



Investment Banking Interview Questions

Wall Street Prep

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For general information on our products and services or technical support, please visit our website at wallstreetprep.com, or contact our office at (617) 314-7685.

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And most importantly, we want to thank Justin Kim, who toiled to bring this guide to life, working with our faculty and clients to make sure that the interview questions not only reflect what interviewees should expect to face, but that the answers reflect the level of detail expected by interviewers.

Thank you,

Matan Feldman

Founder and Chief Executive Officer,
Wall Street Prep

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Wall Street Prep

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Introduction

Technical Section Introduction

Dear Reader,

This interview guide was designed with a single goal in mind: To give you the tools to land a job in investment banking and other related financial services sectors.

There is much material to cover in this guide, so let's just dive right in. For virtually every technical interview question, there are some general principles to govern your approach:

Keep Answers Concise



One of the most frequently asked interview questions for investment banking is, "How do you value a company?" I could easily take an hour to explain how to value a company and I would barely scratch the surface. That's not what we're going for in an interview.

When asked an expansive technical question where you're unsure about the appropriate level of detail, it's reasonable to finish a succinct answer with, "Would you like a little more detail on any of this?"

However, while most candidates struggle with keeping answers brief, others have the opposite problem of not giving sufficient details.

As a rough guideline for questions without clear numerical or concrete answers, the answers ***should last at least 1 minute***. This shows the interviewer you're actually taking the time to think and come up with thoughtful responses.

For example, answering the question, "Walk me through the cash flow statement," by saying, "You start with net income, and then make non-cash adjustments to net income to arrive at cash for the year" would not be enough to show your understanding.

The interviewer just needs to understand that you can articulate concepts at a high level. In most cases, answers should be no longer than 2-3 minutes.

Avoid Rambling into Tangents



The longer your response goes on, the risk of being asked to elaborate on a topic you don't fully understand increases in tandem. That being said, ***don't extend beyond your comfort zone*** and keep answers short to avoid giving the interviewer extra reasons to probe deeper.

Upon responding to a question, a momentary pause from the interviewer is normal, so don't misconstrue it as meaning that further explanation is required on your end.

To be able to wait patiently after giving your initial answer shows that you recognized the concept the interviewer was testing for, and have confidence that an adequate response was provided.

The more tangents in your answer, the more likely a difficult counter-point could be brought up.

Handle Difficult Questions Effectively

It's a near certainty that you'll be asked a question to which you don't know the answer.

Just remember to remain calm and not let the interviewer see you sweat. Firms want to hire individuals who are presentable to clients, so remaining calm while under pressure is essential.

The most important thing is that if the interview takes a turn in the wrong direction: ***don't fall into a downward spiral*** because it's rarely as bad as you might think.

There are three types of approach you can take when you're unsure how to answer a question:

1

If you kind of know something related to what is being asked

First and foremost: avoid guessing. Instead, look for a way to describe the parts of the question you understand and then be upfront about where you're unsure.

For example, if you're unsure how to answer: "How would you value a bank?" You might say, "Well, I know that banks are different from traditional companies in that their main source of revenue comes from interest on loans, but I don't think I understand bank valuation that well and this is definitely something I plan to look into after this interview."

2

If you think you know the subject matter but don't understand the question

When a question is asked in an unclear or vague manner, you'll want to reformulate the question back to the interviewer for some clarification.

For example, if an interviewer asks: "Is EBITDA usually lower or higher than cash flow?" You could begin by asking, "Just to confirm I'm understanding the question correctly, are you defining cash flow here as unlevered free cash flows or as operating cash flows?"

3

If you just flat out don't know the answer





































In this situation, it's preferable to say, "Honestly, I would need to think about that more and would rather not guess because I don't think I'll be able to give a sufficient answer."

Here, it's necessary to come off as humble as you don't want to appear indifferent to the fact that you don't know the answer. An important part of damage control is using the opportunity to show the interviewer your professionalism under stress. While not a technical skill, this is a key interpersonal skill that firms look for.

Prioritize Based on the Specific Role

How you allocate your time while preparing for interviews is more important than how many hours you spent. For this reason, decide which career path you're most interested in recruiting for and then ensure that your time is being spent in the right places.

The table below, which uses “Harvey Balls” (a favorite in investment banking pitch books), provides an overview of which sections of this guide to focus on based on the specific role you're pursuing:

	Investment Banking	Private Equity	Restructuring	Hedge Fund / Equity Research	Corporate FP&A	Sales & Trading
Accounting						
Valuation						
Mergers & Acquisitions						
Leveraged Buyouts						
Capital Markets / Financing						
Industry Specific	<p>Very likely if interviewing with a firm with industry specialization or with a specific industry coverage group</p> <p>Less likely if interviewing with an industry-agnostic firm that covers many sectors or with a generalist group</p>					
Behavioral						

Suppose you're interviewing for an investment banking role. Questions about leveraged buyouts will come up far less than if you were interviewing for private equity – just keep in mind that **any question is fair game**.


But if you do get asked about LBOs, it'll most likely be a simple question such as, “What is the basic intuition behind an LBO?” as opposed to, “Walk me through how to model a dividend recap.”

This interview guide has been organized such that each subsection within a major topic starts with the most frequently asked questions. If you're focusing on a career path that doesn't go deep into a section, you should at least go through the most frequently asked questions for that section.

Online Video Course Access

Throughout this interview guide, we've included links to supplementary videos and extra reading material to dive deeper into more complicated topics.

- **If you purchased access to the supplementary videos,** [Click Here](#) to log-in.
- **If you received access to this guide from your university,** click on the linked graphic below to create your account and access the supplementary videos (or [Click Here](#)):

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Accounting Questions

Financial Statements & Accrual Concepts

What is the primary purpose of US GAAP?

In the US, the Securities and Exchange Commission ("SEC") authorizes the Financial Accounting Standards Board ("FASB") to determine the set of accounting rules followed by publicly traded companies.

Under FASB, financial statements are required to be prepared in accordance with US Generally Accepted Accounting Principles ("US GAAP").

Through the standardization of financial reporting and ensuring all financials are presented on a fair, consistent basis – the interests of investors and lenders are protected.



Watch Video →
Basic Accounting

What are the main sections of a 10-K?

In a 10-K, you'll find the three core financial statements, which are the income statement, cash flow statement, and balance sheet. There'll also be a statement of shareholders' equity, a statement of comprehensive income, and supplementary data and disclosures to accompany the financials.

Main Sections of a 10-K	
Business Overview	Overview of the company's business divisions, strategy, product or service offerings, seasonality, geographical footprint, and key risks.
Management's Discussion & Analysis ("MD&A")	Commentary and summarized analysis of the company's fiscal year result from the perspective of the management team.
Financial Statements	The "Core 3": Income Statement, Balance Sheet, Cash Flow Statement The "Other 2": Statement of Comprehensive Income, Statement of Shareholders' Equity
Notes	Supplementary disclosures to the financial statements that provide more details about a company's recent financial performance.

What is the difference between the 10-K and 10-Q?

- **10-K:** A 10-K is the annual report required to be filed with the SEC for any public company in the U.S. The report is comprehensive and includes a full overview of the business operations, commentary on recent performance by management, risk factors, disclosures on changes in accounting policies – and most importantly, the three core financial statements with supplementary data.
- **10-Q:** A 10-Q refers to the quarterly report required to be filed with the SEC. Compared to the 10-K, this report is far more condensed in length and depth, with the focus being on the quarterly financials with brief sections for MD&A and supplementary disclosures.
- **Additional Differences:** A few more differences are 10-Ks are required to be audited by an independent accounting firm, but 10-Qs are only reviewed by CPAs and left unaudited. 10-Ks must also be filed ~60-90 days after the fiscal year ends, whereas 10-Qs must be submitted ~40-45 days after the quarter ends.

Walk me through the three financial statements.

- 1. Income Statement ("IS"):** The income statement shows a company's profitability over a specified period, typically quarterly and annually. The beginning line item is revenue and upon deducting various costs and expenses, the ending line item is net income.
- 2. Balance Sheet ("BS"):** The balance sheet is a snapshot of a company's resources (assets) and sources of funding (liabilities and shareholders' equity) at a specific point in time, such as the end of a quarter or fiscal year.
- 3. Cash Flow Statement ("CFS"):** Under the indirect approach, the starting line item is net income, which will be adjusted for non-cash items such as D&A and changes in working capital to arrive at cash from operations. Cash from investing and financing activities are then added to cash from operations to arrive at the net change in cash, which represents the actual cash inflows/(outflows) in a given period.



Watch Video →
The 3 Financial Statements

Walk me through the income statement.

The income statement shows a company's accrual-based profitability over a specified time period and facilitates the analysis of its historical growth and operational performance. The table below lists the major income and expense components of the income statement:

Watch Video →
The Income Statement

Income Statement Typical Components	
Net Revenue (or Sales)	The income statement begins with revenue (often called the "top line"), which represents the total value of all sales of goods and delivery of services throughout a specified period.
Less: Cost of Goods Sold	COGS represents the costs directly tied to producing revenue, such as the costs of materials and direct labor.
Gross Profit	Revenues – Cost of Goods Sold = Gross Profit
Less: Selling, General & Administrative ("SG&A")	Operating expenses that are not directly associated with the good or service being sold (e.g., payroll, wages, overhead, advertising, and marketing).
Less: Research & Development ("R&D")	R&D refers to developing new products or procedures to improve their existing product/service offering mix.
EBITDA	Gross Profit – SG&A – R&D = EBITDA EBITDA stands for: <u>E</u> arnings <u>B</u> efore <u>I</u> nterest, <u>T</u> axes, <u>D</u> epreciation & <u>A</u> mortization.
Less: Depreciation & Amortization ("D&A")	D&A is a non-cash expense that estimates the annual reduction in the value of fixed and intangible assets
Operating Income ("EBIT")	EBITDA – D&A = Operating Income (or EBIT) EBIT stands for: <u>E</u> arnings <u>B</u> efore <u>I</u> nterest and <u>T</u> axes.
Less: Interest Expense, net	Interest expense from debt, net of interest income generated from investments.
Pre-Tax Income ("EBT")	EBIT – Interest Expense, net = Pre-Tax Income (or "Earnings Before Tax")
Less: Tax Expense	Tax liability recorded by a company for book purposes.
Net Income	EBT – Tax Expense = Net Income (referred to as the "bottom line")

Apple Inc. | Historical Income Statement (Snapshot from [Financial Statement Modeling Course](#))

Apple Income Statement	2016A	2017A	2018A	2019A
(\$ in millions)	9/30/16	9/30/17	9/29/18	12/31/19
Revenue	\$215,639	\$229,234	\$265,595	\$260,174
Less: Cost of Revenue	(131,376)	(141,048)	(163,756)	(161,782)
Gross Profit	\$84,263	\$88,186	\$101,839	\$98,392
Less: Research & Development (R&D)	(10,045)	(11,581)	(14,236)	(16,217)
Less: Selling, General & Administrative (SG&A)	(14,194)	(15,261)	(16,705)	(18,245)
Operating Income (EBIT)	\$60,024	\$61,344	\$70,898	\$63,930
Plus: Interest Income	3,999	5,201	5,686	4,961
Less: Interest Expense	(1,456)	(2,323)	(3,240)	(3,576)
Less: Other Expense, net	(1,195)	(133)	(441)	422
Pre-Tax Income (EBT)	\$61,372	\$64,089	\$72,903	\$65,737
Less: Taxes	(15,685)	(15,738)	(13,372)	(10,481)
Net Income	\$45,687	\$48,351	\$59,531	\$55,256

Walk me through the balance sheet.

The balance sheet shows a company's assets, liabilities, and equity sections at a specific point in time. The fundamental accounting equation is: Assets = Liabilities + Shareholders' Equity. The assets belonging to a company must have been funded somehow, so assets will always be equal to the sum of liabilities and equity.



Watch Video →
Balance Sheet

- **Assets Section:** Assets are organized in the order of liquidity, with "Current Assets" being assets that can be converted into cash within a year, such as cash itself, along with marketable securities, accounts receivable, prepaid expenses, and inventories. "Long-Term Assets" include property, plant, and equipment (PP&E), intangible assets, goodwill, and long-term investments.
- **Liabilities Section:** Liabilities are listed in the order of how close they're to coming due. "Current Liabilities" include accounts payable, accrued expenses, and short-term debt, while "Long-Term Liabilities" include items such as long-term debt, deferred revenue, and deferred income taxes.
- **Shareholders' Equity Section:** The equity section consists of common stock, additional paid-in capital (APIC), treasury stock, and retained earnings.

Could you give further context on what assets, liabilities, and equity each represent?

- **Assets:** Assets are resources with economic value that can be sold for money or bring positive monetary benefits in the future. For example, cash and marketable securities are a store of monetary value that can be invested to earn interest/returns, accounts receivable are payments due from customers, and PP&E is used to generate cash flows in the future – all representing inflows of cash.
- **Liabilities:** Liabilities are unsettled obligations to another party in the future and represent the external sources of capital from third-parties, which help fund the company's assets (e.g., debt capital, payments owed to suppliers/vendors). Unlike assets, liabilities represent future outflows of cash.
- **Equity:** Equity is the capital invested in the business and represents the internal sources of capital that helped fund its assets. The providers of capital could range from being self-funded to outside institutional investors. In addition, the accumulated net profits over time will be shown here as "Retained Earnings."

What are the typical line items you might find on the balance sheet?

Assets Section	
Current Assets <i>(Listed in Order of Liquidity)</i>	
Cash & Cash Equivalents	This line item includes cash itself and highly liquid, cash-like investments, such as commercial paper and short-term government bonds.
Marketable Securities	Marketable securities are short-term debt or equity securities held by the company that can be liquidated to cash relatively quickly.
Accounts Receivable	A/R refers to payments owed to a business by its customers for products and services already delivered to them (i.e., an "IOU" from the customer).
Inventories	Inventories are raw materials, unfinished goods, and finished goods waiting to be sold and the direct costs associated with producing those goods.
Prepaid Expenses	Prepaid expenses are payments made in advance for goods or services expected to be provided on a later date, such as utilities, insurance, and rent.
Non-Current Assets	
Property, Plant & Equipment ("PP&E")	Fixed assets such as land, buildings, vehicles, and machinery used to manufacture or provide the company's services and products.
Intangible Assets	Intangible assets are non-physical, acquired assets such as patents, trademarks, and intellectual property ("IP").
Goodwill	An intangible asset created to capture the excess of the purchase price over the fair market value ("FMV") of an acquired asset.

Liabilities Section	
Current Liabilities <i>(Listed in Order of Liquidity)</i>	
Accounts Payable	A/P represents unpaid bills to suppliers and vendors for services/products already received but were paid for on credit.
Accrued Expenses	Accrued expenses are incurred expenses such as employee compensation or utilities that have not been paid, often due to the invoice not being received.
Short-Term Debt	Debt payments coming due within twelve months, with the current portion of long-term debt also included.
Non-Current Liabilities	
Deferred Revenue	Unearned revenue received in advance for goods or services not yet delivered to the customer (can be either current or non-current).
Deferred Taxes	Tax expense recognized under GAAP but not yet paid because of temporary timing differences between book and tax accounting.
Long-Term Debt	Long-term debt is any debt capital with a maturity exceeding twelve months.
Lease Obligations	Leases are long-term contractual agreements, allowing a company to lease PP&E for a specific time period in exchange for regular payments.

Shareholders' Equity	
Common Stock	Common stock represents a share of ownership in a company and can be issued when raising capital from outside investors in exchange for equity.
Additional Paid-In Capital ("APIC")	APIC represents the amount received in excess over the par value from the sale of preferred or common stock.
Preferred Stock	Preferred stock is a form of equity often considered a hybrid investment, as it has features of both common stock and debt.
Treasury Stock	Refers to shares that had been previously issued but were repurchased by the company in a share buyback and are no longer available to be traded.
Retained Earnings (or Accumulated Deficit)	Represents the cumulative amount of earnings since the company was formed, less any dividends paid out.
Other Comprehensive Income ("OCI")	OCI consists of foreign currency translation adjustments and unrealized gains or losses on available for sale securities.

Apple Inc. | Historical Balance Sheet (Snapshot from [Financial Statement Modeling Course](#))

Apple Balance Sheet (\$ in millions)	2017A 9/30/17	2018A 9/29/18	2019A 12/31/19
Cash & Cash Equivalents	\$20,289	\$25,913	\$48,844
Marketable Securities (Short-Term and Long-Term)	248,606	211,187	157,054
Accounts Receivable, net	17,874	23,186	22,926
Inventories	4,855	3,956	4,106
Other Current Assets	31,735	37,896	35,230
Property, Plant & Equipment, net	33,783	41,304	37,378
Other Non-Current Assets	18,177	22,283	32,978
Total Assets	\$375,319	\$365,725	\$338,516
Accounts Payable	\$44,242	\$55,888	\$46,236
Other Current Liabilities	30,551	33,327	37,720
Deferred Revenue	10,384	5,966	5,522
Commercial Paper	11,977	11,964	5,980
Long-Term Debt (Including Current Portion)	103,703	102,519	102,067
Other Non-Current Liabilities	40,415	48,914	50,503
Total Liabilities	\$241,272	\$258,578	\$248,028
Common Stock & APIC	\$35,867	\$40,201	\$45,174
Retained Earnings	98,330	70,400	45,898
Other Comprehensive Income (OCI)	(150)	(3,454)	(584)
Total Shareholders' Equity	\$134,047	\$107,147	\$90,488

Walk me through the cash flow statement.

There are two methods by which cash flow statements are organized: Direct and Indirect.

The more common approach is the indirect method, whereby the cash flow statement is broken out into three sections:

1. **Cash from Operations:** The cash from operations section starts with net income and adds back non-cash expenses such as depreciation & amortization and stock-based compensation, and then makes adjustments for changes in working capital.
2. **Cash from Investing:** Next, the cash from investing section accounts for capital expenditures (typically the largest outflow), followed by any business acquisitions or divestitures.
3. **Cash from Financing:** In the third section, cash from financing shows the net cash impact of raising capital from issuances of equity or debt, net of cash used for share repurchases, and repayments of debt. The cash outflows from the payout of dividends to shareholders will be reflected here as well.

Together, the sum of the three sections will be the net change in cash for the period. This figure will then be added to the beginning-of-period cash balance to arrive at the ending cash balance.



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The Cash Flow Statement

How are the three financial statements connected?

- **IS ↔ CFS:** The cash flow statement is connected to the income statement through net income, as net income is the starting line on the cash flow statement.
- **CFS ↔ BS:** Next, the cash flow statement is linked to the balance sheet because it tracks the changes in the balance sheet's working capital (current assets and liabilities). The impact from capital expenditures (PP&E), debt or equity issuances, and share buybacks (treasury stock) are also reflected on the balance sheet. In addition, the ending cash balance from the bottom of the cash flow statement will flow to the balance sheet as the cash balance for the current period.
- **IS ↔ BS:** The income statement is connected to the balance sheet through retained earnings. Net income minus dividends issued during the period will be added to the prior period's retained earnings balance to calculate the current period's retained earnings. Interest expense on the income statement is also calculated off the beginning and ending debt balances on the balance sheet, and PP&E on the balance sheet is reduced by depreciation, which is an expense on the income statement.



Watch Video →
3 Financial Statements Connections

If you have a balance sheet and must choose between the income statement or cash flow statement, which would you pick?

Assuming that I would be given both the beginning and end of period balance sheets, I would choose the income statement since I could reconcile the cash flow statement using the balance sheet's year-over-year changes along with the income statement.

Which is more important, the income statement or the cash flow statement?

The income statement and cash flow statement are both necessary, and any in-depth analysis would require using both. However, the cash flow statement is arguably more important because it reconciles net income, the accrual-based bottom line on the income statement, to what is actually occurring to cash.

This means the actual movement of cash during the period is reflected on the cash flow statement. Thus, the cash flow statement brings attention to liquidity-related issues and investments and financing activities that don't show up on the accrual-based income statement.

If you had to pick between either the income statement or cash flow statement to analyze a company, which would you pick?

In most cases, the cash flow statement would be chosen since the cash flow statement reflects a company's true liquidity and is not prone to the same discretionary accounting conventions used in accrual accounting. Whether you're an equity investor or lender, a company's ability to generate sufficient free cash flow to reinvest into its operations and meet its debt obligations comes first. At the end of the day, "cash is king."

Although one factor that could switch the answer is the company's profitability. For an unprofitable company, the income statement can be used to value the company based on a revenue multiple. The cash flow statement becomes less useful for valuation purposes if the company's net income, cash from operations, and free cash flow are all negative.



Watch Video →
Cash Flow
Statement Review

Why is the income statement insufficient to assess the liquidity of a company?

The income statement can be misleading in the portrayal of a company's health from a liquidity and solvency standpoint.

For example, a company can consistently show positive net income yet struggle to collect sales made on credit. The company's inability to retrieve payments from customers would not be reflected on its income statement.

Financial reporting under accrual accounting is also imperfect in the sense that it often relies on management discretion. This "wiggle room" for managerial discretion in reporting decisions increases the risk of earnings management and the misleading depiction of a company's actual operational performance.

Accrual accounting often relies on management's discretion, making the income statement less reliable.

The solution to the shortcomings of the income statement is the cash flow statement, which reconciles net income based on the real cash inflows/(outflows) to understand the true cash impact from operations, investing, and financing activities during the period.

What are some discretionary management decisions that could inflate earnings?

- Using excess useful life assumptions for new capital expenditures to reduce the annual depreciation
- Switching from LIFO to FIFO if inventory costs are expected to increase, resulting in higher net income
- Refusing to write-down impaired assets to avoid the impairment loss, which would reduce net income
- Changing policies for costs to be capitalized rather than expensed (e.g., capitalized software costs)
- Repurchasing shares to decrease its share count and artificially increase earnings per share ("EPS")
- Deferral of capex or R&D to the next period to show more profitability and cash flow in the current period
- More aggressive revenue recognition policies in which the obligations of the buyer become less stringent

Tell me about the revenue recognition 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 or not cash was collected from the customer.
- **Matching Principle:** The expenses associated with the production/delivery of a good or service must be recorded in the same period as when the revenue was earned.

How does accrual accounting differ from cash-basis accounting?

- **Accrual Accounting:** For accrual accounting, revenue recognition is based on when it's earned and the expenses associated with that revenue are incurred in the same period.

- **Cash-Basis Accounting:** Under cash-basis accounting, revenues and expenses are recognized once cash is received or spent, regardless of whether the product or service was delivered to the customer.

What is the difference between cost of goods sold and operating expenses?

- **Cost of Goods Sold:** COGS 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:** Operating expenses such as SG&A and R&D 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.

When do you capitalize vs. expense items under accrual accounting?

The factor that determines whether an item gets capitalized as an asset or gets expensed in the period incurred is its useful life (i.e., estimated timing of benefits).

- **Capitalized:** Expenditures on fixed and intangible assets expected to benefit the firm for more than one year need to be capitalized and expensed over time. For example, PP&E such as a building can provide benefits for 15+ years and is therefore depreciated over its useful life.
- **Expensed:** In contrast, when the benefits received are short-term, the related expenses should be incurred in the same period. For example, inventory cycles out fairly quickly within a year and employee wages should be expensed when the employee's services were provided.

If depreciation is a non-cash expense, how does it affect net income?

While depreciation is treated as non-cash and an add-back on the cash flow statement, the expense is tax-deductible and reduces the tax burden. The actual cash outflow for the initial purchase of PP&E has already occurred, so the annual depreciation is the non-cash allocation of the initial outlay at purchase.

Do companies prefer straight-line or accelerated depreciation?

For GAAP reporting purposes, most companies prefer straight-line depreciation because lower depreciation will be recorded in the earlier years of the asset's useful life than under accelerated depreciation. As a result, companies using straight-line depreciation will show higher net income and EPS in the initial years.

Eventually, the accelerated approach will show 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 more 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.

What is the relationship between depreciation and the salvage value assumption?

Most companies will use a salvage value assumption in which the remaining value of the asset is zero by the end of the useful life. The difference between the cost of the asset and residual value is known as the total depreciable amount. If the salvage value is assumed to be zero, the depreciation expense each year will be higher and the tax benefits from depreciation will be fully maximized.

$$\text{Straight Line Annual Depreciation} = \frac{(\text{Asset Historical Cost} - \text{Salvage Value})}{\text{Useful Life Assumption}}$$

Do companies depreciate land?

While classified as a long-term asset on the balance sheet, land is assumed to have an indefinite useful life under accrual accounting, and therefore depreciation is prohibited.

How would a \$10 increase in depreciation flow through the financial statements?

The depreciation expense will be embedded within either the cost of goods sold or the operating expenses line item on the income statement.

- **IS:** When depreciation increases by \$10, EBIT would decrease by \$10. Assuming a 30% tax rate, net income will decline by \$7.
- **CFS:** At the top of the cash flow statement, net income has decreased by \$7, but the \$10 depreciation will be added back since it's a non-cash expense. The net impact on the ending cash balance will be a positive \$3 increase.
- **BS:** PP&E will decrease by \$10 from the depreciation, while cash will be up by \$3 on the assets side. On the L&E side, the \$7 reduction in net income flows through retained earnings. The balance sheet remains in balance as both sides went down by \$7.

The key takeaway is depreciation, despite being a non-cash expense, reduces taxable income and has a positive impact on the ending cash.

A company acquired a machine for \$5 million and has since generated \$3 million in accumulated depreciation. Today, the PP&E has a fair market value of \$20 million. Under GAAP, what is the value of that PP&E on the balance sheet?

The short answer is \$2 million. Except for certain liquid financial assets that can be written up to reflect their fair market value ("FMV"), companies must carry the value of assets at their net historical cost.

Under IFRS, the revaluation of PP&E to fair value is permitted. Even though permitted, it's not widely used and thus not even well known in the US. Don't voluntarily bring this up in an interview on your own.

What is the difference between growth and maintenance capex?

- **Growth Capex:** The discretionary spending of a business to facilitate new growth plans, acquire more customers, and expand geographically. Throughout periods of economic expansion, growth capex tends to increase across most industries (and the reverse during an economic contraction).
- **Maintenance Capex:** The required expenditures for the business to continue operating in its current state (e.g., repair broken equipment).

Which types of intangible assets are amortized?

Amortization is based on the same accounting concept as depreciation, except it applies to intangible assets rather than fixed tangible assets such as PP&E. Intangible assets include customer lists, copyrights, trademarks, and patents, which all have a finite life and are thus amortized over their useful life.

What is goodwill and how is it created?

Goodwill represents an intangible asset that captures the excess of the purchase price over the fair market value of an acquired business's net assets.

Suppose an acquirer buys a company for a \$500 million purchase price with a fair market value of \$450 million. In this hypothetical scenario, goodwill of \$50 million would be recognized on the acquirer's balance sheet.

Read More → [Goodwill: Differences Between GAAP and Tax Accounting](#)

Goodwill is the excess premium paid over the fair value, and is created to "plug" this gap for the balance sheet to remain in balance.

Can companies amortize goodwill?

Under GAAP, public companies are prohibited from amortizing goodwill as it's assumed to have an indefinite life, similar to land. Instead, goodwill must be tested annually for impairment.

However, privately held companies may elect to amortize goodwill and under some circumstances, goodwill can be amortized over 15 years for tax reporting purposes.

What is the “going concern” assumption used in accrual accounting?

In accrual accounting, companies are assumed to continue operating into the foreseeable future and remain in existence indefinitely. The assumption has broad valuation implications, given the expectation of continued cash flow generation from the assets belonging to a company, as opposed to being liquidated.

Explain the reasoning behind the principle of conservatism in accrual accounting.

The conservatism principle requires thorough verification and use of caution by accountants when preparing financial statements, which leads to a downward measurement bias in their estimates.

Central to accounting conservatism is the belief that it's better to understate revenue or the value of assets than to overstate it (and the reverse for expenses and liabilities). As a result, the risk of a company's revenue or asset values being overstated and expenses or liabilities being understated is minimized.

For any revenue or expense to be recognized, there must be evidence of occurrence with a measurable monetary amount.

Why are most assets recorded at their historical cost under accrual accounting?

The historical cost principle states that an asset's value on the balance sheet must reflect the initial purchase price, not the current market value. This guideline represents the most consistent measurement method since there's no need for constant revaluations and markups, thereby reducing market volatility.

What role did fair-value accounting have in the subprime mortgage crisis?

In the worst-case scenario, sudden drops in asset values could cause a domino effect in the market. An example was the subprime mortgage crisis, in which the meltdown's catalyst is considered to be FAS-157. This mark-to-market accounting rule mandated financial institutions to update their pricing of illiquid securities. Soon after, write-downs in financial derivatives, most notably credit default swaps ("CDS") and mortgage-backed securities ("MBS"), ensued from commercial banks, and it was all downhill from there.

Why are the values of a company's intangible assets not reflected on its balance sheet?

The objectivity principle of accrual accounting states that only verifiable, unbiased data can be used in financial filings, as opposed to subjective measures. For this reason, internally developed intangible assets such as branding, trademarks, and intellectual property will have no value recorded on the balance sheet because they cannot be accurately quantified and recorded.

Companies are not permitted to assign values to these intangible assets unless the value is readily observable in the market via acquisition. Since there's a confirmable purchase price, a portion of the excess amount paid can be allocated towards the rights of owning the intangible assets and recorded on the closing balance sheet.

If the share price of a company increases by 10%, what is the balance sheet impact?

There would be no change on the balance sheet as shareholders' equity reflects the book value of equity. Equity value, also known as the "market capitalization," represents the value of a company's equity based on supply and demand in the open market. In contrast, the book value of equity is the initial historical amount shown on the balance sheet for accounting purposes. This represents the company's residual value belonging to equity shareholders once all of its assets are liquidated and liabilities are paid off.



**Watch Video →
Book v Market Value**

$$\text{Book Value of Equity} = \text{Total Assets} - \text{Total Liabilities}$$

The equity value recorded on the books will be significantly understated from the market value in most cases.

For example, the book value of Apple's common stock is only ~\$51 billion as of its latest 10-K filing for FY 2020, whereas its market value of equity is over \$2 trillion as of this guide's publishing date.

Do accounts receivable get captured on the income statement?

There is no accounts receivable line item on the income statement, but it gets captured, if only partially, indirectly in revenue. Under accrual accounting, revenue is recognized during the period it was earned, whether or not cash was received.

The two other financial statements would be more useful to understand what is happening to the accounts receivable balance since the cash flow statement will reconcile revenue to cash revenue, while the absolute balance of accounts receivable can be observed on the balance sheet.

Why are increases in accounts receivable a cash reduction on the cash flow statement?

Since the cash flow statement begins with net income and net income captures all of a company's revenue (not just cash revenue), an increase in accounts receivable means that more customers paid on credit during the period.

Thus, a downward adjustment must be made to net income to arrive at the ending cash balance. Although the revenue has been earned under accrual accounting standards, the customers have yet to make the due cash payments and this amount will be sitting as receivables on the balance sheet.

What is deferred revenue?

Deferred revenue (or "unearned" revenue) is a liability that represents cash payments collected from customers for products or services not yet provided. Some examples are gift cards, service agreements, or implied rights to future software upgrades associated with a product sold. In all the examples listed, the cash payment was received upfront and the benefit to the customer will be delivered on a later date.



Watch Video →
Deferred Revenue

For instance, a company that sells a smartphone for \$500 might allocate \$480 of the sale to the phone and the remaining \$20 to the value of the customer's right to future software upgrades. Here, the company would collect \$500 in cash, but only \$480 would be recognized as revenue. The remaining \$20 will stay recognized as deferred revenue until the software upgrades are provided.

Why is deferred revenue classified as a liability while accounts receivable is an asset?

- **Deferred Revenue:** For deferred revenue, the company received payments upfront and has unfulfilled obligations to the customers that paid in advance, hence its classification as a liability.
- **Accounts Receivable:** A/R is an asset because the company has already delivered the goods/services and all that remains is the collection of payments from the customers that paid on credit.

Why are increases in accounts payable shown as an increase in cash flow?

An increase in accounts payable would mean the company has been delaying payments to its suppliers or vendors, and the cash is currently still in the company's possession. The due payments will eventually be made, but the cash belongs to the company for the time being and is not restricted from being used. Thus, an increase in accounts payable is reflected as an inflow of cash on the cash flow statement.

Which section of the cash flow statement captures interest expense?

The cash flow statement doesn't directly capture interest expense. However, interest expense is recognized on the income statement and then gets indirectly captured in the cash from operations section since net income is the starting line item on the cash flow statement.

What happens to the three financial statements if a company initiates a dividend?

- **IS:** When a company initiates a dividend, there'll be no changes to the income statement. However, a line below net income will state the dividend per share ("DPS") to show the amount paid.
- **CFS:** On the cash flow statement, the cash from financing section will decrease by the dividend payout amount and lower the ending cash balance at the bottom.
- **BS:** The cash balance will decline by the dividend amount on the balance sheet, and the offsetting entry will be a decrease in retained earnings since dividends come directly out of retained earnings.

Do inventories get captured on the income statement?

There is no inventory line item on the income statement, but it gets indirectly captured, if only partially, in cost of goods sold (or operating expenses). For a specific period, regardless of whether the associated inventory was purchased during the same period, COGS may reflect a portion of the inventory used up.

The two other financial statements would be more useful for assessing inventory as the cash flow statement shows the year-over-year changes in inventory, while the balance sheet shows the beginning and end-of-period inventory balances.

How should an increase in inventory get handled on the cash flow statement?

An increase in inventory reflects a use of cash and should thus be reflected as an outflow on the cash from operations section of the cash flow statement. The inventory balance increasing from the prior period implies the amount of inventory purchased exceeded the amount expensed on the income statement.

What is the difference between LIFO and FIFO, and what are the implications on net income?

FIFO and LIFO are two inventory accounting methods to estimate the value of inventory sold in a period.

- **First In, First Out ("FIFO"):** Under FIFO accounting, the goods that were purchased earlier would be the first ones to be recognized and expensed on the income statement.
- **Last In, First Out ("LIFO"):** Alternatively, LIFO assumes that the most recently purchased inventories are recorded as the first ones to be sold first.

The impact on net income would depend on how inventory costs have changed over time:

	First In, First Out (FIFO)	Last In, First Out (LIFO)
Rising Inventory Costs (↑)	<ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ▪ 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 (↓)	<ul style="list-style-type: none"> ▪ 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. 	<ul style="list-style-type: none"> ▪ 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.

What is the average cost method of inventory accounting?

Besides FIFO and LIFO, the average cost method is the third most widely used inventory accounting method. Under this method, the assigned inventory costs are based on a weighted average, in which the total costs of production in a period are summed up and divided by the total number of items produced.

Each product cost is treated equally and inventory costs are spread out evenly, disregarding the date of purchase or production. Thus, this method is viewed as a simplistic compromise between the two other methods, but would be improper to use if the products sold are each unique with significant variance in the cost to manufacture and the sale price (i.e., more applicable for high-volume, identical batches of inventory).

How do you calculate retained earnings for the current period?

Retained earnings represent the total cumulative amount of net income held onto by a company since inception after accounting for any dividends paid out to its common and preferred shareholders.

$$\text{Current Period Retained Earnings} = \text{Prior Retained Earnings} + \text{Net Income} - \text{Dividends}$$

What does the retention ratio represent and how is it related to the dividend payout ratio?

The retention ratio represents the proportion of net income retained by the company, net of any dividends paid out to shareholders. The inverse of the retention ratio is the dividend payout ratio, which measures the proportion of net income paid out as dividends to investors.

$$\text{Retention Ratio} = \frac{(\text{Net Income} - \text{Dividends})}{\text{Net Income}} \quad \text{Dividend Payout Ratio} = \frac{\text{Dividends Paid}}{\text{Net Income}}$$

What are the two ways to calculate earnings per share (EPS)?

1. **Basic EPS:** Determines a company's earnings on a per-share basis, but allocable to only the basic shares outstanding (otherwise known as "common shares").

$$\text{Basic EPS} = \frac{(\text{Net Income} - \text{Dividends on Preferred Stock})}{\text{Basic Weighted Average Shares Outstanding}}$$

2. **Diluted EPS:** Compares a company's earnings relative to its shares outstanding on a per-share basis but considers the impact of potentially dilutive securities such as options, warrants, and convertible securities. If an option is "in-the-money," the option holder can become a common shareholder at their choosing. Thus, diluted EPS is a more accurate depiction of ownership value per share.

$$\text{Diluted EPS} = \frac{(\text{Net Income} - \text{Dividends on Preferred Stock})}{\text{Diluted Weighted Average Shares Outstanding}}$$

Read More → *Forecasting Shares Outstanding and Earnings Per Share (EPS)*

Where can you find the financial reports of public companies?

In the US, public companies are required to report periodic filings with the SEC, including an annual report (10-K) and three quarterly (10-Q) reports each year. These reports are available for free through [SEC EDGAR](#).

In other countries, reporting requirements will vary, but most countries will require at least an annual report, while some will require an interim filing (i.e., a report in the middle of the company's fiscal year). Only a few countries make company filings easily accessible through a central database, forcing analysts to rely on expensive financial data providers or dig through company websites manually to collect data.

The closest database to EDGAR in breadth and ease of use is Canada's [SEDAR database](#). In the United Kingdom, the closest EDGAR equivalent is [Companies House](#), where private companies must also report their financials.

Read More → *Bloomberg vs. Capital IQ vs. FactSet vs. Thomson Reuters Eikon*

What is a proxy statement?

The proxy statement, formally known as "Form 14A," is required to be filed before a shareholder meeting to solicit shareholder votes. The document must disclose all relevant details regarding the matter for shareholders to make an informed decision.

In addition, the board of directors' compensation and other notable announcements such as changes to the company's articles of incorporation are included.

What is an 8-K and when is it required to be filed?

An 8-K is a required filing with the SEC when a company undergoes a materially significant event and must disclose the details. Often called the "current report," 8-Ks are usually filed within four days of the event. The information contained within the report should be of high importance and pertinent to shareholders.

Events that would trigger this filing would include previously unannounced plans for a new acquisition, disposal of assets, bankruptcy, a tender offer, the resignation of a senior-level manager or member of the board of directors, or disclosure that the company is under SEC investigation for alleged wrongdoing.

Why has understanding the differences between US GAAP and IFRS financial reporting become increasingly important?

For public companies in the US, the reporting rules and guidelines are set by the Financial Accounting Standards Board (FASB) and referred to as US Generally Accepted Accounting Principles (US GAAP). The International Accounting Standards Board (IASB) oversees the International Financial Reporting Standards (IFRS), which is followed by over 144 countries.

Understanding the differences between US GAAP and IFRS has become more important because:

- **Continuation of Globalization:** Globalization is the gradual convergence of economies in different countries. The widespread adoption of IFRS has placed pressure on the US to adopt IFRS to have a single set of accounting standards and rules used worldwide, but it seems unlikely in the near-term.
- **Geographic Diversification of Investments:** In recent years, investment firms have been broadening their investments' geographic scope to consider more opportunities overseas. Nowadays, institutional investors are more open to making investments in emerging markets due to the prevalence of opportunities and as a strategy to re-risk their overall portfolio.
- **Cross-Border M&A Activity:** Cross-border mergers and acquisitions ("M&A") have emerged as a strategy for multinational companies to enter new markets, extend their reach to new potential customers, and diversify their revenue sources.

Financial Statement Analysis

What are some of the most common margins used to measure profitability?

Profitability Margins		
Gross Margin	The percentage of revenue remaining after subtracting just COGS, the direct costs associated with the company's revenue generation (e.g., direct materials, direct labor).	$\text{Gross Margin} = \frac{\text{Gross Profit}}{\text{Revenue}}$
Operating Margin	The percentage of profitability after subtracting operating expenses from gross profit. This measure is useful for comparisons due to being independent of capital structure and taxes.	$\text{Operating Margin} = \frac{\text{EBIT}}{\text{Revenue}}$
Net Profit Margin	The percentage of accrual profitability remaining after all expenses have been subtracted. Unlike operating margin, this measure is impacted by capital structure and taxes.	$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Revenue}}$
EBITDA Margin	The most widely used profit margin for benchmarking due to being independent of capital structure and taxes, in addition to adjusted for non-cash expenses (D&A) and non-recurring items.	$\text{EBITDA Margin} = \frac{\text{EBITDA}}{\text{Revenue}}$

What do the phrases “above the line” and “below the line” mean?

The expression “the line” is in reference to operating income, which represents the point that divides normal, ongoing business operations from non-operational line items.

- **“Above the Line”:** If a profitability metric is “above the line,” it reflects a company’s operational performance before non-operational items such as interest and taxes. Financing-related activities are an example of such non-operational items, as decisions on how to fund a company are discretionary (debt vs. equity). For example, a metric such as earnings before interest, taxes, depreciation and amortization (“EBITDA”) is considered “above the line.” Hence, its widespread usage for comparative purposes since operational performance is portrayed while being independent of capital structure and taxes.
- **“Below the Line”:** In contrast, profitability metrics “below the line” have adjusted operating income for non-operating income and expenses, which are items classified as discretionary and unrelated to the core operations of a business. An example would be net income, since interest expense, non-operating income/(expenses), and taxes have all been accounted for in its ending value.

Is EBITDA a good proxy for operating cash flow?

While EBITDA does add back D&A, typically the largest non-cash expense, it doesn't capture the full cash impact of capital expenditures (“capex”) or working capital changes during the period.

EBITDA also doesn't adjust for stock-based compensation, 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.

Read More → [EBITDA vs. Cash Flows from Operations vs. Free Cash Flow](#)

Despite the criticism regarding its drawbacks, EBITDA remains the most widely used proxy for operating cash flow in practice.

What are some examples of non-recurring items?

Non-recurring items include legal settlements (gain or loss), restructuring expenses, inventory write-downs, or asset impairments. Often called "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.

When adjusting for non-recurring expenses, are litigation expenses always added back?

Not necessarily, as whether an expense is non-recurring depends on the industry. In many cases, it's a discretionary decision on whether an expense is a part of the normal operations of a company. For example, expenses related to litigation might not be added back for a research and development (R&D) oriented pharmaceutical company, given the prevalence of lawsuits in the industry.

What is the difference between organic and inorganic revenue growth?

- **Organic Growth:** A company experiencing organic growth is expanding to new markets, enhancing its sales & marketing strategies, improving its product/service mix, or introducing new products. The focus is on continuously making operational improvements and bringing in revenue (e.g., set prices more appropriately post-market research, target right end markets).
- **Inorganic Growth:** Once the opportunities for organic growth have been maximized, a company may turn to inorganic growth, which refers to growth driven by M&A. Inorganic growth is often considered faster and more convenient than organic growth. Post-acquisition, a company can benefit from synergies, such as having new customers to sell to, bundling complementary products, and diversification in revenue.

Simply put, organic growth is the optimization of a business from the internal efforts of management and their employees.

How does the relationship between depreciation and capex shift as companies mature?

The more a company has spent on capex in recent years, the more depreciation the company incurs in the near-term future. Therefore, when looking at high-growth companies spending heavily on growth capex, their ratio between capex and annual depreciation will far exceed 1.

For mature businesses experiencing stagnating or declining growth, this ratio converges near 1, as the only capex is related to routine maintenance capex (e.g., replace equipment, refurbish store layouts).

As a company begins to mature and its growth stagnates, a greater proportion of its total capex will shift towards maintenance.

What is working capital?

The working capital metric measures a company's liquidity and ability to pay off its current obligations using its current assets. In general, the more current assets a company has relative to its current liabilities, the lower its liquidity risk. Current liabilities represent payments that a company needs to make within the year (e.g., accounts payable, accrued expenses), whereas current assets are resources that can be turned into cash within the year (e.g., accounts receivable, inventory).

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Read More → [Working Capital: Formulas, Misconceptions and Real Examples](#)

Why are cash and debt excluded in the calculation of net working capital (NWC)?

In practice, cash and other short-term investments (e.g., treasury bills, marketable securities, commercial paper) and any interest-bearing debt (e.g., loans, revolver, bonds) are excluded when calculating working capital because they're non-operational and don't directly generate revenue.

$$\text{Net Working Capital (NWC)} = \text{Operating Current Assets} - \text{Operating Current Liabilities}$$

Cash & cash equivalents are closer to investing activities since the company can earn a slight return (~0.25% to 1.5%) through interest income, whereas debt is classified as financing. Neither is operations-related, and both are thereby excluded in the calculation of NWC.

Read More → [Working Capital in Valuation](#)

Is negative working capital a bad signal about a company's health?

Further context would be required, as negative working capital can be positive or negative. For instance, negative working capital can result from being efficient at collecting revenue, quick inventory turnover, and delaying payments to suppliers while efficiently investing excess cash into high-yield investments.

However, the opposite could be true, and negative working capital could signify impending liquidity issues. Imagine a company that has mismanaged its cash and faces a high accounts payable balance coming due soon, with a low inventory balance that desperately needs replenishing and low levels of AR. This company would need to find external financing as early as possible to stay afloat.

What does change in net working capital tell you about a company's cash flows?

The change in net working capital is important because it gives you a sense of how much a company's cash flows will deviate from its accrual-based net income.

$$\text{Change in Net Working Capital} = \text{NWC}_{\text{Prior Period}} - \text{NWC}_{\text{Current Period}}$$

If a company's NWC has increased year-over-year, its operating assets have grown and/or its operating liabilities have shrunk from the prior year. Since an increase in an operating asset is a cash outflow, it should be intuitive why an increase in NWC means less cash flow for a company (and vice versa).

What ratios would you look at to assess working capital management efficiency?

Efficiency Ratios		
Days Inventory Held ("DIH")	<ul style="list-style-type: none"> DIH measures the average number of days it takes for a company to sell off its inventory. Companies strive to minimize their DIH and sell their inventory as soon as possible. 	$\text{DIH} = \left(\frac{\text{Inventory}}{\text{COGS}} \right) \times 365 \text{ Days}$
Days Sales Outstanding ("DSO")	<ul style="list-style-type: none"> DSO represents the average number of days it takes for a company to collect payments made on credit. Lower DSOs mean less time is needed to retrieve cash from sales made on credit. 	$\text{DSO} = \left(\frac{\text{AR}}{\text{Revenue}} \right) \times 365 \text{ Days}$
Days Payable Outstanding ("DPO")	<ul style="list-style-type: none"> DPO refers to the average number of days it takes for a company to pay back its suppliers. Higher DPOs indicate the company has more bargaining power over its suppliers. 	$\text{DPO} = \left(\frac{\text{AP}}{\text{COGS}} \right) \times 365 \text{ Days}$

What is the cash conversion cycle?

The cash conversion cycle ("CCC") measures the number of days it takes a company to convert its inventory into cash from sales. Therefore, a lower cash conversion cycle is preferred as it implies the company generates and collects cash in a shorter duration. As a general rule, companies with lower CCCs operate efficiently, hold more negotiating power over suppliers, and have quicker sales collection cycles.

$$\text{Cash Conversion Cycle} = \text{DIO} + \text{DSO} - \text{DPO}$$

How would you forecast working capital line items on the balance sheet?

Working Capital Forecast		
Accounts Receivable (A/R)	<ul style="list-style-type: none"> A/R typically grows along with revenue and should remain in-line with historical periods. DSO often gradually decreases over time as companies become more efficient in payment collection. 	<ul style="list-style-type: none"> DSO should be calculated for historical periods ($DSO = A/R \div \text{Revenue} \times 365$) Assumptions for DSO in future periods will be based on historical trends or an average. Forecasted A/R can be calculated by $(DSO \text{ assumption} \div 365) \times \text{forecasted revenue}$.
Inventories	<ul style="list-style-type: none"> Inventory will grow in-line with COGS in most cases. DIH can decrease over time as companies become more efficient at selling their inventory. 	<ul style="list-style-type: none"> DIH would be calculated for historical periods ($DIH = \text{Inventory} \div \text{COGS} \times 365$) Historical trends or an average of past periods should be used for the DIH assumptions. Forecasted inventory balance will be equal to the $(DIH \text{ assumption} \div 365) \times \text{forecasted COGS}$.
Prepaid Expenses	<ul style="list-style-type: none"> Prepaid expenses will typically be SG&A related, but can grow with revenue if it's unclear. 	<ul style="list-style-type: none"> Historical prepaid expenses would be calculated as a % of SG&A (or revenue). Forecasted prepaid expenses will be equal to the % assumption \times forecasted revenue.
Other Current Assets	<ul style="list-style-type: none"> Other current assets normally grow along with revenue, assuming they're tied to operations. Otherwise, can be straight-lined 	<ul style="list-style-type: none"> Other current assets for past periods would be calculated by dividing past amounts by revenue. Forecasted OCA would be equal to the % assumption \times forecasted revenue.
Accounts Payable (A/P)	<ul style="list-style-type: none"> A/P will typically grow with COGS, especially if the company sells goods (i.e., inventory payment delays). DPO can be assumed to gradually increase if the company might have more buyer power in the future. 	<ul style="list-style-type: none"> DPO for past periods will be calculated ($DPO = A/P \div \text{COGS} \times 365$). Historical trends would be followed or an average can be taken for the assumption. Forecasted A/P will be equal to the $(DPO \text{ assumption} \div 365) \times \text{COGS}$.
Accrued Expenses	<ul style="list-style-type: none"> Accrued expenses usually relate to operating expenses, thus it will grow along with SG&A (or revenue if it's unclear). 	<ul style="list-style-type: none"> Accrued expenses as a percentage of SG&A will first be calculated for historical periods. Forecasted accrued expenses will be the % SG&A assumption \times current period SG&A.
Deferred Revenue	<ul style="list-style-type: none"> Deferred revenue is typically forecasted to grow with the revenue, as it's likely a part of the company's business model. 	<ul style="list-style-type: none"> Deferred revenue as a % of revenue will be calculated for historical periods. Forecasted D/R will be equal to the % of revenue assumption \times forecasted revenue.
Other Current Liabilities	<ul style="list-style-type: none"> Current liabilities are usually forecasted to grow with revenue If the driver is unclear, it can be straight-lined. 	<ul style="list-style-type: none"> Current liabilities as a % of revenue will be calculated for previous periods. Forecasted OCL will be equal to the % of revenue assumption \times current period revenue.

How would you forecast capex and D&A when creating a financial model?

In the simplest approach, D&A can be projected as either a percentage of revenue or capital expenditures, while capex is forecasted as a percentage of revenue. Re-investments such as capex directly correlate with revenue growth, thus historical trends, management guidance, and industry norms should be closely followed.

Alternatively, a depreciation waterfall schedule can be put together, which would require more data from the company to track the PP&E currently in-use and the remaining useful life of each. In addition, management plans for future capex spending and the approximate useful life assumptions for each purchase will be necessary. As a result, depreciation from old and new capex will be separately shown.

For projecting amortization, useful life assumptions would also be required, which can often be found in a separate footnote in a company's financial reports.

How would you forecast PP&E and intangible assets?

When forecasting PP&E, the end of period balance will be calculated using the roll-forward schedule shown below. Note, capex will input as a negative, meaning the PP&E balance should increase. Other factors that could affect the end-of-period PP&E balance are asset sales and write-downs.

PP&E Roll-Forward

$$\text{EOP PP\&E} = \text{BOP PP\&E} + \text{Capex} - \text{Depreciation}$$

To forecast intangible assets, management guidance becomes necessary as unlike capex, there's usually no clear historical pattern that can be followed as these purchases tend to be inconsistent. In most cases, it's best to rely on management if available, but in the absence of guidance, it's recommended to assume no purchases.

Intangible Assets Roll-Forward

$$\text{EOP Intangibles} = \text{BOP Intangibles} + \text{Intangibles Purchases} - \text{Amortization}$$

What is the difference between the current ratio and the quick ratio?

The current ratio and quick ratio are used to assess a company's near-term liquidity position. The two ratios are both used to determine if a company can meet its short-term obligations using just its short-term assets at the present moment.

- **Current Ratio:** A current ratio greater than 1 implies that the company is financially healthy in terms of liquidity and can meet its short-term obligations.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

- **Quick Ratio:** Otherwise known as the acid-test ratio, the quick ratio measures short-term liquidity, but uses stricter policies on what classifies as a liquid asset. Therefore, it includes only highly liquid assets that could be converted to cash in less than 90 days with a high degree of certainty.

$$\text{Quick Ratio} = \frac{(\text{Cash \& Cash Equivalents} + \text{AR} + \text{Short Term Investments})}{\text{Current Liabilities}}$$

Give some examples of when the current ratio might be misleading?

- The cash balance used includes the minimum cash amount required for working capital needs – meaning operations could not continue if cash were to dip below this level.
- Similarly, the cash balance may contain restricted cash, which is not freely available for use by the business and is instead held for a specific purpose.
- Short-term investments that cannot be liquidated in the markets easily could have been included (i.e., low liquidity, cannot sell without a substantial discount).
- Accounts receivable could include “bad A/R”, but management refuses to recognize it as such.

Is it bad if a company has negative retained earnings?

Not necessarily. Retained earnings can turn negative if the company has generated more accounting losses than profits. For example, this is often the case for startups and early-stage companies investing heavily to support future growth (e.g., high capex, sales & marketing expenses, R&D spend).

Another component of retained earnings is the payout of dividends and share repurchases, contributing to lower or even negative retained earnings. In these scenarios, the negative retained earnings mean the company has returned more capital to shareholders than taken in.

How can a profitable firm go bankrupt?

To be profitable, a company must generate revenues that exceed expenses. However, if the company is ineffective at collecting cash from customers and allows its receivables to balloon, or if it cannot get favorable terms from suppliers and must pay cash for all inventories and supplies, the company can suffer from liquidity problems due to the timing mismatch of cash inflows and outflows.

Profitable companies with these types of working capital issues can usually secure financing, but if financing suddenly becomes unavailable (e.g., 2008 credit crisis), the company could be forced to declare bankruptcy.

Alternatively, a profitable company that took on far too much debt in its capital structure and could not service the interest payments may also default on its debt obligations.

What does return on assets (ROA) and return on equity (ROE) each measure?

Return on assets ("ROA") and return on equity ("ROE") are measures of profitability that show how effective a company's management team is at utilizing the resources it has on-hand (assets or equity).

- **Return on Assets:** ROA measures asset utilization and how efficiently a company's assets are used to generate earnings. A high ROA relative to a peer group indicates assets are being used near full capacity, whereas a low ROA means management may not be deriving the full potential benefit from its assets.

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{(\text{Average of Beginning and Ending Total Assets})}$$

- **Return on Equity:** The ROE ratio gives insight into how efficiently a management team has been using the capital shareholders have contributed. A higher ROE means management is efficient at using the money raised from equity financing (and vice versa).

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{(\text{Average of Beginning and Ending Book Value of Equity})}$$

What is the relationship between return on assets (ROA) and return on equity (ROE)?

The relationship between ROA and ROE is tied to the use of leverage. In the absence of debt in the capital structure, the two metrics would be equal. But if the company were to add debt to its capital structure, its ROE would rise above its ROA due to increased cash, as total assets would rise while equity decreases.

If a company has a ROA of 10% and a 50/50 debt-to-equity ratio, what is its ROE?

Imagine a company with \$100 in total assets. A 10% return on assets (ROA) would imply \$10 in net income. Since the debt-to-equity mix is 50/50, the return on equity (ROE) is \$10/\$50 = 20%.

When using metrics such as ROA and ROE, why do we use averages for the denominator?

The numerator, usually net income, comes from the income statement. The denominator, either assets or equity, comes from the balance sheet. The income statement covers a specific period, whereas the balance sheet is a snapshot at one particular point in time. Thus, the average between the beginning and ending balance of the denominator is used to adjust for this mismatch in timing.

What are some shortcomings of the ROA and ROE metrics for comparison purposes?

A company's ROA and ROE ratios are benchmarked against competitors in the same industry to assess management efficiency and track historical trends. However, the ROA and ROE ratios are most useful when compared to a peer group of companies with similar growth rates, margin profiles, and risks. This approach would be best suited for established companies operating in mature, low-growth industries with many comparable companies to accurately track the management team's profitability and efficiency.

What is the return on invested capital (ROIC) metric used to measure?

The return on invested capital ("ROIC") metric is used to assess how efficient a management team is at capital allocation. A company that generates an ROIC over its cost of capital (WACC) suggests the management team has been allocating capital efficiently (i.e., investing in profitable projects or investments) and if sustained over the long-run, this indicates a competitive advantage. ROIC represents one of the most fundamental assessments of a company: "How much in returns is the company earning for each dollar invested?"

$$\text{Return on Invested Capital (ROIC)} = \frac{\text{NOPAT}}{\text{Invested Capital}}$$

Read More → [Calculating Return on Invested Capital](#)

What does the asset turnover ratio measure?

The asset turnover ratio is a metric used to understand how efficiently a company uses its assets to generate sales. The asset turnover ratio answers the question, "How many dollars in revenue does the company generate per dollar of assets?" The higher the ratio, the better, as this suggests the company is generating more revenue per dollar of an asset owned. But it has shortfalls in being distorted by capital expenditures and asset sales.

$$\text{Asset Turnover Ratio} = \frac{\text{Revenue}}{(\text{Average of Beginning and Ending Total Assets})}$$

What does inventory turnover measure and how does it differ from days inventory held (DIH)?

The inventory turnover ratio is how often a company has sold and replaced its inventory balance throughout a specified period (i.e., the number of times inventory was "turned over").

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{(\text{Average of Beginning and Ending Inventory})}$$

In contrast, DIH is the average number of days it takes for a company to turn its inventory into revenue.

What does accounts receivables turnover measure?

Accounts receivable turnover is a metric used to measure the number of times per year that a company can collect its average accounts receivable from customers. The higher the turnover ratio, the better as it indicates the company is efficient at collecting its due payments from customers that paid on credit.

$$\text{Receivables Turnover} = \frac{\text{Revenue}}{(\text{Average of Beginning and Ending Accounts Receivables})}$$

What does accounts payables turnover measure and is a higher or lower number preferable?

Accounts payable turnover measures how quickly a company pays its vendors. Generally, longer credit terms provide a company with more flexibility as it means the company has more cash-on-hand. A higher A/P turnover means the company pays off its A/P balance quickly, meaning the cash outflows occur faster.

$$\text{Accounts Payable Turnover} = \frac{\text{Cost of Goods Sold}}{(\text{Average Beginning and Ending Accounts Payable})}$$

What are some ratios you would look at to perform credit analysis?

Credit Ratio Type	Purpose	Examples
Liquidity Ratios	Assesses a company's ability to meet its current obligations using its current assets.	<ul style="list-style-type: none"> Current Ratio Quick Ratio Cash Ratio
Leverage/Solvency Ratios	Compares a company's use of debt to assets, equity, earnings, and total capitalization to evaluate if its debt obligations can be met.	<ul style="list-style-type: none"> Debt-to-EBITDA Debt-to-Assets Debt-to-Equity
Coverage Ratios	Measures a company's ability to service interest payments and other debt-related obligations using a cash flow metric.	<ul style="list-style-type: none"> Times Interest Earned EBITDA Interest Coverage Ratio Debt Service Coverage Ratio Fixed Charge Coverage Ratio
Profitability Ratios	Conveys a company's ability to consistently generate profits, enabling it to meet its debt obligations.	<ul style="list-style-type: none"> Gross, Operating, Net Profit, and EBITDA Margins % ROE, ROA, and ROIC

What are the two types of credit ratios used to assess a company's default risk?

Credit Ratios		
Leverage Ratios	Leverage ratios compare the amount of debt held by a company to a specific cash flow metric, most often EBITDA.	<ul style="list-style-type: none"> Total Debt/EBITDA Senior Debt/EBITDA Net Debt/EBITDA Total Debt/Equity Total Debt/Total Capital
Interest Coverage Ratios	Interest coverage ratios measure a company's ability to cover its interest payments using its cash flows. The higher the interest coverage ratio, the better (ideally, >2.0x).	<ul style="list-style-type: none"> EBIT/Interest Expense EBITDA/Interest Expense EBITDA/Cash Interest Expense (EBITDA – Capex)/Interest Expense

How do you calculate the debt service coverage ratio (DSCR) and what does it measure?

The debt service coverage ratio (DSCR) is a measure of creditworthiness that tests a company's ability to pay its current debt obligations using its current cash flows. As a general rule, a DSCR greater than 1.0 shows the company is generating sufficient cash flows to pay down its debt. But a DSCR below 1.0 could be a cause of concern, as it suggests the company might have insufficient cash flows to handle the debt it currently holds.

There are various methods to calculate the DSCR, but one commonly used example is shown below:

$$\text{DSCR} = \frac{(\text{EBITDA} - \text{Capex})}{(\text{Mandatory Principal Repayment} + \text{Interest Expense})}$$

How do you calculate the fixed charge coverage ratio (FCCR) and what does it mean?

The fixed charge coverage ratio (FCCR) is used to assess if a company's earnings can cover its fixed charges, which can include rent, utilities, and interest expense. The higher the ratio, the better the creditworthiness. Fixed charges can include expenses such as rent or lease payments, and utility bills.

$$\text{Fixed Charge Coverage Ratio (FCCR)} = \frac{(\text{EBIT} + \text{Lease Charges})}{(\text{Lease Charges} + \text{Interest Expense})}$$

Advanced Accounting

How would raising capital through share issuances affect earnings per share (EPS)?

The impact on EPS is that the share count increases, which decreases EPS. But there can be an impact on net income, assuming the share issuances generate cash because there would be higher interest income, which increases net income and EPS. However, most companies' returns on excess cash are low, so this doesn't offset the negative dilutive impact on EPS from the increased share count.

Alternatively, share issuances might affect EPS in an acquisition where stock is the form of consideration. The amount of net income the acquired company generates will be added to the acquirer's existing net income, which could have a net positive (accretive) or negative (dilutive) impact on EPS.

How would a share repurchase impact earnings per share (EPS)?

The impact on EPS following a share repurchase is a reduced share count, which increases EPS. However, there would be an impact on net income, assuming the share repurchase was funded using excess cash. The interest income that would have otherwise been generated on that cash is no longer available, causing net income and EPS to decrease.

But the impact would be minor since the returns on excess cash are low, and would not offset the positive impact the repurchase had on EPS from the reduced share count.

What is the difference between the effective and marginal tax rates?

- **Effective Tax Rate:** The effective tax rate 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).

$$\text{Effective Tax Rate \%} = \frac{\text{Taxes Paid}}{\text{Earnings Before Tax}}$$

- **Marginal Tax Rate:** The marginal tax rate is 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 the company's taxable income, as the tax rate adjusts according to the tax bracket in which it falls.

Why is the effective and marginal tax rate often different?

Effective and marginal tax rates differ because the effective tax rate calculation uses pre-tax income from the accrual-based income statement. Since there's a difference between the taxable income on the income statement and taxable income shown on the tax filing, the tax rates will nearly always be different. Thus, the "Tax Provision" line item on the income statement rarely matches the actual cash taxes paid to the IRS.

Read More → [Effective vs. Marginal Tax Rates](#)

Could you give specific examples of why the effective and marginal tax rates might differ?

Under GAAP, many companies follow different accounting standards and rules for tax and financial reporting.

- Most companies use straight-line depreciation (i.e., equal allocation of the expenditure over the useful life) for reporting purposes, but the IRS requires accelerated depreciation for tax purposes – meaning, book depreciation is lower than tax depreciation for earlier periods until the DTLs reverse.
- Companies that incurred substantial losses in earlier years could apply tax credits (i.e., NOL carry-forwards) to reduce the amount of taxes due in later periods.
- When debt or accounts receivable is determined to be uncollectible (i.e., "Bad Debt" and "Bad AR"), this can create DTAs and tax differences. The expense can be reflected on the income statement as a write-off but not be deducted in the tax returns.

What are deferred tax liabilities (DTLs)?

Deferred tax liabilities ("DTLs") are created when a company recognizes a tax expense on its GAAP income statement that, because of a temporary timing difference between GAAP and IRS accounting, is not actually paid to the IRS that period but is expected to be paid in the future.

DTLs are often related to depreciation. Companies can use accelerated depreciation methods for tax purposes but elect to use straight-line depreciation for GAAP reporting. This means that for a given depreciable asset, the amount of depreciation recognized in the earlier years for tax purposes will be greater than under GAAP.

Those temporary timing differences are recognized as DTLs. Since these differences are just temporary – under both book and tax reporting, the same cumulative depreciation will be recognized over the life of the asset – at a certain point into the asset's useful life, an inflection point will be reached where the depreciation expense for tax reporting will become lower than for GAAP.

Temporary timing differences in book and tax accounting lead to the creation of DTAs/DTLs, which will gradually unwind to a balance of zero.

What are deferred tax assets (DTAs)?

Deferred tax assets ("DTAs") are created when a company recognizes a tax expense on its GAAP income statement that, due to a temporary timing difference between GAAP and IRS accounting rules, is lower than what must be paid to the IRS for that period. These net operating losses ("NOLs") that a company can carry forward against future income create DTAs.

For example, a company that reported a pre-tax loss of \$10 million will not get an immediate tax refund. Instead, it'll carry forward these losses and apply them against future profits.

However, under GAAP, the tax benefit will be recognized from a presumed future tax refund immediately on the income statement, and this difference gets captured in DTAs. As the company generates future profits and uses those NOLs to reduce future tax liabilities, the DTAs gradually reverse.

Another reason for DTAs is the differences between book and tax rules for revenue recognition. Broadly, tax rules require recognition based on receiving cash, while GAAP adheres rigidly to accrual concepts.

Read More → [Financial Concepts: Deferred Taxes](#)

What impact did the COVID-19 Tax Relief have on NOLs?

Under the Coronavirus Aid, Relief, and Economic Security (CARES) Act, NOLs that arise beginning in 2018 and through 2020 could be carried back for up to a maximum of five years. The rules for claiming tax losses were changed to assist individuals and corporations negatively impacted by the pandemic.

For tax years beginning after 2020, the CARES Act would allow NOLs deduction equal to the sum of:

1. All NOL carryovers from pre-2018 tax years
2. The lesser amount between 1) all NOL carryovers from post-2017 tax years or 2) 80% of remaining taxable income after deducting NOL carryovers from pre-2018 tax years

Previously, NOLs arising in tax years ending after 2017 could not be carried back to earlier tax years and offset taxable income. NOLs arising in tax years post-2017 could only be carried forward to later years. But the key benefit was that the NOLs could be carried forward indefinitely until the loss was fully recovered (yet limited to 80% of the taxable income in a single tax period).

What are the notable takeaways from Joe Biden's proposed tax plans?

- The corporate tax rate will rise from the Trump Era's Tax Cuts and Jobs Act ("TCJA") rate of 21% to 28%; estimated to increase the government's tax revenue from \$2 trillion to \$3 trillion over the next decade.
- The top tax rate for individuals with a taxable income of \$400k+ will rise from 37% to 39.6%.
- A 12.4% payroll tax will be imposed on those earning \$400k+ and to be split evenly between employers and employees.
- Minimum tax on corporations with book profits of \$100+ million, which would be structured so that corporations would pay the greater amount between 1) their regular corporate income tax or 2) the 15% minimum tax with net operating loss (NOL) and foreign tax credits allowed.

Does a company truly not incur any costs by paying employees through stock-based compensation rather than cash?

Stock-based compensation is a non-cash expense that reduces a company's taxable income and is added-back on the cash flow statement.

However, SBC incurs an actual cost to the issuer by creating additional shares for existing equity owners. The issuing company, due to the dilutive impact of the new shares, becomes less valuable on a per-share basis to existing shareholders.



Watch Video →
Stock-Based Compensation

Could you define contra-liability, contra-asset, and contra-equity with examples of each?

- **Contra-Liability:** A contra-liability is a liability account that carries a debit balance. While classified as a liability, it functions closer to an asset by providing benefits to the company. An example would be financing fees in M&A. The financing fees are amortized over the debt's maturity, which reduces the annual tax burden and results in tax savings until the end of the term.
- **Contra-Asset:** A contra-asset is an asset that carries a credit balance. An example would be depreciation, as it reduces the fixed asset's carrying balance while providing tax benefits to the company. There is often a line called "Accumulated Depreciation," which is the contra-asset account reflected on the balance sheet.
- **Contra-Equity:** A contra-equity account has a debit balance and reduces the total amount of equity held by a company. An example would be treasury stock, which reduces shareholders' equity. Since treasury stock reduces the total shareholders' equity, treasury stock is shown as a negative on the balance sheet.

What is an allowance for doubtful accounts on the balance sheet?

Under US GAAP, the allowance for doubtful accounts estimates the percentage of uncollectible accounts receivable. This line item is considered a contra-asset because it reduces the accounts receivable balance. The allowance, often called a bad debt reserve, represents management's estimate of the amount of A/R that appears unlikely to be paid by customers. In effect, a more realistic value for A/R that'll actually be turning into cash is shown on the balance sheet, while preventing any sudden decreases in the company's A/R balance.

What is the difference between a write-down and a write-off?

- **Write-Downs:** In a write-down, an adjustment is made to an asset such as inventory or PP&E that has become impaired. The asset's fair market value (FMV) has fallen below its book value; hence, its classification as an impaired asset. Based on the write-down amount deemed appropriate, the value of the asset is decreased to reflect its true value on the balance sheet. Examples of asset write-downs would include damages caused by minor fires, accidents, or sudden value deterioration from lower demand.
- **Write-Offs:** Unlike a write-down in which the asset retains some value, a write-off reduces an asset's value to zero, meaning the asset has been determined to hold no current or future value (and should therefore be removed from the balance sheet). Examples include uncollectible AR, "bad debt," and stolen inventory.

How would a \$100 inventory write-down impact the three financial statements?

- **IS:** The \$100 write-down charge will be reflected in the cost of goods line item. The expense would decrease EBIT by \$100, and net income would decline by \$70, assuming a 30% tax rate.
 - **CFS:** The starting line item, net income, will be down \$70, but the \$100 write-down is an add-back since there's no actual cash outflow from the write-down. The net impact to the ending cash will be a \$30 increase.
 - **BS:** On the asset side, cash is up \$30 due to inventory being written down \$100. This will be offset by the decrease of \$70 in net income that flows through retained earnings on the equity section. Both sides of the balance sheet will be down by \$70 and remain in balance.
- The cash impact of the write-down was net positive, as the company's taxable income was reduced from the tax savings.**

How does buying a building impact the three financial statements?

- **IS:** Initially, there'll be no impact on the income statement since the purchase of the building is capitalized.
- **CFS:** The PP&E outflow is reflected in the cash from investing section and reduces the cash balance.
- **BS:** The cash balance will go down by the purchase price of the building, with the offsetting entry to the cash reduction being the increase in PP&E.

Throughout the purchased building's useful life, depreciation is recognized on the income statement, which reduces net income each year, net of the tax expense saved (since depreciation is tax-deductible).

How does selling a building with a book value of \$6 million for \$10 million impact the three financial statements?

- **IS:** If I sell a building for \$10 million with a book value of \$6 million, a \$4 million gain from the sale would be recognized on the income statement, which will increase my net income by \$4 million.
- **CFS:** Since the \$4 million gain is non-cash, it'll be subtracted from net income in the cash from operations section. In the investing section, the full cash proceeds of \$10 million are captured.
- **BS:** The \$6 million book value of the building is removed from assets while cash increases by \$10 million, for a net increase of \$4 million to assets. On the L&E side, retained earnings will increase by \$4 million from the net income increase, so the balance sheet remains balanced.

However, the gain on sale will result in higher taxes, which will be recognized on the income statement. This lowers retained earnings by \$1 million and be offset by a \$1 million credit to cash on the asset side.

If a company issues \$100 million in debt and uses \$50 million to purchase new PP&E, walk me through how the three statements are impacted in the initial year of the purchase and at the end of year 1. Assume a 5% annual interest rate on the debt, no principal paydown, straight-line depreciation with a useful life of five years and no residual value, and a 40% tax rate.

Initial Purchase Year (Year 0)

- **IS:** There'll be no changes as neither capex nor issuing debt impact the income statement.
- **CFS:** The \$50 million outflow of capex will be reflected in the cash from investing section of the cash flow statement, while the \$100 million inflow from the debt issuance will be reflected in the cash from financing section. The ending cash balance will be up by \$50 million.
- **BS:** On the assets side, cash will be up by \$50 million and PP&E will increase \$50 million from the PP&E purchase, making the assets side increase by \$100 million in total. On the L&E side, debt will be up \$100 million, which will offset the increase in assets and the balance sheet remains in balance.

End of First Year (Year 1)

- **IS:** Since the capex amount was \$50 million with a useful life assumption of five years (straight-line to a residual value of zero), the annual depreciation will be \$10 million. Next, the interest expense will be equal to the \$100 million in debt raised multiplied by the 5% annual interest rate, which comes out to \$5 million in annual interest expense. The pre-tax income will be down by \$15 million and assuming a 40% tax rate, net income will be down \$9 million.
- **CFS:** Net income will be down \$9 million, but the non-cash depreciation of \$10 million will be added back, making the ending cash balance increase by \$1 million.
- **BS:** On the assets side, cash is up by \$1 million and PP&E will decrease by \$10 million because of the depreciation. Since equity is also down \$9 million due to net income, both sides will remain in balance.

For long-term projects, what are the two methods for revenue recognition?

1. **Percentage of Completion Method:** In the percentage of completion method, revenue is recognized based on the percentage of work completed during the period. This method is used far more common since it's in a company's best interest to record partial revenue once earned. Two conditions must be met to use this method: the collection of payment must be reasonably assured, and the total project costs with the estimated completion date are required to be provided.
2. **Completed Contract Method:** The completed contract method recognizes revenue once the entire project has been completed. This method is rarely used in the US, as it would result in a company under-reporting revenue that has been earned under the accrual-based system.

If a company has continuously incurred goodwill impairment charges, what do you take away from seeing this in their financials?

Goodwill on the balance sheet remains unchanged unless it's impaired, meaning the purchaser has determined that the acquired assets are worth less than initially thought. While goodwill impairment can be attributed to unforeseeable circumstances, impairments as a common occurrence may raise concerns regarding the management team's history of overpaying for assets or their inability to integrate new acquisitions.

What is restricted cash and could you give me an example?

Restricted cash is cash reserved for a specific purpose and not available for the company to use. On the balance sheet, the restricted cash will be listed separated from the unrestricted cash, and there'll be an accompanying disclosure providing the reasoning why this cash cannot be used.

An example of restricted cash would be if a company signed an agreement to receive a line of credit, but the lender has required the borrower to maintain 10% of the total loan amount at all times (i.e., "bank loan requirement"). As long as the line of credit is active, the 10% minimum must be preserved to avoid breaching the lending terms. The company may have a separate bank account to hold the funds, or the lender may have required the amount to be placed in escrow to ensure compliance.

What is the accounting treatment for finance leases?

Finance leases is an accounting approach that recognizes the present value of all future lease payments as debt and recognizes the value provided by those future lease obligations as an asset (PP&E) on the lessee's balance sheet. Unlike debt, where the principal is defined, companies must estimate the initial finance lease liability as the present value of all future lease payments, using a discount rate assumption. For example, a 4-year lease with \$500,000 annual year-end lease payments at an assumed discount rate of 10% will be recognized.

Similar to debt, leases are long-term obligations to make payments to another party. However, lease payments rarely include explicit interest payments in the way debt does. Instead, the interest fees are implied and accounted for in the total lease expense.

Over the finance lease term, the asset is depreciated, while the lease liability accrues interest during the year and is then reduced by lease payments (similar to principal payments with debt). On the income statement, depreciation and the implied interest expense reduces net income.

To recap, the balance sheet initially treats the finance lease as a debt-like liability and the underlying asset as an owned asset. Over the life of the lease, the income statement impact doesn't capture the rent expense as one might intuitively assume. Instead, finance lease accounting breaks up the lease payments into two components on the income statement: interest and depreciation expenses – even though a company in actuality is paying a lease payment that commingles these two items.

What is the accounting treatment for operating leases?

Lease accounting changed significantly in 2019 for both US GAAP and IFRS. IFRS doesn't allow operating leases at all, so this only applies to US GAAP.

The initial balance sheet impact is the same as finance leases: Initially, the lease is recognized as a liability on the balance sheet (just like debt) with the corresponding asset as PP&E. The income statement is where the accounting diverges from finance leases. The income statement is simply reduced by the rent (lease) expense throughout the lease term. For example, if a 5-year lease calls for the annual lease payment of \$500,000, the annual rent expense will be recognized as a \$500,000 operating expense per year. The cash flow statement will already reflect the lease payment in each period via the net income line, so the lease payment affects the cash flow statement in cash from operations.

What are the three different types of intercompany investments?

1. **Investments in Securities:** The investment in securities method is used when a company invests in another company's equity, but the ownership percentage is less than 20%. These investments are treated as minor, passive financial investments due to the insignificant influence.
2. **Equity Investments Method:** When a company owns between 20-50% of another company, this is considered a significant level of influence. Thus, proper accounting treatment would be the equity method. Under the equity method, an investment is initially measured at the acquisition price and recorded as an "Investment in Affiliate" (or "Investment in Associate") on the assets side. Although a non-controlling stake, this type of ownership is considered influential enough to affect the target's decisions.
3. **Consolidation Method:** When the parent company has majority control over 50% ownership, the consolidation method is used. Instead of creating an individual investment asset, the target company's balance sheet is consolidated with the acquirer. To reflect that the acquirer owns less than 100% of the consolidated assets and liabilities, a new equity line titled "Non-Controlling Interests" (NCI) is created, which captures the value of equity in the consolidated business held by non-controlling (minority) interests (other third parties).

What are the three sub-classifications of investment securities?

1. **Trading Securities:** These are debt or equity investments intended to generate short-term profits. The purchase amount of the security will be recorded at its initial cost on the balance sheet and periodically marked-to-market until sold. Any unrealized gain/(loss) will be recorded on the income statement throughout the holding period until the realized gain/(loss) when sold.
2. **Available-for-Sale Securities ("AFS"):** These are debt or equity securities held for the long-term but sold before maturity. The investment amount will be recorded at the initial cost on the balance sheet, marked-to-market until the sale, and categorized as either current or non-current. A distinction from trading securities is how unrealized gains or losses are not be reflected on the income statement, but recorded as "Accumulated Other Comprehensive Income" on the balance sheet. Once sold, the realized gain/(loss) will be recognized on the income statement.

- 3. Held-to-Maturity Securities ("HTM"):** These are long-term investments in debt securities held until the end of their term. HTM applies only to debt instruments, typically government bonds, certificates of deposit (CDs), and investment-grade corporate bonds, as they have fixed payment schedules and maturity dates. HTM securities are low risk, low return holdings since there's a low risk of default, and the long-term holding horizon helps mitigate many risks. The investment's original cost is recorded on the balance sheet (reported at amortized cost). However, the value of the investment is not adjusted following changes in its FMV due to the HTM classification.

Could you name an example of an asset that's exempt from the cost principle rule?

Mark-to-market accounting would record the asset at its current fair market value and then adjust the value to reflect what an asset would sell for today. There are a few exceptions to the cost principle rule, with one of them being marketable securities, which are highly liquid and traded on stock exchanges.

What is trapped cash and what benefit does it provide to companies?

Trapped cash refers to the accumulation of cash overseas by multinational companies. While not illegal, companies keep this cash offshore to avoid certain repatriation taxes if brought back to the US.

For example, Apple held ~\$250 billion overseas at one point, mainly in Ireland, which has been known as a "tax-haven." While CEO Tim Cook had to defend Apple's tax practices to Congress, there was no sign of illegal wrongdoing, and Cook's counterargument was that Apple paid all required tax payments related to sales conducted in the US and shifted the narrative towards how Apple is a global company.

During the Trump administration, fixing this issue and incentivizing US companies to bring their operations back to their home country was a key objective. But even after the tax cuts went into effect, many corporations retained significant amounts of cash abroad – well short of the predicted \$4 trillion expected to be brought back. For multinational companies with operations in several countries, there's no clear incentive or obligation why they would have to bring all their cash and operations back to the US.

When can a company capitalize software development costs under accrual accounting?

The capitalization of software development costs involves internally developed software costs being recognized similar to fixed asset purchases, as opposed to being expensed as incurred in the current period. These software-related costs can include programmers' compensation, market testing, and various direct or indirect overhead costs related to bringing the software to the public. To capitalize software development costs, the software being developed must be eligible based on GAAP's criterion.

Broadly, there are two stages of software development in which a company can capitalize software costs:

1. The application development stage for software intended for internal use such as coding
2. The stage when the software's "technological feasibility" has been reached and can be marketed

The accounting treatment of capitalized software costs is like that of certain intangible assets, in which the software costs are capitalized and amortized over the useful life assumption on the income statement.

Read More → [Accounting for Capitalized Software Costs](#)

What is PIK interest?

PIK stands for "Paid-in-Kind." PIK interest expense is interest charged by a lender that accrues towards the ending debt balance as opposed to being paid in cash in the current period. While opting for PIK may conserve cash for the time being from deferring interest payments to a later date, the debt principal due at maturity increases each year, as well as the accrued interest payment amount.

What is a PIK toggle note?

A PIK toggle note provides the issuer of the debt with the option to defer an interest payment, but the entire debt balance, including the accrued payments that must be paid by maturity. Loans can come arranged with a fixed PIK schedule outlined in the lending terms, but certain debt instruments can come with the optionality to let the issuer decide whether to pay in cash or accrue over to the next period. Therefore, whether interest expense is paid-in-cash or PIK effectively becomes a discretionary decision.

If a company has incurred \$100 in PIK interest, how would the three-statements be impacted?

- **IS:** On the income statement, interest expense will increase by \$100, which causes EBIT to decrease by \$100. Assuming a 30% tax rate, net income will decrease by \$70.
- **CFS:** On the cash flow statement, net income will be down by \$70, but the \$100 non-cash PIK interest will be added back. The ending cash balance will increase by \$30.
- **BS:** On the assets side of the balance sheet, cash will be up \$30. Then on the liabilities side, the debt balance will be up \$100 (since the PIK accrues to the debt's ending balance), and net income is down \$70. Therefore, both sides are up by \$30, and the balance sheet balances.

What is the purpose of the original issue discount feature of debt?

An original issue discount ("OID") is a feature of debt meant to make the issuance more appealing to investors as a "deal sweetener." Typically, the reduction is 1-2% of the debt issuance.

For example, that if there's \$100 of debt being raised, you'll issue it so that the lender only has to pay \$98 or \$99. An OID is modeled similarly to financing fees and amortized over the term of the debt.

Why are circularities created in financial models?

A circularity is introduced into a financial model when a cell, either directly or indirectly, refers to itself. The most common circularity is created by interest expense and interest income.

For example, interest expense is calculated off the beginning and ending balances of a company's debt outstanding, which includes the revolver. Furthermore, the revolver drawdown/(paydown) for a given period is directly impacted by interest expense – thereby, a circular reference is created.

How would you forecast a company's basic and diluted share count?

In general, management teams will publicly announce their plans for future share issuances or a buyback program. If that's the case, then the number of share issuance and repurchases can be calculated using the formula shown below:

$$\text{Basic Share Count EOP} = \text{Basic Share Count BOP} + \left(\frac{\text{Shares Issued}}{\text{Estimated Share Price}} \right) - \left(\frac{\text{Share Repurchases}}{\text{Estimated Share Price}} \right)$$

The estimated share price used above can be approximated using the formula below:

$$\text{Share Price Estimate} = \text{Prior Period Share Price} \times (1 + \text{Current Period Consensus EPS Growth Rate})$$

To calculate the impact of dilutive securities, the differences between the basic and diluted share count in historical periods can be looked at and this amount can be straight-lined into the future. While this approach has its shortcomings, it serves as a decent proxy for how potentially dilutive securities such as options, warrants, and convertible debt will impact the diluted share count.

How can you forecast a company's implied share price using its EPS?

Since the P/E ratio is equal to a company's share price divided by its EPS, a company's implied share price can be estimated by taking the forecasted EPS figure and then multiplying it by a P/E ratio assumption. The conservative approach is to use the company's current P/E ratio as of the present day (or a minor contraction).

This estimated share price can be sanity checked by using the consensus EPS annual growth rate as a proxy for share price growth. Both approaches implicitly assume a fixed P/E ratio, but this is meant to be an approximation of where a company could be trading at, rather than a precise share price forecast.

Read More → [Forecasting a Company's Shares Outstanding and Earnings Per Share](#)

What are the two types of pension plans and how does the accounting differ for each?

A pension plan is a contract between an employer and employee, in which the employer agrees to pay cash benefits to the employee upon retirement.

1. **Defined Contribution:** The plan is the simpler of the two, as the employer makes specified contributions into the plan periodically. The accounting treatment of defined contribution plans is fairly straightforward as a pension expense will be shown on the income statement (typically SG&A).
2. **Defined Benefit:** The other option involves the employer having to estimate each period how much of a contribution must be made to satisfy the upcoming defined post-retirement benefits (and thus, there will be assumptions on expected payments required). For defined benefit plans, the accounting becomes more complicated since it involves expected values. But the defined benefit plan will recognize a pension expense in the SG&A with the off-setting balance sheet entry being either a liability if the amount of cash contribution is smaller than the pension expense recorded on the income statement or an asset as a pre-paid expense if the amount of cash contribution was greater than the pension expense recorded on the income statement. Both would lead to tax implications since there would be differences between GAAP and IRS taxes, which creates DTAs/DTLs.

Valuation Questions

Corporate Finance Theory

Could you explain the concept of present value and how it relates to company valuations?

The present value concept is based on the premise that "a dollar in the present is worth more than a dollar in the future" due to the time value of money. The reason being money currently in possession has the potential to earn interest by being invested today.

$$\text{Present Value}_{t=0} = \frac{\text{Cash Flow}_{t=1}}{(1 + r)^{t=1}}$$

For intrinsic valuation methods, the value of a company will be equal to the sum of the present value of all the future cash flows it generates. Therefore, a company with a high valuation would imply it receives high returns on its invested capital by investing in positive net present value ("NPV") projects consistently while having low risk associated with its cash flows.



Watch Video →
Present Value
Basics

What is equity value and how is it calculated?

Often used interchangeably with the term market capitalization ("market cap"), equity value represents a company's value to its equity shareholders. A company's equity value is calculated by multiplying its latest closing share price by its total diluted shares outstanding, as shown below:

$$\text{Equity Value} = \text{Latest Closing Share Price} \times \text{Total Diluted Shares Outstanding}$$

How do you calculate the fully diluted number of shares outstanding?

The treasury stock method ("TSM") is used to calculate the fully diluted number of shares outstanding based on the options, warrants, and other dilutive securities that are currently "in-the-money" (i.e., profitable to exercise).

The TSM involves summing up the number of in-the-money ("ITM") options and warrants and then adding that figure to the number of basic shares outstanding.

In the proceeding step, the TSM assumes the proceeds from exercising those dilutive options will go towards repurchasing stock at the current share price to reduce the net dilutive impact.



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Diluted Share
Count

What is enterprise value and how do you calculate it?

Conceptually, enterprise value ("EV") represents the value of the operations of a company to all stakeholders including common shareholders, preferred shareholders, and debt lenders.

Thus, enterprise value is considered capital structure neutral, unlike equity value, which is affected by financing decisions.

Enterprise value is calculated by taking the company's equity value and adding net debt, preferred stock, and minority interest.

$$\text{Enterprise Value} = \text{Equity Value} + \text{Net Debt} + \text{Preferred Stock} + \text{Minority Interest}$$

How do you calculate equity value from enterprise value?

To get to equity value from enterprise value, you would first subtract net debt, where net debt equals the company's gross debt and debt-like claims (e.g., preferred stock), net of cash, and non-operating assets.

$$\text{Equity Value} = \text{Enterprise Value} - \text{Net Debt} - \text{Preferred Stock} - \text{Minority Interest}$$

Equity value represents just the residual value to equity holders, whereas enterprise value pertains to all providers of capital.

Which line items are included in the calculation of net debt?

The calculation of net debt accounts for all interest-bearing debt, such as short-term and long-term loans and bonds, as well as non-equity financial claims such as preferred stock and non-controlling interests. From this gross debt amount, cash and other non-operating assets such as short-term investments and equity investments are subtracted to arrive at net debt.

$$\text{Net Debt} = \text{Total Debt} - \text{Cash \& Equivalents}$$



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Net Debt

When calculating enterprise value, why do we add net debt?

The underlying idea of net debt is that the cash on a company's balance sheet could pay down the outstanding debt if needed. For this reason, cash and cash equivalents are netted against the company's debt, and many leverage ratios use net debt rather than the gross amount.

What is the difference between enterprise value and equity value?

Enterprise value represents all stakeholders in a business, including equity shareholders, debt lenders, and preferred stock owners. Therefore, it's independent of the capital structure. In addition, enterprise value is closer to the actual value of the business since it accounts for all ownership stakes (as opposed to just equity owners).

To tie this to a recent example, many investors were astonished that Zoom, a video conferencing platform, had a higher market capitalization than seven of the largest airlines combined at one point. The points being neglected were:

- The equity values of the airline companies were temporarily deflated given the travel restrictions, and the government bailout had not yet been announced.
- The airlines are significantly more mature and have far more debt on their balance sheet (i.e., more non-equity stakeholders).



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Enterprise Value vs Equity Value

Could a company have a negative net debt balance and have an enterprise value lower than its equity value?

Yes, negative net debt just means that a company has more cash than debt. For example, both Apple and Microsoft have massive negative net debt balances because they hoard cash. In these cases, companies will have enterprise values lower than their equity value.

If it seems counter-intuitive that enterprise value can be lower than equity value, remember that enterprise value represents the value of a company's operations, which excludes any non-operating assets. When you think about it this way, it should come as no surprise that companies with much cash (which is treated as a non-operating asset) will have a higher equity value than enterprise value.

Can the enterprise value of a company turn negative?

While negative enterprise values are a rare occurrence, it does happen from time to time. A negative enterprise value means a company has a net cash balance (total cash less total debt) that exceeds its equity value. Imagine a company with \$1,000 in cash, no other assets and \$500 in debt and \$200 in accounts payable. There is \$300 in equity in this business, while the enterprise value is -\$200.

If a company raises \$250 million in additional debt, how would its enterprise value change?

Theoretically, there should be no impact as enterprise value is capital structure neutral. The new debt raised shouldn't impact the enterprise value, as the cash and debt balance would increase and offset the other entry.

However, the cost of financing (i.e., through financing fees and interest expense) could negatively impact the company's profitability and lead to a lower valuation from the higher cost of debt.

Why do we add minority interest to equity value in the calculation of enterprise value?

Minority interest represents the portion of a subsidiary in which the parent company doesn't own. Under US GAAP, if a company has ownership over 50% of another company but below 100% (called a "minority interest" or "non-controlling investment"), it must include 100% of the subsidiary's financials in their financial statements despite not owning 100%.

When calculating multiples using EV, the numerator will be the consolidated metric, thus minority interest must be added to enterprise value for the multiple to be compatible (i.e., no mismatch between the numerator and denominator).

How are convertible bonds and preferred equity with a convertible feature accounted for when calculating enterprise value?

If the convertible bonds and the preferred equities are "in-the-money" as of the valuation date (i.e., the current stock price is greater than their strike price), then the treatment will be the same as additional dilution from equity. However, if they're "out-of-the-money," they would be treated as a financial liability (similar to debt).

What are the two main approaches to valuation?

- 1. Intrinsic Valuation:** For an intrinsic valuation, the value of a business is arrived at by looking at the business's ability to generate cash flows. The discounted cash flow method is the most common type of intrinsic valuation and is based on the notion that a business's value equals the present value of its future free cash flows.
- 2. Relative Valuation:** In relative valuation, a business's value is arrived at by looking at comparable companies and applying the average or median multiples derived from the peer group – often EV/EBITDA, P/E, or some other relevant multiple to value the target. This valuation can be done by looking at the multiples of comparable public companies using their current market values, which is called "trading comps," or by looking at the multiples of comparable companies recently acquired, which is called "transaction comps."



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Valuation Methods

What are the most common valuation methods used in finance?

Valuation Methods	
Comparable Company Analysis ("Trading Comps")	Trading comps value a company based on how similar publicly-traded companies are currently being valued at by the market.
Comparable Transactions Analysis ("Transaction Comps")	Transaction comps value a company based on the amount buyers paid to acquire similar companies in recent years.
Discounted Cash Flow Analysis ("DCF")	DCFs value a company based on the premise that its value is a function of its projected cash flows, discounted at an appropriate rate that reflects the risk of those cash flows.
Leveraged Buyout Analysis ("LBO")	An LBO will look at a potential acquisition target under a highly leveraged scenario to determine the maximum purchase price the firm would be willing to pay.
Liquidation Analysis	Liquidation analysis is used for companies under (or near) distress and values the assets of the company under a hypothetical, worst-case scenario liquidation.

Among the DCF, comparable companies analysis, and transaction comps, which approach yields the highest valuation?

Transaction comps analysis often yields the highest valuation because it looks at valuations for companies that have been acquired, which factor in control premiums. Control premiums can often be quite significant and as high as 25% to 50% above market prices. Thus, the multiples derived from this analysis and the resulting valuation are usually higher than a straight trading comps valuation or a standalone DCF valuation.

Which of the valuation methodologies is the most variable in terms of output?

Because of its reliance on forward-looking projections and discretionary assumptions, the DCF is the most variable out of the different valuation methodologies. Relative valuation methodologies such as trading and transaction comps are based on the actual prices paid for similar companies. While there'll be some discretion involved, the valuations derived from comps deviate to a lesser extent than DCF models.

Contrast the discounted cash flow (DCF) approach to the trading comps approach.

	Advantages	Disadvantages
Discounted Cash Flow (DCF)	<ul style="list-style-type: none"> ▪ The DCF values a company based on the company's forecasted cash flows. ▪ This approach is viewed as the most direct and academically rigorous way to measure value. ▪ Considered to be independent of the market and instead based on the fundamentals of the company. 	<ul style="list-style-type: none"> ▪ The DCF suffers from several drawbacks; most notably, it's very sensitive to assumptions. ▪ Forecasting the financial performance of a company is challenging, especially if the forecast period is extended. ▪ Many criticize the use of beta in the calculation of WACC, as well as how the terminal value comprises around three-quarters of the implied valuation.
Trading Comps	<ul style="list-style-type: none"> ▪ Trading comps value a company by looking at how the market values similar businesses. ▪ Thus, comps relies much more heavily on market pricing to determine the value of a company (i.e., the most recent, actual prices paid in the public markets). ▪ In reality, there are very few truly comparable companies, so in effect, it's always an "apples and oranges" comparison. 	<ul style="list-style-type: none"> ▪ While the value derived from a comps analysis is viewed by many as a more realistic assessment of how a company could expect to be priced, it's vulnerable to how the market is not always right. ▪ Therefore, a comps analysis is simply pricing, as opposed to a valuation based on the company's fundamentals. ▪ Comps make just as many assumptions as a DCF, but they are made implicitly (as opposed to being explicitly chosen assumptions like in a DCF).

How can you determine which valuation method to use?

Each valuation method has its shortcomings; therefore, a combination of different valuation techniques should be used to arrive at a range of valuation estimates. Using various methods allows you to arrive at a more defensible approximation and sanity-check your assumptions.

The DCF and trading comps are often used in concert such that the comps provide a market-based sanity-check to intrinsic DCF valuation (and vice versa).

For example, an analyst valuing an acquisition target may look at the past premiums and values paid on comparable transactions to determine what the acquirer must realistically expect to pay. The analyst may also value the company using a DCF to help show how far market prices are from intrinsic value estimates.

Another example of when the DCF and comps approaches can be used together is when an investor considers investing in a business – the analyst may identify investing opportunities where comps-derived market values for companies are significantly lower than valuations derived using a DCF (although it bears repeating that the DCF's sensitivity to assumptions is a frequent criticism).

Would you agree with the statement that relative valuation relies less on the discretionary assumptions of individuals?

That could be argued as an inaccurate statement. While a comps analysis often yields different valuations from a DCF, that's only because of inconsistent implicit assumptions across both approaches. If the implicit assumptions of the comps analysis were entirely consistent with the explicit assumptions of the DCF analysis, the valuations using both approaches would theoretically be equal.

When you apply a peer-derived multiple to value a business, you're still implicitly making assumptions about future cash flows, cost of capital, and returns that you would make explicitly when building a DCF. The difference is, you're relying on the assumptions used by others in the market.

So when you perform relative valuation, you assume the market consensus to be accurate or at least close to the right value of a company and that those investors in the market are rational.

All valuation methods contain some degree of inherent bias; thus, various methods should be used in conjunction.

What does free cash flow (FCF) represent?

Free cash flow ("FCF") represents a company's discretionary cash flow, meaning the cash flow remaining after accounting for the recurring expenditures to continue operating.

The simplest calculation of FCF is shown below:

$$\text{Free Cash Flow (FCF)} = \text{Cash from Operations} - \text{Capex}$$

The cash from investing section, other than capex, and the financing section are excluded because these activities are optional and discretionary decisions up to management.

Why are periodic acquisitions excluded from the calculation of FCF?

The calculation of free cash flow should include only inflows/(outflows) of cash from the core, recurring operations. That said, a periodic acquisition is a one-time, unforeseeable event, whereas capex is recurring and a normal part of operations (i.e., capex is required for a business to continue operating).

Explain the importance of excluding non-operating income/(expenses) for valuations.

For both DCF analysis or comps analysis, the intent is to value the operations of the business, which requires you to set apart the core operations to normalize the figures.

- When performing a DCF analysis, the cash flows projected should be strictly from the business's recurring operations, which would come from the sale of goods and services provided. A few examples of non-operating income to exclude would be income from investments, dividends, or an asset sale. Each example represents income that's non-recurring and from a discretionary decision unrelated to the core operations.
- When performing comps, the core operations of the target and its comparables are benchmarked. To make the comparison as close to "apples to apples" as possible, non-core operating income/(expenses) and any non-recurring items should be excluded.

Define free cash flow yield and compare it to dividend yield and P/E ratios.

The free cash flow yield ("FCFY") is calculated as the FCF per share divided by the current share price. For this calculation, FCF will be defined as cash from operations less capex.

$$\text{Free Cash Flow Yield (FCFY)} = \frac{\text{Free Cash Flow Per Share}}{\text{Current Share Price}}$$

Similar to the dividend yield, FCF yield can gauge equity returns relative to a company's share price. Unlike dividend yield, however, FCF yield is based on cash generated instead of cash actually distributed. FCF yield is more useful as a fundamental value measure because many companies don't issue dividends (or an arbitrary fraction of their FCFs).

If you invert the FCF yield, you'll get share price/FCF per share, which produces a cash flow version of the P/E ratio. This has the advantage of benchmarking prices against actual cash flows as opposed to accrual profits. However, it has the disadvantage that cash flows can be volatile, and period-specific swings in working capital and deferred revenue can have a material impact on the multiple.

Could you define what the capital structure of a company represents?

The capital structure is how a company funds its ongoing operations and growth plans. Most companies' capital structure consists of a mixture of debt and equity, as each source of capital comes with its advantages and disadvantages. As companies mature and build a track record of profitability, they can usually get debt financing easier and at more favorable rates since their default risk has decreased. Thus, it's ordinary to see leverage ratios increase in proportion with the company's maturity.

The optimal capital structure is the D/E mix that minimizes the cost of capital, while maximizing the firm value.

Why would a company issue equity vs. debt (and vice versa)?

	Advantages	Disadvantages
Equity	<ul style="list-style-type: none"> No required payments, unlike debt, giving management more flexibility around repayment. Dividends to equity shareholders can be issued, but the timing and magnitude are at the board and management's discretion. Another advantage of equity is that it gives companies access to a vast investor base and network. 	<ul style="list-style-type: none"> Issuing equity dilutes ownership, and equity is a high cost of capital. Public equity comes with more regulatory requirements, scrutiny from shareholders and equity analysts, and full disclosures of their financial statements. The management team could lose control over their company and be voted out by shareholders if the company underperforms.
Debt	<ul style="list-style-type: none"> The interest expense on debt is tax-deductible, unlike dividends to equity shareholders (although recent tax reform rules limit the deduction for highly levered companies). Debt results in no ownership dilution for equity shareholders and has a lower cost of capital. Increased leverage forces discipline on management, resulting in risk-averse decision-making as a side benefit. 	<ul style="list-style-type: none"> Required interest and principal payments that introduce the risk of default. Loss of flexibility from restrictive debt covenants prevents management from undertaking a variety of activities such as raising more debt, issuing a dividend, or making an acquisition. Less room for errors in decision-making, therefore poor decisions by management come with more severe consequences.

What are share buybacks and under which circumstances would they be most appropriate?

A stock repurchase (or buyback program) is when a company uses its cash-on-hand to buy back some of its shares, either through a tender offer (directly approach shareholders) or in the open market. The repurchase will be shown as a cash outflow on the cash flow statement and be reflected on in the treasury stock line items on the balance sheet.

Ideally, the right time for a share repurchase to be done should be when the company believes the market is undervaluing its shares. The impact is the reduced number of shares in circulation, which immediately leads to a higher EPS and potentially a higher P/E ratio. The buyback can also be interpreted as a positive signal by the market that the management is optimistic about future earnings growth.

Why would a company repurchase shares? What would the impact on the share price and financial statements be?

A company buys back shares primarily to move cash from the company's balance sheet to shareholders, similar to issuing dividends. The primary difference is that instead of shareholders receiving cash as with dividends, a share repurchase removes shareholders.

The impact on share price is theoretically neutral – as long as shares are priced correctly, a share buyback shouldn't lead to a change in share price because while the share count (denominator) is reduced, the equity value is also reduced by the now lower company cash balances. That said, share buybacks can positively or negatively affect share price movement, depending on how the market perceives the signal.



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Share Repurchases

Cash-rich but otherwise risky companies could see artificially low share prices if investors discount that cash in their valuations. Here, buybacks should lead to a higher share price, as the upward share price impact of a lower denominator is greater than the downward share price impact of a lower equity value numerator.

Conversely, if shareholders view the buyback as a signal that the company's investment prospects are not great (otherwise, why not pump the cash into investments?), the denominator impact will be more than offset by a lower equity value (due to lower cash, lower perceived growth and investment prospects).

On the financials, the accounting treatment of the \$100 million share buyback would be treated as:

- Cash is credited by \$100 million
- Treasury stock is debited by \$100 million

Why might a company prefer to repurchase shares over the issuance of a dividend?

- The so-called "double taxation" when a company issues a dividend, in which the same income is taxed at the corporate level (dividends are not tax-deductible) and then again at the shareholder level.
- Share repurchases will artificially increase EPS by reducing the number of shares outstanding and can potentially increase the company's share price.
- Many companies increasingly pay employees using stock-based compensation to conserve cash, thus share buybacks can help counteract the dilutive impact of those shares.
- Share buybacks imply a company's management believes their shares are currently undervalued, making the repurchase a potential positive signal to the market.
- Share repurchases can be one-time events unless stated otherwise, whereas dividends are typically meant to be long-term payouts indicating a transition internally within a company.
- Cutting a dividend can be interpreted very negatively by the market, as investors will assume the worst and expect future profits to decrease (hence, dividends are rarely cut once implemented).

A company with \$100 million in net income and a P/E multiple of 15x is considering raising \$200 million in debt to pay out a one-time cash dividend. How would you decide if this is a good idea?

If we assume that the P/E multiple stays the same after the dividend and a cost of debt of 5%, the impact to shareholders is as follows:

- Net income drops from \$100 million to \$90 million [(\$200 million new borrowing x 5%) = \$10 million]
- Equity value drops from \$1,500 million (15 x \$100 million) to \$1,350 million (15.0 x \$90 million)

Although there's a tax impact since interest is mostly deductible, it can be ignored for interviewing purposes.

That's a \$150 million drop in equity value. However, shareholders are immediately getting \$200 million.

So ignoring any tax impact, there's a net benefit of \$50 million (\$200 million – \$150 million) to shareholders.

The assumptions we made about taxes, the cost of debt and the multiple staying the same all affect the result. If any of those variables were different – for example, if the cost of debt was higher – the equity value might be wiped out in light of this move. A key assumption in getting the answer here was that P/E ratios would remain the same at 15x. A company's P/E multiple is a function of its growth prospects, ROE, and cost of equity. Hence, borrowing more with no compensatory increase in investment or growth raises the cost of equity via a higher beta, which will pressure the P/E multiple down.

While it appears based on our assumptions that this is a decent idea, it could easily be a bad idea given a different set of assumptions. It's possible that borrowing for the sake of issuing dividends is unsustainable indefinitely because eventually, debt levels will rise to a point where the cost of capital and P/E ratios are adversely affected. Broadly, debt should support investments and activities that will lead to firm and shareholder value creation rather than extract cash from the business.

When would it be most appropriate for a company to distribute dividends?

Companies that distribute dividends are usually low-growth with fewer profitable projects in their pipeline. Therefore, the management opts to pay out dividends to signal the company is confident in its long-term profitability and appeal to a different shareholder base (more specifically, long-term dividend investors).

What is CAGR and how do you calculate it?

The compound annual growth rate ("CAGR") is the rate of return required for an investment to grow from its beginning balance to its ending balance. Put another way, CAGR is the annualized average growth rate.

$$\text{CAGR} = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\frac{1}{t}} - 1$$

What is the difference between CAGR and IRR?

The compound annual growth rate (CAGR) and internal rate of return (IRR) are both used to measure the return on an investment. However, the calculation of CAGR involves only three inputs: the investment's beginning and ending value and the number of years. IRR, or the XIRR in Excel to be more specific, can handle more complex situations with the timing of the cash inflows and outflows (i.e., the volatility of the multiple cash flows) accounted for, rather than just smoothing out the investment returns.

CAGR is usually for assessing historical data (e.g., past revenue growth), whereas IRR is used more often for investment decision-making.

How would you evaluate the buy vs. rent decision in NYC?

- First, I would have to make assumptions to allow for a proper comparison, such as having enough upfront capital to make a down payment and the investment period being ten years.
- Under the 1st option, I assume I buy and will have to pay the monthly mortgage, real estate tax, and maintenance fees (which will be offset by some tax deductions on interest and depreciation) during this investment period. Then, I'll assume that I could sell the property at a price that reflects the historical growth rate in real estate in NYC. Based on the initial and subsequent monthly outlays and the final inflow due to a sale, I can calculate my IRR and compare this IRR to the IRR from renting.
- For the 2nd option, I would start by estimating the rental cost of comparable properties, factoring in rent escalations over ten years. Since there's no initial down-payment required, I would put that money to work elsewhere, such as an investment in the stock market, in which I would assume an annual return over the ten years consistent with the long-term historical return on the stock market (5-7%). I could then compute an IRR based on the inflows/(outflows) and compare the two IRRs to make an informed decision.
- I would keep in mind that this comparison is not precisely "apples to apples." For example, investing in an NYC property is riskier than investing in the stock market due to the leverage and lower liquidity. NYC real estate is liquid, but not as liquid as public stocks. If the two IRRs were identical, I would probably go with renting as it does not appear that I am being compensated for the added risk.

How would you value a painting?

A painting has no intrinsic value, generates no cash flows, and cannot be valued in the traditional sense. The pricing of the painting is a function of what someone will pay for it in the market, rather than being anchored by its fundamentals. To determine the approximate price, you would have to analyze comparable transactions to see the amount others paid to purchase similar paintings in the past.

When would it be appropriate to use a sum-of-the-parts approach to valuing a company?

In a sum-of-the-parts ("SOTP") analysis, each division of a company will have its unique risk/return profile and need to be broken up to value the entire company more accurately as a whole. Thus, a different discount rate will value each segment, and there'll be distinct peer groups for the trading and transaction comps. Upon completing each division's valuation, the ending values would be summed up to arrive at the total value.

An example of when SOTP analysis (or break-up analysis) would be used is when the company being valued has many operating divisions in unrelated industries, each with differing risk-profiles (e.g., conglomerate).

How does valuing a private company differ from valuing a public company?

The main difference between valuing a private and public company is the availability of data. Private companies are not required to make their financial statements public. If you're provided private company financials, the process is similar to public companies, except that private company financial disclosures are often less complete, standardized, and reliable. In addition, private companies are less liquid and should thus be valued lower to reflect an illiquidity discount (usually ranges between ~10-30%).

What is an illiquidity discount?

The illiquidity discount used when valuing private companies is related to being unable to exit an investment quickly. Most investors will pay a premium for an otherwise similar asset if there's the optionality to sell their investment in the market at their discretion. Therefore, a discount should be applied when performing trading comps since shares in a public company include a premium for being sold in the public markets with ease (called the "liquidity premium").

Read More → [Estimating Illiquidity Discounts](#)

Intrinsic Valuation

Walk me through a DCF.

The most common approach to building a DCF is the unlevered DCF, which involves the following steps:

- 1. Forecast Unlevered Free Cash Flows ("FCFF" or "UFCF"):** First, unlevered free cash flows, which represent cash flows to the firm before the impact of leverage, should be forecast explicitly for a 5 to 10 year period.
- 2. Calculate Terminal Value ("TV"):** Next, the value of all unlevered FCFs beyond the initial forecast period needs to be calculated – this is called the terminal value. The two most common approaches for estimating this value are the growth in perpetuity approach and the exit multiple approach.
- 3. Discount Stage 1 & 2 CFs to Present Value ("PV"):** Since we are valuing the company at the current date, both the initial forecast period and terminal value need to be discounted to the present using the weighted average cost of capital ("WACC").
- 4. Move from Enterprise Value → Equity Value:** To get to equity value from enterprise value, we would need to subtract net debt and other non-equity claims. For the net debt calculation, we would add the value of non-operating assets such as cash or investments and subtract debt. Then, we would account for any other non-equity claims such as minority interest.
- 5. Price Per Share Calculation:** Then, to arrive at the DCF-derived value per share, divide the equity value by diluted shares outstanding as of the valuation date. For public companies, the equity value per share that our DCF just calculated can be compared to the current share price.
- 6. Sensitivity Analysis:** Given the DCF's sensitivity to the assumptions used, the last step is to create sensitivity tables to see how the assumptions used will impact the implied price per share.



**Watch Video →
Building a DCF**

Conceptually, what does the discount rate represent?

The discount rate represents the expected return on an investment based on its risk profile (meaning, the discount rate is a function of the riskiness of the cash flows). Put another way, the discount rate is the minimum return threshold of an investment based on comparable investments with similar risks. A higher discount rate makes a company's cash flows less valuable, as it implies the investment carries a greater amount of risk, and therefore should be expected to yield a higher return (and vice versa).

What is the difference between unlevered FCF (FCFF) and levered FCF (FCFE)?

- **Unlevered FCF:** FCFF represents cash flows a company generates from its core operations after accounting for all operating expenses and investments. To calculate FCFF, you start with EBIT, which is an unlevered measure of profit because it excludes interest and any other payments to lenders. You'll then tax effect EBIT, add back non-cash items, make working capital adjustments, and subtract capital expenditures to arrive at FCFF. Tax-affected EBIT is often referred to as Net Operating Profit After Taxes ("NOPAT") or Earnings Before Interest After Taxes ("EBIAT").



**Watch Video →
Calculating
Unlevered Free
Cash Flow**

$$\text{FCFF} = \text{EBIT} \times (1 - \text{Tax Rate}) + \text{D\&A} - \text{Changes in NWC} - \text{Capex}$$

- **Levered FCF:** FCFE represents cash flows that remain after payments to lenders since interest expense and debt paydown are deducted. These are the residual cash flows that belong to equity owners. Instead of tax-affected EBIT, you start with net income, add back non-cash items, adjust for changes in working capital, subtract capex, and add cash inflows/(outflows) from new borrowings, net of debt paydowns.

$$\text{FCFE} = \text{Cash from Operations} - \text{Capex} - \text{Debt Principal Payment}$$

What is the difference between the unlevered DCF and the levered DCF?

- **Unlevered DCF:** The unlevered DCF discounts the unlevered FCFs to arrive directly at enterprise value. When you have a present value, add any non-operating assets such as cash and subtract any financing-related liabilities such as debt to get to the equity value. The appropriate discount rate for the unlevered DCF is the weighted average cost of capital (WACC) because the rate should reflect the riskiness to both debt and equity capital providers since UFCFs are cash flows that belong to debt and equity providers.
- **Levered DCF:** The levered DCF approach, on the other hand, arrives at equity value directly. First, the levered FCFs are forecasted and discounted, which gets you to equity value directly. The appropriate discount rate on LFCFs is the cost of equity since these cash flows belong solely to equity owners and should thus reflect the risk of equity capital. If you wanted to get to enterprise value, you would add back net debt.



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Unlevered vs
Levered DCF

The levered and unlevered DCF method should theoretically lead to the same enterprise value and equity value, but in practice, it's very difficult to get them to be precisely equal.

What is the appropriate cost of capital when doing an unlevered DCF?

When doing an unlevered DCF, the weighted average cost of capital (WACC) is the correct cost of capital to use because it reflects the cost of capital to all providers of capital.

However, the cost of equity would be the right cost of capital to use for levered DCFs.

What is the formula to calculate the weighted average cost of capital (WACC)?

The weighted average cost of capital (WACC) can be viewed as the opportunity cost of an investment based on comparable investments with similar risk profiles.

WACC is calculated by multiplying the equity weight by the cost of equity and adding it to the debt weight multiplied by the tax-affected cost of debt.

For the equity and debt values, the market values must be used rather than the book values.



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The WACC Formula

$$\text{WACC} = \left(\frac{\text{Equity}}{\text{Debt} + \text{Equity}} \times R_{\text{equity}} \right) + \left[\frac{\text{Debt}}{\text{Debt} + \text{Equity}} \times R_{\text{debt}} (1 - t) \right]$$

- $E/(D + E)$ and $D/(D + E)$ are the equity and debt weights of the total capital structure
- R_{equity} = Cost of Equity
- R_{debt} = Cost of Debt, and must be tax-affected since interest is tax-deductible
- t = Tax Rate %

If a company carries no debt, what is its WACC?

If a company has no debt on its capital structure, its WACC will be equivalent to its cost of equity. Most mature companies will take on a moderate amount of leverage once their operating performance stabilizes because they can raise cheaper financing from lenders.

How is the cost of equity calculated?

The cost of equity is most commonly estimated using the capital asset pricing model ("CAPM"), which links the expected return on a security to its sensitivity to the overall market (most often S&P 500 is used as the proxy).

$$\text{Cost of Equity (Re)} = \text{Risk Free Rate} + \text{Beta} \times \text{Equity Risk Premium}$$

How do you determine the risk-free rate?

The risk-free rate ("Rf") should theoretically reflect the yield to maturity of default-free government bonds of equivalent maturity to the duration of each cash flow being discounted.

However, the lack of liquidity in the longest maturity bonds has made the current yield on 10-year US treasury notes the preferred proxy for the risk-free rate for US-based companies.



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Cost of Equity

What effect does a low-interest-rate environment have on DCF-derived valuations?

If the market's prevailing interest rates are at low levels, valuations based on DCFs will become higher since the discount rate will be lower from the decreased risk-free rate, all else being equal.

There has been much debate around normalized risk-free rates. Aswath Damodaran has argued against the usage of normalized rates and has written that "you should be using today's risk-free rates and risk premiums, rather than normalized values when valuing companies or making investment assessments."

Read More → *Musings on Markets: Dealing with Low Interest Rates*

Define the equity risk premium used in the CAPM formula.

The equity risk premium ("ERP") measures the incremental risk (or excess return) of investing in equities over risk-free securities. Historically, the ERP has ranged between 4% to 6% based on historical spreads between the S&P 500 returns over the yields on risk-free bonds.

$$\text{Equity Risk Premium (ERP)} = \text{Expected Market Return} - \text{Risk Free Rate}$$

Explain the concept of beta (β).

Beta measures the systematic (i.e., non-diversifiable) risk of a security compared to the broader market. Said another way, beta equals the covariance between expected returns on the asset and the market, divided by the variance of expected returns on the market.

A company with a beta of 1.0 would expect to see returns consistent with the overall stock market returns. If the market has gone up 10%, the company should see a return of 10%. A company with a beta of 2.0 would expect a return of 20% if the market had gone up 10%.



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Beta Concept

Beta/Market Sensitivity Relationship

- $\beta = 0 \rightarrow$ No Market Sensitivity
- $\beta < 1 \rightarrow$ Low Market Sensitivity
- $\beta > 1 \rightarrow$ High Market Sensitivity
- $\beta < 0 \rightarrow$ Negative Market Sensitivity

What is the difference between systematic risk and unsystematic risk?

- **Systematic Risk:** Otherwise known as undiversifiable risk (or market risk), this is the risk inherent within the entire equity market rather than specific to a particular company or industry. This type of risk is unavoidable and cannot be mitigated through diversification.
- **Unsystematic Risk:** In contrast, unsystematic risk is the company-specific (or industry) risk that can be reduced through portfolio diversification. The effects of diversification will be more profound when the portfolio contains investments in different asset classes, industries, and geographies.

Does a higher beta translate into a higher or lower valuation?

A company with a high beta suggests more risk and will exhibit higher volatility than the market (i.e., higher sensitivity to market fluctuations). Thus, a higher discount rate will be used by investors to value the company's cash flows, which directly leads to a lower valuation, all else being equal.

What type of sectors would have higher or lower betas?

A useful question to ask yourself when assessing beta is: "Would consumers require (or demand) this product or service during a recession?"

- **High Beta:** A beta of >1 would mean the industry is highly cyclical and be more volatile than the broad market. For example, the automobile, semiconductors, and construction industry have higher betas since most consumers only purchase cars and new homes during positive economic growth.
- **Low Beta:** A beta of <1 suggests the security is less volatile than the broad market. Consumer product stores that sell necessary, everyday goods such as toiletries and personal hygiene products would have a low beta. Other sectors with low betas are hospitals/healthcare facilities and utilities, which provide essential goods and services required by consumers regardless of the prevailing economic climate.

What are the benefits of the industry beta approach?

The industry β approach looks at the β of a comparable peer group to the company being valued and then applies this peer-group derived beta to the target. The benefits are that company-specific noise is eliminated, which refers to distorting events that could cause the correlation shown in its beta to be less accurate.

So the peer-group derived beta is "normalized" since it takes the average of the unlevered betas of comparable businesses and then relevers it at the target capital structure of the company being valued. The implied assumption is that the company's business risk will converge with its peer group over the long run.

This approach also enables one to arrive at an industry-derived beta for private companies that lack readily observable betas. To perform a DCF analysis for a private company, the industry beta approach would be required as privately-held companies don't have readily observable betas.



Watch Video →
Industry Beta

What are the flaws of regression betas?

1. **Backward Looking:** The standard procedure to estimate the beta is through a regression model that compares the historical market index returns and company returns, in which the slope of the regression corresponds to the beta of the stock. However, this past performance (and correlation) may not be an accurate indicator of the stock's future performance.
2. **Large Standard Error:** The regression model is sensitive to the assumptions used, such as the index chosen to be the proxy for the market return. There are also company-specific events that can cause deviations that are not indicative of a company's true correlation with the market.
3. **Constant Capital Structure:** The regression beta reflects the averaged past D/E ratios instead of the current leverage in the company's capital structure. The amount of leverage used by a company often directly relates to its maturity, so this can be argued to be a flawed assumption for forecasting purposes, especially when considering beta's relationship with debt.

What is the impact of leverage on the beta of a company?

If a company's capital structure has no leverage, its levered beta (or equity beta) would be equal to its unlevered beta (or asset beta), reflecting only business-specific risk. The removal of the risk from the debt component of levered beta results in unlevered beta. Therefore, the levered beta can either be equal to or greater than unlevered beta, but never lower. This is because levered beta is the combined risk encompassing both business-specific and financial risk.

In general, the more leverage used in a capital structure, the higher the beta given the increased volatility from debt.

The amount of leverage held by a company directly impacts beta as the financial risk increases from the greater risk of default and bankruptcy (i.e., less margin for error and more volatility if an economic downturn occurs).

What is the typical relationship between beta and the amount of leverage used?

Generally, mature companies with lower betas will have a higher percentage of debt in their capital structure because they can easily get cheap financing based on their long-lasting track record of cash flows and profitability, as well as being non-cyclical and carrying less risk than the broad market.

In comparison, a company with a high beta will be reluctant to use debt or if they do, the terms of the debt would be less favorable. From a financier's perspective: "Would the lender be comfortable loaning money to a company that has a higher beta and volatility throughout different economic cycles?"

What are the formulas used to unlever and relever beta?

By unlevering beta for the peer group, each comparable company's business risk is isolated, and the distorting effect of leverage is removed.

Calculating raw betas from historical returns and even projected betas is an imprecise measurement of future beta because of estimation errors (i.e., standard errors create a large potential range for beta). As a result, it's recommended to use an industry beta.

Since the betas of comparable companies are distorted because of different rates of leverage, we unlever the betas of these comparable companies:

$$\beta \text{ Unlevered} = \frac{\beta(\text{Levered})}{\left[1 + \left(\frac{\text{Debt}}{\text{Equity}}\right)(1 - t)\right]}$$

Then, once a median or average unlevered beta is calculated, this beta is relevered at the target company's capital structure:

$$\beta \text{ Levered} = \beta \text{ Unlevered} \times \left[\left(1 + (1 - t) \left(\frac{\text{Debt}}{\text{Equity}}\right)\right) \right]$$

Is it possible for an asset to have a negative beta?

Yes, the most commonly cited example is gold, which has an inverse relationship with the market. When the stock market goes up, the price of gold will often decrease.

However, when the stock market undergoes a correction or enters recession territory, investors flee towards gold as a safe-haven, and the increase in demand drives up gold prices.

How do you estimate the cost of debt?

The cost of debt is readily observable in the market as the yield on debt with equivalent risk.



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Cost of Debt**

If the company being valued doesn't have publicly traded debt, the cost of debt can be estimated using a so-called "synthetic rating" and default spread based upon its credit rating and interest coverage ratio.

Read More → *Ratings, Interest Coverage Ratios & Default Spread*

Which is typically higher, the cost of debt or the cost of equity?

The cost of equity is higher than the cost of debt because the cost associated with borrowing debt (interest expense) is tax-deductible, creating a "tax shield."

The cost of equity is typically higher because, unlike lenders, equity investors are not guaranteed fixed payments and are last in line at liquidation (i.e., bottom of the capital structure).

Since the cost of equity is higher than the cost of debt, why not finance using only debt?

The required return on the debt will increase with the debt level because a more highly levered business has a higher default risk. As a result, the "optimal" capital structure for most companies includes a mixture of debt and equity.

As the proportion of debt in the capital structure increases, WACC gradually decreases due to the tax-deductibility of interest expense (i.e., the "tax shield" benefits). WACC continues to decrease until the optimal capital structure is reached.

But once this threshold is surpassed, the cost of potential financial distress offsets the tax advantages of debt, and the WACC will reverse course and begin an upward trajectory as the risk to all debt and equity stakeholders increases.

Besides the risk of a company becoming overburdened with leverage, debt also comes with more constraints (i.e., covenants) that restrict activity and prevent them from exceeding certain leverage ratios or maintaining a coverage ratio above a certain threshold.

As more debt is incrementally added to the capital structure, the risk to all company stakeholders increase.

What is the difference between WACC and IRR?

- **Internal Rate of Return:** The IRR is the rate of return on a project's expenditures. Given a beginning value and ending value, the IRR is the implied interest rate at which the initial capital investment would have to grow to reach the ending value. Alternatively, it's defined as the discount rate on a stream of cash flows leading to a net present value (NPV) of 0.
- **Weighted Average Cost of Capital:** The WACC (or cost of capital) is the average minimum required internal rate of return for both debt and equity providers of capital. Thus, an IRR that exceeds the WACC is an often-used criterion for deciding whether a project should be pursued.

Which would have more of an impact on a DCF, the discount rate or sales growth rate?

The discount rate and the sales growth rate will be sensitized in a proper DCF model, but the discount rate's impact would far exceed that of operational assumptions such as the sales growth rate.

How is the terminal value calculated?

There are two common approaches to calculate the terminal value ("TV"):

1. **Growth in Perpetuity Approach:** Often called the Gordon Growth method, the growth in perpetuity approach calculates the terminal value by assuming a perpetual growth rate on cash flows after the explicit forecast period and then inserting this assumption into the static perpetuity formula.

$$\text{Terminal Value (TV)} = \frac{\text{FCF}_{t+1}}{(r - g)}$$



**Watch Video →
Terminal Value**

- 2. Exit Multiple Approach:** The exit multiple approach calculates the terminal value by applying a multiple assumption on a financial metric (usually EBITDA) in the terminal year. The multiple reflects the multiple of a comparable company in a mature state.

Why is it necessary to discount the terminal value back to the present?

Under both approaches, the terminal value represents the present value of the company's cash flows in the final year of the 1st stage of the explicit forecast period right before entering the perpetuity stage. The TV calculated is the present value of a growing perpetuity at the very end of the stage 1 projection of cash flows. Thus, this future value must be discounted back to its present value (PV) since the DCF is based on what a company is worth today, the current date of the valuation.

For the perpetuity approach, how do you determine the long-term growth rate?

The long-term growth rate is the rate that the company will grow into perpetuity. That being said, it should range somewhere between 1% to 3% (sometimes up to 5%). Often, GDP or the risk-free rate are proxies for g . This growth rate must reflect the steady-state period when growth has slowed down to a sustainable rate.

A hypothetical question to ask would be: "Can this company grow at $X\%$ for the next hundred years?" If not, then the perpetuity growth rate should be adjusted downward to be more realistic.

How can the terminal value be sanity-checked if the exit multiple approach was used?

If the exit multiples approach was used to calculate the terminal value, it's important to cross-check the amount by backing out into an implied growth rate to confirm it's reasonable.

$$\text{Implied } g = \frac{(\text{Terminal Value} \times r - \text{FCF}_{\text{Final Year}})}{(\text{Terminal Value} + \text{FCF}_{\text{Final Year}})}$$

Likewise, the implied exit multiple can be calculated from the perpetuity growth rate.

$$\text{Implied TV Exit Multiple} = \frac{\text{Terminal Value}_{\text{Perpetuity Method}}}{\text{EBITDA}_{\text{Final Year}}}$$

What is the argument against using the exit multiple approach in a DCF?

In theory, a DCF is an intrinsic, cash-flow based valuation method independent of the market. By using the exit multiple approach, relative valuation is being brought into the valuation. However, the exit multiple approach is widely used in practice due to being easier to discuss and defend in terms of justifying the assumptions used.

What is the purpose of using a mid-year convention in a DCF model?

By using the mid-year convention, we are treating the projected cash flows as if they're generated at the midpoint of the given period. Without this mid-year adjustment, the DCF implicitly assumes that all cash flows are being received at the end of the year. This would be inaccurate since cash flows are generated steadily throughout the year, depending on the industry.

The compromise is to use a mid-year convention that assumes the CFs are received in the middle of the year. Since the projected cash flows are received earlier, the implied valuation of the company would increase because of the earlier received cash flows. For example, if the cash flow you're discounting is Year 5 and the discount factor is 5, the mid-year convention would use a discount factor of 4.5 since we are assuming half a year has passed before the cash flow is generated.

Could you give me an example of when the mid-year convention might be inappropriate?

While the mid-year convention in a DCF is standard practice, it may be inaccurate for highly seasonal companies. Many retail companies experience strong seasonal patterns in demand, and sales are disproportionately received in the 3rd and 4th quarters.

This is particularly the case for retailers that have a niche in winter clothing. For example, the mid-year convention may be an inappropriate adjustment for Canada Goose, a Canadian company that focuses primarily on winter clothing. The unadjusted, period-end assumption may be more appropriate in this scenario.

How would raising additional debt impact a DCF analysis?

The enterprise value based on an unlevered DCF should theoretically remain relatively unchanged since the DCF is capital structure neutral. But if the debt raised changed the capital structure weights substantially, the implied valuation could change. As the percentage of debt in the capital structure increases, the cost of debt increases from the higher default risk (which lowers the implied valuation).

Imagine that two companies have the same total leverage ratio with identical free cash flows and profit margins. Do both companies have the same amount of default risk?

If one company has significantly more cash on its balance sheet, it'll most likely be better positioned from a risk perspective. When assessing leverage risk, a company's excess cash should be considered since this cash could help paydown debt. Hence, many consider cash to be "negative debt" (i.e., the implied assumption of net debt).

Therefore, one of the main leverage ratios looked at in addition to Total Debt/EBITDA is Net Debt/EBITDA. All else being equal, the company with a higher excess cash balance and lower Net Debt/EBITDA would be at lower risk of bankruptcy (and lower cost of debt).

When would a DCF be an inappropriate valuation method?

Practically, when you don't have access to financial statements, a credible DCF analysis valuation is difficult, and a comps analysis might be more realistic. So if you have a data point such as revenue or EBIT, a comps analysis is easier to implement.

In addition, DCFs may be unfeasible when the company is not expected to generate positive cash flows for the foreseeable future. Here, much of the company's value is weighted towards the distant future, and the DCF becomes less credible.



**Watch Video →
DCF Strengths and
Weaknesses**

Why is a DCF not used to value early stage startups?

Although the DCF approach is based upon a company's future cash flows, this method can still be used on early-stage startups that are cash flow negative. The caveat being, there must be a path towards turning cash flow positive in the distant future.

DCF's become less reliable for early-stage startups that may not reach a sustainable, stable growth rate for 15+ years as it becomes very difficult to accurately predict the FCFs beyond this period. A DCF valuation is most credible when looking at mature companies with an established market position, as opposed to pre-revenue companies that have not yet determined their business model, go-to-market strategy, or target end-user.

If 80% of a DCF valuation comes from the terminal value, what should be done?

The explicit forecast period may not be long enough (should range from 5 to 10 years). In the final year in the explicit stage, the company should have reached normalized, stable growth.

Alternatively, the terminal value assumptions may be too aggressive and not reflect stable growth.

How would you handle stock options when calculating a company's share count?

The standard convention for stock options is to include in the dilutive share count any vested (exercisable) options whose strike price is below the current share price ("in-the-money"). In addition, any option proceeds the company received from the exercising of those options are assumed to be used by the company to repurchase shares at the current share price (the treasury stock method).

But certain finance professionals use all outstanding in-the-money options (as opposed to just the vested in-the-money options) to perform the analysis. The logic being that any options that are still unvested will vest soon, and since they're in-the-money, it's more conservative to include them in the share count.

How would you handle restricted stock in the share count?

Some finance professionals completely ignore restricted stock from the diluted share count because they're unvested. However, increasingly, unvested restricted stock is included in the diluted share count under the logic that eventually they'll vest, and it's thus more conservative to count them.

How would you handle convertible preferred stock in the share count?

Convertible preferred stock is assumed to be converted into common stock to calculate diluted shares if the liquidation value (i.e., the preferred stock's conversion price) is lower than the current share price.

For example, imagine a company whose current share price is \$60 issued raised \$500 million several years ago by issuing 10 million preferred shares, each granting the holder the right to collect either \$50 per preferred share (its liquidation value) or to convert it to one share of common stock. Since the current share price is greater than the liquidation value, we would assume that the preferred stock is converted for calculating the diluted share count.

When conversion into common stock is assumed to calculate the share count in a valuation, the preferred stock should be eliminated when calculating net debt to be consistent and avoid double counting.

How would you handle convertible bonds in the share count?

Convertible bonds are assumed to be converted into common stock if the conversion price of the bond is lower than the current share price.

For example, imagine a company whose current share price is \$60 issued raised \$500 million several years ago by issuing a bond convertible into 10 million shares of common stock. Since the current share price is greater than the conversion price, we assume the bond is converted to calculate diluted shares.

If conversion into common stock is assumed to calculate the share count, the convertible bonds should be eliminated from the balance sheet when calculating net debt to be consistent (and avoid double-counting).

How should operating leases be treated in a DCF valuation?

They should be capitalized because leases usually burden the tenant with obligations and penalties that are far more similar to debt obligations than to a simple expense (i.e., tenants should present the lease obligation as a liability on their balance sheet as they do for long-term debt). In fact, the option to account for leases as an operating lease was eliminated starting in 2019 for that reason.

Therefore, when operating leases are significant for a business (retailers and capital-intensive businesses), the rent expense should be ignored from the free cash flow build-up, and instead, the present value of the lease obligation should be reflected as part of net debt.

For forecasting purposes, do you use the effective or marginal tax rate?

The choice between whether to use the effective or marginal tax rate boils down to one specific assumption found in valuation methods such as the DCF: the tax rate assumption used will be the tax rate paid into

perpetuity. In most cases, the effective tax rate will be lower than the marginal tax rate, mainly because many companies will defer paying the government.

Hence, line items such as deferred tax assets (DTAs) and deferred tax liabilities (DTLs) are created. If you use the effective tax rate, you implicitly assume this deferral of taxes to be a recurring line item forever. But this would be inaccurate since DTAs and DTLs unwind, and the balance eventually becomes zero.

The recommended approach is to look at the historical periods (i.e., past 3-5 years) and base your near-term tax rate assumptions on the effective tax rate. But by the time the 2nd stage of the DCF is approaching, the tax rate should be “normalized” and be within close range of the marginal tax rate.

How does a lower tax rate impact the valuation from a DCF?

1. **Greater Free Cash Flows:** A lower tax rate would result in more net income as fewer taxes have to be paid to the government, meaning more earnings retention and higher cash flow.
2. **Higher Cost of Debt:** A lower tax rate results in a higher after-tax cost of debt and a higher re-levered beta, all else being equal. If the tax rate is reduced, that would mean the after-tax cost of debt would rise, and the benefit from the tax-deductibility of interest ("tax shield") would be reduced.
3. **Higher Beta:** A lower tax rate would result in a higher levered beta, which would cause the cost of equity and WACC to increase.

While the last two implications suggest a lower valuation, the net impact on the company's valuation would be specific to the company's fundamentals, and one would have to flow through all the changes in a DCF model to see if the increased FCF offsets the increased WACC.

How does a dividend discount model (DDM) differ from a discounted cash flow model (DCF)?

The dividend discount model ("DDM") stipulates that the value of a company is a function of the present value of all its future dividends paid out, whereas the discounted cash flow 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 calculates the equity value and then equity value per share (similar to levered DCFs, but different from unlevered DCFs).

What are the major drawbacks of the dividend discount model (DDM)?

Forward-looking valuation methods each have their shortcomings, and the DDM is no exception, given its sensitivity to assumptions such as the dividend payout ratio, dividend growth rate, and required rate of return.

But some additional drawbacks that help explain why DDM is used less often include:

- The DDM cannot be used on high-growth companies as the denominator would turn negative since the growth rate would exceed the expected return rate.
- The DDM is more suitable for large, mature companies with a consistent track record of paying out dividends, but even then, it can be very challenging to forecast out the growth rate of dividends paid.
- Most companies don't pay out any dividends, especially as share buybacks have become common.
- The DDM neglects buybacks, an increasingly important source of returns for shareholders.
- If the dividend payout amounts reflected true financial performance, then the output would be similar to the traditional DCF. However, poorly run companies can still issue large dividends, distorting valuations.

Relative Valuation

What is the purpose of using multiples in valuation?

A valuation multiple is a financial ratio that reflects how valuable a particular company is in relation to a specific metric. The numerator will be a measure of value such as equity value or enterprise value, whereas the denominator will be a financial or operating metric.

Since absolute values cannot be compared, multiples are used to standardize a company's value on a per-unit basis. This enables comparisons in value amongst similar companies, which is the premise of relative valuation. For any valuation multiple to be meaningful, a contextual understanding of the target company, such as its fundamental drivers and general industry knowledge, is required.



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Valuation Multiples

How do you determine what the appropriate numerator is for a multiple?

For multiples, the represented stakeholders in the numerator and denominator must match.

- If the numerator is enterprise value, metrics such as EBIT, EBITDA, unlevered free cash flow (FCFF), and revenue multiples can be used since these are all unlevered (i.e., pre-debt) measures of profitability.
- In contrast, if the numerator is equity value, metrics such as net income, levered free cash flow (FCFE), and earning per share (EPS) would be used because these are all levered (i.e., post-debt) measures.

Walk me through the process of “spreading comps.”

Before you can answer the question, you must ask for clarification on whether the interviewer is asking about trading or transaction comps. The processes for both, however, have many overlapping aspects.

- 1. Determine Comparable Peer Group:** The first step to perform comps is to select the peer group. For trading comps, the peer group will be composed of publicly traded comparable companies that are competitors in the same industry or operate within a nearby industry. For transaction comps, the peer group would include companies recently involved in M&A deals within the same or a similar industry.
- 2. Collect Relevant Information:** The next step involves finding publicly available information that may be helpful to understand the trends and factors affecting how companies in a particular industry are being (or were) valued. Most of the insights gathered in this step will be more on the qualitative side and related to industry research, understanding ongoing developments, and company-specific details.
- 3. Input Financials:** With the industry research completed, you'll then pull the financial data of each comparable company and then “scrub” the financials for non-recurring items, accounting differences, financial leverage differences, and business life cycles (cyclicality, seasonality) to ensure consistency and allow for a fair comparison among the companies. If relevant, you'll also calendarize each peer group company's financials to standardize the metrics to ensure comparability.
- 4. Multiples Calculation:** Then, the peer group's valuation multiples will be calculated and benchmarked in the output sheet. At a minimum, the multiples are shown on a last twelve months (LTM) and the next fiscal year (NTM) basis, and as a general convention, the minimum, maximum, 25th percentile, 75th percentile, mean and median will be listed. Using the research collected in previous steps, you'll then attempt to understand the factors causing the differences and remove any outliers if deemed appropriate.
- 5. Apply Multiple to Target:** In the last step, the target company being valued will have the median (or mean) multiple applied to the corresponding metric to arrive at its approximate comps-derived value. Understanding the fundamental drivers used to value companies within a particular industry makes comps-derived valuations defensible – otherwise, justifying whether the target should be valued on the higher or lower end of the valuation range will be difficult.

When putting together a peer group for comps, what would some key considerations be?

- **Operational Profile:** These characteristics entail the nature of the business, such as its industry, business model, products/services sold, and end markets served. In addition, the company's position within the market (market leader or market challenger), stage in the life cycle, and seasonality/cyclicality should all be considered. The importance of selecting the right peer group for a comps-derived valuation cannot be overstated, and this begins with understanding the target's operational characteristics.
- **Financial Profile:** If the company might be a suitable inclusion to the peer group based on its operational characteristics, its financial profile would then be considered. Some metrics to gather would be the company's key cash flow metrics, size in terms of valuation, profitability margins, credit ratios, historical/estimated growth rates, and return metrics.

Operational Profile	Financial Profile
Industry/Sector	Size (Enterprise Value, Equity Value)
Product and Service Offerings	Margin Profile (Gross Margin, Operating Margin, EBITDA Margin)
End Markets and Customers Type	Historical and Forecasted Growth Rates (Revenue, EBITDA, EPS)
Distribution Channels	Credit Profile (Leverage Ratios, Coverage Ratios)
Cyclicality or Seasonality	Return Metrics (ROIC, ROA, ROE)

Should the target company being valued be included in its peer group?

Many professionals exclude the target company being valued from the peer group because the target's inclusion would skew the multiple towards the target's current valuation. However, if the intuition behind a comps analysis is that the market may misprice individual stocks but is correct on the whole, then logic dictates that the target should be included in its market-based valuation.

What are the primary advantages of the trading comps approach?

- **Public Filings:** Trading comps involves public companies, making data collection far more convenient since all their reports and filings are easily accessible online.
- **Less Data Required:** Implementation is a key advantage of trading comps, as proper DCFs cannot be built without detailed financials and supplementary data. But to get a decent trading comps-based valuation, only a few data points (e.g., EBITDA, revenue, net income) are required, making it easier to value companies when access to data sets is limited.
- **Current Valuations:** Trading comps reflect up-to-date, current valuations based on investor sentiment as of the present day, since it's based on the latest prices paid in the public markets.

What are the main disadvantages of performing trading comps?

- Putting together a peer group of "pure-play" companies by itself can be a challenging task, especially if the target is differentiated and has few (or no) direct competitors.
- Even with a well-thought-out, similar peer group, explaining the differences in valuation can be difficult as the comparison is always "apples to oranges."
- Understanding valuation gaps between a company and its comparables involves judgment, which can be very challenging – plus, the market is often emotional and fluctuates irrationally, bringing in more external factors to consider.



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**Trading Comps
Strengths and
Weaknesses**

- Low trade volume and less followed equities may not reflect their true fundamental value, making them less useful for trading comps.

To perform transaction comps, how would you compile the data?

When collecting the data to perform transaction comps, you would use deal announcement press releases, proxy filings, and the merger agreement to learn about the deal terms. You would also use the target company's filings (annual and quarterly reports) for historical financial data, research reports, and financial data vendors such as Bloomberg, Capital IQ, or FactSet for historical share price data and estimated earnings forecasts.

What do transaction comps tell you that trading comps cannot?

Transaction comps can provide insights into control premiums that buyers and sellers should expect when negotiating a transaction.

In addition, transaction comps can validate potential buyers' existence in the private markets and if a particular investment strategy has been successfully implemented before.

Let's say a certain company is valued at a specific price based on a DCF analysis and confirmed to be within range by trading comps. However, if there are no buyers in the market, the seller is unlikely to exit at its expected valuation.



**Watch Video →
Transaction Comps**

In M&A, why is a control premium paid?

A control premium refers to the amount an acquirer paid over the market trading value of the shares being acquired (usually shown as a percentage). As a practical matter, a control premium is necessary to incentivize existing shareholders to sell their shares. It's improbable that an acquirer could get a controlling interest in a target company without first offering a reasonable purpose premium over the current price.

From the perspective of the shareholders of the acquisition target: "What would compel existing shareholders to give up their ownership if doing so is not profitable?"

Besides incentivizing existing shareholders to sell, what other factors lead to higher control premiums being paid?

- **Competitive Deals:** In M&A, nearly all acquirers pay a control premium due to the competitive elements of sale processes. As a general rule, the control premium paid will be higher the more buyers are involved, as competition directly drives up the price.
- **Synergies:** If there are potential synergies that can be realized by the acquirer and the management team has high conviction in its occurrence, then the acquirer might be justified in paying a higher premium.
- **Asset Scarcity:** Many acquirers (strategics in the majority of cases) might pay a higher premium if the specific asset is a centerpiece to their future plans and there are no other acquisition targets in the market that meet their criteria. Oftentimes, this acquisition could lead to a meaningful competitive advantage for the acquirer over the rest of the market, making the completion of this acquisition a necessity.
- **Undervalued Target:** The target company might be perceived to be significantly undervalued from the buyer's viewpoint. From their perspective, the purchase price could be a moderate premium when compared to their own fair value assessment of the target, whereas to others the buyer paid an unreasonably high premium.
- **Mismanagement:** A mismanaged company coincides with the previous point, as this typically leads to underperformance. The acquirer will most likely be under the impression that the management should be replaced, and through operational improvements, a significant amount of value that is currently not being fully taken advantage of could be derived. Thus, a target acquired for this reason will be immediately restructured, beginning with the management team being replaced post-closing.

Why is transaction comps analysis often more challenging than trading comps?

Performing comparable acquisition analysis can be challenging when there has been limited (or no) M&A activity within the relevant space, or the comparable transactions were completed a long time ago in a completely different economic environment. Data from those prices paid might not reflect current market trends and investor sentiment.

The transaction dates place a significant constraint on the pool of comparable transactions. Generally, only relatively recent transactions (within the last five years) offer insight into industry valuations.

The transaction context must also be looked at, such as the form of consideration, the type of buyer (financial or strategic), and the deal's circumstances, which can significantly influence the final purchase price. However, this information about the deal can be challenging to compile, especially when they involve private companies, as they're not required to disclose all this deal-related information. Most times, even the purchase price paid for a company may not even be announced – thus, the data found is “spotty” and less straight-forward than trading comps.



Watch Video →
Transaction Comps
Strengths and
Weaknesses

When putting together a peer group for transaction comps, what questions would you ask?

- What was the transaction rationale from both the buyer and seller's perspective?
- Was the acquirer a strategic or a financial buyer?
- How competitive was the sale process?
- Was the transaction an auction process or negotiated sale?
- What were the economic conditions at the time of the deal?
- Was the transaction hostile or friendly?
- What was the purchase consideration?
- If the industry is cyclical (or seasonal), did the transaction close at a high or low point in the cycle?

When valuing a company using multiples, what are the trade-offs of using LTM vs. forward multiples?

Using historical (LTM) profits have the advantage of being actual results. This is important because EBITDA, EBIT, and EPS forecasts are subjective and especially problematic for smaller public firms, whose guidance is less reliable and harder to obtain.

That said, LTM suffers from the problem that historical results are often distorted by non-recurring expenses and income, misrepresenting the company's recurring operating performance. When using LTM results, non-recurring items must be excluded to get a “clean” multiple. In addition, companies are often acquired based on their future potential, making forward multiples more relevant.

Therefore, both LTM and forward multiples are often presented side-by-side, rather than picking one.

Read More → [The Role of Multiples in Valuation](#)

Why might two companies with identical growth and cost of capital trade at different P/E multiples?

Growth and cost of capital are not the only drivers of value. Another critical component is the return on invested capital (ROIC). Besides having different ROICs, the two companies could very well just be in different industries or geographies.

Other reasons may include relative mispricing or inconsistent EPS calculations, often caused by non-recurring items or different accounting policies.

Should two identical companies with different leverage ratios trade at different EV/EBITDA multiples?

You would expect the EV/EBITDA multiples to be similar because enterprise value and EBITDA measure a company's value and profits independent of its capital structure. Technically, they won't be exactly equal because enterprise value depends on the cost of capital, so there'll be some variation.

Should two identical companies with different leverage ratios trade at different P/E multiples?

P/E multiples can vary significantly due to leverage differences for otherwise identical companies. All else being equal, as a company borrows debt, the EPS (denominator) will decline due to higher interest expense.

The impact on the share price, on the other hand, is hard to predict and depends on how the debt is used:

- If the debt proceeds go unused and generate no return, the share price will decline to reflect the incremental cost of debt with no commensurate growth or investment. In this scenario, the share price and P/E ratio can be expected to decline.
- But if that debt were used to invest and grow the business, the P/E ratio should increase.

Simply put, debt adds more risk to equity investors (given their junior position in the capital structure) with little potential return, and investors will value the company at a lower P/E.

Which multiples are the most popular in valuation?

Enterprise Value/EBITDA multiples are the most common, followed by EV/EBIT and P/E. There are several others that are more industry and company-specific. For example, P/B ratios are used to value financial institutions, EV/Revenue multiples are used to value unprofitable companies, and (EV – Capex)/EBITDA multiples can be used for capital-intensive industries such as manufacturing or cable companies.

What are some common enterprise and equity value multiples?

- **Enterprise Value Multiples:** EV/Revenue, EV/EBIT, EV/EBITDA
- **Equity Value Multiples:** Price/Earnings (P/E), Price/Book (P/B), Price/Levered Cash Flows

Read More → [What Does an EV/EBITDA Multiple Mean?](#)

Why would it be incorrect to use enterprise value and net income in a multiple?

There would be a mismatch between the represented investor groups in the numerator and denominator. Enterprise value represents the value of the operations to all stakeholders in a company, meaning the cash flows belonging to both lenders and equity providers of capital. Net income, however, represents the residual value that flows just to equity shareholders.

Why might one company trade at a higher multiple than another?

One company may be valued at a higher multiple than another because of superior fundamentals such as better growth prospects, higher return on invested capital, lower cost of capital (WACC), and more robust cash flow generation. Investors are forward-looking. Therefore, companies with better growth trajectories and signs of being well managed with efficient capital allocation are rewarded with higher valuations.

Intuitively, what does the P/E ratio mean?

The price-to-earnings ratio (P/E) is one of the most widely used metrics by investors to determine a company's relative value against the industry average and its peers. This can then help determine whether the company is undervalued, fairly valued, or overvalued. The P/E ratio answers: "How much is the market willing to pay for a dollar of this company's earnings?"

$$\text{PE Ratio} = \frac{\text{Current Share Price}}{\text{EPS}}$$

$$\text{PE Ratio} = \frac{\text{Market Capitalization}}{\text{Net Income}}$$

A company is currently trading at 12.5x EBITDA, is it overvalued?

The answer depends on the company's industry being valued and how its valuation fares compared to the rest of its peer group. For instance, a software company trading at 12.5x would be near the sector median, whereas a double-digit multiple in an industry such as Oil & Gas is rare.

We recommend researching various industries and identifying those that consistently receive higher valuations on average (e.g., software, healthcare) and which ones don't – and then figure out the reason. The differences can often be related to cyclical trends that are impacting an industry. For example, sub-industries related to cloud computing, cybersecurity, remote healthcare, gaming, and video streaming services have seen significant valuation increases since the beginning of the pandemic.

Read More → [Enterprise Value Multiples by Sector](#)

What does a high P/E ratio relative to a peer group imply?

If a company has a high P/E ratio in relation to its peer group, this might mean the market is overvaluing the company. Alternatively, it could mean the company has less earnings than its peer group (or is a younger company). For this reason, the use of P/E multiples is most useful when the company is mature and its peer group has a similar capital structure.

A high P/E ratio is almost always a positive sign that the market expects the company's earnings to grow in the future and is optimistic about its growth prospects, as well as its current capex (which is causing the lower earnings) will pay off over time and eventually lead to greater profits.

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?

The company's P/E ratio would be higher. The company's four year-back P/E ratio was 5.0x and its current P/E ratio is 10.0x. Therefore, its P/E doubled after its EPS declined by \$1.00.

One potential interpretation is that the company is now overvalued and shouldn't be trading at a 10.0x multiple given the deteriorated EPS. Realistically, the market would view a decrease in EPS negatively, resulting in a lower share price and valuation.

But since the share price didn't change, there are a few possible explanations:

1. The company could have issued more shares to raise capital that had a dilutive impact on EPS.
2. The company might have made a dilutive acquisition with stock as the main purchase consideration.

In both cases, the cause of the lower EPS is the increase in the denominator. The share price remaining constant suggests the market reaction to how the company plans to use the newly raised capital or the M&A deal was positive, otherwise, the share price would've dropped. Similar to how EPS can be artificially boosted from share buybacks, it can decrease without there being an actual drop in performance. The issuance of additional shares typically results in the per-share value decreasing from the dilution, but the \$10 share price is the post-dilution share price (meaning, the price was upheld despite the dilution).

When would the use of the PEG ratio be appropriate?

The PEG ratio is used to standardize the P/E ratio and enable comparisons among companies with different expected long-term growth rates (g). As a broad rule of thumb, a stock is fairly valued when the PEG ratio is 1, undervalued when the PEG ratio is below 1, and overvalued when above 1.

$$\text{PEG Ratio} = \frac{\left(\frac{P}{E}\right)}{g}$$

There are two approaches for the growth rate used:

1. **Trailing PEG:** In the first option, the growth rate can be based on a company's historical growth. For example, the LTM growth rate could be used, or the annualized growth rate over the past 3-5 years.
2. **Forward PEG:** The other, more commonly used option calculates the growth rate from a 1-3 year projection based on consensus estimates or an annualized version of those growth rates.

When would you value a business using the P/B ratio?

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.

When should you value a company using a revenue multiple vs. EBITDA?

Companies with negative profits and EBITDA will have meaningless EBITDA multiples. As a result, multiples based on revenue are the only available option to gain some level of insight.

How would you value a pre-revenue early stage internet company?

An internet company with no revenue or negative profitability could be valued using user engagement metrics such as the subscriber count, monthly active users, daily active users, and website hits. For example, pre-revenue internet startups are often valued using multiples such as EV/DAU or EV/MAU.

Why is calendarization a required step when performing comps analysis?

Calendarization involves aligning the fiscal year ending dates of a group of comparable companies to allow for a more accurate comparison. The general convention is to adjust the financials so that all the fiscal years end in December. The reason calendarization is necessary is that cyclical and seasonality can skew results and create discrepancies when making comparisons.

If the market matters most when valuing public companies, do we even need a comps analysis?

Why not just use the market cap directly to value the company?

If the market were perfectly efficient, it would price individual equities correctly, rendering a comps analysis pointless. However, the reasoning for still using a comps analysis for public company valuations is that the market may be efficient on average, but it can be off when pricing individual companies. Most investors will agree that the market is relatively efficient. However, investors can be overly emotional and overreact, creating investment opportunities.

When applying a peer group derived EV/EBITDA multiple onto your target company, what is an argument for using the group's median multiple instead of the mean?

The simple reason is: Medians remove the distortive impact of outliers on the peer group multiple. When using larger peer groups, the median is preferable over the mean because it limits distortions from outliers, which increases as more companies are included. The mean might be preferable for smaller peer groups with fewer than five comparable companies and no outliers.

Mergers & Acquisitions Questions

M&A Concepts

Can you define M&A and explain the difference between a merger and an acquisition?

Mergers and acquisitions (M&A) is an umbrella term that refers to the combination of two businesses. To buyers, M&A serves as an alternative to organic growth, whereas for sellers, M&A provides an opportunity to cash out or share in the newly formed entity's risk/reward.

The two terms are often used interchangeably but have some minor differences:

- **Merger:** A merger suggests the combination of two similarly sized companies (i.e., "merger of equals"), where the form of consideration is at least partially with stock, so shareholders from both entities remain. In most cases, the two companies will operate under a combined name (e.g., ExxonMobil, Kraft Heinz, Citigroup), whereas sometimes the new combined entity will be renamed.
- **Acquisition:** An acquisition typically implies the target was of smaller-size than the purchaser. The target's name will usually slowly dissipate over time as the target becomes integrated with the acquirer. In other cases (e.g., Salesforce's acquisition of Slack, Google's acquisition of Fitbit), the target will operate as a subsidiary to take advantage of its established branding.

What are some potential reasons that a company might acquire another company?

- Value Creation from Revenue and Cost Synergies
- Ownership of Technology Assets (IP, Patents, Proprietary Technology)
- Talent Acquisitions (New Skilled Employees)
- Expansion in Geographic Reach or into New Product/Service Markets
- Diversification in Revenue Sources (Less Risk, Lower Cost of Capital)
- Reduce Time to Market with New Product Launches
- Increased Number of Channels to Sell Products/Services
- Market Leadership and Decreased Competition (if Horizontal Integration)
- Achieve Supply Chain Efficiencies (if Vertical Integration)
- Tax Benefits (if Target has NOLs)

What are the differences among vertical, horizontal, and conglomerate mergers?

- **Vertical Merger:** A vertical merger involves two or more companies that serve different value chain functions. From the increased control over the supply chain, the combined entity should theoretically eliminate inefficiencies.
- **Horizontal Merger:** A horizontal merger comprises a merger amongst companies directly competing in the same (or very similar) market. Thus, following a horizontal merger, competition in the market decreases (e.g., Sprint & T-Mobile merger). Notable benefits that stem from a horizontal merger are the increased geographical coverage to sell products/services and an increase in pricing power.
- **Conglomerate:** A conglomerate refers to the combination of multiple business entities operating in unrelated industries for diversification purposes – an example would be Berkshire Hathaway.

In terms of vertical integration, what is the difference between forward and backward integration?

- **Backward Integration:** When an acquirer moves upstream, it means they're purchasing suppliers or manufacturers of the product the company sells – this is known as backward integration.
- **Forward Integration:** When an acquirer moves downstream, it means they're purchasing a company that moves them closer to the end customer such as a distributor or technical support – this is known as forward integration.

Describe a recent M&A deal.

For M&A interviews, come prepared to discuss at least one recent transaction in-detail. To understand the rationale behind an M&A deal and the market's perception of the proposed (or closed) transaction, review press releases and articles with commentary on the deal from reliable sources. Also, look at the current competitive dynamics within the industries relevant to the deal and the ongoing trends that could further explain why the transaction was completed.

The specific details regarding the deal which should be included in your response include:

- Name of Acquirer and Target Company (along with a business profiles of each)
- Merger or Acquisition Strategic Rationale (can be found in the Form S-4 or publicly announced)
- Approximate Transaction Size, Premium Offered, and Form of Consideration (if publicly disclosed)
- Acquirer and Target's Share Price Movement Post-Announcement
- Personal Perspective on the Transaction – "In your opinion, was this a good deal?"

For an example of how to review an M&A transaction, see our analysis on the acquisition of LinkedIn.

Read More → [Ultimate Guide to M&A + Breakdown of Microsoft's Acquisition of LinkedIn](#)

What are synergies and why are they important in a deal?

Synergies are the expected cost savings or incremental revenues arising from an acquisition. They're important because if an acquirer believes synergies can be realized, a higher premium would be paid.

1. **Revenue Synergies:** Cross-selling, upselling, product bundling, new distribution channels, geographic expansion, access to new end markets, reduced competition leads to more pricing power
2. **Cost Synergies:** Eliminate overlapping workforces (reduce headcount), closure or consolidation of redundant facilities, streamlined processes, purchasing power over suppliers, tax savings (NOLs)

Why should companies acquired by strategic acquirers expect to fetch higher premiums than those selling to private equity buyers?

Strategic buyers can often benefit from synergies, which enables them to offer a higher price. However, the recent trend of financial buyers making add-on acquisitions has enabled them to fare better in auctions and place higher bids since the platform company can benefit from synergies similar to a strategic buyer.

How do you perform premiums paid analysis in M&A?

Premiums paid analysis is a type of analysis prepared by investment bankers when advising a public target, in which the average premium paid in comparable transactions serves as a reference point for an active deal. The presumption being the average of the historical premiums paid in those comparables deals should be a proxy (or sanity check) for the premium to be received in the current deal.

Read More → [Premiums Paid Analysis in M&A](#)

Tell me about the two main types of auction structures in M&A.

1. **Broad Auction:** In a broad auction, the sell-side bank will reach out to as many prospective buyers as possible to maximize the number of interested buyers. Since competition directly correlates with the valuation, the goal is to cast a wide net to intensify an auction's competitiveness and increase the likelihood of finding the highest possible offer (i.e., removing the risk of "leaving money on the table")
2. **Targeted Auction:** In a targeted auction, the sell-side bank (usually under the client's direction) will have a shortlist of buyers contacted. These contacted buyers may already have a strong strategic fit with the client or a pre-existing relationship with the seller.

Read More → [Sell-Side Process](#)

What is a negotiated sale?

A negotiated sale involves only a handful of potential buyers and is most appropriate when there's a specific buyer the seller has in mind. A potential reason for this type of sale approach could be the seller intends to stay on and strongly values the partnership and growth opportunities.

Under this approach, the speed of close and confidentiality are two distinct benefits. These deals are negotiated "behind-closed-doors" and generally on friendlier terms based on the best interests of the client.

What are some of the most common reasons that M&A deals fail to create value?

- **Overpaying/Overestimating Synergies:** Nearly all M&A deals involve a premium in the purchase price. Even if the deal results in positive results, it might not be enough to justify the premium. Overpaying for an asset goes hand-in-hand with overestimating synergies. Synergies are challenging to achieve in practice and should be estimated conservatively, but doing so would result in missing out on acquisition opportunities and being out-bid. An acquirer often has to accept that the expected synergies used to justify the premium paid may not be met for the sake of completing the deal.
- **Inadequate Due Diligence:** An acquirer will often fail to perform sufficient diligence before acquiring a company. The decision may have been made while overly-focused on the target's positives and the potential post-integration benefits while neglecting the risks. A competitive auction with a short timeline can lead to this type of poor judgment, in which the other buyers become a distraction.
- **Lack of Strategic Plan:** For an M&A deal, when an acquirer becomes fixated on pursuing more resources and achieving greater scale without an actual strategy, this can lead to synergies not being realized despite an abundance of resources on-hand and potential growth opportunities.
- **Poor Execution/Integration:** Post-closing, the acquirer's management team may exhibit poor leadership and an inability to integrate the new acquisition. This poor integration can lead to diminished employee morale, cultural mismatches, and a noticeable drop in product/service quality. Of all the reasons M&A deals can fail, cultural compatibility can be the trickiest risk to assess.

Studies have repeatedly shown a high percentage of deals destroy shareholder value. If that's the case, why do companies still engage in M&A?

Many studies have concluded that most M&A deals destroy shareholder value. Yet, many companies continue to pursue growth through M&A.

One reason companies choose to engage in M&A is that many deals are done out of necessity, meaning they were defensive measures taken to protect their market share or to maintain competitive parity. Once a company owns a sizeable percentage of a market, its focus shifts towards protecting its existing market share as opposed to growth and stealing more market share (i.e., the company is now the target incumbent to steal market share from).

Therefore, the company must always be on the look-out for developing trends or companies that could someday become a threat, which is closely related to technological adaptation and staying innovative as industries continuously develop. M&A is a method for companies to fend off outside threats and gain new technological capabilities.

M&A is often a defensive response to structural sector disruption that presents a threat to an existing business model.

What is the purpose of a teaser?

A teaser is a one to two-page marketing document that's usually put together by a sell-side banker on behalf of their client. The teaser is the first marketing document presented to potential buyers and is used to gauge their initial interest in formally taking part in the sale process. The intent is to generate enough interest for a buyer to sign an NDA to receive the confidential information memorandum ("CIM").

The content found in a teaser will be limited, and the name of the company is never revealed in the document (instead “Project [Placeholder Name]”), and the teaser only provides the basic background/financial information of the company to hide the identity of the client and protect confidentiality. The information provided is a brief description of the business operations, investment highlights, and summary financials (e.g., revenue, operating income, EBITDA over the past two or three years) – just enough details for the buyer to understand what the business does, assess recent performance and determine whether to proceed or pass.

What does a confidential information memorandum (CIM) consist of?

A confidential information memorandum (“CIM”) provides potential buyers with an in-depth overview of the business being offered for sale. Once a buyer has executed an NDA, the sell-side investment bank will distribute the CIM to the private equity firm or strategic buyer for review.

The format of the CIM can range from being a 20 to 50-page document with the specific contents being a detailed company profile, market overview, industry trends, investment highlights, business segments, product or service offerings, past summary financials, performance projections (called the “Management Case”), management biographies, and the transaction details/timing.

Read More → [Confidential Information Memorandum \(CIM\)](#)

What are the typical components found in a letter of intent (LOI)?

Once a buyer has proceeded with the next steps in making a potential acquisition, the next step is to provide the seller with a formal letter of intent (“LOI”). An LOI is a letter stating the proposed initial terms, including the purchase price, the form of consideration, and planned financing sources. Usually non-binding, an LOI represents what a definitive agreement could look like, but there's still room for negotiation and revisions to be made in submitted LOIs (i.e., this is not a final document).

Read More → [Letter of Intent \(LOI\)](#)

What are “no-shop” provisions in M&A deals?

In most M&A deal agreements, there'll be a dedicated section called the “no solicitation” provision, or more commonly known as the “no-shop” provision. No-shop provisions protect the buyer and give exclusivity during negotiations. The sell-side representative is prevented from looking for higher bids and leveraging the buyer's current bid with other buyers. Violating the no-shop would trigger a significant breakup fee by the seller, and an investigation would be made into the sell-side bank to see if they were contacting potential buyers when legally restricted from doing so. On the other side, a seller can protect themselves using reverse termination fees (“RTFs”), which allow the seller to collect a fee if the buyer were to walk away from the deal.

Read More → [Breakup Fees and Reverse Termination Fees in M&A](#)

What is a material adverse change (MAC), and could you provide some examples?

In an M&A transaction, a material adverse change (“MAC”) is a highly negotiated, legal mechanism intended to reduce the risk of buying and selling parties from the merger agreement date to the deal closure date. MACs are legal clauses included in virtually all merger agreements that list out the conditions that allow the buyer the right to walk away from a deal without facing legal repercussions or significant fines.

Common Examples of MACs

- Significant Changes in Economic Conditions, Financial Markets, Credit Markets, or Capital Markets
- Relevant Changes such as New Regulations, GAAP Standards, Transaction Litigation (e.g., Anti-Trust)
- Natural Disasters or Geopolitical Changes (e.g., Outbreak of Hostilities, Risk of War, Acts of Terrorism)
- Failure to Meet an Agreed-Upon Revenue, Earnings, or Other Financial Performance Target

Read More → [Material Adverse Change: The ABCs of MACs](#)

Contrast asset sales vs. 338(h)(10) election vs. stock sales.

Sale Type	Description	Tax Implications
Asset Sales	<ul style="list-style-type: none"> In an asset sale, the seller will sell the assets to the buyer with each asset contractually sold. Once the buyer holds all the assets, it controls the business by having everything that made the seller's equity worth something. 	<ul style="list-style-type: none"> In the asset sale, the buyer gets the incremental D&A tax benefits – meaning, the tax basis of assets is stepped up, which creates tax-deductible D&A and future cash tax savings. But the seller potentially faces double taxation – first on the corporate level and then on the shareholder level.
Stock Sales	<ul style="list-style-type: none"> In a stock sale, the seller gives the buyer shares. Once the buyer holds all the target shares, it controls the business from being its new owner. 	<ul style="list-style-type: none"> In a stock sale, the buyer doesn't get a stepped-up basis in the seller's assets, which means the buyer cannot benefit from lower future taxes due to incremental deal-related D&A. The seller is taxed only at the shareholder level (as opposed to the corporate level).
338(h)(10) Election	<ul style="list-style-type: none"> A 338(h)(10) is something both buyer and seller can jointly elect to do, which gives you the tax treatment of an asset sale without the hassle of actually exchanging individual assets. This applies to acquisitions of corporate subsidiaries or S-corps, and most applicable when the target has a high amount of NOLs. 	<ul style="list-style-type: none"> A 338(h)(10) offers the benefits of stock sales along with the tax savings of an asset sale. Legally, a 338(h)(10) is considered a stock sale but treated as an asset sale for tax purposes. The seller is still subject to double-taxation, but the buyer can benefit from the tax advantages of the step-up of assets and the NOLs – leading to a higher purchase price.

Read More → [Asset Sale vs. Stock Sale](#)

Contrast a friendly acquisition and hostile takeover attempt.

- **Friendly Acquisition:** A friendly acquisition is when the takeover bid was made with the consent of both companies' management teams and boards of directors. The two had previously agreed to come to the table and negotiated on good terms. The target's board will notify their shareholders of the bid and decision, and in most cases, the shareholders will follow the lead of the board.
- **Hostile Takeover:** Conversely, a hostile takeover usually comes after a failed friendly negotiation. The target's management and board of directors have expressed their objection to the acquisition, but the acquirer has continued pursuing a majority stake by going directly to the shareholders.

What are the two most common ways that hostile takeovers are pursued?

1. **Tender Offer:** In a tender offer, the acquirer will publicly announce an offer to purchase shares from existing shareholders for a premium. The intent is to acquire enough voting shares to have a controlling stake in the target's equity that enables them to push the deal through.
2. **Proxy Fight:** Alternatively, a proxy fight involves a hostile acquirer attempting to persuade existing shareholders to vote out the existing management team to take over the company. Convincing existing shareholders to turn against the existing management team and board of directors to initiate a proxy fight is the hostile acquirer's objective, as the acquirer needs these shareholders' votes, which it does by trying to convince the company is being mismanaged.

How does a tender offer differ from a merger?

When a public company has received a tender offer, an acquirer has offered a takeover bid to purchase some or all of the company's shares for a price above the current share price. Often associated with hostile takeovers, tender offers are announced publicly (i.e., public solicitation) to gain control over a company without its management team and board of directors' approval. In contrast, a traditional merger would involve two companies jointly negotiating on an agreement to combine.

Read More → [Tender Offer vs. Merger](#)

What are some preventive measures used to block a hostile takeover attempt?

- **Poison Pill Defense:** A poison pill defense is a tactic used by the company being targeted to prevent a hostile takeover attempt. Poison pills give existing shareholders the option to purchase additional shares at a discounted price, which dilutes the acquirer's ownership and makes it more difficult for the acquirer to own a majority stake (i.e., more shares necessary).
- **Golden Parachute Defense:** A golden parachute is when key employees' compensation packages are adjusted to provide more benefits if they were to be laid off post-takeover. Since the takeover was hostile, it's improbable the acquirer would keep the existing management team and board, so they would have to honor the benefits and severance agreements such as continued insurance coverage and pension benefits that these executives included to fend off the acquirer.
- **Dead Hand Defense:** A dead hand provision is similar to the traditional poison pill defense strategy and has the same purpose of creating additional dilution to discourage the acquirer. Rather than giving shareholders the option to purchase new discounted shares, additional shares are automatically issued to every existing shareholder (excluding the acquirer).
- **Crown Jewel Defense:** The "crown jewels" are defined as a company's most valuable assets, which most often include patents, intellectual property (IP), and trade secrets. This defense strategy is based on creating an agreement where the company's crown jewels could be sold if the company is taken over. In effect, this would immediately make the target less valuable and less desirable to the acquirer.

What are some active defense measures to block a hostile takeover attempt?

- **White Knight Defense:** The white knight defense is when a friendly acquirer interrupts the takeover by purchasing the target. The unfriendly bidder is referred to as the "black knight," and this tactic is usually done only when the target is on the verge of being acquired. The target's management and board have accepted it'll give up its independence and lose majority ownership, but the result is still in their favor.
- **White Squire Defense:** A white squire defense is similar to the white knight defense in that an outside acquirer will step in to buy a stake in the company to prevent the takeover. The distinction being the target company will not have to give up majority control over the business as the white squire investor only purchases a partial stake, sized just large enough to fend off the hostile acquirer.
- **Acquisition Strategy Defense:** Another option the target company can resort to is to make an acquisition. While the acquisition may not have been necessary and a premium may have to be paid, the end result is the balance sheet is less attractive post-deal from the lower cash balance (and/or use of debt).
- **Pac-Man Defense:** The Pac-Man defense is when the target attempts to acquire the hostile acquirer. This retaliation deters the hostile attempt, rather than being intended to acquire the company. The Pac-Man defense is employed as a last-resort as having to follow-through on the acquisition is not the end-goal.
- **Greenmail Defense:** Greenmail is when the acquirer gains a substantial voting stake in the target company and threatens a hostile takeover unless the target repurchases its shares at a significant premium. Thus, in a greenmail defense, the target will be forced to resist the takeover by repurchasing its shares at a premium. However, anti-greenmail regulations have made this nearly impossible nowadays.

What is a staggered board and how does it fend off hostile takeover attempts?

When the board of directors of a company is organized as a staggered board, each board member is intentionally classified into distinct classes regarding their term length. A staggered board is used to defend against hostile takeover attempts as this type of ordering protects the existing board of directors and the management team's interests. Since the board is staggered, gaining additional board seats becomes a more complicated and lengthy process for hostile acquirers (and deters takeover attempts).

What is a divestiture and why would one be completed?

A divestiture is the sale of a business segment (and the assets belonging to the unit). Often, divestitures are completed once the management has determined that a segment doesn't add enough value to the core business (e.g., redundant, a distraction from core operations, and non-complementary to other divisions).

The divestiture allows the parent company to cut costs and shift their focus to their core business while allowing the divested business's operations to become leaner and unlock hidden value potential. However, sometimes, the rationale behind the divestiture can be related to restructuring (i.e., prevents falling into insolvency) or regulatory pressure to prevent the existence of a monopoly.

From the viewpoint of investors, a divestiture can arguably be interpreted as a failed strategy in the sense that this non-core business failed to deliver the expected benefits (e.g., economies of scale) and show that there's a need for cash for reinvestment or to better position themselves from a liquidity standpoint. Hence, many divestitures are influenced by activist investors that push for the sale of a non-core business and then request a capital distribution.

How does an equity carve-out differ from a divestiture?

An equity carve has many similarities to a divestiture and is often referred to as a "partial IPO." The mechanism of an equity carve-out is that the parent company will sell a portion of their equity interest in a subsidiary to public investors. In nearly all cases, the parent company will still retain a substantial equity stake in the new entity (usually > 50%).

Upon completing the equity carve-out, the subsidiary will be established as a new legal entity with its separate management team and board of directors. The cash proceeds of the sale to 3rd investors are then distributed to the parent, the subsidiary, or a combination.

What is a spin-off and why are they completed?

In a spin-off, a parent company will separate a particular division to create an independent entity with new shares (ownership claims). The existing shareholders will receive those shares in proportion to their original proportion of ownership in the company (i.e., pro-rata). The decision is up to the shareholders whether to hold on to those shares or sell them in the open market. The rationale for spin-offs is usually in response to shareholders' pressure to divest a subsidiary that would be better off as a standalone company.

What is the difference between a subsidiary and an affiliate company?

- **Subsidiary:** A subsidiary is when the parent company remains the majority shareholder (50%+).
- **Affiliate Company:** An affiliate company is when the parent company has only taken a minority stake.

What is a reverse merger and what benefits does it provide?

A reverse merger is when a privately held company undergoes a merger with another company that's already publicly traded in the markets. The public company can either be an operating company or be an empty corporate shell. The benefit of reverse mergers is that the public entity can now issue shares without incurring the costs associated with IPOs.

What is an S-4 filing and when does it have to be filed?

An S-4 is a required form that must be filed with the SEC prior to a merger and acquisition activity taking place. Contained in the S-4 will be material information related to the transaction, such as the deal rationale, negotiated terms, risk factors, pro forma financials, and other related material.

What is the difference between the Schedule 13-D and 13-G filing?

The Schedule 13-D and 13-G are forms intended to disclose publicly when an investor has taken a significant stake in a company in terms of ownership and voting power. These filings notify other investors of the influential investor's stake (i.e., "beneficial owners").

- **Schedule 13-D:** A Schedule 13-D must be filed when an investor acquires a minimum of 5% of a public company's total common equity, and over 2% was acquired in the last twelve months. Within ten days of the triggering acquisition, the Schedule 13-D must be filed. There must be a direct statement in the filing, answering whether they intend to acquire more of the company's shares to gain further influence.
- **Schedule 13-G:** A Schedule 13-G can be filed in lieu of the 13-D as long as the investor doesn't intend to take control of the company. This alternative, short-form version is filed when an investor acquires 5%+ of the total equity but less than 2% in the last twelve months. Since there appears to be no intent to further increase their stake on the filing date, the reporting requirements are shorter, less detailed, and depend on the investor's classification (e.g., institutional investor, passive investor). If the investor's intent is amended, the 13-D must be filed within ten days of the change.

Can you explain what the "winner's curse" is in M&A?

The so-called winner's curse in M&A is the tendency for the winning bidder to have paid far beyond the target's fair value. While a certain premium is expected during competitive processes, this can often be elevated to irrational levels. The buyer may later feel buyer's remorse and receive scrutiny for overpaying, especially if the acquisition doesn't pan out as expected, which can lead to write-downs of the acquired assets. Financial buyers also experience greater difficulty meeting their fund's required returns threshold if a higher multiple was paid.

What is a holdback in M&A?

To help mitigate transaction risks, a holdback mechanism can require a portion of the purchase price of an acquisition to be placed in escrow to protect the interests of the buyer post-closing until the terms of the agreement have been satisfied. This provision can be used to ensure the seller follows through on all agreed-upon conditions outlined in the deal agreement and minimize the risk of monetary loss for the buyer. These funds would be held in escrow and can be released to the buyer if the seller violates the terms.

What type of material is found in an M&A pitchbook?

A pitchbook is a marketing document used by investment banks to pitch potential clients to hire them for a particular transaction. The pitchbook will differ by each investment bank, but the general M&A transaction pitchbook will include:

1. Introduction of the Investment Bank and Dedicated Team Members
2. Situational Overview of the Deal and Client Company
3. Prevailing Market and Industry Trends
4. Implied Valuation Range and Combined M&A Model
5. Proposed Deal Strategy Outline and Key Considerations
6. Credentials and Tombstones of Relevant Industry Experience
7. Appendix (DCF Model, Trading Comps, Transaction Comps)

Read More → [Investment Banking Pitchbook: Real-World Examples](#)

Accretion/Dilution Modeling

Walk me through a simple M&A model.

An M&A model takes two companies and combines them into one entity.

1. First, assumptions need to be made about the purchase price and other uses of funds such as refinancing target debt and paying transaction and financing fees.
2. Then, assumptions about the sources of funds need to be made. The question being answered here is: "Will the acquirer pay for the acquisition using cash, take on additional debt, issue equity, or a combination?"
3. With those assumptions in place, the acquirer's balance sheet is adjusted to reflect the consolidation of the target. Certain line items such as working capital can be added together, while others require further analysis. The major adjustment to the combined balance sheet involves calculating the incremental goodwill created in the transaction, which involves making assumptions regarding asset write-ups and deferred taxes created (or eliminated).
4. Next, deal-related borrowing and paydown, cash used in the transaction, and the elimination of target equity all need to be reflected.
5. Lastly, the income statements are combined to determine the combined, pro forma accretion/dilution in EPS – which is ultimately the question being answered: "Will this deal be accretive or dilutive?"



Watch Video →
Accretion/Dilution
Analysis

What are two ways to determine the accretive/dilutive impact to EPS?

1. **Bottom-Up Analysis:** When the post-transaction EPS calculation is done as a bottom-up analysis, this involves starting from the buyer's and seller's standalone EPS and adjusting to reflect the incremental interest expense, additional acquirer shares that must be issued, synergies, and incremental depreciation and amortization due to asset write-ups.
2. **Top-Down Analysis:** Alternatively, the accretion/dilution analysis can be done top-down, whereby the two income statements are combined, starting with revenue and then moving down to expenses while making the deal-related adjustments.

What does accretion/dilution analysis tell you about the attractiveness of a transaction?

An accretive deal doesn't necessarily indicate value creation for the acquirer (and vice versa for dilutive deals). However, significant accretion or dilution is often perceived by buyers, public company buyers in particular, as a sign of potential investor reaction from the transaction. Many buyers fear dilutive deals because they can lead to a decline in share price post-announcement. This fear is rooted in the notion that investors will apply the pre-deal P/E ratio to the now-lower pro forma EPS.

These concerns, while quite valid when viewed through the prism of buyers' short-term concerns about meeting EPS targets, are not relevant to whether a deal actually creates long-term value for the acquiring company's shareholders, which is a function of the intrinsic value of the newly combined company.

- **Accretion:** When Pro Forma EPS > Acquirer's EPS
- **Dilution:** When Pro Forma EPS < Acquirer's EPS
- **Breakeven:** No Impact on Acquirer's EPS

Read More → [How an Investment Banker Builds an Accretion Dilution Model](#)

What does it mean when a transaction is done on a “cash-free, debt-free” basis?

Nearly all M&A deals are negotiated on a “cash-free, debt-free” basis. A transaction done on a CFDF basis implicitly assumes the seller will pay off all the debt outstanding and extract all the excess cash before the new buyer completes the transaction. Excess cash in this context is defined as the cash remaining after the debt has been paid down and above its minimum cash balance. Since the acquirer doesn't have to assume the debt on the seller's balance sheet or get to use its cash, the acquirer is just paying the seller for the company's enterprise value.

Read More → *Cash-Free Debt-Free: Why it's Used and Impact on Enterprise Valuation*

Is it better to finance a deal via debt or stock?

- **Buyer's Perspective:** When the buyer's P/E ratio is significantly higher than the target's, a stock transaction will be accretive, which is an important consideration for buyers and may tilt the decision towards stock. When considering debt, the buyer's access to debt financing and the cost of debt will influence the buyer's willingness to finance a transaction with debt. The buyer will also analyze the deal's impact on its capital structure, credit rating implications, and credit statistics.
- **Seller's Perspective:** Most sellers will prefer cash (i.e., debt financing) over a stock sale unless tax deferment is a priority for the seller. A stock sale is usually most palatable to the seller in a transaction that more closely resembles a merger of equals and when the buyer is a public company, where its stock is viewed as a relatively stable form of consideration.



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Deal Consideration**

What does purchase consideration refer to in M&A?

The purchase consideration in an M&A deal represents the acquirer's proposed payment method to the target's shareholders. The purchase consideration can be categorized as cash, stock, or a combination.

The tax consequences represent decisive factors that shareholders consider when assessing an offer:

- An acquisition paid all-cash has an immediate tax consequence, as a taxable event has been triggered.
- In contrast, if the purchase method made was all-equity (i.e., exchange of shares in the newly merged company), this would not trigger any taxes.

Shareholders' perception of the post-M&A company and its future can also impact their decision:

- If they have negative views of the company's future, they would not want to own shares in that company – even if it means they must pay taxes for that year associated with the deal.
- But if they believe the new company will perform well and the share price will appreciate, the shareholders will be inclined to accept stock as compensation to take part in the potential upside.

What is an exchange ratio and what are the two main types?

For partial or all-stock deals, the purchase offer can be structured as either a fixed or floating exchange ratio.

1. **Fixed Exchange Ratio:** A fixed exchange ratio clearly defines the number of shares of the acquirer's stock to be exchanged for one share of the target. The number of shares to be required by the target's shareholders is constant, as well as their ownership percentage in the new entity, regardless of the share price movement once the definitive agreement between the two parties is signed and executed. The target's shareholders bear the risk that the share price could decline post-closing, with no provision in place to protect them in the event this were to occur.

- 2. Floating Exchange Ratio:** A floating exchange ratio sets a specific amount per share the acquirer has agreed to pay for each share of the target's stock in the form of the acquirer's shares. Therefore, the target's shareholders have downside protection if the share price falls post-closing.

When might an acquirer prefer to pay for a target company using stock over cash?

For the acquirer, the main benefit of paying with stock is that it preserves cash. For buyers short on cash, paying with stock avoids the necessity of using debt to help fund the deal.

For the seller, a stock deal makes it possible to share in the future growth of the business and enables the seller to defer the payment of tax on gain associated with the sale.

Why might some shareholders prefer cash compensation rather than stock?

Certain types of shareholders might prefer cash rather than stock as the purchase consideration because cash is tangible, and the value received post-closing is guaranteed. These types of shareholders are more risk-averse and may not view the prospects of the combined company positively.

Other shareholders may prefer compensation in stock to take part in the combined entity's upside potential and to delay paying taxes.

Would you expect an all-cash or all-stock deal to result in a higher valuation?

In most cases, an all-stock deal will result in a lower valuation than an all-cash deal since the target's shareholders get to participate in the potential upside of owning equity in the new entity.

If the deal were all-cash, the proceeds from the sale would be a fixed amount (and be capped), but an all-stock deal comes with the possibility of higher returns if the combined entity performs well and the market has a favorable view of the acquisition, leading to share price appreciation.

In all-stock deals, how can you determine whether an acquisition will be accretive or dilutive?

As a general rule, if the acquirer is being valued at a lower P/E than the target in an all-stock deal, the acquisition will be dilutive. The reason being more shares must be issued, which increases the dilutive impact. Since the denominator (the pro forma share count of the combined entity) has increased, the EPS will decline.

But if the acquirer is being valued at a higher P/E than the target, the acquisition will be accretive.

Assume that a company is trading at a forward P/E of 20x and acquires a company trading at a forward P/E of 13x. If the deal is 100% stock-for-stock and a 20% premium was paid, will the deal be accretive in year 1?

Yes, stock-for-stock deals where the acquirer's P/E ratio is higher than the target's P/E are always accretive. Don't get tricked. A 20% premium just brings the target's P/E to $13 + (13 \times 20\%) = 15.6$ P/E, which is still below the acquirer's P/E.

How do you calculate the offer value in an M&A deal?

The offer price per share refers to the purchase price to acquire the seller's equity on a per-share basis.

Thus, the calculation of offer value involves multiplying the fully diluted shares outstanding (including options and convertible securities) times the offer price per share.

$$\text{Offer Value} = \text{Fully Diluted Shares Outstanding} \times \text{Offer Price Per Share}$$

Why is a "normalized" share price used when calculating the offer value?

Oftentimes, news of the deal or even rumors can leak and cause the price of the companies involved in the deal to rise (or decrease). Therefore, the latest share price may already reflect investors' opinions on the deal and not be an accurate depiction of the real standalone valuation of the target company.

How do you calculate the control premium in an M&A model?

It is important to use the normalized share price in the calculation, as rumors of the deal could have reached the public before an official announcement. To accurately calculate the control premium, the denominator (i.e., pre-deal share price) must be “unaffected” by the news of the transaction.

$$\text{Control Premium \%} = \left(\frac{\text{Offer Price Per Share}}{\text{Current Price Per Share}} - 1 \right) \times 100$$

How do you calculate the transaction value?

Transaction value in the M&A context refers to the target’s implied enterprise value given the offer value. The transaction value equals the target offer value plus the target’s net debt.

$$\text{Transaction Value} = \text{Target Offer Value} + \text{Net Debt}$$

What are the most common balance sheet adjustments in an M&A model?

In an M&A analysis, certain line items on the acquirer and target's balance sheet can simply be lumped together. However, others need to be adjusted to reflect deal-related accounting and funding adjustments.

On the Accounting Side

- **Goodwill:** Eliminate the existing, pre-deal target goodwill and create new goodwill from the new deal.
- **PP&E and Intangible Assets:** Write up assets to fair market value (FMV).
- **Deferred Tax Liabilities (DTLs):** Create new deferred tax liabilities in a stock sale.
- **Target Equity:** Eliminate target equity from the consolidation.

On the Funding Side

- **Debt:** Create new acquirer debt (if the deal was partially funded with debt) and eliminate Target debt (Target debt is often refinanced and reflected in the new acquirer debt financing, although in rare cases, it can carry over).
- **Equity:** Increase the existing value of acquirer equity by the value of new acquirer equity issued.
- **Cash:** Reduce cash by the excess cash used to fund the deal and pay transaction and financing fees with a corresponding reduction to equity (the transaction fees) and to new debt (the financing fees).

What are the most common income statement adjustments in an M&A model?

In an acquisition, the acquirer and target income statements are consolidated. But before doing so, certain line items must be adjusted as part of purchase accounting.

Income Statement Adjustments

- **Revenue:** Increase consolidated revenue by any revenue synergies.
- **Operating Expenses:** Reduce consolidated expenses by any expected cost synergies.
- **Incremental D&A:** Asset write-ups often result in more non-cash D&A. Thus, incremental D&A expenses from write-ups need to be added to consolidated D&A.
- **Other Expenses:** Transaction fees are expensed on the income statement.
- **Interest Expense:** Acquirer interest expense is adjusted up when debt financing is used to fund the deal. Target interest expense is eliminated when target debt is refinanced.
- **Financing Fees:** Financing fees related to raising debt are amortized over the term of the debt, and the non-cash expense is recognized within interest expense.
- **Interest Income:** Reduce interest income by the impact of excess cash used to fund the deal.
- **Taxes:** All the adjustments above need to be tax-affected at the acquirer’s tax rate.



**Watch Video →
Income Statement
Deal Adjustments**

- **Pro Forma EPS:** Use the acquirer's pre-deal share count and then add the number of acquirer shares issued in the transaction.

What does a goodwill impairment tell you about a deal?

Companies are required to estimate the value of their past acquisitions periodically. A goodwill impairment occurs when the acquiring company determines the current value is lower than the original price paid for the target company.

For example, suppose an acquirer that paid \$100 million for a business with \$40 million in goodwill now estimates the acquired business's value to be \$70 million. Here, the acquirer must recognize a \$30 million goodwill impairment via retained earnings, bringing the goodwill balance down to \$10 million.



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**Goodwill &
Acquisition
Accounting**

Which balance sheet items are often adjusted to fair market value in a transaction?

Property, plant, and equipment (PP&E) and intangible assets are often carried at book values significantly below market values. As a result, these two assets are written-up the most in a transaction.

Who determines the value of fair market write-ups in a transaction?

Independent appraisers, accountants, and other valuation firms can help determine the write-up amounts.

What is the purpose of a fairness opinion in the M&A context?

A fairness opinion is a document provided by the seller's investment banker to the seller's board of directors attesting to the fairness of a transaction from a 3rd party perspective. The purpose of the fairness opinion is to provide the selling shareholders with an unbiased evaluation of the deal.

Read More → Fairness Opinions in M&A

Would an acquirer prefer \$100 in revenue synergies or \$100 in cost synergies?

An acquirer would prefer \$100 in cost synergies because all those cost savings (after accounting for tax) flow through to the bottom line, while revenue synergies have associated costs that reduce the bottom-line benefit.

For example, \$100 in revenue synergies for a company with 40% pre-tax profit margins and a 25% tax rate would see $\$100 \times 40\% \times (1 - 25\%) = \30 flow to the bottom line, while the same company with \$100 in cost synergies would see $\$100 \times (1 - 25\%) = \75 flow to the bottom line.

Are acquirers more likely to achieve revenue synergy or cost synergy expectations?

While both revenue and cost synergy expectations are often not fully achieved post transaction, revenue synergy assumptions are less accurate than cost synergy assumptions. This is because cost synergies can point towards specific cost-cutting initiatives such as laying off workers and shutting down facilities.

In contrast, revenue synergies are driven by higher-level, more uncertain assumptions around cross-selling, new product launches, and other growth initiatives.

For investment bankers, why is a sell-side process typically shorter than a buy-side assignment?

As a practical matter, once the owner of a company proceeds with a potential sale, it'll usually be easy to find a group of buyers. So when working on behalf of the seller, the likelihood of completing a transaction is higher.



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**Day in the Life of
an M&A Advisor**

On the other hand, many companies regularly engage in market research and “dipping their toe in the water” type explorations of potential acquisition candidates. Thus, when working on behalf of a buyer, these engagements can drag on for months and often end in no transaction.

What is the accounting for transaction fees in M&A?

Transaction fees include investment banking advisory, accounting, and legal fees, which are expensed as incurred. In effect, the pro forma net income and pro forma EPS will be reduced.

What is the accounting treatment for financing fees?

When an acquirer borrows debt to finance an acquisition, the fees related to this borrowing are not treated like transaction fees. Instead, there are treated differently by being capitalized and amortized over the life of the debt issuance, which creates an incremental amortization expense. Therefore, the pro forma net income and pro forma EPS will be reduced over the term of the borrowing.

Regarding the balance sheet, financing fees are deducted from the debt liability directly as a contra-liability. In terms of modeling the financing fees, the financing fees are amortized over the borrowing term, classified as “Debt Issuance Costs,” and embedded as a non-cash expense within interest expense.

Read More → [Financing Fees Accounting](#)

What are some standard income statement adjustments related to a transaction?

M&A Income Statement Adjustments

- Expected Synergies
- Capitalized Financing Fees
- Incremental Depreciation & Amortization
- Additional Interest Expense
- Loss of Interest Income

What causes incremental D&A to be recorded in M&A deals?

Incremental D&A is created due to asset write-ups. The assets of the target, most often PP&E and intangible assets, are written-up to their fair value in a deal if appropriate. The increase in D&A will reduce pro forma net income and pro forma EPS.

What is the impact of target NOLs in M&A?

Depending on the deal structure, target NOLs are assumed by the acquirer, although their use by the acquirer is capped at an annual limit that's a function of the purchase price x the long-term tax-exempt rate. Alternatively, target NOLs can be used to offset the seller's gain on sale, which since the 2017 tax reform act, has been capped at 80% of the target's taxable income.

Why are deferred tax liabilities (DTLs) created in transactions?

Deferred tax liabilities (DTLs) are created because of deal-related asset write-ups. Specifically, when a company is acquired, its assets' book basis often gets written up to fair market value. However, when deals are structured as stock sales, the tax basis doesn't always get stepped up to align with the book basis write up.

Here, DTLs are created on the deal date because depreciation on assets written-up will be higher for book purposes than for tax purposes.



**Watch Video →
Deferred Taxes
in M&A**

What happens to a target's existing NOLs in transactions?

The treatment of existing target NOLs depends on the structure of the deal:

- **Asset Sales:** NOLs can be used up by the target to offset any gain on sale on the corporate level. The acquirer doesn't get any remaining unused NOLs as they're permanently lost.
- **Stock Sales:** NOLs can be used by the acquirer in the future but are subject to an annual "IRC 382 limitation," which limits the annual carryforward to a regularly published "long term tax-exempt rate" times the equity purchase price.

An M&A deal has an adjustment for a deferred revenue write-down. Why would this occur?

A deferred revenue write-down adjustment is often seen in software M&A deals (e.g., Adobe's acquisition of Marketo-Magento), as revenue is typically under long-term subscription contracts. The value of the deferred revenue might get revalued (and reduced) to its fair value before the transaction closes, leading to a write-down if it's determined the amount recognized is less than what was originally on the books.

There could various causes, such as collectability not being reasonably assured, terminated/breached contracts, or changes in customer contract terms (e.g., upgrades, maintenance, support) that all require re-estimating the remaining performance obligation, the costs required to fulfill the performance obligations, and the appropriate profit margin associated with fulfilling the performance obligation.

What is an earnout in the context of M&A?

In M&A, an earnout is a contractual arrangement between a seller and buyer in which a portion of the total purchase price consideration (or rare occasions, the entirety) is to be paid out on a later date, contingent on the seller achieving pre-determined financial targets. Negotiations between a seller and buyer during an M&A deal can stall because the seller desires a purchase price higher than the buyer is willing (or able to pay), leading to the inability to come to an agreement.

To break out of this purchase price deadlock– an earn-out provision is often used as a compromise. The more formal term is "contingent consideration," and under this mechanism, a portion of the purchase price will be issued to the seller upon achievement of a certain milestone within a given time frame.

Read More → [Earnouts in M&A](#)

Which side do you believe an earn-out helps more: the buyer or seller?

An earn-out can be very beneficial for a buyer, as the seller takes on the burden of not meeting the financial targets and the risk of underperformance. The seller's interests will also be closely aligned with the buyers, as the seller will likely be very determined to reach the financial or operational milestones set to receive the full purchase consideration, which is again beneficial to the buyer.

Most sellers are reluctant to agree to earnouts given the uncertainty of payment. But without an earnout being structured, the deal in most cases wouldn't have closed due to the disparity in valuations. If the seller meets their performance targets, the seller can receive all (or near) the total consideration originally requested, depending on how the earn-out was structured.

But failure to meet the targets would mean the buyer didn't overpay for the asset, which was the objective for the inclusion of an earn-out. Hence, earn-outs can be viewed as a risk-allocation mechanism as the payment is deferred and the burden of meeting the target is placed on the seller.

How are earn-outs typically structured?

Earn-outs are highly negotiated and will differ by the deal, but most will last for one to five years and be paid out in installment payments (rather than a lump sum). The payoffs will be structured into percentage-based tiers for each year, meaning the target (and reward) is broken out into different levels and these hurdle rates will sum up to the total earn-out amount. The most common pay-off structures are:

1. **Percentage of Future Performance:** The seller is compensated for each tier met plus the pro rata amount earned over (usually based on how close to meeting a target it was on a percentage-basis).
2. **Binary Payments:** Often called "all-or-nothing" payments, there will be no payout for a specific tier unless a target is met 100%, which places more risk and pressure on the seller.

For earn-outs, why is EBITDA the most common metric to use as the target?

The most frequently used metric for earn-outs is EBITDA. The logic is straightforward as most valuations are presented as a multiple of EBITDA. If a seller believes its business with \$1 million in EBITDA is worth 5.0x EBITDA, but the buyer is willing to pay up to 4.0x EBITDA, the compromise would be a \$4 million purchase price and a chance for the seller to earn the extra \$1 million based on the attainment of the EBITDA goal.

EBITDA strikes the right balance between growth and profitability. The attainment of an EBITDA target requires a long-term oriented strategy and the metric is a better proxy for real value creation. Revenue targets are viewed as less than ideal because the buyer may become short-term focused and make riskier decisions to hit the sales targets. Net income is also viewed as sub-optimal due to how it can be easily manipulated for the goal to be met (e.g., cost-cutting, reduce capex, sell assets).

How would an earn-out be modeled on the three statements?

An earn-out will not be reflected on the Sources & Uses table since no cash payment has been paid out yet. However, the returns models from both the buy-side and sell-side perspective would have this earn-out modeled out as a contingency.

- **IS:** The change in the value of the contingency payment would be reflected in the non-operating gains/(losses) section. The amount will depend on the probability of the earn-out being paid out. A gain would mean the probability of payout has decreased, while a loss means the probability has increased.
- **BS:** The earn-out will be recorded as a contingent consideration in the liabilities section and recorded at its measured fair value as of the acquisition date. An accountant will determine the liability's fair value as the present value of the probability-weighted expected amount of future payment. Thus, as targets are met (or missed), the contingent liability is re-evaluated and adjusted periodically until the earn-out period ends.
- **CFS:** If a target is met, the agreed-upon payout will be recorded here. The fluctuating changes in the probability of payout are also shown here, but these non-cash changes in values are not actual cash inflows/(outflows), unlike the payout when a target is met.

Which industries would you expect earnouts to be the more prevalent?

Healthcare is the industry in which earnouts are most common. Given the increased regulatory complexity and strict compliance requirements, financial and strategic acquirers must carefully evaluate and mitigate the risk of their investments. In recent years, the FTC and DOJ have placed increased scrutiny on healthcare M&A. The prevalence of earn-outs in healthcare transactions reflects the amount of risk surrounding the regulatory environment, as well as the uncertainty of product trials currently in development pipelines.

Many M&A deals related to healthcare are structured with contingencies on receiving regulatory approval, as both the buyer and seller are well aware of the risk the buyer would be undertaking. The value of the assets being considered for the acquisition would depend on future events that cannot be accurately predicted.

Unique to the healthcare industry, many of these earn-outs are based on events such as receiving FDA approval, FDA classification, patent production approval, or reaching milestones (e.g., receiving approval, meeting unit production targets, and then product sales target).

In M&A, what is the purpose of seller notes?

A seller note is when the seller has agreed to receive a portion of the purchase price in the form of debt. The seller note is part of the purchase consideration, similar to an earn-out. Thus, it provides an incentive for the seller to stick around and help the ownership transition. Now that the seller has become a lender to the company, downside protection becomes a priority since it's the seller's best interests for the new business to be run well, as this increases the probability of receiving the agreed-upon installment payments of the loan (and receive the full purchase price).

If the seller is staying on to manage the business, that means he/she will make more risk-averse decisions. And if management is not staying on, the seller will go above and beyond to ensure the new management team knows what they're doing.

How are seller notes in M&A modeled?

Seller notes (or seller financing) are modeled the same way as any other debt instrument. Therefore, it'll show up in the Sources & Uses schedule as a source of funds since these notes helped finance the deal. In most cases, seller notes will come in the form of subordinated debt with a high, fixed interest rate given its position in the capital structure. But often, the option for PIK interest or conversion feature will be attached.

What is the purpose of the working capital peg negotiation in M&A?

The working capital peg is the negotiated sufficient level of net working capital required post-closing of a transaction and should represent the normalized NWC requirements to operate the business on an ongoing basis. From the perspective of the buyer, the purpose of setting this target is to prevent the seller from taking cash beyond NWC requirements. Therefore, a working capital peg ensures the business can continue operating with no more capital required upon closing.

Can you name a scenario when the post-deal EPS accretion/dilution would not be a significant consideration?

If the buyer is publicly traded and the target is a startup being purchased for "acqui-hiring" purposes, the strategic acquirer would pay little attention to the post-acquisition EPS. Instead, the focus would be the onboarding of the new key personnel being brought on and the intellectual property (IP), since the impact on EPS would be negligible given the size disparity.

Leveraged Buyout Questions

Private Equity Investing

For private equity interviews, getting an interview in the first place is the toughest part for most candidates. So if you received an interview, most interviewers will assume you already possess the technical knowledge.

First round interviews are closer to discussions regarding your interest in investing and past deal experience, in addition to questions about your investment thought process. These discussions, while seemingly behavioral, are actually very technical and it'll soon become apparent whether you know what you're talking about or not.

A few examples of these discussion-type questions would be:

- Tell me about a portfolio company of ours that you would (or would not) have invested in and give me your prediction on how the investment has performed so far.
- Which industry are you most interested in pursuing an investment within?
- Tell me about an investment theme you have in mind and why you think it's an interesting opportunity?
- If our firm was looking at a new investment opportunity in [specific sub-industry], how would you approach diligence to determine if it's an investment worth looking further into or not?

In general, standard technical questions come up less common during private equity recruiting. But to speak competently during deal walk-throughs and investment rationale discussions, as well as to perform well on LBO modeling tests, an understanding of the fundamentals behind private equity investing and leveraged buyouts is required – which we'll cover in detail in this section.

Each year, Bain publishes a [Global Private Equity Report](#) we suggest reading to learn more about how the industry has been performing as a whole, as well as recent trends in exit valuations and the number of exits by type.

What is a leveraged buyout (LBO)?

In a leveraged buyout, a private equity firm (often called the financial sponsor) acquires a company with most of the purchase price being funded through the use of various debt instruments such as loans, bonds. The financial sponsor will secure the financing package ahead of the closing of the transaction and then contribute the remaining amount.

Once the sponsors gain majority control of the company, they get to work on streamlining the business – which usually means operational improvements, restructuring, and asset sales intending to make the company more efficient at generating cash flow so that the large debt burden can be quickly paid down.

The investment horizon for sponsors is 5-7 years, at which point the firm hopes to exit by either:

- Selling the company to another private equity firm or strategic acquirer
- Taking the company public via an initial public offering (IPO)

Financial sponsors usually target returns of ~20-25% when considering an investment.



Watch Video →
Introduction
to LBOs

Explain the basic concept of an LBO to me using a real-life example.

One metaphor to explain an LBO is "house flipping," using mostly borrowed money. Imagine you found a house on the market selling for a low price, in which you see an opportunity to sell it later for a higher price at a profit. You end up purchasing the house, but much of the purchase price was financed by a mortgage lender, with a small down payment that came out of your pocket. In return for the lender financing the home, you have a contractual obligation to repay the full loan amount plus interest.

But instead of purchasing the house to live there, the house was bought as a property investment with the plan to put the house back on the market in five years. Therefore, each room is rented out to tenants to generate monthly cash flow. The mortgage principal will gradually be paid off and the periodic interest payments are paid down using the rental income from the tenants. Home renovations are completed with the remaining amount and any existing property damages are fixed – again, using the rental income.

After around five years, the house is sold for a price higher than the initial purchase due to the improvements made to the house and because the house is located in an area where home values have been increasing. The remaining mortgage balance will have to be paid in full, but you pocket a greater percentage of the proceeds from the sale of the house because you consistently paid down the principal.

Read More → [LBO Analysis on a Cocktail Napkin](#)

What is the intuition underlying the usage of debt in an LBO?

The typical transaction structure in an LBO is financed using a high percentage of borrowed funds, with a relatively small equity contribution from the financial sponsor. As the debt principal is paid down throughout the holding period, the sponsor will realize greater returns at exit. Therefore, private equity firms attempt to maximize the amount of leverage while keeping the debt level manageable to avoid bankruptcy risk.

The logic behind why it's beneficial for sponsors to contribute minimal equity is due to debt having a lower cost of capital than equity. One reason the cost of debt is lower is that debt is higher on the capital structure – as well as the interest expense being tax-deductible, which creates a "tax shield." Thus, the increased leverage enables the firm to reach its returns threshold easier.

What is the typical capital structure prevalent in LBO transactions?

LBO capital structures are cyclical and fluctuate depending on the financing environment, but there has been a structural shift from D/E ratios of 80/20 in the 1980s to around 60/40 in more recent years.

The different debt tranches include leveraged loans (revolver, term loans), senior notes, subordinated notes, high-yield bonds, and mezzanine financing. The majority of the debt raised will be senior, secured loans by banks and institutional investors before riskier types of debt are used. In terms of equity, the contribution from the financial sponsor represents the largest source of LBO equity. Sometimes, the existing management team will rollover a portion of their equity to participate in the potential upside alongside the sponsor.



Watch Video →
LBO Capital
Structure

Since most LBOs retain the existing management team, sponsors will usually reserve anywhere between 3% to 20% of the total equity to incentive the management team to meet financial targets.

What are the main levers in an LBO that drive returns?

1. **Debt Paydown (Deleveraging):** Through deleveraging, the value of the private equity firm's equity grows over time as more debt principal is paid down using the acquired company's free cash flows.

2. **EBITDA Growth:** Growth in EBITDA can be achieved by making operational improvements to the business's margin profile (e.g., cost-cutting, raising prices), implementing new growth strategies, and making accretive add-on acquisitions.
3. **Multiple Expansion:** In the ideal scenario, the financial sponsor hopes to exit an investment at a higher multiple than entry. The exit multiple can increase from improved investor sentiment, better economic conditions, increased scale or diversification, and favorable transaction dynamics (e.g., competitive auction led by strategics).

What attributes make a business an ideal LBO candidate?

- **Strong Free Cash Flow Generation:** The ideal LBO candidate must have predictable, FCF generation with high margins given the amount of debt that would be put on the business. To make the interest payments and debt paydown, consistent FCF generation year-after-year is essential and should be reflected in the target's historical performance.
- **Recurring Revenue:** Revenue with a recurring component implies there's less risk associated with the cash flows of the company. Examples of factors that make revenue more recurring include long-term customer contracts and selling high-value products or services required by customers, meaning the product/service is necessary for business continuity (as opposed to being a discretionary, non-essential spend).
- **"Economic Moat":** When a company has a "moat," it has a differentiating factor that enables a sustainable competitive advantage, which leads to market share and profit protection from outside threats. This effectively creates a barrier against competition. Examples of deterrents include branding, patents, proprietary technology, economies of scale, network effects, and switching costs.
- **Favorable Unit Economics:** High margins are a byproduct of good unit economics, a well-managed cost structure, low capital expenditures, and minimal working capital requirements. These factors all lead to more FCFs being available to make interest payments, paydown debt principal (required and optional), and re-invest more into operations of the business. In addition, when a company's unit economics is consistently better than the rest of the market, this is oftentimes an indication of a competitive advantage.
- **Strong, Committed Management Team:** Qualified management teams will have a proven track record, which can be proxied by the number of years working with one another and their past achievements. The importance of the management team cannot be overstated, as they're the ones executing the strategic plan.
- **Undervalued (Low Purchase Multiple):** While finding undervalued companies has become increasingly difficult as more capital has flooded the private capital markets, many private equity firms pursue opportunistic buyouts where the company can be acquired for a lower price due to external factors. For example, an industry may have fallen out of favor temporarily or come under pressure due to macro or industry-related trends, which could allow a firm to complete the purchase at a discount. Since a lower entry multiple was paid, the opportunity for value creation through exiting at a higher multiple (i.e., multiple expansion) is greater while the risk of having overpaid is reduced.
- **Value-Add Opportunities:** For traditional LBO firms, the ideal target will be very well-run, but there should be some areas of inefficiencies that can be improved upon. These represent opportunities for value creation such as selling non-core business assets, taking cost-cutting measures, and implementing more effective sales & marketing strategies.



Watch Video →
Ideal LBO Target
Characteristics

What types of industries attract more deal flow from financial buyers?

- **Non-Cyclical/Low-Growth:** Industries with stagnant to low growth tend to attract higher amounts of interest from private equity investors, as many companies will turn to inorganic growth once organic

growth opportunities seem to have diminished. In an effort to continue growing and increase margins, companies will turn to M&A and start acquiring smaller companies. Therefore, these strategics represent potential buyers, which means there'll be a viable exit plan from the perspective of a private equity firm. Usually, these industries are non-cyclical and mature with minimal disruption risk, making them the ideal industry for private equity firms that specialize in add-ons (i.e., "buy-and-build") and pursue fragmented markets where the consolidation strategy is more viable.

- **Subscription-Based/Contractual:** Industries with business models based around long-term customer contracts are viewed favorably by private equity firms, especially if the business model is based around subscription models, as these companies are known for having recurring, stable revenue from reliable commercial customers. B2B enterprise software companies are valued at such high multiples consistently and sought after by private equity firms for this very reason.
- **High R&D Requirements:** Industries involving technical products will usually have a lot of deal flow because incumbents will prefer to acquire companies with proven technologies rather than building them in-house, which would require significant amounts of time and resources. For that reason, many private equity firms will pursue smaller niche players and grow them, knowing there will be strategic buyers later on interested in acquiring the company for their technology. These companies will often have significant pricing power and an established niche, making them ideal targets for PE investors.
- **Potential Synergies:** Certain industries will have more opportunities for synergies to be realized. This can come in the form of revenue synergies such as upselling, cross-selling, and product bundling, as well as in the form of cost synergies, such as benefiting from economies of scale and reducing redundant costs. For example, industrial technology and software is known for being two of the best industries for upselling and cross-selling to existing customers, while healthcare services such as dental clinics and psychiatry treatment centers are known for having inefficient cost-structures that can benefit significantly from cost synergies through increased scale, operational improvements, and streamlining processes.
- **Favorable Industry Trends:** The potential investment should be well-positioned to benefit from ongoing industry tailwinds. This means that incremental improvements are going on in the industry that could be potential add-ons that provide more value to their customers, as opposed to industry-disrupting developments that would create the need for significant investments to adjust to the changing landscape.

What would be the ideal type of products/services of a potential LBO target?

- **Mission-Critical:** The ideal product or service should be essential to the end markets being served and the discontinuance of the product or service's usage should be detrimental to business continuity. In other words, the customer should be unable to function without this product/service due to how deeply embedded it has become in its operations.
- **Recurring/Contract-Based:** Revenue from long-term, contractual-agreements is highly regarded by private equity investors. For instance, enterprise software companies are known for having predictable revenue due to their subscription-based business models and long-term contracts with commercial customers.
- **High-Switching Costs:** The decision to switch to another provider should come with high switching costs that make customers reluctant to move to a competitor. This would mean the costs should outweigh the benefits of moving to a lower-cost provider.
- **High-Tech:** The more technical the product, the higher the barrier to entry and more pricing power over its end markets due to the lack of competition. In effect, this leads to more stable, low-risk cash flows, with the optionality to increase prices if necessary. The proxy for finding companies selling technical products is high R&D expenditures, patents/IP, and industry reputation.

The quality of a company's revenue is determined by its predictability, defensibility, and certainty of being recurring.

- **Location-Based Competition:** Certain private equity firms will pursue companies where competition is location-specific. This is more prevalent for service-oriented industries such as landscaping and commercial cleaning. The primary benefit is that these are fragmented markets with less competition and often involve long-term, contract-based customer relationships.

What is the relationship between debt and purchase price?

The relationship between debt and purchase price is another reason such large amounts of debt are being used in LBOs. The usage of debt enables a private equity firm to purchase companies of a particular size it could otherwise not purchase using equity alone or with a minimal amount of borrowed funds.

In addition, the usage of high debt leaves the firm with more unused capital (called “dry powder”) for other investments or add-on acquisitions for their existing portfolio companies.

How is the maximum leverage used in an LBO typically determined?

The debt-to-equity mix in private equity deals has hovered around 60% debt/40% equity as M&A activity stabilized since the 2008 financial crisis. However, leverage varies significantly across industries, besides being specific to the target company's fundamental qualities.

Debt/EBITDA has hovered in the 5.0x to 7.0x range and is pressured upward as overall valuations increase. When LBOs emerged as a type of M&A transaction in the 1980s, debt represented as much as 90% of the capital structure. But this has come down because of the risks inherent to high debt burdens.



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Introduction to
LBO Debt

Why might a private equity firm not raise leverage to the maximum leverage, even if it had the option to do so?

Generally, a private equity firm will want to maximize the amount of debt without endangering the company and putting it at risk of default. The reason being more leverage means less required equity and the greater the potential returns. But there are several reasons a private firm might intentionally raise less leverage than the maximum amount that can be raised from lenders:

- **Increased Default Risk:** The firm may have doubts regarding whether the acquired company could support the additional debt. Even if the company is in a stable industry and has healthy credit ratios, it's a judgment call by the firm on how much debt to use as a percentage of its total debt capacity.
- **Negative Perception:** The firm doesn't want to appear to be using excessive leverage at the company's expense. Nowadays, private equity firms pitch themselves as value-add partners and avoid having a reputation for extracting as much value as they can from a business for their benefit.
- **Decreased Fund Returns/Fundraising Implications:** If a firm's portfolio company declares bankruptcy, this would not only ruin the current fund's returns, but it would make future fundraising efforts more challenging. Lenders would also be less willing to fund the private equity firm in the future and companies (potential investments) would be reluctant to partner with them.
- **Planned Dividend Recap:** The firm might be planning to do a dividend recapitalization later on, especially if it forecasts lower interest rates than the present day. Therefore, there would be remaining debt capacity, and the additional debt capital would be raised under better terms.

What determines a company's debt capacity?

In most cases, a leveraged finance group at an investment bank and the capital markets team will guide a private equity firm looking to raise debt financing.

1. First, the industry risk is typically the starting point to assess what type of financing package could be obtained. Numerous factors would be looked at, such as the industry growth rate, past cyclicity, barriers to entry, the threat of disruption by technological advancements, and regulatory risks.
2. Once the industry has been looked at, the focus will narrow down on the company's competitive position in the market and substitution risk. The objective is to understand how this company compares to the rest of the market and if it has differentiating factors that protect its revenue and margins.
3. Then, the company's historical performance will be closely examined to create a forecast model. The forecast will focus on mostly downside scenarios and look for predictable, steady cash flows, as this allows the company to handle a higher level of debt.
4. Based on scenario analysis from the forecast model, the company's appropriate debt capacity will be determined. This leverage multiple (Total Debt/EBITDA) represents the maximum leverage multiple the debt can be raised up to with a sufficient "cushion" that enables it to meet all of its debt obligations even if it were to underperform (e.g., EBITDA drops 20-25%). Note, the leverage and interest coverage ratio parameters will vary significantly based on the industry and the prevailing lending environment.

The more predictable the free cash flows of the company, the greater its debt capacity and tolerance for a high debt-to-equity mix.

In the context of an LBO, what is the "tax shield"?

In an LBO, the "tax shield" refers to the reduction in taxable income from the highly levered capital structure. As interest payments on debt are tax-deductible, the tax savings provide an additional incentive for private equity firms to maximize the amount of leverage they can get for their transactions.

Since senior debt is cheaper, why don't financial sponsors fund the entire debt portion of the capital structure with senior debt?

Senior lenders will only lend up to a certain point (usually 2.0x to 3.0x EBITDA), beyond which only costlier debt is available because the more debt a company incurs, the higher its risk of default. The senior debt has the lowest risk due to its seniority in the capital structure and imposes the strictest limits on the business via covenants, which require secured interests. Subordinated junior debt is less restrictive but requires higher interest rates than more senior tranches of debt.



**Watch Video →
Role of Tax Savings
in LBOs**

How do financial sponsors exit their investments?

- **Sale to a Strategic Buyer:** The sale to a strategic buyer is the least time-consuming while fetching higher valuations as strategics will pay a premium for the potential synergies.
- **Secondary Buyout:** The next option is the sale to another financial buyer, otherwise known as a sponsor-to-sponsor deal. However, financial buyers cannot pay a premium for synergies (unless it's an add-on).
- **Initial Public Offering (IPO):** The third method for a private equity firm to monetize its profits is for the portfolio company to undergo an IPO and sell its shares to the public markets. However, this is an option exclusive to firms of larger-size such as mega-funds or club-deals.

What is the one caveat of an IPO exit?

An exit via an IPO is not necessarily an immediate exit per se. Instead, an IPO is a path towards an eventual exit, as the IPO process is very time-consuming and comes with a lock-up period in which shareholders are prohibited from selling their shares for 90 to 180 days.

What is a secondary buyout?

A secondary buyout, or sponsor-to-sponsor deal, is when a private equity firm exits an investment by selling to another private equity firm. There is substantial evidence showing that secondary buyouts have lower returns than traditional buyouts, as many of the operational improvements and value-add opportunities have been exhausted by the previous owner.

What is a dividend recapitalization?

A dividend recapitalization (or dividend recap) occurs when a financial sponsor, having acquired a company via an LBO, raises additional debt intending to pay themselves a dividend using those newly raised proceeds. In most cases, a dividend recap is completed once the sponsor has paid down a portion of the initial debt raised, which creates additional debt capacity.

Therefore, dividend recaps allow for partial monetization and sponsors can de-risk some of their investment, unlike an outright exit via a sale or IPO. As a side benefit, the dividend recap would positively impact the fund's IRR from the earlier retrieval of funds.

How might operating a highly levered company differ from operating a company with minimal or no debt?

Highly leveraged companies have a lower margin of error due to high fixed debt-related payments (interest and principal). Using leverage increases the importance of effective planning and instituting better financial controls, and forces management to become more disciplined with costs and conservative in capital spending, especially when embarking on new initiatives such as expansion plans or acquisitions.

How can a private equity firm increase the probability of achieving multiple expansion during the sale process?

Building a higher quality business via entering new markets through geographic expansion, product development, or strategic add-ons could help a PE firm fetch higher exit valuations – and increase the odds of exiting at a higher multiple than entry. Also, exit multiples can expand due to improvements in market conditions, investor sentiment in the relevant sector, and transaction dynamics (e.g., selling to a strategic).

Why is multiple expansion viewed as a less than ideal lever for value creation?

The standard LBO modeling convention is to conservatively assume the firm will exit at the same EV/EBITDA multiple as the entry multiple. The reason being that the deal environment in the future is unpredictable, and relying on multiple expansion to meet the return threshold is risky, given the amount of uncertainty surrounding the exit. If meeting the return hurdles is contingent on exiting at a higher multiple in the future, the target company may be a less-than-ideal LBO candidate.

In comparison, the creation of value through EBITDA growth and debt paydown is easier to develop a plan for than reliance on exiting at a higher multiple, which has many moving pieces out of the investor's control.

Can you name a scenario when multiple contraction is common?

For large-sized companies undergoing LBOs, it's normal to see minor multiple contractions. The reason is that as the company grows larger, the number of potential bidders that could afford to purchase the company grows smaller (i.e., a reduced pool of prospective buyers with sufficient capital). Since there's less competition, this usually leads to a lower purchase price.

This company could undergo an IPO, but this would depend on the situation, and a minor contraction in the exit multiple would not impair returns to the fund, especially since the expanded size of the company implies there was revenue and EBITDA growth, as well as debt paydown.

What are some risks you would look out for when assessing potential investment opportunities?

- **Industry Cyclicity:** Cyclical revenue and demand based on the prevailing economic conditions make an investment less attractive from a risk standpoint. Traditional buyout investors prioritize stability and predictability in revenue before all else – and cyclicity is counter-intuitive to those traits.
- **Customer Concentration:** In general, no single customer should account for more than ~5-10% of total revenue, as the risk of losing that customer from unexpected circumstances presents too significant a risk.
- **Customer/Employee Churn:** The circumstances will be specific to the case, but high customer and employee churn rates are perceived negatively as customer churn creates the need for constant new customer acquisitions, while low employee retention signals organizational structure issues.
- **Temporarily Inflated Valuations:** A key driver of returns is a lower entry multiple than exit, which clearly becomes more difficult if the company was acquired when industry-wide valuations were inflated. For example, acquiring a healthcare IT company in 2020 would be akin to “buying at the top.” M&A in the healthcare industry is known for having high valuations, but this was heightened by the influx of strategics during the pandemic looking to build out their digital infrastructure and virtual integrations.
- **Past Institutional Ownership:** Considering how secondary buyouts have been shown to generate lower average returns, the PE firm's question to itself becomes: “What resources do we have to drive value creation that past investors were incapable of implementing?” For this reason, most PE firms avoid companies that were previously owned by another financial sponsor or venture capital-backed.
- **Retiring Key Management:** If the continued success of the business and brand reputation with its customers is hinged on a particular individual (e.g., the founder) who intends to retire by the end of the holding period, it could make the sale process more difficult when exiting. The next buyer would have to take on the risk of replacing management while retaining existing customer relationships.

If you had to pick, would you rather invest in a company that sells B2C or B2B?

All else being equal, the revenue quality would be higher for the B2B company. There is a higher likelihood of long-term contracts for customers that are businesses than consumers. Most individual consumers opt for monthly payment plans. Simply put, businesses have significantly more spending power than consumers and are overall more reliable as customers.

Businesses also have more loyalty to a particular company with whom they partner. The primary cause of this low churn (i.e., revenue “stickiness”) is the switching costs associated with moving to another provider and overall being less sensitive to pricing changes.

Imagine that you're performing diligence on the CIM of a potential LBO investment. Which questions would you attempt to answer?

- Is there a strong management team in place and do they intend to stay on during the LBO?
- What value does the company's products/services provide to their customers?
- Which factors make the company's revenue recurring? Are there any long-term customer contracts?
- Where does the team see new opportunities for growth or operational improvements?
- What has been driving recent revenue growth (e.g., pricing increases, volume growth, upselling)?
- How is the threat of competition? Does this company have a defensible “moat” to protect its profits?
- What specific levers does the private equity firm have to pull for value creation?
- Is the industry that the company operates within cyclical?
- How concentrated are the company's revenue and end markets served?
- Is there a viable exit strategy? Will there be enough buyer interest when the firm looks to exit?

What is a management buyout (MBO)?

A management buyout is a leveraged buyout where a significant portion of the post-LBO equity comes from the previous management team. The typical premise behind an MBO is that the management team believes it can operate the company better and create more value under their direction. An MBO usually coincides with recent underperformance and scrutiny from a company's shareholder base.

Management will usually provide cash equity and rollover any existing equity. In addition, equity financing can also include financial sponsors or other investors. The debt financing portion of the MBO, other than the rollover amount, is similar to that of a traditional LBO.

What is rollover equity and why do private equity firms perceive it as a positive sign?

The existing management team will occasionally rollover some (or all) of its equity into the newly acquired company and may even contribute additional capital alongside the financial sponsor. The rollover equity is an additional source of funds, and it reduces the amount of leverage needed to be raised and the equity contribution from the financial sponsor to complete the deal.

If a management team is willing to rollover some equity into the new entity, it implies the management team is doing so under the belief that the risk they're undertaking is worth the potential upside. It's beneficial for all parties in the deal for management to have "skin in the game" and have closely aligned incentives.

When might a PE firm prefer to use term loans rather than subordinated notes in an LBO?

Term loans are a cheaper form of debt with lower interest rates, and most PE firms will first maximize the amount that banks and institutional lenders will provide before raising riskier forms of financing. Since optional repayments are typically allowed with term loans, there's greater flexibility.

In addition, if the company is expecting to be active in terms of M&A activity (e.g., add-ons, divestitures), the restrictive incurrence covenants associated with subordinated notes should be considered.

Would a private equity firm prefer high growth or stability in revenue?

The vast majority of traditional buyout firms would choose stability in revenue over rapid growth. Given the capital structure considerations and usage of high leverage, most buyout-focused PE firms would choose consistent, predictable revenue over high growth if the decision were mutually exclusive.

Why might a higher average selling price (ASP) or average order value (AOV) not always be better?

While pricing power is a lever for revenue growth, an overly expensive product decreases the number of potential buyers due to the product being out of their price range. Therefore, there must be a balance between having high pricing from product quality and being able to reach a large enough market for there to be opportunities for expansion and new customer acquisitions.

Can a highly capital-intensive industry be appealing to PE investors?

Asset-light industries can often be attractive because they require less capital to be deployed to generate sales growth. However, a highly capital-intensive industry could create a high barrier to entry that deters entrants, confers stability, and increases the collective pricing power over customers.

Since a capital-intensive industry implies higher amounts of PP&E, this can become beneficial when raising debt financing. As a result of having more fixed assets that can be pledged as collateral, the company can receive better lending terms as the borrowing base has increased.

When might customer concentration be considered being at a manageable level?

An exception to the customer concentration risk will be if there are irrevocable contracts in place (i.e., long-term customer agreements). This contractual obligation between the company and the customer being served makes the concentration risk more tolerable but could still lead to a discount on the purchase price.

Explain the strategic rationale behind add-on acquisitions and how it creates value.

An add-on acquisition is when a portfolio company of a private equity firm (called the “platform”) acquires a smaller company. The strategic rationale for bolt-on acquisitions is that the add-on will complement the platform’s existing product or service offerings; thus, enabling the company to realize synergies and enter new end markets to extend its reach. The inorganic growth from add-ons is often a key rationale for an initial investment, and many firms only specialize in this type of consolidation play where the firm attempts first to acquire a platform company that operates in a fragmented market.

Another side benefit of the roll-up strategy is that it allows platform companies to compete with strategic buyers in auction-based sale processes since synergies can be realized.

How can value be created during a consolidation play?

- **Increased Pricing Power:** Most customers will pay more for a stronger brand and complementary product or service offerings bundled together, leading to greater pricing power.
- **More Bargaining Power:** Larger incumbents with higher market shares have more leverage when negotiating terms with suppliers, enabling them to extend their payables (leading to a more attractive cash conversion cycle), in addition to being able to make bulk purchases at discounted rates.
- **Lower Customer Acquisition Costs (CAC):** From improved software (e.g., CRM, ERP) and more infrastructure-related integrations, CACs decrease due to increased scale and higher efficiency.
- **Improved Cost Structure:** Upon closing, the consolidated company can benefit from economies of scale and cost savings. The increased profitability could come from combined divisions or offices, removal of redundant functions, and reduced overhead expenses (e.g., marketing, accounting, IT).

What does “multiple arbitrage” in a roll-up acquisition scenario imply?

One key reason add-ons are common in private equity is that the acquisition target will often be valued at a lower multiple than the acquirer and thus be an accretive transaction. After the transaction has closed, the newly acquired company's cash flows will be valued at the same multiple as the platform company before any operational improvements or integrations are made.

A private equity firm has tripled its initial investment in five years, estimate the IRR?

If the initial investment tripled in five years, the IRR would be 24.6%.

Since it's doubtful that you would be handed a calculator to solve this question, the most common IRR approximations should be memorized, as shown in the table below:

Common IRR Approximations

- 2.0x Initial Investment in 3 Years → ~25% IRR
- 2.0x Initial Investment in 5 Years → ~15% IRR
- 2.5x Initial Investment in 3 Years → ~35% IRR
- 2.5x Initial Investment in 5 Years → ~20% IRR
- 3.0x Initial Investment in 3 Years → ~45% IRR
- 3.0x Initial Investment in 5 Years → ~25% IRR

How many years would it take to double a \$100,000 investment at a 9% annual return?

The Rule of 72 states that in order to figure out how long it would take to double an investment, divide 72 by the investment's annual return. Here, it's suggested to take approximately $72/9 = 8$ years to double.

There is also a lesser-known rule, called the Rule of 115, which estimates the time to triple an investment by dividing 115 by the rate of return.

If an LBO target had no existing debt on its closing balance sheet, would this increase the returns to the financial buyer?

Upon completing an LBO, the firm has essentially wiped out the existing capital structure and recapitalized it using the sources of funds raised. For the most part, the pre-acquisition capital structure, therefore, has no impact because it doesn't directly affect the primary return drivers.

The returns to a financial sponsor are based on 1) the initial equity contribution cash outflow and 2) all cash inflows received throughout the holding period such as dividends, monitoring fees, and most notably the exit proceeds.

There are a few minor considerations such as the management team being inexperienced with running a company using leverage (and the lower margin of error). This might be brought up as a risk during debt financing, but it would be a relatively insignificant detail.

Since an LBO would involve the capital structure of a target being replaced, any pre-LBO debt would have no direct impact on returns.

Where do financial sponsors typically get their capital?

Financial sponsors raise capital to fund their investments from insurance companies, pension funds, sovereign wealth funds, endowments, high net worth individuals, and financial institutions.

In the private markets, what does "dry powder" mean?

The term dry powder is defined as the amount of committed but unallocated capital a firm has on hand. This is the available cash that's waiting to be deployed on the side-lines. Dry powder mounting at record-high levels signifies fewer investment opportunities in the market that fit private equity firms' criteria. The purchase multiples usually increase during these times as auction processes become more competitive.

What is proprietary deal sourcing and how does it compare to intermediated deals?

- **Proprietary Deals:** A proprietary deal was initiated through cold outreach or existing relationships between the target and the firm. Given the existing relationship, the negotiations are usually on friendlier terms. PE firms typically reach out expecting the company not looking to sell currently, but they want to be the first firm called if management looks to sell in the future. The downside of deal sourcing is that the process can be grueling, where hundreds of cold emails and calls will have to be made. Most companies that meet PE firms' investment criteria are well run and have already reached a certain level of success, making it challenging to convince the owners to exit or let go of their majority control over their business.
- **Intermediated Deals:** Intermediated auctions, in contrast, are led by an investment bank with an extensive list of potential buyers. The increased competition among buyers is likely to lead to higher prices as the sell-side bank is trying to extract the highest sale price in an auction process.

From a limited partner's perspective, what are the advantages/disadvantages of the private equity asset class?

The target IRR commonly referenced by participants in the private equity asset class will be in excess of ~20-25%. This type of return is relatively high compared to other asset classes, such as public equities (~10% return on average). On the flip side, PE-backed portfolio companies carry more bankruptcy risk, which is why a strong return is required to compensate investors for undertaking this risk related to leverage usage.

Some investors are also attracted to the private equity asset class because private equity managers are more active investors and closely work with their portfolio companies to create value and reduce costs. However, liquidity can be a deterrent to investors sometimes, as unlike investors in publicly traded stocks, a private equity investor cannot sell their shares freely.

Explain the “2 and 20” compensation structure in private equity.

The “2 and 20” fee structure refers to the standard compensation structure prevalent in the private equity industry. In short, the firm charges 2% of assets under management (i.e., the management fee) and then 20% of the profits earned (i.e., the “carried interest”).

- **2% Fee:** The 2% management fee is typically meant for the firm to cover operational costs (e.g., employee salaries, administrative expenses).
- **20% Fee:** This is the incentive fee dependent on the fund’s performance. 20% of the firm's profit beyond a pre-determined threshold goes toward the general partners (GPs) of the PE firm.

What is a distribution waterfall schedule in private equity?

The distribution waterfall is the allocation schedule that shows the distribution of proceeds from an investment to the various stakeholders in a systematic order based on their claims' priority. Each stakeholder would have a different claim on the pool of profits based on the security they hold. However, this is based on the relationship dynamics between the GPs and their LPs in the private equity industry.

Classic PE Distribution Waterfall

1. The initial investment from the LPs will first be returned in full, along with any returns related to a fund’s pre-determined minimum hurdle rate.
2. Then, 20% of the returns will be distributed to the GPs due to the catch-up clause.
3. The remaining excess proceeds would then be split 80% to the LP and 20% to the GP. The percentages can vary, but the 80/20 split is the industry standard.

In the distribution waterfall in private equity, what is the catch-up clause?

The catch-up clause will be outlined in the contract with the private equity fund's LPs. It states that once the LPs have received a specified return (usually their initial investment plus a hurdle rate), the GPs receive the majority (or all) of the profits until the return proportion outlined in the agreement is met so that the GPs' return will “catch-up” to the original agreed-upon split since the LPs were paid first.

What is a clawback provision?

A clawback provision gives fund LPs the right to reclaim a portion of the incentive fees distributed to the GPs that were over the original agreement (i.e., GPs were overpaid in carried interest). The clawback provision specifies the GP must return the money at the end of the fund's closing if the investors failed to receive their initial capital contribution and share of profits back as stated in the investment contract.

For example, a fund can start well in terms of investment returns (i.e., the first couple of exits), which benefits both the GPs and LPs, but then later, the back-end of the remaining portfolio companies could be less profitable, and this clause gives LPs the right to reclaim some of their capital back.

What is the difference between a recapitalization and an LBO?

LBOs are accounted for as an acquisition, meaning assets are written-up, and goodwill is recognized. Recapitalizations are mechanically similar but are not accounted for as an acquisition – thus, the asset bases carryover and remain unchanged with no goodwill recognized. Since no goodwill is recognized, negative equity is often created because the offer price is often higher than the book value of equity.

Why do some portfolio companies pay sponsor consulting fees?

The sponsor consulting fee, otherwise known as monitoring fees, is the annual fee paid by a portfolio company to its owner, the private equity firm. Many private equity firms, particularly those with in-house consultants, a team of operating partners, or have a separate division specifically offering consulting services, will arrange these types of advisory fees in their investment agreement.

What is the impact of the 2017 tax reform on the private equity industry?

1. The most significant change was that corporate tax rates were reduced from 35% to 21%. There were also reductions to S Corporations/LLCs, but the impact is a bit murkier and minor.
2. Companies face limits on how much interest expense can be deducted for tax purposes. While the formula is a little more complicated, companies can roughly deduct interest up to 30% of their EBITDA. This offsets the lower tax rate benefits for highly levered companies.
3. Companies can now accelerate depreciation for tax purposes even more than they could before, which lowers upfront tax bills. This lowers taxes further for capital intensive businesses.
4. Companies can no longer carryback NOLs, but they can carryforward indefinitely instead of just 20 years. Also, companies can use NOLs to offset only 80% of current period income (before tax reform, NOLs could offset 100% of current period income).

For private equity funds, the limited partnership is called a “blind pool.” What does this mean?

When the limited partner (LP) makes a capital commitment to a private equity fund, the most common LP partnership is the blind pool fund. This is the traditional investment model found in the PE industry, and it means the LPs are not directly involved in the firm's investment decisions to any extent.

Instead, the investments are made at the discretion of the GPs and the firm's investment team. Once LPs have committed capital, they don't evaluate the investments to be made by the fund. However, most LPs would not invest in a fund unless they have a personal relationship with the GPs, understand their strategy and track record, and have seen their past returns.

In private equity, what is a capital call?

Private equity firms issue capital calls when an investment deal is in the last stages and about to be closed, and the committed capital from LPs will fund the acquisition. A capital call, otherwise known as a “drawdown,” is a request from the GPs to the LPs to provide the monies they have committed to the fund. Within the pre-determined duration outlined in the initial agreement, the LP must provide the committed capital (usually ~7-12 days on average). If an investor invests in a fund, the agreement made is that the investor will provide the capital when requested by the firm – rather than the firm holding on to the capital at all times. Thus, LPs can do what they want with the committed capital to receive a low-risk return while waiting on the capital call (i.e., invest in mutual funds, liquid government bonds).

However, an LP failing to provide the capital within the timeframe would result in the LP paying a penalty fee or having to pay the remaining committed capital upfront since the terms of the agreement were not abided by.

LBO Modeling

Walk me through the mechanics of building an LBO model.

An LBO model analyzes the impact of a company buyout by financial sponsors using both its own equity and new borrowing as the two primary sources of capital. The specific effects analyzed by the model include an equity valuation of the pre-LBO company, the IRR to the various new debt and equity capital providers, and the effects on the company's financial statements and ratios.

1. **Entry Valuation:** The first step to building an LBO model is to calculate the implied entry valuation based on the entry multiple and LTM EBITDA of the target company. If the company is publicly traded, then the offer price per share could alternatively be used.
2. **Sources & Uses Table:** The next step in the LBO model is to identify the uses of funds – how much the previous equity holders will be paid, any pre-LBO debt that needs to get refinanced, as well as the transaction and financing fees. Based on this, various assumptions will be made regarding the sources of funds, such as the amount of debt raised and the residual amount being funded by sponsor equity.
3. **Free Cash Flow Build:** The operations are then forecasted over the 5-7 years expected holding period, and a complete 3-statement model is built so that the LBO debt assumptions correctly affect the income statement and cash flow statement. In getting the proper cash flow forecast, it's imperative to build a debt schedule that accurately modifies the debt balances and (paydowns)/drawdowns based on the flow of excess cash or deficits.
4. **Exit Valuation & Returns:** Next, the exit assumptions need to be made – most notably around the exit EV/EBITDA multiple. Based on this assumption and the state of the balance sheet at the presumed exit date, the internal rate of return ("IRR") and multiple of money ("MoM") can be estimated for the sponsor.
5. **Sensitivity Analysis:** Lastly, scenarios and sensitivity analysis can be added to provide users with different ways to look at the model's output – one common sensitivity is to back into the implied pre-LBO equity value based on explicit sponsor hurdle rates and operating assumptions.

What is the purpose of the "Sources & Uses" section of an LBO model?

The "Sources & Uses" section outlines the amount of capital required to complete the transaction and how the proposed deal will be funded.

- **Uses Side:** The "Uses" side answers, "What does the firm need to buy, and how much will it cost?" The most significant usage of funds in an LBO is the buyout of equity from the target's existing shareholders. Other uses include transaction fees paid to M&A advisors, financing fees, and the refinancing of existing debt (i.e., replacing the debt) if applicable.
- **Sources Side:** The "Sources" side tells us, "Where is the funding coming from?" The most common sources of funds are various debt instruments, the equity contribution from the financial sponsor, excess cash on the balance sheet, and sometimes management rollover.

From the private equity firm's perspective, the key component being quantified is the amount of equity required to be contributed.

How would you measure the credit health of a pre-LBO target company?

The two most common types of credit ratios used are leverage ratios and interest coverage ratios.

- The leverage ratio parameters will depend on the industry and the lending environment. However, the total leverage ratio (total debt/EBITDA) in an LBO ranges between 5.0x to 7.0x, with the senior debt ratio (senior debt/EBITDA) around 3.0x.
- For interest coverage ratio parameters, as a general rule of thumb: the higher the interest coverage ratio, the better. The interest coverage ratio should be at least 2.0x in the first year post-buyout.

Why is LBO analysis used as a floor valuation when analyzing company value using several valuation methodologies?

In private equity, the “hurdle rate” is the rate of return that financial sponsors are required to meet (and ideally exceed) to undertake an LBO. An LBO model provides a floor valuation for an investment, as it's used to determine what a financial sponsor can pay for the target while still realizing the minimum 15% to 25% IRR.

This is due to the risks associated with leverage and relatively short investment horizons, as well as the return expectations from their fund's LPs. These hurdle rates are usually higher than the cost of equity capital on the same business without those LBO-specific risks. Thus, the present value (or valuation) implied, given those higher hurdle rates, will be lower than the valuation of the company when analyzed through the traditional DCF and comps approaches.

An LBO is called a "floor valuation" because it's used to determine the maximum purchase price the PE firm can pay to achieve the fund's minimum IRR threshold.

When analyzing the viability of undertaking an LBO, how do private equity firms estimate the company's value in the exit year?

The most common approach is to assume that the private equity firm will exit at the same EV/EBITDA multiple at which the target company was acquired. For example, if sponsors are contemplating an LBO where the purchase price reflects a 10.0x EV/EBITDA multiple, the exit year assumption (usually 5-7 years from the LBO date) will probably be the same 10.0x multiple. Because of the importance of this assumption in determining the attractiveness of the deal to a financial sponsor (i.e., the deal's IRR), this exit multiple assumption is sensitized, and IRRs are presented in a range of various exit scenarios.

If you had to choose two variables to sensitize in an LBO model, which ones would you pick?

The two variables chosen would be the entry and exit multiple, as no other variables have the same level of impact on the returns in an LBO. The ideal scenario for a financial sponsor is to purchase the target at a lower multiple and then exit at a higher multiple, leading to profitable returns.

Some other variables to include in the sensitivity tables are revenue growth, total leverage turns (the leverage multiple at purchase), and the EBITDA margin.

What are the capex and net working capital requirement considerations for a private equity firm looking at a potential investment?

From the perspective of an LBO investor, high capex and net working capital are both viewed negatively as it implies the company requires more usage of cash to fund operations and grow. Both capex and increases in NWC represent outflows of cash, which means less free cash flow can be used to service interest payments, paydown debt principal, and reinvest into the business.

For traditional buyout candidates, the capex needs should be limited, with most of the spending being related to maintenance. If a mature company has high capex and NWC requirements, it implies the company is in an industry with an unfavorable cost structure, meaning maintenance capex by itself is on the higher end and more cash is tied up in the operations through NWC.

Lower capex and NWC requirements means that more free cash flow can be used to paydown debt and reinvest into operations.

If management decides to rollover equity, how would you calculate their new ownership stake and proceeds received at exit?

First, the management rollover amount would be either a hardcoded input of the contribution amount in dollars or as a percentage of the new equity.

$$\text{Rollover Equity} = \text{Total Equity} \times \text{Rollover Equity \%}$$

The management's ownership stake in the post-LBO company will be calculated as the rollover equity amount divided by the new equity amount, plus the rollover equity amount.

$$\text{New Ownership Stake} = \frac{\text{Rollover Equity Amount}}{(\text{Rollover Equity Amount} + \text{New Equity})}$$

At exit, the amount of proceeds received by multiplying the exit equity value by the implied ownership by the management team that rolled over their equity. Alternatively, this could be based on a percentage of the excess value creation over the initial equity investment or structured with a liquidation preference in which management doesn't receive any proceeds unless a returns threshold is met.

$$\text{Rollover Equity Proceeds} = \text{Exit Equity Value} \times \text{Management Implied Ownership \%}$$

What are the two most common return metrics used by private equity firms?

The two most common return metrics used in private equity are the IRR and MoM:

- 1. Internal Rate of Return (IRR):** IRR estimates the rate of return an investment will yield. In other words, IRR is the effective compounded annual interest rate on an investment. The IRR accounts for the periods in which the proceeds are received (and thus "time-weighted").

$$\text{Internal Rate of Return (IRR)} = \left(\frac{\text{FV}}{\text{PV}} \right)^{\left(\frac{1}{t} \right)} - 1$$

- 2. Multiple of Money (MoM):** Otherwise referred to as the cash-on-cash return or multiple on invested capital (MOIC), the MoM is the total inflows divided by the total outflows from the investor's perspective. MoM compares the amount of equity the sponsor takes out relative to the initial equity contribution.

$$\text{MoM} = \frac{\text{Total Cash Inflows}}{\text{Total Cash Outflows}}$$

If you're given the multiple of money (MoM) of an investment and the number of years the investment was held, what is the formula to calculate the internal rate of return (IRR)?

The IRR can be calculated using the MoM and number of years (t) using the formula below:

$$\text{Internal Rate of Return (IRR)} = \text{MoM}^{\left(\frac{1}{t} \right)} - 1$$

What levers have a positive/negative impact on the IRR of an investment?

Positive IRR Levers	Negative IRR Levers
Earlier Extraction of Proceeds: Can be achieved through a dividend recapitalization, an earlier than expected sale, the receipt of cash interest (as opposed to PIK interest, for debt investors), and annual monitoring fees paid to the sponsor	Delayed Receipt of Proceeds: Often caused by a sale pushed back to a later date due to lack of buyer interest or unfavorable market conditions, receipt of PIK interest (for debt investors)
Increased FCFs: Results from strong revenue generation, EBITDA growth, and an improved margin profile – which all result in more debt being paid down throughout the holding period	Decreased FCFs: Caused by falling short of initial forecasts or decreased profit margins from external factors (e.g., higher unit costs) – the result is less debt being paid down in total
Multiple Expansion: Entails exiting at a higher multiple than the entry multiple	Multiple Contraction: Investment is exited at a lower multiple than the purchase multiple

When measuring returns, why is it necessary to look at both the IRR and MoM?

The MoM cannot be a standalone metric as it doesn't consider the time value of money, unlike the IRR calculation. For instance, a 3.0x multiple may be impressive if achieved in five years, but the multiple remains the same, whether it took five years or thirty years to receive those proceeds.

IRR is an imperfect standalone measure because it's highly sensitive to timing. For example, a private equity firm issuing itself a dividend soon after the acquisition increases the IRR, but the MoM may have been sub-par (making the IRR misleading in this case).

Over shorter time frames, the MoM is more important than the IRR; however, over longer time frames, achieving a higher IRR is more important.

Tell me how you would calculate IRR in Excel.

To determine the IRR of any investment, you need the magnitude of the cash outflows/inflows and their corresponding dates.

Avoid stating the IRR Excel function would be used, as it only gives you the option to do annual periods. The IRR function assumes that each cell is separated by precisely twelve months, which would be unrealistic.

Instead, use “= XIRR (Range of CFs, Range of Timing),” in which you'll drag the selection across the range of cash inflows/outflows and then across the corresponding dates. The initial cash outflow (i.e., the financial sponsor's equity contribution) needs to be negative since the investment is an outflow of cash. Then, cash inflows such as dividends, consulting fees, and exit proceeds are inputted as positives.

What is the difference between gross IRR and net IRR in private equity?

When comparing the performance of a private equity firm across the industry, gross IRR is often looked at to assess the returns of the GPs on a pure basis (before any outflows to LPs). Gross IRR is the returns at the fund level before deducting any management fees and carried interest. Thus, gross IRR is a raw measure of a fund's performance and the GPs' ability to create a portfolio of profitable investments.

Net IRR, on the other hand, is the returns by a fund at the LP level, once management fees and carried interest have been subtracted. Therefore, net IRR is a more accurate representation of how well GPs can re-distribute returns to LPs on a time-weighted basis and would have more relevance to LPs.

Tell me about the J-curve in private equity returns.

In private equity, the J-curve refers to the timing of return proceeds received by a fund's LPs. The graphing of the net realized IRR of a fund gives rise to the "J" shape. Early in the fund lifespan, the J-curve begins with a steep, negative slope as the initial investments represent capital outflows and the annual management fee paid to the PE firm. But gradually, as the fund exits its portfolio companies after each holding period, the downward trajectory will reverse course and ascend upward.

If a business that underwent an LBO has been operating as intended, why does the private equity firm not hold on to the investment for a longer duration (e.g., 10+ years)?

The average holding of a private equity firm is about 5 to 7 years. Traditional private equity firms, unlike pension funds that target lower IRRs of around ~8-10%, cannot hold on to portfolio companies for longer durations since they raise capital in fund structures, and therefore have to return money to their limited partners (LPs) many times before fundraising for their next fund.

Besides the need to return capital to investors in the current fund, IRR is one of the LPs' primary metrics to evaluate PE firms' performance. From a firm marketability perspective, it would also be beneficial to avoid holding onto an investment for too long as doing so decreases the fund's IRR.

In the situation when a private equity firm has the option to exit within a 1 to 2-year time frame, why might the firm be reluctant to proceed with the sale?

Unless the returns realized are an anomaly, PE firms want to avoid holding onto a company for only 1 to 2 years since the capital has to be redeployed. The decision will depend on the deal environment and opportunities present in the market as finding another suitable investment could take a long time.

The opportunity cost of having to find a replacement deal will have to be weighed by the firm. In addition, the transaction costs would be another side consideration.

How would you calculate the levered free cash flow yield for private equity investment, and when would it be used?

Although used far less often than the IRR and MoM, the levered free cash flow yield (FCFY) can be a useful metric for assessing a private equity investment's performance.

1. The first step to calculating the levered FCFY is to calculate the levered free cash flow. Recall, this investment is from a private equity firm's perspective, so we must deduct interest payments and mandatory debt pay down.

$$\text{Levered FCF} = \text{EBITDA} - \text{Taxes} - \text{Interest} - \text{Capex} - \text{Increase in NWC} - \text{Mandatory Debt Amortization}$$

2. Now that we have the levered FCF, the only remaining calculation is to divide the levered FCF by the initial equity investment amount.

$$\text{Levered Free Cash Flow Yield (FCFY)} = \frac{\text{Levered Free Cash Flow}}{\text{Initial Equity Investment}}$$

There is no set levered FCFY that PE firms target since it'll vary not only by industry but by other factors such as the financing mix, total ownership percentage, and required amortization by debt. However, the higher the levered FCFY, the better since this implies the company is generating cash that can be used to reinvest into the business or payout a special dividend. If a private equity firm wanted to see how its investment was performing, then the levered FCF yield is one metric they could use.

So rather than the percentage amount, what matters more is the year-over-year growth (YoY). If the levered free cash flow becomes a larger proportion than the firm's initial equity contribution, it's a positive sign as that would signify downside protection above all else.

If we had not deducted interest and the mandatory debt amortization in calculating the free cash flow above, what metric would we be measuring?

If that were the case, we would have calculated the unlevered free cash flow. To get to the unlevered FCF yield, the denominator would be enterprise value to match the cash flows.

$$\text{Unlevered Free Cash Flow Yield} = \frac{\text{Unlevered Free Cash Flow}}{\text{Entry Enterprise Value}}$$

The unlevered FCF yield would tell the investor how the overall company is performing on an operational level, and it can tell us how much FCF remains to reinvest into the business and pay a dividend to equity holders, as well as the amount that can be used to paydown debt.

How does the accounting treatment of financing fees differ from transaction fees in an LBO?

- **Financing Fees:** Financing fees are related to raising debt or issuing equity. These fees are capitalized and amortized over the debt's maturity (~5-7 years).
- **Transaction Fees:** Transaction fees refer to the M&A advisory fees paid to investment banks or business brokers, as well as the legal fees paid to lawyers. Unlike financing fees, transaction fees cannot be amortized and are classified as one-time expenses deducted from a company's retained earnings.

If an acquirer writes-up the value of the intangible assets of a target, how are goodwill and amortization impacted?

During an LBO, intangible assets such as patents, copyrights, and trademarks are often written-up in value. Recall that goodwill is simply an accounting concept used to “plug” the difference between the purchase price and fair value of the assets in the closing balance sheet – so a higher write-up means the assets being purchased are actually worth more. Therefore, a higher write-up of intangible assets means less goodwill will be created on the transaction date.

Publicly traded companies cannot amortize goodwill under US GAAP – however, private companies can opt to amortize goodwill for tax reporting purposes. This question is specifically regarding the purchase accounting on the closing date of the transaction.

What does a cash sweep refer to in LBO modeling?

A cash sweep is when the excess free cash flow after revolver repayments is used to make optional repayments on debt, assuming the debt tranche allows early repayments. In most cases, this optionality to repay debt early comes with a prepayment penalty fee since the lender receives reduced interest payments.

What is the purpose of the minimum cash balance in an LBO model?

Companies need a certain amount of cash for daily operations and meet their net working capital (NWC) requirements. The debt schedule will contain logical functions that ensure the cash balance never dips below this specified amount. The minimum cash balance will increase the amount of funding required since this cash on the company’s balance sheet cannot help fund the transaction.

LBO Modeling Tests

For private equity interviews, the firm will almost certainly ask you to build an LBO model as either a standalone modeling test or as part of an investment case study.

Each firm's recruitment structure varies each year based on the competitiveness of the process and urgency to secure the top candidates.

There can be instances when candidates are given up to five hours to complete a full investment case study with a supporting model that'll be presented to members of the investment team, whereas in others, the only modeling test given is a simple one hour modeling test.

Given the lack of predictability in the modeling tests and their timing, it's best to just be prepared for all levels of difficulty.

Below are links to examples of LBO Modeling Tests:

[Paper LBO Walk Through →](#)

[Basic LBO Modeling Test →](#)

[Standard LBO Modeling Test →](#)

[Advanced LBO Modeling Test →](#)

[Full Integrated LBO Modeling Course →](#)

Capital Markets Questions

Debt & Leveraged Finance

What is the difference between a bond and a leveraged loan?

While some features of leveraged loans and bonds can overlap, the key difference is that a loan is a private transaction between a borrower and a lender. The lender is a single bank or a small syndicate of banks or institutional investors. The interest cost is often LIBOR plus a spread, and the loan is often secured by collateral with strict covenants, while the repayment of principal can happen over time or as a bullet payment at the end. Given the collateral, earlier principal repayments, and covenants, loans are less risky and carry lower interest rates than bonds.

Corporate bonds, in contrast, must be registered with the SEC and are public transactions. Bonds are issued to institutional investors and traded freely on the secondary bond market, leading to a broader investor base. Bonds are usually priced at a fixed rate with semi-annual payments, have longer terms than loans, and have a balloon payment at maturity. Since bonds come with less restrictive covenants and are usually unsecured, they're riskier for investors and therefore command higher interest rates than loans.

Putting it all together, below is a table outlining the typical features of debt used in leveraged finance:

	Leveraged loans		Bonds		
Debt Type	Revolver	Term Loan A (Bank Debt); Term Loan B/C/D (Institutional)	Senior secured	Senior unsecured	Subordinated
Lender	Institutional investors & banks		Institutional investors		
Coupon	Floating, i.e. LIBOR + 300 bps		Fixed, i.e. 8.00% coupon paid semi-annual		
Cash/PIK interest	Cash interest				Cash or PIK
Interest rate	Lowest <-----> Highest				
Principal repayment schedule	None	Some principal amortization	Bullet at end of term		
Secured/unsecured	Secured (1st and 2nd liens)			Unsecured	
Priority in bankruptcy	Highest<----->Lowest				
Term	3-5 years	5-7 years	5-10 years		
Covenants	Mostly incurrence ("covenant lite"); Some maintenance (strictest)		Incurrence		
Call protection	No			Yes	

Read More → [Ultimate Guide to Debt & Leveraged Finance](#)

What is the difference between investment-grade and speculative-grade debt?

- **Investment-Grade Debt:** Investment-grade debt (often called high-grade debt) has a credit rating above BBB/Baa. This category of debt is issued by companies with a strong credit profile. Investment-grade debt is considered safe, given the low risk of default.
- **Speculative-Grade Debt:** Speculative-grade debt has a credit rating below BB/Ba. These types of debt are issued by more leveraged companies with a riskier credit profile. Given this increased risk of default and bankruptcy, the interest rates on these riskier debts will be significantly higher to compensate investors for taking on the additional risk.

What does it mean when a debt tranche is denoted as 1st lien or 2nd lien?

Lien is defined as the seniority and the priority of payment to a debt holder relative to the other tranches. A lien is a legal claim against the assets of a borrowing company (i.e., used as collateral) and the right to seize those assets first in forced liquidation/bankruptcy scenarios.

- **1st Lien Debt:** The highest seniority, 1st lien, is fully secured by the company's assets and has the first claim to collateral in a liquidation/bankruptcy scenario (e.g., revolver, term loans).
- **2nd Lien Debt:** Right below 1st lien loans sits 2nd lien where compensation is provided only if there's collateral value remaining once 1st lien lenders are repaid in full. These debt types are riskier and more expensive for borrowers (e.g., high-yield bonds, mezzanine financing).

Tell me about the different classifications of term loans.

- **Term Loan "A":** TLAs refer to secured loans syndicated to banks and are typically packaged alongside a revolving credit facility. TLAs have shorter terms (~5 years), carry higher amortization levels than other term loans, and are amortized evenly over their tenor (i.e., "straight-lined").
- **Term Loan "B," "C," or "D":** An institutional term loan (B/C/D) is a loan facility syndicated to institutional, non-bank investors such as hedge funds, CLOs, mutual funds, and insurance companies. These term loans differ from TLAs in having longer terms while requiring no principal amortization before maturity – instead, they involve nominal amortization with a bullet payment due at maturity. TL B/C/Ds are more prevalent in LBOs than TLAs, as B/C/Ds have less strict covenants, longer terms, and require less principal amortization each year. The "B," "C," or "D" designation is more indicative of the investor base than the priority rank.



Watch Video →
Term Loans
and Revolvers

What is the difference between a secured and unsecured loan?

- **Secured Loans:** If a debt instrument is secured, that means the debt is backed by collateral. The assets of the borrower were pledged as collateral to get favorable financing terms. If the company were to go bankrupt, the lenders have a legal claim on the pledged collateral. Leveraged loans are secured by collateral and are the safest security class for a lender. Most term loans and revolvers in the leveraged loan market are syndicated to institutional investors such as hedge funds, CLOs, and mutual funds.
- **Unsecured Loans:** For unsecured loans, pension funds, mutual funds, insurance companies, hedge funds, and some banks are typically willing to invest in this relatively riskier type of debt for the higher yield.

How are leveraged loans usually priced?

Leveraged loans are usually priced off LIBOR plus a spread. In addition, loans often include a LIBOR floor, so an example would be a pricing of "LIBOR + 3%" (300 basis points) with a LIBOR floor of 2%, so the interest rate can never dip below 5%.

What does LIBOR stand for?

LIBOR stands for “London Interbank Offered Rate,” representing the global standard benchmark used to set lending rates. LIBOR is the rate at which banks lend amongst each other. For lenders of debt instruments with floating rates, the debt pricing will be based on LIBOR, the standard interest rate. However, LIBOR is expected to fade away in use as UK regulators have voiced a desire for LIBOR to be phased out by the end of 2021.

What is SOFR, the expected replacement of LIBOR?

Coming up on the horizon and expected to replace LIBOR eventually, the Secured Overnight Funding Rate (SOFR) is a measure of the borrowing costs of cash collateralized by Treasury securities. Said another way, the SOFR is a Repo-based funding rate of the observed transactions overnight.

In terms of debt terminology, what does the coupon rate mean?

The coupon rate simply refers to the annual interest rate (“pricing”) paid on a debt obligation. The interest expense is based on the outstanding principal amount and is modeled as a percentage of the beginning and ending balance of the relevant debt tranche. In terms of payment dates, senior bank debt pays interest each quarter, whereas most bonds pay interest on a semi-annual basis.

How does the coupon on a bond differ from the yield?

The coupon represents the annual interest rate paid based on the notional principal of the bond, while the yield is the annual return on the bond, including the coupon payment adjusted for the premium or discount of the purchase price when held to maturity. One difference is coupons are fixed for the bond’s term, whereas yields move with the markets.

What does it mean when a bond is trading at a discount, par, or premium?

- **Discount:** Price < 100, Yield is Greater than Coupon
- **Par:** Price = 100, Yield is Equal to Coupon
- **Premium:** Price > 100, Yield Less Than Coupon

What is the difference between a fixed and floating interest rate?

- **Fixed Interest Rate:** A fixed interest rate means the interest expense to be paid is the same regardless of changes to the lending environment. A fixed interest rate is more common for riskier types of debt, such as high-yield bonds and mezzanine financing.
- **Floating Interest Rate:** A floating interest rate is tied to LIBOR plus a specified spread (i.e., LIBOR + 2-4%). This pricing type is seen more often for senior debt tranches (e.g., term loans, revolvers).

When would an investor prefer fixed rates over floating rates (and vice versa)?

If interest rates are expected to fall in the near-term future, investors would prefer fixed rates. However, if interest rates are expected to increase, investors would prefer floating rates.

What are some different debt amortization schedules?

The debt amortization schedule refers to the amount of principal the borrower must repay annually. Compliance with this payment schedule is mandatory and not optional for the borrower.

Types of Debt Amortization Schedules:

- **Bullet Maturity:** The entire loan payment is due at the end of the loan’s lifespan.
- **Straight-Line Amortization:** Principal payments must be repaid in equal installments until maturity.
- **Minimum Amortization:** Entails lesser amounts of annual payments (e.g., ~5-10% per year) – therefore, the entire principal will not have been paid off at maturity.

What is a callable bond and how does it benefit the issuer or borrower?

A callable bond can be redeemed by the issuer prior to its maturity, with the decision being at the issuer's discretion. A callable bond enables the issuing company to pay off the debt earlier if they have more free cash flow remaining in the period and can refinance at lower interest rates.

From the investor's perspective, a callable bond gives more optionality to the issuer, so the debt holders are compensated with higher interest rates (compared to non-callable bonds).

When would the prepayment optionality of certain debt tranches be unattractive to lenders?

Some debt instruments include provisions that enable the borrower to repay some principal ahead of the payment schedule without the incurrance of any financial penalties. However, other lenders may include a call protection feature that prohibits borrowers from prepayment until a pre-specified duration has passed. The reason being that certain lenders prefer to disallow prepayment as it implies the receipt of more interest payments in the future.

For instance, if the borrower pays more principal off early, the annual interest payments (inflows to the lender) in the future are reduced since interest is based on the beginning and ending balance of the debt outstanding.

A bond has a call protection clause of NC/2. What does this mean?

Many HYBs will have call protection clauses that last two or three years (denoted as NC/2 and NC/3, respectively). Some are often NC/L, which means the bond is not callable for the term's entire duration. Once a bond becomes callable, the borrower may repay some (or all) of the debt balance and pay less interest. The caveat is that the prepayment penalties could offset those savings on interest – thus, HYB's classification as an expensive financing source.

Therefore, NC/2 means the bond has call protection for two years. Once this two-year period has passed, the borrower can repay the debt along with the prepayment penalty fee.

What is a revolving credit facility and what purpose does it serve to the borrower?

The revolver refers to a company's revolving line of credit drawn down when the free cash flow being generated is insufficient. The revolver acts as a "corporate credit card" for urgent situations. The borrower typically draws from the revolver to meet its short-term working capital requirements after an unexpected, temporary shortage in liquidity. Ideally, the lender doesn't want the revolver fully drawn frequently as it signals a deterioration in cash flows.

The revolver provides the borrower with the optionality to drawdown, repay, and reborrow on an "as-needed" basis.

What is the undrawn commitment fee associated with revolvers?

A revolver typically comes with a small $< 1\%$ fee, which is an annual fee paid out to the lender. The borrower is charged an annual fee on the unused amounts, called the undrawn commitment fee.

What is the difference between an asset-based loan and a cash flow revolver?

The maximum amount that can be drawn from an ABL revolver is based on the company's liquid assets. Thus, the amount is tied to borrowing-base lending formulas to limit borrowing to a certain percentage of the collateral – most often inventory and accounts receivable (e.g., 80% of A/R + 65% of Inventory)

The maximum amount that can be borrowed for cash flow revolvers is tied to the borrower's historical and projected cash flow generation. Therefore, covenants are more restrictive due to the uncertainty around future cash flows. Unlike physical assets such as inventory, a company's future cash flows cannot be pledged as collateral or seized in bankruptcy, hence its less favorable terms.

Why do revolvers normally not have a leverage test?

In most cases, revolvers will only have an interest coverage ratio test (e.g., $> 2.0 \times \text{EBITDA} / \text{Cash Interest}$) and have the simplest covenant structure relative to other tranches of debt. This is because the revolver has the highest priority in the capital structure and has a priority claim to the borrower's assets.

Therefore, the lender that provided the revolving credit line is unconcerned if the borrower raises additional debt, since this means the company has more cash available (on which the revolver has the first claim). In the scenario that the borrower undergoes bankruptcy, the revolver will almost certainly be made whole.

What is unitranche debt and its benefits?

Unitranche debt financing is a blended hybrid of senior debt and subordinated debt. The distinct characteristics of unitranche debt are that it's just one tranche of debt instead of two (as the name suggests), and the debt is priced at a blended interest rate. Traditionally, there would be 1st and 2nd lien debt, and the borrower would have to get financing from two (or more) different lenders, which could make securing financing packages a time-consuming process. But in recent years, non-bank institutional lenders began to provide the entire package and customize it based on negotiations.

The main advantage to borrowers over traditional credit facilities is that it enables borrowers to have "one-stop-shop" financing (i.e., the convenience factor). The borrowers would have only one set of loan documents, one set of covenants, and a much simpler and faster process to close.

What is the difference between a bond's coupon rate and the bond's current yield?

The coupon rate ("nominal yield") represents a bond's annual coupon divided by its face (par) value. The current yield on a bond equals the bond's coupon payment divided by the bond's price.

For example, a bond trading at 90 with a \$100 face value and a \$6 coupon has a 6% coupon rate and a current yield of 6.7% ($\$6/90$). While the coupon rate is always the same, the current yield fluctuates based on the market price of a bond.

What is the difference between current yield and yield to maturity?

The current yield on a bond equals the bond's coupon payment divided by the bond's price. The current yield is a way to discuss coupon rates when the bond price deviates from par. For example, a bond trading at 90 with a \$100 face value and a \$6 coupon has a 6% coupon rate and a current yield of 6.7% ($\$6/90$).

Unlike YTM, the current yield is not the true yield of a bond as it doesn't capture any yield associated with principal recovery, nor does it assume the reinvestment of coupon payments. The YTM is the internal rate of return of a bond. YTM considers coupon payments, principal recovery, assumes reinvestment at the same rate (an iterative process), and time to maturity.

Could you define fixed income and name a few examples?

Fixed-income securities provide their investors with a stream of fixed periodic interest payments and then the return of principal at the end of its term. The fixed amount of interest is paid in the form of coupon payments, usually semi-annually. While all bonds technically fall under fixed income, fixed income usually refers to low-return, low-risk bonds (as opposed to mezzanine financing and HYBs). Examples include treasury notes, treasury bonds, treasury bills, municipal bonds, money markets, and certificates of deposits (CDs).

What does the money market refer to and what is the typical maturity range?

The money market refers to the purchase and sale of large quantities of short-term bonds and other debt instruments overnight. The maximum maturity of these short-term bonds is 397 days (~13 months), and the investors are usually risk-averse with limited risk appetite.

What are the two main classifications of money market accounts?

1. **Government Money Market Funds:** T-Bills, Discos (Agency Discount Notes, Reverse Repo)
2. **Prime Money Market Funds:** Short-Term Bonds, Commercial Paper, Certificates of Deposits

What is a municipal bond and what is the one distinct benefit it has for investors?

A municipal bond is a debt instrument issued by a state, municipality, or county to finance its capital expenditures needs, including construction needs, road developments, parks, highways, and other public projects. “Munis” could be viewed as loans that investors make to local governments – and for doing so, these bonds are exempt from federal taxes and most state/local taxes.

What is the difference between coupon bonds and discount bonds?

Unlike coupon bonds, zero-coupon bonds (discount bonds) make no payments between issuance and maturity and are priced at a discount to their face value.

What is the difference between Macaulay duration and modified duration?

Macaulay duration is the weighted average timing of the present value of all the cash flows, typically denoted in years. The modified duration, on the other hand, indicates the percentage change in a fixed income instrument's price given a 1% interest rate change – by making a slight adjustment to Macaulay's duration to reflect the price movement given a change in yield.

Asset managers and fixed income investors typically focus on modified duration, as it shows price sensitivity to interest rates. For example, a 10-year bond with a modified duration of 8 would lose 8% in price (say from par or \$100 to \$92) if the yield increased from 1% to 2%.

Read More → [Understanding Duration](#)

What is the relationship between duration and the coupon?

The duration of any coupon-bearing bond will be less than its years to maturity, as there are coupon payments between now and maturity.

- **Lower Coupon → Longer Duration:** The lower the coupon, the longer the duration is and closer the duration is to maturity. The impact of each coupon payment to shorten the payment is reduced.
- **Higher Coupon → Shorter Duration:** The higher the coupon, the shorter the duration. Each coupon payment has a higher cash flow, which shortens the duration.

What is convexity used to measure?

Convexity is a measure of the relationship between the price of a bond and its yield. Often, convexity is used to track the overall exposure risk on a portfolio of bond holdings. In general, a bond with higher convexity would have a higher price, and its addition to a portfolio should increase the systematic risk of the entire portfolio of bonds. Therefore, a high convexity portfolio would be more sensitive to interest rate fluctuations.

What are the three types of covenants found in lending agreements?

- **Affirmative Covenants:** These covenants require that the obligor (borrower) of the debt to perform certain specific tasks. Examples of affirmative covenants are meeting financial reporting requirements, paying taxes, being insured, maintaining licenses/permits, and legal compliance.
- **Negative Covenants:** These covenants restrict the obligor of the debt to refrain from certain specific tasks such as issuing dividends, raising debt, acquiring another company, or pledging assets as collateral.
- **Financial Covenants:** For financial covenants, there are two types: 1) maintenance and 2) incurrence covenants. Maintenance covenants are usually included in credit agreements (bank loans), while incurrence covenants are included in indentures (bonds).

What is the purpose of covenants in debt financing?

Covenants are contractual agreements between lenders and borrowers meant to protect the interests of the lending parties. Failure to comply with these covenants or breaching a covenant can cause the borrower to be placed into default, allowing lenders to seize the borrower's assets. Debt-holders desire assurance of the full receipt of their due payments with a high level of certainty and restricting the borrower into making only risk-averse decisions and maintaining healthy credit statistics decreases the risk of not being paid back.



**Watch Video →
Debt Covenants**

What are maintenance covenants and provide some examples?

The objective of maintenance covenants is to ensure the borrower maintains sufficient profitability and cash flows to service debt payments. Compliance with maintenance covenants is tested each quarter.

Examples of Maintenance Covenants

- Total Debt/EBITDA must remain below 5.0x
- Debt/Equity must never exceed 2.5x
- Interest Coverage Ratio cannot fall below 3.0x

These parameters will change depending on the prevailing market conditions and be industry specific.

What are incurrence covenants and give some examples?

The purpose of incurrence covenants is to prevent the borrower from taking specific actions that could put the lender's payback at risk. Compliance with incurrence covenants is tested when taking a specific action (e.g., new debt issuance, dividends, acquisition).

Examples of Incurrence Covenants

- Restricted from making acquisitions or divesting one of its business segments (or major assets)
- Prevented from raising additional debt, especially if it has higher seniority than the covenant holder
- Cannot distribute dividends to equity shareholders without the approval of the lenders

What is one key difference between maintenance and incurrence covenants?

Maintenance covenants differ from incurrence covenants in that they're subject to periodic tests, typically completed at the end of each quarter. The borrower must routinely prove its compliance with its maintenance covenants to avoid default. Incurrence covenants are tested only once a certain action or event "triggers" it.

Leveraged loans have become increasingly "covenant-lite," what does this entail?

Secured 1st lien loans have shifted towards becoming "covenant-lite" in recent times, meaning they're packaged with less restrictive incurrence covenants than traditional maintenance covenants. Compliance tests of covenant-lite loans are thus only required if the borrower takes a certain action (e.g., raises more debt, dividend issuance), rather than being tested periodically as they traditionally were.

This trend is due to large banks needing to make their financing packages more attractive to borrowers to compete with newer types of institutional lenders that offer more flexibility (e.g., private credit funds, increased usage of unitranche debt).

What are subordinated notes?

Subordinated notes are characterized by longer tenors and higher-interest rates that compensate investors for undertaking more risk. This layer of debt enables the borrower to increase leverage beyond what risk-averse institutional banks will provide. While subordinate notes have a higher cost of capital relative to bank debt and don't allow prepayments, these notes come with less restrictive covenants.

What are the characteristics of mezzanine financing?

Mezzanine financing refers to the layer of financing that lies in between traditional debt and common equity. This category is the lowest form of debt in the capital structure and includes preferred stock, convertible debt, bonds coupled with warrants. All mezzanine debt is unsecured and will be of smaller magnitude relative to the other parts of the capital structure.

The debt terms involved in mezzanine financing are highly negotiated, flexible, and tailored to meet the specific needs of both parties. The interest rates are the highest compared to other less risky tranches and debt, with the option for interest to be paid-in-cash or payment-in-kind (PIK). Also, the conversion feature that some of these securities carry provides the holder with the optionality to partake in the upside potential of the equity (and create dilution for common shareholders).

What are bridge loans?

Bridge loans provide interim financing should the required debt commitments not be available by the closing of the deal (i.e., the borrower could not secure a firm commitment letter from lenders). Investment banks that can do so will provide this type of bridge loan commitment to prevent a transaction from stalling and give assurance that sufficient funding will be available to close the deal.

What is staple financing and which type of lender provides it?

Staple financing is when the sell-side investment bank can provide some initial debt, but rather than holding onto the debt, they usually sell it to debt-oriented hedge funds or institutional investors.

Staple financing is an option available when the sell-side advisor is a large, more institutionalized investment bank that has a balance sheet such as J.P. Morgan, Goldman Sachs, and Morgan Stanley. For clarification, the phrase “has a balance sheet” means the investment bank is diversified in terms of its sources of revenue and has a lending division, as opposed to purely offering M&A advisory services. This is an advantage that bulge bracket banks have over elite boutiques such as Evercore and Qatalyst Partners, where most of their revenue comes from M&A advisory – but this creates the potential for a conflict of interest since the firm serves both sides of the transaction (the seller and the buyer).

What is a firm commitment letter?

Once a financial sponsor or a strategic buyer has met with the target's management team and has proceeded with submitting an LOI, the next step is to get a firm commitment letter from its lender(s). This is done to gain credibility as a buyer, as the most credible bids are the ones with financing commitments prepared with the initial debt terms outlined.

How does a highly confident letter differ from a firm commitment lender?

From both the buyer and seller perspective, committed financing is preferred as the lending bank is practically guaranteed to fund it upon closing. Alternatively, highly confident letters mean the lender believes it can raise the amount of capital required, but they'll not commit to it (and not backstop it with their balance sheet).

Other than covenants, what provisions can be included to protect lender interests?

Besides the traditional covenants found in lender agreements, there'll often be conditions listed that enable the lender to renege on its initial commitment without facing monetary consequences. These provisions are included in the case an unexpected event occurs. The lender doesn't want to be committed to lending in a situation when everything appears to be headed downhill and the risk of default has significantly increased.

In these commitment letters, you would usually see a provision within the agreement to lend as long as certain conditions are met. In nearly all cases, the letter includes phrasing along the lines of how there cannot be a “significantly material adverse effect” that places repayment into question.

What is commercial paper and which types of companies issue them?

Commercial paper is issued by large corporations with high credit ratings as short-term borrowing to finance their working capital needs. The typical commercial paper term is ~270 days, and the debt is issued at a discount (i.e., zero-coupon bond) as an unsecured promissory note. The minor concern associated with commercial paper is that they're unsecured, meaning they're not backed by any collateral. Therefore, only large corporations issue this type of debt as they have strong credit ratings.

Besides market risk, name some other risks that bond investors face?

- **Default Risk:** Default risk means the borrower's creditworthiness has decreased from deteriorating financial performance, and most often, it coincides with a downgrade from a credit agency. The higher the credit rating, the lower the probability of default.
- **Liquidity Risk:** Next, liquidity risk refers to when the ability of the bond to be exchanged has unexpectedly decreased. This means that the number of potential buyers in the market has diminished (e.g., changing lending conditions, unexpected company-specific circumstances).
- **Event Risk:** Finally, event risk pertains to specific events such as M&A or legal investigations that could change the risk of holding a particular bond. For example, if the SEC announces they have started an investigation into a company for fraud, this would have an immediate negative effect on all stakeholders.

Tell me about the debt lender and equity investor "story disconnect."

This disconnect between debt lenders and equity investors is due to lenders being "backward-looking" and focused on how the company has performed historically.

Particular attention is paid to signs of cyclicity in the borrower's performance and how it was affected by the latest recession. This is because debt lenders are more concerned with the downside case. After all, even if the company performs well, the lenders don't get to participate in the upside alongside the equity investors.

Thus, the continued generation of the borrower's cash flows to satisfy debt obligations is of the utmost highest importance to debt investors.

In the best case scenario, lenders receive all interest payments and repayment of debt principal, whereas equity owners theoretically have unlimited upside.

When a company is raising capital, why is the lender's case usually less optimistic than the projections shown to raise interest from equity investors?

A distinction when dealing with lenders is that there's little incentive to show aggressive assumptions. Thus, lender case forecasts are lower than the base case for the debt covenants to be set off a lower base.

While they must show that the company can meet the debt obligations to be approved for financing, there's no rational reason for a sponsor to stretch its assumptions beyond this.

Debt covenants are usually based on this metric of EBITDA – thus, the EBITDA provided to lenders is the starting point. A higher EBITDA as the starting point means a higher EBITDA level is required to abide by the covenants. Then, future covenants will be based on quarterly projections of this initial EBITDA.

Therefore, the borrower should desire a sufficient "cushion" to operate where, even if its EBITDA were to drop in an economic downturn, the covenant would still not be breached.

What does refinancing risk involve?

Refinancing risk is the concern that a borrower cannot refinance its debt obligations at the same (or similar) rate as before. For example, the credit rating of the company may have been demoted, and lenders are no longer willing to refinance at the same rates.

From the perspective of an investor, what is the interest rate risk in reference to?

Interest rate risk becomes a consideration for bonds with longer maturities. For instance, the market rates constantly change, and the lending environment could turn more favorable (interest rates could decrease).

If an investor is locked into a long-term bond, they'll face more interest rate risk due to the longer maturities. Therefore, the investor would demand a higher yield to compensate for the additional risk taken on by agreeing to a long-term arrangement.

What is prepayment risk?

Prepayment risk (often called reinvestment risk) is the risk that a lender takes on when allowing the borrower to pre-maturely pay down a particular debt. For example, if a borrower has pre-paid their loan and the lender has received the initial principal back – the lender must search for a new borrower.

However, there's the risk that the credit market has become less favorable to lenders, and the lender may not achieve the same yield as before. For this reason, many lenders will not allow the optionality for prepayment, or if they do, they'll attach prepayment penalties as compensation for taking on the risk of having to reinvest at the current market rates (which could be significantly lower).

In mezzanine financing, what is an “equity kicker”?

An equity kicker is often issued as a “deal sweetener” for new debt issuances. Through the inclusion of an equity kicker, mezzanine investors can often increase returns by an extra 100-200 basis points. In return, the cost of financing can be brought down to allow the borrowing company to secure better terms.

“Equity Kicker” Types

- **Warrants:** Warrants function similar to employee stock options such that the mezzanine investors have the option to exercise their options and turn them into common stock if profitable. This usually amounts to 1-2% of the total equity of the borrower.
- **Co-invest:** Mezzanine investors may seek the right to co-invest equity alongside the controlling shareholder, such as the financial sponsor in the case of funding an LBO.
- **Conversion Feature:** If the debt or preferred stock is structured as convertible, the investor has the option to 1) participate in the common equity's upside or 2) continue to receive interest or dividends.

Equity Financing

If a startup is “bootstrapping,” what does this mean?

If a startup is currently in the “bootstrapping” stage, operations are currently being funded entirely by the cash flows generated by the business and through the out-of-the-pocket funds from the entrepreneur. This term is often closely aligned with the concept of a startup remaining “lean” and holding off on raising outside, “unnecessary” capital to first maximize the utilization of their resources (e.g., human capital, intellectual property, product, and market strategy ideas/plans).

The startup is likely attempting to minimize expenses while building its cash flow to reduce the need to raise outside capital. Alternatively, it may not have the option to raise capital even if it wanted to due to insufficient proof-of-concept. Once the startup has become more established and made more progress, it can raise capital with more negotiating leverage (rather than being at the mercy of early investors).

For an early-stage company, what are a few options for liquidity events?

A liquidity event is an opportunity for the founder of a private company and its early investors to sell some or all of their equity ownership. Given the illiquid nature of the investment and the high-risk nature of early-stage companies, it's reasonable to see a liquidity event.

Often, this will begin with a minor partial liquidity event to take some profits (i.e., partial “cash-out”), with the provider of the capital being a venture capital firm. Later examples of liquidity events as the startup grows will be raising financing from venture firms and being acquired by a strategic.

Who are angel investors?

An angel investor is most often a wealthy, accredited individual investing in seed and early-stage companies. Once a startup has exhausted its funding from friends and family members, the angel investor is often the first outside investor to provide capital.

The company may often not even have a working product, and therefore, the angel investor is taking on a substantial risk of losing their initial investment. For this reason, the check size of an angel investor is rarely more than \$1 million per startup investment.

Walk me through the various funding rounds in venture capital.

Venture Funding Rounds

- **Seed Round:** The seed round will involve friends and family of the entrepreneurs and individual angel investors. Seed-stage VC firms can sometimes be involved, but this is typically only when the founder has previously had a successful exit in the past.
- **Series A:** The Series A round would include early-stage investors and typically represents the first time institutional investment firms will provide financing. During this stage, the startup's focus will be on optimizing its product offerings and business model and developing a better understanding of its users.
- **Series B/C:** These rounds represent the expansion stage and still involve mostly early-stage venture firms. The startup has gained initial traction and shown enough progress for the focus is now be trying to scale, which involves hiring more employees (especially in sales & marketing, business development).
- **Series D:** The Series D round (and onward) represents late-stage investments where the new investors providing capital will usually be growth equity shops that invest under the belief the company has a real chance at undergoing an IPO in the near term.

From the perspective of an entrepreneur, what are the pros and cons of raising outside capital?

For entrepreneurs, the primary reason for raising outside capital is often first to ensure the business has sufficient funds even to operate. This will particularly be the case for startups that require high R&D for continued product development and to scale further.

Using the newly raised capital, the entrepreneur has various options to improve their operations, including:

- Hire more talented employees and increase overall employee count (more job functions)
- Move the business to a better location (i.e., be closer to target customers, VCs, a state with lower taxes)
- Invest more in sales & marketing, advertising, and other operational roles
- Implement new growth strategies that otherwise could not be done without this funding

Most venture capitalists are rarely simple providers of capital. These investors are often former entrepreneurs who had their own successful exits and can develop a strong mentor-mentee relationship with the entrepreneur. Under the guidance of the new advisors, the entrepreneur can better navigate the difficulties all startups inevitably face as they attempt to achieve growth and scale.

In addition, an investor's willingness to not only risk the loss of their capital but to spend their time and resources to provide guidance to the management team proves the validity of the entrepreneur's business idea (i.e., this product and business plan could be viable).

The major downside of raising outside capital is that the entrepreneur must give up more ownership of their business as more capital is raised. However, this is often a necessary decision if the entrepreneur wants to grow the business and eventually IPO (or have a similarly successful exit).

What does the proof-of-concept stage involve?

When a company is at the proof-of-concept stage, there's no working product on-hand. Instead, there's just a proposed idea for a certain product, technology, or service. Thus, it's difficult to raise much capital; however, the amount of funding required is usually very minimal since it's only meant to build a prototype and see if this idea is feasible in terms of product-market fit. At this stage, the investors providing this type of seed investment are usually friends, family, or angel investors.

Explain to me what the commercialization stage is.

The commercialization stage is when the value proposition of a startup and the possibility of a product-market fit has been validated, meaning institutional investors have been sold on this idea and contributed more capital. The focus shifts almost entirely to revenue growth, as profitability is not the priority, since the company has more than enough capital raised and investors will contribute more if needed.

The commercialization stage usually refers to Series C to D (and beyond), and there'll be several large, institutional venture firms and growth equity firms involved in guiding this high-growth company to help refine the product or service offering, as well as the business model.

Explain the power law of returns in venture capital investing and its implications?

Peter Thiel famously said, "The biggest secret in VC is that the best investment in a successful fund outperforms the entire rest of the fund combined." The return distribution that Thiel was referring to is known as the power law of returns.

Venture capital investments are made under the expectation that most will inevitably fail. However, a single investment by itself can enable the firm to meet its return hurdle. The implication of this is the considerable emphasis on market size when looking for prospective companies given the risk/return profile.

Given the rate of failure in startups, VCs only target investments that have the potential to return the value of the entire fund.

If the revenue opportunity present in the market is not large enough, the fund could not meet its return threshold even if the startup turned out to be a success. This illustrates why VCs target large industries worth at least ~\$500 million to achieve their target of ~\$100 million revenue based on their market penetration assumptions with a reasonable margin of safety.

What role does a lead investor have in a round of financing?

The lead investor in a company is a venture capital firm or individual investor that organizes a round of funding for a particular company. The lead investor is usually one of the first institutional investors in the company and will contribute the largest amount of capital (i.e., “lead the round”).

The lead investor will often use their network to help the startup raise more funding from various investment firms and make introductions as needed. Therefore, the more credibility the lead investor has within the investment community, the higher the likelihood that other VC firms will trust their judgment and be more willing to participate in the upcoming financing rounds.

Give me an example of the drag-along provision in use?

The drag-along provision protects the interests of the majority shareholders (usually the early, lead investors) by enabling them to force major decisions such as exiting the investment.

This provision will prevent minority shareholders from holding back a particular decision or taking a specific action, just because a few shareholders with small stakes are opposed to it and refusing to do so.

For example, suppose the stakeholders with majority ownership desire to sell the company to a strategic, but a few minority investors refuse to follow along (i.e., drag-along the process). In that case, this provision allows the majority owners to override their refusal and proceed onward with the sale.

What are the typical characteristics of preferred stock?

Preferred stock can be best described as a hybrid between debt and equity – and sits right in between the two in the capital structure. Preferred stock has a higher claim on assets than common stock and receives dividends, which can be paid out as cash or “PIK.”

Unlike common equity, the preferred stock class doesn't have voting rights but has seniority in the capital structure, but still has a lower claim than any debt holders. Sometimes preferred stock can be convertible into common equity, creating additional dilution.

What are the two main types of preferred equity investments?

1. **Participating Preferred:** The investor receives the preferred proceeds (i.e., dividends) amount + has a claim to common equity afterward (i.e., “double-dip” in the exit proceeds).
2. **Convertible Preferred:** Also referred to as non-participating preferred, the investor receives either 1) the preferred proceeds or 2) common equity conversion amount – whichever is of greater value.

What is a liquidation preference?

The liquidation preference of an investment represents the amount the owner must be paid at exit (after secured debt, trade creditors, and other company obligations). The liquidation preference determines the relative distribution between the preferred shareholders and the common shareholders.

Often, the liquidation preference is expressed as a multiple of the initial investment (e.g., 1.0x, 1.5x).

$$\text{Liquidation Preference} = \text{Investment \$ Amount} \times \text{Liquidation Preference Multiple}$$

A preferred shareholder has a 2.0x liquidation preference. What does this mean?

A liquidation preference is a clause in a contract that gives a certain class of shareholders the right to be paid ahead of other shareholders in the event of a liquidation. This feature is commonly seen in venture capital investments. Given the high failure rate in venture capital, certain preferred investors desire assurance to get their invested capital back before any proceeds are distributed to common stockholders.

If an investor owns preferred stock with a 2.0x liquidation preference – this is the multiple on the amount invested for a specific funding round. Thus, if the investor had put in \$1 million with a 2.0x liquidation preference, the investor is guaranteed \$2 million back before common shareholders receive any proceeds.

What does it mean if the liquidation preference is a capped participation preference?

A capped participation preference (often called “capped participating preferred”) indicates that the preferred shareholders can share in the liquidation proceeds on a pro rata basis until total proceeds reach a certain multiple of the original investment, plus any accrued dividends. This is similar to participating preferred equity, but the proceeds are capped once a certain multiple has been reached.

What is the difference between the pre-money and post-money valuation?

- **Pre-Money Valuation:** The pre-money valuation refers to the company's value prior to the first (or the next) financing round.
- **Post-Money Valuation:** The post-money valuation accounts for the new investment amount after the financing round. It can be calculated as simply the new financing amount added to pre-money valuation, or the formula below can be used:

$$\text{Post Money Valuation} = \frac{\text{New Financing Amount}}{\% \text{ of Equity}}$$

Tell me about the difference between an up round vs. a down round.

Prior to a new financing round, the pre-money valuation will first be determined. The difference captured between the starting valuation and then the ending valuation after the new round of financing determines whether the financing was an “up round” or a “down round.”

- **Up Round:** An up round refers to financing in which the valuation of the company raising additional capital increases when compared to its prior valuation.
- **Down Round:** A down round refers to when the valuation of a company has decreased after a financing round when compared to the previous financing round.

Can you give me an example of when dilution would be beneficial for a founder?

As long as the startup's valuation has increased sufficiently (i.e., “up round”), dilution to the founder's ownership can be beneficial. For example, let's say that a founder owns 100% of a startup that's worth \$5 million. In its seed-stage round, the valuation was \$20 million, and a group of angel investors collectively want to own 20% of the company in total. The founder's stake will be reduced from 100% to 80%, while the value owned by the founder has increased from \$5 million to \$16 million post-financing despite the dilution.

Can a startup recover from a down round?

For certain, despite the dilution and potential internal conflict created from the unsuccessful new round of financing – the capital raised could have eliminated the risk of bankruptcy and given it enough money to turn the business around. This down round may have been the lifeline the startup needed to stay afloat and still have a chance at achieving its goals. While a down round is not a positive sign, it's not necessarily a sign that the end is near (although it may be more challenging to raise capital in the future unless clear improvements in performance are made).

What are anti-dilution protection clauses?

The purpose of anti-dilution protection clauses protects shareholders (usually the early investors) following a down round. In effect, their conversion ratio remains the same to shield their investment from potentially losing value due to the additional dilution created post-financing.

What is the term sheet in venture capital?

Term sheets establish the specific agreements of investment between an early-stage company and a venture firm. The term sheet is a non-binding agreement that forms the basis of more enduring and legally binding documents, such as the Stock Purchase Agreement (SPA) and Voting Agreement.

The term sheet is usually less than ~10 pages and is prepared by the investor. Although short-lived, the term sheet's purpose is to list out the initial specifics of an investment, such as the valuation, dollar amount raised, class of shares, investor rights, and investor protection clauses.

The term sheet would then flow into the capitalization table, which is essentially a numerical representation of the investor ownership specified in the term sheet.

What is the pay-to-play provision and what purpose does it serve?

A pay-to-play provision incentivizes investors to participate in future rounds of financing. Simply put, these provisions will require existing preferred investors to invest on a pro rata basis in subsequent financing rounds. If not, the investors will lose some (or all) of their preferential rights, which most often include liquidation preferences and anti-dilution protection. In most cases, the preferred shareholder will accept being automatically converted to common stock with a down round.

What is a right of first refusal (ROFR) and is it an interchangeable term with a co-sale agreement?

While a ROFR and co-sale agreement are both provisions intended to protect the interests of a certain group of stakeholders, the two terms are not synonymous.

- **Right of First Refusal:** The ROFR provision gives the company and/or the investor the option to purchase shares being sold by any shareholder before any other 3rd party.
- **Co-sale Agreement:** The co-sale agreement provides a group of shareholders the right to sell their shares when another group does so (and under the same conditions).

What are redemption rights?

A redemption right is a feature of preferred equity that enables the preferred investor to force the company to repurchase its shares after a specified period. It protects them from a situation when the company's prospects turn bleak. However, this is a rare occurrence to see exercised, as most of the time, the company would not have sufficient funds to make the purchase even if legally required to so.

What is a full ratchet provision, and how does it differ from a weighted average provision?

- **Full Ratchet Provision:** A full ratchet is an anti-dilution provision that protects early investors and their preferred ownership stakes in the case of a down-round, the investor with the full ratchet's conversion price will be re-priced to the lowest price at which any new preferred stock is issued. In effect, the investor's ownership stake is maintained at the expense of substantial dilution to the management team, employees, and all other investors.
- **Weighted Average:** A similar anti-dilution provision used far more often is the weighted average method, which uses a weighted average calculation that adjusts the conversion ratio to account for any past share issuance and the prices they were raised. In effect, the conversion rate is lower than that of a full-ratchet strategy, making the dilutive impact far less severe.

What is the difference between broad-based and narrow-based weighted average anti-dilution provisions?

Both broad-based and narrow-based weighted average anti-dilution protections will include common and preferred shares. However, broad-based will also include options, warrants, and shares reserved for purposes such as option pools for incentives. Since more dilutive impact from shares is included in the broad-based formula, the magnitude of the anti-dilution adjustment is thereby lower.

What is a capitalization table and what purpose does it serve to early-stage companies and their shareholders?

A capitalization table ("cap table") for any early-stage company tracks the equity ownership of a company in terms of number and type of shares (as well as series) along with any special terms such as liquidation preferences or protection clauses. For this reason, a cap table must be kept up-to-date to calculate the dilutive impact from each funding round, employee stock options, and issuances of new securities or convertible debt. Thus, all stakeholders can accurately calculate their share of the proceeds in a potential exit (i.e., liquidation event such as a sale to a strategic or IPO).

What is an option pool?

An option pool is a reservation of a certain percentage of shares (usually between 5% and 20%) set aside for future issuance to key employees, investors, or advisors of a company. The option pool is often used to attract talented employees by a cash-strapped startup that cannot afford to pay out high salaries due to insufficient cash and provide an incentive to perform well for the options to vest.

Another case an option pool is used is when a private equity firm performing an LBO allots a portion of equity as an incentive tool for the management team to reach their targets (called a "management option pool").

What is an employee stock ownership plan (ESOP) pool?

When a startup has an employee stock ownership plan (ESOP), it allocates a certain percentage of shares to early employees and later hires. The key distinction of this specific type of options pool is that it's not intended for the founding team, first employees, or current employees. Instead, an ESOP aligns incentives for future employees and is used to hire the top talent once the business scales. By the time a startup is nearing its Series A, the ESOP pool size typically ranges around ~10% of the fully diluted equity.

What is growth equity and how does it differ from earlier-stage venture capital investments?

Growth equity involves taking minority equity stakes into high-growth companies that have moved beyond the initial startup stages. The investments made by growth equity firms are often called growth capital because they help the company advance into the next development stage. Since the growth equity firm doesn't have a majority stake, the investor has less influence on the portfolio company's strategy and operations. However, the objective is more related to riding the ongoing, positive momentum and taking part in the IPO ideally.

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.

When growth equity investors pursue industries to invest in, how does it differ from industries targeted by traditional buyout firms?

Growth equity is centered on disruption in “winner-takes-all” industries; whereas traditional private equity is more about defensibility in revenue and free cash flows. In the industries that traditional buyouts take place, there's enough room for there to be multiple “winners.” In addition, traditional buyouts typically rely heavily on the use of leverage in their investments, in contrast to growth equity firms, which may not use any debt, and usually are more focused on the pure growth of the equity in their investments.

What is an initial public offering (IPO)?

An initial public offering (IPO) is the process of a privately held company offering its equity to the public in a new stock issuance. For a company to undergo an IPO, specific requirements must be met that are set by the Securities and Exchange Commission (SEC). An IPO presents a company with an opportunity to get further capital by offering shares through the primary market channel.

Traditionally, the company will hire several investment banks (often called the “underwriters”) to advise on the transaction as the company “goes public.” The investment bank will market the company (i.e., the “roadshows”), secure demand from institutional investors, and set the IPO price and listing date.

From the perspective of management, what are some downsides of going public?

While the benefits of becoming publicly traded from a monetary perspective are clear, there are several disadvantages to management once their company has gone public:

- The foremost concern for management teams is that they could lose control over their company, especially if shareholders are not pleased with its financial performance and believe they should be replaced.
- The disclosure requirements will open up the company to scrutiny by investors and their closest competitors can access their financials as their operations and playbook are an open-book for viewing.
- Going public puts more pressure on the management team to meet near-term performance metrics, as public market investors can be more short-term focused and expect companies to meet their quarterly or annual earnings guidance.

What are the key differences between common and preferred stock?

- **Common Stock:** Common stock is often referred to as basic shares and represents ownership in a particular company. Usually, common shares come with voting rights, and the amount of voting power a common shareholder has is directly related to the number of shares owned.
- **Preferred Stock:** Preferred stock is a hybrid between bonds and common stock, which can be appealing to more risk-averse investors. Preferred stockholders are usually paid preferred dividends consistently, hence its comparison to bonds. But if dividends cannot be paid out to any equity investors, preferred shareholders have a higher claim on the distributions than equity shareholders – so no dividends can legally be paid to common shareholders without first paying the preferred shareholders. On the downside, preferred shareholders have no (or limited) voting rights in the company's corporate governance and are still below all debt holders in the capital structure. In the event of liquidation, the preferred shareholders will have a higher claim on the liquidated assets relative to common shareholders, assuming there's remaining collateral after the debt holders have received their share.

What are preemptive rights?

Preemptive rights allow existing shareholders to purchase a new issuance before it's offered to other potential buyers. This provision protects early shareholders from dilution when the company issues new shares.

How can founders maintain control over their company post-IPO?

Once a company has gone public, it's inevitable for ownership to become diluted for all stakeholders. For many founders, this is the primary concern when considering selling shares to the open public.

Three methods for management to help protect their control over their company are:

1. **Create Different Share Classes (Dual-Class Share Structure):** This would mean there are distinct classes of common stock with different voting rights or voting power. The most common practice is the issuance of Class A and Class B shares. When a company goes public, the founders and early investors can be given shares with extra voting rights (often called "super-voting shares").
2. **Maintain Majority Control:** While it's near impossible for the founders to maintain majority control, close relationships with their early investors and investors with large stakes in the company would be very beneficial to have on their side and a way for them to maintain majority control in the company to an extent. Having the backing of the largest shareholders is reassuring from the perspective of management.
3. **Control the Internal Board of Directors (BOD):** While regulations are increasingly forcing companies to include more independent board members, the more BOD members that have a close relationship with the founders – the more beneficial it is for management. Ideally, the entire board respects and believes the current management team is the right team to lead the company. The absence of this type of dynamic could lead to management being voted out if performance suffers. Therefore, it's in management's best interest to have as many inside directors as possible (rather than outside directors).

What are no-vote common shares and which headline IPO brought it into discussion?

The mainstream IPO that included no-vote common shares was the IPO of Snap Inc. in 2017. While common shares with differing voting rights are frequently seen during IPOs, the no-vote common shares were a rarity. In Snap's IPO, most shareholders were not given voting rights, which was controversial, as investors would be completely hostage to management decisions under the proposed corporate governance. Even Snap's S-1 filing wrote that "to our knowledge, no other company has completed an initial public offering of non-voting stock on a US stock exchange" and acknowledged this decision could lead to a lower share price and fewer investors.

In Snap's IPO, there were three classes of stock: Class A, Class B, and Class C. Class A would be the shares traded on the NYSE with no voting rights, Class B would be for early investors and executives of the company and come with one vote each, and Class C would be held only by Snap's two co-founders, CEO Evan Spiegel and CTO Bobby Murphy. The Class C shares would come with ten votes apiece, and the two holders would have a combined 88.5% of Snap's total voting power post-IPO.

During an IPO, what is the role of the underwriter?

The underwriter, most often an investment bank, will serve as an intermediary between the company issuing securities and the investing public. The underwriter will be tasked with handling the new issuance of stock and to ensure 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. Some key obligations that the underwriter will have are to handle the roadshow strategy, generate interest from potential investors, and price the IPO optimally to maximize the value received.

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What is the purpose of a syndicate of underwriters?

A group of investment banks, called a syndicate, will purchase the new issuance of securities for a negotiated price and then promote the securities to their network of investors in a process called a roadshow. Doing so spreads the risk across several underwriters instead of placing all the pressure on one underwriter, which maximizes the chance of the entire issuance being sold to the public (but mainly to institutional investors).

What events take place during management roadshows?

A roadshow is when the management of a company raising capital will travel around to give presentations to institutional investors such as large asset management firms, hedge funds, and pension funds. The reason for doing the roadshows is to generate interest from investors for an upcoming issuance of equity or debt.

What is the difference between the primary and secondary markets?

- **Primary Market:** The primary market is when securities are first issued via an IPO – i.e., this is the first time shares are offered to the public.
- **Secondary Market:** The secondary market is when the securities are traded amongst investors, which include institutional firms (e.g., asset managers, hedge funds), as well as individual investors.

What is a red herring, and when is it filed with SEC?

More formally called the preliminary prospectus, the red herring provides prospective investors with information regarding an upcoming IPO. Included in the prospectus are details related to the company's products, growth plans, intended uses of the raised funds, potential risk factors, and more background details on the company (e.g., detailed financial statements, management team biographies).

The filing must be filed with the SEC, not just accompany the bankers on the roadshow and be used to raise investor interest, but to describe the issuance of equity and the proposed details of the IPO offering.

What is the S-1 filing, and how does it differ from the red herring?

The SEC Form S-1 is a required filing with the SEC for all US companies seeking to become publicly listed and registered on an exchange (i.e., planned IPO). Found in the S-1 is information on the planned usage of the raised capital proceeds, the current business model, full detailed historical financials, commentary on the competition landscape, a prospectus of the planned security issuance, the method for setting the offering share price, and commentary on existing securities and dilution.

Compared to the red herring, the S-1 is lengthier and more formalized regarding the IPO's information and set strategy. The red herring is a preliminary prospectus that comes before the S-1 and is circulated during the "quiet period" before the registration has become official with the SEC. Often, the SEC may request additional material to be included or changes to the red herring. The final prospectus, the official S-1, would then be filed before the company can proceed with the distribution of shares.

Why is there a lockup period associated with IPOs?

The 180-day lockup period associated with IPOs prevents insiders from selling their shares immediately once the company has undergone an IPO. The sudden increase in selling volume could cause the share price to drop significantly, as many early investors might want to liquidate their positions as soon as possible.

What is the difference between a seasoned equity offering (SEO) and a rights offering?

- **Seasoned Equity Offering:** A SEO is when a company that's already public (i.e., underwent an IPO) issues additional shares. This is often referred to as a "follow-on offering."
- **Rights Offering:** A rights offering gives existing shareholders the exclusive right to purchase new shares at a pre-specified price below the current share price on a pro rata basis.

During an IPO, what does a firm commitment mean?

A firm commitment refers to when an investment bank, the underwriter of an IPO, agrees to assume all the risks associated with failing to sell all the shares being listed by purchasing all the securities being issued directly from the company. Under this method, the underwriter would bear all the risk because it purchases the entire issuance of new securities (hence, syndicates are far more common).

What do “best efforts” underwriting agreements involve?

An underwriting arrangement based on “best efforts” refers to the equity underwriters' commitment to making their best effort to sell as much as possible of the securities issuance. However, there's no guarantee that all the securities will be sold, so there are no negative implications for them failing to achieve the set capital raising target (other than potential reputational damage).

Could you explain the Dutch auction pricing method in an IPO?

In an IPO that uses the so-called Dutch auction pricing strategy, the share price is lowered until all the shares would be sold. Then, all the shares are sold at that price, which is the highest price where all the shares would be sold. Rather than setting the price based on valuation alone, the price is based on the bids placed by the interested buyers that will submit how much they would pay and the number of shares they can buy at their proposed price. In effect, bringing in a game theory element to this type of auction pricing strategy.

What is a direct listing and how does it differ from the traditional IPO?

An alternative to the traditional IPO is a direct listing, which involves the company selling shares directly to the public market without the advising of an investment bank. Companies that decide to proceed with this route can avoid the lock-up period associated with IPOs, minimize the dilutive impact, and save a significant amount of money by not having to pay fees to investment banks. This option is riskier, however, since the process is relatively new, and there's no assurance that the shares will be priced correctly or enough shares will be sold.

Direct listings come with fewer transaction costs (paid to investment banks) and the ability to avoid the lockup period but are not viewed as a “replacement” for an IPO because they're not ideal for a company that wants to raise capital. However, the SEC recently announced a rule change that companies undergoing a direct listing can now raise capital, making direct listing a more compelling alternative to IPOs. One of the first companies to do a direct listing was Spotify in 2018, as well as Slack in 2019. Two of the most prominent IPOs in 2020, Palantir Technologies and Asana Inc, both opted to go public under the non-traditional direct listing.

In the past couple of years, IPOs have increasingly been scrutinized for leaving “money on the table.” Could you explain what this criticism is regarding?

Following an IPO, the shares often surge and the market capitalization of the company can jump in excess of \$50-\$80 million on the 1st day of trading. This has led to criticism, including from prominent VC Bill Gurley, one of the leading critics of the underpricing of IPOs by investment banks for “leaving money on the table.”

In defense of investment banks, this underpricing can be attributed to how their priority is to sell all the shares being listed, which often requires pricing it lower than some would pay. However, many investment banks are still accused of having conflicts of interest to serve both the company going public and institutional investors. For example, imagine an unrealistic scenario where shares were priced to “perfection” and the share price didn't budge once listed, meaning no share appreciation for the investors. Therefore, this discounted feature of IPO pricing could be seen as a way to establish long-term relationships with investors because if they achieve a high return from an IPO, they'll be more likely to invest in the next IPO managed by the same investment bank.

A syndicate in an IPO has exercised the greenshoe option. What does this mean?

The greenshoe option (or “over-allotment”) is a clause outlined in the underwriting agreement of an IPO that allows the underwriting syndicate to purchase up to an additional 15% of the shares at the offering price. The option can be exercised, and more shares can be sold if demand from the public exceeded expectations, and the shares are trading above the offering price, which allows the issuing company to raise more capital. Alternatively, the underwriters are granted this right to buy more shares from investors to stabilize the price and decrease the supply if the share price dropped.

What is a special purpose acquisition company (SPAC)?

A special purpose acquisition company (SPAC), often referred to as a “blank check company,” is a shell company formed strictly to raise capital through an initial public offering to acquire an existing company or merge multiple companies. Prior to having a specific target, the SPAC raises funds through an IPO of the SPAC’s equity securities, with the sponsor retaining ~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, 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. Here, the 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 buyers 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.

Read More → [Going Public Circa 2020; Door #3: The SPAC](#)

What is a private placement?

A private placement is when a company raising capital issues shares to only a select few institutional investors. In contrast to a public issuance, the securities are not made available for sale to the open market and are not required to be registered with the SEC. A private placement is a more direct approach to selling to a group of accredited investors, consisting of institutional firms, mutual funds, and pension funds. Both public and privately held companies can partake in private placements.

What are the characteristics of a shelf offering?

Filed with the SEC, a shelf offering provision (S-3 registration) enables a company to make an issuance in a three-year period, rather than selling it all in one sale. This can be beneficial as the market conditions could turn more favorable, and it gives the company raising capital more flexibility with the timing of the sales. Hence, many shares will be “on the shelf” until the company sells them.

What does a private investment in public equity (PIPE) mean?

Private investment in public equity (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 will be made at a discounted price, usually as an unregistered convertible or preferred security.

PIPEs have become an alternative way for companies to raise capital and this financing structure became more prevalent due to the relative cheapness and efficiency vs. a traditional secondary offering. There are also fewer regulatory requirements, as there’s no need for expensive roadshows.

General Market Knowledge

Questions pertaining to the public equity markets tend to be less common in investment banking and private equity interviews when compared to hedge fund, sales & trading, equity research, and capital markets roles. You should still have a general understanding of the markets as a baseline.

If you have not already, make it a daily habit to read the [Wall Street Journal](#). Most university career centers will provide students with free access. If not, WSJ is currently offering a \$4 per month student digital pack offer on their website as of right now. Even if this current offer ends, WSJ is known for giving significant discounts to students.

Also subscribe to email newsletters such as [Morning Brew](#) and [Dan Primack's Pro-rata](#) – these are two convenient ways to keep tabs on what's going on in the markets.

What did the S&P 500/Dow/NASDAQ close at last night?

The market would likely be open at the time of the interview, and the interviewer doesn't expect you to have the exact latest numbers. Therefore, saying: "The S&P 500 closed around 3,570 yesterday and opened lower this morning after reports of new coronavirus infections surged" would be sufficient. Instead, it's more important to discuss the recent trends and developments driving equity valuations over the past few months and years rather than memorizing the precise figure at which a certain index closed.

If you're preparing for an interview during an important economic period or event (e.g., COVID-19, recent Fed meeting, financial crisis, healthcare reform, tax reform), be aware of what's going on and be prepared for questions on your thoughts on those types of current events.

What is the current 10-year risk-free rate?

Similar to the previous question, you just need to answer with an approximation of the current risk-free rate. A response along the lines of "The yield on the 10-year treasury bonds has been around ~0.8% as of late" will do. Just make sure you're within the ballpark. If you want to open up a more in-depth discussion about the risk-free rate and interest rates, you could mention the direction it has been trending. For example, you could mention that throughout the fall, the risk-free rate has been trending upward since the summer from the increased political risks surrounding the 2020 elections, the rising cases of coronavirus cases as more businesses re-open, and more questions surrounding the timeline of the vaccine development.

What's your near-term and long-term outlook on the equity markets?

Start by answering where the current level of the market is and the prevalent trends in the market. For instance, has the market been rising with strong earnings? Then talk about the key catalysts that could move the market and the specific development you would be looking out for.

In addition, try to find out what the bank's research analysts predict for the market's Year-End Target. You can find research estimates on Bloomberg or ask an analyst you have networked with to share the latest estimates with you. Many brokerage firms also provide institutional research to retail clients using their online brokerage account, so opening up a Chase or a Merrill account can allow you access to J.P. Morgan and BofA research.

Later on in your careers, when you discuss the markets with clients, you'll start with your house view (research), and then you can add your personal views on why you would disagree.

Sample Response

"First off, I know your bank's Year-End target for the S&P500 is 4,000. I am personally slightly more bearish with the view that the S&P 500 will trade range bound and close the year at the same point we are now. Overall, the S&P 500 is trading at a P/E ratio of 36, which is quite high on a historical context. Most of the positive news on the COVID recovery has already been priced in, and I feel a shift in sentiment or flows can send stocks lower. We are approaching quarter-end, and with stocks outperforming bonds this quarter, I would expect some investors to sell stocks and buy bonds for rebalancing.

Although I am slightly more bearish, I don't think there's a risk for a broad market crash. The Fed has shown strong support for the market. We are seeing the Fed ease up on some support in the market. The S&P 500 is already higher than where we were pre-COVID, and my view is that the Fed will continue to remove support for the market if we move higher, limiting the upside gains in the market and causing us to trade on a range-bound basis."

What do you think the Fed is going to do at the next FOMC Meeting?

Although the question asked has no right or wrong answer, there are a few unasked questions that will showcase your understanding of the markets:

- When is the next FOMC meeting?
- What is the current Fed Funds Target Rate?
- What was the Fed's action at the last FOMC meeting?
- What is the Futures Market implying for the FOMC meeting?

To answer this question effectively, you need to list the key facts to the unanswered questions and then express your view. If the market is not expecting a move in the Fed Funds rate, be prepared to discuss the Fed's balance sheet and changes in its Asset Purchase Programs.

Sample Response

"The next FOMC meeting will be on November 5th. The current Fed Funds Target rate is between 0 and 25 basis points. The Fed has held this rate steady since the emergency meeting in March when the Coronavirus crisis began. The market is not expecting any change to the Fed Funds Target Rate, and I'm not either.

I'll be watching the Fed closely to see if they're planning to change the language or guidance of their asset purchase program. With the stock markets near all-time highs, I would expect the Fed to remove some asset purchases modestly they have promised but gradually as to not spook the markets."

What is the key difference between the NYSE and the NASDAQ?

In the US, the two primary stock exchanges are the NYSE and the NASDAQ. Before filing for an IPO, companies must decide which stock exchange to list their shares.

- **NYSE:** The NYSE (New York Stock Exchange) is the older stock exchange with roots back to 1817 and physically on Wall Street. Originally, the NYSE was setup with pit trading on an actual trading floor, but today, most trades are electronic, although some market makers still exist.
- **NASDAQ:** Launched in 1971, the NASDAQ is newer and a completely electronic exchange with offices in Times Square and data centers in New Jersey. Compared to the NYSE, the NASDAQ is more tech-heavy due to its flexible listing requirements that appeal to former startups that at one point didn't qualify for the NYSE. However, the NYSE has relaxed its listing requirements in recent years, removing the clear divide as there used to be.

What is the treasury yield curve, and what does its shape tell you?

The yield curve is just a plot of the relation between the yield and the term of otherwise similar bonds. The treasury yield curve plots treasury bond yields across their terms and is the most widely used yield curve as it sets a “risk-free” benchmark for other bonds (corporate, municipal, etc.).

A treasury yield curve is normally upward sloping because, all else being equal, an investor would prefer a one year, 3% bond than being locked into a 30-year, 3% bond.

However, investors’ expectations about future interest rates affect the slope as well. When investors expect the Fed to raise short-term interest rates in the future, investors will decrease demand for short-term treasuries to avoid getting locked into a low but soon-to-be higher short-term rate. This decrease in the relative demand for short-term treasuries will raise short-term yields and flatten the yield curve.

What does an inverted yield curve tell you?

An inverted yield curve means that yields on longer maturities are lower than shorter maturities of otherwise comparable bonds, like treasuries. Normally, yield curves are upward sloping as issuers must pay a premium to entice investors to keep their capital locked up for a longer-term. When the yield curve inverts, it's usually a harbinger of an economic slowdown and recession. In fact, the last seven recessions were preceded by an inversion of the yield curve, and it's considered a strong leading indicator by economists and investors alike.

The inversion happens as investors anticipate market interest rates to decline down the road (presumably because they expect a slowdown and expect monetary policymakers to eventually lower rates to stimulate the soon-to-be slowing economy). Thus, investors prefer the safety of long-term maturities at the current higher rates over investing in shorter maturities and having to reinvest at the lower expected future rates.

In terms of yield curve jargon, what does an upward sloping yield curve, inverted yield curve, steeping yield curve, and flattening yield curve imply?

- **Upward Sloping:** Long-Term Government Bond Yields > Short-Term Government Bonds Yields
- **Inverted:** Long-Term Government Bond Yields < Short-Term Government Bonds Yields
- **Steepening:** The interest rate differential between Short-Term and Long-Term bonds is increasing
- **Flattening:** The interest rate differential between Short-Term and Long-Term bonds is decreasing

During a period of record unemployment and economic turmoil in 2020, the markets recovered faster and performed better than expected. What led to this disconnect between the equity market and the economy?

While there are many potential reasons the markets are trading at the levels they’re trading at today (or counter-arguments on whether they should be), one reason valuations have recovered rather quickly is because of the role that the risk-free rate has when valuing equities. Since the market bottomed in March 2020, the US 10-year treasury notes have been around 0.6% to 0.8% – mostly on the lower end of this range, especially between July and August 2020. Many institutional investors had two choices to either invest in:

1. Default-free government bonds yielding practically nothing (< 1% return)
2. Invest in the stock of large, multinational companies with a high likelihood of making it through this period, if not benefit from the lock-downs

The strong performance of the so-called “FAANG” stocks (Facebook, Amazon, Apple, Netflix, and Google) made it clear which decision many investors chose. These leading tech-giants have disproportionately outperformed the broader market as they led its recovery. Given their weighting in the S&P 500 Index, it becomes clear why the market surpassed record all-time highs later in 2020.

Most investors will either directly or implicitly make an investment decision based on the opportunity cost elsewhere. In the direct case, many investors will use discount rates that use the current ten-year government yield as the risk-free rate while performing a DCF (which leads to higher valuations). Others will implicitly see how bond prices have increased as more investors have sought safer assets, which means lower yields because of the inverse relationship. So investors who seek high returns (or even at least have the potential to receive a moderate return) have nowhere else to park their capital other than the equity market.

How does the current market compare to the peak of the Dot-com bubble in 2000?

The Dot-com bubble (often called the internet or tech bubble) reached its highest point around March 2000. At that period, the Chairman of the Federal Reserve, Alan Greenspan, announced his intention to raise interest rates aggressively. The US 10-year treasury notes were yielding ~6% on average. Therefore, when concerns about equities being overvalued were increasingly spreading – investors could sell their shares and receive a ~6% risk-free return.

Contrast this to today, where the Fed Chairman, Jerome Powell, has clarified interest rates will remain near zero through 2022. In the current market, there's no “safe-haven” investment with a decent yield. The term “zero-default risk” loses its meaning to equity investors when interest rates are close to zero (i.e., fair to state, it becomes almost worthless to investors seeking decent returns). The Fed has made it clear that interest rates will remain at this low rate until they're 100% confident that the economy has recovered from the coronavirus's negative effects. Despite providing projections that GDP will bounce back in 2021 and confidence in the recovery, there was no public signal that a rise in interest rates was even in consideration.

What is the definition of VIX and why is it used?

VIX is an index of the implied volatility of the one-month S&P 500 options at different strikes. VIX is a measure of overall market sentiment and is often referred to as the “fear gauge.” A low VIX is associated with a strong market with limited volatility. A high VIX is a sign of fear and an uncertain market. The VIX measures S&P 500 options' implied volatility, including how costly options are to hedge your portfolio.

Where is the price of oil at?

Be careful not to quote the futures prices, as both Bloomberg and Yahoo Finance will show futures prices as well as the price of the spot index. For Oil indices, be specific if you're quoting WTI or Brent, as there's more than one benchmark.

What tools does the US government have to combat inflation or hyperinflation?

The Federal Open Market Committee (FOMC) targets an inflation rate of ~2% over the long-term. To keep inflation around this target range, the US government has monetary and fiscal policies it can use to maintain a stable, long-term inflation rate.

- **Monetary Policies:** Monetary policies involve actions taken by the US central bank to control the money supply and demand to maintain sustainable economic growth. These policies can be classified as either expansionary or contractionary. Expansionary policies increase the liquidity of the money supply, whereas contractionary policy decreases the liquidity of the money supply. Examples of these policies would include strategically adjusting interest rates, changing reserve requirements, direct lending to banks, and open market operations.
- **Fiscal Policies:** Fiscal policies are related to changing tax policies and government spending to increase or decrease the purchasing power of the economy. In effect, this gives the Fed the ability to regulate the economy and influence economic conditions. For example, the corporate tax cut in 2017 from 35% to 21% under the Tax Cuts and Jobs Act (TCJA) was enacted to fuel economic growth and incentivized corporations to return their foreign operations to create more jobs in America.

What is quantitative easing (QE)?

Quantitative easing (QE) is a form of monetary policy where the central bank will directly make purchases of longer-term securities from the open market to increase the money supply and total liquidity. In effect, QE will decrease interest rates, which will directly encourage more lending and make money flow more into equities since fixed-income instruments will have low yields. This type of monetary policy is controversial, as it's essentially meant to flood the economy with money to spur economic activity. QE became a controversial topic of discussion when the Federal Reserve announced in March 2020 that it would purchase \$700 billion worth of government debt, bonds, and mortgage-backed securities over the coming year. This unprecedented decision would not only significantly increase the Fed's balance sheet risk and increase its already-mounting debt, but has created widespread concerns about this seemingly endless "printing" of money. The broader implications this could have for future generations remains an unknown. Often, to help spark economic growth, the Fed will turn to cut interest rates, but interest rates were already close to zero – hence, the Fed turned to QE.

What does it mean when the Fed is engaging in open market operations?

Open market operations are when the central bank purchases or sells short-term government securities (e.g., treasuries) in the open market to influence the money supply and impact short-term interest rates. If the money supply circulating in the system is increased, it becomes easier for businesses and consumers to get loans at low-interest rates, which has a positive impact on economic activity. Alternatively, the selling of securities from the central bank's balance sheet will remove money from the system. This reduction makes loans more difficult to be approved for (i.e., more demand from borrowers, less supply of money) and, as a result, makes interest rates on these loans increase.

What is the relationship between bond prices and interest rates?

There is an inverse relationship between bond price and interest rates. If market interest rates go up (due to a Fed interest rate hike or other market conditions), this has the impact of making the interest being offered by currently outstanding debt seem less attractive given the availability of comparable investments with now higher interest rates, all else being equal. The price of outstanding bonds would thus drop in this scenario.

If the Fed wants to lower rates, what can it do?

If the Fed wants to lower rates, it can directly purchase treasuries in the open market, and then T-bill yields would directly decline. The buyers, which consist of other foreign governments, individuals, institutional investors, and large banks, will store this cash and raise the supply. Alternatively, the Fed can lower rates through repurchase agreements (RPs). This would lower banks' demand for reserves and thus the Fed funds rate, which is the basis on which commercial banks lend.

If the Fed wants to increase rates, what can it do?

Conversely, if the Fed wants to raise rates, it can sell treasury bills in the open market. The Fed lends cash overnight to a select group of banks ("primary dealers") while taking treasuries as collateral at the repo rate. These primary dealers will then disseminate this cash throughout the financial system; thus, the fed funds rate increases. If the Fed wants higher rates, it can also do a reverse repo ("RRP"), in which the Fed borrows money from primary dealers. This would tighten the credit markets, and the fed funds rate would increase.

Besides direct purchases or sales, what is another policy tool the Fed can use to manipulate interest rates?

Another policy tool available to the Fed is to adjust the provided interest on bank reserves. The lowering of this rate (called interest on excess reserves, or "IOER") would encourage lending (and vice versa). The IOER is the interest rate the Federal Reserve pays on excess reserves. This rate is typically within the fed funds' target range. For example, if the fed funds target range is 1.5% to 1.75%, the IOER would be ~1.6%.

What is a repurchase agreement (repo)?

Repos (RPs) are short-hand for repurchase agreements (formally called “sale and repurchase agreements”) and refer to when a borrower, usually a government securities dealer, gets short-term funding by selling securities such as treasuries and agency mortgage securities to a lender.

The lenders could be money market funds, governments, and financial institutions. For a pre-determined period, the borrower will purchase the securities back for the original price plus interest (e.g., the repo rate), usually completed overnight.

What are reverse repurchase agreements (reverse repo)?

Conversely, a reverse repurchase agreement (reverse repo, or “RRP”) is when the purchaser of the security agrees to re-sell the security back to the seller for a pre-determined price at a later date. Essentially, repos and reverse repos are the two sides of a lending agreement from the perspective of the two opposing parties. Note, these are short-dated transactions with a guarantee of repurchase.

What is the Federal Open Market Committee (FOMC)?

The Federal Open Market Committee (“FOMC”) is the monetary policy-making body of the Federal Reserve System. The members meet eight times a year to set the interest rate policy and the federal funds rate. Following these meetings, a statement will be publicly issued to communicate the following changes in rates and commentary on their outlook on the economy and guidance on their forward-view of current policies (i.e., the potential for changes, risks considerations).

What is the federal funds rate?

The federal funds rate represents the target interest rate set by the Federal Open Market Committee (FOMC) for short-term loans. The fed funds rate target has historically been one rate (e.g., 1.5%) but is now a range (1.5% to 1.75%). Based on the agreed-upon Federal funds rate, commercial banks and institutions will borrow and lend their excess reserves to one other (usually completed overnight) at this rate. This is the rate that banks charge other banks for overnight loans to cover their reserve requirements. Banks with excess reserves can lend to banks with insufficient reserves. The federal funds rate affects the lending market because banks and many institutional lenders tie their lending rates (e.g., Prime, LIBOR) to the fed funds rate. As a result, any adjustments will flow throughout the entire market, including short-term US treasuries.

What is the federal discount rate?

The federal discount rate refers to the interest rate that the Federal Reserve charges commercial banks and other financial intuitions for short-term loans through the discount window loan process. In contrast to the federal funds rate, the federal discount rate is the rate charged to banks to borrow funds from them, whereas the federal funds rate is the rate that banks lend to each other. Compared to the fed funds target rate, the federal discount rate is typically 50 bps higher.

What are the reserve requirements set by the Fed?

The reserve requirement is the minimum level of cash a commercial bank is required to keep on-hand to cover its deposits. If this requirement were to be lowered by the Fed, the result would be more loans could be made. Therefore, lowering the reserve requirement is an expansionary policy option.

What would happen if interest rates turned negative?

In an environment with negative interest rates, the payment of interest flips between the borrower and lender. The borrower is being paid interest by the lender, rather than the other way around. Central banks use this drastic monetary policy tool to incentivize commercial bank lenders to make loans rather than sit on the funds.

From shortest to longest maturity, list treasury notes, treasury bonds, and treasury bills.

- 1. Treasury Bills:** T-bills mature within one year of issuance
- 2. Treasury Notes:** T-notes mature between two and ten years
- 3. Treasury Bonds:** T-bonds mature in twenty to thirty years

What is a certificate of deposit (CD)?

A certificate of deposit (CD) is an agreement with a bank to deposit money for a specified rate of return (i.e., earn interest). CDs are short-term agreements, issued at par based on the deposit amount, and have the same credit risk as a deposit.

What is the money market yield?

The money market yield is defined as the interest rate earned from holding securities of higher liquidity and short maturities (< one year). Examples of securities included would be certificates of deposit (CDs), US Treasury bills, and municipal bonds.

$$\text{Money Market Yield} = \left[\frac{(\text{Final} - \text{Initial Cash Flow})}{(\text{Initial Cash Flow})} \right] \times \left(\frac{360}{\text{Actual Days}} \right)$$

What are treasury inflated protected securities (TIPS)?

A treasury inflated protected securities ("TIPS") are issued by the US Treasury and protect bondholders from the risk of inflation. Periodically, TIPS adjust the par value (and the coupon) by the inflation rate for the bondholder to receive the originally expected return. Based on changes in inflation, the principal amount will be adjusted, which would then affect the coupon paid.

When does a liquidity trap occur?

A liquidity trap refers to when short-term interest rates are close to zero, which leaves the central bank unable to lower them further to stimulate economic activity. In effect, a liquidity trap makes monetary policy ineffective and restricts the options available to the Fed. Because of the near-zero interest rates, consumers hoard cash rather than invest it into bonds under the belief that the economy is headed in a negative trajectory.

What does the consumer price index (CPI) measure?

The consumer price index (CPI) is used to measure the change in prices that consumers pay for goods and services on average over a period. The index considers the prices of consumer goods (e.g., housing, apparel, transportation, education, recreation, food, medical care). CPI is followed by many to measure inflation and as a proxy to assess how effective (or not effective) the government's current economic policies are.

Would you agree with the statement that deflation is worse than inflation?

Deflation is the macroeconomic condition when a country experiences decreased prices. This is the opposite of inflation, which is characterized by an increase in prices. While initially, consumers may enjoy the lower prices, this cuts into the profit margins of companies. Then begins the cycle of employee layoffs, reduced pay, cutbacks on spending by companies, and overall, the output of the economy contracts, and the level of unemployment increases. This deflationary spiral will eventually lead to reduced investments made by companies to conserve cash, less overall economic growth, and increases in bankruptcies as borrowers cannot pay back loans.

From many economists' perspective, deflation is more serious than inflation as deflation is more difficult to control. An example of deflation's long-lasting effects can be seen in Japan, where even after decades of near-zero interest rates and quantitative easing (QE) efforts, the country has still failed to turn around and struggles to get prices rising again.

Hedge Fund Investing Strategies

Interviewing with a hedge fund is almost entirely dependent on pitching stocks and discussing investment trends in the market. The stock pitch you give is arguably the most important component of the interview. Regardless of whether you're an undergraduate/MBA student or coming from a stint in investment banking, all candidates need to have a stock pitch ready.

Just like other front-office finance roles, credentials and connections matter in the hedge fund industry. However, your investment thought process and differentiation in terms of the investment pitch you present are significant factors in the hedge fund industry.

Pitch me a stock.

Being asked to pitch a stock is a test of your understanding of how equities are valued and how markets function, as well as your ability to think about a business and industry. This is arguably the most important portion of a hedge fund interview as it opens up a lengthy discussion.

Come prepared to discuss one company in-detail and to defend your viewpoint of why its share price will increase (or decrease if pitching a short).

Before the interview, try your best to understand the firm's investment strategy and put together a pitch based on the information you can compile. This will require some creativity and guesswork, but it's very important to have a general sense of the fund's strategy heading into the interview.

It can be difficult to gather information on hedge funds, as most will not even have a website, or their website will show their logo and contact information due to regulatory reasons. However, you can still find bits-and-pieces of information to understand their focus vaguely.

In addition to being aware of the fund's strategy, avoid well-known stocks where the interviewer may have a predisposed view. For example, if you're a firm believer in the growth story of Tesla, but your interviewer is not, it's unlikely you'll change their mind. The interviewer will not wait three months and evaluate your performance vs. your peers. Therefore, it's recommended to pitch a lesser-known stock the chance the interviewer has an existing thesis on is rather unlikely. Even if they agree with your pitch, it'll lead to a far more granular discussion since they've looked at this company before.

Throughout your pitch, have conviction in your thesis and be prepared to hold your ground, as your assumptions will be challenged. No matter what, avoid changing your recommendation or even give off the impression of beginning to show doubt amidst giving your pitch. If your recommendation can be dismantled within a ten-minute discussion, you have either chosen the wrong stock to pitch or you didn't come adequately prepared to defend your assumptions.

Remember, counter-arguments with valid concerns can be made against all pitches. But as long as the assumptions that serve as the basis for your pitch remain intact, there's no reason to question the validity of your pitch – as that's precisely what the interviewer is attempting to do.

Understand which specific factors matter and which ones don't matter in the share price of the company you're pitching. When you can distinguish between the two and make it clear to the interviewer, the discussion becomes structured around those key points your pitch was crafted around – putting you in a far more advantageous position.

Stock Pitch Structure	
Recommendation	The pitch should begin with a clear statement on whether you recommend the fund to take either a long or short position. This introduction is your “hook” to grab the interviewer’s interest and your view on the potential upside (or downside) of an intriguing investment, so it’s important you get this part right to get the interviewer interested in hearing more about your investment thought process and rationale.
Company Overview	Next, contextualize the company’s “story,” which should progressively lead to the reason this stock you have chosen will perform better than its peers. Included in this section should be a basic overview of the business model with commentary on each of the segments, products/services sold, and any recent news that could affect the future performance of the business (e.g., M&A, management change).
Competitive Advantage	Then, explain what competitive advantage (i.e., economic moat) this company currently possesses. This section will be most relevant if you pitch a long position, but regardless of the fund strategy, try to show how you understand the competitive dynamics within an industry and focus on what differentiates this business that’ll protect its profits. Examples could be patents, intangibles such as branding, switching costs, or offering a product/service that cannot be easily replicated.
Market/Competitive Landscape	Next, the ongoing trends in the market that affect the company’s performance should be brought up, as well as your thoughts on the company’s current positioning within the competitive landscape. An approximation of the company’s market share and whether it’s a market leader or challenger should also be made clear.
Catalysts	Since the company’s background and market overview is done, the catalysts that can cause the market to “correct” its mispricing can be identified. Phrased another way: “Which specific catalyst will cause the share price to change?”
Price Target Range	In the next part, state an approximate price target range, how it compares to the current share price on a percentage basis, and the expected time for the target to be reached given the catalysts mentioned. While you need to mention the methods used to arrive at the valuation, a broad overview is sufficient because a significant portion of the follow-up discussion will be related to your valuation.
Investment Risks	Considering the interviewer has a deep understanding of the different risks specific to particular industries and the recurring risks that impact all industries, expect questions on the risk factors (and how they could be mitigated). If you’re interviewing with a fundamentals-oriented fund, you could bring up the margin of safety, consistent FCF generation in past years, low cyclicalities, and revenue diversification to defend how it could uphold during a recession.
Closing	Finally, close out the initial remarks by reiterating your earlier statement on the upside (or downside) potential. Then, expect an in-depth discussion with the interviewer on your price target, specific assumptions used for the DCF and comps analysis, and any points of disagreement/concern – which collectively measure how well you can defend your thesis using sound logic and reasoning.

Sample Fundamental Initial Pitch

"The company that I've chosen to pitch a long-position on is Genasys (NASDAQ: GNSS), a provider of mission-critical communications and emergency management solutions.

Genasys has three business segments, with the first segment being its Public Warning System (PWS) software, a location-based messaging platform for emergency messages sent out via mobile devices. This software benefits from the trend of critical communications solutions, and its use case is comparable to AMBER Alert. In 2019, the EU mandated its member nations to deploy country-wide PWS by June 2022 (Regulation Article 110 of the EEC), which should serve as a secular tailwind for Genasys.

Next, Genasys offers Long Range Acoustic Device (LRAD) and Acoustic Hailing Devices (AHD), which are types of speaker systems that provide long-range audio sirens to bring attention to an emergency or hazard in real-time. This segment is a legacy business, and industry growth has been on the lower end, but there are very few competitors of comparable size, and Genasys appears to have carved a defensible niche. Most of the customers for these products are specialized for the defense, law enforcement, and the military end markets, which fluctuate based on governmental budgets and depend on securing contracts. However, Genasys is becoming the global leader for LRAD systems, as shown by a recent \$14.5mm follow-on AHD order with the US Army and a \$4.3mm IDIQ contract with the US Navy.

Genasys' third segment offers Integrated Solutions, which combines hardware and software in a single system and represents the company's greatest growth potential, as it has a significantly larger market to sell. Large enterprises are signing contracts now, as shown by the recent telecom carrier contracts announced in Australia. In terms of M&A, Genasys made a complementary acquisition of the Ottawa-based emergency communications company, Amika Mobile. This continued geographic expansion through M&A, the long-term customer contracts, and how the company's products are gradually becoming requirements by regulatory bodies worldwide all decrease the downside risk of Genasys.

Genasys' software business represents a relatively minor percentage of total revenue at the present day. I am under the belief that the continued build-out of its software platform and the upcoming regulations on public safety will be catalysts leading to significant incremental value creation over the next few years and drive higher profitability, as seen by its Q3 2020 ~\$12mm in revenue (35% YoY growth) and ~54.1% gross margin. The latest closing price of Genasys was \$6.78. The share price has appreciated 100%+ from trading around \$3 at the beginning of 2020 and may no longer be undervalued, but this could be a growth play with more upside potential remaining. I believe the future growth (especially in the EU) and the value of the multi-year contracts are being ignored at the current share price.

Based on my valuation, I believe Genasys should be trading around ~\$8.15 (approximately 20% upside), and this positive upward trajectory should continue to gain momentum as we enter 2021 and get closer to 2022. By then, more countries, other than just the EU and US, would have increase regulatory requirements for PWS and LRAD related hardware and force adoption – thus, making this opportunity a promising long-term investment.

Sample Trading Initial Pitch

"The stock I would like to pitch is Medpace Holdings (NASDAQ: MEDP). They're a mid-sized contract research organization that performs clinical trials for biotech firms to get new drugs approved. Medpace primarily operates on a fee-for-service basis, meaning they get paid whether or not the drug is successful but get paid more for successful trials as those run longer and have more fees.

Medpace focuses on smaller biotech firms, which have seen a surge of venture capital funding. This VC funding pays for the services of Medpace to see if potential drugs can get FDA approval. There is a lag in timing, so the funding we are seeing now will show up on Medpace's future earnings. Compared to its peers, Medpace is well-positioned. Labor costs are a big input in Medpace's business but are lower when compared to its peers. Medpace has consistently delivered above averages, strong profit margins.

The stock is trading at \$116, which is in the middle of a wide 52-week trading range of \$58 to \$144. The current trailing or backward-looking P/E ratio is 41x, which feels high on a standalone basis, but is negatively impacted by COVID related lockdowns slowing existing clinical trials. On a normalized forward basis, it's a quite reasonable 24x. I believe that stronger revenue growth and EPS growth will drive the stock price higher. I think we can easily see the stock trading closer to \$130 in the next six months with annual EPS ticking up to \$4.33 with a 30x P/E ratio."

Notice how compared to the fundamental pitch, there's less of a focus on the company specific details and "story." This doesn't mean that the fundamentals of the business don't matter; instead, the takeaway is that most trading usually has a shorter-term outlook on the company. Traders, particularly those that specialize in complex financial derivatives or short-selling, don't have the luxury of being able to wait for a thesis to come true (usually a few months at most). Right now, Medpace is benefiting from a short-term, unexpected event, as seen in its share price growth since the beginning of 2020.

Let's say you're about to analyze an investment opportunity on a public company. What are some questions you would ask?

During your analysis, try to first understand where the company has been, where it's at the present day, and then attempt to build an investment thesis on where the company is headed.

- What is the company's mission statement and what value do they provide to their customers?
- What is the background of the management team, how long have they been running the company, and what is their track record?
- What is the business model? How does the company generate cash flow?
- What types of products/services does the company sell? Would you consider them to be valuable?
- What is the company's strategy to achieve growth? Has its strategy adapted alongside the market?
- What are the end markets to whom the company sells its products/services?
- How has the company's financial performance been in recent years?
- Is the company's cash flows sustainable? Does its revenue have a recurring component?
- What are the risks to the company's cash flows? How competitive is the market?
- What are the growth prospects of the cash flows? Where do you predict revenue growth and opportunities to create profitability to come from?
- What has earnings per share (EPS) been historically, and how has it been trending in recent years?

Question each of your assumptions carefully from the perspective that your thesis might be flawed, as doing so will help solidify your pitch as you understand the counter-arguments. By identifying the weaker areas of your pitch, you can defend your viewpoints better since you've looked at the investment from both perspectives with an open mind, as opposed to looking for what confirms your pre-existing beliefs.

What are some of the various investment strategies employed by hedge funds?

1. **Long-Short Equity:** Involving picking winners and losers based on the fundamental analysis of companies; The long-short offsetting pairs reduce the overall market risk.
2. **Event-Driven Investing:** Pursues pricing inefficiencies before or after major corporate events such as mergers, acquisitions, and spinoffs – either looking for potential M&A targets or seeking to trade the acquisition premium on announced acquisitions.
3. **Activist:** Activist funds seek underperforming companies they believe are poorly managed and attempt to be the catalyst for a successful turnaround.
4. **Quants:** Includes systematic, rules-based, algorithmic trading, proprietary strategies, momentum, mean reversion, and high-frequency trading (HFT).
5. **Arbitrage/Relative Value:** Seeks pricing inefficiencies/mispricing and trading spreads within an asset class (e.g., volatility arbitrage in the options market, convertible arbitrage in stock vs. convert trading).
6. **Long-Only:** Often associated with value investing, long-only funds only take long positions on the common equity of companies they believe are undervalued with a longer-term holding horizon.
7. **Short-Only:** Short-selling specialists pursue overvalued stocks. However, the most prominent short-only funds are associated with uncovering accounting frauds or other types of malfeasance.
8. **Market Neutral:** Like a long-short fund, but will pair long and short trades to mitigate market risk.

What is the investment rationale behind the long-short strategy?

When an investment firm goes “long,” it purchases a stock that it believes will increase to turn a profit. The opposite being the firm goes “short” on companies with share prices they expect to decrease. So if the share price goes down, the firm profits. Each equity investment contains some components of market and industry and company-specific risks. The objective of long-short investing is to hedge the market risk (i.e., cancel out the market risk) and then the industry and company-specific risk to some extent, so they're not on the wrong side in case the economy's trajectory suddenly flips.

How does a long-short fund differ from an equity market-neutral (EMN) fund?

A long-short fund and an equity market-neutral fund (“EMN”) are closely aligned, and at an initial glance, they appear to share the same goal. The difference is that a market-neutral fund will ensure the total value of long and short positions are close to being equal as possible to lower the portfolio risk, which is closer to the original intent of a hedge fund.

For this reason, market-neutral funds exhibit the lowest correlation with the market, and the goal of an equity market neutral fund is to generate returns independent of market movements. A distinct feature of a market-neutral fund is that it always yields positive returns, even if it could mean losing out on the more potential upside (i.e., limited upside). From a returns perspective, an EMN fund appears the least exciting overall, but it remains consistent with its objective of having no correlation to the equity markets.

Long-short hedge funds are similar in that they take long-short positions to hedge their investments, but they're more lenient on the portfolio's rebalancing. This means they don't require a perfect balance between longs and shorts, and if a certain market trend is performing well, they'll try to let the profits continue (even if the risk increases). Unlike EMN funds that have portfolio betas close to zero, long-short funds will have positive betas and have a direction while hedged (e.g., net long or net short) based on their market outlook.

Broadly, what is the purpose of hedging?

Hedging is a strategy used by an investor or a company to mitigate the risks of an investment. Hedging usually involves investing in derivative products that will be profitable if the market moves in the opposite direction the investor expects. While it may lower the potential upside, it provides downside protection in return.

What is the difference between gross and net exposure?

Two terms that are frequently thrown around in the hedge fund industry when discussing measures of risk are gross and net exposure. Gross exposure is a leverage metric, whereas net exposure is a market risk metric.

- **Gross Exposure:** Gross exposure is defined as the percentage of a portfolio invested in longs, plus the percentage that's short. If the gross exposure is in excess of 100%, the portfolio is levered (e.g., using borrowed funds).

$$\text{Gross Exposure} = \text{Long Exposure \%} + \text{Short Exposure \%}$$

- **Net Exposure:** Net exposure is calculated as the percentage of a portfolio invested in longs minus the percentage of the portfolio that's short.

$$\text{Net Exposure} = \text{Long Exposure \%} - \text{Short Exposure \%}$$

What is a maximum drawdown?

The maximum drawdown (MDD) is a measure of a portfolio's maximum downside risk over a period. The MDD is viewed as the maximum potential loss as the question being answered is: "What is the most an investor might lose?"

$$\text{MDD} = \frac{(\text{Peak Portfolio Value} - \text{Lowest Portfolio Value})}{\text{Lowest Portfolio Value}}$$

As shown above, the MDD formula shows the largest percentage drop in a portfolio's value based on the peak and lowest points of a portfolio. But be mindful that for MDD to be a meaningful measure of risk, the portfolio should have become active in the market for more than a decade at a minimum to ensure the portfolio has undergone at least one full economic cycle and experienced at least one major bear market.

How do investment strategies based on beta, enhanced beta, and alpha differ?

- **Beta:** Roughly, beta is the correlation of your portfolio with the broad market. If your portfolio has a beta of 1.0, then if the stock market goes up 10%, you would expect your portfolio to go up 10% too. Beta strategies track an underlying index, most often the S&P 500.
- **Enhanced Beta:** Strategies that track an underlying index but outperform Beta by adding an Alpha strategy (called "overlay"). Enhanced beta is still classified as passive investing and tracks an index, for the most part. However, there are some additional adjustments to the holdings to achieve greater returns, such as taking market capitalization and dividend payments into considerations (i.e., added element of active management to adjust the proportion of the weighting of specific stocks to outperform beta while remaining risk-averse).
- **Alpha:** In contrast, alpha is the excess return amount above the market return and measures the out-performance of a certain security or portfolio, achieved with above-market returns. Said another way, alpha involves the uncorrelated returns to the market. When portfolio managers discuss alpha, they're almost always referring to "beating the market."

Explain the merger arbitrage investment strategy?

The merger arbitrage investment strategy is when an investor purchases the shares of a company undergoing an M&A deal. The investor can take advantage of inefficiencies in pricing surrounding M&A, as it often takes time for the market to digest the recent information and settle on a valuation. The investor can profit from the uncertainty that exists as the market evaluates an announced acquisition. The overarching aim is to profit from the spread between the current market price and the announced acquisition price.

Read More → [Merger Arbitrage Example](#)

What is the event-driven turnaround investment strategy?

The goal is to capitalize on a particular event, ranging from a regulatory change to a full operational turnaround. The ideal investment characteristics are underperformance vs. peers with a strong, aligned management team. The right team is of high importance because they execute the turnaround strategy. The investor would examine the management team's track record and see if they have any relevant history in turnaround situations and what makes them the right leaders for the job.

What is activist investing?

In activist investing, poorly run and underperforming companies are targeted by turnaround specialists that will push for changes in either management practices or completely replace the management team. A key distinction is that the catalyst to the turnaround is the entrance of the activist investors themselves. The public announcement of an investment by a well-known activist investor alone can cause a company's share price to spike, as investors expect drastic changes to come.

For example, an activist investor could take a large equity stake in a company intending to drive the management's strategic decisions (or maybe even replace the team). Their goal is to convince existing shareholders that there's hidden value in the company that the current management is not extracting (and thus, the company is undervalued). Even though their investment is a minority stake, these activist investors can often change a company's trajectory (e.g., Starboard Value, Elliott Management) and influence an underperforming company.

What does convertible bond arbitrage mean?

The convertible bond arbitrage strategy is when an investor will take a long position on a convertible bond and then short the underlying stock. The investor would then benefit from the difference in pricing between the convertible bond and the share price.

If the share price declines, the investor can benefit from the short position taken, and thus there'll be more downside protection. But if the share price increases, the investor can convert the bond into shares and then sell, earning enough to cover the short position (and again minimize the downside).

What is momentum investing, and how does it differ from GARP?

Richard Driehaus, of Driehaus Capital Management, is often credited as being the father of momentum investing. The general theme of momentum investing is: "buy high, sell higher."

The momentum investing strategy strives to capitalize on the continuance of ongoing trends in the market – hoping the trend persists. The difference from GARP investing is that momentum investing relies more on technical indicators to decide trades, rather than being value-oriented and looking for high-growth but still undervalued companies. The holding period is shorter in momentum investing as it intends to take advantage of trends that are often driven by human emotion, which coincides with overvaluations of certain equities.

How does momentum investing differ from mean reversion?

- **Momentum Strategies:** Momentum-based strategies rely on the continuance of existing market trends to ride the upward trend. Recently, securities (or a specific asset class) have performed well, and these investors believe there's still more upside remaining for profits to be made.
- **Mean Reversion Strategies:** Mean reversion based strategies pursue unusually large drops or increases in pricing due to market over-reactions (either oversold or overbought) and then place bets that the price will revert towards the mean.

How does quant vs. human investment strategies compare?

Systematic Strategies

- **Rules-Based:** Investments are unaffected by emotion – the most frequently cited reason for misjudgment.
- **Data Capacity:** Systems can interpret and analyze more data and inputs in volume and speed.
- **Machine Learning (ML):** Systematic strategies will adapt and continuously improve over time.
- **Back Tested:** These systems can identify which specific strategies would have worked in the past to help guide future decisions (i.e., run simulations of how a strategy would have performed).

Human Traders

- **Adaptability:** Traders are more experienced, can adjust to market changes, and can pick up sudden sentiment changes that computers cannot capture.
- **More Resourceful:** Capable of capturing more market color and feedback that's not in electronic format (e.g., salesperson calls, investor presentation meetings).

How does a hedge fund with a global macro strategy invest?

A hedge fund with a global macro strategy bases its investments on the overall economic and political environment. The relations between countries and macroeconomic trends can affect numerous financial instruments. Thus, a global macro fund's holdings are more diverse relative to traditional hedge funds and include common equity, fixed income, currencies, futures on commodities, and other specialized options.

The strategy will shift based on changes in economic policies, global events, and changes in foreign policies/regulations as these present the investment opportunities that these global macro funds seek and then actively pursue. The fund's focus will often be 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.

Most large institutional asset management firms are multi-strat. What does this mean?

Most institutional investors that manage billions of dollars, such as Blackrock, are considered multi-strat, which is a catch-all term for having a diversified combination of investment strategies. Given the various strategies employed, this type of approach provides more stability in returns and has more downside protection. For example, a multi-strat investment firm will invest in equities, bonds, real estate, and private equity to spread its capital allocation and de-risk its portfolio holdings. Considering their AUM, capital preservation often takes priority over achieving outsized returns.

Why would it be incorrect to compare a hedge fund's returns to the market return?

Traditionally, hedge funds were never intended to be investment vehicles to "outperform" the markets. Instead, hedge funds provided their investors with decent risk-adjusted returns regardless of the market conditions. As the name suggests, they serve as a "hedge" against the market, and wealthy investors would park a small portion of their wealth into funds, rather than placing 90%+ of their net worth into these funds, as many people falsely assume that they do.

During bull markets, funds would have relatively decent returns, whereas, during bear markets, funds would again have decent returns. Many investors, particularly those in favor of long-term value investing, criticize the high active management fees and argue that index funds would be a better strategy, but under the false presumption that hedge fund LPs share the same belief system as them.

However, over the years, the objective of hedge funds has significantly shifted, and many fund managers explicitly aim to outperform the market in both bull and bear markets.

Why does it become more difficult to achieve high returns as a fund grows in AUM?

If the assets under management (AUM) of a firm grow, achieving high returns becomes increasingly difficult. The reason being large firms are considered “market movers,” meaning each of their actions is closely followed and the sheer size of their investments alone can cause the pricing of a stock to move up or down. For example, if a large firm sells its shares, other investors in the market could assume they're selling for a reason (i.e., under the belief the firm has more information than them), purchase demand will shrink, and the price will fall. Given the reasons above, large asset managers cannot invest in small-cap stocks, and instead, they're limited to invest in large-cap stocks since the impact their decisions have is lessened. But because large-cap stocks are widely followed by equity research analysts and investors alike, these assets are more efficiently priced.

Hence, many small-cap oriented funds place a cap on their AUM, even if they could raise more capital. These firms specialize in small-cap companies, where they believe the likelihood of finding mispriced securities is higher and they could achieve the highest returns for their investors.

Tell me about the Modern Portfolio Theory (MPT).

Introduced by Economist Harry Markowitz, the premise on which the Modern Portfolio Theory (MPT) is built upon is that “efficient portfolios” can be constructed in which the expected return can be maximized for a level of market risk with the proper allocation. Simply put, MPT is maximizing the return investors could achieve from their portfolio while bearing the least amount of risk possible (for their targeted return).

A central idea of MPT is that an asset shouldn't be assessed as a standalone investment from a risk standpoint but based on its contribution to the overall portfolio. Meaning, the portfolio beta matters more when selecting investments for a portfolio, rather than considering only the asset's individual beta. The relationship between risk and return of various portfolios would be plotted to determine the optimal asset allocation at each risk level where the expected return is maximized. Although systematic risk is unavoidable, diversified assets in a portfolio that are not correlated with one another can reduce the unsystematic risk of a portfolio. In a well-diversified portfolio, the total risk in the portfolio should be mostly systematic risk.

What is the Sharpe ratio and why does it have such popularity among investors?

The Sharpe ratio was developed by William Sharpe, who is also responsible for the CAPM model. The ratio is one of the most widely referenced metrics in academics, certain institutional investors, and everyday investors due to its simplicity. The use case is to assess the risk/return of a portfolio, or an individual investment, although most use it for a group of investments (e.g., mutual funds).

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

The Sharpe ratio begins by subtracting the risk-free rate to isolate the excess return of the portfolio. The excess return is then divided by the portfolio's standard deviation (a proxy for portfolio risk). A ratio below 1.0 would be considered a sub-par portfolio return considering the risk undertaken, while a ratio above 1.0 being acceptable and beyond 2.0 is rated as a well-performing portfolio on a risk-adjusted return basis (with 3.0+ being exceptional).

The frequent critique of the Sharpe ratio is how total portfolio risk is proxied by the portfolio's standard deviation, which is an oversimplified assumption that all equity returns are on a normal distribution. For this reason, there are many variations of the Sharpe ratio that account for portfolio risk in different ways, such as the Sortino ratio, which uses downside deviation rather than the total standard deviation of portfolio returns.

Why do many investors disregard equity research reports?

An equity research report is a document that provides a formal recommendation on whether investors should buy, hold, or sell shares in a specific public company. However, most equity research analysts have an inherent bias to be more positive about a stock. Equity research analysts have an incentive to give “buy” recommendations to maintain close relationships with the company's management teams being assessed. If an equity research analyst scrutinizes a company, it may not take future calls from that analyst. The investment banking division may also indirectly benefit if the company has a close relationship with the equity research division. This could lead to assignments helping the company if it raises capital or makes an acquisition in the future. The skewed rating system is well known across the market; for example, if an analyst issues a “hold” recommendation for a company, this is usually interpreted as a very negative signal by the investor community. In addition, equity research analysts are legally restricted from investing in the companies under their coverage group due to regulations to prevent a conflict of interest. For these reasons, it's important for investors to not take equity research reports at face value and instead make their own decisions.

What would happen if the US stopped requiring quarterly earnings reports?

Under SEC requirements, public companies in the US must file quarterly reports. This became a topic of debate after many prominent CEOs and investors such as Jamie Dimon, Elon Musk, and Warren Buffett expressed their agreement with modifying the quarterly filing requirement, under the reasoning that quarterly reporting places too much pressure on the management teams to meet quarterly EPS and earnings expectations.

Counter-Arguments

- Management teams that desire longer gaps between reporting periods could be hoping to conceal their poor performance. Although many acknowledge quarterly reports can lead to short-term oriented decision-making at the expense of a long-term strategy, one can attest that hitting short-term targets is proof that a long-term strategy is working. Any company can make poor choices, underperform, and then claim they're employing a long-term strategy. If short-term EPS targets distract a qualified management team from wise decision-making, they likely are not qualified to be running a public company.
- Shareholders are owners of the business and would create further distance between managers and shareholders (i.e., worsen the “agency problem”). As partial owners, shareholders should have the right to be aware of recent performance and company news.
- The lack of available information on what's going on within companies could make equities less attractive to risk-averse investors. The market would become less efficient since less public information is available. Thereby, market volatility would decrease during non-reporting periods while reporting periods would see substantial price movements (i.e., leading to instability in markets).

Walk me through the process of a hedge fund shorting a stock.

Short selling is when an investor predicts a short-term decline in the price of a particular security. For an investor to short a stock, it means the investor has “borrowed” the security from a broker and sold it in the open market, under the belief they'll repurchase the shares for a lower price later.

1. First, the hedge funds will go onto the exchange and sell the shares that they have borrowed from a securities lender or broker – meaning, they sold a stock that they don't actually own on paper.
2. Once the hedge fund wants to exit their short position, they'll re-purchase the shares and return the shares they bought to the lender.
3. 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.

Name two of the key metrics to assess short interest.

1. **Short Interest Ratio:** Total number of shares shorted and open positions not bought back as reported by the exchange, divided by average trading volume

$$\text{Short Interest Ratio} = \frac{\text{Short Interest}}{\text{Average Trading Volume}}$$

2. **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)

$$\text{Short \% of Free Float} = \frac{\text{Short Interest}}{\text{Free Float}}$$

Tell me about the difference between index shorting and alpha shorting.

- **Index Shorting:** Index shorting can involve shorting an index such as the S&P 500 or buying put options on an index to hedge out the long positions.
- **Alpha Shorting:** Alpha shorting refers to taking individual short positions to make a profit. Funds will employ both approaches, but alpha shorting is much more difficult.

What is the difference between shorting a stock and purchasing a put option?

For shorting a stock, the investor has unlimited downside potential. Recall that short-selling means the investor sold a stock that they technically don't actually own, believing that they'll purchase it for a lower price in the future (i.e., the potential share price upside is unlimited). When purchasing put options, the maximum loss is limited to the initial investment amount.

Could you explain what a short squeeze is?

A short squeeze occurs when there's much short interest on a particular stock, and then positive news comes out. Many short sellers simultaneously attempt to cover their short positions at once, which causes a rapid increase in the share price. A short squeeze accelerates a share price's upward movement as short-sellers attempt to buy back the stock and cut their losses.

List some characteristics of an ideal short.

- Complacent incumbents facing a threat from innovative new entrants – must assess the management's willingness to adapt and the likelihood of a proper reaction (e.g., Nokia's failure to adjust).
- Companies focused on consumer euphoria – significant short-term interest in a consumer-oriented product (i.e., the demand is driven by a consumer-led "fad").
- Incumbents that are unlikely to exist in the future (e.g., physical newspaper business) and don't appear to be making any effort to adjust to the changing environment.
- Signs of accounting fraud or allegations made by credible sources

Why do many investors pay such close attention to special situations?

Special situations refer to specific event catalysts that could cause significant price movement in the near-term (or long-term) future. The term special situation is an umbrella term for many transactional, corporate restructuring, or financial engineering efforts completed by companies. The common theme among these examples is they present potential arbitrage opportunities. There is significant empirical evidence suggesting that spin-offs, split-offs, and divestitures can present positive value investment opportunities.

Many examples of special situations are related to M&A, including spin-offs, split-offs, merger arbitrage, and tender offers. Others are related to internal decisions such as new management teams, restructuring plans (turnaround strategy), recapitalizations, and more.

Specifically, what does it mean when an investor is a “contrarian” investor?

The simplest answer is that contrarian investors attempt to find investment opportunities that go against the consensus view. But the more detailed response is that contrarian investors invest in companies the market has given up on, either following poor performance or because future prospects appear bleak. The contrarian investor is implicitly investing under the belief that the markets over-react or neglect certain factors that have distorted a company's pricing.

A contrarian investor nearly always takes on a contrarian mindset when searching for investments, but the common misconception is that they constantly invest differently just for the sake of being a contrarian. Instead, contrarians are extremely patient and rarely make an investment unless they have sufficient conviction to take on this bet against the consensus. The basic principle of being a contrarian investor is the ability to think for oneself and being able to develop a set of views independent of what other people around you believe or want you to think. While this quote was said in the context of VC investing, Reid Hoffman, the co-founder of LinkedIn and partner at Greylock, said, “It's actually pretty easy to be a contrarian. It's hard to be contrarian and right.”

Why have so many hedge funds closed in recent years?

In aggregate, hedge fund returns have compressed in recent times and underperformed the S&P 500 over the past decade. The increased AUM in the market has made it more difficult to find good investment opportunities. Because of this, many large, brand-name funds have closed and returned capital to their investors. And given the increased competition, some ways that hedge funds are becoming increasingly sophisticated are the usage of satellite imagery, point-of-sale data, credit card data, and the employment of data scientists. The need for a hedge fund to be differentiated and carve out a unique niche to achieve outsized returns has never been greater – but this is far easier said than done in reality.

What is the purpose of diversification in portfolio management?

Portfolio diversification is when a portfolio contains investments in diverse industries, asset classes, and geographies. The end objective is to limit exposure to one asset class or particular risk and construct a portfolio of holdings that are not correlated while still attempting to maximize returns (i.e., nearly all unsystematic risk is eliminated). The chosen investments shouldn't be correlated with one another, or else that would defeat the purpose of diversification.

Broadly, could you define what value investing entails?

Value investing could be best described as the strategy of finding temporarily mispriced stocks trading for less than their intrinsic values, under the belief that the market is undervaluing these companies. From their viewpoint, these opportunities arise because the market is emotional and often overreacts to good or bad news, resulting in share price movements that incorrectly align with the company's long-term fundamentals in question. By purchasing equities at deflated prices, they seek to profit from share price appreciation once the market corrects itself.

To recap, value investing is essentially attempting to capture some level of disconnect between the current trading price and the company's true intrinsic value (that's not immediately apparent to the market). The value investor will then attempt to identify the catalyst that would make the market realize the company is undervalued, but by then, the investor would have purchased the security at the discounted price.

What does it mean when a security has a sufficient margin of safety?

A margin of safety is one of the fundamental concepts of value investing in which a security is purchased only when the share price is significantly below its intrinsic value. The margin of safety serves as an investor's downside risk protection and can be thought of as the difference between the estimated intrinsic value and the current share price.

Said another way, the margin of safety is the buffer that value investors place into their investment decision making to protect them against downside risk if the share price drops post-investment. Rather than shorting stocks or purchasing puts, many value investors view this as their primary method to mitigate investment risk.

$$\text{Margin of Safety (MOS)} = 1 - \left(\frac{\text{Current Share Price}}{\text{Intrinsic Value}} \right)$$

Often, many value investors will not invest in a security unless the margin of safety is ~20-30%. If the MOS hurdle is 20%, the investor will only purchase a security if the current share price is 20% below the intrinsic value based on their valuation.

How do you determine whether a company has an “economic moat” or not?

An “economic moat” is the competitive advantage of a company and the factors that protect its profits from competitors. The moat will be evident in the company’s unit economics (e.g., consistent operational performance, high margins) and is caused by any unique advantages. Such as patents, proprietary technology, branding/reputation, product or service value, switching costs, or network effects. These traits shouldn't be easy to replicate by other competitors in the market and come with barriers such as high switching costs or capital requirements.

Said another way, an economic moat refers to a company’s ability to maintain its competitive edge over its competitors to protect its continued long-term profit generation. The stronger and more defensible a company’s competitive advantage, the more difficult it becomes for other new entrants to breach this moat and take away their market share. An economic moat can be viewed as protecting the competitive positioning of a business.

If a company has an “economic moat,” sustainable value creation over the long-term is attainable.

Read More → *Measuring the Moat: Assessing the Magnitude and Sustainability of Value Creation*

Why would an investor use the “Scuttlebutt method”?

Coined by Phil Fisher in his book “Common Stocks and Uncommon Profits,” the Scuttlebutt method refers to investing based around going out and conducting your own proprietary research (i.e., listen for rumors, observe surrounding developments, observe stores), rather than just reading equity research reports and financial news, and relying on the opinions of others. This type of diligence involves talking to all kinds of people (e.g., customers, employees, industry experts) to gain their insights and identify trends by gathering your information and then making investment decisions based on your intuition.

Why does Warren Buffett dislike the EBITDA metric?

Warren Buffett and Charlie Munger are both known for having a particular distaste for management teams and equity research analysts using the EBITDA metric. In Berkshire Hathaway’s 2000 shareholder letter, Buffett famously wrote, “References to EBITDA make us shudder – does management think the tooth fairy pays for capital expenditures? We’re very suspicious of any accounting methodology that’s vague or unclear since too often that means management wishes to hide something.” Given how EBITDA neglects capex, Buffett doesn't believe EBITDA is a true representation of a company’s financial performance. Failing to account for capex would particularly apply to capital-intensive industries such as manufacturing.

What is Warren Buffett’s view on the capital asset pricing model (CAPM)?

Warren Buffett has a negative view of the capital asset pricing model (CAPM) due to his disagreement with beta as a measure of risk. From his perspective, CAPM is ineffective because it mistakes volatility as a risk when in reality, it could represent an opportunity to purchase undervalued securities (rather than being a sign it's a risky, less valuable investment that should be avoided). Buffett has been very outspoken about this topic, going

as far as calling beta nonsense, and has stated how in his and Charlie Munger's opinion, "Volatility is no measure of risk to us." Instead, Buffett defined risk as "the possibility of harm or injury."

Contrary to what's taught in academic literature, volatility doesn't equate to risk according to Buffett. This means that the higher the chance you might lose your initial capital, the riskier the investment is. How you determine the probability of losing your capital is based on the quality of the fundamentals of the business, the margin of safety (pricing vs. intrinsic value), and doing enough research into every aspect of the business as risk comes from ignorance.

What is the difference between value investing and deep value investing?

Value investing and deep value investing are price-focused strategies to profit from companies trading at a discount to their NPV. While the definition is subjective, deep value investors are distinct for refusing to pay a higher price for quality. This means they're often willing to make reasonable bets on cheap equities despite a clear deterioration in quality, including weak recent financials, ineffective growth strategies, and incompetent management teams. The reasoning behind this is that deep value investors believe quality is already priced in.

Thus, the only way to make outsized returns in the market is by searching for opportunities where the investors have over-reacted to bad news (often terrible news) on underperforming companies. Many deep value investors speculate on a new turnaround strategy once rock bottom has been reached, as this would imply a restructuring of some sort, such as a new management team and the sale of non-core assets. An activist investor may frequently step in and help initiate a change of course for the business, precisely the type of catalyst the deep value investor is waiting on.

How do value investors deal with volatility in share price movement?

Simply put, value investors have a long-term thesis and therefore ignore short-term movements. Often, a value investor will hold a security for 5+ years and invest with the mindset of "never selling."

Explain to me what the purpose of dollar-cost averaging (DCA) is.

Commonly recommended by practitioners of value investing, the practice of dollar-cost averaging (DCA) refers to committing to buying shares at pre-determined intervals. This can be useful during periods of market volatility and prevent an investor from attempting to "time the bottom."

If the stock price decreases, then the investor can simply purchase more to lower the average cost paid on a per-share basis. But if the price increases, the investor can either continue purchasing (if still undervalued based on their beliefs) or pursue other opportunities in the market.

Explain the growth at a reasonable price (GARP) investment strategy?

Growth at a reasonable price (GARP) is a hybrid investment strategy that combines growth investing and value investing. GARP could be best described as profiting from a company trading at a material discount on an earnings basis but not to the same extent as traditional value investments.

The GARP investment strategy is based on finding high-quality companies with a sustainable competitive advantage, above-market consistent earnings growth, and large market potential. Then, the NPV of the cash flows will be determined with the growth potential incorporated to see if the company is undervalued. While this is not necessarily pure value investing, it's a reasonable compromise that many investors have adopted.

What are value traps?

Investors new to value investing will frequently fall into the so-called value trap. This fallacy is the false belief that a particular stock is currently undervalued because it has fallen out of favor with the market and dropped significantly in recent weeks or months. Because these investments appear to trade at such low levels

compared to the prior levels, many investors will view this as a buying opportunity. However, the fall in price is misleading, as there's usually a good explanation for the decrease in valuation.

Explain the efficient market hypothesis (EMH) and its three forms?

Introduced by Eugene Fama, the efficient market hypothesis (EMH) theory asserts that asset prices fully reflect all available information. Following the release of new information or relevant data, prices will automatically adjust instantaneously to reflect the accurate price within a matter of seconds.

- **Weak Form EMH:** The weak form of the EMH states that all past information such as historical trading prices and volume data is reflected in current asset prices.
- **Semi-Strong EMH:** The semi-strong form of the EMH states that all publicly available information is reflected in current asset prices.
- **Strong Form EMH:** The strong form of the EMH states that all public and private information (including inside information) is reflected in current asset prices.

If the efficient market hypothesis were true, what implication would this have on active management?

Since the EMH theory contends the current prices reflected in the market already reflect all information, an attempt by an investment manager to outperform the market by finding mispriced securities or timing the performance of a certain asset class in an industry is a game of chance rather than skill. If the efficient market hypothesis were strong form efficient, there would be no point in active management.

It is important to note that EMH by its definition is referring to the long-run. Therefore, if an investor purchased a temporarily undervalued stock (by their definition) and then sold for an above-market return – that doesn't invalidate the EMH theory. Rather, most proponents of EMH suggest that these types of occurrences are rare and not worth the effort (and active management fees) over the long-term.

Why has passive investing become more popular for everyday investors?

Index funds such as mutual funds and exchange-traded funds (ETFs) are convenient for the everyday investor to participate in the markets. The widely held belief among the passive investing community is that it's very difficult to beat the market, and it would be a futile attempt when investment professionals that spend considerable resources and time on analyzing securities struggle to do so consistently.

How does the random walk theory differ from the efficient market hypothesis?

The random walk theory similarly concludes that attempts to predict share price movements accurately are futile, and past successes are due to luck rather than actual skill. The random walk theory is a hypothesis that assumes the share price changes in the financial markets are due to random, unpredictable events that nobody can predict. In contrast, EMH is the theory that asset prices perfectly reflect all the information available in the market. Under this assumption, a company's share price can neither be undervalued nor overvalued, but it's precisely trading where it should be because the market is efficient.

Sales & Trading

What is the role of the sales & trading division in an investment bank?

Sales & Trading is the division of an investment bank responsible for selling issuances of stocks, bonds, and derivatives.

- **Sales Division:** The salespeople work more closely with institutional investors such as large asset managers, hedge funds, insurance companies, pension funds, and other buy-side investors to pitch ideas and buy or sell securities or derivatives. Simply put, the sales division manages the communication and relationship building with clients on behalf of the investment bank.
- **Trading Division:** Traders make a market and execute trades on behalf of the investors they represent. Unique to this role, sometimes traders have their own trading book where they can take positions and generate a personal P&L. Traders need to be quick with mental math, have the quantitative skills to understand complex products, and have an intuitive understanding of markets to spot mispricing.

What is a derivative?

A derivative refers to a financial instrument in which its value is derived from an underlying asset or index. Some of the most common derivatives include options, futures contracts, forwards, and swaps. For example, a call option tied to a particular stock would be an example of a derivative, since the option's value depends on the company's share price.

What are options?

Options are financial derivative instruments that give the holder the right, but not the obligation, to purchase or sell an underlying asset at an agreed-upon price. This right will have a set expiration date upon which, if the option is not exercised, it'll expire worthless.

What is the difference between a call and a put option?

- **Call Options:** Call options are financial contracts that give the owner the right, but not the obligation, to buy an underlying asset at a pre-specified price within a period. If the option holder believes the price of the underlying asset will increase ("bullish"), they'll purchase calls because the value of a call option will increase as the underlying asset's value increases.
- **Put Options:** Put options, in contrast, are contracts that give the owner the right, but not the obligation, to sell an underlying asset at a pre-specified price within a period. If the option holder believes the price of the underlying asset will decrease ("bearish"), they'll purchase puts since the value of a put option increases as the underlying asset's value decreases.

Tell me the differences among options that are "in-the-money," "out-of-the-money," and "at-the-money."

- **In-the-Money ("ITM"):** If an option is "in-the-money" (ITM), this means that the option is profitable to exercise. For a call option, an ITM option would mean that the option price of the underlying asset is above the exercise price (or strike price).
- **Out-of-the-Money ("OTM"):** If an option cannot be exercised profitably, it's referred to as being "out-of-the-money" since the option has no intrinsic value.
- **At-the-Money ("ATM"):** When an option is at-the-money, this means the option's strike price is equal to the price of the underlying security. An ATM option, similar to an OTM option, has no intrinsic value but could still have time value depending on the expiration date.

What are cash equities trading groups at investment banks?

Within investment banks, the equities groups are split between cash equities and derivatives. The term “cash equities” is another term for stock trading commonly used when discussing sales & trading. The set-up of a cash equities group is completely different today due to the diminished requirements for actual traders on the floor or market makers due to the reliance on electronic trading. Nowadays, most investment banks have only a handful of cash equity traders globally, as opposed to the hundreds formally employed in the last decade.

What does a book of orders consist of on trading exchanges?

During the period of open-trading (or “continuous market-making”), there's a book of orders that contains bids and offers.

- **Bids:** Bids are when there's interest to purchase the security from buyers.
- **Offers:** Offers are when existing holders are interested in selling the security to the open market.

Each order has a price and the number of shares at that specific price. Orders are then automatically ranked, with the highest bid at the top and the lowest sell offer at the top.

What is the indicative cross size?

The indicative cross size calculates the number of shares that can connect buyers with sellers at a specific price point. The closing price would be the price with the highest cross size (i.e., the price at which you can get the maximum number of buyers and sellers to exchange shares).

List some key volume indicators used by traders.

- **Volume:** The total number of shares that are traded within a day. A stock with a higher average daily volume means you can trade more shares before moving the price.
- **VWAP:** VWAP stands for the “volume-weighted average price.” This indicator measures the average price based on actual trading volumes.
- **Depth:** The depth reflects the total buy and sell orders currently on the order book and is used to measure how much one could purchase in terms of volume without “moving markets.”

How does an order get routed?

There are multiple venues for a sales trader to send an order to:

- **Order to the Floor:** The exchange (NYSE or NASDAQ) where the stock is listed.
- **Internalization:** The bank executing the trade could provide the other side, offsetting the trade flow with their trade flows.
- **Electronic Communication Network:** ECN is a computerized stock exchange that connects buyers with sellers. Stocks are not listed on an ECN, but the ECN pays rebates taken out of the bid-offer spread to participants, which provides liquidity to the ECN.
- **Smart Order Routing (SOR):** Alternatively, SOR algorithms can scan the market and spread the order through multiple trading venues.

What are some examples of off-exchange trading platforms?

- **Block Trades:** A large number of shares are traded off the exchange, reporting requirements to FINRA (ticker, size, and the price paid), and typically traded after the market close.
- **Dark Pools:** Platforms to allow large trades to be executed without moving prices. Has reporting requirements similar to block trades, lower execution fees than exchanges, and flexibility in order types.
- **OTCBB/Pink Sheets:** Over-the-Counter Market (not exchange-traded) can be used by smaller companies that don't meet the exchange listing requirements but still need to file with the SEC.

What is a stock index and how can one be traded in the public markets?

A stock index is just a tracker of a collection of equities, reflecting the price of stocks included in the index and calculated based on the index provider's rules. The index by itself is not tradable on an exchange, although there are financial instruments such as ETFs that follow these major indices (e.g., SPY, VTI, QQQ).

What are the key equity indices and their unique traits?

S&P 500 (Bloomberg Ticker: SPX)

- 500 Large Cap US Stocks selected by Standard and Poor's (S&P)
- Minimum Market Capitalization of \$8.2 Billion
- Price Return Index (Total Return Index Available)
- Market Capitalization Weighted (i.e., Float Adjusted)
- Updated Quarterly to Add or Remove Constituents (and Update Share Counts for Market Cap Weighting)

DJIA (Bloomberg Ticker: INDU)

- Stands for "Dow Jones Industrial Average"
- 30 Large-Cap US Stocks (excluding Transportation and Utilities) chosen by S&P and the Wall Street Journal
- Price Return Index: Price-Weighted
- During stock splits, the share prices are multiplied by a divisor to reflect the split (divisor is ~0.147)

NASDAQ 100 (Bloomberg Ticker: NDX)

- Largest 100 Stocks Listed on the NASDAQ
- Ranked in Order of Market Cap Size
- Price Return Index (Total Return Index Available)
- Market Capitalization Weighted (Not Float Adjusted)
- Maximum Weights Rebalanced Quarterly

What is a mutual fund?

A mutual fund is an investment vehicle for both retail and institutional investors, in which investors are pooled together and each own shares of the fund proportional to the amount invested. Most mutual funds are open-ended, allowing for investors to increase or decrease their investment.

Mutual funds are typically bought and sold at the end of the day, at the fund's net asset value (NAV). The NAV is the total value of all the securities in the fund, plus cash, divided by the number of shares. It's the value of each mutual fund share as determined by closing market prices. A few traits to be aware of are that mutual funds are regulated by the SEC and are managed by an asset manager.

Could you define what an asset manager is?

An example of an asset manager would be one that actively manages a mutual fund on behalf of the fund's investors. These asset managers are considered fiduciaries, meaning that they're hired and compensated for advising their investors and making recommendations and/or investments in the best interests of their clients.

How do hedge funds differ from mutual funds?

The distinction between hedge funds and mutual funds is that hedge funds are not targeted towards retail investors. Instead, only accredited investors can invest as LPs in hedge funds. Hedge funds come with higher risks of losing capital. Thus, these strict qualification rules were put in place to protect the interests of those that can't afford to lose a significant sum of money. In addition, hedge funds are more actively managed, use different strategies, and are resultingly compensated more due to the "2 and 20" compensation model.

Would sales & traders be considered as fiduciaries?

No, sales and trading professionals are not considered being fiduciaries. Instead, sales and traders work directly with institutional and high-wealth investors that don't require (or request) advisory services. The primary role of S&T is to execute orders on behalf of clients without providing investment advice.

What is an ETF?

An exchange-traded fund (ETF) is a type of financial product that tracks a specific underlying index (i.e., collection of securities, most often equities). An ETF can be viewed as a blend between a mutual fund (portfolio of investments, passive strategy, benchmarked to index) while being similar to equities by being listed and traded on exchanges. ETFs have become a very popular choice recently due to lower fees and convenience.

What is the difference between the initial margin vs. the variation margin?

Initial Margin

- A fixed amount you need to pay to cover your credit risk, set by the Clearing Bank's Risk Department, which may allow offsetting positions
- Varies based on the volatility of the underlying product
- Covers the cure period risk of a clearing client not making their variation margin

Variation Margin (or Maintenance Margin)

- The Market-to-Market gain or loss you have on your position
- Cash or collateral is received if your position is in-the-money, but you pay cash or collateral if your position is out-of-the-money

What purpose do clearing houses serve in the derivatives market?

Following 2008, the Dodd-Frank Act required most derivatives (both exchange-traded and over-the-counter) to be formally cleared. Originally, the buyer or seller of an exchange-traded derivative would not be aware of who the counterparty is – but now, clearing houses are required to intermediate the transaction and help mitigate the credit risk. While the counterparty risk associated with derivative instruments is not eliminated by any means, the facilitation of the exchange by a 3rd party seeks to minimize it.

What is securitization?

Securitization is when financial instruments are pooled together into one group to become more marketable. The issuer will then sell this pool of repackaged assets to investors (e.g., mortgages pooled together and divided into securitized bonds). By themselves, the assets within the group would not have sufficient liquidity to be sold as a standalone product, but securitization can allow for the grouped assets to be easily tradeable in the market and thus have high liquidity.

What are collateralized debt obligations (CDOs)?

A collateralized debt obligation (CDO) is a structured-financial instrument backed by a collateral pool, which can include loans and other assets. These underlying assets are offered as collateral in case the loan defaults. Often put together by investment banks, the bankers will collect cash flow-generative assets (e.g., mortgages, bonds, debt) and then repackage them into a pool and customize it based on the level of credit risk the investor is comfortable taking on.

The most well-known example of a CDO would be mortgage-backed securities (MBS), a type of asset-backed security (ABS) secured by a collection of mortgages. MBS that consisted of subprime loans played a central role in the housing financial crisis and revealed one weakness of the securitization process: the lack of transparency in the assets pooled. Many felt the combination of collateral concealed the lack of quality to make the MBS

appear less risky. In addition, securitization allowed for mortgage originators to originate new, low-quality mortgages and then quickly offload them through an MBS offering.

Give me an overview of the mortgage-backed securities market.

Mortgage-backed securities are a very common way to finance mortgages in the US, UK, and Netherlands. The US MBS market is very large, even of greater size than the corporate bond market. Mortgage loans will first be placed into a special purpose vehicle (SPV), a holding company for the mortgages. The SPV will then issue MBS bonds. As the homeowners that took out the underlying loans make mortgage payments, they go to the MBS bondholders.

How is the MBS market split in the US?

1. **Agency Mortgages:** A government agency (e.g., Freddie Mac or Fannie Mae) guarantees the mortgage loan. If the underlying homeowner defaults, the agency takes on the credit risk and repays the loan.
2. **Non-Agency Mortgages:** There is no guarantee, and the bond investors take the credit risk of the underlying borrowers. This risk is reflected in the higher interest rate these borrowers pay, as well as over-collateralization, having a higher value of loans than MBS bonds issued.

What is an asset-backed security (ABS), and how do they differ from MBS?

Asset-backed securities (ABS) function similarly to mortgage-backed securities (MBS). Although mortgages are technically classified as an “asset,” the differences lie in how ABS is typically used to refer to financing (e.g., credit card loans, car loans or leases, student debt). In comparison, the ABS market is smaller than the MBS market since the borrowings related to ABS are typically smaller than mortgages, especially in the US.

What are collateralized loan obligations (CLO)?

Collateralized loan obligations (CLOs) are securities backed by a pool of low-rated corporate loans. CLOs are structured using low-credit rated corporate loans that are bundled together. The CLOs will have many tranches to appeal to different investors from a risk perspective. CLOs would be an example of a CDO but are unique in that usually just business loans are involved, and each distinct class of owners will receive differing yields based on the tranche and risk they're undertaking.

What is a forward contract?

Forward contracts are formal agreements between two parties in which one party agrees to purchase an underlying asset from the other party at a later date. The future date of purchase and the price at which the purchase will be made will both be stated in the original agreement.

What are futures contracts?

Futures are derivative instruments that serve as a contractual obligation for two parties to exchange an underlying asset at a pre-determined price at a later date. This exchange is completed regardless of the change in the asset's price (whether up or down). The buyer must either buy the underlying asset, or the seller must sell the underlying asset at the pre-specified set price.

Historically, futures were most common with commodities such as bushels of corn. Physical commodities would be physically settled, meaning the commodity (e.g., corn, barrels of oil, lumber) would actually be delivered in person. But in today's market, equity and interest rate futures have significantly higher trading volumes in comparison, which don't involve any physical delivery since they are monetary exchanges (i.e., cash-settled based on the value difference).

What is the difference between forwards and futures contracts?

The two derivatives, forward and futures contracts, are similar in that both involve agreements between two parties to buy or sell an underlying asset at a pre-determined price by a specified date. The difference is that a forward contract is a private agreement that settles at the end of the agreement term and is traded over-the-counter. A futures contract has more standardized terms (i.e., less customization) and is traded on exchanges, in which the changes in prices can be readily seen daily until the end of the contract term.

How does the spot exchange rate and forward exchange rate differ?

- **Spot Exchange Rate:** The spot exchange rate is the exchange ratio of one currency into another currency on a particular day. The key characteristics of spot exchange rates are that they're reported on a real-time basis and determined by the supply/demand of that currency relative to the same supply/demand dynamics of the other currency (i.e., set by the market).
- **Forward Exchange Rates:** In forward exchange rates, two parties will exchange currency at a specific date in the future. These deals are executed to hedge against foreign exchange risk, to which many multinational companies are exposed. Forward exchange rates can be quoted for limited durations (e.g., 30 days, 60 days, 90 days, 180 days).
- **Distinction:** The key distinction is that the rate is negotiated and agreed upon by the two parties for forward exchange rates (rather than letting the market determine the rate).

What is the difference between a warrant and a stock option?

- **Warrants:** A warrant gives the holder the right, but not the obligation, to purchase common shares of stock directly from the issuing company at a fixed price for a pre-determined period. The key distinction is that the warrant is issued directly by a company to an investor. Therefore, if the warrant is exercised, the shares required to fulfill the agreement are issued, so warrants have more of a dilutive impact when exercised because the company will actually issue new stock.
- **Stock Options:** A 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 amongst investors. The exercising of a stock option has less of a dilutive impact because no new shares are issued since options are derivatives based on an underlying asset (i.e., the pre-existing common shares of the company).

What is implied volatility?

The implied volatility ("IV") is the market's expectations on the movement in a specific security or indexes' price. Implied volatility has a significant role in the pricing of options contracts, as higher IV results in higher premiums (and vice versa). During periods of bearish sentiment, implied volatility typically increases, whereas when the market is bullish, the implied volatility decreases.

If the implied volatility were to rise, how would option prices be affected?

The implied volatility has a significant impact on the options market. The higher the volatility of the underlying asset (e.g., share price, commodity price), the higher is the price for both call and put options (and vice versa). The reason being higher implied volatility means there's greater price movement being expected by market participants, thus increased upside and downside potential.

As a general proxy, higher implied volatility (IV) indicates uncertainty in the markets that can cause swings in either direction, but it's interpreted as a bearish signal because many equity investors exit the market when there's greater uncertainty.

How is the VIX traded?

The VIX is an index and not directly tradable, similar to the S&P 500. Market participants can trade VIX futures and take a view of where the calculated index will be in the future.

Like other future products, VIX futures can be packaged into Exchange Traded Notes (ETNs) and bought by retail investors.

If an investor wants to go long on the VIX, what factors would need to be considered?

The return of being long on the VIX is affected by the futures' roll-yield. In normal times, the VIX curve is in a contango shape, where the level where I can lock VIX in the future is higher than the level today.

The return of a long VIX strategy, whether in futures directly or ETNs, needs to factor in the cost of rolling futures due to the contango shape.

What will happen to the market if North Korea invades South Korea?

This is a test of your understanding of how markets are connected and interrelated. The question to ask is: "Is the move a risk-on move or a risk-off move?" Here, political instability is a risk-off move.

Sample Response

"If North Korea invades South Korea, stocks and stock futures will fall, most notably in the direct market (say the KOSPI) and across the world. Assets would pour into safe-haven assets, US Treasuries, Gold, and currencies such as the Swiss Franc. And the prices for all these assets would increase. Yields on government bonds will go down as yields and prices are inversely related.

For Corporate bonds, the overall price performance would be mixed, with the treasury yields declining offset by widening credit spreads. In terms of safe-haven currencies, the Japanese Yen, which would typically be included and has appreciated during other times of dislocation, would likely weaken in this scenario due to the geographical proximity of Japan to the Korean peninsula and interconnected economies."

Pick one asset class or part of the market you know well and dive a bit deeper. For example, you can talk about options.

Sample Response

"I would expect implied volatility in the market to increase substantially. Demand for puts would increase, particularly for out of the money puts, and we would see skew increase significantly. Skew is the difference between the implied volatility of out of the money puts and out of the money calls, and the supply/demand imbalance in this scenario would increase skew significantly.

You could also expand into specific stocks and trading strategies you would recommend:

South Korea is a large producer of cell phone components, and this disruption would affect Apple's ability to hit its sales numbers for the next quarter. I would short Apple stock and short a basket of Apple suppliers in the delta-one market using a custom basket equity swap.

General Motors has a large manufacturing operation in Korea from its purchase of Daewoo. Their global sales numbers would be particularly affected if their Korean plants are offline for an extended period. I would short GM shares to express this view."

Could you provide some examples of how swaps can hedge fixed income risks?

Swaps are financial agreements that can hedge a variety of fixed income risks, including:

- **Interest Rate Risk:** Interest rate swaps are derivatives that enable investors to convert floating rate cash flows into fixed-rate cash flows. The swap protects against the potential bond price decline caused by when bank deposit rates rise and investors want more yield to own bonds (i.e., yields rise, prices decline). An interest rate swap refers to a forward contract that usually involves the exchange of a fixed and floating rate between two parties. The contract is agreed upon by the two borrowers having different preferences for interest rates based on their specific needs (and speculations).
- **Credit Default Risk:** Credit default risk swaps are used when investors are concerned about the bond being repaid in full and demand more yield to own bonds (yields rise, prices decline)
- **Foreign Exchange Risk:** FX swaps come into play when the bond issuer pays coupons and the bond principal in a different currency – therefore, this is used to hedge against the possibility the currency's value might fall

What are the four main types of trading on Wall Street?

1. **Proprietary Trading:** In proprietary trading, traders will purchase and sell securities using the firm's capital to make profits. Prop trading doesn't involve clients, but it functions as if it were an investment bank's internal hedge fund. However, due to regulatory changes and the Volker rule, many banks have been forced to stop prop trading – instead, most banks have spun out their prop trading desks into independent hedge funds.
2. **Flow Trading:** Today, most of the traders currently working on Wall Street are flow traders. Flow trading is when the bank acts as a principal, and the client decides if they want to buy or sell. Based on their decision, the trader will set the price and take the other side. Flow traders bring in profits through high volume transactions and charging a bid-offer spread on each transaction. A bid-offer spread involves making markets in a stock, bond, or a derivative, with the trader buying at a lower price (bid price) than they're selling it (ask price).
3. **Agency Trading:** In agency trading, the trader executes orders on behalf of a particular client. Stocks, futures, and equity options are typically agency traded on an exchange (e.g., NASDAQ, NYSE, CME). The exchange is a natural market maker, and a flow trader is rarely needed to intermediate. An exception is large-sized trades, called block trades, which often happen off-exchange and use a traditional flow trader.
4. **Electronic Trading:** Electronic trading removes human touchpoints from the trading process. The employment of salespeople and traders can be expensive, and trading in margins in certain asset classes are becoming increasingly slim. Thus, these types of automated trading platforms based on advanced algorithms are more profitable for investment banks. Electronic trading develops, sells, and supports a trading platform or algorithm. Investors can trade without having to make a call or chat with a salesperson to execute the trade. Electronic trading works best for simple, high liquidity products where there's an electronic market that could be hedged. If the platform or algorithm can connect to an exchange and trade equities or futures, electronic trading makes sense. It also works outside an exchange such as FX Spot, where market participants have moved to an electronic platform, and the algorithm can trade with other banks electronically to hedge the risk.

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What category of trading would most trades fall under today?

Most trades today are agency trades, in which traders employed at an investment bank will act as an intermediary between the investor and the exchange (and collect a commission). Based on the orders of the client (the investor), the sales trader will execute the trade as directed.

Explain how the Volcker Rule changed the sales & trading division of investment banks.

The Volcker Rule is a section under the Dodd-Frank Act that prohibits investment banks from using their accounts for short-term proprietary trading of securities and derivatives, such as futures and options. In effect, the rule stated the investment banks could no longer perform proprietary trading. However, they can make markets through flow trading. This rule was imposed because banks were becoming too involved in the monetary gains from their trading divisions instead of focusing more on agency and flow trading (i.e., clients' interests come first).

What is the "Chinese Wall" in investment banks?

In the context of an investment bank, the "Chinese Wall" refers to the barrier intended to separate the M&A and Capital Markets division from the Equity Research and Sales & Trading divisions. Given the amount of non-public information that the M&A and Capital Markets division possesses on their clients (e.g., potential acquisition news, plans for capital raises, IPOs), this separation blocks the exchange of confidential information. Thus, the Chinese Wall is an information barrier protecting Material Non-Public Information (MNPI) from passing from those working on the private-side to those on the public-side.

What is a credit default swap (CDS), and why are they used?

A credit default swap ("CDS") is a derivative instrument that enables an investor to "swap" their credit risk with another investor. Essentially, a CDS serves as an insurance policy whereby, upon the occurrence of a credit event, the credit protection buyer will be compensated by the seller.

The buyer of a CDS is said to be buying protection (i.e., benefits if the company becomes less creditworthy and cost increases, similar to buying puts). On the other side, the seller of a CDS sells this protection, speculating that the credit will improve and can thus keep the sale price for the CDS. Later, if there's a default that must be paid out to the buyer of protection (similar to selling puts on a stock), the seller loses money.

How does the CDS market differ from the options market?

The credit default swap market ("CDS") is similar to the options market, in which investors buy or sell options in anticipation of a share price going up or down, usually to hedge an underlying position. The difference lies in how the investor is speculating that the company's perceived creditworthiness will increase or decrease, rather than share price movement.

What is an option premium, and who receives it: the buyer or seller?

The option premium is the total amount that a buyer has paid to purchase an options contract. In all instances, the seller of the option will receive the premium.

What are the three components of an option premium?

1. **Intrinsic Value:** The intrinsic value of an option is the amount of profit investors would get if they immediately exercised the option.
2. **Time Value:** The time value of an option is the amount that an investor will pay in excess of the intrinsic value. As the expiration date nears, the time decay of the option will cause the option premium to decline.
3. **Implied Volatility (IV):** The pace of the decline will depend on the implied volatility of the stock and any potential catalysts on the horizon (e.g., investor presentation, earning report release).

If an option has more time until expiration and greater implied volatility, would you expect the premium to be greater or smaller?

The option premium would be greater since there's more time for the price of the underlying asset to increase, and more volatility means a greater likelihood of price movement in either direction.

Explain the role that time decay has in the value of an option.

Time decay, which is denoted by the option Greek theta, is the measurement of the rate of decline in the value of an option from the passage of time as the expiration date nears. As the expiration date comes closer, the effect of time decay on the option's value accelerates as there's less time for the underlying asset to change in value. However, the rate of this value erosion will be slower, and the option will retain more of its value if it's currently in-the-money (ITM).

What would you expect the theta of a long-term option to be?

A long-term contract will have a theta close to zero because it doesn't lose value each passing day, and the expiration date is far away. Theta would be significantly higher for short-term options nearing expiration, especially if it's out-of-the-money. Short-term options will lose value each day, as they have more premium to lose relative to a long-term option.

What is the relationship between delta and gamma?

- **Delta:** A measure of the expected change in an option's price resulting from a \$1.00 change in the price of the underlying asset (security or index) – used by many traders to determine the likelihood of an option being in-the-money on the expiration date.
- **Gamma:** A measure of the rate of change in the delta of an option per \$1.00 change in the price of the underlying asset – gamma is a proxy for the stability of delta.

What is the difference between American options and European options?

The major distinction is that American-style options can be exercised before the expiration date, whereas European-style options can only be exercised on the date of expiration.

For this reason, the ability to exercise an option contract before expiration makes American options more valuable than European options, all else being equal. However, whether an early exercise would have been the most profitable choice would depend on the time premium remaining on the option and the potential for events in the future that can affect its value (which cannot be predicted).

What are eurobonds?

A eurobond is a type of bond that's denominated in a currency different from the currency of the country in which the bond is being issued and sold. When spelled with a non-capitalized "e," the term "euro" refers to external rather than Europe.

What is the bid-ask spread?

The bid-ask spread is the difference between the highest price that a buyer will pay for a particular asset and the lowest price that a seller will sell it. The more illiquid an asset is, the greater the bid-ask spread will be.

What is a black swan event?

A black swan event is an unexpected, very improbable event that statistically rarely occurs, but when it does – it brings havoc and severe consequences. These events cannot be predicted and often cause catastrophic damage to the global financial markets and economy.

Industry Specific Questions

Industry Specific Section Introduction

Before we begin the industry specific section, we wanted to give some words of advice.

It is rare to encounter industry related questions unless you're interviewing with a sector focused firm or for a specific group placement. Alternatively, you may encounter industry related questions if you bring up your personal interest in an industry on your own accord.

Each industry covered in this section contains questions related to:

- The recent trends and ongoing developments within the specific industry
- The unit economics of companies (revenue and cost drivers) within the specific vertical for financial modeling purposes

The ability to demonstrate an interest in an industry is one of the best ways to differentiate yourself.

Instead of expecting to be asked these questions word-for-word, identify an sub-industry or two that's of interest to you and strive to understand the underlying concepts, and then try to bring them up yourself when you're discussing your interest.

In addition, we have included questions on:

- Company-specific details on the industry's key players
- Historical events that helped shape the industry to how it operates today
- Technical terminology that you're not expected to know (especially if you're an undergraduate student); instead you'll learn this while on the job

If constrained on time, you should feel no obligation to review these extra questions. Instead, just ensure that you're aware of a few key industry trends.

Technology, Media & Telecommunications (TMT)

For our section on the TMT industry, we'll focus more on telecom and media as we have a separate section on the SaaS industry right afterward – albeit, there's a fair amount of overlap.

The two sections were separated as SaaS tends to involve metrics specific to early stage startups, whereas M&T interview questions are generally more about industry trends and the competitive landscape. Relative to SaaS companies, most telecom and media companies are valued in more traditional methods due to the industries being more mature and established.

SaaS companies, particularly those in the early-stages of growth, have their own set of metrics to evaluate their performance and use operational KPI based valuation multiples.

When it comes to following the technology news, sources such as [TechCrunch](#), [The Verge](#), and [Gizmodo](#) are great resources to stay up-to-date. But for more insightful commentary on the business side of technology and media, we suggest following Ben Thompson's blog, [Stratechery](#).

What are the most common types of business models in the telecom and media industry?

- **Traditional Equipment Sales/Wireless Services:** The first category comprises the traditional range of telecommunications equipment, networking products, and wireless services (e.g., Wi-Fi plans, cable television). As the oldest segment in TMT, recent revenue growth has been very low because this type of revenue is related to one-time equipment sales and then monthly plans, making revenue growth a function of geographic expansion (which has begun to stall). However, companies in this space tend to benefit from high operating leverage, barriers to entry, and lack of competition; hence, the anti-trust concerns. The incumbents are few and include companies such as AT&T, Verizon, and T-Mobile.
- **Subscription-Based Streaming:** The next category would include companies such as Netflix, Hulu, Spotify, in which business models are built around new customer acquisitions, minimizing churn, and increasing pricing by offering more value than their competitors. For companies in this segment, user count growth is the priority and many have no clear pathway towards becoming profitable without first achieving significant scale. Streaming has quickly become one of the most competitive spaces across all industries as traditional industries such as cable television and radio have been completely disrupted and new developments appear (e.g., cloud gaming, Esports)
- **Advertising:** This category would include companies such as Facebook, Twitter, and Google, which are companies that focus primarily on metrics such as MAU and DAU. Given their reliance on advertising, user engagement a key measure when assessing these companies' recent performance. While industry growth has been very strong for years now, particularly for the leading companies, the greatest hurdle looking ahead appears to be increased efforts by regulatory bodies to restrict user data collection and attempts to break-up these tech monopolies (citing anti-trust regulations).
- **Media Networks/Diversified Entertainment:** This category involves companies that create, acquire, and distribute programming content such as movies, films, theater events, and other media content. Through their broad reach, these companies can produce revenue from various segments such as advertising, affiliate fees, subscriptions, product sales, and licensing. Companies under this category could be best described as "media conglomerates" and examples include ViacomCBS, Disney, and NBCUniversal.

What are a few notable trends going on in the TMT industry right now?

- **Convergence of Business Models:** More companies are increasingly stepping outside into different segments either organically or through M&A. For instance, Google has countless subscription-based services, such as YouTube Music and Google Play Pass, as well as new ventures into communication services through Google Voice, home devices through Google Home, streaming through Chromecast, and fitness through its acquisition of Fitbit. Facebook has also been active by entering social commerce through Facebook Shops, music and video content creation through Creator Studio, and livestreaming through Facebook Pages and Facebook Watch Party. While this should come as no surprise for FAANG companies, this trend includes companies in low-growth segments as well, such as AT&T, which has continued its efforts to establish itself in streaming through AT&T TV, DIRECTV, U-Verse, and WatchTV. ViacomCBS is also planning to release its new streaming service Paramount+ in 2021.
- **Scale-Oriented M&A:** There have been many mergers of equals in recent years such as the merger between CBS/Viacom, Time Warner/AT&T, and T-Mobile/Sprint, which were all significant industry-changing mergers that raised regulatory concerns. Growth opportunities have run out in these areas, thus the pursuit of market leadership through consolidation of these low-growth industries has become more common due to the benefits from cost synergies, operating leverage, and diversification.
- **"Streaming Wars":** 2020 was a transformative year for the streaming video industry, as COVID-19 accelerated the adoption of video streaming with consumers streaming unprecedented amounts of video content through providers such as Netflix and Hulu. The competition has intensified as of late as more companies are increasingly moving into the streaming market, with some of the most notable entrants being Disney+, Apple TV+, HBO Max, Peacock, and Quibi just to name a few.
- **Hosted Online Events:** As lockdowns and social distancing measures prevented large social gatherings and events, many events have shifted to digital means. This has benefited media segments such as e-sports and livestreaming in particular. The number of major live musical or cinematic events hosted in real-time online has also increased with positive reception from consumers. The trend is expected to pick up and become more frequent in 2021 after a slow start following the initial outbreak in early 2020.
- **5G & Edge Computing:** 5G and edge computing are forecasted to be two of the highest growth segments, with adoption being led by large enterprises and increased B2B collaborations such as AT&T and Microsoft's multi-year alliance to work on the cloud, AI, and 5G. This trend is cited as being a central catalyst before 5G can reach mass adoption since 5G requires edge computing for its full capabilities to become more widely accessible given its reliance on the edge-computing infrastructure (likewise, edge computing requires more applications with 5G capabilities, particularly for mobile).
- **Consumer Usage of AI Assistants:** Sales in artificial intelligence (AI) assistants have increased amongst consumers and adoption is expected to increase, despite the security concerns. Many attribute this to work-from-home (WFM), which has led to consumers increasingly spending more on their homes (and thereby benefiting the "smart home" trend). This trend concurs with consumers' changed spending habits where more money is spent on their homes as seen in the record spending on gardening, home renovations, and various home-improvement projects.

Which valuation metrics are common to see for traditional telecom companies?

The category of traditional telecom companies would include mobile telecom service providers, convergent telecom service providers, cable operators, and data centers/infrastructure providers.

The traditional telecom industry is capital-intensive with high fixed costs, which are typically financed using debt as these companies operate in a highly concentrated, mature industry with minimal cyclicity. Because of the large amount of debt in their capital structure, telecom companies will incur substantial debt-related expenses. In addition, high amounts of depreciation will be recognized each year given their large fixed asset base. Another notable consideration is the tax incentives from the government provided for research & development (R&D), especially as the US attempts to build out its 5G infrastructure.

For the reasons stated above, accrual-based earnings are volatile year-over-year (YoY), making equity value based multiples like P/E less useful. Instead, the most commonly used valuation multiple is EV/EBITDA, but often EBITDA is on a run-rate basis or normalized over several years to account for inconsistencies.

EV/(EBITDA – Capex) is also common to see, as many consider it a better approximation of operating free cash flow given the capital intensive nature of the telecom industry and the need to adjust for capex. Telecom would be an example of an industry where trailing (LTM) and forward (NTM) multiples would be truly necessary to fully understand the valuation trends.

Unique to telecom companies, other multiples include EV/Data Centers, EV/Net PP&E, EV/Route Miles, EV/Fiber Miles, and EV/Access Lines in Service, EV/Broadband Subscribers, and EV/Broadcast Revenue.

As a side note, considering how diversified many of the traditional telecom companies have become, it may be necessary to perform a sum-of-the-parts valuation (SOTP).

What metrics would you use to measure user engagement?

In the context of media companies, user engagement is the level of involvement a customer has with a particular product, such as a website, application, or online platform. Higher user engagement rates imply users derive value from the product (leading to continued usage). This is of high importance for media companies because user engagement leads to customer retention and more recurring revenue.

User Engagement KPIs

- Daily Active Users (DAU) and Monthly Active Users (MAU)
- Active Subscriber Count
- Time Spent In-App Per Day or Week
- Pageviews/Website Hits
- Churn Rate (Retention %)
- Conversion Rate (Free → Paid Plan)

Which multiples are most commonly used to value modern media companies?

For high-growth media companies, operational KPI-based multiples are very common due to many of them being unprofitable or barely profitable. Traditional cash flow based metrics fail to capture the true value of many of these companies. By virtue of many of these companies having the objective of acquiring new customers, large losses will inevitably be incurred. Therefore, it would be unreasonable to assess a growth-oriented company based on profitability-based cash flow metrics.

EV/Revenue is often looked at, but it may not be the ideal multiple to look at if user growth is currently being prioritized over monetization. Instead, user count, growth in new customers, and the churn rate are the key value drivers used to assess performance. And multiples such as EV/MAU, EV/DAU, and EV/Monthly Subscriber Count may provide a better indication of the company's value.

For a company with a product meant for high frequency in usage, what is one way to assess user engagement?

A popular metric for measuring the level of user engagement ("stickiness") is the ratio between daily active users (DAU) and monthly active users (MAU). The DAU/MAU ratio, expressed as a percentage, is the proportion of monthly active users that engage with an application in a single day.

$$\text{DAU: MAU} = \frac{\text{Daily Active Users}}{\text{Monthly Active Users}} \times 100$$

For example, if the company's app has 500 DAU and 1,000 MAU, then the DAU/MAU ratio is 50%. This can be interpreted as the average user engaging with the app roughly 15 days in a 30 day month.

According to Sequoia, the standard DAU/MAU is between 10% and 20%, but certain apps such as WhatsApp can easily top 50%. Note, this metric would only be useful for products with daily use (e.g., social media, messaging platforms, mobile applications). It wouldn't be useful for products that don't require daily use. For example, this metric would be useful for companies such as Facebook, Twitter, and Snapchat, but not applicable for Airbnb, Uber, and Lyft.

What are economies of scale and could you give me an example?

Economies of scale occur when the per-unit costs of production decrease as output increases. These cost savings from greater scale will result in higher margins. The cost per unit decreases as more output units are produced because the costs are being spread over the increased number of goods. An example of a company benefiting from economies of scale would be Apple. Because Apple sells millions of iPhones each quarter, it can commit to component purchases at a massive scale with significant negotiating leverage that results in volume discounts (and a lower average cost per unit).

What effect does having high operating leverage have on the scalability of a business?

The operating leverage represents the proportion of a company's cost structure that consists of fixed costs, as opposed to variable costs. Thus, companies with a higher proportion of fixed costs in their costs structure have greater operating leverage.

- **High Operating Leverage:** If the company has high operating leverage, each additional dollar of revenue can be brought in at higher profits once the fixed operating costs are paid. Thus, each marginal unit is sold at a lesser cost, creating the potential for greater profitability since fixed costs such as rent and utilities remain the same regardless of output.
- **Low Operating Leverage:** If a company has high variable costs, each additional dollar of revenue may generate less profit as costs proportionally increase alongside increased revenue (i.e., the variable costs offset the additional revenue). If revenue were to increase, these costs would rise in tandem (or vice versa).

If a company has high operating leverage, earning outsized profits on each incremental sale is plausible.

Can you give me an example of a company benefiting from operating leverage?

An example would be a telecom business that has finished building out its network infrastructure. Initially, the business will incur substantial upfront capex to enable connectivity and network capabilities (e.g., equipment purchases, construction, security implementations).

But once the network has been built out and operations are running, each new customer acquisition comes at a low incremental cost, as the cost of adding one customer to an existing network is inexpensive. Most of the expenses incurred are mostly maintenance-related later on. The initial investment will eventually be earned back and what remains is a high margin business with recurring revenue.

When might having high operating leverage not benefit a company?

Companies with high operating leverage have the potential to earn more profits on each incremental sale as the business scales. The caveat being, if sales and customer volume turn out lower than anticipated, the company can end up in financial ruin, given the initial investment spent and fixed cost structure. This means companies with high operating leverage have more business risk (i.e., higher risk of insufficient profitability) because the break-even point has been moved higher. If sales were to decrease, a business with a variable cost structure could easily reduce costs, but a company with a fixed cost structure has very limited flexibility.

What are network effects and can you provide some examples?

The network effect is a phenomenon whereby the value of a product or service offering increases with each incremental user and increased adoption. Network effects compound once critical mass is attained, meaning past this inflection point, new customers' acquisition experiences a domino effect where less effort and monetary investments are required.

- Facebook is an excellent example of the network effect, as its advertising revenue took off once its user base grew and customer engagement increased. By virtue of being the largest, fastest growing social media platform, Facebook obtained a durable moat in the advertising market, which led to an influx of advertisers wanting to place ads on Facebook's platform (driving up ad revenue) and new opportunities for different products and services to be introduced.
- Another example would be Google's search engine, which provides more accurate results as more users use the platform. Here, the network effects led to more advertising revenue and a more effective product as more usage of the product by users increased the product's value for all users. This explains why Google has dominated the search engine market with a near ~87% market share.

What is pricing power and how would you measure it?

While there's no exact formulaic method to calculate a company's pricing power, a useful question to ask is: "If the company raised prices by ~25%, what would the impact on customer retention be?" It's a positive sign if customer retention remains relatively stable after raising prices.

If a company has pricing power, it can raise prices and not see a substantial customer churn increase. The amount of pricing power a company is determined by how essential a product is to the users, how unique the value it provides, and the availability of (or lack of) other alternatives in the market.

Pricing power is often the byproduct of a differentiated product, which is essential to the users and unique in the value provided.

What is the difference between a cyclical and secular trend?

- **Cyclical:** A cyclical trend will be less predictable in terms of timing than seasonality and can result in more severe implications on the financial performance of a company. Cyclical trends can be near impossible to time. An example would be the semiconductor industry, which is largely driven by GDP growth and spending trends by enterprises.
- **Secular:** A secular trend is a long-lasting, often permanent change in an industry because it's related to new technology developments or changing consumer behaviors. An example would be the rise of Netflix and how it benefited from the secular trend of over-the-top ("OTT") content. Most secular trends are here to stay and these shifts are often gradual with plenty of time for companies to make adjustments, but many still ignore ongoing trends until their products/services become obsolete (Blockbuster in this example)

What are some examples of barriers to entry that can help protect a company's profit margins?

- **Network Effects:** Network effects are the incremental benefits from more users joining a platform and once a platform has attained critical mass in users (i.e., reached the inflection point of product adoption), it becomes very difficult to take market share away.
- **Economies of Scale:** Improved cost structures from the increased scale can be a barrier to entry that deters competitors, as the existing incumbents have a clear advantage in profitability and thus have more cash flows to reinvest into the business. Since the unit costs of a product decline as the volume increases, new entrants would come in with a significant cost disadvantage right away.
- **Proprietary Technology:** By having a differentiated offering that nobody else has, competition would be non-existent (or minimal), especially if there are patents involved.
- **High Capex Requirements:** Capital requirements related to infrastructure, machinery, and R&D to get a business started can deter new entrants.
- **Switching Costs:** Unless the new entrant has a significantly better product/service than the current offerings, switching costs can serve as a barrier (i.e., the switching costs outweigh the benefits).
- **Regulatory Hurdles:** The government and regulatory requirements can serve as barriers to entry, especially in highly regulated areas such as healthcare. These requirements to receive approval to enter a market can deter new entrants but benefit existing incumbents.

Consistent profits that can be sustained over the long-term require differentiation in an industry with high barriers to entry.

What is 5G, and what benefits will it provide?

5G is the next-generation network that's much faster (at full capacity) than 4G that it has the promise of dramatically accelerating the development of smart cities, autonomous vehicles, drone technology, virtual reality, public transportations, and manufacturing, agriculture, health care, and many other industries.

The 5G communication system claims to provide 100 gigabits per second, which would be 100x faster than the speed of 4G communication. This coincides with the reduced latency and clearance of bandwidth issues associated with emerging new technologies (which 4G struggled to handle).

The nationwide deployment of 5G has come at a slower pace than advertised. Today, many users with 5G devices are actually on a slower form of 5G because many carriers are rolling out different tiers of 5G (i.e., technically no mobile devices are on "5G" as of the current date). While the major US carriers have been racing to launch 5G this year, successful implementation in some form or another has only been in select regions and has been inconsistent. For those in less developed cities, the step-up from LTE (e.g., the download speeds) has been marginal, and many users have been left disappointed by the barely noticeable change.

The shift towards 5G could take up to several years as this is the natural process of technology deployment, especially given its potential implications on society. However, 5G will be well worth the wait since it'll be the catalyst of what takes IoT to new levels and allows applications such as robotics, industrial automation, and autonomous vehicles to become a reality.

The term "latency" often comes up when discussing 5G. What does it mean?

To enable connectivity between devices, large amounts of data are being exchanged online. A delay in transmitting data is referred to as latency and can hinder the user experience. Thus, reduced network latency when transmitting data packages prevents irritation and frustration from users (i.e., comparable to being stuck in road traffic). Latency is directly related to a network's bandwidth, which is a network's maximum data transfer rate over a certain period. While the two are not interchangeable terms, they're closely interlinked.

Which companies do you expect to benefit the most from the increased adoption of 5G?

In the US, the companies that stand to benefit will be the leading wireless networks such as AT&T, T-Mobile, and Verizon, especially when you consider their collective market share in the wireless carrier space. Many semiconductor companies are also expected to benefit, such as Qualcomm, Broadcom, and Qorvo. Qualcomm recently announced a new portfolio of 5G infrastructure semiconductor platforms, Broadcom is a leading vendor of chips for 5G smartphones, and Qorvo is a supplier at the forefront of radio frequency (RF) solutions.

Many enterprises are expected to test private 5G deployments. What are the implications?

The increased deployment of private 5G networks by enterprises means more next-generation wireless 5G radio antennas and transmission resources will be dedicated to a specific enterprise (and become independent of cellular networks). In effect, private 5G networks will bring bandwidth to areas that carriers have neglected or locations with greater security requirements. In theory, these private networks should be more secure as the enterprise (the network operator) will set up and monitor its security policies instead of relying on a 3rd party, and it would enable data to be stored locally on the nearby premises of the facility.

"Edge AI" is a common buzzword when discussing artificial intelligence. What does it involve?

Edge AI is a combination of edge computing and AI. Using too many devices and traffic on a single network can often clog the network and slow down the speed. To ease these issues of latency and bandwidth that hamper performance, machine learning algorithms can be run on a local server (or device) with edge computing capacity as opposed to remote servers and data centers – this is known as “Edge AI.” To further explain, the algorithms are processed locally on a hardware device requiring no connection to a remote server. The chip uses data generated from within the device and then processes it to give immediate, real-time insights with no delay from network congestion. Edge AI's main advantage is that Edge AI-enabled devices can process data faster and be more responsive relative to centralized IoT devices, leading to better customer experiences.

What do over-the-top services refer to and can you name a few examples of “OTT” providers?

Over-the-top (“OTT”) is the delivery of film and television content through the Internet, bypassing traditional cable and satellite TV services. Examples of OTT providers include Netflix, Hulu, and Amazon Prime Video.

The trend of OTT is being driven by cord-cutters and trimmers, which refers to consumers increasingly cutting off their cable connections to switch to a lower cost subscription-based OTT provider. Simply put, digital transformation has re-defined the media industry and traditional business models are being replaced by consumer-oriented experiences. Many consumers nowadays don't see the benefit of having access to programs they don't watch and desire the customization that OTT enables them to have.

Tell me about the pricing models used in the OTT industry.

Broadly, there are three types of pricing models used by OTT providers:

1. **Subscription Video on Demand (“SVOD”):** The SVOD pricing model provides video-on-demand services that enable users to access an entire library of videos for a recurring fee under a subscription (most commonly a month). Once the user has paid the fee, they can watch unlimited content on any device using internet access. The most mainstream examples of SVOD include Netflix, Hulu, and HBO. At present day, SVOD is the most common type of VOD offered by media companies.
2. **Transactional Video on Demand (“TVOD”):** Under TVOD pricing, users purchase content on a pay-per-view basis. Rather than unlimited access under SVOD, the users are charged per video or video package rather than the entire catalog. Examples of TVOD would be Google Play, Amazon Prime Video, and iTunes.
3. **Ad-Based Video on Demand (“AVOD”):** AVOD refers to video content that's available for free to consumers. Here, the revenue brought in is through ad revenue rather than directly from the consumers. An example would be Hulu, which offers SVOD plans in addition to a free AVOD plan.

What is the “varied access” pricing model?

The varied access pricing model provides different content access levels to subscribers (i.e., different subscription plans based on their preferences).

For example, Netflix offers its users options to sign up for a single, one-screen plan or a family plan option with additional features such as higher resolution.

What are the two categories of programming we see in OTT?

1. **Original Content:** Offering original content can give an OTT service provider a significant competitive edge. Therefore, a company such as Netflix invests considerable amounts in content development (e.g., Stranger Things, Bird Box, House of Cards) to gain an edge over its competitors.
2. **Licensed Programming:** Licensed programming includes agreements to replay content previously aired elsewhere. The benefit of licensed programming is lower costs but at the expense of less control over the content (e.g., Disney pulled its content and Pixar content from Netflix’s catalog as it rolled out Disney+).

How would you forecast the subscription revenue for Netflix?

The revenue of an OTT provider such as Netflix would be based on its ability to minimize churn. Netflix has established itself as the market leader with the highest market share.

From now on, Netflix’s success (or failure) in being able to fend off new entrants such as Disney+ and Hulu will be very impactful on Netflix’s revenue forecast and anticipated churn.

1. **Renewal Rate:** The first metric to begin with would be the number of paid memberships at the end of the period. This is mostly a function of the renewal rate of Netflix’s existing customer base. Netflix doesn’t disclose its customer renewal rate or churn, but there are streaming services analytics reports to use as estimates. The key question is: “Can Netflix hold on to the new customers that subscribed during the stay-at-home period, as well as prevent its customers from leaving for its competitors?”
2. **New Subscribers:** Then, the number of paid net membership additions can be forecasted. For a mature market-leading company such as Netflix, this metric was relatively stable, but COVID and the emergence of new competitors have made this a challenging task. One consideration should be Netflix’s pricing increase in late 2020 at a time when the competition in the OTT space has increased substantially. But most consider the increase to be modest and the impact on churn will be negligible. Plus, its new plans for up-and-coming content will be important – this would have to be compared to the offerings of its competitors (Hulu and Disney+ in particular). For this reason, the churn forecasted should be a wide range as it depends on how customers react to the new content quality.
3. **Average Monthly Fees:** Next, the average monthly revenue per paying membership would be forecasted. This will be straight-forward and done based on historical averages and trends, as well as with the recent price increase in mind. But the pricing plans shouldn’t deviate much in the future, especially with the ongoing attempts to undercut Netflix’s pricing. Since the subscriber counts are in annual figures, you would need to annualize this fee amount.
4. **Total Subscription Revenue:** To wrap up this basic revenue build, you would take the projected subscriber count (net of customer churn) and multiply this figure by the annualized average membership fee to get Netflix’s revenue for the year, and then continue this for the rest of the forecast.

For pricing, why does Disney undercut its competitors?

Disney+ is viewed as the main competitor of Netflix for the foreseeable future, but interestingly, the service cost was priced at only \$6.99 per month, vs. Netflix's basic plan of \$8.99. However, Netflix's more popular plans are its standard and premium plans, which were increased to \$13.99 and \$17.99 per month in 2020.

There are a few reasons Disney has the flexibility to take this aggressive strategy:

- First, unlike Netflix, whose revenue generation and business model is entirely based on subscription sign-ups, Disney is essentially a diversified conglomerate with enough funds to take on this type of customer acquisition strategy. While Disney+ is likely to see an increase in price later on to become a more profitable division (in ~2024, according to the management), its current focus is to steal market share from Netflix. By strategically undercutting Netflix and providing its own original content pulled from Netflix, Disney has a significant advantage.
- Next, Disney+ is not a priority for Disney. The larger, overarching focus of Disney is its core businesses (e.g., Disney Theme Parks, Disney Studios, Disney Original Content). By controlling the distribution of its own content by going D2C, Disney can strengthen its relationships with its customers and create a network effect where each offering builds upon each other – for customers and families, in particular, this creates a fully integrated, cross-platform user experience not just in terms of online media but in-person visits. Rather than dispersing its content through various channels, Disney has now become a one-stop-shop for its content, especially given the lucrative opportunities in video streaming on the horizon.

Disney owns Disney+, Hulu, and ESPN+. Why does Disney not just bundle them in one offering?

Disney actually offers this bundled plan, but many users choose to opt for individual offerings. From an initial glance, it might appear odd that Disney has three different streaming services. But the controlling stake in Hulu brought immediate synergistic benefits to Disney. Right away, Disney+ became a part of the "streaming wars" conversation before their offering became more developed. Hulu was long considered the primary competitor of Netflix, and now it became Hulu and Disney+ in an instant.

For ESPN+, sports differ from streaming TV shows and movies because real-time, live events are the preferred consumption method by consumers (i.e., the traditional TV model). Thus, ESPN and Disney could develop an affiliate fee business model and offer a pay-per-view or pay-for-access type pricing for this arrangement. And given how sporting events have natural breaks in between, this creates an opportunity for commercials (and thus greater ad revenue).

Many investors initially dismissed Roku following their IPO. Why has the company far exceeded initial expectations to date?

Following their IPO, many investors had a negative outlook on Roku, given the ongoing shift away from hardware. Competitors such as Apple with its cult-following were expected to steal Roku's customers with ease. But to the surprise of many, Roku is one of the market leaders in 2020 for connected TV platforms and has outperformed expectations. Despite still using hardware (e.g., the stick users plugged into the TV), Roku made several strategic moves that enabled them to have a leading position.

Roku partnered with television manufacturers to make Roku OS come built-in the TV right out of the box. Despite having an arguably outdated design, its simple interface, ease-of-use, and affordability created a niche. Next, Roku established partnerships with Netflix, Hulu, and Disney+ to allow its users to stream any of the top media apps from their TV. This level of independence from not trying to get customers to use a certain app over another (i.e., from Amazon, Google, Apple) is a key reason it has become the choice of consumers – all Roku concerns itself with is providing an easy, affordable way for customers to stream content from their homes.

Why has Apple shifted its focus from hardware to software?

Computing hardware sales peaked in 2011 and have seen a contraction in growth every year since, and it has become increasingly challenging for Apple to provide an incentive for customers to upgrade to newer models. Since hardware products are periodic one-time purchases, rather than recurring revenue sources, Apple has shifted its focus to building out its software and related services. Software-based services have a larger total addressable market (TAM) and lead to higher customer retention rates (i.e., product “stickiness”), thus Apple has shifted its focus on strengthening its online service offerings and further integrating the Apple ecosystem (e.g., iOS App Store, iCloud, iTunes, Apple Music, Macs). Once a customer enters this ecosystem, it becomes more difficult to leave. Many of Apple’s products are intentionally not compatible with other competitors’ products (e.g., cannot download Apple apps on a Windows laptop; only the web-based versions are available).

What is enterprise collaboration software?

Enterprise collaboration software provides teams with tools to share information, coordinate activities, manage projects, and communicate. The collaboration market consists of many submarkets – for instance, employee communication applications (real-time chat, video-conferencing), file sharing and content collaboration, and project management.

The global workplace collaboration software market is expected to exceed ~\$18 billion within the next few years as the adoption of integrated collaboration and communication software increases. Amid the recent global coronavirus crisis, collaboration software applications have become an increasingly integral part of how businesses’ workflow is organized and carried out. As enterprises were forced to function remotely, executives deployed new collaboration tools company-wide to connect physically distant teams. Zoom (ZM) is considered a primary beneficiary of the coronavirus outbreak, as many employers and schools were left with no other option but to use remote video-conferencing software.

Tell me about a few of the ongoing trends in the enterprise collaboration software industry.

- **Platform Vendors vs. Specialist Players:** As the market matures, collaboration solutions that offer a suite of offerings under a unified platform will have a key competitive advantage.
- **Third-Party Application Integrations:** To compete with larger established vendors, specialized single-application companies must include more third-party application integration within the collaboration ecosystem to increase end-user satisfaction.
- **Upcoming Consolidation Phase:** The market remains highly fragmented with a low barrier to entry, making it ripe for M&A activity (e.g., productivity apps, note-taking apps, time management apps, employee tracking, and scheduling apps). Thus, more enterprise software providers will include social software and collaboration into their product mix.
- **Shift Towards Remote Work:** Before COVID, approximately ~70% of the global workforce worked remotely at least once a week. In 2020, remote work became completely normalized in our society, and many large corporations have stated they intend to continue working remotely for the foreseeable future.
- **Security → Customer Trust:** Privacy and security concerns will be a major topic of discussion in the future – earlier in 2020, Zoom came under scrutiny after major security flaws and platform deficiencies were uncovered. Thus, Zoom rolled out more encryption offerings and acquired Keybase to strengthen its security and regain users’ trust.

There are two distinct groups in enterprise collaboration software, platform vendors and specialist players. Could you tell me how they differ?

1. **Platform Vendors:** Platform vendors have an existing portfolio of software products, an established brand name, and a trusted customer base. For example, Microsoft is a trusted brand with established security infrastructures and a loyal customer following - therefore, their strategic focus is integrating Teams into Office 365 and onboarding existing customers.
2. **Specialist Players:** Specialist players are new entrant, high-growth companies with one service offering (e.g., Zoom). While platform vendors can afford to offer free option plans over the long-term, specialist players must urgently acquire new customers and monetize them. For specialist players, the acquisition of new customers is the focus - whereas platform vendors can leverage their existing user base that's already familiar with using their products and have gained their trust.

How were Microsoft Teams able to capture market share away from Zoom?

MS Teams took significant market share away from Zoom with relative ease because Microsoft had an existing customer base. Microsoft was not necessarily better at acquiring new customers than Zoom or more innovative; instead, it had existing long-term customer relationships, and it was a more convenient change from the perspective of consumers. Many of whom were already users of Office.

Would you consider B2B software to be non-cyclical?

Robert F. Smith of Vista Equity Partners once stated that "Software contracts are better than first-lien debt. You realize a company will not pay the interest payment on their first-lien until after they pay their software maintenance or subscription fee. We get paid our money first."

Today, many B2B software applications have become essential, embedded parts of companies - meaning, the removal of a software product from a business would leave its operations unable to continue functioning. Also, most software arrangements are structured as long-term contracts and include high switching costs. For these reasons, B2B software would be considered non-cyclical and resistant to downturns.

In the context of technology applications, what does product bundling mean and could you provide an example?

The concept of product bundling is taking complementary products that frequently get purchased together and selling them as a whole. There is typically a direct complementary relationship between the products such as Adobe's Creative Cloud offerings (Photoshop, Illustrator, and After Effects), whereas with others, there's a broad, indirect link. An example would be an Amazon Prime membership and Amazon Prime Video, in which a customer having both doesn't add more value to each other (other than the savings from the discount).

Name a weakness in Spotify's business model that explains its lack of profitability.

While Spotify's fixed costs (e.g., SG&A and R&D) are in line with its comparables, Spotify's problem is its marginal costs. These marginal costs are mostly related to the royalty fees it pays to record labels, songwriters, and publishers. In contrast to Netflix, Spotify has close to no original content, although they're negotiating new deals for lower rates and their mass adoption of subscribers provides an incentive for record labels to partner with Spotify to expand their reach. Spotify's value proposition to its customers completely depends on record labels - who ultimately control the rates charged.

To add insult to injury, competitors such as Apple offered free trials that lasted up to 3+ months. Similar to the Disney/Netflix relationship, Apple's revenue comes from diversified sources, unlike Spotify.

Despite its low margins, why do you suppose Spotify offers so many discount pricing models on its offerings?

Despite its often-cited struggles with profitability, Spotify offers a wide variety of discounted plans such as a very popular student plan and partnerships with Hulu, Showtime, Starbucks, and more. While this may decrease revenue in the short-term, this strategy is based on the focus on customer retention and the belief that this metric, for the time being, is more important than ARPU. These discounted plans may cut into their ability to make more revenue, but its impact on finding loyal customers has been positive. The churn rate for Spotify has been on the higher end, but over time this will decrease as the retained customers become a reliable base to sell other products and services (e.g., podcasts, audiobooks).

For Spotify to become more profitable, its primary competitive advantage is its customer count and network. Thus, this metric must be prioritized to provide an incentive for artists of all sorts to partner with their platform and not have all the leverage when negotiating contract terms (i.e., the artist would be missing out if their music or content is not on the Spotify platform).

What is demand-aggregation and could you name some companies capitalizing on this trend?

Demand-aggregation companies have business models built around establishing themselves as the middlemen between businesses and consumers. The two most well-known companies that enable this type of feature would be Groupon and Yelp. Groupon is known for providing discount coupons to consumers and connecting them with retailers/restaurants, whereas Yelp is known for its crowd-sourced reviews on businesses of all sizes. Another example would be Apple News+, which aggregates the news from various news outlets and blogs for the customer to create their personalized, curated news platform.

Tell me about the trend of livestreaming.

Consumers are increasingly following live video streaming apps to interact with friends, family, and other users. The popularity of live streaming first became mainstream in South Korea, but there has been a surge in popularity as many consumers enjoy watching content as it's happening in real-time and interacting with the content creator. The amount of livestreamed content and speed of adoption shows a clear desire for live content worldwide. Examples of companies capitalizing on this trend are Facebook Live, Periscope, and Twitch.

Where do the opportunities for monetization in the Esports industry lie?

There are four general monetization strategies for the Esports industry: merchandising, sponsorships, media rights, and gate revenues. But most industry revenue comes from advertising, which is a direct function of audience count and engagement hours, rather than just viewership. Therefore, advertisers see a large market opportunity in Esports, as these streams often have some of the highest levels of engagement, and there's a level of trust between an Esports athlete and his/her fans that's rare to find these days. Esports athletes (especially those that stream on video platforms) often stream for hours daily and interact with fans, thus creating a sense of community. However, Esports is often considered difficult to monetize as the Esports audience is heavily skewed towards the younger demographic, who have less discretionary spending power.

Why is the semiconductor industry known for being cyclical?

The semiconductor industry highly depends on the economic conditions (i.e., usually follows GDP growth rate), as IT spending fluctuates heavily based on how the economy is doing. Besides being tied to enterprises' spending trends, it depends on new device purchases such as smartphones and laptops by consumers, which are very cyclical and decrease substantially during downturns. Another aspect is how the industry's products have short life-cycles and can become obsolete quickly once better new developments occur, even from minor incremental improvements. Hence, the industry is known for inventory build-up and write-downs of inventory.

What are the five types of virtualization?

Virtualization refers to running multiple operating systems on a single system simultaneously, resulting in reduced IT expenses and increased efficiency for businesses.

1. **Desktop Virtualization:** Desktop virtualization is when a desktop operating system can run as a virtual machine on a physical server with other virtual desktops.
2. **Application Virtualization:** Application virtualization packages several applications into a single application, which is then separated from the operating system to run in a “sandbox.”
3. **Server Virtualization:** Server virtualization enables many virtual machines to run on one physical server, which leads to more efficient utilization of the physical server.
4. **Storage Virtualization:** Storage virtualization is physical storage being grouped to have a single storage device in a virtual format.
5. **Network Virtualization:** Network virtualization combines hardware appliances and software to enable management from a single external virtual network (i.e., aggregate various physical networks into one network).

Could you name an example of virtualized distribution?

An example of virtualized distribution would be cloud-based gaming. Often referred to as “gaming-as-a-service,” cloud gaming offers gaming through remote servers and streams them directly to a user’s device. Cloud gaming is a form of virtualized distribution instead of dependence on hardware (e.g., traditional disks). When it was initially released to the public and used by consumers, it was compared to Netflix due to its similarities in the consumer experience.

What impact did the success of Fortnite have on business models in the gaming industry?

The online video game Fortnite was unique in that it had a “free-to-play” business model, yet it generated well over \$2 billion in revenue across all platforms and became one of the most successful games that brought mainstream attention to Esports. Rather than selling its game for an upfront fee, Epic Games (the publisher of Fortnite) made the game free to download – betting on its ability to monetize content through offering optional in-game purchases of different costumes, skins, Battle Passes, and V-Bucks.

By offering the game for free, Fortnite amassed a cult-like following in a very short duration because of the minimal friction for a user to play with their peers. And this popularity and customer acquisitions led to opportunities for sponsorships, ad revenue, and live competitions. In effect, the success of Fortnite made video game incumbents realize the revenue potential besides the initial purchase (e.g., Esports, advertising, in-app purchases, priced unlocks).

What will the implications of Apple’s IDFA changes in iOS 14 have on advertising companies?

During its annual Worldwide Developers Conference (WWDC), Apple announced that following the release of iOS 14, developers and publishers will be required to receive permission from users before using the Identification for Advertisers (IDFA), which is Apple’s proprietary mobile ad ID used for ad tracking and measurement. Apple has effectively restricted one of the important elements of in-app mobile advertising. The result is that developers must now explicitly ask users to gather their data and track them across mobile apps and websites accessed on the iPhone/iPad. While originally the feature was slated for release in fall 2020, Apple delayed the privacy feature change to early 2021 to provide developers with sufficient time to adjust.

This privacy feature is one of the most aggressive policy changes a tech giant has made in recent years, and what Apple users should expect to see is a prompt requesting their IDFA – as one would expect, most users are expected to select the decline option. Advertising companies such as Facebook have publicly announced this change has the potential to impact its ad revenue negatively going forward.

What did Apple announce in 2020 that will negatively impact Intel?

In 2020, Apple's CEO Tim Cook officially announced Apple would part ways with Intel and confirmed the company would begin its transition towards using its own custom-built ARM processors in its laptops and desktops (i.e., to proprietary ARM-based processors developed in-house). Apple stated its "Apple Silicon" chips would allow for better, more powerful Macs, and its own chips would bring a new level of performance speed while being more energy-efficient. Apple claims the chip's advanced power management capabilities would enable maximized performance paired with industry-leading battery life. The first Mac with Apple Silicon will be released at the end of 2020, and Apple expects the split with Intel to take approximately two years.

Tell me about the controversial T-Mobile and Sprint merger that brought up concerns of a monopoly and how it ended up being approved.

The T-Mobile and Sprint merger was finally approved and completed in 2020, after the initial deal announcement in 2018 and delays related to regulatory scrutiny. The merger was controversial as it effectively brought down the number of major cell phone carriers in the US down from four to three. As part of the agreement for the acquisition to be completed, T-Mobile agreed not to raise prices for three years. Thus, T-Mobile and Sprint users cannot see any price increases until 2023.

One reason the Justice Department agreed to the T-Mobile and Spring merger was because of DISH Network's involvement. To secure the Justice Department's approval, the two carriers agreed to divest certain assets to DISH, most notably its prepaid subsidiaries (e.g., Boost Mobile), spectrum licenses, and many of Sprint's retail stores. DISH would become a viable 4th wireless carrier, allowing for healthy competition to be maintained.

How have the acquisitions of Time Warner and DirectTV by AT&T performed to date?

In the past five years, AT&T has spent billions to position itself well for the streaming wars. Its M&A spending spree began with its acquisition of DirecTV in 2015 in a \$49 billion deal, which appeared to be a well-planned, strategic acquisition when media companies were benefiting from a surge in online video consumption from consumers. Then the hugely controversial merger with Time Warner took place in 2018.

Since then, AT&T's streaming ambitions have appeared overzealous, and it currently owns many seemingly redundant streaming brands such as HBO Go, HBO Now, AT&T Now, AT&T TV, AT&T WatchTV, AT&T U-verse, and DirecTV. By the end of the fiscal year 2019, AT&T carried more than \$150 billion in debt on its balance sheet – which flowed down to its customers through increased pricing. In its FY 2019 annual report, AT&T not only lost traditional TV service customers but internet video platform users. Initially, AT&T had expected to benefit from the influx of new subscribers acquired from DirecTV and use this leverage in negotiations with programmers. Then, by merging with Time Warner and the acquisition of HBO, AT&T would have access to original programming and be the most well-rounded premium service offering in both quality and quantity.

While the original grand vision was to create a media conglomerate; instead, it saddled AT&T with massive debt, higher pricing plans than its competitors, and a lagging market position despite all their spending. The questionable M&A strategy of AT&T gave them a seat at the table for the streaming wars and made them a more modern, diversified company, but it came with such significant expenses that to this day – it's not yet clear whether those acquisitions were the right decisions (or if they were all necessary).

What is the FCC agency and what is its role as a regulatory agency?

The Federal Communications Commission ("FCC") regulates all interstate and international radio, television, wire, satellite, and cable communications in the US. The agency consists of a five-member panel appointed by the President of the US and confirmed by the Senate. The FCC aims to protect consumers from unfair increases in prices or be forced to accept lower quality services and prevent companies from becoming monopolies to where others cannot join the market from the barriers being too high.

What is net neutrality?

Net neutrality is the idea that internet service providers (ISPs) should treat all online data equally, without preference towards certain users or restricting access content or discrimination towards others – hence, the name “neutral.” If net neutrality were not to exist, ISPs could place restrictions on the kinds of access to content on the Internet (i.e., hinder downloads, uploads, application usage). Also, the ISPs could intentionally slow down or speed up the internet based on where the access is based (or the owner).

How did TikTok become such a popular app in an industry that's considered as being near a monopoly in terms of competition?

Owned by ByteDance, TikTok is a video-sharing social networking application that allows its users to make and share short ~15-second clips. At first glance, the platform doesn't come across as noteworthy, given how similar it sounds to the features of Snapchat, Instagram Stories, and Facebook Stories.

But the reason TikTok achieved such rapid adoption was because of its focus on user-generated content. More specifically, just about any person could go “viral” and garner millions of views on this app. Compare this to a platform such as YouTube, where the front page is filled with content created by well-known people (often sponsored partners). A similar application, Vine, was one of the first short-form video sharing applications to gain mainstream adoption and was acquired by Twitter. However, Vine was eventually shut down, which many attribute to its biased algorithm in which endorsed content was disproportionately promoted on the app (making the content repetitive as the same branded creators would be shown and often recycled in the feed). Given how TikTok's main appeal appears to be the aspect of users discovering new content by unknown people, it seems unlikely TikTok will make the same mistake as Vine, especially given how the company has stated its mission is to enable everyone to be a creator and share their creative expression through their videos.

While this question won't appear in an interview, it's useful to understand the niche of the leading technology companies within an industry. Likewise: How has Snapchat performed well to this date despite many believing Instagram Stories (practically a copy-cat of Snapchat's features) would kill the app's usage?

What major licensing deal did Spotify complete in 2020?

In May 2020, Spotify shocked the podcasting market after announcing that Joe Rogan, the host of the Joe Rogan Experience, had agreed to an exclusive \$100 million licensing deal. The Joe Rogan Experience is widely considered as being one of the most popular podcasts in the US, with each episode receiving millions of views.

Spotify CEO Daniel Ek has stated that he had realized that podcasts and audiobooks would be the future of Spotify, rather than music alone. These acquisitions and partnerships accelerate the path for Spotify to become the leading audio platform. The gradual change in strategy could be seen in the acquisition of podcast networks Gimlet Media, Anchor, and The Ringer, but the acquisition of JRE was by far the highest-profile strategic move by Spotify to establish itself in the podcast market.

Tell me about an ongoing trend in the news industry.

Nowadays, many writers, including reporters and journalists, are increasingly starting their independent online newsletters. These writers are creating mini-news platforms through an online email newsletter. With distrust of the media at an all-time high, a growing number of writers and readers have been gravitating towards newsletter platforms such as Substack. By doing so, creators have full autonomy over not only the pricing but their content. Also, rather than generating revenue through advertisements, these writers are paid through subscription plans that many of their readers pay each month. This trend of newsletter platforms is the decentralization of the news, which has increasingly become governed and censored by publishers.

Other examples include the continued digitalization of news to more mobile, news aggregation services (e.g., Reddit, Apple News), Twitter as a news platform, and daily/weekly curation newsletters.

Software as a Service (SaaS)

What are the advantages/disadvantages of being a vertical vs. horizontal software company?

Horizontal Software

- **Advantages:** Horizontal software companies provide complete, all-encompassing solutions for their customers, that can be used across a broad range of industries (e.g., Office 365, Salesforce CRM, QuickBooks). Simply put, these products each have larger TAMs and therefore have greater potential for total revenue. A company with a small fraction of a large market could generate more revenue than a market leader in a small market. By even by capturing a fraction of a large market, a company can make enough revenue to find its niche and refine its business strategy (even if it fails to become a market leader). Part of the reason these companies have more time to adjust their strategy is that the markets are large and take time to saturate. Thus, horizontal software companies can pivot and narrow down their target customer over time based on which end markets are most profitable.
- **Disadvantages:** The downside being SaaS tends to consist of "winner takes all" markets and only a few companies will end up dominating a market as they become the standard products used across most industries. As a result, competition in horizontal software markets tends to be more cut-throat, while involving larger, well-funded companies (often publicly-traded). As a result, sales & marketing spend is noticeably higher for horizontal software companies, given the extensive number of potential customers and the competitive nature of customer acquisitions (i.e., numbers game and a race to reach customers).

Vertical Software

- **Advantages:** Vertical software companies target specific niche segments. If a vertical software company comes in with a product that adds meaningful value, it can quickly establish itself as the industry leader. Once market leadership is established, the company can then create a tailored suite of solutions based on their understanding of their end market's specific challenges and needs. This further enables them to create a durable moat and even have the potential to change the industry as a whole. Hence, these companies experience lower churn (less threat from larger enterprises) and don't have to spend as much on sales & marketing.
- **Disadvantages:** The key drawback to vertical software is the amount of risk being undertaken as many of these markets are neglected for a reason (e.g., technical hurdles, specialization requirements, research & development costs). In the view of many, the potential revenue and market potential doesn't justify the expenditures. The development of a viable product has the potential to take longer and incur more expenses before reaching the market. So by entering this market, the company is making a high-risk bet that it can gain traction in this focused segment. Another drawback is, even if the company becomes a market leader, growth opportunities will eventually slow down and the company will be forced to pursue expansion opportunities in adjacent markets to expand its geographic reach and total addressable market (TAM), making the gap between S&M spending narrow at scale.

Vertical software companies develop their products to solve problems for a specific end market, which are typically neglected niche segments.

Tell me about the trend of verticalization in the SaaS industry.

In the early days of SaaS, vertical software companies received less interest and lower valuations from investors when compared to horizontal software companies. The implicit assumption being that their limited scalability would make multi-billion dollar exits unattainable.

Today, nearly every industry runs on software or is affected by it indirectly, which can be attributed to vertical solution providers ("VSPs"). By creating specialized products tailored to serve the needs of new or underserved markets, many of these VSPs have proven to redefine their target industries and obtain market leadership.

Since many of these segments served were slow to adopt technology and neglected by many horizontal software companies due to the level of customization necessary and technical requirements, there was an abundance of opportunities to bring value-add solutions specifically put together for their unique needs and challenges. The common pattern seen was one product being integrated into an underserved niche segment and then over time, companies would develop a platform of tools tailored for their customer base. Given their timing advantage and the lack of competition in the market, this enabled their developers to focus on product development and further improve upon their competitive advantage.

The number of vertical software providers has increased substantially, along with premiums in their valuations. Through offering specific, tailored solutions designed to address the unique demands and challenges faced by niche areas, VSPs had the advantage of increased value-add opportunities from customization, a loyal customer base with less churn, and more pricing power.

Which valuation multiples are used most commonly in SaaS?

For public SaaS companies, EV/Revenue remains the primary valuation metric. But as the industry matures, the market is rewarding companies with healthy EBITDA margins more, and EV/EBITDA has increased in usage for industries where the market leaders have become clear as seen by their market share.

When looking at unprofitable companies, EV/Revenue and EV/ARR are two of the most commonly used multiples, along with user-based multiples such as EV/DAU, EV/MAU, and EV/Monthly Subscription Users.

Given the prevalence of acqui-hiring in SaaS, two multiples looked at in those acquisition-type situations are EV/Total Funding Raised and EV/Total Employee Count.

What is product-market fit?

The concept of product-market fit (PMF) is one of the key factors that determine whether an early-stage startup start-up can succeed or not. From Marc Andreessen's blog, he described it as "Product/market fit means being in a good market with a product that can satisfy that market." So product-market fit is the validation of the product in the market, as confirmed from consistent consumption by existing users, organic new customer growth, and increased word-of-mouth promotion.

PMF is more of a qualitative trait as determining the degree to how a product satisfies a market's demand and the extent of how much a product resonates with a particular market is difficult to measure, let alone quantify. Often, PMF is described as one of those attributes that can be recognized from customer engagement and feedback, as well as exponential growth as the product begins to "sell itself" and marketing takes off on its own.

Read More → [Pmarchive: The Only Thing That Matters](#)

What does the LTV: CAC ratio represent and why is it an important metric to track?

The first and arguably most important metric for evaluating software businesses is the ratio of customer lifetime value ("LTV") over customer acquisition costs ("CAC"). The LTV is the total value that a single customer will generate for a business over its lifetime, whereas CAC is the total cost incurred to make the customer purchase the products and/or services being offered.

$$\text{LTV: CAC Ratio} = \frac{\text{Customer Lifetime Value}}{\text{Customer Acquisition Cost}}$$

Put together, the LTV: CAC Ratio ratio effectively shows what the lifetime value of a customer is to a company relative to the costs associated with the acquisition of that customer.

The question being answered here is: "Is the company deriving enough value from their customers to justify the costs spent to acquire them?"

The LTV: CAC ratio matters because how much a company spends to acquire a customer should be a function of how much value it receives in return.

How do you calculate the customer lifetime value (LTV) and customer acquisition cost (CAC)?

1. First, the customer lifetime would be calculated using by dividing 1 by the monthly customer churn rate. Customer lifetime is the implied duration a customer will remain with a company.

$$\text{Customer Lifetime} = \frac{1}{\text{Monthly Customer Churn Rate \%}}$$

2. We'll then calculate the customer lifetime value (LTV), but we must calculate the average revenue per account (ARPA) before we do. To reiterate, the periods used must be consistent, so the ARPA calculation will use MRR as the numerator, which is divided by the total number of accounts.

$$\text{Average Revenue Per Account (ARPA)} = \frac{\text{Monthly Recurring Revenue}}{\text{Total Number of Accounts}}$$

3. Next, the LTV will be calculated using the formula below since we have the ARPA, which will be multiplied by gross margin % and then divided by the MRR churn rate.

$$\text{Lifetime Value} = \frac{\text{ARPU} \times \text{Gross Margin \%}}{\text{MRR Churn Rate \%}}$$

4. Now that we have the lifetime value, we only need to calculate the CAC. CAC is the sum of all S&M expenses divided by the total number of new customers acquired.

$$\text{CAC} = \frac{\sum \text{Total Sales \& Marketing Expenses}}{\text{Total \# of New Customers Added}}$$

5. Lastly, we have calculated the two metrics needed to calculate the LTV: CAC ratio.

$$\text{LTV: CAC} = \frac{\text{LTV}}{\text{CAC}}$$

What is the ideal LTV/CAC ratio that software companies target?

- An LTV/CAC of >3.0x is considered sustainable and the typical target for most software companies seeking continual growth.
- An LTV/CAC of <1.0x is an unsustainable rate and implies the company is having difficulty monetizing its newly acquired customers.
- An LTV/CAC of >5.0x+ for an early-stage company means the management may need to spend more on new customer acquisitions.

Conceptually, what does customer lifetime value (LTV) represent?

Simply put, customer lifetime value (LTV) measures the total amount of revenue a company receives from a single customer on average. LTV is a measure of how valuable the average customer is to a company during the entire lifespan over their relationship, which is critical to track because it helps predict the future revenue that can be expected from each customer. This figure is then compared to the CAC to gauge its cost-efficiency.

How do you calculate customer churn?

Customer churn represents the rate that customers canceled their products/services agreement over a specific time horizon. The churn rate (also known as the attrition rate) measures the customers lost in a period as a percentage of the number of total customers at the beginning of the period.

$$\text{Churn Rate \%} = \frac{\text{Total \# of Churned Customers}}{\text{Total \# of Customers at Beginning of Period}}$$

How would you calculate revenue churn?

The two most common revenue churn rates calculated are:

1. **MRR Churn:** This represents the lost MRR from the churned customer as a percentage of MRR.

$$\text{MRR Churn \%} = \frac{\text{Churned MRR}}{\text{Churned MRR}_{\text{Previous Month}}}$$

2. **Net MRR Churn:** This represents the lost MRR but accounts for the MRR expansion from existing customers. If expansion MRR offsets (and outpaces) the lost MRR, the net MRR churn will turn negative.

$$\text{Net MRR Churn \%} = \frac{\text{Churned MRR} - \text{Expansion MRR}}{\text{MRR}_{\text{Previous Month}}}$$

What are bookings and are they recognized as revenue under GAAP?

Bookings represent the value of a contract a customer has contractually committed to spend, usually agreed to on an annual or multi-year basis. Although not recognized as revenue under GAAP yet, it's a key indicator of the company's prospects and is used for forecasting purposes as it indicates the direction the business is heading in terms of growth and momentum.

For software companies, why are bookings a better proxy than revenue to measure growth?

Bookings are a more useful proxy to measure a SaaS company's growth because it's a forward-looking indicator that doesn't understate the true value of customer contracts the way accrual-based revenue does. For this reason, bookings are more useful when evaluating a company's sales & marketing performance and one of the main metrics used to portray projected performance when raising venture funding.

Why would it be a mistake to use bookings and deferred revenue interchangeably?

Many mistakenly use the terms bookings and deferred revenue interchangeably. Bookings represent the contractual commitment of customers to use their products or services. The difference with deferred revenue is the customer has neither received nor paid for the products or services. For deferred revenue, the revenue is similarly unearned, but payment was received upfront.

In SaaS, what are billings and how does it differ from bookings?

Billings are the invoices due for payment from a customer. For example, if a company secured an annual contract of \$12,000 with billings agreed to be on a quarterly basis, the total billings for the first month would be \$3,000 while the remaining bookings would be \$9,000.

An early-stage startup has a very low churn rate. Why might this be misleading?

Many newer, growth-stage companies will have very low customer churn rates, but this can be misleading. The reason being an "early adopter" is the least likely customer type to churn, as most are passionate about testing out the latest technologies and innovations. Thus, the low churn rate would not be an accurate proxy for their churn rates later on because initial adopters are closer to "product testers" than real customers.

In the SaaS industry, what is a reasonable customer churn rate?

Within the software industry, a churn rate of ~5% annually is the norm. However, this rate must be compared to its closest competitors to understand the end-users and understand the expected churn.

Why is product revenue preferred over service-based revenue in the software industry?

When most of a company's revenue comes from product revenue rather than service revenue, it leads to higher gross margins and better scalability. In comparison, services-based revenue is less-recurring, has much lower margins, and is less scalable.

What are monthly recurring revenue and annual recurring revenue used to measure?

Monthly recurring revenue ("MRR") is a measure of the recurring, predictable revenue generated on a monthly basis by subscription SaaS companies. MRR should include monthly recurring revenue from subscription fees, upgrades, up-selling, and cross-selling, as well as revenue lost from downgrades, discounts, and churn. MRR is equal to the monthly recurring revenue at the end of each month and is computed by taking the MRR from the previous month and adding net new MRR.

In contrast, annual recurring revenue ("ARR") is just MRR annualized and calculated as $ARR = MRR \times 12$.

What does annual recurring revenue (ARR) mean in the SaaS context?

For the SaaS industry, annual recurring revenue (ARR) is a measure of a software business's recurring revenue components on an annualized basis. The proper calculation of ARR will exclude non-recurring, one-time fees such as professional service, consulting fees, installation, and set-up fees. ARR is a key measure that reflects the amount of total revenue that's recurring in nature.

What are the flaws of the annual recurring revenue (ARR) metrics?

ARR is used to estimate revenue for the upcoming year, based on the most recent MRR. Implicit in its assumptions is that there'll be no customer churn, upselling, or downgrades. And that the latest month is the best indicator of its future performance.

How do you calculate net new MRR for a given period?

Net new MRR is computed by taking the new MRR from new customers, adding new expansion MRR from existing customers, and deducting MRR churn from lost customers.

$$\text{Net New MRR} = \text{New MRR} + \text{New MRR Expansion} - \text{MRR Churn}$$

What are the different types of expansion MRR?

- **Upselling:** Convincing existing customers to spend more on an upgraded version of the products/services they're already using with additional features, add-ons, or capabilities.
- **Cross-Selling:** Offering customers complimentary products or services that enhance the product the customer is already using.
- **Add-Ons:** Providing opportunities to unlock more features or widgets currently not part of a customer's plan, so additional features must be unlocked.

Why is the net dollar retention an important metric to measure alongside the ARR?

ARR cannot be looked at alone, as a SaaS company can grow ARR 100%+ each year yet have poor net dollar retention (<75%). Net dollar retention is a core KPI to look at when assessing an early-stage SaaS company's health, as poor NDR will eventually catch up and slow down the ARR if the underlying issues are not fixed. Net dollar retention is expressed as a percentage of the revenue from customers retained compared to the beginning period after accounting for upsells, upgrades/downgrades, and customer churn.

$$\text{NDR} = \frac{(\text{Starting MRR} + \text{Expansion MRR} - \text{Downgrade MRR} - \text{Churn MRR})}{\text{Starting MRR}} \times 100$$

- **NDR > 100%:** Indication of an increase in recurring revenue from existing customers – the top-performing SaaS companies can exceed this figure by a large margin, but most will target ~100% or slightly above.
- **NDR < 100%:** Contraction in recurring revenue due to downgrades in user consumption and churn.

How are bookings accounted for when calculating MRR?

Bookings represent the value of a long-term contract that has been committed to by a customer. To account for bookings when calculating MRR, the amount must be amortized across the length of the contract (i.e. monthly).

What are some ways that software companies can grow their recurring revenue?

- **New Customers Acquisitions:** Increase sales & marketing spend, enter new channels/markets
- **Higher Average Selling Price (ASPs):** Requires pricing power over their customer base
- **More Cross-Selling:** Easier to sell complementary products/services to existing customers
- **Increase Upsell Rate:** Benefits from the additional revenue derived from existing customers

What is CMRR, and how does it compare to MRR?

Committed Monthly Recurring Revenue (CMRR) is calculated with MRR as the base metric, and then it accounts for new committed signed contracts, expansion opportunities, customer downgrades, and expected churn.

$$\text{CMRR} = \text{MRR} + \text{New Bookings} + \text{Upsell Bookings} - \text{Downgrade Bookings} - \text{Churn}$$

Unlike MRR, CMRR is a forward-looking metric with more discretion on what to include and the amount. CMRR is, therefore, more speculative as it tries to forecast changes in recurring revenue, but is arguably a better approximation of how a company might perform in the future.

In the SaaS industry, how would you measure sales efficiency?

The various sales efficiency metrics and "magic number" are all variations of comparing new recurring revenue generated during a given period due to sales & marketing spend. As a broad generalization, these sales efficiency metrics are answering: "For each dollar spent on sales and marketing (S&M), what was the amount of new revenue generated as a result?"

1. **Gross Sales Efficiency:** Simply divides Gross New ARR (doesn't account for churn) by the S&M spend.

$$\text{Gross Sales Efficiency} = \frac{\text{Gross New ARR}_{\text{Current Quarter}}}{\text{Total Sales \& Marketing Expense}_{\text{Prior Quarter}}}$$

2. **Net Sales Efficiency:** Net Sales Efficiency accounts for both new sales and lost customers

To calculate the net sales efficiency, the Net New ARR is first calculated. The Net New ARR calculation begins with the Net ARR from new customers, adds the Expansion ARR from existing customers, and then deducts the Churned ARR from lost customers.

$$\text{Net New ARR} = \text{Net ARR} + \text{Expansion ARR} - \text{Churned ARR}$$

Then, you'll divide the Net ARR as of the current quarter and divide by the S&M spend of the previous quarter.

$$\text{Net Sales Efficiency} = \frac{\text{Net ARR}_{\text{Current Quarter}}}{\text{Sales \& Marketing Spend}_{\text{Prior Quarter}}}$$

For SaaS companies, what is the "magic number" and why is it used?

The main weakness with the net sales efficiency metric was that not all public companies disclose the necessary figures required for the calculation. To bypass this, Scale Venture Partners developed its own "Magic Number" to enable meaningful comparison amongst companies. Net New ARR is replaced with the difference between the two most recent quarterly GAAP revenue figures and then annualizes it.

$$\text{Magic Number} = \frac{[(\text{GAAP Revenue}_{\text{Current Quarter}} - \text{GAAP Revenue}_{\text{Previous Quarter}}) \times 4]}{(\text{Sales \& Marketing}_{\text{Previous Quarter}})}$$

A Magic Number <0.75 is considered inefficient, between 0.75 to 1 is efficient, and >1.0 is very efficient.

Read More → [A Primer on SaaS Sales Efficiency](#)

What is the CAC Payback Period?

The CAC payback period measures how many months it takes for a company to recuperate its customer acquisition costs. The shorter the CAC payback period is, the sooner the company can break-even and become more profitable. In terms of the industry benchmark, the general aim is less than 12 months. The top, best-in-class SaaS companies average ~6-12 months, but most average ~18 months.

$$\text{CAC Payback} = \frac{\text{Customer Acquisition Cost}}{\text{Average MRR Per Customer} \times \text{Gross Margin \%}}$$

How do you calculate ARPA?

The average revenue per account (ARPA) is a measure of the revenue generated per active account, typically on a per month basis. This metric is often used interchangeably by the average revenue per user (ARPU). An ARPA that's growing is a positive sign that more value is being derived from each account as the business scales.

$$\text{Average Revenue Per Account (ARPA)} = \frac{\text{MRR}}{\text{Total Number of Accounts}}$$

Alternatively, ARR can be used instead of MRR to convert ARPA to a yearly metric.

What is the difference between total contract value (TCV) and annual contract value (ACV)?

- **Total Contract Value:** TCV is the total value of the contract and is independent of the time frame (i.e., the period can be a month, six months, twelve months, etc.).
- **Annual Contract Value:** ACV measures the contract's value over twelve months – and is thus the better metric to use when making comparisons across the industry since it's annualized.

How can a software company decrease its churn?

- **Focused Market Segmentation:** The first method is to segment the customer base and identify the lower churn customers to direct selling efforts. Through trial-and-error, the company should understand its market in more detail over time and adjust based on where demand appears to be the strongest (i.e., double down on the most profitable segments). Besides product validation, narrowing down the target customer market should be a key priority of any startup.
- **Improved Customer Interface:** The software company should continuously maintain contact with its existing customer base and provide value through additional insights and discounts to preserve and better their relationship. While interfacing with customers, feedback should always be collected, analyzed, and taken into consideration.
- **Upfront Payments:** The software company could make additional efforts to promote its annual payment plan (i.e., more discounts, benefits) to receive the full payment upfront. With upfront payments or any long-term contractual commitments, it's far less likely for a customer to churn if they're on an annual plan.
- **Variable Pricing Model:** Another option is to create a pricing model that introduces more payment options based on variables such as the number of seats, number of licenses, or amount of features. While this may lead to some downgrades from users, increased optionality helps reduce lost customers.

Negative customer feedback that's left unaddressed, will inevitably become churn for the company later.

If a SaaS company has net negative churn, what does this mean?

Net negative churn occurs when a SaaS company's expansion revenue from existing customers exceeds the revenue lost from existing customers, from cancellations and downgrades. A key distinction of this metric is revenue from new customers is not factored in. Therefore, net negative churn means recurring revenue from existing customers by itself can offset higher-than-normal churn. While customer attrition rates want to be minimized, being capable of weathering a sharp decline in new customer acquisitions confirms the value being provided to existing customers.

What is the importance of TAM in SaaS investing and how is it estimated?

To estimate the total achievable revenue and quantify the market size and opportunity, the total addressable market (TAM) is estimated. Market size is a critical factor for SaaS companies and an area where investors spend significant time evaluating.

The most insightful part of market sizing analysis is arguably segmenting the market, which involves identifying which areas are growing or contracting, customer categorization, and spending trends/behavioral patterns (i.e., cohort analysis).

In general, SaaS is a “winner-takes-all” market, which makes market share and churn critical metrics to track.

- **Bottom-Up Approach:** While there are various ways to size a market, the most common method is the bottom-up TAM approach, which involves identifying the target customer profile, the approximate number of potential customers that meet the profile criteria, the growth in the target customers, and the assumed penetration of the segment. At its core, bottom-up revenue forecasts are based on quantity sold multiplied by the product or service price (key data points collected from past selling efforts). Listed below are a few examples of the most basic bottom-up revenue forecast drivers:

B2C SaaS: Revenue = Total Number of Users × ARPU

B2B SaaS: Revenue = Total Number of Customers × ACV

Volume Based Build: Revenue = GMV or TPV × Take Rate %

- **Top-Down TAM Approach:** In contrast, a top-down approach uses broader assumptions and estimates the TAM based on a market share percentage-based assumption on the total market size. To support their market sizing assumption, industry research and reports would be used. Then, the top-down revenue forecast would involve the TAM being multiplied by the implied market share %. However, this is a “quick and dirty” method to forecast revenue, rather than being precise by any means.

What is the SaaS Quick Ratio?

Mamoon Hamid popularized his variant of the Quick Ratio, which compares MRR growth (from New MRR and Expansion MRR) to MRR loss (from churned MRR and contraction MRR) in the same timeframe.

The formula for calculating SaaS Quick Ratio is shown below:

$$\text{SaaS Quick Ratio} = \frac{(\text{New MRR} + \text{Expansion MRR})}{(\text{Churned MRR} + \text{Contraction MRR})}$$

For interpreting the output, a ratio less than 1 means MRR is being outpaced by the rate of churn, a ratio between 1 and 4 means MRR is above churn but still losing lots of growth potential, and then the optimal target Hamid mentions is 4.

There are four factors in the formula:

1. **New MRR:** MRR increase from new subscriptions following new customer acquisitions and bookings.
2. **Expansion MRR:** MRR increase from upselling and cross-selling opportunities.
3. **Churned MRR:** MRR lost from the churn, in which customers have canceled their subscription.
4. **Contraction MRR:** MRR lost from downgrades in subscription plans.

What is cohort analysis and its primary use case for SaaS companies?

Cohort analysis is a behavioral analytical tool used by companies to understand their customers, which helps them take actionable steps towards improving customer retention and customer lifetime value. A cohort is defined as a subset (or group) of customers who share a certain characteristic.

Some of the most common types of cohorts used are:

- **Time-Based Cohorts:** Customers are grouped based on the date of their purchase.
- **Segment-Based Cohorts:** Customers are broken down by purchase (e.g., a specific product, plan, tier).
- **Size-Based Cohorts:** Customers are split based upon size (e.g., small businesses, large enterprises).

Once the cohorts have been defined, it becomes easier to analyze user behavior by each customer type and spot trends in the compiled data. Based on the patterns identified, the company then tests the hypothesis to determine its validity and effectiveness. One of the key insights that can be derived from cohort analysis is understanding why certain customers churn, and then what measures can be taken to minimize churn.

In SaaS, what is the purpose of A/B testing?

Typically associated with the hypothesis testing stage of cohort analysis, A/B testing involves software being used to track user behavior and gather insights after implementing a change. In most cases, the experiment will compare two or more variants (i.e., product modifications) and compare the outcomes. This enables the company to change the user experience gradually and make the optimal decision following user testing.

What is the difference between gross margin and contribution margin?

- **Gross Margin:** Measure of how expensive it's to develop a product, consisting of both fixed and variable product direct costs.

$$\text{Gross Margin (\$)} = \text{Revenue} - \text{Cost of Goods Sold}$$

- **Contribution Margin:** Calculated on a per unit basis, contribution margin measures profit per unit without considering fixed costs. The contribution margin enables you to list out the different product lines of a business to identify which ones are the most profitable on a per-unit basis.

$$\text{Contribution Margin (\$)} = \text{Unit Revenue} - \text{Unit Variable Costs}$$

What is the "Rule of 40" in the SaaS industry?

In recent years, a popularized measure of growth is the "Rule of 40," which states that 40% of a company's growth rate added to their profit margin should exceed 40%. The rule suggests a company with low (or negative) profits can still be valued at a high multiple as long as its growth rate counterbalances the cash burn.

Most often, MRR or ARR is used for the growth rate, while the EBITDA margin in the same period is used for the profit margin. Opinions differ on what stage this rule becomes applicable and its usefulness as a metric, but it's a simple measure to make sure the trade-off between growth and spend is balanced (and prevent the "growth at all costs" mindset).

Financial Institutions Groups (FIG)

Walk me through a bank's income statement.

1. A bank's income statement starts with interest income, net of interest expense. This is called net interest income and represents the difference between how much a bank earns on loans and how much a bank has to pay out in interest to get customer deposits that finance those loans.
2. The next major line in a bank's income statement is an expense called "Provision for Credit Losses," representing an accrual for expected losses due to bad loans.
3. Net interest income minus the credit loss provision represents a bank's core operating profitability.
4. Below this line (often called "Net Interest Income After Provisions for Losses") are non-interest related income and expenses – Banks recognize income from other activities, such as fees, commissions, service charges, and trading gains. The most significant non-interest expense is salary and employee benefits. Other non-interest expenses include occupancy and equipment expense, technology expense, amortization, marketing, and insurance expense.
5. Lastly, there's the tax expense line item, and then you get to net income.

Walk me through a bank's balance sheet.

- **Assets:** The largest asset for a bank is the bank's loan portfolio. Loans represent the bulk of a bank's assets and are typically comprised of residential and commercial real estate, as well as other consumer and commercial loans. The next largest assets will be investment securities and cash.
- **Liabilities:** Deposits represent the bulk of a commercial bank's source of funds. Interest-bearing deposits contribute to a bank's interest expense, while non-interest-bearing deposits don't. The rest of a bank's liabilities are typically short- and long-term borrowings.
- **Equity:** Like any non-bank company, equity will consist of common stock and treasury stock, preferred stock, retained earnings, and other comprehensive income.

How are the financials of a bank different from a traditional company?

For a non-bank, traditional company, revenues, cost of goods sold, and SG&A typically represent the main elements of operating income, while non-operating items like interest expense and income, other gains and losses, and taxes are presented below operating income.

Separating revenues vs. non-operating items like interest income and expense is not feasible for a bank since its core revenue comes from generating interest income while its primary operating expense is interest expense. A bank's income statement is driven by the size and returns of its assets (loans) and the cost of capital of its liabilities (deposits) in a far more direct way than traditional companies.

What is the impact of an inverted yield curve on a bank's profits?

Banks lend long term (mortgages, car loans, business loans) and fund this by borrowing short term (like deposits and interbank loans). As a result, the larger the difference (spread) between the yields on long-term bonds and yields on short-term bonds, the more profitable a bank will be, and vice versa.

Thus, in the case of an inverted yield curve, bank profits would be expected to contract as long-term yields decline relative to short-term yields. Needless to say, different banks will have different levels of exposure to this duration risk based on their particular investment and loan portfolio mix. But as a general rule, bank profitability declines as the yield curve flattens or inverts.

How do you value a commercial bank?

There are significant differences between the valuation of a non-bank and a bank. The most common valuation models employed to value a bank include:

- Levered Discounted Cash Flow Analysis
- Dividend Discount Model (DDM)
- Residual Income Model (RI)
- Comps with Equity Value Multiples (e.g., P/B, P/E)

All these valuation approaches are levered approaches that value the equity directly. That's because disentangling operating value from nonoperating value for banks is impossible, seeing that the core operations are fundamentally tied to generating debt-related interest income, net of interest expense.

For this reason, multiples used for comps analysis must be equity multiples like P/B and P/E, as opposed to the EV/EBITDA, EV/Revenues, and EV/EBIT multiples (which you would use for non-banks).

Walk me through valuing a bank using a levered DCF.

You can't value a bank using a traditional unlevered DCF because it's impossible to disentangle operating cash flows from financing cash flows, a key requirement in the unlevered DCF.

However, you can value a bank using a levered DCF:

1. First, levered free cash flows are forecasted explicitly for 5-10 years.
2. Beyond the final explicit forecast period, the terminal value is calculated using either the growth in perpetuity approach or exit multiple method.
3. Then, both the explicit levered free cash flows and terminal value (TV) are discounted back to the present at the bank's cost of equity since this is a levered DCF.
4. Finally, the sum of the present value (PV) of levered CFs represents the bank's equity value.

Walk me through a bank valuation using the dividend discount model (DDM).

Because banks typically have large dividend payouts, a dividend discount model is a common valuation approach. At a high level, the DDM process usually involves arriving at an equity value by forecasting future dividends and discounting at the cost of equity. The 3-stage DDM is common for bank DDM models and breaks up the forecast period into three distinct stages:

1. **Development Stage (3-5 years):** Forecast dividends explicitly and discount to PV using the cost of equity as the discount rate.
2. **Maturity Stage: (3-5 years):** Rather than making explicit dividend forecasts, derive dividends based on the assumption that ROE and cost of equity converge. The logic here is that a mature company cannot sustain ROE significantly greater than its cost of equity forever.
3. **Terminal Stage:** The final stage represents the PV of all future dividends once the company has reached maturity, assuming a perpetual dividend growth rate or terminal price/book multiple.

Walk me through a bank valuation using the residual income model. Why is it arguably better than the DCF or DDM?

The residual income valuation approach works around a significant shortcoming of the DDM – namely, its sensitivity to terminal value. The residual income valuation calculates a company's equity value as the sum of two components: Book Value of Equity + Present Value of Residual Income.

The present value of the residual income is estimated by looking at the extra equity value above the company's book value. For example, if a bank with a 10% cost of equity and \$1 billion book value of equity is expected to

generate \$150 million in net income next year, the residual income for that year will be \$50 million (\$150 million – [\$1 billion x 10%]).

Conceptually, this represents excess returns above the cost of capital, and all excess returns are added to the book value of equity to arrive at the fair value of equity. By the terminal value period, the assumption is that excess returns go away, which leads to a terminal value of 0. This avoids the terminal value issue in the DDM and DCF approaches, which commingle value creation and value preservation.

What multiples are appropriate for valuing a bank?

- Price Per Share/Book Value Per Share (P/B)
- Price Per Share/Earnings Per Share (P/E)
- Price Per Share/Tangible Book Value Per Share (P/TBV)

Why is the unlevered DCF approach inappropriate for banks?

The unlevered DCF approach would not be feasible for banks because it attempts to calculate cash flows on an unlevered basis (i.e., before the effects of debt and leverage). That would not be a plausible option, as it's unreasonable because most of a bank's revenue and cost of goods sold comes in the form of interest income and interest expense, respectively. While it's useful to separate operating earnings from interest income and expense in a non-bank, it's a pointless exercise for banks.

How would you forecast the revenue of a boutique investment bank?

Since this is a boutique investment bank, its primary revenue sources will be from fees from mergers & acquisitions advisory and/or helping companies raise debt or equity financing.

One approach to forecast revenue would be to use revenue per employee as the main driver. Investment banking is a relationship-driven business, thus the amount of deal flow is a function of their senior bankers' ability to bring in and close deals. The other assumptions needed would be the average revenue per employee and growth in employee count. As a sanity check, the implied annual deal count can be backed out of using the forecasted revenue and an assumption for the average deal size and the average fee structure (i.e., % transaction fee). This could be done to ensure the deal count is reasonably in-line with the past deal flow. Other considerations would be the industry or product group focus, as these influence the potential deal count, growth rates, and cyclicity in revenue.

Understanding a bank's trajectory, how it ranks compared to its competitors, the area it specializes in, and the quality of its employees is required to create an accurate forecast. This is why when large investment banks acquire boutiques, the acquirer is paying for the senior bankers' client relationships, their industry reputation/track record, and expected deal flow to be generated by the new additions to the team. Hence, earn-outs are often structured to prevent senior partners from leaving and to align incentives.

How does a passively managed fund generate revenue?

The amount of revenue generated by an asset management firm is a function of its total AUM. The management fee, which is charged as a percentage of AUM, is intended to cover the fees to oversee the portfolio and cover all operational expenses. The percentage would increase the more active the asset manager is in the investment selection process and the amount of specialization required.

Often called the management expense ratio ("MER"), this metric represents the fee charged to manage the capital invested in a mutual fund. MER is the total of a fund's management fee, operating expenses, and taxes for a specific year, divided by the fund's total AUM. Thus, MER is expressed as a percentage of the average dollar amount of a fund investment.

How would you value an actively managed alternative investment management firm?

Alternative asset management firms such as hedge funds and private equity firms generate two types of cash flows: management fees and performance fees. From investing in riskier alternative asset classes, these types of funds can charge higher management fees traditionally around ~2% with an incentive fee in which ~20% of returns past a pre-specified threshold go directly to the GPs of the firm.

Each has different risk profiles and thus merit a sum of the parts approach.

1. **Management Fees:** The first type of cash flow, and the easier one to model, is related to management fees. Most charge management fees of 1-2% on total capital raised. The most common valuation approach is to apply a market multiple to the current or next year's forecast for management fees.
2. **Performance Fees:** The second cash flow comes from less predictable performance fees (often called "carried interest"), which tend to be around 15-20% of the returns. Since these fees are realized upon exiting investments, they tend to be lumpy and difficult to forecast. The typical approach here is to apply a multiple on these cash flows, but a much lower multiple than the multiple applied to management fees.

What types of multiples are used to value asset management firms?

The most common multiples used to value asset management firms are the standard P/E and EV/EBITDA multiples. EV/AUM is occasionally used as well, however, this metric would only be useful if peer group is closely related to one another.

For example, EV/AUM cannot be used to compare a passive asset manager and an actively managed equity mutual fund since the expected returns and fees as a percentage of AUM vary.

What is securities lending?

Securities lending is when a lender provides stock, bonds, derivatives, or other financial instruments to a borrower. And in return, the borrower will transfer collateral to the lender and pay a borrowing fee. The collateralized transaction is a temporary transfer, meaning the borrower is contractually obliged to return the securities if requested or on the agreed-upon date.

What are the three main types of securities lending models?

1. **Direct Lenders:** Some investors have the scale to build their securities lending operation – this would include large asset managers such as Vanguard and Blackrock.
2. **Custodian:** Bundled option of custody, fund administration, and securities lending – custodians manage large pools of assets for several investors (i.e., pool collateral investment).
3. **3rd Party Lending:** Either linked to a prime brokerage or specializes in securities lending, these separate custodians can operate a third option for assets not held in their custodian operation.

What are the two fee models in securities lending?

1. **Discretionary Lending:** This is the more traditional lending model, in which the lending agent (or principal) will negotiate each loan in the portfolio with the borrower. All lending is conducted on a "best-efforts" basis. Here, loans are negotiated based on fluctuating daily demand levels in the marketplace; therefore, the lender receives the market rate with a fee paid to the agent who managed the lending.
2. **Principal Exclusive:** Under this lending structure, the lender (or their representative) negotiates an exclusive arrangement with a principal counterparty. The borrower pays a flat fee for exclusive access to a portfolio (or portion). The steady lending fees are agreed upon at the expense of more upside potential. However, these financial arrangements are negotiated and could include profit-sharing past a threshold.

What is FinTech?

Financial technology ("FinTech") encompasses the modernized technology-enabled delivery of financial services. By leveraging technology, various types of services can be delivered faster and more efficiently than before. Everything from mobile banking on smartphones, investing in stocks from a mobile application, and being able to transfer money to a peer online are all part of FinTech.

What multiples would you use to value a FinTech company?

In FinTech, the most commonly used multiples appear to be EV/Revenue, EV/EBITDA, and P/E. For sectors with higher-growth, their LTM multiples will often not be meaningful and will thus be accompanied by one-year and two-year forward multiples. Besides the leading companies in the industry, EV/Revenue is used the most often as many FinTech companies are unprofitable or barely profitable.

Industry Specific Multiples

- **Digital Banking and Payments:** EV/Total Payment Volume (TPV), EV/Total # of Peer-to-Peer Transfers, EV/Total # of Premium Users
- **Transfer Services and Marketplaces:** EV/Gross Transaction Volume (GTV), EV/Total Origination Volume, EV/Average Revenue Per Transaction
- **Stock Brokerages:** EV/Daily Average Revenue Trades (DARTS), EV/Total # of Premium Subscriptions

How do most FinTech start-ups generate revenue?

The business model most commonly seen in FinTech start-ups is a brokerage-type structure, in which the amount a company makes is fee-based (i.e., a small percentage of each transaction). This categorization would include start-ups in verticals such as digital banking, payments, online money transfer services, stock brokerages, and lending marketplace. For example, a P2P online money transfer service platform may charge a 2-4% fee for international transfers of a particular size.

Other business models can include service fees such as Robo-advisors in which a flat subscription fee is paid each month or interest payments in the case of direct lenders that lend off their balance sheet.

Tell me about the trend of challenger banks.

Challenger banks are branchless, digital banks – over the past few years, these startups have acquired millions of banking customers, with many of them attaining unicorn status in terms of VC funding. The name "challenger" is due to competing against the traditional incumbent banks that many consumers criticize for slow processing speeds, hidden fees, and lack of transparency. The leading challenger banks include Chime, N26, Current, Revolut, and Varo.

From the consumer perspective, what is the benefit of a challenger bank over a traditional bank?

The primary appeal of challenger banks is their online presence and mobile app development that resonates with digitally native consumers. Their rapid adoption could also be due to the easy setup process of an account (can often take only a few minutes), transparent fee structure and no hidden fees, lower rates for premium services and features, and an overall better online experience. Many challenger banks such as Chime have an immediate crediting of paychecks, forgoing the typical two to three-day float period that traditional banks have.

Are challenger banks actually "banks" in the traditional sense?

Many challenger banks don't start with a banking license; instead, they rely on a partner bank to operate. Later, as more customers sign up for their banking services, the challenger bank will either continue to depend on their established partnerships with other banks or apply for their banking license.

What is the difference between a neo bank and a challenger bank?

The terms neo bank and challenger bank are often used interchangeably and categorized together. However, the key distinction is that neo banks are completely digital and have no physical presence (i.e., no brick-and-mortar) – instead, they serve consumers through their mobile apps and online web platforms. Neo banks don't possess a full banking license and instead rely on a partner bank to operate (e.g., N26 and Visa), but challenger banks have a full banking license to operate with a minor physical presence.

Given their current business model, do challenger banks have a pathway to becoming profitable someday?

Challenger banks bring attention to their transparent, reduced fees, and most offer free basic accounts. But over the past few years, challenger banks have increasingly rolled out more premium account options that offer their top customers premium services. For instance, N26 offers a basic account that offers a few free ATM withdrawals and foreign currency payments, and alternatively a “Black” option with travel, smartphone, and insurance services.

Similarly, the business model of Revolut offers a free basic account and two subscription-type premium plans – and the company claimed to break even in terms of profitability in early 2017. While many of these startups are most likely burning cash, these startups have a single-minded focus on growth, and this freemium business model (with the option for premium services) is the best strategy to continue acquiring more customers while simultaneously raising more funding from investors.

Why might consumer FinTech start-ups appear to be struggling to monetize their user base?

The majority of FinTech start-ups struggle to generate revenue because their focus is neither on revenue growth nor profitability, but user base growth. How these FinTech companies plan to monetize their users and become a sustainable business remains unknown. Many start-ups have begun to launch premium, pay-to-use services, but leading FinTech start-ups such as Monzo and Revolut have revealed deepening losses, employee layoffs/pay cuts, and complaints from customers about lower-quality service.

One explanation for their struggles is that the primary appeal of these FinTech apps for many consumers is that these applications offer greater control, visibility, and convenience – all while being free. For financial services applications such as N26, Revolut, M1, Brex, and Chime, the reason many of these users (heavily skewed towards the younger demographic) signed up was because of the free pricing, the sign-up process can take less than an hour, and the interface was simple and easy to use. To use challenger banks as an example, many expected to become profitable through the interchange income it receives when customers use their debit cards, but this type of business model has proven to be difficult. In addition, many of these customers don't actually use these neo/challenger banks as their primary banking service, but rather as a side application.

Tell me about the current state of the banking services start-up scene.

Consumer digital banking services, one of the most well-funded areas in FinTech, has quickly become overcrowded and concerns regarding how users will be monetized are now more apparent. The need to generate more revenue (and profits) has begun to show as increasingly more banking start-ups are restricting their free options, charging for usage past a certain level, and aggressively pushing for premium plans sign-ups. Certain challenger banks have even started charging overdraft fees, fees for replacement cards, and higher withdrawal fees, which contradicts the original consumer-friendly marketing pitch.

The reason being many traditional banks have adapted well to the changing environment. To make matters worse, Big Tech and large corporations have gradually been moving into the space as well. Google appears to have doubled-down on its FinTech ambition when it revealed Plex, a mobile-first savings and checking bank

account integrated into Google Pay. Similar to many challenger banks, Plex has no monthly fees, overdraft charges, or minimum balance requirements, and Google has partnered with 11 banks to launch this service.

2021 will likely be a "make or break" year for many FinTech start-ups and shake out many well-funded players as seen by the bankruptcy of Monedo. As user growth becomes more difficult and the pressure to produce more revenue and profitability increases, it's likely we'll see increased mergers between FinTech start-ups, partnerships to integrate various services, or exits to larger companies.

How have traditional financial institutions responded to the new trends of digital banking?

The rise of challenger and neo banks exposed the inherent issues within the traditional banking system, which initially appeared to be in the process of being disrupted. However, many traditional, legacy banks rolled-out improved digital applications that slowed down much of the momentum surrounding consumer banking apps. This was also aided by the interest rate cuts in early 2020, which made many consumers return to their original banking provider.

Given the outside threat from the new digital banking entrants and pandemic, the entire banking industry had to respond by improving upon their digital infrastructures and platforms. Under great pressure to adapt under a limited time horizon, and these banks did just that. Nearly all the large banks have made initiatives to build out their mobile interface better, improve their communication (e.g., immediate digital customer service, chatbots), and increase transparency.

COVID-19 and the sudden necessity to build upon their digital banking solutions, looks to have been beneficial catalysts for change in traditional banks.

Tell me about the controversy surrounding Robinhood and payment for order flow.

Robinhood was charged in December 2020 by the SEC for misleading statements that failed to disclose the payments received from high-frequency trading firms for routing customer orders to them. In short, Robinhood failed to fulfill its obligation to its customers to execute orders at the best, available terms. Previously, investors were under the belief that Robinhood's primary revenue sources were coming from their Gold service memberships, interest collected from customers' cash accounts, and by lending securities. Robinhood didn't disclose that most of their revenue actually came from offloading transactions to brokers and dealers (i.e., selling customer order flow to trading firms) and receiving compensation for doing so.

Simply put, market makers such as Citadel Securities can pay e-brokers like Robinhood for the right to execute customer trades, and then Robinhood is paid a fee for the shares that are routed. While frowned upon for the lack of transparency, payment for order flow is not illegal per se and nearly all brokerages do it. But the larger issue was how much this type of revenue contributed towards Robinhood's total revenue, in which more than half was from payment for order flow. If one of the leading FinTech unicorns on the verge of an IPO is struggling to generate revenue from their internal products, it brings into question whether other FinTech start-ups can.

Why did N26 exit the UK market in early 2020?

N26 announced it was shutting down its operations in the UK earlier in 2020 due to Brexit. Many Fintech startups in Europe take advantage of a process called "passporting," which lets them apply for a banking license to operate in a European Union member state and then expand to all other EU states.

But following Brexit, regulations surrounding passporting will change – which led to N26's decision to exit the UK banking market because it owns a European banking license through the central bank of Germany and thus could not operate in the UK with its European license.

What does open banking mean?

The ongoing trend of open banking is the leading factor in the innovation of the traditional banking system. Open banking refers to the allowance of 3rd party access to consumer banking and financial account data specific to the customer. Given how integration is one of the key themes in FinTech, you could easily understand why the approval of a customer to give data access to these 3rd party providers has opened up so many opportunities for startups to enhance the consumer banking experience.

What role do APIs play in open banking?

APIs serve as a key component and a necessity for Banking-as-a-Service (BaaS) to be a possibility. BaaS is defined as the end-to-end process that connects banking institutions with 3rd party startups. The connection is enabled directly through APIs as they help develop layers of offerings over the traditional base banking core product while safeguarding the valuable financial information of the customers.

Does open banking harm traditional financial institutions?

It would be the contrary. The trend of integrating 3rd party offerings with traditional banking systems has been in the works for a long time due to regulatory hurdles delaying the process. But now that open banking has taken off, the refusal of a traditional bank would cause their customers to move to other providers that are more modern. These 3rd party integrations are complementary to banking services and give them more opportunities for growth and additional revenue. The inability to have integrations available would cause a bank to fall behind its competitors – thus, there's an incentive to race to have as many integrations as possible.

What is the state of the payments industry landscape today, and how has it been changing?

The payment industry dynamics have been shifting as more businesses and consumers move from cash to digital payments. It seems inevitable that contact-less, digital payments will become the norm for online and in-person purchases (i.e., NFC mobile payments). In recent years, many tech companies have come into the payments industry such as Apple Pay, Samsung Pay, Amazon Pay, and Google Pay. Considering how security requirements are in higher demand such as biometric authentication, sensor technology, and smart chip technology, it appears the payments market will be one of the most competitive areas of FinTech in the years ahead led by existing industry leaders such as Square and PayPal and the new entrants mentioned above.

What impact do you predict COVID-19 to have on the usage of QR codes?

While QR codes have been around for decades, the trend of no-touch payments has been positively affected by COVID-19. The recent increase in usage by consumers has shown how reliable QR codes are for no-touch, digital payments. Previously, QR code payments had not yet taken off notably in the US, but COVID looks to be a tailwind for the industry and could lead to further widespread adoption.

Many merchants are now accepting QR code payments (often not accepting cash payments), and more mobile applications such as UberEATS have introduced “contactless ordering” and encourage the usage of QR code payments to minimize the risk for both the customers and delivery person.

What does peer-to-peer (P2P) lending involve?

Often referred to as “social lending,” P2P lending is alternative debt financing without an official financial institution serving as an intermediary. P2P lending enables consumers to get loans directly from one another, most often through mobile phones. In most cases, the lending is facilitated by a P2P platform, where an automated system will match lenders with borrowers. As most of these platforms have lower overhead costs and operations are run online, their costs will be significantly lower. However, the highest volume count of P2P transactions occurs via transfer apps (e.g., Venmo, Cash App, Apple Pay) that enable one to send money conveniently through mobile after connecting their bank account to the application.

Can you tell me about some of the lending models that have emerged over the past few years?

- **Peer to Peer (P2P) Lending:** P2P lending platforms match borrowers directly to investors, both parties are typically individuals or small businesses. The site determines the rates and lending terms of the specific transaction given the risk, which is obtained using big data or other technology programs. But regardless, these platforms aim to meet the needs of borrowers that require liquid funds with those willing to deploy their funds as a lender.
- **Point of Sale Transaction-Based Lending:** In POS lending, the consumer is offered customized financing options by the merchant when making a purchase either in-person or online (i.e., installment payments, rather than one-time purchase).
- **FinTech Partner Bank Lending:** FinTech data aggregator start-ups, marketplaces, credit reports/B2B financing, and other start-ups that focus on a particular niche such as SMBs or consumers can partner with a traditional bank for financing and banking products to be provided based on the transaction data collected on the risk profile of the borrower enhance credit analysis.
- **Supply-Chain Finance Solutions:** Specialized non-bank Fintech platforms with supply chain management platforms now offer working capital and supply chain solutions to underserved SMBs (e.g., dynamic discounting and reverse factoring solutions).
- **FinTech Enabled Marketplaces:** Online marketplace lending connects borrowers with investors willing to offer loans based on their application, which was processed internally to accurately assess the borrowers' creditworthiness with advanced underwriting using ML and other consumer data. Compared to P2P, marketplaces are larger-scale and involve institutional investors who are prepared to pay sizable fees for the convenience of the transaction along with the creditworthiness check (very popular in the real estate industry). The aggregator model focuses on providing the end consumer different lending options available in the market based on the exact need of the consumer (tenure, amount, prepayment mode, etc.).

What is point-of-sale lending?

Point-of-sale lending, also known as "buy now, pay later" (BNPL), enables consumers to make purchases based on scheduled installment plans at the time of purchase for a minimal flat fee. POS lending has already seen substantial adoption in the US, as seen by the increased payment optionality for making purchases today.

A newly developing trend is businesses are increasingly transitioning to cloud-based POS, which should lead to faster checkout times (an area of inefficiency for POS currently). By enabling regular installment payments, typically on a monthly basis, consumers benefit from greater flexibility in payment structures, which has resonated among millennials in particular. At present day, the leading POS lenders include Affirm (co-founded by Max Levchin), Klarna, and Afterpay.

Why have lending companies such as Square relied less on the FICO score in recent years when assessing a borrower?

One advantage that digital lenders such as Square have over traditional banks is the amount of consumer data owned. Many FinTech companies, including Square and Stripe, care less about the FICO score, the traditional way of assessing the credit-worthiness of a borrower. Instead, these technology-based lenders examine the payment history from their platforms using advanced algorithms to spot trends such as overall payment volume, percentage of recurring customers, and payment frequency to determine the borrower's credit health. The reliance on technology rather than lengthy applications, background checks, and eligibility requirement forms enables them to issue loans faster and become self-reliant in their lending decisions.

What are real-time payment (RTP) systems?

In 2017, The Clearing House (TCH) introduced a new payment structure in the US, marking a major shift in the existing payment system. The new system permitted real-time payment (RTP) clearing instead of the traditional Automated Clearing House (ACH) that took between one to two days. The widespread adoption of the RTP system, thanks to mobile usage and technological advancements, have contributed to an environment in which many consumers, merchants, and financial institutions are enabled to send and transfer payments with faster settlement period, setting a new payment standard worldwide.

What role does Stripe play in the payments industry?

Founded in 2010, Stripe has become one of the most influential FinTech companies in the US and globally. The San Francisco-based startup was formed to build the “economic infrastructure for the Internet,” and today, it serves millions of companies of all sizes, including startups, e-commerce stores, and Fortune 500 companies, including tech-giant Amazon. Using Stripe’s software and APIs, commercial customers can process online payments and transfers. In addition, Stripe’s platform handles the technical implementation, fraud prevention, and banking infrastructure required for secure payments.

What did Square accomplish in 2020 that was an important milestone for the FinTech industry?

Earlier in 2020, Square received approval from the Federal Deposit Insurance Corporation (FDIC) to operate as a bank through a conditional Industrial Loan Company (ILC) charter. Upon approval of its application, Square announced in a press release that it plans to open a bank in Utah called Square Financial Services, which is expected to launch later in 2021. Square is expected to offer small business loans to merchants using their technology to process the payments, as well as issue deposit products. For nearly three years, Square had been pursuing an industrial loan company charter, which was opposed by many banking lobbyists and regulators. The last time the FDIC approved a de novo ILC application was more than a decade ago.

What led to the downfall of Lending Club, a former FinTech unicorn?

Lending Club was founded on the idea of bringing individual borrowers and lenders together (i.e., P2P lending platform), and when it went public in 2014, it was valued at more than \$9 billion. Lending Club envisioned individuals could lend to one another, and they could be the facilitating platform. However, the Company experienced a loan scandal involving the CEO and realized that their algorithm to assess consumer credit risk was not working as intended. Since then, their valuation has dropped to below \$350 million.

Lending Club was once considered a leader in FinTech and pioneer in P2P lending, but it recently acquired Radius Bank and announced its P2P lending platform would shut down. Lending Club became a bank through this acquisition and shifted its focus to institutional investors, as it learned how difficult it could be to assess individual borrowers' credit risk. The belief that individuals would be more responsible for repaying their debt if the lender was another individual rather than an institutional bank turned out to be a false presumption.

What is a payday loan, and how does the process work?

A payday loan is a very controversial, short-term loan that will rarely last more than a couple of weeks. These loans are usually provided by lenders operating from storefronts, but the payment industry’s shift online has affected this small lending niche. Payday loans are meant for an emergency, short-term need, and the application can often be completed within a matter of minutes. Once a payday loan is approved, the funds will be deposited into the verified bank account. But the payday loan lender would require the borrower to write a post-dated check in payment of both the principal loan amount and the high amount of interest charged. The post-dated check ensures the lender will be paid back on the agreed-upon scheduled date. These borrowers will accept the post-dated check arrangement in a troubled situation, since their credit history was not rejected and/or even reviewed by the payday lenders.

What is InsurTech?

InsurTech refers to advancements in technology to make the traditional, outdated insurance business model more efficient. For example, chatbots and smartphone apps are increasingly being used to streamline the industry's back-end process. The insurance industry is known for its slow adoption and for being inefficient. Because of this trend, insurance companies no longer need to rely on hiring employees dedicated to customer service as in the past. Other use cases of InsurTech include risk modeling to predict future losses, demand modeling to estimate premiums, fraud detection through recognizing patterns of abnormal behavior, processing claims using automation, and using machine learning to speed up the underwriting process. The result is digital premium payments and digitizing claims processing (leading to higher margins).

A few companies at the forefront of the InsurTech industry include Oscar Health, Root Insurance, Bright Health, Clover Health, Lemonade, and PolicyGenius.

What is crowdfunding and what are some of its benefits?

Crowdfunding is a type of fundraising in which a relatively small amount of funds are raised from many individual investors from the public, typically through online platforms.

This financing method allows individual and institutional investors to invest in private, unlisted entities in exchange for ownership in the entity – which is often a new business venture of a smaller scale. Crowdfunding takes advantage of the reach and easy accessibility of the vast networks of potential investors through the internet and can be beneficial for society as it encourages entrepreneurship from the expansion of the pool of investors from whom funds could be raised.

What does card-not-present fraud mean?

Card-not-present fraud is a scam in which the customer doesn't physically hand the card to a merchant during a fraudulent transaction. These frauds occur during transactions conducted over the internet or the phone – and are becoming more common as scamming tactics become more sophisticated, and more payments are made electronically.

What are Robo-Advisors?

Robo-advisors provide automated portfolio management and balancing based on the individual consumer's money management goals. Betterment was one of the first Robo-advisors to become mainstream and remains among the leading Robo-advisors. As opposed to having a financial advisor manage their portfolio and asset allocation on their behalf, these users depend on online platforms based upon proprietary algorithms. The need for human interaction and supervision (and labor costs from the perspective of the firm/bank) is reduced. Hence, financial institutions are investing heavily in AI-powered Robo-advisors and customer service chatbots. While software-driven programs have caused frustration for many banking clients in the past, gradually, these bots are becoming "smarter" and more accepted as informants for help. From the customer's perspective, Robo-advisors come with fewer fees than financial advisors and have a low minimum required initial investment, enabling everyday investors to test out the latest technology at an inexpensive price.

An important distinction is that Robo-advisors automate passive indexing strategies (e.g., ETFs, mutual funds) and are intended for long-term investing, which comes with far less risk. Since Robo-advisors invest in ETFs and related investments, they represent low-cost, personalized portfolio management while automating the process of portfolio rebalancing in real-time and tax loss harvesting (selling at a loss to offset a capital gains tax, and then replacing with a similar asset to maintain the target portfolio risk/return allocation).

What does the “underbanked” refer to?

The “underbanked” refers to the people worldwide who don't have access to banking services or live in areas with no retail branches of banks or formal financial services nearby. The ability of FinTech to enable these people that lack the proper access to a bank account is considered one of the most important purposes of FinTech – specifically, to location-independent challenger banks.

What are cryptocurrencies?

A cryptocurrency refers to a digital store of value that uses cryptography for security under a decentralized system. This means that no central regulatory body can manage an individual's digital wallets. Instead, cryptocurrencies rely on blockchain ledger technology and smart contracts.

How would you value Bitcoin?

Like all currencies, Bitcoin has no intrinsic value and cannot be valued like a traditional cash-flow generating asset. Instead, the pricing of bitcoin depends on perceptions on the probability that it'll ultimately become a full-fledged currency and stable medium of exchange.

Warren Buffett said on national TV that “cryptocurrencies have no value and they don't produce anything.” Chamath Palihapitiya, of Social Capital, disagreed that Bitcoin has no value because its purpose is to serve as a hedge to the traditional existing financial structure and, for this reason, has value because it's not correlated to the rest of the market. Instead of viewing it as a cash-flow generating asset with intrinsic value, Chamath's counter-argument was that Bitcoin is a non-productive asset class worth what others in the market agree to pay for it, similar to how gold is priced. However, he believes Bitcoin has the potential to replace gold as the safe haven commodity of investors. A misconception is a belief that Bitcoin makes up a major percentage of an investor's overall portfolio and is expected to outperform market returns. But Chamath recommends all investors to have at least 1% of their assets in Bitcoin. While many early investors became wealthy from their Bitcoin holdings and its record surge in price made it go mainstream in 2017 during the “crypto-mania,” its actual purpose, in theory, is to serve as a hedge.

What is an ICO?

An ICO, which stands for an initial coin offering, is equivalent to an IPO for cryptocurrency projects. But the key difference is, an investor gets equity ownership in the company undergoing an IPO in return for their capital, whereas in an ICO, the investor receives digital tokens in exchange for their investment. The process is unregulated and prone to exit scams, which has led to regulatory scrutiny and a negative perception of the cryptocurrency industry by the general public.

What is the function of blockchain technology?

Blockchain technology is a secure, digital ledger that shows every single record of transactions. Each block contains data detailing each transaction, such as date, time, and dollar amount – and is theoretically designed to be impossible to alter. Each proceeding block is structured through links called a chain, and they're often used in cryptocurrencies – most notably, Bitcoin.

What does the trend toward “DeFi” signify?

Decentralized finance (DeFi) is an umbrella term for the shift towards financial applications by utilizing cryptocurrency and blockchain technology. The adoption of DeFi would suggest the disruption of traditional financial intermediaries and the removal of a centralized authority, which leads to more control over transactions by users since the middle-man is cut out. An example of DeFi would be lending platforms that rely on smart contracts rather than banks to oversee the lending.

What impact did Robinhood's zero-commission pricing have on the brokerage industry?

After Robinhood launched with zero-fee trading, major brokerages were forced to change their pricing structure to avoid losing users, and a wave of fee-eliminating announcements soon followed. Established players, Charles Schwab, TD Ameritrade, and E-Trade, were forced to adjust their business models by eliminating (or reducing) commissions on certain types of securities. The industry disruption by Robinhood is often credited for prompting the merger between Charles Schwab and TD Ameritrade.

What is the purpose of a FinTech sandbox?

A FinTech sandbox enables a company to test their newly developed technologies within an environment that mimics the actual real-life use case. However, there are safeguards in place to ensure there are no consequences to failure. The sandbox is essentially a testing ground to experiment and try out their new offering before becoming licensed and bringing the product to market when there are higher stakes and serious repercussions for failures (i.e., pilot testing).

What does Anti-Money Laundering (AML) refer to?

Anti-Money Laundering ("AML") is a set of regulations that prevent criminals from disguising illegally obtained funds as legitimate income. Over the past decade, financial institutions and governments have been pursuing ways to prevent money laundering, and AML laws require financial institutions to monitor their clients and report any suspicious activity related to money laundering.

What is RegTech?

RegTech is regarding the management of regulatory processes within the financial industry using software and related technology. The most common use cases of RegTech include regulatory monitoring, reporting, and compliance checks. The recent advancements in RegTech help financial services companies comply with regulations while enabling regulatory bodies to monitor and strictly enforce their rules.

What does "KYC" refer to in FinTech?

KYC is an abbreviation for "Know Your Customer." The term refers to the process in which a business will verify the identity of the client and is most commonly used by financial institutions (and often a legal requirement closely tied to AML purposes). The premise of KYC is to prevent identity fraud and to authenticate users via thorough identification and background checks to diligence the person.

Healthcare

When it comes to interviewing with healthcare investment banks, having a background in healthcare or studying biology, chemistry, or a health-related major is not necessary by any means. Healthcare investment banking groups hire undergrads with minimal medical knowledge all the time. If you can show a basic understanding of the healthcare business model and can discuss a few developing trends, that would be more than sufficient to convince an interviewer of your interest in healthcare.

Provide a broad overview of how the healthcare industry is segmented.

1. Life Sciences

- Biotech
- Large Pharma
- Specialty Pharma
- Generics

2. Healthcare Services

- **Other Services:** Contract Research Organizations, Pharmacy Benefit Managers (PBMs), Pharmacies, Distributors, HCIT
- **Payers:** Managed Care Organizations (Health Insurers), Centers for Medicare & Medicaid Services (CMS)
- **Providers:** Hospitals, Urgent Care, Inpatient Rehab Facilities, Ambulatory Surgery Centers, Long-Term Care Hospitals, Outpatient Rehab, Skilled Nursing Facilities, Home Health & Hospice

3. Med-Tech

- Medical Devices
- Medical Equipment

What are some ongoing industry trends in the healthcare sector?

1. Industry Consolidation via M&A and Alliances

- Payers acquiring or developing their own Pharmacy Benefit Managers (PBMs) – examples include the Cigna and Express Scripts merger and CVS's Caremark acquisition of Aetna
- Retail pharmacies aligning with distributors
- Pharmacies acquiring or creating alliances with payers

2. Integrated Delivery Networks (IDNs)

- Systems of healthcare providers and health plans within a geographic area – creating an alignment between the different sub-sectors
- IDNs be thought of as a shift towards an ecosystem where various healthcare services are provided by different providers but under a single brand

3. Value-Based Care vs. Fee-for-Service

- Recent concerns that care has been compensated based on quantity rather than quality
- The movement towards outcome-based payments for medical services is changing how healthcare providers are being reimbursed

4. Consumer-Centric Healthcare

- E.g., Urgent Care Centers, Increased Access to Personal Health Data, Telemedicine

What are the main differences between biotech and other types of pharma companies?

Broadly put, biotech companies use living organisms to create their drugs, whereas the other life sciences categories develop their drugs using chemical compounds. Biotech companies are typically very high growth and based around one product/therapeutic area. Other sub-sectors in the life sciences industry, such as large pharma, are far more diversified with more product lines across several therapeutic areas (e.g., Pfizer, Merck).

What do inpatient and outpatient refer to when discussing providers?

Inpatient and outpatient are two common ways to segment the services that healthcare providers offer.

1. **Inpatient Care:** Treatment where the patient stays overnight at a hospital or a comparable facility.
2. **Outpatient Care:** Refers to facilities where patients receive treatment but don't stay overnight.

Tell me the difference between acute and post-acute care.

- **Acute Care:** Acute care refers to receiving treatment at a hospital and is associated with shorter-term, often severe injuries and medical emergencies – e.g., urgent care, intensive care units (ICUs), and emergency room services.
- **Post-Acute Care:** Medical treatment received at non-hospital healthcare facilities is classified as post-acute care and can range from short-term rehabilitation to longer-term restorative care. These are all services beneficiaries receive after treatment at an acute care hospital – e.g., physical therapists, skilled nursing, rehabilitation facilities, and psychiatric care.

An illustrative sample care continuum would flow from the Primary Care Physician (PCP) → Hospital (Acute) → Rehab Facility, Skilled Nursing Facility (Post-Acute) → Physical Therapy (Post-Acute).

What are the two channels for pharmaceutical drug distribution?

1. Retail Pharmacy Channel

- In the retail channel, the product flows from the branded pharma or generics company to a distributor that's typically aligned with a particular retail pharmacy and then onto the retail pharmacy before finally reaching the customer.
- On the funds side, customers' co-pay just passes through the retail pharmacy onto the PBM. The amount the customer essentially pays and their premium goes from the payer to the PBM based on the negotiated drug prices for the drugs on the formulary (i.e., list of covered drugs).
- For funds flowing out of the PBM, the PBM will pay the retail pharmacies based on those negotiated prices, and the retail pharmacies will pay the pharma and generic companies based again on the negotiated prices. There is much negotiation involved throughout the chain and opportunities for PBMs or retail pharmacies to earn a spread by negotiating different prices with different parties.
- The result being industry consolidations with payers and PBMs merging and retail pharmacies and payers merging to reduce opportunities for "excess" profit from the spread and lead to better margins.

2. Mail Order Channel

- In the mail-order channel, the products go directly from the generic or branded pharma company to a typically PBM operated mail order facility and then onto the customer. The funds, the customer's co-pay, go directly to the PBM, and then the payers pay the PBM based on those negotiated drug prices.
- Then it's the PBMs who will pay the pharma and generic companies for the cost of that product based on the negotiated drug prices.

What is the biggest cost driver for pharma companies?

1. **Research & Development (R&D):** For pharma companies, clinical trials related to R&D are by far the highest cost. These trials typically take five to seven years going through the various stages of clinical trials (i.e., FDA approval for a product, regulatory hurdles, application acceptances).
2. **Production Costs:** R&D is followed by the costs of producing pharmaceutical products, which refer to active pharmaceutical ingredients (API) manufacturing.
3. **Sales & Marketing (S&M):** The third cost is sales & marketing, usually directed at physicians and patients – however, this trails the previous two by a large margin.

What roles do pharmacy benefit managers (PBMs) play in the industry?

Pharmacy benefit managers (PBMs) directly negotiate drug prices with retail pharmacies and influence the prices of the products – as their job essentially is to manage the pharmaceutical spend for insurers and to keep drug costs as low as possible. PBMs get paid on the spread between what payers pay them for drugs and what they payout to the retail pharmacies and pharma companies, which further incentivizes them to lower the drug prices. Once a doctor has prescribed a particular drug, the script is handed to a retail pharmacy, and the PBMs dictate which drug to dispense (i.e., a brand or generic). PBMs reduce costs by negotiating drug prices with drug manufacturers and retail pharmacies and driving generic utilization and mail order penetration.

Explain the purpose of rebates in the context of pharmaceutical pricing.

Rebates are essentially discounts offered to PBMs by pharma companies to incentivize them to include them in their list of covered drugs (called a formulary). Therefore, PBMs maintain on behalf of the payers a schedule of which drugs are covered for their customers and at what prices. Particularly when there's high competition for a drug product, a pharma company might give bigger rebates to the PBMs to ensure they remain on the list of the covered drugs – at the expense of reduced product revenue.

What type of services do contract research organizations (CROs) provide?

CROs operate clinical trials on behalf of pharma and biotech companies in an outsourced, contractor-type relationship. CROs are hired to manage and lead the medical company's clinical trials and to perform other specialized tasks to help bring a particular drug/medical device to the market and obtain regulatory approval quicker. Client organizations contract with CROs to use their expertise, which is required to carry out these high-stake trials safely and in a cost-efficient manner – since CROs are an alternative to having to hire permanent, dedicated staff members with the required skill set.

What is the difference between a branded and generic pharma company?

A generics company (e.g., Teva) develops and sells generic drugs, which are allowed for sale once the patents on the original branded drugs have expired. Given the commoditized nature of these no-brand name drugs, the generics business model and competition amongst one another is based on winning fixed volume contracts for mass production. Research & development costs are lower for generics companies since there are fewer clinical trials involved. However, sales & marketing costs targeted at retail pharmacies are higher since competition is based on securing those contracts with retail pharmacies. In contrast, branded pharma companies (e.g., Novartis) have patent exclusivity which enables them to compete on product innovation and reputation of quality, rather than pricing-based competition.

What are the two pathways for a generics drug being approved?

There are two pathways for approving a generics drug:

1. **Paragraph III:** First, there's the Paragraph III filing, often called the standard channel. This is when the generics companies wait out until a patent expires and then markets it at the same time as other generics.
2. **Paragraph IV:** The other channel is called a Paragraph IV filing – when a generics company challenges a patent before it expires. If this is approved by the FDA, the generic company can gain 180 days of exclusivity before other generics can come in. This is a pathway that most generics companies use if they think they have grounds to challenge a patent.

Let's say you're valuing a pharmaceutical company selling drugs approved for therapeutic usage. What would the basic drivers of revenue be?

For the typical pharmaceutical company, the most basic drivers of revenue growth would be the current number of patients using their drugs, the average price of the drug, and the average dosage of the medication recommended by the physician/medical professional.

What assumption would you look at to value a clinical-stage biotechnology company?

A biotech company typically consists of a portfolio of different experimental drug candidates. Because each experimental drug candidate is unique and specific, we must value them separately. We must determine the annual free cash flow of each experimental drug candidate, then use discounting principles to determine the net present value of each unique product. Biotech companies are very cash-dependent, so the company's current cash balance is also crucial when determining the full equity value of a biotech company.

Model Assumptions

1. **Number of Products in Pipeline/Development Stage:** In the first assumption, the number of products under development and the current development phase for each must be identified. Then, it must be determined whether the company has a discovery platform of pre-clinical models and research.
2. **Peak Opportunity:** Determining the potential peak revenue opportunity within a therapeutic area is often the most important assumption. Sales will grow modestly after the company has achieved peak revenue until patent expiry or loss of exclusivity. Loss of exclusivity means that a brand name drug will lose its exclusive rights to sell in a certain geography.
3. **Indication:** The indication refers to the use of that drug for treating a particular disease/condition. More specifically, an indication is a specific, identifiable condition that the FDA has cleared a therapeutic drug to treat and can be thought of as a subcategory to a broader therapeutic area.
4. **Estimated Time for Completion:** The estimated time for completion refers to how long it'll take for the biotechnology company to complete all necessary clinical trials.
5. **Launch Date:** Once you have determined the estimated time for completion, you can estimate a launch date for the drug. Once the product has officially launched, you can apply an uptake curve that grows each year until the estimated peak revenue is achieved.

What does the “probability of success” rate refer to in receiving FDA approval?

Depending on the targeted therapeutic area, certain drug candidates have a higher probability of success than others. But overall, research has shown that it's very difficult to achieve “approval” status from the FDA.

When modeling a revenue forecast build for clinical-stage biotechnology companies, the probability of success rate (called the “POS”) must be multiplied to each product line, excluding research & development. The risk-adjusted revenue would then be calculated as the unadjusted revenue multiplied by the cumulative POS rate.

Provide an overview of the path to becoming an approved therapy by the FDA.

FDA Approval Phases

- **Pre-Clinical Discovery:** Non-human testing to determine what a safe dosage for humans would be or if it even is safe to proceed with human testing (i.e., animal testing)
- **Phase 0:** An exploratory study usually involving fewer than 15 test subjects and dosage on the lower end due to safety concerns
- **Phase 1:** Human tests to determine if the treatment is safe while testing for the highest dose in humans without serious side effects (typically involves 20 to 80 test subjects)
- **Phase 2:** Continued human tests to determine if the treatment works and testing specific dosing to observe response and efficacy (can involve a few dozen to 300+ test subjects)
- **Phase 3:** Further human tests to determine if the treatment is better and testing the therapy against currently available therapies and treatments (ranges from several hundred to 3,000 test subjects)
- **New Drug Application (NDA):** Formal application submission asking for approval by the FDA – once an NDA is received, the FDA has ~60 days to decide whether to proceed with the process of review.
- **Phase 4:** Involves a thorough drug review by the FDA on all submitted data (e.g., studies conducted, labeling plan, and manufacturing facilities inspections) before making a formal decision on the application

How would you build a revenue model for a recently launched generic drug company?

Revenue Model Process

1. To begin, the two main revenue drivers would be recent product launches and the current pipeline.
2. For a generics drug, pricing and annual sales data on the branded drug before the patent expired will be looked to have a benchmark to reference. The branded annual sales can help estimate the total market size for the drug, and this proxy can project how the generic drug will perform (i.e., demand sizing).
3. In most cases, the revenue build will be a top-down model. The total market volume with the average quantity of capsules in each bottle and the estimated price for the bottle will be gathered. Then, the market growth will be projected based on historical growth rates, but this will usually be on the lower end, and most models will assume minimal annual growth YoY in line with population growth.
4. In the next step, the estimated generic market volume as a percentage of the total market will be calculated for each. Initially, the branded drug will retain some market share, but then gradually, this hold on the market will fade as PBMs drive the conversions to generics. Keep in mind, this is the capture rate by all generic companies, rather than just the company being valued. The assumption should be on the higher end (~85%) and then gradually increase each year once the patent has expired.
5. Next, the key variable, the competition, must be accounted for in the forecast. The question that needs to be answered is: "How many generics companies will there be in the market?" This will determine the estimated revenue for the target company and its specific market share. Thus, there should be a line item for the total number of generic companies that will compete with the company being valued. As more competitors enter each year, the revenue should decline from lower quantity and price declines. But once a certain number of competitors have entered the space, it no longer becomes profitable, and the number of new entrants will stagnate close to zero. A reasonable assumption is that when a new competitor enters the market, the price will drop by ~10%.
6. A simplifying assumption is that the market share will be evenly split between all competitors, but this will be driven by the contracts with the retail pharmacies. So generic companies with a history of being well-supplied and reliable can secure favorable contracts and grab more market share.
7. Lastly, now that we have the sale volume (% of total market share) of the company being valued and estimated drug price from sites such as GoodRx or the negotiated price with the pharmacies if publicly available, we can multiply the two to arrive at the revenue for the product.

On average, how does the pricing of generics compare to branded drugs?

Typically, the prices on generic drugs will be ~15-20% of the branded price.

How would projecting revenue from drugs in the pipeline differ from recently launched generics?

For pipeline products, it may be appropriate to apply a risk-weight to project revenue. The risk-weight will be based on the percentage likelihood that the product will make it through the development and receive FDA bioequivalence approval. This is intended to account for the risk the product may face manufacturing issues or run into quality control difficulties, especially if the particular drug is complex (e.g., extended-release, injected).

How would you build a revenue model for a hospital?

Model Assumptions

- 1. Number of Operating Hospitals & Freestanding Outpatient Surgery Centers:** The first key metrics would include the number of operating hospitals and the number of freestanding outpatient surgery centers. Then, a growth rate would need to be attached, which will depend on historical growth and M&A plans announced by management since nearly all growth in terms of location count is driven through acquisitions (rather than organic growth). The reimbursements for services are mostly out of a hospital's control, so growth through acquisition is the most reliable growth strategy.
- 2. Utilization Data:** Next, the utilization data of each hospital must be calculated. This includes the number of licensed beds (and the weighted average of licensed beds), average admissions (i.e., the inpatient volume), equivalent admissions, the average length of stay, and the average daily census.
- 3. Average Occupancy Rates:** Then, the average occupancy rate will be calculated using the weighted average number of beds and the average daily census.
- 4. Reimbursement Rates:** The reimbursement rates will differ by the payor, and thus the sources of revenue will often be separated by each type (e.g., Medicare, Managed Medicare, Medicaid, Managed Medicaid, Managed Care/Other Insurers).

Existing Hospitals Revenue Projections

- 1.** To start, calculate the average number of beds per hospital. Then, add a row for the implied outpatient volume, which is calculated as the equivalent admissions (a proxy for outpatient and inpatient volume) less the admissions (outpatient volume). Based on this metric, we can derive the average daily volume from admissions, beginning with the inpatient admissions, which will then be multiplied by the average length of the stay. This gets us to the inpatient volume adjusted for length of stay, and then we'll add the outpatient volume to arrive at the total annual volume.
- 2.** Since we are calculating the approximate average daily volume, we would then divide the total annual volume by 365 for the units to line up.
- 3.** Then, we'll project the number of hospitals owned for > 1 year and the beds per hospital from historical periods. That gets us to the total number of beds owned by existing hospitals, which will then be multiplied by the occupancy rate and then add a line for the annual improvement. Doing so gets us to the average daily census, which we'll then multiply by 365 to get to the total annual volume.
- 4.** Using the outpatient volume as a total % of the total annual volume, we can calculate the implied outpatient volume. We'll now calculate the inpatient volume adjusted for the length of stay by subtracting the outpatient volume from the total annual volume. To arrive at the inpatient admissions, we'll divide the inpatient volume by the average length of stay to get to the inpatient volume.
- 5.** To get to the equivalent admissions, we can add the inpatient volume to the outpatient volume. Now, we can apply the revenue per equivalent admission assumption metric to it. We'll assume a growth rate for this metric and then multiply the ending figure by the equivalent admissions to arrive at the total revenue generated by hospitals owned > 1 year.

Hospital Acquisitions

1. To forecast the revenue from acquired hospitals, the first assumption will be the new hospitals acquired multiplied by the beds per hospital to arrive at the total beds from acquired hospitals.
2. You'll then go through the same calculations as we did for the hospitals owned for over one year. In the first couple of years post-acquisition, there should be a lower occupancy rate to be conservative since these are new hospitals that have not built up brand recognition yet.
3. Again, the average daily census will be multiplied by 365 to arrive at the total annual volume.
4. We'll then make an assumption for the outpatient volume as a percentage of the total annual volume and calculate the outpatient volume. That allows us to calculate the inpatient volume adjusted for length of stay, which is the total annual volume less the outpatient volume. Then, inpatient admissions will be calculated by dividing the inpatient volume adjusted for length of stay by the average length of stay.
5. Ultimately, this allows us to calculate equivalent admissions, which, as a reminder, is the sum of the inpatient admissions and outpatient volume.
6. Lastly, the same metrics will be applied as the existing hospitals. The equivalent admissions will be multiplied by revenue per equivalent admission to calculate the revenue from new hospitals for the year. But since hospitals are not acquired precisely at the beginning of the year, we'll apply a mid-year adjustment by multiplying this figure by 0.5. Overall, the total revenue will be the sum of the revenue from the existing hospitals and acquired hospitals.

How do you calculate the equivalent admissions of a hospital?

The equivalent admission is a proxy for the combined outpatient and inpatient volume.

$$\text{Combined Outpatient \& Inpatient Volume} = \frac{(\text{Admissions} \times \text{Total Inpatient \& Outpatient Revenue})}{\text{Inpatient Revenue}}$$

What does the average occupancy rate represent, and how is it calculated?

The average occupancy rate is a key measurement of the profitability of a hospital that shows how well a hospital is utilizing its capacity. While the target rate will depend on the hospital and be specific to the location/services provided, an occupancy rate of ~75% is cited as the most profitable percentage whereas, for high-end hospitals in urban densely populated areas, a ~85% occupancy rate is considered "peak profitability."

$$\text{Average Occupancy Rate} = \frac{\text{Average Daily Census}}{\text{Weighted Average Number of Beds}}$$

What are the differences between Medicare vs. Managed Medicare and Medicaid vs. Managed Medicaid?

Medicare vs. Managed Medicare

- **Medicare:** Medicare refers to healthcare coverage managed directly by the federal government.
- **Managed Medicare:** Also known as Medicare Advantage, this plan is managed by a Managed Care Organization such as Humana or Aetna, which contracts with the federal government to offer healthcare coverage to Medicare-eligible individuals. Medicare Advantage plans have different cost and benefits structures and may include coverage for additional services not covered by Original Medicare, such as prescription drug coverage (known as Medicare Part D).

Medicaid vs. Managed Medicaid

- **Medicaid:** Often called Original Medicaid, this healthcare coverage is offered directly by the government. Medicaid is run at a state level, so the offerings vary by state.

- **Managed Medicaid:** Refers to plans provided by Managed Care Organizations (MCOs). The distinction is that many states have increasingly chosen to contract out their Medicaid program to MCOs because they have realized that the MCOs are more cost-effective and provide better services.

What are managed care organizations (MCOs)?

Managed care organizations (MCOs) are medical service providers who offer managed care health plans. MCOs refer to non-government payers in the US. MCOs make their money from the premiums and administrative fees from their customers (e.g., employers, individuals who purchase their health coverage plans).

What impact did Medicaid expansion have on hospital reimbursements?

The expansion of Medicaid eligibility to those with lower incomes was of the key focus points of the Affordable Care Act (ACA). Medicaid reimbursement rates have historically been the lowest of all the various payer types. So the Medicaid expansion that happened through the Affordable Care Act (ACA) had a positive impact on hospitals since more patients now had health insurance rather than being uninsured. The caveat being more oversight over hospital practices, outcome-based payments, and penalties for non-compliance.

How do you calculate the medical loss ratio (MLR) and why is it tracked?

The MLR ratio is used to measure the percentage of premiums an insurance company spends on claims and expenses that directly improve healthcare quality. Under the Affordable Care Act (ACA), this provision's intended purpose was to ensure a minimum percentage of the health insurance premiums were used to pay claims and encourage providing value to enrollees while limiting insurance companies' marketing and administrative expenses.

$$\text{Medical Loss Ratio (MLR)} = \frac{\text{Medical Costs}}{\text{Premium Revenue}}$$

For example, a medical loss ratio of 80% indicates that the insurer is using the remaining 20% of each premium dollar to pay overhead expenses.

What are some of the main health plans used today?

- Preferred Provider Organization (PPO)
- Health Maintenance Organization (HMO)
- Point-of-Service (POS)
- Indemnity Plans (Fee-for-Service)
- Health Savings Account (HSA)

What are preferred provider organizations (PPOs)?

Preferred provider organization (PPOs) refers to contractual arrangements in which healthcare professionals and facilities provide services to their subscribed clients at discounted rates. The PPO is structured as a subscription-based membership in which healthcare professionals have agreed with an insurer (or a 3rd party) to provide medical care services at reduced rates.

PPOs are by far the most common form of managed care in the US. Under PPOs, payers will steer patient volume towards certain providers in exchange for contracted reimbursement rates.

What are health maintenance organizations (HMOs)?

As a healthcare plan alternative to PPOs, an HMO is a network that provides health insurance coverage for a monthly or annual fee. The coverage is limited to the network of doctors and other healthcare providers that are under contract to the HMO, and participants are required to first receive medical treatment from a primary care physician (PCP).

HMO contracts have the benefit of lower premiums relative to traditional health insurance plans because the health providers have the advantage of having patients directed towards them; however, the downside is the restrictions related to coverage access.

What are point-of-service plans (POS)?

A point-of-service plan (POS) can be viewed as a hybrid managed healthcare care plan between HMO and PPO. Similar to an HMO, plan holders are designated an in-network physician as their primary care provider. However, the patient may go outside of the provider network for healthcare services like under a PPO plan. The benefits provided will depend on whether the policyholder uses in-network or out-of-network healthcare providers. Relative to HMO and PPO, POS represents a small fraction of the total health insurance market.

What do indemnity healthcare plans involve?

Often called “fee-for-service” plans, indemnity plans enable patients to direct their own healthcare decisions and enjoy greater flexibility. The benefits are greater flexibility in being able to visit any doctor or specialist at a hospital. The insurance company that provided the healthcare plan will then pay a set portion of the total incurred charges from the visit.

However, the patient must pay an annual deductible and out-of-pocket payment for services before submitting a reimbursement claim. Once the requirements are met, the insurance provider pays a percentage of the total costs based on the usual, customary and reasonable (UCR) charges of comparable providers.

What do usual, customary and reasonable (UCR) fees refer to?

The usual, customary and reasonable (UCR) fees are the fees paid out-of-pocket by insurance policyholders for healthcare services. The UCR is the amount paid for a medical service based on what nearby providers typically charge for the same (or similar) service and often varies depending on the geographic area in which the service was provided.

Could you explain what issue an integrated delivery network (IDN) is attempting to fix?

An integrated delivery network (IDN) is a network of healthcare facilities owned collectively under a single parent holding company. The term is used to define the connectivity of various healthcare specialists that provide a continuum of healthcare services (i.e., joint healthcare). The issues IDNs see in today's healthcare system is misaligned incentives, inefficiencies such as lack of coordination and poor communication leading to higher medical costs for patients, and fragmentation.

In the ideal healthcare system, there would be coordination and an alignment in economic incentives that increase the utilization of available resources, leading to better clinical outcomes and improving the delivery of healthcare services. IDNs promote the idea of organizations working collectively to combine their assets and specialties to deliver the most comprehensive, efficient healthcare services to the patients they serve.

The concept behind an integrated delivery network (IDN) is to provide a range of health care services across the continuum of care through vertical integration.

What does interoperability mean in healthcare?

In the healthcare setting, interoperability is the ability of different IT systems and software applications to communicate and exchange data. The implication being data on a particular patient may seamlessly be shared across different clinics, labs, hospitals, and pharmacies. This enables the more efficient delivery of healthcare services for individuals, enhances the overall patient experience, lowers medical costs, and reduces errors.

What is a physician-hospital organization (PHO)?

A physician-hospital organization (PHO) refers to ventures organized and owned under hospitals and physicians at medical practices that engage in paid contracting under managed care plan contracts and provide services in coordination with one another under a formal partnership. While integrations will vary by contract, there may be limitations in the cooperation between healthcare providers as the economic incentives are not completely aligned between hospitals and physicians, leading to disagreements.

What are physician organizations (POs)?

The physician organization (POs) model is the traditional system in which physical organizations and hospitals co-exist with no contractual integration. This type of model has faced recent pressure from patients (and regulatory bodies) and may not be sustainable in the long-term due to managed care and the trend of IDS. As more healthcare reform initiatives call for providers to integrate service delivery and align their economic incentives, a shift towards PHO models is expected.

What is a medical service organization (MSO)?

A medical service organization (MSO) provides management, administrative, and operational tasks on behalf of medical practices. While not licensed to practice medicine, MSOs encourage integration between hospitals and physicians by performing time-consuming responsibilities on their behalf. Some areas in which MSOs assist are financial/billing management, human resources (HR) management, recruiting, and regulatory compliance.

What is an independent practice association (IPA)?

An IPA, short for Independent Practice Association, is an organization of independent physicians licensed to practice. The purpose is to build a contracting relationship with HMOs and payers that provide discounts to patients under fee-for-service arrangements.

This type of integration is beneficial as it creates a funnel for patients to go from the IPA to the physician's office, which helps the physician generate more revenue while the IPA can process claims under the conditions outlined in the contract agreement.

What does a partially integrated medical group (PIMG) mean?

A partially integrated medical group (PIMG) is a step in the right direction towards IDS, but it's not a complete integration. In a PIMG, there's a medical group practice resulting from the mergers of multiple practices into a single legal entity. However, separate practices still retain independence in their operations.

While there's usually centralized governance, there are many non-integrated elements such as the total income allocation by each center and the retention of the individual identity of each facility.

What does a fully integrated medical group (FIMG) include?

A fully integrated medical group (FIMG) is one of the end goals of IDS. In a FIMG, the physical practice is listed as a single, legal entity and is managed under single, centralized governance similar to a PIMG. However, the practices under a FIMG operate under a common name, and there's complete integration in the organizational structure and management of workflow.

For example, the administrative operations, clinical systems, and income distribution are unified and completed under a single allocation system.

Explain the 3rd party business model in how providers are paid in the healthcare industry.

Hospitals and healthcare facilities get paid through a co-pay that the patient gives them at the time of care and through the fees from the payers. Once the medical care has been provided, a claim will be submitted to the payers describing what services were performed and what reimbursement is appropriate based on services

codes. Payers, to keep their costs down, will then send them to an internal payment integrity unit or an external 3rd party HCIT company to check for errors or services incorrectly billed. These adjusted claims are then sent back to the payer, and that's what the payers will choose to reimburse hospitals and other providers.

Payers reimburse providers based on contracted rates for the services rendered (e.g., with participation in a PPO, hospitals typically have a one to three-year contract stating reimbursement terms; for physicians, it's based on a set fee-schedule, often based on the Medicare rates).

Why is payment integrity such a point-of-conflict in the healthcare industry?

Payment integrity is ensuring claims were paid in the right amount. Payment integrity providers analyze disputes and adjust claims on behalf of managed care companies, Medicare, and others. Payment integrity companies earn a percentage of the errors they identify.

For example, if they believe a patient was incorrectly admitted as an inpatient when being treated as an outpatient would've been appropriate – then the payment integrity provider would file a formal dispute that the patient didn't need to stay overnight.

Today, most payment integrity programs include some level of automation. However, a significant amount of manual work is still required to verify each payment and identify potential misclassifications or fraud. The increased complexity in treatments and innovations in tests/services has made it even more difficult for payers to distinguish between what qualifies as medically necessary tests/services and those that don't meet the qualifications. The rise in the sheer volume of claims filed each year has made catching these mismatches and anomalies overwhelmingly challenging. Given the mounting amount of data, it would be very difficult to recognize patterns and fix them on time, but recent advancements in artificial intelligence (AI) have been promising as a potential solution for this inefficient payment integrity system.

What is telemedicine and how does the process work?

Telemedicine (or telehealth) refers to the treatment of patients provided remotely using modern HIPAA compliant video-conferencing tools. This type of remote treatment has gone mainstream in the past year as it enables patients to communicate with a healthcare professional virtually rather than physically visiting the medical office or hospital.

Through real-time videoconferencing, a patient can discuss their symptoms and medical issues with a qualified healthcare provider to receive a diagnosis and determine whether an actual visit is required. In effect, this reduces the healthcare bills of the patients as unnecessary visits are reduced, and it allows medical professionals to provide treatment conveniently.

During the COVID-19 pandemic, telemedicine was brought into the spotlight, with Teledoc being one of the main beneficiaries leading the movement. One reason telemedicine saw such staggering growth was because many non-COVID patients feared that going to a hospital or medical facility would make them catch the virus. Funding towards privately held telemedicine startups substantially increased in 2020 as virtual medical treatment became more normalized and accepted.

Telemedicine has shown to provide a multitude of benefits for patients such as improved clinical outcomes, increased patient engagement (from more frequency of communication), expanded patient access, reduced costs and improved efficiency (which leads to lower billings to patients), and enhanced care coordination as this integration can often have a ripple effect on other parts of healthcare operations.

What are some limitations of telemedicine?

Telemedicine applies only to non-urgent situations, not actual emergencies. Any serious medical condition that requires immediate hands-on treatment or x-rays to assess the severity of the situation cannot be treated over telemedicine. Instead, telemedicine is intended for non-emergency matters and follow-up consultations after

an in-person meeting. Telemedicine is also expected to free up more time for patients that require urgent treatment and give medical professions more time to rest, especially when the health of the medical providers themselves is a widespread concern due to insufficient sleep and constant stress.

What is utilization management in the healthcare context?

Utilization management in healthcare describes the periodic review of the hospital and healthcare facility utilization to manage costs better. In addition, the quality of care provided is assessed to understand which areas to adjust to provide better patient experiences while remaining financially efficient (i.e., understand demand curves better, recognize which areas to focus on, identify inefficiencies).

In the coming years, the trend of telemedicine and increased automated workflow is expected to have a very positive impact on the costs of hospital and related facilities.

What is the difference between onsite and near-site healthcare, and what benefits do they provide to employees and employers?

The health and well-being of employees have been a topic at the forefront of many regulatory conversations in recent days. Through onsite or near-site healthcare, employers can address increasingly rising employee healthcare costs and chronic conditions of employees, which both contribute towards time away from work for the employee and wasted non-productive time.

With an onsite clinic or a near-site clinic, employees can reduce the time spent away from work to receive preventive diagnoses or treatments. In addition, health benefit options can serve as an incentive for employees to join a certain company.

Other than the distance, the biggest difference between a near-site clinic and an onsite clinic is the required costs. Onsite clinics require significant investments to set-up, which is why it's usually only done by large corporations with considerable resources. Near-site clinics are managed by outside 3rd party organizations, which reduce the monetary investment substantially. Thus, smaller businesses opt for near-site clinics because they cannot afford to host an on-site clinic.

Contrary to common belief, these near-site clinics are arguably more convenient to employees since there are multiple location offerings. Since there are various locations to choose from, it's easier for employees to receive care regularly, whereas with onsite clinics, the employee would have to come near the workplace.

Talk to me about the rising trend of D2C startups in the pharmaceutical industry.

There has been a noticeable shift towards a healthcare system model where patients can conveniently go online, consult with a physician around a range of clinical and therapeutic topics, and receive a prescription for that specific condition. Well-capitalized startups within the digital health space include TruePill, PillPack (acquired by Amazon Pharmacy), Capsule, NowRx, Surescripts, and ZappRx (acquired by Allscripts).

The pharmacy retail market is undergoing significant disruption from startups like Amazon's PillPack, Capsule, NowRx, Hims & Hers, Ro, and Blink Health, which offer patients low-cost, fast-delivery prescription medication services. Thanks in part due to the de-stigmatization of certain healthcare areas (e.g., birth control, erectile dysfunction, hair loss, acne) and demand for increased privacy by consumers, the D2C model has taken off as one of the fastest-growing segments in healthcare.

Tell me about a healthcare startup you're closely following.

Founded in 2016, Truepill is a B2B telehealth startup that provides pharmacy API and fulfillment services of medications and is often referred to as the "AWS for pharmacies." Truepill works directly with D2C pharmacy brands (most notably Nurx, Hims, Lemonaid), digital health companies, and other healthcare organizations to enable them to improve upon and scale their platforms.

Truepill's team of licensed medical professionals can diagnose, provide consultations, and prescribe medications across various clinical areas via telemedicine and in-person clinics. In addition, Truepill operates pharmacies that can ship cash or insurance-billed medications directly to the doorsteps of the patient. Essentially, Truepill acts as the licensed pharmacist dispensing and shipping the medication prescribed through D2C startups. For D2C healthcare startups, Truepill handles all the logistics, shipping, and pharmacy fulfillment on their behalf, thus enabling them to benefit from Truepill's economies of scale and growing international footprint.

Truepill's API provides full transparency to its user base by providing data such as overall fulfillment volume, the number of orders going out on time, the delivery status of the order on a real-time basis, and reports on issues that caused delays.

Competition amongst D2C pharmacy brands has become crowded as more niche startups enter the market – however, Truepill provides non-partisan services (comparable to Stripe's role in FinTech) by functioning as a background infrastructure layer. Truepill's business model of being only B2B has previously never existed before, and co-founder Sid Viswanathan has stated that Truepill seeks to become “the pharmacy behind the scenes that's powering the entire ecosystem.” Thus, Truepill works alongside and negotiates agreements primarily with drug makers and PBMs, as opposed to competing with the industry intermediaries that sit between insurers and drug makers.

Telemedicine and on-demand virtual deliveries will have a significant role in the modern pharmacy, and Truepill looks to capitalize on this trend by leading the development of the digital pharmacy infrastructure.

From a financial perspective, how were hospitals and healthcare facilities affected by the COVID-19 pandemic?

Since the beginning of this year, healthcare workers have been at the forefront in the fight against the coronavirus outbreak, and the revenue and profitability in the healthcare industry have deteriorated due to the deferral of most surgical procedures for non-life-threatening conditions and the decrease in the number of accidents and non-coronavirus illnesses. Considering its high fixed cost nature, hospitals today are currently in an urgent, cost-cutting mode for expenses unrelated to COVID-19, as seen by employee layoffs and reductions in working hours for workers not relevant to COVID-19.

While the healthcare industry is notorious for being slow to adopt new technologies, a considerable portion of the forecasted total industry growth of IT spend is expected to stem from the vertical healthcare institutions such as hospitals and smaller-scale clinics that have been disproportionately affected throughout the coronavirus outbreak. The reason is that these medical facilities were using outdated technologies and have no choice but to adjust to the prevailing conditions. So while digital infrastructure, certain healthcare services (related to diagnosis, testing, and disease control), and telemedicine platforms experienced positive growth, many hospital holding companies and healthcare facilities have been seeing substantial margin contraction.

Consumer Products & Retail

Could you name some ongoing trends in the consumer goods industry?

- Ongoing Convergence between Traditional Brick-and-Mortar Stores and e-commerce
- Rapid Product Development & Consumer Testing
- Targeted Marketing using Data Analytics (e.g., personalized ads on social media)
- Direct-to-Consumer (DTC) Business Models
- Subscription-Based Payment Plans (i.e., the customer pays in fixed intervals)
- Increased Demand for Transparency on Labels (e.g., location, manufacturing method, health, and environmental sustainability)
- Same-Day/One-Day Click-and-Deliver and Click-and-Collect Feature in e-commerce
- Partnerships between DTC Brands with Brick-and-Mortar Stores

Which types of valuation multiples are often used for consumer and retail companies?

The valuation multiples used in consumer and retail companies are standard for the most part. Given the mature state of the industry, multiples such as P/E and EV/EBITDA are frequently used.

Specific to retail, one of the most popular multiples is EV/EBITDAR, with the "R" being rental and lease-related costs. This is done to better standardize the multiple since there are companies that rent their stores whereas others own them. Without the rent expense being added back, companies paying rent would be valued lower than those that own their stores.

A few industry specific valuation multiples based on operating metrics include EV/Total # of Stores, EV/Sales per Square Foot, EV/Sales Per Store, and EV/Same-Store Sales.

For e-commerce sellers or marketplace businesses, an important valuation multiple would be EV/Gross Merchandise Volume (GMV).

What unit economics drive revenue in the consumer goods industry?

For the consumer & retail sector, most companies that fall under this industry classification have revenue drivers, split broadly into volume and price.

- **Volume Drivers:** The volume drivers section could include the number of stores, the average number of daily customers visiting the store, the average number of products in each order, and the average number of customer transactions per day.
- **Price Drivers:** On the other side, the price per product sold will be a function of the product quality, brand reputation, and how it stands relative to its competitors. There are often significant constraints, and most retailers have very little pricing power (i.e., have to set near market rate).

Excluding premium retailers, most companies in the consumer sector will have a growth strategy oriented around achieving volume growth – this can be achieved by a better sales/marketing strategy, store count increase, and geographic expansion.

What is the most significant cost driver for consumer product companies?

Unique to the consumer products industry, a significant percentage of their total cost structure is spent on advertising and marketing campaigns. Advertising is a key channel to communicate with their customers, while marketing campaigns help end-users positively view brands.

A successful advertising and marketing strategy leads to an increase in sales and pricing power in this industry. For product sales, building an “emotional connection” with the end customers is necessary for brand loyalty (e.g., Patagonia's initiatives for environmental and social responsibility).

What are the two main retail channels to sell products to customers?

1. **Brick-and-Mortar Stores:** Brick-and-mortar means a company's store has a physical presence at a specific location, building, or retail outlet that customers can visit in-person.
2. **E-commerce:** e-commerce involves transactions via digital means (i.e., online businesses, mobile).

Nowadays, the two channels have converged, as seen by Walmart's online shopping platform's development to compete with Amazon and other e-commerce stores.

If you were a seller, would you prefer to sell your products on a marketplace or personal e-commerce store?

Both online marketplace platforms and e-commerce stores are related to digital commerce.

- **Marketplace:** In the simplest terms, a marketplace is a platform where various products come from multiple e-commerce sellers. Some of the most well-known examples of marketplaces would be Amazon, eBay, and AliExpress. The main benefit of making purchases in a marketplace is the platform's pre-existing reliability (i.e., intermediary and security infrastructure), website traffic, and buyers enjoy comparing similar product offerings side-by-side. There is less information asymmetry in what the price of comparable products is. The more diverse the marketplace is, the more convenient it's for customers to purchase items in different areas. For sellers, the effort to bring traffic and viewers to their products is minimal, which means fewer marketing expenditures are required. The downside of marketplaces is the commission fees on each transaction, which typically range between 5% and 15%.
- **Individual e-commerce Store:** For an individual e-commerce store, there are more responsibilities and work required to get the store running. To bring traffic to a new website requires spending on marketing and SEO, and even then, there's no guarantee the efforts will pay off. But while the process can be more time-consuming, the seller can customize the website to their liking and create a virtual shopping experience. In addition, no commission has to be paid to a 3rd party, but only a minor website hosting fee is paid. There are benefits to both, but certain brands with existing followers will avoid marketplaces so that their customers will have a differentiated online shopping experience in which the company's brand is the only focus. From the sellers' perspective, the saturation of brands in marketplaces, especially from lower-tier brands, makes the platform appear less "premium" to users and damages the online shopping experience (e.g., "sponsored" products shown next to a seller's products).

For a marketplace company, which KPIs would you pay the closest attention to?

- **Gross Merchandise Volume:** GMV is the total amount of sales made through all the transactions for merchandise on a platform over a specific time frame.
- **Average Order Value:** AOV is the average amount spent per transaction and is calculated by dividing total revenue by the total number of transactions.
- **Take Rate:** The take rate is the percentage of GMV collected by the marketplace (typically ranges between 10% to 30% for established marketplaces) and is how marketplaces produce revenue.

Explain how the "Amazon Effect" has impacted the entire retail industry.

The so-called "Amazon Effect" is the ongoing disruption of the retail market (and other online platforms/e-commerce stores), resulting from their sector dominance. Amazon single-handedly changed the competitive landscape of all retail and raised the bar for what customers expect during their online shopping experience.

- **Shipping Speed:** Amazon Prime's 1-2-day shipping raised the standards of the speed at which a product would have to be delivered to customers, which cuts into the margins of other online businesses.
- **Free Returns:** Online sellers have less leverage in return handling because of Amazon. In most cases, the seller will offer free returns to cover all shipping charges related to the return (along with free delivery).

Why have many e-commerce platforms opened brick-and-mortar locations?

While many people neglected the traditional brick-and-mortar business model, companies have started to re-think the amount of value provided by customized in-person shopping experiences – fueled by the trend of “click-and-collect.” Products sold online will have higher margins and be more convenient, but it’s often difficult to create an emotional connection with customers when sales are just online. Thus, many e-commerce platforms have opened brick-and-mortar locations recently.

Another reason is the convenience factor, as integrating an online sale with in-person pickups is the fastest method for product delivery. A recent example of this could be seen in the curbside pickup trends in 2020. Consumers want products fast and often prefer to go pick them up in-person immediately.

Lastly, the ability to return products purchased online at a nearby location can help a company save on shipping costs. Alternatively, many partnerships have developed between companies and even educational institutions. For example, Amazon returns can be accepted at a retail store such as Kohl’s and at universities with a department dedicated to the shipping and handling of product returns.

Many DTC companies have recently established partnerships with brick-and-mortar store chains and began opening up physical stores. What is the reasoning behind this trend?

Many DTC brands have realized how a traditional brick-and-mortar store could complement its products, and it’s expected to become a key part of their strategy increasingly. The multi-channel strategy to sell products on several platforms to maximize exposure to diverse consumer types. For example, Quip, the direct-to-consumer toothbrush brand, has partnered with Target to diversify its distribution channels and have a presence in brick-and-mortar stores.

Many customers prefer DTC, especially when there’s fast shipping. But certain customers prefer purchasing a product after seeing it in person, regardless of the option for free returns – commonly known as “buy online, pick up in-store” (BOPIS), which is not a new idea but a trend that appears to have returned. Besides partnerships with existing stores, many DTC brands such as Casper, Warby Parker, and Everlane opened physical locations over the past few years and have continued to grow their physical footprint.

What are some benefits that brick-and-mortar stores have over e-commerce?

- **Physical Shopping Experience:** Many customers enjoy the shopping experience, which helps develop an emotional connection to a particular brand if done properly. Many struggling retailers such as Macy’s have introduced strategies to offer a more “physical” customer experience through in-store VR, online integrations (e.g., mobile check-out), and nearby modern food vendors. Given Macy’s key demographic, a family-friendly shopping environment in their improved stores with better lighting/stylistic changes is expected to impact performance positively.
- **Fewer Product Returns:** Another reason is related to the percentage of product returns. Since customers see the product in-person, ~30% of products purchased online end up being returned, compared to ~9% for brick-and-mortar stores. And if a customer returns a product, it has become standard practice for shipping to be covered entirely by the seller.

Are multichannel and omnichannel marketing synonymous?

Both multichannel and omnichannel marketing strategies are mediums through which sellers communicate and pitch their products to prospective buyers. Examples of marketing channels would be TV advertisements, social media, billboards, and a brand’s website, whereas sales channels can be email campaigns, cold calling, live chats, and referral networks.

- **Multichannel Approach:** The multichannel approach is when a company uses multiple channels to spread their message about their brand and attempt to reach new customers. Each channel is separate, has its individual marketing message, and is not interlinked with the other channels.
- **Omnichannel Approach:** The omnichannel approach integrates different channels to create a more seamless online experience for customers (i.e., viewing the experience through the customer's eyes). The contextual engagement and marketing message will usually be the same (or similar) across all channels. However, omnichannel will have more of a focus on the customer experience.

Tell me about the significance of PayPal's acquisition of Honey.

Near the end of 2019, PayPal acquired Honey, a browser extension for consumers to find coupons and discounts while purchasing items online. Not only was this acquisition PayPal's largest acquisition to date, but it was the first of its kind in that a web browser extension could be acquired at such a high valuation. PayPal explained its rationale for the purchase by pointing to the possibilities of integrating Honey's browser extension and Smart Shopping Assistant mobile application with its PayPal/Venmo check-out services to create a more seamless, simplified shopping experience for consumers. For instance, consumers could make a single purchase from multiple different websites, all at the lowest prices possible.

Now, PayPal's Venmo a significant leg-up on its competition with Apple Pay and Square's Cash App, especially considering Honey's popularity with consumers. At the time of the acquisition announcement, Honey had more than 17M monthly active users. Considering Venmo's traction with consumers, acquiring Honey would further establish PayPal's footprint in the consumer market and provide a complementary portfolio of offerings to drive engagement. Hence, CEO Dan Schulman's statement that the acquisition of "Honey is amongst the most transformative acquisitions in PayPal's history."

Could you define what consumer-packaged-goods (CPG) and retail are?

- **Consumer Packaged Goods:** CPG refers to products that consumers frequently use and replenish routinely, typically in a short usage cycle (i.e., fast-moving consumer goods). A few common examples of CPG products would be toilet paper, paper towels, shampoo, conditioner, soda, and soap. As one would expect, the CPG sector is very competitive, as many companies compete for limited shelf space, and often products are highly commoditized. The success of a particular commoditized product depends on customer loyalty and familiarity with the brand. You'll often see "copycat brand" products (e.g., store brand soda placed next to Coca-Cola products at a slight discount).
- **Retail:** In contrast, retail focuses on the sale process of products to individual consumers. While CPG refers to a particular category of products, retail refers to selling the products. Often compiled each month and followed closely by investors as an indicator of the economy's health, retail sales data reports track consumer demand for durable and non-durable goods by calculating the purchases over a specified period.

What is social commerce, and how is it different from social media marketing?

The trend of social commerce refers to social networking websites such as Facebook, Instagram, Twitter, and Snapchat becoming sales channels for companies selling a product or service. A distinction from social media marketing is that a company doesn't use the social media platform only for promotional purposes. Instead of directing the customer to visit their company site to make the purchase, customers can make a product purchase within whichever social media site they were browsing. For example, Facebook recently rolled out Facebook Shops and Instagram Shopping, enabling businesses to set up an online store easily. There'll be an incentive for businesses to purchase ads on Facebook and Instagram's platform due to their user count, targeted ads (more consumer data), the prevalence of influencers, and modern features (e.g., live shopping, product launch videos, product tags). In addition, the shopping experience is seamless as Messenger, Instagram Direct, and WhatsApp allow sellers to answer questions and offer support through the chat.

How are chatbots being used in the retail industry?

Nowadays, most companies will have chatbots installed on their websites to assist customers. Chatbots are pre-programmed AI applications intended to simulate customer service interactions in lieu of the immediate need of a human representative.

The clear advantage here is that chatbots enable immediate responses to common questions and can help a company reduce costs over time once the program is developed. The caveat is that a human will usually be on standby, as the chatbot cannot answer all questions, and its capabilities will take time to develop and become less reliant on human aid. Many customers prefer speaking with an actual human due to the frustrating experiences that chatbots often provide, especially in the earlier days when they were first being rolled out.

What is the difference between a discretionary product and a non-discretionary product?

- **Non-Discretionary Products:** Often called consumer-staples, non-discretionary products are necessary for consumption every day by their users regardless of income levels or consumer type. Examples would include bottled water, soap, toothpaste, shampoo, and razors. Regardless of the economic conditions, consumers require these products, which makes them less cyclical. An example of a company that sells many non-discretionary products would be Unilever, which sells products related to nutrition, hygiene, personal care, and more.
- **Discretionary Products:** Discretionary products with higher price points are non-essential and are in greater demand when the economy is doing well. Examples would include purchases of new vehicles, TVs, and smartphones upgrades.
- **Distinction:** During recessionary periods, CPGs continue to sell relatively well, while most non-discretionary product spending will be put on hold by everyday consumers.

What are some common characteristics of CPGs?

- Low Average Selling Prices (ASPs)
- Essential, Necessary to Users
- Rapid Consumption and Disposal by Consumers
- Frequent Repurchases (Often Weekly/Monthly)
- Low Customization Required

What is the difference between CPG and durable goods?

- **CPG:** CPG products are used frequently and replenished quickly by consumers (i.e., short product replacement cycle).
- **Durable Goods:** Durable goods are purchased and replaced far less often than CPG and are usually significantly more expensive. Examples would include TVs, washing/drying machines, furniture, and refrigerators that provide benefits for long durations.
- **Distinction:** Besides the differences in product life cycle and pricing, a key difference is consumers' time when contemplating the purchase. For instance, a consumer can take weeks to decide which laptop to purchase, while CPG goods can often be decided within minutes.

What does it mean when a product has become commoditized?

A product has become commoditized when the product offerings have little differentiation from one another, and the competition is now done on pricing alone. The competitive dynamics of the industry become a “race to the bottom” to see who can sell at the lowest price.

Name a few KPIs that many retail chains report in their financial statements.

- **Sales Per Square Foot:** Using the sales per square foot metric, an investor could determine how well a company uses its floor space relative to its competitors. This KPI assesses the efficiency of a company at using the floor space in its stores.

$$\text{Sales Per Square Foot} = \frac{\text{Net Sales}}{\text{Sales Space by Sq. Foot}}$$

- **Sales Per Employee:** The sales per employee metric is used to determine whether a particular sales strategy is working and whether the right staffing decisions were made. Individual stores often track this to examine their employee list in more detail and see which are struggling to make sales.

$$\text{Sales Per Employee} = \frac{\text{Total Sales}}{\text{Total Employee Count}}$$

- **Conversion Rate:** The conversion rate is the proportion of customer store visits to the number of customers who made an actual purchase during their visit. The higher the conversion rate, the better – as it means that customers are not just walking in and leaving without making a purchase.

$$\text{Conversion Rate} = \frac{\text{Number of Transactions}}{\text{Total Number of Visitors}}$$

- **Same-Store Sales:** With the same-store sales metric, investors can compare individual stores' performance benchmarked against the same period in the previous year. By comparing an individual store over a specified time frame, a company can determine whether the store is performing above (or below) expectations relative to its comparable stores, and then try to figure out why that's the case.

$$\text{Same Store Sales} = \left[\left(\frac{\text{Current Period Sales}}{\text{Prior Period Sales}} \right) - 1 \right] \times 100$$

- **Average Transaction Value (ATV):** Average transaction value is a metric that shows the average dollar amount customers are spending on each order and can show a company's effectiveness in strategic product placement, promotions, discounts, and other sales strategies to increase the number of items purchased.

$$\text{Average Transaction Value} = \frac{\text{Total Revenue}}{\text{Total Number of Transactions}}$$

Tell me what the trend of voice commerce is and its use cases in retail.

An example of AI rapidly gaining traction, voice commerce uses voice recognition technology to find and order products online without dependence on hardware. For example, rather than having to search on your laptop/computer for the item, read articles and posts about which products are recommended, and then making the purchase – instead, a consumer can use voice commands to hear a list of products, specify their needs and listen to the differences, and then tell the voice-powered device (or assistant) to make the purchase.

What is the gig economy?

The gig economy is enabled by online marketplace platforms that facilitate short-term engagements of independent contractors to deliver services (“gigs”). These workers work flexible hours and based on their schedule, rather than being employed full time. Known as the “sharing economy,” this type of P2P facilitation of services is broad and encompasses freelance consulting services, ride-hailing drivers on Uber/Lyft, food delivery services through Grubhub/DoorDash, and temporary home rentals on Airbnb.

Tell me about an ongoing trend in e-commerce that you're following.

The pet foods and supplies industries were already experiencing high growth, given the increased humanization of pets worldwide by pet owners. Fueled by millennials, this trend has driven up demand for premium pet products and new product developments related to pet nutrition with greater transparency in the ingredients and overall quality. In the last few years, the pet products segment has been one of the fastest-growing consumer spending segments and has one of the highest order volume categories on online marketplace platforms.

Since COVID-19, demand for pet food delivery has been surging, as seen by the growth of pet e-commerce companies such as Chewy. Direct-to-consumer models in the pet products industry were already trending, but the pandemic accelerated this trend, which can likely be attributed to the increased amount of time pet owners spend at home with their pets. But other than consumers being forced to stay home, many shoppers realized how convenient it's to have subscription-based orders come in for their pets with minimal work on their end.

Could you give me an example of how augmented reality is changing the consumer experience in the retail industry?

Launched in 2010, Warby Parker has always been known as an innovative eyewear company from its founding days. Initially, Warby Parker disrupted the optical industry through its Home Try-On Program, where the company would ship sample frames to customers to try on at home. But now, it has transitioned to leveraging the camera capabilities of smartphones (the iPhone X and above, to be specific) to enable the Virtual Try-On feature where customers can see their appearance with a virtual frame through augmented reality. Based on an AI-generated map of the customer's face and the collected details on specific facial features, the app can recommend which types of frames would best suit the customer and make an automated list of recommendations for the customer to virtually "try on."

Warby Parker's virtual glasses show how augmented reality can be implemented and enhance the reality of online shopping, and many more startup products in different product categories with similar features have been developed, such as in furniture and clothing shipping. In addition, existing incumbents have rolled out and developed similar features for their mobile applications and websites.

While retail is known for being one of the most cyclical industries, can you name one resilient product segment?

One specific product segment in retail that's resilient to recessions is the cosmetics and beauty products segment. The phrase "insecurities sell" describes consumer spending patterns very accurately for the beauty products industry, as even higher prices don't appear to have much of an impact on spending volume.

This is because purchases based on "intangible benefits" such as beauty products, the price comes secondary. Intangible consumer benefits are more prevalent in items that matter more to customers (the benefits) – which is further enhanced by how the products are applied directly applied on the skin. Even during recessions, studies on past consumer spending behaviors have shown that beauty regimes are among the last to be cut. This explains why the cosmetics market has proven to be less discretionary than one may assume – as demand rises during economic expansions and remains steady during contractions. While everyday customers are often fickle and price-sensitive, that behavior doesn't show in this particular segment.

Why are luxury goods often not negatively affected during recessions?

While luxury goods are often considered to be significantly cyclical, the industry is actually not as cyclical as one might expect. The reason being the income level of customers that can afford luxury goods. Many of these high-income customers, even in a recession, don't change their spending habits. There might be less demand

from customers that can no longer afford the luxury goods, but those that can still afford these luxuries will continue to make purchases.

How does pricing power in retail differ from other industries such as manufacturing?

Pricing power arises from emotion-driven intangibles that are often unquantifiable with typical metrics, unlike what is necessary to gain pricing power for commercial and industrial products. Therefore, many companies emphasize nurturing customer trust in their branding and emotional appeal to their customers. For products in a technical industry such as manufacturing, the highest-quality product will come out on top over time. But in retail, a well-marketed low-quality product with more brand appeal can outsell a higher quality product.

What makes the beauty products industry not just resilient to recessions but recurring in terms of revenue?

For most consumer goods, there's a limit to how much can be purchased and used. However, skincare and cosmetics products' usage is essentially limitless as many of these products are non-reusable (e.g., face masks, skin lotion) while requiring constant replenishment. Hence, skincare products are among the most profitable categories of consumer goods with highly recurring purchases.

Besides cyclicity, why do many private equity investors stay away from retail?

Compared to price-based growth and upselling/cross-selling, volume-based growth is the least valuable since it entails continually increasing sales and adapting to the always-changing consumer demands. But from a different perspective, the ability to adapt, strong branding, and increased scale could be a sustainable competitive advantage given that the cost of producing each unit decreases and capex requirements decline, which have a net positive impact on gross margins. Regardless, most investments into retail are usually structured as VC/growth capital, not traditional LBOs.

Tell me about the trend of connected fitness.

Led by home-equipment cycling company, Peloton, the trend of connected gym experiences and virtual trainers has been positively affected by COVID-19. Rather than going to the gym to train with friends or a trainer, this type of equipment enables the ability to workout "on-the-go" enabled by new technologies and applications integrated into the equipment. An example of a recent M&A deal involving this trend would be Lululemon's acquisition of Mirror.

What is the trend of athleisure wear?

In recent years, the trend of "athleisure" has taken off, especially for the younger demographic. Athleisure is a hybrid between professional workplace wear and casual and exercise outfits. Increasingly, athleisure has become a larger portion of consumers' everyday wardrobe because it's more versatile and comfortable for users, as the need for formal wear is gradually decreasing (especially in Silicon Valley). One of the leading companies in this segment is the athletic apparel retailer Lululemon Athletica.

What does the phrase "fast fashion" mean?

"Fast fashion" is a strategy of placing clothing designs shown on the catwalk in retail stores as quickly as possible to meet consumers' demands. Trends change quickly based on changing consumer tastes and seasons, so modern retailers such as Zara recognized this and have led this movement of placing trendy items on their store racks as early as possible to take advantage of these short-term spikes in demand. The quantity will often be strategically limited, creating a rush of customers to purchase the items – thus, the rapid replenishment required of store stock and higher margins for retailers that have joined in on this strategy.

What is the secondhand market?

While not a recent development by any means, the secondhand market is being forecasted as one of the fastest-growing retail segments over the next few years, as the circular economy trend continues to expand across different industries. Helping this trend is the blurring of the line between new clothing purchases and secondhand purchases, in which the stigma of purchasing worn re-sold clothing is diminishing.

Two of the main beneficiaries of this trend have been platforms Poshmark and thredUP, which are social commerce marketplaces where everyday consumers can conveniently list their clothing and related products for sale, with the end function being similar to a closet clean-out.

Often retail-brand companies such as Supreme can sell clothing that will be resold for significantly more. Why does Supreme not just raise their prices?

Often, a product's resale value can be multiple times more expensive than the original price tag. The reason companies such as street-wear company Supreme (which has a business model based around the creation of scarcity and premium brand portrayal) don't raise their original prices is because increasing prices would decrease the number of customers that could afford the product.

Supreme's customer base primarily consists of the younger demographic. Therefore, having too high of a price point would make them "window shoppers" rather than customers lining up for days to purchase an item in one of their stores. For example, an upper-middle-class high school student could afford to purchase Supreme's product – and this ability to purchase the item (the only constraint being the supply) makes the product more marketable and has a positive impact on the brand image.

Therefore, absolute, upper-tier premium brands are relatively unknown to most consumers. But Supreme, which is considered a premium/luxury brand by most customers, is well-recognized by consumers of all income levels. This is the marketing strategy and niche Supreme has carved out, which eventually led to a 50% equity sale to the Carlyle Group at a \$1 billion valuation.

What is scrambled merchandising?

Scrambled merchandising is a product assortment strategy used by retailers to serve as many customers as possible by offering a diverse product line. In effect, the retail store can portray itself as a "one-stop" shop. An example of scrambled merchandising would be a pharmacy retail store (e.g., CVS) having a section dedicated to selling electronics such as headphones and speakers.

In the retail context, what does "channel surfing" mean?

Channel surfing in retail, also known as "showrooming," is when customers try on products and get product information in-person at stores, but rather than making the purchase there, the customer will order the product online for a lower price and take advantage of online-only discounts, or pay less in taxes.

What type of differentiated business model did Dollar Shave Club have?

Dollar Shave Club (DSC) was one of the first-movers in the trend of subscription-based B2C business models. In the example of DSC, its value proposition almost immediately took away Gillette's leading market share as customers enjoyed the inexpensive, convenient subscription plans, as well as the brand transparency that it offered. However, Gillette soon launched its subscription-based kits, and new competitors emerged, such as Harry's in men's grooming.

Tell me about the trend of retailers using DOOH for their advertising.

Digital out-of-home (DOOH) is an advertising medium where their content is displayed on outdoor electronic screens and displays on buildings, highways, subways, and bus stops. More retailers are allocating their advertising spend towards DOOH due to the higher ad engagement and conversions based on customer survey

data. Similar to traditional out-of-home (OOH) advertising, the two are based on the same idea of placing advertisements in highly populated, urban places for people such as those commuting to work could see. But the key difference is the utilization of data to reach the right viewers strategically. DOOH can be viewed as data-driven OOH. Many of the trends that fall under AdTech, such as geo-fencing and personalization, are used in DOOH. For example, imagine a retailer such as Nordstrom having an advertisement on a billboard that automatically adjusts the clothing being promoted based on the current weather condition.

What is a private label brand?

A private label brand is when a third party company manufactures a product but then sold under a more established brand. These private-label brands can be seen in various industries but are most prevalent in food, cosmetics, and consumer merchandise. For example, Target has its “Open Story” brand launched in 2020 to sell premium luggage. Like most private brand labels, this line of luggage is sold at a discount and often mimic a market leader. Today, Target has over 45+ private label brands to choose from, which has boosted its revenue growth and margins (hence, its strong performance from 2019 to 2020).

Tell me about some trends related to the food industry.

- **Food Delivery/Takeout Platforms:** These platforms allow for food to be ordered from restaurants and food shops using a mobile application, which can then be delivered by a gig worker or be picked up by the customers (e.g., Uber Eats, Grubhub, DoorDash, Postmates).
- **Meal Kit Services:** Similarly, meal kit service companies deliver pre-prepared food; however, the difference is the customers cook the food at their home at their convenience. These companies' business model is usually based on a subscription plan with enough meals to last several weeks (e.g., HelloFresh, Blue Apron Home Chef).
- **Plant-Based Substitutes:** Consumers are looking for plant-based alternatives to meat and dairy for the supposed health benefits and environmental sustainability (e.g., Beyond Meat Impossible Foods, Amy's Kitchen).
- **Lifestyle-Based Menu Options:** Many companies are becoming more aware of the popular diet trends being followed by consumers and attempt to offer menu items to cater to their specific needs (e.g., Paleo and Keto Bowls from Chipotle).
- **Greater Transparency/Sustainability:** More consumers are demanding products to be sold with transparent labels, sustainable packaging, and ethical production.

Tell me about some trends in the beverage industry.

- **Cannabidiol (CBD Oil) Infused Beverages:** CBD Oil was the clear winner in 2019 for its supposed health benefits for anxiety, pain-alleviation, and insomnia. Products ranging from CBD infused drops and drinks were flying off shelves while drug/food regulatory bodies were scrambling to classify and regulate CBD.
- **Health-Based Hybrid Beverages:** More health-conscious consumers opt for beverages that support their lifestyle decisions and allow them to derive multiple benefits from one product. An example would be coffee that comes pre-mixed with protein powder (e.g., Kitu Super Coffee, REBBL).
- **Hard Seltzer:** Hard seltzer is a seltzer (carbonated water) spiked with alcohol. The sudden burst in popularity is due to the variety of flavors while being low calorie, which appealed to the younger demographic (e.g., White Claw, Vizzy).

Financial Restructuring

Restructuring is unique, requiring an understanding of credit, valuation, and bankruptcy law. On the investment banking side, you'll encounter these questions at restructuring advisory firms or M&A boutiques with a significant restructuring practice. You'll also see these types of questions in corporate banking, private equity, and hedge funds that invest in distressed debt.

If you know that restructuring is where you want to be, in addition to reviewing the questions below, invest the time and watch our [free online course on the basics of restructuring](#).

What are the most common reasons for a company to become distressed?

- **Liquidity Problems:** The catalyst for most restructuring is from the debtor defaulting on its debt obligations, meaning that an interest payment or principal repayment was missed. The reason for this diminished liquidity is most often due to an unexpected deterioration in financial performance.
- **Accelerated Payments:** Certain high yield or straight debt instruments come with accelerated payment provisions, designed to compensate the investor for the entire principal, applicable premium, and interest prior to first call/maturity. The enforceability of so-called "make-whole" provisions has been a controversial topic, but the terms were specified in the indenture and meant to protect the lenders' yield.
- **Failed LBO:** Another reason for bankruptcies is failed leveraged buyouts (LBOs), which are associated with a company being over-levered and financial underperformance, leading to the inability to support the debt load. A recent example would be Toys "R" Us when it filed for Chapter 11 in 2017.
- **Missed Suppliers and Vendors Payment:** A non-debt related example would be the inability to pay suppliers or vendors. Suppliers and vendors are typically more accommodating to help keep the company afloat, albeit they can discontinue working with the debtor if they feel it's a lost cause.
- **Covenant Violation (and Forced Call):** A breached covenant could also force a borrower to declare bankruptcy, as the creditors have an agreement stating that failure to comply with the debt covenants would trigger a forced liquidation (e.g., cannot receive a downgrade from a credit rating agency).
- **Industry Disruption:** Structural shifts in an industry can lead to traditional products/services becoming obsolete (e.g., the OTT trend led by Netflix causing Blockbuster's downfall and bankruptcy).
- **Black Swan Event:** Unforeseeable events with significant macroeconomic impacts that could trigger mass bankruptcies. Examples include the subprime mortgage crisis and most recently, the COVID-19 pandemic that led to the bankruptcies of companies such as J. Crew, Brooks Brothers, and Ruby Tuesday.

What are a few typical signs that a debtor is planning to file for bankruptcy soon?

A debtor that's aware it'll eventually have to file soon will attempt to time the filing date to conserve cash and give themselves as much flexibility as possible. Oftentimes, the filing will be done right before a large payment has come due. Some common indications that a debtor intends to file soon are the revolving credit line will have been drawn to maximum capacity, debt covenants have already been breached (or will be soon), and payments to suppliers or vendors have been delayed.

Other than declaring bankruptcy, what alternatives does a company have to stay afloat?

- **Straight Refinancing:** For the distressed company to replace the old debt issuance with a new issue would be an ideal scenario, but unrealistic as it'll be difficult for a lender to refinance the debt. Another consideration is, the additional debt may help them in the short-term, but then once again, they haven't solved the problem. Instead, the company has just delayed it (or maybe even worsened it) unless they have a turnaround plan bound to work.
- **Raise Additional Equity:** Another option would be to raise capital through share issuances, but very few equity investors would purchase the stock of a company nearing bankruptcy. In the case the company declares bankruptcy, equity holders would receive nothing until debt holders are paid in full (e.g., a recent example was when car-rental company, Hertz, attempted to raise new equity after filing for bankruptcy, which was approved before being suspended shortly after; and now de-listed from the exchange).
- **Out of Court Restructuring:** The most practical option is to re-negotiate the debt terms with existing creditors and work something out out-of-court. The new arrangement could involve temporarily delayed payment dates, extending the maturity of debt (and reducing the due coupon amounts), or switching to PIK interest. Sometimes, the creditors may agree to a "bondholder haircut" in which the debt principal and interest are reduced so that the company can continue operating and avoid filing for bankruptcy.

As a company nears becoming distressed, how might its accounts receivable, deferred revenue, and accounts payable balances change?

- **Deferred Revenue:** For companies with business models based around long-term contracts or subscriptions, deferred revenue tends to increase as the debtor tries to get some much-needed liquidity in return for delivery of a good or service on a later date (often with steep discounts).
- **Accounts Payable:** Days payable outstanding (DPO) will often extend significantly due to the company being incapable of paying the suppliers, even if the company wanted to make the payments.
- **Accounts Receivable:** The inability to collect A/R might be one of the reasons for the lack of liquidity. Regardless, since A/R is a part of the borrowing base, a company nearing distress may provide more services on credit to increase its borrowing base. Customers that are aware of the situation may take advantage of this by intentionally delaying payments in case the company goes bankrupt.

What does operational restructuring involve?

Once becoming distressed, many companies see no chance in an achievable turnaround and are simply liquidated. But others often have a short period to get in front of this problem and try to solve the underlying issues. During operational restructuring, the company will try to improve its operations through cost-cutting, improving working capital management, and headcount reduction. One of the main parts of operational restructuring is asset restructuring, which is the sale of unproductive, non-core assets (or divisions) to re-focus on the core business. If it's an option, the company's management team may retain restructuring advisors to help them navigate through these operational issues or hire 3rd party consultants.

What is the difference between a voluntary and involuntary petition?

In most cases, bankruptcy begins when the debtor files a petition themselves (called a "voluntary petition"). Being the filer provides certain advantages, such as selecting the jurisdiction. Thus, the debtor almost always ends up filing preemptively. Although a rare occurrence, bankruptcies could be initiated if creditors file a "non-voluntary petition." This is when the creditors themselves force the distressed company into Chapter 11 bankruptcy, often done due to a technical default (e.g., broken covenants, violation of terms).

Contrast an out of court restructuring with an in-court restructuring.

Out of Court Restructuring

- An out of court restructuring is the process in which a company negotiates with creditors (both lenders and trade claims) without a court overseeing the process. In an out of court restructuring, all creditors must agree to any modifications to contracts and agreements, and nothing can be imposed on creditors.
- An out of court restructuring's primary benefit is that it can be done more quickly and is less costly than a formal bankruptcy. The process can also remain private, thus mitigating the disruption to the operations of the business related to the bankruptcy's negative publicity. For example, one risk of declaring formal bankruptcy is that vendors will require immediate cash on delivery and stop accepting delayed payments, creating even more stress on the distressed company.
- However, because out of court restructurings require all creditors to agree to changes, it's difficult to get consensus the more parties involved (i.e., leading to holdout problems). In addition, access to debtor in possession (DIP) financing is unavailable, as it's usually difficult to convince new lenders to provide fresh capital without the lender protections that only bankruptcy can provide.

In-Court Restructuring

- Through an in-court process (bankruptcy), a judge oversees the process and is the only way changes to (and outright rejections) contracts like leases, pensions, and debt agreements can be imposed on creditors.
- In-court restructuring addresses many of the issues associated with out of court restructuring by providing protection from creditors who are owed payments ("automatic stay"), addressing the holdout problem by lumping various creditors into various classes and paying all members of the same classes their pro rata share of the recovery, and empowering a judge to reject or modify specific unfavorable contracts
- The distressed company is given access to debtor-in-possession (DIP) financing. DIP lenders are protected via priority (sometimes "super-priority") status.

Out of Court Restructuring	In-Court Restructuring
If successful, an out-of-court restructuring far less expensive than in-court bankruptcy.	Legal fees can drain cash from the business at a critical time when liquidity is a major concern.
Historically, out of court restructurings have been much quicker than in-court bankruptcy processes.	The process can take years, but "pre-packs" have accelerated the timeline as the restructuring plan is agreed upon by all parties before a formal declaration.
The process can remain private and create less disruption to the operations of the business.	All creditor claims, lists of company assets, liabilities, and recoveries are publicly disclosed.
Creditors can continue collection efforts, eviction proceedings, etc.	The company gets an "automatic stay," temporarily protecting the debtor from creditors.
Suffers from the holdout problem, as reaching a consensus with many parties is difficult.	Recoveries agreed to as part of the plan applies to the entire class.
No access to financing as lenders don't want to lend to distressed businesses without the protection afforded to them in a bankruptcy.	Debtor-in-possession (DIP) financing becomes available, which is only an option for companies that filed for bankruptcy protection under Chapter 11.
Leases and contracts cannot be nullified (i.e., reject or reassign leases and contracts).	Non-financial liabilities such as pensions, unfavorable leases, and contracts can be rejected.

What is the purpose of the automatic stay provision?

The automatic stay provision in Chapter 11 temporarily prohibits creditors (e.g., lenders, collection agencies, government entities) from attempting to collect owed claims through legal action. This injunction halts debt collectors' ability to affect the company that has declared bankruptcy negatively. Importantly, the automatic stay provision is designed to enable the company to continue to operate.

The timing of the petition is important as it creates a distinct line between "pre-petition" vs. "post-petition," which prevents creditors from collecting pre-petition claims without approval of the court beforehand.

Liabilities incurred pre-petition are subject to compromise, whereas post-petition liabilities receive admin status priority treatment over pre-petition liabilities.

Which claim holders get priority in a bankruptcy?

1. Creditors with secured claims (i.e., claims secured by liens on a company's assets) have priority in a bankruptcy and usually get the highest recoveries. However, if new debtor-in-possession (DIP) financing has been approved by the Court and put in place, these claims will have a "super-priority" status, even higher than regular secured claims.
2. Below secured claims are administrative claims. These are usually legal, advisory, and other professional fees accruing as part of the bankruptcy process. For the bankruptcy process to function, these claims must be given a higher priority over other unsecured claims.
3. Below secured claims are the unsecured claims. Unsecured claims include all the bondholders and trade claims. As a group, they're called the general unsecured claims ("GUCs"). GUCs are typically the trade creditors and unsecured lenders.
4. There are some unsecured claims to whom the court grants priority over the GUCs. These claims may include accrued employee salaries and taxes owed.
5. Any value remaining after all these claims are satisfied belongs to equity holders. But often there won't be enough assets to make all other claims whole, so existing equity usually gets wiped out in a bankruptcy.

To recap, the waterfall structure is: "Super Priority" Claims → Secured Prepetition → Administrative Claims → Priority Unsecured → General Unsecured Claims (GUCs) → Preferred & Common Equity

Following a bankruptcy filing, will the management team be replaced or remain on board?

In most cases, the same management team will stay in place post-petition. The exception would be if there was proven fraud or any type of misconduct that warrants replacement. Otherwise, the existing management should manage day-to-day operations to turn things around as the management team is the one that likely made the poor decisions that led to this current situation. Thus, they understand where they went wrong and why better than anyone else. But to provide further support (or as an "insurance policy"), often an outside consultant that specializes in turnaround restructuring will be brought on.

In Chapter 11, under which circumstances might a Court appoint a trustee to replace the existing CEO?

In some cases, a court-appointed trustee will displace the management team that placed the company in its current state of financial distress. While this is a less than ideal situation, as more time is required to become familiarized with the company, the Chapter 11 trustee will become in charge of day-to-day operations if deemed appropriate. This appointment of a trustee would be made under two justifications: 1) the management team participated in fraudulent behavior, dishonesty to stakeholders, or criminal misconduct, or 2) the Court has determined it's in the "best interests" of the company and all stakeholders for the current management to be replaced. This is a less objective decision that would usually be based on signs of gross mismanagement (beyond the typical level) and mistrust from all stakeholders.

Can a decline in a company's share price and valuation cause it to become distressed?

By itself, a decline in a company's share price and valuation cannot lead to the company becoming distressed. But the decline reflects the market's anticipation of the company becoming distressed, which may be justified. If the company can continue making its debt-related payments and not breach any covenants, it should continue to operate. A side impact of this negative market perception can be suppliers, vendors, and customers' reluctance to continue working with the company, and the increased difficulty of raising additional capital.

From an advisory standpoint, what are the two sides to a restructuring deal?

A restructuring (Rx) banker can advise the creditor side or the debtor in a restructuring deal.

- **Creditor Side:** The creditor side refers to the loan or bondholders. Rx creditor mandates often involve working alongside many holders of debts within a certain class that have banded together. The more parties involved on the creditor side, the longer coming to a formal agreement will take. On this side, the Rx banker advises creditors/lenders, which often includes hedge funds or private equity firms.
- **Debtor Side:** The debtor is the distressed company. Rx debtor mandates involve dealing with solely one party: the company at risk of bankruptcy unless changes aren't made soon. From this advisory role, the Rx banker gains a deep understanding of the business and works on the "turnaround."

Broadly, what are the two main types of bankruptcies?

There are two main types of bankruptcies: Chapter 7 and Chapter 11.

1. **Chapter 7:** A Chapter 7 bankruptcy refers to the pure liquidation of a distressed company in which all assets are liquidated and then disbursed to stakeholders based upon the absolute priority rule. Following the waterfall schedule, those with higher claims on company assets are made whole before any proceeds can flow down to the claim holders lower in the capital structure.
2. **Chapter 11:** During a Chapter 11 bankruptcy, a company's reorganization is overseen by the court. This process involves putting together a Plan of Reorganization (POR) to identify the impaired classes. Only those who have been classified as impaired have a say in the matter and vote on the terms. Once the POR is agreed upon, the troubled company will then re-emerge under a new capital structure.

What is a pre-pack in a bankruptcy?

A pre-packaged bankruptcy is a type of restructuring procedure where a plan is agreed upon amongst all the relevant parties before a company declares its insolvency. When Chapter 11 is filed, it's accompanied by a disclosure statement, the proposed POR, and an agreement to support the legally binding plan.

The approval will be based on meeting the sufficient number of applicable votes (~85-90% participation rate required). The process has become more common in recent years and can sometimes take as little as 45 days.

Contrast the pre-pack vs. the traditional Chapter 11.

In Chapter 11 bankruptcy, the company can either have a pre-pack or a traditional Chapter 11.

- **Pre-Pack:** A pre-pack involves a pre-planned POR that has been agreed upon by the relevant, impaired creditors before its official filing. The key stakeholders have already been working on the processes together and agreed upon a POR before entering bankruptcy – thus, as you would expect, this streamlines the process considerably and enables the company to emerge quickly from Chapter 11 in a few months.
- **Traditional Chapter 11:** In the traditional Chapter 11, the process starts from scratch and can take years to complete. There can be contention between creditors, as the process can be hectic, and not each creditor is on the same page (often called a "free-fall"). The caveat to the often inefficient, long-lasting traditional Chapter 11 is the pre-pack.

What information is contained in a plan of reorganization (POR)?

Once a debtor files for bankruptcy, the priority is an emergence from bankruptcy via an agreed-upon plan of reorganization (POR) between the company and all relevant claim holders. A POR is a document detailing what will happen to the debtor's assets, liabilities, and equity upon exit from bankruptcy. Most notably, the expected recoveries and the form of consideration for the claims are all identified in the plan of reorganization.

What are the four tests representing the minimum standards of fairness for a POR to be approved?

1. **Best Interests of Creditor Test:** Recoveries under the POR must be proven to be greater than under Chapter 7 liquidation.
2. **Good Faith Test:** POR is required to have been prepared and proposed in "good faith."
3. **Feasibility Test:** Ensures the POR will not result in further restructuring or subsequent liquidation.
4. **Consent or Cram-Down:** Even if an impaired class votes to reject the plan, the proponent may ask the court to adopt the plan despite the objection.

What type of creditor might prefer a Chapter 7 liquidation over a Chapter 11?

A secured creditor that's reasonably assured of recovering 100% under both Chapter 7 and Chapter 11 might prefer a Chapter 7 due to the process being faster. Although recoveries tend to be higher under Chapter 11, this has little relevance to the creditor since 100% recovery is expected from either option.

What role does the US Trustee have in Chapter 11 bankruptcies?

In Chapter 11 bankruptcies, the US trustee will be appointed to monitor and provide oversight on how the process is progressing. The primary responsibility of the trustee is to ensure the debtor in possession is in compliance with operating and reporting rules, as well as to supervise that all reports and documentation requests are filed on time. Overall, the US trustee protects the integrity of the bankruptcy system by overseeing the administration of the bankruptcy case and address any concerns regarding fairness from either the debtor or creditors' side.

How does valuation play a role in bankruptcies?

Valuation often plays a contentious role in bankruptcies because it's subjective but carries very real implications on the recoveries by the claim holders.

Example Bankruptcy Scenario

- Imagine a bankruptcy with \$300 million in face value secured claims, \$200 million in unsecured claims, and the POR submitted to the court by the company proposes to have the \$300 million in debt of the secured creditors reinstated. In contrast, all unsecured claims get their claims converted to equity.
- If the court assumes a value for the company's assets to be \$400 million (based on a combination of a DCF and a comps analysis), there are \$500 million in total claims against a business with a value of only \$400 million. Here, the unsecured claims get 100% of the equity, and current equity owners will get wiped out.
- That's because the equity value of the restructured company is \$100 million, and since it's less than the \$200 million unsecured claim, it must all be given to the holders of the unsecured claims (under the absolute priority rule, unsecured claims need to be made whole before equity gets anything).
- But if the court instead assumed a value of \$700 million for the company, the equity value of the restructured company is now assumed to be \$400 million (\$700 million - \$300 million). The \$200 million unsecured claims are considered to get full recovery when given only 50% of the equity (\$200 million/\$400 million), leaving the remaining 50% of equity to trickle down to the old equity.
- This example shows just how important valuation can be in deciding who gets what in a bankruptcy. Inevitably it leads to arguments about valuations, and the bankruptcy framework encourages negotiation and horse-trading between the various classes to come to an agreement.

What is the relationship between a liquidation analysis and the "best interests" test?

One of the main reasons a liquidation analysis is completed is to compare it to the recoveries received in a proposed plan of reorganization (POR). In other words, for the POR to pass the "best interests" test, it must provide greater recovery to creditors under its proposed Chapter 11 turnaround solution than a Chapter 7 liquidation. So the liquidation analysis essentially sets the floor for the recovery amount of the creditors (i.e., if the recoveries to the creditors are above this floor, the POR is in their best interests).

During Chapter 11 restructuring, what does the cash flow test require?

For a company to emerge from Chapter 11 restructuring, the cash flow test must be passed (i.e., the "feasibility test"). The cash flow test represents the debtor's projected future financial solvency under the proposed POR. In the forecast, it must be demonstrated the new capital structure post-emergence will be sustainable. Even if the plan benefits all stakeholders, the Court may reject the plan if the company will eventually have to be liquidated or require further restructuring in the foreseeable future.

The test will consist of a projection model of a company's cash flows, a debt schedule under the new capital structure and debt terms, and the ending balance of cash for each period. To receive approval, this test must show the company will remain solvent not only in the base case but even if it underperforms.

What is the absolute priority rule, and why is it important?

The absolute priority rule ("APR") is a legal principle in bankruptcy that states that nobody in a lower-priority class gets repaid until the higher priority class gets paid in full. Classes are ranked based on priority and receive recoveries in accordance with the APR, such that creditors in a claims class shall receive full recovery before any value trickles down to a lower claims class.

But in reality, the recoveries by each class deviates from the APR because unsecured creditors or equity get some recovery despite higher priority creditors not receiving 100% recovery. This occurs because claims by the lower classes can be made to hold up the process and litigation can be threatened, which further complicates the process. To prevent the potential hassle, lower classes are sometimes given partial recovery.

In bankruptcies, which class usually holds the largest claim?

Typically, the class with the largest claim will be the general unsecured claims (GUCs), which include pre-petition trade creditors (not given priority claims), unsecured lenders, and all lenders the company owes money to on an unsecured basis (e.g., accounts payable due to suppliers). This class will often include riskier investors of unsecured bonds and unsecured notes.

What does the priority unsecured class involve?

Priority unsecured receives priority over general unsecured claims. These include accrued employee salaries – these get some preference in the bankruptcy process even though they're unsecured. Other groups receive certain priorities in the bankruptcy code. For example, the government might give itself priority status if the company owes them taxes.

How would you value a distressed company?

Companies under distress are often valued both as a going concern and as a liquidated business.

- **Going Concern Approach:** The going concern valuation uses the DCF approach, usually with a higher-than-normal cost of capital assumption to reflect the added risks of investing in a company under distress. A comps analysis may also be used, but since non-distressed comparable companies are used, the multiples derived from the analysis will probably be too high.
- **Liquidation Analysis:** Companies under distress can also be valued using liquidation analysis, which looks at the value of the business as a collection of assets and estimates a liquidation value.

What is the intent of liquidation analysis?

Liquidation analysis values a company based on the assumption it'll go out of business soon, and its assets will be sold. The liquidation value will include only its tangible, physical assets such as its real estate, PP&E, and inventory, while its intangible assets are excluded. Because of the "fire-sale" nature of liquidations, the assets being sold are usually sold at a discount to their fair market value because of the necessity to collect cash within a short time period to return to lenders (and investors).

When using the traditional valuation methodologies, why might valuing a distressed and non-distressed business differ?

The key distinction is regarding the going concern assumption, as much of the total valuation will come mostly from earlier years in the forecast than the terminal value.

To calculate the terminal value (TV), the forecasted perpetuity growth assumption will be very low or may even be a negative rate. A negative perpetual growth rate implies the company will eventually progress towards liquidation each year until dissolving. If using the exit multiple approach to calculate TV, the exit multiple assumption would be on the very bottom-tier of the comparable universe.

While the standard valuation methodologies will be used, there'll be a heavy bias towards being conservative in the financial projections to account for the distressed company's current risks. For example, the discount rates used in restructuring scenarios are higher (15% to 25%+), and relative valuation will use the lower range of the multiples derived from the peer group to reflect the higher risk.

What is distressed debt?

Distressed debt refers to bonds that are trading significantly below face value (below 80 cents on the dollar is a rough benchmark) or very high spreads over LIBOR in the case of loans ($L + 1000$ is a rough benchmark). The causes of distress are usually due to an impending or a perceived need for financial restructuring, often due to operational challenges and high leverage. Often, distressed debt investors will buy the debt from the original debt holders (institutional investors, traditional banks).

Would you rather own bank debt or bonds in a bankruptcy?

That depends. Assuming the bank debt is secured, and bonds are not, the secured bank debt will get higher priority when determining recoveries. Secured creditors often get full recoveries, while unsecured creditors get only partial recovery. If neither claim is secured, in theory, they'll both be treated equally (*pari passu*).

However, there are a lot of other factors that could alter the relative recoveries.

For example, if the bonds are subordinated to other debt through an inter-creditor agreement, the bonds in question would have lower recovery.

In addition, the maturity date of the debt can influence recoveries – for example, if a sizeable chunk of bank debt principal is due prior to the bankruptcy petition date, bank debt recoveries might be higher should the company decide to make the payment.

Lastly, there's another dimension to question from the perspective of a potential investor in the bank debt vs. the bonds, which is the price. For example, let's say secured bank debt is trading at 95, while unsecured bonds are trading at 50.

If I believe the bonds will get 70 cents on the dollar as an investor, I would prefer to buy the bonds because I view them as underpriced.

How does a distressed debt investor make money?

While there are various ways that distressed debt investors make money, at a high level, distressed debt investors generate returns by investing in bonds, loans, or even trade claims that are trading below their likely recoveries. Distressed debt investors will often attempt to accumulate enough of these securities to gain influence in the negotiation with the company and affect the restructuring in a way that increases the chance of recovery in the securities they hold.

For example, a bond trading at 50 cents on the dollar implicitly reflects a market expectation of a 50% recovery.

A distressed debt investor might analyze the company's capital structure and discover that:

- A credible argument can be made to the court that a seemingly more senior claim is not, in fact, senior due to where it sits in the corporate structure or questions related to its lien
- The recovery to the bondholders would be less risky and come more swiftly if the company liquidated (Chapter 7) instead of attempting to restructure (Chapter 11) by taking on more obligations via a DIP facility and continuing to pay exorbitant bankruptcy fees
- The value of some assets has been undervalued

Here, the distressed debt investor might decide to accumulate the distressed debt at 50 and get a seat at the table to influence the judge and other creditors towards their view.

What is a fulcrum security in a restructuring?

The fulcrum security is known as the most senior security that will most likely convert into equity ownership post-restructuring. In the event of a reorganization, the fulcrum security represents the last piece of the capital structure that received partial recovery (i.e., less than par value).

Said another way, the fulcrum security's placement is the point in the capital structure in which the "value breaks." While this may be an oversimplification, the secured, senior class of creditors above the fulcrum security were in high likelihood paid in full (or compensated sufficiently), whereas all claims junior to the fulcrum security theoretically should receive nothing.

The fulcrum security is the most senior security that will not receive a full recovery; thus, it's the tier of claims most likely to convert into equity.

Since the fulcrum security is the part of the capital structure most likely to be converted into equity, the holder is in a position with the most leverage to lead the company's restructuring plan. For this reason, distressed investors focus on identifying the fulcrum security not just because it has the highest probability of converting into or receiving equity in the newly emerged company but as a strategy to have control over the new entity.

What does the phrase "debt to control" mean?

"Debt to control" is when an investor seeks to gain control over a company through bankruptcy or reorganization. Under this strategy, the investor will purchase the distressed company's senior debt and bonds at steeply discounted prices. Thereby, the investor will become a major shareholder if the company emerges from bankruptcy and debt obligations will be exchanged for newly issued equity as part of the agreement. Compared to the strategy of attempting to identify the fulcrum security and having leverage from being the priority shareholder post-emergence, this strategy is considered to be higher risk since influence over the company is obtained through becoming a major creditor of a company and then obtaining a controlling stake in the new equity. Since more capital must be invested at a higher risk, the firms that specialize in this type of investing strategy tend to be of larger scale and institutional firms that invest across the entire capital structure and different asset classes (e.g., Apollo Global), as opposed to distressed hedge funds.

What are “super-priority” claims?

“Super priority” refers to secured DIP claims that have priority over other administrative claims and usually pre-petition secured claims. This is capital that was obtained once the distressed-situation of the company was recognized. Thus, it has repayment priority over even senior debt lenders because its approval was contingent on being beneficial to all the stakeholders, as determined by the Court.

What does priming mean in restructuring financing?

Priming refers to a situation in which a lender high in the capital structure (e.g., secured loan) is superseded by another lender. Thus, priming is when a new tranche is added to the existing capital structure – but the key difference is, this tranche is higher than the others, including the senior secured lenders. In a restructuring, DIP financing gets a superior claim to all others out of Chapter 11.

What is DIP financing and why is it considered as being safe for the lender?

Debtor-in-possession financing (“DIP financing”) is a special type of financing only available to companies under distress that have already filed a bankruptcy petition. DIP financing is placed at the very top of the capital structure. Legally, this form of financing has super-priority administrative over all other existing stakeholders. In most cases, DIP financing comes from those who had previously provided loans to the company in the past. DIP financing is considered very safe for lenders due to being secured, having collateral backing, and coming with very restrictive covenants.

What conditions must be met for DIP financing to be approved?

The Court will only approve DIP financing if there's adequate collateral to protect pre-petition lenders. DIP financing that primes existing secured creditors must be deemed to make pre-petition secured creditors better off than in a liquidation. Once it has been proven not to impair the secured holders and is determined to bring enough positive benefits to the company, the DIP financing loan will help the distressed company with its business operations and reorganization.

Could you explain the purpose of the TWCF model in restructuring?

The thirteen-week cash flow model (“TWCF”) is a required submission in a bankruptcy process to track the liquidity of a company vulnerable to bankruptcy. The TWCF is used in turnaround situations once a company enters or is on the verge of becoming financially distressed.

The model provides visibility into the company's short-term liquidity to assess its options for short-term cash management. While quarterly and annual models will be created for the troubled company, the priority is to ensure the company can stay afloat in the short-term – hence, the TWCF's importance. Besides the transparency to creditors and its usage as a tool by management to make critical decisions, the TWCF is used to determine the borrowing needs during the reorganization period. If the ending cash balance falls to a level too low, a drawdown of the revolver or DIP financing will be necessary.

How does the TWCF model differ from typical financial models?

- **Cash-Based Accounting:** TWCF is a cash-basis analysis, meaning it uses cash flow accounting instead of accrual-based accounting. This direct method for cash flow accounting is more insightful for the restructuring advisors, as the real cash balance matters and represents a more accurate portrayal of the company's liquidity. The company's cash inflows/(outflows) are projected carefully in a weekly and monthly cash flow budget to provide the highest transparency level for management and creditors.
- **Weekly Rolling Forecast:** Notably, TWCF models are based on rolling forecasts and updated continuously by Rx bankers weekly, enabling granular comparisons between the projected numbers vs. the actual

numbers. The variance can also be assessed to better understand the company's financial health and the borrowing needs (DIP) during the reorganization period.

Walk me through the basic structure of a TWCF model.

1. **Operating Cash Inflows:** The operating cash receipts will first be counted, representing the company's cash collections from customers. Then, operating cash disbursements such as payroll, insurance, and inventory purchases will be deducted to arrive at operating cash inflows.
2. **Net Cash Inflows/(Outflows):** Next, non-operating disbursements such as interest payments, principal amortization, and professional fees are subtracted to calculate the period's net cash inflows/(outflows).
3. **Ending Cash Balance:** In the final step, the ending cash balance will be calculated by subtracting the net cash inflows/(outflows) calculated in the previous step from the beginning cash balance.

What is an "amend and extend" agreement?

An "amend and extend" is when the debtor has come to an agreement with the lending parties for the debt to remain in place, but with the maturity extended to a later date. In return for the extension, the cost to the borrower is usually an increased interest rate, an amendment fee, a different amortization schedule, or other newly negotiated debt terms that favor the lender.

How do you determine the value of a secured claim?

Collateralized claims are secured to the extent the pledged collateral covers the claim. If the value of the collateral is less than the claim, this shortfall is treated as unsecured. Therefore, the amount of value a secured claim has is limited to the minimum between the secured claim and the creditor's collateral value. To the extent a secured creditor has collateral worth less than its claim, this deficiency would be treated as general unsecured claims (GUCs).

The claim of a secured creditor was bifurcated into two claims. Could you explain when this might take place?

If the collateral value is greater than the claim, then the claim is fully secured. However, the secured creditor's claim being bifurcated means there was inadequate collateral. The secured claim's value will be up until the collateral value, while the other claim is unsecured and treated just like any of the other unsecured claims. Despite being secured by the debtor's collateral, secured pre-petition claims only have priority over admin and other unsecured claims to the extent of the collateral value. Therefore, if the collateral is less than the claim, the under-collateralized portion will be treated as an unsecured deficiency claim.

How does the fiduciary duty of management change during a bankruptcy?

During a bankruptcy, a shift in the management's fiduciary responsibility occurs once a company appears insolvent (or close to being so). Specifically, management's fiduciary duties must change from equity holders to creditors when the company enters the "zone of insolvency."

What does a negative pledge provision restrict a borrower from doing?

In a negative pledge provision, the borrower agrees to not pledge certain specified assets as collateral. From the perspective of the lender, prohibiting the borrower from granting a lien to an additional lender protects them from the risk of the available collateral being reduced and prevents a new creditor with higher priority. In effect, negative pledges make it more difficult for the borrower to raise debt.

What is the purpose of adequate protection?

Adequate protection limits what a firm can do with the collateral pledged and is put in place in an agreement for secured creditors to be assured their interest in the collateral assets are protected (and not sold off or damaged). The lack of adequate protection can be grounds for relief from the automatic stay, which means

creditors have the right to seize the debtor's assets or property based on the contractual terms. Thus, as long as secured creditors are adequately protected, the debtor may use the cash collateral (as well as any other assets with liens on them). The key benefit is that these adequate protection liens are granted “super-priority” status – above post-petition admin claims.

What is the main difference between liquidation done under Chapter 7 and 11?

Liquidation can occur in both Chapter 7 and 11. The key distinction is that under Chapter 7, the management team will be removed, and instead, a liquidating trustee will be appointed to oversee the bankruptcy process.

What is a plan support agreement?

Plan support agreements obligate creditors that sign it to vote for a plan consistent with the terms outlined in the agreement. These agreements reduce the overall costs and duration of bankruptcy proceedings while creating less disruption to the business and its employees/customers.

What is the difference between consent and a waiver?

Both refer to creditors giving their consent to the company breaching covenants. However, a waiver is temporary (e.g., temporary breach due to an unforeseeable event), whereas consent is permanent.

What are debentures?

Debentures (or unsecured bonds) are unsecured obligations with covenants that are much less restrictive than those of bank loans. If the troubled company undergoes bankruptcy, there are no assets the holder of the debentures can claim and are paid only once secured bondholders are compensated, assuming these lenders, which are low in the capital structure, even receive any form of compensation.

What does a sale under Section 363 of the US Bankruptcy Code involve?

A Section 363 Sale is when a distressed company sells its assets and provides a potential opportunity for buyers (often called “stalking horse bidders”) to purchase the assets at a bargain. A key feature of a 363 Sale is the stalking horse offer bid is subject to higher bid offers within a specified period and would require the Bankruptcy Court's approval beforehand. Perhaps the most significant risk to bypass in this process is an improperly conducted Section 363 Sale that fails to receive approval from the court.

Would a Section 363 Sale hurt creditors because of the loss of collateral?

The contrary would be true as the sale cannot be completed without the creditors' approval, the key stakeholders in the bankruptcy process whom the sale process should benefit above all else. Thus, a completed sale would imply that no objections were presented to the Court.

For example, if the debtor is attempting to sell an asset at a discount far below the fair value, the Court must listen to the creditors' objections before granting approval/rejection – but again, the creditors' interests carry more weight than the debtor.

In addition, 363 sales enable secured creditors to place credit bids, which can help cancel a portion of the debt amount owed by the debtor. If eligible, the secured creditor can opt to bid on the debt owed to them on which the asset is collateral (i.e., acquire the asset solely using credits and with no cash outflow).

What is credit bidding?

Credit bidding is a feature of acquisition in Chapter 11 that allows secured lenders to use their claim as acquisition currency without actually having to put up new cash (only secured claims can credit bid). Notably, credit bidding enables investors, who are often financial sponsors, to acquire secured debt from existing creditors at a discount and credit bid the full claim to purchase the underlying collateral.

What is the purpose of bondholder committees?

During an out-of-court bankruptcy, the various lending parties will often band together in a bondholder committee to negotiate with the borrowing company with more leverage.

These committees work alongside one another to increase the probability that the borrower will agree to their negotiation terms in the out-of-court restructuring scenario. If needed, the committee may hire a 3rd party Rx advisory shop to help them conduct their analysis and solidify their pitch.

Why might certain distressed funds be hesitant to join a bondholder committee?

The downside to joining a bondholder committee is the disclosure requirements – this obligation to disclose security positions is typically why certain distressed funds refuse to join a committee. Once the fund becomes a part of the committee, they must sign an agreement to disclose when they buy or sell securities.

Why does the holdout problem occur in out-of-court restructurings?

A company cannot unilaterally provide individual creditors with partial recoveries out-of-court – creditors must agree. This agreement becomes increasingly challenging to get a consensus when there are more parties involved. In these cases, especially when there are many bondholders, bondholders may calculate that if enough other creditors participate, they'll be better off not participating and insist on a full recovery. In contrast, for in-court restructuring, the recoveries agreed upon applies to the entire class.

What are administrative claims?

Otherwise known as post-petition unsecured claims, administrative claims represent the necessary costs and expenses of preserving business operations' continuance. Examples of administrative claims would include employee wages/salaries, payments for goods and services received post-petition, and professional fees (taxes, legal fees, turnaround consulting services).

Name some specific add-backs to EBITDA in the context of restructuring.

- Professional Fees (Restructuring Advisory, Accounting, Legal Fees, Turnaround Consulting)
- Employee Severance Costs
- Legal Settlement Expenses
- Inventory or PP&E Write-Downs
- Goodwill Impairments
- Uncollectible Accounts Receivable ("Bad AR")
- Gains/(Losses) on Sales of Assets and Facility Closures

What is a critical vendor motion?

A critical vendor motion is when vendors deemed "critical" receive their pre-petition claims to ensure their ongoing affiliation with the debtor. The borrower cannot operate in any capacity without this vendor. Therefore, the Court has approved the filed motion that allows the company to pay this vendor.

Courts will sometimes approve a company's request to make payments to certain critical vendors during the bankruptcy before adopting the reorganization plan – reasoning that not paying will degrade the company's value in a way that hurts the higher priority claims even further.

What is a fraudulent conveyance?

Fraudulent conveyance is when the debtor, when the company was considered to be already "insolvent," made a cash, property, or other asset transfer intending to defraud its creditors. The lienholder that claims a fraudulent transfer must prove the company was insolvent when making the sale and that the sale was made to delay or avoid its due obligation to its creditors. If successful, the lienholder can claw back some proceeds.

Give me an example of a spring forward provision.

An example of a spring forward provision would be a term loan with a longer maturity than a senior note lower in the capital structure. The term loan lending agreement could include a provision allowing the payment date to “spring forward” if a specific triggering event is met. This contingency could be based on the senior note being refinanced by a pre-specified date, the revolver being drawn too frequently or past a stipulated percentage, a credit downgrade from a rating agency, or if an upcoming debt swap offer was not accepted. The cause could also have been related to the traditional financial covenants, such as leverage ratio surpassed a certain level. In most cases, the spring forward provision will pull the maturity of the debt ~90 days earlier than when the other corresponding debt would come due.

What are voidable preferences?

Voidable preferences occur when a monetary (or asset) transfer is processed less than ~90 days before the official bankruptcy filing. This often refers to disputes where senior creditors have accused the debtor of an unwarranted payment right before declaring bankruptcy to a creditor lower in the order of payment. If the creditors making the accusation successfully prove the payment violated the waterfall schedule, the payment would thus be voided and be legally required to be returned to the rightful creditors.

What does a cramdown refer to in a restructuring scenario?

In the so-called cramdown provision, a plan of reorganization (POR) is confirmed and imposed on an impaired class that had voted to reject the plan. Despite the objections, the Court has the authority to approve a proposed plan regardless if one or more classes of creditors assert that their claims would be impaired further if the plan is confirmed.

What is an equitable subordination?

Although a rare occurrence, secured creditors should be aware of the very unfavorable scenario that the courts could unilaterally equalize all claims under certain circumstances (called “equitable subordination”). The type of situation that would invoke such an uncommon decision and is typically associated with the misconduct of secured creditors with proof of wrongdoing (i.e., “acting in bad faith”). For example, an insider could be acting on the secured creditor’s behalf to influence the debt to the detriment of other creditors.

How is a capitalization table used for restructuring purposes?

For restructuring, a capitalization table (“cap table”) will be put together and continuously updated by the Rx banker to assess the debtor’s liquidity. All the claims on the company will be listed, but with a focus on the debt securities that the company has issued. Next to each debt tranche, the maturity dates, coupon rate/pricing, credit ratings, and market price (if publicly traded) will be listed, along with the key credit metrics calculated, such as the leverage and interest coverage ratios. By assessing the maturity dates of all the looming debt maturities and the dates of the interest payments coming up, the Rx bankers can gauge the urgency of the situation regarding the company’s liquidity and need for DIP financing.

Do equity shareholders receive any form of compensation during Chapter 11s?

Theoretically, both preferred and common equity holders will get wiped out and receive nothing during Chapter 11s. This is intuitive since equity is at the bottom of the capital structure; however, equity holders are occasionally given a “tip” (or called “tipping equity”) where they’re given 1-2% of the newly reorganized company’s equity or a nominal payment.

Real Estate (REIT)

REITs are a unique type of investment. If you're interviewing at a REIT or in the Real Estate group at a Bank, make sure you read [this guide](#) before proceeding so you have a general understanding of what REITs are all about.

Do REITs pay taxes?

REITs are “pass-throughs,” meaning REIT profits are not taxed on the corporate level and instead get passed through to the shareholder who gets taxed at the individual level on the REITs' dividends.

However, one requirement for qualifying for this tax-advantaged REIT status is that at least 90% of the REIT's profits must be distributed as dividends, so a REIT can't hoard profits like a C Corp and not issue any dividends.

Also, a REIT's dividends are “non-qualified,” meaning they're taxed at the ordinary income (higher) tax rate, not the capital gains (lower) tax rate. In contrast, C-corporations have a corporate level tax, followed by another tax on dividends, but C-Corp dividends are qualified, meaning they're taxed at a lower capital gains tax.

REITs don't pay corporate-level taxes, but REITs pay property taxes on the properties they own. These taxes are included as part of direct real estate expenses on a REIT's income statement.

Walk me through the income statement of a REIT.

Primary Line Items

- On the income statement, rental income is the primary source of revenue. In addition, there may be ancillary income, such as management fees, which are included in revenue.
- Direct real estate expenses include utilities, marketing/advertising expenses, payroll, maintenance, and property taxes.
- Revenues – Direct Expenses = REITs Net Operating Income, which represents a REIT's property-level profitability.
- Next, we subtract corporate overhead, SG&A expenses, and depreciation expenses to get to GAAP operating profit. Under US GAAP, REITs usually have significant depreciation expenses from their asset-intensive nature (there's no depreciation for REITs under IFRS).
- Next, we subtract interest expense, which is usually large for REITs because REITs borrow a lot to finance their operations.
- Lastly, REITs are constantly buying and selling real estate, so there's usually significant income or loss from discontinued operations (along with gains or losses on sales) reported below net income.

What is NOI and why is it an important metric?

Net operating income (NOI) equals a REIT's rental income less property-level real estate expenses such as utilities, marketing & advertising, payroll, maintenance, and property taxes. It's a measure of profit before depreciation, corporate-level SG&A, and interest expense.

$$\text{Net Operating Income (NOI)} = \text{Rental Income} - \text{Operating Expenses}$$

The NOI is an important metric because isolates property-level profitability, enabling comparisons across different properties or portfolios of companies without the noise of corporate-level expenses or leverage.

While not the same, it's the closest thing REIT financials have to gross profit. NOI is the numerator used in the calculation of a REIT or real estate property's cap rate.

Define funds from operations (FFO) and why is it important?

Funds from operations (FFO) refers to a figure commonly used by real estate investment trusts (REITs) to measure operating performance. Assuming US GAAP, the FFO formula is shown below:

$$\text{FFO} = \text{Net Income} + \text{D\&A} - \text{Gain on Sale} + \text{Non Controlling Interest} - \text{Cash to Non Controlling Interests}$$

FFO is similar to cash from operations because it excludes things like working capital changes. Another way to think of FFO is to think of it as basically levered EBITDA, with the difference between FFO and EBITDA is that EBITDA attempts to capture profitability from operations. In contrast, FFO is levered and captures the effect of non-common equity claims against the business, such as debt, preferred shares, and non-controlling interests.

For REITs valuing properties, how do regulations differ between GAAP and IFRS?

Under IFRS, REITs must value properties as “Investment Properties,” meaning no depreciation is recognized, and instead, the properties are regularly marked to market (which is recognized as a gain on the income statement). Therefore, the bridge from IFRS net income to FFO doesn't require a depreciation add-back since there was no depreciation expense on the income statement, and the revaluation gain needs to be subtracted from IFRS net income to get to FFO.

What is the difference between FFO and AFFO?

Adjusted FFO, or Cash Available for Distribution (CAD), takes FFO and subtracts capital expenditures from FFO to get closer to free cash flow (though still missing the working capital adjustments).

$$\text{Adjusted Funds from Operations (AFFO)} = \text{FFO} + \text{Non Recurring Expenses} - \text{Capex}$$

Read More → [Funds from Operations \(FFO\)](#)

Walk me through a NAV valuation.

The most common real estate valuation is a valuation driven by the net asset value (NAV) model.

NAV Valuation Process

- 1. Value NOI-Generating Assets:** This step involves identifying the NOI generating assets from the real estate portfolio and then dividing it by a cap rate assumption that represents that cap rate for the cumulative portfolio. The cap rate assumption is the most important part of the valuation. If distinct NOIs and cap rates are available by property, region, or property type, a more detailed valuation be done.
- 2. Value Other Income Streams:** If ancillary income and management fees are not included in the NOI, these should be valued separately, which is also done by taking the income from those activities and dividing it by a cap rate assumption, which may or may not be the same as the cap rate used to value the NOI-generating real estate. In addition, any JV income should be valued separately using the same approach and added to the NAV.
- 3. Reduce NAV by Required Future Expenditures:** Next, NAV must be adjusted down by the present value of future expected capital expenditures and corporate overhead required to sustain the properties that are not included in the NOI. This is also typically done by dividing the expenditures by a cap rate assumption.
- 4. Add “Non-Operating” REIT Assets:** Any assets not already included in the NAV build up like cash and construction in progress should be added to the NAV buildup. These can be valued at book value or by applying a premium to book value (in the case of construction in progress).
- 5. Subtract Debt & Other Non-Equity Claims:** Subtract debt and other debt-like claims not yet valued – often the book value is used under the thinking that book values for these liabilities don't deviate too far from market values, but if there's reason to believe deviations exist, market values should be used.
- 6. NAV-Derived Equity Value:** The end result represents the REIT's NAV-derived equity value. This can be compared against its market cap or divided by shares outstanding to compare against its share price.

Why might the NAV be preferable to a DCF for REITs?

The NAV approach is so well suited for real estate because, unlike other industries, REIT balance sheets carry real estate assets for which there are often comparable assets with observable market values. The NAV approach recalculates a REIT's balance sheet to reflect fair market values of assets using cap rate assumptions. This is simply not feasible for most industries, so a discounted cash flow analysis is often employed instead.

What is a cap rate, and why is it important?

Capitalization rates ("cap rates") are the most common real estate multiple, which compares a measure of unlevered profitability against a property's value.

$$\text{Cap Rate} = \frac{\text{Net Operating Income (NOI)}}{\text{Property Value}}$$

For example, if a \$2 million property is generating annual NOI of \$100,000, it has a cap rate of \$100,000/\$2 million = 5.0%. It is a little different from traditional valuation multiples in that the numerator and denominator are reversed so that a high cap rate implies a low valuation (and vice versa).

All else being equal, a property with a higher cap rate relative to comparable properties suggests it's undervalued or has some combination of higher risk, lower expected future returns, or growth.

What are the most common methods for valuing REITs?

REITs Valuation Methods

- **Net Asset Value ("NAV"):** Applies to US REITs, where book values are not marked up to their FMV
- **Price to Book (P/B):** Applies to IFRS REITs because the book values reflect market value due to IFRS revaluation rules
- **Relative Valuation of REITs:** Refers to comps analysis
- **Intrinsic Value of REITs:** Used less often but can supplement the more common approaches

REIT Valuation Multiples

- **"FFO" Multiple:** FFO = Equity Value/Funds from Operations
- **"AFFO" Multiple:** AFFO = Equity Value/Adjusted Funds from Operations

Intrinsic REIT Valuation Methods

- **Dividend Discount Model (DDM):** Unlike other types of businesses, the DDM is suitable for REITs because at least 90% of a REIT's profits must be distributed to shareholders. The DDM discounts all future expected dividends using the cost of equity.
- **Discounted Cash Flow Analysis (DCF):** The traditional DCF valuation can be done for REITs as with other industries, but in practice, it's used far less often than the NAV approach.

Read More → [REIT Valuation Approaches](#)

Why is the self-storage industry known to be such a resilient performer?

The self-storage industry has been one of the most reliable, non-cyclical asset classes in real-estate. During the 2008 recession, self-storage REITs were the only real estate asset class that produced positive returns, when others such as hospitality fell 50%+. The increased urbanization has led to the recent spike in demand over the past few years in the US. Millennials are opting not to purchase homes – as shown by the decrease in new home sales. While self-storage was traditionally viewed as a place to store unneeded items that consumers were reluctant to dispose of, these facilities have become extensions of homes (i.e., extra closet space/garage).

Real Estate Private Equity (REPE)

Real Estate Private Equity (REPE) is a subset of private equity that deals with real estate assets. To learn about the recruiting process, industry, salary, main players, and career path, [read this guide](#).

What are the three methods for valuing real estate assets?

1. **Cap Rates:** $\text{Property Value} = \text{Property NOI} / \text{Market Cap Rate}$
2. **Comparables:** Similar transactions inform price per unit or per square foot valuations (and current market cap rates)
3. **Replacement Cost Method:** An investor would never purchase a property for more than it could be built.

Compare the cap rates and risk profiles for each of the main property types.

1. **Hotels:** Hotels trade at the highest cap rates because cash flow is driven by nightly stays (extremely short-term) and more operationally intensive activities like restaurants and conferences.
2. **Retail:** The creditworthiness of retail tenants is increasingly in question due to trends in e-commerce.
3. **Office:** Office sector is closely correlated to the broader economy but has longer-term leases.
4. **Industrial:** Industrial sector benefits from e-commerce trends and longer-term leases.
5. **Multifamily:** Multifamily is thought of as the safest asset class because no matter how the economy is performing, people will need a place to live.

Walk me through a basic cash flow pro forma for a real estate asset.

1. The top line is revenue, which will be primarily rental income but might include other revenue lines and almost always deduct vacancy and leasing incentives such as rent abatements and concessions.
2. Next, you subtract all operating expenses to get to NOI.
3. After NOI, you subtract any capital expenditures and account for the purchase and sale of a property – this will get you to unlevered cash flow.
4. Finally, to get from unlevered cash flow to levered cash flow, you subtract financing costs.

Describe the four main real estate investment strategies.

1. **Core Investments:** Core is the least risky and therefore targets the lowest returns. Core investments are typically newer properties in great locations with high occupancy and very creditworthy tenants.
2. **Core-Plus Investments:** Core-plus is similar to core but slightly riskier and may feature minor leasing upside or require small amounts of capital improvements. Core-plus is what most people think of when they hear “real estate investing.”
3. **Value-Add Investments:** Value-add investments are riskier deals, and risk can come from various places – substantial lease-up, an older property needing meaningful capital improvements, a tertiary location, or poor credit tenants.
4. **Opportunistic Investments:** Opportunistic is the riskiest area and therefore targets the highest returns. Opportunistic investments include new development or re-development.

If I paid \$100 million for a building and it has 75% leverage, how much does it need to sell for to double my equity?

\$125 million. With 75% leverage, you would invest \$25 million of equity and borrow \$75 million of debt. If you doubled your equity, you would get \$50 million ($\$25 \text{ million} \times 2$) of cash flow to equity and still need to pay down \$75 million of debt. $\$50 \text{ million of equity} + \$75 \text{ million of debt} = \$125 \text{ million sale price}$.

If you had two identical buildings in the same condition and right next to each other, what factors would you look at to determine which property is more valuable?

Since the physical attributes, building quality, and location are the same, I would focus on the cash flows.

- First, I would want to understand the amount of cash flow. You can determine this by looking into what average rents are in the buildings and how occupied the buildings are. Despite the same location and quality, each building's management and leasing could vary, leading to differences in rents and occupancy.
- Second, I would want to understand the riskiness of the cash flows. To assess this, I would look at the rent roll to understand tenants' creditworthiness and the term of leases.
- Lastly, the value of the properties would be looked at. The formula for value being NOI/cap rate. NOI will be informed by the cash flows amount, whereas the cap rate will be informed by the cash flows' riskiness. The property with higher cash flow and less risk will be valued higher.

Assume you purchased a property for \$1 million at a 7.5% cap rate, had 0% NOI growth throughout the holding period, and exited at the same cap rate after three years. What is your IRR?

First, we know that the NOI/Cap Rate = Value. If a property's NOI and cap rate don't change, then the value remains the same. Because there's 0% NOI growth and after three years, we are selling the property for the same 7.5% cap rate we purchased it for, we'll sell the property for \$1 million, resulting in no terminal value profit. Since there's no terminal value profit, the only profit comes from interim NOI, which is \$1 million x 7.5%, which remains constant each year. IRR is our annual return, so IRR equals our cap rate of 7.5%.

If you purchase a property for \$1 million at a 5.0% cap rate with 60% leverage and a 5.0% fixed cost of debt, what is the cash-on-cash yield?

1. First, we know that Cash-on-Cash Yield = Levered Cash Flow/Equity Invested, and Levered Cash Flow = NOI – the Cost of Debt.
2. If 60% of leverage was used, this implies \$600k of debt and \$400k of equity invested. A \$1 million purchase price at a 5.0% cap rate implies \$50k of annual NOI. \$600k of debt at a 5.0% fixed cost implies a \$30k annual cost of debt. \$50k annual NOI - \$30k annual cost of debt = \$20k of levered cash flow.
3. Lastly, \$20k levered cash flow/\$400k equity invested = 5.0% cash-on-cash yield.

Do you have any questions for me? (REPE Context)

Roles & Responsibilities Questions

- Is there a strict delineation between the acquisitions and asset management team?
- How much exposure do junior acquisition professionals get to the legal process of executing a deal?
- How much traveling is there for junior team members?

Firm Strategy Questions

- Does the firm focus on a single risk profile (core, core-plus, value-add, opportunistic) or multiple strategies?
- Does the firm only do equity investing or both debt and equity?
- Does the firm do any development or only acquisitions?

Walk me through a back-of-the-envelope multifamily real estate acquisition model.

- This type of test is usually part of its separate section of the interview. You'll have approximately ten minutes and be provided pen and paper, or with Excel, to complete a basic modeling test.
- [Read this step-by-step tutorial](#) on building a back-of-the-envelope (BoE) multifamily real estate acquisition model.

Industrials

Why have industrial manufactures shifted their focus towards the aftermarket?

Over the past decade, there has been a clear shift in industrial manufacturers becoming more service-oriented and offering more aftermarket services, an all-encompassing term that includes maintenance services, spare parts delivery, and other value-added services. The overall cyclical nature within the manufacturing industry in terms of customer demand and market maturity has led to manufacturers attempting to mitigate the risk of cyclical fluctuations by decreasing the proportion of revenue from new equipment sales.

For industrial manufacturers, achieving organic growth through new product development and sales can be a costly, capital-intensive process. Comparatively, revenue from aftermarket service is a more predictable, recurring stream of revenue. In the latest recession, those with a greater proportion of revenue coming from services fared far better compared to those that are 90%+ dependent on new manufacturing sales. While certain manufacturers have built-out their services division in-house, most industry players have chosen the path of vertical integration through increased M&A activity.

This trend has been escalated from COVID-19, as demand for new industrial equipment has declined as their end markets reduced capital spending to preserve cash (especially in the aerospace industry).

What is the trend of servitization in manufacturing?

Simply put, servitization refers to building additional revenue streams for manufacturers from providing more service offerings, rather than depending on a third party. Some of the most common services include replacing spare parts, product repairs, maintenance, overhauls, performance monitoring, and customer service.

In the past, the focus was solely on equipment manufacturing. Sales and distribution would be handed off to 3rd party equipment vendors and customers would rely on specialists for product support. Nowadays, manufacturers are selling "systems," focusing on the outcome of their products and providing the services themselves to ensure customer satisfaction. This trend is in-line with the shift towards placing greater emphasis on after-sales service operations to improve customer retention and increase margins.

Why is there such a high level of M&A activity in the industrial manufacturing space?

Historically, industrial manufacturing has been one of the most active areas for M&A because of the constant innovation in product development. This can be attributed to the highly specialized nature of the industry in which there are hundreds of niches, which all provide differentiated capabilities.

For those reasons, existing incumbents acquire companies with proven technologies and an existing customer list rather than incurring high R&D expenses to build it in-house.

Financial sponsors are active in this industry and attempt to acquire niche players to grow through add-ons and then exit to large strategics such as Honeywell, Siemens, ABB, ASSA ABLOY, and Johnson Controls.

For most of these industrial conglomerates, recent revenue growth has become almost entirely inorganic growth. Many of these financial sponsors acquire companies under the belief that there'll be buyers when they look to exit their investment.

The more specialized niches there are within an industry, the higher M&A activity will be generally.

Which valuation multiples are most often used to value companies in industrials?

The most common multiple used valuation multiple for industrials is EV/EBITDA, especially for industrial tech. EV/(EBITDA – Capex) is often used for manufacturing companies, while EV/EBITDAR can be used for the transportation and logistics segments if equipment such as the trucks are rentals.

A few more valuation multiples specific to transportation and logistics would be EV/Total Freight Tonnage, Volume, EV/Miles Driven, and EV/Average Revenue per Mile or Weight Unit.

Let's say you're looking at an industrials company. What business and industry characteristics would you first consider?

- **End Markets:** First, the customers served and their diversification will determine how cyclical the industrials company's revenue is. The relationship between the company and their customers, and how essential their products are will determine how recurring the revenue is.
- **Supply Chain:** Next, I would consider how efficient the company's processes are by looking at how many suppliers it depends on and how well integrated it appears. Other than the manufacturing process, the distribution network would need to be examined to see how much reach the company has and opportunities for expansion by selling in more channels.
- **Product Value/Upgrade Cycles:** Then, the product or service being offered should be looked at when determining how valuable the offering is and how often upgrades (or any type of recurring service such as maintenance) would be required.
- **Competitive Landscape:** Lastly, the strength of the industry's barriers to entry and how the company's products fare compared to its competitors should be examined. These two factors will directly affect the stability in the revenue generated and the pricing power of the company over its end markets.

An industrials company has shown COVID-related impaired revenue. What metric would you look at to assess the damage and predict the pace of recovery?

The metric the interviewer is looking for is the build-up of backlog (or the lack of it). Ideally, the company's backlog should have significantly increased despite the decrease in revenue. This is because many customers have delayed their projects into the future, either due to their own decision or regulations that prevent the completion of the project.

The backlog represents customer contracts that have been secured but have not yet been earned. Throughout much of Q1 and Q2 2020, the leading industrial conglomerates saw a healthy backlog and was a key talking point their management team would focus on during the earnings calls. The reason being management could point towards this pent-up backlog as evidence to back up their statement that a swift recovery would be underway going-forward. The absence of backlog or lagging growth compared to its competitors would be viewed negatively as a sign that the company couldn't secure commitments from new customers throughout the lock-down period and/or existing customers have canceled their projects by choice or gone bankrupt.

Walk me through the stages from Industry 1.0 to Industry 4.0.

- **Industry 1.0:** Referred to as the "Industrial Revolution," this was when manufacturing moved from human labor to reliance on machines. The machines were fueled by water, steam, and coal power, and the production process became easier and faster.
- **Industry 2.0:** Often called the "Technological Revolution," this is when electrical technology entered and allowed greater production volume and more sophistication in the machines used.
- **Industry 3.0:** Known as the "Digital Revolution" and began with the early days of computers, which were massive despite the minimal computing power provided. However, this period planted the seeds for the electronics and IT infrastructure for the future stage of reliance on computer technology.
- **Industry 4.0:** This is where our society is currently at and is often described as the "Automation Revolution." Industry 4.0 is most notably characterized by the new capabilities of automation in which machines can decide and govern themselves using key innovations such as IoT, cloud computing, and big data. Other examples of developments include smart factories, sensor technology, and voice/facial recognition, to name a few.

How did Industry 4.0 help bridge the gap between OEMs and their customers?

Before the technological advancements and hyper-connectivity from Industry 4.0, the original equipment manufacturer (“OEM”) would produce replacement parts in which service contractors would then perform the planned maintenance and reactive repairs on their behalf. The result is limited visibility into the existing install base and less customer connectivity/engagement.

Industrial IoT has allowed OEMs to control uptime and monitor performance throughout the asset and service life-cycle relationship. Also, guaranteed service level agreements (SLAs) are directly put into place and enable better customer relationships.

What are some concerns surrounding Industry 4.0 that exist to this day?

- **M2M Mistrust (IoT):** Despite all the progress made in all fronts of IoT, machine-to-machine communication has its limitations in terms of reliability and has not been fully developed to have the level of performance and stability envisioned by many (i.e., 100% trust).
- **Security of Data:** The vast amount of data collection and the level of access these machines are given create concerns for IT security – especially for facilities without the most updated security infrastructures.
- **Costly Mistakes:** In manufacturing, slight mishaps or minor mistakes could be very costly and be damaging to the production process. Therefore, processes are rolled out gradually at lower volumes.

What is Industry 5.0, and what will it do for manufacturing once this next phase arrives?

The term Industry 5.0 could be best described as humans working alongside robots and smart machines. Compared to Industry 4.0, it's more about enabling humans to work efficiently with robots and machines collaboratively by leveraging new advancements in existing technologies such as IoT and big data.

Industry 5.0 is necessary because consumers demand customization in their products, and a requirement of this is the creative input from a human – this has been the driving force behind this movement of human contributions returning to manufacturing. In Industry 5.0, IoT, AI, and ML will all continue to play a significant role when handling repetitive tasks. However, humans would have increased responsibility for being the decision-maker for perception-driven design and customization.

What are co-bots, and what makes them unique?

Shorthand for “collaborative robots,” co-bots are intended to operate alongside humans. The distinction is that these co-robots and humans can safely complete tasks right next to one another in proximity, rather than a robot performing tasks and the human monitoring its performance from a safe distance.

What is the difference between customer support agreements and outcome contracts?

- **Customer Support Agreements:** A customer support agreement is an arrangement signed between the customer and service provider to outline the work, the terms and conditions surrounding its completion, and the specific costs for each type of service provided.
- **Outcome Contracts:** As its name suggests, outcome-based contracts are result-oriented and focus on their equipment quality. The contract terms and the pricing are tied to the achievement of specific, measurable performance metrics and requirements that must be met (i.e., KPI-based contracts).

What is the difference between process manufacturing and discrete manufacturing?

- **Process Manufacturing:** Process manufacturing is a production method that uses a formulaic, blending approach to producing goods (i.e., follows recipes using the ingredients and raw materials) and the type of manufacturing seen in the food, beverage, chemical, and pharmaceutical industries.

- **Discrete Manufacturing:** Discrete manufacturing is characterized by the production of lower volumes from the higher level of complexity involved. The end products are composed of identical components that could be individually counted and identified numerically (e.g., nuts, bolts, screws).

Tell me about the differences between predictive, prescriptive, and condition-based maintenance.

- **Predictive Maintenance:** Utilization of vibration, temperature, or pressure-based detection software to predict and correct asset degradation using data before the event of machine failure.
- **Prescriptive Maintenance:** Applies an additional layer of ML/AI to predictive maintenance to further improve upon the prediction accuracy and to prescribe more immediate corrective actions. Rather than predicting a potential failure alone, it comes up with specialized recommendations based on the corresponding outcomes to enhance overall efficiency.
- **Condition-Based Maintenance:** The timing of maintenance services is decided by predetermined conditions, or a certain threshold level is met. While this may sound similar to predictive maintenance, it's more about setting a contingency "rule," and to an extent, the performance deterioration may have already begun (e.g., smoke signal, less stability in temperature control, slowed cool downtime).

What are some basic unit economics for a truck transportation company you would look at to forecast revenue?

To build a revenue model for a trucking transportation company, some key historical metrics necessary first required would be the average number of shipment orders (i.e., transportation hauls) in a year, the average length of each haul in miles, and the total annual shipping revenues. Then you can back into the average revenue per mile driven. Then, to further build out the model with greater specificity, one could look at the number of clients it works with consistently, the current pipeline of shipment orders, and the number of new client contracts it could win in the years ahead. Alternatively, you could forecast the revenue on a per-driver, per-truck, or per-project basis.

What are some of the cost drivers you would look at for a truck transportation company?

The trucking industry, similar to many sub-sectors in industrials, are known for their high-cost structure.

- The most important metrics to forecast would be the costs related to the truck drivers, which includes the total number of drivers employed by the company and the compensation of the drivers (usually on a per-mile basis or hourly basis, rather than a set-base salary).
- Capex needs should then be considered, and the total number of existing trucks, the average age of the fleet of trucks, the average life-cycle of each truck, and the average annual repair costs.
- Lastly, other factors such as the sales & marketing spend (S&M), insurance costs, and rent expenses should be looked at, but these costs will not be impactful compared to the previous two.

Would you consider distribution and transportation service providers to be a low-margin business?

Historically, distribution and transportation services are known for being in the bottom-tier of margins. However, software developments such as route optimization leverage geographic information systems (GIS) to ensure the most efficient service routing should improve each transport and enable the provider to increase prices for their improved capabilities.

Other developments, such as asset location tracking, enable the real-time monitoring of parts and components through bar code/QR code scanning to improve data accuracy and more information for the client. Asset location tracking is useful for the logistics industry as it ensures the accurate identification of the inventory's location to satisfy compliance requirements if relevant (e.g., pharmaceutical drugs).

Many of these developments mentioned above serve as opportunities to improve their service offerings and differentiate themselves from competitors and improve margins.

Why does the airline industry have such low margins?

Despite providing an essential transportation service, airlines have historically suffered from razor-thin margins due to their high-fixed cost structure. The cost of purchasing new fleets is very expensive, and the constant need for fleet maintenance, repairs, and geographic footprint all cut into the margins significantly. Each airline has high variable costs (e.g., certified pilots, flight crews, key personnel, airport customer service agents, security services) to worsen the margins that have already been hampered by the highly capital-intensive nature of the industry.

Airline companies are also constrained in their ability to cut costs because of how high-stakes each expenditure is. For example, the decision to not repair a damaged plane, spend less on airline security, or reduce the number of flights could have significant reputational repercussions and wipe out a large portion of current and future bookings. There are very few costs/expenses that could be considered being “unnecessary.”

Another consideration is the competitive nature of the airline industry with various rival incumbents within the market that compete on pricing, availability of flights, and geographic reach. Therefore, airline businesses must ensure that they get their pricing strategy correct to appeal to customers, which effectively reduces their pricing power and reduces their ability to improve upon their margins.

What is the difference between fully autonomous vehicles and self-driving cars?

The terms are often used interchangeably, but a fully autonomous car would be completely self-aware and capable of making its own choices with no human supervision required (Level 5). A self-driving car can drive itself, but a human passenger is required to be ready to take control of the wheel (Level 3).

Why has the rollout of Waymo and self-driving been done at such a slow pace?

Waymo has long been considered a leading player in the self-driving technology space. Despite their head start, the project has been beset by delays and revisions to commercialization predictions. Given the regulatory challenges they face, safety has become their highest priority as their autonomous vehicles are deployed. One fatal accident could cause this venture to grind to a halt and cause reputational damage from society and mistrust in the technology being used.

What does energy management software (EMS) refer to, and what role does it play in increasing the number of so-called “smart buildings”?

Energy management software (EMS) refers to applications that track and measure energy usage, identify leakages/waste, and is the core technology that enables smart buildings. For example, EMS can enable the building owner to optimize and adjust the HVAC system, lighting controls, and energy usage based on simulation modeling and demand analysis. EMS allows the building owner to conserve energy, reduce their utility bills, and comply with sustainability regulations that depend on the city/state.

What does industrial access control involve, and what value does it provide to end-users?

Industrial access control systems manage people's entry into or out of specific areas within facilities while restricting unauthorized entry for security purposes. The mounting security concerns regarding industrial applications have created the necessity for adopting access control technologies to protect their most valuable assets. The solutions provided include a range of electronic access control devices, electronic or mechanical locks, and integrated surveillance systems to oversee the passage of people and assets through buildings and facilities. These assets protected can be tangible, in addition to intangible assets held by companies (often in

the technology vertical). Thus, industrial access control involves expensive equipment and safety hazards, but it also protects internal documents, data, and other intangibles belonging to industrial companies.

What is the difference between positive displacement pumps and centrifugal pumps?

- **Positive Displacement Pumps:** Positive displacement pumps move fluids by trapping a confined volume of the liquid and forcing this trapped amount into the discharge port's suction. The most common methods seen are rotary, reciprocating, or diaphragm pumps. The fluid movement is generated by two (or three) spindles that move in opposing directions and thus displace the liquid. A key distinction is that the flow rate will remain constant, even with a change in pressure.
- **Centrifugal Pumps:** Centrifugal pumps are used to transport fluids using the rotational energy generated by a spinning motor/engine. Once the fluid nears the impeller of the pump, the movement is accelerated. As the fluid nears this critical point, the pressure and velocity at which the fluid is pushed past the impeller increases. To summarize, centrifugal pumps pass on velocity onto the liquid to result in outlet pressure.
- **Distinction:** The primary distinction is how centrifugal pumps transmit velocity to the liquid, resulting in increased pressure for the outflow. In contrast, positive displacement pumps trap the liquid and transfer it from a suction-like discharge port. For centrifugal pumps, the pressure is first created and then flow results, but with positive displacement pumps, flow is first created, and then pressure is created.

What are the two most common types of positive displacement pumps?

1. **Reciprocating Pumps:** Based on the expansion, contraction, or reciprocating of a chamber to impact a pump's pressure to draw fluids and guide them through the discharge outlet.
 - **Diaphragm Pump:** functions similar to the human diaphragm, in which, as the diaphragm expands, the fluid is drawn into the pump and then discharged when it expands.
 - **Piston Pump:** consists of a reciprocating mechanism in which the first stroke of the pump causes suction of the fluid and the chamber of the cylinder expands, and then as the pump force reverses, the outlet opens, allowing the fluid out from the high-pressure built up.
 - **Plunger Pumps:** has an appearance similar to piston pumps, but the high-pressure seal is stationary, and a smooth cylindrical plunger slides through the seal (i.e., more suited for higher pressures). In a plunger pump, the high-pressure seal is stationary, and thus the plunger slides through the seal, allowing the pump to be used at higher pressures.
2. **Rotary Pumps:** Utilize rotating chambers that trap fluid and then transport it from the intake side to the pump's discharge side.
 - **Screw Pumps:** Uses two screws that pressurize fluids and move them in a system based on rotation against the other – the screws take in the fluid then push it out from the other side from the pressure
 - **Peristaltic Pumps:** Traps fluid in a flexible hose, and then the hose is pressurized (“pinched”) between the rollers and the inside wall of the housing – the rollers will revolve around a central axis, pushing out the fluid through the tubes and out the discharge outlet (i.e., like squeezing toothpaste)
 - **Vane Pumps:** Sliding vanes press up against the wall of the cavity when the rotor spins, creating a sealed chamber in which the fluid will be flown out
 - **Progressive Cavity Pumps:** Transfer fluids through specifically shaped cavities once the rotor spins bi-directional (i.e., corkscrew motion) and is best suited when the liquid's viscosity is high
 - **Gear Pumps:** Rigid rotating gears inside a chamber push the fluid out towards as the gears spin (“revolutions”), and the trapped fluid will be carried by the rotation and tight meshing of the gears – making these pumps well suited for high viscosity fluids

- **Lobe Pumps:** Functions similar to gear pumps, but the rotors are specifically designed to come close to touching to drive each other's movement and for items to flow through without being crushed (hence, its usage for food processing)

List a few manufacturing KPIs you would look at to measure the efficiency of a factory.

- **Throughput:** The throughput KPI measures the production capabilities of a machine, line, or plant (i.e., how much can be produced over a specified period, usually an hour or day).

$$\text{Throughput} = \frac{\text{Total Number of Units Produced}}{\text{Time}}$$

- **On-Time Delivery (OTD):** The OTD measures the percentage of orders delivered on-time – often more related to logistics performance.

$$\text{On Time Delivery (OTD)} = \frac{\text{Work Orders Delivered on Original Schedule}}{\text{Original Schedule Work Orders Due}}$$

- **Capacity Utilization:** Capacity utilization measures the proportion of potential output that's being used. The target is for the machine/factory to run close to 100% capacity as possible.

$$\text{Capacity Utilization} = \frac{\text{Actual Utilization}}{\text{Total Production Capacity}}$$

- **First Pass Yield (FPY):** The FPY KPI metric calculates the percentage of products manufactured properly to specification the first time through the process (i.e., these don't require any rework or become scrap).

$$\text{First Pass Yield Rate (FPY)} = \frac{\text{Quality Units}}{\text{Total Units Produced}}$$

- **Machine Downtime Rate:** The machine downtime rate is a basic KPI that provides a high-level view of how operations function in terms of both scheduled downtime and unscheduled downtime – a target will be set by the factory based on the scheduled downtime.

$$\text{Machine Downtime Rate} = \frac{\text{Downtime Hours}}{(\text{Downtime Hours} + \text{Operational Hours})}$$

What are some ongoing trends in the plastics industry?

- **Shift towards ESG:** The foremost trend in the plastics industry has been the increased focus on Environmental, Social, and Corporate Governance (ESG). OEMs and suppliers, whether by their own choice or due to regulations, have been assuming more sustainability responsibilities to leave a lesser impact on the environment by committing to zero-waste initiatives and the use of recycled materials.
- **Biodegradable Plastics:** One trend has been the increased usage of biodegradable plastics such as Bioresins, made from plant-based materials and thus naturally more compostable.
- **Pro-degradant Concentrates:** Another development gaining traction is conventional thermoplastics becoming more biodegradable. For example, straws are known for being very durable, which is beneficial for suppliers and consumers, but not for the environment. By having more pro-degradant concentrates added to them, these thermoplastics are becoming more eco-friendly.

What is reinforced plastic, and why are they increasingly being used?

Reinforced plastics serve as an alternative to traditional metal. Historically, the automotive industry was the leading end market; however, reinforced plastics are now gaining traction with medical, defense, and construction applications due to being lightweight yet durable with design versatility.

Most notably, carbon, glass, metal, and graphite-reinforced based plastics have been embraced as substitutes.

What impact will the trend of electric vehicles (EVs) have on the polymer market?

The imminent shift towards electric vehicles, led by Tesla, is expected to impact global polymer demand positively. Automakers prefer polymers over traditional metals to develop lighter, more energy-efficient electric vehicles. These lightweight materials not only make the vehicle conserve more energy, but they enhance the design and are manufacturable (i.e., easily molded and more versatile) for engineers. Using plastics in the automotive industry has been around for decades, but with different requirements and newer developments (e.g., smaller, more compact) in plastics, the role polymers play will become more significant as the industry finds more ways to use them.

For instance, advanced polymers such as polyphthalamide (PPA) and polyamide (PA) are expected to be the materials of choice as they can better endure the higher temperatures associated with the internal systems in EVs and support their new technologies (e.g., sensors, monitors).

What is additive manufacturing, and what benefits does it provide?

Additive manufacturing (AM), also known as 3D printing, is a technological advancement in industrial production that enables the efficient creation of lighter yet durable parts and systems through layering. AM uses computer-aided-design (CAD) and 3D object scanners to create a customizable, precise product quickly without a deterioration in quality despite the reduced cycle time.

However, the term “rapid prototyping” has become closely aligned with AM, as that’s been its primary use case so far. While the turnaround times are short (~1-2 weeks), only low-volume production runs can be performed at once. Despite the promise shown, most of the work done has been for designing and prototyping relatively small plastic parts or components.

What are the differences between injection molding and urethane casting?

- **Injection Molding:** In injection molding, the molded product is created by injecting molten plastic materials into a mold and then cooling and sliding them. The cavity comes together with the core to form a void into which the melted plastic is injected to form the plastic part (i.e., to fill the “cavities”).
- **Urethane Casting:** During urethane casting, the cavity in the silicone mold forms the cavity by pouring the liquid (the “cured silicone”) around a master pattern (the design model for the end parts to be made). Injection modeling is better suited for higher temperatures and thousands of part production cycles per day (therefore used for mass production at lower costs).
- **Distinction:** A silicone mold is not durable enough to last for high volume production but can be produced more quickly than injection molding – thus, it’s more commonly used for prototype manufacturing. In terms of part quality, both methods can produce robust parts that have better durability and impact resistance than those produced by additive manufacturing. The deciding factor comes down to the volume being produced and the stage at which the product development is.

How does a maritime/shipping company generate revenue?

A maritime/shipping company either owns or operates vessels that service the global commodity (crude/refined oil, coal, iron ore) and trade markets. A shipping company earns daily rental rate voyages secured with a counterparty such as oil majors, commodity mining companies, and finished goods suppliers.

The agreements can be for extended voyages (time charters and bareboat) or short voyages (spot charters):

1. **Time Charter:** A time charter contract defines a fixed daily rate over a defined period, usually one to three years. This provides a predictable and defined revenue stream for the shipping company for a specified period. In time charters, the charterer (e.g., the counterparty like an oil major) usually pays voyage expenses (such as port and fuel costs for the vessel).

2. **Bareboat Charter:** A bareboat charter is a long-term time charter, typically lasting longer than five years. As the name implies, the charterer gets a bareboat in bareboat charters and covers virtually all expenses tied to operating the ship, including the vessel fuel, bunkers, port dues, and vessel operating expenses (e.g., day-to-day operations, maintenance, crewing, and insurance). The vessel owner receives daily charter hire payments and is responsible only for the vessel's capital costs.
3. **Short Voyages (Spot Charter):** While the time and bareboat charters provide the shipping company with a long-term fixed payment, spot charters are based on a fixed daily rate (usually based on the weight of cargo) for a specific journey from a loading port to a discharge port. Spot charters are usually much shorter than time charters, lasting 90-120 days, as the term is specifically tied to a small defined number of voyages. In contrast to long-term or bareboat charters, spot charters are a relatively more volatile source of revenue since the daily rental rate is agreed upon based on the marketplace's current dynamics and could change. In addition, unlike longer time or bareboat charter, the shipping company usually covers voyager expenses such as port and fuel costs, which drive the daily rate higher. From the charterer's perspective, spot charters are full-service short-term rentals, while a time charter is typically a one to three-year lease where the charterer has some responsibility to cover expenses. The bareboat charter is a long-term lease where the charterer is almost like an owner, covering all expenses and getting a no-frills empty boat.

How do the financials of a maritime/shipping company differ from a traditional company?

A maritime company's financials are similar to those in other industries, but there are a few differences.

- First, depreciation and amortization are typically separately identified on the income statement, whereas in other industries, these line items are usually baked within operating expenses like COGS, SG&A, or R&D expense. Here, it's relatively easy to derive a top-down EBITDA, but you would need to remove the effect of non-recurring charges, if applicable.
- Second, taxes are minimal to non-existent because companies are typically domiciled in "tax havens" where they're exempt from federal taxes. However, if there are specific jurisdictional taxes related to transportation income that the company has to pay, they'll show up on the income statement. For example, various jurisdictions (like the US) change a tonnage tax on the amount of cargo freighted within their territories.

Walk me through a shipping company's income statement.

A shipping company's income statement is typically broken down by revenue and operating and non-operating expenses. Revenues are typically generated from various activities (i.e., time charter revenue, spot charter revenue, or pooled charter revenue) and adjusted for ownership percentages.

The operating expenses of a shipping company typically consist of:

- **Voyage Expenses:** Port and fuel costs and transport taxes in certain applicable jurisdictions.
- **Vessel Operating Expenses:** Crew costs, provisions, deck and engine stores, lubricating oil, insurance, maintenance, and repairs incurred.
- **G&A:** Salaries, legal costs, and stock-based compensation.
- **D&A:** Related to newly acquired vessels and other fixed assets.
- **Other Expenses:** FX gains or losses and goodwill impairment are captured here as well.

Then, non-operating expenses will consist of net interest expense and other expenses.

Walk me through a shipping company's balance sheet.

- **Assets:** For a shipping company, the vessels and vessels under construction comprise the largest assets on the balance sheet, along with cash and cash equivalents.

- **Liabilities:** Current and long-term debt represents the largest liabilities. A key characteristic to be aware of is that shipping companies carry little to no working capital.
- **Equity:** Consists of common stock and treasury stock, preferred stock, retained earnings, and other comprehensive income.

How do you value a shipping company?

The most common valuation models employed to value a shipping company include:

- Net Asset Value (NAV)
- Enterprise Value Multiples (e.g., EV/EBITDA, EV/EBIT)
- Equity Value Multiples (e.g., Price to Cash Flow, Price/NAV)

Walk me through a NAV valuation for a shipping company.

The most common maritime valuation is the net asset value (NAV) model, which involves:

1. **Value EBITDA-Generating Assets:** This part refers to valuing the vessels. The market values of vessels are readily available in industry trade journals based on selling/purchasing activity in the vessel marketplace. To value vessels, start by computing the actual steel value based on market benchmarks, which will represent the bulk of the valuation. Then, analysts typically conduct a discounted cash flow analysis on a company's future time-charter profile by calculating the difference between the daily rate fixed on each vessel and the forward curve of expected time charter rates, as published in industry trade journals. The typical WACC used is 10%, but the PV of the embedded contract value is added to the steel value to obtain a "charter adjusted" value per vessel. This represents the "enterprise value" based solely on vessel value.
2. **Subtract Debt & Other Non-Equity Claims Not Yet Valued:** When subtracting debt and debt-like claims, the book value is often used under the thinking that book values for these liabilities don't deviate too far from the market values. But if there's reason to believe deviations exist, market values should be used.
3. **Add Non-Operating Assets:** Any non-operating assets not already included in the NAV build up like cash and construction in progress should be added to the NAV buildup. These can be valued at book value or the projected market value in the case of construction in progress.
4. **Ending Valuation:** The resulting value represents the NAV-derived equity value of the shipping company. This can be compared against the company's market cap or divided by shares outstanding to compare against the shipping company's current share price to calculate Price/NAV. A company trading at a premium to NAV is a positive for stock price performance.

Why might the NAV be preferable to a DCF for shipping companies?

The NAV approach is suited for shipping companies because, unlike other industries, shipping company balance sheets carry real assets for which there are often comparable assets with observable market values. The NAV approach is essentially recalculating a shipping company's balance sheet to reflect fair market values of assets. This is simply not a feasible option for most industries, which is why a discounted cash flow analysis is often employed for them instead.

What are some factors that may affect the valuation of a shipping company?

Valuation is influenced by Daily Revenue, Charter Rates, and Vessel Asset Values.

These are influenced by two factors:

1. The supply and demand of the underlying commodities being shipped
2. The supply and demand of actual vessels

Supply and demand dynamics of the underlying commodity and/or products being transported:

- Crude oil and refined oil product markets
- Liquefied natural gas (LNG) markets
- Dry bulk commodities such as coal, iron ore, and grain
- Global freight transport through containerships
- Supply and demand dynamics of existing vessels “on the water” and vessels currently being built (i.e., “on the global order book”)

Ships typically take 18 months to construct, and there typically is a frenzy of oversupply in the marketplace when underlying commodity demand is strong, which produces a supply lag, and makes timing (i.e., when the vessel owner bought, constructed, and finally deployed the vessel on voyages) a crucial element in this space.

In the years leading up to the financial crisis, there was a major uptick in ship orders that increased the order backlog, and once those ships were ready to be deployed, the financial crisis hit, and ships were left idling “on-the-water” and were also for lack of a better term, financially underwater.

Oil & Gas (O&G)

What are the three major subsectors that make up O&G? Tell me a bit about each.

1. **Upstream:** Upstream consists of Exploration and Production (E&P) companies and Oil-Field Service (OFS) companies. OFS companies run drilling rigs and prepare seismic and geological/geophysical data to support E&Ps, which actually end up producing the oil and gas for sale.
2. **Midstream:** Midstream companies are primarily involved in the transportation (pipelines, rail, etc.) and storage of hydrocarbons (crude and refined product terminals, gas, and NGL storage facilities). Processing gas into natural gas liquids is also considered midstream, unlike the refining of crude.
3. **Downstream:** Downstream refers to refining crude into motor gasoline ("mogas"), distillates, and others.

How do you value each of the subsectors of O&G?

- OFS and refining are typically valued similarly to the standard company: EV/EBITDA, P/E.
- Midstream might be valued on an EV/EBITDA basis, but it's complicated because many midstream companies are organized as Master Limited Partnership (MLPs) and pay Incentive Distribution Rights (IDRs) to the General Partner. The "GP burden" should be included as part of Net Debt in the numerator of EV/EBITDA. Otherwise, midstream companies are valued using a dividend discount model (or distribution discount model for MLPs).
- While E&Ps can be looked at on an EV/EBITDA or EV/EBITDAX basis, the predominant way of valuing E&Ps is via a Net Asset Value Model. Essentially, it's a long-term DCF (30+ years into the future) where the E&P's reserves are depleted to zero, and cash flows are calculated over that long-term time frame. You would then include any balance sheet adjustments (net debt, non-operating assets, asset retirement obligations, hedge assets/liabilities, and G&A costs).

Name a few O&G industry specific multiples beyond the typical multiples.

- **EV/EBITDAX:** EBITDAX consists of an adjustment to EBITDA by adding back exploration expenses for successful efforts companies.
- **EV/DACF:** DCF is an abbreviation for debt-adjusted cash flow, calculated as cash from operations plus after-tax interest expense (could be before or after working capital changes).
- **EV/Daily Production:** This calculation results in a dollar figure and the denominator is based on either BOE or CFE production (aka EV/flowing barrel).
- **EV/Reserves:** In the US, this is usually calculated off of Proved Reserves, so it would technically be EV/1P. Canadian IFRS allows proved + probable reserves in filings, so the calculation would be EV/2P.
- **Acreage Value:** On many transactions, the most valuable asset may be undeveloped acreage. Say a Permian Basin operator acquires an operator nearby: it'll be worth some amount for its current production (flowing production), but a lot of the purchase price is the undeveloped acreage (for the Permian, you may see prices for \$30,000/acre up to over \$60,000/acre, but note that each region has different metrics).

Describe the difference between full cost accounting and successful efforts accounting for E&Ps, and then the impact on the income statements and balance sheets of identical companies.

There are a few major differences between the two:

- Successful efforts accounting expenses geological/geophysical (G&G) costs as they're incurred and expensing exploratory dry holes immediately.
- Development dry holes are still capitalized under successful efforts.
- Full cost companies capitalize G&G costs, as well as capitalize exploratory dry holes.

Assuming the companies are identical, successful efforts will show lower initial profits since they're expensing both G&G and exploratory dry holes immediately. However, in later years, full cost companies should show lower profits since both exploratory dry holes and G&G costs are capitalized (making DD&A higher, as well as a greater likelihood of an impairment/write-down).

Describe the characteristics that make O&G different from more traditional industries, such as consumer staples.

- **Commodity Pricing:** O&G companies are "price-takers" and have little control in pricing (indirect control based on hedging policy and where to sell production).
- **Depleting Assets:** Oil/Gas fields suffer from a natural decline element, so companies must continuously drill to offset this decline.
- **Asset Intensive:** In an M&A environment, there should be little to no Goodwill recognized as Upstream/Midstream/Downstream assets are all easily identifiable.
- **Cyclical:** O&G goes through severe boom and bust moments, so it's difficult to predict.
- **SFAS 69:** An unique aspect for E&Ps is that they're required to value their E&P operations per SFAS 69.

For oil & gas companies, what is the SMOG disclosure requirement?

SFAS 69 requires the public disclosure of a standardized measure of discounted future cash flows from proved oil and gas reserves quantities – this is often referred to as the standardized measure of oil and gas, or SMOG.

The SMOG has several limitations because it uses historical pricing and historical costs (which cannot be escalated), excludes hedging and G&A, and companies are required to use a 10% discount rate. Companies can only value Proved Reserves and don't include any non-E&P assets like midstream or refining assets.

Describe the different categories of reserves.

- **Proved Reserves (1P):** 90% chance that the indicated reserve is there or larger
- **Probable Reserves (1P+Probable Reserves=2P):** 50% chance the probable reserves are there or larger
- **Possible Reserves (2P+Possible Reserves=3P):** 10% chance the possible reserves are there or larger

For reserves, how do 10-Ks under GAAP differ from IFRS filings?

Official GAAP filings (10-Ks) only allow Proved reserves to be shown (non-official reports like Investor Relations may show 3P reserves); IFRS allows companies to show 2P reserves.

What are some differences between the financial statements for an E&P company vs. a regular company?

- Realized and/or unrealized gains on hedges
- Instead of D&A, E&P companies show DD&A (depletion, depreciation & amortization)
- Asset retirement obligations are common (essentially environment remediation when it comes time to plug and abandon a well or wells)
- Exploration expense: shown for successful efforts since these companies expense exploratory dry holes and G&G costs

What are some metrics that would be looked at in an O&G M&A model?

- Aside from accretion/dilution to EPS (for the most part, only applicable to large companies), the focus would be accretion or dilution to NAV.
- Debt-adjusted per share growth refers to production growth that excludes capital structure (i.e., neutral to how the company is financed). Typically, debt would be converted to shares assuming a quarter-end share price for this calculation. This metric allows comparison between companies that use debt vs. equity to finance operations.

- Reserves to Production ratio (R/P) is calculated as the reserves at the end of the year divided by the production during that year. Quick metric to determine how many years of proved reserves are left.
- Production replacement ratios: Ideally, a company can replace its production. Defined as new reserves divided by production. New reserves may or may not include acquisitions of reserves. It's better for a company to find its own reserves vs. acquiring reserves.
- F&D stands for finding and development costs, and its calculation is similar to Production Replacement ratios (except it's in dollars rather than percentages). The numerator is based on a company's total costs (whether capitalized or expensed) divided by new reserves. It can also be calculated by excluding acquisitions in the numerator and excluding reserves from purchases in the numerator.

Would an E&P company be a good candidate for an LBO? Why or why not?

No, due to the lack of control over prices and unpredictable cash flows, an E&P company would not be an ideal candidate for an LBO.

What are IDCs, and what type of companies can use them?

IDCs stand for intangible drilling costs, which can be immediately expensed for tax purposes for non-integrated companies (lack of refining, for simplicity).

What is the energy equivalency between a barrel of oil and natural gas in cubic feet?

One barrel of oil has the energy equivalence of approximately 6,000 cubic feet of gas (6 mcf). Using that relationship, you could convert back and forth between a barrel of oil equivalent (BOE) and an mcf (thousand cubic feet equivalent).

Behavioral Questions

Behavioral Section Introduction

While the focus of this guide is on the technical portion of the interview, we wanted to leave you with some guidance on how to navigate behavioral questions.

A candidate can possess all the technical knowledge in the world yet still fail to receive an offer if they neglected the qualitative requirements when firms give out offers. These non-technical questions are where you have an opportunity to demonstrate that you're someone who possesses the self-awareness and emotional intelligence to handle the rigors of investment banking.

Broadly, there are four categories of behavioral questions:



Personal



Firm Specific



Experience



Elevator Test

1. Personal Background Questions

The first category entails questions regarding your “story.” These questions are received right at the beginning of an interview and are an opportunity for you to introduce yourself formally. These types of questions are predictable, yet arguably, the most important part of the interview, as your answers to these questions will set the tone for the rest of the interview.

What interviewers are looking for are candidates that appear hardworking and more importantly, have a track record of success. This is the purpose of your resume and why it's so important for recruiting.

Your resume should highlight your list of past accomplishments because they're proof that you're capable of doing the job and have been committed to working towards this goal for a long period.

2. Firm Specific Questions

The next category of questions should convey your interest in joining the specific firm. The interviewer wants to assess how much you know about the firm and what they do and understand why you want to join this firm.

There are two types of candidates: those that understand the role they're applying for (and the firm's background) and those who applied to every firm they could find.

It should go without saying which type you need to be. Not understanding the tasks you'll be responsible for on a day-to-day basis and not even knowing the firm's basic background is one of the fastest ways to remove yourself from the list of potential candidates.

3. Past Experiences & Situational Questions

Considering the interviewer will have your resume on hand, expect to be asked to expand upon your past work and leadership experiences.

However, you're not being asked to regurgitate the bullet points on your resume. The interviewer knows how to read. Instead, this series of questions is based on two core questions:

- How have your experiences prepared you for this position?
- Does this candidate have the right personality and decision-making skills required to perform well?

The interviewer doesn't want a laundry list of tasks you have done, as he/she can already see the type of work involved in your internships/leadership experience. Instead, the question is asked to understand better why you believe that your past experiences apply to the position you're interviewing for and how this will make you a more suitable candidate.

Included in this section are situational questions, which are an extension of the questions regarding your experiences. But rather than asking what you did in the past, these questions are asked in a more hypothetical format to see how you would react in specific situations. However, you should still try your best to tie your responses back to a past (or similar) experience.

For example, if you're asked how you would react to a rude, passive-aggressive employee – most likely, you'll not have a direct experience that you can bring up as an example. Instead, you can talk about non-work related past interactions with these people and how you reacted and connect the similarities. These types of questions allow the interviewer to gain insight into how you would react in specific circumstances on the job (e.g., stress, workplace conflict) and how you approach problem-solving.

4. Elevator Test Questions

The last category of questions refers to your interviewer trying to determine whether you're someone they could see themselves working alongside for 60+ hours each week.

These types of questions test your soft skills more than anything and your ability to find a mutual connection or interest with the interviewer, or at the very least, casually converse with them.

From the perspective of the interviewer, they're asking themselves:

- If I ran into this person on the elevator, would it be a conversational or an awkward encounter?
- Would I want to grab a drink with this person outside of work hours?
- Does this person have an interesting life outside of work?

Behavioral Interview Advice

But before we dig deeper into each section of behavioral questions, we would like to provide some more guidance on how to approach answering these questions to increase the odds of leaving a good impression and receiving an offer. This section is a continuation of the interview advice provided at the beginning of the guide, but pertains more to the interview's social aspect rather than the technical portion.

Relax, and Just Be Conversational



Right from the onset of an interview, your goal should be to **turn the interview into a casual conversation** with friendly back-and-forth dialogue. For this reason, the initial impression you leave while shaking the interviewer's hand and answering the first question (i.e., "Tell me about yourself") is essential because it conveys your ability to fit into the culture. You must begin the interview on the right foot and immediately come across as someone personable, as it's very difficult to recover from a bad first impression.

Firms are not only looking for intelligent, hardworking candidates. They're also searching for candidates that are easy to communicate with and fit in well with the firm's culture.

For starters, avoid stepping into an interview room under the mindset that you're about to get interrogated, as your nervousness will unquestionably be visible in your body language and speech. Instead, view this as a conversation between two professionals: a young professional and a more experienced professional that could become a potential mentor. Doing so will put you in the right mentality – this interview is an opportunity to progress in your career, take some pressure off yourself.

Remember, the person sitting across from you was once a college student (maybe even just a few years ago) and understands exactly what it was like to be in your shoes. However, we'll emphasize that you must strike the right balance between sounding professional without coming across as overly casual.

Structure Your Answers



While this may come across as common sense, **take the time to think before you speak**.

All of your responses should be well-thought-out and reflect that you can speak in coherent sentences and in a professional manner. There is no rush to get your words out. If you need to, take the time to pause and think before answering the question. A brief moment of silence is far better than saying something that you'll regret later.

Not being rushed in your speech or fumbling over words shows the interviewer that you can handle pressure, which positively affects their perception of you as a viable candidate.

If you feel yourself becoming tense or panicking, take a moment to calm your breath down and remind yourself to articulate your words clearly, as it's common for interviewees to unknowingly mumble and lower the volume of their voice when nervous. As you face the questioning, appear patient and relaxed.

And always remember the rule of **"show, don't tell."** Let your past achievements and experiences speak for themselves. The interviewer wants anecdotal evidence from your past in your responses and to hear some exciting stories, not a list of adjectives.

The most commonly referenced approach to answering interview questions is the "STAR" method. We recommend following a similar approach to give a well-rounded, effective answer that touches all bases.

- **Situation:** Provide a contextual overview for the interviewer
- **Task:** Explain what responsibility you were tasked with (or the problem you had to solve)

- **Action:** Describe the specific thought-process behind the action you took (i.e., consideration factors)
- **Result:** Discuss the outcome and how everything panned out in the end

But when you follow a framework such as the one above, it's very easy to sound "robotic" and sound like you're just reciting what you remembered. Respond to questions in a professional, concise manner – but avoid sounding overly-rehearsed.

Therefore, when you can – try your best to throw in some comments to make your answers flow better.

- **Original:** "The firm I interned with over the summer specializes in the TMT sector, and our client was a managed service IT consulting company."
- **Revised:** "The firm I interned with over the summer specializes in the TMT sector, and our client was a managed service IT consulting company – which was interesting because I noticed your firm recently closed a transaction involving one of its closest competitors."

These types of concise comments just make the conversation much more fluid. But just be aware that it can start a side conversation and make sure you don't lose track of where you're in your answer. In addition, avoid rambling in a completely different direction.

Finally, when you explain the "Result," rather than just stating the positive outcome and numbers as evidence – you should mention the lessons you learned from this experience and why this is relevant.

Focus on the Positive Aspects



For all of your responses, **frame your answers in a positive light**. This entails focusing only on the positive aspects without ever mentioning negative comments about a past employer, university, or work experience. There is always a way to spin something in a positive direction if one thinks hard enough. Many interviewers will intentionally attempt to trick you into saying something negative.

A few examples of these "baiting" questions include:

- The school you're attending is a non-target for us. Do other investment banks even recruit there?
- I see you majored in History. You regret that decision, right?
- I have a friend that worked at [firm] in the past. I heard the office culture at [firm] is terrible – how did you manage?

Recognize the interviewer is attempting to get you to agree with them and add something negative – don't fall for it. People want to spend time with and be around those that are optimistic and high energy. You would not want to work with someone that's negative all the time and constantly complaining, and the interviewer doesn't either.

Every question can be reframed as more positive. For example, if you're asked a bland question such as "What do you know about our firm?" – answer the question as if you were asked, "What particular attributes stood out to you about our firm?"

"Roll with the Punches"



Mike Tyson once said, "Everybody's got a plan until they get punched in the face." That's what a confrontational question feels like the first time you get it, and you'll almost certainly get one.

The most important part of handling these tough questions is ***not to appear rattled and remain composed***. Many interviewees fall into a spiral after a tough question and never recover for the rest of the interview, which is exactly what your interviewer is trying to screen for. This advice is similar to our recommendation on navigating questions when you don't know the answer; the difference is that these questions are intentionally phrased to assess how you respond to being provoked with negative criticism.

A few examples of these "Mike Tyson Questions" are:

- Why did you not land an internship offer last summer?
- Do you not have any other offers on the table right now? Would I be correct in assuming we are one of the few firms that even gave you an interview?
- I see that you have a 2.8 GPA. Typically, we hire 3.5 and above. What's going on?
- To be candid, this is not the strongest resume, and there are far more qualified candidates. Why should we even consider hiring you?

These questions serve two primary purposes:

1. They test whether you'll fold under pressure or handle your emotions without being offended – the interviewer knows their question was asked in an impolite manner.
2. Their comment, the minor insult they just threw at you, usually has some validity behind it – this is not just a test to see how you react. Instead, it's an opportunity to address a real concern.

The ability to not be offended and instead provide a strong, defensible answer in response is actually a great opportunity to differentiate yourself and be memorable as a candidate. The interviewer is doing you a favor by pointing out their concerns about your qualifications.

You can view these confrontational questions as "low downside, high upside" questions because the truth is: what they're questioning can often be the actual reason you're rejected (e.g., low GPA, no relevant experience, less qualified). On the bright side, an enthusiastic response that shows confidence has the potential for the firm to see past this.

Try to Differentiate Yourself



When a candidate has put in the time and effort to prepare for the interview and researched the firm and the role, it becomes very apparent to the interviewer that they're serious about joining this firm. Understand that genuine interest and desire cannot be faked, and it shows not only in the depth of your answers but in the hours you spent preparing when nobody was watching.

There should be no reason for you to be memorizing your responses to the behavioral questions if you're speaking the truth about your experiences and personal ambitions.

If you want to see this in play, the next time you have a phone interview – close your laptop. You'll be surprised by how much better the conversation will flow when you're not distracted by a screen and trying to scroll to the right page while speaking.

When you come up with or figure out something on your own, you tend to remember it more easily. For this reason, if you're struggling with behavioral questions, you've likely spent inadequate time reflecting on your past decisions or you're attempting to recite a sample response you read in an interview guide.

For technical questions, there are right and wrong answers. And regarding interview guides, interviewers know what is out there and may have even used the guides themselves. If they recognize your answer to a technical question is close to a guide's sample response, it doesn't matter because it's the correct answer. If you truly understood the concept, you can answer follow-up questions around the same topic.

However, for behavioral questions, if they recognize you're repeating answers straight from an interview guide, the interviewer will probably be chuckling inside as they listen to your rehearsed response.

If you attend a top target school (or graduated from one) with a stellar GPA and previous internship experiences, then you could probably get away with generic answers. But for most students that attend non-targets or are not on the executive board of their finance organizations on campus, the behavioral section is often the determining factor in whether or not they receive an offer. It might even be the only reason a particular candidate even has a fighting chance to receive an offer because an analyst, associate, or even a VP who helped conduct the interviews may recognize the student's name and vouch for them.

This is the reason we'll only be providing general frameworks when answering behavioral questions, other than a few exceptions.

Instead of memorizing answers written by someone else or preparing for hundreds of the same regurgitated questions with slight variations, come up with your personalized responses on your own and refine them until they can be used for whichever variation is asked. It's a complete waste of time to attempt to predict the exact phrasing of the fit-based questions that will be asked because the general themes are the same.

So when it comes to preparation for behavioral questions, just remember that ***"less is more"*** and be efficient with your time management.

Personal Background Questions

Walk me through your resume.

First impressions last; thus, this very first question is the single most important question for that reason. Your resume states the name of the school you're attending, your major, your past internships, and your GPA. So when you're asked by the interviewer to "Walk me through your resume" or similarly "Tell me about yourself," you should approach it as answering a series of "Why?" questions because it's the rationale behind each of your personal decisions they want to hear.

We recommend structuring your response based on answering these questions in this order:

1. "Why did you decide to attend the [insert university name]?"
2. "Why did you choose to major in [insert major]?"
3. "Why are you qualified for this position?" (e.g., internship experiences, extracurricular activities)
4. "Why are you sitting across from them right now?"

Then, following this general framework, tell your personal narrative that ties everything together and brings to life your past decisions and personal ambitions (and maybe even the detours along the way).

Remind yourself that you're telling your own "story" – the delivery is just as important as the substance. Thus, ensure that your story is engaging, contains just the right amount of emotion, and is intriguing to the listener.

The last thing you want to do is sound as if you're reading off a script and bore the interviewer.

Sample Response

"After graduating from high school in Basking Ridge, NJ, I decided to attend the University of Notre Dame. I chose Notre Dame because of the school's strong academics and strong athletics. Having lettered in three sports in high school all four years, I wanted a school where students pack the stadiums but also take academics seriously. Notre Dame was the perfect choice for me.

At Notre Dame, I majored in finance and was actively involved in student government as a Class Council Rep and as a Class Senator. I chose finance because I knew it would lead me to a career that was both quantitative in nature and involved significant interaction with people.

After my freshman year, I decided to enter the corporate world over the summer by starting my career at General Electric. I was an intern in GE's FP&A group, where I learned to apply the basics of accounting and valuation by helping update short-term and long-term rolling forecast models to assess profitability and risk.

The next summer, I worked at Goldman Sachs and the following summer at BAML. Such experiences were invaluable because I got a taste for what M&A is like and confirmed it was what I want to pursue after graduating. Throughout each summer analyst role, I gained experience in performing in-depth company and industry research, preparing presentation decks and other marketing materials for clients, and had the opportunity to learn how to create more complex financial models by the analysts I was tasked under.

So having been a summer analyst both at Goldman and BAML, I know for certain that investment banking is the right career path for me, and I would very much like to work for [firm name]."

Why investment banking?

When answering the question of why you're pursuing a career in investment banking, there are some key points that you should make very clear to the interviewer:

- Your decision is not based on following the group consensus because it seems to be a popular career path, prestige (i.e., status symbol, bragging rights), or just in it for the money.
- You clearly understand what the investment banking occupation entails and the type of responsibilities you'll be getting on a day-to-day basis (e.g., financial modeling, transaction support, updating deliverables).
- You believe the skills you'll get from your experience in banking are well-worth the trade-off of challenging work weeks and all the required sacrifices.

The ideal approach to answering this question is to focus on the amount of personal growth you'll achieve in terms of skill-building and the relationships you'll make with your fellow analysts while in the trenches. This shows you not only understand this is a difficult challenge but that you embrace it.

Sample Response

"Throughout my undergraduate studies, I have noticed my interests have shifted towards more analytically challenging pursuits. This past year, I have taken more quantitative classes such as Computer Science, Economics, and Accounting, and I believe that investment banking is an exciting challenge that combines my interests in critical thinking with quantitative analysis.

Specifically, banking interests me most because it presents an opportunity to develop substantive analytical skills while developing a close network of colleagues. While I understand the long hours will be difficult, it's strangely exciting to me as I look forward to the challenge and self-growth I'll get out of this experience. I have a very strong work ethic, and I am enthusiastic about this opportunity to join this firm and be involved in work that helps companies be better off strategically and financially. While I know I won't be involved in the commercial and strategic aspects of deal negotiations, being able to support that process by producing great presentations and analysis would be an incredibly rewarding experience professionally."

Why did you choose your university?

When providing the reason you picked the university you're attending, walk the interviewer through your thought process and the specific factors you considered when making your decision. If you attend a non-target, you need to be more creative and not appear to be attending a less prestigious school because you didn't receive acceptance to a better one.

Instead, you can say that you wanted to graduate with as little debt as possible as affordability was a key determinant in your final decision. You can then follow up by saying that you believed you would receive a great education at this university and make the most out of it. Because of attending this less prestigious university, you understood that you would have to put in more time and effort to have a chance at certain careers (and this should be evident in your resume). This shows your decision was well-reasoned (i.e., reduced debt burden post-graduation), and you understood that you get out of life what you put in.

The last thing you want to do is to say anything negative about your university and make excuses about how breaking into the banking industry is much more challenging as a non-target school graduate. Despite this being true, you want to show you were still confident you could accomplish your goal if you put in more time and effort. After doing so, you want to shift the question that you're answering to: "What do you enjoy most about attending your university?" Avoid just explaining your reasoning for attending your university. Instead, explain how your decision was correct, and you got what you wanted from your time in your undergraduate (e.g., relationships with friends, professors, investment club involvement, classes).

How did you first become interested in finance?

This question should be unique to your own experience, so you need to make your answer as personal to your experience as possible. How you first heard about finance doesn't have to be extraordinary, and truthfully, most stories for how people initially became interested in the field will be generic (e.g., interest in investing, running a business, entrepreneurship, recommendation of friends).

The more important part you need to emphasize is that you not only became interested in finance, but you actually went out to confirm this could be a viable career path for you through gaining relevant internship experience and joining relevant student organizations.

The amount of effort shown to confirm this is the right career path for you is what matters, as opposed to how you initially became interested. You can become interested in something quickly as those emotions come and go, but actionable steps to pursue this interest further is tangible proof of interest. Thus, change the question you're answering: "How did you become interested in finance initially, and then how did you confirm this is a viable career for your interests?" Most of your response should be based on discussing the internship positions at which you worked, networking with upperclassmen or alumni, and how you determined this is the right career path for you.

Why did you choose your major?

If you're studying finance or accounting, your response should be relatively straight-forward and it's rather unlikely you'll be asked this question (more likely to receive the question right above). Given the applicability to the career path you're pursuing, it shouldn't require much explanation of how you decided on your major. Easily, you can point towards how you were aware you would receive the base knowledge required for this position of financial accounting and basic valuation concepts. Then, follow with how you understand that most of what you do will be learned while on the job, but what you have learned in your classes still applies to the job (and then point towards specific concepts you learned during your courses).

But if you're majoring in a study unrelated to business, your response will require greater creativity. Ideally, the major should have some relevance to the role that you're pursuing. For example, if you're studying biology, you can state that you're pursuing healthcare investment banking and felt confident that you could learn what you needed on your own through self-study efforts. The focus shouldn't be on why you're majoring in a certain field, but your answer should shift towards: "Despite not majoring in finance or accounting like most, why are you still just as qualified?" The point that you understand the necessary technical knowledge should be shown through your answers to the interview's technical portion. Not being in the business school, unless it prevents you from participating in investment organizations on campus, is rarely viewed negatively. Instead, view it as a differentiating factor that you can leverage to craft a memorable narrative unique to yourself. If you do well on the technical interview and show industry knowledge, you'll be at a clear advantage against your peers that all have similar profiles and blend in together.

A follow-up question is often: "Are you majoring in [field of study] because the business school admissions rejected you?" This question will only be asked if you've shown regret in your major, and the decision was out of your control. Hence, this is the precise reason you should express no negativity when discussing your chosen major, as this is a tough question if you were rejected (i.e., putting you in a defensive position). In this situation, it's best to admit that you were not accepted and then move the conversation to how you didn't allow this temporary failure to demotivate you or lessen your passion for this career path. Instead, it motivated you even further as it meant that you would have to learn the material on your own and put in more effort.

How has your undergraduate experience been so far?

This should be a straightforward question to answer and a bit of a softball. Start by stating how you have enjoyed your time in university and mention all the positives of attending the educational institution in which you're currently enrolled. Try to bring up what distinguishes the school, what you have learned since first entering as a freshman, and how you look forward to the future.

Base your answer around answering the question of: What will you remember most about your time as an undergraduate student? Avoid over-thinking the question. If you have nothing notable to talk about – just bring up classes you enjoyed to date, the professors you connected very well with, the friends you have made through your involvement in student activities on campus, or anything somewhat memorable.

What types of activities are you involved in on-campus?

Ideally, have some level of involvement in a student-run organization on campus. If not, you're at a clear disadvantage as many campus recruiting teams gun specifically for the executive board, especially at non-targets. The reason is that recruitment teams will attempt to maintain close relations with universities, and connections to the executive board are useful for the firm's future recruiting efforts and marketability. Often, the recruiting teams will reach out to campus representatives specifically for the executive board's resumes (or a handful of recommended active members). At a bare minimum, you should at least be an active member of one finance-related club, even if you're not on the executive board or actively participating. Regardless, portray yourself as having responsibilities other than your personal life and classes. This means that if you're not too involved with a student organization, just claim that you're a member but not too active and then quickly change the question you're answering to: What activities do you do outside of school and your personal life? Then you can open up the conversation to internships you have held throughout the academic school year (this would be the ideal response if it's an option) or jobs that you work to help support yourself financially.

If a question cannot be answered in a way that makes you stand out as a candidate, change the topic and adjust the question that you're answering. You should have noticed by now that this is a recurring theme in how we recommend approaching fit questions. Remember, this is a conversation, so minor deviations from the initial question are normal. You can (and should) use this to your advantage in behavioral questions, as unlike technical questions, there's no "right" answer per se.

Why should we hire you?

The way you should interpret this question is: "Given all the qualified candidates we are interviewing, why should we hire you specifically?" Imagine how the typical candidate, your competition, would respond to this question and avoid answering in that same generic manner.

For example, if you're attending a non-target school, you can point towards the fact that you understood that it would be tough for you to receive looks from firms, and therefore you took the extra initiative to find relevant positions on your own. To get to the same opportunity as many other candidates, there were more hurdles that you have to pass and more work that you had to put in – and then you can discuss how you learned there'll always be times when there are more qualified people than you, but all that you can do is put your head down and create your own opportunities rather than waiting for them to be handed to you. But you have to be careful that you don't come across as suggesting that other students from target schools didn't put in the same amount of effort as you (e.g., the interviewer may be a graduate from NYU/Wharton).

Then, you can provide specific examples of how you creatively became a more qualified candidate. This question is a chance to differentiate yourself from the rest of the candidate pool, so make it count. Focus more on the value that you can provide to the firm and your passion for wanting to prove yourself instead of listing your qualifications. Remember, there are many people just as qualified as you (if not more), so it's better to appeal to their emotions in addition to logic for some questions.

What are some of your strengths?

When asked what some of your strengths are, state a general quality that practically anyone might possess and then list a specific example that portrays this strength in a way that most can't.

For example, you can state that you're "ambitious." Then immediately, follow this with a story that shows you're ambitious to an extent that far exceeds that of an ordinary person who claims to be "ambitious." The adjective you choose is not what is important; instead, it's the follow-up story that you say that matters. The reason we recommend starting with a vague adjective is that it allows you to tell a more comprehensive story. In the example that you'll provide, you can bring up many more of your strengths, such as being detail-oriented, communicating well, and managing your time well.

If you had started with a specific adjective such as "organized," the story's depth will be a bit restricted, and the content will be a bit bland.

What are some of your weaknesses?

If asked to state your weaknesses, be careful not to disqualify yourself as a candidate. For example, don't state that you have an anxiety disorder, ADHD, or insomnia. Those are medical conditions – instead, provide examples of fixable weaknesses that can be improved upon with enough effort. Then, follow this up with how you have taken steps to improve this weakness of yours and speak on how you have made positive progress.

Good examples of weaknesses that can be improved include learning to prioritize better, learning to communicate with your superiors more often to keep them in the loop on your progress on projects, and learning to take care of your physical health – you should easily be able to recognize a pattern. Just be sure that the weakness you state is not too personal, as that has the potential to make the interviewer feel uncomfortable and possibly even feel sorry for asking the question.

Tell me about a time that you set a goal and achieved it.

The mistake most interviewees will make with this question is to overthink it because they believe the accomplishment has to be grand, or else the interviewer would mock it. Take the needless pressure off yourself and lower the bar. It can be a simple goal that you successfully achieved.

Just break the goal down into the steps that you followed to reach it and show that you're genuinely proud of the accomplishment. Following the step-by-step breakdown of the process, explain the lessons you learned from this experience to connect it to how it applies to this job.

If you had to choose, would you say that you're smart or hardworking?

Your response should state that if you were forced to decide between either of those, you would choose hardworking. The reason is that your work ethic is within your control, whereas your intelligence is arguably determined by genetics. Then, follow up your answer with an example that displays your work ethic as any person can claim that they're hardworking (or state they can be if given an opportunity). The interviewer wants to listen to tangible proof that confirms that you're a hard-worker.

The quality of being hardworking in investment banking recruiting has become a given and assumed by the interviewer. Given how over-saturated investment banking has become over the last decade (and continues to be the career of choice for most top business students), firms are no longer just looking for motivated candidates they can teach during the first few weeks of onboarding.

Why is your GPA so low?

While this question can be phrased politely, more often than not, it'll not be. But regardless of how it's asked, the method in which you handle the question doesn't change.

Begin by acknowledging the low GPA with no sign of denial or offense taken. One of the most common mistakes that interviewees make is they try to come up with legitimate reasons without admitting the fault that they corrected (e.g., "I became more involved with my school's investment organization" or "I was working an internship during the semester"). The interviewer doesn't need to hear the entire background. Instead, immediately shift the question you're answering to: "How have you grown as a person since the beginning of your undergraduate experience?" Explain the faults that required improvement (e.g., lacked time management, prioritization, had not yet found interests) and the lessons you have learned from your mistakes. Then, point towards tangible examples that reflect this improvement. For example, you can say that your GPA has improved in recent semesters (or once you changed majors).

Are you good at multi-tasking?

As we mentioned in an earlier section, avoid merely stating that you're good at multi-tasking. Instead, provide specific examples of when you had a significant workload and how you managed your time. Talk about how you first took a step back to organize your schedule for the day, listed each task based on its priority, and then how you completed all the tasks well while meeting the deadlines. This shows you know how to prioritize and manage multiple tasks without becoming stressed and losing focus because there are so many tasks.

How are your presentation skills?

Investment bankers are typically on the higher end of extroversion. High extroversion becomes far more important for more senior levels, but you still need to demonstrate some sociability and assertiveness even at the junior levels so that the interviewer doesn't have a hard time imagining you fitting in socially.

Provide an example of a time when you gave a presentation in front of an audience. Ideally, this would be a finance-related case competition or something of that nature. Instead of talking about how much confidence you have in being a presenter, talk about how much you enjoyed participating in the case competition (or the event you chose), what the presentation was about, and the result. As you describe your pitch, try to present a portion of the presentation to the interviewer right there. Doing this implicitly proves that you have good presentation skills and sociability without directly stating it.

What has been your favorite class in university?

The class you choose should ideally be related to finance or accounting – it's recommended to play it safe this way as saying your favorite class was entirely unrelated to investment banking can raise some eyebrows. But if you decide to be creative and take the risk because you have an interesting story about a professor or perhaps you learned a valuable lesson that applies to investment banking in an unrelated class, hedge your answer by saying that you enjoyed all the business courses you took (and mention self-study courses you took).

What has been your least favorite class in university?

This should go without saying, but avoid saying a class remotely near the field of finance or accounting. Pick a class that has very little relevance to investment banking. While you should touch on the reason, since it was your least favorite course, the more important point that you need to make is that you still received a high grade in that class. Maybe you had realized you just weren't that interested in this field of study or weren't a fan of the instruction style, but emphasize that you put in the extra time to do well.

Where do you see yourself in five years?

Your answer shouldn't only outline where you want to be in five years but also identify the variables that might change your decisions. This shows you have taken the time to consider your plans for the future and what you want to achieve throughout your professional career, even though there's much uncertainty at this early stage. It should go without saying that your response should show a commitment to finance/business.

The most common response is, "I can't accurately say where I'll be five years since I am beginning my career, but I know I want to remain in a finance-related role. Regardless of whether I stay in investment banking for the long-term or not, I know it'll be an incomparable learning experience, and many doors would open in terms of potential career paths if I decide not to remain in banking."

There is nothing inherently wrong with this response, but it's a generic response that everyone rehearses, and there's a lack of specificity with no mention of which variables would affect your decision. This type of generic response doesn't reflect that you have spent a considerable amount of time thinking about your future, but instead shows you memorized an answer from an interview guide. Thus, one side question you should answer in your response should be: "If you were to end up leaving investment banking after 1 to 2 years, specifically, what would have made it a worthwhile career decision?"

What makes you believe that you're the right candidate for this position?

Your answers to the behavioral and technical questions should speak for themselves. Thus, the real question is: "What makes you think you can handle the grunt work?" Most candidates, even the ones that fail to receive an offer at a Superday, are "intelligent" enough to learn to model and complete many of the mundane tasks handed off to summer analysts and analysts. But the analysts that struggle in investment banking are the ones that cannot handle the stress involved and will break-down physically.

That being said, it's best to structure your response around how passionate you're about this role and how you're someone who will not crumble under stress. Your response needs to include examples of how you handled a high workload in the past and that you understand how demanding this occupation can be. After hearing your response, the interviewer should know that you not only understand how challenging this line of work can be, but you're expecting it. For this question, it's perfectly acceptable to exaggerate a bit to portray how enthusiastic you're about potentially joining this firm.

What traits do you believe make for a successful analyst?

In reality, this question is unlikely to be directly asked. However, it's still useful to have a response prepared to reference when answering questions such as "Why should we hire you?" or "What are some of your strengths?" As you could probably tell, this question is embedded within those questions, as you have to understand what makes for a successful analyst to have good responses. Some examples of positive traits include:

- **Confidence:** Firms pursue candidates that come across as confident, but confidence should come from past accomplishments and be something you've earned. So let your achievements speak for themselves, and focus more on giving off the impression that you're someone with humility that can be easily taught.
- **Detail-Oriented:** The recommendations given while advising clients are based on numbers and data; hence, extreme attention-to-detail is required to ensure models/deliverables contain no mistakes. Being attentive is especially important during periods of high deal flow, as this usually means all-nighters and barely getting ~2-3 hours of sleep each night (making one prone to mistakes).
- **Extroverted:** Given the hours spent together, most people want to work alongside those they can be friendly around, rather than being uncomfortable to even run into. While you don't have to be the most outgoing person in the room, you should at least be easy to converse with.
- **Conscientious/Accountability:** Conscientiousness can be best described as feeling responsible for a particular project's outcome. Thus, an employee with high conscientiousness will be thorough and diligent when completing their tasks, as they feel an obligation to do so.
- **High-Energy:** The best performing, top-bucket analysts are very high-energy and take on more workload. This is typically associated with being competitive, wanting to prove themselves to the rest of the team, or wanting to gain as much experience as possible to move to the buy-side.

Firm Specific Questions

What do you know about our firm?

It doesn't take much work to do some background research on the firm. At the bare minimum, know the firm's history, industry/product groups, and recent deal-related news about the firm. But rather than answering the question by reciting the facts that you read on Wikipedia, focus your answer on the firm's positive attributes.

Similar to how you should state specific examples to show your positive qualities, you want to state specific examples for this firm. For instance, talk about the positive trends you see occurring at the firm and then immediately mention a specific deal that you found particularly intriguing. If you're interviewing with an investment bank, say that you have noticed their deal flow in [insert industry] has grown, and it would be such an exciting opportunity to join the firm given the positive trajectory.

Tell me about a deal our firm has completed.

It would be best to be prepared to discuss at least one transaction the firm has closed in the past. Try to pick a deal that you found interesting, as it shows your interests align with the type of deals the firm specializes in.

Ideally, pick a deal that closed recently as it'll be fresh on the team's mind, and it's a sign that you're up-to-date on what the firm has been doing. This question could easily turn into a conversation if the interviewer was staffed on that deal by chance or might still want to talk about it.

Why do you want to join our firm?

For this question, state why you want to join this firm specifically and show that you're not just applying for all the investment banks. Focus on this firm's differentiating factors and what stood out to you during your research. Even better, end your answer by name-dropping specific employees you spoke with to learn more about the firm's culture. But remember, your goal is to explain why you prefer this bank over its competitors. This doesn't require you to put down or talk negatively about another bank.

While it's good to list out the reasons that made you interested in joining this firm, it's also helpful to answer the question: "What do you bring to the table, and why would you be a good fit for this firm?" Many qualified candidates want to join this firm for good reasons (e.g., industry focus, firm reputation). With that in mind, focus less on what you want to get out of this internship/job and instead shift your answer to appealing to the firm's interests.

Which other firms are you currently interviewing with?

There are quite a few mistakes you can make while answering this question:

- Don't mention any non-investment banking firms, as this would contradict your earlier statement about your commitment to investment banking.
- Never lie that you're interviewing with another investment bank if you're not. You may be surprised by how small the front office circle is, and the person may ask around and find out that you lied.
- Avoid giving off the impression that you have better options on the table and that this firm is your back-up.

Regardless of what other firms you're interviewing with, that's not the point of this question. Briefly answer the initial question and then change the topic to your enthusiasm for joining this firm. You want to clarify that this firm is your number one choice and imply that you would accept an offer with absolutely zero hesitation if given a chance to join the firm.

An alternative is to leverage your existing offers in the interview, but this can easily backfire and should be carefully phrased without appearing as bragging that you have other, better options. Firms want to secure the top candidates, but there are few things recruiting teams dislike more than being rejected by candidates.

Who have you spoken with at this firm?

You should have two to three people that immediately come to mind. The ideal person would be an employee that you cold-emailed/cold-called that was the first person you spoke with at the firm, as this shows that you reached out and got in touch with someone at the firm to express your interest and learn more about the firm's recruiting process. This should go without saying, but speak highly of the name-dropped employees and discuss some interesting points from the conversations you had with them, as well as why this made you even more interested in this specific firm.

If you simply submitted an online application and were invited for an in-person interview, it's essential that you immediately attempt to get in touch with at least one employee over the phone before stepping into the office. The worst-case scenario is that this in-person interview is the first time meeting the team, and you're struggling even to recall their names.

Our group focuses on [insert industry]. Which verticals are you the most familiar with?

If you're interviewing with a specific industry group (rather than a generalist group), come prepared to discuss some recent developments in the industry and companies within the particular space that you enjoy following. Also, understand the specific drivers of revenue and expenses within the specific industry at a bare minimum.

Similar to the questions related to the market, understanding an industry comes from reading relevant news sources and industry primers consistently. Many of these primers are posted publicly for free by consulting firms such as McKinsey, Bain, and Deloitte. In addition, many investment banks, particularly in the middle-market, will post monthly publications with commentary on M&A deal flow trends and valuation multiples.

How can our firm trust that you won't leave for the buy-side the first chance you get?

This question will initially appear to be intended to test your commitment to investment banking. Your gut instinct may be to respond that you're committed to working in investment banking for the entirety of your life and become a managing director someday.

But the interviewer knows that there's a high likelihood that you'll leave after one or two years – the interviewer might even be recruiting for the buy-side themselves. Therefore, this question is just an extension of: "What do you hope to get out of your time in investment banking?" State that whether you stay in investment banking for the long-haul will depend on how the next two years go. Right away, this shows that you're not naïve while simultaneously stating that you're planning to stay for two years without having to state it directly (i.e., it was phrased as a passing comment, not a direct "I intend to stay at this firm for two years"). Then move onto discussing the value you see in investment banking in terms of the learning and personal growth you'll experience.

What do you hope to get out of this internship/job?

Your response should focus on the learning experience that you would receive throughout the specific internship/job. The bank's representatives should have pitched these points during their recruiting information sessions and listed them in their listings.

Explain how you understand the demanding workload and how the responsibilities will be challenging, but you know how much you'll gain from this experience, not just in technical knowledge but also in skills such as discipline, time management, and attention-to-detail. There are very few career paths that offer the same amount of workload, well-rounded education in business, and responsibilities to new graduates as investment banking. In addition, emphasize your desire to learn to build complex financial models, break businesses down and analyze them, and develop an understanding of M&A in a specific industry. Notice these are all mutually beneficial as you can contribute more to the firm as you become more experienced.

You can also discuss how you desire to work in a job with the highest amount of pressure because those are the situations that you can thrive. Then, as always, follow-up with what you got out of past internships (ideally similar roles) and discuss how you look forward to learning even more at the current firm with greater responsibilities and deal flow. Lastly, it's beneficial to show your willingness to do unglamorous and tedious grunt work.

What are your short-term and long-term goals in this position?

For your short-term goal, state your sole objective is to absorb as much information as possible and understand how the workflow is conducted at this firm. To support this statement, provide an example of when you caught on quickly and added value immediately. The interviewer is searching for someone that appears to be a quick learner and can "hit the ground running."

For your long-term goal, you have more room for how you can respond and personalize it as everyone has different ambitions. There are various goals you can list, but most of them should be centered on the idea of learning as much as you can and progressing further in your long-term career, whatever that may be.

Name one concern that you have about investment banking.

Similar to the question about your weaknesses, the concern you list should be minor and one that all new hires should somewhat be concerned about. For example, stating that one of your concerns is lacking the industry knowledge required would be a good response. If you're interviewing to join as a summer analyst or first-year analyst, you aren't expected to have much industry knowledge. And regardless of how much industry knowledge you believe you have, it's minuscule compared to those that have been working at the firm and have more deal experience under their belt.

While financial modeling experience and technical knowledge are expected in the candidate, most of the industry knowledge will be learned during the job. Thus, your response should make it clear that you're thinking ahead into the future and also gives you the chance to state that if you receive an offer, you intend to learn more about the industry the group specializes in on your own. While this may give the impression that you're a bit of a "try-hard," this is not necessarily a negative trait to have in investment banking.

In contrast, examples of sub-par responses would be how you're concerned that you might be overwhelmed by the workload, unable to handle the stress of lack of sleep, or that you'll make mistakes while on the job. Although these are legitimate concerns in the back of everyone's mind, these types of responses show your lack of confidence in being able to adapt.

Did you not receive a return offer from your previous internship?

This question is often asked if the interviewer sees that you worked a summer analyst position the prior summer and are now interviewing for an analyst role. As always, never lie and always tell the truth. In your response, stay positive regardless of the circumstances (even if you didn't receive an offer). Briefly touch upon the previous internship, what you learned throughout the internship, and then move onto your current pursuit. Your response should be forward-looking, so show no sign of dejection and focus on the progress you're making, as all experience, good or bad, is progress at the end of the day.

If you received a return offer or your previous internship(s) were during the school year, then you're in good shape. The fact that you received a return offer shows that you have options, and the fact that you're interviewing for this firm implies that you view this opportunity as better than the prior one – which is an indirect compliment to the firm. Most internships done throughout the academic years with firms nearby rarely give out return offers, and most working professionals are aware of this. Hence, the high percentage of MBA associates who work PE internships throughout the school year that join other firms afterward.

Therefore, there's no need to "defend" yourself on why you didn't receive an offer, and instead, you can focus on what you learned and state that those opportunities were stepping stones leading to this role. However, phrase this carefully to not leave the impression that every internship/job is a stepping stone. State that in a way that shows that these past experiences helped you prepare for this specific role and were great learning opportunities, as opposed to only doing it to build your resume further.

What is your ideal work environment?

For most firms, your answer should be along the lines of finding a place where you'll be given many responsibilities under pressure and opportunities to learn. You could mention how you want to find mentors and people to learn from in the workplace – then discuss how much you value learning from the experience and guidance of others. You can also bring up how you want to fit in well with the other hires and build long-lasting friendships. The key trait that you want to focus on is your desire to learn and be placed where others rely on you to be productive and submit high-quality work on time. But try your best to tailor your response to what you have heard about the firm's culture. For example, if you know the investment bank has a reputation for being a "sweatshop," discuss how you heard this type of environment is more on the challenging end of the investment banking spectrum, but you feel well prepared.

Past Experiences & Situational Questions

Tell me more about your internship at [insert firm name].

When answering questions about your past work experiences, the purpose should be to tie your answer to how this internship experience prepared you for this specific role.

The common tendency is to rephrase what you wrote on your resume with some added details. The interviewer is already aware of what you worked on and will ask questions about a specific project you worked on if they want you to elaborate on a certain bullet point (and they undoubtedly will).

Focus on how this experience applies to the position you're interviewing for right now and shaped you into a better candidate. This question is more of a test of your understanding of what would be expected of you on the job, how the skills and the knowledge you gained are applicable, and why you're qualified.

Besides the commentary above, be prepared to have detailed discussions about each bullet point on your resume. Most of the questions related to your experience will be straight from your resume, so be prepared and anticipate the follow-up questions.

What feedback did you receive in your past internship?

While it may be tempting for you to state that all the feedback you received was positive, the question is implicitly asking for what negative feedback you received (i.e., constructive feedback). So after stating that most of the feedback was positive with an example, change the topic to one negative piece of feedback you received – and how you have worked to improve it with tangible proof to show how you have changed.

The ability to admit that you received negative feedback and show that you have grown as a result shows maturity. It also demonstrates that you value negative feedback and take it into serious consideration to better yourself and improve. Negative feedback is far more valuable than positive feedback. Just be sure the negative feedback you bring up was a fault that's fixable with effort.

How would your previous employer describe you?

If you were to go around to different firms and ask the employees: What would you look for in the ideal candidate? Their answers would be very similar to one another.

That being said, some qualities valued most by employers are being intelligent, reliable, detail-oriented, hardworking, and well-organized. So tailor your response to what they want to hear, and then as always – provide examples of you exhibiting this sort of quality.

Tell me about a time you demonstrated leadership.

The interviewer is looking for an example that demonstrates that you can take the lead on a project. But be careful and balance showing confidence and knowing when to take a step back – as, on the job, you'll be taking orders, not giving them. The message you want to convey is, you enjoy being a leader and can be one, but you understand there's a hierarchy in investment banking, and your superiors have been doing this for much longer than you. Therefore, you're in the mindset of learning from their experiences.

Tell me about a time you had to work with a group to accomplish an important goal.

The most common mistake is to focus on your individual contribution and base your answer on how you led the team to show your leadership.

Without sounding pompous, illustrate the positive impact you had on the team and your responsibilities to a reasonable extent. Then shift the conversation to how your group worked well together and explain how the work was successfully distributed. You should make it clear that it was a group effort and that it was the contribution from each member that led to the positive outcome – not just one person. It doesn't matter if you

led the group and took on most of the workload in reality. The takeaway for the interviewer is that you understand effective teamwork and enjoy working with others.

Tell me about a time you had to work with a group and one member was not contributing.

The purpose of this question is not for you to bash this group member that was not contributing. It can be tempting to say something condescending such as “some people just don't have the work ethic,” given how common of an occurrence it's for there to be a “freeloader.” Instead, speak on how you respectfully pulled the group member aside and told them how the group felt about his/her minimal amount of contribution.

If it worked, great. If it didn't, say that while you understood it would be preferable if this group member contributed more, completing this project was the priority. You could also mention that you and the other group members took on the extra workload and ended up receiving a high grade.

However, this doesn't mean you should say that you neglected the group member completely. State that you attempted to resolve the conflict, and once it didn't work, you re-focused on the end goal. In addition, say that you understood that there might have been personal circumstances preventing him/her from contributing – this shows maturity and understanding of others' personal lives.

Tell me about a time you dealt with an unmanageable workload.

Time management is an essential skill required to succeed in investment banking. Given the long hours and the seemingly endless workload, your interviewer is looking for you to provide examples demonstrating your ability to manage your time through an organization (and effective communication skills).

Most interviewees will respond by talking about a time that they had many tasks to complete, which is not wrong, and we recommend you begin your answer this way. But after providing this example, humbly state that you understand this is nowhere close to the workload and stress involved in investment banking. Stating this shows that you understand the difficulty of the job – and coming across as bragging about managing your time well in school when there's such little pressure compared to banking may rub the interviewer the wrong way.

A continuous theme for many of these answers is the firm's interests come before yours.

If we hired you and the workload became too much to handle all by yourself, what would you do?

You can talk about how you would approach this situation and communicate with your superiors. Being able to admit that you may require help shows you don't let your ego impede your decision making. It's better for you to get a portion of the work delegated to another analyst so that all the firm's deadlines are met.

The last thing you want is to miss the deadline and for the quality of all the work to deteriorate because you were too prideful to admit that you had too many projects at once. Not everyone in the office knows your schedule for the day and projects will come from many people – one of them may have accidentally given you a project unaware that you already had more than enough on your plate.

How do you deal with stressful situations in life?

First, you might start your answer by mentioning specific strategies you have used to manage stress in the past, such as organizing a list of tasks based on the priority, meditation, or taking the time to take care of your health by exercising. But you need to bring up an example of a time that you dealt with a very stressful situation and how you handled it.

Honestly, there's no solution to eliminate stress from your life. Often, the only option is to accept it, not complain, and continue working – this is the idea the example you provide should reflect.

Tell me about a time you worked with someone difficult.

Not everyone you meet will be friendly to you, nor will they be easy to work alongside. You cannot please everyone in life, so your response should show your understanding of this and that you would not take this type of behavior personally or let it affect the quality of your work.

But rather than explaining how you went out of your way constantly to please this person, talk more about how you prioritized getting the job done and didn't allow this to distract you or hinder your performance.

How would you react if you were struggling with your work/life balance?

Your response should demonstrate that you know what is expected of you and how your job responsibilities come before your personal life. An understanding of the amount of sacrifice required should be clear to the interviewer to avoid coming across as being naïve. Even the most ambitious, hardworking people can have difficulty coping with the demands of investment banking, so suggesting you can do it because you're motivated makes you seem simple-minded and lacking real work experience.

For this reason, bring up an example of actually struggling with your work/life balance. Too many candidates make the mistake of using an example of minor stress and talking about how they managed through it. Talking about a time you faced true difficulty shows you expect to face some real difficulty in banking (nearly everyone does initially), but the point you want to make clear is that you still endured it while finishing all the tasks you had to do. Again, you want to mention how you understand this experience, while it was difficult, will pale in comparison to what you may encounter in investment banking. You do, however, believe you can handle the stress of investment banking and expect a challenging experience.

Tell me about a failure in your life.

This question is not asking for a sob story, so instead, re-frame this question: "Tell me about a time you failed and overcame it?" it's the lesson that you gained from the experience that the interviewer is asking to hear. If you state a failure of yours and ramble on about how awful it was, it shows you didn't reflect upon the painful experience, nor did you use it as a learning experience. Your answer should show that when you face a challenge or failure, you can learn from what went wrong and adjust accordingly.

What is the biggest mistake that you have made?

Investment bankers are constantly dealing with several projects simultaneously in a high stress environment. Given the sheer number of hours worked each week, mistakes are bound to happen. What matters is how you react and handle the mistake. Have a story prepared on how you made a minor mistake, owned up to it, and learned from it. Ideally, the mistake shouldn't be too material to detract from your candidacy.

The trait that you want to show in your response is that you rarely make mistakes, but when you do – you take full responsibility without hesitation and use it as a learning experience for the future. Everybody makes mistakes, but certain people will use it as a wake-up call and constant reminder to be attentive to details, whereas others will attempt to place the blame elsewhere.

Tell me about a time that you resolved a conflict with a co-worker.

The answer to this question should differ from the question about working with a difficult co-worker – as this is specifically asking about a time you resolved a conflict, so the answer is not that you prioritized the end project before your relationships. Since it's rather unlikely that you, especially if an undergraduate student, have had to deal with a situation where you had a real conflict with a co-worker. You may have worked with rude people, but this is rarely about a conflict that you have to step in and resolve.

Therefore, it's best to first provide a hypothetical example of how you would approach resolving a conflict and then provide a real example of this in action in your personal life (rather than work). What the interviewer is

looking for is that you're respectful when handling sensitive situations and capable of identifying the source of conflict and fixing problems with others.

Let's say you just submitted a deliverable through email and immediately spotted a mistake. What would you do next?

This situation is of lower-stakes, and the question assesses if you would let your ego impede your decision making. The mistake will inevitably be uncovered, so the earlier the better. Thus, your response should be that you would immediately send a follow-up email with the corrected file. Following this event, the lesson you took away was that you should print the file and review the numbers on-hand before submitting a file, as it's easier to spot errors this way.

How would you react if you're in the middle of a client meeting and notice a minor error?

Right away, recognize this a high-stakes situation with a client right in front of you. This is not a matter of integrity, but not embarrassing the team type ordeal. Notice in the question, it specifically says it's a minor error, so the correct answer is to not bring attention to it and fix it later discretely without the client noticing.

If you point out the error in the middle of the presentation, the client will not be impressed by your level of transparency; instead, they'll view your team as being under-prepared for the meeting. Effectively, you have thrown the team under the bus and potentially damaged the client's perception of your firm.

You have found out that one of your close co-workers in your analyst group has been leaking confidential information about a client to their peers. What would you do?

The leaking of confidential information is illegal with serious monetary and reputational repercussions, regardless of how close the relationship is between the two of you. Loyalty is an important trait that interviewers look for; however, this type of behavior would cross the line and must be reported immediately to the firm. The message you're trying to convey is that you prioritize the firm's interests and its clients above all else with no hesitation, despite your close relationship with the co-worker.

Let's say we hired you as an analyst, and you noticed some processes within your group that you believed were inefficient. What would you do?

First, understand the work processes involved in the front office of an investment bank have not changed all too much over the past two decades, while back-office operations and many other divisions of an investment bank have become more streamlined and more efficient. Therefore, begin your answer by stating that you understand how each firm has gradually developed processes that have become standard.

Afterward, you could say that in a hypothetical scenario of this occurring – you would bring it up with your superiors to open up a discussion about why it's being done this way for you to learn more about the bank, rather than telling them to change it because it's inefficient from your perspective.

There is usually a good reason work is completed a certain way, and it's best to take an approach assuming that there's something that you have neglected. Your role as a summer analyst or analyst is to follow instructions and get work done correctly and on-time, not to provide your inputs on how the organizational structure and workflow of the bank should be run.

Elevator Test Questions

What do you like to do for fun? Any interesting hobbies?

Be genuine and discuss what you enjoy doing in your free time (e.g., follow sports, fitness, and health). The interests and hobbies you list matter far less than how you talk about them, so show some enthusiasm in your response. Even if finance is your obsession, show that you're someone with interesting hobbies and try to avoid answers such as "reading the WSJ" when you have spare time.

Mentioning something that has an aspect of self-improvement, such as reading or working out, can leave a positive impression on the interviewer and suggest you value progress and pursue continuous improvement, which is a goal most people admire.

How do you usually spend your time on the weekends?

This question is very similar to the previous one, and the gist of how to approach it's the same. The only minor difference is that since it's specifically asking what you do on the weekend, it's best to mention social activities such as spending time with friends and going out, rather than discussing hobbies and interests.

What have you been up to as of late?

In reality, you have most likely been hyper-focused on the interview preparation. But similar to the question above, you want to steer clear from finance-related answers. While you should mention, you have been prioritizing your interview preparation but try to talk about some interesting past events or more tasks you have on the horizon. For example, you could talk about an upcoming event (e.g., a sporting event, a new TV show episode) that you're looking forward to or any interesting plans with friends.

Tell me what you were like in high school.

It is fine and recommended to be a bit on the humorous side in your response, as nobody was perfect in high school. Just tell them what you were like in high school, what activities you were involved in, how you spent your time back then, and then change the conversation to answering: Name a few examples of how you have changed since your days as a high school student.

Again, the focus is on the progress you have made since being a young high school student to the present day and the lessons you have gathered along the way.

How would your best friend describe you?

A similar question is: "How would your previous employer describe you?" We went over the recommended answer earlier, but your response should differ for this question. When answering this question, you want to focus on the traits that show you're extroverted and a reliable friend. State examples of how you had an enjoyable time with your friends socially or when you helped a friend in need.

To wrap up your answer, you can conclude by speaking on what friendship means to you personally, which is a chance to show that you're someone who values loyalty.

Tell me something interesting about yourself.

Try not to overthink this question and state something that's not on your resume that someone would find interesting. If you can't think of anything, simply bring up something humorous that happened recently.

The only way you could answer this badly is by struggling to say any words and then stating that you're not sure. You'll react this way if you have irrationally high expectations of what the interviewer wants to hear.

What is the most recent book that you have read?

To answer this question, avoid bringing up a finance-related book such as Rosenbaum & Pearl and *The Intelligent Investor*. While these are great resources to learn about investment banking and value investing, this type of response lacks personality.

One option is to pick non-fiction books that provide useful knowledge that applies to on-the-job performance, such as books on logical decision-making, mental models, thinking about uncertainty and risk, workplace culture, and stress management. The books listed below are widely read amongst professionals and can lead to a good conversation about self-growth and life lessons.

Examples of Good Responses

- *Principles* by Ray Dalio
- *Skin in the Game* by Nassim Nicholas Taleb
- *Thinking, Fast and Slow* by Daniel Kahneman
- *The Hard Thing About Hard Things* by Ben Horowitz
- *Why We Sleep* by Matthew Walker

Alternatively, you can bring up a book related to recent events. The ideal book should be related to a controversial, uncommon event, as this has a higher likelihood of leading to an interesting conversation.

Examples of Other Good Responses

- *Billion Dollar Whale* by Tom Wright and Bradley Hope
- *Bad Blood: Secrets and Lies in a Silicon Valley Startup* by John Carreyrou
- *No Filter: The Inside Story of Instagram* by Sarah Frier
- *Super Pumped: The Battle for Uber* by Mike Isaac
- *Billion Dollar Loser: The Epic Rise and Fall of WeWork* by Reeves Wiedeman

The books listed above cover the controversial 1MDB scandal, the fraud involving blood-testing startup Theranos, the origin story of Instagram, the creation of Uber, and the failed IPO and downfall of WeWork.

These are all recent events that most people have heard about on the news, but they most likely don't know all the details – which is where you have the chance to tell an interesting story.

What motivates you?

This question is an opportunity to discuss your values, and your answer should ideally align with the interviewer's personal motivations to an extent. A few examples of good responses would include how you enjoy the process of personal growth, continually meeting new people and friends, creating new experiences and challenging yourself, and making your family proud.

Try to avoid bringing up monetary goals or saying that you view investment banking as a stepping stone for other career paths. Your answer to this question should be what gets you out of bed each morning and what will keep you moving forward when times get challenging. So the question you should answer is: "When times get tough and you're exhausted, what will keep you going?"

Do you have questions you want to ask?

Just like the first question of the interview (“Walk me through your resume” or “Tell me about yourself”), this question is a near certainty and will usually conclude the interview. It would also not be a stretch to say that this question is up there in the list of most important behavioral questions.

We can categorize examples of good, open-ended questions to ask into three buckets:

1. Background Questions

- Could you tell me more about your career path, and how your time in investment banking has been?
- What tasks or responsibilities of your job do you enjoy the most?
- What are some goals you hope to achieve while working at this firm?

2. Experience & Insight Questions

- Could you tell me about the first deal you were tasked on?
- Do you have any unique predictions for the [industry focus] that not everyone shares?
- How has deal flow been for the firm since COVID?

3. Career Advice Questions

- If you could go back to when you were completing your undergraduate, what advice would you give yourself?
- What is the most valuable lesson you have learned since joining this firm?
- What do you credit your past achievements to?

These questions show an interest in the interviewer and are phrased in positive ways to bring up nostalgia or pride in their accomplishments. Just as important, ask thoughtful follow-ups that show you paid attention as they spoke, rather than trying to come up with the next question to ask.

Try to avoid generic, non-personal questions such as “What qualities do you look for in a potential candidate?” as their answer will be very bland, and it’ll be difficult to ask follow-up questions that can begin a conversation. Also, try not to ask questions that can be answered with a simple “Yes” or “No.”

Don’t view this as an opportunity to ask the interviewer questions about the position or role (i.e., anything that could easily be Googled). Instead, view this as a chance to have an informal chat with the person and learn more about who they’re personally.

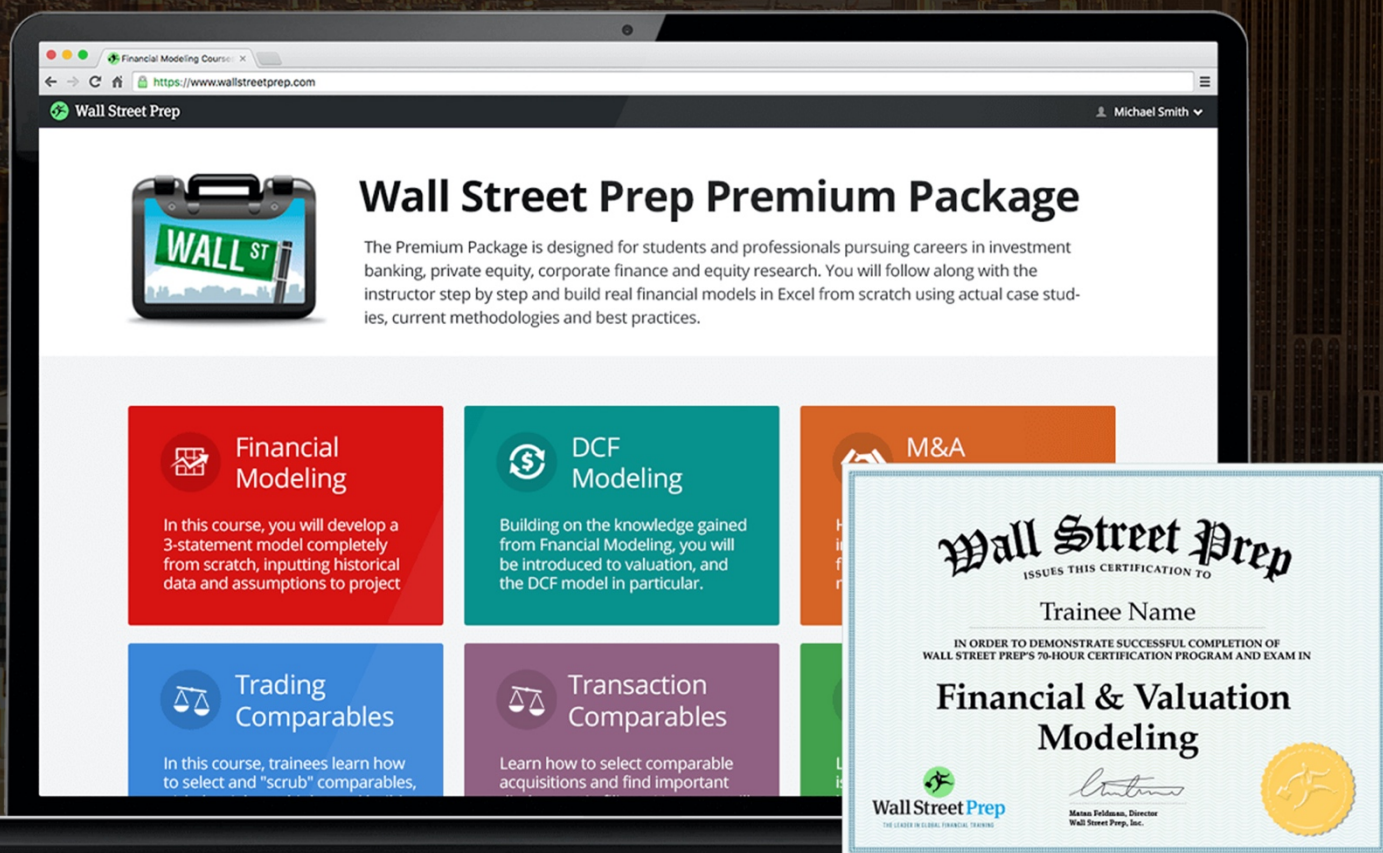
When the dialogue for this final question is brief, or if the interviewer cuts you off after one question following a quick answer, this usually a negative sign. There are exceptions to this rule, such as the interviewer having another call coming up or a busy schedule, but you can typically gauge how your interview went based on this question’s duration.

People have a tendency to best recall the earlier parts and ending parts of a conversation or meeting. Thus, the interviewer’s initial impression of when you first introduced yourself and how the interview ended will be two of the most important points in the interview.

In closing, try your best to **end the interview on a high note**. The way you achieve this is by not just leaving a good impression of yourself, but by making the interviewer feel good about themselves and their career. Without coming across as disingenuous or desperate, show genuine interest in their past achievements and perspectives, and ask for guidance as you progress through your career.

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