

Valuations Final Notes

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WEEK 1: INTRODUCTION TO VALUATION

Investing versus Speculating

- › **Investing**
- The decision to invest is based on the difference between the current value of an asset and the perceived value of it.
- Investors of this approach expect to profit in at least one of three ways:
 - 1) Higher free cash flow which is reflected in a higher share price
 - 2) An increase in the multiple that an investor is willing to pay for the underlying business.
 - 3) A narrowing of the difference between the share price and underlying business value.
- › **Speculating**
- Speculators base their craft on a prediction of the behaviour of others. They are therefore, ignorant of investment fundamentals.
- 1) Ultimately will lose out in the “greater-fool game”.

Reconcile some theory with practice:

- EMH, at its heart suggests that financial markets are efficient and trying to outperform averages is futile.
 - Matching the market is the best you can hope for.
- The reality is that markets, while generally efficient, have bouts of irrationality.
 - Ben Graham’s analogy to Mr Market suggests that investors should stand to take advantage of anomalies (whereby a market may be too optimistic or pessimistic).
 - Because changes in share price can change for any number of reasons
 - Looking beyond prices for affirmation of an investment decision is necessary.

Intel Corporation (Nasdaq NMS: INTC)

- › **September 21 2000:**
 - Intel announce revenue growth for Q3 of 2000 is below expectations by 7-9% (short of analyst expectations by 8-12%). In response to announcement Intel’s stock price falls by 30%.
- › 1) Was the information in Intel’s announcement sufficient to warrant a loss of value of that magnitude?
- › 2) What future revenue growth rates were consistent with Intel’s stock price of \$61.50 just prior to the press release, and \$43.41 only five days later?
- › 3) Was investors’ reaction to the press release therefore irrational?

Understanding the business

- › This involves understanding a company’s economic and industry context and management’s strategic responses.
 - › To value a company we need to understand if variations with the economic cycle are pro-cyclical or counter-cyclical.
 - › Beyond the economic cycle are industry factors. e.g. if we are analysing Qantas, what are the critical input drivers that will determine the future position of the firm?
 - › Questions that need to be addressed in valuation analysis include:
 - › How attractive are the industries in which the company operates in terms of offering prospects for sustained profitability?
 - › What is the company’s relative competitive position within the industry?
 - › What is the company’s competitive strategy?

- › How well is the company executing its strategy?

An Interesting Aside

When comparing between two companies, all else equal, the more preferable investment option is one with a high return on equity (ROE).

- ROE is often used as an indicator of shareholder value, because quite simply that is what it measures.

Context:

- Often firms will pursue policies to increase growth hoping that growth will increase cash flows, and that these cash flows will ultimately increase the share price.
 - Though this statement is reasonable, what are some of its defeating qualities?

Forecasting Company Performance

1. Economic Forecasting

- Top-down forecasting / Bottom-up forecasting
- E.g. start with forecasted economic growth, market size, and market share to arrive at revenue forecasts.

2. Financial Forecasting

- Analysts will integrate the analysis of industry prospects and competitive corporate strategy with financial statement analysis (FSA) to formulate specific numerical forecasts.
- **Pro-forma analysis.**

Category	Observation	Potential Interpretation
Revenues and gains	Recognizing revenue early—for example: •Bill-and-hold sales. •Recording sales of equipment or software prior to installation and acceptance by customer.	Acceleration in the recognition of revenue boosts reported income, masking a decline in operating performance.
	Classification of nonoperating income or gains as part of operations.	Income or gains may be nonrecurring and may not relate to true operating performance, possibly masking declines in operating performance.
Expenses and losses	Recognizing too much or too little reserves in the current year, such as •Restructuring reserves. •Loan-loss or bad-debt reserves. •Valuation allowances against deferred tax assets.	May boost current income at the expense of future income, or alternatively may decrease current year's earnings to boost future years' performance.
	Deferral of expenses by capitalizing expenditures as an asset—for example: •Customer acquisition costs. •Product development costs.	May boost current income at the expense of future income. May mask problems with underlying business performance.
	Use of aggressive estimates and assumptions, such as •Asset impairments. •Long depreciable lives. •Long periods of amortization. •High assumed discount rate for pension liabilities. •Low assumed rate of compensation growth for pension liabilities. •High expected return on assets for pension.	Aggressive estimates may indicate actions taken to boost current reported income. Changes in assumptions may indicate an attempt to mask problems with underlying performance in the current period.
Balance sheet issues (may also affect earnings)	Use of off-balance-sheet financing (financing that does not appear on the balance sheet), such as leasing assets or securitizing receivables.	Assets and/or liabilities may not be properly reflected on the balance sheet.
Operating cash flow	Characterization of an increase in a bank overdraft as operating cash flow.	Operating cash flow may be artificially inflated.

Valuation Approaches;

- › Value perspectives:
 - › Intrinsic value, going concern, liquidation value, fair value
- › Market Efficiency
 - › Intrinsic value = market price (EMH) and therefore, purpose of valuation = justification of market price.
 - › Divergences trading costs, accounting numbers, private company etc...(Grossman et al.(1980)) drive perceptions of mis-valuation, which with a critical assumption that these inefficiencies get corrected →basis of valuation.
 - › Do different markets (or different tiers of markets) exacerbate market valuation problem?

- › **Absolute valuation**
 - › Present value model, discounted cash flow model (DCF), intrinsic value model, dividend discount model (DDM) etc...
 - › Based on expected future cash flows of an asset.
- › **Relative Valuation**
 - › Comparable asset valuation based on common variable. E.g. earnings, cash flows, sales.
- › **Contingent Claims valuation**
 - › Real option analysis measures the value of assets that possess option like characteristics.
- › **Logic:** Intrinsic value can be measured by forecasting expected cash flows, growth and risk.
- › **But why conduct intrinsic valuations?**
 - › Markets are assumed to make errors over time and correct as information is released to the market.
- › **Advantages:**
 - › Based on fundamentals and therefore less exposed to market moods.
 - › Gets you to think about the underlying characteristics of the firm.
- › **Disadvantages:**
 - › Wide array of inputs required that can be quite noisy.
 - › Does not necessarily tell you something is over/undervalued.
- › **But why conduct relative valuations?**
 - Markets can make pricing errors across similar comparable assets.
- › **Advantages:**
 - Much more likely to reflect market perceptions/moods. Is this important?
 - Assets are always relatively undervalued/overvalued.
 - Not as computationally intensive as other approaches.
- › **Disadvantages:**
 - Undervalued may still equal overvalued.
 - The logic – which says that stocks markets are valued correctly in aggregate but that mistakes exists of single securities.
 - Simplicity in the model means that there exist many implicit assumptions.
- › **Logic:** Particular assets can share similar qualities to options
- › **But why conduct CC valuations?**
 - You may have equity in a deeply troubled firm with negative earnings and high valuation or may be trying to value rights to expand an investment or a patent that is exclusively owned by the firm.
- › **Advantages:**
 - Allow us to value assts that we would otherwise not be able to.
 - Valuation according to DCF says that greater risk affects value downwards but how about according to option pricing?
- › **Disadvantages:**
 - Inputs are extremely difficult to obtain.
 - Not a primary model per se.
- › The broad criteria for model selection are that the valuation model be:
 - Consistent with the characteristics of the company being valued;
 - Appropriate given the availability and quality of data; and
 - Consistent with the purpose of valuation, including the analyst's ownership perspective.
 - Timeframe

- › In addition to these broad considerations, three other specific issues may affect ones use and interpretation of valuation models.
 - Control premium
 - Marketability discount
 - Liquidity discount

WEEK 2/3 – USING FINANCIAL STATEMENTS PART 1

- › Accounting plays an important role in valuation analysis:
 - It is the language for describing financial performance
 - Provides the framework that valuation takes place in.
- › We use the language of accounting to...
 - Understand historical financial performance.
 - Forecast financial performance
- › Specifically we can use financial statements for:
 - Establishing company profiles
 - Cash flow analysis
 - Budget planning and financial statement forecasting
 - Comparable companies analysis
 - M&A and due diligence analysis
 - Pitch book presentations
 - DCF valuation

- › The building blocks of accounting are Assets and Liabilities. Assets represent future benefits and liabilities represent future obligations. The difference between asset and liability value is the equity in the firm that belongs to the owners:

Equity = Assets – Liabilities

- › Equity is also known as net assets or book value. If all assets are and liabilities were recorded at market values then

Book Value of Equity = Market Value of Equity

Assets	Liabilities
<p>Current Assets – includes all the firms short-term assets:</p> <ul style="list-style-type: none"> <i>Cash</i> – money the firm has in the bank <i>Marketable Securities</i> – securities held, at market value <i>Accounts Receivable</i> – customers unpaid bills to the firm <i>Inventory</i> <p>Fixed Assets</p> <ul style="list-style-type: none"> <i>Leased property and equipment</i> – if the firm has leases the value of the items leased may appear on the balance sheet <i>Plant, Property & Equipment</i> – these items are listed at historical cost minus the loss of value due to aging (depreciation) <p>Goodwill – if assets have been purchased at more than their market value the difference is listed</p>	<p>Current Liabilities – all the firms short term obligations:</p> <ul style="list-style-type: none"> <i>Accounts payable</i> – unpaid bills to suppliers <i>Accrued Tax</i> – unpaid tax <i>Current portion of long term debt</i> – the part of the long term debt principal to be paid in the next year. <i>Short-term borrowing</i> – all borrowing that (in principal) has to be repaid within the year. <p>Long Term Liabilities</p> <ul style="list-style-type: none"> <i>Obligation under leases</i> – the debt equivalent of long term leases <i>Long term debt</i> – borrowing by the firm to be repaid over a number of years <p>Preferred Stock</p> <p>Equity – investments in the firm by its owners plus undistributed accumulated earnings.</p> <ul style="list-style-type: none"> <i>Stock Value</i> – the value of the stock at issue <i>Retained Earnings</i> – that part of profit after tax not paid as dividends
Total Assets – sum of items in this column	Total Liabilities - sum of items in this column

Assets	Reference	Liabilities	Reference
Cash and Cash Equivalents	(1)	Accounts Payable	(11)
Accounts receivable	(2)	Accrued Expenses	(12)
Inventories	(3)	Short term Debt	(13)
Deferred Income Taxes	(4)	Total Current Liabilities	(14=11+12+13)
Total Current Assets	(5=1+2+3+4)	Long Term Debt	(15)
Plant Property and Equipment (PPE)	(6)	Other Long Term Liabilities	(16)
Accumulated Depreciation	(7)	Total Liabilities	(17=14+15+16)
Net PPE	(8=6-7)	Shareholders' Equity	
Other assets	(9)	Common Stock	(18)
Total Assets	(10=5+8+9)	Retained Earnings	(19)
		Total Liabilities and Equity	(20=18+19)

- › Assets are defined as **probable** future economic benefits obtained or controlled by a firm as that is the result of **past** transactions or events.
- › If the asset is **marketable** it is recorded at observed market value.
 - › If the assets are not traded they are valued at **historical cost**. They are then adjusted downwards by the amount that future benefit has been consumed or impaired in each accounting period.
- › Liabilities are the opposite of assets.
 - › They are **probable** future sacrifices of economic benefit that result from **past** events. The conditions that govern liabilities are the same as those for assets. They must be probable and they must result from past events.

There are two reasons for changes in equity:

- Transactions with equity holders, distributions or receiving funds from them.
- Transfers of the operating surplus to the equity account.
- › As equity is equal to assets less liabilities, periodic net income is related to equity as:

Ending Equity = Beginning Equity + Net Profit After Tax – Distributions to Equity Holders

Net Profit After Tax = Change in Equity + Net Distributions to Equity

Cost of making the product	Revenue/Sales	(1)
	Other Income	(2)
	Total Revenues	(3=1+2)
Supporting the business (product/ service)	Cost of Goods Sold (COGS/OPEX/Cost of Sales)	(4)
	Selling, General and Administrative Expenses (SG&A)	(5)
	Earnings before Interest, Taxes, Depreciation and Amortisation (EBITDA)	(6=3-4-5)
	Depreciation	(7)
	EBIT (Earnings before Interest and Taxes /Operating Profit)	(8=6-7)
Cost of financing	Interest	(11=9+10)
	Interest Expense	(9)
	Interest Income	(10)
Taking care of the tax-man	EBT (Earnings Before Tax/ Income Before Taxes)	(12=8-11)
	Taxes	(13)
	Net Income	(14=12-13)

- › Revenue is defined to be an increase in assets or reduction in liabilities that is caused by the sale of goods and services as part of the firm's normal operations.
- › Expenses are the opposite of revenues; they are the decrease in assets or increase in liabilities that arise from the normal operating activities of the firm.

- › Operating profit or EBIT is the difference between revenue and expenses associated with the firm's recurring or ongoing operations. This is seen as the primary driver of firm value (also note the use of EBITDA).

Operating Profit (EBIT) = Revenue – Expenses

- Examples of links:
 - Revenue is linked to Cash, AR, Deferred Revenues
 - Net Income is related to Retained Earnings
 - Depreciation, CAPEX, and PPE are all related

Using Financial Statements Part 2

- › A pro-forma statement is a prediction of how a firm's financial statements will look in succeeding years.
- › The sales-driven approach
 - Wherever possible (and reasonable) one should assume that the items in the balance sheet and income statement depend directly on the sales of the firm.

Financial Ratios used

- › **Efficiency**
 - Used to model the firm's use of assets/need for liabilities relative to sales or COGS, particularly in relation to the working capital cycle.
 - E.g. accounts receivable days, inventory days
- › **Profitability**
 - Used to derive profit numbers from sales
 - E.g. gross profit margin, EBITDA margin
- › **Valuation**
 - Used to describe what value the market places on items on a firm's financial statements
 - E.g. P/E, Price/book, FV/EBITDA
- › **Liquidity**
 - Used to examine how the firm can meet its needs for cash flow
 - E.g. current ratio
- › **Leverage**
 - Used to measure the firm's solvency, i.e., its ability to meet its debt (usually long term) obligations
 - E.g. financial leverage
- › Cross sectional analysis
 - Where does the firm's multiple lie relative to comparable companies?
 - What should the firm's multiple be if it is to be in line with comparable companies?
 - Trade-off between number of comparable firms and the level of comparability.
 - Do not be alarmed by abnormal ratios as long as you can explain them.
- › Time series analysis
 - One way around the issue of comparability.
 - Note that the production, marketing and financial policies of the firm can and do change over time.
 - Historical cost accounting may induce spurious trends in financial ratios.
 - If a firm under or over performs to begin with then time series analysis may not reveal this.

It is therefore important to use both cross sectional and time series analyses.

- › Economic interpretation of ratio changes is important
 - Understanding the business of the firm is key to interpreting differences and changes in ratios
- › Comparing ratios on a scale free basis
 - Restate all income statement items as a percentage of sales.
 - Restate all balance sheet items as a percentage of total assets.
 - This facilitates comparisons across firms and time but obviously can be misleading when scale matters (e.g., when there is a degree of ‘operating leverage’)

What makes a good forecast?

- › Economic plausibility
 - The statements must reflect how the firm might realistically operate in the future.
- › Accounting consistency
 - Do the financial statements balance?
 - Do they “articulate?”

Are they a good model of the firm’s finances?

Calculation of Historical Ratios	Actual 2001	Actual 2002	Actual 2003	3-year Average
Ratios to calculate operating profit				
Sales growth rate		12.38%	5.93%	9.16%
COGS / Sales	61.90%	66.21%	64.00%	64.04%
SGA / Sales	23.81%	21.72%	21.50%	22.34%
Depreciation / Net PPE	14.91%	15.00%	15.00%	14.97%
Ratios to calculate operating capital				
Cash / Sales	5.00%	4.98%	5.00%	4.99%
Inventory/ Sales	8.93%	9.00%	10.00%	9.31%
Accts. Rec. / Sales	7.74%	7.42%	7.50%	7.55%
Net PPE / Sales	32.74%	29.66%	30.00%	30.80%
Accts. Pay./ Sales	9.52%	7.42%	7.50%	8.15%
Accruals / Sales	0.95%	1.06%	1.00%	1.00%
Ratios to calculate operating taxes				
Tax Rate (Taxes/EBT)	40.00%	39.06%	40.00%	39.69%

- › Sales Growth Rate- Look at averages, look at external / internal environment
- › COGS
 - Higher COGS comes from higher production costs or lower sales price, or both.
 - Lower COGS comes from cost containment with stable prices, or higher prices with stable costs, or both.
 - Marketing predicts COGS will decrease from last year’s 64% to 62.5% of sales.
 - COGS are either fixed or variable. We can’t observe that from looking at the numbers directly but we can try to estimate.
 - Fixed costs tend to make up a bigger part of smaller firm costs so should be taken into account for when forecasting margins.
- › Tax expenses also form a component of the firm’s free cash flow.
- › We need to project the effective tax rate.