

LECTURE 1: CH 1 & 2

CHAPTER 1: INTRODUCTION TO INVESTING AND VALUATION

FINANCIAL STATEMENT ANALYSIS: is the method used by which users extract information to answer their questions about the firm

- we will focus on financial statement analysis from the perspective of investors, especially equity investors

USERS OF FIRM'S FINANCIAL INFORMATION (DEMAND SIDE)

- **Equity investors:** investment analysis and management performance evaluation
- **Debt investors:** calculate the probability of default, determination of lending rates, covenant violations, etc.
- **Management:** strategic planning, investment in operations, evaluation of subordinates, etc
- **Employees:** assess job security and for remuneration, wage negotiation
- **Litigants:** disputes over value in the firm
- **Customers:** security of supply
- **Governments:** policy making, regulation, taxation, government contracting
- **Competitors:** monitor competition, set benchmarks/targets to meet/exceed their competitors

Investors and management are the primary users of financial statements. Investors are always concerned about the amount to pay for an investment

A motto for the course: price is what you pay, value is what you get

INVESTMENT STYLES:

- **Intuitive investing:** relies on intuition and hunches: no analysis
- **Passive investing:** assumes that the market price is a fair price for the risk taken: no analysis. This is 'efficient market approach'
- **Momentum investing:** those stocks that have gone up momentum to continue going up more
- **Fundamental investing:** uses fundamental analysis or valuation analysis (also called security analysis when securities such as stocks or bonds are involved). It examines information about firms for the purpose of reaching conclusion about the underlying value. It challenges market prices
 - Fundamental investing could be either: **active investing** or **defensive investing**
 - Fundamental investors speak of intrinsic values, warranted values or fundamental values
 - **Intrinsic value:** is the worth of an investment that is justified by the information about its payoffs.

COSTS OF EACH APPROACH:

- Danger in intuitive approach: self deception; ignores ability to check intuition
- Danger in passive approach: there is a risk of paying too much, stocks may be mispriced
- Danger in momentum approach: nothing can go up forever, speculation feeds on itself creating bubbles
- Fundamental analysis: requires work!
 - The defensive investor: prudence requires analysis; a defence against paying the wrong price (or selling at the wrong price)
 - The active investor: activism requires analysis; an opportunity to find mispriced investments
- Fundamental investors try to discover the **intrinsic value (warranted or fundamental value):** the worth of an investment that is justified by the information about its payoff --> requires fundamental analysis
- **Fundamental risk:** is the risk that results from business operations
- **Price risk:** is the risk of trading at the risk price. Paying too much or selling for too little

ALPHA AND BETA TECHNOLOGY:

- Passive investment needs a beta technology (except for index investing)

BETA TECHNOLOGIES:

- Calculates risk measures: Betas
- Calculates the normal return for risk using a model such as the CAPM
- Ignores any arbitrage opportunities
- Hedges against the fundamental risk by holding a well-diversified portfolio
- Index investor (buyer of an index) are protected against fundamental risk but not price risk
- Active investing needs a beta and an alpha technology

ALPHA TECHNOLOGIES: Try to gain abnormal returns by exploiting arbitrage opportunities from mispricing i.e they try to capture the price risk

- Dell traded at 87.9 times earnings in 2000. Historically, P/E ratios have averaged about 14. *Is Dell's P/E ratio too high? Would one expect its price to drop?*
- Dell traded at 9.3 times earnings in 2012. *Is this too low?*
- Google Inc. had a market capitalization of \$201 billion in 2012. *What future sales and profits would support this valuation?*
- Coca-Cola had a price-to-book ratio of 4.9 in 2012. *Why its market value so much more than its book value?*
- Google went public in 2004 and received a very high valuation in its IPO.
 - *How would analysts translate its business plans and strategies into a valuation?*
 - *Was the IPO price appropriate, or was the market over-excited?*

BUBBLE, BUBBLE, TOIL AND TROUBLE

- The last two decades have provided many bubbles
- These bubbles occur when people form unreasonable expectations of likely returns and so make misguided consumption and investment decisions
- Mispriced stocks attracted capital to the wrong business
- Investors borrow to buy paper 'securities' rather than real productive assets
- Debt burn becomes intolerable
- Banks that feed borrowing run into troubles
- Retirement savings lost and pension crises develop
- ➔ **Therefore, understanding how to value investments is crucial to avoid these financial crises**
- ➔ **Fundamental analysis anchors investors:** Fundamental analysis anchors investors against the winds of speculation, fad and fashion. With a sense of value, fundamental analysis challenges prices fed by speculation, whether it be optimism that drives prices fed by speculation or pessimism that depresses prices down-ward.

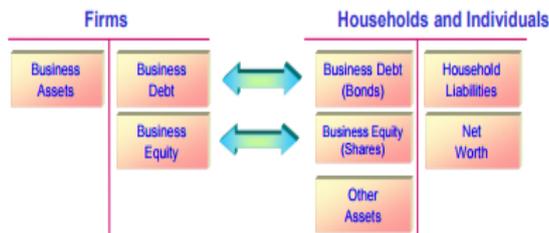
THE SETTINGS: INVESTORS, FIRMS, SECURITIES AND CAPITAL MARKETS

- To value business investments we need to have a good understanding of how a business works, how it adds value and how it returns value to investors.
- Investors (individuals or institutions) invest in firms, they give up cash in hope of a higher return of cash in the future
 - gives them a claim on the firm for a return: non-tradable contract (partnerships interests or bank loan agreements) or tradable securities (stocks or bonds)
 - Claims could be also contingent such as convertible bonds, options and warrants → payoffs are based on the price of the firms' stocks or bonds.
- **Equity:** is the owners' claim on the business → is a **residual claim** on the value of the firm after other claimants have been satisfied
 - **the most important claim and also the most difficult to value; much of this unit will be dedicated to equity valuation**
- **Debt claims:** are relatively simply claims for return of interest and principle, so they are relatively simple to value.

DEBTHOLDERS AND SHAREHOLDERS AND CASH FLOW BETWEEN THE FIRM:

- Debt holders (bondholders, banks, and other creditors) make loans to the firm in exchange for a claim for a payoff in the form of interest payments and loan repayments
- Shareholders: contribute cash in exchange for equity that entitle them to a payoff in the form of dividends or cash from share repurchases.
- The amount of the payoff, less the amount paid for the claim is called the return
- When a firm sells debt or equity claims it trades in the **capital market**

VALUE OF THE FIRM: value of the enterprise/enterprise value



Value of the firm = Enterprise value = Value of Assets
= Value of Debt + Value of Equity

$$V_0^F = V_0^D + V_0^E$$

Typically, valuation of debt is a relatively easy task.

→ The claims on the firm must add up to the value of the firm

BUSINESS ACTIVITIES:

- **Financing activities:** raising cash from investors and returning cash to investors
 - **Investing activities:** investing cash raised from investors and funds generated from operations in operational assets
 - **Operating activities:** utilizing investments to produce and sell products. Cash generated from operations might be re-invested
- Understanding these activities is fundamental to understanding the value generation in a business.

THE BUSINESS ANALYSIS: THE PROFESSIONAL ANALYST:

INVESTING WITHIN FIRMS: INSIDE ANALYSIS: Business managers invest moneys contributed to the firm in business assets.

Tests strategic ideas to see if they generate value e.g exploring new markets, adopting new technology,

1. Develop strategic ideas and plans
2. Forecast payoffs from the strategy
3. Calculate value from forecasted payoffs
4. Manage implemented strategies under a value-added criterion (value based management)
5. Reward managers based on value added

Applications:

- Corporate strategy (new products, new technology, new market)
- Mergers & Acquisitions
- Buyouts & spinoffs
- Restructurings
- Capital budgeting
- **Value-based management:** investing and managing with valuation analyst
- **CFO** typically coordinates analysis for management, and is their responsibility to institutionalize the best analysis.

INVESTING IN FIRMS: OUTSIDE ANALYSIS: The outside analyst understands the firm's value in order to advise outside investors.

Two main types of analysts:

- Equity analyst: buy-side of sell-side e.g hedge funds, mutual funds
- Credit analyst: bond rating agencies, bank loan officers, evaluate the riskiness and thus value of business debt.
- Understanding the business is a necessary prerequisite to carrying out a valuation. To be a successful outside analyst, you should:
 - Understand the business model (strategy)
 - Master the business details such as the firm's product, technology, knowledge base, competition, management, legal and regulatory issues, etc.

INSIDE V OUTSIDE ANALYST:

- Inside analysts have for more information to work with.
- Outside analysts receive the published financial statements along with much supplementary information, but typically not privy on "inside information"

THE ANALYSIS OF THE BUSINESS: KNOWING THE BUSINESS: both for inside and outside investors

1. Know the firms product

- Types of products
- Consumer demand for the product
- Price elasticity of demand for the product
- Substitutes for the product. Is it differentiated? On Price? On Quality?
- Brand name association of the product
- Patent protection of the product

2. Know the technology

- Production process
- Marketing process
- Distribution channels
- Supplier network
- Cost structure
- Economies of scale

3. Know the firm's knowledge base

- Direction and pace of technological change and the firm's grasp of it
- R&D programs
- Tie-in to information networks
- Ability to innovate in product development
- Ability to innovate in production technology
- Economies from learning

4. Know the industry competition:

- Concentration in the industry, number of firms and their sizes
- Barriers to entry in the industry and the likelihood of new entrants and substitute products
- The firm's position in the industry: is it the first mover, or a follower? Does it have a cost advantage?
- Competitiveness of suppliers: Do suppliers have market power? Do labour unions have power?
- Relationships and alliances with other firms

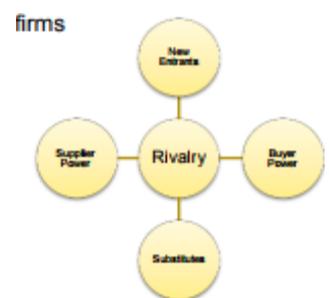
PORTER's five forces:

5. Know the management

- what is the management's track record?
- Is the management entrepreneurial?
- Does the management focus on shareholders or their own interests?
- Do stock compensation plans serve shareholders' interests?
- what is ethical charter under which the firm operates?
- How strong are the corporate governance mechanisms?

6. Know the Political, Legal and Regulatory Environment

- The firm's political influence
- Legal constraints on the firm including the antitrust law, consumer law, labour law and environment law
- Regulatory constraints on the firm including product and price regulations
- Taxation of the business



KEY QUESTIONS: SUSTAINIBILITY OF COMPETITIVE ADVANTAGE

Microeconomics tells us that competition drives away abnormal returns. The more enduring the competitive advantage, the more the firm generates value.

- Does the firm have competitive advantage?
- How durable is the firm's competitive advantage?
- What forces are in play to promote competition?
- What protection does the firm have from competitors?

- For all the reasons cited before, analysts usually specialize by industry sector
- Understanding the economic factors is a prerequisite to valuation: firm's product, competition, etc
- We need a way of translating these factors into measures that lead to a valuation → The financial statements are a lens on the business
 - Financial statement analysis focuses the lens.

VALUATION TECHNOLOGIES: Once we understand the business, we need to analyse and value the underlying business. There are two broad categories to valuation.

1. Methods that do not involve forecasting (Chapter 3)
 - **Method of Comparables:** pricing the underlying stock using the price multiples of similar firms
 - **Multiple Screening:** identifies underpriced and overpriced stocks on the basis of their relative multiples
 - **Asset based valuation:** adding up the fair value of the firm's assets and subtracting the value of liabilities.
2. Methods that involve forecasting
 - **Discounting future dividends** (Chapter 4)
 - **Discounting future cash flows** (Chapter 4)
 - **Pricing book values (Residual Earnings Analysis):** calculate the present value of expected residual earnings and add it to the book value (chapter 5)
 - **Price earnings:** earnings growth analysis: capitalized earnings plus the value of expected abnormal earnings growth (chapter 6)

Problem with forecasting: deals with the future, and the future is inherently speculative.

TENETS OF SOUND FUNDAMENTAL ANALYSIS

- One does not buy a stock, one buys a business
- When buying a business, know the business
- Value depends on the business model, the strategy
- Good firms can be bad buys
- Price is what you pay, value is what you get
- Part of the risk in investing is the risk of paying too much for a stock
- Ignore information at your peril
- Don't mix what you know with speculation
- Anchor a valuation on what you know rather than speculation
- Beware of paying too much for growth
- When calculating to challenge price, beware of using price in the calculation
- Stick to your beliefs and be patient, prices gravitate to fundamentals, but that can take some time

CLASSIFYING AND ORDERING INFORMATION AND ANCHORING A VALUATION

- Order information in terms of how concrete it is: separate concrete information from speculative information
- Anchor a valuation on what you know rather than speculation
- Financial statements provide an anchor: based on accounting principles that largely exclude speculative information. They are audited.
- Value = anchor + extra value
- **Anchor is a concrete starting point. For example**
- Value = book value + extra value
- Value = Earnings + extra value

The valuation task: How to calculate the extra value

CHAPTER 2: INTRODUCTION TO FINANCIAL STATEMENTS

Financial statements are the lens on the business. They draw a picture in two ways:

1. **Form:** the way that the component parts of the statements fit together sketches out the picture
 2. **Content:** the numbers reported within each component fills out the sketch
- ➔ Accounting equations describe how the components fit together

THE FINANCIAL STATEMENTS:

- Public firms are required to file annual and quarterly financial statements to securities and exchange commission (SEC) in the US and to the Australian Securities and Investment Commission (ASIC) in Australia.
1. Balance sheet (statement of financial position)
 2. Income statement (statement of profit and loss)
 3. Cash flow statement
 4. Statement of Shareholders' equity

THE BALANCE SHEET:

Assets = Liabilities + Shareholders' Equity

Or:

Shareholders' Equity = Assets – Liabilities = net assets (residual claim)

Notes:

- **Assets:** investments that are expected to generate payoffs. Assets are classified as current and fixed or long-term assets.
- **Liabilities:** claims of parties other than the owners. They are also classified as current and long-term liabilities.
- **Equity:** claims of the owners.

STATEMENT OF CASH FLOW:

Change in Cash = Cash from operations + Cash from investing + Cash from financing

Notes:

- **Cash from operations:** cash from selling products net of cash used up in doing so.
- **Cash from investing:** cash used up (received) from buying (selling) productive assets.
- **Cash from financing:** cash raised from (paid to) equity and/or debt holders (except interest expense which are usually reported under cash from operations!)

THE INCOME STATEMENT:

Net Revenue – Cost of Goods Sold = Gross Margin (gross profit)
Gross Margin – Operating Expenses = Operating Income
Operating Income – Interest Expense + Interest Income = Income before Taxes
Income before Taxes – Income Taxes = income after Taxes and before extraordinary Items
Income before Extraordinary Items + Extraordinary Items = Net Income
Net Income – Preferred Dividends = Net Income Available to Common shareholders

Notes:

- **Net income** is sometimes called **net profit or earnings**.
- Operating income is sometimes called earnings before interest and taxes (EBIT).
- **EPS:** earnings per share: net income available to common shareholders / shares outstanding
- **Basic EPS:** net income available to common shareholders/weighted-average common shares outstanding.
- **Diluted EPS:** net income available to common shareholders/total common shares if holders of securities convertible to shares were to exercise their options and hold common shares.

STATEMENT OF EQUITY:

The Stocks and Flow Equation:

Ending equity = Beginning equity + Total (comprehensive) income
– Net payout to shareholders

Notes:

- Total comprehensive income = Net income + Other comprehensive income
- Net payout to shareholders = Dividends + Share repurchases – Share issues
- Note that other comprehensive income is not reported in the income statement (**dirty surplus accounting**), but appears under the equity section in the balance sheet.

THE FOOTNOTES AND SUPPLEMENTARY INFORMATION TO FINANCIAL STATEMENTS

- Details about each item reported in the financial statements are usually reported in footnotes and supplementary notes following the financial statements
- These footnotes also report important items that may not be recognized in the financial statements such as: compensations, accounting policies, pension plan, off-balance sheet obligations, structured vehicles, derivative exposure, segments etc.

How Parts of the Financial Statements Fit Together

The Balance Sheet

$$\begin{aligned} & \text{Assets} \\ & - \text{Liabilities} \\ & = \text{Shareholders' Equity} \end{aligned}$$

The Income Statement

$$\begin{aligned} & \text{Net Revenue} \\ & - \text{Cost of Goods Sold} \\ & = \text{Gross Margin} \\ & - \text{Operating Expenses} \\ & = \text{Operating Income before Taxes (EBIT)} \\ & - \text{Net Interest Expense} \\ & = \text{Income Before Taxes} \\ & - \text{Income Taxes} \\ & = \text{Income After Tax and before Extraordinary Items} \\ & + \text{Extraordinary Items} \\ & = \text{Net Income} \\ & - \text{Preferred Dividends} \\ & = \text{Net Income Available to Common} \end{aligned}$$

Cash Flow Statement (and the Articulation of the Balance Sheet and Cash Flow Statement)

$$\begin{aligned} & \text{Cash Flow from Operations} \\ & + \text{Cash Flow from Investing} \\ & + \text{Cash Flow from Financing} \\ & = \text{Change in Cash} \end{aligned}$$

Statement of Shareholders' Equity (and the Articulation of the Balance Sheet and Income Statement)

	Net Income	Dividends
Beginning Equity	+ Other Comprehensive Income	+ Share Repurchases
+ Comprehensive Income	= Comprehensive Income	= Total Payout
- Net Payout to Shareholders	←	- Share Issues
= Ending Equity	←	= Net Payout

MEASUREMENT IN THE FINANCIAL STATEMENTS:

- The **intrinsic value** is what the underlying security is **really** worth.
- **Intrinsic Premium** = Intrinsic Value of Equity – Book Value of Equity
- **Market Premium** = Market Value of Equity – Book Value of Equity
- If these premiums are negative, they are called discounts (from book value).
- Premiums are unrecognized goodwill.
- Intrinsic Price-to-Book Ratio = $\frac{\text{Intrinsic Value of Equity}}{\text{Book Value of Equity}}$
- Price-to-Book Ratio (Market-to-Book ratio) = $\frac{\text{Market Value of Equity}}{\text{Book Value of Equity}}$
- The difference between the two ratios will tell whether the underlying is mispriced

MEASUREMENTS IN THE BALANCE SHEET:

- **Fair value accounting:** some assets and liabilities are marked-to-market and reported accordingly
- **Historical cost accounting:** other assets are reported at their historical cost, which may not equal their current fair value
- ➔ thus reported equity value does not usually equal the market value

INVESTMENT IN LONG-TERM DEBT SECURITIES (Some at fair value)

Some investments in bonds and other debt instruments are marked to market. For marking to market, these investments are classified into three types:

- **Investment held for active trading:** recorded at fair value in the balance sheet. Unrealized gains and losses are reported in the income statement, along with interest
- **Investment available for sales**(they are not for active trading, but could be sold before maturity): Recorded at fair value in the balance sheet. Unrealized gains or losses are reported in other comprehensive income on the balance sheet equity, while interest in reported in the income statement
- **Investment held to maturity:** recorded at historical cost on the balance sheet. The fair value reported in the footnotes. Unrealized gains/losses are unrecognized. Interest received during their lives are reported in the income statement.
 - Fair market value for these investments are given in the foot notes

INVESTMENT IN EQUITIES OF OTHER FIRMS:

- If the investment <20% of the other firm's shares those held for active trading or available for sale or held to maturity are treated like debt instruments
- If the investment is 20-50% of the other firm's shares: using the **equity method** (at cost but carrying value is increased by the share of earnings less dividends paid and wrote off of goodwill acquired on purchase). The share of earnings less dividends paid and wrote off of goodwill acquired on purchase are reported in income statement.
- If the investment (>50% of the firm's shares, in this case the other firm financial reports are **consolidated** in the parents firm with a deduction for the minority interest from net assets and net income of the parent firm.

MEASUREMENT OF LIABILITIES IN THE BALANCE SHEET

- **Short term payables** (at fair value)
- **Borrowings** (approximate fair value when initially recorded) they are not marked to market. Market values are footnoted.
- **Accrued and estimated liabilities:** such as pension liabilities, warranty liabilities, unearned deferred revenue, etc (quasi fair value because based on estimate which could be biased)
- **Commitments and contingencies:** such as losses of lawsuits, product warranty, debt guarantees (many of these items may not be recorded but footnoted). Reporting in the balance sheet is required if: The contingent event is "probable" and the amount of loss can be "reasonably" estimated.

MEASUREMENTS IN THE INCOME STATEMENT:

- **Accounting value added** = Ending equity book value – beginning equity book value + dividend = comprehensive earnings
- **Market value added** = Ending price – Beginning price + dividend
- **Stock return** = $P_t - P_{t-q} + d_t$ (note that stock return is equal to market value added)

PRINCIPLES OF EARNINGS MEASUREMENT:

- The market value added need not equal the accounting value added for two main reasons
 - Because the market value added is a speculative value that prices current as well as future earnings
 - Revenue recognition and expenses matching principles might be violated
- Value added in the stock market is speculative. The market not only prices the earnings from current operations, but it also anticipates sales and earnings to be made in the future.

Revenue recognition principles: add value when it has been earned. The principles are:

- The earnings process is substantially accomplished (product or service has been delivered to the customer)
- Receipt of cash is reasonably certain (a receivable has been established as a legal claim against the customer)
- Exceptions:
 - Revenues might be recognised during production such as long-term construction projects
 - revenue is not recognized until cash is collected such as instalment sales
 - Unrealised gains from securities might be recognised before sale.

Expenses: The Matching principle: Matches expenses against revenues for which they are incurred. Sometimes the matching principle is violated.

- Revenue with COGS, Plant with depreciation, Employee pension costs recorded in the period that employee generates revenues
- Bad matching prescribed by GAAP:
 - R&d expenditures are expensed when incurred, rather than matched to (subsequent) revenues they generate
 - Expensing film production costs when incurred rather than matching them to revenues earned after the film is released

- Revenue recognition and expense matching are violated in practice, reducing the quality of earnings as a measure of value added from customers.

Examples of poor matching prescribed by GAAP:

- Expensing R&D in the income statement when incurred, rather than recording them as an asset (an investment) in the balance sheet
- Expensing film production costs as incurred, rather than matching them against revenues earned after the film is released

Examples of poor matching by firms:

- Advertising and promotion costs are expensed when incurred, rather than matched to (subsequent) revenues they generate)
- Underestimated bad debt from sales: sales are overstated
- Estimating long useful lives for plant assets. Depreciation is understated.

GUIDING PRINCIPLES FOR RECOGNIZING ACCOUNTING VALUE ADDED:

- The fundamentalist creed: don't mix what you know with speculation
- The accountant's restatement of creed: **The reliability criterion:** accounting numbers should be based on objective evidence, free of opinion and bias for assets, liabilities, revenues and expenses
- **Conservative accounting:** omitting or understating assets on balance sheet. Write down not up. If the value of an asset is uncertain do not book on the balance sheet
- **Some tension:** The reliability criterion may create a tension in matching principle used to prepare the financial statements. For example: Expensing R&D, brand assets, advertising expenses in the year they were incurred although they produce future revenues. They are expensed in the year they are incurred rather than reported as assets because their value is uncertain.
- But the above tension is acceptable to the fundamental investor because he/she should anchor the valuation on concrete basis, and then value the speculative component.
- **Accounting quality:** Good quality accounting serves as a check on speculation. Bad accounting quality perpetuates bubbles. We shall see how to evaluate the quality of the financial statements later.