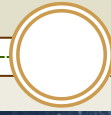
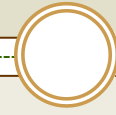


# BUACCFUND 2020 – SESSION 8



# AGENDA



- Financial Statement Analysis

# **Financial Statements and their analysis**



# The Major Financial Statements

- 1. Income statement**
- 2. Balance sheet**
- 3. Statement of cash flows**
- 4. And....**

# SOURCES OF INFORMATION ABOUT COMPANIES

- ❑ Annual reports contain:
  - Footnotes to financial statements
  - Summary of significant accounting policies used
  - Management's discussion and analysis of financial results
  - Report of independent registered public accounting firm



# SOURCES OF INFORMATION ABOUT COMPANIES

- ❑ Annual reports also contain:
  - Management's statement of its responsibility for financial statements
  - Management's report on internal controls
  - Selected comparative financial data for a series of years
  - Narrative information about company

# SOURCES OF INFORMATION ABOUT COMPANIES

## ❑ Reports submitted to SEC

- Annual 10-K - Contains information not included in the annual report to shareholders
- Quarterly 10-Q - Includes unaudited quarterly financial statements
- Periodic 8-K - Notifies investors of any unscheduled material event

# SOURCES OF INFORMATION ABOUT COMPANIES

- ❑ Reports submitted to SEC also include
  - Proxy statements include:
    - ❑ Qualifications of board members
    - ❑ Executive compensation and stock option awards
    - ❑ Audit fee disclosures
  - Information on issuance of common shares or debt
- ❑ SEC filings available on corporate websites and SEC Edgar website



# SOURCES OF INFORMATION ABOUT COMPANIES

- ❑ Other information sources include:
  - Company press releases available on web
  - New coverage available on corporate websites and sites like Google finance
  - Quarterly conference calls of corporations with analysts and investors
    - Announce quarterly results
    - ❑ Discuss new developments
    - ❑ Live and archived webcasts

# SOURCES OF INFORMATION ABOUT COMPANIES

- ❑ Other sources of information
  - Online services
  - General financial press
  - Stockbrokers
  - Private investment services
  - Newsletters

# ACCOUNTING VS. ECONOMIC EARNINGS

- Accounting earnings
  - Earnings of a firm as reported on its income statement
    - Inventory policy (FIFO, LIFO) or depreciation method
- Economic earnings
  - The real flow of cash that firm could pay out to its stockholders without impairing its productive capacity.

# FINANCIAL STATEMENT ANALYSIS

- ❑ Use of financial data to assess some aspect of a company's performance
- ❑ Reasons investors perform analysis
  - To check on their current investments
  - Have beliefs about the company been met?
  - To plan future investments
  - What are future risks and opportunities?



# **Purpose of Financial Statement (ratio) analysis and Comparability Problems**



# OBJECTIVES OF FINANCIAL STATEMENT ANALYSIS

- ❑ Stockholders and creditors use financial statement analysis to:
  - Predict expected returns
  - Assess risks associated with those returns
- ❑ Creditors are concerned about:
  - **Short-term liquidity:** Organization's ability to meet current payments as they become due
    - ❑ Such as interest, wages, and taxes

# OBJECTIVES OF FINANCIAL STATEMENT ANALYSIS

- **Long-term solvency:** Organization's ability to generate enough cash to repay long-term debts as they mature
- Profitability - Profitable operations provide cash to
  - Repay loans
  - Pay dividends
  - Finance growth

# RATIO ANALYSIS

- Ratio = One number issued from the Financial Statement Divided by another number issued from the Financial Statement
- Purpose of Ratio Analysis
  - Understand the factors that affect performance
- Methods
  - Trend analysis
  - Comparative analysis
  - Combination of the two
- Use by External Analysts
  - Important information for investment community
  - Important for credit markets





# COMPARABILITY PROBLEMS

Ratios must have a benchmark, but it can be difficult to compare data of different firms

- **Different inventory valuation**
  - LIFO and FIFO
- **Depreciation problems**
  - Accounting depreciation  $\neq$  Economic depreciation
  - Different depreciation methods at different firms
  - In periods of inflation depreciation is understated in economic terms and real economic income is overstated

# INTERNATIONAL ACCOUNTING CONVENTIONS

- **Reserving practices**
  - Overseas firms have far more discretion in their ability to set aside reserves for future contingencies (or not) than U.S. firms have.
  - This means foreign firms' earnings are more subject to managerial manipulation
- **Depreciation**
  - Foreign firms typically use accelerated depreciation on their financial statements and U.S. firms don't, so foreign firms have lower reported earnings, ceteris paribus.
- **Intangibles**
  - Treatment of intangibles varies widely between countries.



# **Main methods of using ratios**



# EVALUATING FINANCIAL RATIOS

- ❑ Uses of financial ratios typically involve comparisons
  - **Time-series comparisons:** Compare the company's ratios with its own historical ratios
  - **Benchmark comparisons:** Compare the company's financial ratios with benchmarks
  - **Cross-sectional comparisons:** Compare the company's financial ratios with the ratios of other companies or industry averages



# EVALUATING TRENDS AND COMPONENTS OF A BUSINESS

- ❑ **Trend analysis:** Compares financial trends and changes from one year to the next and identifies patterns that have occurred in the past

$$\text{Percentage change 2011 to 2012} = \frac{\text{2012 Amount} - \text{2011 Amount}}{\text{2011 Amount}} \times 100$$

- Important trends include changes in:
  - ❑ Revenues and cost of sales
  - ❑ Administrative expenses and revenues
  - ❑ Current liabilities and long-term debt

# EVALUATING TRENDS AND COMPONENTS OF A BUSINESS

- ❑ Changes in income statement and balance sheet should be examined in conjunction with each other
  - Are increases in inventory associated with increased sales?
  - Are increases in sales associated with increased accounts receivable?

# COMMON-SIZE STATEMENTS

- ❑ Financial statements in which components are expressed as relative percentages (**component percentages**)
- ❑ Income statement percentages based on:
  - ❑ Sales revenue equal to 100%
  - ❑ Expense items are a percentage of revenue
  - ❑ Allows easy comparisons
    - Year to year changes
    - Company to company performance

# COMMON-SIZE STATEMENTS

- Balance sheet percentages based on:
  - Total assets equal to 100%
  - **Component percentages** are expressed as a % of total assets
  - Facilitates year to year comparison
  - Facilitates company to company comparison, adjusted for size differences
  - Facilitates comparisons of changes in balance sheet to changes in income statement - are relationships stable over time



# Main ratios

# GENERAL INSTRUMENT LTD.

	2007	2008	2009	2010
<b>Income statements</b>				
Sales revenue		\$100,000	\$120,000	\$144,000
Cost of goods sold (including depreciation)		55,000	66,000	79,200
Depreciation		15,000	18,000	21,600
Selling and administrative expenses		15,000	18,000	21,600
Operating income		30,000	36,000	43,200
Interest expense		10,500	19,095	34,391
Taxable income		19,500	16,905	8,809
Income tax (40% rate)		7,800	6,762	3,524
Net income		<u>11,700</u>	<u>10,143</u>	<u>5,285</u>
<b>Balance sheets (end of year)</b>				
Cash and marketable securities	\$ 50,000	\$ 60,000	\$ 72,000	\$ 86,400
Accounts receivable	25,000	30,000	36,000	43,200
Inventories	75,000	90,000	108,000	129,600
Net plant and equipment	<u>150,000</u>	<u>180,000</u>	<u>216,000</u>	<u>259,200</u>
Total assets	<u>\$300,000</u>	<u>\$360,000</u>	<u>\$432,000</u>	<u>\$518,400</u>
Accounts payable	\$ 30,000	\$ 36,000	\$ 43,200	\$ 51,840
Short-term debt	45,000	87,300	141,957	214,432
Long-term debt (8% bonds maturing in 2022)	<u>75,000</u>	<u>75,000</u>	<u>75,000</u>	<u>75,000</u>
Total liabilities	<u>\$150,000</u>	<u>\$198,300</u>	<u>\$260,157</u>	<u>\$341,272</u>
Shareholders' equity (1 million shares outstanding)	\$150,000	\$161,700	\$171,843	\$177,128
Other data				
Market price per common share at year-end		\$ 93.60	\$ 61.00	\$ 21.00

# RATIO ANALYSIS I. – LIQUIDITY RATIOS

**1. Current Ratio**  $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\$259,200}{\$266,272} = .97$

**2. Quick (Acid Test)**  $\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} = \frac{\$259,200 - \$129,600}{\$266,272} = .49$

**3. Cash ratio**  $\frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}} = \frac{\$86,400}{\$266,272} = .324$

Industry  
Average

2.0

1.0

0.70

# RATIO ANALYSIS II. – ASSET UTILIZATION RATIOS

<b>1. Total Asset Turnover</b>	$\frac{\text{Sales}}{\text{Avg. Assets}} = \frac{\$144,000}{(\$518,400 + 432,000)/2} = .303$
<b>2. Fixed Asset Turnover</b>	$\frac{\text{Sales}}{\text{Avg. Fixed Assets}} = \frac{\$144,000}{(\$259,200 + 216,000)/2} = .606$
<b>3. Inventory Turnover</b>	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{\$79,200}{(\$129,600 + 108,000)/2} = .485$
<b>4. Average collection period or days sales in receivables</b>	
$\frac{\text{Avg. Accounts Receivables}}{\text{Sales} \times 365} = \frac{(\$43,200 + \$36,000)/2}{\$144,000 \times 365} = 100.4 \text{ days}$	

Industry  
Average

0.40

0.70

0.50

60 days

How will these ratios affect ROA and ROE?



# RATIO ANALYSIS III – MARKET PRICE RATIOS

## 1. Market-to-Book

$$\frac{\text{Price stock}}{\text{Book Value/share}} = \frac{\$21.00}{\$177,128/1,000} = .1186$$

## 2. P/E ratio

$$\frac{\text{Price stock}}{\text{Earnings / share}} = \frac{\$21.00}{\$5,285/1,000} = 3.97$$

## 3. ROE

$$\frac{\text{Net Income}}{\text{Equity at Book Value}} = \frac{\$5,285}{\$177,128} = 2.98\%$$

$$\text{ROE} = \frac{\text{P/B}}{\text{P/E}} = \frac{.1186}{3.97} = 2.98\%$$

Industry  
Average

.69

8.0

8.64%

# Decomposing ROE



# DECOMPOSITION OF ROE

ROE can be decomposed into various ratios that reflect different aspects of a firm's performance:

$$(1) \text{ ROE} = \frac{\text{Net Profit}}{\text{Equity}} \quad (1a) \text{ ROE} = \frac{\text{Net Profit}}{\text{Equity}} \times \frac{\text{Equity}}{\text{Equity}}$$

$$(2) \text{ ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{Equity}}$$

$$(3) \text{ ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Equity}}$$

$$(4) \text{ ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Equity}}$$

$$(5) \text{ ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

# DECOMPOSITION OF ROE

ROE can be decomposed into various ratios that reflect different aspects of a firm's performance:

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

(1)      ×      (2)      ×      (3)      ×      (4)      ×      (5)

Tax      ×      Interest      ×      Margin      ×      Turnover      ×      Leverage  
Burden      Burden



# FINANCIAL RATIOS

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

(1)      ×      (2)      ×      (3)      ×      (4)      ×      (5)

Tax      ×      Interest      ×      Margin      ×      Turnover      ×      Leverage

Burden      Burden

- **Ratio (1) Tax Burden (TB):**

- Measures the percentage of pretax profit that the firm keeps after paying taxes

- **Ratio (2) Interest Burden (IB):**

- Measures the percent of EBIT kept after paying interest expense
- This ratio is 1 if the firm has no debt

$$\frac{\text{Pretax Profit}}{\text{EBIT}} = \frac{\text{EBIT} - \text{Interest Expense}}{\text{EBIT}}$$

# FINANCIAL RATIOS

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

(1)      ×      (2)      ×      (3)      ×      (4)      ×      (5)

Tax      ×      Interest      ×      Margin × Turnover × Leverage

Burden      Burden

- **Ratio (3) Operating Profit Margin**
  - Measures the percentage of sales revenue that remains after subtracting cost of goods sold, selling and administrative expenses and depreciation
- **Ratio (4) Asset Turnover Ratio (ATO)**
  - Measures the efficiency of the firm at generating sales per dollar invested in the assets
  - Note: Margin x ATO = ROA

# FINANCIAL RATIOS

$$\text{ROE} = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

(1)      ×      (2)      ×      (3)      ×      (4)      ×      (5)

Tax      ×      Interest      ×      Margin      ×      Turnover      ×      Leverage

Burden      Burden

- **Ratio (5) Leverage ratio**

- Leverage ratio =  $1 + \text{Debt} / \text{Equity}$
- The leverage ratio is a measure of the percentage of debt in total capitalization.
- Note that it appears that using more debt as a percent of capital will increase ROE, but using more debt also reduces the interest burden ratio