Purpose, Features and Interpretation of Financial Ratios

Jerek Joseph

What we need to know

- Here are all the points this PowerPoint aims to cover from the BME Y12 Syllabus.
- Interestingly, people struggle with this topic due to it being more of an accounting topic. As such, this PowerPoint provides background information to contextualise what you are learning. :)

- purpose, features and interpretation of the following basic financial ratios:
  - liquidity
    - current ratio
      - formula: $\frac{\text{current assets}}{\text{current liabilities}}$
  - profitability
    - gross profit ratio
      - formula: $\frac{\text{gross profit}}{\text{net sales}}$
    - profit ratio
      - formula: $\frac{\text{profit}}{\text{net sales}}$
    - expense ratio
      - formula: $\frac{\text{operating expenses}}{\text{net sales}}$
    - return on equity ratio
      - formula: $\frac{\text{profit}}{\text{equity at end}}$
  - stability
    - debt to equity ratio
      - formula: $\frac{\text{total liabilities}}{\text{total equity}}$

Definitions

The financial ratios you are about to learn contains components that are not very self-evident to understand. Here are some definitions to help!

- Assets are a **present economic resource** controlled by the **entity** (business) as a result of **past events** (transaction).
  - **Current assets** are assets you can convert into cash within **12 months.** i.e., cash, accounts receivable (debtors, that owe you money), inventory, prepaid expenses (paying for expenses in advance, i.e., rent, insurance)
  - While **non-current assets** longer-term assets with a useful value **over 12 months**. i.e., long term investments, land, property, plant, equipment, intangible assets (patents, trademarks etc)
- Liabilities are a **present obligation** (a duty that cannot be avoided) of the **entity** (business) to **transfer an economic resource** as a result of **past events** (transaction).
  - **Current Liabilities** can be paid **within 12 months**. i.e., accounts payable (creditors, that you owe typically for non-current assets), income tax owed
  - While **non-current liabilities** are paid over a period longer than 12 months. i.e., long term loans, leases, deferred tax
- Equity is the **residual (remaining) interest** in the assets of an **entity** (business) after you **deduct all its liabilities**.
  - It is found through the following equation: **Assets – Liabilities = Equity**

Definitions (Continued)

- Cost of Sales is all the costs that go into **the inventory** of a business.
- Net Sales refers to the **total amount of sales** made by a business (expressed monetarily) within a specific period, after sales returns, discounts and allowances are deducted.
- Gross Profit is the revenue a firm makes after deducting the **only** cost of sales.
- Profit on the other hand is all income after deducting **all expenses.**
- Income is the **increase in assets** or **decreases in liabilities**, that results in an **increase in equity**, **excluding contributions** from equity stakeholders (so equity increases do not count!)
  - i.e., sales, retained earnings (profit that was reinvested back into the firm)
- Expenses are the **decreases in assets** or **increases in liabilities**, that result in a decrease in equity, **excluding distributions** of equity, to equity stakeholders (so decreases in equity do not count!)
  - i.e., insurance, rent, wages, salaries, advertising, interest on loan, etc

Balance Sheets (Statement of Financial Position)

These are financial statements produced by firms that show **all assets, liabilities and equity**.

They always label Current/Non-Current Assets and Liability, along with Equity, in this format!

Also known as **Cash at Bank**, this is all the things that can be quickly converted into cash. i.e., current term deposits

This is also known as **Financial Assets**. They are stocks, bonds and mutual funds that Apple has invested in!

This is all the **debt owing TO Apple** FROM others (who are known as "debtors"). These are generally customers who don't pay upfront. i.e., interest free repayments, or Afterpay!

This is the same inventory you know, and what was discussed earlier in the course!

This is basically accounts receivable, **but not for regular customers**. This could be the Government owing tax refunds to Apple, or insurance claims that Apple has made.

Explained this one earlier, but this time it is stocks etc that are held or going to be held for **over 12 months**

Exactly what it sounds like!

This is all the **debt owing FROM Apple** TO others (who are known as "creditors"). This is generally for non-current assets they don't pay upfront, or anything else that they are repaying for.

This is a source of finance that Apple must repay **within 12 months**. i.e., short term loan

This is cash Apple received for products and services, that they still need to provide.

This is a source of finance, where Apple raised funds from the public that is **not** secured to their assets, but funds they must pay back regardless.

This is a source of finance that Apple must repay in a period **over 12 months**. i.e., long term loan, mortgage

These are **shares (stocks)** issued by Apple to shareholders

These are profits from previous periods that have been kept by Apple

Apple Inc.
CONSOLIDATED BALANCE SHEETS
(In millions, except number of shares which are reflected in thousands and par value)

	September 26, 2020	September 28, 2019
ASSETS:		
Current assets:		
Cash and cash equivalents	$ 38,016	$ 48,844
Marketable securities	52,927	51,713
Accounts receivable, net	16,120	22,926
Inventories	4,061	4,106
Vendor non-trade receivables	21,325	22,878
Other current assets	11,264	12,352
Total current assets	143,713	162,819
Non-current assets:		
Marketable securities	100,887	105,341
Property, plant and equipment, net	36,766	37,378
Other non-current assets	42,522	32,978
Total non-current assets	180,175	175,697
Total assets	$ 323,888	$ 338,516
LIABILITIES AND SHAREHOLDERS' EQUITY:		
Current liabilities:		
Accounts payable	$ 42,296	$ 46,236
Other current liabilities	42,684	37,720
Deferred revenue	6,643	5,522
Commercial paper	4,996	5,980
Term debt	8,773	10,260
Total current liabilities	105,392	105,718
Non-current liabilities:		
Term debt	98,667	91,807
Other non-current liabilities	54,490	50,503
Total non-current liabilities	153,157	142,310
Total liabilities	258,549	248,028
Commitments and contingencies		
Shareholders' equity:		
Common stock and additional paid-in capital, $0.00001 par value: 50,400,000 shares authorized; 16,976,763 and 17,772,945 shares issued and outstanding, respectively	50,779	45,174
Retained earnings	14,966	45,898
Accumulated other comprehensive income/(loss)	(406)	(584)
Total shareholders' equity	65,339	90,488
Total liabilities and shareholders' equity	$ 323,888	$ 338,516

See accompanying Notes to Consolidated Financial Statements.

Income Statements (Statement of Comprehensive Income)

These are financial statements produced by firms that show **all income and expenses.**

It's important to note that some income is represented as "**gain**". If it says "**loss**", it is an expense!

Also known as **Revenue**. Self-explanatory!

This is 'Cost of Sales' that I explained earlier.

This is the interest on term deposit or other investments

This is the interest on loan or other borrowings

This can be the "Profit for period" or "Loss for Period". **Whenever you see this, consider it to be "Profit"**

Sample Products Co.
Income Statement
For the Five Months Ended May 31, 2017

Sales		$100,000
Cost of goods sold		(75,000)
Gross profit		25,000
Operating expenses		
Selling expenses		
Advertising expense	(2,000)	
Commissions expense	(5,000)	(7,000)
Administrative expenses		
Office supplies expense	(3,500)	
Office equipment expense	(2,500)	(6,000)
Total operating expenses		(13,000)
Operating income		12,000
Non-Operating or other		
Interest revenues		5,000
Gain on sale of investments		3,000
Interest expense		(500)
Loss from lawsuit		(1,500)
Total non-operating		6,000
Net Income		$ 18,000

What is Ratio Analysis?

Ratio analysis is a quantitative measure of information which is contained in a firm's financial statement. It is typically used for comparative purposes and to measure various aspects of the firm's financial position and performance such as: profitability, effectiveness of policies, financial stability and cash flows.

Stakeholders that use this information include:

- Management
- Owners
- Investors
- Creditors
- Banks and other Financial Institutions
- Employees
- Government Regulatory Bodies

Results are typically expressed in percentages (200%).

Usefulness of Ratios

- **Ratios are not useful by themselves**
- Firms find ratios useful for decision making when they are compared with the results of **another benchmark** such as:
  - **Industry Averages** – these are averages derived from other firms offering similar goods and services.
  - **Previous Accounting Periods** – firms will use ratios calculated from financial statements they produced previously to determine trends/changes.
  - **Budgeted Amounts** – this is the comparison of whether actual figures in the financial statements meet their budgeted figures.
- Ratios need to be calculated **over several years** before a trend appears.
- Ratios **do not identify root causes of problems**, a change in ratio has several possible explanations that may not be identifiable by the firm.
- The data for ratios, and the ratios themselves, can be manipulated.
- Firms may not be comparable due to **size**, **diversity in product range, financial and business risk**, and **different markets**.
- Since analysis of ratios involves historical data being compared, that data **may not account for the state of the economy, business environment, and other internal factors**.
- Ratios are based on historical cost (expenses and income reported at the value they occurred).

Types of Ratios

Profitability – the ability for a firm to use (control) its expenses to generate an adequate return (profit).	Gross Profit Ratio Profit Ratio Expense Ratio Return on Equity Ratio
Stability (also known as Leverage) – refers to the way a firm has financed its assets. Whether it has used their owners' resources (equity) or borrowed funds (debt).	Debt to Equity Ratio
Liquidity – how easy it is for firms to turn assets into cash as a part of normal business operations, in addition to the capacity for firms to pay debts as they fall due.	Current Ratio (also known as Working Capital Ratio)

Profit Ratio

Profit Ratio – Shows the percentage of profit (after tax) that is contained in each dollar of sales.

$$\textbf{Profit Ratio} = \frac{\textbf{Profit (After Tax)}}{\textbf{Net Sales}} \times \frac{\textbf{100}}{\textbf{1}}$$

$$\text{Example} = \frac{\$21{,}000}{\$150{,}000} \times \frac{100}{1} = 14\%$$

For every $1 of sales made by a business, 14 cents is profit after tax.

Interpreting Profit Ratios

Increase – generally means, that the profit being earned has increased in proportion to the total sales.	Potential causes: • **A reduction in expenses** – through better control or management. • An **increase in the selling price** of products. • A **reduction in cost of sales** – through finding a cheaper supplier of inventory.
Decrease – generally means, the profit being earned has decreased in proportion to the total sales.	May be caused by: • An **increase in expenses** that are <u>not being passed</u> onto consumers in the form of increased selling prices. • **Increased competition** forcing the business to lower its selling prices. • **Increased cost of sales**.
Suggested Strategies for Improvement	• **Increase** average selling **price**. • **Reduce** operating **expenses**. • **Reduce cost of sales** by searching for a cheaper supplier of inventory.

Gross Profit Ratio

Gross Profit Ratio – shows the percentage of profit the business has earned from the sale of stock or inventory.

$$\textbf{Gross Profit Ratio} = \frac{\textbf{Gross Profit}}{\textbf{Net Sales}} \times \frac{\textbf{100}}{\textbf{1}}$$

Example

$$= \frac{\$60{,}000}{\$150{,}000} \times \frac{100}{1} = 40\%$$

This means that for every $1 of sales; 40 cents is gross profit.

Interpreting Gross Profit Ratios

Increase – generally means, that the profit earned from the sale of stock or inventory has **increased in proportion** to the total sales.	Potential Causes: • An increase in the selling price of products. • Might be selling a greater proportion of high-profit items. • A reduction in cost of sales – perhaps through finding a cheaper supplier of inventory or lower freight costs or customs duty.
Decrease – generally means, the profit earned from the sale of stock has **decreased in proportion** to the total sales.	May be caused by: • Might be selling a greater proportion of low profit items • Increased competition forcing the business to lower its selling prices. • Increase in cost of sales. • The difference between selling price and purchase price may have decreased.
Suggested Strategies for Improvement	• Increase average selling price. • Reduce cost of sales by searching for a cheaper supplier of inventory.

Expense Ratio

Expense Ratio – indicates the amount of sales dollars required to cover expenses (selling and distribution, general and administrative and financial).

$$\textbf{Expense Ratio} = \frac{\textbf{Expenses (exc. Cost of Sales)}}{\textbf{Net Sales}} \times \frac{\textbf{100}}{\textbf{1}}$$

$$= \frac{\$39{,}000}{\$150{,}000} \times \frac{100}{1} = 26\%$$

This means for that every one sales dollar the business is incurring 26 cents in expenses.

Interpreting Expense Ratios

Increase – generally means, that expenses are increasing in proportion to the total sales.	Potential Causes: • Greater rate of increase in expenses than the rate of increase in sales. • The incursion of an extraordinary expense. • Higher expenses with no increase or lower sales.
Decrease – generally means, that expenses are decreasing in proportion to the total sales.	May be caused by: • Lower rate of increase in expenses than the rate of increase in sales. • Lower expenses with an increase or no change in sales.
Suggested Strategies for Improvement	• Increase profit through increased sales while retaining expense levels at the current level. • Decrease expenses while retaining or improving sales.

Return-on-Equity Ratio

This ratio measures a firm's profit (revenue subtract all expenses) divided by its shareholders' equity.

It directly represents how much profit is generated by the business in proportion to the equity it gets from its shareholders.

$$\textbf{Expense Ratio} = \frac{\textbf{Profit}}{\textbf{Equity at end}} \times \frac{\textbf{100}}{\textbf{1}}$$

$$= \frac{\$83{,}000}{\$40{,}000} \times \frac{100}{1} = 207.5\%$$

This means for that every one dollar in equity the business has $2.07 in profit.

Interpreting Return-on-Equity Ratios

Increase – generally means, that profit is increasing in proportion to the total equity of the firm.	Potential Causes: • Increases in profits for that period. • Value of shareholders' equity has decreased (the firm might have cancelled shares, bought back shares etc.). • Less equity has been invested in proportion to the growth of the firm. • Increase in retained earnings.
Decrease – generally means, that profit is decreasing in proportion to the total equity of the firm.	May be caused by: • Reduced profits due to increase in expenses. • Value of shareholders' equity has increased due to decreased liabilities. • Decrease in retained earnings/profit.
Suggested Strategies for Improvement	• Increase profit through increased sales while retaining expense levels at the current level. • Investing in assets and reducing liabilities. • Increase dividend payments or buy back shares/equity of the firm.

Current (or Working Capital) Ratio

Current Ratio – The ability of a business to pay its short-term debts (specifically those being those debts that are payable in 12 months or less) using its current assets.

$$\textbf{Current Ratio} = \frac{\textbf{Current Assets}}{\textbf{Current Liabilities}} \times \frac{\textbf{100}}{\textbf{1}}$$

$$= \frac{\$60{,}000}{\$35{,}000} \times \frac{100}{1} = 171\%$$

This ratio means the business has $1.71 of current assets available to pay every $1.00 of its current liabilities.

Interpreting Current Ratios

< 100%	Indicates that business is likely to find it difficult to pay its short-term debts.
Between 100% and 200%	Indicates that the business should be able to pay its short-term debts.
More than 200%	Indicates that the business should be able to pay its short-term debts and has extra current resources available. It can also indicate that the business is not making the best use of its recourses to generate revenue. An excessively high current ratio where resources are being used inefficiently ***may*** be due to: • High amounts of uncollected Accounts Receivables. • Large volumes of obsolete Inventory.
Suggested Strategies for Improvement	• Increase the rate at which debtors repay amounts owed through a tighter credit (lending and repayment) policy. • Improve stock turnover in order to generate sales income and in turn increase the businesses available cash at bank. • Monitoring expenses closely. • Repay creditors faster to take advantage of discounts. • Decrease current liabilities by renegotiating short-term loans into long-term if appropriate.

Debt-to-Equity Ratio

Stability (or leverage) refers to the extent of borrowing of a business.

This is important because a highly leveraged business is likely to have large interest and loan repayments and as a result faces an increased risk of failure.

This ratio that measures the stability of a business.

$$\text{Debt to Equity} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \times \frac{100}{1}$$

[i.e., Current Liabilities + Non-Current Liabilities]

[i.e., Total Assets – Total Liabilities]

Interpreting Debt-to-Equity Ratios

High Ratio	Firm may have trouble paying the loans off due to high external borrowings. (highly geared).
Low Ratio	Firm has minimum external borrowings and can easily pay off loans. (lowly geared).
Ratio Increases	• It can be due to increased borrowings through items such as loans or debentures. • However, an increase in the ratio is **not necessarily a bad thing**. • This is because, despite higher interest and principal repayments, the business may have borrowed funds to expand its operations which may lead to growth in sales and higher profits.
Ratio Decreases	It may be due to the repayment of loans, shares issues, increased profits and retaining more profits within the business. While this is typically is a good thing and reduces the risk profile of the business, it can also mean the businesses future growth is slow as a lack of borrowed funds can suggest a lack of future plans to expand.
Interpretations	**There is no one acceptable figure for the debt-to-equity ratio**. A small business may need to have a debt-to-equity ratio of about 70% or less whilst a large corporation could have one that is between 100% and 200% and still operate successfully.
Suggested Strategies for Improvement	• Reinvest profit back into business • Decrease owner's drawings • Contribute additional capital • Select external financing with low rates of interest