

HHIF Lecture Series: Financial Statement Analysis

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Financial Statements

- Provide an overview of the company's financial activities
 - ▶ Allow investors and managers to make decisions about the company
 - ▶ Similar companies must use the same rules for creating financial statements, e.g. GAAP
 - ★ But sometimes following the rules does not mean the numbers are right
- Released on a quarterly and annual basis; freely available for publicly traded companies
- Contain information about the company's earnings, costs, assets and liabilities, cash, and capital structure
 - ▶ Used to compare historically and among competitors
 - ▶ Look at *financial ratios*, e.g. debt/equity, price/equity, etc.
- Most *objective* analysis is based on the numbers in financial statements
 - ▶ Contrast with *subjective* analysis, based on opinion
 - ▶ "Company's XYZ Gross Profit Margin is 30%" vs "Company XYZ is efficient"

Some Terminology

Accounting Term	Definition
Revenue	Income received from normal business activities <i>e.g. money made from a sale</i>
Expense	Outflow of cash or non-cash asset to another entity <i>e.g. rent, interest on debt</i>
Asset	An economic resource owned by a company; can produce value, <i>e.g. cash, factory, equipment</i>
Liability	An obligation of cash or other assets due to past transactions, <i>e.g. bank loan</i>
Shareholders' Equity	Amount of money contributed by owners plus the money reinvested in the business
Cash Flow	Movement of cash into or out of the company <i>e.g. Cash from a sale (cash inflow)</i>
Cost of Goods Sold	Direct costs associated with the production of goods sold; includes cost of materials and labor used to produce the goods

Keeping Track of Transactions

- Every transaction must be recorded in the ledger
 - ▶ A ledger is a "book" with the records of all the company's accounts
 - ▶ Some examples of accounts: cash, accounts receivable, accounts payable, rent, owner's equity
 - ▶ Financial statements are produced based on the balances of the accounts in the ledger
- Double-entry bookkeeping: Every transaction is associated with a debit to some accounts and a credit to other accounts
 - ▶ *Sum of Debits = Sum of Credits* for every transaction
 - ▶ Assets make up the debits;
Liabilities and Owner's Equity make up the credits
 - ▶ $\boxed{\text{Assets} = \text{Liabilities} + \text{Owner's Equity}}$
- When are revenues recognized?
 - ▶ When they are *earned* (e.g. signing a deal) vs When there is a transfer of *cash*
 - ▶ Matching Principle: For the periods the revenues are earned (called accrual accounting system)
 - ▶ Expenses are recognized for the period they are incurred

Income Statement

- Records all revenues and expenses for a given period
- Shows the Net Income: essentially, total revenue minus total cost

$$\begin{aligned} \text{Revenues} - \text{Operating Expenses} &= \text{Operating Income (EBIT)} \\ \text{Operating Income} - \text{Interest and Taxes} &= \text{Net Income} \end{aligned}$$

- Net Income is also referred to as Earnings
- EBIT = Earnings Before Interest and Taxes

Profitability Ratios related to Income Statements

Ratio Name	Formula	Definition
Gross Profit Margin	$\frac{\text{Revenue} - \text{COGS}}{\text{Revenue}}$	Percent of Revenue retained after paying the costs related to production of goods
Operating Profit Margin	$\frac{\text{Operating Income}}{\text{Sales}}$	How much a company makes on each dollar of sales
Tax Rate	$\frac{\text{Provision for Income Tax}}{\text{Income before Tax}}$	Rate at which company's income is taxed

Balance Sheet

- Provides a "snapshot" of the company's finances

Three major parts:

- **Assets**

- ▶ Current Assets: Items that can be easily converted to cash (*liquid*)
e.g. Cash, Accounts Receivable, Inventory, Prepaid Expenses
- ▶ Long-Term Assets: cannot be easily converted to cash
e.g. Property, Plant, and Equipment; Intangible Assets (such as patents); Goodwill

- **Liabilities**

- ▶ Current Liabilities: must be paid off within a year
e.g. Accounts Payable, Accrued Expenses
- ▶ Long-Term Liabilities: can be paid off over a long period of time
e.g. Long Term Debt, Capital Leases

- **Owners' (or Shareholders') Equity**

- ▶ includes Preferred and Common Stock, Issued Capital, Minority Interest

- $\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$

Balance Sheet

- "Financial Version" of Balance Sheet: Assets = "Liabilities"
 - ▶ Assets:
 - ★ *Assets in Place*: existing investments; predictable Cash Flows (CFs)
 - ★ *Growth Assets*: Expected Value to be created by Future Investments
 - ▶ "Liabilities"
 - ★ *Debt* (creditors): fixed claim on CFs; little role in management
 - ★ *Equity* (shareholders): residual claim on CFs; significant role in management

Liquidity and Debt Ratios related to Balance Sheets

Ratio Name	Formula	Definition
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	Ability to pay off short-term debt; close to 2 desirable
Quick Ratio	$\frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$	Ability to pay off short-term debt; close to 1 desirable
Debt/Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Shareholders' Equity}}$	Measures <i>leverage</i> of the company; too much leverage is risky

Cash Flow Statement

- Summarizes the flow of cash in several general categories over a specified period
- Recall revenue/expense recognition does not have to coincide with cash flows

Three major parts:

- **Cash from Operating Activities**

- ▶ Converts items reported on income statement from accrual basis of accounting to cash
- ▶ Includes *Net Income, Depreciation and Amortization, Deferred Taxes, Changes in Working Capital*

- **Cash from Investing Activities**

- ▶ Includes *Purchases/Sales of Long-term Assets, Payments Related to Mergers and Acquisitions*

- **Cash from Financing Activities**

- ▶ Reports the flow of cash related to investors - creditors and shareholders
- ▶ Includes *Debt Issuance and Repayment, Dividend Payments, Sales/Repurchase of Stock*

- $$\text{CFO} + \text{Investing CF} + \text{Financing CF} = \text{Net Change in Cash}$$

Some More Ratios

Profitability Ratios

Ratio Name	Formula	Definition
Return on Assets	$\frac{\text{Net Income}}{\text{Average Total Assets}}$	Profitability relative to assets
Return on Equity	$\frac{\text{Net Income}}{\text{Average Shareholders' Equity}}$	Profitability relative to equity

Efficiency Ratios

Inventory Turnover	$\frac{\text{COGS}}{\text{Average Inventory}}$	Frequency of inventory sales and replacement; low values are undesirable
Receivables Turnover	$\frac{\text{Net Credit Sales}}{\text{Average Accounts Receivable}}$	Efficiency in collecting debt and extending credit
Cash Conversion Cycle	$\text{Days Inv. Outstanding} + \text{Days Sales Outstanding} - \text{Days Payables Outstanding}$	Number of days it takes to convert a dollar used in production/expenses to a dollar made from a sale

Valuation Ratios

- Used to estimate and/or compare the "true" value of a company

Ratio Name	Formula	Definition
EPS	$\frac{NI - \text{Pref. Stock Dividends}}{\text{Average Shares Outstanding}}$	How much income earned is allocated to one common share
Price/Earnings (P/E)	$\frac{\text{Common Share Price}}{EPS}$	Share Price relative to income allocated to one share; high ratio suggests stock is overvalued
Price/Book (P/B)	$\frac{\text{Common Share Price}}{\text{Shareholders' Equity/Share}}$	Compares stock market value to its book value
Price/Sales (P/S)	$\frac{\text{Common Share Price}}{\text{Revenue per Share}}$	Share Price relative to revenue allocated to one share; Sales more reliable than Earnings
Dividend Yield	$\frac{\text{Annual Dividend per Share}}{\text{Common Share Price}}$	Self-explanatory; important for value investing

Valuation Overview

- Objective of valuation: to price an asset (e.g. a company)
- Three general approaches to do this:
 - ▶ Income Approach - determine fair value
 - ★ Discounted Cash Flow Model
 - ▶ Market Approach - compare with similar assets
 - ★ Since stock prices are determined by supply and demand, stocks of similar companies can be viewed as "substitutes"
 - ▶ Asset-based Approach - value each asset in the business and find the sum of these values
 - ★ Usually get a value lower than the fair value
- Very important in value investing
- Also important in investment banking

Relative Valuation

- **Question:** How much are people willing to pay for a similar asset?
- Often difficult to find identical assets
 - ▶ Usually look for assets (i.e. companies) **similar in a specific category**
- Steps to value a company stock:
 1. Find comparable companies and record their market values
 2. Transform market values to standardized values, or multiples
 - ★ It does not make sense to compare the market price of a Goldman Sachs stock with the market price of a JPMorgan stock
 - ★ But it does make sense to compare the *Price/Earnings Multiple*: how many times a share is trading in comparison to earnings per share
 3. Compare the resulting multiple for the company with the multiples for similar companies
 - ★ This can give an idea of if the asset is undervalued/overvalued
 - ★ *but in comparison only to similar companies*
 - ★ You should think about why certain multiples are higher than others (the firms are not identical)

Calculating Multiples

- Calculate a ratio by dividing asset value by another variable common to all assets
 - ▶ Typical value for a company is stock price or enterprise value (market value of the company)
 - ▶ The other variable can be earnings, revenue, cash flows, etc. or industry-specific
- Some Examples of Multiples
 - ▶ Price/Earnings
 - ▶ Value/EBITDA
 - ★ EBITDA = Earnings before Interest, Tax, Depreciation, Amortization
 - ▶ Price/Book
 - ▶ Price/Sales
 - ▶ Price/Cash Flow
- **Note:** Use equity values (price, EPS, etc.) to value equity
Use Enterprise value (market value, book value for earnings, etc.) to value the firm

Relative Valuation - Example

Big Five Banks

- Will use two multiples: Price/Earnings and Value/EBITDA
- $Value = Market\ Cap + Total\ Debt - Cash\ \&\ Short\ Term\ Investments$

Company	P/E	Value/EBITDA
Royal Bank of Canada	15.69	80.5
Toronto Dominion Bank	14.42	107.7
Bank of Nova Scotia	14.60	59.6
Bank of Montreal	13.39	120.5
Canadian Imperial Bank of Commerce	12.33	125.0
Cross-Sectional Average	14.1	98.7

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- Let's say ABC Company has *EPS* of \$5; *EBITDA* of \$4.0B
 - ▶ Then ABC share price = $EPS \times P/E\ Multiple = 5 \times 14.1 = \70.5
 - ▶ ABC Enterprise Value =
 $EBITDA \times EBITDA\ Multiple = 4.0 \times 98.7 = \$394.8B$

Relative Valuation - Concluding Remarks

- Relative Valuation gives a fast way of valuing the company
 - ▶ Much faster and simpler than Discounted Cash Flow Model
- Make sure you compare **similar** companies
 - ▶ But you should still account for differences
- Use appropriate numbers to value *Equity vs Enterprise*

- Think about if the multiple you are using is appropriate
 - ▶ E.g. bias, outliers
 - ▶ Check if you are using the right numbers
- Relative Valuation does not give intrinsic value
 - ▶ Using it to compare companies in different industries is inappropriate

Financial Ratio Analysis - Concluding Remarks

- Best way to master it is to do it yourself
- Select several similar companies; Look at their financial statements
 - ▶ Available in "Investor Relations" section on company website
 - ▶ Also available on various financial websites, e.g. Google Finance, Yahoo Finance
 - ★ I find MorningStar is usually the best
 - ★ Or use software at Rotman Lab (e.g. CapitalIQ)
 - ▶ Make sure the data you are using is correct
- Perform Ratio Analysis - Historical and Cross-Sectional
 - ▶ You can calculate the ratios from financial statements yourself
 - ▶ Ratios are also available on financial websites
- Select one of the companies and perform relative valuation

- Financial Statement Analysis is a crucial part of fundamental analysis, but qualitative analysis is also extremely important
 - ▶ Look at company news, products, business model, management, etc.

Any Questions?

Upcoming Events:

- Investors' Forum 2: Fundamental Analysis
 - ▶ Wednesday, November 15, 6:30-8:30 p.m., South Dining Room, Hart House
- Next Lecture: Discounted Cash Flow Model
 - ▶ Friday, November 19, 6-8 p.m., North Dining Room, Hart House

References

- Investopedia - [Financial Ratio Tutorial](#)
- Aswath Damodaran - [Relative Valuation](#)
- Vincent Wong - Valuation Lecture, September 28, 2010
- [Morningstar](#)
- [Google Finance](#)