Ratio Analysis

An important skill for management is the ability to determine what a change or trend in a particular ratio may mean for a business operation in terms of its ability to do things like efficiently collect on accounts, successfully apply for loans, find future investors, or keep stockholders satisfied with the operation's profitability.

To determine how well a company is performing, its current financial ratios need to be compared to previous years' ratios or industry ratios. Ratios fall into four categories:

(1) Liquidity: *working capital, current ratio*, and *quick ratio*—measures a business's ability to pay off short-term debt. A current ratio of 1.50 and a quick ratio of 0.90–1.00 are standard. Any less is cause for concern in most industries.

(2) Turnover (cash conversion): *inventory turnover, A/R turnover, CC/R turnover, A/P turnover,* and *collection periods.* This category is particularly important to any retail, wholesale, or manufacturing operation. In general, the higher the turnover the better—more cash flowing into the business.

(3) Ability to pay all debts (leverage, solvency): *debt ratio (total liabilities/total assets or total liabilities/owners' equity)* and *times-interest earned ratio.* A company with a low debt ratio will find it much easier to obtain loans. A high times-interest earned ratio means that the business easily pays off its interest expenses.

(4) Profitability: *profit margin, return on owners' equity (ROE), return on assets, earnings per share (EPS), asset turnover* – the fundamental goal of a business is to earn a profit so these ratios are the most commonly reported. A higher ROE (how much income is earned for every $1 invested) is more desirable for shareholders.

Remember that for any financial ratio involving an average (like inventory turnover, A/R ratio, etc.) you will need to take the average of a certain account over two time periods, before you can calculate the desired ratio.

Financial leverage refers to the use of **debt financing,** or taking on loans, to increase the return on ownership equity.

Practice Problems

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1. From the information given below calculate the following ratios. Use the formulas provided from your class notes.
    (a) Current ratio for 2009 and 2010
    (b) Quick ratio for 2009 and 2010
    (c) Working capital for 2009 and 2010
    (d) Credit card receivables as a percentage of credit card sales revenue for 2010
    (e) Average collection period for credit card receivables, based on credit card sales revenue for 2010
    (f) Accounts receivable as a percentage of A/R credit sales revenue for 2010
    (g) Average collection period for A/R based on A/R credit sales revenue for 2010
    (h) Total assets to total liabilities for 2009 and 2010
    (i)   Total liabilities to total assets for 2009 and 2010
    (j)   Total liabilities to stockholders' equity for 2009 and 2010
    (k) Gross return on assets for 2010
    (l)   Net return on assets for 2010
    (m) Net income to total sales revenue ratio for 2010
    (n) Number of times interest is earned for 2010
    (o) Food inventory turnover ratio for 2010
    (p) Return on stockholders' equity for 2010

2. Answer the following questions using the financial ratios calculated in exercise 1.
    (a) Are current assets increasing or decreasing relative to current liabilities?
    (b) If the average collection period for accounts receivable in 2009 was 36 days, is the business more or less efficient in A/R collection in 2010?
    (c) If the average collection period for credit card receivables in 2009 was 2 days, has the business become more or less efficient in 2010?
    (d) If the food inventory turnover ratio for 2009 was 26 times, has more or less money been tied up in food inventory in 2010?
    (e) If the business wanted to borrow capital in order to invest in expanding, would it be easier to find a lender in 2010 than 2009?
    (f) If the return on stockholders' equity in 2009 was 28.5%, has profitability improved from 2009 to 2010 from stockholders' point of view?
    (g) Has the business been using financial leverage to the advantage of stockholders over the 2 year period?

Balance Sheets, December 31

Authored by Emily Simpson

	2009	2010
Assets		
Cash	$10,788	$15,200
Credit card receivables	3,642	4,528
Accounts Receivable	5,290	6,160
Food Inventory	14,100	13,700
Prepaid Expenses	2,600	3,000
Land	34,000	34,000
Equipment	63,540	71,200
Building	305,800	317,300
Furnishings	17,480	18,912
Accumulated Depreciation	(114,100)	(123,500)
Total assets	$343,140	$360,500
Liabilities & Stockholders' Equity		
Accounts payable	$17,500	$13,200
Income tax payable	11,800	10,575
Accrued expenses payable	7,040	7,500
Mortgage payable (current)	9,300	10,200
Long-term mortgage payable	186,000	175,800
Common stock	11,000	11,000
Retained earnings	100,500	132,225
Liabilities & Stockholders' Equity	$343,140	$360,500

Condensed Income Statement for the year ending Dec 31, 2010

Sales revenue*		$702,600
Cost of sales	$288,700	
Operating expenses	351,300	
Total operating costs		(640,000)
Operating income, before interest and tax		$62,600
Interest expense		(20,300)
Income before tax		$42,300
Income tax		(10,575)
Net Income		$31,725

*Sales revenue consisted of 27% cash, 63% credit cards, and 10% accounts receivable.

Solutions

1.

	2009	**2010**

a	Current ratio	0.80	1.03
b	Quick ratio	0.43	0.62
c	Working capital	($9,220)	$1,113
d	Credit card receivables as % CCR revenue		0.92%
e	Avg. collection period for credit card rec.		3.4 days
f	Accounts receivable as % A/R revenue		8.15%
g	Avg. collection period for A/R		29.7 days
h	Total Assets/Total Liabilities	1.48	1.66
i	Total Liabilities/Total Assets	0.68	0.60
j	Total Liabilities/Total Equity	2.08	1.52
k	Gross return on assets		17.79%
l	Net return on assets		9.02%
m	Net income to Sales Revenue		4.52%
n	# times interest earned		3.08 times
o	Food inventory turnover		20.8 times
p	Return on stockholders' equity		24.91%

2. (a) Current assets are increasing relative to current liabilities. In 2009 there were $0.80 of current assets per $1 of current liabilities, compared to 2010 which has $1.03 of current assets per $1 of current liabilities.
(b) The business has become more efficient in collection of accounts receivable as the average collection period has decreased from 36 days to 29.7 days.
(c) The business has become less efficient in its collection of credit card receivables since the average collection period has increased from 2 days to 3.4 days.
(d) More money has been tied up in food inventory in 2010. We can tell since the food inventory turnover ratio has decreased from 26 times a year to 20.8 times a year, meaning it takes longer to clear out the inventory.
(e) It would be easier now for the business to borrow capital since the total liability to total equity has decreased from $2.08 of liabilities per $1 equity to $1.52 of liabilities per $1 equity.
(f) Profitability has not improved from the stockholders' point of view since ROE has decreased from 28.5% to 24.91%
(g) No it has not since both ROE and TL/TE has decreased from 2009 to 2010. The business should be taking on more loans to increase the return on stockholders' equity.