AN INTRODUCTION TO FINANCIAL ANALYSIS

- 1. Scope of financial analysis
- 2. Information sources
- 3. Financial analysis process

1. SCOPE OF FINANCIAL ANALYSIS (1)

Financial (statement) analysis – using companies' financial reports combined with other information to evaluate the past, current and prospective performance and financial position of a company for the purpose of making investment, credit and other economic decisions.

Perspectives:

- **Inside-out** Provide complete information to managers on firm's strategy and a variety of institutional factors.
- **Outside-in** Outside analysts attempt to create "inside information" from analyzing financial statements gaining information on firm's current performance and future prospects.
 - Problem No direct or complete access to inside managers' information.
 - Solution Explore the firm's industry and its competitive strategies to interpret financial statements.

<u>1. SCOPE OF FINANCIAL ANALYSIS (2)</u>				
Financial information user	Important questions			
A security analyst Valuation and performance	How well is the firm I am following performing? Did the firm meet my performance expectations? If not, why not? What is the value of the firm's stock given my assessment of the firm's current and future performance?			
A loan officer or credit analyst Risks and solvency issues	What is the credit risk involved in lending a certain amount of money to this firm? How well is the firm managing its liquidity and solvency? What is the firm's business risk? What is the additional risk created by the firm's financing and dividend policies?			
A management consultant Industry related issues	What is the structure of the industry in which the firm is operating? What are the strategies pursued by various players in the industry? What is the relative performance of different firms in the industry ?			

<u>1. SCOPE OF FINANCIAL ANALYSIS (3)</u>				
Financial information user	Important questions			
A corporate manager Firm's value issues	Is my firm properly valued by investors? Is our investor communication program adequate to facilitate this process? Is the firm a potential takeover target? How much value can be added if we acquire this firm? How can we finance acquisition?			
An independent auditor Accounting policy issues	Are the accounting policies and accrual estimates in this firm's financial statements consistent with my understanding of this business and its recent performance? Do these financial reports communicate the current status and significant risk of the business.			

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1. SCOPE OF FINANCIAL ANALYSIS (10)

Accrual accounting:

- **Recognises** the effects of accounting events **WHEN SUCH EVENTS OCCUR** regardless of the time cash is exchanged.
 - Recognition is the fact of recording an event in financial records (books). A recognition act may occur BEFORE or AFTER cash has been collected or paid. The term ACCRUAL means that recognition is made BEFORE cash is paid or collected.
- Net income: the effects of economic transactions are recorded on the basis of *expected*, not necessarily *actual*, cash receipts and payments.
- **Expected cash receipts from** the delivery of products or services are recognized as REVENUES.
- **Expected cash outflows associated** with these revenues are recognized as EXPENSES.
- (+) Accrual accounting provides more complete information on a firm's periodic performance.

Туре	s of accruals:
• Un	nearned (or deferred) revenue - company receives cash prior to
ea	rning the revenue.
1.	Cash receipt + liability (unearned revenue).
2.	Reduce liability (unearned revenue) + record revenue.
• Un	billed (or accrued) revenue - company earns revenue prior to
rec	ceiving cash, but has not yet recognized the revenue at the end o
an	accounting period.
1.	Revenue + asset (unbilled revenue).
2. • Pro	Reduce asset (unbilled revenue) + increase accounts receivable. epaid expense - company makes a cash payment prior to compizing an expense
1.	Cash payment + asset (prepaid expense).
2.	Reduce asset (prepaid expense) + record expense.
• Ac	er paid as of the end of an accounting period.
be	Liability (accrued expense) + record expense.
2.	Reduce liability when cash is paid.

1. SCOPE OF FINANCIAL ANALYSIS (11)

Accounting conventions and standards:

- Accrual accounting creates subjectivity in financial statements, i.e. accounting discretion creates opportunities for managers to distort reported indicators.
- Solution set accounting standards to limit such possibilities for distortions.
 - IASB International Accounting Standards Board develops IFRS.
 - FASB US Financial Accounting Standards Board develops US GAAP.
 - Regulatory authorities IOSCO (International Organization of Securities Commissions) – in US SEC (Securities Exchange Commission, Financial Services Authorities.
- Valuation adjustments adjustments to asset or liabilities when required by standards.
- Too rigid standards may create an opposite outcome.





Managers' reporting strategy - the manner in which managers use their accounting discretion.

- It depends on:
- Accounting standards set minimum disclosure level requirements, do not limit additional disclosure.
- **Constraints** disclosure of proprietary information about business strategies and their expected economic consequences may hurt the firm's competitive position.
- Extent of manipulation:
 - Making it difficult for investors to identify poor performance on a timely basis.
 - Making it costly for investors to understand the true performance by controlling the extent of information that is disclosed voluntarily.

1. SCOPE OF FINANCIAL ANALYSIS (14)

Auditing:

- External auditing ensures that accounting rules and conventions are consistently used over time, and that their accounting estimates are reasonable.
- Legal environment:
 - Improves disclosure quality through threat of lawsuits and resulting penalties.
 - May inhibit disclosure if there is potential for a significant legal liability involved with risky forecasts, such as forward-looking disclosures.
- **Governance structure** audit committee oversees the work of an auditor and ensures that financial statements are properly prepared.









2. INFORMATION SOURCES (3)

Balance sheet (statement of financial position / statement of financial condition):

- Presents a company's current financial position by disclosing resources the company controls (assets) and what it owes (liabilities) at a specific point in time.
- Key components:
 - Current assets inventories, trade receivables, other receivables, cash, cash equivalents.
 - Noncurrent assets:
 - Plant, property and equipment (net).
 - Other non-current assets goodwill, patents, investment property, investments in companies etc.
 - Current liabilities.
 - Long-term debt.
 - Owners' equity excess of assets over liabilities e.g.
 Assets liabilities = owners' equity

St	atement of cash flows: A firm's cash receipts and cash payments that represent information on its sources and uses of cash. Key components:
	 Operating cash flows - transactions that enter into the determination of net income and are primarily activities that comprise the day-to-day business functions of a company.
	 Investing cash flows - activities associated with the acquisition and disposal of long - term assets, such as equipment.
	 Financing cash flows - activities related to obtaining or repaying capital to be used in the business.

2. INFORMATION SOURCES (5)

Statement in changes of owners' equity (statement of

shareholders' equity / statement of retained earnings):

- Reports changes in the owners' investment in the business over time.
- Begins with the amount of equity shown on the balance sheet.
- Net income is added, and cash dividends paid to owners are subtracted.

Notes to financial statements - provide explanatory information about the financial statements e.g.:

- Business acquisitions and disposals.
- Commitments and contingencies.
- Legal proceedings.
- Stock option and other employee benefit plans.
- Related party transactions etc.

2. INFORMATION SOURCES (6)

Management discussion and analysis (MD&A) – provides information on significant events and uncertainties that affect or may affect the company's liquidity, capital sources and results.

Independent auditor's report - expresses an auditor's opinion on the financial statements, whether the financial statements are prepared, in all material respects, in accordance with an applicable financial reporting framework.

3. FINANCIAL ANALYSIS PROCESS

Steps in the financial analysis process:

- 1. Articulate the purpose and context of the analysis.
- 2. Collect data top-down approach (macro \rightarrow industry \rightarrow company).
- 3. Process data:
 - Read and evaluate financial statements incl. footnotes.
 - Make adjustments to financial statements to facilitate comparisons (based on accounting analysis).
 - Compute ratios, growth rates, prepare common-size statements, charts, regression analysis etc.
- 4. Analyse/interpret the processed data.
- 5. Develop and communicate conclusions and recommendations depends on the purpose.
- 6. Follow up.

FINANCIAL ANALYSIS METHODS 1. Types of financial analysis methods Horizontal analysis Vertical analysis Cross-sectional analysis Trend percentages Ratio analysis Use of graphs Writing an analysis report

FINANCIAL ANALYSIS

Financial analysis - applies analytical tools to financial data to assess a company 's performance and trends in that performance.

Types of analysts using financial analysis-

- Equity analysts evaluate equity investment to determine whether it is attractive and what is the appropriate price.
- **Credit analyst** evaluates the creditworthiness of a company.
- Analyst in a company evaluating performance of a company or its subsidiary.

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1. TYPES OF FINANCIAL ANALYSIS METHODS (1)

The main financial analysis methods include:

- Horizontal analysis.
- Vertical analysis incl. common-size statements.
- Cross-sectional analysis.
- Trend percentages.
- Ratio analysis.

1.1. HORIZONTAL ANALYSIS (1)

Using comparative financial statements to calculate euro or percentage changes in a financial statement item from one period to the next

			Increase or	(Decrease)	
	2008 (5)	2007 (\$)	Amount	Percent	
Assets					
Current assets	550,000	533,000	17,000*	3.2%	
Long-term investments	95,000	177,500	(82,500)	(46.5)%	
Plant assets (net)	444,500	470,000	(25,500)	(5.4)%	
ntangible assets	50,000	50,000			
Total assets	1,139,500	1,230,500	(91,000)	(7.4)%	
					
Liabilities					
Current liabilities	210,000	243,000	(33,000)	(13.6)%	
Long-term liabilities	100,000	200,000	(100,000)	(50.0)%	
Total liabilities	310,000	443,000	(133,000)	(30.0)%	
Stockholders' Equity:					
Preferred 6% stock, \$100 par	150,000	150,000			
Common stock, \$10 par	500,000	500,000			
Retained earnings	179,500	137,500	42,000	30.5%	
Total stockholders' equity	829,500	787,500	42,000	5.3%	
Total Exhibits and stackholders' south	1 139 500	1,230,500	(91,000)	(7.4)%	



	Vertical Ana	alysis of	Balance She	et		
s()	20	98	200	9	201	10
Cash	\$ 608,000	30%	\$ 755,000	29%	\$ 783,000	31%
Accounts Receivable	476,000	23%	500,000	19%	556,000	22%
Inventory	500,000	25%	615,000	23%	595,000	24%
Property and Equipment, net	441,000	22%	760.000	29%	591,000	_23%
Total Assets	\$2,025,000	100%	\$2,630,000	100%	\$2,525,000	100%
Accounts Payable	\$ 115,000	5%	\$ 160,000	6%	\$ 65,000	3%
Wages Payable	55,000	3%	65,000	3%	60,000	2%
Income Taxes Payable	18,000	1%	35,000	1%	25,000	19
Notes Payable	87,000	4%	210,000	8%	175,000	7%
Common Stock	400,000	20%	450,000	17%	450,000	18%
Additional Paid-in Capital	600,000	30%	700,000	27%	700,000	27%
Retained Earnings	750,000	37%	1.010.000	38%	1,050,000	42%
Total Liabilities and Stockholders' Equity	\$2,025,000	100%	\$2,630,000	100%	\$2,525,000	100%

1.3. CROSS-SECTIONAL ANALYSIS

Cross-sectional analysis (relative analysis) compares specific metric for one company with the same metric of the other company or group of companies, allowing comparisons even though the companies might be of significantly different sizes and/or operate in different countries.

EXHIBIT 4	Vertical C for Two H	ommon-Size (Partial) Balance Sheet lypothetical Companies			
		Company 1 % of Total Assets	Company 2 % of Total Assets		
Cash		38	12		
Receivables		33	55		
Inventory		27	24		
Fixed assets net of o	lepreciation	1	2		
Investments		1	7		
Total assets		100	100		





1.4. RATIO ANALYSIS (2)

Limitations of ratio analysis:

- Computed ratio is not "the answer". It is an indicator of some aspect of company performance (what happened not why it happened).
- Based on judgement ratio itself does not tell much, they need to be interpreted.
- Differences in accounting policies can distort ratios, i.e. proper comparison of companies requires adjustments to financial data.
- Company's operating activities may not be homogeneous different divisions operate in different industries, i.e. create problems for making comparisons.
- Problems with consistency of ratio analysis ratios may behave in a contradicting way.
- There is a need to focus on relevant (not all) ratios.

ANALYSIS (3)				
Operating income				
Total assets				
 Using the average of beginning and ending balances. 				
 No significant differences if the company has stable level of assets. 				
 When assets are growing (or shrinking) – prefer average. 				
ent or cash flow statement d balance sheet number as Je balance sheet number.				
 If the ratio is based on seasonal interim numbers, then use the average over all interim periods. 				
ding balance.				

1.4. RATIO ANALYSIS (4)

Data sources for calculating ratios:

- Companies' financial statements.
- Different databases e.g. Reuters, Bloomberg, Baseline, FactSet, Thomson Financial, Amadeus, Bankscope etc.

Keep in mind that:

- ratio calculation principles may differ across database vendors,
- data classification principles may differ.

<u>1.4. RATIO ANALYSIS (5)</u> Types of ratios: Activity ratios – measure how efficiently a company performs day-to-day tasks such as the collection of receivables and management of inventory. Liquidity ratios – measure the company's ability to meet its short-term obligations. Solvency – measure a company's ability to meet long-term obligations. Subsets of these ratios are also called leverage and long-term debt ratios. Profitability ratios – measure the company's ability to generate profitable sales from its resources (assets). Valuation ratios – measure the quantity of an asset or flow associated with ownership of a specified claim (share).

1.4. RATIO ANALYSIS (6)

Interpreting ratios:

- **Company goals and strategy** actual ratios can be compared with company objectives.
- **Industry norms** (cross-sectional analysis) comparison with others in the industry. Note that:
 - Some ratios may be industry specific.
 - Companies may have different lines of business aggregate ratios distorted, use the industry-specific ratios for lines of business ratios.
 - Differences in accounting standards can distort financial ratios.
 - Differences in corporate strategies can affect some ratios.
- Economic conditions affect business-cycle dependent companies' ratios.

<u>1.6. USE OF GRAPHS (1)</u>
Graphs:
• Facilitate comparison of performance and financial structure over time.
 Provide a visual overview of trends.
• Can be used by the analyst to communicate his/her conclusions on the financial condition or risk management aspects.
Best practice:
• Pie charts – for composition of a total value.
• Line graphs – change in amount over longer time period.
 Stacked column graph – composition and amounts as well as change over time matter.

1.6. USE OF GRAPHS (2)

Recommendations for constructing graphs:

- Mandatory components axes, scale, frame, legend, title.
- Pie chart sectors should be presented in descending order starting from the upper part and moving in a clock-wise direction.
- Line charts and stacked column charts must have a scale, a 0-point and the y-axis must be fully disclosed (no cuts or omitting the 0-point).
- Time-series elements should be presented from left to right.
- No 3D effects.
- The colours of lines/columns/sectors should be distinguishable.
- The height of lines and columns must correspond to the actual values.

2. WRITING AN ANALYSIS REPORT (1)
Contents could include:
 The purpose of the report (unless readily apparent).
 Relevant aspects of the business context.
 Economic environment (country, macro economy, sector).
 Financial and other infrastructure (accounting, auditing, rating agencies).
 Legal and regulatory environment (and any other material limitations on the company being analysed).
Evaluation of corporate governance.
 Assessment of financial and operational data.
 Conclusions and recommendations (including risks and limitations to the analysis).





RATIO ANALYSIS

Types of ratios:

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Management	Owners	Lenders	
Operational Analysis	Profitability	Liquidity	
Gross Margin Profit Margin Operating Expense Analysis Contribution	 Return on Equity Earnings Per Share (EPS) 	 Current Ratio Quick Ratio (Acid Test) 	
Asset Management	Disposition of Earnings	Leverage	
 Asset Turnover Working Capital Accounts Receivable Inventory Turnover Accounts Payable 	Cash Flow Per Share Dividends Per Share Dividend Yield Payout/Retention Dividend Coverage	 Debt to Assets Debt to Capitalization Debt to Equity 	
Profitability	Market Indicators	Debt Service	
 Return on Assets EBIT ROA 	Stock Price Price/Earnings Ratic (P/E) Market to Book Value	 Interest Coverage Interest and Principal Coverage 	
Source: Financial Modeling Guide (www.financial	modelingguide.com)		

 <u>1. An</u> Activity ratios = asservatios. How efficiently a corworking capital and baseline to the second secon	<u>CTIVITY RATIOS (1)</u> et utilisation ratios = o npany manages its as longer-term assets.	perating efficiency ssets? Both
Activity ratios	Numerator	Denominator
Inventory turnover	Cost of good sold	Average inventory
Days of inventory on hand (DOH)	Number of days in period	Inventory turnover
Receivables turnover	Revenue	Average receivables
Days of sales outstanding (DSO)	Number of days in period	Receivables turnover
Payables turnover	Purchases	Average trade payables
Number of days of payables	Number of days in period	Payables turnover
Working capital turnover	Revenue	Average working capital
Fixed asset turnover	Revenue	Average net fixed assets
Total asset turnover	Revenue	Average total assets

<u>1. ACTIVITY RATIOS (2)</u>	
Inventory Turnover = <u>Cost of goods sold</u> Average inventory	
Inventory Turnover = $\frac{\notin 220,000}{(\notin 55,000 + \notin 12,000) \div 2} = 6.57$ times	
How many times inventory is sold and replaced during the year? The higher than industry the better!	
Days of inventories on hand (DOH) $DOH = \frac{365}{Inventory turnover} = \frac{365}{6.57} \sim 56 \text{ days}$	
Company keeps 56 days worth of inventory on hand The lower the better : Company manages inventory well. Unless sales are weak, then could signify shortages.	

<u>1. AC</u>	<u>TIVITY RATIOS (3)</u>
Receivables = turnover	Revenue Average receivables
Receivables = (€17,0	<u>€494,000</u> 000 + €20,000) ÷ 2 = 26.70 times
How many times a comp cash each year? The hig	any converts its receivables into gher than industry the better!
Deve of color	
outstanding (DSO) =	<u>365 Days</u> Receivables turnover
Days of sales outstanding (DSO) = Days of sales outstanding = - (DSO) =	<u>365 Days</u> Receivables turnover <u>365 Days</u> 26.70 Times = 13.67 days
Days of sales outstanding (DSO) = Days of sales outstanding = - (DSO) 2 How many days it takes to	<u>365 Days</u> Receivables turnover <u>365 Days</u> 26.70 Times = 13.67 days collect an account receivable?

<u>1. ACTIVITY RATIOS (4)</u> Payables turnoverPurchase (or cost of good sold + ending inventory – beginning inventory) Average trade payables
Payables = <u>€600,000</u> = 15 times turnover = <u>40,000</u> = 15 times How many times per period a company pays its average payable amount? The lower than industry the better!
Number of days of payables = $\frac{365 \text{ Days}}{\text{Accounts Payable Turnover}}$ Number of days <u>365 Days</u> of payables <u>15 Times</u> = 24.3 days
On average it takes 24 days, for a company to pay its accounts payable. Prefer to have higher number of days of payables. Lower DPO is worse: not taking advantage of credit. Very high DPO: problems making timely payments.

<u>1. ACTI</u>	VITY RATIOS (5)
Working capital	Revenues
turnover =	Average working capital
Working capital	<u>€494,000</u> = 35.29 times
Turnover =	€14,000
 It measures how well a b support a given sales lev The higher the better (graworking capital turnover not have enough capital If working capital is close interpreted. 	ousiness is using its working capital to rel. eater efficiency). Still, a very high ratio can show that a company does al to support its sales growth. To 0 or negative, the ratio cannot be

<u>1. A</u>	<u>CTIVITY RATIOS (6)</u>
 Fixed asset turnover = Fixed asset turnover = How efficiently the coninvestments in fixed a Higher ratio refers genuse. Too high ratio m A low ratio can indicate business environmer capacity, a company The ratio may exhibite investments across y 	RevenuesAverage net fixed assets

	<u>1. ACT</u>	TIVITY RATIOS (7)
Total asset turnover	=	Revenues Average Total Assets
Total asset turnover	=	<u>€494,000</u> €323,195 = 1.53 times
 Measures the c with a given lev Higher ratio ref A low ratio can capital intensity Problems: Ratio may be components (re participate active) The ratio does where revenue 	company vel of ass ers gene be an ir v of the b e skewe eceivable vely in re s not w is base	y's overall ability to generate revenues sets. erally to higher efficiency of assets' use. ndicator of inefficiency or of relative business. ed if assets include also non-active es and investment portfolios), that do not evenue generating process. vork well for service-oriented business d on people.

Ţ	ypes of ratios:
•	Activity ratios – measure how efficiently a company performs day-to-day tasks such as the collection of receivables and management of inventory.
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•	Solvency – measure a company's ability to meet long-term obligations. Subsets of these ratios are also called leverage and long-term debt ratios.
•	Profitability ratios – measure the company's ability to generate profitable sales from its resources (assets).
•	Valuation ratios – measure the quantity of an asset or flow associated with ownership of a specified claim (share).













RATIO ANALYSIS

Types of ratios:

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<u>3. SOLVENCY RATIOS (1)</u>
 Solvency – company's ability to pay for its long-term obligations. Illiquid but solvent – no cash to pay, high equity level.
 Insolvent but liquid – cash to pay, low equity level or problems servicing obligations.
 Operating leverage – fixed costs magnify the effect of changes in sales on operating income.
Solvency ratios:
 Debt ratios – focus on the balance sheet and measure the amount of debt capital relative to equity capital.
 Coverage ratios – focus on the income statement and measure the ability of a company to cover its debt payments.
• Debt – there exists 3 alternative definitions:
 Interest-bearing short-term + long-term debt excl. Accrued expenses and accounts payable. WE WILL USE THIS ONE!
 All liabilities.
 Long-term debt only.

<u>3. SOLVENCY RATIOS (2)</u>			
Solvency ratios	Numerator	Denominator	
Debt ratios			
Debt-to-assets ratio	Total debt	Total assets	
Debt-to-capital ratio	Total debt	Total debt +total shareholders' equity	
Debt-to-equity ratio	Total debt	Total shareholders' equity	
Financial leverage ratio	Average total assets	Average total equity	
Coverage ratios			
Interest coverage	EBIT	Interest payments	
Interest coverage (cash basis)	Undelivered cash flow from operations	Interest payments	
Fixed charge coverage	EBIT +fixed charges	Fixed charges	
Fixed charge coverage (cash basis)	Undelivered cash flow from operations + fixed charges	Fixed charges	
CFO to debt	Undelivered cash flow from operations	Total debt	
i <mark>xed charges</mark> are interest a nd preferred dividends	nd principal repayments (inc	luding those on leases)	









RATIO ANALYSIS
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4	<u>4. PROFITABILITY RAT</u>	<u>IOS (1)</u>	
 Profitability rat during a perio 	tios – measure return ea d.	rned by the company	
Profitability ratios	Numerator	Denominator	
Return on sales			
Gross profit margin	Gross profit	Revenue	
Operating profit margin	Operating income	Revenue	
Pretax margin	EBT (income before taxes)	Revenue	
Net profit margin	Net income	Revenue	
	Return on investmen	it	
Operating ROA	Operating income	Average total assets	
ROA	Net income	Average total assets	
Return on total capital	EBIT	Short-term and long-term debt and equity	
ROE	Net income	Average total equity	
Return on common equity	Net income –preferred dividends	Average common equity	

4. PROFITABILITY RATIOS (2)		
		Gross Profit Margin = $\frac{\text{Gross profit}}{\text{Revenues}}$
	2011	\$40,000
Revenue	100.000	Gross Profit Margin = $\frac{$40,000}{$100,000}$ =
COGS	60,000	\$100,000
Gross profit	40,000	= 0.4, or 40.0%
Operating expenses	10,000	
Operating profit	30,000	 Indicates the percentage of
Interest expenses	5,000	revenue remaining to cover
Other expenses	5,000	operating expenses, other
Income before tax	20,000	expenses
Tax rate	30%	 A high margin indicates that the company can make a
Tax expenses	6,000	reasonable profit as long as it
Net profit	14,000	keeps the overhead cost under
		 control. A low margin indicates that the business is unable to control its production cost.

4. PROFITABILITY RATIOS (3)		
Operating Margin = $\frac{\text{Operating income}}{\text{Revenues}}$ \$30,000		
Revenue	100.000	Operating Margin $=\frac{1}{\$100,000}$ =
COGS	60,000	
Gross profit	40,000	= 0.3, or 30.0%
Operating expenses	10,000	 Indicates how much a company
Operating profit	30,000	makes after paying for total
Interest expenses	5,000	operating costs (direct cost and
Other expenses	5,000	overhead).
Income before tax	20,000	• It is used to measure company's
Tax rate	30%	pricing strategy and operating
Tax expenses	6,000	efficiency
Net profit	14,000	 A high margin is preferred
		because if it is high and increasing, the company is earning more per dollar of sales.

4. PROFITABILITY RATIOS (4)			
		$Pre - tax Margin = \frac{Income before tax}{Revenues}$	
Revenue	2011 100.000	Pre - tax Margin = $\frac{\$20,000}{\$100,000}$ =	
COGS Gross profit	60,000 40,000	= 0.2, or 20.0%	
Operating expenses Operating profit	10,000 30,000	It reflects the effects of	
Interest expenses	5,000	operating) income and	
Income before tax	20,000	expense on profitability.Pay attention to trends in non-	
Tax rate	30%	operating income!	
Tax expenses	6,000		
Net profit	14,000		

<u>4. PROFITABILITY RATIOS (5)</u>			
		Net Profit Margin = $\frac{\text{Net income}}{\text{Revenues}}$	
Revenue	2011 100.000	Net Profit Margin $=\frac{\$14,000}{\$100,000}=$	
Gross profit	40,000	= 0.14, or 14.0%	
Operating expenses Operating margin	<u>10,000</u> 30,000	A low profit margin indicates a	
Interest expneses Other expneses	5,000 5,000	that a decline in sales will erase	
Income before tax Tax rate	20,000 30% 6,000	 The higher the margin is, the more effective the company is 	
Net profit	14.000	 In converting revenue into actual profit. Net profit margin is mostly used to compare company's results over time. 	

4. PROFITABILITY RATIOS (6)			
$Operating \ ROA = \frac{Operating income}{Average total assets}$ $ROA = \frac{30000}{150000} = 20\%$ $ROA = \frac{Net income}{Average total assets}$ $ROA = \frac{14000}{150000} = 9.33\%$ $ROA = \frac{net \text{ profit + interest (1- tax rate)}}{Average total assets}$ $ROA = \frac{14000 + 5000 (1-0.3)}{150000} = 11.66\%$	 ROA gives an idea of how efficient management is at using its assets to generate profit. ROA can vary substantially across different industries. The only common rule is that the higher return on assets is, the better. 		



<u>RATIO ANALYSIS</u>			
Types of ratios:			
 Activity ratios – measure how efficiently a company performs day-to-day tasks such as the collection of receivables and management of inventory. 			
 Liquidity ratios – measure the company's ability to meet is short-term obligations. 			
 Solvency – measure a company's ability to meet long-term obligations. Subsets of these ratios are also called leverage and long-term debt ratios. 			
 Profitability ratios – measure the company's ability to generate profitable sales from its resources (assets). 			
 Valuation ratios – measure the quantity of an asset or flow associated with ownership of a specified claim (share). 			





5. VALUATION RATIOS (3)

Types of valuation ratios: • Per share quantities: • basic EPS,

- diluted EPS, •
- cash flow per share,
 EBITDA per share,
 dividends per share.
 Valuation ratios:

- - P/E, •
 - P/B,
 - P/S, •
 - P/CF. ٠
- Dividend-related quantities:dividend pay-out ratio,retention ratio, •

 - sustainable growth rate. •

X CORPORATION	_
2012	
Common shares outstanding	
Beginning of year	17,000
End of year	27,400
Net income	\$ 53,690
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Dividends per share	2
Dec. 31 market price/share	20
Interest expense	7,300
Total assets	
Beginning of year	300,000
End of year	346,390

Earnings per Share Earnings per Share	$\frac{5. VALUATION RATIOS (5)}{\text{Earnings Available to Common Stockholders}}$ = Weighted-Average Number of Common Shares Outstanding = $\frac{€53,690}{(17,000 + 27,400) \div 2}$ = €2.42
Alternatives	for calculating weighted average number of shares (1):
Alternate 1 To illustrate, increased by \$11 9.5 million of th October 1, 1995 shares outstandin	assume that during 1995 Colgate-Palmolive's common stock balance .7 million (11.7 million shares). Assume that the company issued ese shares on April 1, 1995, and the other 2.2 million shares on . The computation of the weighted-average number of common g would be:
171.5 million 9.5 million 2.2 million Weighted-av	shares × 1 year 171.5 million shares × ¼ year (April–December) 7.125 million shares × ¼ year (October–December)

<u>5. VALUATION RATIOS (6)</u>
Alternatives for calculating weighted average number of shares (2):
<u>Alternate 2</u> An alternate method looks at the total number of common shares outstanding, weighted by the portion of the year that the number of shares was outstanding, as follows:
171.5 million shares × ¼ year (January–March)42.875 million181.0 million shares × ½ year (April–September)90.5 million183.2 million shares × ¼ year (October–December)45.8 million
Weighted-average number of shares outstanding
Another alternate method is:
$\begin{array}{rcl} 171.5 \text{ million shares} \times & 3 \text{ months} = & 514.5 \text{ million share-months} \\ 181.0 \text{ million shares} \times & 6 \text{ months} = & 1,086.0 \text{ million share-months} \\ 183.2 \text{ million shares} \times & \underline{3 \text{ months}} = & \underline{549.6 \text{ million share-months}} \\ 12 \text{ months} & & 2,150.1 \text{ million shares} \\ 2,150.1 \text{ million share-months}/12 \text{ months} = & 179.175 \text{ million shares} \end{array}$



<u>5. VALUATION RATIOS (8)</u>			
P/E Price-Earnings <u>Market Price Per Share</u> Ratio EPS			
 Provides some measure of whether the stock is under or overpriced. 			
Sensitive to nonrecurring earnings.			
P/CF Price-cash flow = <u>Market price per share</u> Ratio			
P/S Price-sales = <u>Market price per share</u> ratio Sales per share			
P/B Price-book ratio = <u>Market price per share</u> Book value per share			

P/E value	Interpretation	
A company with	Companies with losses are usually treated as having an	
negative earnings	undefined P/E ratio, although a negative P/E ratio can be determined, mathematically.	
PE lower than the	Either the stock is undervalued or the company's earnings are	
industry average	thought to be in decline or of unstable nature. So a low PE	
	does not always mean a good BUY.	
PE more or less	For many companies a P/E ratio in this range may be	
equals the industry average	considered fair value.	
PE is above the	The stock is overvalued (and should be sold) or the company's	
industry average	earnings have increased since the last earnings figure was	
(let's say 25 vs. 20)	published. The stock may also be a growth stock with earnings	
	expected to increase substantially in future.	
PE is way above the	A company whose shares have a very high P/E may have high	
industry average	expected future growth in earnings or the stock may be the	
(let's say 40 vs. 20)	subject of a speculative bubble.	

5. VALUATION RATIOS (10)		
P/E	Explanation	
Say the average trailing P/E ratio for firms in an industry is 32. Your company's is 25.	Company is undervalued	
What are two rationales for using the P/E ratio?	 Earnings power is the primary determinant of investment value. Empirical research shows that P/E differences are significantly related to long-run average stock returns. 	
What are some shortcomings of the P/E ratio?	 Earnings can be negative. Management discretion can distort reported earnings. 	
What does higher inflation imply in terms of P/Es?	Lower P/Es.	
What are the possible reasons for when the P/E of a stock is less than the benchmark?	 Stock is undervalued. Stock is properly valued, but has lower expected growth rate than benchmark. 	

5. VALUATION RATIOS (11)

P/B interpretation:

- If a company is trading for less than its book value (or has a P/B less than one), then:
 - a) market believes the asset value is overstated, or
 - b) company is earning a very poor (even negative) return on its assets.
- If (a) is true, then investors are well advised to steer clear of the company's shares because there is a chance that asset value will face a downward correction by the market, leaving investors with negative returns.
- If (b) is true, there is a chance that new management or new business conditions will prompt a turnaround in prospects and give strong positive returns. Even if this doesn't happen, a company trading at less than book value can be broken up for its asset value, earning shareholders a profit.
- A company with a very high share price relative to its asset value is likely to be one that has been earning a very high return on its assets.

5. VALUATION RATIOS (11)		
P/B	Explanation	
Advantages of P/B ratio	 Usually positive even when EPS is negative. More stable than EPS. Useful for valuing companies that have liquid assets or those that are expected to go out of business. 	
Disadvantages of the P/B ratio	 Does not reflect value of intangible assets. Can be misleading in cases where there are differences in asset size of the firm. Inflation and technological change can cause book and market values of assets to differ. 	
What three adjustments are commonly made to the P/B ratio?	 Use tangible book value. Adjust for significant off-balance-sheet assets and liabilities. Adjust book values for comparability. 	

5. VALUATION RATIOS (12)

P/S interpretation:

- P/S shows how much market values every dollar of the company's sales. It measures the value placed on sales by the market.
- A higher ratio means that the market is willing to pay more for each dollar of annual sales. The lower the ratio, the more attractive the investment. However, the value of the ratio varies across industries. A better benchmark is to compare with industry average.
- P/S provides a useful measure for sizing up stocks. But investors need to be mindful of the ratio's potential pitfalls and possible unreliability.

5. VALUATION RATIOS (13)				
P/S	Explanation			
Advantages of P/S ratio	 Meaningful even for distressed firms. Not as volatile as P/E. Appropriate for valuing stocks in mature or cyclical industries or startups with no record of earnings. 			
Disadvantages of the P/S ratio	 High growth in sales does not necessarily indicate high operating profits. Does not capture differences in cost structures across companies. Sales forecasts can be distorted. 			

5. VALUATION RATIOS (14)

P/CF interpretation:

- It measures market's expectations of a firm's future financial health.
- It provides an indication of relative value. Because accounting laws on depreciation vary across jurisdictions, the price-to-cash-flow ratio can allow investors to assess foreign companies from the same industry with a bit more ease.

Advantages of P/CF:

- Not easy to manipulate.
- A more accurate picture of a company.
- P/CF ratio provides a reliable indication of long-term returns.

5. VALUATION RATIOS (15)

P/CF disadvantages :

- Different basis for calculation:
 - Free cash flow to equity holders and to stakeholders is calculated differently.
- The type of cash flow should be specified every time.
- P/CF ratios neglect the impact of non-cash components such as deferred revenue.
- P/CF ratio is a "quick and dirty" approach that should be complemented with discounted cash flow procedures.



5. VALUATION RATIOS (16)					
PEG interpretation:					
 ABC : Industries stock price is higher than its earnings growth. This means that if the company doesn't grow at a faster rate, the stock price will decrease. XYZ: PEG ratio of 0.75 tells that the company's stock is undervalued, which means if it is trading in line with the growth rate, then the stock price will increase. 					
Stock theory suggests that PEG ratio should be 1 to every stock. This would represent theoretical equilibrium between the market value of a stock and anticipated earnings growth.					
PEG >1: Market expectation of growth is higher than consensus estimates. Stock is currently overvalued due to heightened demand for shares	PEG <1: Markets are underestimating growth and the stock is undervalued. Analysts' consensus estimates are currently set too low.				

5. VALUATION RATIOS (17)

Common share dividends

Net income attributable to common shares

- It compares the dividends paid by a company to its earnings. The part of earnings that is not paid out in dividends is used for reinvestment and growth in future earnings.
- Investors who are interested in short term earnings prefer to invest in companies with high dividend payout ratio.
- Investors who prefer to have capital growth like to invest in companies with lower dividend payout ratio.
- Mature, stable and large companies usually have higher dividend payout ratio.
- Young and seeking growth have lower or modest dividend payout ratio.

5. VALUATION RATIOS (18)

Dividend pay-out ratio:

Dividend payout ratio = -

- Investors' goal is consistent and/or improving DPR.
- It should not be too high. The earnings should support the payment of dividends. If the company pays high levels of dividends, it may become difficult for it to maintain such levels of dividends if the earnings fall in the future.
- The dividends are not paid from "earnings"; in fact they are paid from the "cash". A company will not be able to pay dividends if it does not have sufficient cash even if it has a high level of earnings.
- DPR compares dividends to the earnings, not to the cash.
- Dividends are paid in cash; therefore, high dividend payout ratio can have implications for the cash management and liquidity of the company.





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<u>6. CASH FLOW RATIOS (1)</u>				
Calculation	Measures			
CFO/Net revenue	Cash generated per dollar of revenue			
CFO/Average total assets	Cash generated from all resources			
CFO/Average shareholders' equity	Cash generated from owner resources			
CFO/Operating income	Cash generating ability of operations			
(CFO-Preferred dividend)/No. of common shares outstanding	Operating cash flow on a per-share basis			
	CASH FLOW RATIOS (Calculation CFO/Net revenue CFO/Average total assets CFO/Average shareholders' equity CFO/Operating income (CFO-Preferred dividend)/No. of common shares outstanding			

<u>6. CASH FLOW RATIOS (2)</u>					
Coverage ratios					
Calculation	Measures				
CFO/Total debt	Financial risk and financial leverage				
(CFO+Interest paid+ Taxes paid)/Interest paid	Ability to meet interest obligations				
CFO/Cash paid for long- term assets	Ability to acquire assets with operating cash flows				
CFO/Cash paid for long- term debt repayment	Ability to pay debts with operating cash flows				
CFO/Dividends paid	Ability to pay dividends with operating cash flows				
CFO/Cash outflows for investing and financing activities	Ability to acquire assets, pay debts, and make distributions to owners				
CFO/ Average current liabilities	Ability to pay off its current liabilities from its operations				
CFO/Average total liabilities or total debt	Ability to repay its liabilities from net cash provided by operating activities.				
	<u>6. CASH FLOW F</u> Calculation CFO/Total debt (CFO+Interest paid+ Taxes paid)/Interest paid CFO/Cash paid for long- term assets CFO/Cash paid for long- term debt repayment CFO/Dividends paid CFO/Cash outflows for investing and financing activities CFO/ Average current liabilities CFO/Average total liabilities or total debt				