

Foundations of Accounting & Finance

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Lecture – 20

Ratio Analysis Part II - Profitability Ratios

Introduction

In the last session, we focused on examining from the perspective of capital providers, primarily both debt and equity providers. We examined various financial ratios relevant to assessing the financial health and performance of companies.

Starting with the viewpoint of debt providers, we discussed the significance of understanding the debt and equity components within a company's capital structure, emphasizing the debt-to-equity ratio as a key indicator. We then explored ratios such as interest coverage ratio, which indicates a company's ability to meet its interest obligations, and debt service coverage ratio, which evaluates its capacity to repay both interest and principal on its debts.

Transitioning to the perspective of equity providers, we examined the increasing risk associated with equity investments as the debt component in the capital structure rises. Further we also analyzed ratios such as earnings per share (EPS), market price and price-to-earnings (PE) multiple.

These discussions provided essential insights into the factors that influence the decision-making process of capital providers. However, it is important to note that these aspects represent only a portion of the considerations that capital providers may take into account when evaluating investment opportunities. There are other set of ratios that encompass profitability, efficiency and liquidity.

I. Profitability

In assessing profitability, it is essential to recognize that it is not only equity shareholders and debt providers who are concerned about the financial health of the business. Other stakeholders, such as employees, also have an interest in the profitability of the company. For employees, the company's profitability directly impacts job security, bonuses, and overall stability. Therefore, profitability is a critical aspect for all stakeholders.

Now, let us focus into a few key elements that we consider when evaluating profitability.

1) Return on Equity

The primary focus for equity holders is the return on equity (ROE). It measures the return that equity holders receive on their investment. Essentially, ROE evaluates the net income attributable to equity shareholders relative to their equity stake in the company. In simpler terms, the net income, or profit after tax (PAT), represents the earnings belonging to the equity holders. Therefore, ROE provides insight into how effectively the company generates profits from the equity invested by its shareholders.

$$\text{Return on equity} = \frac{\text{Net Income or PAT}}{\text{Average Shareholders equity}}$$

Why average equity capital?

To calculate return on equity (ROE), we need to determine the denominator, which is the equity capital. However, we don't just use the year-end equity capital as the year end capital is the result of addition or deletion of the current year's profit; instead, we calculate the average equity capital for the year. This is because profits are earned throughout the year, not just at the year-end. Secondly when we mention total shareholder's equity we mean all the money belonging to the shareholders indicating that it is an addition of share capital plus reserves and surplus.

For example, let us consider a scenario where on April 1, 2020, the equity capital was 5 lakhs, and the retained earnings or reserves and surplus were 1 lakh, resulting in a total equity capital of 6 lakhs. By March 31, 2021, assuming a profit after tax (PAT) of 2 lakhs and no dividends, the equity capital is 5 lakhs, and the retained earnings increase to 3 lakhs, making the total capital 8 lakhs.

However, the profit of 2 lakhs is earned not on the 8 lakhs but on the initial 6 lakhs invested at the beginning of the year or the on the average of the equity that is getting accumulated throughout the year. To calculate the average equity capital, we take the average of the opening and closing balances. In this case, the average equity capital would be $(6 \text{ lakhs} + 8 \text{ lakhs}) / 2 = 7 \text{ lakhs}$.

Therefore, the return on equity is calculated as the profit after tax divided by the average equity capital. If the PAT is 2 lakhs and the average equity capital is 7 lakhs, the return on equity would be $2 \text{ lakhs} / 7 \text{ lakhs}$. This calculation provides insight into the return that equity shareholders are receiving on their investment throughout the year.

2) Return on assets

Return on assets (ROA) is a key metric used to assess the efficiency of a company in generating profits from its total assets. Let us consider an example: Suppose a company has total assets worth 10 lakhs and its profit before interest and taxes (PBIT) is 3 lakhs. To calculate ROA, we consider the profit before interest and tax, adjust it by subtracting taxes, and then divide the result by the total assets. The adjustment for taxes is carried out by multiplying the PBIT by $(1 - \text{Tax Rate})$,

where the tax rate represents the proportion of profits paid as taxes. This adjustment helps to nullify the impact of taxes on profits.

$$\text{Return on assets} = \frac{\text{PBIT} (1 - \text{Tax})}{\text{Average total assets}}$$

3) Return on capital

Return on capital, also referred to as capital employed, return on investment, or return on invested capital, is a key financial metric used to evaluate the efficiency of capital utilization within a company.

$$\text{Return on invested capital} = \frac{\text{PBIT} (1 - \text{Tax})}{\text{Long term liabilities} + \text{Shareholders, equity}}$$

The denominator of this ratio represents the total capital employed in the business. This includes equity share capital, which may be averaged over a period, and long-term debt capital. Long-term debt capital specifically refers to borrowing that is not of short-term nature.

Therefore, when we indicate return to capital we include both the return to debt holders as well as equity holders. Hence we use PBIT. Now coming to (1-T) part: the return for the equity holders is always after tax but the return to the debt holders is prior to tax. But when we compare we need to nullify the tax advantage accruing due to debt in a capital structure hence, we consider PBIT (1-T) in the numerator. This is explained further with the help of an illustration.

By comparing the return generated by the company to the total capital employed, return on capital provides valuable insights into the company's ability to generate profits relative to the capital invested.

Tax advantage of debt

Debt capital holders receive returns in the form of interest payments. However, it is crucial to note that interest payments are made before taxes.

To illustrate this, let us consider two companies, A and B, operating in the same industry, with identical products, markets, prices, and market shares. Company A has an equity capital of \$100 and no debt, while Company B has an equity capital of \$60 and a debt capital of \$40, totalling \$100.

Both companies generate a profit before interest and tax of \$10. In the case of Company A, with no debt, there are no interest payments, resulting in a profit before tax of \$10. After applying a 50% tax rate, the profit after tax for Company A is \$5.

On the other hand, Company B has interest payments of \$4 due to its \$40 debt at a 10% interest rate. Consequently, its profit before tax is \$6 (\$10 - \$4). After applying the same 50% tax rate, the profit after tax for Company B is \$3.

Now, when we calculate the return on investment (ROI) or return on capital employed (ROCE) for both companies, we find that Company A's return is 5% (\$5 profit after tax / \$100 invested capital), while Company B's return is 7% (\$7 profit after tax / \$100 invested capital).

The higher return for Company B does not necessarily indicate better performance in operations but rather reflects the advantage gained purely from its capital structure, which includes debt financing. This tax advantage of debt allows Company B to achieve a higher return on capital compared to Company A, despite both companies generating the same profit before interest and tax.

Why company B is better?

The perceived superiority of one company over another often stems from the way their capital structures are maintained. When one company appears to have a better performance than another, it is crucial to dissect the reason. In many instances, it is not because of core operational performance but rather because of the way their capital is structured.

Consider two companies, A and B, both are generating the same amount of profit before interest and tax (PBIT). Despite having identical core performances, Company B might seem more attractive to investors due to its utilization of debt capital alongside equity capital. This gives Company B an edge in terms of return on investment (ROI) compared to Company A.

However, this apparent advantage of Company B is not a result of better performance but rather reflects the impact of leveraging. By incorporating debt into its capital structure, Company B can amplify its returns by saving on the taxes to be paid on the interest component of the debt. Yet, this advantage is not inherently tied to the company's operational prowess. In reality, both companies have the same core performance, with each earning the same amount of profit.

To make a fair comparison between the two companies, it is essential to adjust for the tax advantage associated with debt. By factoring this, we can ensure that we are comparing the companies based on their operational efficiency rather than the influence of their capital structures. This adjustment nullifies the perceived advantage of debt financing and allows for a more accurate evaluation of the companies' performances.

	A	B
Equity	100	60
Debt	0	40
Total Capital	100	100
PBIT	10	10
Less: Interest @ 10%	0	4
PBT	10	6
Less: tax @ 50%	5	3
PAT	5	3
ROI/ ROCE/ ROIC	5%	7%
	pat/ equity	(pat + interest)/ Total capital
<i>After adjusting for tax advantage</i>		
ROI/ ROCE/ ROIC	5%	5%
	pat/ equity	(pat + interest (1-tax))/ Total capital

4) Net profit Margin

Net profit margin, along with gross profit margin, is an important ratio in assessing a company's profitability. Net profit margin represents the proportion of profit after tax compared to total income. It is calculated by dividing the profit after tax by the total income. This ratio provides insight into how efficiently a company is generating profit from its total revenue.

$$\text{Net profit margin} = \frac{\text{Profit after tax}}{\text{Total Income}}$$

5) Gross profit margin

Gross profit margin is calculated by dividing gross profit by operating revenue. The distinction between gross and net profit margin lies in their focus on core and non-core activities within a company's financial statements.

$$\text{Gross profit margin} = \frac{\text{Gross profit}}{\text{Operating revenue}}$$

In a company's annual report or profit and loss statement, revenue is typically derived from both core and non-core activities. Total income encompasses revenue from all sources, including both core and non-core activities. On the contrary, operating income specifically reflects the revenue generated solely from core activities, excluding non-core sources.

For instance, consider a manufacturing company that earns revenue from selling its products (core activity) as well as from interest on investments or rental income from unused space (non-core

activity). Total income would include revenue from all these sources, whereas operating income would focus solely on revenue generated from selling products.

By using gross profit margin, we can evaluate the profitability of the core activities of a company without being influenced by the revenue generated from non-core activities. This helps in assessing the financial performance of the company's core operations separately from its non-core activities.

Examples of non-operating income

Income from sales is a common revenue source, but for instance in an automobile companies revenue includes from sale as well as service. Additionally, investing excess capital in liquid mutual funds generates interest income. However, this interest income does not stem from the core activities of the company, such as manufacturing or selling vehicles.

Renting out extra space within the company's facilities also generates revenue, but it is considered non-core activity income. Core activities, on the other hand, involve manufacturing and selling vehicles, as well as providing vehicle services.

When considering profit after tax, it comprises both core and non-core profits. Total income encompasses revenue from both core and non-core activities.

Analysing profitability, some companies may show positive overall profit margins based on total income, while their gross profit margin may be negative. This indicates that they are not profiting from core activities but rather from non-core activities.

The question arises: is it beneficial to continue core activities or to focus solely on non-core activities? This decision can be complex, with arguments about the relationship between core and non-core activities.

In summary, it is essential to consider both core and non-core activities when assessing a company's financial performance, but can also vary based on the purpose of evaluation.