Financial Ratios

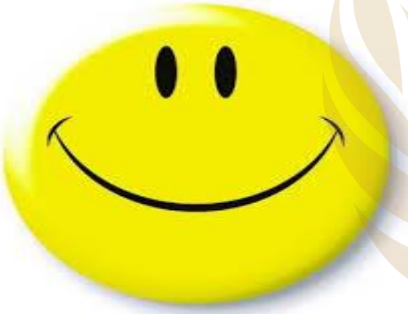
- Liquidity ratios.
- Asset management (Activity ratios).
- Debt ratios.
- Profitability ratios.

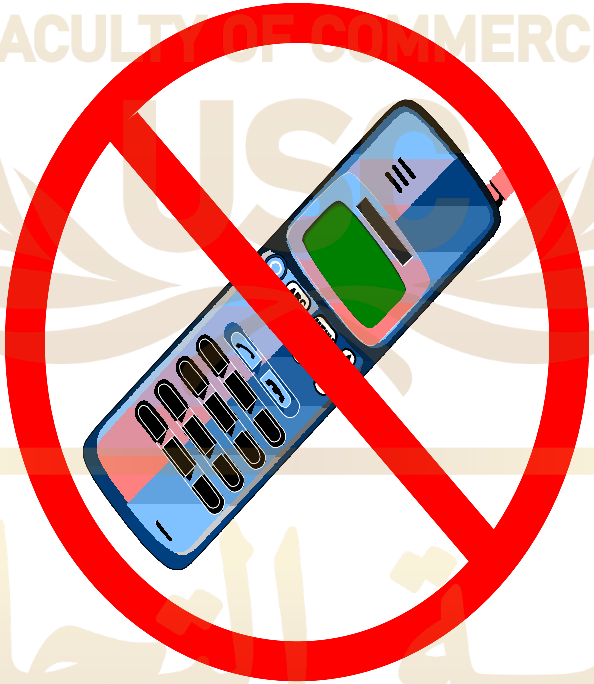
Dr. Mohamed Fawzy El-Bardan

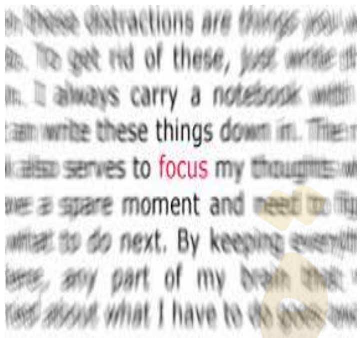
Associate Professor of Business Administration
Faculty of commerce - University of Sadat City
Aassociate Trainer from IBCT

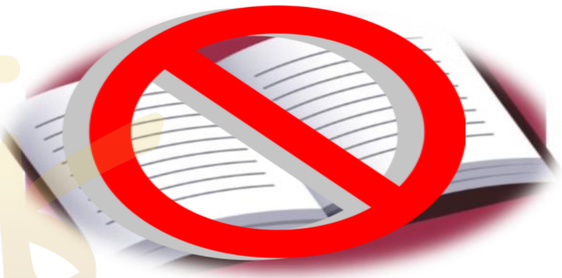
MOHAMMED.FAWZY@COM.USC.EDU.EG

Lecture
Code of ethics









If we divide users of ratios into short-term lenders, long-term lenders, and stockholders, in which ratios would each group be most interested, and for what reasons?

Short-term lenders—Liquidity ratios because their concern is with the firm's ability to pay short-term obligations as they come due.

Long-term lenders—Leverage ratios because they are concerned with the relationship of debt to total assets. They also will examine profitability to insure that interest payments can be made.

Stockholders—Profitability ratios, with secondary consideration given to debt utilization, liquidity, and other ratios. Since stockholders are the ultimate owners of the firm, they are primarily concerned with profits or the return on their investment.

Low Carb Diet Supplement Inc. has two divisions. Division A has a profit of $156,000 on sales of $2,010,000. Division B is able to make only $28,800 on sales of $329,000. Based on the profit margins (returns on sales), which division is superior?

Solution:

Low Carb Diet Supplements

	Division A		Division B	
$\dfrac{\text{Net income}}{\text{Sales}}$	$\dfrac{\$156{,}000}{2{,}010{,}000}$	$= 7.76\%$	$\dfrac{\$28{,}800}{\$329{,}000}$	$= 8.75\%$

Division B is superior.

Database Systems is considering expansion into a new product line. Assets to support expansion will cost $380,000. It is estimated that Database can generate $1,410,000 in annual sales, with an 8 percent profit margin. What would net income and return on assets (investment) be for the year?

$$\text{Net income} = \text{Sales} \times \text{profit margin}$$
$$= \$1{,}410{,}000 \times 0.08$$
$$= \$112{,}800$$

$$\begin{array}{l}\text{Return on assets} \\ \text{(investment)}\end{array} = \frac{\text{Net income}}{\text{Total assets}}$$
$$= \frac{\$112{,}800}{\$380{,}000}$$
$$= 29.7\%$$

Polly Esther Dress Shops Inc. can open a new store that will do an annual sales volume of $837,900. It will turn over its assets 1.9 times per year. The profit margin on sales will be 8 percent. What would net income and return on assets (investment) be for the year?

$$\text{Assets} = \frac{\text{Sales}}{\text{Total asset turnover}}$$

$$= \frac{\$837{,}900}{1.9} = \$441{,}000$$

$$\text{Net income} = \text{Sales} \times \text{Profit Margin}$$

$$= \$837{,}900 \times 0.08 = \$67{,}032$$

$$\text{Return on assets (investment)} = \frac{\text{Net income}}{\text{Total assets}}$$

$$= \frac{\$67{,}032}{\$441{,}000} = 15.2\%$$

Billy’s Crystal Stores Inc. has assets of $5,960,000 and turns over its assets 1.9 times per year. Return on assets is 8 percent. What is the firm’s profit margin (return on sales)?

Billy's Crystal Stores Inc.

$$\text{Sales} = \text{Assets} \times \text{total asset turnover}$$

$$\$11{,}324{,}000 = \$5{,}960{,}000 \times 1.9$$

$$\text{Net income} = \text{Assets} \times \text{Return on assets}$$

$$\$476{,}800 = \$5{,}960{,}000 \times 8\%$$

$$\frac{\text{Net income}}{\text{Sales}} = \$476{,}800/\$11{,}324{,}000 = 4.21\%$$

Exercise 1

The balance sheet for *Stud Clothiers* is shown next. Sales for the year were $2,400,000, with 90 percent of sales sold on credit.

STUD CLOTHIERS
Balance Sheet 20X1

Assets		Liabilities and Equity	
Cash……………………	$ 60,000	Accounts payable…………….	$ 220,000
Accounts receivable…...	240,000	Accrued taxes…………………	30,000
Inventory………………	350,000	Bonds payable (long-term)……………………	150,000
Plant and equipment…...	410,000	Common stock………………..	80,000
		Paid-in capital…………………	200,000
		Retained earnings…………….	380,000
Total assets………..	$1,060,000	Total liabilities and equity…	$1,060,000

Compute the following ratios:

a. Current ratio.

b. Quick ratio.

c. Debt-to-total-assets ratio.

d. Asset turnover.

e. Average collection period.

a. $$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$650,000}{\$250,000}$$

$$= 2.6\text{x}$$

b. $$\text{Quick ratio} = \frac{(\text{Current assets} - \text{inventory})}{\text{Current liabilities}}$$

$$= \frac{\$650,000 - \$350,000}{\$250,000}$$

$$= \frac{\$300,000}{\$250,000}$$

$$= 1.2\text{x}$$

c. $$\text{Debt to total assets} = \frac{\text{Total debt}}{\text{Total assets}}$$

$$= \frac{\$400,000}{\$1,060,000}$$

$$= 37.74\%$$

d. $$\text{Asset turnover} = \frac{\text{Sales}}{\text{Total assets}}$$

$$= \frac{\$2,400,000}{\$1,060,000}$$

$$= 2.26\text{x}$$

e. $$\text{Average collection period} = \frac{\text{Accounts receivable}}{\text{Average daily credit sales}}$$

$$= \$240{,}000 / \frac{(\$2{,}400{,}000 \times 0.90)}{360 \text{ days}}$$

$$= \frac{\$240{,}000}{\$6{,}000 \text{ per day}}$$

$$= 40 \text{ days}$$

Exercise 2

Debt utilization ratios (LO2) The Lancaster Corporation's income statement is given next.

a. What is the times-interest-earned ratio?
b. What would be the fixed-charge-coverage ratio?

LANCASTER CORPORATION

Sales	$246,000
Cost of goods sold	122,000
Gross profit	124,000
Fixed charges (other than interest)	27,500
Income before interest and taxes	96,500
Interest	21,800
Income before taxes	74,700
Taxes (35%)	26,145
Income after taxes	$ 48,555

a. $$\text{Times interested earned} = \frac{\text{Income before interest and taxes}}{\text{Interest}}$$

$$= \frac{\$96,500}{21,800}$$

$$= 4.43\text{x}$$

b. $$\text{Fixed charge coverage} = \frac{\text{Income before fixed charges and taxes}}{\text{Fixed charges}}$$

$$= \frac{\$96,500 + 27,500}{\$21,800 + 27,500}$$

$$= \frac{\$124,000}{\$49,300}$$

$$= 2.52\text{x}$$

Exercise 3

Inventory turnover (LO2) Perez Corporation has the following financial data for the years 20X1 and 20X2:

	20X1	**20X2**
Sales………………………….	$8,000,000	$10,000,000
Cost of goods sold……………	6,000,000	9,000,000
Inventory………………………	800,000	1,000,000

a. Compute inventory turnover based on ratio number 6, Sales/Inventory, for each year.

b. Compute inventory turnover based on an alternative calculation that is used by many financial analysts, Cost of goods sold/Inventory, for each year.

c. What conclusions can you draw from part *a* and part *b*?

Perez Corporation

	20X1	20X2

a. $\dfrac{\text{Sales}}{\text{Inventory}} = \dfrac{\$8,000,000}{8,00,000} = 10\text{x} \qquad \dfrac{\$10,000,000}{1,000,000} = 10\text{x}$

b. $\dfrac{\text{Cost of goods sold}}{\text{Inventory}} = \dfrac{\$6,000,000}{800,000} = 7.5\text{x} \qquad \dfrac{\$9,000,000}{1,000,000} = 9\text{x}$

Based on the sales-to-inventory ratio, the turnover has remained constant at 10x. However, based on the cost of goods sold to inventory ratio, it has improved from 7.5x to 9x.

The latter ratio may be providing a false picture of improvement in this example simply because cost of goods sold has gone up as percentage of sales has (from 75 percent to 90 percent). Inventory is not really turning over any faster.

Exercise 4

Yearly sales (credit)		$420,000
Inventory turnover		7 times
Current liabilities		$80,000
Current ratio		2
Average collection period		36 days
Current assets:	$	
Cash	______	
Accounts receivable	______	
Inventory	______	
Total current assets	______	

Solution:

Inventory	= \$420,000/7
	= \$60,000
Current assets	= 2 × \$80,000
	= \$160,000
Account rec.	= (\$420,000/360) × 36
	= \$42,000
Cash	= \$160,000 – \$60,000 – \$42,000
	= \$ 58,000

Exercise 5

The Griggs Corporation has credit sales of $1,200,000. Given these ratios, fill in the following balance sheet.

Total assets turnover	2.4 times
Cash to total assets	2.0%
Accounts receivable turnover	8.0 times
Inventory turnover	10.0 times
Current ratio	2.0 times
Debt to total assets	61.0%

GRIGGS CORPORATION

Balance Sheet

Assets		Liabilities and Stockholders' Equity	
Cash	______	Current debt..	______
Accounts receivable......	______	Long-term debt	______
Inventory.......................	______	Total debt..	______
Total current assets	______	Equity..	______
Fixed assets	______	Total debt and stockholders' equity	______
Total assets	______		

Griggs Corporation

Sales/Total assets	= 2.4 times
Total assets	= $1,200,000/2.4
Total assets	= $500,000
Cash	= 2% of total assets
Cash	= 2% × $500,000
Cash	= $10,000
Sales/Accounts receivable	= 8 times
Accounts receivable	= $1,200,000/8
Accounts receivable	= $150,000
Sales/Inventory	= 10 times
Inventory	= $1,200,000/10
Inventory	= $120,000

Fixed assets	= Total assets – Current assets
Current asset	= \$10,000 + \$150,000 + \$120,000 = \$280,000
Fixed assets	= \$500,000 – \$280,000 = \$220,000
Current assets/Current debt	= 2
Current debt	= Current assets/2
Current debt	= \$280,000/2
Current debt	= \$140,000

Total debt/Total assets	= 61%
Total debt	= 0.61 × \$500,000
Total debt	= \$305,000
Long-term debt	= Total debt – Current debt
Long-term debt	= \$305,000 – 140,000
Long-term debt	= \$165,000
Equity	= Total assets – Total debt
Equity	= \$500,000 – \$305,000
Equity	= \$195,000

Griggs Corporation
Balance Sheet

Cash	$ 10,000	Current debt	$140,000
A/R......................	150,000	Long-term debt	165,000
Inventory..............	$120,000	Total debt...........	$305,000
Total current assets	280,000		
Fixed assets..........	220,000	Equity	195,000
Total assets	$500,000	Total debt and stockholders' equity	$500,000

Exercise 6

Using ratios to determine account balances (LO2) We are given the following information for the Pettit Corporation.

Sales (credit)	$3,549,000
Cash	179,000
Inventory	911,000
Current liabilities	788,000
Asset turnover	1.40 times
Current ratio	2.95 times
Debt-to-assets ratio	40%
Receivables turnover	7 times

Current assets are composed of cash, marketable securities, accounts receivable, and inventory. Calculate the following balance sheet items.

a. Accounts receivable.

b. Marketable securities.

c. Fixed assets.

d. Long-term debt.

Pettit Corporation

a. Accounts receivable = Sales/Receivable turnover
= $3,549,000/7x
= $507,000

b. Marketable securities = Current assets – (Cash + Accounts rec. + Inventory)

Current assets = Current ratio × Current liabilities
= 2.95 × $788,000
= $2,324,600

Marketable securities = $2,324,600 – ($179,000 + $507,000 + $911,000)
= $2,324,600 – $1,597,000
= $727,600

c. Fixed assets = Total assets – Current assets

Total assets = Sales/Asset turnover

= $3,549,000/1.40x

= $2,535,000

Fixed assets = $2,535,000 – $2,324,600

= $210,400

d. Long-term debt = Total debt – Current liabilities

Total debt = Debt to assets × Total assets

= 40% × $2,535,000

= $1,014,000

Long-term debt = $1,014,000 – $788,000

= $226,000

Exercise 7

The Haines Corp. shows the following financial data for 20X1 and 20X2.

	20X1	**20X2**
Sales	$ 3,230,000	$3,370,000
Cost of goods sold	2,130,000	2,850,000
Gross profit	1,100,000	520,000
Selling & administrative expense	298,000	227,000
Operating profit	802,000	293,000
Interest expense	47,200	51,600
Income before taxes	754,800	241,400
Taxes (35%)	264,180	84,490
Income after taxes	$490,620	$156,910

For each year, compute the following and indicate whether it is increasing or decreasing profitability in 20X2 as indicated by the ratio.

a. Cost of goods sold to sales.

b. Selling and administrative expense to sales.

c. Interest expenses to sales.

	20X1	20X2
a. $\dfrac{\text{Cost of goods sold}}{\text{Sales}}$	$\dfrac{\$2,130,000}{3,230,000} = 65.9\%$	$\dfrac{\$2,850,000}{3,370,000} = 84.6\%$

It is decreasing profitability.

	20X1	20X2
b. $\dfrac{\text{Selling \& admin. expense}}{\text{Sales}}$	$\dfrac{\$298,000}{3,230,000} = 9.2\%$	$\dfrac{\$227,000}{3,370,000} = 6.7\%$

It is increasing profitability.

	20X1	20X2
c. $\dfrac{\text{Interest expense}}{\text{Sales}}$	$\dfrac{\$47,200}{3,230,000} = 1.5\%$	$\dfrac{\$51,600}{3,370,000} = 1.5\%$

It is not changing profitability.


Thank you!