3B) FINANCIAL STATEMENT ANALYSIS

(Ratio and Cash Flow analysis)

Financial statement analysis (or financial analysis) is the process of reviewing and analyzing a company's financial statements to make better economic decisions. These statements include the income statement, balance sheet, statement of cash flows, and a statement of retained earnings. Financial statement analysis is a method or process involving specific techniques for evaluating risks, performance, financial health, and future prospects of an organization.

It is used by a variety of stakeholders, such as credit and equity investors, the government, the public, and decision-makers within the organization. These stakeholders have different interests and apply a variety of different techniques to meet their needs. For example, equity investors are interested in the long-term earning power of the organization and perhaps the sustainability and growth of dividend payments. Creditors want to ensure the interest and principal is paid on the organizations debt securities (e.g., bonds) when due.

Common methods of financial statement analysis include fundamental analysis, DuPont analysis, horizontal and vertical analysis and the use of financial ratios. Historical information combined with a series of assumptions and adjustments to the financial information may be used to project future performance. The Chartered Financial Analyst designation is available for professional financial analysts.

Benjamin Graham and David Dodd first published their influential book "Security Analysis" in 1934. A central premise of their book is that the market's pricing mechanism for financial securities such as stocks and bonds is based upon faulty and irrational analytical processes performed by many market participants. This results in the market price of a security only occasionally coinciding with the intrinsic value around which the price tends to fluctuate. Investor Warren Buffett is a well-known supporter of Graham and Dodd's philosophy.

The Graham and Dodd approach is referred to as Fundamental analysis and includes: 1) Economic analysis; 2) Industry analysis; and 3) Company analysis. The latter is the primary realm of financial statement analysis. On the basis of these three analyses the intrinsic value of the security is determined.

Horizontal and vertical analysis **:** Horizontal analysis compares financial information over time, typically from past quarters or years. Horizontal analysis is performed by comparing financial data from a past statement, such as the income statement. When comparing this past information one will want to look for variations such as higher or lower earnings.

Vertical analysis is a percentage analysis of financial statements. Each line item listed in the financial statement is listed as the percentage of another line item. For example, on an income statement each line item will be listed as a percentage of gross sales. This technique is also referred to as normalization or common-sizing.

Financial ratio analysis **:** Financial ratios are very powerful tools to perform some quick analysis of financial statements. There are four main categories of ratios **:**
(1) Liquidity Ratios (2)Profitability Ratios
(3) Activity Ratios and (4) Leverage ratios.
These are typically analyzed over time and across competitors in an industry.

(1) *Liquidity ratios* are used to determine how quickly a company can turn its assets into cash if it experiences financial difficulties or bankruptcy. It also measures Co.'s ability to pay ST & LT obligation and ability to remain in business. A few common liquidity ratios are the current ratio and the liquidity index. (a) The current ratio is *Current assets/Current liabilities* and measures how much liquidity is available to pay for liabilities. (b) The liquidity index shows how quickly a company can turn assets into cash and is calculated by **:** [(Trade receivables x Days to liquidate) + (Inventory x Days to liquidate)] / (Trade Receivables + Inventory).
(c) Quick Ratio – Also called Acid Ratio. Mathematically calculated as –

$$\frac{\text{(Cash + Cash Equivalent + ST Investment + Current Receivables)}}{\text{Current Liabilities}}$$

(2) *Profitability ratios* are ratios that demonstrate how profitable a company is. A few popular profitability ratios are the breakeven point and gross profit ratio. The breakeven point calculates how much cash a company must generate to break even with their start up costs. The gross profit ratio is equal to (revenue - the cost of goods sold)/revenue. This ratio shows a quick snapshot of expected revenue.

(3) *Activity ratios* are meant to show how well management is managing the company's resources. Two common activity ratios are accounts payable turnover and accounts receivable turnover. These ratios demonstrate how long it takes for a company to pay off its accounts payable and how long it takes for a company to receive payments, respectively.

Debtors turnover ratio – Receivable TO ratio is an activity ratio, measuring how efficiently a firm uses its assets. A high ratio implies either the Co. operates on a cash basis or that its extension of credit and collection of accounts receivable is efficient. How many times per year do the debtors buy and pay on an average? eg. – Debtors on an average have TO of 12, means debtors on an average buy and pay 12 times per year. Putting in another way – debtors take an average of 30 days to pay after sales. If you could decrease the 30 days – means you are converting your debtors to pay faster, this is what we want.
Debtors TO ratio = Credit Sales / Average Debtors
Average Debtors = (Opening Debtors' Balance + Closing Balance) / 2

(4) *Leverage ratios* depict how much a company relies upon its debt to fund operations. A very common leverage ratio used for financial statement analysis is the debt-to-equity ratio. This ratio shows the extent to which management is willing to use debt in order to fund operations. This ratio is calculated as: (Long-term debt + Short-term debt + Leases)/ Equity.

DuPont analysis uses several financial ratios that multiplied together equal return on equity, a measure of how much income the firm earns divided by the amount of funds invested (equity).

A Dividend discount model (DDM) may also be used to value a company's stock price based on the theory that its stock is worth the sum of all of its future dividend payments, discounted back to their present value. In other words, it is used to value stocks based on the net present value of the future dividends.

Financial statement analyses are typically performed in spreadsheet software and summarized in a variety of formats.
Recasting financial statements **:** Investors typically are attempting to understand how much cash the company will generate in the future and its rate of profit growth, relative to the amount of capital deployed. Analysts may modify ("recast") the financial statements by adjusting the underlying assumptions to aid in this computation. For example, operating leases (treated like a rental transaction) may be recast as capital leases (indicating ownership), adding assets and liabilities to the balance sheet. This affects the financial statement ratios.

Recasting financial statements requires a solid understanding of accounting theory. Once the cash flow in future years is projected, a discount rate or interest rate will be applied to measure the value of the company and its stock or debt.

When it comes to investing, analyzing financial statement information (also known as quantitative analysis), is one of, if not the most important element in the fundamental analysis process. At the same time, the massive amount of numbers in a company's financial statements can be bewildering and intimidating to many investors. However, through financial ratio analysis, you will be able to work with these numbers in an organized fashion.

The objective of this tutorial is to provide you with a guide to sources of financial statement data, to highlight and define the most relevant ratios, to show you how to compute them and to explain their meaning as investment evaluators.

In this regard, we draw your attention to the complete set of financials for Zimmer Holdings, Inc. (ZMH), a publicly listed company on the NYSE that designs, manufactures and markets orthopedic and related surgical products, and fracture-management devices worldwide. We've provided these statements in order to be able to make specific reference to the account captions and numbers in Zimmer's financials in order to illustrate how to compute all the ratios.

Among the dozens of financial ratios available, we've chosen 30 measurements that are the most relevant to the investing process and organized them into six main categories as per the following list **:**

1) Liquidity Measurement Ratios
(i) Current Ratio
(ii) Quick Ratio
(iii) Cash Ratio
(iv) Cash Conversion Cycle

2) Profitability Indicator Ratios
(i) Profit Margin Analysis
(ii) Effective Tax Rate

(iii) Return On Assets
(iv) Return On Equity
(v) Return On Capital Employed

3) Debt Ratios
(i) Overview Of Debt
(ii) Debt Ratio
(iii) Debt-Equity Ratio
(iv) Capitalization Ratio
(v) Interest Coverage Ratio
(vi) Cash Flow To Debt Ratio
4) Operating Performance Ratios
(i) Fixed-Asset Turnover
(ii) Sales/Revenue Per Employee
(iii) Operating Cycle

5) Cash Flow Indicator Ratios
(i) Operating Cash Flow/Sales Ratio
(ii) Free Cash Flow/Operating Cash Ratio
(iii) Cash Flow Coverage Ratio
(iv) Dividend Payout Ratio

6) Investment Valuation Ratios
(i) Per Share Data
(ii) Price/Book Value Ratio
(iii) Cash Flow Coverage Ratio
(iv) Price/Earnings Ratio
(v) Price/Earnings To Growth Ratio
(vi) Price/Sales Ratio
(vii) Dividend Yield
(viii) Enterprise Value Multiple
(ix) Ratio Analysis: Using Financial Ratios
(x) By Investopedia Staff

There is a lot to be said for valuing a company, it is no easy task. If you have yet to discover this goldmine, the satisfaction one gets from tearing apart a companies financial statements and analyzing it on a whole different level is great - especially if you make or save yourself money for your efforts.

The Ratios -

Performance	Activity
Book Value Per Common Share	Asset Turnover
Cash Return On Assets	Average Collection Period
Vertical Analysis	Inventory Turnover
Dividend Payout Ratio	Financing
Earnings Per Share	Debt Ratio
Gross Profit Margin	Debt / Equity Ratio
Price/Earnings Ratio	Liquidity Warnings
Profit Margin	Acid-Test Ratio
Return on Assets	Interest Coverage
Return on Equity	Working Capital

A financial ratio or accounting ratio is a relative magnitude of two selected numerical values taken from an enterprise's financial statements. Often used in accounting, there are many standard ratios used to try to evaluate the overall financial condition of a

corporation or other organization. Financial ratios may be used by managers within a firm, by current and potential shareholders (owners) of a firm, and by a firm's creditors. Financial analysts use financial ratios to compare the strengths and weaknesses in various companies. If shares in a company are traded in a financial market, the market price of the shares is used in certain financial ratios.

Ratios can be expressed as a decimal value, such as 0.10, or given as an equivalent percent value, such as 10%. Some ratios are usually quoted as percentages, especially ratios that are usually or always less than 1, such as earnings yield, while others are usually quoted as decimal numbers, especially ratios that are usually more than 1, such as P/E ratio; these latter are also called multiples. Given any ratio, one can take its reciprocal; if the ratio was above 1, the reciprocal will be below 1, and conversely. The reciprocal expresses the same information, but may be more understandable: for instance, the earnings yield can be compared with bond yields, while the P/E ratio cannot be: for example, a P/E ratio of 20 corresponds to an earnings yield of 5%.

Sources of data for financial ratios **:** Values used in calculating financial ratios are taken from the balance sheet, income statement, statement of cash flows or (sometimes) the statement of retained earnings. These comprise the firm's "accounting statements" or financial statements. The statements' data is based on the accounting method and accounting standards used by the organisation.
Purpose and types of ratios **:** Financial ratios quantify many aspects of a business and are an integral part of the financial statement analysis. Financial ratios are categorized according to the financial aspect of the business which the ratio measures. Liquidity ratios measure the availability of cash to pay debt. Activity ratios measure how quickly a firm converts non-cash assets to cash assets. Debt ratios measure the firm's ability to repay long-term debt. Profitability ratios measure the firm's use of its assets and control of its expenses to generate an acceptable rate of return. Market ratios measure investor response to owning a company's stock and also the cost of issuing stock. These are concerned with the return on investment for shareholders, and with the relationship between return and the value of an investment in company’s shares.

Financial ratios allow for comparisons -
- between companies
- between industries
- between different time periods for one company
- between a single company and its industry average

Ratios generally are not useful unless they are benchmarked against something else, like past performance or another company. Thus, the ratios of firms in different industries, which face different risks, capital requirements, and competition are usually hard to compare.
Accounting methods and principles **:** Financial ratios may not be directly comparable between companies that use different accounting methods or follow various standard accounting practices. Most public companies are required by law to use generally accepted accounting principles for their home countries, but private companies, partnerships and sole proprietorships may not use accrual basis accounting. Large multi-national corporations may use International Financial Reporting Standards to produce their financial statements, or they may use the generally accepted accounting principles of their home country.

There is no international standard for calculating the summary data presented in all financial statements, and the terminology is not always consistent between companies, industries, countries and time periods.

Abbreviations and terminology **:** Various abbreviations may be used in financial statements, especially financial statements summarized on the Internet. Sales reported by a firm are usually net sales, which deduct returns, allowances, and early payment discounts from the charge on an invoice. Net income is always the amount *after* taxes, depreciation, amortization, and interest, unless otherwise stated. Otherwise, the amount would be EBIT, or EBITDA (see below).

Companies that are primarily involved in providing services with labour do not generally report "Sales" based on hours. These companies tend to report "revenue" based on the monetary value of income that the services provide.

Note that Shareholders' Equity and Owner's Equity are *not* the same thing, Shareholder's Equity represents the total number of shares in the company multiplied by each share's book value; Owner's Equity represents the total number of shares that an individual shareholder owns (usually the owner with controlling interest), multiplied by each share's book value. It is important to make this distinction when calculating ratios.

Other abbreviations
(*Note:* These are not ratios, but values in currency.)
COGS = Cost of goods sold, or cost of sales.
EBIT = Earnings before interest and taxes
EBITDA = Earnings before interest, taxes, depreciation, and amortization
EPS = Earnings per share

Ratios

Profitability ratios

Profitability ratios measure the company's use of its assets and control of its expenses to generate an acceptable rate of return

Gross margin, Gross profit margin or Gross Profit Rate

= Gross Profit / Net Sales or (Net Sales – COGS) / Net Sales

Operating margin, Operating Income Margin, Operating profit margin or Return on sales (ROS) = Operating Income / Net Sales

Note **:** Operating income is the difference between operating revenues and operating expenses, but it is also sometimes used as a synonym for EBIT and operating profit. This is true if the firm has no non-operating income. (Earnings before interest and taxes / Sales).

Profit margin, net margin or net profit margin = Net Profit / Net Sales

Return on equity (ROE) = Net Income / Average Shareholders Equity

Return on Assets (ROA ratio or Du Pont ratio) = Net Income / Average total Assets

Return on Assets (ROA) = Net Income / Total Assets

Return on Assets Du Pont (ROA Du Pont)

= (Net Income / Net Sales)(Net Sales / Total Assets)

Return on capital employed (ROCE) = EBIT / Capital Employed

Note **:** this is somewhat similar to (ROI), which calculates Net Income per Owner's Equity

Net gearing = (Net Debt / Equity

Basic Earnings Power Ratio = EBIT / Total Assets

Liquidity ratios measure the availability of cash to pay debt.

Current ratio (Working Capital Ratio) = Current Asset / Current Liabilities

Acid-test ratio (Quick ratio)

= [Current Assets – (Inventories + Prepayments)] / Current Liabilities

Cash Ratio = Cash and Marketable Securities / Current Liabilities

Operating Cah Flow ratio = Operating Cash Flow / Total Debt

Activity ratios (Efficiency Ratios) **-** Activity ratios measure the effectiveness of the firm's use of resources.

Average collection period Accounts Receivable / (Annual Credit Sales / 365 Days)

Asset turnover = Net Sales / Total Assets

Stock turnover ratio = Costs of Goods Sold / Average Inventory

Debt ratios (leveraging ratios)

Debt ratios quantify the firm's ability to repay long-term debt. Debt ratios measure financial leverage.

Debt ratio = Total Liabilities / Total Assets

Debt to equity ratio

= Long Term Debt + Value of Leases / Average Shareholders Equity

Debt service coverage ratio

= Net Operating Income / Total Debt Service

Market ratios

Market ratios measure investor response to owning a company's stock and also the cost of issuing stock. These are concerned with the return on investment for shareholders, and with the relationship between return and the value of an investment in company’s shares.

Earnings per share (EPS) = Net Earnings / Earning per share

Payout ratio = Dividends / Earnings or Dividends / EPS

P/E ratio = Market price per share / Diluted EPS

Dividend Yield = Dividend / Current Market Price

Other Market Ratios -

EV/EBITDA = Enterprise Value / EBITDA

EV/Sales = Enterprise Value / Net Sales

Sector-specific ratios

EV/capacity

EV/output

If you believe in the old adage, "it takes money to make money," then you can grasp the essence of cash flow and what it means to a company. The statement of cash flows reveals how a company spends its money (cash outflows) and where the money comes from (cash inflows). We know that a company's profitability, as shown by its net income, is an important investment evaluator. It would be nice to be able to think of this net income figure as a quick and easy way to judge a company's overall performance. However, although accrual accounting provides a basis for matching revenues and expenses, this system does not actually reflect the amount the company has received from the profits illustrated in this system. This can be a vital distinction. In this article, we'll explain what the cash flow statement can tell you and show you where to look to find this information.

Difference Between Earnings and Cash : In an August 1995 article in *Individual Investor*, Jonathan Moreland provides a very succinct assessment of the difference between earnings and cash. He says "at least as important as a company's profitability is its liquidity - whether or not it's taking in enough money to meet its obligations. Companies, after all, go bankrupt because they cannot pay their bills, not because they are unprofitable. Now, that's an obvious point. Even so, many investors routinely ignore it. How? By looking only at a firm's income statement and not the cash flow statement."

The Statement of Cash Flows : Cash flow statements have three distinct sections, each of which relates to a particular component - operations, investing and financing - of a company's business activities. For the less-experienced investor, making sense of a statement of cash flows is made easier by the use of literally-descriptive account captions and the standardization of the terminology and presentation formats used by all companies:

Cash Flow from Operations **:** This is the key source of a company's cash generation. It is the cash that the company produces internally as opposed to funds coming from outside investing and financing activities. In this section of the cash flow statement, net income (income statement) is adjusted for non-cash charges and the increases and decreases to working capital items - operating assets and liabilities in the balance sheet's current position.

Cash Flow from Investing **:** For the most part, investing transactions generate cash outflows, such as capital expenditures for plant, property and equipment, business acquisitions and the purchase of investment securities. Inflows come from the sale of assets, businesses and investment securities. For investors, the most important item in this category is capital expenditures (more on this later). It's generally assumed that this use of cash is a prime necessity for ensuring the proper maintenance of, and additions to, a company's physical assets to support its efficient operation and competitiveness.
Cash Flow from Financing **:** Debt and equity transactions dominate this category. Companies continuously borrow and repay debt. The issuance of stock is much less frequent. Here again, for investors, particularly income investors, the most important item is cash dividends paid. It's cash, not profits, that is used to pay dividends to shareholders.

A Simplified Approach to Cash Flow Analysis
A company's cash flow can be defined as the number that appears in the cash flow statement as net cash provided by operating activities, or "net operating cash flow," or some version of this caption. However, there is no universally accepted definition. For instance, many financial professionals consider a company's cash flow to be the sum of its net income and depreciation (a non-cash charge in the income statement). While often coming close to net operating cash flow, this professional's shortcut can be way off the mark and investors should stick with the net operating cash flow number.

While cash flow analysis can include several ratios, the following indicators provide a starting point for an investor to measure the investment quality of a company's cash flow:

Operating Cash Flow/Net Sales **:** This ratio, which is expressed as a percentage of a company's net operating cash flow to its net sales, or revenue (from the income statement), tells us how many dollars of cash we get for every dollar of sales.

There is no exact percentage to look for but obviously, the higher the percentage the better. It should also be noted that industry and company ratios will vary widely. Investors should track this indicator's performance historically to detect significant variances from the company's average cash flow/sales relationship along with how the company's ratio compares to its peers. Also, keep an eye on how cash flow increases as sales increase; it is important that they move at a similar rate over time.

History of Free Cash Flow **:** Free cash flow is often defined as net operating cash flow minus capital expenditures, which, as mentioned previously, are considered obligatory. A steady, consistent generation of free cash flow is a highly favorable investment quality - so make sure to look for a company that shows steady and growing free cash flow numbers.

For the sake of conservatism, you can go one step further by expanding what is included in the free cash flow number. For example, in addition to capital expenditures, you could also include dividends for the amount to be subtracted from net operating cash flow to get to get a more comprehensive sense of free cash flow. This could then be compared to sales as was shown above.

As a practical matter, if a company has a history of dividend payments, it cannot easily suspend or eliminate them without causing shareholders some real pain. Even dividend payout reductions, while less injurious, are problematic for many shareholders. In general, the market considers dividend payments to be in the same category as capital expenditures - as necessary cash outlays.

But the important thing here is looking for stable levels. This shows not only the company's ability to generate cash flow but it also signals that the company should be able to continue funding its operations.

Comprehensive Free Cash Flow Coverage

You can calculate a comprehensive free cash flow ratio by dividing the comprehensive free cash flow by net operating cash flow to get a percentage ratio - the higher the percentage the better.

Free cash flow is an important evaluative indicator for investors. It captures all the positive qualities of internally produced cash from a company's operations and subjects it to a critical use of cash - capital expenditures. If a company's cash generation passes this test in a positive way, it is in a strong position to avoid excessive borrowing, expand its business, pay dividends and to weather hard times.

The term "cash cow," which is applied to companies with ample free cash flow, is not a very elegant term, but it is certainly one of the more appealing investment qualities you can apply to a company with this characteristic.

Once you understand the importance of how cash flow is generated and reported, you can use these simple indicators to conduct an analysis on your own portfolio. The point, like Moreland said above, is to stay away from "looking only at a firm's income statement and not the cash flow statement." This approach will allow you to discover how a company is managing to pay its obligations and make money for its investors.

Fundamental Analysis : The Cash Flow Statement

The cash flow statement shows how much cash comes in and goes out of the company over the quarter or the year. At first glance, that sounds a lot like the income statement in that it records financial performance over a specified period. But there is a big difference between the two.

What distinguishes the two is accrual accounting, which is found on the income statement. Accrual accounting requires companies to record revenues and expenses when transactions occur, not when cash is exchanged. At the same time, the income statement, on the other hand, often includes non-cash revenues or expenses, which the statement of cash flows does not include.

Just because the income statement shows net income of $10 does not means that cash on the balance sheet will increase by $10. Whereas when the bottom of the cash flow statement reads $10 net cash inflow, that's exactly what it means. The company has $10 more in cash than at the end of the last financial period. You may want to think of net cash from operations as the company's "true" cash profit.

Because it shows how much actual cash a company has generated, the statement of cash flows is critical to understanding a company's fundamentals. It shows how the company is able to pay for its operations and future growth.

Indeed, one of the most important features you should look for in a potential investment is the company's ability to produce cash. Just because a company shows a profit on the income statement doesn't mean it cannot get into trouble later because of insufficient cash flows. A close examination of the cash flow statement can give investors a better sense of how the company will fare.

Three Sections of the Cash Flow Statement

Companies produce and consume cash in different ways, so the cash flow statement is divided into three sections: cash flows from (i) operations, (ii) financing and (iii) investing. Basically, the sections on operations and financing show how the company gets its cash, while the investing section shows how the company spends its cash.

(i) Cash Flows from Operating Activities **:** This section shows how much cash comes from sales of the company's goods and services, less the amount of cash needed to make and sell those goods and services. Investors tend to prefer companies that produce a net positive cash flow from operating activities. High growth companies, such as technology firms, tend to show negative cash flow from operations in their formative years. At the same time, changes in cash flow from operations typically offer a preview of changes in net future income. Normally it's a good sign when it goes up. Watch out for a widening gap between a company's reported earnings and its cash flow from operating activities. If net income is much higher than cash flow, the company may be speeding or slowing its booking of income or costs.

(ii) Cash Flows from Investing Activities **:** This section largely reflects the amount of cash the company has spent on capital expenditures, such as new equipment or anything else that needed to keep the business going.

It also includes acquisitions of other businesses and monetary investments such as money market funds.

You want to see a company re-invest capital in its business by at least the rate of depreciation expenses each year. If it doesn't re-invest, it might show artificially high cash inflows in the current year which may not be sustainable.

(iii) Cash Flow From Financing Activities **:** This section describes the goings-on of cash associated with outside financing activities. Typical sources of cash inflow would be cash raised by selling stock and bonds or by bank borrowings. Likewise, paying back a bank loan would show up as a use of cash flow, as would dividend payments and common stock repurchases.

Cash Flow Statement Considerations **:** Savvy investors are attracted to companies that produce plenty of free cash flow (FCF). Free cash flow signals a company's ability to pay debt, pay dividends, buy back stock and facilitate the growth of business. Free cash flow, which is essentially the excess cash produced by the company, can be returned to shareholders or invested in new growth opportunities without hurting the existing operations. The most common method of calculating free cash flow is:

Net Income
+ Amortization / Depreciation
- Changes in Working Capital
- Capital Expenditure

= Free Cash Flow

Amortization is an accounting term that refers to the process of allocating the cost of an intangible asset over a period of time. It also refers to the repayment of loan principal over time.

Ideally, investors would like to see that the company can pay for the investing figure out of operations without having to rely on outside financing to do so. A company's ability to pay for its own operations and growth signals to investors that it has very strong fundamentals.