The Business Library — **Resource Report #4**

Assessing a Business' Health and Profitability

- **Identify Problems Early**
- **Track Trends**
- **Compare Today's Numbers to Past Numbers**
- **Pinpoint Areas Holding Back Profits**
- **Focus on the Critical Questions**
  - **How much are sales increasing? Profits?**
  - **Is debt at a comfortable level?**
  - **How often is inventory turning over?**
  - **Are overhead costs rising faster than sales?**
  - **How is growth being financed?**
  - **What numbers are off from last month's/last year's?**
- ***Two Case Studies:* How to Analyze Any Business**

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How Healthy Is Your Business?

Back to the fundamentals! That's what this **Resource Report** is all about. It is designed to guide you in analyzing your own business or one you want to acquire or value. Keep it handy for future reference. Use it anytime you want to run a check on your business. It will help you identify problems in their early stages before they have a chance to affect profitability.

The math is a bit tedious but it is not difficult; stay with it, take it one step at a time, and you will collect valuable, insightful information on any business.

To illustrate the analysis and concepts, we will use numbers from an *actual* company — which we have given a fictitious name, Becker Instruments, Inc.

This **Resource Report** is published in two parts. Part One is an overview of *what* the numbers, calculations, and ratios can tell us about a company. Part Two tells us *how* to get the numbers and calculate the ratios we need for our analysis.

Thomas J. Martin, *Author*

Good management overcomes financial problems by adjusting to changes. In contrast, bad management can undermine the best of balance sheets.

How healthy is your company or one you want to acquire or invest in? Are there problems that could grow into crisis proportions? How do you spot them? Can accurate projections be made using historical results? Would the loss of one or a few customers cause serious problems? Can you put a price tag on the business that is meaningful for *today* and *tomorrow?* Do you know where your business has been and where it's headed?

If you know the answer to each question, don't bother reading on — you know all about *trend and comparative analysis,* business computations that answer all those questions and many more.

Steps in Trend Analysis

1. Review the financial statements for the last three to five years *plus* the most recent comparative interim statements.

2. Spread out the financial statements; see sample on page 15. List the key accounts by year, one after the other (e.g., cash, accounts receivable), for the last three to five years — prepare condensed balance sheets, income statements, and sources and uses of funds.

3. Select, compute, and compare the key ratios.

Step #1: The Financial Statements

The first step is to review historical financial statements and current comparative interim statements. Also review the accountant's opinion (or lack of it), as well as all the footnotes to the financial statements, which can tell you a lot about the owners and management, as well as the company's obligations, contingent liabilities, and transactions with related parties, e.g., a rental agreement between the company and its owners.

Since the purpose of trend analysis is to make comparisons, be sure that the statements are, in fact, comparable. For example, if there has been a major reclassification of accounts or a change in the method of accounting, rework the numbers so that you can do a proper comparative analysis. If necessary, ask your accountant to help reclassify the statements.

What to Look For

- Are the company's gross profit and operating profit margins increasing or decreasing?

- Have sales been flat or rising and at what annual rate?

- Does the trend of accounts receivable or inventory (turnover ratios) indicate any problems?

- Has the company's customer base increased and is there good distribution as a percent of sales, e.g., no one customer accounts for more than 10% to 20% of total sales?

- How has the company principally financed its growth — through debt, common stock, or retained earnings? Basically, has the company's debt-to-equity ratio significantly increased over the last few years?

In addition to getting a handle on the business, the five-year trend will reflect the quality of management. Don't be overly concerned about a bad year. Good management overcomes problems by adjusting to new and changed business environments. In contrast, bad management can undermine the best of balance sheets, even when sales are good.

Get the Details

In any analysis, be sure to:

- Get complete financial statements — not condensed versions. Ask for schedules of cost of sales and operating expenses, and all footnotes to the statements.

- Get divisional and consolidating statements if divisions or subsidiaries are involved. These statements will show the results of the company by entity, important breakdowns for further comparison and analysis.

- *Tax return:* Compare and analyze the differences if the accountant's financial statement doesn't conform to the company's tax return.

After identifying the big questions you want answered and compiling all the financial data, you now proceed to *Step #2.*

Step #2: **Spread Out the Statements**

The only way to compare specific accounts is to place them in columns — referred to as a "spread sheet." In addition to listing the numbers, express each number as a percentage of total gross sales. *Example:* See Table 1 below for a comparison of a two-year income statement.

Table 1 — Becker Instruments, Inc.
Comparative Analysis: 2005 vs. 2006

	2005		2006	
(Dollars in Thousands)	Dollar	Percent*	Dollar	Percent*
Gross Sales	$1,825	100.0	$2,150	100.0
Returns and Allowances	-35	-1.9	-105	-4.9
Net Sales	1,790	98.1	2,045	95.1
Cost of Sales	-1,076	-59.0	-1,320	-61.4
Gross Profits	714	39.1	725	33.7
General, Selling, and Administrative	-374	-20.5	-450	-20.9
Operating Profits	340	18.6	275	12.8
Other Income (Expense)	-30	-1.6	-40	-1.9
Pretax Income	310	17.0	235	10.9
Taxes	-140	-7.7	-100	-4.6
Net Income	$ 170	9.3	$ 135	6.3

* All percent computations are as a percent of gross sales.

Overall observation: Net income as a percent of sales declined from 9.3% in 2005 to 6.3% in 2006 — three percentage points.

Find out why: Further analysis shows that the percentage decline was due to the fact that last year's sales increased $325,000 (17.8% above the prior year's sales), while net income declined $35,000 (20.6%). That caused a decline in the

return on sales percentages (net income divided by sales) from 9.3% in 2005 to 6.3% in 2006. You need to determine the reason for the difference of three percentage points. That's next.

Analyze the Differences

If Becker Instruments had maintained its 9.3% after-tax profit margin on sales in 2006, it would have shown a profit of $200,000 (9.3% times 2006 sales of $2.15 million). In fact, the company showed a profit of only $135,000 — 6.3% of sales. We start by analyzing specific expense accounts. Here is select data from the income statement in Table 1 on the prior page:

Table 2: Analyzing Select Income Data

	Percent		The Difference	
	2005	2006	Percent	Amount
Returns and Allowances	1.9	4.9	3.0	$ 64,500
Cost of Sales	59.0	61.4	2.4	51,600
Total	60.9	66.3	5.4	$116,100
		Total Difference		$116,100

Note that in 2006 the total expense difference of $116,100 represented 5.4% of 2006's gross sales ($116,100 divided by $2,150,000).

If these two expense categories had been in line with 2005 percentages, the company would have shown an additional $116,100 in pretax profits. In fact, we can go one step further and adjust the 2006 results to reflect the add-back of $116,100, thereby seeing what the profit *would have been* if these two expenses had been in line with 2005 results. *Here's the math.*

Table 3: Reconstructing the Profits

	2006 Results	Percent of Sales
Reported Pretax Profits	$235,000	10.9
Add Back:		
Returns and Allowances	64,500	3.0
Cost of Sales	51,600	2.4
Adjusted Pretax Profits	$351,100	16.3
Comparison with 2005	$310,000	17.0

As shown, much of the 3% variance between 2005 and 2006 has been accounted for by these two expense categories alone. The reconstructed pretax profit is 16.3% for 2006 sales after adjusting these two categories. This explains most of the decline in profits.

More Questions

Your work is just beginning. Thus far, the spread sheets and analysis have only identified the possible source of the lower profits. In fact, there may no longer be a concern if Becker's management has already identified and taken steps to solve the decline in profits. Or, those two factors (returns and cost of sales) that had such bottom-line impact on the company's 2006 results could have explanations. *For example:*

- The high returns and allowances could be caused by one isolated situation, e.g., a problem with *only* one customer returning goods.
- The high cost of sales could reflect start-up expenses for a new product line or the downtime for installation of new equipment, both of which will positively impact the bottom line in the future.

What to do: Get a detailed breakdown of cost of sales and returns and allowances. Make further percentage comparisons of the specific expenses in these two categories to help you more accurately pinpoint the problem.

Step #3: Select and Compute the Key Ratios

Computing key ratios will help you pinpoint problems and identify specific areas that require further investigation. The following categories of ratios will be explained and illustrated: 1. liquidity ratios, 2. asset mix, 3. leverage ratios, 4. activity ratios, and 5. profitability and growth ratios.

1 — Liquidity Ratios

These ratios measure a company's ability to meet its current obligations, primarily current liabilities such as trade payables, bank debt, and taxes. A high degree of liquidity means that the business not only has a cushion for paying its bills, but also has the reserves to take advantage of unexpected business opportunities.

The principal liquidity calculations are:

- *Cash ratio* — cash divided by current liabilities. Cash includes near-cash securities, such as Treasury Notes, money-market funds, and certificates of deposit. (A cash ratio of 0.25 to 1.00 is considered excellent for most businesses since cash represents 25% of current liabilities due within one year.)
- *Working capital* — current assets less current liabilities.
- *Current ratio* — current assets divided by current liabilities. (A current ratio of 2.0 to 1.0 is considered excellent.)
- *Net quick assets* — cash and receivables less current liabilities.
- *Net quick ratio* — quick assets (cash and receivables) divided by current liabilities. (A net quick ratio of 1.0 to 1.0 is also considered excellent since cash and receivables alone cover *all* liabilities due within one year.)

2 — Asset Mix

It is also helpful to compute over a few years the composition of current assets and their relationship to sales. *Here's an example:*

Let's consider the data for the year ended Dec. 31, 2006 compared with the company's 2003 results, three years earlier. During this period, the company's sales grew from $1 million to $2.1 million — an increase of 110%. The following Table 4 immediately highlights a possible inventory problem.

Table 4: Asset Use Analysis

(Dollars in Thousands)

	2003			2006		
	Amount	% of Total	% of Sales	Amount	% of Total	% of Sales
Cash	$ 30	9	3	$ 55	7	3
Accounts Receivable	110	32	11	200	27	10
Inventory	200	59	20	500	66	24
Totals	$340	100		$755	100	

Analysis: Note that inventory in 2006 represented 66% of the company's current assets — an increase from 59%; basically an inventory investment of $1 now generated $4.20 in sales ($2.1 million sales for 2006 divided by $500,000 inventory). In 2003, the ratio was $5 of sales for every $1 of inventory — *a better ratio.* The reason for this negative change should be identified and whether it is still continuing should be determined.

3 — Leverage Ratios

Leverage ratios tell you the financial risk in a business, i.e., the degree to which debt capital, rather than equity capital and retained earnings, financed operational needs, expansion, and capital expenditures.

Profitable leverage: If a business can earn a return on loans greater than the interest cost of the debt, the company's stockholders capture the spread. This is referred to as *favorable trading on equity,* i.e., earning an additional return without an additional equity investment by the company's stockholders. However, the greater the amount of debt, the smaller the cushion for a mistake. The cost of debt (interest) and principal repayments must be met regardless of the level of the company's year-to-year profitability. In contrast, dividends on common stock do not have to be paid. That's why it's important to compute all leverage ratios, principally the following ones:

- *Total debt to net worth* — total of all current and long-term debt divided by tangible net worth (the company's reported net worth less intangible assets, such as goodwill and deferred financing costs).

- *Funded debt to net worth* — long-term debt divided by tangible net worth.

- *Interest coverage* — historical pretax income and interest expense divided by projected interest expense, including interest on new debt financings.

Axiom: The higher the debt-to-equity (net worth) ratios and the lower the interest coverage, the greater risk to a lender.

Usually, and depending on the industry, a business is considered *highly* leveraged when:

- Total debt represents *more than* two to three times a company's net worth.

- Long-term debt is *more than* net worth, i.e., lenders have more long-term capital in the business than the company's owners. The preferable ratio is 50 to 75 cents of long-term debt for each dollar of net worth.

- Pretax income plus interest expense is *less than* four times interest expense (based on an average of the last three years).

The last point requires some explanation: Since interest expense on debt is tax deductible, lenders look at how much pretax income covers interest expense. Generally, a coverage multiple of four to six times is considered good. *Note:* In defining debt, the present value of lease rentals (really substitutes for debt financings) often is included as long-term debt. If so, the fixed charges would include both interest expense and lease rentals.

Author's note: When the debt-to-equity ratio is seriously out of proportion, e.g., a 4.0 to 1.0 ratio, a lender usually requires collateral, such as a security interest in the company's accounts receivable, inventory, or equipment. In some cases, a blanket lien covering *all* of the company's assets is required.

4 — Activity Ratios

These computations measure how well the business uses its financial resources. The better the use, the less capital it will need.

The principal calculations are:

- *Average collection period* — average of beginning and ending accounts receivable divided by daily credit sales.
- *Inventory turnover* — cost of goods sold divided by cost of inventory (the average of beginning and ending inventory).
- *Asset turnover* — total sales divided by average total assets.
- *Accounts payable turnover* — accounts payable divided by daily purchases of goods and supplies.

Good turnover ratios reduce a company's need for capital *both* today and in future years. *Example:* In the case of inventory, a turnover of 4 on sales of $1 million requires a $250,000 capital investment in inventory. An increase in the turnover to 5 requires only $200,000 of inventory, which frees up $50,000 of capital for other uses.

5 — Profitability and Growth Ratios

Compute the following:

- Compounded annual growth rate of sales.
- Compounded annual growth rate of earnings.
- Return on stockholders' equity.
- Return on total capitalization (long-term debt plus equity).

The period to be analyzed can be three, five, or ten years. Generally, the most recent three years is best to use since the compounded annual growth rate won't reflect earlier low base years. It's much easier to double earnings from $50,000 to $100,000; try it when the business is earning $1 million.

Furthermore, most businesses should show a higher earnings' growth curve

because of breakeven analysis. Fixed costs basically stay fairly constant, while variable costs fluctuate with sales. The more sales, the more profit earned on each dollar spent on sales. If this is not the case, i.e., a company's sales volume is growing at a greater rate than its earnings, the reasons should be investigated.

Also determine the operating and gross profit margins. Analyze the level of the return on sales, as well as the trend over the last three to five years.

Bottom line. Understand your growth — what's propelling it and what is holding it back.

For further analysis of the underlying causes of a company's making or losing money, please see the next page, *Profitability and Gross Profit Margin.* □

Increased sales do not always translate into increased profits.

Exhibit 1

Profitability and Gross Profit Margin

These profitability ratios are all-important to the viability of any business. Without profits and a positive cash flow, a business eventually will cease to exist. *The principal profitability calculations are:*

- Net income as a percent of sales.
- Net income as a percent of net worth.
- Net income as a percent of assets.
- Net income as a percent of total capitalization.

The last calculation needs some explanation. Total capitalization is a company's *total* long-term capital, including long-term debt, preferred stock, and common stockholders' equity. It's an important factor in determining profitable leverage. Profitable trading on equity occurs when a company pays a fixed interest rate, say 10%, for new capital, but then earns 15% on that money. The incremental five percentage points is an additional return for common stockholders.

In addition to the above, two other profitability ratios are important:

- *Gross profit margin* — the company's gross profit as a percent of sales; basically, its profits after deducting cost of goods sold.
- *Operating profit margin* — the profit after deducting both cost of goods sold and general, selling, and administrative expenses (GS&A). This also is referred to as earnings before interest expense and taxes (EBIT).

Gross profit sensitivity. The profitability of a business is very sensitive to its gross profit margin since this represents the profit contribution to GS&A expenses after all costs are deducted for production and delivery. Consequently, in analyzing and valuing a business, compute and understand its gross profit, as well as the operating profit.

Example: If a company has a 40% gross profit margin (60% cost of sales) and a 10% pretax profit margin, a 10% change in cost of sales to 66% (60% plus 6%) will drop the pretax profit margin from 10% to 4% — a 60% decline. *Here's the math in percentages:*

	Actual	Adjusted	Change
Sales	100	100	
Cost of Goods Sold	-60	-66	+10%
Gross Profit Margin	40	34	
GS&A	-30	-30	
Pretax Profit Margin	10	4	-60%

A *simple but compelling example* — an increase of six percentage points in cost of sales affected profits by 60%! □

Spread Sheets: **Please see next page.**

Spread Sheets for Financial Statement Analysis

Historical Income Statement Data

(Dollars in thousands)	2004		2005		2006	
	$	%	$	%	$	%
Net sales						
Cost of goods sold						
General, selling and administrative expense						
Operating income						
Other income (expense)						
Pretax income						
Taxes payable						
Net income						
Return Analysis						
Net income % sales						
Net income % net worth						
Net income % assets						
Gross profit margin						
Operating profit margin						
Turnover Ratios (in days)						
Average collection period						
Inventory turnover						
Accounts payable turnover						

Important Definitions

#1. *Net working capital* is current assets *less* current liabilities. *Current ratio* is current assets *divided* by current liabilities.

#2. *Net quick assets* are cash items and accounts receivable *less* current liabilities. Net quick ratio is cash items and accounts receivable *divided* by current liabilities.

#3. *Average collection period* is accounts receivable *divided* by daily credit sales.

#4. *Inventory turnover* is average inventory (beginning and end-of-year position) *divided* into cost of sales (or into sales).

#5. *Accounts payable aging* (days) is accounts payable *divided* by daily purchases of goods and supplies.

Historical Balance Sheet Data

(Dollars in thousands)	2004	2005	2006
Cash and marketable securities			
Accounts receivable			
Inventories			
Prepaid expenses			
Current assets			
Gross plant and property			
Less: Depreciation			
Net plant and property			
Investments, loans, and advances			
Other assets			
Total assets			
Notes payable			
Accounts payable/Accruals			
Current portion of long-term debt			
Current liabilities			
Long-term debt			
Preferred stock			
Common stock			
Capital surplus			
Retained earnings			
Less: Treasury stock			
Stockholders' equity			
Total liabilities and equity			
Liquidity Ratios			
Net working capital			
Current ratio			
Net quick assets			
Net quick ratio			
Cash ratio			
Leverage Ratios			
Long-term debt as a % of stockholders' equity			

Part Two

Case Study: SDI, Inc.

Ten Indicators of the Health Of a Business

- **Liquidity**
- **Leverage**
- **Profits**
- **Basic Values**
- **Turnover**
- **Cost of Capital**
- **Stock Analysis**
- **Dividends**
- **Dilution**
- **Source and Application of Funds**

Author's Note

If you are unfamiliar with balance sheet, income statement, and cash flow analysis and/or intimidated by mathematical ratios, this case study is for you. It is designed to be a comprehensive, one-stop guide to all the formulas you'll ever need to assess a company's wealth and profitability. Take it step by step and take your time. *The payoff is considerable:* you get detailed, accurate insights into where your company is now and where it's headed.

Note: In computing the ratios in this case study, use the comparative financial data on the next two pages.

Financial Computations

Following are certain balance sheet and income statement data on *SDI, Inc.* for the years ended Dec. 31, 2005 and 2006 that should be used in computing the returns, values, turnovers, and other ratios in this case study.

SDI, Inc.
Comparative Balance Sheet Data

(In Thousands)

	2005	2006
Cash	$ 75	$ 100
Accounts receivable	150	200
Inventory	200	250
Prepaid expenses	55	50
Current assets	$480	$ 600
Gross: Plant and equipment	$320	$ 500
Accumulated depreciation	-100	-200
Net plant and equipment	220	300
Other assets (tangible)	100	100
Total assets	$800	$1,000
Short-term bank notes	$320	$ 100
Accounts payable	80	100
Accruals	50	50
Taxes payable	50	50
Current liabilities	$500	$ 300
8% Five-year notes	$ 0	$ 300
10% Convertible preferred stock	100	100
Common stock ($1 par value)	100	100
Capital surplus	25	25
Retained earnings	75	175
Total liabilities and stockholders' equity	$800	$1,000

SDI, Inc.
Comparative Income Statement Data

(In Thousands)

	2005	2006
Net sales	$1,500	$2,000
Cost of goods sold	900	1,200
Gross profit	$ 600	$ 800
General, selling and administrative expenses	350	450
Operating profit	$ 250	$ 350
Less: Interest expense	30	40
Less: Other items (net)	10	10
Pretax income	$ 210	$ 300
Income taxes	100	140
Net income	$ 110	$ 160
Less: Preferred stock dividend	10	10
Net income available to common stock	$ 100	$ 150

Other Facts —

1. 100,000 shares of common stock are outstanding — $100,000 common stock account divided by the $1 par value on the prior page.

2. Common stock cash dividends paid in 2006 were 50 cents per share, a total of $50,000 (100,000 shares times 50 cents).

3. The preferred dividends are $10,000 annually — 10% times $100,000 preferred stock.

4. The preferred stock of $100,000 is convertible into 10,000 shares of common stock. The par value of the preferred stock is $100.

5. The common stock is valued at a price-earning's (p/e) multiple of 10.

6. Depreciation in 2005 and 2006 was $75,000 and $100,000, respectively.

Ratios and Values to Compute

The following ratios, returns, and values will be computed on the next pages. Please use the comparative financial data on the prior two pages in making the calculations:

1. Liquidity Ratios
   a. Net working capital and current ratio
   b. Net quick assets and net quick ratio
   c. Cash ratio
   d. Percentage composition of current assets

2. Leverage Ratios
   a. Long-term debt percent of tangible net worth
   b. Total debt percent of tangible net worth
   c. Total capitalization — all long-term capital

3. Profitability Ratios
   a. Return on sales
   b. Return on capitalization
   c. Return on assets
   d. Return on common stockholders' equity
   e. Earning power
   f. Gross profit margin
   g. Operating profit margin

4. Basic Values
   a. Par value
   b. Book value
   c. Market value

5. Turnover (Activity) Ratios
   a. Accounts payable
   b. Accounts receivable
   c. Inventory
   d. Assets
   e. Agings

6. Cost of Capital
   a. Debt
   b. Preferred stock
   c. Common stock
   d. Retained earnings

7. Common Stock Analysis
   a. Earnings per share
   b. Price-earning's multiple
   c. Capitalization rate
   d. Yield

8. Dividends
   a. Payout ratio
   b. Yield

9. Dilution
   a. Convertibles
   b. Warrants/stock options

10. Source and Application of Funds

Definition: **Stockholders' Equity = Net Worth = Net Book Value**

Answers To Select Ratios

Using the balance sheet, income statement, and other financial data on pages 18 and 19, here are the computations for the year ended Dec. 31, 2006.

1. Liquidity Ratios

A. Net working capital = Current assets – Current liabilities

$300,000 = $600,000 – $300,000

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

2.0 = $\frac{\$600,000}{\$300,000}$

B. Quick assets = Cash + Accounts receivable

Net quick assets = Quick assets – Current liabilities

$-0- = $300,000 – $300,000

Net quick ratio = $\frac{\text{Quick assets}}{\text{Current liabilities}}$

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

C. Cash ratio = Cash ÷ Current liabilities

0.333 = $100,000 ÷ $300,000

D. Percentage composition of current assets

		%
Cash	$100,000	17
Accounts receivable	200,000	34
Inventory	250,000	41
Prepaid expenses	50,000	8
Current assets	$600,000	100

2. Leverage Ratios

A. Long-term debt = $300,000

Tangible net worth = Stockholders' equity less intangible assets

$$\frac{\text{Long-term debt}}{\text{Tangible net worth}} = \frac{\$300,000}{\$400,000} = 75\%$$

B. $$\frac{\text{Total debt}}{\text{Tangible net worth}} = \frac{\$600,000}{\$400,000} = 150\% \text{ (1.5 to 1.0)}$$

C. Capitalization — all long-term capital

		%
8% Five-year note	$300,000	43
10% Preferred stock	100,000	14
Common stockholders' equity	300,000	43
Total capitalization	$700,000	100

3. Profitability Ratios

A. Return on sales = $\frac{\text{Net income}}{\text{Sales}} = \frac{\$ \ 160,000}{\$2,000,000} = 8\%$

B. Return on capitalization = $\frac{\text{Net income}}{\text{Total capitalization}} = \frac{\$160,000}{\$700,000} = 23\%$

C. Return on assets = $\frac{\text{Net income}}{\text{Assets}} = \frac{\$ \ 160,000}{\$1,000,000} = 16\%$

D. Return on equity = $\frac{\text{Net income - preferred dividend}}{\text{Common stockholders' equity}} = \frac{\$150,000}{\$300,000} = 50\%$

E. Earning power = Operating profit margin times asset turnover

Operating margin = $\frac{\text{Operating profit}}{\text{Sales}} = \frac{\$350,000}{\$2,000,000} = 17.5\%$

Asset turnover = $\frac{\text{Sales}}{\text{Average assets}} = \frac{\$2,000,000}{\$900,000} = 2.2$ times

17.5% x 2.2 = 38.5% earning power on assets

F. Gross profit margin = $\frac{\text{Gross profit}}{\text{Sales}}$

$\frac{\$800,000}{\$2,000,000}$ = 40% Gross profit margin

G. Operating profit margin = $\frac{\text{Operating profit}}{\text{Sales}}$

$\frac{\$350,000}{\$2,000,000}$ = 17.5% Operating profit margin

4. Basic Values

A. Par value = $1 (see balance sheet on page 18). The par value is simply a stated value of common stock for accounting and legal purposes.

B. Book value = $\frac{\text{Common stockholders' equity}}{\text{Shares outstanding}}$

= $\frac{\$300,000}{100,000} = \$3$ per share

Note: You compute the shares outstanding by dividing $1 par value per share into the common stock account of $100,000 on page 18.

C. Market value = Earnings per share (EPS) times the price earning's multiple (p/e)

Earnings per share = $\frac{\text{Net income less preferred stock dividend}}{\text{Shares outstanding}}$

Earnings per share = \$160,000 – \$10,000 = $\frac{\$150,000}{100,000}$ = \$1.50 EPS

Market value = Earnings per share x price-earning's multiple

Market value = \$1.50 x 10 p/e

Market value = \$15 per share

5. Turnover (Activity) Ratios

A. Accounts payable

Days purchases outstanding = $\frac{\text{Accounts payable x 365 days}}{\text{Annual purchases}}$

= $\frac{\$100,000 \text{ x } 365}{\$800,000}$

= 46 Days purchases outstanding

Note: Annual purchases of \$800,000 were assumed to represent two-thirds of the cost of sales of \$1.2 million.

B. Accounts receivable

Average collection period = $\frac{\text{Accounts receivable x 365 days}}{\text{Annual credit sales}}$

= $\frac{\$200,000 \text{ x } 365}{\$2,000,000}$

= 37 Average collection period (in days)

Note: It is assumed that all sales were made on a credit basis.

C. Inventory

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average ending inventory}}$$

$$= \frac{\$1,200,000}{\$225,000}$$

$$= 5.3 \text{ times}$$

D. Assets

$$\text{Turnover} = \frac{\text{Sales}}{\text{Average assets}}$$

$$= \frac{\$2,000,000}{\$900,000}$$

$$= 2.2 \text{ times}$$

E. Agings

For further analysis of select asset accounts, agings should be prepared for accounts receivable, accounts payable, and inventories. Here is an example based on the accounts receivable level of $200,000 as of Dec. 31, 2006:

Days Outstanding	Amount	%
0 - 30 days	$ 92,000	46
31 - 60 days	56,000	28
61 - 90 days	38,000	19
91 days and over	14,000	7
	$200,000	100

6. Cost of Capital

A. Debt: All interest on debt is tax deductible.

B. Preferred stock: All dividends are *not* tax deductible by the corporation but are taxable income to the preferred stockholder at a rate of 15%.

C. Common stock: The cost of capital on common stock dividends is the "opportunity cost" of this money, which could have been used for growth (resulting in increased net income and earnings per share). This cost

should then be compared to the stockholders' use and return on the dividends received less the taxes they paid on the dividends.

There is also an added cost of capital when new shares of common stock are issued and sold by the corporation. This cost reflects itself in potential dilution of earnings per share, book value per share, and the percentage of ownership held by each stockholder. Basically, the corporation's net income and total value must now be shared with the stockholders who acquired the new shares.

D. Retained earnings: This account represents the accumulated earnings and losses retained in the business. The use of and return on this capital retained in the business is compared to the use and return by the corporation's stockholders. If the corporation can earn more on the capital than its stockholders can, earnings should be retained.

7. Common Stock Analysis

A. Earnings per share: Total net income available to common stockholders divided by the number of shares outstanding. (See top of page 24.)

B. Price-earning's multiple: The price of the common stock divided by the earnings per share. (See top of page 24.)

C. Capitalization rate: This is the reciprocal of the price-earning's multiple, which is assumed to be 10.

$$\text{Capitalization rate} = \frac{1}{10 \text{ p/e}}$$

$$\text{Capitalization rate} = 10\%$$

D. Yield: Dividends paid per share divided by the market value.

$$\text{Yield} = \frac{\text{Dividends per share}}{\text{Price per share}}$$

$$\text{Yield} = \frac{\$0.50}{\$15.00} = 3.33\%$$

8. Dividends

A. Payout ratio: The percent of dividends paid out to common stockholders.

$$\text{Payout ratio} = \frac{\text{Total common stock dividends paid}}{\text{Total net income available to common stockholders}}$$

$$\text{Payout ratio} = \frac{\$\ 50{,}000}{\$150{,}000}$$

$$\text{Payout ratio} = 33.3\%$$

B. Yield: See prior page.

9. Dilution

A. Convertible preferred: The par value of the preferred stock is $100 and it is convertible into 10 shares of common stock. There are 1,000 preferred shares outstanding ($100,000 total preferred stock divided by the $100 par value).

Since each share of preferred stock is convertible into 10 shares of common stock, the potential dilution is 10,000 shares (1,000 preferred times 10 shares of common stock). If all of the preferred stock was converted into 10,000 shares of common stock, 110,000 shares of common stock would be outstanding. Thus, the potential dilution to the company's common stockholders would be 9.1%, computed as follows.

$$\text{Percent dilution} = \frac{\text{Shares to be issued}}{\text{Shares outstanding after conversion}}$$

$$\text{Percent dilution} = \frac{10{,}000}{100{,}000 + 10{,}000} = 9.1\%$$

Important: If the preferred stock is converted into common stock, earnings per share and the market price of the common stock also must be adjusted. Now, the net income available to common stockholders is $160,000, since the annual $10,000 preferred stock dividend no longer has to be paid. Thus, the new EPS is computed as follows:

$$\text{EPS} = \frac{\$160{,}000}{110{,}000} = \$1.45$$

Dilution: The conversion of the preferred stock into common stock represented real dilution to the common stockholders — 5 cents per share. As illustrated on page 24, the EPS was $1.50 and the price per share was $15, assuming a p/e of 10. However, the company now *doesn't* have a contractual preferred dividend to pay nor does it have to concern itself with eventually redeeming (paying back) the $100,000 preferred stock.

B. Warrants/stock options: A warrant or other stock option carries the right to purchase a certain number of shares of common stock at a certain price for a certain period. These equity-type instruments (like the convertible preferred) are issued for financing purposes or as employee incentives. The same dilution mathematics described directly above are applicable to any option to purchase a company's common stock.

10. Source and Application of Funds

A source and application of funds schedule reconciles the balance sheet and the income and cash flow statement. It reflects where capital came from (internal and external sources) and how it was used by the company. Using the financial statements on pages 18 and 19, the following is its source and application of funds for the year ended Dec. 31, 2006.

Sources of Capital:	
Net income	$160,000
Depreciation	100,000
8% Five-year notes	300,000
Total sources	$560,000
Uses of Cash:	
Capital expenditures	$180,000
Cash dividends:	
Preferred stock	10,000
Common stock	50,000
Increase in working capital	320,000
Total uses	$560,000

The net working capital position increased from a negative position of $20,000 in 2005 to a positive position of $300,000 in 2006, an increase of $320,000. Note that

the $320,000 can be further analyzed to reflect the specific changes in the net working capital category. Here's the breakdown

Increase in cash	$ 25,000
Increase in accounts receivable	50,000
Increase in inventory	50,000
Decrease in prepaid expenses	-5,000
Decrease in notes payable	220,000
Increase in accounts payable	-20,000
Net change in working capital	$320,000

* * *

We know that working through these ratios can be time-consuming. We also know that working with balance sheets is not nearly as much fun as working in your real business. But this is time well-spent. There's gold in the numbers you are calculating. Keep in mind that these are the same ratios professional consultants use to diagnose problems in companies and get them back on track to profitability.

Trouble in a single area — slow-moving inventory or a slow-paying customer — can slow cash flow and dampen profits. But pinpoint the problem early enough and you can fix it before it causes real damage.

Our advice: Apply these ratios on a routine, regular basis to see where your company is headed before it's too late to turn it around. □

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Tricia Walsh, Publishing Director
The Business Library
16 Fox Lane, Locust Valley, NY 11560
516-671-8050 • Fax: 516-671-8077
E-mail: triciawalsh@yourbusinesslibrary.com

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