Questions Answered

Investment Banking, Private Equity, S&T, Hedge Fund, Infrastructure

Kevin Romanteau

About the Author

Kevin Romanteau is a former investment banker, investor, and writer who has helped hundreds of people navigate the finance world.

Inspired by his family business, Kevin developed a fundamental understanding of the commodity markets from an early age. The seeds of his intended career trajectory were planted early in his life, as he grew up in a small village on the Western coast of France. He started working after school when he was old enough to support his family and during the weekend on the family farm.

This experience gave him a better understanding of commodities' logistics and inner workings. He also understood that the most vital force affecting agricultural decision-making was finance, so he paid close attention to the stock market, and at 16, his burgeoning interest in financial markets led him to start investing in the equity markets, which put him in the spotlight.

Kevin graduated from London Business School with an Executive Master's degree in Finance. Before now, he worked for four years as an EMEA investment banker at BNP Paribas, Société Générale, and Citi Bank. In doing so, he progressively mastered the art of investment banking across a wide range of sectors.

Passionate about shareholder activism, he published 'The Golden Age of Activism Investing,' which has been cited in many articles and resulted in advisory and speaking engagements with the French Ministry of Economy & Finance and at the Middle East Investment Summit, respectively.

Kevin has always shared his vast knowledge, expertise, and insight with students interested in a career in financial services and has extensive teaching experience from lecturing at a French business school and one-on-one training. He has helped 200+ students score internships and jobs in the most prestigious financial institutions.

Contact the Author

Please get in touch with any questions, comments, or suggestions for future editions: www.ibd-101.com.

Introduction

Investment Banking 101: 500+ Technical Q&As, the third of the Investment Banking 101 series, is an unmatched problem solver that addresses the most frequently asked questions in investment banking, sales & trading, private equity, hedge fund, project finance, and infrastructure.

Loaded with the most asked questions on Investment Banking, it provides easy-to-understand, structured answers. It allows undergraduates, MBA students, career switchers, instructors, or professionals to extract necessary information easily.

Investment Banking 101: 500+ Technical Q&As contains over 500 questions and answers, including multiple real-world case studies that enable you to truly master and refine the core skills of the successful investment professional.

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Macroeconomic

2. Financial Accounting

2.2 Income Statement

Question: If you were to choose one financial statement, which would it be?
The Cash Flow Statement allows you to make assumptions to get EBITDA and provides you with a record of cash inflows and outflows.

Question: If you were to choose two financial statements, which would they be?
The Balance Sheet and the Income Statement from which we can get the Cash Flow Statement.

Question: What is an Income Statement? What are the major line items on it?
The income statement provides the results of a business' operations during a specified period of time.

- *Revenue = Units Sold * Price:* Income that arises from the sales of goods and/or services. Sales represents the total dollar amount realized by a company through the sale of its products and services during a given period. Revenue is recorded when at the time of sale.
- *Expenses:* Commonly includes COGS, SG&A, D&A, Interests and Taxes, which are the costs incurred by a business over a specified period to generate the reported Revenues.

Note that analysing a company at the sales levels is enlightening to determine its positioning relative to its peers. All else being equal, companies with greater sales volumes tend to benefit from scale, market share, purchasing power, and lower risk profile. As such, they are often rewarded by the market through a premium valuation.

Question: What is the impact of not recording revenue as cash?
In this case, Revenue will be recorded as Deferred Revenue under the Liabilities section on the balance sheet. Over time, it will turn into revenue on the income statement.

<u>Question</u>: Walk me through how you create a revenue model for a company.

- *Bottoms-Up Build* - Start with individual products/customers - estimate the average sale value or customer value - and then the growth rate in sales and sales values to tie everything together.

- *Tops-Down Build* - Start with the "big-picture" metrics like overall market size - then estimate the company's market share and how that will change in the coming years - and then multiply to get their revenue of these two methods, Bottoms-Up is more common and is taken more seriously because estimating "big-picture" numbers is almost impossible.

<u>Question</u>: Explain the Revenue Recognition Principle and Matching Principle used in accrual accounting.

- *Revenue Recognition Principle*: Revenue is recorded in the same period the good or service was delivered (and therefore "earned"), whether cash was collected or not from customers.

- *Matching Principle*: The expenses associated with production/delivery of a good or service must be recorded in the same period as when the revenue was earned**.**

<u>Question</u>: When should an expense be capitalized?

It is optimal to capitalize an expense if the asset has a useful life greater than a year. Otherwise, you should expense the purchase.

<u>Question</u>: What is the difference between COGS and Operating Expenses?

- *Cost of Goods Sold:* represents the direct costs associated with the production of the goods sold or the delivery of services to generate revenue. Examples include direct material and labor costs.
- *Operating Expenses:* include SG&A and R&D, which are not directly associated with the production of goods or services offered. Often called indirect costs, examples include rent, payroll, wages, commissions, meal and travel expenses, advertising, and marketing expenses.

<u>Question</u>: Walk me through how you create an expense model for a company.

To do a true Bottoms-Up build, you:

- Start with each different department of a company, the # of employees in each, the average salary, bonuses and benefits.

- Then make assumptions on those going forward. Usually, you assume that the number of employees is tied to revenue, and then you assume growth rates for salary, bonuses, benefits, and other metrics.

- COGS should be tied directly to Revenue and each "unit" produced should incur an expense.

- Other items such as rent, Capex, and miscellaneous expenses are either linked to the company's internal plans for building expansion plans (if they have them), or to Revenue for a simpler model.

<u>Question</u>: How an increase or decrease in inventory costs will impact the net income depending on FIFO or LIFO accounting methods?

	First In, First Out (FIFO)	**Last In, First Out (LIFO)**
Rising Inventory Costs	If inventory costs have been rising, lower COGS would be recorded under FIFO. Since the less expensive inventory was recognized, net income will be higher in the current period.	If inventory costs have been rising, then COGS for the period will be higher under LIFO because the recent, pricier purchases are assumed to be sold first. Thus, the result would be lower net income for the period.
Decreasing Inventory Costs	If inventory costs have been dropping, COGS would be higher under FIFO, since older inventory costs are more expensive. The ending result would be lower net income for the period.	If inventory costs have been dropping, then COGS would be lower under LIFO. Thereby, net income for the period will be higher since the cheaper inventory costs were recognized.

<u>Question</u>: Should a company use LIFO or FIFO when prices increase?
LIFO is preferable because rising prices increase the cost, and ultimately, decrease taxes.

<u>Question</u>: If a company changes its inventory accounting policy from LIFO to FIFO, how would that impact on the three financial statements?
It would depend on whether the cost of materials has been increasing or decreasing. If costs are increasing, switching from LIFO to FIFO will make COGS decrease. Operating Income and Net Income will increase accordingly. Taxes will go up as well, but the net effect of the Cash Flow should be negative since the Inventory will surge.

<u>Question</u>: Why is the Income Statement not affected by changes in inventory?

Expenses (COGS) are recognised only when sales are realized due to the matching principle and accrual-based accounting. Therefore, an increase in inventory only represents an accumulation of finished goods and work in progress that have not yet been sold. When this inventory is sold, the corresponding expense of the product will be matched with the revenue realized at the sale.

<u>Question</u>: What is Gross Profit?

Gross profit is a key indicator of operational efficiency and pricing power. It is usually expressed as a percentage of sales for analytical purposes.

Gross Profit = Revenue – COGS Gross

Gross Margin = Gross Profit / Revenue

<u>Question</u>: What is SG&A?

Selling, General & Administrative Expense usually refers to all the “central” costs of a business. SG&A includes expenses, such as salespersons and employees’ wages, advertising and promotion, travel, and office payroll and expenses.

<u>Question</u>: What is EBIT?

EBIT, which stands for Earnings Before Interests and Taxes, is commonly referred to as operating profit.

EBIT = Revenues – COGS[1] *– SG&A*[2]*– Depreciation – Amortisation*

EBIT Margin = EBIT / Revenue

- *A good measure of operating profitability*: EBIT focuses on profitability as it is independent by the capital structure (before interest).
- *A comparability tool:* relevant when analysing the universe of peers (comparable companies).
- *A measure exposed to manipulations:* since it includes non-cash expenses (D&A), it can be impacted by differences in accounting policies.

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[1] Not including depreciation

[2] Not Including amortisation

<u>Question</u>: If Depreciation is a non-cash expense, how does it affect Net Income?

Depreciation is treated as non-cash expenses and is added back to the Cash Flow from Operations statement. The expense is tax-deductible and reduces the tax burden. Since the actual cash outflow for the initial purchase of PP&E has already occurred, the annual depreciation is the non-cash allocation of the initial outlay at purchase.

<u>Question</u>: Do companies prefer Accelerated or Straight-Line Depreciation?

Under GAAP reporting, most companies prefer SLD:

- *Straight-Line Depreciation (SLD):* the method lowers the depreciation amount recorded in the earlier years of the asset's useful life. As a result, companies using SLD will show a higher Net Income and EPS in the initial year.
- *Accelerated Depreciation:* Companies will show a lower depreciation into an asset's life than the straight-line method. However, companies still prefer straight-line depreciation because of the timing, as many companies are focused on near-term earnings. If the company is constantly acquiring new assets, the "flip" won't occur until the company significantly scales back capital expenditures.

<u>Question</u>: Is EBITDA a good proxy for Operating Cash Flow?

- *EBITDA* as a relevant proxy for operating cash flow: it reflects the company's total cash operating costs for producing its products and services.

- *Limitations:* While EBITDA adds back D&A, typically the largest non-cash expense, it does not capture the full cash impact of Capex or changes in Working Capital (WC). EBITDA does not adjust for Stock-Based Compensation (SBC), although an increasingly used "adjusted EBITDA" metric does add-back SBC. These non-cash and any non-recurring adjustments must be properly accounted for to assess a company's past operational performance and to accurately forecast its future cash flows.

<u>Question</u>: Why would the Depreciation & Amortization number on the Income Statement be different from what's on the Cash Flow Statement?

This happens if D&A is embedded in other Income Statement line items. When this happens, you need to use the Cash Flow Statement number to arrive at EBITDA because otherwise you're undercounting D&A.

<u>Question</u>: A company has had positive EBITDA for the past 10 years, but it recently went bankrupt. How could this happen?

Possible Scenarios:

- The company is spending too much on Capital Expenditures * These are not reflected at all in EBITDA, but it could still be cash-flow negative.

- The company has high interest expenses and is no longer able to afford its debt.

- The company's debt all matures on one date and it is unable to refinance it due to a "credit crunch" - and it runs out of cash completely when paying back the debt.

- It has significant one-time charges (from litigation, for example) and those are high enough to bankrupt the company.

- Remember that EBITDA excludes investment in (and depreciation of) long-term assets, interest and one-time charges - and all of these could end up bankrupting the company.

<u>Question</u>: What is Earnings Before Interests, Taxes, Depreciation and Amortisation (EBITDA)?
EBIDA is calculated as follows:
EBITDA = Revenues – COGS – SG&A
Where:
- COGS excludes depreciation of PP&E
- SG&A excludes amortization

Thereby, EBITDA Margin = EBITDA / Revenue

- *A fair "apples-to-apples" tool for peer comparison purposes:* EBITDA is free from differences in capital structure (i.e., interest expense), tax regime (i.e., tax expense), and accounting policy (D&A). However, some people, such as Warren Buffet, advocate the use of EBIT over EBITDA as they believe that the company's investment in Capex is a key indicator of future growth.
- *A good measure of profitability:* it is indicative of a company's ability to generate profits after having paid operating costs. However, EBITDA excludes the cost of tangible and intangible assets which for certain industries, such as Telecom, are significant. In this case, analysts often use EBITDA - Capex.
- *A tool exposed to manipulations:* a company's accounting decisions in terms of revenue recognition, Account Receivables, affect the accuracy of the measure.

<u>Question</u>: Give examples of Non-Recurring Items.
Non-Recurring Items include gains or losses from legal settlements, restructuring expenses, inventory write-downs, and asset impairments. Often known as "scrubbing" the financials, the act of adjusting for these non-recurring items is meant to normalize the cash flows and depict a company's true operating performance.

<u>Question</u>: What is Net Income?
Net Income ("earnings" or the "bottom line") is the residual profit after all expenses have been subtracted. Net Income is also grasped as the earnings available to equity holders once all obligations have been satisfied (e.g., to suppliers, vendors, service providers, employees, utilities, lessors, lenders, state and local treasuries).

Question: What is the difference between the ETR and MTR?

- *Effective Tax Rate (ETR):* represents the percentage of taxable income corporations must pay in taxes. For historical periods, the effective tax rate can be backed out by dividing the taxes paid by the pre-tax income (or earnings before tax).
  ETR % = Tax paid / EBT

- *Marginal Tax Rate (MTR):* the taxation percentage on the last dollar of a company's taxable income. The tax expense depends on the statutory tax rate of the governing jurisdiction and on the company's taxable income. The tax rate depends on the tax bracket in which it falls.

Question: How do you normalize earnings?

On the income statement, you can sometimes see one-off expenses, expenses that will not recur, and non-recurring income. on the income statement. If you include one-off expenses in your calculation of the earnings before getting, the multiples and the valuation will be distorted. The earnings amount in a multiple should reflect the company's underlying overall profitability, not a one-time event.

Therefore, when you are calculating EBITDA and EBIT to calculate, add back the non-recurring expenses and subtract the non-recurring income.

When you are using EBT (Earnings Before Tax), you must adjust the tax expense. For example, you can remove a non-recurring cost by multiplying the increase in profits by (1-Tax Rate).

Question: How would you forecast an Investment Banking boutique's revenue?

One should first focus on the main sources of revenue as they considerably differ from regular companies. An IB boutique derives its revenue from fees generated by M&A or Financing advisory and/or underwriting activities. Revenues are contingent upon the deal flow, the fee structure, the reputation, the client database, and senior bankers' ability to bring in deals.

After comparing the historical deal pipeline with that of today and peers, you could forecast revenue using average revenue per employee as the main driver.

<u>Question</u>: Explain the concept the non-recurring item?
Non-recurring items are listed in the historical income statements and should always be excluded. They include items such as restructuring charges, gains/losses on sales of assets or merger-related write-offs. Always use the pretax amount for items such as sales, EBITDA, and EBIT. Be sure to take out the after-tax cost (or gain) of these items for after-tax items such as net income and EPS. If pretax and after-tax costs are not in the footnotes, use local taxes rates. Footnote your methodology carefully.

<u>Question</u>: What is Compounded Annual Growth Rate (CAGR)?
The compounded annual growth rate is the growth rate of a number compounded over several years. Most analyses will show some form of historical growth rate in the form of a compound annual growth rate on Revenues, EBITDA, EBIT and/or net income. CAGR can be a simple annual growth rate, or it can be calculated based on interim periods.

CAGR = -1 + (End Value / Start Value)^(1/t)

<u>Examples</u>:

Simple Annual CAGR	2015	2016	2017	2018	2019	2020
Revenue	$100	$200	$300	$400	$500	$600

CAGR '15-20 (5-Y) = -1+ (600 / 100)^(1/5) = 43%

Complex Interim CAGR	2015	2016	2017	2018	2019	2020	Q1 2021
Revenue	$100	$200	$300	$400	$500	$600	$625

CAGR '15-21 Q1 (5-Y) = -1+ (625 / 100)^(1/5.25) = 42%

2.8 Industry Specificities in Financial Statements

<u>Question</u>: Detail how each industries specificities reflect in the Balance Sheet and Income Statement

1. FIG companies

FIG companies operate according to a unique business model, which manifests itself in the Income Statement and Balance Sheet.

Income Statement

- There is no distinction between *operations and financing* since operations are financing activities.
- *Revenue* stems from interest income, fee and commission income, underwriting and in the case of insurance companies, insurance premiums.
- *Interest income and expense* from loans and securities exist since interest is paid on deposits and borrowings. As a result, Net Interest Income equals to Interest Income less Interest Expense
- *Expenses* include provisions for loan losses, operating expenses such as regulatory compliance costs, and in the case of insurance companies' insurance claims.
- *Other items* include gains and losses on investments.

Balance Sheet

- *Assets* include a high amount of loans receivables, investment in securities, and allowances for loan losses (estimated amount losses if loans were to not be repaid). Inventory should be low.
- *Liabilities:* high amounts of liabilities from customers' deposits. Liabilities also include inter-bank borrowings, funds from central banks, debt securities for bond issuance, and in the case of insurance, insurance liabilities.

2. Retail companies

Retail companies are characterized by their goodwill (brand name), high margins, and seasonality vs. year-around sales trend, which impact inventory turnover and sales revenue.

Income Statement

- Revenue is generated by the sale of goods, usually excluding returns, allowances, and discounts. Revenue is typically recognized at the time of sale.
- Cost of Goods Sold (COGS) should be high as it encompasses the cost of merchandise. Retail companies display high margins, as it is the main driver of profitability.
- Operating expenses include both Selling, General and Administrative Expenses (SG&A) and Depreciation & Amortization. SG&A encompasses marketing, wages, and lease expenses. D&A can be high due to manufacturing equipment and wear and tear of store fixtures.

Balance Sheet

- Assets are driven by a high inventory due to the seasonality of sales, variable amounts of Accounts Receivables depending on whether sales are made with cash or on credit, a significant right-of-use asset, and a potentially high PP&E amount (store fixtures, technology, machines). As a reference, intangibles should be lower than in the tech or pharmaceutical sector.
- Liabilities include lease liabilities for retail and factory spaces and Accounts Payables which can be high if the business accepts purchases on credit.

3. Tech companies

Income Statement

- Revenues are driven by software sales, subscription revenue, and licensing fees.
- Expenses are broken down into COGS, which includes amortization of capitalized R&D costs over a software's useful life, R&D expenses, SG&A expenses, impairments expenses (for intangible assets), and stock-based compensation expenses. COGS are often lower than those of retail companies.
- Gross Margins are often high.

Balance Sheet

- Assets: *mostly* intangibles, including software's licenses and all forms of intellectual property (patents). Assets are also driven by capitalized R&D costs under IFRS accounting standards and any long-term investments in startups or joint ventures. PP&E can also be high due to fixed long-term equipment. Note that although tech companies mostly have intangible assets, they have lower inventory than FIG and retail companies. Software companies may also display high Account Receivables if they credit their products or services to clients.
- Liabilities: in the case of subscription-based services such as streaming or software companies, deferred revenues can be high. Intellectual property items can also imply high costs generated by legal procedures, which are recorded as contingent liabilities.
- Equity: stock-based compensation for employees is very prevalent in this industry.

3. Corporate Valuation

3.1 Primer

Enterprise Value and Equity

- *Equity Value = Price per share * # Shares*
  - Also known as "market cap"; cannot be negative
- *Enterprise Value = Equity Value + Debt – Cash + Preferred Stock + Noncontrolling Interests – Associates*
- *Per Share Value = Equity Value/# Shares*
- Convertible Bonds (in the money)
  - Value of Convertible Bonds/Par Value = # of convertible bonds
  - Par Value/Price = # of shares per convertible bond
  - # of shares per convertible bond * # of convertible bonds = new shares created

Valuation

- *EBIT = Operating Income = Revenue - COGS - Operating Expenses*
- *P/E = Price per Share/EPS = Equity Value/Net Income*
- *EPS = Net Income/Shares Outstanding*

3.2 Intrinsic Valuation

<u>Question:</u> Which valuation methods provide the intrinsic value of a company?

- *Discounted Cash Flows (DCF)*: Measures the intrinsic value of a company by discounting all the Future Cash Flows of the firm available to stakeholders to the Present Value (PV). A DCF answers the question: "how much would a company be worth based on the PV of its Future Cash Flows?" A DCF can be completed via the WACC or APV method. It is relevant to compare a DCF to the 52-Week Market High/Low valuation.

- *Leveraged Buyout (LBO)*: An LBO is an exit valuation that answers the question: "At what maximum price is a financial sponsor willing to pay if the company achieves a minimum x% of IRR in x years?" An LBO valuation is based on the targeted returns (IRR), the exit hypotheses, and the company's debt capacity.

- *Dividend Discount Model (DDM):* The underlying rationale of this method that dividends are indicative of a company's value. It consists of first projecting dividends and then discounting them to the Present Value.

- *Residual Income (RI):* The RI method consists of comparing a company's actual earnings to its expected earnings. Residual Income results from the subtraction of Net Income from the cost of equity multiplied by the amount of Equity.

- *Thirteen-Week Cash Flow (TWCF):* This cash-based method is used in the context of corporate restructuring (Chapter 11). The aim is to determine the size of the financing needed during the restructuring period. Alternatively, TWCF is a powerful valuation tool to prevent a liquidation. TWCF is a direct method that offers visibility and transparency into a company's short-term liquidity and enhances stakeholders' confidence.

- *Liquidation Value*: This valuation falls into a business asset valuation along with Market Value, Book Value, and Salvage Value. Typically, the liquidation value ranges between the Book

Value and the Salvage Value. Liquidation Value examines a company’s physical assets in three scenarios: when a company is about to default (distressed situation or bankruptcy), when it should be refinanced, or when its assets are sold separately. Assets under examination are only physical – excluding intangibles – real estate, infrastructure, inventory, store fixtures, and equipment. These assets are of the utmost importance as their sale generates cash needed to cover the debt.

<u>Question</u>: How does a DDM differ from a DCF?
A DDM stipulates that the value of a company is a function of the present value of all its future dividends paid out. A DCF states a company is worth the sum of the present value of all the future free cash flows it generates. The DDM will forecast a company's future dividends based on a dividend per share (DPS) and growth rate assumptions – which are then discounted using the cost of equity. For the terminal value calculation, an equity value based multiple will be used, most commonly P/E. Therefore, the DDM directly leads to the equity value and equity value per share. The DDM is similar to a levered DCFs but diverges from unlevered DCFs.

<u>Question</u>: How you would value a bank using the DDM?
Bank valuations display similar characteristics to FIG valuations as banks and financial institutions usually have substantial dividend payouts. Dividends are indeed part of banks’ net income and generate a payout ratio. The DDM primarily focuses on estimating the equity value by projecting future dividends and then discounting them at the cost of equity.

The typical steps are:
1. Forecasts Dividends: Determine 3 multiple growth stages and assign a discount rate to each of them. The discount rate is the cost of Equity and not the WACC.

- *Development:* dividends are explicitly forecasted, and the present value (PV) is calculated using the cost of equity as the discount rate.
- *Maturity:* dividends are derived based on the assumption that Return on Equity (ROE) and the cost of equity will eventually align. Indeed, a mature company cannot indefinitely sustain an ROE that significantly exceeds its cost of equity.

- *Long-Term Growth or Terminal stage:* the Present Value (PV) of all future dividends once the company has reached maturity is discounted by the perpetual dividend growth rate or a terminal price-to-book multiple.

This multi-stage method is more complex than the Gordon Growth Method (GGM)**,** a single-stage model. The GGM assumes perpetual dividends' growth over time, which makes it more relevant for a mature bank that displays a constant dividend payout ratio. Thereby, the GGM provides the takes an infinite series of dividends per share and discount them back to the present.

2. Find the Terminal value: Use the P/BV ratio and the exit multiple

- *P/BV ratio:* answers the question How much of the ROE is allocated to dividends and at what cost?
  P/BV ratio = (ROE – Net Income Growth) / (Cost of Equity – Net Income Growth)

3. Under Basel III standards, banks' shareholder equity section is under Tier 1 capital

- *Dividends*: are set as follows *Beginning Tier 1 Capital + Net Income + Other Changes to SE – Dividends = Minimum Shareholders' Equity* needed to meet the Tier 1 capital ratio.
- *Other changes to SE*: include adding extra items such as Stock Repurchase, Stock Issuance, and Stock-based compensation.

4. Get the intrinsic value of the bank's Equity: Sum the PV of Terminal Value to the PV of Dividend

4. Multiples

4.2 Equity Value Multiples

- *Equity Value Multiples*: the denominator must be a financial statistic that flows only to equity holders, such as net income (or diluted EPS). Among these multiples, EV/EBITDA and P/E are the most common. Equity Value multiples compare the value of common shares to the earnings available to common shareholders.

- *Equity Value/EBITDA:* the most frequently used and the most reliable.

- *Equity/Sales*: This multiple does not exist as equity is only attributed to shareholders while sales go to both debt and shareholders. The apple-to-apple rule is not satisfied.

- *Equity Value/EBIT*: is not considered reliable. EBIT is calculated after accounting for D&A, which can be easily manipulated by changing the amortization period of the investment.

- *P/E ratio*: gives investors an idea of how much the market is paying for a company's earning power. P/E ratios are typically based on forward-year EPS (and, to a lesser extent, LTM EPS) as investors are focused on future growth. It is given by the following formula: *P/E Ratio = Price of Stock / Earnings per Share*

Question: **What are the sources of Shares Outstanding?**
Shares are listed on the company filings, on the balance sheet and on its income statement. The source of the shares outstanding is important. Financial statements may also list average shares outstanding on the income statement. This is the weighted average number of shares outstanding over the period identified (quarter, year), and is not a point estimate, but a weighted average over that period. Be careful to check of new events: splits, acquisitions, more recent documents with shares (e.g., proxy).

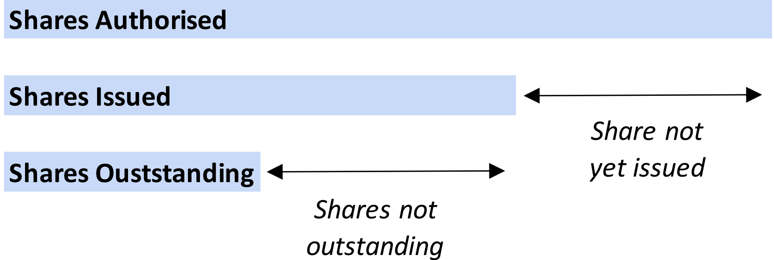
<u>Question</u>: What are the source of Shares Outstanding?

- *Financial Statement's Cover:* Shares outstanding a of date of date cover, more recent than balance sheet. Does not include options and warrants or convertibles.

- *Income Statement:* Basic and diluted shares outstanding for the period shown on the income statement. This is an average over the corresponding period of time. Basic is common shares only; diluted includes other dilutive securities such as options, warrants, and convertibles.

- *Interim Report (Prospectus, Proxy, etc.):* Shares outstanding as of date of filings or of the financial statement.

- *Balance Sheet:* Actual shares outstanding as of date of the balance sheet. Excludes option, warrants and other equivalents. Balance sheet typically provide the following:



<u>Question</u>: What are the pros and cons of P/E multiple?

PROS	CONS
P/E RATIO	
• Widely accepted and used to communicate investment ideas • Simple to calculate and interpret, and compare with a peer group • Indicative of market expectations for growth: Companies with higher P/Es vs. peers tend to have higher earnings growth expectations. • Less subjective than EV multiples • Places emphasis on earnings, as the main driver of a company's value • Highly relevant for FIG and other companies that pay high amounts of interest payments. Earnings incorporate interest payment whereas EBIT and EBITDA don't	• Prone to earnings manipulations and distortions due to differences in accounting policies, such as D&A • Influenced by capital structure • Limited scope of appliation: only used if earnings are positive • Highly sensitive to macroeconomic context: with variations across industries, earnings often react rapidly to economic cycles, making the P/E ratio volatile.

<u>Question</u>: Which are the drivers of the P/E ratio?

Qualitative factors:

- Share Price: shaped by market perceptions, economic outlook, and expectations of risk
- Earnings Quality (EQ): high quality earnings translate into reliable future earnings forecasts.
- Risk Profile
- Cyclicality of the industry

Quantitative factors:

- Interest rate
- Earnings Growth: rapidly growing companies benefit from higher P/E ratio as investors' "Willingness to Pay" is higher.
- Dividend Policy: there is a correlation between companies paying dividends have a higher ratio.

<u>Question</u>: What are the main P/E ratio ranges of P/E and how do they vary across sectors?

Globally speaking, we can make the following simple distinction:

- *High P/E Ratio:* companies characterized by a high potential for fast growth. Example: Technology
- *Moderate P/E Ratio:* constant demand for products. Example: Retail
- *Low P/E Ratio:* companies that face high R&D costs and potentially regulatory costs. Example: Healthcare

<u>Question:</u> How does the Price to Book (P/B) ratio relate to the P/E ratio (P/B) Ratio and when you would it?
The P/B ratio can be used when the company's book value captures a substantial part of its real value. An example would be commercial banks, as most of their assets and liabilities are frequently re-valued and similar to their actual market values.
P/E = P/B / ROE

<u>Question</u>: Two companies are almost similar, except that Company A is trading at 20x P/E and Company B is trading at 18x P/E. Which one would you invest in?
P/E is the price-to-earnings ratio, which demonstrates the cost per $1 of earnings. In this scenario, it's best to invest in Company B as it has a lower P/E ratio, it is a better investment — you are paying less for each $1 of earnings.

<u>Question</u>: If company X has a P/E of 2.0x and company Y of 4.0x. Considering all other factors being equal, in which company would you invest?

- *Company X*: a P/E of 2 suggested that Equity/Net income equals 2. Company X is generating an annual net income of half of its equity (equity/2).

- *Company Y*: generates a fourth of its equity (equity/4). Consequently, if all other factors (same risk and same amount of money invested) remain the same, the annual return in company X is twice higher than Y. Hence, you would invest in company X.

<u>Question</u>: A company has a 2.0x Sales Multiple and 4.0x EBITDA Multiple. Calculate its EBITDA margin.

Recall that *Sales Multiple = EV / Sales* and *EBITDA Multiple = EV / ETBIDA*
EV = 2.0 * Sales and EV = 4.0 * EBITDA
2.0 * Sales = 4.0 * EBITDA => EBITDA/Sales = 2/4 = 50%
Thus, the EBITDA margin of the company is 50%.

<u>Question</u>: A company has 10,000 shares at $20 a share. There are 100 call options at an exercise price of $10, 50 restricted stock units (RSUs) and 100 convertible bonds at a price of $10 and par value of $100. What is the diluted equity value?
Options: Company receives $1000, 100 new shares created company able to buy back 50 shares (50 new shares). Add 50 restricted stock units (so far 100 new shares)

Convertible Bonds

- *Par Value / Price = # of shares per convertible bond*
  $100 / 10 = 10 shares per convertibles bond * 100 convertible bonds = 1,000 new shares
- 1,000 + 100 = 1,100 → diluted share count is 11,000

Dilutive Equity = 11,100 * 20 = $222,000

<u>Question</u>: Is a company with a 50x P/E overvalued or undervalued? Why?
A P/E multiple alone does not tell us if it is over or undervalued… we would need to look at the industry average, the expectations for the company's growth and forward performance, and other qualitative and quantitative considerations.

Maybe the industry average is 40x and this company seems overvalued relative to its performance, or maybe it is lagging, and this multiple is "cheap".

In the real word, that multiple may be high relative to the S&P 500's P/E, but from that number alone we can't say conclusively if it is over or undervalued.

Question: Treasury Stock Method

Assumes that the options and warrants are exercised at the beginning of the year and the proceeds from the exercise of options and warrants are used to purchase common stock for treasury. If the exercise price is lower than the price of the stock, then the proceeds from the exercise are not sufficient to buy back all of the shares. The incremental shares remaining are added to the weighted average number of shares outstanding for the purpose of calculating diluted EPS.

There are two methods for calculating incremental shares added to weighted average number of shares outstanding:

- *Method A: Incremental shares = Options – (average market price – Exercise price) / Average Market Price) * # Options*
- *Method B: Incremental shares = Options – (Exercise price * # options) / Average Market Price)*

Examples

Stock price: $15
options 2,000 at $6.0 exercise price
Method A: [($15 - $6) / $15] * 2,000 = 1,200
Method B: 2,000 – [($6 * 2,000) / $15] = 1,200

Challenges with the Treasury method

- Weighted average exercise calculations can be misleading.
- Weighted average method assumes that all options are at the average price.

<u>Question</u>: Part 1 – Suppose that company A trades at a P/E of 20. Company B trades at P/E of 10. Both are considering acquiring Company C, which trades at a P/E of 15. The deal is an all stock. For each of the acquiring companies, explain whether the deal is dilutive or accretive.

- *Company A:* the deal would be Accretive, since company A is paying less for earnings (of company C) than what the market is paying for company A's earnings. This is reflected in the price to earnings ratio of both companies.

- *Company B:* the deal would be Dilutive for the same reason as stated above. The earning per share will increase for A after the merger. It will depend on the sum of the earnings after the merger and the number of total shares after the merger.

<u>Question</u>: Part 2 – Suppose that the transaction has now changed so that the acquirer secures debt from the market at rate of 5%. This money is then used as cash for the acquisition. Would this deal be considered accretive or dilutive?

Calculate the acquirer's P/E, which has now become 1/interest rate *(1-t), as t = 0. The acquirer's P/E is 1/5% = 20.

As given in the question, the target's P/E is 15. Thus, the deal is accretive.

<u>Question</u>: Why would two companies with identical growth and cost of capital trade at different P/E multiples?

Growth in earnings and sales, along with the Cost of Capital, are not the only drivers of the P/E ratio. Several qualitative and quantitative factors can contribute to explaining this difference:

- *Return on Invested Capital (ROIC) and Return on Capital Employed (ROCE):* The higher the ROIC, the higher the P/E ratio. Conversely, the higher the leverage, the lower the ROE, and thus the lower the P/E ratio.
- *Operating Profit Margins (OPM) and Net Profit Margins (NPM):* These two metrics demonstrate a company's ability to translate growth into profits. The higher the OPM and NPM, the better the valuations.
- *Non-recurring Items and Accounting Standards:* Both can account for differences in EPS calculations, leading to relative mispricing.
- *Dividend Policy:* A company that distributes higher dividends may be perceived more favorably, resulting in a higher P/E.
- *Intangibles:* Brand reputation, management style, customer base, and other intangibles also impact P/E ratios as they shape investors' perceptions, and thus, market sentiment.
- *Macroeconomic Context:* The health of the global economy is reflected differently across sectors depending on the maturity and life cycle stage of the company. Some companies' P/E ratios are more sensitive to changes in interest rates and the cyclicality of products. In the case of commodity companies, the stage of the cycle is a key factor in the P/E ratio.
- *Risk Profile:* Even if the cost of capital is similar, investors may ask for a risk premium upon assessment of risk, driving the P/E ratio down.
- *Capital Structure:* Leverage tends to bring the P/E ratio down.

Note: If two companies in the same sector trade at different valuation multiples, the above factors hold. Yet, it is also likely that the difference comes from profitability growth. Companies that display higher growth in profits are more likely to seduce investors. Investors are indeed more willing to pay a higher P/E ratio.

<u>Question</u>: A company has an EPS of $2.00 that has declined to $1.00 four years later. Assume its share price has remained the same at $10. Is its current P/E ratio higher or lower than its four year-back P/E ratio, and how would you interpret this situation?

P/E Ratio = Share Price / EPS

P/E Ratio 4 years ago = $10 / $2.00 = 5

P/E Ratio Today = $10 / $1.00 = 10

The current company's P/E ratio is higher than that of four years ago, effectively doubling the P/E ratio.

Reasons that may explain the increase in the P/E ratio include:

- Overvaluation: With the EPS now half of what it used to be, trading at such a high multiple could indicate overvaluation.
- Investors' Expectation of Future Growth: The market may interpret the sharp decrease in the EPS as temporary, leading to a higher valuation based on expectations of future growth.
- Lower Interest Rate: This could contribute to the attractiveness of the stock, reflected in a higher P/E ratio.

Reasons for the unchanged share price (despite the increase in the P/E ratio) could be:

- Issuance of Shares: The company could have issued more shares, resulting in a diluted EPS. Similar to the effect of a share buyback, the dilution of shares lowers the per-share value.
- M&A or Dilutive Acquisition: The company could potentially acquire another company with stock, affecting the EPS.

In any case, the constant share price may be indicative of a positive reaction from the market.

7. Mergers & Acquisitions

7.4 The M&A Process

<u>Question</u>: What is a fairness opinion?
A fairness opinion represents an expert evaluation conducted by an investment bank or a third party to assess whether the conditions of a merger, acquisition, buyback, spin-off, or going private deal are fair for shareholders. This process ensures transparency and ethical governance. When facing a takeover, the board of directors of public companies often request this evaluation to make informed decision about potentially accommodating buyers.

<u>Question</u>: Explain the sell-side and buy-side in M&A?
In an M&A transaction, the sell-side refers to the parties involved in the sale of the entire business or a portion thereof. In contract, the buy-side involves parties actively seeking an opportunity to purchase or take a stake in a company.

<u>Question</u>: If you were a bank, would you join the sell-side or the buy-side during the M&A process?
As an investment bank, I would lean towards the sell-side as I believe that it is more rewarding: there is a tangible opportunity to earn a success fee when the transaction is completed.
However, the buy side unveils a challenging and compelling dynamic: several bidders may bid for the same company and the deal will be closed only if there is a client that outbids all other potential offers.

<u>Question</u>: Tell me about the two main types of auction structures in M&A?

- *Broad Auction:* conducted by the sell-side bank, this approach involves as many prospective buyers as possible to maximize interest in the deal and competitiveness. A broad auction increases the likelihood of securing the best offer possible and minimizes the risk of undervaluing a company or “leaving money on the table”.
- *Targeted Auction:* is more focused as it involves the sell-side bank, under the client's direction and a limited number of buyers. The buyers are contacted by the bank as they usually are

strategically aligned with the client's business or have an existing relationship with the seller.

<u>Question</u>: What is a negotiated sale?

A negotiated sale is a more intimate process as it involves only a handful number of potential buyers. The negotiated sale usually occurs when there is a specific buyer in mind and an intent to enhance the partnership and growth opportunities.

This approach has the advantage of being fast and confidential as deals are negotiated "behind-closed-doors" and tend to be on friendlier terms, reflecting the best interests of the client.

<u>Question</u>: What is Material Adverse Change (MAC)?

In the context of an M&A transaction, a MAC is a sophisticated legal tool designed to reduce the risk of buying and selling parties between the date of the merger agreement and the completion of the deal closure. MACs are legal clauses included in all merger agreements, listing out the conditions that allow the buyer to exit the deal without facing legal consequences or significant penalties.

Typical occurrences of MACs

- Major fluctuations in economic conditions, financial markets, credit markets, or capital markets
- Significant changes in regulations, GAAP standards, or transaction-related litigation (e.g., Anti-Trust concerns)
- Events such as natural disasters or geopolitical crises (e.g., outbreak of hostilities, threat of war, terrorist activities)
- Failure to achieve agreed-upon revenues or other financial performance targets.

<u>Question</u>: How is an earnout in the context of M&A?

An earnout is a contractual agreement between a seller and buyer where part of the total purchase price is considered or sometimes the whole amount is deferred and paid later. The date of the payment is contingent on the seller reaching pre-determined financial targets. M&A negotiations can stall if the seller desires a higher purchase price than the buyer is willing or able to pay.

An earn-out provision also known as contingent consideration is often used to break out of this purchase price deadlock. A portion of

the purchase price will be issued to the seller upon attainment of a specific milestone within a predetermined period.

8. Capital Markets

8.1 Equity Capital Market Primer

<u>Question</u>: Why is equity riskier than debt?
Equity is a residual claim, which is inherently riskier than debt. Equity is satisfied only after all obligations bondholders are met. Although debt holders benefit from a more secure investment, they have limited upside.

<u>Question</u>: Under what circumstances should a company issue opt to equity rather than debt?

- *Growth firms or high-risk profile companies:* companies that display a high volatility in cash flows could be in dire straits while attempting to secure debt.

- *Lower Debt-to-Equity ratio:* Over-leveraged companies seek to decrease the amount of debt by raising equity.

- *Intangible Asset-oriented company:* Companies with predominantly intangible assets can struggle to get access to debt, making equity as a viable option.

- *Market signalling and managers' futures earnings expectations:* manager may choose between equity and debt based on futures earnings forecast. If earnings growth is expected, debt financing should be more beneficial due to the tax shields and the preservation of upside for current shareholders. Conversely, if earnings are expected to drop, equity financing should be prioritised as it reduces the burden of interest expenses.

Question: **Discuss the pros and cons of an IPO.**

PROS	CONS
IPO	
• Better visibility in the M&A market (Public information) • Better public awareness of the company (annual and quarter reports) • Increased management incentives through stock option plans • Better access to capital markets for future capital inflow • Better valuation of the company as the market rewards IPOs with a transparency and liquidity premium	• The cost of equity is higher than debt • IPOs are prone to hostile takeover bids • Leads to shareholders' dilution and loss of control over the company • Competitors can take advantage of regulatory filings • Additional cost of complying with regulatory requirements, annual/quarter reports, and auditing fees build-up • Management strategy can be negatively affected by market pressure

Question: **Why would a startup embark on an IPO?**
If the startup in question needs capital or wishes to undertake new strategic opportunities and generate a positive NPV. Founders or VC funds are often looking to sell part or all their shares.

Question: **If you were pitching to be the underwriter for an IPO, what would be the table of contents of the pitch book?**

- Executive summary
- Industry overview and main trends
- Equity narrative
- Preliminary valuation
- Credentials of the bank

Question: **Distinguish pre- and post-money valuation.**

- *Pre-Money Valuation:* refers to the company's valuation prior to the first (or the next) financing round.
- *Post-Money Valuation:* accounts for the new investment amount issued from the financing round. The calculation is as follows:
- *Post Money Valuation = (New Financing Amount / % of Equity)*

Question: Why are IPOs generally underpriced?
For conservatism purposes, issuers do not want their stock to lose value on the first day of trades. The aim is also to attract new investors to the IPO compensate initial owners for the additional risk they are taking, who benefit from lower prices for bearing the risk.

Question: What is a Greenshoe?
Greenshoe or over-allotment option, allows the underwriters to buy additional shares (~ 15%), notably when a deal is extremely popular or overbooked by the underwriters. After the stabilization period the stock is free to trade in the market and the quiet period ends. The company can communicate directly with investors.

<u>Question</u>: Describe the types of issues as well as the pro and cons.

Classification	Description	Pros	Cons
Fully Marketed Bookbuild Offering	Similar process to an IPO Requires due diligence, research, prospectus, roadshow, bookbuilding	Good if targeting investors in a new market or the investors don't understand the equity story	Cost and time constraint Lack of price certainty Does not fulfil pre-emption rights
Accelerated Bookbuilding (ABB)	Fast track bookbuilding Sales of share directly to institutional investors (typically 24 hours)	Save time Good for well-known issuers Limited documentation	Lack of certainty Good equity story required Raise limited amount of capital Do not fulfil pre-emption rights
Private Placing / Block Trade	Bank buying share at fixed price and quickly sell it to investors	Save time Certainty of the process Limited documentation	Discount required. Potential overhang if bank cannot sell stake immediately Does not fulfil pre-emption rights
Right Issues	Offer shares to existing shareholders in proportion to % stake Discount to the current share price	Protect shareholders against dilution of control Fulfil pre-emption rights	Time constraint Significant documentation required Arbitrage opportunities lead to share price pressure

Question: **During an IPO, what is the role of the underwriter?**
An underwriter, typically an investment bank, stands as an intermediary between a company issuing securities and the public who will invest in the securities. The underwriter handles the new issuance of stock and ensures that the public, primarily institutional investors (e.g., mutual funds, pension funds, hedge funds), commit to purchasing the issuance before actually becoming available for purchase in the open market. Ky obligations of the underwriter encompass leading the roadshow strategy, cultivating interest from potential investors, and pricing the IPO optimally to maximize its value.

Question: **What is a syndicate?**
A syndicate is a group of investment banks collaborating to sell the shares to the public as part of an IPO. A syndicate is led by a Global Coordinator or Lead Manager.

Question: **What are pre-emptive rights?**
Pre-emptive rights are provisions that empower existing shareholders to purchase newly issued shares before they become available to other potential buyers. This mechanism protects early shareholders from dilution as the company releases additional shares.

Question: **Distinguish between primary and secondary markets.**

- *Primary Market:* welcomes securities issued for the first time to the public via an IPO.
- *Secondary Market:* offers securities traded amongst investors, such as institutional firms (e.g., asset managers, hedge funds) and individual investors.

Question: **Why is a lockup period a standard feature of IPOs?**
The 180-day lockup period is associated with IPOs to discourage insiders from selling their shares immediately after an IPO. If they did so, a sudden influx of shares could markedly depress the share price, especially if many early investors opt to cash in their holdings without delay.

<u>Question</u>: What characterizes "best efforts" underwriting agreements?

Underwriting arrangements defined by "best efforts" embody the equity underwriters' endeavor to sell the maximum possible portion of the securities issuance. However, there is no guarantee that they will succeed in selling all securities. Failure to meet the capital-raising targets has no direct negative consequences, besides reputational risk.

<u>Question</u>: How is private placement defined?

Private placement is the issuance of stocks to private parties. It does not require registration with the SEC but there is a limited number of investors. Often insurance companies are not concerned with marketability and thus, the market for non-traded debt has increased. If the placement is large, then an investment bank can be involved to deal with the investors.

<u>Question</u>: What his Private Investment in Public Equity (PIPE) defined?

A PIPE refers to the private placement of securities in a public company by accredited investors, such as hedge funds, private equity funds, and mutual funds. The purchase occurs at a discounted price, usually as an unregistered convertible or preferred security. PIPEs offer a cheap, efficient, and less regulated alternative for companies to raise capital versus a traditional secondary offering.

Question: **What does a Special Purpose Acquisition Company (SPAC) entail?**

A SPAC, often referred to as a "blank check company," is a shell company formed strictly to raise capital through an IPO to acquire an existing company or merge several companies. Prior to having a specific target, the SPAC raises funds through an IPO of the SPAC's equity securities. In turn, the sponsor retains ~20% of the post-IPO SPAC. The invested capital is moved into an escrow until the target to be acquired is determined, or else the capital will be returned to investors. While SPACs have been around for a while, 2020 has been a record year for this type of investment vehicle.

From the company's perspective, SPACs have quickly become a popular method to go public in a simple and time-efficient manner (usually ~4-6 months). Arguably, it's even more convenient than a reverse merger with added benefits such as involving significantly less work than the traditional IPO. Most of the strenuous work involved in an IPO, such as making investors interested and raising capital, has already been done by the SPAC sponsor. The capital has already been raised, so all that remains is for the company to agree to a valuation. In a SPAC, valuations paid technically have more accuracy (or at least are more straight-forward). Since a SPAC deal is more like an M&A negotiation with a buyer dynamic rather than an underwriter telling you what the market might pay. Thus, SPAC acquisitions come with a certainty of pricing aspect and less risk of "leaving money on the table" because there's no risk of failing to issue all the shares (hence no need for a discount).

SPACs provide many advantages for companies looking to go public compared to a traditional IPO or direct listing, such as simplicity, faster timeframe, better valuation, and well incentivized long-term partners. As a side benefit, most SPAC sponsors are reputable individuals and asset management firms. Otherwise, they would not have been able to secure the capital in the first place.

Question: **How does the typical Growth Equity investment differ from traditional buyouts?**

Traditional buyout funds take majority stakes in stable growth, mature companies (usually ~90-100% equity ownership), whereas growth equity investors take minority stakes in high-growth companies attempting to disrupt a particular industry. For growth-oriented investors, differentiation is a key factor that's often the leading rationale for investing. To these investors, what makes a product worth investing in is the value it derives from its proprietary technology that's difficult to replicate or protected by patents. The end goal in growth equity investing is almost always an IPO.

Question: **What motivates a company to repurchase shares?**

- *Increase Share Price:* this strategy is initiated by the management who believes that the company's stock is undervalued.
- *Change Capital Structure:* it allows a company to maintain a higher Debt-to-Equity ratio.
- *Prevent Earnings Dilution:* share repurchase can boost a company's EPS growth, or conversely, prevent a drop in EPS, which can result from the exercise of stock option grants.
- *Deploy Excess Capital:* after fulfilling capital investment requirements, a company is left with residual cash flows, which can be reinvested through stock buybacks.
- *Replace Dividend Payouts with Share Repurchases*: since capital gains may be taxed at lower rates than dividend income, a share repurchases offer long-term tax benefits to shareholders.

9. Sales & Trading

9.1 S&T Primer

Question: How are financial markets segmented?
- *Equities*
- *Fixed Income*
- *Currencies*
- *Commodities*

Note that these markets welcome both simple assets and complex products, such as derivatives.

Question: What is a Derivative?
A derivative is a financial instrument whose value is derived from one or more underlying assets. It functions as a contract between two or more parties, with its value fluctuating based on the underlying assets. There are four main types of derivatives:
- *Forwards*
- *Futures*
- *Options*
- *Swaps*

Question: Can you provide a brief overview of stock trading in equity markets?
In equity markets, stocks are purchased and sold. The value of these stocks, in theory, is based on the company's performance, market sentiments towards the company, industry impacts, macro-environmental factors as well as the expected future profits of the company. However, the law of demand and supply reigns.

<u>Question</u>: How is the equity department of a bank structured?
Banks typically divide their equities departments into two or three areas:

- *Cash Equities:* involve the Sales & Trading of vanilla stocks.
- *Equity Derivatives:* focus on the Sales & Trading of derivatives and structured products.
- *Prime Services:* provide a wide range of services to Hedge Funds.

Desks within these divisions encompass Cash Equities Sales/Sales-Trading/Trading, Execution and Program Trading, Delta Sales/Trading (forward, futures, swaps, ETFs), Flow Sales/Trading (options, warrants), Emerging Markets Sales/Trading, Structured Product Sales, Structured Equity Trading (Exotic products), and Structuring, which deals with the pricing of structured products and product management.

<u>Question</u>: Can you briefly discuss the main caveats of fixed income markets?
Fixed Income refers to instruments with a fixed or predetermined cash flow, (income). The products range from corporate bonds to local municipalities, and sovereign bonds across various products – Debt, Credit, Mortgages, Interest Rate and Inflation forwards and futures. Some banks have a FICC department, which includes Fixed Income, Currencies and Commodities products but Currencies or Commodities are not strictly speaking Fixed Income markets.

Desks in this sector include: Flow Rates Sales/Trading (government and agency bonds, vanilla derivatives such as Interest rate swaps and interest rate options), Structured Rates Trading (exotic rates derivatives), Flow Credit Sales/Trading (corporate bonds, credit derivatives, credit derivatives indices), Structured Credit Trading (exotic credit derivatives), Mortgages Sales/Trading (Mortgages and securitized products such as ABS, RMBS & CMBS), Distressed debt Trading (high yield and illiquid bonds), Repo Trading, and Structuring (rates, credit and funding).

<u>Question</u>: What are the features of currencies-related products?
Although there are spot markets on various exchange rates, currencies are predominantly traded as derivatives because treasury management often carries currency risk underlying cash flows.

Desks that cover currencies-related products in financial markets include: FX Sales/Trading (spot, derivatives products such as swaps, forwards, futures and options), Emerging Markets Sales/Trading (same product but on emerging countries' currencies), Structured FX Trading (exotic FX derivatives, hybrid products), FX Structuring, Electronic FX (often banks have an FX trading platform providing spot, forward and options pricing and execution to clients, this is a team of quants and traders developing systematic pricing and hedging algorithms for clients)

<u>Question</u>: What is your perspective on commodities in the financial market?
Commodities have emerged as a distinct asset class, attracting numerous institutional investors for diversification benefits and potential returns. Spot prices are defined by the law of supply and demand at a particular location, rather than the Net Present Value (NPV) of future cash flows.

In the commodity market, transactions can be categorized as:

- *Physical:* such transactions are usually executed by commodity houses, that provide a reference spot price against which derivative transactions are settled.
- *Financial:* these transactions are conducted as derivatives.

<u>Question</u>: List some key volume indicators used by traders.

- *Volume:* represents the total number of shares traded in a day. Stocks with higher average daily volumes indicate the ability to trade more shares without significantly affecting the price.
- *Volume-Weighted Average Price (VWAP):* this indicator measures the average price based on the actual trading volumes.
- *Depth:* indicates the total buy and sell orders currently present in the order book. It is a measure of how much one can purchase in terms of volume without significantly affecting the markets.

Question: Differentiate a warrant from a stock option.

- *Warrant:* grants the holder the right, but not the obligation, to purchase common shares directly from the issuing company at a fixed price for a pre-determined period. The primary difference with a stock option is that warrants are directly issued to an investor. When exercised, the company issues new shares to meet the agreement, making warrants dilutive.

- *Stock option:* gives the holder the right, but not the obligation, to purchase or sell shares at a pre-specified price for a defined period. Options are commonly traded among investors. Exercising a stock option is less dilutive since it does not result in the issuance of new shares; options are derivatives based on an underlying asset; the pre-existing common shares of the company.

10. Hedge Fund

10.1 Hedge Fund Strategies

- *Long-Short Equity*: The winners and losers are picked after a fundamental analysis of the specific companies. In addition, the long-short offsetting pair is helpful to reduce the overall impact of market risk.
- *Long-Only*: Long-only is associated with value-investing and exclusively holds long positions on the common equity of undervalued companies (in a longer-term holding horizon).
- *Short-Only*: The short-selling experts hunt for overvalued stocks. However, the most well-known short-only funds work wonders to uncover accounting fraud and other malfeasances.
- *Market Neutral*: Similar to a long-short fund, but pairs long and short trades to mitigate market risk.
- *Event-Driven Investing*: Consist in cooking out for any price inconsistencies prior to and after any major corporate events including merging, acquisition, and spinoffs – either M&A targets or trading the acquisition premium on announced acquisitions.
- *Activist*: Looks for companies that are underperforming, inefficiently managed and could be a catalyst for a successful turnaround.
- *Quants*: mainly involve systematic (rule-based) algorithmic trading strategies, mean reversion, momentum and high-frequency trading (HFT).
- *Arbitrage/Relative Value*: Focuses on price inefficiencies as well as trading spreads within an asset class. For instance, convertible arbitrage in stock vs. convert trading, and volatility arbitrage in the options market.

Question: Detail the implications of shareholder activism investing?

In activist investing, the turnaround specialists target underperforming and inefficiently run companies aiming to change either the existing management practices or the whole management team. It is worth mentioning that the catalyst to the turnaround is the entrance of the activist investors themselves and its public announcement can cause a company's share price to skyrocket, as investors anticipate significant changes to come. For instance, an activist investor could buy a large stake in a certain company to influence the management's strategic decisions or replace the entire team.

Despite the activist investor aims at convincing existing shareholders of the potential of the company management failure. Apart from the fact that the activist investors have a minority stake in the company, they can change the whole trajectory of the business (e.g., Starboard Value, Elliott Management) and influence an underperforming company and impact the company in a significant way.

Question: What is a merger arbitrage investment strategy?

In a merger arbitrage investment strategy, the investor purchases stock of a company undergoing an M&A deal; takes advantage of price inefficiencies due to the fact that the market needs time to digest the recent information and settle on a valuation and reaps profits from the uncertainty that exists as the market evaluates an announced acquisition. The goal of the investor is to gain profit from the difference between the current market price and the announced acquisition price.

Question: What does convertible bond arbitrage mean?
When an investor takes a long position on a convertible bond and shorts the underlying stock, the price difference in the convertible bond and the share price benefits the investors. Such strategy is termed a convertible bond arbitrage strategy. In the case that the share price declines, the investor can get benefit from the short position (downside protection). Conversely, if the share price increases, the investor will then convert the bonds into shares to sell, earning enough to cover the short position (and again minimize the downside).

Question: Differentiate momentum investing from GARP.
Richard Driehaus (of Driehaus Capital Management) is the father of momentum investing. The general principle of momentum investing is: "*Buy high, sell higher*." It capitalizes on the continuation of market trends – hoping the trend persists.

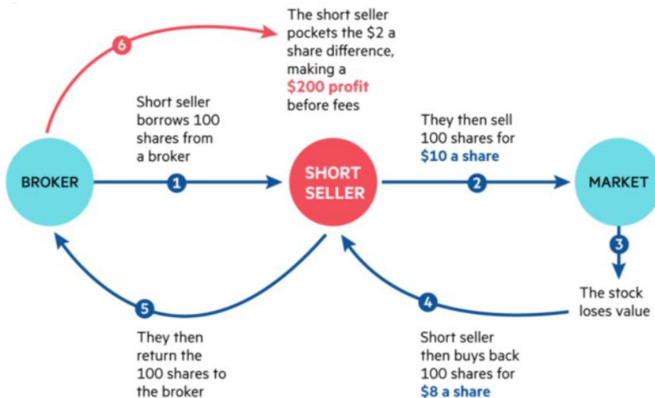
Momentum investing differs from GARP investing in the sense that it relies more heavily on technical indicators to decide trades. Looks for high growth but still undervalued companies and has a shorter holding period as it intends to take advantage of trends that are often driven by human emotion and coincide with overvaluations of certain equities.

Question: How does a global macro–Hedge Fund invest?
The economic and political environment serves as a foundation for hedge funds with a global macro strategy. Even the relations between countries and the changing macroeconomic trends influence numerous financial instruments. The strategy is adapted as per the changes in foreign policies/regulations, economic policies, or global events as these factors provide the investment opportunities that these global macro funds seek and actively pursue. Hence, holdings of such funds are more diverse compared to traditional hedge funds and they also include common equity, fixed income, currencies, futures on commodities, and other specialized options. Furthermore, hedge funds mainly focus on liquid broad indices rather than specific equities, which is why macro hedge funds are very active in rates, currencies/FX, commodities, and equity indices.

Question: Explain how a hedge shorts a stock.

- When an investor predicts a short-term decline in the price of a security, it is termed short selling. For an investor shorting a stock means, "borrowing" the security from a broker and selling it in the open market with a belief of repurchasing for a lower price later.
- The hedge funds will be listed on the exchange and sell them. Keep in mind, these shares have been borrowed from a securities lender or broker – meaning sold a stock that was not actually owned on paper.
- Once a hedge fund wants to exit its short position, it will re-purchase the shares and return them to the lender.
- If the short went as planned (i.e., the share price dropped), then the hedge fund's profit will be the difference between the purchase and sale price, less any associated fees paid to the lender – so the hedge fund has bought it back at a lower price than what they had sold the shares.
- Note that declining stock market still carries dangers for short sellers whose pitch to investors rests on their ability to identify the weakest companies.

Making money from a fall in price[3]



[3] Financial Times

Question: Name two of the key metrics to assess short interest.

- *Short Interest Ratio*: Total number of shares shorted, and open positions not bought back as reported by the exchange, divided by average trading volume. It is calculated as follows: *Short Interest Ratio = Short Interest / Average Trading Volume*
- *Short % of Free Float*: Short interest as a percentage of Free float, or the number of shares available to be traded (excludes insider-owned shares). *Short % Free Float = Short Interest / Free Float*

Question: Enlist the features of an ideal short.

- *Threat of new entrants:* Complacent incumbents threatened by innovative new entrants – must assess the management's willingness to adapt and the likelihood of an appropriate reaction (e.g., Nokia's failure to adjust)
- *Consumer euphoria-focused companies:* significant short-term interest in a consumer-oriented product (i.e., the demand is driven by a consumer-led "fad")
- *Unfit incumbents:* companies that are unlikely to exist in the future (e.g., physical newspaper business) and are not willing to adjust to the changing environment.
- *Signs of accounting fraud:* allegations unveiled by credible sources.

Question: Difference between shorting a stock and purchasing a put option

- *Shorting a stock:* investor has unlimited downside potential. Investors sold a stock that they technically don't own, believing that they will purchase it for a lower price in the future → potential share price upside is unlimited.

- *Purchasing put options:* max loss is limited to the initial investment amount.

Question: Compare index shorting and alpha shorting.

- *Index Shorting*: shorting an index (S&P 500) or buying put options or an index to hedge out the long positions.
- *Alpha Shorting*: taking individual short positions to make a profit, more difficult approach.

10.6 Activism

10.6.1 Activist Primer

<u>Question</u>: What is shareholder activism?
Activism is a strategy through which an investment manager takes a minority position in a public company with the goal of unlocking value through altering its capital allocation activities. Strategies used include financial restructuring, operational turnarounds, and/or strategic initiatives. Influencing the company's Board management to adopt its suggested changes. Taking a small equity portion (circa 5%) and pushing for performance-enhancing changes. Encouraging other shareholders to support its proposals in order to create value for all the shareholders.

<u>Question</u>: What are the aims of activism?
Seeking to influence a company, rather than control it (as is the case with private equity funds). Elaborating a course of action that unlocks value in share price and transforms the long-term prospects of the target company. Courses of action include improvement of corporate governance, shifts in company strategy and reforms to the capital structure.

A common campaign focus is M&A where Activists seek better returns through pressuring Boards to sell underperforming businesses or influencing the pricing of takeovers.

<u>Question</u>: How do companies respond to activist's involvement?
Companies often engage constructively through discussions with activist investors, meeting the Activist fund and agreeing on specific measures. Often the issue is put to a shareholder vote. Identifying issues that might attract Activist's attention, then helping them understand the business model and capital allocation decisions.

11. Project Finance / Infrastructure

11.2 Project Finance Concepts

<u>Question</u>: What is project finance?
Project finance is used to refer to a non-recourse or limited recourse financing structure in which debt, equity and credit enhancement are combined for the construction and operation or the refinancing of a particular facility in a capital-intensive industry. Project finance refers to how an infrastructure project is structured where:
- Future project revenues pay back the initial money invested, and
- Investors are subject to limitations on losses in the event of project non-performance

<u>Question</u>: What are the types of infrastructure projects
Social services: Education, healthcare, senior housing, criminal justice, military housing, public housing, municipality facilities
Road and rail: Roads, bridges, rail public transport, tunnels, parking
Energy and utilities: Pipelines, water (distribution and treatment), power (transmission and distribution), renewables
Communications: Cable systems, broadband and wireless, satellites
Ports and airports: Airports and seaports

<u>Question</u>: What are the benefits of project finance structure?
Benefits to Lenders
- High leverage leads to higher returns
- Risk limited to money invested in the project
- Risk distributed among investors
- Avoids restrictive covenants on the corporate balance sheet

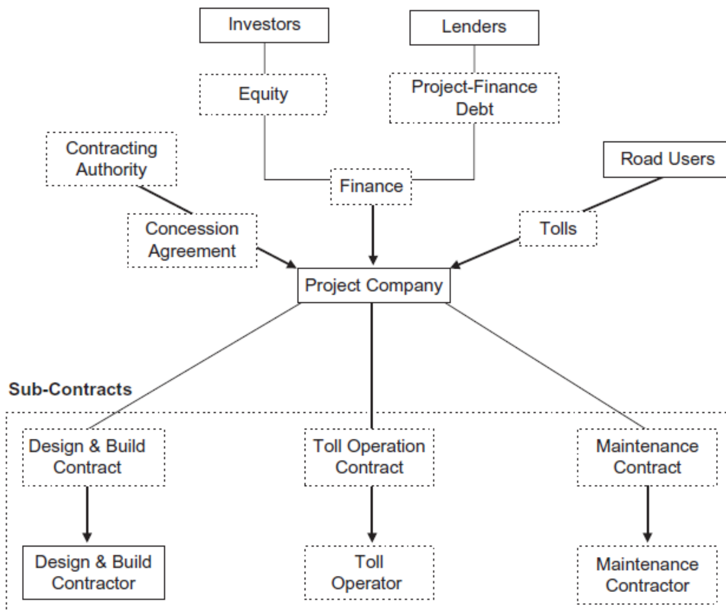
Benefits to Public Authority
- Competitive bidding market
- Independent due diligence undertaken by financiers since they are committed to a bid price
- Financing costs can be measured/monitored/shares
- High quality infrastructure

<u>Question</u>: Explain to us the Public-Private Partnerships (PPP) model?

For projects involving both the government (Contracting Authority) and the private sector. Typically, large infrastructure projects that perform a public service (e.g. school, hospitals, roads). Governments typically own the infrastructure, while the Private Sector can perform different roles.

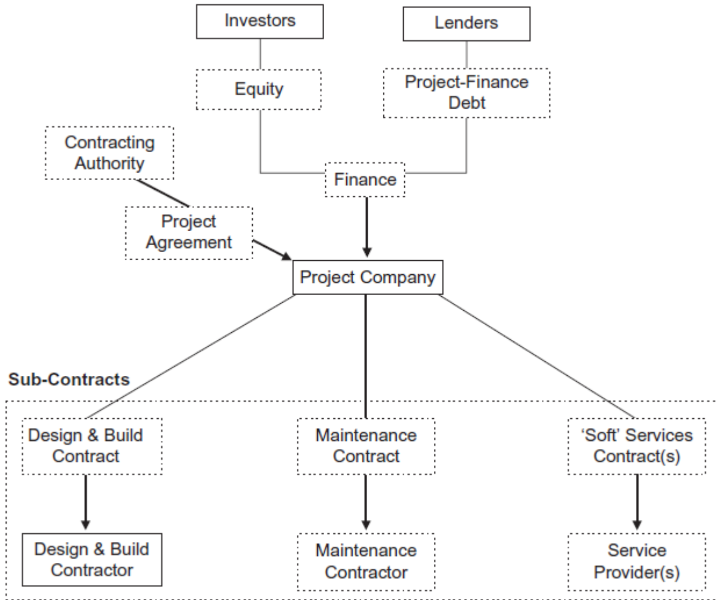
There are two mains PPP models:

- *Concessions*: construction or refurbishment of public infrastructure such as a road, bridge, tunnel, airport, port, railway, etc., with revenue derived from tolls, fares or similar payments by users ('User Charges').



Concession (i.e. Toll Road)

- *PFI Model:* construction or refurbishment of a public building (such as a school, hospital, prison, public housing or government office), or other public infrastructure (such as a road, railway line, water-treatment facility or sewage plant), with revenue derived from payments by a Contracting Authority ('Service Fee'[4]).



PFI Model (Contracting Authority)

[4] This is often referred to as an 'Availability-based' model, because in the majority of cases the Project
Company is paid for making the project available to the Contracting Authority, not for its usage as such.

<u>Question</u>: What are the subcontract models?

Design-Build Contractors (D&B)

- Responsible for the design, engineering, and construction of the asset
- Determine the cost of initial design and construction of asset to be financed
- Mark-up their services to make a profit

Operational and Maintenance Contractors (O&M)

- Responsible for the asset's O&M once project is operational
- Services are repaid by project revenues before debt and equity are repaid
- Mark-up their services to make a profit

Low Extent of private sector participation High

PUBLIC	PUBLIC	PFI PPP	CONCESSION PPP	PRIVATE
Road	Powerplant	New hospital	Airport concession	Water company (regulated)
Own: D B F M O	Own: D B F M O	Own: D B F M O	Own: D B F M O	Own: D B F M O

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