

Foundations of Accounting & Finance

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Week - 05

Lecture – 22

Ratio Analysis Part IV - Efficiency Ratios

I. Efficiency ratios

We have so far covered performance ratios, liquidity ratios, profitability ratios, and more. Now, we focus on efficiency ratios. Efficiency ratios throw light on how effectively resources are utilized, often referred to as turnover ratios. They measure the efficiency of using various resources, such as fixed assets, etc.

For instance, when we discuss about efficiency, we are examining how efficiently assets are utilized to generate revenue. These ratios provide insights into the effectiveness of resource utilization. One example of an efficiency ratio is the turnover ratio. It is essential to understand these ratios to examine the operational efficiency and effectiveness of a business. Following are the major efficiency ratios:

1) Fixed asset turnover ratio

The fixed asset turnover ratio measures how efficiently fixed assets are utilized in generating sales. It indicates the relationship between the sales value and the value of fixed assets.

For example, let us consider a scenario where the fixed assets are valued at 10 lakhs, but the sales generated are only 3 lakhs. This suggests that the fixed assets are underutilized, and it may take a longer time to recover the investment made. The profit or margin earned from these sales contributes to the recovery of the fixed asset investment.

On the contrary, if the sales amount to 100 lakhs while the fixed assets remain at 10 lakhs, indicating that sales are ten times the value of fixed assets, it implies higher efficiency. In this case, the profit margins contribute significantly to recovering the cost of the fixed assets or providing a return on investment.

To calculate the fixed asset turnover ratio, we divide net sales by the average value of fixed assets. This ratio helps assess the efficiency of utilizing fixed assets in generating sales revenue.

$$\text{Fixed asset turnover ratio} = \frac{\text{Net sales}}{\text{Average Fixed Assets}}$$

Why Average fixed assets?

When we calculate the fixed asset turnover ratio, we use the term "average net fixed assets." Let us examine why we specifically mention "average net fixed assets" and why we use the average instead of the opening or closing values.

Firstly, when we refer to net sales, we mean the gross sales minus discounts given and sales returns. This adjustment provides a clearer picture of the core sales revenue, excluding discounts and returns that may distort the calculation.

Now, when we talk about average net fixed assets, we are essentially considering the net block of fixed assets. The net block is derived from the gross block (the original value of assets) minus accumulated depreciation. This net block reflects the current value of assets, which is more relevant for assessing their utilization efficiency.

Using the average net fixed assets is crucial because it accounts for fluctuations in asset acquisitions and disposals throughout the year. For instance, during the fiscal year, new assets may be acquired while old ones might be sold. Therefore, taking a simple opening or closing value would not accurately represent the assets' utilization efficiency.

By calculating the average, we ensure that the evaluation encompasses the returns generated from assets acquired at different points during the year. It provides a more comprehensive understanding of how efficiently the assets are utilized to generate sales revenue.

How to calculate average assets?

To determine the average fixed assets, we typically use a straightforward approach. We add the opening fixed assets to the closing fixed assets and then divide the sum by 2. This method gives us the simple average of fixed assets over a specific period.

Mathematically, the formula for calculating the average fixed assets is:

$$\text{Fixed asset turnover ratio} = \frac{\text{Opening Fixed Assets} + \text{Closing Fixed Assets}}{2}$$

Understanding Fixed Asset Turnover Ratio

The fixed asset turnover ratio offers insights into how effectively fixed assets are utilized within an organization. It indicates the number of times the sales value covers the fixed assets, thereby highlighting the efficiency of asset utilization.

In essence, a higher fixed asset turnover ratio suggests that the organization is generating more sales revenue relative to its investment in fixed assets. This indicates efficient utilization of assets, which is a favourable indicator of operational effectiveness and financial health.

2) **Current asset turnover ratio**

In cases where your organization has a relatively low investment in fixed assets, such as in service industries where current assets play a significant role, the current asset turnover ratio becomes particularly relevant. This ratio helps assess how effectively how the organization utilizes its current assets to generate sales revenue.

$$\text{Current asset turnover ratio} = \frac{\text{Net sales}}{\text{Average Current Assets}}$$

3) **Total assets turnover ratio**

The total assets turnover ratio provides insights into the overall efficiency of asset utilization within an organization. While fixed assets constitute a significant portion of the assets, there are other assets in which the organization invests as well. Therefore, it is essential to assess the efficiency of the utilization of all assets collectively.

To calculate the total assets turnover ratio, we divide net sales by average net total assets. Now, why do we emphasize average net total assets? Similar to our discussion on fixed assets, it is crucial to consider the average net value of total assets to accurately measure the efficiency.

$$\text{Total asset turnover ratio} = \frac{\text{Net sales}}{\text{Average net total assets}}$$

When we refer to net total assets, we are considering various factors such as debtors. For instance, if a portion of debtors is doubtful or unlikely to pay, we deduct these amounts from the total debtors to determine the net debtors. This approach helps us evaluate the true position of assets and their efficiency in generating sales revenue.

When to use this ratio?

The decision to use either the fixed asset turnover ratio or the total asset turnover ratio depends on the nature of the business and the composition of its assets.

a) Fixed Asset Turnover Ratio:

- Use in contexts where a substantial portion of total assets comprises fixed assets, such as manufacturing industries with heavy investments in machinery, equipment, and infrastructure.
- It provides meaningful insights into the efficiency of utilizing fixed assets to generate sales revenue.

b) Total Asset Turnover Ratio:

- Suitable for businesses where fixed assets constitute a small proportion of total assets or where most assets are floating, such as service industries or trading businesses.
- Provides a broader perspective by considering all assets, including both fixed and floating assets.
- Useful for evaluating the overall efficiency of asset utilization across the organization.

4) Invested capital turnover ratio

Invested Capital Turnover Ratio indicates how effectively is the capital utilized by comparing sales revenue to the total invested capital. Total invested capital encompasses both long-term debt and equity, including reserves and surplus. Essentially, it examines whether the sales adequately justify the capital that is invested in the business. This ratio serves as a crucial measure of capital efficiency, shedding light on how effectively the financial resources are utilized to create revenue.

$$\text{Invested capital turnover ratio} = \frac{\text{Net sales}}{\text{Long term liabilities} + \text{Shareholders equity}}$$

5) Equity turnover ratio

The Equity Turnover Ratio assesses the efficiency with which equity capital is utilized within a company. By dividing net sales by total equity, this ratio reveals the relationship between sales revenue and the equity invested in the business. It becomes especially relevant when equity comprises a significant portion of the company's capital, overshadowing long-term debt.

$$\text{Equity turnover ratio} = \frac{\text{Net sales}}{\text{Shareholders equity}}$$

6) Working capital turnover ratio

Working Capital Turnover Ratio deals with the efficiency of utilizing working capital for daily operations. Essentially, it examines how effectively the funds allocated to day-to-day activities generate sales revenue.

Now, why consider the Working Capital Turnover Ratio? Well, working capital represents the money used for the organization's day-to-day operations. It encompasses assets such as cash, inventory, and accounts receivable, minus liabilities such as accounts payable. By evaluating this ratio, we can assess whether our working capital is being utilized efficiently.

To calculate the Working Capital Turnover Ratio, we divide net sales by average working capital. This provides us with a clear measure of how well our working capital is generating sales revenue.

$$\text{Working capital turnover ratio} = \frac{\text{Net sales}}{\text{Average working capital}}$$

How to calculate working capital

Working capital is essentially the difference between current assets and current liabilities. This calculation provides you with the net working capital requirement.

When I say 'net working capital requirement,' what does that mean? Essentially, it represents the amount of money I may need to borrow. But why would I need to borrow money? Well, let us break it down.

Gross working capital

Gross working capital refers to the total current assets of a company, excluding cash. To clarify, let us examine the components of current assets. Firstly, we have inventory, which encompasses raw materials, work in process inventory, and finished goods inventory. Secondly, we have debtors, who owe us money for goods sold.

Consider this scenario: if you only purchase goods with cash and do not use credit, your entire investment is tied up in inventory and debtors. Essentially, your money is invested in materials, which are then transformed into finished goods and sold. However, until the customers pay, this capital remains locked. Therefore, gross working capital represents the funds required for day-to-day operations

Net working capital

In addition to current assets, we also consider current liabilities. When I purchase raw materials on credit, I am essentially provided with a 30-day credit period, meaning I have not yet paid for those materials. Consequently, a portion of my current assets is funded by these current liabilities.

Net working capital is determined by subtracting the portion of current assets financed by current liabilities from the total current assets. This gives us the net working capital requirement, representing the amount of capital needed for operational activities after accounting for financing from current liabilities

Understanding working capital turnover ratio

In the context of the working capital turnover ratio, we assess the relationship between sales revenue and average working capital. By calculating how many times sales turnover occurs relative to the average working capital. Lower ratio indicates that a significant portion of capital is tied up and is not actively circulating. This could be due to stagnant inventory or outstanding

debtors. Conversely, a higher ratio signifies a rapid churn, with funds swiftly circulating through collections and payments. A high working capital turnover ratio suggests efficient capital utilization, indicating that the organization is effectively managing its resources.

7) **Inventory turnover ratio**

Inventory turnover ratio allows us to analyse the utilization of inventory within the working capital framework. It can be dissected into general inventory turnover, raw material inventory turnover, or finished goods inventory turnover, depending on the specific focus.

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

The inventory turnover ratio is calculated by dividing the cost of goods sold (COGS) by the average inventory. This indicates how many times the cost of goods sold matches the inventory value, indicating the rate at which inventory is being consumed and replenished. While average inventory provides a general picture, examining specific components such as raw material inventory or finished goods inventory offers deeper insights into operational efficiency.

Unlike the working capital turnover ratio, which is compared to sales, the inventory turnover ratio is evaluated based on COGS. This distinction allows us to assess how efficiently raw materials are utilized in production processes. For instance, raw material inventory turnover ratio measures the frequency of raw material consumption relative to COGS, highlighting the speed at which inventory is transformed into finished goods.

On the contrary, the finished goods inventory turnover ratio may be analysed in relation to sales, reflecting the efficiency of converting finished goods inventory into sales revenue. By employing these ratios, businesses can optimize inventory management strategies and enhance operational performance

8) **Cash turnover ratio**

Cash turnover ratio is calculated as net sales divided by average cash balance, indicating number of times that cash is turned over in an accounting period. However, it is essential to recognize that the relevance of this ratio varies across industries. For businesses with minimal cash transactions, such as those predominantly operating on credit, the cash turnover ratio may not provide meaningful insights.

$$\text{Cash turnover ratio} = \frac{\text{Net sales}}{\text{Average cash balance}}$$

Nevertheless, in industries where cash transactions are prevalent, such as retail or small businesses, the cash turnover ratio becomes a valuable tool. It reveals how effectively cash resources are utilized to generate sales revenue. Expanding on this concept, we can also introduce the concept

of cash and cash equivalents into the analysis. By incorporating not only liquid cash but also bank balances and marketable securities into the calculation, the ratio becomes more comprehensive.

Application of cash ratios

By analysing how quickly cash resources are replenished relative to sales revenue, these ratios provide valuable insights into the efficiency of cash utilization. For instance, if the cash turnover ratio indicates that cash resources are turning over 10, 20, or even 100 times in relation to sales revenue, it suggests a healthy cash flow cycle. Conversely, lower turnover ratios may indicate inefficiencies in cash utilization.

Interpretation of the ratios

When interpreting these ratios, it is crucial to recognize these are indicative ratios. The interpretation of each ratio depends heavily on the unique context in which it is being analysed.

For example, the fixed asset turnover ratio, in industries such as petroleum refinery or automobile assembly, where there is a significant initial investment in fixed assets, the ratio is very relevant compared to a service industry with fewer assets. Therefore, attempting to assign a benchmark number would be misleading. Similarly, the relevance of certain ratios varies based on the industry and specific circumstances. For instance, in asset-intensive industries, focusing solely on the fixed asset turnover ratio might provide a more comprehensive understanding compared to examining the total asset turnover ratio.

9) Accounts receivable turnover ratio accounts payable turnover ratio

Accounts Receivable Turnover Ratio: This ratio assesses receivables efficiency by dividing net credit sales by average receivables. For instance, if my credit sales amount to \$100 and my average receivables are \$1000, the ratio is 0.1. A low ratio suggests inefficiency in collecting receivables, indicating a backlog in payments and accumulation over time.

$$\text{Accounts Receivable Turnover Ratio} = \frac{\text{Credit sales}}{\text{Average receivables}}$$

Accounts Payable Turnover Ratio: Similarly, this ratio measures payment efficiency by dividing net credit purchases by average payables. It reflects how effectively a company honours its payment obligations. A mismatch between payables and credit terms may signal financial stress, prompting increased borrowing and interest expenses, ultimately affecting profitability.

In assessing these ratios, it is crucial to consider industry dynamics. Matching average payables and receivables helps ensure smooth cash flow management and optimal working capital utilization, minimizing the need for additional borrowing and interest expenses.

$$\text{Accounts Payable Turnover Ratio} = \frac{\text{Credit purchases}}{\text{Average payables}}$$

Generalizability of the ratios

Can one ratio tell the entire story of a company? No, these ratios are merely indicators. Using them in isolation won't provide a complete picture. Consider a company with minimal fixed assets, such as an IT firm operating in rented spaces. In such cases, calculating the fixed asset turnover ratio would be irrelevant. Instead, you must assess the relevance of each ratio in the context of the company you are analysing.

These ratios must be viewed holistically. Depending on the company, select the ratios that matter most. Remember, these are only indicative measures. For instance, dividend yield holds little significance for closely-held, unlisted companies since they are not publicly traded.

Ratio analysis should always be tailored to the company's characteristics. In a scenario where a company has zero debt, metrics like return on equity, return on invested capital, and return on capital employed will yield identical results.

Operating cycle

Operating cycle begins with placing an order for raw materials, which are then supplied to your stockyard, typically purchased on credit. After this, the raw materials are used for production. Upon completion of production, payment is made to the supplier. Subsequently, the finished goods are sold on credit, followed by the collection of cash from sales.

The operating cycle encompasses this entire process, starting from the moment the goods are supplied until cash is collected. While some textbooks define it from the receipt of raw materials, in practice, it commences from the moment the order is placed, as this initiates the obligation to pay.

Cash cycles

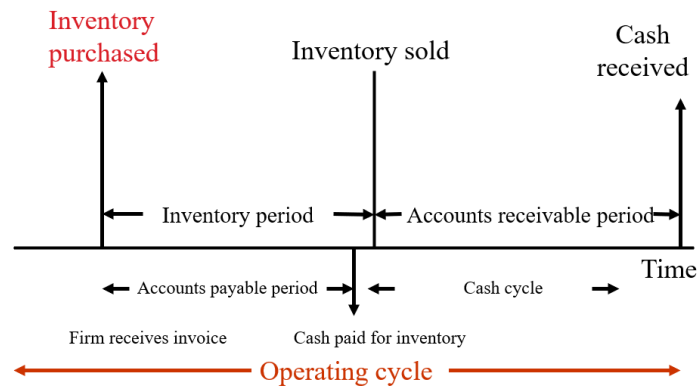
Cash cycle is very different from operating cycle. Cash cycle is when first money goes out this period alone is what we call it as the cash cycle. Why this period alone is what is called as the cash cycle? Because this is when the first money goes out and this is when the money you get back on what you have lost out there. So, this period is what we call it as a cash cycle (Figure 1).

Understanding the operating and cash cycle

The operating cycle tends to be longer, while the cash cycle should ideally be shorter. As the cash cycle shortens, the working capital requirement decreases. Conversely, if the cash cycle matches the operating cycle, more working capital is needed. Organizations must focus on reducing both cycles. Practices like Just-in-Time (JIT) help achieve this goal by enhancing the efficiency of the supply chain processes. With JIT, raw materials are promptly utilized in production upon arrival, minimizing storage time. Finished goods are swiftly delivered to customers, leading to immediate cash receipts.

By minimizing both the operating and cash cycles, organizations optimize their working capital management. Shorter cycles result in lower cash requirements, enhancing financial efficiency. It is essential to prioritize keeping both cycles low for optimal performance.

Figure 1: Operating and Cash cycle



Summary

In summary, the ratio analysis brings us to the conclusion of the first part of the course. We have covered the financial statements, including the P&L, balance sheets, cash flow statement, and ratio analysis, which constitute a significant portion of financial accounting. With this, we have completed the financial accounting part of the course. Moving forward, we will deal with cost accounting, followed by corporate finance.