**Training the Street**

**Educational Scope**

**Trading Comparables Valuation**

1. Identify an appropriate group of publicly traded, or 'listed' peers.
2. Compute their fully diluted equity values and Enterprise Values (EV).
3. Measure each peer's earnings over a variety of time frames including Last Twelve Months (LTM) and forecast year.
4. Make 'pro-forma' adjustments to earnings numbers to remove distortions from acquisitions or disposals made by the comparable firms.
5. Calendarize forward earnings numbers.
6. Interpret your multiples and formulate a valuation of the businesses in question.

**Transaction Comparables**

1. Select comparables historical deals or transactions.
2. Accurately measure the historical recurring earnings of the companies acquired in these deals and compare this to the effective Enterprise Value paid by the acquirer for the entire business.
3. Interpret the results and apply your analysis to the target business.

**Valuation Fundamentals**

1. Calculate Equity Value and Enterprise Value (EV) for a company given share price and balance sheet information.
2. Calculate EBIT, EBITDA and P/E multiples.
3. Perform a basic DCF valuation of a business.
4. Perform a basic LBO analysis and valuation of a business.
5. Understand the relative strengths and weaknesses of these techniques, and when one might be more appropriate than another.

**DCF Valuation**

1. Forecast free cash flow to the enterprise.
2. Estimate an appropriate Weighted Average Cost of Capital (WACC) for the business you are valuing.
3. De-lever comparable companies’ betas and re-lever to the target capital structure of the business being valued.
4. Estimate a reasonable Terminal Value (TV) using either a multiple, or a perpetual growth assumption.
5. Discount free cash flows and TV to valuation date, incorporating the mid-year adjustment.
6. Translate the resulting EV to an equity value.
7. Sensitize your results using an Excel data-table.

**LBO Analysis Fundamentals**

1. Define an LBO transaction.
2. Understand the funding structure of an LBO.
3. Identify the process of the subordination of debt within an LBO funding structure.
4. Build an LBO model in Excel for any cash generating business.
5. Calculate the Internal Rate of Return (IRR) to the financial sponsor.

**M&A Analysis Fundamentals**

1. Understand how to build the Sources and Uses table and form a view on likely funding sources used by the buyer.
2. Consolidate the balance sheets of the buyer and target businesses.
3. Forecast combined EPS post deal and calculate the deal accretion or dilution.

**Financial Statement Analysis**

**Introduction**

Typical uses of accounting information:

* Profitability analysis
* Cash flow analysis
* Forecasting
* Corporate valuation
* Credit analysis
* Deal structuring (M&A, LBO, divestitures)
* Company profiles

Financial analysis

* Investors / analysts look from the outside in.
* Analysis is often based on simplifications or estimates.
* Analyze the past in order understand the business and form a view of the future.
* Dissect the accounts to see:
  + What made an account go up or down?
  + What were the flows into and out of an account?
  + What drives the level of the account?
* US companies publish 10K (annually) and 10Q (quarterly).
  + MD&A (extremely important document)
  + Income Statement, Balance Sheet, Cash Flow Statement
  + Notes to the financial statements
* Non-US companies publish Annual Report and Interims (semi-annually).

The three primary financial statements are linked together.

Cash + Non-Cash Assets = Liabilities + Non-Retained Earnings Equity + Retained Earnings

The above equation formulates the Balance Sheet. Change in the Cash from the Balance Sheet is articulated in the Cash Flow Statement. Likewise, change in the Retained Earnings is articulated in the Income Statement.

**Income Statement**

**Revenue recognition**

* Revenue from customers (sales) impacts one of three lines on the balance sheet – cash, accounts receivable (common for B2B transactions), or deferred revenue.
* Recognized when goods delivered / services performed (exception for long-term contracts), not when cash is received.
* When revenue hits the income statement, that is when direct costs (COGS) associated with those revenues also hits the income statement.
* Gross vs net revenue (sales tax, discounts, rebates, returns, etc. are excluded from revenue in the spirit of conservative accounting).
* Revenue is recognition is important because revenue determines profits. Watch out for premature revenue recognition. The type of company often determines revenue recognition versus cash receipt. For example,
  + Airlines receive cash before passengers fly – they have to account for this with a “Deferred Revenue” liability to counterbalance the cash received.
  + Supermarkets and retailers receive cash a recognize revenue simultaneously.
  + Manufacturers receive cash post-sale and accounts for this delayed receipt of cash with an “Accounts Receivable” asset.

**Costs**

* COGS and SG&A are the two primary operating expense lines on the income statement.
* COGS refers to the direct costs of production including raw materials, depreciation of factory buildings and equipment, factory labor, factory maintenance costs, and factory utilities and other direct costs.
* Sales – COGS = Gross Profit
* SG&A refers to non-production related business costs including sales and marketing, support services including HR, IT, and finance, head office costs including management compensation, depreciation of non-production related fittings and equipment, and amortization of corporate software licenses.
* Gross Profit – SG&A = Operating Profit (EBIT)
* COGS and Inventory are tied together. Similarly SG&A and Prepaid Expenses are tied together.

**Income Statement (continued)**

**Profit Margins**

* Gross profit = Sales – COGS
  + Reflects production efficiency.
  + Ignores unavoidable business support costs.
* Operating Profit (EBIT) = Gross profit – SG&A
  + Reflects all operating costs.
  + Includes D&A expenses which can be subject to varying accounting policies.
* EBITDA = EBIT + Depreciation + Amortization (D&A is buried in COGS and SG&A
  + Ignores D&A expenses which can be subject to varying accounting policies.
  + Does not reflect ongoing costs of fixed asset purchases.
* EBT = EBIT – Net interest expense
* Net Income = EBT – Taxes
  + Reflects all expenses incurred by shareholders.
  + Influenced by varying leverage levels.

**Adjusting EBIT and EBITDA to remove distortion from one-off items**

The primary use of financial statements is either to compare amongst companies or across time.

* “Cleaned” or normalized numbers must be used for comparison and forecasting.
* “One offs” are removed or “cleaned” from the historic data on the basis that they are not expected to occur in the future. Common non-recurring items include restructuring charges, large gains / losses on the sale of businesses or assets, impairments of non-current assets, and large one-time charges / expenses.
* From the clean EBIT, we add back ongoing depreciation and amortization expenses to get to clean EBITDA.

**Tax Expense**

This is the expected tax cost for the year based on reported profits. The average tax rate, or effective tax rate (ETR), incurred by the company is the tax expense divided by EBT. Deriving ETR is a complicated process. The ETR is generally used for forecasting total global tax expense in operating financial models (DCF, LBO, M&A, and general operating models).

The marginal tax rate (MTR) is the tax that will be applied to additional profits. It is normally the statutory tax rate in the company’s home country. In some countries, this will be the sum of a national tax rate and a local tax rate. The MTR is used for estimating the tax impact of marginal dollars of earnings or expenses (for example, estimating the tax benefit of additional interest expense on new loans and one-off expenses).

**Net Income**

Net income measures a company’s profit. Shareholders provide capital to a company that the company then uses to purchase assets. These assets hopefully generate a return. The return on assets can either be reinvested back into the company or paid back to shareholders. In the former situation, this reinvestment comes from retained earnings. In the later situation, the profits are distributed back to shareholders in the form of dividends. The amount of dividends is a function of the company’s dividend policy and this policy is primarily driven where the company is in its life-cycle.

Earnings per Share (EPS) = Net income / Weighted average shares outstanding (WASO)

When WASO is basic shares we get Basic EPS. When WASO is diluted, we arrive at Diluted EPS.

Return on Equity (ROE) = Net income / Book value of equity

Payout Ratio = Dividends / Net income

Dividend Yield = Dividends per share / Share price

Earnings Yield = Diluted EPS / Share price

P/E Ratio = Share price / Diluted EPS (this is the “earnings multiple”)

**Normalizing Net Income**

Remove the post-tax impact of non-recurring items from reported net income. This is done because non-recurring items decrease the forecasting quality of the income statement. When normalizing net income, the marginal tax rate tax rate is used.

ETR is used for 1) forecasting total tax expense in financial models and 2) taxing the EBIT in DCF models.

MTR is used for 1) normalizing net income and 2) calculating the cost of debt post-tax.

**Balance Sheet**

**Current Assets & Liabilities - Inventory**

Current assets are expected to be used or sold within one year. Current assets typically consist of:

* Cash and cash equivalents
* Short-term investments
* Accounts receivable (also called trade receivables; sometimes net of bad debts)
* Inventory (sometimes comprised of finished goods and raw materials in the case of manufacturing firms)
* Prepaid assets

Inventories purchased 🡪 Inventories sold 🡪 COGS (flows through to the Income Statement)

Inventories purchased 🡪 Unsold inventories 🡪 Inventory asset (appears on the Balance Sheet)

Valuation methodology of unsold inventories is critical because it impacts COGS and as well as the inventory balance. There are two primary methods of valuing inventory: FIFO and LIFO (not allowed by IFRS but common in the US). Weighted average cost is a third inventory valuation method.

In an inflationary scenario, LIFO gives you less gross profit in the current period relative to FIFO. However, in subsequent periods, LIFO gives you more gross profit relative to FIFO.

**Current Assets & Liabilities**

* Short-term debt (interest-bearing debt due within one year and/or current portion of long-term debt)
* Dividends payable (dividends declared but not yet paid to shareholders)
* Accounts payable / trade creditors (amounts owed to suppliers)
* Accrued expense (operating costs incurred during the year but not yet paid)
* Taxes payable

A key idea is operating assets and operating liabilities. On the asset side we have Cash + Short-term operational assets + Long-term operational assets. On the liabilities side we have Short-term operational liabilities + Long-term operational liabilities + Debt + Equity.

Positive OWC requires funding => Cash + OWC + Non-current assets = Debt + Equity

In this scenario, increases in OWC consumes cash and conversely decreases in OWC generates cash.

Negative OWC provides funding => Cash Non-current assets = OWC + Debt + Equity

In this scenario, increases in OWC generates cash and conversely decreases in OWC consumes cash.

Within an industry group, comparative analysis requires a ratio to adjust for scale and this ratio is typically OWC / Sales.

Within an industry group: higher OWC / Sales suggests relative inefficiency. Negative OWC / Sales is most efficient but not achievable in most industries.

Financial Assets and Financial Liabilities include Cash, Short-term investments, Short-term debt, Current maturities of LTD, and Current capital leases. Financial Assets and Financial Liabilities **does not enter** the definition of Operating Working Capital.

Working Capital = All Current Assets – All Current Liabilities

**Current Assets & Liabilities (continued)**

Operating Working Capital = (All Current Assets – Financial Assets) – (All Current Liabilities – Financial Liabilities)

Ending receivable days = (Receivables / Sales) \* 365 (falling receivable days is good)

Ending inventory days = (Inventories / COGS) \* 365 (falling inventory days is good)

Ending payables days = (Payables / COGS) \* 365 (falling payable days is bad)

Funding Cycle or Days Funding (Provided) / Required

Days Funding = (Receivable days + Inventory days) – Payable days

**Non-Current Assets**

Non-current assets are considered financial assets that are intended to be held for more than one year (e.g. investments in long-term debt).

Tangibles have physical substance such as PP&E

Intangibles do not have physical substance such as goodwill and other intangibles like patents, licenses, trademarks etc.

Other long-term assets such as deferred tax assets and pension assets.

What causes non-current assets (NCA) to go up or down? Use BASE analysis (Beginning Amount, Additions, Subtractions, Ending Amount) to gain insights into the movement of NCA balances.

UP -> Capex; Purchase of intangible assets

DOWN -> Depreciation; Amortization

Gross PP&E – Accumulated Depreciation = Net Book Value of PP&E

Gross Intangibles – Accumulated Amortization = Net Book Value of Intangibles

**Non-Current Assets - Goodwill**

Non-current assets -> Land, Buildings and building equipment, Machine and equipment

Deferred charges and other assets

Goodwill

Goodwill is an asset which is created ONLY when a business acquisition is made. Goodwill is essentially the excess price that we pay above the fair value of the net assets that we acquire in the process.

The value of goodwill equals the purchase price minus fair value of the net assets acquired.

Recognizes the payment made for assets that cannot be separately recognized on the acquirer’s balance sheet.

Unlike PP&E and Intangible Assets, Goodwill is not amortized and thus can have an indefinite useful life. It does have to be tested every year for impairment which represents a permanent reduction in the asset’s value. This impairment test is generally applied to any asset not subject to D&A.

Other intangible assets

**Debt**

Short-term debt is due within one year and includes commercial paper, drawn revolving credit facility, bank overdrafts.

Long-term debt is due after one year (amortizing and bullet) and includes notes payable, loan notes, corporate bonds, bank loans, obligations under finance leases.

**Debt (continued)**

From a financial analysis perspective we want to analyze a company’s Net Debt.

Net debt accounts for all cash and cash equivalents (cash, short-term deposits, marketable securities, liquid short-term investments) as well as all debt. Net debt = Total debt – Cash and cash equivalents – short-term highly liquid assets.

Debt metrics include:

Debt / Equity or Net Debt / Equity – this is a measure of financial leverage.

Debt / EBITDA or Net Debt / EBITDA – measure the ability of the business to repay the debt.

EBITDA / Interest Expense – measures interest coverage which is the ability of the business to pay interest.

Total Debt is comprised of Interest bearing liabilities (watch out for items that sound like debt but are in fact operating items). Note that leases should be rolled into total debt.

**Equity**

Equity investors buy shares with cash. Returns to the investor can be earned through: 1) dividends that are discretionary and approved by shareholders and 2) sale of shares to third party in stock market or to company in form of share buy-backs.

Common Stock – par value of all shares issued. Also referred to as the “nominal value”.

APIC – additional paid-in capital of all shares issued. APIC is also referred to as a “share premium”.

Treasury Stock – cash cost of all shares repurchased.

Retained Earnings – cumulative net income less dividends distributed (look for Preferred Dividends in addition to the traditional Common Dividends)

Number of Shares

* Authorized – number of shares a company is allowed to issue.
* Issued – number of shares a company has ever issued.
* Treasury stock – number of inactive shares repurchased by the issuer.
* Outstanding – number of active shares owned by shareholders.

When accounting for Equity it is important to distinguish between accounting for the number of shares OR accounting for the equity balances on the Balance Sheet. With number of shares price of shares is not factor whereas price is a key factor in determining the APIC and Treasury Stock balances on the Balance Sheet.

**Debt and Equity – Returns Measures**

Return of Capital measures the rate of return on the amount of financing invested in the company. The definition of “capital” and “return” must be consistent with each other.

Return on Capital = Return / Capital

The numerator measures how much the investment generated during the period. The denominator is the amount of capital that was invested in order to generate return by that investment.

Return on Equity = (Net income) / (Shareholders’ equity)

DuPont Analysis ROE = (Net income) / Sales x Sales / Assets x Assets / Equity

ROE = Profitability x Investment Efficiency x Leverage

Return on Invested Capital (ROIC) looks at the total amount of capital provided by all investors (shareholders + debt holders). It is usually calculated unlevered (before interest). ROIC is also referred to as Return on Capital Employed.

ROIC = (Operating profit) / (Debt + Equity) The numerator can be before or after taxes.

For ROIC we are looking for a profit number that is before interest but takes taxes into account (NOPAT -> net operating profit after taxes).

ROIC = (Operating profit) / Sales x Sales / (Invested capital)

ROIC = Operating profit margin (Profitability) x Net operating assets turnover (Efficiency)

**Cash Flow Rules**

The cash flow statement (CFS) is a reconciliation of the items on the balance sheet from the beginning of the time period to the end of the time period.

When Assets increase Cash decreases, when assets decrease cash increases.

When Liabilities and Equity increase Cash increases, when liabilities and equity decrease cash decreases.

The cash flow statement explains the reasons for the change in cash from the beginning to the end of a time period. These reasons are in the form of three components: Operating, Investing, and Financing.

Operating

Payments from customers (sales)

Payments to suppliers and employees

Depreciation component of PP&E

Interest

Net income component of Retained earnings

Tax

Investing

Purchase and sale of long-term assets

PP&E (Capex component of PP&E)

Intangibles

Financial assets

Financing

Equity issuance

Dividends (brings down Retained earnings)

Share buy-back

Debt issuance

Debt payment

The CFS always starts with Net income in the Operating section.

The net cash flow shown in the CFS must be reconciled with the cash change on the balance sheet.

**Financial Modeling: Fundamentals**

**Model Steps Overview**

1. Historical Financial Statements
2. Historical Ratio Analysis
3. Assumptions and Projections
4. Forecast Financial Statements and Analysis

**Modeling Steps for Financial Statements**

1. Build the Income Statement (IS)
   1. Leave out interest
2. Build the Balance Sheet (BS)
   1. Leave out cash and revolver (plugs)
3. Build the Cash Flow Statement (CFS) – resolves movement in the balance sheet
   1. Cash flows calculated using changes from BS
4. Balance BS
   1. Link up cash and revolver from CFS to BS
5. Calculate and link up interest
   1. Build full debt schedule
   2. Link up interest to IS

**Operating Cash**

The minimum cash level needed to operate a business on a day-to-day basis.

Rarely disclosed in the financial statements.

Often estimated as a % of sales (% used depends on sector).

Can be considered a component of Operating Working Capital (OWC) – grows just like other short-term assets link inventories, account receivable, payables, etc.

Total cash = Excess cash + Operating cash

**Deriving the CFS**

1. Categorize the change in each BS account as Operating, Investing, and/or Financing
   1. Note that some items affect more that one section of the CFS
2. Use BASE analysis if needed for items such as PP&E and Retained earnings
3. Apply rules for cash based on change in assets, liabilities, and equity
4. Build out CFS structure -> CFO, CFO, CFF, and cash reconciliation

**Managing the Excess or Revolver Plug, Interest, and Stress Testing**

Balancing the BS is possible if you have a well-constructed CFS. A company will either have excess cash or negative cash, in which case the company needs to dip into its revolver.

How you calculate interest on debt depends on the timing of the debt (or cash balances as well) intake or repayment. Most often, as an analyst you don’t have access to granular debt repayment timing, so the default is to use average debt by averaging the year-over-year ending debt amounts on the BS. Note that using the average debt methodology necessitates dealing with a circularity that results in the financial model.

A good stress test requires changing the modeling assumptions and checking how the model responds. It is critical in assessing whether a model functions as expected. Make sure you stress test a **copy of the model**.

Modeling checklist:

Good construction (iterations, matrix integrity, build on section at a time, put your assumptions, totals should be formulas, never hard-code in formulas)

Troubleshooting (sense check, stress test, matrix check)

User Friendly (leave audit trail, insert comments, beauty save, include cover sheet)