CHAPTER 13
ANALYZING FINANCIAL STATEMENTS

For exam purposes I will present you with the financial statements of a company and ask you to analyze its activities. I do not expect you to remember all the ratios. The last page of the exam will contain a page of ratio formulas. I will not tell you the name of the ratio but will provide you with the formula. The exam question may require you to comment on profitability, liquidity, solvency, reasonableness of share price and/or any other aspect of the company which you believe is important to a potential investor. It will be necessary to identify and calculate the appropriate ratio and interpret what it means.

Interpretation of amounts reported on financial statements may be enhanced by expressing certain relationships as ratios or percents. Although many ratios can be calculated, only a few will be useful for a given decision. Having selected the relevant ratios, the analyst has the problem of evaluating the results. This evaluation involves the task of selecting one or more realistic standards with which to compare the results. Four types of standards are used: (1) historical standards, (2) external standards, (3) experience, and (4) planned standards. The interpretation of ratios may suggest strengths and weaknesses in the operations and/or the financial position of the company that should be accorded in-depth investigation and evaluation.

UNDERSTANDING THE BUSINESS

1. In Canada and the U.S., billions of dollars are spent each year preparing, auditing, and publishing financial statements. These expenditures are incurred because financial statements provide information that helps people make better economic decisions.

2. There are two broad groups of financial statement users.
   a. Managers of businesses (internal users) rely on data to assess the past and plan for the future.
   b. Investors, potential investors, creditors, potential creditors, investment analysts, governments, and others (external users) rely on data for investing, lending and regulatory decisions.

3. Users are interested in various types of information.
   a. Information about <u>past</u> performance is helpful to assess the prior success of a business and the effectiveness of management. This historical data is helpful for comparing companies. This includes such information as sales volume, cash flows, and return on investment.
   b. Information about the <u>present</u> condition of a business helps to judge the successes and failures of the past and to predict cash flow and profit potentials in the future. This includes information about assets owned or leased, capital structure, cash position, and inventory position.
   c. Information about the <u>future</u> performance of the business may be based on prior events. All decisions are future oriented, but they need reliable measures from the past and present to help in predicting outcomes in the future. Recent trends of a business may be good indicators of future expectations.

THE INVESTMENT DECISION

1. Investors and investment advisors (analysts) consider two types of returns on stock investments - dividends and stock appreciation.
2. Factors for investors to consider are:
   a. Economy wide factors include interest rate changes, gross national product, productivity, unemployment rates, general inflation, and import/export legislation. All of these items can impact the performance of a company.
   b. Industry factors include events of major impact on a given industry. Examples are droughts or floods affecting the food industry and oil prices abroad affecting oil and gas drilling.
   c. Individual company factors include nonquantitative information such as the mission statement, product quality, and customer loyalty. This knowledge is derived from observations beyond the financial statements.

UNDERSTANDING A COMPANY'S STRATEGY

1. Financial statement analysis should consider more than just the numbers on these statements. A solid understanding of a company's business strategy is the best place to begin financial statement analysis. That is, a decision maker must know what a company is trying to do before assessment of its success or failure can be accomplished. Sources of important information are found in company press releases, investment banking firm reports, and annual reports (including the president's letter and the Management Discussion and Analysis section of the Annual Report).

2. Many find a useful starting point for the financial analysis is the ROE profit driver analysis or DuPont analysis. This tool breaks down the ROE into logical "drivers" that include Profit, Asset Management and Financial Leverage.
3. Some items that are important to consider include the importance of cost factors, product differentiation, sales volume, customer service, employee compensation, and employee training.

FINANCIAL STATEMENT ANALYSIS

1. Financial results cannot be evaluated in isolation. The development of appropriate comparisons/benchmarks (over multiple years for one company and among several companies in an industry) is needed to properly analyze the information reported in financial statements. Finding an appropriate benchmark requires judgment and experience. Financial analysis is a sophisticated skill rather than a mere mechanical process.
2. There are two types of benchmarks for making financial comparisons.
    a. Time series analysis (trend analysis) involves the comparison of information for a single company over time (two or more years). A ratio computed for a single year does not provide much value in analysis. When several years are compared for a particular item, the trend can be analyzed to provide insights into the changes.
    b. Comparisons with similar companies (in the same line of business or industry) can provide for a better determination of a specific company's performance since financial results are often affected by industry and/or economy-wide factors.

Finding comparable companies may be challenging in some instances. Care should be exercised in choosing companies for comparisons to avoid misleading conclusions. The standard industrial classification (SIC) codes established by the federal government may be helpful to find comparable companies. Financial information services also provide assistance by publishing industry averages of common ratios for various industries.

3. Company comparisons must be undertaken with care given the inherent differences between companies.

TESTS OF PROFITABILITY

1. Profitability is a primary measure of the overall success of a company. It is a necessary condition for survival. No single measure is sufficient to conclude on a company's profitability. Tests of profitability focus on measuring the adequacy of income on the IS compared to primary factors from other financial statements.
2. Several profitability tests commonly used are as follows:

A. Return on Equity (ROE)

This ratio relates income to the owners' investments that provide for it.

$$\text{ROE} = \frac{\text{Income}}{\text{Average owners' equity}}$$

Income is before extraordinary items.

Average owners' equity is preferable to use when available since income is earned over a period of time. It is a book value amount (not current market value).

B. Return on Assets (ROA)

This ratio relates income to total assets employed (assets financed by **both** creditors and owners). This is considered to be a good ratio to measure management's ability to effectively utilize assets (whatever their source of financing). ROE could be very large for a company that is highly leveraged (large amount of debt) while ROA could be considerably lower.

$$\text{ROE} = \frac{\text{Income + Interest expense (Net of tax)}}{\text{Average total assets}}$$

Interest expense (net of tax) is added to income since it is a return to creditors but it was previously deducted to arrive at income.
Average total assets is preferable to use when available since income is earned over a period of time. It is a book value amount (not current market value).

C. Financial Leverage Percentage

This ratio considers both the return to owners and the return on total assets. Financial leverage (FL) is positive (an advantage) when ROE exceeds ROA. However, when ROA exceeds ROE, financial leverage is negative (a disadvantage). Positive leverage occurs when the rate of return on a company's investment is higher than the average

after-tax interest rate on borrowed funds (the company borrows at one rate and invests at a higher rate of return). Most companies have positive leverage which is a benefit to the owners. FL is a primary reason that most companies have debt in their capital structures.

$$FL = ROE - ROA$$

D. Earnings per Share (EPS)

This ratio relates income to a number of shares rather than to a number of dollars. EPS is one of the most widely used ratios. Companies often release quarterly EPS information to the media. EPS must be computed for the IS. If a company has extraordinary items in deriving NI, EPS must also be computed for NI before extraordinary items. There may be ***many*** complexities when computing EPS.

$$EPS = \frac{\text{Income}}{\text{Weighted Average \# C/S shares outstanding}}$$

The average # C/S shares outstanding is based on a weighted average. Income is only the amount that relates to common shareholders. If a company has preferred shareholders, adjustments may be needed to the numerator. Common stock equivalents (convertible P/S, etc.) are factored into the computation of the denominator.

E. Quality of Income

Financial analysts are concerned with the issue of whether a company's earnings are generated by its operations or by the aggressive use of liberal accounting policies. A ratio greater than one is considered to be indicative of higher quality earnings because each dollar of income is supported by at least one dollar of cash flow. A ratio below one represents a lower quality of earnings.

$$\text{Quality of Income} = \frac{\text{Cash flows from operating activities}}{\text{Net income}}$$

F. Profit Margin (PM)

This ratio is based on two IS amounts. It represents the percent of each sales dollar, on average, that is profit. Care should be used with this percent since it does not consider the resources that generated the sales or profit.

$$\text{PM} = \frac{\text{Income Before Extraordinary Items}}{\text{Net Sales}}$$

Income is before extraordinary items.

G. Fixed Asset Turnover Ratio

The fixed asset turnover ratio measures management's ability to generate sales with the company's use of available fixed assets. Here, fixed assets include property, plant, and equipment. This ratio measures management's effectiveness in utilizing the resources that are available. This ratio is especially valuable for capital intensive companies.

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Net sales revenue}}{\text{Average fixed assets}}$$

The asset turnover ratio is often used by financial analysts to evaluate companies that have large amounts of inventory and accounts receivable. It highlights whether companies are managing these non-fixed assets well.

$$\text{Asset Turnover} = \frac{\text{Net sales revenue}}{\text{Average total assets}}$$

Note that multiplying the asset turnover ratio by the profit margin ratio yields return on investment.

TESTS OF LIQUIDITY

1. Liquidity refers to a company's ability to meet its currently maturing debt payments. Liquidity tests focus on current assets and current liabilities. Three widely used ratios to measure the short-term financial strength (debt paying ability) of a business are the cash ratio, the current ratio, and the quick ratio. Receivable turnover and inventory turnover ratios are also measures of liquidity, as well as operating efficiency and asset management.

2. Five liquidity tests commonly used are as follows:

A. Cash Ratio

Companies with insufficient cash often fail. A measure of the adequacy of available cash is called the cash ratio. It indicates the cash reserve compared to current liabilities. This ratio can indicate financial distress. Certainly a company would like to have an adequate cash ratio. However, if a cash ratio is too high, better investment decisions need to be considered.

$$\text{Cash Ratio} = \frac{\text{Cash + cash equivalents}}{\text{Current liabilities}}$$

B. Current Ratio (CR)

This ratio measures the relationship between total current assets and total current liabilities (from BS amounts only). The CR measures the adequacy of working capital so it is sometimes called the working capital ratio (working capital = current assets - current liabilities). Though a CR of 2:1 is often quoted as adequate, the optimal level for the CR depends on the industry. If the CR is too low, liquidity may be threatened. If the CR is too high, it may indicate inefficiencies (excess amounts tied up in inventories and A/R) that could lead to serious operating difficulties.

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

C. Quick Ratio (QR)

This ratio is also called the acid test ratio. The amounts to compute the QR are found on the BS. The QR is a more stringent test of short-term liquidity than the CR. Quick assets are readily convertible into cash (quick to cash) at approximately their book values. Quick assets include cash, short-term investments, and A/R (net of allowance for doubtful accounts). Inventories and prepaid expenses are not included as quick assets since they are not assets to be quickly turned into cash. That is, they are more than "one step" away from cash.

$$QR = \frac{\text{Quick assets}}{\text{Current Liabilities}}$$

D. Receivable Turnover (R T/O)

This ratio is a measure of short-term liquidity as well as operating efficiency. This ratio reflects how many times the trade receivables were recorded and collected. It measures the effectiveness of the credit-granting and collection activities of a company. A high R T/O suggests effective collection activities, but it may also indicate an overly stringent credit policy causing lost sales and profits. A low R T/O suggests that credit is granted to poor credit risks and/or collection efforts are ineffective.

$$\text{R T/O} = \frac{\text{Net Credit Sales}}{\text{Average Net Trade Receivables}}$$

Credit sales should be used. If this amount is not available, total sales may be used to determine a "rough" approximation of this ratio. Average net trade receivables is preferable to use when available since credit sales occur over a period of time.

R T/O can be converted to a time basis known as average age of trade receivable (days sales uncollected). A rule of thumb is that average days to collect should not exceed 1.5 times the credit terms. However, many exceptions exist for this rule. If net credit sales are not available, this computation may not be meaningful.

$$\text{Average age of trade receivables} = \frac{\text{Days in the year}}{\text{R T/O}}$$

E. Inventory Turnover (I T/O)

This ratio reflects the relationship of inventory and the volume of goods sold during the period. It measures the nearness to cash (liquidity) of inventory. If inventory levels are not effectively managed, additional costs are incurred which must be passed on to customers in the form of higher sales prices. If this ratio is too high, sales may be lost because items are out of stock. If this ratio is too low, additional costs to carry inventory may be incurred. I T/O varies significantly by industry. Companies with items subject to deterioration typically have high I T/O. On the other hand, companies that sell expensive merchandise not subject to spoilage may have lower I T/O.

$$\text{I T/O} = \frac{\text{CGS}}{\text{Average inventory}}$$

Average inventory is preferable to use when available since CGS occurs over time. In addition, if a company is growing, inventory levels may increase substantially from the beginning to the end of the period.

I T/O can be converted to a time basis known as average days' supply in inventory.

$$\text{Average days' supply in inventory} = \frac{\text{Days in the year}}{\text{I T/O}}$$

F. Payable Turnover

This ratio evaluates the company's effectiveness in managing payable to trade creditors.

$$\text{Payable Turnover} = \frac{\text{Net Credit Purchases}}{\text{Average Net Trade Payables}}$$

Credit purchases not readily discernible from the financial statements. We can approximate net credit purchases in the following manner:

Purchases = Cost of Goods Sold + Ending Inventory – Beginning Inventory

The lower the ratio, the more concern with respect to a company's liquidity.

G. Using Ratios to Analyze the Operating Cycle

1. Operating cycle involves three distinct phases:
   i. the acquisition of inventory
   ii. the sale of inventory
   iii. collection of cash from customers

2. Ratios can help assess the length of the Operating Cycle
   i. accounts payable turnover
   ii. inventory turnover
   iii. accounts receivable turnover

TESTS OF SOLVENCY

1. Solvency refers to the ability of a company to meet its long-term debt obligations on a continuing basis. The relative amount of resources provided by creditors and owners is known as a company's equity position.
2. Debt is risky because of the contractual obligations it imposes on a company. Principal and interest payments are legal obligations that must be made on specific dates regardless of a company's earnings. In contrast, owners' equity does not have a maturity date. Dividends are payable to owners only after they are declared by the board of directors. Therefore, equity capital is less risky than debt.
3. In spite of the risk associated with debt, most companies obtain resources from creditors because of the advantages of positive financial leverage. When selecting a capital structure (the mix of debt and owners' equity), a company must balance the potential of higher returns with leverage against the higher risks of debt.
4. Three solvency and equity position tests commonly used are as follows:

A. Times Interest Earned

The failure to make required interest payments to creditors could cause a company to go into bankruptcy. The times interest earned ratio gives an indication of the margin of protection for creditors.

$$\text{Times Interest Earned Ratio} = \frac{\text{Net income + interest expense + income tax expense}}{\text{Interest expense}}$$

B. Cash Coverage Ratio

Some analysts prefer this ratio over the times interest earned ratio since it considers cash flows instead of accrual amounts on the income statement. After all, cash is what pays interest. Thus, the amounts used for computing this ratio are found on the statement of cash flows.

$$\text{Cash Coverage Ratio} = \frac{\text{Cash flows from operating activities before interest and taxes}}{\text{Interest paid (from cash flow statement)}}$$

C. Debt-To-Equity Ratio (D/E)

This ratio expresses the proportion of creditors' equity (debt) to owners' equity (permanent capital). The ratio indicates the amount of liabilities to each dollar of owners' equity.

$$\text{D/E Ratio} = \frac{\text{Total liabilities}}{\text{Shareholders' equity}}$$

$$\text{Owners' equity} = \text{Net assets (A - L)}$$

MARKET TESTS

1. Market tests relate the current market price (market worth) of a share of stock to an indicator of a return that might accrue to the investor. Unlike other ratios, these tests focus on the current stock price in the market place.
2. Two market tests commonly used are as follows:

A. Price/Earnings (P/E) Ratio

This ratio measures the relationship between the current market price of stock and EPS. The P/E ratio (a multiple) is used as an indicator of the future performance of the stock. High P/E multiples indicate that the market expects earnings to grow rapidly.

$$\text{P/E Ratio} = \frac{\text{Current Market Price Per Share}}{\text{EPS}}$$

This ratio may be inverted to determine the rate at which the stock market is capitalizing the current earnings.

B. Dividend Yield Ratio (DY)

This ratio measures the relationship between dividends paid per share and the current market price of a share of stock. DY for most stocks is relatively low compared to yields from other investments (savings accounts, for example). Stocks with high growth potential often offer lower DY than stocks with lower growth potential. Investors often invest in stock for price appreciation rather than dividends income.

$$\text{DY Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}}$$

INTERPRETING RATIOS AND OTHER ANALYTICAL CONSIDERATIONS

1. The computation of any particular ratio is not standardized except for EPS. The users of financial statement information should compute ratios based on their decision objectives. When using ratios computed by others, the computational approach should be ascertained.
2. To interpret a ratio, it should be compared with a standard that represents a desirable value such as an industry average. The optimal ratio for one company may not be the most favorable ratio for another company. Even when comparing companies within a specific industry, variations in the nature of operations, size, and accounting policies should be considered.
3. Many ratios represent averages which may obscure underlying factors that are of interest to analysts. This may be of particular concern when computing ratios from consolidated financial statements.
4. Despite limitations, ratio analysis is a useful tool for making decisions about a company. Ratios are effective in predicting "going concern" weaknesses and strengths.

OTHER FINANCIAL INFORMATION

1. Financial statements provide information for many users including the average investor. An understanding of basic accounting vocabulary (business language), methods, principles, and concepts enables a more effective analysis of the information contained in the financial statements. It is impossible to interpret accounting numbers without an understanding of what went into their development.
2. The first step in analyzing financial statements is a review of the accounting policies employed by a company. This information must be disclosed in the notes to the financial statements. This information enables an analyst to understand the impact of various accounting alternatives when comparing companies.