistency** by narrowing the range of acceptable response.
- Ensure transactions reported by firms are similar.
  - Comparable
- Also **allow discretion** to management to properly describe the economics of the firm.
- An important inputs for **valuation** purposes.



# Organization

- **Standard-setting bodies**

- **US GAAP:** Generally Accepted Accounting Principles

- The financial accounting standard board (FASB)

- **IFRS:** International Financial Reporting Standards

- The international accounting standard board (IASB)

- **Desirable attributes of standard-setters**

- Observe high professional standards.
- Have adequate authority, resource, and competencies to accomplish its missions.
- Have clear and consistent standard-setting processes.
- Guided by a well-articulated framework.
- Operate independently while still seeking input from stakeholders.
- Should not be compromised by special interests.
- Decisions are made in the public interest.

- **Regulatory authorities**

- Securities and Exchange Commission (**SEC**) in United States.
- Financial Services Authority (**FSA**) in United Kingdom.
- International Organization of Securities Commissions (**IOSCO**)
  - Objectives of IOSCO
    - Protect investors
    - Ensure the fairness, efficiency, and transparency of markets
    - Reduce systemic risk
    - A goal of **uniform** financial regulations across countries.
- Accounting standard setters are attempting to **converge** their standards with IFRS.
  - **Disagree** on the best treatment of a particular item or issue.
  - The **political pressures** that regulatory bodies face from **business group** and others who will be affected by changes in reporting standards.

# Financial Reporting

- **Qualitative Characteristics**

- **Two fundamental characteristics**

- **Relevance**

- To be relevant, information should have predictive value, confirmatory value.
- **Materiality** is an aspect of relevance.

- **Faithful representation**

- To be faithful representative, information should be **complete, neutral, and free from error.**

- Other four characteristics (Enhance relevance)

- **Comparability**

- Consistent among firms and across time periods.

- **Verifiability**

- Independent observers, using the same methods, obtain similar results.

- **Timeliness**

- **Understandability**



- **Measurement base**

- **Historical cost:** the amount originally paid for the asset.
- **Amortized cost:** historical cost adjusted for depreciation and impairment.
- **Current cost:** the amount the firm would have to pay today for the same asset.
- **Realizable value:** the amount the firm could sell the asset.
- **Present value:** the discounted value of the asset's future cash flows.
- **Fair value:** the amount at which two parties in an arm's-length transaction would exchange the asset.

- **Constraints**

- There is cost-benefit tradeoff of the enhancing characteristics
  - The benefit that users gain from the information should be greater than the cost of presenting it.
- Non-quantifiable information cannot be captured directly in financial statement.

- **Assumptions**

- **Accrual accounting**

- Financial statements should reflect transactions at the time they actually occur, not necessarily when cash is paid.

- **Going concern**

- The company will continue to exist for the foreseeable future.

- **Required reporting elements**

- Assets、Liabilities、Equity、Income、Expense

- **Required financial statements**

- Balance sheet
- Statement of comprehensive income
- Cash flow statement
- Statement of changes in owner's equity
- Explanatory notes, including a summary of accounting policies

## • Features for preparing financial statements

- Fair presentation
- Going concern basis
- Accrual basis
- Consistency
  - Items are presented and classified, with prior-period amounts disclosed for comparisons.
- Materiality
  - Financial statements should be free of misstatements or omissions.
- Aggregation
- No off-setting
  - Asset and liabilities, income and expenses cannot off-setting.
- Reporting frequency
  - At least annually.
- Comparative information



- **Structure and content of financial statements**
  - **Classified balance sheet**
    - Current and noncurrent
  - **Minimum information**
    - Minimum information is required on the face of each financial statement and in the notes.
  - **Comparative information**
    - Comparative information for prior periods should be included unless a specific standard states otherwise.

- **Disclosure of significant accounting policies**
  - In the footnotes
  - Significant policies and estimates that require management judgements are addressed in MD&A.
  - A public company estimates the impact of implementing recently issued accounting standards or evaluates the effects of the new standards.
- **U.S. GAAP V.S IFRS**
  - Until these frameworks converge, analysts will need to interpret financial statements that are prepared under different standard. A company will present a **reconciliation statement** showing what its financial results would have been under an alternative reporting system.

# Effective financial reporting

- **Characteristics**

- **Transparency**

- Users should be able to see the underlying economics of the business reflected clearly in the company's financial statements.
- Full disclosure and fair representation create transparency.

- **Comprehensiveness**

- Encompass the full spectrum of transactions that have financial consequences.
- Universal enough to provide guidance for recording both existing and newly developed transactions.

- **Consistency**

- Ensure reasonable consistency across companies and time periods.
- Similar transactions should be measured and presented in a similar manner regardless of industry, company size, geography, or other characteristics.

- **Barriers to a single coherent framework**
  - **Valuation**
  - **Standard-setting approach**
    - **Principles-based approach:** a broad framework.
      - IFRS
    - **Rules-based approach**
      - Specific guidance about how to classify transactions.
      - U.S.GAAP
    - **Objectives-oriented approach**
      - The blends of the other two approaches.
      - The common conceptual framework is moving toward an objective-oriented approach.
  - **Measurement**
    - At one point in time: Balance sheet
    - Between points in time: Income statement

## Summary

- Objectives
- Organization
- **Financial Reporting**
  - **Qualitative Characteristics**
  - **Assumptions**
  - Features for preparing financial statements
  - Structure and content of financial statements
  - Disclosure of significant accounting policies
- **Effective financial reporting**
  - **Characteristics**
  - Barriers to a single coherent framework

- **Study session 7**

- **Los24. Understanding Income Statement**
- Los25. Understanding Balance sheets
- Los26. Understanding Cash Flow Statement
- Los27. Financial Analysis Technique

## Components and format of the Income Statement

- **Component**

- **Revenues** are the amounts reported from the sale of goods and services in the normal course of business. Revenue less adjustments for estimated returns and allowances is known as net revenue.
- **Expense** are the amounts incurred to generate and include cost of goods sold, operating expenses, interest, and taxes.
  - **Grouping by nature**: depreciation.
  - **Grouping by function**: cost of goods sold, sale costs.
- **Net income**=revenues-ordinary expenses + other income-other expense + gains-losses
- **Non-controlling interest**
  - When consolidates financial statements.

- **Multi-step income statement**

- Revenue

- Cost of goods sold

- = **Gross profit**

- Selling, general, and administrative expense

- Depreciation expense

- = **Operating profit (EBIT)**

- Interest expense

- = **Income before tax (EBT)**

- Provision for income taxes

- = **Income from continuing operations**

- Earnings(losses) from discontinued operations, net of tax

- = **Net income**



## Revenue recognition

- **Recognizing revenue**

- **Revenue recognized from the sale of goods**

- The entity has transferred to the buyer the significant risks and rewards of ownership of the goods.
- The entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold.
- The amount of revenue can be measured reliably.
- It is probable that the economic benefits associated with the transaction will flow to the entity.
- The costs incurred or to be incurred in respect of the transaction can be measured reliably.

- **Revenue recognized from service rendered**

- The amount of the revenue can be measured reliably.
- It is probable that the economic benefits associated with the transaction will flow to the entity.
- The stage of completion of the transaction at the balance sheet date can be measured reliably.
- The costs incurred for the transaction and the costs to complete the transaction can be measured reliably.
- Receive cash before revenue recognition: **unearned revenue**.

- **Long-term contracts:** spans a number of accounting periods
  - **Percentage of completion method**
    - When the outcome of a long-term contract can be reliably estimated.
    - Revenue, expense, and therefore profit, are recognized as the work is performed.
    - % = total cost incurred / total expected cost
  - **Completed-contract method**
    - When the outcome of the project cannot be reliably estimated, revenue, expense and profit are recognized only when the contract is complete (US, **GAAP**).
    - **IFRS**, revenue may be recognized to the extent of contract costs incurred, only if it is probable **the costs will be covered**.
- **Comparison**
  - Which one is more aggressive?
  - Which one provide smoother earnings?
  - Do they have the same cash flow?

## Example from curriculum P238

Stelle technology has a contract to build a network for a customer for **a total sales price of 10 million**. The network will take an **estimated three years to build**, and total building costs are estimated to be 6 million. Stelle recognizes long-term contract revenue using the **percentage-of-completion method** and estimated percentage complete based on expenditure incurred as a percentage of total estimated expenditures.

1. At the end of year 1, the company had spent 3 million. Total cost to complete are estimated to be another 3 million. How much revenue will Stelle recognize in Year 1?
2. At the end of year 2, the company had spent an additional 2.4 million for an accumulated totla of 5.4 million. Total costs to completed are estimated to be another 0.6 million. How much revenue will Stelle recognize in Year 2?
3. At the end of year 3, the contract is complete. The company spent an accumulated total of 6 million. How much revenue will Stelle recognize in Year 3?

### Solution to 1:

- The percentage is  $3/6=50\%$ , the revenue is  $50\%*10$  million= $5$  million;
- The cost is 3 million.

### Solution to 2:

- The percentage is  $5.4/6=90\%$ , the total revenue is  $90%*10$  million= $9$  million;
- It has already recognize 9 million, now we can recognize  $9-5=4$  million.
- The cost is  $5.4-3=2.4$  million.

### Solution to 3:

- The percentage is 100%, It has already recognize 9 million, now we can recognize  $10-9=1$ million.
- The cost is  $6-5.4=0.6$  million.

## Example from curriculum P240

Stelle technology has a contract to build a network for a customer for **a total sales price of 10 million**. The network will take an **estimated three years to build**, but considerable uncertainty surrounds total building costs because new technologies are involved. In other words, the outcome cannot be reliably measured, but it is probable that the costs up to the agreed upon price will be recovered.

***How much revenue, expense and income would the company recognize each year*** under IFRS and using the completed contract method under US GAAP?

- At the end of year 1, Stelle has spent 3 million.
- At the end of year 1, Stelle has spent a total of 5.4 million.
- At the end of year 1, the contract is complete. Stelle has spent a total of 6 million.

## IFRS

### Solution to 1:

- The revenue is 3 million;
- The cost is 3 million, 0 income.

### Solution to 2:

- The revenue is 2.4 million;
- The cost is 2.4 million, 0 income.

### Solution to 3:

- The revenue is  $10 - 3 - 2.4 = 4.6$  million;
- The cost is 0.6 million, the income  $4.6 - 0.6 = 4$  million.

## U.S.GAAP

### Solution to 1:

- The revenue is 0 million;
- The cost is 0 million, 0 income.

### Solution to 2:

- The revenue is 0 million;
- The cost is 0 million, 0 income.

### Solution to 3:

- The revenue is 10 million;
- The cost is 6 million, the income  $10-6=4$  million.



Revenue recognition to the extent of contract costs incurred: **IFRS**

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Revenue	\$3 million	\$2.4 million	\$4.6 million	\$10 million
Cost of construction	\$3 million	\$2.4 million	\$0.6 million	\$6 million
Profit	\$0 million	\$0 million	\$4 million	\$4 million

Completed Contract Method: **US GAAP**

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Revenue	\$0 million	\$0 million	\$10 million	\$10 million
Cost of construction	\$0 million	\$0 million	\$6 million	\$6 million
Profit	\$0 million	\$0 million	\$4 million	\$4 million

- **Installment sales**

- If collectibility is certain, revenue is recognized at the time of sale using the normal revenue recognition criteria.
- If collectibility cannot be reasonably estimated, the **installment method** is used.
- If collectibility is highly uncertain, the **cost recovery method** is used.

- **Barter transaction**

- Two parties exchange goods or services without cash payment.
- IFRS: **fair value** of similar non-barter transactions with unrelated parties.
- U.S GAAP: **fair value** only if a company has historically received cash payments for such services, otherwise, the revenue is recorded at the **carrying value** of the asset.

## Example from curriculum P240

Assume the total sales price and cost of a property are 2,000,000 and 1,100,000, respectively, so that the total profit to be **recognized is 900,000**. The amount of cash received by the seller as a down payment is 300,000, with the remainder of the sales price to be received **over a 10-year period**. It has been determined that there is significant doubt about the ability and commitment of the buyer to complete all payments. How much profit will be recognized attributable to the down payment if:

- The installment method is used?
- The cost recovery method is used?

### Solution to 1:

- The ratio is  $900,000/2,000,000=45\%$ . The profit attributable to the down payment is  $45\%*300,000=135,000$ .

### Solution to 2:

- The cost recovery method, the company would not recognize any profit attributable to the down payment because the cash amounts paid by the buyer still do not exceed the cost of 1,100,000.

- **Gross versus net reporting**

- **Gross revenue reporting**

- Report sales revenue and cost of goods sold (COGS) ***separately***.
- Criteria for gross revenue reporting under U.S. GAAP
  - Be the primary obligor under the contract.
  - Bear the inventory risk and credit risk.
  - Be able to choose its supplier.
  - Have reasonable latitude to establish the price.
- Under the same condition, gross revenue reporting **has higher revenue and COGS**.

- **Net revenue reporting**

- Only report the ***difference*** of sales and COGS.

## Example from curriculum P89

Consider a travel agent who arranges a first-class ticket for a customer flying to Singapore. The ticket price is 10,000, and the travel agent receives a 1,000 commission.

- **Using gross reporting**, the travel agent would report 10,000 of revenue, 9000 of expense, and 1000 of profit.
- **Using net reporting**, the travel agent would simply report 1000 of revenue and no expense.
- **Implications for financial analysis**
  - Find firm's revenue recognition policies in the financial statement footnotes.
  - Consider whether the firm applies **appropriate recognition methods**
    - How conservative are the firm's revenue recognition policies.
      - **Aggressive**: recognize revenue sooner rather than later.
    - The extent to which the firm's policies rely on **judgment and estimates**.

- Convergence

- The five-step of recognizing revenue

- Identify the **contract** with a customer.
  - Contract is an agreement between two or more parties that specifies their obligations and rights.
- Identify the **performance obligations** in the contract.
  - The customer can benefit from the good or service on its own or combined with other resources that are readily available.
  - The promise to transfer the good or service can be identified separately from any other promises.
- Determine the transaction price.
- Allocate the transaction price to the performance obligations in the contract.
- Recognize revenue when the entity satisfies a performance obligation.

## • Required disclosures

- Contracts with customers by category.
- Assets and liabilities related to contracts, including balances and changes.
- Outstanding performance obligations and transaction prices allocated to them.
- Management judgments used to determine the amount and timing of revenue recognition, including any changes to those judgments.

## Expense recognition

- **Matching principle**

- Expenses to generate revenue are recognized in the same period as the revenue.

- **Inventory expense recognition**

- **Specific identification**

- Auto dealer records each vehicle.

- **First-In, First-Out (FIFO)**

- The first item purchased is assumed to be the first item sold, a food products.
- in an inflationary environment, FIFO results in lower cost of goods sold and higher inventory.

- **Last-In, First-Out (LIFO)**

- The last item purchased is assumed to be the first item sold, a coal distributor.
- U.S.GAPP, in an inflationary environment, LIFO results in higher cost of goods sold, lower taxable income and lower income taxes.



- **Weighted average cost**

- Total cost/total units, inventory and cost of goods sold are between LIFO and FIFO.

### Example from notebook P93

Using the inventory data in the table below to calculate the cost of goods sold and ending inventory under each of the three methods.

#### Inventory data

- January 1(beginning inventory)    2 units @ 2=\$4
- January 7 purchase                    3 units @ 3=\$9
- January 19 purchase                 5 units @ 5=\$25
- Cost of goods available               10 units=\$38
- Units sold during January            7 units

## Solution:

- FIFO

Cost of goods sold= $2*2+3*3+2*5=23$ ; ending inventory= $3*5=15$ .

- LIFO

Cost of goods sold= $5*5+2*3=31$ ; ending inventory= $2*2+1*3=7$ .

- Weighted average

Average unit cost= $38/10=3.8$ ; Cost of goods sold= $7*3.8=26.6$ ; ending inventory= $3*3.8=11.4$ .

- Inventory method comparison

	Cost of goods sold	Ending inventory
FIFO (U.S and IFRS)	First purchased	Most recent purchases
LIFIO ( <b>U.S only</b> )	Last purchased	The earliest purchased
Weighted average cost (U.S and IFRS)	Average cost of all items	Average cost of all items

- **Depreciation expense recognition**

- **Straight-line depreciation**

$$\text{SLDE} = (\text{cost} - \text{residual value}) / \text{useful life}$$

- **Accelerated depreciation method, Double-declining balance**

$$\text{DDB} = (2/N) * (\text{cost} - \text{accumulated depreciation})$$

## Example from notebook P95

Littlefield Company recently purchased a machine at a cost of 12,000. The machine is expected to have a residual value of 2,000 at the end of its useful life in five years. Calculate depreciation expense using the **straight-line method and the double-declining balance method**.

### Solution:

- **Straight-line method** : The annual depreciation expense is  $(12,000-2,000)/5=2,000$ .

- **Double-declining balance method**:

year 1:  $2/5*12,000=4,800$ .

year 2:  $2/5*(12,000-4,800)=2,880$ .

year 3:  $2/5*(12,000-7,680) =1,728$ .

year 4: in the last three years, we have depreciated  $4,800+2,880+1,728=9,408$ .

the depreciation is  $12,000-9,408-2,000=592$ .

year 5: Depreciation is 0.

- **Amortization expense recognition**
  - **Definite lives**, straight-line method
  - **Indefinite lives**, are not amortized, impairment test annually.
- **Bad debt expense and warranty expense recognition**
  - **Credit sales or warranty**
  - **Implications for financial analysis**
    - Expense recognition requires a number of estimates. Since estimates are involved, it is possible for firms to delay or accelerate the recognition of expenses. Delayed expense recognition increases current net income and is therefore more aggressive.

- **Non-recurring items**

- **Discontinued operations** is one that management has decided to dispose of, but either has not yet done so.
- **Measurement date**: the date when the company develops a formal plan.
- **Phaseout period**: the time between the measurement date and the actual disposal date.
- **Analyst**: discontinued operations should be **excluded** by the analyst when forecasting future earnings.

- **Unusual or infrequent items**

- **Gains or losses from the sale of assets or part of a business.**
- **Impairments, write-offs, write-downs, and restructuring costs**
- Unusual or infrequent items are included in income from continuing operations and are reported before tax.
- **Analyst:** Determine whether they should be included when forecasting future firm earnings.



- **Extraordinary items**

- Losses from an expropriation of assets
- Gains or losses from early retirement of debt
- Uninsured losses from natural disasters that are both unusual and infrequent
- Extraordinary items are reported separately in the income statement, net of tax, after income from continuing operations.
- **Analyst**
  - Judgement is required in determining whether a transaction or event is extraordinary.
  - Determine whether some items should be included when forecasting future income.

## Policies changes

- **Changes in accounting policies**

- A change in inventory accounting from LIFO to FIFO, it requires **retrospective application**.

- **Changes in accounting estimate**

- The result of a change in management's judgment, usually due to new information. It is applied prospectively and does not require the restatement of prior financial statements.
- **Analyst:** review changes in accounting estimates to determine the impact on future operating results.

- **Prior-period adjustment**

- Disclosure of the nature of the adjustment and its effect on net income is also required.
- **Analyst:** errors may indicate weaknesses in the firm's internal controls.

- **Operating and non-operating components**

## EPS

- **Earnings per share (EPS)**
  - **Simple capital structure** contains only common stock, nonconvertible debt, and nonconvertible preferred stock.
    - It only report basic EPS.
  - **Complex capital structure** contains stock options, warrants or convertible securities.
    - It should report ***both basic EPS and diluted EPS***.

## • Basic EPS

$$\text{basic EPS} = \frac{\text{net income} - \text{preferred dividends}}{\text{weighted average number of common shares outstanding}}$$

- The **weighted average number of common shares** is the number of shares outstanding during the year, weighted by the portion of the year they were outstanding.
  - The weighting system is days outstanding divided by the number of days in a year. Usually months.
  - Shares issued enter into the computation from the date of issuance.
  - **Reacquired shares are excluded** from the computation from the date of reacquisition.
  - Shares sold or issued in a purchase of assets are included from the date of issuance.
  - **A stock split or stock dividend** is applied to **all shares outstanding** prior to the split or dividend and to the beginning-of-period weighted average shares. A stock split or stock dividend adjustment is not applied to any shares issued or repurchased after the split or dividend date.

## Example from curriculum P274

For the year ended 31 December 2009, Shopalot Company had net income of 1,950,000. the company had **1,500,000 shares** of common stock outstanding, no preferred stock, and no convertible financial instruments.

What is Shopalot's **basic EPS**?

### Solution:

- Basic EPS= $1,950,000/1,500,000=1.3$ .

## Example from curriculum P274

For the year ended 31 December 2009, Angler Products had net income of 2,500,000. the company declared and paid 200,000 of dividends on preferred stock. The company had the following common stock share information:

- Shares outstanding on 1 January 2009 1,000,000
- Shares issued on 1 April 2009 200,000.
- Shares repurchased (treasury shares) on 1 October 2009 (100,000)
- Shares outstanding on 31 December 2009 1,100,000.

1. What is the company's **weighted average number of shares outstanding**?
2. What is the company's **basic EPS**?
3. On December 2009, a previously declared **2 for 1 stock split** took effect. Each shareholder of record receives two shares in exchange for each current share that he or she owns. What is the company's basic EPS?

### Solution to 1:

- The weighted average number of shares outstanding  
 $=1,000,000*3/12+1,200,000*6/12+1,100,000*3/12=1,125,000.$

### Solution to 2:

- Basic EPS= $(2,500,000-200,000)/1,125,000=2.04.$

### Solution to 3:

- The weighted average number of shares outstanding= $1,125,000*2=2,250,000.$
- The basic EPS would be  $(2,500,000-200,000)/2,250,000=1.02.$

## • Diluted EPS

- **Antidilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would **increase EPS** if exercised or converted to common stock.
- **Dilutive securities** are stock options, warrants, convertible debt, or convertible preferred stock that would **decrease EPS** if exercised or converted to common stock.
- **Convertible preferred stock if converted**
  - If converted, no long pay preferred dividends.
  - The number of shares outstanding will increase.

$$\text{Diluted EPS} = \frac{\text{(Net income)}}{\text{(Weighted average number of shares outstanding + New common shares that would have been issued at conversion)}}$$



## Example from curriculum P277

For the year ended 31 December 2009, Utility Company had net income of 1,750,000. The company had an average of 500,000 shares of common stock outstanding, **20,000 shares of convertible preferred**, and no other potentially dilutive securities. Each share of preferred pays a dividend of \$10 per share, and each is ***convertible into five shares*** of company's common stock. Calculate the company's **basic and diluted EPS**.

### Solution:

- Basic EPS= $(1,750,000 - 200,000) / 500,000 = 3.1$ .
- Diluted EPS= $(1,750,000) / (500,000 + 100,000) = 2.92$ .

- **Convertible debt outstanding**

- If converted, no long pay interest. Add **Interest\*(1-tax rate)** back.
- The number of shares outstanding will increase.

$$\text{Diluted EPS} = \frac{(\text{Net income} + \text{After-tax interest on convertible debt} - \text{Preferred dividends})}{(\text{Weighted average number of shares outstanding} + \text{Additional common shares that would have been issued at conversion})}$$

## Example from curriculum P279

Dppnox Company reported net income of 750,000 for the year ended 31 December 2009. The company had a *weighted average of 690,000 shares of common stock* outstanding. In addition, the company has only one potentially dilutive security: \$50,000 of 6% convertible bonds, convertible into a total of 10,000 shares.

Assuming a tax rate of 30%, calculate Oppnox's basic and diluted EPS.

### Solution:

- Basic EPS =  $750,000 / 690,000 = 1.09$ .
- Diluted EPS =  $[750,000 + 50,000 * 6% * (1 - 30%)] / (690,000 + 10,000) = 1.07$ .

- **Stock options, warrants if converted**

- **Treasury stock method**

- If exercise prices < average market price of the stock, the stock option or warrants are dilutive.
- The company is assumed to receive cash upon exercise, in exchange, to issue shares.
- The company is assumed to use the cash proceeds to repurchase shares at the weighted average market price during the period.

- $\Delta \text{stock} = \text{shares created by exercising the options} - \text{repurchase}$

**Diluted EPS**

$$= \frac{(\text{Net income} - \text{Preferred dividends})}{[\text{Weighted average number of shares outstanding} + (\text{New shares that would have been issued at option exercise} - \text{Shares that could have been purchased with cash received upon exercise}) \times (\text{Proportion of year during which the financial instruments were outstanding})]}$$

## Example from notebook P104

Baxter Company has 5,000 shares outstanding all year. Baxter had 2,000 outstanding warrants all year, convertible into one share each at \$20 per share. The year-end price of Baxter **stock was \$40**, and the average stock price was \$30. What effect will these warrants have on the ***weighted average number of shares***?

### Solution:

- If the warrants are exercised, the company will receive  $2,000 * 20 = 40,000$  and issue new shares.
- The company would repurchase  $40,000 / 30 = 1,333$  shares.
- Net shares issued would be  $2,000 - 1,333 = 667$  shares.

## Example from curriculum P281

Hihotech Company reported **net income of 2.3 million** for the year ended 30 June 2009 and had a weighted average of 800,000 common shares outstanding. At the beginning of the fiscal year, the company has outstanding **30,000 options with an exercise price of 35**. Over the fiscal year, the company's market price has average \$55 per share. Calculate the company's *basic and diluted EPS*.

### Solution:

- The basic EPS= $2,300,000/800,000=2.88$ .
- The cash received is  $30,000*35=1,050,000$ . The shares repurchased= $1,050,000/55=19,091$ .  
The incremental number of shares is  $30,000-19,091=10,909$ .
- The diluted EPS= $2,300,000/[800,000+10,909]=2.84$ .

## • If dilutive

- +Convertible preferred dividends to earnings
- +Interest expense\* (1-tax) to the numerator.
- The basic EPS denominator is adjusted for the equivalent number of common shares that would be created by the conversion of all dilutive securities outstanding.

$$\text{diluted EPS} = \frac{\left[ \begin{array}{c} \text{net income} - \text{preferred} \\ \text{dividends} \end{array} \right] + \left[ \begin{array}{c} \text{convertible} \\ \text{preferred} \\ \text{dividends} \end{array} \right] + \left[ \begin{array}{c} \text{convertible} \\ \text{debt} \\ \text{interest} \end{array} \right] (1-t)}{\left( \begin{array}{c} \text{weighted} \\ \text{average} \\ \text{shares} \end{array} \right) + \left( \begin{array}{c} \text{shares from} \\ \text{conversion of} \\ \text{conv. pfd. shares} \end{array} \right) + \left( \begin{array}{c} \text{shares from} \\ \text{conversion of} \\ \text{conv. debt} \end{array} \right) + \left( \begin{array}{c} \text{shares} \\ \text{issuable from} \\ \text{stock options} \end{array} \right)}$$

- An antidilutive security

### Example from curriculum P284

For the year ended 31 December 2009, Dim-Cool Utility Company had **net income** of 1,750,000. The company had an **average of 500,000 shares** of common stock outstanding, 20,000 shares of convertible preferred, and no other potentially dilutive securities. Each share of preferred pays a dividend of \$10 per share, and each is convertible into three shares of the company's common stock, what was the company's **basic and diluted EPS?**

### Solution:

- Basic EPS= $(1,750,000 - 200,000) / 500,000 = 3.1$ .
- Diluted EPS= $1,750,000 / (500,000 + 3 * 20,000) = 3.13 > 3.1$ , antidilutive.



- **Effect of stock dividends and stock splits**

- **Stock dividend** is the distribution of additional shares to each shareholders in an amount proportional to their current number of shares.
- **Stock split** refers to the division of each “old” share into specific number of “new” shares.
- Each shareholder’s proportional ownership in the company is unchanged by either of stock dividend or stock split.

## Analysis of income statement

- A vertical common-size income statement

- Expresses each category of the income statement as a percentage of **revenue**.
  - Eliminating the effects of size.
  - Allows for comparison of income statement items over time.

	<i>North Co.</i>	<i>South Co.</i>
Revenue	\$75,000,000	\$3,500,000
Cost of goods sold	<u>52,500,000</u>	<u>700,000</u>
Gross profit	\$22,500,000	\$2,800,000
Administrative expense	11,250,000	525,000
Research expense	<u>3,750,000</u>	<u>700,000</u>
Operating profit	\$7,500,000	\$1,575,000

	<i>North Co.</i>	<i>South Co.</i>
Revenue	100%	100%
Cost of goods sold	<u>70%</u>	<u>20%</u>
Gross profit	30%	80%
Administrative expense	15%	15%
Research expense	<u>5%</u>	<u>20%</u>
Operating profit	10%	45%

- **Ratios**

- Effective tax rate= tax/pretax income
- Gross profit margin=gross profit/revenue
- Net profit margin=net income/revenue
- Operating profit margin= operating profit/ revenue
- Pretax margin= pretax profit/ revenue

- **Other comprehensive income**

- **Transactions that are not included in net income**, such as:
  - Foreign currency translation gains and losses adjustments
  - Adjustment for minimum pension liability
  - Unrealized gains and losses from cash flow hedging derivatives
  - Unrealized gains and losses from available-for-sale securities

## Example from curriculum P293

Assume a company's beginning shareholders' equity is 200 million, its **net income for the year is 20 million** its cash dividends for the year are 3 million, and there was no issuance or repurchase of common stock. The company's actual **ending shareholders' equity is 227 million**.

1. What amount has bypassed the **net income** calculation by being classified as other comprehensive income?  
A. 0.                      B. 7 million.                      C. 10 million.
2. Which of the following statements best describes other comprehensive income?  
A. Income earned from diverse geographic and segment activities.  
B. Income that increases stockholders' equity but is not reflected as part of net income.  
C. Income earned from activities that are not part of the company's ordinary business activities.

**Solution to 1:** C.  $227 - (200 + 20 - 3) = 10$  million.

**Solution to 2:** B. A and C are not correct because they do not specify whether such income is reported as part of net income and shown in the income statement.

## Summary

- Components and format of the Income Statement
- **Revenue recognition**
  - **Long-term contracts**
    - Percentage of completion method
    - Completed-contract method
  - **Installment sales**
    - Barter transaction
- **Expense recognition**
  - **Inventory expense recognition**
  - **Depreciation expense recognition**
    - Unusual or infrequent items
    - Extraordinary items
- **Policies changes**

- **EPS**
  - **Basic EPS**
  - **Diluted EPS**
    - *Convertible preferred stock if converted*
    - Convertible debt outstanding
    - Stock options, warrants if converted
  - **An antidilutive security**
- **Analysis of income statement**
  - A vertical common-size income statement
  - **Ratios**
  - **Other comprehensive income**

- **Study session 7**

- Los24. Understanding Income Statement
- **Los25. Understanding Balance sheets**
- Los26. Understanding Cash Flow Statement
- Los27. Financial Analysis Technique

# Elements

- **Components**

- **Assets**

- Resources controlled as a result of past transactions that are expected to provide future economic benefits.

- **Liabilities**

- Obligations as a result of past events that are expected to require an outflow of economic resources.

- **Equity**

- The owner's residual interest in the assets after deducting the liabilities.

- **Uses and limitations of the balance sheet**

- **Liquidity**

- The ability to meet short-term obligations

- **Solvency**

- The ability to meet long-term obligations



## Balance Sheet

<b>Assets</b>	<b>Liabilities</b>
<b>Current assets</b>	<b>Current liabilities</b>
Cash and cash equivalents	Accounts payable
Marketable securities	Notes payable and current portion of long-term debt
Accounts receivable	Accrued liabilities
Inventories	Unearned revenue
Prepaid expense	<b>Non-current liabilities</b>
Deferred tax assets	Long-term financial liabilities
<b>Non-current assets</b>	Deferred tax liabilities
Property, plant and equipment	<b>Equity</b>
Intangible assets	Contributed capital
Financial assets	Retained earnings
	Accumulated other comprehensive income

## Assets

- **Current assets** includes cash and other assets that will likely to converted into cash or used up within one year or one operating cycle, whichever is greater.
  - **Cash and cash equivalents**
    - T-Bills, commercial paper and money market funds
  - **Marketable securities**
    - T-Bills, T-Notes, Bonds, and equity securities
  - **Accounts receivable**
    - Bad debt expense
  - Inventories
  - Other current assets
    - **Prepaid expense** are operating costs that have been paid in advance.
    - Deferred tax assets

- **Non-current assets**

- **Property, plant and equipment (PP&E)**

- IFRS use the cost model or the revaluation model to recognize PP&E.
- U.S GAAP only use cost model to recognize PP&E.
- Under the cost model, PP&E must be tested for impairment.
  - Goodwill.

## • Intangible assets

### • Identifiable intangible assets

- Patents, trademarks, and copyrights.
- The measurement is the same as PP&E.
- U.S.GAAP: Except for certain legal costs, intangible assets that are created internally, such as research and development costs, are expensed.
- IFRS
  - **Research stage:** discovery of new scientific or technical knowledge, expensed.
  - **Development stage:** using research results to plan or design products, capitalized cost.
- Finite-lived intangible assets are amortized over their useful lives and tested for impairment as PP&E.
- The amortization method and useful life estimates are reviewed ***at least annually***. Intangible assets with infinite lives are not amortized, but are tested for impairment ***at least annually***.

### • Unidentifiable intangible assets cannot be acquired separately and have unlimited life.

## • Financial assets

### • Trading securities(TS):Fair value

- Gain or loss is recognized in I/S
- 从生到死都是以公允价值计量，公允价值的变动或卖出时的损益直接在I/S确认。
- 有一点需要注意的是，买入资产所发生的交易成本直接计入I/S。

### • Held-to-maturity(HTM): Amortized Cost

- 持有至到期投资是指我们有意愿且有能力持有至到期的投资。
- 我们最熟悉的HTM是债券，
  - 买入时，我们以公允价值计量，买入债券过程中发生的成本也计入账面价值。
  - 持有期间，债券是以amortized cost确认，这是显著不同于其他financial asset的地方（fair value确认）。
  - 最终卖债券时，损益直接在I/S中确认。

### • Available-for-sale securities(AFS):fair value

- Gain or loss is recognized in OCI, equity.
- 金融资产既不能被划为HTM，也不能被化为PVPL，这类资产就叫可供出售金融资产Available-for-sale。
  - 买入AFS时以公允价值计量；
  - 持有期间，**AFS公允价值的变动计入OCI.**
  - 卖出时，买卖价之差全部转入I/S，包括之前OCI积累的unrealized gain or losse。

### Example from notebook P138: Classification of investment securities

Triple D Corporation purchased a 6% bond, at par, for \$1,000,000 at the beginning of the year. Interest rates have recently increased and the market value of the bond declined \$20,000. Determine the bond's effect on Triple D's financial statements under each classification of securities.

#### Solution:

- If the bond is classified as a **held-to-maturity security**, the bond is reported on the balance sheet at \$1,000,000. Interest income of \$60,000 [ $\$1,000,000 \times 6\%$ ] is reported in the income statement.
- If the bond is classified as a **trading security**, the bond is reported on the balance sheet at \$980,000. The \$20,000 unrealized loss and \$60,000 of interest income are both recognized in the income statement.
- If the bond is classified as an **available-for-sale security**, the bond is reported on the balance sheet at \$980,000. Interest income of \$60,000 is recognized in the income statement. The \$20,000 unrealized loss is **not recognized** in the income statement. Rather, it is reported as a change in stockholders' equity.

## • Goodwill

- When **purchase price > fair value of the identifiable net assets** in acquisition, recognize goodwill.
- Goodwill is only created in a purchase acquisition. Internally generated goodwill is expensed as incurred.
- Goodwill is **not amortized but must be tested for impairment at least annually**. If impaired, goodwill is reduced and a loss is recognized in the income statement. The impairment loss does not affect cash flow.
- Since goodwill is not amortized, ***firms can manipulate net income*** upward by allocating more of the acquisition price to goodwill and less to the identifiable assets.
- **Analyst's view**
  - Excluding goodwill from balance sheet data used to compute financial ratios.
  - Excluding goodwill impairment losses from income data used to examine operating trends.

## Example from notebook P136

Wood Corporation paid 600 million for the outstanding stock of Pine Corporation. At the acquisition date, Pine reported the following condensed balance sheet (book value).

- Current asset=80 million;
- Plant and equipment, net=760 million;
- Goodwill=30 million;
- Liabilities=400 million;
- Stockholders'equity =470 million.

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

### Solution:

- Fair value of the net assets= $80+(760+120)-400=560$ . • Purchase price-fair value of net asses= $600-560=40$ .



## Liabilities

- **Current liabilities** are expected to be settled in the entity's normal operating cycle, held primarily for trading, or due to be settled within 12 months.
  - **Accounts payable**
    - The unpaid amount due to trade credit.
  - **Notes payable and current portion of long-term debt**
  - **Accrued liabilities**
    - Expenses that have been recognized in the income statement but are not yet contractually due.
    - Interest payable, wages payable, and accrued warranty expense.
  - **Unearned revenue**
    - Cash collected in advance of providing goods and services.
      - A magazine publisher receives subscription payment.

- **Non-current liabilities**
  - Long-term financial liabilities
  - Deferred tax liabilities(DTL)

## Equity

- **Owners' equity**, net assets
  - **Contributed capital** is the amount contributed by equity shareholders.
    - Par value has no relationship with fair value, always plus additional paid-in capital.
    - **Treasury stock** reduces stockholder's equity
      - Has no voting rights and does not receive dividends.
    - Preferred stock has certain rights and privileges not conferred by common stock.
  - **Retained earnings** are the undistributed earnings of the firm since inception.
  - **Accumulated other comprehensive income (OCI)**
    - All changes in stockholders' equity except for transactions recognized in the income statement and transactions with shareholders.
  - **Noncontrolling interest**

## • Statement of changes in stockholder's equity

- Total comprehensive income for the period
- The effect of any accounting changes that have been retrospectively applied to previous periods.
- Capital transactions with owners and distributions to owners.
- Reconciliation of the carrying amounts of each component of equity at the beginning and end of the year.

	<i>Common Stock</i>	<i>Retained Earnings (in thousands)</i>	<i>Accumulated Other Comprehensive Income (loss)</i>	<i>Total</i>
Beginning balance	\$49,234	\$26,664	(\$406)	\$75,492
Net income		6,994		6,994
Net unrealized loss on available-for-sale securities			(40)	(40)
Net unrealized loss on cash flow hedges			(56)	(56)
Minimum pension liability			(26)	(26)
Cumulative translation adjustment			42	42
Comprehensive income				6,914
Issuance of common stock	1,282			1,282
Repurchases of common stock	(6,200)			(6,200)
Dividends		(2,360)		(2,360)
Ending balance	<u>\$44,316</u>	<u>\$31,298</u>	<u>(\$486)</u>	<u>\$75,128</u>

## Analysis

- **Common-size balance sheet**

- Each item of the balance sheet as a percentage of total assets, **eliminating the effect of size**.
- Allow comparison **over time**(time-series analysis) and **across firms**(cross-sectional analysis).

	East	West		East	West
Cash	2300	1500	Cash	5%	10%
Accounts receivable	3700	1100	Accounts receivable	8%	7%
Inventory	5500	900	Inventory	12%	6%
<b>Current assets</b>	11500	3500	<b>Current assets</b>	25%	23%
Plant and equipment	32500	11750	Plant and equipment	71%	77%
Goodwill	1750	0	Goodwill	4%	0%
<b>Total assets</b>	45750	15250	<b>Total assets</b>	100%	100%
Current liabilities	10100	1000	Current liabilities	22%	7%
Long-term debt	26500	5100	Long-term debt	58%	33%
<b>Total liabilities</b>	36600	6100	<b>Total liabilities</b>	80%	40%
<b>Equity</b>	9150	9150	<b>Equity</b>	20%	60%
<b>Total liabilities and equity</b>	45750	15250	<b>Total liabilities and equity</b>	100%	100%

- **Balance sheet ratios**

- **Liquidity ratios** 衡量公司的短期偿债能力

- Current ratio=current assets/ current liabilities
- Quick ratio= cash+ securities+ receivable/current liabilities
- Cash ratio=cash+ securities/current liabilities

- **Solvency ratios** 衡量企业长期偿债能力 financial risk and financial leverage

- Long-term debt-to equity= Long-term debt/total equity
- Total debt-to-equity= Total debt/total equity
- Debt ratio= Total debt/total assets
- Financial leverage= total assets/ total equity

## Example:

### 1. Calculate Liquidity ratios (West)

- Current ratio=current assets/ current liabilities= $3,500/1,000=3.5$ .
- Quick ratio= cash+ securities+ receivable/current liabilities= $(1,500+1,000)/1,000=2.6$
- Cash ratio=cash+ securities/current liabilities= $1,500/1,000=1.5$ .

### 2. Calculate Solvency ratios (West)

- Long-term debt-to equity= Long-term debt/total equity= $5,100/9,150=0.5574$ .
- Total debt-to-equity= Total debt/total equity= $6,100/9,150=0.6667$ .
- Debt ratio= Total debt/total assets= $6,100/15,250=0.4$ .
- Financial leverage= total assets/ total equity= $15,250/9,150=1.6667$ .



- **Limitations of balance sheet ratio analysis**

- Comparisons with peer firms are limited by differences in accounting standards and estimates.
- Lack of homogeneity as many firms operate in different industries.
- Interpretation of ratios requires significant judgment.
- Balance sheet data are only measured at a single point in time.

# Summary

- **Elements**
- **Assets**
  - Current assets
  - Non-current assets
- **Liabilities**
  - Current liabilities
  - Non-current liabilities
- **Equity**
- Statement of changes in stockholder's equity
- Analysis

- **Study session 7**

- Los24. Understanding Income Statement
- Los25. Understanding Balance sheets
- **Los26. Understanding Cash Flow Statement**
- Los27. Financial Analysis Technique

# Cash flow statement

- **Provide the following information**
  - A company's cash receipts and cash payments during an accounting period
  - A company's operating, investing, and financing activities
  - An understanding of the impact of accrual accounting events on cash flows
- **Analyst**
  - Regular operations generate enough cash to **sustain** the business.
  - Enough cash is generated to pay off existing debts as they mature.
  - The firm is likely to need additional financing.
  - Unexpected obligations can be met.
  - The firm can take advantage of new business opportunities as they arise.

- Sources

- Income statement items
- Changes in balance sheet accounts

- Classification

- **Cash flow from operating activities (CFO)**

- Inflows and outflows of cash resulting from transactions that affect a firm's net income.
- Direct method or indirect method

- **Cash flow from investing activities (CFI)**

- Inflows and outflows of cash resulting from the acquisition or disposal of long-term assets and certain investments.
- Direct method

- **Cash flow from financing activities (CFF)**

- Inflows and outflows of cash resulting from transactions affecting a firm's capital structure.
- Direct method

- **Noncash investing and financing activities**
  - **A firm acquires real estate with financing provided by the seller.**
    - Not reported as an investing and financing activities in the CFS.
  - **An exchange of debt for equity**
    - Not reported as a financing activities in the CFS.
  - Must be disclosed in either a footnote or supplemental schedule to the CFS.
  - Analyst
    - Be aware of the firm's noncash transactions.
    - Incorporate them into analysis of past and current performance.
    - Consider their effects in estimating future cash flows.

## CFO

- **Inflows and outflows**

- Provide specific information on the sources of operating cash flows.

### Cash flow from operating activities

Cash inflows	Cash outflows
Cash from customers	Cash paid to employees and suppliers
Interest received	Interest paid
<b>Dividends received</b>	Taxes paid
Sale proceeds from trading securities	Acquisition of <b>trading securities</b>
	Other expenses

- Direct method

CFO	I/S	B/S	
		- $\Delta$ Asset	+ $\Delta$ Liabilities
+Cash received from <b>customers</b>	+Sales	Accounts receivable	Unearned revenue
-Cash paid to <b>suppliers</b>	-COGS	Inventory	accounts payable
-Cash paid to employees and other operating <b>expenses</b>	-expense	prepaid expense	Payable
-Cash paid for <b>interest</b>	-Interest expense		Interest payable
-Cash paid for <b>taxes</b>	-Tax expense	DTA	Tax payable,DTL



- **Cash received from customers**

$$\text{Accounts receivable}_{\text{Beginning}} + \text{revenue} - \text{cash collected from customers} = \text{account receivable}_{\text{Ending}}$$

### Example from curriculum P415

Blue Bayou reported revenues of 50 million, total expenses of 35 million, and **net income of 15 million** in the most

recent year. If **accounts receivable decreased by 12 million**, how much cash did the company receive from customers?

- A. 38 million.                      B. 50 million.                      C. 62 million.

### Solution:

- Revenue-cash received from customers= $\Delta$ account receivables
- 50-cash received from customers=-12.
- cash received from customers=62. C.

## • Cash paid to suppliers

$$\triangleright \text{Inventory}_{\text{Beginning}} + \text{purchases} - \text{cost of goods sold} = \text{Inventory}_{\text{Ending}}$$

$$\triangleright \text{Accounts payable}_{\text{Beginning}} + \text{purchases} - \text{cash paid to suppliers} = \text{account payable}_{\text{Ending}}$$

### Example from curriculum P417

Orange beverages reported cost of goods sold for the year of 100 million. **Total assets increased by 55 million**, but inventory declined by 6 million. **Total liabilities increased by 45 million**, but accounts payable decreased by 2 million. How much cash did the company pay to its suppliers during the year?

A. 96 million.

B. 104 million.

C. 108 million.

### Solution:

• Purchase- cost of goods sold =  $\Delta$ inventory ; • Purchase -100=-6. purchase=94.

• Purchases- cash paid to suppliers=  $\Delta$ account payable. • 94- cash paid to suppliers=-2;

**cash paid to suppliers=96. A.**

- **Cash paid to employees**

➤  $\text{Salary and wage payable}_{\text{Beginning}} + \text{salary and wage expense} - \text{cash paid to employees}$   
 $= \text{Salary and wage payable}_{\text{Ending}}$

### Example

Salary and wage payable increased by 10 million, salary and wage expense is 12 million, calculate cash paid to employees.

### Solution:

- salary and wage expense- **cash paid to employees**=  $\Delta$  Salary and wage payable
- 12- **cash paid to employees**=10,
- **Cash paid to employees**= 2.

- **Cash paid for other operating expenses**

- Other operating expenses+increase in prepaid expenses-increases in other accrued liabilities  
= cash paid for other operating expenses

### Example from curriculum P419

Black Ice reported other operating expenses of 30 million. Prepaid insurance expense increased by 4 million, and ***accrued utilities payable decreased by 7 million***. Insurance and utilities are the only two components of other operating expenses. How much cash did the company pay in other operating expenses?

A. 19 million.                      B. 33 million.                      C. 41 million.

### Solution:

- Other operating expenses-decrease in prepaid expenses-increases in other accrued liabilities  
=30+4+7=41. C.

- **Cash paid for interest**

$$\text{Interest payable}_{\text{Beginning}} + \text{interest expense} - \text{cash paid to interest} = \text{Interest payable}_{\text{Ending}}$$

### Example

Interest payable increased by 10 million, interest expense is 300 million, calculate cash paid to interest.

### Solution:

- Interest expense - **cash paid to interest** =  $\Delta$  Interest payable
- 300 - **cash paid to interest** = 10,
- **Cash paid to interest** = 290.

- **Cash paid for income taxes**

- $$\text{Income taxes payable}_{\text{Beginning}} + \text{income tax expense} - \text{cash paid for income taxes} = \text{Income taxes payable}_{\text{Ending}}$$

- Taxes on income are required to be separately disclosed under IFRS and US GAAP.
- The disclosure may be in the cash flow statement or elsewhere.

### Example

Income taxes payable increased by 20 million, income tax expense is 1000 million, calculate cash paid for income taxes.

### Solution:

- income tax - **cash paid for income taxes** =  $\Delta$  Income taxes payable
- 1000- **cash paid for income taxes** =20,
- **Cash paid for income taxes**= 100-20=980.

- Indirect method

- $CFO = NI + \text{Non-cash charge} - \text{Gain} + \text{Loss} - \Delta CA + \Delta CL$

- Begin with **net income**.
- Subtract gains or add losses that resulted from **financing or investing cash flows** (such as gains from sale of land).
- Add back all **noncash charges** to income (such as depreciation and amortization) and subtract all noncash components of revenue.
- Add or subtract changes to balance sheet **operating accounts** as follows:
  - Increases in the **operating asset accounts** (uses of cash) are **subtracted**, while decreases (sources of cash) are added.
  - Increases in the **operating liability accounts** (sources of cash) are **added**, while decreases (uses of cash) are subtracted.

## Example:

I/S Net income 30 million

Depreciation 7 million

	Beginning	Ending
Account receivable	15	30
Inventory	16	13
Account payable	10	20

Total adjustments that the company would make to net income in order to derive operating cash flow?

A. Add 5 million.      B. add 21 million.      C. subtract 9 million.

## Solution:

- $CFO = NI + \text{Non-cash charge} - \text{Gain} + \text{Loss} - \Delta CA + \Delta CL$   
 $= 7 + 10 - (30 - 15) - (13 - 16) + (20 - 10) = 5$ . **A.**



- Arguments in favor of each method

- Direct method starts from the *top* of the income statement, indirect method starts from the *bottom* line of the income statement.
- The direct method provides **more information** than the indirect method.
  - The direct method is that it presents the firm's operating cash receipts and payments, while the indirect method only presents the net result of these receipts and payments.
- The main advantage of the indirect method is that it focuses on the **difference** between net income and operating cash flow.
  - Provide a useful link to the income statement when forecasting future operating cash flow.

- Disclosure requirement

- U.S. GAAP

- a direct method presentation must also disclose the adjustments necessary to **reconcile** net income to cash flow from operating activities. This disclosure is the same information that is presented in an indirect method cash flow statement. (not required under IFRS.)

- IFRS

- payments for interest and taxes must be disclosed **separately** in the cash flow statement under either method (direct or indirect). (U.S.GAAP only disclose in the footnotes.)

## ■ Contents

### Cash flow from investing activities

	Inflows	Outflows
<b>Fixed assets</b>	Sale proceeds	Acquisition
Debt and equity investments	Sale proceeds	Acquisition
Loans made to others	Principal received	Loans made to others

- **Equipment sold**

- **Historical cost of equipment sold**

- $$\text{Equipment}_{\text{Beginning}} + \text{equipment purchased} - \text{historical cost of equipment sold} = \text{Equipment}_{\text{Ending}}$$

- **Accumulated depreciation on equipment sold**

- $$\text{Accumulated depreciation}_{\text{Beginning}} + \text{depreciation expense} - \text{Accumulated depreciation on equipment sold} = \text{Accumulated depreciation}_{\text{Ending}}$$

- **Book value of equipment sold**

- $$\text{Book value of equipment sold} = \text{Historical cost of equipment sold} - \text{Accumulated depreciation on equipment sold}$$

- **Cash received from equipment sale**

- $$\text{Book value of equipment sold} + \text{gain on sale of equipment} = \text{cash received from sale of equipment.}$$

## Example from curriculum P422

Copper reported a gain on the sale of equipment of 12 million. In addition, the company's income statement shows depreciation expense of 8 million and cash flow statement shows **capital expenditure of 15 million**, all of which was for the purchase of new equipment.

Balance sheet items	12/31/2009	12/31/2010	Change
Equipment	100 million	109 million	9 million
Accumulated depreciation-equipment	30 million	36 million	6 million

Using the above information from the comparative balance sheets, how much cash did the company receive from the equipment sale?

- A. 12 million.                      B. 16 million.                      C. 18 million.

## Solution:

- **Historical cost of equipment sold**

Equipment<sub>Beginning</sub>+ equipment purchased-historical cost of equipment sold=Equipment<sub>Ending</sub>

100+15- Historical cost of equipment sold=109, Historical cost of equipment sold=6 million.

- **Accumulated depreciation on equipment sold**

Accumulated depreciation<sub>Beginning</sub>+ depreciation expense-Accumulated depreciation on equipment sold

=Accumulated depreciation<sub>Ending</sub>

30+8-Accumulated depreciation on equipment sold=36, Accumulated depreciation on equipment sold=2 million.

- **Book value of equipment sold**

Book value of equipment sold= Historical cost of equipment sold- Accumulated depreciation on equipment sold

=6-2=4 million.

- **Cash received from equipment sale**

Book value of equipment sold+ gain on sale of equipment= cash received from sale of equipment.

4+12=16 million. B.

# CFF

- Contents**

## Cash flow from financing activities

<b>Cash inflows</b>	<b>Cash outflows</b>
Proceeds from issuing stock	<b>Repurchase stocks,</b> pay dividends
Principal amounts of issuing bonds	Principal paid on bonds

## Example:

A company recorded the following in Year 1:

On 31 December 2009, a company issued a 30,000 180-day note at 8% and used the cash received to pay for inventory and *issued 110,000 long-term debt at 11% annually* and used the cash received to pay for new equipment. Which of the following most accurately reflects cash flow for the year ended 31 December 2009 under IFRS, cash flow from ?

A. Operations are unchanged. B. financing increase 110,000. C. operations decrease 30,000.

**Solution:** C.

- The payment for inventory decreases CFO.
- Issue long-term debt: CFF.
- Pay for new equipment: CFI.



## IFRS V.S U.S. GAAP

- Comparison

	US GAAP	IFRS
Interest received	CFO	CFO or CFI
Dividend received	CFO	CFO or CFI
Interest paid	CFO	CFO or CFF
Dividend paid	<b>CFF</b>	CFO or CFF

## Free cash flow

- **Free Cash Flow to the Firm (FCFF)**, is the cash available to all investors, both equity owners and debt holders.

- $$\text{FCFF} = \text{NI} + \text{NCC} + \text{Int} * (1 - \text{tax rate}) - \text{FCInv} - \text{WCInv}$$

- NI=Net Income
- NCC= Noncash Charges (depreciation and amortization)
- Int= Interest expense
- FCInv= fixed capital investment (net capital expenditures)
- WCInv= working capital investment

- $$\text{FCFF} = \text{CFO} + \text{Int} * (1 - \text{tax rate}) - \text{FCInv}$$

- CFO: Cash flow from operation

- **Free Cash Flow to Equity (FCFE)**, is available for distribution to common shareholders.

- $FCFE = CFO - FCInv + \text{net borrowing}$

- CFO: Cash flow from operation
- FCInv= fixed capital investment (net capital expenditures)
- **Net borrowing**= debt issued – debt repaid

## Other cash flow ratios

### • Performance ratios

$$\text{Cash flow-to-revenue} = \frac{\text{CFO}}{\text{net revenue}}$$

$$\text{Cash return-on-assets} = \frac{\text{CFO}}{\text{average total assets}}$$

$$\text{Cash return-on-equity} = \frac{\text{CFO}}{\text{average total equity}}$$

$$\text{Cash-to-income} = \frac{\text{CFO}}{\text{operating income}}$$

$$\text{Cash flow per share} = \frac{\text{CFO} - \text{preferred dividends}}{\text{weighted average number of common shares}}$$

### • Coverage ratios

$$\text{Debt coverage} = \frac{\text{CFO}}{\text{total debt}}$$

$$\text{Interest coverage} = \frac{\text{CFO} + \text{interest paid} + \text{tax paid}}{\text{interest paid}}$$

$$\text{Reinvestment} = \frac{\text{CFO}}{\text{cash paid for long-term assets}}$$

$$\text{Debt payment} = \frac{\text{CFO}}{\text{cash paid for long-term debt repayment}}$$

## Cash flow statement analysis

- Step 1: **Major sources and uses of cash**
  - Cash flow analysis begins with an evaluation of the firm's sources and uses of cash from operating, investing, and financing activities.
  - The negative operating cash flow is not sustainable.
  - Over the long term, successful firms must be able to generate operating cash flows that exceed capital expenditures and provide a return to debt and equity holders.

- Step 2: **determine operating cash flow drivers**
  - An analyst should identify the major **determinants** of operating cash flow.
    - Generated by the firm's **earnings-related activities**.
    - Generated by decreasing **noncash working capital**, is not sustainable.
      - Decreasing noncash working capital, such as liquidating inventory and receivables or increasing payables.
  - A stable relationship of operating cash flow and net income is an indication of **quality earnings**.
    - The variability of net income and operating cash flow should also be considered.

- Step 3: **determine Investing Cash Flow drivers**
  - Increasing **capital expenditures**, a use of cash, is usually an indication of growth.
  - A firm may reduce capital expenditures or even sell capital assets in order to save or generate cash.
    - This may result in higher cash outflows in the future as older assets are replaced or growth resumes.
  - Generating operating cash flow that exceeds capital expenditures is a desirable trait.
- Step 4: **determine Financing Cash Flow drivers**
  - Reveals information about whether the firm is generating cash flow by issuing debt or equity.

## • Common-Size Cash Flow Statement

- Each item/ net revenue
- Each inflow of cash/ total cash inflows
- Each outflow of cash/ total cash outflows

<b>Inflows</b>		<b>Percentage of Total Inflows</b>
Net cash provided by operating activities	\$2,606	77.38%
Sale of equipment	762	22.62
<b>Total</b>	<b>\$3,368</b>	<b>100.00%</b>

<b>Outflows</b>		<b>Percentage of Total Outflows</b>
Purchase of equipment	\$1,300	36.93%
Retirement of long-term debt	500	14.20
Retirement of common stock	600	17.05
Dividend payments	1,120	31.82
<b>Total</b>	<b>\$3,520</b>	<b>100.00%</b>
Net increase (decrease) in cash	(\$152)	



## Summary

- Cash flow statement
- **CFO**
  - Inflows and outflows
    - **Direct method**
    - **Indirect method**
- **CFI**
  - **Equipment sold**
- **CFF**
- IFRS V.S U.S. GAAP
- Free cash flow
- Other cash flow ratios
- Cash flow statement analysis

- **Study session 7**

- Los24. Understanding Income Statement
- Los25. Understanding Balance sheets
- Los26. Understanding Cash Flow Statement
- **Los27. Financial Analysis Technique**

## Analytical tools and techniques

- **Ratio analysis** are useful tools for expressing relationships among data that can be used for internal comparisons and comparisons across firms.
  - **Usage**
    - Project future earnings and cash flow.
    - Evaluate a firm's flexibility (the ability to grow and meet obligations even when unexpected circumstances arise).
    - Assess management's performance.
    - Evaluate changes in the firm and industry over time.
    - Compare the firm with industry competitors.

- **Limitations**

- Financial ratios are not useful when viewed in isolation.
- Comparisons with other companies are made more difficult by different accounting treatments.
- It is difficult to find comparable industry ratios when analyzing companies that operate in multiple industries.
- Conclusions cannot be made by calculating a single ratio. All ratios must be viewed relative to one another.
- Determining the target or comparison value for a ratio is difficult, requiring some range of acceptable values.

- **Common-Size Analysis**

- **A vertical common-size balance sheet** expresses all balance sheet accounts as a percentage of *total assets*.

$$\text{vertical common-size balance-sheet ratios} = \frac{\text{balance sheet account}}{\text{total assets}}$$

- **A vertical common-size income statement** expresses all income statement items as a percentage of *sales*.

$$\text{vertical common-size income statement ratios} = \frac{\text{income statement account}}{\text{sales}}$$

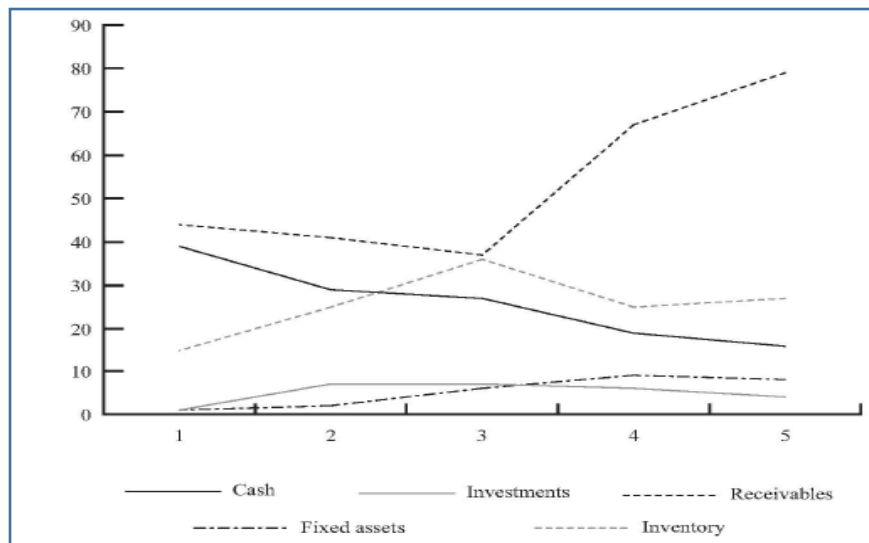
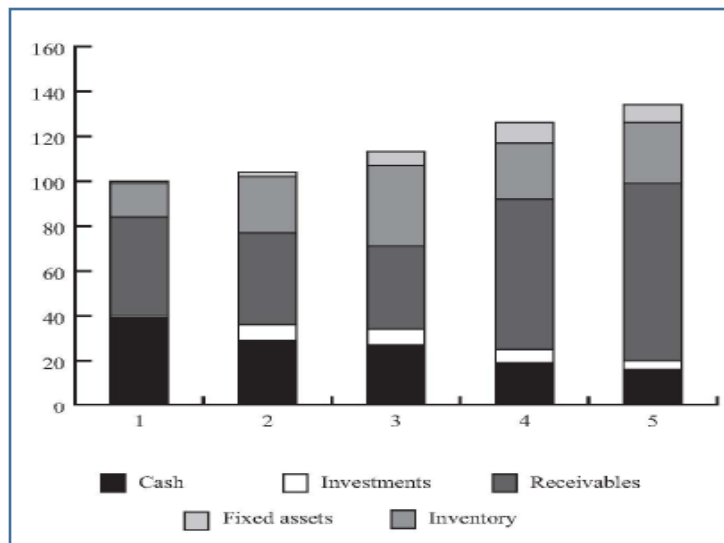
- A **horizontal** common-size balance sheet or income statement

	<i>20X4</i>	<i>20X5</i>	<i>20X6</i>
Inventory	1.0	1.1	1.4
Cash and marketable securities	1.0	1.3	1.2
Long-term debt	1.0	1.6	1.8
PP&E (net of depreciation)	1.0	0.9	0.8

## Graphical Analysis

- A stacked column graph (also called a *stacked bar graph*) **shows the changes in items** from year to year in graphical form
- A line graph

## Regression Analysis



## Financial ratios

- **Activity ratios**
  - Measure how efficiently the firm is managing its assets.
- **Liquidity ratios**
  - The ability to pay short-term obligations as they come due.
- **Solvency ratios**
  - The firm's financial leverage and ability to meet its longer-term obligations.
- **Profitability ratios**
  - How well the company generates operating profits and net profits from its sales.
- **Valuation ratios**
  - Comparing the relative valuation of companies. Such as sales per share, earning per share, and price to cash flow per share.
- These categories are **not mutually exclusive**.



- Activity ratios
  - Account receivable

$$\text{receivables turnover} = \frac{\text{annual sales}}{\text{average receivables}} \quad \text{days of sales outstanding} = \frac{365}{\text{receivables turnover}}$$

- It is desirable to have a collection period (and receivables turnover) close to the **industry norm**.
- **A collection period that is too high** might mean that customers are too slow in paying their bills, which means too much capital is tied up in assets.
- **A collection period that is too low** might indicate that the firm's credit policy is too rigorous, which might be hampering sales.

## • Inventory

$$\text{inventory turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}} \quad \text{days of inventory on hand} = \frac{365}{\text{inventory turnover}}$$

- It is considered desirable to have days of inventory on hand (and inventory turnover) **close to the industry norm.**
- A processing period is **too high**
  - Too much capital is tied up in inventory.
  - The inventory is obsolete.
- A processing period is **too low**
  - Firm has inadequate stock on hand, which could hurt sales.

- **Payable**

$$\text{payables turnover} = \frac{\text{purchases}}{\text{average trade payables}} \quad \text{number of days of payables} = \frac{365}{\text{payables turnover ratio}}$$

- The average amount of time it takes the company to pay its bills.

- **Total assets**

$$\text{total asset turnover} = \frac{\text{revenue}}{\text{average total assets}}$$

- Different types of industries might have considerably different turnover ratios.
  - Manufacturing businesses that are capital-intensive might have asset turnover ratios near one.
  - Retail businesses might have turnover ratios near 10.
- it is desirable for the total asset turnover ratio to be close to the industry norm.
  - Low asset turnover ratios might mean that the company has too much capital tied up in its asset base.
  - A turnover ratio that is too high might imply that the firm has too few assets for potential sales, or that the **asset base is outdated.**

- **Fixed assets**

$$\text{fixed asset turnover} = \frac{\text{revenue}}{\text{average net fixed assets}}$$

- It is desirable to have a fixed asset turnover ratio **close to the industry norm**.
- **Low fixed asset turnover** might mean that the company has too much capital tied up in its asset base or is using the assets it has inefficiently.
- A turnover ratio that is **too high** might imply that the firm has obsolete.

- **Working capital**

$$\text{working capital turnover} = \frac{\text{revenue}}{\text{average working capital}}$$

- Some firms may have very low working capital if outstanding payables equal or exceed inventory and receivables.

- Liquidity ratios

- Current ratio

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

- The higher the current ratio, the more likely it is that the company will be able to pay its short-term bills.
- A current ratio < 1, a negative working capital, is probably facing a **liquidity crisis**.

- Quick ratio

$$\text{quick ratio} = \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{current liabilities}}$$

- The higher the quick ratio, the more likely it is that the company will be able to pay its short-term bills.

- Cash ratio

$$\text{cash ratio} = \frac{\text{cash} + \text{marketable securities}}{\text{current liabilities}}$$

- The higher the cash ratio, the more likely it is that the company will be able to pay its short-term bills.

- Defensive interval

$$\begin{aligned} & \text{defensive interval} \\ & = \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{average daily expenditures}} \end{aligned}$$

- Expenditures include cash expenses for costs of goods, SG&A, and research and development.

- Cash conversion cycle

$$\text{cash conversion cycle} = \left( \frac{\text{days sales}}{\text{outstanding}} \right) + \left( \frac{\text{days of inventory}}{\text{on hand}} \right) - \left( \frac{\text{number of days}}{\text{of payables}} \right)$$

- The length of time it takes to turn the firm's cash investment in inventory back into cash.
- A conversion cycle that is **too high** implies that the company has an excessive amount of capital investment in the sales process.

## • Solvency ratios

- Solvency ratios measure a firm's financial leverage and ability to meet its long-term obligations.

### • Debt-to-equity

$$\text{debt-to-equity} = \frac{\text{total debt}}{\text{total shareholders' equity}}$$

- Total debt= long-term debt+ interest-bearing short-term debt + preferred stock + equity.

### • Debt-to-capital

$$\text{debt-to-capital} = \frac{\text{total debt}}{\text{total debt} + \text{total shareholders' equity}}$$

- Total debt= long-term debt+ interest-bearing short-term debt.

### • Debt-to-asset

$$\text{debt-to-assets} = \frac{\text{total debt}}{\text{total assets}}$$



- **Financial leverage ratio**

$$\text{financial leverage} = \frac{\text{average total assets}}{\text{average total equity}}$$

- Average= [beginning + ending]/2
- Greater use of debt financing increases financial leverage, risk to equity holders and bondholders alike.

- **Interest coverage**

$$\text{interest coverage} = \frac{\text{earnings before interest and taxes}}{\text{interest payments}}$$

- The lower this ratio, the more likely that the firm cannot pay its debt.

- Fixed charge coverage

$$\text{fixed charge coverage} = \frac{\text{earnings before interest and taxes} + \text{lease payments}}{\text{interest payments} + \text{lease payments}}$$

- **Significant lease obligations** will reduce this ratio significantly compared to the interest coverage ratio.
- Fixed charge coverage is the more meaningful measure for companies that lease a large portion of their assets, such as some airlines.

- Profitability ratios

- Net profit margin

$$\text{net profit margin} = \frac{\text{net income}}{\text{revenue}}$$

- If this ratio is low, it may be dangerous.
- The net profit margin should be based on net income from continuing operations.
- Below-the-line items such as discontinued operations will not affect the company in the future.

- Gross profit margin

$$\text{gross profit margin} = \frac{\text{gross profit}}{\text{revenue}}$$

- If this ratio is low, it may be dangerous.
- Gross profit can be increased by raising prices or reducing costs.
  - The ability to raise prices may be limited by competition.

- **Operating profit margin**

$$\text{operating profit margin} = \frac{\text{operating income}}{\text{revenue}} \text{ or } \frac{\text{EBIT}}{\text{revenue}}$$

- If this ratio is low, it may be dangerous.
- Analysts must be consistent in his calculation method and know how published ratios are calculated.
- Some analysts prefer to calculate the operating profit margin by adding back depreciation and any amortization expense to arrive at earnings before interest, taxes, depreciation, and amortization (EBITDA).

- **Pretax margin**

$$\text{pretax margin} = \frac{\text{EBT}}{\text{revenue}}$$

- Return on assets

$$\text{return on assets (ROA)} = \frac{\text{net income}}{\text{average total assets}}$$

$$\begin{aligned} \text{return on assets (ROA)} \\ = \frac{\text{net income} + \text{interest expense} (1 - \text{tax rate})}{\text{average total assets}} \end{aligned}$$

$$\text{return on total capital} = \frac{\text{EBIT}}{\text{average total capital}}$$

- Return on total capital

$$\text{return on equity} = \frac{\text{net income}}{\text{average total equity}}$$

- Return on equity

- Return on common equity

$$\begin{aligned} \text{return on common equity} &= \frac{\text{net income} - \text{preferred dividends}}{\text{average common equity}} \\ &= \frac{\text{net income available to common}}{\text{average common equity}} \end{aligned}$$

## Example from notebook P221

	Current year	Previous year		Current year	Previous year
Assets			Liabilities		
Cash and marketable securities	105	95	Payables	110	90
Receivables	205	195	Short-term debt	160	140
Inventories	310	290	Current portion of long-term debt	55	45
Total current assets	620	580	Current liabilities	325	275
Gross property, plant, and equipment	1,800	1,700	Long-term debt	610	690
Accumulated depreciation	360	340	Deferred taxes	105	95
Net property, plant, and equipment	1,440	1,360	Common stock at par	300	300
Total assets	2,060	1,940	Additional paid in capital	400	400
			Retained earnings	320	180
			Common shareholders equity	1,020	880
			Total liabilities and equity	2,060	1,940

## Income statement

Sales	4000
-cost of goods sold	3000
= <b>gross profit</b>	<b>1000</b>
-operating expenses	650
= <b>operating profit</b>	<b>350</b>
-Interest expense	50
-earning before taxes	300
- Taxes	100
= <b>net income</b>	<b>200</b>
-common dividends	60.

Calculate current ratio, quick ratio, days of sales outstanding, inventory turnover, total asset turnover, working capital turnover, gross profit margin, net profit margin, return on total capital, return on common equity, debt-to-equity and interest coverage.



## Solution:

- current ratio= $620/325=1.9$ ,
- quick ratio= $(105+205)/325=0.95$ .
- **days of sales outstanding**= $365/[4000/(205+195)*0.5]=18.25$ ,
- Inventory turnover= $3000/[(310+290)/2]=10$ .
- total asset turnover= $4000/[(2060+1940)/2]=2$ ,

Beginning working capital= $580-275=305$ , ending working capital= $620-325=295$ .

- **working capital turnover**= $4000/[(305+295)/2]=13.3$ .
- gross profit margin= $1000/4000=25\%$ , net profit margin= $200/4000=5\%$ .

Beginning total capital= $140+45+690+880=1755$ .

Ending total capital= $160+55+610+1020=1845$ .

- **return on total capital**= $350/[(1755+1845)/2]=19.4\%$ ,
- return on common equity= $200/[(1020+880)/2]=21.1\%$ .
- debt-to-equity= $(610+160+55)/1020=80.9\%$ .
- interest coverage= $350/50=7$ .

## DuPont analysis

- Three-part approach

### Return on equity

$$= \frac{\text{net income}}{\text{revenue}} * \frac{\text{revenue}}{\text{average total assets}} * \frac{\text{average total assets}}{\text{average equity}}$$

- If ROE is relatively low,
  - The company has a poor **profit margin**.
  - The company has poor **asset turnover**.
  - The firm has too little **leverage**.

### Example from notebook P228

A company has a net profit margin of 4%, asset turnover of 2, and a debt-to-assets ratio of 60%. What is the ROE?

### Solution:

- Debt-to-assets=60%, so equity-to-asset=40%
- ROE=4%\*2\*(1/40%)=20%.

- Extended five-part approach

$$\frac{\text{Net income}}{\text{Average shareholders' equity}} = \frac{\text{Net income}}{\text{EBT}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Revenue}}$$

$$\times \frac{\text{Revenue}}{\text{Average total assets}} \times \frac{\text{Average total assets}}{\text{Average shareholders' equity}}$$

$$\text{ROE} = \text{Tax burden} \times \text{Interest burden} \times \text{EBIT margin} \times \text{Total asset turnover} \times \text{Leverage}$$

## Example from notebook P229

An analyst has gathered data from two companies in the same industry. Calculate the **ROE** for both companies and use **extended DuPont analysis** to explain the critical factors that account for the differences in the two companies' ROEs.

	Company A	Company B
Revenue	500	900
EBIT	35	100
Interest expense	5	0
EBT	30	100
Taxes	10	40
Net income	20	60
Average assets	250	300
Total debt	100	50
Average equity	150	250

## Solution:

- **EBIT=EBIT/revenue**

Company A: EBIT margin= $35/500=7\%$ ; Company B: EBIT margin= $100/900=11.1\%$ .

- **Asset turnover=revenue/average assets**

Company A: asset turnover= $500/250=2$ ; Company B : asset turnover= $900/300=3$ .

- **Interest burden=EBT/EBIT**

Company A: Interest burden= $30/35=85.7\%$ ; Company B : Interest burden= $100/100=1$ .

- **Financial leverage=average assets/ average equity**

Company A: Financial leverage= $250/155=1.67$ ; Company B : Financial leverage= $300/250=1.2$ .

- **Tax burden= net income/ EBT**

Company A: Tax burden= $20/30=66.7\%$ ; Company B: Tax burden= $60/100=66\%$ .

- ROE

Company A:  $66.7\% * 0.857 * 0.07 * 2 * 1.67 = 13.4\%$ ; Company B:  $0.608 * 1 * 0.111 * 3 * 1.2 = 24\%$ .

- Company B has a higher tax burden but a lower interest burden, better EBIT margins and better asset utilization and less leverage. Its higher EBIT margins and asset turnover are the main factors leading to its significantly higher ROE.

## Sustainable growth rate

- Sustainable growth rate

- $g = \text{ROE} \times \text{RR}$

- Retention rate

**retention rate**

$$= \frac{\text{net income available to common} - \text{dividends declared}}{\text{net income available to common}}$$

$$= 1 - \text{dividend payout ratio}$$

- Dividend payout ratio

$$\text{dividend payout ratio} = \frac{\text{dividends declared}}{\text{net income available to common}}$$



## Analysis

- **Business risk**

- Standard deviation
- Coefficient of variation=standard deviation/expected value

$$\text{CV sales} = \frac{\text{standard deviation of sales}}{\text{mean sales}}$$

$$\text{CV operating income} = \frac{\text{standard deviation of operating income}}{\text{mean operating income}}$$

$$\text{CV net income} = \frac{\text{standard deviation of net income}}{\text{mean net income}}$$

- Value-at-risk

- **Credit analysis**

- Interest coverage ratios, return on capital, debt-to-assets ratios, and cash flow to total debt.
- Altman: predict firm bankruptcies.

- **Segment reporting**

- Business segment or Geographic segment

- a portion of a firm that has risk and return characteristics distinguishable from the rest of the firm and accounts for **more than 10% of the firm's sales or assets.**
- Firms are required to report some items for significant business and geographic segments.
  - Profitability, leverage, and turnover ratios by segment can give the analyst a better understanding of the performance of the overall business.

- **Forecasts**

- Ratio analysis in conjunction with other techniques can be used to construct pro forma financial statements.

## Summary

- Analytical tools and techniques
- **Financial ratios**
  - **Activity ratios**
  - **Liquidity ratios**
  - **Solvency ratios**
  - **Profitability ratios**
  - **Valuation ratios**
- DuPont analysis
- Sustainable growth rate
  - $g = ROE * RR$
- Analysis

### Return on equity

$$= \frac{\text{net income}}{\text{revenue}} * \frac{\text{revenue}}{\text{average total assets}} * \frac{\text{average total assets}}{\text{average equity}}$$