FINANCIAL RATIO ANALYSIS

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What is it?

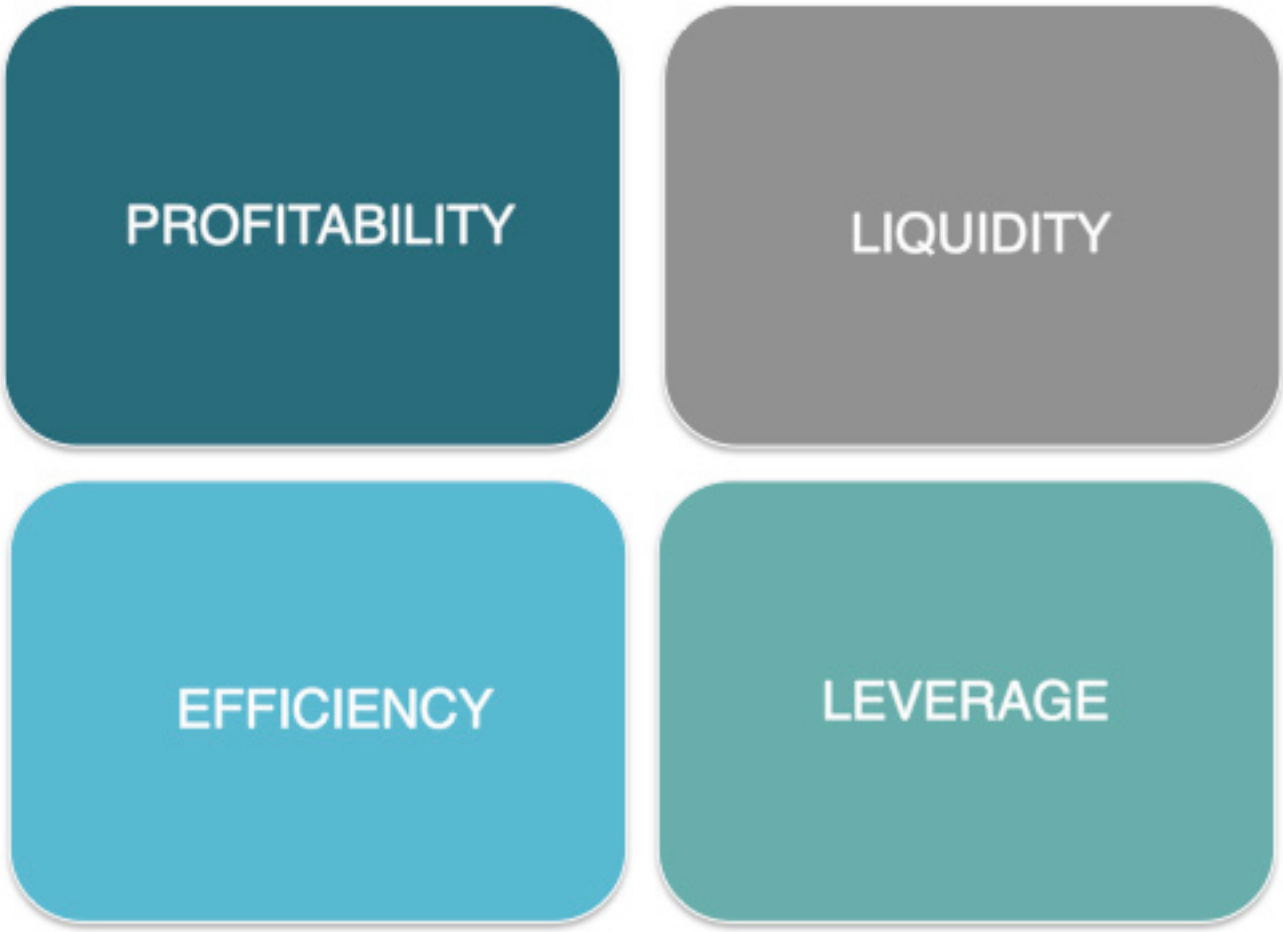
Ratio analysis is the development of quantitative relationships between various elements of a company's financials and other information. These ratios are useful to financial analysts, equity research analysts, investors, and asset managers in order to evaluate the overall financial health of businesses, with the end goal of making better investment decisions. Financial leaders and executive-level officers will often use the finance ratios to get a better understanding of how their businesses are performing.

Why use it?

Ratio analysis enables comparisons over time for a company, across companies (within the same industry), and facilitates in identifying operating and financial strengths and weaknesses of a company. It is a great way to compare two companies that are different in size, operations and management style. It also helps in quantifying how efficient a company's operations are and how profitable the business is set up to be. Through ratio analysis, management can find out the department or division that is not doing well, relative to others, and take some corrective actions.

Types of ratios

Financial ratios can be grouped according to the type of measure being analyzed. The major types of measures analyzed for a business are: Profitability Ratios, Liquidity Ratios, Efficiency Ratios and Leverage Ratios:



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1 PROFITABILITY RATIOS

Profitability Ratios measure aspects of a company's operating results (profit/loss) on a relative basis. These are the benchmarks used by analysts and investors to measure and evaluate the ability of a company to generate income (profit) relative to revenue, balance sheet assets, operating costs, and shareholders' equity during a specific period.

GROSS MARGIN RATIO:

This ratio measures the amount of sales revenue that is left after reducing the cost of goods sold. The gross profit ratio is essentially the percentage markup on merchandise from its cost. It shows how much profit a company makes after paying off its cost of goods sold (COGS).

IT IS CALCULATED AS:

GROSS MARGIN RATIO =

$$\frac{\text{Gross Profit}}{\text{Total Revenue}} = \frac{\text{Total Revenue - COGS}}{\text{Total Revenue}}$$

Explanation:

As an example, a company has sales of $50,000 and cost of goods sold of $15,000. The gross margin ratio would be = (50,000-15,000)/50,000 = 0.70.

This means that for every dollar sale made the company would retain a gross profit of $0.70. If a company has a high gross margin ratio, it means that the company will have more money to pay operating expenses like salaries, utilities, and rent.

It is important to compare gross margin ratios between companies in the same industry rather than comparing them across industries.

NET PROFIT MARGIN RATIO:

Also known as the “Profit Margin” or “Net Profit Margin”, this ratio measures the rate of net profitability on sales revenue. In other words, it tells you how much does every dollar of sales ends up as net income.

IT IS CALCULATED AS:

$$\text{NET PROFIT MARGIN} = \frac{\text{Net Income}}{\text{Total Revenue}}$$

Explanation:

For example, a 15% profit margin is equal to $0.15 profit for every $1 of revenue. The typical profit margin ratio of each company can be different depending on which industry the company is in.

OPERATING PROFIT MARGIN OR EBIT RATIO:

The operating profit margin measures how much profit a company makes on every dollar of sales, after paying for variable costs of production, such as wages and raw materials, but before paying interest or tax. This margin is also known as the EBIT (Earnings Before Interest and Tax) Ratio. It is calculated by dividing a company's operating profit by its total revenue.

IT IS CALCULATED AS:

$$\text{PROFIT MARGIN (EBIT)} = \frac{\text{Operating Profit}}{\text{Total Revenue}}$$

Explanation:

Operating profit ratio can be used when an acquirer is considering a leveraged buyout. When the acquirer is analyzing the target company, they would be looking at the potential improvements that they can bring into the operations. The operating profit margin provides an insight into how well the target company performs in comparison to its peers. In particular, it measures how efficiently a company manages its expenses so as to maximize profitability.

The omission of interest and taxes is helpful because a leveraged buyout would inject a company with completely new debt, which would then make historical interest expense irrelevant.

RETURN ON TOTAL ASSETS

Also known as return on investment (ROI), it measures the rate of return on total assets and indicates the efficiency with which invested resources are used. This ratio indicates how well a company is performing by comparing the profit (net income) it is generating to the total capital it has invested in assets.

The higher the return, the more productive and efficient the management is in utilizing economic resources.

IT IS CALCULATED AS:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

Explanation:

Out of all the ratios this is considered the most important ratio in analyzing a company's profitability. The ratio is typically used when comparing a company's performance between periods, or when comparing two different companies of similar size and industry.

Say a company has net income of $50,000. At the beginning of the year (January 1st) it has total assets of $450,000 and on December 31st it has total assets of $550,000. The average assets in the year is $500,000, so the ROA would be = 50,000/((450,000+550,000)/2) = 0.10

Industries that are capital-intensive and require a high value of fixed assets for operations will generally have a lower ROA, as their large asset base will increase the denominator of the formula. However, a company can have a large ROA. if they are able to use their large asset base to generate high levels of revenue.

RETURN ON CAPITAL EMPLOYED (ROCE):

This is a profitability ratio that measures how efficiently a company is using its capital to generate profits. The return on capital employed is considered one of the best profitability ratios and is commonly used by investors to determine whether a company is suitable to invest in.

IT IS CALCULATED AS:

$$ROCE = \frac{EBIT}{\text{Total Assets - Current Liabilities}}$$

Capital Employed

Explanation:

If for example, a company has ROCE at 5%, this indicates that $0.05 is generated for every dollar of capital employed.

A higher ROCE is always more favorable as it implies that more profits are generated per dollar of capital employed. Always keep in mind that other profitability ratios such as return on assets, return on invested capital, and return on equity should be used in conjunction with ROCE to determine whether a company is truly profitable or not.

EBIT IS EARNINGS BEFORE INTEREST AND TAX.

RETURN ON EQUITY:

Return on Equity (ROE) measures the rate of return on total equity investments in the company. Since total equity is equal to a company's assets less its debt, another way of considering this ratio is as a measure of how much net income is generated by the company's net assets.

IT IS CALCULATED AS:

$$ROE = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

Explanation:

Unlike other return on investment ratios, ROE is more of a profitability ratio from an investor's point of view. This ratio calculates how much money is made based on the investors' investment in the company. Investors want to see a high return on equity ratio because this indicates that the company is using its investors' funds efficiently.

2 LIQUIDITY RATIOS

Liquidity ratios measure the ability of the company to pay its obligations (both short-term and long-term) as they become due. These measures are appropriate for use in managing working capital. They are used by financial analysts to evaluate the financial health of a company. Liquidity ratios are also known as solvency ratios. These ratios are often used to determine the level of risk involved in extending credit to a company.

CURRENT RATIO:

The Current ratio is a widely used measure of a company's ability to pay its current liabilities. It measures the quantitative relationship between current assets and current liabilities in terms of the number of times current assets could cover current liabilities.

IT IS CALCULATED AS:

$$\text{CURRENT RATIO} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Explanation:

If a company has current assets of $20 million and current liabilities of $10 million, this gives us a current ratio of 2. It means the company can pay off its current liabilities, such as accounts payable, twice with its current assets. Had the ratio been below 1, creditors and investors would consider this company risky as it shows an inefficiency on the company's part in repaying its current liabilities.

Under normal circumstances, a current ratio greater than 1 would suggest financial well-being for a company. At the same time, too high of a current ratio also suggests that the company is leaving too much excess cash unused, rather than investing the cash into projects for the company's growth.

QUICK RATIO:

The quick ratio measures the company's ability to pay its current liabilities with only quick assets, ones that can be converted into cash within 90 days or in the short term. Cash, cash equivalents, short term investments or marketable securities and current accounts receivable are considered as quick assets.

The quick ratio is often called the **acid test ratio**, as it tells us how well the company can quickly convert its currents assets into cash to cover its current liabilities.

IT IS CALCULATED AS:

$$\text{QUICK RATIO} = \frac{\text{Cash + Marketable Securities + Accounts Receivable}}{\text{Current Liabilities}}$$

Explanation:

If a business has cash of $30 million, marketable securities of $25 million, accounts receivable of $38 million, it has "quick assets" of $93million. If it also has current liabilities of $65 million, it has a quick ratio of 1.43. This means that the business can pay off its current liabilities 1.43 times using its most liquid assets.

A 'quick ratio' greater than 1 strongly implies financial well-being of the company as it shows that the company can repay its short-term debt obligations with only the liquid assets. But, like the current ratio, a quick ratio that is too high also suggests that the company is holding on to a cash pile, instead of investing to generate returns or growth.

DEFENSIVE INTERVAL RATIO:

Defensive Interval Ratio (DIR) measures the quantitative relationship between highly liquid assets and the average daily use of cash to support operating costs. It indicates how many days a business can operate without needing to dip into capital sources besides current assets.

IT IS CALCULATED AS:

$$\text{DEFENSIVE INTERVAL RATIO} = \frac{\text{Current Assets}}{\text{Daily Expenditures}}$$

Daily Expenditures = (Annual operating Expenses – Non-cash Charges) / 365

Explanation:

A company has $18,000 in cash, $8,000 in accounts receivable, and $8,000 in marketable securities. It also has $150,000 in annual operating expenses and incurs $12,000 in annual depreciation. The daily expenditures equal (150,000 – 12,000) / 365 = 378.08. The company's DIR is calculated by (18,000 + 8,000 + 9,000) / 378.08 = 92.57. This means the company can operate for 92 days and remain liquid without utilizing funds from its long-term assets.

This ratio is mostly used to compare similar companies within the same industry to gain information as to how the company is doing relative to its competitors. At the same time, this ratio can be used to compare with the company's own historical DIR to see how the company's liquidity has changed over time.

TIMES INTEREST EARNED RATIO:

The Times Interest Earned Ratio (TIE) measures the ability of the company to use current earnings to cover interest payments for a period. It calculates the number of times the company could cover its periodic interest expenses if it diverts all of its earnings before interest and taxes (EBIT) to debt repayments This ratio helps to quantify a company's probability of default.

IT IS CALCULATED AS:

$$\text{TIE RATIO} = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest Expense}}$$

Explanation:

For example, a company has an EBIT of $5.4 million and an interest expense of $0.9 million, its TIE ratio would be 6. This means that the company can cover the interest repayments 6 times.

Creditors would favor a company with a much higher times interest ratio because it shows the company can afford to pay its interest payments when they come due. Higher ratios are less risky while lower ratios indicate credit risk.

OPERATING CASH FLOWS RATIO:

The operating cash flow ratio measures the company's ability to cover the current liabilities with the cash generated from its business operations.

IT IS CALCULATED AS:

OPERATING CASH FLOW RATIO = Cash Flow from Operations / Current Liabilities

Explanation:

Say a business has cash flow from operations of $150,000 and current liabilities of $100,000, it has an operating cash flow ratio of 1.5. This means that the business can cover 1.5 times its current liabilities with its operating cash flows.

The operating cash flow ratio is different from other liquidity ratios. The operating cash flow ratio looks at a company's cash flow, so while having too high of a current ratio implies that the company is inefficient in using its excess cash (which may deter potential investors), having a high operating cash flow ratio does not imply poor performance as it shows that a company is efficient in generating cash flows per dollar of current liabilities.

3 EFFICIENCY RATIOS

These are the Operation Risk ratios that measure the efficiency with which a company carries out its operating activities. These ratios indicate how long it takes for a business to fulfill segments of its operations. They are also known as efficiency ratios as they are used to measure how well a company is utilizing its assets and resources.

ACCOUNTS RECEIVABLE TURNOVER RATIO:

The accounts receivable turnover ratio measures how many times a business can collect its average accounts receivable during the year. It indicates the quality of credit policies and the efficiency of collection policies.

IT IS CALCULATED AS:

$$\text{ACCOUNTS RECEIVABLE TURNOVER RATIO} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$$

Explanation:

This ratio shows how efficient a company is at collecting its credit sales from customers. Some companies collect their receivables from customers in 90 days while other take up to 6 months to collect from customers. Higher ratios mean that companies are collecting their receivables more frequently throughout the year.

For instance, a company has credit sales of $26,000 and returns of $2,300. At January 1st, accounts receivable was $1,800. At December 31st, the company had accounts receivable of $10,000. Therefore, its accounts receivable turnover ratio for the period under consideration would be = (26,000 – 2,300) / (1,800 + 10,000) / 2) = 4.02.

This means that the company collects its accounts receivables about 4.02 times a year. This would generally be compared to industry averages to see how efficient the company is in collecting from its customer compared to its competitors.

ASSET TURNOVER RATIO:

The asset turnover ratio measures a company's ability to generate sales from its assets by comparing net sales with average total assets. It calculates net sales as a percentage of assets to show how many sales are generated from each dollar of company assets. For instance, a ratio of 0.60 means that each dollar of assets generates 60 cents of sales.

IT IS CALCULATED AS:

ASSETS TURNOVER RATIO = $\frac{\text{Net Sales}}{\text{Average Total Assets}}$

Explanation:

Higher turnover ratios mean the company is using its assets more efficiently. Lower ratios mean that the company isn't using its assets efficiently and may have management or production problems.

For example, a business has net sales of $200,000 for the year. On January 1st, the company had total assets of $75,000. On December 31st, the company had total assets of $85,000.

The company's asset turnover ratio would then be = 200,000 / ((75,000 + 85,000) / 2) = 2.50. This means that for every dollar of total assets, the company generates about $2.50 in net sales.

INVENTORY TURNOVER RATIO:

The inventory turnover ratio measures the number of times an inventory is acquired, and sold or used during a period of time. It indicates over or under stocking of inventory, or obsolete inventory.

IT IS CALCULATED AS:

$$\text{INVENTORY TURNOVER RATIO} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Explanation:

For example, a retail store has cost of goods sold of $2 million for the fiscal year. On January 1st, inventory was $110,000. On December 31st, the store's inventory was $180,000. Therefore, the store's inventory turnover ratio would be = 2,000,000 / ((110,000 + 180,000) / 2) = 13.79. This indicates that the retail store sold its entire stock of inventory 13.79 times in the fiscal year.

The inventory turnover ratio will vary from industry to industry. For example, the clothing industry will have higher turnover than the car industry.

Creditors are particularly interested in this because inventory is often put up as collateral for loans. Banks want to know that this inventory will be easy to sell.

DAYS SALES IN INVENTORY:

Also known as Inventory Turnover Days, this measures the number of days inventory is held before it is sold or used. It indicates the efficiency of general inventory management.

IT IS CALCULATED AS:

$$\text{INVENTORY TURNOVER DAYS} = \frac{\text{Number of Days in Period}}{\text{Inventory Turnover Ratio}}$$

Explanation:

For instance, in the above example, the store's inventory turnover ratio was 13.79, which indicated that the retail store sold its entire stock of inventory 13.79 times in the fiscal year. We can use these numbers to calculate the inventory turnover days. This would be = 365 / 13.79 = 26.47.

Hence, we can say that the store takes approximately 26 days to sell an entire stock of inventory. We could compare this number to the industry averages to see how efficient the company is in converting inventory into sales compared to its competitors.

DAYS SALES IN AVERAGE RECEIVABLES:

Like the days sales in inventory, this measures the average number of days required to collect receivables. In other words, it is a measure of the average age of receivables.

IT IS CALCULATED AS:

$$\text{DAYS SALES IN AVERAGE RECEIVABLES} = \frac{\text{Number of Days in Period}}{\text{Accounts Receivable Turnover Ratio}}$$

Explanation:

This measure is calculated by using the accounts receivable turnover ratio. Take for example, a company that has credit sales of $20,000 and returns of $800 during a calendar year. On January 1st, the company had accounts receivable of $1,800. On December 31st, the company had accounts receivable of $3,200. Therefore, its accounts receivable turnover ratio for this fiscal period (365 days) would be = (20,000 – 800) / (1,800 + 3,200) / 2) = 7.68. We can use these numbers to calculate the accounts receivable days, which would be = 365 / 7.68 = 47.53. Analyzing this, it takes the company 47 days on average to collect its accounts receivables. As with the accounts receivable turnover ratio, this number should be compared to industry averages to see how efficient the company is in collecting payments versus its competitors.

4 LEVERAGE RATIOS

Leverage ratios provide measures of relative sources of equity and equity value. Leverage ratios represent the extent to which a business is utilizing borrowed money. They also evaluate company solvency and capital structure. These ratios provide an indication of how the company's assets and business operations are financed - using debt or equity.

DEBT TO EQUITY RATIO

Debt to Equity ratio measures the relative amounts of assets provided by creditors and shareholders. The ratio compares whether a company's capital structure utilizes more debt or equity financing. It takes into consideration short-term debt, long-term debt, and other fixed payment obligations.

IT IS CALCULATED AS:

$$\text{DEBT-TO-EQUITY RATIO} = \frac{\text{Short Term Debt + Long Term Debt + Other Fixed Payments}}{\text{Shareholders Equity}}$$

Explanation:

For instance, a company has a total debt worth $30 million and the total equity is worth $80 million, as per the above formula, the debt-to-equity ratio would be 0.375. In other words, the company has 37 cents in debt for every dollar of equity.

A debt to equity ratio of 1 would means that investors and creditors have an equal stake in the business assets. A lower debt to equity ratio usually implies a more financially stable business. A higher debt-equity ratio indicates a more highly-levered company – a company that is financed with debt. Leverage has benefits such as tax deductions on interest expenses but also carries risks associated with these expenses.

Thus, leverage is preferable for companies with stable cash flows, but not for companies in decline.

EQUITY RATIO:

Equity Ratio measures the proportion of assets provided by shareholders. The equity ratio indicates two important financial concepts of a solvent and sustainable business. The first being how much of the total company assets are owned outright by the investors. Which means, that after all the liabilities are paid off, the investors will end up with the remaining assets. Secondly it inversely shows how leveraged the company is with debt.

IT IS CALCULATED AS:

EQUITY RATIO = Shareholders Equity / Total Assets

Explanation:

Take for example, if a company has a total of $30 million in total shareholder's equity, and total assets are equal to $150 million, then the equity ratio of this company would be equal to 0.2. This ratio typically is expressed as a percentage. Therefore, it would be 20% in the above example.

A higher ratio also shows potential creditors that the company is more sustainable and less risky to lend future loans. Companies with higher equity ratios should have less financing and debt service costs than companies with lower ratios.

DEBT RATIO:

Debt Ratio measures the proportion of assets provided by creditors. It indicates the extent of leverage in funding the entity. It can also be seen as how much of their assets the company must sell in order to pay off all of its liabilities. This helps investors and creditors understand the overall debt burden on the company as well as the company's ability to pay off the debt in future, uncertain economic times.

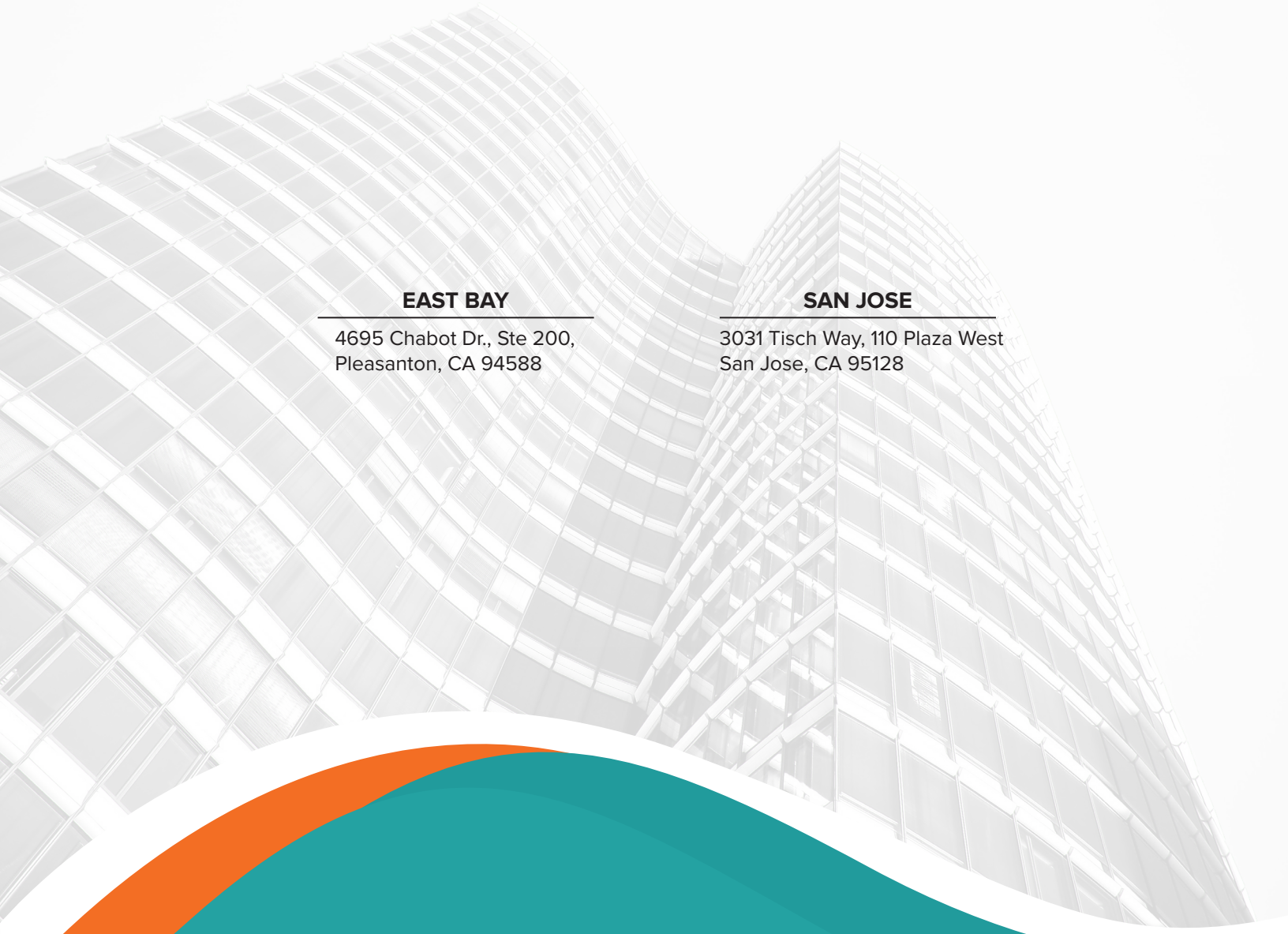
IT IS CALCULATED AS:

$$\text{DEBT RATIO} = \frac{\text{ST + LT Debt}}{\text{Total Assets}}$$

Debt Ratio = (Short Term + Long Term Debt / Total Assets)

Explanation:

A lower debt ratio usually implies a more stable business with the potential growth because a company with lower ratio also has lower overall debt. A Debt ratio of 0.5 is usually considered favorable and a ratio above 1 would be considered risky.



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