

FINANCIAL STATEMENTS AND RATIO ANALYSIS

In following we will be demonstrating the use of ratios to help examine the health of a firm.

Ratios allow managers evaluate to a firm's financial statements in order to point out the strengths and weaknesses of the firm, and the areas that need improvement.

Financial statement analysis involves comparing a firm's performance with that of other firms in the same industry, as well as evaluating trends in a firm's position over time.

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Analysis of the financial statements helps the financial manager identify problems before they become a crisis.

These problems may be life threatening to the company (such as realizing that the company will not be able to pay its bills in the upcoming months) or simple planning issues (such as identifying that company's the equipment is aging and that funds need to be set aside to replace this equipment in the next few years).

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Objectives:

Explain why managers, investors, and potential creditors need ratios to help them interpret financial statements.

Financial statements help predict the firm's future earnings and dividends. Managers, investors, and potential creditors use the ratios to make investment and financial decisions.

Distinguish between time series analysis and cross sectional analysis.

Time series analysis is used to compare a firm's current performance to its previous performance across different time periods. Cross sectional analysis is used to compare the ratios of one firm to those of similar firms.

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Compute the most frequently used financial ratios.

Most ratios analyze a firm's use of inventory, accounts receivable, accounts payable, fixed assets, and debt. Profitability, liquidity, activity, financing, and market ratios are the most commonly used financial ratio categories.

Perform an analysis of a firm using financial ratios.

After all of the ratios have been computed, the analyst reviews each of them in each category as a.g.

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The most common tools used to track and measure a company's financial health are the company's balance sheet and the income statement and cash-flow statement.

The financial health of a company is determined by not only the values shown on the financial statements but also the relationships among these values.

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These relationships are known as financial ratios.

Good construction financial management includes monitoring the critical financial ratios and comparing them to other companies in the industry.

We look at ratios that are commonly used to measure the performance of a company, regardless of its industrial segment. Where necessary these ratios are adapted to the unique characteristics found in the construction industry.

We also look at recommended target ratios for the construction industry.

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The Goals of Financial Analysis

Analysis of financial statements is done by dividing one category or group of categories on the company's financial statement by another category or group of categories on the company's financial statement. By making this calculation we create a ratio that can be compared to other companies within the industry.

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Company insiders, as well as outside investors, analysts and competitors, perform financial analysis to gain knowledge of the firm's position in the industry.

Both insiders and outsiders want to identify the firm's strengths and weaknesses.

The firm will want to identify strengths so they can be enhanced to their full potential. Alternative, problem areas will be identified so that managers can make the corrections necessary to improve them.

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There are two types of ratio comparison: cross sectional and time series. Both types of analysis are important and both should be used.

- **Cross sectional analysis** compares a firm's financial ratios to these of its peers at the same point in time. It involves comparing the firm's ratios to those of an industry leader, peer group, of the industry average. The most common method of classifying firms by industry is the Standard Industry Classification (SIC) Code.
- **Time series analysis** is the evaluation of a firm's performance over time. Time series allows the firm to compare its current performance to its past performance and look for trends.

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- ***Single-family residential*** includes construction of new single-family homes and remodels, repairs, and additions to single-family homes performed by construction companies. Single-family residential excludes the construction of single-family homes built by speculative builders and developers.
- ***Commercial construction*** includes the construction of multifamily housing, hotels, industrial buildings, warehouses, by construction companies. Commercial construction excludes construction projects built by developers.

Other commercial construction data on more specific classes of commercial construction are available from Dun&Bradstreet, Inc., as well as other sources.

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- **Heavy and highway** construction includes the construction of streets, and highways elevated highways, bridges, tunnels, water lines, sewers, pipelines, communications, and power lines. Data on specific classes of heavy and highway construction are available from Dun&Bradstreet, Inc., as well as other sources.
- **Specialty trades** includes most subcontractor work and includes the following specific classes of specialty trades: plumbing, heating, and air-conditioning; paint and paper hanging; electrical and other stone work; masonry, stone setting, and other stone work; plastering, drywall, acoustical, insulation work, terrazzo, tile, marble and mosaic work; carpentry work; floor laying and other floor work not elsewhere classified; roofing, siding, and sheet metal work; concrete work; water well drilling, structural steel erection; glass and glazing work; excavation work; wrecking and demolition work; installing or erecting building equipment not elsewhere classified; and specialty trade not elsewhere classified.

Data on specific classes of specialty trades are available from Dun&Bradstreet, Inc., as well as other sources.

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Common-sized Financial Statements

Common-sized financial statements present each entry as a ratio, with the denominator either being total assets or total sales.

A common-sized balance sheet is prepared by dividing all balance sheet items by total assets. It provides the firm with a view of how the assets of the firm were financed, and which types of assets (short-term or long-term) dominate the firm.

The common-sized income statement divides each entry by total sales. This statement shows how each dollar of sales affects the bottom line. A firm's cost control is shown through the common sized income statement.

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Financial Ratio Analysis

The ratios in this section are the most commonly used; however, many firms make additional specialized ratios to fit their firms,

Ratios are usually presented in the following categories:

- Profitability ratios
- Liquidity ratios
- Activity ratios
- Financing ratios
- Market Ratios

The firms in different industries will put different emphasis on the categories.

In following we will review each of the categories with the most commonly used ratios in each. We will also point out whether the ratio should be higher or lower than the industry's average.

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PROFITABILITY RATIOS

Profitability ratios are considered the most important ratios since they measure how effectively a firm is using its resources to generate profits.

The greater the profitability ratios, the happier firms are following.

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RETURN ON EQUITY

Return on equity is the return the company's shareholders received on their invested capital. It is also known as return on investment.

The return on equity may be measured before or after income tax.

The pretax return on equity is calculated as follows:

$$\text{Pretax Return on Equity} = \text{Net Profit before Taxes} / \text{Equity}$$

A good target for the pretax return on equity is 15%. The after-tax return on equity is calculated as follows:

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The after-tax return on equity is calculated as follows:

$$\text{After-Tax Return on Equity} = \text{Net Profit after Taxes} / \text{Equity}$$

Typical after-tax returns on equity ratios for construction companies are shown in table.

Pretax and after-tax returns for a construction company should be greater than the pretax or after-tax returns of investing the capital in the stock market or other saving instruments.

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Table Typical Return on Equity (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	25.9	62-8.1
Commercial	16.7	53-5.4
Heavy and Highway	14.6	31-4.7
Specialty Trades	17.4	42-5.6

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Example:

Determine the pretax return on equity and after-tax return on equity for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The after-tax return on equity for the company is better than the median for a commercial construction company but well below the upper end of the range.

Improvement in the after-tax profit margin will help increase this percentage.

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RETURN ON ASSETS

The return on assets (ROA) measures the overall effectiveness of management in generating profits with its available assets. It is also called the firm's return on investment.

$$\text{Return on Assets} = \text{Net Income after Tax} / \text{Total Assets}$$

Efficiently run companies will have a high return on assets, whereas companies that are poorly run will have a low return on assets. Typical returns on assets ratios for construction companies are shown in following table.

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Table Typical Return on Assets Ratios (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	8.7	24.1-2.3
Commercial 2.2	6.5	21.7-2.0
Heavy and Highway	6.5	14.7-2.0
Specialty Trades	7.9	19.0-2.4

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Example:

Determine the return on assets for the commercial construction company in figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

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The return on assets for the company is better than the median for a commercial construction company but well below the upper end of the range improvement in the after-tax profit margin will help increase this percentage.

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GROSS PROFIT MARGIN

The gross profit margin is the percentage of the revenues left after paying construction costs and equipment costs and is a measure of what percentage of each dollar of revenue is available to cover general overhead expenses and provide the company with a profit. It is also known as the gross profit ratio.

The gross profit margin is calculated as follows:

$$\text{Gross Profit Margin} = \text{Gross Profit} / \text{Revenue}$$

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Typical gross profit margins for construction companies are shown in Table.

Table Typical Gross Profit Margin (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>
Single-Family Residential	24
Commercial	17
Heavy and Highway	25
Specialty Trades	32

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Example:

Determine the gross profit margin for the commercial construction company in figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

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The company spent 86.1% of its revenue on construction costs and retained 13.9% of its revenue to cover overhead expenses and provide a profit for the company's shareholders.

The company's gross profit margin is less than the median for commercial construction companies.

The company needs to increase its profit and overhead markup or exercise better control over its construction costs.

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GENERAL OVERHEAD RATIO

General overhead ratio is the percentage of the revenues used to pay the general overhead expense. It is also known as the general and administrative cost ratio. The general overhead ratio is calculated as follows:

$$\text{General Overhead} = \text{General Overhead/Revenue}$$

As a rule of thumb, the general overhead ratio for commercial construction companies should be less single-family construction residential companies' ratios would be higher when sales commissions are included in the general overhead.

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Example:

Determine the general overhead ratio for the commercial construction company in figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The company spent 11.4% on general overhead.

Because of its revenue the general overhead percentage is over 10% the company needs to decrease its general or increase its revenues overhead without increasing the general overhead.

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PROFIT MARGIN

The profit margin is the percentage of the revenues that becomes profit and may be measured before or after income taxes. It is also known as the return on revenues or return on sales.

The profit margin is a measurement of how well a construction company can withstand changes in the construction market, such as reduced prices, higher costs, and less demand.

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The pretax profit margin is calculated as follows:

$$\textbf{Pretax Profit Margin} = \textbf{Net Profit before Taxes/Revenues}$$

A good target for a pretax profit margin is 5%.

The after-tax profit margin is calculated as follows:

$$\textbf{After-Tax Profit Margin} = \textbf{Net Profit after Taxes/Revenues}$$

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Typical after-tax profit margins for construction companies are shown in table.

Table Typical After-Tax Profit Margins (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	3.3	8.1-0.9
Commercial	2.2	8.7-0.6
Heavy and Highway	3.2	7.3-1.0
Specialty Trades	2.8	6.7-0.8

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Example 14:

Determine the pretax and after-tax profit margins for the commercial construction company in figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

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The pretax profit margin for the company is less than the recommended 5%.

The after-tax profit margin is slightly less than the median for a commercial construction company but well within the range.

The company needs to work on its profitability.

This may be done by cutting costs or increasing the profit and overhead markup.

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OPERATING PROFIT MARGIN

Operating Profit Margin:

The operating profit margin measures the percentage of profit earned on each sales dollar before interest and taxes.

$$\begin{aligned}\text{Operating Profit Margin} &= \\ &= \text{Operating Profits} / \text{Sales} \\ &= \text{EBIT} / \text{Sales}\end{aligned}$$

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NET PROFIT MARGIN

The net profit margin measures the percentage of profit earned after all expenses and taxes of each sales dollar.

$$\text{Net Profit Margin} = \text{Net Profit After Taxes} / \text{Sales}$$

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Liquidity Ratios

Liquidity ratios reveal if a firm can meet its short-term and credit obligations.

Creditors usually consider these types of ratios important because they want to know if a firm can pay its bills.

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QUICK RATIO

The quick ratio is a measurement of a company's ability to pay current (short-term) liabilities with cash or other near cash assets-assets that can quickly be turned into cash.

The quick ratio may also be referred to as the acid test ratio. The quick ratio is calculated as follows:

Quick Ratio = (Cash + Accounts Receivable)/Current Liabilities

or

Quick Ratio = (Current Assets – Inventory) / Current Liabilities

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When calculating the quick ratio a company should not include accounts receivable in the form of retention because often retention cannot be converted to cash quickly.

Similarly, accounts receivable that are unlikely to be collected - often recorded as an allowance for bad debt-should not be included in the accounts receivable.

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A company with a quick ratio of **1.00 to 1** or greater is considered liquid.

A company with a ratio below **1.00 to 1** will need to convert inventory, notes receivable, other current or long-term assets to cash or raise cash through debt or equity financing to pay its current liabilities.

A ratio greater than **1.50 to 1** may be an indication that the company has too much cash and should be investing its capital elsewhere or should be disbursing it to its shareholders.

A quick ratio greater than **1.00 to 1** does not guarantee that a company can pay its current liabilities on time because its current liabilities may be due-before its accounts receivable are received.

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Typical quick ratios for construction companies are found in table.

Table	Typical Quick Ratios	
INDUSTRY SECTOR	MEDIAN	RANGE
Single-Family Residential	0.9	2.1-0.3
Commercial	1.2	2.1-0.6
Heavy and Highway	1.2	2.1-0.8
Specialty Trades	1.4	2.5-0.9

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Example:

Determine the quick ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The quick ratio is slightly higher than the median for a commercial construction company but well within the typical range.

Because the quick ratio is less than **1.50 to 1** it does not appear that the company has too much cash or near cash assets.

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CURRENT RATIO

The current ratio measures the firm's ability to meet its short-term obligations. Current assets are those that can be converted into cash in less than a year to pay current liabilities.

A current ratio of 1 indicates that a firm is just meeting its short-term obligations- Most firms want to have a current ratio above 1 to have a cushion in case of unforeseen emergencies.

The current ratio is calculated as follows:

$$\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$$

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A current ratio of **2.00 to 1** is considered a strong indication that a company is able to pay current liabilities. If a company's current ratio is below 1.00 to 1 it is an indication that the company does not expect to receive enough revenue over the next year to pay its current liabilities.

To pay these liabilities the company needs to sell long-term assets or raise cash through debt or equity financing. If a company's current ratio is below **1.50 to 1** the company is undercapitalized and may run into financial problems during the next year.

If a company's current ratio is over **2.50 to 1**, the company may have too much of its assets tied up in current assets and should possibly be investing its assets in other long-term ventures or distributing them to its shareholders.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Typical current ratios for construction companies are found in table.

Table Typical Current Ratios

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	1.6	3.2-1.1
Commercial	1.5	3.1-1.2
Heavy and Highway	1.7	2.8-1.2
Specialty Trades	1.8	3.3-1.3

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Example:

Determine the current ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

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The current ratio is slightly higher than the median for a commercial construction company but well within the typical range.

Because the current ratio is greater than **1.00 to 1**, it appears that the company will meet its short-term cash needs and because the current ratio is **less than 2.50 to 1** it does not appear that the company has too much of its assets tied up in current assets.

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NET WORKING CAPITAL

Net working capital is not a ratio, but it still measures the firm's overall liquidity. It is especially helpful in time series analysis.

Working capital turns is a measurement of how efficiently a company is using its working capital.

Net working capital is defined as current assets less current liabilities and may be calculated as follows:

$$\text{Net Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The working capital represents those funds available for future operations or for the reduction of long-term liabilities.

The working capital turns is also known as the revenues to net working capital ratio or sales to net working capital ratio.

The working capital turns is calculated as follows:

$$\textbf{Working Capital Turns = Revenues/Working Capital}$$

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When a company passes payments on from the owners to subcontractors, a better measurement of working capital turns is obtained by subtracting the subcontractor payments from the revenues as follows:

Working Capital Turns

= (Revenues - Subcontractor)/Working Capital

FINANCIAL STATEMENTS AND RATIO ANALYSIS

A firm with a high number of turns is undercapitalized to reduce and needs its level of sales or increase the availability of current assets.

Typical working capital turns for construction companies are shown in table.

Table Typical Working Capital Turns		
INDUSTRY SECTOR	MEDIAN	RANGE
Single-Family Residential	11.7	26-5.8
Commercial	12.1	23-6.1
Heavy and Highway	8.8	17-4.9
Specialty Trades	8.8	16-5.3

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the working capital turns for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The working capital turns is slightly less than the average but well within the typical range. The company appears to be properly capitalized.



FINANCIAL STATEMENTS AND RATIO ANALYSIS

ACTIVITY RATIOS

Activity ratios are used to measure the efficiency of converting assets to sales of cash.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

FIXED ASSETS TO NET WORTH RATIO

The fixed assets to net worth ratio is a measurement of the amount of the owner's equity that is tied up in fixed assets, such as construction equipment, building, and vehicles.

The fixed assets to net worth ratio is often expressed as a percentage and is calculated as follows:

$$\text{Fixed Assets to Net Worth} = \text{Net Fixed Assets} / \text{Net Worth}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Table Typical Fixed Assets to Net Worth Ratios (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	38	14-90
Commercial	24	8-64
Heavy and Highway	68	36-117
Specialty Trades	36	17-75

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CURRENT ASSETS TO TOTAL ASSETS RATIO

The current assets to total assets ratio is a measurement of how liquid a construction company's assets are.

The current assets to total assets ratio is calculated as follows:

$$\text{Current Assets to Total Assets} = \text{Current Assets} / \text{Total Assets}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

A company with a high ratio would have most of its assets in the form of current assets and would be very liquid.

A company with a low ratio would have most of its assets tied up in long-term assets, such as fixed and other assets.

The ratio varies by sector.

For single-family residential, commercial, and most specialty trades the average current assets to total asset ratio runs between 0.70 and 0.80.

For heavy and highway the average runs between 0.55 and 0.65 because of their large investment in excavation equipment.

Notable exceptions from the specialties trades are concrete work with an average of 67, wrecking and demolition with an average of 55, and excavation with an average of 46.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Remembering that fixed assets require a constant stream of income to offset their loss in value, construction companies that have significant investments in construction equipment are more dependent on maintaining a constant flow of work than those companies that have little invested in construction equipment.

During a downturn in the industry, companies with a large investment in construction equipment usually suffer the most.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the current assets to total assets ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The current assets to total assets ratio is slightly outside and below the range for a commercial construction company.

This indicates that the company has a heavier investment in fixed assets than most commercial construction companies.

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ASSETS TO REVENUES RATIO

Assets to revenues ratio is a measurement of how efficiently the company is using its assets. It is also known as the assets to sales ratio.

The assets to revenues ratio is often expressed and is calculated as a percentage as follows:

$$\text{Assets to Revenues} = \text{Total Assets} / \text{Revenues}$$

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The recommended range for the ratio varies from industry to industry. Typical assets to revenues ratios for construction companies are shown in table.

Table Typical Assets to Revenues Ratios (percentages)

INDUSTRY SECTOR	MEDIAN	RANGE
Single-Family Residential	29	17-49
Commercial	29	19-55
Heavy and Highway	46	34-62
Specialty Trades	32	24-44

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Companies with assets to revenues ratios above the upper end of the typical range may be performing too much work for their assets, which may be a sign of pending financial difficulties if left uncorrected.

Companies with assets to revenue ratios below the lower end of the range are underutilizing their assets and should consider taking on more work.

Heavy and Highway have a higher median assets to revenues ratio because of its extensive investment in construction equipment.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the assets to revenues ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

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The assets to revenues ratio is almost midway between the median and upper limit of the range for a commercial construction company.

It does not appear that the company is performing too much work with its assets.

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INVENTORY TURNOVER

The inventory turnover ratio measures how many times per year the inventory is sold and replaced.

$$\text{Inventory Turnover} = \text{Cost of Goods Sold} / \text{Inventory}$$

The average inventory can be used in the denominator by adding the beginning inventory to the ending inventory and dividing by 2.

If this ratio is decreasing, this may indicate either obsolete inventory or fewer expensive items are being sold.

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FIXED ASSET TURNOVER

The fixed asset turnover measures how effectively fixed assets are used to generate sales.

$$\text{Fixed Asset Turnover} = \text{Sales} / \text{Fixed Assets}$$

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CURRENT ASSET TURNOVER

The current asset turnover measures how effectively fixed assets are used to general sales.

$$\text{Current Asset Turnover} = \text{Sales} / \text{Current Assets}$$

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TOTAL ASSET TURNOVER

The total asset turnover measures the efficiency of all assets (fixed and current) to general sales.

$$\text{Total Asset Turnover} = \text{Sales} / \text{Total Assets}$$

Total asset turnover is used to identify which assets might be causing problems.

If the fixed asset turnover is good, but total asset turnover is low, then current assets may be examined because the problem could lie there.

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Management Ratios

The next set of ratios is termed management ratios because they deal with receivables, payments, and collections management.

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ACCOUNTS RECEIVABLE TURNOVER

The accounts receivable turnover ratio is the number of times per year accounts receivable is paid and replaced.

Accounts Receivable Turnover = Sales / Accounts Receivable

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AVERAGE COLLECTION

The average collection period ratio is also called the days of sales the receivables. This ratio represents the number of days of credit sales there are in accounts receivable.

Average Collection Period = Accounts Receivable / Daily Credit Sales

or =

Accounts Receivable / Annual Credit Sales/365

or

Average Collection Period = 365 days / Receivables Turnover

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AVERAGE PAYMENT PERIOD

The average payment period is the number days a firm takes to pay their bills. Often times, the cost of goods sold are used in place of average purchases.

Average Payment Period = Accounts Payable / Average Purchases per day

or

Accounts Payable / Annual Purchases / 365

FINANCIAL STATEMENTS AND RATIO ANALYSIS

COLLECTION PERIOD

The collection period is a measurement of the average time it takes a company to collect its accounts receivable or the average number of days that capital is tied up in accounts receivable.

The collection period is also a measure of how long the company's capital is being used to finance client's construction projects. It may also be referred to as the average age of accounts receivable.

The collection period is calculated as follows:

$$\text{Collection Period} = \text{Accounts Receivable (365)/Revenues}$$

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For the construction industry the collection period is affected by retention. Retention held is recorded as an accounts receivable when the work is completed but will not be available for release until the project is completed. This has the effect of lengthening the collection period.

The greater the percentage of retention being held and the longer the project the greater this effect is.

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For an accurate measure of how long capital is being used to finance client's construction projects it is necessary to include the accounts receivable that are in the form of retention because retention is a source of capital to the project's owner.

However, including the accounts receivable that are in the form of retention in the calculation of the collection period distorts the collection period as a measure of how well a company is collecting the accounts receivable that are due to it.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

This is because no matter how aggressive a company collects its accounts receivable it cannot collect the retention until the project is complete.

A better measure of how well a company is collecting its accounts receivable is to exclude the accounts receivable that are in the form of retention from the calculations.

When a company has met the requirement for receipt of the retention, the retention should be moved to the accounts receivable trade account, thus reflecting that the retention is now collectable.

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A company's collection period should be ***less than 45 days***. A collection period of ***more than 45*** days indicates that the company has poor collection policies or has extended generous payment terms to its clients.

For a company whose clients do not hold retention, this time should be reduced to 30 days. Reducing the collection period reduces a company's need for cash and may reduce the company's need for debt and the interest charges that accompany debt.

Generous payment terms and slow collections often increase a company's reliance on debt which increases its interest expenses and thereby reduces its profitability.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Typical collection periods for construction companies are shown in table and include accounts receivable in the form of retention

Table Typical Collection Period (days)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	23	8-45
Commercial	48	22-75
Heavy and Highway	51	31-73
Specialty Trades	50	31-72

FINANCIAL STATEMENTS AND RATIO ANALYSIS

A closely related ratio is the receivable turns.

The receivable turns represent the number of times the receivables are turned over during a year and are calculated as follows:

$$\text{Receivable Turns} = 365 / \text{Collection Period}$$

Because of the mathematical relationship between the collection period and the receivable turns it is to measure unnecessary both ratios

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the collection period-with and without retention-and receivable turns for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The collection period is better than the median for a commercial construction company and is within the typical range. It is also below the recommended 45 days.

On average, the company is funding the construction costs to the client for 37.4 days.

On average, it takes the company 35 days to collect the payment on a bill sent to a client.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

AVERAGE AGE OF ACCOUNTS PAYABLE

The average age of accounts payable represents the average time it takes a company to pay its bills and is a measure of how extensively a company is using accounts age of accounts payable is the average trade financing.

The average amount of accounts payable divided by the total of the invoices that pass through the accounts payable for the period.

The average age of accounts payable is often calculated as follows:

$$\text{Average Age of Accounts Payable} = \text{Accounts Payable (365)} / (\text{Materials} + \text{Subcontract})$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The underlying assumption is that the bulks of the invoices that pass through the accounts payable for the period are material and subcontract construction costs.

When a significant amount of invoices for equipment, other construction cost, or general overhead pass through the accounts payable, they will lengthen out the average age of accounts payable because they will increase the numerator in the equation without changing the denominator.

To get a realistic measure of the average of accounts payable a company may need to increase the materials and subcontract amount by the estimated amount of invoices from equipment, other construction costs, and general overhead that pass through the accounts payable account.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

When the average age of accounts payable is greater than 45 days this is an indication that the construction company is slow to pay its bills and may receive less favorable credit terms and pricing from its suppliers and subcontractors.

When the average age of accounts payable is ***shorter than 20 days*** - unless a construction company is taking advantage of trade discounts - it may be an indication that a company is underutilizing trade financing.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

If the average age of accounts payable is equal to or slightly greater than the collection period - calculated with retention- it is an indication that the construction company is using its suppliers and subcontractors to fund the construction work.

If the average age of accounts payable is much greater than the collection period it may be an indication that the construction company is withholding payments from its suppliers and subcontractors even after it has received payment for the work.

If the average age of accounts payable is less than the collection period, the construction company is in the habit of using its working capital to pay bills before it has received payment from the owner. It is desirable for the average age of accounts payable to be equal to or slightly greater than the collection period.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

A closely related ratio is the payable turns. The payable turns represent the number of times the payables are turned over during a year and are calculated as follows:

$$\text{Payable Turns} = 365 / \text{Average Age of Accounts Payable}$$

Because of the mathematical relationship between the payable turns and average age of accounts payable it is unnecessary to measure both ratios.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the average age of accounts payable and payable turns for the commercial construction company in figures.

Use only the material and subcontract construction costs to calculate the average of accounts payable.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The average age of accounts payable is greater than 45 days, indicating that the company is slow to pay its bills. The average age of accounts payable is 15 days greater than its collection period-with retention included-which is an indication that the construction company is withholding payments from its suppliers and subcontractors even after the project's owner has paid them for the work.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

It is likely that the average age of accounts payable is overstated because the accounts receivable includes bills other than material and subcontractor construction costs.

From figure income statement we see that there were \$21,254 in equipment repairs and maintenance costs and 529,245 in fuel and lubrication equipment costs. If we include these costs in our calculations, the average age of accounts payable drops to 49.0.

Other costs that pass through the accounts payable account may be hidden in the general overhead and other areas of the income statement. The company needs to work on paying suppliers and subcontractors in a more timely fashion.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

ACCOUNTS PAYABLE TO REVENUE RATIO

The accounts payable to revenue ratio is a measurement of how much a company is using its suppliers and subcontractors as a source of funds. It is also known accounts payable to sales.

The accounts payable to revenue ratio is calculated as follows:

$$\text{Accounts Payable to Revenue} = \text{Accounts Payable} / \text{Revenue}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

When calculating the accounts payable to revenue ratio, the accounts payable in the form of retention should be included because retention held from a supplier or subcontractor is a form of funding to the contractor.

The higher the percentage the greater the funding the company is receiving from its suppliers and subcontractors.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Typical accounts payable to revenue ratios for construction companies are shown in table.

Table Typical Accounts Payable to Revenues Ratios (percentages)

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	4.1	1.9
Commercial	7.9	2.9-13.0
Heavy and Highway	5.6	2.8-9.6
Specialty Trades	4.8	2.6-8.1

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the accounts payable to revenue ratio for the commercial construction company in figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

FINANCING RATIOS

These ratios measure how much leverage a firm has undertaken. Financing ratios are also called leverage ratios.

A firm's risk is closely related to the amount of a firm's leverage.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

DEBT RATIO

The debt ratio measures the proportion of total assets financed by the firm's creditors. Greater leverage will result in higher debt ratios.

$$\text{Debt Ratio} = \text{Total Liabilities} / \text{Total Assets}$$

If the ratio *is below 1*, then total assets exceed total liabilities

FINANCIAL STATEMENTS AND RATIO ANALYSIS

TIMES INTEREST EARNED

The times interest earned ratio measures the firm's ability to meet its interest payments. The primary use of this ratio is for creditors to see if the firm is having trouble meeting its interest payments.

Times Interest Earned

= Earnings before Interest and Taxes (EBIT) / Interest

The information needed for this set of ratios is normally *not* all found in the firm's financial statements.

People considering the purchase of securities from the firm are particularly interested in market ratios.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

DEBT TO EQUITY RATIO

The debt to equity ratio is a measurement of the risk in the company all creditors are taking compared to the risk the company's owners are taking. It is also known as the debt to worth ratio or the total liabilities to net worth ratio.

The debt to equity ratio is calculated as follows:

$$\text{Debt to Equity} = \text{Total Liabilities} / \text{Net Worth}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The desired range for the debt to equity ratio *is less than 2.00 to 1*.

If the debt to equity ratio **exceeds 2.00 to 1**, one begins to question whether the company can service its debt, particularly during a downturn in the industry.

A debt to equity ratio that *is less than 1.00 to 1* may indicate that the company is averse to debt financing and is not using debt to expand the company's business.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Typical debt to equity ratios for construction companies are found in table.

Table Typical Total Liabilities to Net worth Ratios

<i>INDUSTRY SECTOR</i>	<i>MEDIAN</i>	<i>RANGE</i>
Single-Family Residential	1.2	0.4-3.0
Commercial	1.3	0.5-2.7
Heavy and Highway	1.0	0.4-1.9
Specialty Trades	0.9	0.4-1.9

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the debt to equity ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The debt to equity ratio is at the median for a commercial construction company.

Because the ratio is less than 2.00 to 1 it appears that the company will be able to service their debt.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

CURRENT LIABILITIES TO NET WORTH RATIO

The current liabilities to net worth ratio is a measurement of the risk that short-term creditors are taking by extending credit to the company compared to the risk the company's owner are taking in the company.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

For example, in the case of a construction company with current liabilities greater than the company's net worth or equity, the short-term creditors would have more capital at risk than the owners. Short-term creditors include suppliers and subcontractors who provide materials, labor and equipment on credit.

The current liabilities to a net worth ratio are often expressed percentage of net worth and are calculated as follows:

$$\text{Current Liabilities to Net Worth} = \text{Current Liabilities} / \text{Net Worth}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

For most industries it is recommended that care be taken when short-term credit is extended to the companies with current liabilities to net worth ratio of 67%.

The construction industry consistently exceeds this recommended level because of the construction industry's heavy reliance on trade financing from suppliers and subcontractors.

Commercial construction companies have the higher current liabilities to net worth ratio because of their extensive use of suppliers and subcontractors to perform their work.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Typical current liabilities to net worth ratios for construction companies are found in table.

TABLE Typical current Liabilities to Net worth Ratios (percentages)

INDUSTRY SECTOR	MEDIAN	RANGE
Single-Family Residential	88	29-241
Commercial	112	32-240
Heavy and Highway	65	29-132
Specialty Trades	71	29-153

FINANCIAL STATEMENTS AND RATIO ANALYSIS

Example:

Determine the current liabilities to net worth ratio for the commercial construction company in the figures balance sheet and income statement.

What insight does this give you into the company's financial operations?

FINANCIAL STATEMENTS AND RATIO ANALYSIS

The current liabilities to net worth ratio are slightly worse than the median for a commercial construction company but well within the typical range.

Because the ratio is less than 100% the short-term creditors do not have more capital at risk than the owners of the construction company, which is a good position to be in.

FINANCIAL STATEMENTS AND RATIO ANALYSIS

MARKET RATIOS

The information needed for this set of ratios is normally *not* all found in the firm's financial statements. People considering the purchase of securities from the firm are particularly interested in market ratios

FINANCIAL STATEMENTS AND RATIO ANALYSIS

EARNINGS PER SHARE

Earnings per share represent the number of dollars earned on each outstanding share of common stock.

The net income figure used in the numerator should have any dividend payments to preferred stockholders subtracted out

$$\text{Earnings per Share} = \text{Net Income} / \text{Number of Shares Outstanding}$$

FINANCIAL STATEMENTS AND RATIO ANALYSIS

PRICE / EARNINGS RATIO

The price/earnings ratio (P/E) represents the amount investors are willing to pay for each dollar of earnings. A high P/E denotes a projection of increasing future earnings.

P/E Ratio = Market Price of Common Stock / Earnings per Share

FINANCIAL STATEMENTS AND RATIO ANALYSIS

MARKET-TO-BOOK RATIO

The market-to-book ratio measures the market value of the firm compared to the value of the firm according to the accountants.

Market - to - Book Ratio = Market Value per Share / Book Value per Share

FINANCIAL STATEMENTS AND RATIO ANALYSIS

CONCLUSION

The withholding of retention is common in the construction industry. When retention is withheld, the accounts receivable is separated into two categories, one for retention and for the rest of the accounts receivable. Accounts payable are similarly split into two accounts.

The standard financial ratios must be modified to take retention into account. The retention portion of the accounts receivable is ignored when calculating the quick ratio and the collection period used measuring the effectiveness of the company's collection efforts.

Subcontractors are used as a source of capital for construction companies. As a result, when calculating the working capital turns, the revenues are reduced by the amount of money that is paid to the subcontractor when the contractor gets paid by the owner.