Financial Statement Analysis

Gestão Financeira I
Gestão Financeira

Licenciatura
2015-2016

LISBON
SCHOOL OF
ECONOMICS &
MANAGEMENT
UNIVERSIDADE DE LISBOA

Outline

1. Firms' Disclosure of Financial Information
2. The Balance Sheet
3. The Income Statement
4. The Statement of Cash Flows
5. Other Financial Statement Information
6. Financial Statement Analysis

Firms' Disclosure of Financial Information

- Financial statements are accounting reports issued periodically to present past performance and a snapshot of the firm's assets and the financing of those assets
- Investors, financial analysts, managers, and other interested parties such as creditors rely on financial statements to obtain reliable information about a corporation
- Public companies must file financial results with the relevant listing authorities
- The annual report with financial statements must be sent to their shareholders every year

The Balance Sheet

- Also called "Statement of Financial Position"
- Lists the firm's assets and liabilities
- Provides a snapshot of the firm's financial position at a given point in time
- The Balance Sheet Equation
  - The two sides of the balance sheet must balance

The Balance Sheet Equation:

Assets = Liabilities + Shareholders' Equity

The Balance Sheet:Global Conglomerate Corporation Balance Sheet for 2012 and 2011

GLOBAL CONGLOMERATE CORPORATION

Consolidated Balance Sheet
Year Ended December 31 (in $ million)

Assets	2012	2011
Current Assets		
Cash	21.2	19.5
Accounts receivable	18.5	13.2
Inventories	15.3	14.3
Other current assets	2.0	1.0
Total current assets	57.0	48.0
Long-Term Assets		
Land	22.2	20.7
Buildings	36.5	30.5
Equipment	39.7	33.2
Less accumulated depreciation	(18.7)	(17.5)
Net property, plant, and equipment	79.7	66.9
Goodwill and intangible assets	20.0	20.0
Other long-term assets	21.0	14.0
Total long-term assets	120.7	100.9
Total Assets	177.7	148.9

Liabilities and Stockholders' Equity	2012	2011
Current Liabilities		
Accounts payable	29.2	24.5
Notes payable/short-term debt	3.5	3.2
Current maturities of long-term debt	13.3	12.3
Other current liabilities	2.0	4.0
Total current liabilities	48.0	44.0
Long-Term Liabilities		
Long-term debt	99.9	76.3
Capital lease obligations	—	—
Total debt	99.9	76.3
Deferred taxes	7.6	7.4
Other long-term liabilities	—	—
Total long-term liabilities	107.5	83.7
Total Liabilities	155.5	127.7
Stockholders' Equity	22.2	21.2
Total Liabilities and Stockholders' Equity	177.7	148.9

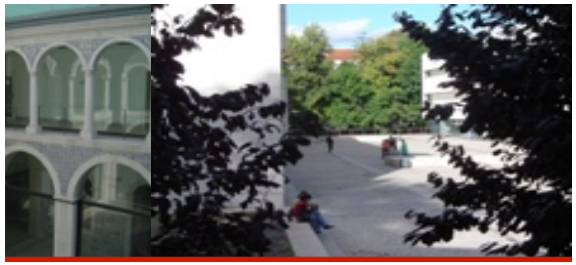
Entidade: .....

BALANÇO EM XX DE YYYYYYY DE 200N (modelo reduzido)

UNIDADE MONETÁRIA (1)

RUBRICAS	NOTAS	DATAS	
		31 XXX N	31 XXX N-1
ACTIVO			
Activo não corrente			
Activos fixos tangíveis			
Propriedades de investimento			
Activos intangíveis			
Investimentos financeiros			
Accionistas/sócios			
Activo corrente			
Inventários			
Clientes			
Adiantamentos a fornecedores			
Estado e outros entes públicos			
Accionistas/sócios			
Outras contas a receber			
Diferimentos			
Outros activos financeiros			
Caixa e depósitos bancários			
Total do activo			
CAPITAL PRÓPRIO E PASSIVO			
Capital próprio			
Capital realizado			
Acções (quotas) próprias			
Outros instrumentos de capital próprio			
Prémios de emissão			
Reservas legais			
Outras reservas			
Resultados transitados			
Excedentes de revalorização			
Outras variações no capital próprio			
Resultado líquido do período			
Total do capital próprio			
Passivo			
Passivo não corrente			
Provisões			
Financiamentos obtidos			
Outras contas a pagar			
Passivo corrente			
Fornecedores			
Adiantamentos de clientes			
Estado e outros entes públicos			
Accionistas/sócios			
Financiamentos obtidos			
Diferimentos			
Outras contas a pagar			
Outros passivos financeiros			
Total do passivo			
Total do capital próprio e do passivo			

(1) - O euro, admitindo-se, em função da dimensão e exigências de relato, a possibilidade de expressão das quantias em milhares de euros



LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

The Balance Sheet

- Current Assets
  - Cash and other marketable securities
    - Short-term, low-risk investments
    - Easily sold and converted to cash
  - Accounts receivable
    - Amounts owed to the firm by customers who have purchased on credit
  - Inventories
    - Raw materials, work-in-progress and finished goods;
  - Other current assets
    - Includes items such as prepaid expenses

- Non-Current Assets
  - Assets that produce benefits for more than one year
  - Reduced through a yearly deduction called **depreciation** according to a schedule that depends on an asset's life
    - Depreciation is not an actual cash expense, but a way of recognizing that fixed assets wear out and become less valuable as they get older
  - The book value of an asset is its acquisition cost less its accumulated depreciation, and less its accumulated impairments
  - Other non-current assets can include such items as property not used in business operations, start-up costs in connection with a new business, trademarks and patents, and property held for sale

The Balance Sheet

- Liabilities
  - Current Liabilities
    - Accounts payable
      - The amounts owed to suppliers purchases made on credit
    - Short-term debt (or notes payable)
      - Loans that must be repaid in the next year
      - Repayment of long-term debt that will occur within the next year
    - Accrual items
      - Items such as salary or taxes that are owed but have not yet been paid, and deferred or unearned revenue

- Liabilities
  - Non-Current Liabilities
    - Long-term debt
      - A loan or debt obligation maturing in more than a year

The Balance Sheet

- Net Working Capital:
  - The capital available in the short term to run the business:

$$\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

The Balance Sheet

- Shareholders' Equity
  - Market Value Versus Book Value
    - Book value of equity
      - An accounting measure of net worth
      - Assets – Liabilities = Equity
      - True value of assets may be different from book value
    - Market capitalization
      - Market price per share times number of shares
      - Does not depend on historical cost of assets

Market versus Book Value

Problem:

- If Global had 3.6 million shares outstanding, and these shares are trading for a price of $14 per share, what is Global's market capitalization?
- Global's market capitalization is:

  (3.6m shares) × ($14/share) = $50.4 million

- How does the market capitalization compare to Global's book value of equity?
- This market capitalization is significantly higher than Global's book value of equity (slide 5):

  $22.2 million

  – Investors are willing to pay 50.4/22.2 = 2.27 times the amount Global's shares are "worth" according to their book value.

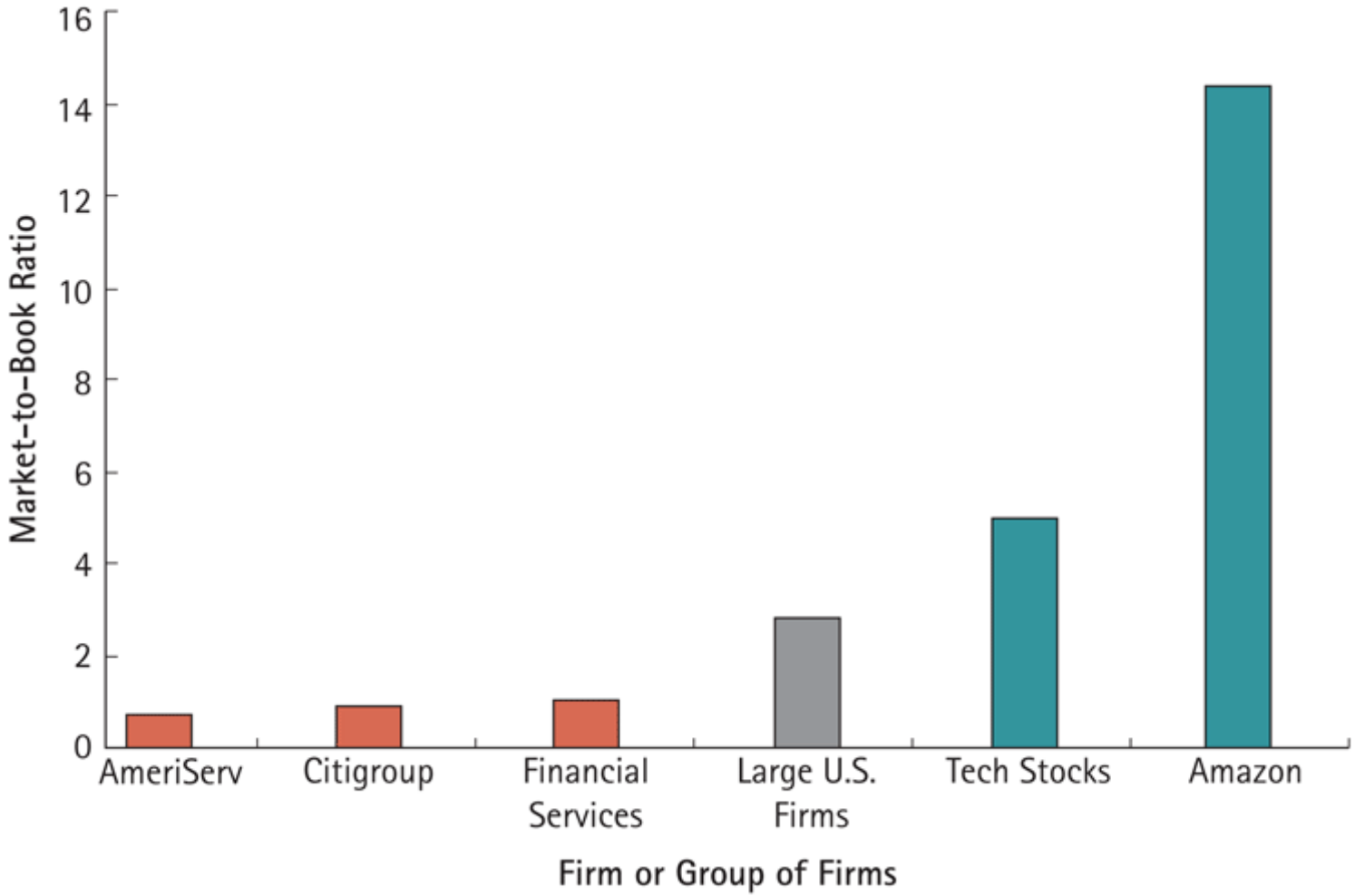
The Balance Sheet

- Market to Book Ratio
  - The ratio of a firm's market capitalization to the book value of shareholders' equity:

$$\text{Market-to-Book Ratio} = \frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$$

  - Also called Price-to-Book ratio
  - Sometimes used to classify firms as value (low M/B) or growth (high M/B)

Market-to-Book Ratios in 2013



The Balance Sheet

- Enterprise Value
  - The value of the underlying business assets, unencumbered by debt and separate from any cash and marketable securities

Enterprise Value = Market Value of Equity + Debt - Cash

  - **Note 1** In a way this would represent the total market value of all operating assets: fixed and intangible assets (non-current)+net working capital, except for cash and its equivalents

Problem:

- In June 2013, H.J. Heinz Co. (HNZ) had a share price of $72.36, a market-to-book ratio of 7.66, a book value of debt of $4,984 million, and cash of $1,100.7 million
- What was Heinz's market capitalization (its market value of equity)?

Share Price:$72.36

Shares outstanding: 320.7 million

Cash: $1.10 billion

Debt (book): $4.98 billion

- Heinz had market capitalization of $72.36 × 320.7 million shares = $23.21 billion
- What was its enterprise value?
- Thus, Heinz's enterprise value was

  23.21+ 4.98 – 1.1 = $27.09 billion

The Income Statement

- The income statement lists the firm's revenues and expenses over a period of time
  - Sometimes called the profit and loss statement, or "P&L"
- The last or "bottom" line of the income statement shows net income
  - A measure of its profitability during the period
  - Also referred to as the firm's earnings

The Income Statement: Global Conglomerate Corporation Balance Sheet for 2012 and 2011

CMVMC

Margem Bruta de Vendas

Resultado Líquido

GLOBAL CONGLOMERATE CORPORATION

Income Statement
Year Ended December 31 (in $ million)

	2012	2011
Total sales	186.7	176.1
Cost of sales	(153.4)	(147.3)
Gross Profit	33.3	28.8
Selling, general, and administrative expenses	(13.5)	(13.0)
Research and development	(8.2)	(7.6)
Depreciation and amortization	(1.2)	(1.1)
Operating Income	10.4	7.1
Other income	—	—
Earnings Before Interest and Taxes (EBIT)	10.4	7.1
Interest income (expense)	(7.7)	(4.6)
Pretax Income	2.7	2.5
Taxes	(0.7)	(0.6)
Net Income	2.0	1.9
Earnings per share:	$0.556	$0.528
Diluted earnings per share:	$0.526	$0.500

The Income Statement

- Earnings Calculations
  - Gross Profit
    - Revenues (Net Sales) - Cost of Sales = Gross Profit
  - Operating Income
    - Gross Profit – Operating Expenses = Operating Income
  - Earnings Before Interest and Taxes (EBIT)
    - Operating Income +/- Other Income = Earnings Before Interest and Taxes
  - Pretax and Net Income
    - EBIT +/- Interest income (Expense) = Pretax Income
    - Pretax Income – Taxes = Net Income

The Income Statement

- Earnings Per Share
  - Net income reported on a per-share basis

$$\text{EPS} = \frac{\text{Net Income}}{\text{Number of Shares Outstanding}}$$

  - Fully diluted EPS increases number of shares by:
    - Stock options issued to employees
      - The right to buy a certain number of shares by a specific date at a specific price
    - Shares issued due to conversion of convertible bonds
      - Convertible bonds are corporate bonds with a provision that gives the bondholder an option to convert each bond into a fixed number of shares of common stock

The Income Statement

- EBITDA
  - Financial analysts often compute a firm's earnings before interest, taxes, depreciation, and amortization, or EBITDA
  - Because depreciation and amortization are not cash flows, this subtotal reflects the cash a firm has earned from operations

The Statement of Cash Flows

- The firm's statement of cash flows uses the information from the income statement and balance sheet to determine:
  - How much cash the firm has generated
  - How that cash has been allocated during a set period
- Cash is important because it is needed to pay bills and maintain operations and is the source of any return of investment for investors

The Statement of Cash Flows

- The statement of cash flows is divided into three sections which roughly correspond to the three major jobs of the financial manager:
  - Operating activities
  - Investment activities
  - Financing activities

The Statement of Cash Flows: Global Conglomerate Corporation Balance Sheet for 2012 and 2011

GLOBAL CONGLOMERATE CORPORATION

Statement of Cash Flows
Year Ended December 31 (in $ million)

	2012	2011
Operating activities		
Net income	2.0	1.9
Depreciation and amortization	1.2	1.1
Other non-cash items	(2.8)	(1.0)
Cash effect of changes in		
Accounts receivable	(5.3)	(0.3)
Accounts payable	4.7	(0.5)
Inventory	(1.0)	(1.0)
Cash from operating activities	**(1.2)**	**0.2**
Investment activities		
Capital expenditures	(14.0)	(4.0)
Acquisitions and other investing activity	(7.0)	(2.0)
Cash from investing activities	**(21.0)**	**(6.0)**
Financing activities		
Dividends paid	(1.0)	(1.0)
Sale (or purchase) of stock	—	—
Increase in borrowing	24.9	5.5
Cash from financing activities	**23.9**	**4.5**
Change in cash and cash equivalents	**1.7**	**(1.3)**

The Statement of Cash Flows

- Use the following guidelines to adjust for changes in working capital:
  - Accounts receivable:
    - Adjust the cash flows by *deducting* the increases in accounts receivable
    - This increase represents additional lending by the firm to its customers and it reduces the cash available to the firm
  - Accounts payable:
    - Similarly, we *add* increases in accounts payable
    - Accounts payable represents borrowing by the firm from its suppliers
    - This borrowing increases the cash available to the firm

The Statement of Cash Flows

- Operating Activity
  - Inventory:
    - Finally, we *deduct* increases to inventory
    - Increases to inventory are not recorded as an expense and do not contribute to net income
    - However, the cost of increasing inventory is a cash expense for the firm and must be deducted
  - We also add depreciation to net income, since it is not a cash outflow

The Statement of Cash Flows

- Investment Activity
  - *Subtract* the actual capital expenditure that the firm made
  - Also deduct other assets purchased or investments made by the firm, such as acquisitions

The Statement of Cash Flows

- Financing Activity
  - The last section of the statement of cash flows shows the cash flows from financing activities
    - Dividends paid
    - Cash received from sale of stock or spent repurchasing its own stock
    - Changes to short-term and long-term borrowing

The Statement of Cash Flows

- Financing Activity
  - Payout Ratio and Retained Earnings

Retained Earnings = Net Income – Dividends

Other Financial Statement Information

- Statement of Changes in Shareholders' Equity:

  Change in shareholders' Equity
  = Retained Earnings + Net Sales of Stock
  = Net Income – Dividends + Sales of Stock
  – Repurchases of stock

- Management Discussion and Analysis
- Notes to the Financial Statements

Financial Statement Analysis

- Investors often use accounting statements to:
  - Compare the firm with itself by analyzing how the firm has changed over time
  - Compare the firm to other similar firms using a common set of financial ratios

Financial Statement Analysis

- Profitability Ratios
  - Gross Margin
    - How much a company earns from each dollar of sales after paying for the items sold

$$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

  - Operating Margin
    - How much a company earns before interest and taxes from each dollar of sales

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Sales}}$$

  - Net Profit Margin
    - The fraction of each dollar in revenues that is available to equity holders after the firm pays interest and taxes

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

  - EBIT Margin

$$\text{EBIT Margin} = \frac{\text{EBIT}}{\text{Sales}}$$

Financial Statement Analysis

- Liquidity Ratios
  - Current Ratio
    - The ratio of current assets to current liabilities

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

  - Quick Ratio
    - The ratio of current assets other than inventory to current liabilities, because inventory is not as liquid as all other current assets

$$\text{Quick Ratio} = \frac{\text{Current Assets - Inventory}}{\text{Current Liabilities}}$$

  - Cash Ratio
    - The most stringent liquidity ratio: $\text{Cash Ratio} = \frac{\text{Cash}}{\text{Current Liabilities}}$

Financial Statement Analysis

- Asset Efficiency
  - Asset Turnover
    - A first broad measure of efficiency is asset turnover

$$\text{Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

  - Fixed Asset Turnover
    - Since total assets include assets that are not directly involved in generating sales, a manager might also look at fixed asset turnover, which measures how efficiently the company generates sales from its investment in fixed assets.

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

Financial Statement Analysis

- Working Capital Ratios
  - Accounts Receivable Days
    - The firm's accounts receivable in terms of the number of days' worth of sales that it represents

$$\text{Accounts Receivable Days} = \frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$$

  - Accounts Payable Days

$$\text{Accounts Payable Days} = \frac{\text{Accounts Payable}}{\text{Average Daily Cost of Sales}}$$

  - Inventory Days

$$\text{Inventory Days} = \frac{\text{Inventory}}{\text{Average Daily Cost of Sales}}$$

  - **Note1 VAT treatment**: the denominator can be adjusted for the VAT.
  - **Note 2** it is possible to consider the numerators at year end, but some people may use the average between beginning and end of year. Be consistent, for interpretation over time.

Financial Statement Analysis

- Working Capital Ratios
  - Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\text{Annual Sales}}{\text{Accounts Receivable}}$$

  - Accounts Payable Turnover

$$\text{Accounts Payable Turnover} = \frac{\text{Annual Cost of Sales}}{\text{Accounts Payable}}$$

  - Inventory Turnover

$$\text{Inventory Turnover} = \frac{\text{Annual Cost of Sales}}{\text{Inventory}}$$

  - **Note** same as note 2 in previous slide.

Financial Statement Analysis

Problem:

- Compute Vodafone's accounts payable days, inventory days, and inventory turnover for 2013, based on the following data from the balance sheet and from the income statement:

  Inventory= 450

  Accounts payable = 16,198

  Cost of goods sold (cost of sales) = 30,505

Financial Statement Analysis

$$\text{Accounts payable days} = \frac{\text{Accounts Payable}}{\text{Average Daily Cost of Goods Sold}} = \frac{16{,}198}{(30{,}505/365)} = 193.81$$

$$\text{Inventory days} = \frac{\text{Inventory}}{\text{Average Daily Cost of Goods Sold}} = \frac{450}{(30{,}505/365)} = 5.38$$

$$\text{Inventory turnover} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}} = \frac{30{,}505}{450} = 67.79$$

Financial Statement Analysis

Interpret:

- Assuming that Vodafone's accounts payable at year-end on its balance sheet is representative of the normal amount during the year, Vodafone is able, on average, to take about 194 days to pay its suppliers
  - (This compares with 77 days you may calculate that it waits on average to be paid - its accounts receivable days)
- Vodafone typically takes 6 days to sell its inventory
- Note that inventory turnover and inventory days tells us the same thing in different ways – if it takes Vodafone about 5/6 days to sell its inventory, then it turns over its inventory about 68 times per 365-day year

Financial Statement Analysis

- Interest Coverage Ratios

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

  - Also known as times interest earned (TIE)
  - TIE = Earnings divided by interest
  - Can define earnings as operating income, EBIT, or EBITDA
  - Assesses how easily a firm is able to cover its interest payments

Financial Statement Analysis

Problem:

- Assess Global's ability to meet its interest obligations by calculating interest coverage ratios using both EBIT and EBITDA.

- Gather the EBIT, depreciation, and amortization and interest expense for each year from Global's Income Statement.

2011: EBIT = 7.1, EBITDA = 7.1+1.1,

Interest expense = 4.6

2012: EBIT = 10.4, EBITDA = 10.4+1.2,

Interest expense = 7.7

Financial Statement Analysis

Solution

In 2011 and 2012, Global had the following interest coverage ratios:

$$\text{2011:}\quad \frac{\text{EBIT}}{\text{Interest}} = \frac{7.1}{4.6} = 1.54 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{7.1 + 1.1}{4.6} = 1.78$$

$$\text{2012:}\quad \frac{\text{EBIT}}{\text{Interest}} = \frac{10.4}{7.7} = 1.35 \quad \text{and} \quad \frac{\text{EBITDA}}{\text{Interest}} = \frac{10.4 + 1.2}{7.7} = 1.51$$

In this case Global's low—and declining—interest coverage could be a source of concern for its creditors.

Financial Statement Analysis

- Leverage (Gearing) Ratios
  - Debt-Equity Ratio
    - The debt-equity ratio is a common ratio used to assess a firm's leverage

$$\text{Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

    - This ratio can be calculated using book or market values
  - Debt-to-Capital Ratio
    - The debt-to-capital ratio calculates the fraction of the firm financed by debt:

$$\text{Debt-to-Capital Ratio} = \frac{\text{Total Debt}}{\text{Total Equity+Total Debt}}$$

Financial Statement Analysis

- Leverage (Gearing) Ratios
  - Net Debt
    - While leverage increases risk to equity holders, firms may also hold cash reserves in order to reduce risk
      - Another useful measure is net debt

$$\text{Net Debt} = \text{Total Debt} - \text{Excess Cash \& Short Term Investments}$$

  - Debt-to-Enterprise Value Ratio

$$\text{Debt-to-Enterprise Value Ratio} = \frac{\text{Net Debt}}{\text{Enterprise Value}}$$

  - Equity Multiplier
    - Total Assets/Book Value of Equity
- **Note**1 In the Total Debt considered above we include short-term debt, long-term debt, pension obligations, preferred shares, and pension obligations. To get net debt you take out Cash and its equivalents
- **Note 2** Many others, such as solvency(E/D), or Debt/EBITDA

Financial Statement Analysis

- Valuation Ratios
  - Analysts and investors use a number of ratios to gauge the market value of the firm.
    - The most important is the firm's **price-earnings ratio (P/E)**
    - The P/E ratio is used to assess whether a stock is over- or under-valued based on the idea that the value of a stock should be proportional to the earnings it can generate

$$\text{P/E Ratio} = \frac{\text{Market Capitalization}}{\text{Net Income}} = \frac{\text{Share Price}}{\text{Earnings per Share}}$$

  - **PEG Ratio**
    - P/E ratios can vary widely across industries and tend to be higher for industries with higher growth rates
    - One way to capture the idea that a higher P/E ratio can be justified by higher expected earnings growth
    - **It is the ratio of the firm's P/E to its expected earnings growth rate**
    - The higher the PEG ratio, the higher the price relative to growth, so some investors avoid companies with PEG ratios over 1

Financial Statement Analysis

Problem:

- Consider the following data from 2013 for Campbell Soup Co. and General Mills, Inc. ($ millions):

	Campbell's Soup Co. (CPB)	General Mills, Inc. (GIS)
Sales	**8,052.0**	**17,774.1**
Operating Income	**1,080.0**	**2,851.8**
Net Income	**458.0**	**1,855.2**
Market Capitalization	**13.371.0**	**31,660.0**
Cash	**333.0**	**741.4**
Debt	**7,106.0**	**15,018.3**

- Compare Campbell's and General Mills' operating margin, net profit margin, P/E ratio, and the ratio of enterprise value to operating income and sales

Financial Statement Analysis

Ratio	Campbell's	General Mills
Operating Margin	1,080/8,052=13.4%	2,851.8/17,774.1 = 16.0%
Net Profit Margin	458/8,052=5.7%	1,855.2/17,774.1 = 10.4%
P/E Ratio	13,371/458 = 29.19	31,660.0/1,855.2 = 17.07
Enterprise Value	13,371.0+7,106.0-333.0 = 20,144.0	31,660.0+15,018.3 – 741.4 = 45,946.9
More examples of ratios: Enterprise Value to Operating Income	*20,144.0/1,080.0 = 18.65*	*45,936.9/2,851.0 = 16.11*
Enterprise Value to Sales	*20,144.0/8,052.0 = 2.50*	*45,936.9/17,774.1 = 2.58*

Financial Statement Analysis

Interpret:

- Note that Campbell's operating and net profit margins are quite a bit lower than General Mills'
- Campbell's had a larger P/E ratio, which can be explained in part by their greater use of leverage as seen later.
  - However, the ratios of enterprise value to sales were almost the same for the two firms

Financial Statement Analysis

- Investment Returns
  - Return on Equity
    - Evaluating the firm's return on investment by comparing its income to its investment

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Book Value of Equity}}$$

  - Return on Assets
    - Evaluating the firm's return on investment by comparing its income to its assets

$$\text{Return on Assets} = \frac{\text{Net Income} + \text{Interest Expense}}{\text{Total Assets}}$$

- **Note** Sometimes you see people computing the ratios based on "end of year" values for BE and TA; sometimes you may see people using average values for the year. Always check and be consistent.

Financial Statement Analysis

- Investment Returns
  - Return on Invested Capital
    - After-tax profit generated by the business, excluding interest, compared to capital raised that has already been deployed

$$\text{Return on Invested Capital} = \frac{\text{EBIT (1- tax rate)}}{\text{Book Value of Equity + Net Debt}}$$

Financial Statement Analysis

- Problem:
  - Assess how Global's ability to use its assets and invested capital effectively has changed in the last year by computing the change in its return on assets and in its return on invested capital.
  - Regarding ROA (using end-of-year values for total assets):

$$\text{ROA}_{2012} = \frac{2.0 + 7.7}{177.5} = 5.5\%$$

$$\text{ROA}_{2011} = \frac{1.9 + 4.6}{148.9} = 4.4\%$$

Financial Statement Analysis

- Regarding ROIC we need to compute EBIT(1-tax rate). So we must calculate the implied tax rate:
  - Because NI=PreTaxIncome(1-tax rate)
  - Tax rate=1-NetIncome/PreTaxIncome
- To compute the invested capital, note that net debt was:

$$\text{Net Debt}_{2011} = 3.2 + 12.3 + 76.3 - 19.5 = 72.3$$

$$\text{Net Debt}_{2012} = 3.5 + 13.3 + 99.9 - 21.2 = 95.5$$

- Finally:

$$\text{ROIC}_{2012} = \frac{10.4 \times \left(1 - \frac{2.0}{2.7}\right)}{22.2 + 95.5} = 6.5\%$$

$$\text{ROIC}_{2011} = \frac{7.1 \times \left(1 - \frac{1.9}{2.5}\right)}{21.2 + 72.3} = 5.8\%$$

Both ratios suggest an overall improvement in the usage of assets and invested capital.

Financial Statement Analysis

- The DuPont Identity
  - This expression says that ROE can be thought of as net income per dollar of sales (profit margin) times the amount of sales per dollar of equity

$$\text{ROE} = \left(\frac{\text{Net Income}}{\text{Total Equity}}\right)\left(\frac{\text{Sales}}{\text{Sales}}\right) = \left(\frac{\text{Net Income}}{\text{Sales}}\right)\left(\frac{\text{Sales}}{\text{Total Equity}}\right)$$

  - This final expression says that ROE is equal to
    - Net income per dollar of sales (profit margin) times
    - Sales per dollar of assets (asset turnover) times
    - Assets per dollar of equity (equity multiplier)

$$\text{ROE} = \left(\frac{\text{Net Income}}{\text{Sales}}\right)\left(\frac{\text{Sales}}{\text{Total Equity}}\right)\left(\frac{\text{Total Assets}}{\text{Total Assets}}\right) = \left(\frac{\text{Net Income}}{\text{Sales}}\right)\left(\frac{\text{Sales}}{\text{Total Assets}}\right)\left(\frac{\text{Total Assets}}{\text{Total Equity}}\right)$$

Financial Statement Analysis

Problem:

- The following table contains information about Deutsche Telekom and France Telecom
- Compute their respective ROEs and then determine how much Deutsche Telekom would need to increase its profit margin in order to match France Telecom's ROE

	Profit Margin	Asset Turnover	Equity Multiplier
Deutsche Telekom	1.02%	0.48	3.07
France Telecom	8.39%	0.47	3.25

Financial Statement Analysis

- We can compute the ROE of each company by multiplying its profit margin, asset turnover, and equity multiplier:
  - Using the DuPont Identity, we have:

ROE Deutsche Telekom = 1.02% × 0.48 × 3.07 = 1.5%

ROE France Telecom = 8.39% × 0.47 × 3.25 = 12.8%

- In order to determine how much Deutsche Telekom would need to increase its profit margin to match France Telecom's ROE, we can set Deutsche Telekom's ROE equal to France Telecom's, keep its turnover and equity multiplier fixed, and solve for the profit margin

12.8% = Profit Margin Deutsche Telekom × 0.48 × 3.07

Profit Margin Deutsche Telekom= 12.8%/1.47 = 8.7%

Financial Statement Analysis: A Summary of KeyFinancial Ratios

Ratio	Formula	Manufacturing	Retail	Service	S&P 500
Profitability Ratios					
Gross Margin	$\frac{\text{Gross Profit}}{\text{Sales}}$	45.3%	33.9%	56.4%	43.3%
Operating Margin	$\frac{\text{Operating Income}}{\text{Sales}}$	21.2%	12.6%	28.2%	24.3%
Net Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$	10.1%	5.5%	12.3%	9.6%
Liquidity Ratios					
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	2.17	1.74	1.75	1.82
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$	1.67	0.84	1.70	1.43
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liabilities}}$	0.88	0.49	0.89	0.70
Efficiency and Working Capital Ratios					
Accounts Receivable Days	$\frac{\text{Accounts Receivable}}{\text{Average Daily Sales}}$	57.66	11.52	61.54	64.36
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Fixed Assets}}$	6.37	5.94	10.17	8.38

Financial Statement Analysis: A Summary of KeyFinancial Ratios

Ratio	Formula	Manufacturing	Retail	Service	S&P 500
Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$	0.91	1.91	0.71	0.84
Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$	6.75	10.80	29.78	11.58
Interest Coverage Ratios					
EBIT/Interest Coverage	$\frac{\text{EBIT}}{\text{Interest Expense}}$	16.35	20.46	15.73	14.25
EBITDA/Interest Coverage	$\frac{\text{EBITDA}}{\text{Interest Expense}}$	20.56	26.79	19.99	18.41
Leverage Ratios					
Book Debt-to-Equity Ratio	$\frac{\text{Total Debt}}{\text{Book Value of Total Equity}}$	83.5%	65.7%	90.9%	90.1%
Market Debt-to-Equity Ratio	$\frac{\text{Total Debt}}{\text{Market Value of Total Equity}}$	27.1%	24.4%	35.7%	40.2%
Debt-to-Capital Ratio	$\frac{\text{Total Debt}}{\text{Total Equity} + \text{Total Debt}}$	37.4%	31.7%	37.2%	39.1%
Debt-to-Enterprise Value	$\frac{\text{Net Debt}}{\text{Enterprise Value}}$	7.9%	10.5%	9.7%	13.1%
Equity Multiplier	$\frac{\text{Total Assets}}{\text{Total Equity}}$	3.98	2.74	3.28	4.18
Operating Returns					
Return on Equity	$\frac{\text{Net Income}}{\text{Book Value of Equity}}$	17.1%	18.8%	16.8%	11.6%
Return on Assets	$\frac{\text{Net Income} + \text{Interest Expense}}{\text{Total Assets}}$	8.4%	9.4%	8.5%	6.9%
Return on Invested Capital (ROIC)	$\frac{\text{EBIT}(1-\text{Tax Rate})}{\text{Book Value of Equity} + \text{Net Debt}}$	13.0%	15.0%	13.3%	11.5%
Valuation Ratios					
Market-to-Book Ratio	$\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$	4.0	4.4	4.2	3.4
Price-to-Earnings Ratio	$\frac{\text{Share Price}}{\text{Earnings per Share}}$	17.2	17.9	20.1	17.5
Enterprise Value Ratios (typical values shown are based on EV/EBITDA)	$\frac{\text{Enterprise Value}}{\text{EBIT or EBITDA or Sales}}$	9.2	9.6	9.5	9.1

Source: Standard and Poors' Compustat.