

Module 4

An Introduction

- Managerial Accounting Concepts and Principles

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Financial Accounting vs Managerial Accounting

Financial accounting provides general purpose **financial information** to those who are outside the organization.



Managerial accounting provides **financial and non-financial information** for managers of an organization and other decision makers



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Nature of Financial and Managerial Accounting

	Financial Accounting	Managerial Accounting
1. Users and decision makers	Investors, creditors and other external users	Managers, employees and other internal users
2. Purpose of information	Making investment, credit and other decisions	Planning and control decisions
3. Flexibility of practice	Structured and often controlled by GAAP	Relatively flexible (no GAAP)
4. Timeliness of information	Often available only after audit is complete	Available quickly without need to wait for audit
5. Time dimension	Historical information with some predictions	Many projections and estimates
6. Focus of information	Emphasis on whole organization	Projects, processes and segments of an organization
7. Nature of information	Monetary information	Monetary and nonmonetary information

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Types of Business

.3 main categories of business:

- Manufacturing,
- Trading,
- Service
- How about pubs, restaurants, etc?

.Costs can be described as:

- Manufacturing costs,
- Trading costs,
- Service costs

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Manufacturing company

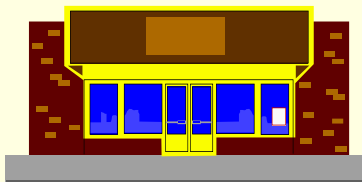
Manufacturing companies purchase materials and components and **convert** them into finished goods.

A manufacturing company must also develop, design, Market, and distribute its products.

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Merchandising/Trading company

Merchandising /Trading companies purchase and then sell tangible products **without** changing their basic form.



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Service-sector company

Service companies provide services or intangible products to their customers.

Labor is the most significant cost category.

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Types of Inventory

Manufacturing-sector companies typically have one or more of the following three types of Inventories:

1. **Direct materials** inventory
2. **Work in process** inventory (work in progress)
3. **Finished goods** inventory

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Types of Inventory

Merchandising-sector /trading-sector companies hold only one type of inventory – the product in **its original purchased form.**

Service-sector companies do not hold inventories of tangible products.

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Classification of Manufacturing Costs

1.Direct materials costs

2.Direct manufacturing labor costs

3.Indirect manufacturing costs (Manufacturing factory)

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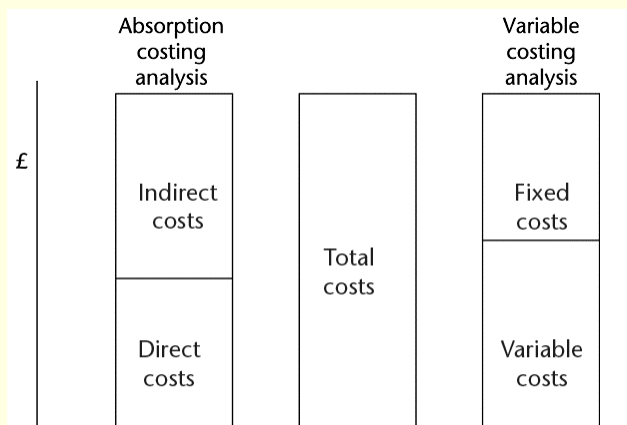
Concept of Cost

- Classification of cost
 - Closely related to product and process of production of goods and service
- Variable Cost, Fixed Cost, Combined cost (partly variable and some fixed cost)
- Eg. Product cost – all direct cost related to production of goods and services
 - Direct materials
 - Direct labour
 - Production cost
 - An other production related cost

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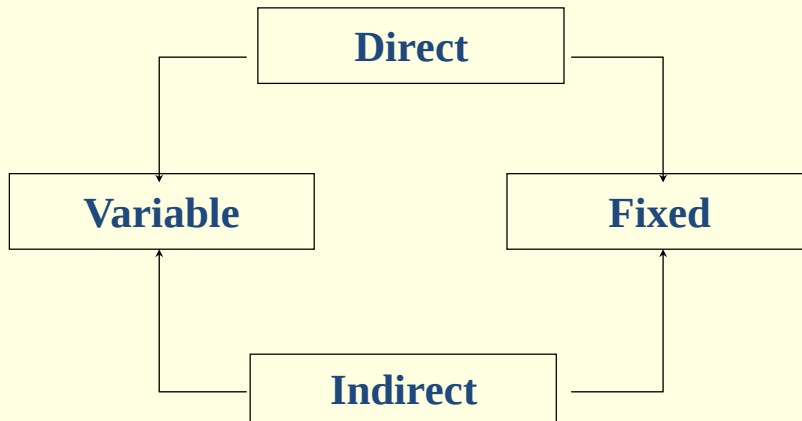
Comparison of Alternative Cost Analyses



N.B. Most direct costs are variable and most indirect costs are fixed, but there are exceptions, e.g. variable overheads.

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Relationships of Types of Costs



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Cost Behaviour: Variable Costing Analysis – Fixed and Variable Costs

- **Variable costs vary in direct proportion with activity**
(e.g. wood for furniture, fabric for garment)
- **Fixed costs remain constant over wide ranges of activity**
(e.g. rent and rates, depreciation, supervisor's salary)

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Concept of Cost – Economical Value

- The nature of cost and business operation (volume) can be reflected as
- Relationship between Y (total cost) and fixed cost and the variable cost

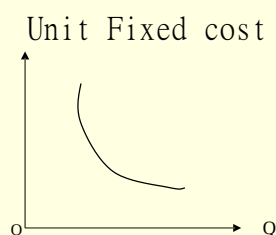
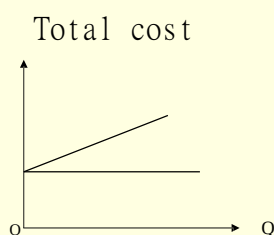
$$y = a + b x$$

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Concept of Cost – Economical Value

- Production cost can be separated into Fixed Cost and Variable Cost
- Fixed Cost
 - Total fixed cost: within a time limited, it will not increase
 - Unit fixed cost will decrease and Qty increases



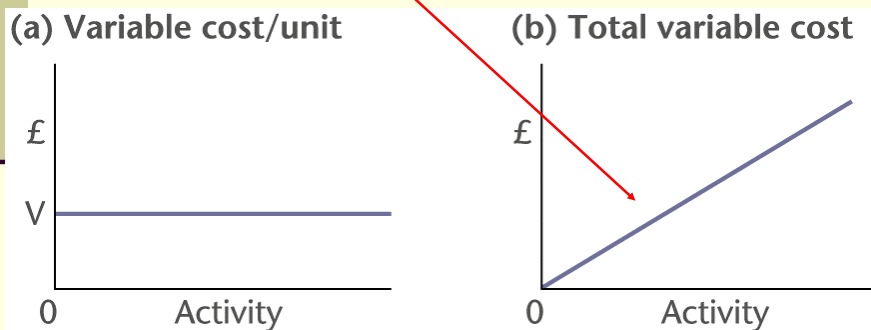
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Variable and Fixed Costs

Cost behavior refers to how a cost will react to changes in the level of business activity.

- **Total variable costs** change in proportion to activity changes.

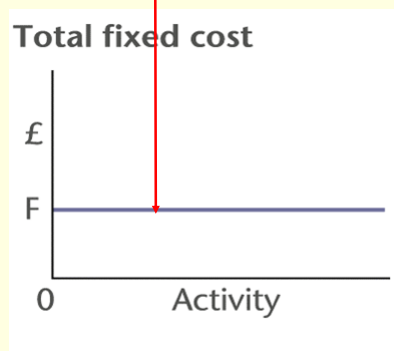


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Variable and Fixed Costs

Cost behavior refers to how a cost will react to changes in the level of business activity.

- **Total fixed costs** do not change when activity changes.

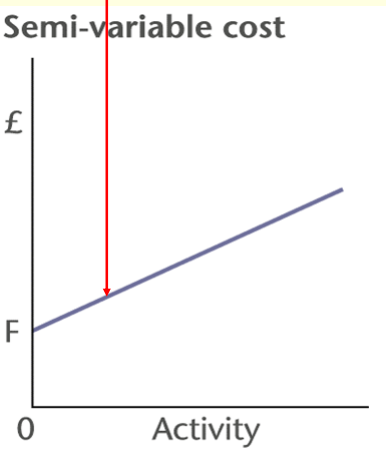


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Variable and Fixed Costs

Cost behavior refers to how a cost will react to changes in the level of business activity.

- Mixed costs are combinations of fixed and variable costs.



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Analyze this cost into its fixed and variable elements:

<i>Month</i>	<i>Output(units)</i>	<i>Total cost(\$)</i>
Jan	120	6,237
Feb	134	6,269
Mar	140	6,280
Apr	126	6,256
May	110	6,220
Jun	119	6,234

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Answer: High-Low Method *question*

Highest output (March)	140 units	\$6,280
Lowest output (May)	110 units	\$6,220
Difference	30 units	\$ 60

Variable cost per unit produced = $\$60/30 = \$2$

Variable cost of 140 units = $140 \times \$2 = \$280$

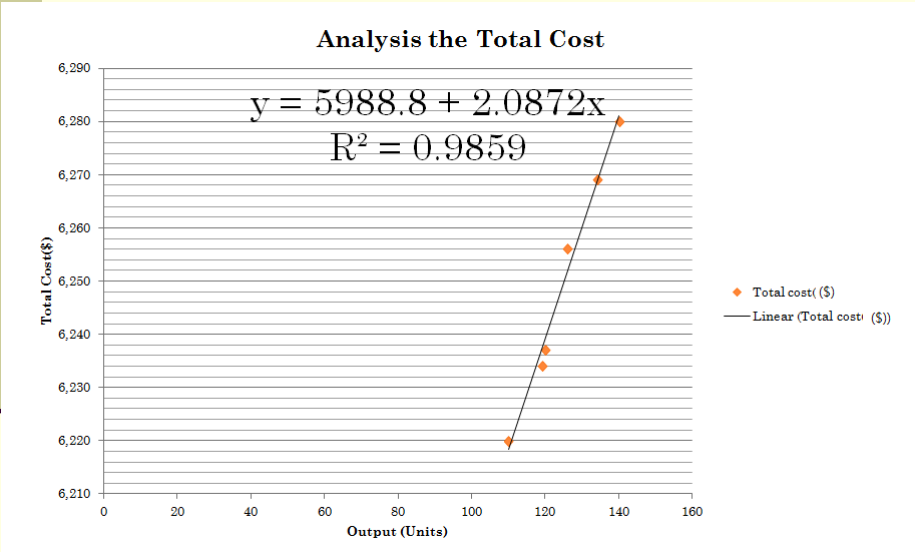
Fixed cost (at 140 units) = Total cost – Variable cost
= $\$6,280 - \$280$
= $\$6,000$

*This can be checked by substituting these values in the other month:

In May,
Variable cost = $110 \times \$2 = 220$
Fixed cost = $6,000$
Total cost = $6,220$

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Regression Analysis



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Module 5

Cost-Volume-Profit and break-even analysis

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Key Concepts and Skills

- Understand about the relationship between cost, volume, and profit
- Understand the various forms of break-even analysis

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Chapter Outline

1 Relationship – Cost-Volume-Profit;

2 Break-even Analysis

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1 Relationship –

Cost-volume-Profit

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Cost Control– A key part of Management and control of Financial Resources

Profit = Sales – cost and expenses

- To increase profit and profitability %
- Increase sales Qty, Unit sales price
- Reduce cost and expenses

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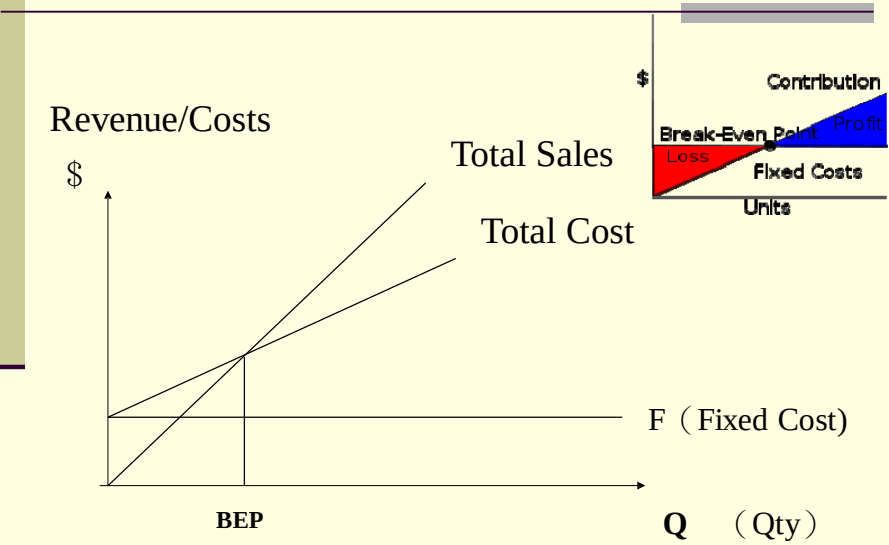
“Cost-Volume-Profit” - CVP

- In a set condition, to understand the relationship between cost, volume and profit)
- Margin contribution increase, product sales profitability increase
- With limited resources, company should always drive and prioritize for highest margin contributed products first

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“Cost-Volume-Profit” - CVP



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What is the difference between gross margin and contribution margin?

Net Sales	\$600,000	Net Sales	\$600,000
Cost of Goods Sold		Variable costs 可變成本	
variable costs	\$120,000	Cost of Goods Sold	\$120,000
fixed costs	<u>\$200,000</u>	Selling and Adm. Exp.	<u>\$40,000</u>
Gross Profit 毛利	\$280,000	Contribution Margin 貢獻	\$440,000
Operational Expenses:		Fixed costs 固定成本	
selling and administrative expenses		Cost of Goods Sold	\$200,000
銷售及行政開支		Selling and Adm. Exp.	<u>\$150,000</u>
variable expenses	\$40,000	Total fixed Costs	<u>\$350,000</u>
fixed expenses	<u>\$150,000</u>	Net Profit	\$90,000
Total Operational Expenses:	<u>\$190,000</u>		
Net Profit	\$90,000		

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Contribution Relationships

£			440K	90K Profit
	600K		Contribution	350K Fixed costs
	Sales revenue			160K Variable costs
		160K Variable costs		
0	A	B	C	

Columns A and B together illustrate the definition of contribution.

$$\text{Contribution} = \text{Sales revenue} - \text{Variable cost}$$

Columns B and C show the relationship between contribution, fixed costs and profit.

$$\text{Total contribution} = \text{Total fixed costs} + \text{Profit}$$

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“Cost-Volume-Profit” - CVP

- CVP analysis
 - Single product– Break-even point (BEP)
 - Total Contribution = Revenue – Variable Cost ----- (1)
 - Total Contribution = Total Fixed Cost + Profit ----- (2)

If Profit = 0 和 (1) = (2); Revenue – Variable Cost = Total Fixed Cost

$$\begin{aligned} \text{Qty}_{\text{BEP}} \times \text{Unit Price} - \text{Qty}_{\text{BEP}} \times \text{Unit variable cost} &= \text{Total Fixed Cost} \\ \text{Qty}_{\text{BEP}} \times (\text{Unit Price} - \text{Unit variable cost}) &= \text{Total Fixed Cost} \end{aligned}$$

$$\text{Qty}_{\text{BEP}} = \text{Total fixed cost} / (\text{Unit Price} - \text{Unit variable cost})$$

$$\text{Qty}_{\text{BEP}} = \text{Total fixed cost} / \text{Unit Contribution}$$

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2 Single product - BEP

$$\text{Break-even point in units} = \frac{\text{Fixed costs}}{\text{unit Contribution}}$$

- $\text{BEP} = \text{Total fixed cost} / (\text{unit \$} - \text{unit variable cost})$
- Eg. : IPAD (HK STORE)
 - Monthly total fixed cost : rental, salary + utilities/insurance = \$5,000,000
 - IPAD : Unit sales price : \$ 8,000
 - IPAD : Unit cost: \$ 6,000
 - Each IPAD profit contribution : $8000 - 6000 = \$2000$
 - Monthly BEP Quantity :
 - $5,000,000 / (8000 - 6000)$
 - $5,000,000 / 2,000$
 - 2,500 unit IPAD

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Eg. Single product (BEP)

Causeway Bay – Hairy Crab specialty shop:
Monthly break-even Quantity (BEP Q)

Monthly fixed cost

- Monthly Rental: \$720,000
- Monthly Employees salary with MPF: \$110,000
- Monthly utility and insurance = \$50,000



Crab (Large size) : Unit sales price : \$ 150(each)

- Crab (Large) : Unit cost : \$ 70(each)
- **How many crab (L) need to sell to break-even ?**

$$\begin{aligned} \text{Fixed Cost} &= (\$720,000 + \$110,000 + \$50,000) \\ \text{BEP} &= \$880,000 / (\$150 - \$70) \text{ per crab} \\ &= 11,000 \text{ crab} \end{aligned}$$

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Multiple products (BEP)

Causeway Bay – Hairy Crab specialty shop: Monthly break-even Quantity (BEP Q)

- Monthly fixed cost
 - Monthly Rental:\$720,000
 - Monthly Employees salary with MPF: \$110,000
 - Monthly utility and insurance = \$50,000
- Crab (M) : Unit sales price :\$ 50(each), cost \$30
- Crab (S) : Unit sales price :\$ 20(each), cost \$10
- Assume 60% sales revenue from M, 40% from S
- How many crab (M) and Crab (S) need to sell to break- even ?



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“Cost-Volume-Profit” Analysis Multiple products

- BEP Q
- = Total Fixed Cost / Combined Average marginal contribution
- Then, calculate the BEP Qty and BEP revenue, and profitability

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“Cost-Volume-Profit” Analysis

Multiple products

- Combined Quantity approach
 - Work out the sales quantity proportion ratios
 - Establish unit price of each product,
 - Work out the unit variable cost and marginal unit contribution
 - BEP (combined):
 - $Qty\ BEP\ (combined) = \text{Fixed cost} / (\text{combined unit price} - \text{combined unit variable cost})$
 - $BEP\ (combined)\ in\ \$ = \text{Fixed cost} / \text{combined unit marginal contribution rate}$

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Total fixed cost \$880,000

	A (Med size crab)	B (Small size crab)
Total Sales Quantity available (given)	30,000	50,000
Unit price	\$50	\$20
Unit marginal contribution	\$20=(50-30)	\$10=(20-10)
Unit marginal contribution %	40% =\$20/\$50	50% =\$10/\$20

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$$\text{Break-even point in dollars} = \frac{\text{Fixed costs}}{\text{Contribution margin ratio}}$$

- $\text{BEP} = \text{Fixed cost} / \text{combined average marginal contribution rate}$
 - Product sales proportion: A=60%; B=40%
 - Combined average marginal contribution %
 - $= 40\% \times 60\% + 50\% \times 40\% = 44\%$
 - $\text{BEP} = 880,000 / 44\% = 2,000,000$

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- $\text{BEP}_m = \$2,000,000 \times 60\% = \$1.2\text{M}$
- $\text{BEP}_s = \$2,000,000 \times 40\% = \$0.8\text{M}$

- $Q_a = 1.2\text{M} / 50 = 24,000 \text{ unit}$
- $Q_b = 0.8\text{M} / 20 = 40,000 \text{ unit}$

$\text{EBIT} = \$2,000,000 \times 0.44 = \$880,000$
just cover the fixed cost

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- IF Target revenue : \$3,000,000 ,
-

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Module 6

Financial Statements Analysis and Long-Term Planning

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Key Concepts and Skills

- Know how to standardize financial statements for comparison purposes
- Know how to compute and interpret important financial ratios
- Be able to develop a financial plan using the percentage of sales approach
- Understand how capital structure and dividend policies affect a firm's ability to grow

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Chapter Outline

- 1 Financial Statements Analysis
- 2 Ratio Analysis
- 3 The Du Pont Identity
- 4 Financial Models
- 5 Some Warnings Regarding Financial Planning Models

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1 Financial Statements Analysis

- Common-Size Balance Sheets
 - Compute all accounts as a percent of total assets
- Common-Size Income Statements
 - Compute all line items as a percent of sales
- Standardized statements make it easier to compare financial information, particularly as the company grows.
- They are also useful for comparing companies of different sizes, particularly within the same industry.

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2 Ratio Analysis

- Ratios also allow for better comparison through time or between companies.
- As we look at each ratio, ask yourself:
 - How is the ratio computed?
 - What is the ratio trying to measure and why?
 - What is the unit of measurement?
 - What does the value indicate?
 - How can we improve the company's ratio?

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Categories of Financial Ratios

- Z-score – Predicting Bankruptcy
 - Insolvency for public list companies (manufacturers or non-manufacturer) (Bankruptcy ??)
- Short-term solvency or liquidity ratios
- Long-term solvency or financial leverage ratios
- Asset management or turnover ratios
- Profitability ratios
- Market value ratios

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The Z-Score Model: Public-Manufacturers

- Credit scoring models provide a quick, objective way to evaluate creditworthiness.

Altman's Z-Score =

$$1.2 * (\text{NWC} / \text{Total Assets}) + 1.4 * (\text{Accumulated RE} / \text{Total Assets}) + 3.3 * (\text{EBIT} / \text{Total Assets}) + .6 * (\text{MV Equity} / \text{BV Debt}) + 0.999 * (\text{Sales} / \text{Total Assets})$$

- Z-Score < **1.81** indicates high probability of bankruptcy
- Z-Score between **1.81** and **2.99** is a grey area
- Z-Score > **2.99** indicates a low probability of bankruptcy

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Z-score Formula:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + 0.999E.$$

A = Working Capital/Total Assets
(Measures liquid assets in relation to the size of the company)

B = Retained Earnings/Total Assets
(Measures profitability that reflects the company's age and earning power)

C = Earnings Before Interest & Tax/Total Assets
(Measures operating efficiency apart from tax as being important to long-term viability)

D = Market Value of Equity/Total Liabilities
(Add market dimension that can show up market price fluctuation as possible a red flag.)

E = Sales/Total Assets. (Standard measure for total asset turnover)

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The Z-Score Model: Private / Non-Manufacturers

Altman's Z-Score = $6.56 \times (\text{NWC} / \text{Total Assets}) + 3.26 \times (\text{Accumulated RE} / \text{Total Assets}) + 1.05 \times (\text{EBIT} / \text{Total Assets}) + 6.72 \times (\text{BV Equity} / \text{Total Liabilities})$

- Z-Score < 1.23 indicates high probability of bankruptcy
- Z-Score between 1.23 and 2.90 is a grey area
- Z-Score > 2.90 indicates a low probability of bankruptcy

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Computing Liquidity Ratios

- **Current Ratio** = Current Assets / Current Liabilities
- = $4179.4 / 2003.565 = 2.09$ times
This ratio measures the short-term debt-paying ability of the company. A higher current ratio suggests a strong liquidity position.
- **Quick Ratio** = (Current Assets – **Inventory**) / Current Liabilities
= $(4179.4 - 143.9) / 2003.565 = 2.01$ times

This ratio is like the current ratio but excludes current assets such as **inventories** that may be difficult to quickly convert into cash.

- **Cash Ratio** = Cash / Current Liabilities
= $(2860.2 + 781.5) / 2003.565 = 1.82$ times

Cash ratio as payment liabilities of the foundation, but they are cash holdings by the management of the use of corporate assets effect a negative position, this ratio should not be too large, the relative Current ratio and quick ratio, this role is small. 1-42

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Is an over-high current ratio (like 5:1) a good thing?

No, because this tells users that the business cannot use its excess cash efficiently to generate further income.

Excess cash means the amount of cash left over after settling all liabilities due within the next 12 months.

Businesses should invest their excess cash into investments, such as shares, term deposits, and etc to earn interest.

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Computing Leverage Ratios

- Total Debt Ratio = $TD/TA = \text{Total Liabilities}/\text{Total Assets}$
 $= (2003.6 + 4117.8) / 8989.5 = 68\%$ (smaller is better)
- $= TD/(TD+TE) = (TA - TE) / TA$
 Ratio of liabilities to assets that reflects the overall enterprise debt service capacity of important indicators, which liabilities and assets of the contrast, reflect the total assets of the business (how much is the debt?).
- Debt/Equity = $TD / TE = \text{Total Liabilities}/\text{Total equities}$
 $= (2003.6 + 4117.8) / 2868.075 = 2.134$
- Long Term Debt Ratio
 $= \text{Long Term Liabilities} / (\text{Long Term Liabilities} + \text{Total equities})$
 $= (1417 + 1435.118 + 897.179) / 2868.075 = 131\%$
- Equity Multiplier (EM) = $TA / TE = 1 + D/E$
 $= 1 + (2003.6 + 4117.8) / 2868.075 = 3.134 = 1 + 2.134$

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Computing Coverage Ratios

- Times Interest Earned = $EBIT / \text{Interest}$
 $= 1270.2 / 327 = 3.88 \text{ times}$

It is a measure the ability of the corporate income to pay the interest expense.

- Cash Coverage
 $= (EBIT + \text{Depreciation} + \text{Amortization}) / \text{Interest}$
 $= (1,270.22 + 113.812) / 327$
 $= 4.23 \text{ times}$

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Computing Inventory Ratios

- Inventory Turnover = Cost of Goods Sold / Inventory
= 865.721 / 143.9 = 6.02 times

This ratio measures the number of times merchandise is sold and replaced during the year.

- Days' Sales in Inventory = 365 / Inventory Turnover
= 365 / 6.02 = 61 days

This ratio measures how many days, on average, it takes to sell the inventory.

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Computing Receivables Ratios

- Receivables Turnover
- = Sales / Accounts Receivable
- = 2727 / 18.974 = 143.53 times
- **Average Collection Period**
- = 365 / Receivables Turnover
- = 365 / 143.53 = 2.54 days = 3 days

- Normal average of around **45 – 75 days**.

This ratio measures, on average, how many days it takes to collect an account receivable.

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CREDITORS' RATIO/ PERIOD OF CREDIT RECEIVED FROM TRADE CREDITORS

$$\frac{\text{Closing Trade Creditors}}{\text{Cost of Goods Sold}} \times 365$$

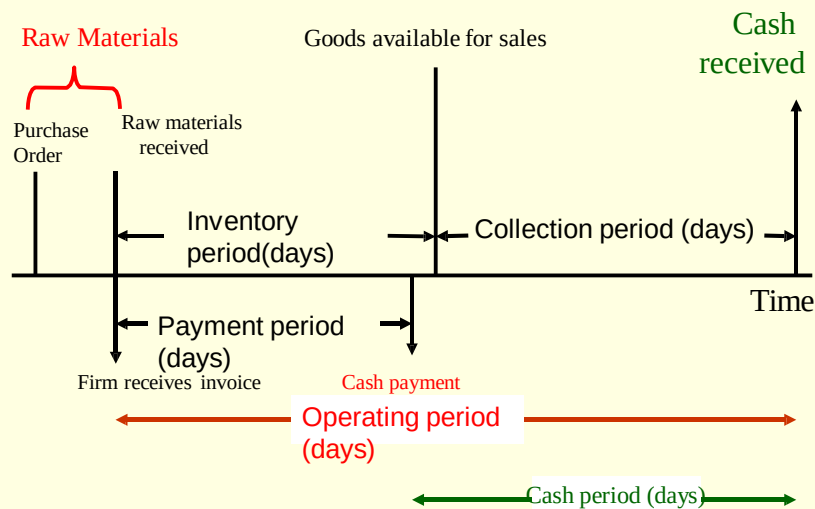
$$= 1144.77 \times 365 / [7455.218 \times (1 - 0.19) + 865.7] = 61 \text{ days}$$

Where the period of credit is high compared with other businesses (or the average for the industry), and/or increasing over time, this indicates that the company is delaying paying its creditors.

It may adversely affect a company's credit rating, creditors may refuse to supply further goods on credit, and it could suggest financial weakness.

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2 Operating period and Cash period



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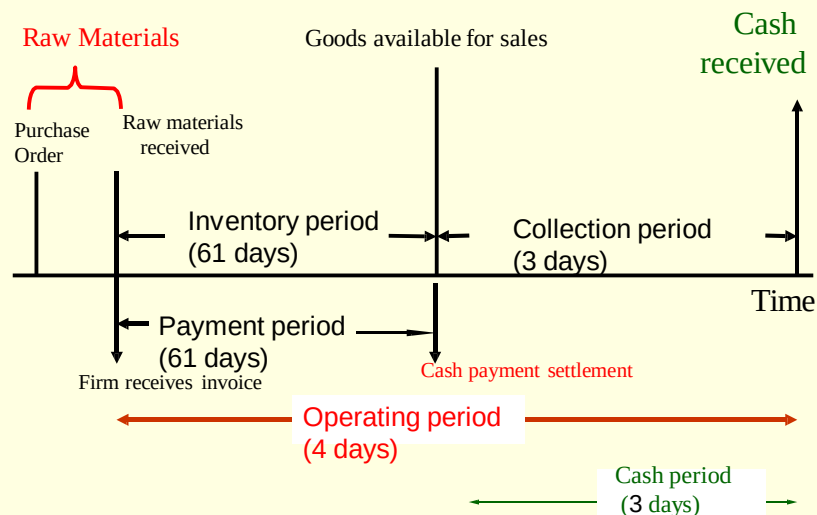
Operating period and Cash period

Operating period (days) = Inventory period (days) + Collection period (days)
 = 61 days + 3 days = 64 days

Cash period (days) = Operating period (days) - Payment period (days)
 = 64 - 61 days = 3 days

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Operating period and Cash period



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Computing Total Asset Turnover

- Total Asset Turnover = Sales / Total Assets
 - = $2726.983 / 8989.465 = 0.30$ times
 - It is usual for $TAT < 1$, especially if a firm has a large amount of fixed assets.

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Computing Profitability Measures

Gross Profit Margin

= (Sales – Cost of Goods Sold) / Sales

= $(2727 - 865.7) / 2727 = 68.3\%$

Net Profit Margin = Net Income after tax / Sales

= $727.801 / 2727 = 26.69\%$

- EBITDA Margin = EBITDA/Sales
- = $(727.801 + 326.966 + 215.451 + 113.812) / 2727$
- = 50.75 %

- Return on Assets (ROA after tax)
- = Net Income after Tax / Total Assets
- = $727.8 / 8989.5 = 8.1\%$

It is used to measure per unit asset creation how much net profit.

- Return on Equity (ROE after tax)
- = Net Income after Tax / Total Equity
- = $727.8 / 2868.075 = 25.4\%$

The measure is corresponding to shareholders' equity investment in the company's index.

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Computing Market Value Measures

- Market Capitalization
 - = $\$18.79/1.074$ per share $\times$ 557219 000shares
 - = 9,700 billion RMB
- PE Ratio = Price per share / Earnings per share
- = $(18.79/1.074) / (727/557) = 17.50 / 1.31 = 13.4$ times

Assessment Unit price level is reasonable Index.
(The bigger value = too expensive)
- Market-to-book ratio

= market value per share / book value per share

 - = $(18.79 / 1.074) / (2868.1 / (557.219)) = 3.40$ times

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Using Financial Statements

- Ratios are not very helpful by themselves: they need to be compared to something
- Time-Trend Analysis
 - Used to see how the firm's performance is changing through time
- Peer Group Analysis
 - Compare to similar companies or within industries



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Using Financial Statements

- Time-Trend Analysis(At least 3 years)
- Used to see how the firm’s performance is changing through time
 - Compare the trend and changes (both in absolute and percentage)
 - Balance Sheet,
 - Income Statement
- Financial Ratios Trends – each of the factors/ratios should be analyzed and compared and identify the trend and the cause of the changes for better forecast the future and make proactive plan for improvement



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Applicable – Balance sheet, Income statement, and ratios..

Firm, Peer

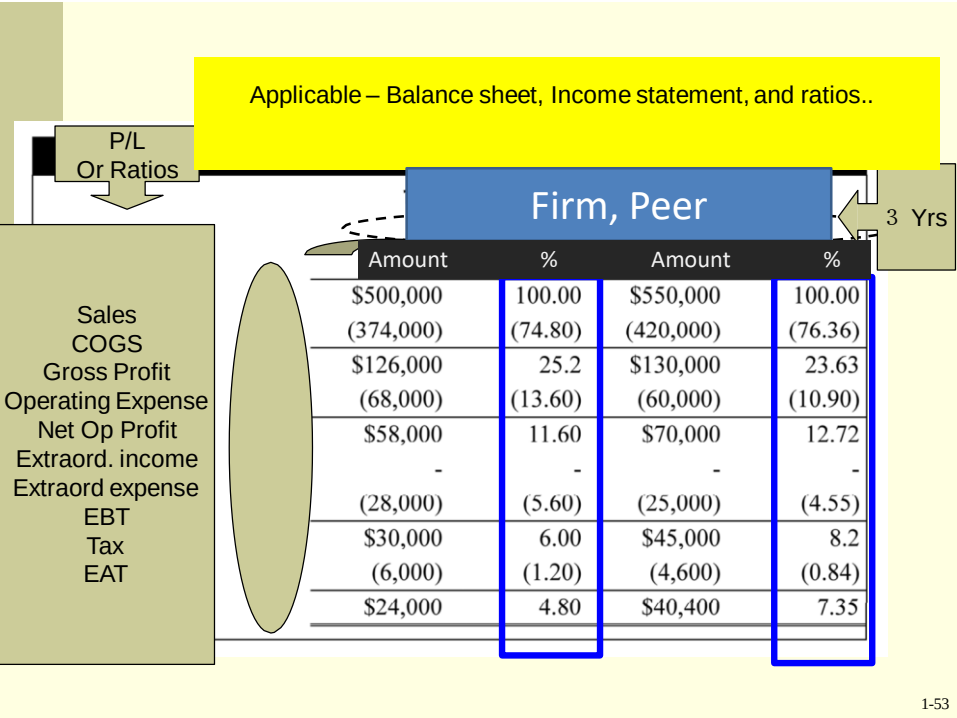
Firm, Peer

3 yr

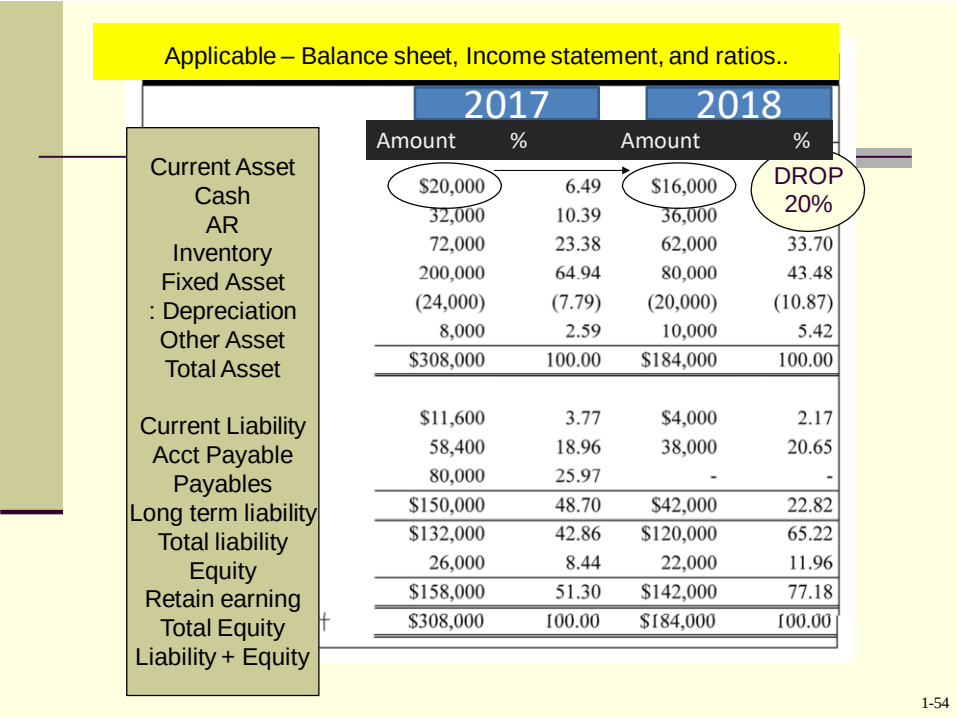
	Amount	%	Amount	%
Current Asset				
Cash	\$20,000	6.49	\$35,000	15.48
AR	32,000	10.39	39,000	17.26
Inventory	72,000	23.38	50,000	22.12
Fixed Asset	200,000	64.94	100,000	44.25
: Depreciation	(24,000)	(7.79)	(10,000)	(4.42)
Other Asset	8,000	2.59	12,000	5.31
Total Asset	\$308,000	100.00	\$226,000	100.00
Current Liability				
Acct Payable	\$11,600	3.77	\$7,000	3.01
Payables	58,400	18.96	42,000	18.58
Long term liability	80,000	25.97	-	-
Total liability	\$150,000	48.70	\$49,000	21.59
Equity	\$132,000	42.86	\$151,000	66.80
Retain earning	26,000	8.44	26,000	11.61
Total Equity	\$158,000	51.30	\$177,000	78.41
Liability + Equity	\$308,000	100.00	\$226,000	100.00

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Applicable – Balance sheet, Income statement, and ratios..

	2017		2018	
	Amount	%	Amount	%
Sales	\$500,000	100.00	\$470,000	100.00
COGS	(374,000)	(74.80)	(358,000)	(76.17)
Gross Profit	\$126,000	25.2	\$112,000	23.83
Operating Expense	(68,000)	(13.60)	(62,000)	(13.19)
Net Op Profit	\$58,000	11.60	\$50,000	10.64
Extraord. income	-	-	-	-
Extraord expense	(28,000)	(5.60)	(28,000)	(5.96)
EBT	\$30,000	6.00	\$22,000	4.68
Tax	(6,000)	(1.20)	4,600	(0.98)
EAT	\$24,000	4.80	\$17,400	DROP 27.5%

Sales

COGS

Gross Profit

Operating Expense

Net Op Profit

Extraord. income

Extraord expense

EBT

Tax

EAT

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Horizontal - Ratios

	2017		2018		Trend
	Amount	%	Amount	%	
Sales	\$500,000	100.00	\$550,000	100.00	10%
COGS	(374,000)	(74.80)	(420,000)	(76.36)	12.3%
Gross Profit	\$126,000	25.2	\$130,000	23.63	
Operating Expense	(68,000)	(13.60)	(60,000)	(10.90)	
Net Op Profit	\$58,000	11.60	\$70,000	12.72	
Extraord. income	-	-	-	-	%
Extraord expense	(28,000)	(5.60)	(25,000)	(4.55)	%
EBT	\$30,000	6.00	\$45,000	8.2	%
Tax	(6,000)	(1.20)	(4,600)	(0.84)	%
EAT	\$24,000	4.80	\$40,400	7.35	%

Sales Revenue increase by 10% (500 to 550),
but cost of sales increased 12.3% exceeded the sales growth (problems, reasons)
Gross profit (17-18) drops 1.6%, due to cost of sales grows 1.6%.
Net profit (17-18) – surprising increase 1.12% (good, why).
This Net Profit positive contribution can be identified as effective
due to tight cost control which drops 2.5% on operating cost

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Using Financial Statements

- Peer Group Analysis (Total – min 3+1 = 4 companies)
- Compare to similar companies or within industries - SIC and NAICS codes (Peer Industry Average) – Alternative – you can use the larges 4 companies in your picked industry and project an industry average for comparison
- Mainly compare all the key financial ratios among the peer “selected” companies and compare their 3 years ratios, and the “selected” industry average



- Critically analysis the difference and trends, and then identify the cause of the changes, which can be macro or micro (internal) causes

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Using Financial Statements Peer Group - Comparison

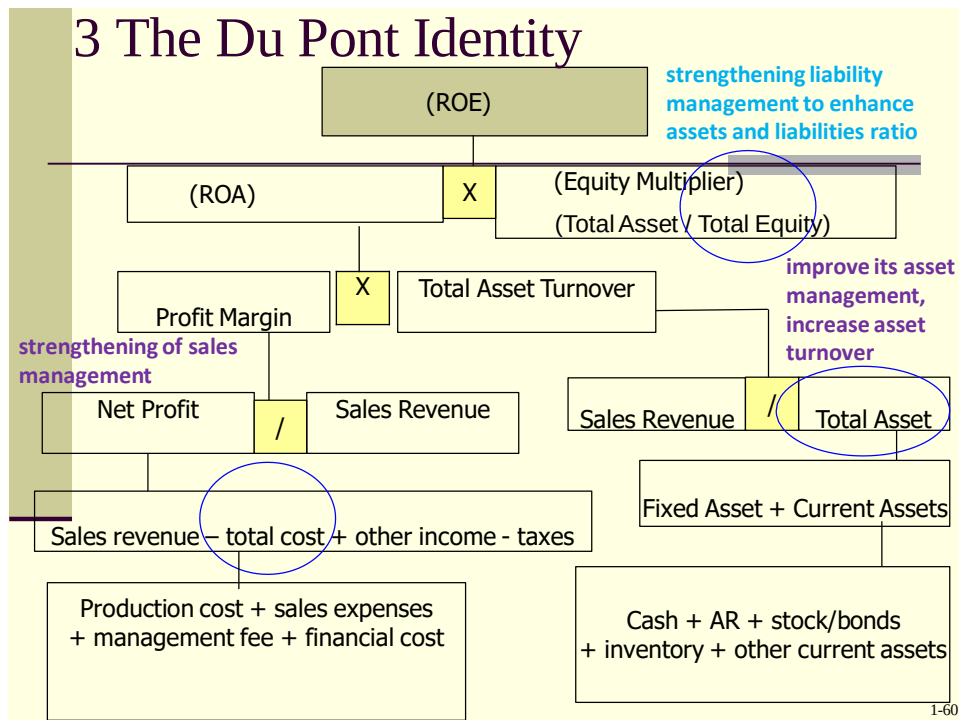


Quick Ratio (Times)	Co A	Co. B	Co. C	Industry Average
1999	1.4	2.2	3	1.7
2000	1.6	2	2	1.8
2001	1.7	1.4	1.1	1.3

Do this for each key financial ratios
Trends of Peers, comparing to CoA. Why ?

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3 The Du Pont Identity

- $\text{ROE} = \text{NI} / \text{TE}$
- Multiply by 1 and then rearrange:
 - $\text{ROE} = (\text{NI} / \text{TE}) (\text{TA} / \text{TA})$
 - $\text{ROE} = (\text{NI} / \text{TA}) (\text{TA} / \text{TE}) = \text{ROA} * \text{EM}$
- Multiply by 1 again and then rearrange:
 - $\text{ROE} = (\text{NI} / \text{TA}) (\text{TA} / \text{TE}) (\text{Sales} / \text{Sales})$
 - $\text{ROE} = (\text{NI} / \text{Sales}) (\text{Sales} / \text{TA}) (\text{TA} / \text{TE})$
 - $\text{ROE} = \text{PM} * \text{TAT} * \text{EM}$

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Using the Du Pont Identity

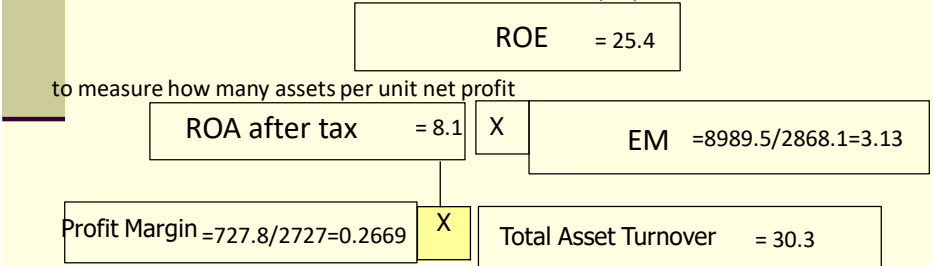
- $ROE = PM * TAT * EM$
 - Profit margin (PM) is a measure of the firm's operating efficiency – how well it controls costs.
 - Total asset turnover (TAT) is a measure of the firm's asset use efficiency – how well it manages its assets.
 - Equity multiplier (EM) is a measure of the firm's financial leverage.

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Calculating the Du Pont Identity

- $ROA = 727.8/8989.5 = 8.1\%$ & $EM = 3.13$
 - $ROE = 8.1\% * 3.13 = 25.4\%$
- $PM = 26.69\%$ and $TAT = 30.3$
 - $ROE = 26.69\% * 30.3 * 3.13 = 25.4\%$
to measure of shareholders' equity investment returns indicators



The indicators reflect each of the dollar sales revenue brought the number of net profits.

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Potential Problems

- There is no underlying theory, so there is no way to know which ratios are most relevant.
- Benchmarking is difficult for diversified firms.
- Globalization and international competition makes comparison more difficult because of differences in accounting regulations.
- Firms use varying accounting procedures.
- Firms have different fiscal years.
- Extraordinary, or one-time, events

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4 Financial Models

- Investment in new assets – determined by capital budgeting decisions
- Degree of financial leverage – determined by capital structure decisions
- Cash paid to shareholders – determined by dividend policy decisions
- Liquidity requirements – determined by net working capital decisions

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The Sustainable Growth Rate

- The sustainable growth rate tells us how much the firm can grow by using internally generated funds and issuing debt to maintain a constant debt ratio.
- Using the Parkson Co.
 - Self-Sustainable Growth Rate

$$= \text{Retained Earning} \div \text{Equity}$$

$$= 2,731.1 \div 2,868.1$$

$$= 95.2\%$$

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Determinants of Growth

- Profit margin – operating efficiency
- Total asset turnover – asset use efficiency
- Financial leverage – choice of optimal debt ratio
- Dividend policy – choice of how much to pay to shareholders versus reinvesting in the firm

1-69

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5 Some Warnings

- Financial planning models do not indicate which financial policies are the best.
- Models are simplifications of reality, and the world can change in unexpected ways.
- Without some sort of plan, the firm may find itself adrift in a sea of change without a rudder for guidance.

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Module 7

An Introduction

- Long term financing (stocks, bonds)

McGraw-Hill/Irwin

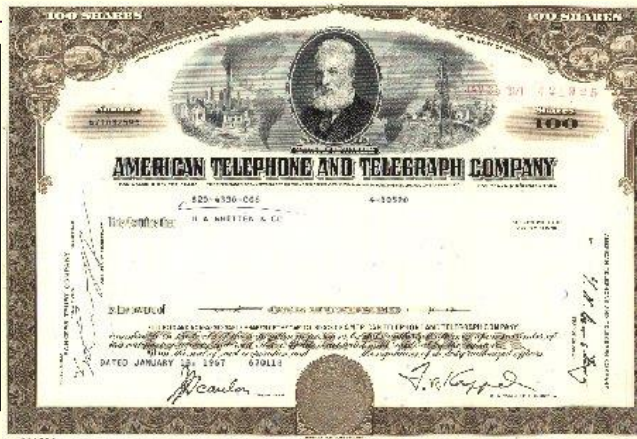
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C1 →

Stock Certificates and Transfer

Each unit of ownership is called a **share of stock**.
A stock certificate serves as proof that a stockholder has purchased shares.



When the stock is sold, the stockholder signs a **transfer endorsement** on the back of the stock certificate.

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Basics of Capital Stock

C2 →

Total amount of stock that a corporation's charter authorizes it to sell.

Stockholders' Equity		
Common Stock, par value \$0.01;		
authorized 250,000,000 shares;		
issued and outstanding 92,556,295 shares		\$925,563

Total amount of stock that has been issued or sold to stockholders.

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Basics of Capital Stock

Par value or Face value is an arbitrary amount assigned to each share of stock when it is authorized.



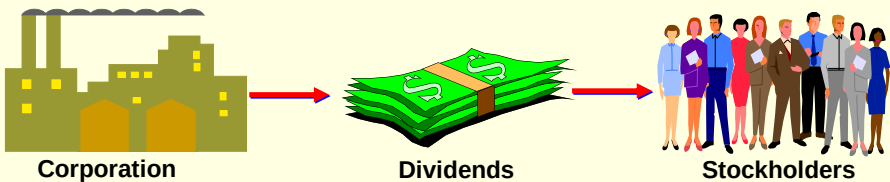
Market price is the amount that each share of stock will sell for in the market.

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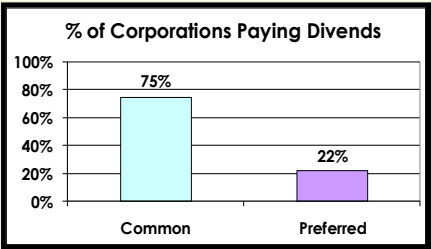
Cash Dividends

Regular cash dividends provide a return to investors and almost always affect the stock's market value.



To pay a cash dividend the corporation must have:

1. A sufficient balance in retained earnings and
2. The cash necessary to pay the dividend.



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Accounting for Cash Dividends

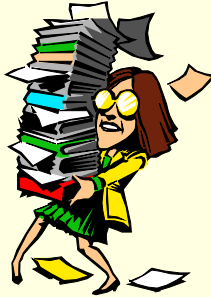


Three important dates



Date of Declaration

Record liability
for dividend.



Date of Record

No entry
required.



Date of Payment

Record payment of
cash to stockholders.

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Stock Dividends

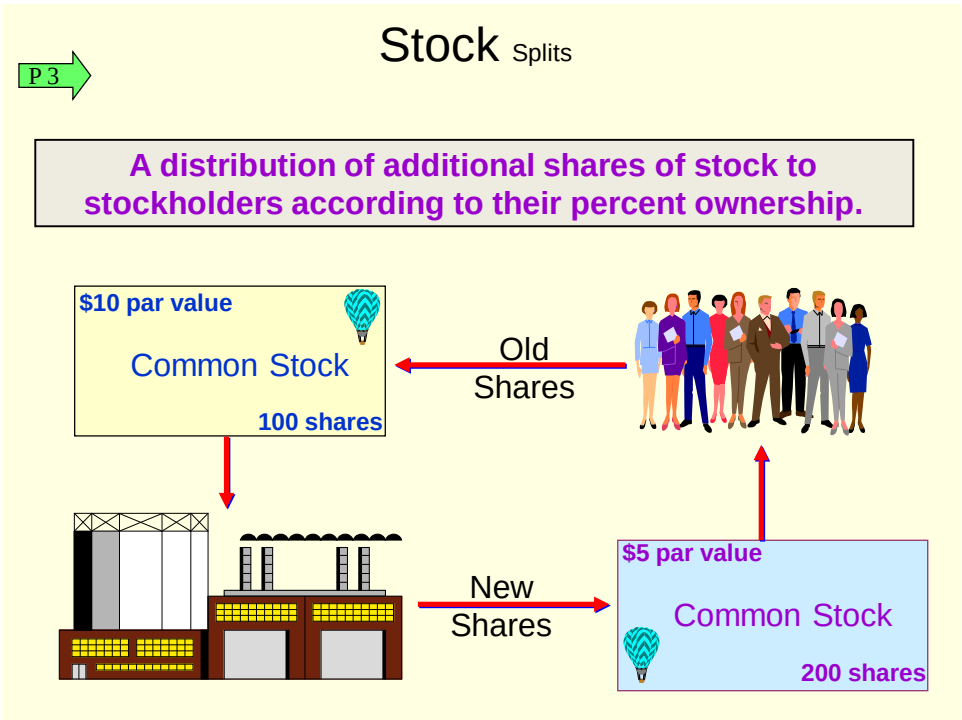
A distribution of a corporation's own shares to its stockholders without receiving any payment in return.

Why a stock dividend?

- Can be used to keep the market price on the stock affordable.
- Can provide evidence of management's confidence that the company is doing well.



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Stock Split

Assume a corporation has 5,000 shares of \$1 par value common stock outstanding before a 2-for-1 stock split.

	Before Split	After Split	
Common Stock Shares	5,000	10,000	Increase
Par Value per Share	\$ 1.00	\$ 0.50	Decrease
Total Par Value	\$ 5,000	\$ 5,000	No Change

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Module 8

Discounted Cash Flow Valuation

McGraw-Hill/Irwin

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Key Concepts and Skills

- Be able to compute the future value and/or present value of a **single cash flow** or series of cash flows
- Be able to compute the **return on an investment**
- Be able to use a financial calculator and/or spreadsheet to solve time value problems

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Chapter Outline

- 1 Valuation: The One-Period Case
- 2 The Multiperiod Case
- 3 Compounding Periods
- 4 Simplifications
- 5 Loan Amortization
- 6 What Is a Firm Worth?

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1 The One-Period Case

- If you were to invest \$10,000 at 5-percent interest for one year, your investment would grow to \$10,500.

\$500 would be interest ($\$10,000 \times .05$)

\$10,000 is the principal repayment ($\$10,000 \times 1$)

\$10,500 is the total due. It can be calculated as:

$$\$10,500 = \$10,000 \times (1.05)$$

- The total amount due at the end of the investment is call the *Future Value (FV)*.

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Future Value

- In the one-period case, the formula for FV can be written as:

$$FV = C_0 \times (1 + r)$$

Where C_0 is cash flow today (time zero), and r is the appropriate interest rate.

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Present Value

- If you were to be promised \$10,000 due in one year when interest rates are 5-percent, your investment would be worth \$9,523.81 in today's dollars.

$$\$9,523.81 = \frac{\$10,000}{1.05}$$

The amount that a borrower would need to set aside today to be able to meet the promised payment of \$10,000 in one year is called the *Present Value (PV)*.

Note that $\$10,000 = \$9,523.81 \times (1.05)$.

1-76

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Present Value

- In the one-period case, the formula for PV can be written as:

$$PV = \frac{C_1}{1+r}$$

Where C_1 is cash flow at date 1, and
 r is the appropriate interest rate.

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Net Present Value

- The Net Present Value (NPV) of an investment is the present value of the expected cash flows, less the cost of the investment.
- Suppose an investment that promises to pay \$10,000 in one year is offered for sale for \$9,500. Your interest rate is 5%. Should you buy?

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Net Present Value

$$NPV = -\$9,500 + \frac{\$10,000}{1.05}$$

$$NPV = -\$9,500 + \$9,523.81$$

$$NPV = \$23.81$$

The present value of the cash inflow is greater than the cost. In other words, the Net Present Value is positive, so the investment should be purchased.

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Net Present Value

In the one-period case, the formula for *NPV* can be written as:

$$NPV = -Cost + PV$$

If we had *not* undertaken the positive *NPV* project considered on the last slide, and instead invested our \$9,500 elsewhere at 5 percent, our *FV* would be *less than* the \$10,000 the investment promised, and we would be *worse off* in *FV* terms :

$$\$9,500 \times (1.05) = \$9,975 < \$10,000$$

1-80

100

2 The Multiperiod Case

- The general formula for the future value of an investment over many periods can be written as:

$$FV = C_0 \times (1 + r)^T$$

Where

C_0 is cash flow at date 0,

r is the appropriate interest rate, and

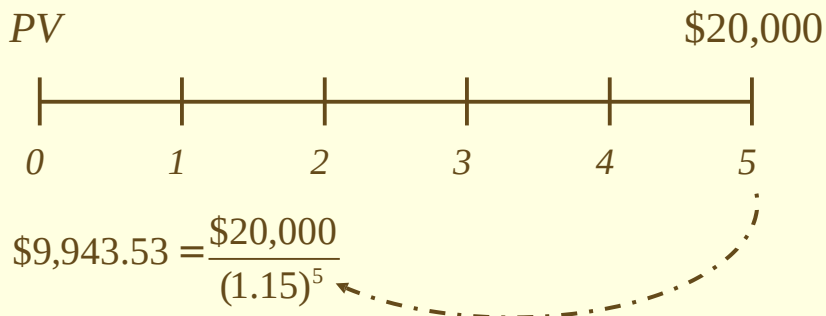
T is the number of periods over which the cash is invested.

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3. Present Value and Discounting (compounding)

- How much would an investor have to set aside today in order to have \$20,000 five years from now if the current rate is 15%?



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What Rate Is Enough?

Assume the total cost of a college education will be \$50,000 when your child enters college in 12 years. You have \$5,000 to invest today. What rate of interest must you earn on your investment to cover the cost of your child's education?

About 21.15%.

$$FV = C_0 \times (1+r)^T \quad \$50,000 = \$5,000 \times (1+r)^{12}$$

$$(1+r)^{12} = \frac{\$50,000}{\$5,000} = 10 \quad (1+r) = 10^{1/12}$$

$$r = 10^{1/12} - 1 = 1.2115 - 1 = 0.2115$$

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Multiple Cash Flows

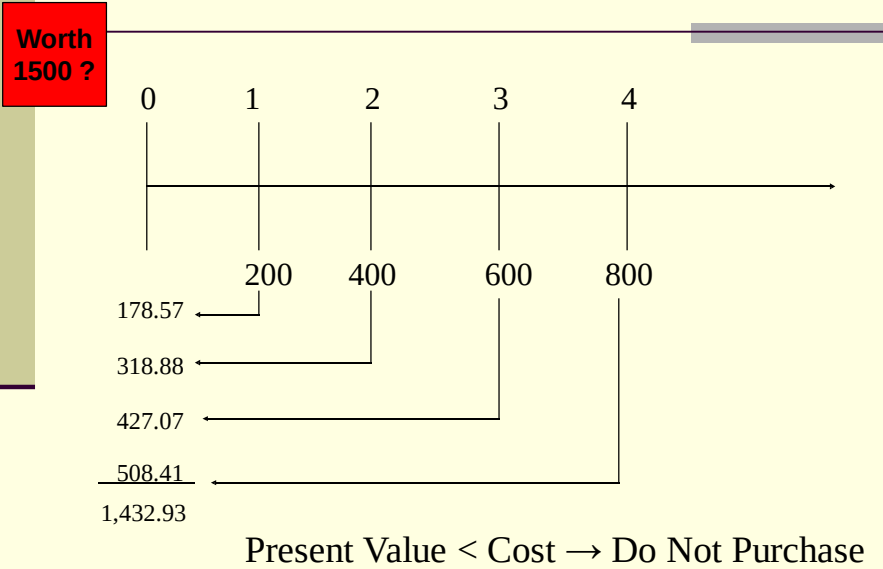
- Consider an investment that pays \$200 one year from now, with cash flows increasing by \$200 per year through year 4. If the interest rate is 12%, what is the present value of this stream of cash flows?
- If the issuer offers this investment for \$1,500, should you purchase it?

Calculation NPV (+ or -) ?

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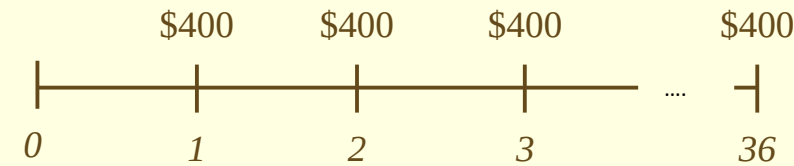
Multiple Cash Flows



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Annuity: Example

If you can afford a \$400 monthly car payment, how much car can you afford if interest rates are 7% on 36-month loans?



$$PV = \frac{\$400}{.07/12} \left[1 - \frac{1}{(1 + .07/12)^{36}} \right] = \$12,954.59$$

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Geometric Series

$$T(1) + T(2) + T(3) + T(4) + \dots + T(n)$$

$$S(n) = \frac{a(R^n - 1)}{R - 1} \quad (R > 1)$$

or

$$S(n) = \frac{a(1 - R^n)}{1 - R} \quad (R < 1)$$

$$a = 400 / (1 + 0.07/12)$$

$$R = 1 / (1 + 0.07/12)$$

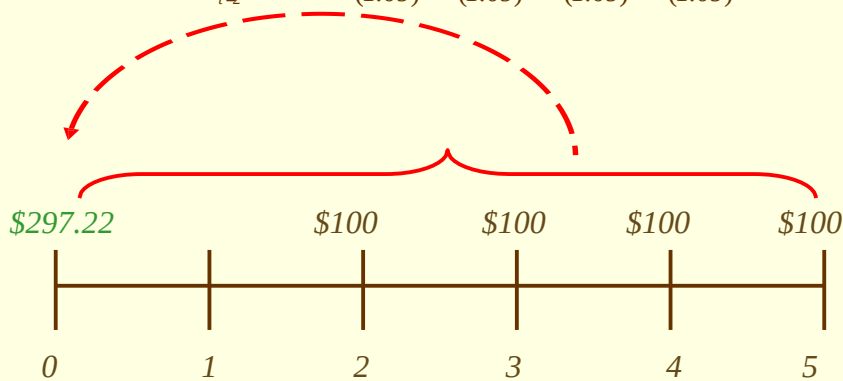
$$n = 36$$

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4 Simplifications

What is the present value of a four-year annuity of \$100 per year that makes its first cash inflow two years from today if the discount rate is 9%?

$$PV_0 = \sum_{t=2}^5 \frac{\$100}{(1.09)^t} = \frac{\$100}{(1.09)^2} + \frac{\$100}{(1.09)^3} + \frac{\$100}{(1.09)^4} + \frac{\$100}{(1.09)^5} = \$297.22$$

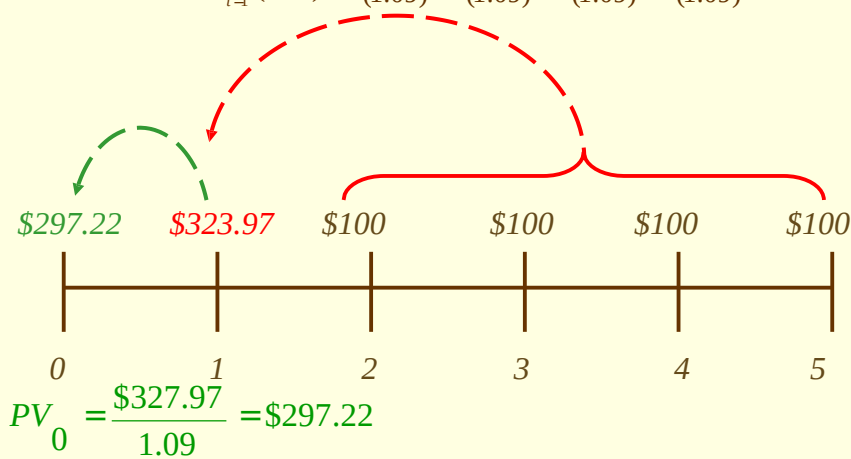


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What is the present value of a four-year annuity of \$100 per year that makes its first cash inflow two years from today if the discount rate is 9%?

$$PV_1 = \sum_{t=1}^4 \frac{\$100}{(1.09)^t} = \frac{\$100}{(1.09)^1} + \frac{\$100}{(1.09)^2} + \frac{\$100}{(1.09)^3} + \frac{\$100}{(1.09)^4} = \$323.97$$



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5 Loan Amortization

- Amortized Loans require repayment of principal over time, in addition to required interest.

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Amortized Loan with Fixed Principal Payment

- Consider a \$50,000, 10 year loan at 8% interest. The loan agreement requires the firm to pay \$5,000 in principal each year plus interest for that year.
- Click on the Excel icon to see the amortization table



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Year	Beginning Balance	Interest Payment	Principal Payment	Total Payment	Ending Balance
1	50,000	4,000	5,000	9,000	45,000
2	45,000	3,600	5,000	8,600	40,000
3	40,000	3,200	5,000	8,200	35,000
4	35,000	2,800	5,000	7,800	30,000
5	30,000	2,400	5,000	7,400	25,000
6	25,000	2,000	5,000	7,000	20,000
7	20,000	1,600	5,000	6,600	15,000
8	15,000	1,200	5,000	6,200	10,000
9	10,000	800	5,000	5,800	5,000
10	5,000	400	5,000	5,400	0

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Amortized Loan with Fixed Payment

- Each payment covers the interest expense plus reduces principal
- Consider a 4 year loan with annual payments. The interest rate is 8% ,and the principal amount is \$5,000.
 - 4 Number of years
 - 8 % interest
 - 5,000 PV
 - PMT = -1,509.60
- Click on the Excel icon to see the amortization table



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Year	Beginning Balance	Total Payment	Interest Paid	Principal Paid	Ending Balance
1	5,000.00	1,509.60	400.00	1,109.60	3,890.40
2	3,890.40	1,509.60	311.23	1,198.37	2,692.03
3	2,692.03	1,509.60	215.36	1,294.24	1,397.79
4	1,397.79	1,509.60	111.82	1,397.78	0.01
Totals		6,038.40	1,038.41	4,999.99	

Note: The ending balance of .01 is due to rounding. The last payment would actually be 1,509.61.

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6 What Is a Firm Worth?

- Conceptually, a firm should be **worth the present value of the firm's cash flows**.
- The tricky part is determining the **size**, **timing**, and **risk** of those cash flows.

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Thanks

END

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