

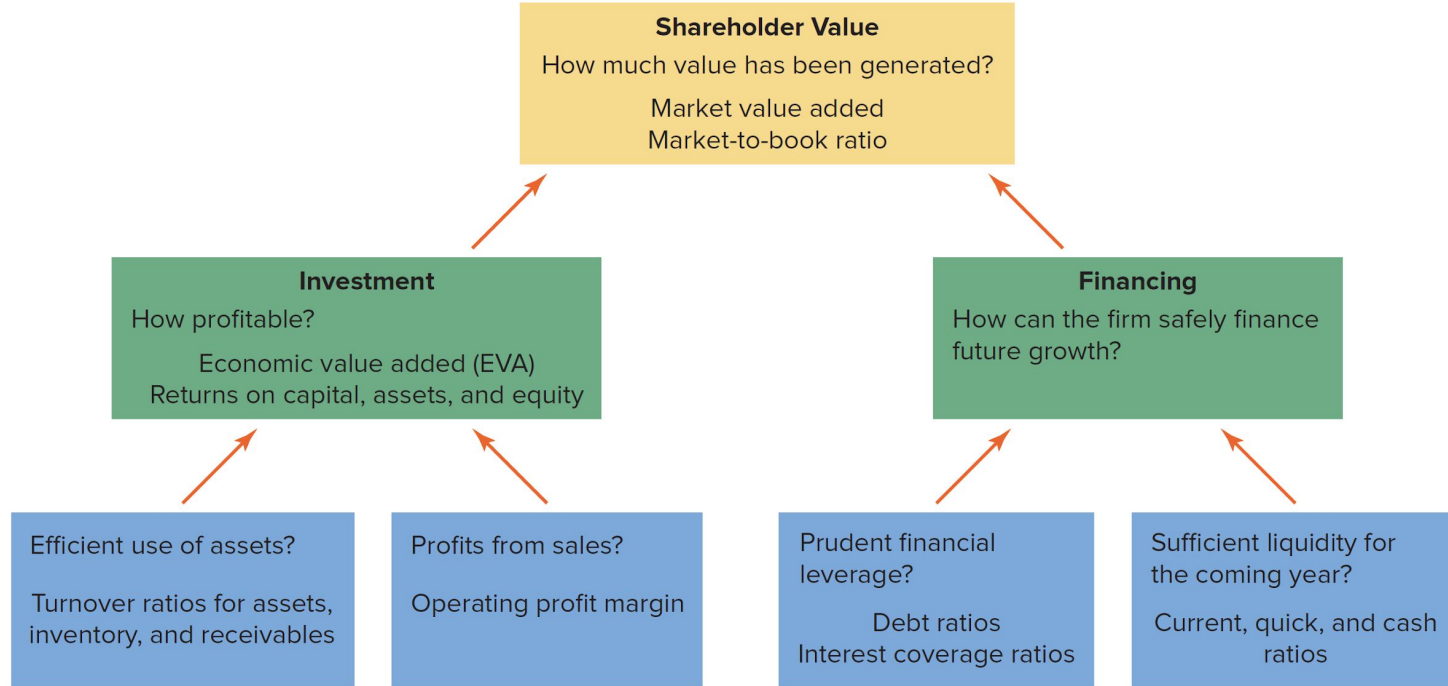
Financial Statement Analysis

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Agenda

1. How Financial Ratios Relate to Shareholder Value
2. Measuring Market Value and Market Value Added
3. Economic Value Added and Accounting Rates of Return
4. Measuring Efficiency
5. The DuPont System
6. Measuring Financial Leverage
7. Measuring Liquidity
8. Interpreting Financial Ratios
9. The Role of Financial Ratios

Understanding Value



Market Value Metrics

- Market Capitalization
 - Total market value of equity, equal to share price times number of shares outstanding
 - Market capitalization = (#shares) × (price per share)
- Market Value Added
 - Market capitalization minus book value of equity
 - MVA = market capitalization - equity
- Market-to-Book Ratio
 - Ratio of market value of equity to book value of equity

Market Value Metrics Illustration

Home Depot's Balance Sheet, Dec 31, 2017 (\$ Millions)

Assets	End of fiscal		Liabilities and shareholders' equity	End of fiscal	
	2017	2016		2017	2016
Current assets					
Cash and marketable securities	3,595	2,538	Current liabilities		
Receivables	1,952	2,029	Debt due for repayment	2,761	1,252
Inventories	12,748	12,549	Accounts payable	11,628	11,212
Other current assets	<u>638</u>	<u>608</u>	Other current liabilities	<u>1,805</u>	<u>1,669</u>
Total current assets	18,933	17,724	Total current liabilities	16,194	14,133
Fixed Assets			Long-term debt	24,267	22,349
Tangible fixed assets			Other long-term liabilities	2,614	2,151
Property, plant, and equipment	41,413	40,426	Total liabilities	43,075	38,633
Less accumulated depreciation	<u>19,339</u>	<u>18,512</u>			
Net tangible fixed assets	22,075	21,914	Shareholders' equity:		
Intangible asset (goodwill)	2,275	2,093	Common stock and other paid-in capital	9,715	9,010
Other assets	1,246	1,235	Retained earnings	39,935	35,517
			Treasury stock	<u>(48,196)</u>	<u>(40,194)</u>
			Total shareholders' equity	1,454	4,333
Total Assets	44,529	42,966	Total liabilities and shareholders' equity	44,529	42,966

Market Value Metrics Illustration

Home Depot's Income Statement (December 31, 2017) \$ Millions

	\$ Million	% of Sales
Net sales	100,904	100.0%
Other income	325	0.3%
Cost of goods sold	66,548	66.0%
Selling, general & administrative expenses	17,864	17.7%
Depreciation	<u>2,062</u>	<u>2.0%</u>
Earnings before interest and income taxes	14,755	14.6%
Interest expense	<u>1,057</u>	<u>1.0%</u>
Taxable income	13,698	13.6%
Taxes	<u>5,068</u>	<u>5.0%</u>
Net income	8,630	8.6%
Allocation of net income		
Dividends	4,212	4.2%
Addition to retained earnings	4,418	4.4%

Market Value Metrics Illustration

Market Capitalization	$\$180.21 \times 1,170 \text{ million shares} = \$222,546 \text{ million}$
Market Value Added	$\$222,546 - \$1,454 = \$221,092 \text{ million}$
Market-to-Book Ratio	$\$222,546 / \$1,454 = 148.3$

Market Value Added Metrics: Known Companies

2017, \$ Millions

Stock	Market Value Added	Market-to-Book Ratio
Apple	782,164	7.15
Microsoft	461,134	5.84
Johnson & Johnson	277,722	3.38
Coca-Cola	202,102	8.59
Walmart	209,010	3.41
Freeport	-5,781	0.85
CBS	-16,858	0.65
AIG	-30,134	0.64
Sprint	24,902	1.37
Bank of America	-65,878	0.80

Compare Coca-Cola and Walmart: Similar MVA, but different Market-to-Book Ratio.

Example

Shares of Notung Cutlery Corp. closed 2018 at \$75 per share. Notung had 14.5 million shares outstanding. The book value of equity was \$610 million. Compute Notung's market capitalization, market value added, and market-to-book ratio.

Example Solution

Market capitalization is $\$75 \times 14.5 \text{ million} = \$1,087.5 \text{ million}$.

Market value added is $\$1,087.5 - \$610 = \$477.5 \text{ million}$.

Market to book is $1,087.5/610 = 1.78$.

You can also calculate book value per share at $\$610/14.5 = \42.07 , and use price per share to calculate market to book: $\$75/\$42.07 = 1.78$.

Example

Locust has 657 million shares outstanding with a market price of \$83 a share.

1. Calculate the company's market value added.
2. Calculate the market-to-book ratio.
3. How much value has the company created for its shareholders as a percent of shareholders' equity, that is, as a percent of the net capital contributed by shareholders?

Current assets	\$42,524	Current liabilities	\$29,755
Long-term assets	<u>46,832</u>	Long-term debt	27,752
		Other liabilities	14,317
		Equity	<u>17,532</u>
Total	\$89,356	Total	\$89,356

Example Solution

1. Market value = 657 mil \times \$83 = \$54,531 million

$$\text{Market value added} = 54,531 - 17,532 = \$36,999 \text{ million}$$

2. Market / book = 54,531 / 17,532 = 3.11
3. The company has increased the value of the equity investment by \$36,999 million, which is 211% of shareholders' equity on the balance sheet.

Market Value Metrics: Drawbacks

1. The market value of the company's shares reflects investors' expectations about future performance.
2. Market values fluctuate because of many risks and events that are outside the financial manager's control. Thus, market values are noisy measures of how well the corporation's management is performing
3. You can't look up the market value of privately owned companies whose shares are not traded. Nor can you observe the market value of divisions or plants that are parts of larger companies.

Economic Value Added (EVA)

- EVA: Net income minus a charge for the cost of capital employed; also called residual income.
- Residual Income: Net dollar return after deducting the cost of capital.
- $EVA = \text{After tax operating income} - (\text{cost of capital} \times \text{total capitalization})$
 - After tax operating income: This is what the firm would earn if it had no debt (100% equity financed)
 - $\text{After tax operating income} = (1 - \text{tax rate}) \times \text{interest expense} + \text{net income}$
 - Alternatively, $\text{After tax operating income} = EBIT \times (1 - \text{tax rate})$
- Home Depot EVA:
 - $\text{Total capitalization} = \$22,349 + \$4,333 = \$26,682$
 - $EVA = [(1 - .37) \times 1,057] + 8,630 - (.082 \times 26,682) = \$7,108 \text{ million}$
 - Alternatively, $EVA = 14755 \times (1 - .37) - (.082 \times 26,682) = \$7,108 \text{ million}$

Example

Roman Holidays Inc. had after-tax operating income of \$30 million on a start-of-year total capitalization of \$188 million. Its cost of capital was 11.5%. What was its EVA?

Example Solution

The cost of capital in dollars is $.115 \times \$188 \text{ million} = \21.62 million .

EVA is $\$30 - \$21.62 = \$8.38 \text{ million}$.

Accounting Rates of Return (ROR)

- Return on Capital (ROC)
 - Net income plus after-tax interest as a percentage of long-term capital
- Return on Assets (ROA)
 - Net income plus after-tax interest as a percentage of total assets
- Return on Equity (ROE)
 - Net income as a percentage of shareholders' equity

Accounting Rates of Return (ROR) for Home Depot

$$\text{Return on capital} = \frac{\text{after-tax operating income}}{\text{total capitalization}} = \frac{9,296}{26,682} = .348$$

$$\text{Return on assets} = \frac{\text{after-tax operating income}}{\text{total assets}} = \frac{9,296}{42,966} = .216$$

$$\text{Return on equity} = \frac{\text{net income}}{\text{equity}} = \frac{8,630}{4,333} = 1.992 \text{ or } 199.2\%$$

EVA and Accounting ROR for Leading Companies

EVA and ROC,2017. Companies are ranked by EVA (dollar values in millions)

	1. After-Tax Interest + Net Income	2. Cost of Capital (WACC), %	3. Total Long-Term Capital	4. EVA = 1 - (2 x 3)	5. Return on Capital (ROC), % (1 ÷ 3)
Apple	52,051	7.1%	203,569	37,638	25.6%
Microsoft	20,626	7.1%	61,619	16,270	33.5%
Johnson & Johnson	17,599	5.7%	112,367	11,160	15.7%
Coca-Cola	8,713	5.8%	44,678	6,144	19.5%
Walmart	14,891	2.8%	206,206	9,076	7.2%
Freeport	1,710	7.1%	52,991	-2,068	3.2%
CBS	1,863	6.1%	55,820	-1,559	3.3%
AIG	457	6.4%	90,107	-5,301	0.5%
Sprint	1,901	5.4%	127,857	-5,054	1.5%
Bank of America	18,370	6.7%	310,587	-2,439	5.9%

Example

What is the difference between after-tax operating income and net income to shareholders? How is after-tax operating income calculated? Why is it useful in calculating EVA, ROC, and ROA?

Example Solution

After-tax operating income is calculated before interest expense. Net income is calculated after interest expense. Financial managers usually start with net income, so they add back after-tax interest to get after-tax operating income. After-tax operating income measures the profitability of the firm's investment and operations. If properly calculated, it is not affected by financing.

Difference among ROE, ROC, and ROA

ROE measures return to equity as net income divided by the book value of equity. ROC and ROA measure the return to all investors, including interest paid as well as net income to shareholders. ROC measures return versus long-term debt and equity. ROA measures return versus total assets.

Example

Here are simplified financial statements for Watervan Corporation:

INCOME STATEMENT (Figures in \$ millions)	
Net sales	\$881
Cost of goods sold	741
Depreciation	31
Earnings before interest and taxes (EBIT)	109
Interest expense	12
Income before tax	97
Taxes	20
Net income	77

Example

Here are simplified financial statements for Watervan Corporation:

BALANCE SHEET (Figures in \$ millions)		
	End of Year	Start of Year
Assets		
Current assets	\$369	\$312
Long-term assets	<u>258</u>	<u>222</u>
Total assets	\$627	\$534
Liabilities and shareholders' equity		
Current liabilities	\$194	\$157
Long-term debt	108	121
Shareholders' equity	<u>325</u>	<u>256</u>
Total liabilities and shareholders' equity	\$627	\$534

Example

The company's cost of capital is 8.5%.

- Calculate Watervan's economic value added (EVA).
- What is the company's return on capital? (Use start-of-year rather than average capital.)
- What is its return on equity? (Use start-of-year rather than average equity.)
- Is the company creating value for its shareholders?

Example Solution

- **EVA = after-tax interest + net income - (cost of capital × total capitalization)**

$$\text{EVA} = (1 - .21) \times 12 + 77 - (.085 \times [256 + 121]) = 54.44$$

- $\text{ROC} = \frac{(1-.21) \times 12 + 77}{256 + 121} = .2294$
- $\text{ROE} = \frac{77}{256} = .3008$
- **Yes. The EVA indicates the firm is producing value in excess of the cost of capital. Thus, it is producing value. The ROC and ROE are also consistent with this conclusion.**

Advantages of EVA

- EVA recognizes that companies need to cover their opportunity costs before they add value.
- EVA makes the cost of capital visible to operating managers. There is a clear target: Earn at least the cost of capital on assets employed.
- A plant or divisional manager can improve EVA by reducing assets that aren't making an adequate contribution to profits.

Disadvantages of EVA

- They show current performance and are not affected by all the other things that move stock market
- We use book values.
 - For example, we ignored the fact that Home Depot has invested large sums in marketing in order to establish its brand name.
 - Older assets may be grossly undervalued in today's market conditions and prices. So a high return on assets indicates that the business has performed well by making profitable investments in the past, but it does not necessarily mean that you could buy the same assets today at their reported book values. Conversely, a low return suggests some poor decisions in the past, but it does not always mean that today the assets could be employed better elsewhere.

Measuring Efficiency: Asset Turnover Ratio

$$\text{Asset turnover ratio} = \frac{\text{Sales}}{\text{Total assets at start of year}}$$

-or-

$$\text{Asset turnover ratio} = \frac{\text{Sales}}{\text{Average total assets}}$$

For Home Depot

$$\text{Asset turnover ratio} = \frac{\text{Sales}}{\text{Total assets at start of year}} = \frac{100,904}{42,966} = 2.35$$

-or-

$$\text{Asset turnover ratio} = \frac{\text{Sales}}{\text{Average total assets}} = \frac{100,904}{(44,529 + 42,966)/2} = 2.31$$

Measuring Efficiency: Inventory Turnover

$$\text{Inventory turnover ratio} = \frac{\text{cost of goods sold}}{\text{inventory at start of year}}$$

$$\text{Inventory turnover ratio} = \frac{66,548}{12,549} = 5.3$$

$$\text{Average days in inventory} = \frac{\text{inventory at start of year}}{\text{cost of goods sold}/365}$$

$$\text{Average days in inventory} = \frac{12,549}{66,548/365} = 69 \text{ days}$$

Measuring Efficiency: Receivables Turnover

$$\text{Receivables Turnover} = \frac{\text{sales}}{\text{receivables at start of year}}$$

$$\text{Receivables Turnover} = \frac{100,904}{2,029} = 49.7$$

$$\text{Average collection period} = \frac{\text{receivables at start of year}}{\text{average daily sales}}$$

$$\text{Average collection period} = \frac{2,029}{100,904/365} = 7.3 \text{ days}$$

Example

The average collection period measures the number of days it takes Home Depot to collect its bills. But Home Depot also delays paying its own bills. Use the information in Balance Sheet and Income Statement to calculate the average number of days that it takes Home Depot to pay its bills. [Like days in inventory, payment delay should be calculated using only direct cost of goods sold—these do not include indirect costs (i.e., selling, general, and administrative).]

Example Solution

Average daily expenses are $66,548/365 = \$182.3$ million. Accounts payable at the start of the year are \$11,212 million. The average payment delay is therefore $11,212/182.3 = 61.5$ days.

Example

1. Chik's Chickens has accounts receivable of \$6,333. Sales for the year were \$9,800. What is its average collection period?
2. Salad Daze maintains an inventory of produce worth \$400. Its total bill for produce over the course of the year was \$73,000. How old on average is the lettuce it serves its customers?
3. In the past year, TVG had revenues of \$3 million, cost of goods sold of \$2.5 million, and depreciation expense of \$200,000. The firm has a single issue of debt outstanding with book value of \$1 million on which it pays an interest rate of 8%. What is the firm's times interest earned ratio?

Example Solution

1. Chik's Chickens has accounts receivable of \$6,333. Sales for the year were \$9,800. What is its average collection period?

Average collection period equals receivables divided by average daily sales:

$$\text{Average collection period} = \frac{6,333}{9,800 / 365} = 236 \text{ days}$$

2. Salad Daze maintains an inventory of produce worth \$400. Its total bill for produce over the course of the year was \$73,000. How old on average is the lettuce it serves its customers?

$$\text{Days sales in inventories} = \frac{400}{73,000 / 365} = 2 \text{ days}$$

3. In the past year, TVG had revenues of \$3 million, cost of goods sold of \$2.5 million, and depreciation expense of \$200,000. The firm has a single issue of debt outstanding with book value of \$1 million on which it pays an interest rate of 8%. What is the firm's times interest earned ratio?

$$\begin{aligned} \text{EBIT} &= \text{revenues} - \text{COGS} - \text{depreciation} \\ &= \$3,000,000 - \$2,500,000 - \$200,000 = \$300,000 \end{aligned}$$

$$\text{Interest} = 8\% \text{ of face value} = \$80,000$$

$$\text{Times interest earned} = \$300,000 / \$80,000 = 3.75$$

The DuPont System

A breakdown of ROE and ROA into component ratios.

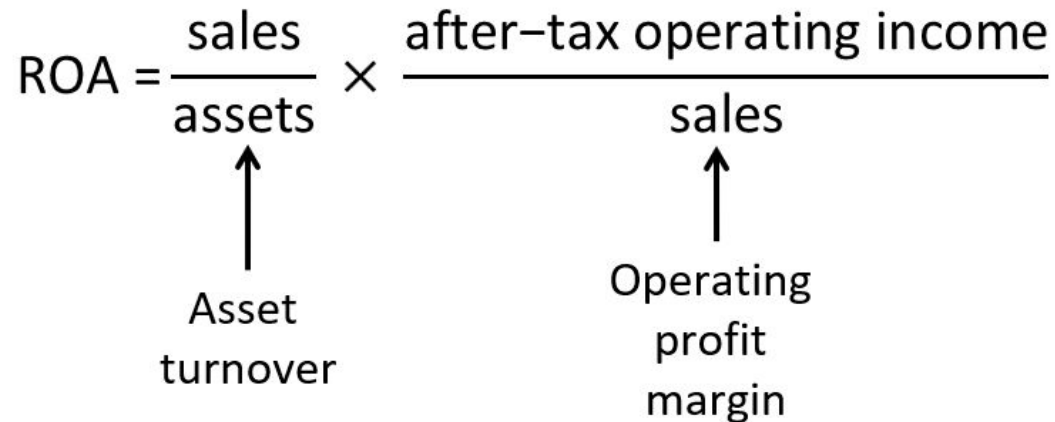
$$\text{Profit margin} = \frac{\text{net income}}{\text{sales}} = \frac{8,630}{100,904} = .086$$

$$\begin{aligned}\text{Operating profit margin} &= \frac{\text{after-tax operating income}}{\text{sales}} \\ &= \frac{8,630 + (1-.37) \times 1,057}{100,904} = .0921\end{aligned}$$

The DuPont System

$$\text{ROA} = \frac{\text{after-tax operating income}}{\text{assets}}$$

$$\text{ROA} = \frac{\text{sales}}{\text{assets}} \times \frac{\text{after-tax operating income}}{\text{sales}}$$



Asset
turnover

Operating
profit
margin

The DuPont System

$$\text{ROA} = \frac{\text{after-tax operating income}}{\text{assets}} = \frac{9,296}{42,966} = .216$$

$$\text{ROA} = \frac{\text{sales}}{\text{assets}} \times \frac{\text{after-tax operating income}}{\text{sales}}$$

$$\text{ROA} = 2.35 \times .0921 = .216$$

What about Mergers?

Firms often seek to improve their profit margins by acquiring a supplier. The idea is to capture the supplier's profit as well as their own. Unfortunately, unless they have some special skill in running the new business, they are likely to find that any gain in profit margin is offset by a decline in asset turnover.

What about Mergers?

A few numbers may help to illustrate this point. Table shows the sales, profits, and assets of Admiral Motors and its components supplier, Diana Corporation. Both earn a 10% return on assets, though Admiral has a lower operating profit margin (20% versus Diana's 25%). Because all of Diana's output goes to Admiral, Admiral's management reasons that it would be better to merge the two companies. That way, the merged company would capture the profit margin on both the auto components and the assembled car.

	Sales	Profits	Assets	Asset Turnover	Profit Margin	ROA
Admiral Motors	\$20	\$4	\$40	0.50	20%	10%
Diana Corp.	8	2	20	0.40	25	10
Diana Motors (the merged firm)	20	6	60	0.33	30	10

What about Mergers?

The bottom row of table shows the effect of the merger. The merged firm does indeed earn the combined profits. Total sales remain at \$20 million, however, because all the components produced by Diana are used within the company. With higher profits and unchanged sales, the profit margin increases. Unfortunately, the asset turnover is reduced by the merger because the merged firm has more assets. This exactly offsets the benefit of the higher profit margin. The return on assets is unchanged.

	Sales	Profits	Assets	Asset Turnover	Profit Margin	ROA
Admiral Motors	\$20	\$4	\$40	0.50	20%	10%
Diana Corp.	8	2	20	0.40	25	10
Diana Motors (the merged firm)	20	6	60	0.33	30	10

Example

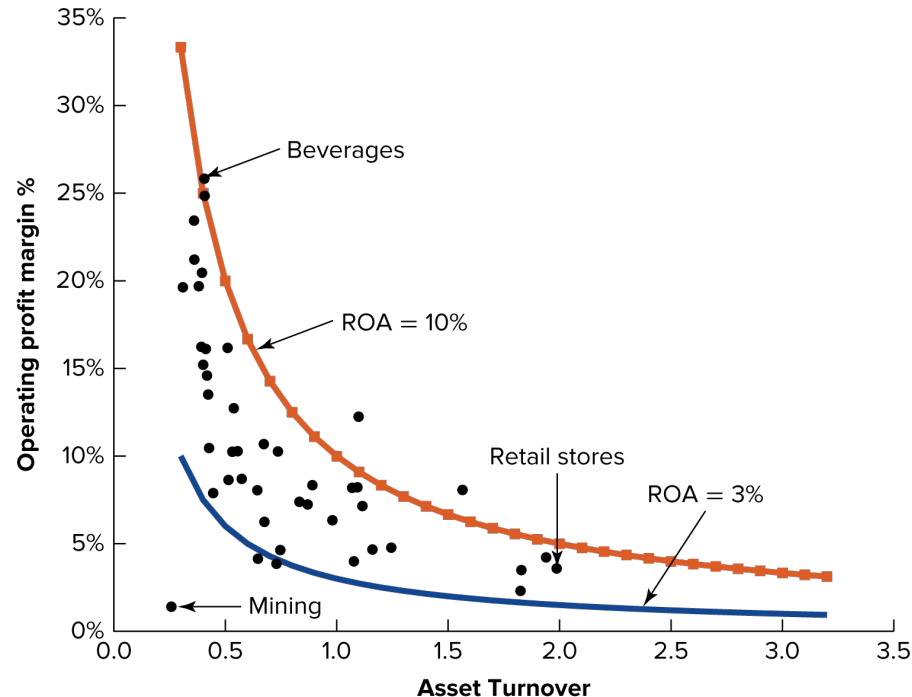
The Du Pont formula seems to suggest that companies with above-average asset turnover ratios generally will have above-average ROAs. Why may this not be so?

Example Solution

In industries with rapid asset turnover, competition forces prices down, reducing profit margins.

The DuPont System

Profit margin and asset turnover for 45 industries



Source: U.S. Census Bureau, Quarterly Report for Manufacturing and Trade Corporations, Third Quarter 2017

Example

Torrid Romance Publishers has total receivables of \$3,000, which represents 20 days' sales. Total assets are \$75,000. The firm's operating profit margin is 5%. Find: (a) the firm's ROA and (b) its asset turnover ratio.

Example Solution

$$\text{Total sales} = \$3,000 \times 365/20 = \$54,750$$

$$\text{Asset turnover ratio} = \$54,750/\$75,000 = 0.73$$

$$\text{ROA} = \text{asset turnover} \times \text{operating profit margin} = 0.73 \times 0.05 = 0.0365 = 3.65\%$$

Measuring Financial Leverage

$$\text{Long-term debt ratio} = \frac{\text{long-term debt}}{\text{long-term debt} + \text{equity}}$$

$$\text{Long-term debt ratio} = \frac{24,267}{24,267 + 1,454} = .94$$

$$\text{Long-term debt-equity ratio} = \frac{\text{long-term debt}}{\text{equity}}$$

$$\text{Long-term debt-equity ratio} = \frac{24,267}{1,454} = 16.7$$

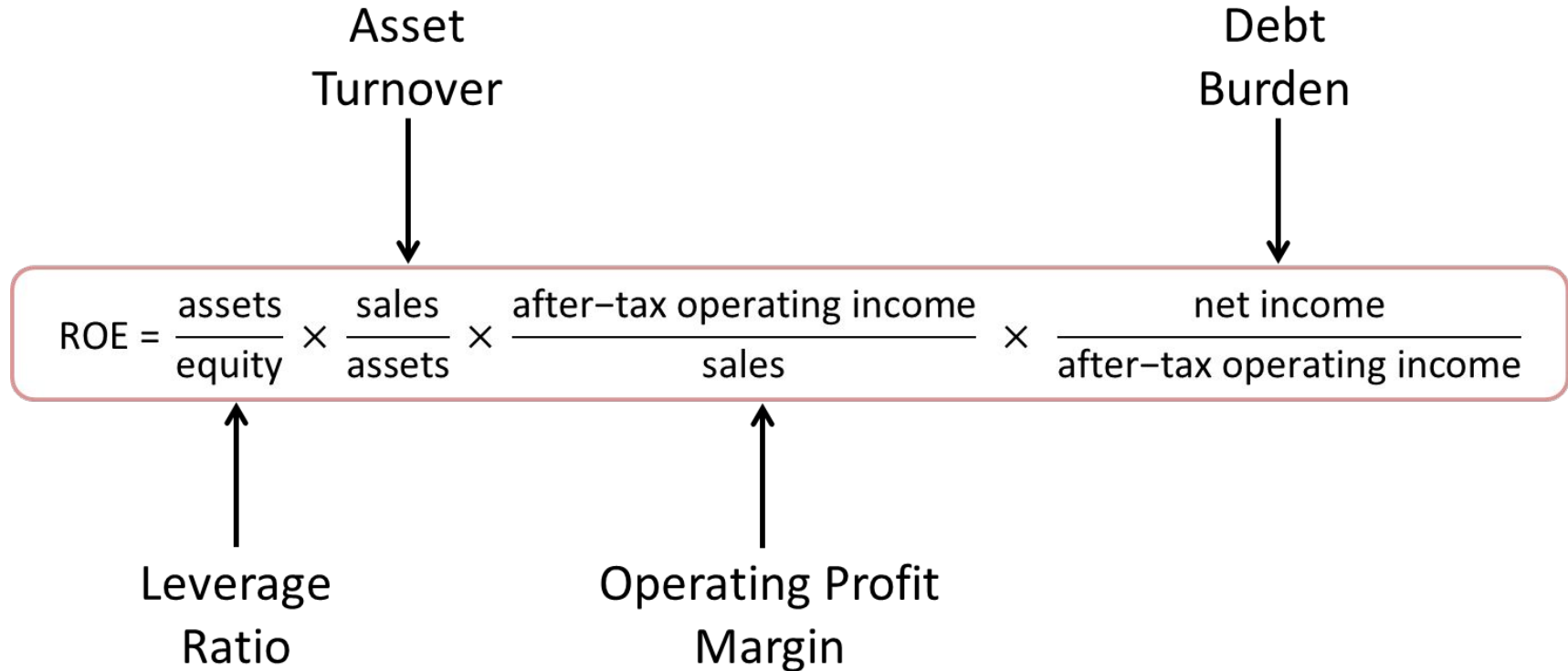
Measuring Financial Leverage

$$\text{Total debt ratio} = \frac{\text{total liabilities}}{\text{total assets}} = \frac{43,075}{44,529} = .97$$

$$\text{Times interest earned} = \frac{\text{EBIT}}{\text{interest payments}} = \frac{14,755}{1,057} = 14.0$$

$$\text{Cash coverage ratio} = \frac{\text{EBIT} + \text{depreciation}}{\text{interest payments}} = \frac{14,755 + 2,062}{1,057} = 15.9$$

Measuring Financial Leverage



Example

Keller Cosmetics maintains an operating profit margin of 5% and asset turnover ratio of 3.

- a. What is its ROA?
- b. If its debt-equity ratio is 1, its interest payments and taxes are each \$8,000, and EBIT is \$20,000, what is its ROE?

Example Solution

$$\text{ROE} = \frac{\text{net income}}{\text{equity}} = \frac{\text{assets}}{\text{equity}} \times \frac{\text{sales}}{\text{assets}} \times \frac{\text{after-tax operating income}}{\text{sales}} \times \frac{\text{net income}}{\text{after-tax operating income}}$$

\uparrow \uparrow \uparrow \uparrow
 leverage assets operating “debt burden”
 ratio turnover profit margin

a. $\text{ROA} = \text{asset turnover} \times \text{operating profit margin} = 3 \times 0.05 = 0.15 = 15\%$

b. Using Equation for ROE, modified to include ROA from above

$$\text{ROE} = \frac{\text{assets}}{\text{equity}} \times \text{ROA} \times \frac{\text{net income}}{\text{Aftertax operating income}}$$

If debt/equity = 1, then debt = equity, so total assets are twice equity.

$$\text{Net income} = \text{EBIT} - \text{interest} - \text{taxes} = 20,000 - 8,000 - 8,000 = 4,000$$

$$\text{Tax rate} = \frac{\text{taxes}}{\text{EBT}} = \frac{8,000}{20,000 - 8,000} = .66 \text{ or } 66\%$$

$$\text{ROE} = \frac{2}{1} \times .15 \times \frac{4,000}{4,000 + 8,000 \times (1 - .66)} = .18 \text{ or } 18\%$$

Example

A firm repays \$10 million face value of outstanding debt and issues \$10 million of new debt with a lower rate of interest. What happens to its long-term debt ratio? What happens to its times interest earned and cash coverage ratios?

Example Solution

Nothing will happen to the long-term debt ratio computed using book values because the face values of the old and new debt are equal. However, times interest earned and cash coverage will increase because the firm will reduce its interest expense.

Example

1. Sappy Syrup has a profit margin below the industry average, but its ROA equals the industry average. How is this possible?
2. Sappy Syrup's ROA equals the industry average, but its ROE exceeds the industry average. How is this possible?

Example Solution

1. The firm must compensate for its below-average profit margin with an above-average turnover ratio. Remember that ROA is the *product* of operating margin \times turnover.
2. If ROA equals the industry average but ROE exceeds the industry average, the firm must have above-average leverage. As long as ROA exceeds the borrowing rate, leverage will increase ROE.

Measuring Liquidity

Net working capital to total assets ratio =

$$\frac{\text{net working capital}}{\text{total assets}} = \frac{18,933 - 16,194}{44,529} = .06$$

Current ratio =

$$\frac{\text{current assets}}{\text{current liabilities}} = \frac{18,933}{16,194} = 1.17$$

Measuring Liquidity

Quick ratio =

$$\frac{\text{cash + marketable securities + receivables}}{\text{current liabilities}} = \frac{3,595 + 1,952}{16,194} = .34$$

Cash ratio =

$$\frac{\text{cash + marketable securities}}{\text{current liabilities}} = \frac{3,595}{16,194} = .22$$

Example

A firm has a long-term debt–equity ratio of .4. Shareholders' equity is \$1 million. Current assets are \$200,000, and the current ratio is 2. The only current liabilities are notes payable. What is the total debt ratio?

Example Solution

$$\text{Long Term Debt-equity ratio} = \frac{\text{long-term debt}}{\text{equity}}$$

$$0.4 = \frac{\text{long-term debt}}{\$1,000,000} \Rightarrow \text{long-term debt} = 0.4 \times \$1,000,000 = \$400,000$$

$$\frac{\text{Current assets}}{\text{Current liabilities}} = 2.0 \text{ and current assets} = \$200,000$$

Therefore, current liabilities = $\$200,000/2 = \$100,000 = \text{notes payable}$

Total liabilities = \$500,000

Total assets = total liabilities + equity = $\$500,000 + \$1,000,000 = \$1,500,000$

Total debt ratio = $\$500,000/\$1,500,000 = 0.33$

Example

1. A firm has \$1.2 million in current assets and \$1 million in current liabilities. If it uses \$.5 million of cash to pay off some of its accounts payable, what will happen to the current ratio? What happens to net working capital?
2. A firm uses cash on hand to pay for additional inventories. What will happen to the current ratio? To the quick ratio?

Example Solution

1. The current ratio starts at $1.2/1.0 = 1.2$. The transaction will reduce current assets to \$.7 million and current liabilities to \$.5 million. The current ratio increases to $.7/.5 = 1.4$. Net working capital is unaffected: Current assets and current liabilities fall by equal amounts.
2. The current ratio is unaffected because the firm merely exchanges one current asset (cash) for another (inventories). However, the quick ratio will fall because inventories are not included among the most liquid assets.

Performance measures

Market value added (\$ million)	market value of equity - book value of equity	\$221,092
Market-to-book ratio	market value of equity - book value of equity	153.1

Profitability Measures

Return on assets (ROA)	after-tax operating income/total assets	21.7%
Return on capital (ROC)	after-tax operating income/(long-term debt + equity)	34.9%
Return on equity (ROE)	net income/equity	199.2%
EVA (\$ millions)	after-tax operating income - cost of capital x capital	\$7,129

Efficiency Measures

Asset turnover	sales/total assets at start of year	2.35
Receivables turnover	sales/receivables at start of year	49.7
Average collection period (days)	receivables at start of year/daily sales	7.3
Inventory turnover	cost of goods sold/inventory at start of year	5.3
Days in inventory	inventories at start of year/daily cost of goods sold	68.8
Profit margin	net income/sales	8.6%
Operating profit margin	after-tax operating income/sales	9.2%

Leverage Measures

Long-term debt ratio	long-term debt/(long-term debt + equity)	0.94
Long-term debt-equity ratio	long-term debt/equity	16.69
Total debt ratio	total liabilities/total assets	0.97
Times interest earned	EBIT/interest payments	14.0
Cash coverage ratio	(EBIT + depreciation)/interest payments	15.9

Liquidity Measures

Net working capital to assets	net working capital/total assets	0.06
Current ratio	current assets/current liabilities	1.17
Quick ratio	liabilities	0.34
Cash ratio	(cash + marketable securities)/current liabilities	0.22

Interpreting Financial Ratios: Competitor Comparisons

	<u>Home Depot</u>	<u>Lowe's</u>
Performance measures		
Market value added (\$ millions)	\$221,092	\$62,677
Market-to-book ratio	153.1	11.7
Profitability Measures		
Return on assets (ROA)	21.7%	11.3%
Return on capital (ROC)	34.9%	18.6%
Return on equity (ROE)	199.2%	53.6%
EVA (\$ millions)	\$7,129	\$1,945
Efficiency Measures		
Asset turnover	2.35	1.99
Receivables turnover	49.7	116.7
Average collection period (days)	7.3	3.1
Inventory turnover	5.3	4.3
Days in inventory	68.8	84.4
Profit margin	8.6%	5.0%
Operating profit margin	9.2%	5.6%
Leverage Measures		
Long-term debt ratio	0.94	0.73
Long-term debt-equity ratio	16.69	2.65
Total debt ratio	0.97	0.73
Times interest earned	14.0	9.4
Cash coverage ratio	15.9	11.7
Liquidity Measures		
Net working capital to assets	0.06	0.02
Current ratio	1.17	1.06
Quick ratio	0.34	0.09
Cash ratio	0.22	0.06

Interpreting Financial Ratios: Industry Comparisons

Selected March 2017 financial ratios for industry groups

	LT Debt Assets	Interest Coverage	Current Ratio	Quick Ratio	Asset Turnover	Profit Margin (%)	Return on Assets (%)	Return on Equity (%)	Payout Ratio
All manufacturing	0.26	3.11	1.26	0.85	0.63	6.76	4.28	13.04	0.54
Food products	0.25	6.87	1.52	0.97	0.91	8.92	8.09	13.05	0.44
Clothing	0.25	7.36	1.17	0.36	2.07	5.49	11.39	22.28	0.23
Aerospace	0.23	5.70	1.15	0.47	0.71	9.29	6.62	24.59	1.01
Chemicals	0.32	2.29	1.12	0.83	0.39	10.11	3.97	13.20	0.66
Pharmaceuticals	0.33	2.18	1.05	0.81	0.32	11.85	3.76	10.52	0.86
Machinery	0.23	2.43	1.32	0.86	0.65	5.03	3.28	6.11	1.22
Electrical	0.21	4.51	1.12	0.74	0.54	7.74	4.19	13.29	0.74
Motor vehicles	0.14	4.50	1.04	0.74	1.25	3.24	4.06	11.70	0.54
Computer and electronic	0.27	3.10	1.21	0.98	0.42	9.83	4.12	18.27	0.27

Example

Even within an industry, there can be a considerable difference in the type of business that companies do, and this shows up in their financial ratios. Here are some data on assets, sales, and income for two companies in 2017. Calculate for each company the asset turnover, the operating profit margin, and the return on assets. In each case, the values are expressed as a percentage of sales. One of these two companies is Walmart. The other is Tiffany. Which one is which? Explain.

	Company A	Company B
Sales	100	100
Assets	40.9	131.1
Net income + after-tax interest	4.25	19.41

Example Solution

Company A is Walmart; it generates a high volume of sales from its assets but earns a relatively low profit margin on these sales. The reverse is true of Tiffany (company B). The two companies differ enormously in their asset turnover and profit margin, but much less in their return on assets.

References

Much of this presentation is derived from the course textbook: Fundamentals of Corporate Finance by Richard A. Brealey, Stewart C. Myers and Alan J. Marcus, 10th edition, McGraw Hill Education.