400 Questions Guide for Investment Banking Interviews: 2025 Edition

Table of Contents:

Why Publish a New Version of This Guide? What's Different?

This new version of the widely shared "400 Questions" guide exists because:

1) The original version, first created in 2009, is now quite bad and outdated. Also, many of the explanations were confusing, incomplete, or not quite correct.

2) Despite these problems, people kept using the old version due to convenience or the lack of awareness around the improved versions over the years.

This edition fixes these issues, covers newer accounting rules (e.g., IFRS 16 / ASC 842 for leases), provides sample answers for many fit / behavioral questions, and includes 155 new industry-specific questions and answers.

This "400 Questions" guide is still far less detailed than our full IB Interview Guide, but it's useful for a quick review.

Have Investment Banking Interviews Changed Since 2009?

The core of investment banking interviews has not changed much in these past 15+ years, but there have been changes around the edges due to new accounting rules and increased deal activity in sectors such as tech and renewable energy.

But the main differences relate to **the recruitment process and the industry appeal:**

1) **Recruitment Process** – In the U.S., banks have accelerated the recruiting process so much that university students must apply for and win junior-year summer internships in the middle of their *sophomore years*. Banks have also automated more of the process via tools like HireVue and online tests.

2) **Industry Appeal** – While investment banking jobs still pay well and offer attractive exit opportunities, it's a less appealing career than it was in 2005 or even 2015. It has not grown much compared to fields like technology, and that has affected compensation levels, workplace practices, and overall enthusiasm levels.

As a specific example, Managing Director pay remained stagnant between 2004 and 2024, so the average MD now earns *less* in inflation-adjusted terms.

Earning $1 – 2 million per year still easily puts them in the top 1% in the U.S., but that compensation level meant more twenty years ago than it does today.

Compensation at the junior and mid-levels has increased, but much of this has taken the form of higher base salaries.

On a related note, we have also found that candidates today are less enthusiastic and prepared for recruiting.

Banks are partially responsible, as the accelerated recruitment timeline gives students scant time to learn the material.

That said, many students also approach the process as if they're playing a casual mobile game – not preparing for a competitive career.

These factors have created a paradoxical situation in which candidates are *less prepared,* but banks are *more selective*.

We expect that banks will hire even more selectively in the future, especially as AI and automation tools continue to improve.

Why hire 10 Analysts when they can get the same results from the top 2 Analysts, amplified by tools that generate "rough drafts" of the work product?

In the long term, average candidates will find the door slamming shut as automation rises.

Therefore, you should use this "400 Questions" guide as a **starting point.**

It's a step in the right direction, but reading this guide will not turn you into a top candidate overnight.

But if you build on this guide with real effort in the form of additional courses, self-study, and 1-on-1 tutoring, you will claw your way to the top.

Return to Top.

Should You Use the Paid Version(s) of This Guide?

Throughout this guide, we link to various topics within our main financial modeling course and full IB Interview Guide.

If you have already paid for these courses, you should obviously use these links to get the more advanced versions, full Excel models, and personalized support.

But if you don't have our courses, is it worth paying for them?

It depends on your goals, budget, and time frame.

The full courses are most worthwhile if you want one or more of the following:

1) **More Advanced Questions, Excel Files, and Case Studies** – For example, we offer 18 templates for the "Walk me through your resume" question in the IB Interview Guide and 17 practice case studies that go beyond anything in this guide. There are also thousands of additional interview questions and answers.

2) **Step-by-Step Learning** – You don't just get questions and answers in the full courses; you learn each concept from the ground up, starting with simple examples and moving into more complex ones. You can read or watch because all the video-based lessons have transcripts, notes, and written guides.

3) **Personalized Support** – If you sign up for the paid courses, you can request detailed feedback on your story, your fit/behavioral answers, or your responses to technical questions. This condensed version does not offer any support.

So, if you care about these points and have weeks or months to prepare, the paid courses could be worthwhile.

If not, or if you are using this guide for a quick review the day before your interview, they're probably not worth it.

Return to Top.

Fit/Behavioral Interview Questions

Before you set foot into any in-person or HireVue interview, you should do the following to prepare for "fit" questions:

1. **Draft Your "Story"** – This one is your answer to the "Walk me through your resume" or "Tell me about yourself" question. You need a short outline of 100 – 150 words and a full version that is 200 – 300 words.

2. **Outline Your 3 "Short Stories"** – You can use these to answer questions about your leadership skills, work experience, challenges, failures, etc. These stories should ideally come from your work experience, but it's OK to use student/leadership activities if you're a student.

3. **Select 3 Strengths and 3 Weaknesses** – Your strengths can be somewhat generic, but your weaknesses should be "real but not too serious," i.e., you do not want to say anything that would destroy your chances of winning the job.

4. **Prepare for the Key Objections Bankers Will Raise About Your Background** – Compare yourself to the "Ideal Candidate" that bankers are seeking and see where you come up short.

We recommend this structure to answer the "Walk me through your resume" question:

1. **The "Beginning"** – Your initial background (hometown, university, or business school).

2. **Your Finance "Spark"** – The specific person, event, or experience that made you interested in finance or investment banking.

3. **Your Growing Interest** – How you gained more relevant skills and work experience over time that prepared you for this job.

4. **Why You're Here Today and Your Future** – Why this firm and this group fit your long-term plans perfectly.

For your 3 short stories, we recommend picking a **"success story,"** a **"failure story,"** and a **"leadership story"** that you can re-use for many questions.

For example, your success story could describe your search fund internship, where you helped the owner research many companies and eventually submit an LOI (Letter of Intent) to acquire a small business in the area.

Your failure story could relate to a student club you took over and tried to grow. Maybe you targeted 2x higher membership, but you didn't get close to that due to poor marketing, a weak team, or insufficient funding.

Your leadership story could relate to an internship task where you had to coordinate with other employees or interns to resolve a problem, such as a payment issue or a client emergency. **The key difference vs. the success story is that this one must involve working with others in a company or organization.**

The best **strengths** to cite include quantitative/analytical abilities, client management skills, the ability to work long hours, attention to detail, work ethic, team/leadership skills, and knowledge of accounting and finance.

Acceptable **weaknesses** might include an inability to delegate well in all situations, taking too long to make decisions, not always speaking up when you see a problem, or not giving useful feedback to teammates.

These are legitimate weaknesses – not fake ones like "I work too hard" – but they're not deal-breakers in the same way that poor math skills and attention to detail are.

Finally, for your **"real weaknesses"** or the objections that interviewers will raise about your background, remember that **most bankers are risk averse**.

They like candidates who attended top universities and business schools, earned high grades, completed highly relevant finance internships, have interesting hobbies/interests, and are personable.

So, anything in your profile that does *not* match this idealized banker could be a weakness: Lower grades or test scores, an unknown university, lack of accounting/finance knowledge, lack of relevant work experience, not enough hobbies/interests, no track record of working long hours, no other European languages if you're applying in London, etc.

To address these issues, you usually point to an "improvement trend" (e.g., for grades) or a "compensatory factor" (e.g., for lack of relevant work experience – point out how some of the skills from your work/leadership experience do, in fact, line up).

For more details on all these points, please see the full fit/behavioral guide.

Return to Top.

The "Big 5" Fit Questions

The "Big 5" here refers not to an NCAA conference but to **the most important fit/behavioral questions** that will come up in all interviews.

Everything else should be easy if you have good answers to these questions.

And if you don't have good answers, the rest of the interview will be a chore.

1. Walk me through your resume / Why are you here today? / Tell me about yourself.

Yes, these are all the same question. This is the single most important question in any interview and one you should spend at least 1 – 2 hours preparing for.

We explained the basic structure above, so here's an example of how to draft a **short outline** if you're a student with a "mixed" background, such as internships at a search fund and a Big 4 accounting firm but nothing specifically in IB:

- **The Beginning:** You were born in Thailand and attended university in the U.S. because you won a scholarship there; your father also had a real estate business.
- **Finance Spark:** You became very interested in sports franchises and the financing of sports teams in university due to some football player trades you followed, so you majored in Finance to learn the business side of the industry.
- **Growing Interest:** In your first 1.5 years of university, you completed Big 4 audit and search fund internships. You liked working on deals and valuing companies, and now you want to work on more complex transactions involving larger companies.
- **The Future and Why You're Here Today:** You want to use your background in emerging markets and search funds to advise companies on cross-border and private equity-related deals.

Here's an example of a full resume walkthrough that uses this outline:

"Sure. I was born in Thailand, came to the U.S., and went to Vanderbilt for university since I won a scholarship there. The school also had a good reputation for business and finance.

My father ran a real estate business in Thailand, so I learned about deals from a young age, but I became more interested in finance during my first year in university. There was controversy

over one football player who quit and joined the Broncos early for a record-high salary, and the story made me interested in sports franchises and financing.

So, to learn more about the business side, I majored in Finance and completed an audit internship at Ernst & Young in Thailand. I liked the financial statement analysis, but I wanted to work on valuation and deals, so I returned to the U.S. and worked at a search fund in my second year.

The owner was interested in acquiring a local HVAC small business he could use as a roll-up platform in the region, so I screened for companies and performed quick valuations. The internship ended as he was submitting an LOI to acquire a $10 million business, but I helped with the bid valuation and some due diligence for the deal.

I liked the search fund experience, but I want to work on larger deals in different industries, so I'm most interested in investment banking. I've also spoken with Vanderbilt alumni in banking and taught myself more technical skills since my internship ended.

I'm here today because I want to leverage my background in emerging markets and search fund deals to move into investment banking and work on larger, more complex deals. And your group has a great reputation for cross-border and private equity-related deals."

2. Why investment banking?

If you told your story properly (see above), bankers should not even ask this as a follow-up question – but sometimes they still ask to check for consistency in your answers.

This question is tricky because it has many **bad answers** (e.g., "You want to learn a lot," "You want the exit opportunities," or "You want to work in a high-stakes environment").

The only decent answer is that **you want to work on deals from start to finish**, and investment banking is the only field offering the experience in this depth and breadth (yes, PE/VC firms also work on deals, but they reject a huge percentage early on).

Say that you've already had some exposure to deals or investing, but your previous jobs/internships were missing elements X, Y, and Z (e.g., maybe you worked at a Big 4 firm and only advised on certain aspects of transactions, such as the purchase price allocation).

But you want to work on the entire process from start to finish and get more "reps" by working on many different deals over time.

Show that your previous internships, activities, and jobs led you *part of the way* to IB but not the entire way there.

3. Why our bank?

You should mostly answer this question in your resume/CV walkthrough. But, again, you may get follow-up questions to clarify or check your consistency.

Your answer should demonstrate how you've **networked with bankers at this firm** and/or know something about their **recent deals and strategies**.

A decent answer might look like this:

*"I'm interested in your bank because I've met quite a few people there already, including **[Person Name 1]**, a VP in the New York office, and **[Person Name 2]**, a Senior Associate in the San Francisco office, at an information session last month, and I've gotten along well with all of them. Also, I noticed you've been advising on many cross-border natural resources M&A deals lately, like **[Company X]**'s **[$Y billion]** acquisition of **[Company Z]**, and I'm really interested in that sector."*

If you have not networked with anyone at the bank, look up a recent deal or news announcement and use that.

Avoid citing generic reasons like "the culture" or "more client interaction" because these could apply to *many different firms*, not just the one you're interviewing with.

4. What are your strengths and weaknesses?

You should present 2 – 3 strengths and 2 – 3 weaknesses and then give short examples (from your "short stories") to support them.

If you don't have one story that illustrates everything, you can use one story for your strengths and another for your weaknesses, but make them **CONCISE**.

Don't try explaining how you're improving or "fixing" your weaknesses because that will make your answer too long. You can address that in a follow-up question. Here's an example:

"My main strengths are my work ethic, ability to meet tight deadlines under pressure, and my quantitative skills.

I used those strengths in my last corporate finance internship when I had to work with different departments to complete a quarterly report on a last-minute deadline when the more senior team members in my group were gone. I had to quickly make sense of unfamiliar reports and transactions and submit accurate work.

My weaknesses are that I sometimes take too long to make decisions, and I don't always speak up in group situations, even when I know something is going wrong.

In one recent M&A case study at business school, I could tell that one team member wasn't doing the required work, but I waited too long to approach him, and our team didn't place well as a result. We could have avoided problems if I had spoken up earlier."

5. Explain or justify your [Real Weakness.]

Since bankers are **risk averse**, you can expect to get direct questions about whatever seems like your most glaring weakness.

This question differs for each candidate, so we cover several examples in the Flaws & Failures section.

For a simple example, let's say that you **graduated from university and worked for 2 years in another industry**, and now you're aiming for investment banking roles as a lateral hire.

Therefore, any interviewer is likely to ask you some variation of: "Why didn't you get into investment banking right out of undergrad?"

You **should not** admit that you tried to get in and failed. Instead, explain it by stating that:

1) You became interested very late in the process when it was too late to get the required sequence of internships (this works better if you went to a non-target school); OR

2) You knew about banking but thought you wanted to do consulting, corporate finance, Big 4 advisory, or something else until you began working full-time and changed your mind (less convincing).

The key is to show that you became interested in IB *over time* due to your post-university work experiences and that you followed a specific plan to get in. Here's an example:

"Sure. To clarify, I became interested in investment banking in my third year of university after transferring from a state school. But I didn't have the sequence of internships required to win an

internship, and most of the large banks had already finished recruiting by then, so I decided to gain full-time experience and move in afterward.

I joined the Ernst & Young Transaction Advisory Services team to gain client and accounting/finance experience, and then I joined an independent valuation firm so I could spend more time on valuation and deal analysis.

Now, I want to move into investment banking and combine the skills I've gained in my previous work experience to work on the entire deal process from start to finish."

Return to Top.

Teamwork/Leadership

These questions should be simple if you've already prepared your 3 short stories: A "Success" story, a "Failure" story, and a "Leadership" story.

1. Can you talk about a team project or group activity you've worked on?

You should use your "Success" story and the STAR (Situation, Task, Action, Result) structure for this one. Aim for 100 – 150 words to keep your answer under 60 seconds. Here's an example:

"Sure. During my summer internship at the New York State Comptroller's Office, I worked in a team of two attorneys, an investigator, and an Analyst to look into financial waste and misappropriated funds.

In one case, we investigated a public hospital and reports of misused government funds there. I researched and analyzed the hospital's financial reports and worked with the Analyst to sift through huge amounts of data.

The Analyst had very little time, and we were on a tight reporting deadline, so I had to work long hours and come in on weekends to finish the project.

I came up with a more efficient, automated way of interpreting the financial reports, and I found several cases of fund misuse by one division at the hospital. Based on that report, the Comptroller's Office withheld funds until the hospital changed its policies and replaced staff."

2. Can you describe a situation where a team did not work as intended?

You can use your "Failure" story here. Use this question to state one of your weaknesses and explain how you've been improving:

"Sure. During college, I started a math tutoring business for high-school students. I won dozens of clients and wanted to expand the business by hiring more coaches.

I hired five coaches, but the business did not work out because it was too hard for me to do the tutoring while also training and managing others at the same time; it was also hard to motivate the new hires since most were doing it part-time.

I ended up canceling the expansion and just keeping a few of my own clients. I learned that it's very difficult to do the work and manage others at the same time, so if I had to do this again, I would have a partner in charge of sales and management."

3. Can you tell me about a time you faced an ethical dilemma in a team or with a co-worker?

You could use any of your short stories for this question but **focus** on a different aspect–disagreeing with a team member over the right actions.

You don't have to cite a gigantic, dramatic dilemma; it could just be a bit dodgy but not outright illegal. Here's an example:

"Sure. When I worked in a team of four in the JP Morgan M&A case study at my university last year, we had to pick a recent deal and recommend for or against it in a presentation.

One team member knew the winners from the previous year, and he suggested contacting them, getting their presentation, and using their entire structure but changing the deal and valuation to maximize our chances of winning.

I thought it was a bad idea that went against the rules of the competition, so I lobbied against it and convinced him to use an original structure; I even offered to draft the presentation and have the other team members pick a deal and value the company.

We ended up coming in second place, but I think we used the right approach."

4. What was the most difficult situation you faced as a leader, and how did you respond?

This question is *almost* the same as the previous one, but you should use your "Leadership" story for this one and focus on the key challenge(s) you overcame.

Spend more time describing that challenge and the ACTION you took rather than the Situation. Here's an example:

"In my first year of university, I acted as the team leader for a marketing project with five students. I had to make sure everyone finished their assigned tasks.

One week before the project was due, a team member called me to say that he had a family emergency, couldn't finish his tasks, and hadn't done anything yet. He had to go home immediately.

But he desperately needed to pass the class, and he asked me to pretend that he had done all the required work.

I gathered the other team members and convinced them to pull an all-nighter with me to finish as much of the assignment as we could. We didn't get the best grade, but everyone passed.

I 'covered' for the team member but decided not to work with him on projects in future classes."

5. Can you tell me about a time when you stepped up and demonstrated leadership even when you were not in an official leadership role?

You can use your 3 "short stories" to answer this question, but you should stick to the one where you did *not* hold an official title or leadership role.

Most likely, that means you'll use your "Success" story or "Failure" story. Here's an example:

"In my corporate finance internship last summer, I mostly supported my Manager and Analyst in the Treasury Department.

We had to finish end-of-quarter reports, and my Analyst was pulled into a company-wide offsite for several days while my Manager was away because of a family emergency.

I knew we would miss the reporting deadline for our Cash and liquidity positions, so I contacted all the other departments, introduced myself, explained the situation, and got all the required transactions and balances from them.

Then, I called the Analyst, explained the results so far, and had him and the Manager sign off on my work. They reviewed it when they came back and fixed a few issues, but we were able to meet the reporting deadline."

Return to Top.

Strengths & Weaknesses

All these questions should be easy **if you spent time selecting your 3 strengths and 3 weaknesses**, as recommended above.

The main challenge is *adapting* your responses to the many variations they could ask.

Sometimes, you might have to combine your strengths and weaknesses with your three "short stories," your main "story," or your answers to other questions.

1. What are your strengths and weaknesses?

You should present 2 – 3 strengths and 2 – 3 weaknesses and then use one of your "short stories" to support them.

If you don't have one story that illustrates everything, you can use one story for your strengths and another for your weaknesses, but make them **CONCISE**.

Don't explain how you're improving or "fixing" your weaknesses because it will be almost impossible to do all that in less than 150 words. Here's an example:

"My main strengths are my work ethic, ability to meet tight deadlines under pressure, and my quantitative skills.

I used those strengths in my last corporate finance internship when I had to work with different departments to complete a quarterly report on a last-minute deadline when the more senior team members in my group were gone. I had to quickly make sense of unfamiliar reports and transactions and submit accurate work.

My weaknesses are that I sometimes take too long to make decisions, and I don't always speak up in group situations, even when I know something is going wrong.

In one recent M&A case study at business school, I could tell that one team member wasn't doing the required work, but I waited too long to approach him, and his part of the project ended up hurting our team's score. We could have avoided problems if I had spoken up earlier."

2. What's your greatest strength?

For this question, pick one strength and use one of your "short stories" to support it. This is a "softball question" that tests your preparation more than anything else. Here's an example:

"My greatest strength is my communication ability. I work well with team members from different backgrounds, and I make sure everyone is on the same page so there are no misunderstandings.

For example, in my operational consulting internship, I worked in a 10-person marketing team, and the initial campaigns we produced weren't great. No one wanted to blame the others, but I knew that several team members didn't completely understand the tasks.

I spoke with everyone and figured out that several team members had science and engineering backgrounds and didn't know much about marketing, so I explained the concepts to them and then divided up the work so that they could focus on the numbers and analysis instead.

The client ended up liking our campaigns and hiring the firm again."

3. What's your greatest weakness?

You could pick any of your weaknesses for this one, but the one that's **least damaging** for the role is best.

For example, if you're applying to intern or Analyst-level roles, **don't** say you have trouble working long hours or understanding the financial statements. A weakness related to your leadership or management abilities is better.

Once you've picked the best weakness, back it up with one of your "short stories" and briefly explain how you're working to improve it. Here's an example:

"My greatest weakness is that I often take too long to make a decision, even when I know the correct choice.

For example, when I was running my math tutoring business in university, one of the tutors I hired received very 'mixed' feedback from students. Some loved his style, and some hated it.

He wasn't hurting the business, but he also wasn't a huge benefit, and he was difficult to deal with since he always asked for higher pay.

I knew I should have let him go within the first 2 – 3 months, but I waited 6 months to do it, which reduced the time I could spend on sales and limited our growth.

I've been working on this problem by forcing myself to make several decisions each week – even small ones – to get into the habit of acting more quickly."

4. What's your biggest failure?

You can use your "Failure" story here, but make sure it *is* a "real failure," or you'll look silly.

For example, don't say that earning a B+ in one class was your "biggest failure."

A more appropriate failure might be a job or internship that went poorly, a business or student club that failed to take off, or a disappointing study-abroad experience. Here's an example:

"My biggest failure was being forced to shut down my math tutoring business in university. I started the business because I received a lot of requests from other students for help with math assignments, and I had developed good teaching methods.

Initially, it went well, and I won a few dozen satisfied clients. But when I tried to expand the business by hiring more tutors, I struggled to maintain service quality.

I was spending so much that we began losing money, so I had to shut it down and go back to only a few of my clients.

I was disappointed, but I learned the difficulty of delivering a service while managing and training others at the same time. If I did it again, I would split up the roles and focus on one or the other."

5. What feedback did you receive from your most recent internship or job?

This one is a combined Strengths and Weaknesses question, and like all "combined" questions, it's tough to give supporting stories *and* explain how you're fixing your weaknesses.

You'll have to state something brief for the "fix" or possibly leave it out if you're using multiple stores in your answer.

You don't need to give all 3 strengths and all 3 weaknesses; it's better to give 1 or 2 so that you have a few "in reserve" in case the person wants more. Here's an example:

"On the last day of my private equity internship last year, my Principal said he admired my ability to work long hours, get up to speed quickly on valuation and financial modeling, and find interesting companies efficiently.

In one case, we got an inbound deal a few days before a bank's bidding deadline, and I had to research the medical imaging industry and figure out how to value the company and assess its competitors, so I stayed in the office over a holiday weekend to finish it.

For areas to improve on, they said I wasn't always the best at managing my time and following up on assignments. For example, I'd often find interesting private companies and do the initial research but then spend too much time on new leads rather than following up on companies I had already found."

Return to Top.

Flaws & Failures

After the Teamwork & Leadership and Strengths & Weaknesses questions, the "Flaws and Failures" questions represent the third-most important "fit" category.

With these questions, **less is more**. The more you "explain" a flaw, the more bankers will wonder if you're hiding something.

Not all the questions here apply to everyone, so focus on the ones most relevant to your background and specific weaknesses.

1. Why are your grades so low?

You'll get this question if you have below a 3.5 GPA in the U.S. or below a 2:1 in the U.K. (or the equivalent in other countries). The *only* decent answer is an "improvement story":

"To be honest, I had trouble focusing in my first year of university, and I jumped between several different majors and classes. I also spent too much time on athletics, and my grades suffered.

But ever since I decided on accounting and finance, my grades have improved, and I have a 3.8 overall GPA in the major, with A's in every class after my first year. And I did that while taking a full course load, playing football, and working part-time."

2. Why haven't you taken any accounting or finance classes before? Do you really know the material?

Say that you decided on finance relatively late, so you didn't have time for formal classes. Point to your independent study, certifications, or outside classes to show what you've learned.

You *could* offer to answer technical questions or take an evaluation, but it's probably not a great idea to offer this upfront because it may sound defensive. Let them ask the technical questions if they want to test your knowledge officially. Here's an example answer:

"I haven't taken formal classes in school because I committed to my Materials Engineering major early, and by the time I became interested in banking, it was too late to switch majors and take more relevant classes.

But I have learned a lot through self-study, books, and several M&A case competitions I participated in.

I'm also studying for Level I of the CFA right now, which requires knowledge of accounting and finance, and I knew enough about valuation to complete several stock pitches for the student investment club."

3. Other candidates for our London office speak 3 – 4 European languages fluently. Why don't you?

Point to your other useful skills, such as your native English ability, expertise in a certain industry, or knowledge of programming language that might be useful for finance. Here's an example:

"I was raised in an academic system where other languages weren't emphasized, so I don't have the linguistic skills of other candidates.

That said, I am a native speaker of English with a lot of writing and editing experience, and I understand that you need native speakers to proofread and edit documents because of all the cross-border deals you do here. So, I feel that my skill set could still be helpful.

Also, I have other skills that many candidates lack; for example, I have a computer science minor, and I know VBA and Python fairly well, which could be useful for automating certain tasks."

4. You've never worked in investment banking before. Why do you think you have skills that are relevant to this industry?

Describe the skills that are required in investment banking and then explain how your previous work experience has given you similar skills:

"I haven't worked in banking before, but from what I know, you need to work long, stressful hours, use analytical and financial skills, pay great attention to small details, and work with internal teams and clients.

I've developed those skills in my time in corporate law at Wilson Sonsini, where I often worked with technology clients completing M&A deals. To do that, I had to advise them on their best legal options and read through hundreds of pages of documents on short notice.

Also, I took several corporate finance classes in law school and learned independently from online courses and books; I'm confident I can join and add value to your team by assisting with technical and deal process work."

5.You're a liberal arts major. How comfortable are you with math? Can you use Excel?

You can use a similar approach and point out how you've gained or used math and analytical skills outside of your major:

"I am a liberal arts major, but I've used math quite a bit outside of my classes, and I'm comfortable with numbers and Excel.

For example, I served as the Budget Chair for the student film organization I was in, and I helped collect fees from members, fundraise, plan events, and pay expenses; I used Excel to plan and forecast the expenses associated with film projects.

Also, in my strategy internship last year, I had to do market analysis using Excel and 'back into' many numbers based on rough estimates."

6. How committed are you to investment banking?

You've already done a private equity internship, so how do I know you won't just leave and return to private equity in a few years?

You saw the private equity internship as a step in your path into investment banking, and you prefer banking for specific reasons; the internship convinced you *not* to pursue PE.

These reasons could include: 1) Too much time spent monitoring portfolio companies and sourcing deals in PE; 2) Compensation being less correlated with short-term performance; 3) Narrower deal/modeling exposure in PE since most deals die in the early stages.

Here's a sample answer:

"I used my private equity internship to get deal experience and learn more about modeling and valuation. I found a local firm that needed interns and thought it would be more relevant than other options like wealth management.

I learned a lot, but the internship convinced me not *to enter the field. I spent a lot of time monitoring portfolio companies and sourcing deals in PE, but I didn't work on many different types of deals – just buyouts and add-on acquisitions – and most didn't advance far.*

I want to work on actual deals rather than monitoring companies and taking quick looks at potential deals and passing, so I prefer banking to private equity."

7. You've had several work experience gaps where you weren't working for 3 – 4 months at a time. What were you doing?

This question is *almost* a "Weakness" one, " but it asks about specific experiences rather than your personality or skill set.

To answer it, pretend you did something constructive in each work experience gap, even if it's a huge stretch. Here's an example:

"Sure. I have a few gaps in my work experience because I sometimes took time off between jobs to do volunteer work, complete certifications, or learn new skills.

To save space, I didn't list all of that under 'Work Experience' on my resume. But, for example, when I quit my job at Deloitte three years ago, I went to Costa Rica to learn surfing and study for Level I of the CFA, which I later passed.

In another gap, I did volunteer work in the Dominican Republic and helped the country recover from a natural disaster, and I did a short internship with a local investor there. So, I've always learned new skills or done work during these gaps."

8. You went to business school in Los Angeles but want to work in investment banking. Why didn't you go to school in or near New York City instead?

With this question, you need a **specific** reason for attending the MBA program you did.

The best reason is that you were working full-time in the area and wanted to continue working during a part-time, weekend, or evening program.

You could also say you were interested in an industry in the area (e.g., tech for San Francisco or energy for Houston), so you wanted to stay in the region.

Then, assuming that you *do* want to be in a financial center such as NY or London, point out that your long-term goal is to work there, which is why you are making the move now:

"My full-time software sales job before business school was in LA, and I completed a part-time/evening program in the area so I could keep working and apply the knowledge from my MBA program to the job itself.

Also, my school has a good track record of sending students into investment banking and a solid alumni network, so I thought it was a fine choice.

When I finish the program, I want to relocate to New York to work in banking full-time since it's the center of all deal activity in the U.S. I also have some connections to the region since I grew up on Long Island and still have friends and family there."

9. The person in the other room has perfect grades from Harvard/Oxford.

Why should I hire you over him?

Point out that it's the *person* who does the work, not the degree. Also, point out that you had to put in far more effort to win this interview than the other person (if you went to a non-target or non-core school).

You can also point to the relevancy of your work experience or your commitment to *staying in* investment banking, unlike many of the students from these top schools.

That said, be careful with your **tone** in answering this type of question because you don't want to come across as defensive. Here's an example:

"You should hire me over him because I'm very motivated, I had to put in a lot more work to make it here, and I'm committed to investment banking for the long term.

Coming from a non-core school, I had to send out over 1,000 cold emails just to win interviews, and I made 5 separate weekend trips to New York – just to win my first internship at a middle-market bank last year.

I was the top-ranked intern in my class and outperformed students at higher-ranked schools because it's the person who does the work – not the degree.

So, I can immediately add value to your team, and if you hire me, you know I'll stick around for the long term because my goal is investment banking – I'm not going to join and then quit for private equity in a few years."

10. You completed an investment banking internship but then accepted a full-time role in Financial Planning & Analysis (FP&A) in corporate finance after graduation.

Why? Did you fail to get a return offer from your internship?

If you go from an IB internship to something "lower" in the prestige hierarchy, such as an FP&A job, no banker will believe you did it voluntarily.

Just admit that you failed to get a return offer and took the other role to gain experience, improve your technical skills, and prepare to re-apply to full-time IB roles.

To explain why you did not get a return offer, you can use an "I made too many mistakes initially" story, a "no one received return offers" story, or a "tricky situation that made it difficult to get to know the team" story. Here's an example:

"I did not get a return offer from my internship, so I took the FP&A role to gain full-time work experience, improve my modeling skills, and prepare to apply for banking roles once again.

This happened because of some mistakes I made in the first 1 – 2 weeks of the internship and the fact that they switched my team midway through.

I did not do a great job communicating my work tasks and asking questions about the requirements for research and pitch books, so the full-time Analyst found my first presentations confusing.

I improved after the team raised this as an issue, but they switched me to a different group after a few weeks, so I didn't have enough time to prove myself and win support for a return offer from both groups."

Return to Top.

Recruiting Process

These questions are not difficult, but sometimes, it's tough to strike the **right tone** in your answers.

For example, if you get a question like "Where else are you recruiting?" you must answer slightly differently depending on your level.

Also, sometimes, it's tricky to know how much you should tell the interviewer and how much you should leave out.

1. Which other investment banks are you applying to?

You **do** want to name other banks that are about the same "level" (bulge bracket, elite boutique, middle market, regional boutique, etc.).

Name-dropping helps your case by giving you "social proof" and showing the bank that other banks like you. This firm is still your top choice, but you have other options.

Avoid mentioning firms at different levels (if possible), as firms may take it as a sign that you're not confident about getting an offer in their "tier." Here's an example:

"The investment banking division at JP Morgan is my first choice, and I would love the opportunity to work here if I receive an offer.

However, I am also applying to several other large banks, including Morgan Stanley, Bank of America, Barclays, and Citi."

2. Which groups within investment banking are you most interested in?

With this question, say that you'd be very grateful for the chance to work *anywhere* at this firm, but that if you have the choice, you have a few preferences.

You don't have to rank your preferences, but you should state that the interviewer's group is among your top choices.

If you're at the MBA level, you *need* to tie your preferred group to your pre-MBA work experience. You're at a disadvantage if you don't do this since most candidates at this level have an industry focus.

Sample Undergraduate-Level "Good" Answer: *"If I win an offer at JP Morgan, I would be grateful for the chance to work in any group within investment banking. But if I had the choice, I would prefer Leveraged Finance, M&A, or Industrials, as I want broad exposure to M&A and debt deals, and Industrials offers great variety."*

Sample MBA-Level "Good" Answer: *"I worked in Microsoft's business development and corporate finance teams before my MBA, so I would prefer to work in the Technology or TMT team to use my industry knowledge. But I would also be open to other groups if I'm fortunate enough to win an offer here."*

3. Have you received offers from any other firms? Where are you in the interview process?

If you **have** received an offer elsewhere, mention it because it will instantly double your desirability.

If not, say that you're still going through interviews with other firms and haven't finished your final rounds.

If you already went through final rounds at another bank, you *may* want to leave out that detail because you'll lose some credibility if you don't know your status yet. Here's an example:

"I'm going through the initial interviews at Morgan Stanley and Bank of America, and I'm scheduled for final-round interviews at Citi and Barclays next week."

4. You applied to our investment banking rotational program last year.

Why didn't you win an offer, and what has changed since then?

Banks do not necessarily track this information for all candidates, but an *individual interviewer* might remember you.

Say that you knew less about accounting/finance, had less work experience, or had a lower GPA, and then explain your improvements since then. Here's an example:

"Sure. I don't know exactly why I didn't win an offer, but I believe it's because I knew less about accounting and finance than other candidates. My interviewers thought I was a good fit but mentioned that I had trouble with the more difficult technical questions.

Since then, I've completed a boutique investment banking internship at a local firm and taken additional accounting and finance classes, and I feel more confident in my technical knowledge."

5. Do you have any questions for me? [at the end of the interview]

You could ask about the interviewer's background, what surprised them the most, the types of deals the bank is working on, or the qualities that made previous interns successful.

Use common sense and do **not** ask inappropriate questions (e.g., their compensation) or questions with easy-to-find answers (e.g., an average day in the life of a banker).

If you've already been through multiple interviews, you don't "need" to ask yet another question at the end of your 10th interview. Just explain how you've already been through 9 interviews and have no further questions. Here are a few examples:

"Sure. Can you tell me about your background and how you decided to join this group?"

"Sure. I understand what interns in your team do, but what qualities have made interns successful in the past? I'm especially interested in parts of the job that people rarely discuss."

Return to Top.

Resume/CV

These questions mostly test if you understand what you have written about on your resume or CV. If you've exaggerated or outright lied about something, it *will* come back to haunt you in interviews (so don't do it).

You can answer many of these questions by re-using your Success, Leadership, and Failure stories, which is why it's so important to craft those "short stories" first.

1. What are the three most impressive entries on your resume?

This question should be easy because you can answer it with your three short stories.

You could spin your "Failure" story as a non-failure or make it sound less serious, which works if you had an extremely challenging goal, such as starting a business while in university.

You could also use a different experience and describe it in 1 – 2 sentences instead. Here's an example:

"My three most impressive experiences are my strategy and finance internship at IBM, my math tutoring business in university, and my Treasury internship at a local tech startup.

At IBM, I helped analyze thousands of financial transactions, found the most time-consuming processes, and suggested ways to automate them, which saved hundreds of hours per year.

In my second year of university, I started a math tutoring business, won dozens of clients, and hired a few coaches; I shut it down because I wanted to focus on school and gain more finance experience.

Finally, in my Treasury internship, I helped the firm comply with its Debt covenants by working with different departments to move around Cash right before the reporting deadline, which saved the company thousands in fees and interest."

2. What did you learn in your most recent internship at [Firm Name]?

Hopefully, the interviewer is asking about an entry that matches one of your short stories.

If not, think about **the skill set overlap** between this recent internship and investment banking.

You could discuss pitch books or marketing materials you worked on, deals or clients you worked with, market/industry research, or even helping the full-timers with emergency tasks or "random" work that shows how well you function under pressure. Here's an example:

"Sure. In my recent internship at a real estate brokerage boutique in my area, I researched new properties in the market and demographic trends to estimate potential pricing based on Cap Rates (yields) for comparable properties and deals.

I spent a lot of time combing through data, finding recent comp sales in databases, and touring properties to see how their 'in-person' values might differ from market norms.

We used this to build quick valuations for multifamily and office properties and figure out which ones might be appealing to different types of institutional buyers, and I learned about property valuation and narrowing lists of potential buyers in the process."

3. Why did you quit your job in the [Company Name] [Group Name] team after you were promoted twice?

This answer should come directly from your main "story" – the 300-word version where you explain your career transitions and why you want to move into investment banking.

Say that you did well in the role, you liked your team, and things were going well, but your career goals changed, so you decided to move elsewhere. Here's an example:

"Sure. I enjoyed my time at IBM, liked my team, and did well there as I worked all over the U.S. and Europe in corporate finance.

I left the job because I wanted to work on M&A deals instead of doing the monthly and quarterly reporting common in corporate finance.

I became very interested when IBM acquired a smaller startup, DataStax, to expand its presence in the cloud database market. I liked the due diligence and financial analysis I assisted with in that deal and became more interested in M&A over time.

Moving to corporate development at IBM wasn't an option, so I decided to join KPMG, work in Transaction Advisory Services there, and then move into investment banking."

4. Why did you attend your university?

The answer to this question should come directly from your main "story," so you should not need to prepare much here.

You probably won't get this question if you went to an Ivy League or equivalent school, but you may get it if you're at a non-target or another school the interviewers are unfamiliar with.

Cite the academics, the generous scholarship you received, the location, or almost anything else to explain your choice:

"Sure. I went to Purdue because I'm from Indiana originally, and I received a generous scholarship there that covered 90% of my tuition and living expenses.

It has good engineering and business programs, and I was interested in both. I also liked all the sports teams since I follow a lot of college football and basketball.

I won admission to a few out-of-state universities that were higher in the rankings, but they would have been much more expensive, and I wanted to graduate with as little debt as possible."

5. Why did you attend an MBA program after you already had 2-3 years of work experience?

Couldn't you move into banking directly?

If your career is "too different" (e.g., marketing), it is extremely difficult to network into investment banking after working for a few years.

Even if you've done something closely related, such as Big 4 advisory, it gets more difficult the longer you wait.

You can also say that you received feedback from bankers indicating that you'd need an MBA to make the switch. Here's an example:

"I tried doing that for about 6 months but didn't get much interest in my candidacy. I figured my advisory experience at Ernst & Young and the finance and business development work I did at my startup would help me.

But 90% of the bankers I spoke with said I would be perceived as a 'career changer' candidate since I had started my own company.

Almost everyone recommended that I complete a top MBA program to transition into investment banking, so I took their advice."

Return to Top.

Understanding Banking

"Understanding Banking" questions include:

- What bankers do and how they advise on M&A and capital markets deals.
- What different groups, such as Leveraged Finance and M&A, do.
- How the process for an initial public offering (IPO) or acquisition works.
- How you would summarize recent stock market and M&A activity.

If you've done enough research to win interviews in the first place, you should know these topics like the back of your hand.

1. How do companies select the investment banks and bankers they work with?

Companies usually select banks based on **relationships** developed over the long term, but sometimes, it's more random and happens because of a pitch or "bake-off" right before the deal process begins (banks compete to win the business).

The selection depends on the team's comfort with each bank, the banks' track records, and their key recommendations. Here's an example answer:

"Companies select banks based on the long-term relationships they've developed, the banks' track records, and the pitches the banks make.

Often, bankers start speaking with companies long before a deal takes place and advise them informally over the years, leading to future transactions.

If the bank is known for something specific, such as selling tech companies for high multiples, that might also factor into the company's decision.

Finally, each bank's pitch in a 'bake-off' meeting also factors in: Companies pick the bankers they're most comfortable with and the ones that give the best recommendations."

2. Let's say I'm working on an Initial Public Offering (IPO) for a client. Can you briefly describe what I would do?

If you want the full details, please see the IPO process and ECM articles on M&I. Here's a concise summary:

"In an IPO, you aim to get the client a good valuation, recruit solid institutional investors, and support the client's share price once it goes public.

First, you meet the client and gather financial, industry, and customer information.

Then, you meet with other bankers and lawyers to draft the IPO registration statement, called the 'S-1' in the U.S., which markets the company to investors.

You receive comments from the SEC and revise the document until it's acceptable.

Then, you spend a few weeks on a 'roadshow' where you pitch the company to institutional investors. You get pricing indications at the end, you sell shares to the investors at that 'IPO price,' and then the company begins trading on a stock exchange.

The hardest part of the process is balancing the client's expectations with the investors' and ensuring that the initial share price is neither "too high" nor "too low" because the best outcome is a modest gain on the first day of trading."

3. Walk me through the process of a typical sell-side M&A deal.

Again, we have an article on M&A investment banking if you want more detail, but here's the short version:

"In a sell-side M&A deal, the bank markets the company to potential buyers and helps negotiate a deal for the best price and terms possible.

The bankers start by meeting the company, creating initial marketing materials like the Executive Summary and Offering Memorandum (OM), and deciding on potential buyers.

Then, they send the Executive Summary to potential buyers to gauge interest, and they respond to follow-up requests for more information.

Next, they narrow the list of potential buyers by setting a bid deadline and requiring written Indications of Interest (IOIs) from buyers. Bankers select certain bidders to advance, continue to send them information, and narrow the list.

Eventually, they pick the winner, negotiate the Purchase Agreement, and announce the deal. Bankers try to maximize the client's price, but they also add value by negotiating the other terms and winning competing offers."

4. Walk me through the process of a typical buy-side M&A deal.

This one is like the process above, but now you *minimize* the price so your client pays less. The steps above are reversed because you approach **potential sellers** rather than buyers:

"In a buy-side M&A deal, the bank helps the client select the best acquisition target, minimizes the price it pays, and gets it the best deal terms possible.

First, the bankers spend time doing upfront research on dozens or hundreds of potential acquisition targets based on what the client wants to buy.

Next, they narrow the list and decide which companies to approach; they conduct meetings with interested parties and gauge each one's receptiveness.

Then, they narrow this list further and conduct more in-depth due diligence on the most likely sellers. They use the companies' financial information to value the target companies and propose offer prices.

Finally, the bankers negotiate the price and key terms of the Purchase Agreement and announce the transaction.

Bankers add value in this process by minimizing the price, finding potential targets, and getting the best terms possible."

5. Walk me through a debt issuance deal.

This one depends on whether you're selling the debt to investors (common for Senior Debt, Subordinated, and Mezzanine issuances) or your bank is keeping the debt on its Balance Sheet.

In the walkthrough below, we'll assume a "generic" process and note the possible differences (see the full DCM article for more):

"The process of raising debt is similar to the process of raising equity, but your goals are different because you want to get the lowest interest rates and the least restrictive covenants and other deal terms for the client.

First, you meet with the client and gather basic financial and market information.

Next, you work closely with DCM or Leveraged Finance to develop a credit model for the company; you analyze the company's credit stats and ratios in different cases, focusing on the more pessimistic ones, to assess the most appropriate terms.

Then, you create an investor memo describing the issuance and "selling" the company to potential investors.

If you're not syndicating the debt, this memo would be for the bank's internal credit committee to win approval for the deal.

If you syndicate the debt, you would contact potential investors and win commitments to purchase the entire issuance."

6. Can you describe a Leveraged Buyout (LBO) and how the process works?

Please see the LBO technical question sections for the model walkthrough and math; this answer describes the deal process.

A leveraged buyout is similar to a sell-side M&A deal since the bank helps a company sell itself; the key difference is that the potential buyers are private equity firms:

"In an LBO, a private equity firm uses debt and equity to acquire a company, operates it for several years, and then sells it to realize a return.

Like a sell-side M&A deal, the bank advising the company still aims for the best price and deal terms.

First, the bank meets with the company, creates marketing materials like the Confidential Information Memorandum (CIM) and Executive Summary, and makes a list of PE firms to approach.

Then, the bankers send out the materials to gauge interest, respond to follow-up requests, and send more information.

The bank narrows the list of potential buyers by setting a bid deadline and requiring Indications of Interest, and sometimes there are multiple rounds of bids.

After the bank and company pick the winner, they negotiate the terms of the deal. The bank could potentially offer debt financing from its Leveraged Finance team to support the deal as well, but this varies by bank, region, and deal type."

7. What's in a pitch book?

In a shocking plot twist, we also happen to have a detailed article on IB pitch books, which you should review for many examples.

Answering this question *concisely* is tricky because there are many different types of pitch books, so we recommend focusing on the *common elements* in all of them:

"The point of a pitch book is to convince a company to hire your bank as an adviser on an M&A deal, equity or debt issuance, or another transaction.

First, the bank presents its "credentials" – its recent track record and similar deals it has worked on – to prove its expertise.

Second, the bank summarizes the company's options and its key recommendations.

Third, the bank presents a valuation of the company and related financial models; in financing deals, the bank might show the company's capital structure before and after the deal and information about the credit stats.

Next, the bank shows potential acquisition targets (for buy-side M&A deals) or potential buyers (for sell-side M&A deals)

The bank concludes by summarizing everything, giving its top recommendations, and outlining the timing of a potential deal."

8. Can you tell me about the different groups at an investment bank?

The broad categories are "industry groups" (Healthcare, Consumer/Retail, Technology, etc.) and "product groups" (Mergers & Acquisitions, Leveraged Finance, Equity Capital Markets, etc.).

Industry groups work with companies in only one industry, but they work on multiple deal types, while product groups advise on only one deal type but across all industries.

Some groups are also more or less technical, have better or worse hours, and offer better or worse exit opportunities, but **you should not bring up these points** because you don't want to seem motivated solely by potential exits. Here's a sample answer:

"There are industry groups and product groups at most investment banks. Industry groups work within only one industry, such as Healthcare, Retail, or Energy, but they work on all deal types within that industry; they focus on relationship development with clients and use their industry knowledge to advance deals.

Product groups include M&A, Equity and Debt Capital Markets, and Leveraged Finance. Each group executes only one deal type, such as acquisitions or debt financings, but they do so across all industries.

They become experts in the technical details behind deal execution."

9. Let's say you become an investment banker, and you're hired as the financial advisor for a company to help it expand its business.

How would you approach this task, and how would you add value as an advisor?

There isn't a "framework" to answer this question, so here's the sample answer:

"First, I would ask the company for its specific expansion goals – a certain revenue or profit target, a new geography, or a new product, for example.

Then, I would assess the company's financial and market profile and determine if it makes the most sense to acquire other companies, raise capital, set up partnerships, or pursue another strategy, such as organic growth.

For example, if the company's leverage ratio is very high and it has almost no cash, acquisitions make less sense than partnerships or raising equity to fund organic expansion.

As a banker, I would add value by introducing the management to potential partners and acquisition targets, negotiating deals, and managing the process to get the best outcome."

10. A client approaches you and asks whether it should go public or sell to another company. How would you help the management team think through this decision?

You should present the **trade-offs** of both strategies to the company, such as the potentially faster process and "clean break" in an M&A deal and the slower/more time-consuming process but potentially higher long-term value in an IPO.

Again, it's best to read and understand the sample answer here:

"I would present the trade-offs of both options to the client and explain that an M&A deal offers a 'clean break' and sometimes a faster/easier process, but the client will give up most of its control and won't participate much in future upside. Many deals also fail.

In an IPO, the client sells only a minority stake, so shareholders and employees get some liquidity, but the company keeps operating as a standalone entity and retains control.

But IPOs are time-consuming and don't necessarily lead to higher prices or faster growth.

The best option depends on whether the team wants to stay with the company for the long term and how much potential the business has – if the team is in it for the long haul, and the potential is very high, an IPO often makes more sense.

If the team does not want to stay, or the business appears to be nearing its ceiling, then an M&A deal makes more sense."

Return to Top.

"Why Banking?" and "Why Our Firm?"

These questions are not that important because you should have already answered them in your "story."

However, interviewers could still ask for slight variations to confirm your motivations and cross-check your responses.

(Also, note that the basic "Why investment banking?" question is in the first section.)

1. What are your long-term plans? Where do you see yourself in 5 – 10 years, and are you committed to investment banking?

At the Associate level and above (MBA recruiting), the only acceptable answer is: *"Yes, I am 100% committed, and I plan for a long-term career in banking."*

You can be a bit more open-ended at the Analyst level (i.e., undergrads and recent grads with only a few years of work experience).

For example, you can say that you want to work on deals in Industry X due to your previous work/academic experience and plan to do so over the next 5 – 10 years. After that, you want to continue in a finance job related to Industry X, but you're not sure where that will be yet.

2. You said you want to work at our firm to gain exposure to bigger, more complex deals. But what if an even bigger bank comes calling next year – would you move again?

This one will come up if you're working at a regional boutique and you're interviewing with a middle-market bank, elite boutique, or a slightly larger bank.

To answer this, you should say that this bank offers the ideal mix of deal size/complexity and client interaction. Yes, a larger bank would offer bigger and more complex deals, but you also value the team size and client interactions, and you prefer this firm because of the balance it offers.

3. Why do you prefer the [Industry Name] group to other industry groups at our firm?

You could use almost anything to explain your interest, from the professions of your family and friends to previous internships to student activities, classes, and bank-sponsored competitions.

For example, to explain your interest in the real estate sector, you can point out that one family member operates properties or worked as a broker, and you interned at a property management company and learned the fundamentals from that. But you're interested in working on larger deals involving real estate-related companies rather than managing individual properties.

We don't necessarily recommend citing "industry fundamentals" unless they ask you about them; it sounds weird to say that you're interested in real estate investment banking because real estate is an inflation hedge, for example (in the story above).

4. Why are you moving from a larger bank to a smaller bank? Did you not receive a return offer at the larger bank?

If you did *not* get a return offer, please refer to the Flaws & Failures section, own up to it, and explain how you've improved over that previous version of yourself.

If you are legitimately moving to a smaller bank (e.g., bulge bracket to elite boutique) despite receiving an offer at the large bank, you could point to the advantages of independent firms over the large banks:

"I received a return offer at Morgan Stanley, but I'm more interested in Lazard because I'd be able to focus on M&A and Restructuring deals, and I would get more client exposure because of the smaller team sizes.

Also, I think I'm a better fit for your culture based on the bankers I've met so far.

Finally, I'm interested in a long-term career in banking, and your firm is much better for that since you offer more independence and more interesting work."

5. Why do you want to work in M&A rather than an industry group?

Link this to your interest in a specific M&A deal or an M&A case competition and say that you want to specialize in deal execution rather than a specific industry.

Do **NOT** cite "exit opportunities" or the ease of moving into private equity. Here's an example:

"Sure. Just to clarify, I'd be open to working in any investment banking team if I'm fortunate enough to win an offer at your firm.

But if I could pick, I would choose M&A because of my interest in mergers and acquisitions and the bank-sponsored M&A case competitions I've entered in the past.

I also enjoy the technical analysis of deals and deal mechanics more than learning a single industry in-depth.

The Technology and Healthcare teams would also be great, but I would prefer M&A if I had the choice."

Return to Top.

"Outside the Box" Questions

These questions are tricky because you can't necessarily "prepare" for them.

Interviewers could throw many random questions at you; all you can do is **be aware** of the topics they might ask about.

Many of these questions are also forms of "the airport test." If a banker gets stuck with you in an airport for the day, could they get along with you and stay entertained? Or would they be tempted to read a book, start a new streaming series, or jump out the window?

1. Tell me something interesting about you that is NOT listed on your resume.

One strategy here is to pick **an experience from when you were a young child.**

You probably have a lot of university-level experience on your resume, but you're less likely to include items from high school/secondary school, middle school, or elementary school.

You can use almost anything, from travel to family to sports and activities. Just use common sense and don't say anything about your OnlyFans "side hustle" or a stint as an AI/crypto "influencer." Here's an example:

"Sure. When I was in elementary school, I participated in a program where we traveled around the U.S. and lived in all 50 states over 5 years.

We spent just over one month in each state and took classes there, played sports, did volunteer activities, and met people from all over the country.

Our teachers also changed as we moved to new areas, so I learned a lot and later studied abroad in Brazil partially because of this experience."

2. You have $1 million, but you are NOT allowed to invest it or use it to make more money.

How would you spend the money?

Answer this question by admitting that you'd spend some money on a high-end vacation, a nice car, or another luxury good you've always wanted.

You'd spend the rest on something related to your hobbies and interests – ideally, something that also benefits others. Here's an example:

"First, I'd use a small portion of it on a vacation to the Galapagos Islands. I might also use some money on a nicer apartment or home.

Then, I'd use the remaining amount to open a community gym in my area. I've practiced weightlifting for years, and I think all kids should learn about physical fitness early.

Where I grew up, they didn't have the chance to do that because it's a rural area without any nearby gyms."

3. What's your "personal Beta"?

"Beta" in the Capital Asset Pricing Model (CAPM) measures a stock's returns relative to the returns of the entire market.

If the stock's Beta is 1.0, it increases by 10% when the market increases by 10%.

If the stock's Beta is 2.0, it falls by 20% when the market falls by 10% but rises by 20% when the market rises by 10%.

You should say that your "Beta" is above 1.0 but not too much above it. You're ambitious, and you try more things than the average person, but you don't take inordinate risks:

"My 'personal Beta' is around 1.5. I take more risks than the average person so I can achieve more, but I'm not enough of a risk-taker to quit everything and do something completely random, like starting an adventure tourism company in Africa.

I'm happy to accept the risk if an internship or job doesn't go as planned, and I don't like to 'play it safe' with those. But I've balanced that by working at larger, well-established companies."

4. In 30 years, your name turns up on the front page of a major newspaper.

What would the headline be, and what would the story be about?

With this question, you can show more "banker-like" traits such as work ethic and analytical skills – but you shouldn't take it *too* seriously.

So, your headline might be about starting a company, becoming a best-selling author, curing a disease, or funding a mission to another planet.

Combine ambition and novelty without going too far into "sci-fi" territory (e.g., **don't** say that you will discover faster-than-light travel, as this is implausible within 30 years):

"The headline would probably be: 'First Manned Mission to Jupiter Returns Intact.' The story would be about how I funded a mission to go beyond the asteroid belt in our solar system and study the gas giants.

I've always been interested in space exploration and the possibility of mining asteroids, moons, and other planets, so if I do well over the next 15 – 20 years, I might fund this type of mission.

It takes at least a few years to reach Jupiter at maximum rocket speeds, so this entire mission would probably take at least a decade, if not longer."

5. If you were an animal, which one would you be?

Don't take this question too seriously; use it as a chance to show your personality and make a light-hearted comment.

It's fine if you can tie in the qualities that bankers are looking for, but don't try too hard:

"I love to swim, and I also like group activities, so I would probably be a dolphin. Also, dolphins never really sleep – at least one side of their brain is always awake – and that might be a useful skill for this job!"

Return to Top.

Discussing Transaction Experience

Discussing **transactions** (M&A deals, equity issuances, debt issuances, investments, etc.) ranges from "nice to have" to "very important," depending on your work experience.

If you're a university student or career changer, it's not that important because you probably don't have deal experience from your previous internships/jobs.

You should still be able to discuss a **recent deal** in the news, but you don't need to be an expert on the mechanics.

But if you've had significant deal experience in previous IB, PE, or corporate development roles, **you should be prepared to discuss it in-depth.** Anything on your resume or CV is fair game, so if you list a deal there, make sure you know the details.

This section presents questions about deals in the news and deals you have worked on. There aren't necessarily "correct" answers, but there are *better* and *worse* answers.

- Interview Guide – How to Discuss Deals, Companies, and Markets
- Interview Guide – How to Discuss Your OWN Deals in Interviews

1. Tell me about a recent deal in the news.

Ideally, you'll pick a deal relevant to the group you're interviewing with, but you won't be able to research and remember 10+ deals, so we recommend picking just one deal in a "generalist" industry, such as technology, healthcare, or consumer/retail.

Focus on the following points when researching the deal:

1) **Background Information** – What are the approximate revenue and EBITDA of the Buyer and Seller? What industries and geographies are they in? Use the company's standalone figures for equity and debt deals.

2) **Deal Rationale** – Why did the Buyer or Seller want to do the deal? Or why did the company want to issue debt or equity?

3) **Premium Paid, Deal Multiples, or Credit Stats/Ratios** – Give a rough idea of the price and any unusual features. You can cite the coupon rate, original issue discount, and credit stats for debt deals.

4) **Your Opinion of the Deal** – Will it benefit the company raising capital? What about their investors? Will both the Buyer and Seller in an M&A deal benefit? Why or why not?

The research process for these points is beyond the scope of this guide, but here's an example outline for a real deal (Celsius Holdings' $1.8 billion acquisition of Alani Nutrition):

1) **Background Information** – Celsius Holdings is an energy drink and liquid supplement company with ~$1.4 billion in revenue and ~$160 million in EBITDA. Alani Nutrition is a producer of zero-sugar energy drinks, snacks, and protein shakes geared toward females; it had ~$600 million in revenue and $87 million in EBITDA at the time of the deal.

2) **Deal Rationale** – Despite strong revenue growth in earlier years, Celsius' sales had fallen in the most recent quarter due to poor consumer spending and convenience store sales and a saturated energy drink market; Alani Nu would allow it to return to growth and gain new distribution channels.

3) **Premium Paid, Deal Multiples, or Credit Stats/Ratios** – Celsius paid around 3x trailing revenue and 21x trailing EBITDA based on press releases. These are very high multiples for food & beverage companies, but Alani Nu had grown at 50% per year in the two previous years, so they are justifiable. If you include the full $50 million of potential synergies and subtract the $150 million of tax benefits, as the company does (see page 30 in the link above), the EBITDA multiple is only 12x, which is more reasonable.

4) **Your Opinion of the Deal** – This seems like an expensive deal in a market segment that is notoriously difficult; energy drink makers tend to grow quickly and then "flatline" once they saturate their markets, and we don't know how close Alani Nu is to market saturation. Also, Celsius issued $900 million of Debt to do the deal, which raised the combined Debt / EBITDA to over 2x, even after synergies. This might limit the company's ability to do larger deals.

2. Can you expand on your opinion of this deal? Would you have done the deal if you were the buyer or investors? Why / why not?

I would not have done the deal at this price. It would have been better to offer a higher Earnout component and link it to performance over the next 3 – 4 years, especially related to the EBITDA and synergy goals.

The Debt and Stock components of the deal also make it more likely to be EPS-dilutive; a lower purchase price or higher Earnout component would have helped.

Also, the market trends and track record of acquisitions in this sector aren't great, so future growth potential and potential sales cannibalization are also concerns.

3. Were there any unusual deal terms?

The $25 million Earnout, based on only performance over the next fiscal year, seems unusual and almost pointless because it's less than ~2% of the deal's value. That's not enough to make a substantial difference in EPS accretion/dilution or the deal's IRR.

A much higher Earnout component contingent on multi-year sales, EBITDA growth, or synergy realization would have been more useful.

4. What were the main risk factors in this deal?

Besides the high multiples for a company with unclear future growth potential, there's also a decent risk of sales cannibalization because Celsius has a "gender-neutral" target audience, while Alani Nu is female-focused, so Celsius might already have a good portion of the Alani Nu customer base.

It's also not clear how well Alani Nu will expand Celsius' distribution channels, as they both sell at convenience stores and similar online and offline retailers; if anything, Celsius' relationship with Pepsi is likely more useful for Alani Nu's sales.

5. Can you tell me about one of the deals from your most recent internship or full-time job?

We have a 17-page guide about this one question, but the short version is that you should pick a deal to which you made a **significant personal contribution** and whose **key financial metrics** and **rationale** you can easily describe.

It helps if you can describe a closed deal rather than a pending or failed deal, and it also helps if you can describe an M&A or Restructuring deal rather than a capital markets one.

When you outline your deal discussion, focus on the **company background**, the **deal motivation**, your **personal contributions**, and its **current status**.

Here's an example for Blackstone and Vista Equity's $8.4 billion buyout of Smartsheet:

1) **Company Background** – It was an $8.4 billion leveraged buyout (Purchase TEV of ~$7.7 billion); Smartsheet is an enterprise software company with collaboration and project management tools. It had ~$1 billion in LTM revenue at the time of the deal announcement, slightly negative EBITDA, and between 15% and 20% revenue growth. It operates in a crowded market, but its products are fairly "sticky."

2) **Deal Motivation** – Management wanted to exit the public markets following poor share price performance (50%+ drop from its level in previous years), and Vista and Blackstone were looking for a company with cost-cutting opportunities that could act as a platform for future roll-ups in the collaboration software space.

3) **Your Personal Contributions** – You helped address the buyers' concerns about the company's true renewal rates and its falling Net Retention Rate (134% to 116% over the two prior years); you also helped potential private equity buyers understand why the company's Operating Expenses had more than doubled over 3 years and pointed out areas for possible cost reductions.

4) **Current Status** – Following shareholder approval, the deal closed earlier this year. It is fully funded with $3.2 billion of Senior Debt and $4.8 billion of Equity.

6. What type of process did you use to find potential buyers or target companies? Why?

Explain why you ran a broad or narrow process (e.g., contacting dozens of potential buyers vs. just a select few). This depends on the deal type, how many logical buyers existed, and whether the company wanted to sell to private equity firms or focus on "strategics" (normal companies). Here's an example:

"For this deal, it was a narrow process because Vista and Blackstone approached the company first, over a year before the deal was announced. The Board decided against a broader sell-side M&A process because it would have been too distracting, and the initial offer price was reasonable. We arranged meetings with ~10 other potential buyers (mostly other PE firms), but the scope was still narrow since most parties did not advance in the process.

Given the declining net bookings, the company was in 'turnaround mode, so there wasn't much interest from other software companies."

7. How did you think about valuation for the client company?

For this one, you should quote the multiples and premiums and explain how they compare to market numbers. Here's an example:

"Smartsheet was a public company, so the valuation was based on a premium to the undisturbed share price (~21% with the initial offer).

While the premium was reasonable, the 7x trailing and 6x forward revenue multiples were far above the median multiples for comparable companies.

The 10-year DCF forecast was also based on aggressive growth and margin assumptions that weren't supported by the company's recent bookings and retention numbers.

So, in my view, the valuation was extremely high and made sense only if the buyers could cut costs aggressively and take the company to 30%+ margins over a few years."

8. What were your unique contributions to this deal? How did you move the process forward?

You don't want to take too much "credit" because interviewers know that Analysts and Associates do not greatly impact most deals.

It's fine to point out that you found errors in the financials, suggested different assumptions, or thought of new potential buyers. You can also point to findings in due diligence or questions you answered that led to certain buyers staying in the process longer. Here's an example:

"My main contributions were related to the data room and answering incoming questions from potential buyers about the company's Net Bookings, Net Retention Rate, and Operating Expenses – because they were all trending in the wrong direction.

I pointed out that Net Bookings were down mostly because of a few large accounts the company had lost recently but that its revenue concentration had improved due to an increase in smaller accounts. Also, the Net Retention Rate was falling not because of churn but because fewer customers were expanding their seats. Not all the buyers were convinced by these explanations, but one strategic and one financial sponsor advanced to the next bidding round after investigating these items, which added to the competitive tension."

9. If you were the buyer(s) or investor(s), would you have done this deal?

There's no right or wrong answer; you just need to explain and support your reasoning with data. Here's an example:

"No, I would not have done the deal because the price was far too high for a company with this growth rate and negative trends in its core metrics. An LTM revenue multiple of 3 – 4x would have been reasonable, but 7x was speculative and based on cost-cutting efforts that may or may not pay off. Since the company was public, though, this much lower multiple was not possible, as it would have implied a negative premium."

10. What is the status of this deal? Has it closed?

This is an easy answer if the deal has closed (as it did in this case). If it hasn't closed, say that it's "ongoing" or "pending."

If the deal has fallen apart or seems likely to fall apart, you could also say something to the effect of "ongoing" because deals fall apart and come back together all the time.

But if the deal you're describing fell apart *very publicly*, just admit it because it's easy to look up in that case. A vague response works only if the entire process has been confidential and you're not using real company names.

Return to Top.

Technical Questions (Generalist)

These sections act as a **quick review** if you already have a decent understanding of the key technical concepts.

They do **not** teach you the concepts from the ground up or walk you through models.

Please click the links in each section's description for the full walkthroughs and Excel files.

Finance Concepts

"Finance" refers to concepts such as the time value of money, the Discount Rate, and the internal rate of return (IRR).

Interviewers may not ask about them directly, but they often come up with other questions about accounting and valuation.

- Interview Guide – Finance Concepts | Quiz Questions
- Core Financial Modeling – Finance Concepts Module

1. Explain the time value of money. Is money today worth more than money next year due to inflation?

No. The time value of money means you could **invest money today** and earn something additional with it by next year.

Inflation also makes money less valuable over time, but the time value of money is about the *potential returns* of an investment made today.

2. What does the "Discount Rate" mean?

The Discount Rate represents your **opportunity cost** or "targeted annualized return." In other words, if you don't invest in *this* company, how much could you earn over the long term by investing in other, similar companies?

The Discount Rate represents **the potential returns and the risk** of other, similar opportunities.

If the Discount Rate is higher, both the potential returns and the risk are higher; the opposite is true if the Discount Rate is lower.

3. Why is the Discount Rate higher if the potential returns are higher? Shouldn't a company with higher potential returns have a lower Discount Rate, making it more valuable?

No. The Discount Rate is higher because *the potential returns and the risk move together*: If a stock could potentially go up by 10x, it's much riskier than a stock that only has the potential to increase by 2x.

The point is that there's no such thing as a "free lunch": Higher potential returns also mean that your chances of losing money are higher.

4. What is WACC?

WACC stands for the "Weighted Average Cost of Capital," the most common Discount Rate used to value companies.

To calculate it, you multiply the % Equity in a company's capital structure by the "Cost" of that Equity, multiply the % Debt in the company's capital structure by the "Cost" of that Debt, and add them up (and, if applicable, Preferred Stock and other long-term funding sources).

For example, if a company uses 60% Equity and 40% Debt, its Cost of Equity is 10%, and its Cost of Debt is 5%, then its WACC is 60% * 10% + 40% * 5% = 8%.

WACC represents the average annualized return you'd expect to earn if you invested proportionally in the Debt *AND* Equity of a company and held them for the long term.

5. How much would you pay for a company that generates $100 of cash flow every single year into eternity?

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate), where Cash Flow Growth Rate < Discount Rate.

If the cash flow does not grow at all, Company Value = Cash Flow / Discount Rate.

So, if your Discount Rate, or "targeted yield," is 10%, you'd pay $100 / 10% = $1,000.

But if your targeted yield is 20%, you'd pay only $100 / 20% = $500 for this company.

6. A company generates $100 of cash flow today, and its cash flow is expected to grow at 5% per year for the long term.

You could earn 10% per year by investing in other, similar companies. How much would you pay for this company?

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate), where Cash Flow Growth Rate < Discount Rate.

So, this one becomes: $100 / (10% – 5%) = $2,000.

A higher Discount Rate makes a company less valuable, and a higher cash flow growth rate makes a company more valuable.

7. What does "Present Value" mean, and what makes it change? How does it differ from Net Present Value?

The Present Value (PV) of an asset or company equals its future cash flows *discounted* at the appropriate Discount Rate (e.g., ~10% for many stocks).

"Discount" means that you take a future cash flow, such as $100, and divide it by ((1 + Discount Rate) ^ Year #), assuming a constant Discount Rate in each period.

The PV tells you what a company or asset is worth *today* based on its potential future performance and your returns expectations.

The PV increases if the company's expected future cash flow or growth rate increases or the Discount Rate decreases.

The PV decreases if the opposite happens.

"Net Present Value" means that you take the PV of these future cash flows and subtract the upfront cost or "asking price" of the company.

If the NPV is positive, the company is worth more than its current price.

8. What does the internal rate of return (IRR) mean? How do you calculate it?

In technical terms, the IRR represents the Discount Rate at which the Net Present Value of an investment equals 0.

Colloquially, you can think of it as "the effective compounded rate of return on an investment."

For example, if you invest $1,000 today and end up with $2,000 after 5 years, the IRR represents the return you'd have to earn on that $1,000, compounded each year, to reach $2,000 in 5 years.

It's 14.9% in this example, which you can verify with a calculator or Excel.

To calculate the IRR, enter the upfront investment as a negative in Excel and the future cash flows and sale value as positives and apply the IRR function to the whole range.

9. What affects the IRR? How do these factors differ from the ones that affect the Present Value?

Many factors are the same: Higher cash flows, growth rates, or future sale values for the asset increase both the Present Value and the IRR. Lower values for these assumptions reduce both the Present Value and the IRR.

One major difference is that **the Discount Rate does NOT affect the IRR** – because you are *solving for* the Discount Rate when you calculate the IRR!

The whole point of the calculation is that you can *compare* the IRR to the Discount Rate to determine if the investment is worth your time and money.

Another major difference is that the upfront price or "asking price" affects the IRR since it's entered as a negative for the first value in the series, but it does not impact the Present Value.

You should *compare* the Present Value to this upfront price to see if the investment is worth more or less than its price.

10. How do you use the IRR, Discount Rate, and Present Value to make investment decisions?

Normally, you calculate the IRR and compare it to the Discount Rate of a project, investment, or company.

If the IRR exceeds the Discount Rate, investing makes sense; if not, you should not invest.

Comparing the Present Value to the upfront price does the same thing: If the PV of the future cash flows exceeds this upfront price, invest; otherwise, do not invest.

Return to Top.

Accounting – Concepts

You **MUST** know accounting to have a shot at winning job offers.

Yes, everyone can go online and memorize the financial statements, but accounting questions are designed to evaluate how much you *understand* the key concepts.

In addition to the financial statements, you should also know about financial metrics/ratios and topics that have become more important over time due to rule changes (e.g., lease accounting).

- Interview Guide – Accounting Guide | Quiz Questions
- Core Financial Modeling – Accounting Module

1. What are the three financial statements, and why do we need them?

The three main financial statements are the Income Statement, Balance Sheet, and Cash Flow Statement.

The Income Statement shows the company's revenue, expenses, and taxes over a period and ends with Net Income, which represents the company's after-tax profits.

The Balance Sheet shows the company's Assets – its resources – and how it paid for those resources – its Liabilities and Equity – at a specific point in time. Assets must equal Liabilities plus Equity.

The Cash Flow Statement begins with Net Income, adjusts for non-cash items and changes in operating assets and liabilities (working capital), and shows the company's Cash Flow from Investing and Financing activities; the last lines show the net change in cash and the company's ending cash balance.

You need the financial statements because there's always a difference between the company's Net Income and the cash flow it generates, and the statements let you estimate and forecast the cash flow more accurately.

2. How do the financial statements link together?

To link the statements, make Net Income from the Income Statement the top line of the Cash Flow Statement.

Then, adjust this Net Income number for non-cash items such as Depreciation & Amortization.

Next, reflect changes to *operational* Balance Sheet items such as Accounts Receivable, which may increase or reduce the company's cash flow.

This gets you to Cash Flow from Operations.

Next, include the investing and financing activities, which may increase or reduce cash flow, and sum up Cash Flow from Operations, Investing, and Financing to get the net change in cash and ending cash balance.

Cash at the bottom of the CFS becomes Cash on the Balance Sheet, and Net Income, Stock Issuances/Repurchases, Stock-Based Compensation, and Dividends link into Common Shareholders' Equity.

Next, link the separate line items on the CFS to their corresponding Balance Sheet line items; for example, CapEx and Depreciation link into Net PP&E.

On the Assets side of the Balance Sheet, **subtract** CFS links; **add** them on the L&E side.

Finally, check that Assets equals Liabilities plus Equity at the end.

3. What's the most important financial statement?

The Cash Flow Statement is the most important single statement because it tells you how much **cash** a company generates, and almost all valuation is based on cash flow.

The Income Statement includes non-cash revenue, expenses, and taxes, and excludes cash spending on major items such as Capital Expenditures, so it does not accurately represent a company's cash flow.

4. How might the financial statements of a company in the U.K. or Germany be different from those of a company based in the U.S.?

Income Statements and Balance Sheets tend to be similar across different regions, but companies that use IFRS often start the **Cash Flow Statement** with something *other* than Net Income: Operating Income, Pre-Tax Income, or, if they are using the Direct Method, Cash Received and Cash Paid.

IFRS-based companies also tend to place items in more "random" locations on the CFS, so you may need to rearrange it.

Finally, the Operating Lease Expense is split into Interest and Depreciation elements under IFRS, but it's recorded as a simple Rental Expense under U.S. GAAP.

5. How do you know when a revenue or expense line item should appear on the Income Statement?

To appear on the Income Statement, an item must:

1) **Correspond 100% to the period shown** – Revenue and expenses are based on the *delivery* of products or services, so an item delivered in Year 1 can count only in Year 1.

   And if a company buys a factory, it can't list the entire purchase price on the Income Statement in one year because it will be useful for many years. It corresponds to *more than just this period*.

2) **Affect the business income available to common shareholders (Net Income to Common)** – If something does not affect the *owners* of the business, it should not appear on the Income Statement.

The second point explains why Preferred Dividends appear on the Income Statement: They reduce the after-tax profits that could potentially go to common shareholders.

6. A company collects cash payments from customers for a monthly subscription service one year in advance. Why do companies do this, and what is the cash flow impact?

A company collects cash payments for a monthly service long in advance if it has the market and pricing power to do so. Because of the time value of money, it's better to collect cash today rather than several months or a year into the future.

This practice always boosts the company's cash flow. It corresponds to **Deferred Revenue**, and on the CFS, an increase in Deferred Revenue is a positive entry that boosts cash flow.

When this cash is finally recognized as Revenue, Deferred Revenue declines, which appears as a negative entry on the CFS.

7. Why is Accounts Receivable (AR) an Asset but Deferred Revenue (DR) a Liability?

AR is an Asset because it provides a **future benefit** to the company – the receipt of additional cash from customers in the future.

DR is a Liability because it represents **future obligations** for the company. The company has already collected the cash associated with the sale, so it must spend money in the future to deliver the product or service.

AR and DR are **opposites**: AR has *not* yet been collected in cash but *has* been *delivered*, whereas DR *has* been collected in cash but has *not yet been delivered*.

8. What are "Deferred Taxes," and how do they affect the statements?

"Deferred Taxes" represent cases where the "Book Taxes" shown on the Income Statement do not represent what the company pays in Cash Taxes to the government in the period.

They typically arise due to Income Statement expenses that are *not* tax-deductible despite appearing above Pre-Tax Income. In some cases, they arise because of *additional amounts* that are deductible beyond what is shown on the IS.

For example, items such as Stock-Based Compensation and Asset Impairments are not deductible for cash-tax purposes until "the second step" of the process (when employees exercise their options and receive shares or when an asset is sold at a loss).

So, these items initially create *negative* Deferred Taxes because the company pays more in Cash Taxes than its Income Statement suggests; later, they become deductible, and Deferred Taxes turn positive.

9. A junior accountant in your department asks about how to fund the company's operations via external sources and how they impact the financial statements. What do you say?

Debt and Equity are the two main methods of funding a company's operations with outside money. Debt is initially cheaper for *most* companies, so *most* companies prefer to use Debt… up to a reasonable level.

To do this, the company must be able to service its Debt by paying for the interest expense and possible principal repayments; if it can't, it must use Equity instead.

Both Equity and Debt issuances show up only on the Cash Flow Statement initially (in Cash Flow from Financing), and they boost the company's Cash balance.

With Equity, the company's share count increases immediately after issuance, which means that existing investors get diluted (i.e., they own a smaller percentage of the company).

With Debt, the company must pay interest, which will be recorded on its Income Statement, reducing its Net Income and Cash, and it must eventually repay the full balance.

10. Your firm recently acquired another company for $1,000 and created Goodwill of $400 and Other Intangible Assets of $200 on the Balance Sheet. A junior accountant in your department asks you why your firm did this – how would you respond?

You must create Goodwill and Other Intangible Assets after an acquisition to ensure the Balance Sheet remains in balance.

In an acquisition, you write down the seller's Common Shareholders' Equity and then combine its Assets and Liabilities with the acquirer's.

If you've paid *exactly* what the seller's CSE is worth – e.g., you paid $1,000 in cash, and the seller has $1,000 in CSE, there are no problems.

However, most acquirers pay **premiums** for target companies, meaning the Balance Sheet will go out of balance.

For example, if the seller had $400 in CSE, the acquirer's Balance Sheet would go out of balance immediately because the Assets side would decrease by $1,000, but the L&E side would decrease by only $400.

To plug the gap, you create "Other Intangible Assets" to represent the values of items such as patents, trademarks, intellectual property, and customer relationships ($200 in this case). Goodwill plugs the remaining gap of $400 and ensures that the Balance Sheet balances.

11. Explain lease accounting on the financial statements under IFRS 16 / ASC 842, including the differences between Operating Leases and Finance Leases.

Assets and Liabilities associated with leases that last for more than 12 months now appear directly on companies' Balance Sheets. Operating Lease Assets are sometimes called "Right-of-Use Assets," and Operating Lease Liabilities initially match them (or are very close).

The rental expense for Finance Leases, which give companies an element of ownership or a "bargain purchase option" at the end, is split into Interest and Depreciation elements on the Income Statement.

On the Cash Flow Statement, Depreciation is added back, and under Cash Flow from Financing, the company records a negative for the "Lease Principal Repayments" (or a similar name).

On the Balance Sheet, the Lease Assets and Lease Liabilities decrease each year until the lease ends. These decreases are based on the Lease Depreciation and Lease Principal Repayments.

Under IFRS, Operating Leases and Finance Leases are treated the same way, so the Operating Lease Expense is also split into Interest and Depreciation elements, and the same BS and CFS line items change.

For Operating Leases under U.S. GAAP, companies record a simple Rental Expense on the Income Statement, so there is no Depreciation/Interest split.

However, the Lease Assets and Lease Liabilities on the Balance Sheet still decrease each year based on the company's estimates for "Lease Depreciation" and "Lease Principal Repayments," which do not appear explicitly on the statements under U.S. GAAP.

12. What's the difference between Deferred Tax Assets and Deferred Tax Liabilities? How do Net Operating Losses (NOLs) factor in?

DTAs and DTLs relate to temporary differences between the book and tax bases of assets and liabilities.

Deferred Tax Assets represent potential future cash-tax savings for the company, while Deferred Tax Liabilities represent additional cash-tax payments in the future.

DTLs often arise because of different Depreciation methods, such as when companies accelerate Depreciation for tax purposes, reducing their tax burden in the near term but increasing it in the future. They may also be created in acquisitions.

DTAs may arise when the company *loses money* (i.e., negative Pre-Tax Income) in the current period and, therefore, accumulates a Net Operating Loss (NOL). They are also created when the company deducts an expense for Book-Tax purposes but cannot deduct it for Cash-Tax purposes (e.g., Stock-Based Compensation).

NOLs are a component of the DTA; they equal approximately the Tax Rate * NOL Balance.

13. How do you calculate Free Cash Flow (FCF), and what does it mean?

There are different types of Free Cash Flow, but one simple definition is **Cash Flow from Operations (CFO) minus CapEx**.

FCF represents a company's "discretionary cash flow" – how much cash flow it generates from its core business *after* paying for the cost of its funding sources, such as interest on Debt.

It's defined this way because most items in CFO on the Cash Flow Statement are required, while most of the CFI and CFF sections are optional or non-recurring (except for CapEx).

A positive and growing FCF means the company doesn't need outside funding sources to continue operating, and it could spend its cash flow in different ways: Hiring employees, re-investing in the business, acquiring other companies, or returning money to the shareholders with Dividends or Stock Repurchases.

Negative or declining FCF means the company may need to raise outside funding, restructure, cut expenses, or grow tremendously to survive.

14. What is Working Capital? What does it mean if it's positive or negative?

The official definition of **Working Capital** is "Current Assets minus Current Liabilities," but the more *useful* definition is:

Working Capital = Current Operational Assets – Current Operational Liabilities

"Operational" means that you exclude items such as Cash, Investments, and Debt that are related to the company's capital structure, not its core business.

This version is sometimes called **Operating Working Capital**.

It may also include Long-Term Assets and Liabilities related to the company's business operations (Long-Term Deferred Revenue is a good example).

Working Capital tells you whether a company needs more in *Operational Assets* or *Operational Liabilities* to run its business, and how big the difference is.

The meaning of positive or negative Working Capital depends on *why* it has that sign. For example, if the company has minimal Inventory and Receivables but a large Deferred Revenue balance, that is usually seen as positive and indicates high efficiency.

But if Working Capital is positive because of a high Receivables balance due to difficulties collecting cash from customers, that is a bad sign.

15. What does the Change in Working Capital mean?

The Change in Working Capital tells you if the company needs to spend in **ADVANCE** of its growth or if it generates more cash flow as a **RESULT** of its growth.

It's also a component of Free Cash Flow and contributes to the difference between "Cash Flow Generated" and Net Income in the period.

The Change in Working Capital is often negative for retailers because they must spend money on Inventory before being able to sell and deliver products.

But the Change in Working Capital is often positive for subscription companies that collect cash in advance because Deferred Revenue increases when they do that, which boosts cash flow.

The Change in Working Capital could increase or decrease Free Cash Flow, which directly affects the company's valuation.

16. In its filings, a company states that EBITDA is a "proxy" for its Cash Flow from Operations. The company's EBITDA has been positive, growing at 20% for the past three years.

However, the company recently ran low on Cash and filed for bankruptcy. How could this have happened?

EBITDA stands for "Earnings Before Interest, Taxes, Depreciation & Amortization" and is typically based on a company's Operating Income plus Depreciation & Amortization from the Cash Flow Statement (with adjustments for various non-recurring items).

Although EBITDA can be a "proxy" for CFO, it is **not** a perfect representation of a company's cash flow.

For example, it excludes CapEx, Acquisitions, the Interest Expense, the Change in Working Capital, and one-time/non-recurring expenses.

High numbers in any of these categories (e.g., a failed acquisition) could have turned the company's cash flow negative and created this situation, even if its EBITDA looked fine.

17. How do you calculate Return on Invested Capital (ROIC), and what does it tell you?

ROIC is defined as NOPAT / Average Invested Capital, where NOPAT (Net Operating Profit After Taxes) = Operating Income * (1 – Tax Rate), and Invested Capital = Common Shareholders' Equity + Debt + Preferred Stock – Cash.

(Various other adjustments and line items are possible; this is just the basic definition.)

ROIC tells you how efficiently a company uses its capital from **all sources** (both external and internal) to generate after-tax profits from its core business.

If two companies are in the same industry and have similar financial profiles, the one with the higher ROIC should be valued more highly because all the investor groups earn more for each $1.00 they invest in the company.

18. What are the advantages and disadvantages of ROE, ROA, and ROIC for measuring company performance?

These metrics all measure how efficiently a company uses its Equity, Assets, or Invested Capital to generate after-tax profits, but the nuances differ.

ROE and ROA are both affected by capital structure (the company's Cash and Debt and Net Interest Expense) because they use Net Income in the numerator and Average Equity or Average Assets in the denominator.

However, they're also **closer to reality** because Net Income appears directly on a company's financial statements and affects its Cash balance.

Since NOPAT is a hypothetical metric that doesn't appear on the statements, ROIC is further removed from the company's Cash position, even though it has the advantage of being capital structure-neutral.

Regarding ROE vs. ROA, ROA tends to be more useful for companies that depend heavily on their Assets to generate Net Income (e.g., banks and insurance firms), while ROE is more of a general-purpose metric that could apply to many industries.

Return to Top.

Accounting – Calculations

If you understand how the 3 financial statements link together, these questions will be straightforward.

If not, these questions will be quite challenging, and you'll need a good amount of practice to master them.

Use the following order when answering these questions:

1. Explain how the **Income Statement** changes, if at all.
2. Explain how the **Cash Flow Statement** changes, if at all (including changes in Deferred Taxes).
3. Explain how the **Balance Sheet** changes and why it still balances, i.e., why Assets still equal Liabilities + Equity.

It's also important to understand whether the interviewer wants you to walk through *a single change in one step* or to *combine changes*.

For example, the output looks quite different if they ask you to walk through a simple Debt issuance vs. a Debt issuance with interest and principal repayment over an entire year.

If anything is unclear, follow up and ask them to clarify whether they want single/individual changes, combined changes, or something else.

Accounting Rules

Cash Flow (CF) Rules

Asset **UP** → Cash Flow **DOWN**
Asset **DOWN** → Cash Flow **UP**

Liability **UP** → Cash Flow **UP**
Liability **DOWN** → Cash Flow **DOWN**

Cash Flow from Operations includes **Net Income**, **Non-Cash Adjustments**, and changes to **Current Assets Excluding Cash and Investments** and changes to **Current Liabilities Excluding Debt**.

Cash Flow from Investing includes changes to many **Long-Term Assets** and also **non-operational Current Assets**, such as short-term investments.

Cash Flow from Financing includes changes to many **Long-Term Liabilities** and **Equity** items, and also **non-operational Current Liabilities**, such as short-term debt.

Record **Revenue** and **Expenses** only in the period when the associated product or service is **delivered**. If there's no **delivery**, use Balance Sheet items like Deferred Revenue and Prepaid Expenses to track these items.

For most accounting interview questions, you can assume a 25% corporate tax rate because this is the average in developed countries, but it's worth verifying this to be sure.

1. A company hires a new employee for a total cost of $100,000 per year. Walk me through how the financial statements change, assuming a 25% tax rate.

This is a simple OpEx increase:

- **Income Statement:** Operating Expenses increase by $100K, so Pre-Tax Income is $100K lower. At a 25% tax rate, Net Income is $75K lower.

- **Cash Flow Statement:** Net Income is down by $75K, and there are no other changes, so Cash at the bottom is also down by $75K.

- **Balance Sheet:** Cash is down by $75K on the Assets side, so Total Assets are down by $75K. On the L&E side, Equity is down by $75K due to the Net Income reduction, so both sides are down by $75K and balance.

- **Intuition:** The company spends $100K more but saves $25K in taxes.

2. You go into a job interview, and the interviewer points out that every single Interview Guide has a question about how Depreciation going up by $10 affects the statements.

So, he asks you to walk through a $10 *decrease* in Depreciation, assuming a 25% tax rate.

This question mostly tests whether you are a human or an NPC:

- **IS:** A $10 reduction in Depreciation means Pre-Tax Income is up by $10. Net Income is up by $7.5 at a 25% tax rate.

- **CFS:** Net Income is up by $7.5, and now you add back *$10 less* of Depreciation, which means that Cash at the bottom is down by $2.5.

- **BS:** Cash is down by $2.5, and Net PP&E is up by $10 because of the reduced Depreciation, so Total Assets are up by $7.5. On the L&E side, Equity is up by $7.5 due to the increased Net Income, so both sides balance.

- **Intuition:** The company loses a $2.5 tax benefit by recording a lower Depreciation number, so its Cash balance falls by $2.5.

3. A company's CEO has decided to sell all its assets, starting with a factory recorded at a book value of $100 on its Balance Sheet.

If this factory sells for $140, how do the statements change?

This is a Realized Gain of $140 – $100 = $40, which is recorded as follows:

- **IS:** The $40 Realized Gain appears here and increases Pre-Tax Income by $40; Net Income is up by $30 at a 25% tax rate.

- **CFS:** Net Income is up by $30, but you reverse the $40 Gain in CFO. Then, in the CFI section, you reflect the *total amount* of proceeds, or $140. Therefore, Cash changes by +$30 – $40 + $140 = +$130.

- **BS:** Cash is up by $130, and Net PP&E is down by its book value of $100, so Total Assets are up by $30. On the L&E side, Equity is up by $30 due to the increased Net Income, so both sides balance.

- **Intuition:** The company sells the factory for $140 but pays taxes only on the $40 representing the Gain, so its Cash is up by $130 rather than $140.

4. Walk me through the financial statements when a customer orders a product for $100 and receives it but hasn't yet paid for it. Then, walk me through the cash collection, combining it with the first step. Ignore COGS and other delivery costs for simplicity.

The first step corresponds to Accounts Receivable increasing by $100, and the second step represents AR decreasing by $100. Here's the first step:

- **IS:** Revenue increases by $100, so Pre-Tax Income is up by $100, and Net Income is up by $75 at a 25% tax rate.

- **CFS:** Net Income is up by $75, but the increase in AR reduces cash flow by $100, so Cash at the bottom is down by $25.

- **BS:** Cash is down by $25, but AR is up by $100, so the Assets side is up by $75. On the L&E side, CSE is up by $75 due to the increased Net Income, so both sides are up by $75 and balance.

- **Intuition:** The company must pay $25 in taxes on Revenue it hasn't yet collected in cash, so its Cash balance falls by $25.

And when the AR is collected, combining it with the first step:

- **IS:** Net Income is still up by $75, and there are no other changes.

- **CFS:** Net Income is still up by $75, but now the AR increase is reversed, so the Change in AR is $0. Therefore, Cash at the bottom is now up by $75.

- **BS:** Cash is now up by $75, and AR goes back to its original level, so the Assets side is up by $75. The L&E side is still up by $75 because of the CSE increase due to the increased Net Income in the first step, so both sides balance.

- **Intuition:** This is a simple cash collection of a $100 payment owed to the company. Initially, Cash was down by $25 because the company had to pay taxes in advance; it's up by $75 in the end because it's a $100 sale minus $25 of taxes.

5. A company hires a marketing agency to run an online advertising campaign for its services. The marketing agency charges $10,000 for this initial campaign, delivers it, and invoices the company, which has 60 days to pay. Walk me through the statements.

This is an expense for the delivery of a service that the company has not yet paid in cash, and there is a specific invoice attached, so this is a $10K increase in Accounts Payable:

- **IS:** Operating Expenses increase by $10K, so Pre-Tax Income falls by $10K, and Net Income falls by $7.5K at a 25% tax rate.

- **CFS:** Net Income is down by $7.5K, but the increase in Accounts Payable is a $10K cash inflow because the company has not paid the invoice in cash yet. Cash at the bottom is up by $2.5K.

- **BS:** Cash is up by $2.5K, so Total Assets are up by $2.5K. On the L&E side, AP is up by $10K, and Equity is down by $7.5K due to the reduced Net Income, so both sides are up by $2.5K and balance.

- **Intuition:** The company gets a $2.5K tax benefit on this expense that it has not yet paid in cash.

6. Now, walk me through what happens ONLY in Step 2, when the company finally makes payment after 60 days. Also, explain intuitively what happens from start to finish.

This corresponds to the payment of a previous Accounts Payable line. In **ONLY** this cash payment step:

- **IS:** No changes.

- **CFS:** Net Income is the same, but Accounts Payable now decreases by $10K, which is a cash outflow on the CFS. Cash is down by $10K.

- **BS:** Cash is down by $10K on the Assets side, and AP is down by $10K on the L&E side, so both sides are down by $10K, and the Balance Sheet balances.

- **Intuition:** The company has finally paid this $10K bill. It received the tax benefit for this expense in a *previous period*, so it's not part of this step.

From start to finish, the company's Cash balance is down by $7.5K because it paid $10K for this marketing campaign but also received a $2.5K tax deduction. There are no permanent changes to AP because it increased by $10K and then decreased by $10K as the payment was made.

7. Your friend's e-commerce company orders $200 of products from its main supplier. A month later, it sells these products for $500.

Walk me through each step of this process SEPARATELY.

The initial step is an Inventory purchase, and the second step is a recognition of Revenue and COGS and the removal of the Inventory. Here's Step 1:

- **IS:** No changes because no product has been sold or delivered yet.

- **CFS:** The Inventory increase reduces cash flow by $200, so Cash is down by $200.

- **BS:** Cash is down by $200 on the Assets side, and Inventory is up by $200. Nothing changes on the L&E side, so the BS remains in balance.

- **Intuition:** The company has spent $200 of Cash on Inventory.

And Step 2:

- **IS:** Revenue is up by $500, and COGS is up by $200, so Pre-Tax Income is up by $300, and Net Income is up by $225 at a 25% tax rate.

- **CFS:** Net Income is up by $225, and Inventory now decreases by $200, which is a positive cash flow, so Cash is up by $425 *in just this step*.

- **BS:** Cash is up by $425, and Inventory is down by $200, so the Assets side is up by $225. On the L&E side, Equity is up by $225 due to the increased Net Income, so both sides balance.

- **Intuition:** *In just this step*, the company recovers $200 in cash from the sale of the Inventory, earns a $300 pre-tax profit, and pays $75 in taxes, so its Cash is up by $425.

This scenario makes more sense when you combine the steps: **Over both steps, Inventory goes up and then down, and Cash is up by $225.**

The company bought some Inventory, turned it into a product, sold and delivered it, profited $300 from it, paid $75 in taxes, and now has $225 in additional Cash.

8. A Software-as-a-Service (SaaS) company bills customers upfront for an entire year of service and collects the cash before the contract begins.

Walk me through the process for a $250 contract with a $50 delivery cost between January 1 and December 31 of the year. COMBINE the cash collection and revenue recognition.

On January 1, Deferred Revenue and Cash both increase by $250 on the Balance Sheet, so the BS remains in balance. For the rest of the year, the company recognizes $250 in Revenue and $50 in Cost of Sales, so the combined steps look like this:

- **IS:** Revenue is up by $250, and COGS is up by $50, so Pre-Tax Income is up by $200, and Net Income is up by $150 at a 25% tax rate.

- **CFS:** Net Income is up by $150, and Deferred Revenue is initially up by $250 but decreases by $250 over the year, reversing this initial increase. So, on December 31, Cash is up by $150.

- **BS:** Cash is up by $150, so Total Assets are up by $150. On the L&E side, Deferred Revenue increases by $250 but then falls by $250, so on December 31, Equity is up by $150 due to the increased Net Income, and both sides balance.

- **Intuition:** The company has earned $200 over the year and paid $50 in taxes, so its Cash is up by $150. The Deferred Revenue changes are temporary and get reversed by the end of the year.

9. A company with 1000 shares issues 500 new shares worth $1.00 on January 1 to fund its business. Then, it decides to issue Dividends per Share of $0.10 to all its shareholders at the end of the year.

Walk me through both steps SEPARATELY on the statements.

In Step 1, the company issues 500 * $1.00 = $500 worth of new Equity. This does not appear on the Income Statement because it is a long-term action that does not affect shareholder income in the current period. Instead, it appears on the CFS under Cash Flow from Financing, boosting Cash by $500, and on the Balance Sheet, Cash and Equity are both up by $500.

In Step 2, the company issues 1500 * $0.10 = $150 of Dividends. These Dividends go to all the shareholders, not just the new ones!

- **IS:** No changes because Common Dividends do not appear on the IS.
- **CFS:** The Common Dividends are a negative $150 here, so Cash is down by $150.
- **BS:** Cash is down by $150 on the Assets side, and Equity is down by $150 on the L&E side, so both sides are down by $150, and the BS balances.
- **Intuition:** The company has distributed $150 to its shareholders, reducing its Cash and Equity capital.

10. A company issues $200 of Debt at a 10% interest rate. Walk me through the entire first year on the statements, including the initial issuance and the full interest payment. COMBINE both steps.

In the first step, nothing changes on the IS because Debt issuances only appear on the CFS. So, Debt on the L&E side increases by $200, and Cash increases by $200 on the Assets side to balance it.

In the second step, the company records Interest on this Debt. The combined steps are:

- **IS:** There's an interest expense of $200 * 10% = $20, so Pre-Tax Income is down by $20, and Net Income is down by $15 at a 25% tax rate.
- **CFS:** Net Income is down by $15, but the Debt issuance is a +$200 to cash flow, so Cash is up by $185.

- **BS:** Cash is up by $185, so Total Assets are up by $185. On the L&E side, Debt is up by $200, and Equity is down by $15 due to the Net Income reduction, so both sides are up by $185 and balance.

- **Intuition:** The company has raised $200 in new funding, paid $20 in interest on it, and received a $5 tax benefit, so its Cash is up by $185.

11. How does this change if, in addition to the 10% interest rate, the Debt now has a 20% principal repayment each year? Combine both steps and assume the principal repayment occurs on December 31.

The main difference is that 20% * $200 = $40 of the Debt must be repaid at year-end.

However, this principal repayment does not appear on the IS and is not tax-deductible, so very little changes. The Interest Expense stays the same because this principal is only repaid at the end of the year.

So, the IS stays the same, but on the CFS, there's an additional cash outflow for this $40 principal repayment. Therefore, Cash is up by $145 rather than $185.

On the BS, Cash is up by $145 on the Assets side. On the L&E side, Debt is up by $160, and Equity is down by $15 due to the Net Income reduction, so both sides are up by $145 and balance.

12. A company that follows U.S. GAAP signs a 10-year Operating Lease on January 1. It will pay $160 in Rent each year.

Assuming a 5% Discount Rate, walk me through the financial statements over this entire year. For simplicity, you may "round" and assume the Present Value of the lease payments equals $1,200.

Initially, the company records the Operating Lease Assets and Liabilities on its Balance Sheet ($1,200 on both sides), and then it records the $160 Rental Expense on its Income Statement.

The 5% Discount Rate means that the initial "Interest Expense" is 5% * $1,200 = $60, so the "Depreciation" equals $160 – $60 = $100. Since the lease payments are constant, the Lease Principal Repayment equals the Depreciation here:

- **IS:** Operating Expenses are up by $160 due to the Rent, so Pre-Tax Income falls by $160, and Net Income falls by $120 at a 25% tax rate.

- **CFS:** Net Income is down by $120, but Operating Lease Assets and Liabilities increase by $1,200, which offset each other. Then, they both decrease by $100, which is also an offset. So, Cash is down by $120 at the bottom.

- **BS:** On the Assets side, Cash is down by $120, and Operating Lease Assets are up by $1,100, so Total Assets are up by $980. On the L&E side, the Operating Lease Liabilities are up by $1,100, and Equity is down by $120, so the L&E side is up by $980, and both sides balance.

- **Intuition:** Cash is down by $120 because this is a simple $160 cash expense with $40 in tax savings. The Lease Asset and Lease Liability are created and then decrease by the same $100 (they will decrease by larger amounts over time).

13. Now walk through the same scenario, but under IFRS rather than U.S. GAAP (or pretend it is a Finance Lease under U.S. GAAP).

Under IFRS, the company records Depreciation of $1,200 / 10 = $120 per year and an initial Interest Expense of $1,200 * 5% = $60.

The Lease Principal Repayment = Cash Rental Expense – Interest Expense = $160 – $60 = $100.

- **IS:** Depreciation is up by $120, and the Interest Expense is up by $60, so Pre-Tax Income is down by $180, and Net Income falls by $135 at a 25% tax rate.

- **CFS:** Net Income is down by $135, but you add back the $120 of Depreciation and record the $1,200 additions to the Lease Assets and Liabilities (which offset each other). Also, you record a negative $100 for the Lease Principal Repayment. Cash is down by $115 at the bottom.

- **BS:** Cash is down by $115, and the Lease Assets are up by $1,080 due to the initial $1,200 increase and the $120 of Depreciation, so Total Assets are up by $965. On the other side, the Lease Liabilities are up by $1,100, and Equity is down by $135 due to the reduced Net Income, so both sides are up by $965 and balance.

- **Intuition:** Cash is down by $115 because the total Cash Lease Expense here is $160, but the company gets a tax benefit for the $180 of Lease Interest + Lease Depreciation that appears on the Income Statement. So, ($160) + $180 * 25% = ($115).

14. A company buys a factory for $200 using $200 of Debt. What happens, INITIALLY, on the statements?

- **IS:** No changes.
- **CFS:** There's no net change in cash because the $200 factory purchase counts as CapEx, which reduces cash flow, and the $200 Debt issuance is a cash inflow.
- **BS:** PP&E is up by $200, so the Assets side is up by $200, and Debt is up by $200, so the L&E side is up by $200, and the Balance Sheet stays balanced.
- **Intuition:** An Asset increases, a Liability increases to balance it, and there are no tax effects.

15. One year passes. The company pays 10% interest on its Debt, and it depreciates 10% of the factory. It also repays 5% of the Debt principal. What happens on the statements in this first year?

A 10% interest rate means $20 in Interest Expense, the 10% depreciation means $200 * 10% = $20 of Depreciation, and 5% * $200 = $10 of the Debt principal is repaid. So:

- **IS:** You record $20 in Interest and $20 in Depreciation, so Pre-Tax Income falls by $40, and Net Income falls by $30 at a 25% tax rate.
- **CFS:** Net Income is down by $30, but you add back the $20 of Depreciation and record $10 in Debt Principal Repayments, so Cash at the bottom is down by $20.
- **BS:** Cash is down by $20, and Net PP&E is down by $20, so the Assets side is down by $40. On the L&E side, Debt is down by $10 due to the principal repayment, and CSE is down by $30 due to the reduced Net Income, so both sides are down by $40 and balance.

- **Intuition:** Cash declines because of the Interest Expense and Debt Principal Repayment, offset by the tax savings from the Interest and Depreciation.

16. At the end of this first year, the company sells its factories for $220 and uses the proceeds to repay its remaining Debt principal after realizing there is little demand for its products.

Walk through this step SEPARATELY from the previous two.

Assume that the Net PP&E balance is $180, and the Debt is $190 because of changes in the previous step.

The Net PP&E selling price is $220, and its Book Value is $180, so we record a Gain of $40:

- **IS:** The Realized Gain of $40 increases Pre-Tax Income by $40 and Net Income by $30 at a 25% tax rate.

- **CFS:** Net Income is up by $30, but the $40 Gain is non-cash, so it's reversed in the CFO section. Then, in Cash Flow from Investing, the full sale proceeds of $220 are recorded as a cash inflow. The $190 Debt repayment is shown as a negative in Cash Flow from Financing. So, Cash at the bottom is up by $20.

- **BS:** Cash is up by $20, and Net PP&E is down by $180, so Total Assets are down by $160. On the L&E side, Debt is down by $190, and CSE is up by $30 because of the increased Net Income, so both sides are down by $160 and balance.

- **Intuition:** The Realized Gain would normally boost Cash by $30 after taxes. However, this full $30 does not flow into Cash because the Debt Repayment exceeds the reduction in Net PP&E by $10. As a result, Cash is up by $20 instead of $30.

17. Walmart purchases $200 of Inventory "on credit," sells it for $400, and records an additional $100 in Operating Expenses to support the sale.

Walk me through ONLY Step 1 of this process with the Inventory purchase.

Accounts Payable is *not necessarily* linked to a specific Income Statement line item in a case like this! It could just correspond to the company paying for Inventory on credit. In the first step:

- **IS:** No changes.

- **CFS:** Accounts Payable increases, boosting cash flow by $200, and Inventory also increases, reducing cash flow by $200; the changes offset each other, and Cash at the bottom stays the same.

- **BS:** Inventory on the Assets side is up by $200, and Accounts Payable on the L&E side is up by $200, so both sides are up by $200 and balance.

- **Intuition:** The company receives the parts and materials but has not paid for them in cash yet, so the Balance Sheet changes, but Cash stays the same.

18. Now walk through Step 2 – the sale and delivery of the products and the supplier payments – SEPARATELY from Step 1.

In this step, Walmart recognizes the additional Revenue, COGS, and OpEx:

- **IS:** Revenue is up by $400, COGS is up by $200, and OpEx is up by $100, so Pre-Tax Income is up by $100. Net Income is up by $75 at a 25% tax rate.

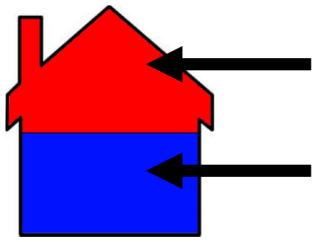
- **CFS:** Net Income is up by $75. The Change in Inventory is now +$200 because it falls by $200 in this step, and the Change in AP is now –$200 because it also falls in this step. They cancel each out, so the Cash at the bottom is up by $75.

- **BS:** Cash is up by $75 on the Assets side, and Inventory is now down by $200, so the Total Assets are down by $125 *in just this step*. On the L&E side, AP is now down by $200 *in just this step*, and Equity is up by $75 due to the increased Net Income, so both sides are down by $125, and the BS balances.

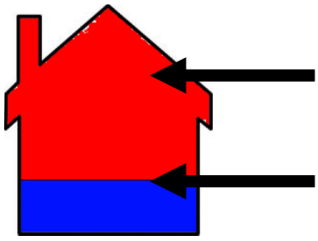
- **Intuition:** Cash is up by $75 because the company earns $100 in pre-tax profits and pays $25 in taxes. The Inventory and AP changes in this step are temporary and represent reversals of Step 1; if you combine the steps, Total Assets and Total Liabilities & Equity are up by $75 cumulatively.

Return to Top.

Equity Value & Enterprise Value – Concepts



- **Equity Value** = $250K
- **Enterprise Value** = $500K



- **Equity Value** = $100K
- **Enterprise Value** = $500K

Equity Value is the value of **EVERYTHING** a company has (Net Assets, or Total Assets – Total Liabilities), but only to the **EQUITY INVESTORS** (the common shareholders).

Enterprise Value is the value of the company's **CORE BUSINESS OPERATIONS** (Net Operating Assets, or Operating Assets – Operating Liabilities), but to **ALL INVESTORS** (Equity, Debt, Preferred, and possibly others).

Enterprise Value **stays the same** even when a company's capital structure changes, while Equity Value changes (like the "total price" of a home vs. the "down payment" in the illustration on the left).

You use both metrics when valuing companies because one valuation methodology might produce the Equity Value, while another might produce the Enterprise Value, and you must be able to move between them.

To calculate Equity Value, multiply the company's Diluted Share Count by its Current Share Price. Equity Value is a fancier name for "Market Cap."

To move from Equity Value to Enterprise Value, subtract non-core Assets and add Liability and Equity lines that represent investor groups beyond the common shareholders (the Debt investors, Preferred Stock investors, etc.).

At a basic level, Enterprise Value = Equity Value – Cash + Debt + Preferred Stock + Noncontrolling Interests, but *many other items* could factor in.

You can also calculate "Implied" versions of both metrics that are based on the output of valuation analyses, but this section focuses on the "Current" versions based on current market prices.

- Interview Guide – Equity Value & Enterprise Value | Quiz Questions
- Core Financial Modeling – Equity Value & Enterprise Value Module

1. What do Equity Value and Enterprise Value MEAN? Don't explain how you calculate them – tell me what they mean!

Equity Value represents the value of **EVERYTHING** a company has (its Net Assets) but only to the **EQUITY INVESTORS** (i.e., the common shareholders).

Enterprise Value represents the value of the company's **CORE BUSINESS OPERATIONS** (its Net Operating Assets) but to **ALL INVESTORS** (Equity, Debt, Preferred, and possibly others).

2. That sounds complicated. What do these concepts mean in plain English? Can you give a real-life analogy?

If you buy a house for $500K with a $100K down payment, $500K is the Enterprise Value, and $100K is the Equity Value.

Enterprise Value does not change when the capital structure changes, so if you use $250K for the down payment, the Equity Value is now $250K, but the Enterprise Value is still $500K.

3. Why do you need both Equity Value and Enterprise Value? Can't you just value companies using one of them?

We need both because some valuation methodologies and analyses produce Equity Value for the output, but others produce Enterprise Value, so we must be able to move back and forth to make proper comparisons.

Enterprise Value has some advantages because it is **not** affected by capital structure changes (e.g., a company using less Debt and more Equity); people often call it "capital structure-neutral" for this reason.

However, Equity Value is still important because most valuations are conducted from the perspective of the **common shareholders**, who mostly care about what their shares are worth.

4. What is the difference between "Current" and "Implied" Enterprise Value? Can you give a real-life example to explain it?

"Current" means that you are calculating the Enterprise Value based on the company's current share price, share count, and Balance Sheet (subtract Cash, add Debt, add Preferred Stock, etc.).

"Implied" means that you are using a valuation methodology, such as the DCF, to value the company and determine *what you think it should be worth*.

Let's say that you search for houses in real life and find one you like with a "list price" of $500K. However, you research the area, similar properties, and demographic trends, and believe it's worth more like $450K.

$500K is the Current Enterprise Value of the house, and $450K is the Implied Enterprise Value.

5. What is the difference between Basic Equity Value and Diluted Equity Value?

Basic Equity Value is Common Shares Outstanding * Current Share Price, while Diluted Equity Value includes the impact of dilutive securities, such as options, warrants, restricted stock units (RSUs), and convertible bonds; it equals Diluted Shares Outstanding * Current Share Price.

Companies create and issue these dilutive securities to incentivize employees to stay at the company (and to raise funds, in the case of convertible bonds).

You factor in these dilutive securities via different methods, such as the Treasury Stock Method for options and warrants and the "If Converted" method for convertible bonds.

Diluted Equity Value more accurately measures what the company's Net Assets are worth to the common shareholders.

6. Let's say you have a company's Diluted Equity Value. How do you move from Equity Value to Enterprise Value?

At a basic level, Enterprise Value = Equity Value – Cash + Debt + Preferred Stock + Noncontrolling Interests, so you could say that in an interview and be fine.

The more technical answer is that you should take Equity Value and **subtract Non-Operating Assets and add Liability & Equity lines that represent other investor groups** beyond the common shareholders.

Examples of Non-Operating Assets include Cash, Investments, Equity Investments (Associate Companies), Assets Held for Sale, and Net Operating Losses.

Examples of L&E lines representing other investor groups include Debt, Preferred Stock, Underfunded Pensions, Noncontrolling Interests, and *sometimes* Leases (it's complicated).

7. Why do you subtract Equity Investments and add Noncontrolling Interests in the Enterprise Value calculation?

The short, simple answer is that Equity Investments (< 50% stakes the parent company owns in others) are considered **non-core assets**, and Noncontrolling Interests (when a parent owns more than 50% in another company, the portion it does *not* own) are considered **another "investor group"** (the minority shareholders of this other company).

The longer answer is that you also do this for **comparability purposes**. For example, let's say that Company A owns 30% of Company B and 75% of Company C.

Company A's EBITDA includes 0% of Company B's EBITDA but 100% of Company C's EBITDA due to accounting rules around the consolidation of the financial statements.

However, Company A's Equity Value reflects 30% of Company B and 75% of Company C.

Therefore, to use Enterprise Value with EBITDA in metrics such as TEV / EBITDA, you must adjust Enterprise Value to reflect 0% of Company B and 100% of Company C.

To do this, you subtract the Equity Investments, which represent 30% of Company B, and you add the Noncontrolling Interests, which represent the 25% of Company C that Company A does *not* own.

8. Can you explain the proper treatment of pensions in Enterprise Value?

Only Defined-Benefit Pension plans factor in because Defined-Contribution Plans do not appear on the Balance Sheet.

You should add the **Unfunded or Underfunded portion**, i.e., MAX(0, Pension Liabilities – Pension Assets), in the TEV bridge because *the employees* represent another investor group when they are promised future payments.

They agree to lower pay and benefits today in exchange for fixed payments once they retire, and the company must fund the pension and invest the funds appropriately.

If contributions into the pension plan are tax-deductible, you should multiply the unfunded portion by (1 – Tax Rate) in the Enterprise Value bridge.

9. Should you add Operating Leases in the Enterprise Value calculation? What about Finance Leases?

This is a question of **comparability** and the valuation multiples you're using. *Generally*, you should add Finance Leases because metrics such as EBITDA exclude the Finance Lease Interest and Finance Lease Depreciation.

If a metric **excludes** certain expenses, then the Enterprise Value paired with this metric should **add or include** the corresponding Liability.

Operating Leases are trickier because the accounting differs under U.S. GAAP vs. IFRS. Under U.S. GAAP, it's best **not to add them** because the corresponding expense is "Rent" on the Income Statement, which is deducted to calculate EBIT, EBITDA, etc.

If you add them to Enterprise Value, you must pair it with a metric like EBITDAR that adds back the Rental Expense.

Under IFRS, it's easiest **to add Operating Leases** because metrics like EBITDA exclude the full Lease Interest and Lease Depreciation from all Lease types, so the corresponding Lease Liabilities should be in Enterprise Value.

NOTE: We do not view Leases as true "financial" items representing "outside investor groups"; this treatment is for comparability and ease of calculation.

10. Can you give examples of company actions that affect Equity Value but NOT Enterprise Value, Enterprise Value but NOT Equity Value, and BOTH Enterprise Value and Equity Value?

This "compound question" tests how well you understand these concepts beyond simple definitions. There are many possible answers, but a few simple ones include:

- **Affects Equity Value But Not Enterprise Value:** A company issues $100 of Stock and lets it sit in Cash on its Balance Sheet (Net Operating Assets are unchanged).
- **Affects Enterprise Value But Not Equity Value:** A company issues $100 of Debt and uses it to buy a factory, boosting its Net PP&E (Net Operating Assets increase by $100).
- **Affects Both Equity Value and Enterprise Value:** A company issues $100 of Stock and uses it to buy a factory, boosting its Net PP&E (Net Operating Assets increase by $100, and Common Shareholders' Equity is also up by $100).

11. Could Equity Value ever be negative? What about Enterprise Value?

Since Equity Value is based on Share Price * Share Count, and neither component can be negative, *effectively,* it cannot be negative (the Implied Equity Value from a valuation methodology could still be negative, but you typically set it to $0 when this happens).

Enterprise Value *could* be negative since Cash could exceed Equity Value for certain types of companies, such as "busted biotech" firms that trade at a discount to their cash.

12. You are comparing Companies A and B. Each operates in the same industry with the same revenue, EBITDA, and other financial metrics.

Company A is financed with 100% Equity, and Company B is financed with 50% Equity and 50% Debt.

In theory, their Enterprise Values should be the same. Will they be the same in real life?

No, most likely not. Although people claim that Enterprise Value is "capital structure-neutral," it's more accurate to say that it is *less affected* by capital structure than Equity Value.

The specific issue is that a company's capital structure affects its **Discount Rate** because a shifting Debt and Equity mix changes its risk and potential returns.

Using more Debt increases the company's default risk, which affects *all the investors* – even the common shareholders.

So, if investors value these companies based on their future cash flows and separate Discount Rates (WACC), the Discount Rate differential could explain valuation differences.

The companies' "Current" Enterprise Values might still be close, but you will see more of a difference with the "Implied" versions, which may grow over time.

Return to Top.

Equity Value & Enterprise Value – Calculations

These questions are simple if you remember the two key rules:

1) **Does Common Shareholders' Equity (CSE) change?**

If so, then Equity Value changes by the amount that CSE changes. If not, then Equity Value does not change.

Items that affect CSE include Net Income, Dividends, Stock Issuances, and Stock Repurchases.

2) **Do Net Operating Assets (NOA) change?**

If so, then Enterprise Value changes by the amount that NOA changes. It doesn't matter which investor group was responsible because Enterprise Value reflects all investors.

The questions and answers here use the following abbreviations and assumptions:

- TEV = Enterprise Value
- Eq Val = Equity Value
- CSE = Common Shareholders' Equity
- NOA = Net Operating Assets
- Tax Rate = 25%

1. A company issues $200 in Common Shares. How do Equity Value and Enterprise Value change?

CSE increases by $200, so Eq Val increases by $200.

NOA does not change because neither Cash nor CSE is operational, so TEV stays the same.

Alternatively, in the TEV formula, the extra Cash offsets the higher Equity Value.

2. This same company decides to use the $200 in Common Stock proceeds to acquire another business for $100 instead. How does everything change?

CSE increases by $200 from this issuance, so Eq Val increases by $200.

Of this $200 in proceeds, $100 remains in Cash, and $100 is allocated to Acquired Assets from the other business.

These Acquired Assets are Operating Assets, and no Operating Liabilities change, so **NOA** increases by $100. TEV, therefore, increases by $100.

3. What if the company uses that same $100 from the $200 of new Common Stock to acquire an Asset rather than an entire company?

CSE still increases by $200, so Eq Val is up by $200.

If this Asset is considered "Operating" or "Core," such as a factory, then NOA increases by $100, so TEV also increases by $100.

If not – for example, the Asset is a short-term investment – then NOA does not change, and TEV stays the same.

4. A company issues $100 in Debt to purchase a new factory. How do Equity Value and Enterprise Value change?

CSE does not change because Debt, not Equity, is the financing source here. Therefore, Eq Val stays the same.

The new factory is a Net Operating Asset, so NOA increases by $100, and TEV, therefore, also increases by $100.

Alternatively, in the TEV formula, Equity Value stays the same, and Debt increases, so TEV goes up.

5. A company issues $100 of Common Stock and $100 of Preferred Stock and lets the proceeds sit in Cash. How do Equity Value and Enterprise Value change?

CSE increases by $100 due to the Common Stock issuances, so Eq Val is up by $100. The Preferred Stock issuance does **not** affect Common Shareholders' Equity!

Net Operating Assets are unchanged, so TEV stays the same.

In the TEV formula, Equity Value is up by $100, Cash is $200 more negative, and Preferred Stock is up by $100, so TEV stays the same.

6. This same company now issues $10 in Common Dividends and $10 in Preferred Dividends. What happens in JUST THIS STEP?

CSE decreases by $20 due to these Dividend issuances. Yes, both Common and Preferred Dividends flow into Common Shareholders' Equity on the Balance Sheet. Therefore, Eq Val is down by $20.

Net Operating Assets are unchanged, so TEV stays the same.

7. A company issues $150 of Debt and $50 of Common Stock to acquire $175 of PP&E and $25 of Short-Term Investments. How do Equity Value and Enterprise Value change?

CSE increases by $50 because of the Common Stock Issuance, so Eq Val increases by $50.

The $175 of PP&E counts as an Operating Asset, and no Operating Liabilities change, so **NOA** increases by $175, and TEV also increases by $175.

8. A company issues $50 of Debt to buy a new factory. However, AFTER this purchase, its Enterprise Value increases by $100 rather than $50.

Your co-worker claims it is because the company issued Debt to make this purchase, and Debt increases Enterprise Value. Is he correct?

No. The *purchase method* does not matter when determining how Enterprise Value changes. All that matters is how the Net Operating Assets change.

The most likely explanation here is that the *book value* of this factory is $50, but its *market value* is $100 because market participants believe the Present Value of its future cash flows is closer to $100. Therefore, Enterprise Value increases by $100 rather than $50. The company effectively got a discount on a new asset.

9. A company purchases $100 of Inventory using Cash. How do Equity Value and Enterprise Value change?

There are no changes on the Income Statement in this initial step because the Inventory has not yet been sold. Therefore, Net Income does not change.

On the Balance Sheet, **CSE** stays the same in this initial step (no changes to Net Income, Stock Issuances/Repurchases, Dividends, etc.), so Eq Val stays the same.

NOA increases by $100 since Inventory is an Operating Asset, and no Operating Liabilities change, so TEV increases by $100.

10. Now assume the Inventory is sold for $200 and walk me through how the *entire* process from beginning to end affects Equity Value and Enterprise Value.

On the Income Statement, Revenue is up by $200, and Pre-Tax Income is up by $100 (due to the $100 of Inventory now being recognized as COGS). Net Income increases by $75 at a 25% tax rate.

On the CFS, Net Income is up by $75, and there are no other net changes (Inventory went up by $100 and then went down by $100), so Cash is up by $75 at the bottom.

On the Balance Sheet, Cash is up by $75 on the Assets side, and CSE is up by $75 on the L&E side.

Since **CSE** is up by $75, Eq Val increases by $75.

NOA does not change because Cash is not an Operating Asset, and no Operating Liabilities change, so TEV stays the same.

Intuition: This 2-step process represents the company generating Net Income and letting it sit in Cash; that process does not make its core business more valuable, so TEV does not increase.

11. A company has 200 outstanding shares at a current price of $10.00. It also has 50 options at an exercise price of $8.00 each. What is its Diluted Equity Value?

The Basic Equity Value is 200 * $10.00 = $2,000. To calculate the diluted shares, note that the options are all "in the money" – their exercise price is less than the current share price – and apply the Treasury Stock Method.

When these options are exercised, 50 new shares are created.

The investors paid the company $8.00 to exercise each option, so the company gets $400 in cash. It uses that cash to buy back $400 / $10.00 = 40 of the new shares, so the diluted share count is 200 + 50 – 40 = 210, and the Diluted Equity Value is $2,100.

12. A company has 10,000 shares outstanding and a current share price of $20.00. It also has 100 options at an exercise price of $10.00, 50 Restricted Stock Units (RSUs), and 100 convertible bonds at a conversion price of $10.00 and a par value of $100.

What is its Diluted Equity Value?

For this type of question, **you should ask to write down the numbers**.

Since the options are in-the-money, you assume they get exercised, so 100 new shares are created.

The company receives 100 * $10.00, or $1,000, in proceeds. Its share price is $20.00, so it can repurchase 50 shares with these proceeds. There are now 50 net additional shares outstanding.

You add the 50 RSUs as if they were common shares, so now there's a total of 100 additional shares outstanding.

The company's share price of $20.00 exceeds the conversion price of $10.00, so the convertible bonds can convert into shares.

Divide the par value by the conversion price to determine the shares per bond:

$100 / $10.00 = 10 new shares per bond

There are 100 individual convertible bonds, so they create 100 * 10 = 1,000 new shares.

These changes create 1,100 additional shares, so the diluted share count is now 11,100, and the Diluted Equity Value is 11,100 * $20.00, or $222,000.

Return to Top.

Valuation Methodologies

These questions are high-level, but many candidates don't understand *the point* of valuation.

You can't answer the advanced questions without knowing that, so don't dismiss this category as "too basic" – even if you have significant work experience.

- **Company Value** =

$$\frac{\text{Cash Flow}}{(\text{Discount Rate} - \text{Cash Flow Growth Rate})}$$

Where the Cash Flow Growth Rate Must Be < Discount Rate

- **Valuation is more than this formula because the Discount Rate and Cash Flow Growth Rate *change* over time**

There are dozens of valuation methodologies, but in real-life interviews, bankers tend to focus on **comparable public companies**, **precedent transactions**, and the **DCF**.

This section and the next one cover the first two categories, and the two sections after that cover the DCF.

- Interview Guide – Valuation | Quiz Questions
- Core Financial Modeling – Valuation Module

1. Public companies already have Market Caps and Share Prices. Why do you need to "value them" at all? You already know how much they're worth.

Because a company's Market Cap and Share Price reflect its **Current Value** according to "the market as a whole" – but the market might be wrong!

You value companies to see if the market's views are correct and whether a company's value *might change* based on your views.

It's like going home shopping, finding a house with a list price of $500K, but then negotiating a lower price because *you believe* it is worth only $450K based on your research.

2. What are the advantages and disadvantages of the 3 main valuation methodologies?

Public Comps are useful because they're based on real market data, are quick to calculate and explain, and do not depend on far-in-the-future assumptions.

However, there may not be truly comparable companies, the analysis will be less accurate for volatile or thinly traded companies, and it may undervalue companies' long-term potential.

Precedent Transactions are useful because they're based on the **real prices** that companies have paid for other companies, and they may better reflect industry trends than Public Comps.

However, the data is often spotty and misleading, there may not be truly comparable transactions, and specific deal terms and market conditions might distort the multiples.

DCF Analysis is the most "correct" methodology according to finance theory, it's less subject to market fluctuations, and it better reflects company-specific factors and long-term trends.

However, it's also very dependent on far-in-the-future assumptions, and there's disagreement over the proper calculations for key figures like the Cost of Equity and WACC.

3. Which of the 3 main methodologies will produce the highest Implied Values?

This is a trick question because almost any methodology *could* produce the highest Implied Values depending on the industry, time period, and assumptions.

That said, Precedent Transactions often produce higher Implied Values than Public Comps because of the **control premium** – the extra amount that buyers must pay to acquire sellers.

But it's tough to say how a DCF compares because it's far more dependent on the long-term assumptions used.

The safest answer is: "A DCF tends to produce the most variable output since it's so dependent on your assumptions, and Precedent Transactions tend to produce higher values than the Public Comps because of the control premium."

4. Which one should be worth more: A $500 million EBITDA healthcare company or a $500 million EBITDA industrials company?

Assume the growth rates and margins are the same.

In all likelihood, the healthcare company will be worth more because healthcare is a less asset-intensive industry. That means the company's CapEx and Working Capital requirements will be lower, and its cash flow will be higher.

Healthcare, at least in some sectors, also tends to be more of a "growth industry" than industrials.

The Discount Rate might also be higher for the healthcare company, but the lower asset intensity and higher expected growth rates could offset that.

This answer is an *extreme* generalization, so you would need more information to give a detailed answer.

5. Can you walk me through how you use Public Comps and Precedent Transactions in a valuation?

First, you select the companies and transactions based on industry, size, and geography (and time for the transactions).

Then, you determine the appropriate metrics and multiples for each set – for example, revenue, revenue growth, EBITDA, EBITDA margins, and revenue and EBITDA multiples – and calculate them for all the companies and transactions.

Next, you calculate the minimum, 25th percentile, median, 75th percentile, and maximum for each valuation multiple in the set.

Finally, you apply these numbers to the financial metrics of the company you're analyzing to estimate its Implied Value.

For example, if the company you're valuing has $100 million in LTM EBITDA, and the median LTM TEV / EBITDA multiple in a set of comparable companies is 7x, then the company's implied Enterprise Value is $700 million.

You then calculate its Implied Value for all the other multiples to get a range of possible values.

6. Can you give a few examples of how you might screen for "similar" Comparable Public Companies and Precedent Transactions?

You screen based on **geography**, **industry**, and **size** (and **time** for Precedent Transactions).

Here are a few example screens:

- **Comparable Company Screen:** U.S.-based steel manufacturing companies with over $500 million in revenue.
- **Comparable Company Screen:** European legacy airlines with over €1 billion in EBITDA.
- **Precedent Transaction Screen:** Latin American M&A transactions over the past 3 years involving consumer/retail sellers with over $1 billion USD in revenue.
- **Precedent Transaction Screen:** Australian M&A transactions over the past 2 years involving infrastructure sellers with over $200 million AUD in revenue.

7. How do you decide which metrics and multiples to use in these methodologies?

You usually look at a sales-based metric and its corresponding multiple and 1-2 profitability-based metrics and their multiples. For example, you might use Revenue, EBITDA, and Net Income and their corresponding multiples: TEV / Revenue, TEV / EBITDA, and P / E.

You do this because you want to value a company in relation to how much it sells and how much it *keeps* from those sales.

Sometimes, you'll drop the sales-based multiples and focus on the profitability or cash flow-based ones (EBIT, EBITDA, Net Income, Free Cash Flow, etc.).

8. Why do you look at BOTH historical and projected metrics in these methodologies?

Historical metrics are useful because they're based on what happened in real life, but they can also be deceptive if there were non-recurring items or if the company made acquisitions or divestitures.

Projected metrics are useful because they assume the company will operate in a "steady state" without acquisitions, divestitures, or non-recurring items, but they're also less reliable because they're based on predictions rather than historical events.

9. When calculating the forward multiples for the comparable companies, should you use each company's Current Equity Value or Current Enterprise Value, or should you project them to get the Year 1 or Year 2 values?

You always use the Current Equity Value or Current Enterprise Value. **NEVER "project" either one.**

A company's share price, and, therefore, both Current Equity Value and Current Enterprise Value, reflects past performance and future expectations.

So, to "project" these metrics, you'd have to jump into the future and see what future expectations are at *that* point in time and then time travel back to the present.

10. How do you interpret the Public Comps? What does it mean if the median multiples are above or below the ones of the company you're valuing?

The interpretation depends on how your company's growth rates and margins compare to those of the comparable companies.

Public Comps are most meaningful when the growth rates and margins are **similar,** but the multiples are **different**. This could mean that the company you're valuing is mispriced.

For example, maybe all the companies are growing at 10 – 15%, and they all have EBITDA margins of 10 – 15%. Your company also has growth rates and margins in these ranges.

However, your company trades at TEV / EBITDA multiples of 6x to 8x, while the comparable companies all trade at multiples of 10x to 12x.

This result could indicate that your company is **undervalued** since its multiples are lower, but its growth rates, margins, industry, and size are comparable.

11. What is a Liquidation Valuation, and when is it useful and not so useful?

In a Liquidation Valuation, you value a company by estimating the market values of all its Assets, adding them up, and subtracting its Liabilities (i.e., you assume full repayment of all Liabilities based on the proceeds from the sale of all its Assets).

It gives you the company's **Implied Equity Value** because you're valuing its *Net Assets*, not its Net Operating Assets.

This methodology is useful for distressed companies because it tells you how much they might be worth if they liquidate and how much different lender groups might receive.

It's less useful for healthy, growing companies because it undervalues them significantly; assets like Net PP&E are always worth more to "going concern" companies.

12. How does a Dividend Discount Model (DDM) differ from a DCF?

In a DDM, rather than projecting Free Cash Flow, you project the company's **Dividends**, usually based on a per-share figure or a percentage of Net Income. You then discount the Dividends to their Present Value using the Cost of Equity and add them up.

To calculate the Terminal Value, you use an Equity Value-based multiple such as P / E, and you discount it to Present Value using the Cost of Equity.

You add the PV of the Terminal Value to the PV of the Dividends to calculate the company's Implied Equity Value rather than its Implied Enterprise Value (there's no "bridge"), and you divide it by the diluted share count to get the company's Implied Share Price.

The DDM is essential in some industries, such as commercial banks and insurance, useful in other industries that pay regular dividends, such as utilities, and not so useful for most others.

13. Why might you use an M&A Premiums analysis to value a company?

The M&A Premiums analysis applies only to **public companies** because you look at acquisitions of similar public companies and calculate the "premium" each buyer paid for each seller.

For example, if the seller's share price was $12.00 before the deal, and the buyer paid $15.00 per share, that represents a 25% premium.

You then use these percentages to value your company. If the median premium in a set of deals is 20%, and your company's share price is $10.00, it's worth $12.00 per share.

This analysis is typically a supplement to Precedent Transactions and gives you another way to value your company besides the standard multiples. But it's also limited because M&A Premiums cannot indicate that a company is currently *undervalued*.

14. What are the advantages and disadvantages of a Sum-of-the-Parts Valuation?

The Sum-of-the-Parts methodology, in which you value each division of a company separately and add them to determine the company's Implied Value, works well for conglomerates that have *very* different divisions (e.g., retail vs. transportation vs. digital media segments).

The divisions operate in such different industries that it would be meaningless to value the company as a whole – no other public company would be comparable.

But Sum-of-the-Parts also takes far more time and effort to set up because you must find comparable companies and transactions for **each division**, build a separate DCF for each division, and so on.

Also, you might not have enough information to use it. Companies sometimes don't disclose EBIT, CapEx, or Working Capital by division, and they may not disclose the corporate overhead expenses that must be counted in the final step.

15. How do you set up an LBO valuation, and when is it useful?

You set up the LBO valuation by creating a leveraged buyout model in which a private equity firm acquires a company using Debt and Equity, holds it for several years, and then sells it for a certain multiple of EBITDA.

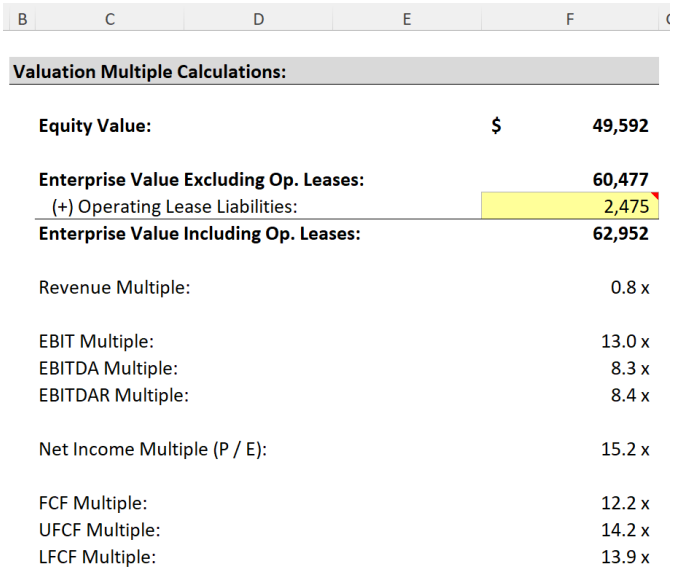
Most private equity firms target an internal rate of return (IRR) in a specific range, so you work backward and determine the **maximum price** the PE firm could pay to achieve a targeted IRR.

You could use the "Goal Seek" function in Excel to do this, and you solve for the purchase price based on constraints for the IRR, exit multiple, and Debt / Equity split.

This methodology is most useful for screening LBO candidates; it can also help a company understand what PE firms vs. normal companies might pay for it.

Return to Top.

Valuation Metrics and Multiples



Valuation Multiple Calculations:		
Equity Value:	**$**	**49,592**
Enterprise Value Excluding Op. Leases:		**60,477**
(+) Operating Lease Liabilities:		2,475
Enterprise Value Including Op. Leases:		**62,952**
Revenue Multiple:		0.8 x
EBIT Multiple:		13.0 x
EBITDA Multiple:		8.3 x
EBITDAR Multiple:		8.4 x
Net Income Multiple (P / E):		15.2 x
FCF Multiple:		12.2 x
UFCF Multiple:		14.2 x
LFCF Multiple:		13.9 x

Questions about valuation multiples may seem easy at first glance, but they can be surprisingly tricky if you don't understand the **fundamental concepts**.

For example, do you understand how a valuation multiple is shorthand for a cash flow-based valuation *and* a way to compare different companies?

Do you understand the trade-offs of different metrics and multiples? What about the exceptions and special cases, such as differences under U.S. GAAP vs. IFRS?

This section covers these concepts:

1. What IS a valuation multiple? Explain the theory and give a real-life analogy.

A valuation multiple is **shorthand** for a company's value based on its Cash Flow, Cash Flow Growth Rate, and Discount Rate. You could value a company with this formula:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate), where Cash Flow Growth Rate < Discount Rate

Valuation multiples let you use a number like "10x" to express this in a condensed way.

You can also think of valuation multiples as "per-square-foot" or "per-square-meter" values when buying a house: They help you **compare** houses or companies of different sizes and see how expensive or cheap they are relative to similar houses or companies.

2. You're valuing a mid-sized manufacturing company. This company's TEV / EBITDA multiple is 15x, but the median TEV / EBITDA for the comparable companies is 10x. What's the most likely explanation?

The most likely explanation is that the market expects this company's cash flows to grow faster than comparable companies. For example, other companies might be expected to grow at 5%, but this company might be expected to grow at 15%.

The Discount Rate is unlikely to differ significantly because these companies are in a similar size range in the same industry, which means the risk and potential returns should be similar.

"Current events" could also affect the multiples, but it's hard to say what they might be without additional information.

3. Walk me through how you calculate EBIT and EBITDA for a public company.

With EBIT, you start with the company's Operating Income on its Income Statement and then add back any non-recurring charges that have reduced Operating Income.

With EBITDA, you do the same thing and then add Depreciation & Amortization from the company's *Cash Flow Statement* to get the all-inclusive number (since D&A on the Income Statement may be embedded in other line items there).

4. How do you decide whether to use Equity Value or Enterprise Value in valuation multiples?

If the financial metric in the denominator of the valuation multiple **deducts Net Interest Expense**, it pairs with Equity Value because the Debt Investors can no longer be "paid" after earning their interest; only Equity Investors can earn something now.

If the metric does *not* deduct Net Interest Expense, it pairs with Enterprise Value. This rule applies to financial metrics (EBIT, EBITDA, etc.) and non-financial ones (Unique Users, Subscribers, etc.).

5. A company has $100 in Revenue, a 15% EBIT margin, and D&A that is 5% of its Revenue.

The company's Equity Value is $100, and it has $20 of Cash, $40 of Debt, and $30 in Lease Liabilities. What is its TEV / EBITDA multiple?

EBITDA = $100 * 15% + $100 * 5% = $20.

TEV = $100 – $20 + 40 = $120. Therefore, TEV / EBITDA = 6x.

The treatment of the Lease Liabilities here is uncertain because we don't know if this company follows U.S. GAAP or IFRS or if these are Operating or Finance Leases. To explain the correct treatment, you must request these details (see the next question).

6. For clarity, the company I just described followed U.S. GAAP, and the Lease Liabilities were for Operating Leases.

Now, imagine that this company followed IFRS rather than U.S. GAAP. How would the EBIT margin and D&A percentages change, and how would the TEV / EBITDA change?

Under IFRS, the EBIT margin would be **higher** because only one component of the Operating Lease Expense would be deducted: The Lease Depreciation. Under U.S. GAAP, the entire Rental Expense is deducted.

The D&A percentage would also be **higher** because D&A under IFRS includes Lease Depreciation as well.

So, the EBITDA margin would be **higher** under IFRS because it would *exclude or add back* the entire Operating Lease Expense so that the EBITDA would be higher than $15.

The TEV / EBITDA multiple would likely stay about the same because under IFRS, you would add the Lease Liabilities to calculate Enterprise Value (you would need more numbers to predict the exact change).

7. What are the advantages and disadvantages of TEV / EBITDA vs. TEV / EBIT vs. P / E?

TEV / EBITDA is better when you want to *ignore the company's CapEx and capital structure completely*.

TEV / EBIT is better when you want to *ignore capital structure but partially factor in CapEx* (via the Depreciation, which comes from CapEx in previous years).

So, TEV / EBITDA is more about **normalizing companies** and is more useful in industries where CapEx is not a huge value driver, while TEV / EBIT is better when you want the implied values to have some relationship with CapEx.

The P / E multiple is affected by different tax rates, capital structures, non-core business activities, and more, so it is less useful for "normalization" purposes than the others (though it has the advantage of being widely understood).

P / E is more important in specific industries, such as banks and insurance firms, that use Equity Value as the leading valuation metric.

8. A company is currently trading at 10x TEV / EBITDA. It wants to sell an Operating Asset for 2x the Asset's EBITDA. Will that transaction increase or decrease the company's Enterprise Value and its TEV / EBITDA multiple?

The sale will **reduce** the company's Enterprise Value because the company is trading an Operating Asset for Cash, which is a Non-Operating Asset.

Even though the company's Enterprise Value decreases, its TEV / EBITDA multiple **increases** because the Asset's multiple was lower than the entire company's multiple.

To understand this, pretend the company's total EBITDA was $100, and this Asset contributed $20 of that EBITDA. Therefore, the company's Enterprise Value before the sale was $1,000.

The company now sells the Asset for 2x * $20 = $40. After the sale, the company's Enterprise Value falls by $40, and its EBITDA falls by $20. So, its new TEV / EBITDA is $960 / $80, or 12x.

9. What happens to the company's Equity Value and P / E multiple in this scenario?

We can't say for sure, but based on the information provided here, Equity Value **does not change** because the Net Assets stay the same (Operating vs. Non-Operating Assets do not matter for Equity Value). It would change only if there were a Gain or Loss recorded on the sale, as that would flow into Common Shareholders' Equity via Net Income.

Most likely, the P / E multiple would **increase** because this company is *most likely* trading at a higher P / E multiple than this specific asset if it's a 10x vs. 2x difference for the EBITDA multiples. However, we can't say for sure because there could be a huge capital structure difference between the company and this specific asset.

10. How do you calculate and use Unlevered FCF and Levered FCF?

Unlevered Free Cash Flow equals Net Operating Profit After Taxes (NOPAT) + D&A and sometimes other non-cash adjustments +/- Change in Working Capital – CapEx.

Levered Free Cash Flow equals Net Income to Common + D&A and sometimes other non-cash adjustments +/- Change in Working Capital – CapEx +/- Net Change in Debt.

You normally use UFCF in DCF-based valuations because it lets you evaluate a company independently of its capital structure, which produces more consistent numbers.

LFCF is far less widely used (and people disagree about the basic definition), but it is more common in certain specialized contexts/industries (e.g., equity REITs).

11. If a company is valued mostly based on its cash flow, why do you also use metrics such as EBIT and EBITDA that may not represent its true cash flow?

You use these metrics mostly for **convenience** and **comparability**. Free Cash Flow measures a company's cash flow more accurately, but it also takes more time to calculate since you need to review the full Cash Flow Statement and make adjustments.

Also, the individual items *within* FCF vary widely for different companies, regions, industries, and accounting systems.

As a result, EBIT and EBITDA are better for comparability/normalization purposes since they are based primarily on the Income Statement (and one line of the CFS for EBITDA).

12. Give an example of a company change that affects UFCF but not EBITDA.

Additional spending on CapEx or a higher-than-normal Change in Working Capital (e.g., due to a large Inventory purchase) would affect UFCF but not EBITDA since UFCF deducts CapEx and reflects the Change in Working Capital (which could be either positive or negative).

13. Company A has a P / E multiple of 15x, with a Net Income of $120 and a TEV / EBITDA multiple of 15x. Its EBITDA is $150.

Company B has the same 15x P / E multiple but a Net Income of $100, a TEV / EBITDA of 10x, and an EBITDA of $200.

Which one has a higher Net Debt balance?

Company A's Equity Value is 15x * $120 = $1800, and its Enterprise Value is 15x * $150 = $2250.

Company B's Equity Value is 15x * $100 = $1500, and its Enterprise Value is 10x * $200 = $2000.

Therefore, Company A's Net Debt is $2250 – $1800 = $450, and Company B's Net Debt is $2000 – $1500 = $500, so Company B has a higher balance.

14. A company's Operating Income is $100, and it has a $500 Debt balance at a 4% interest rate. It also has Cash of $100, currently earning 0% interest.

If the company's Equity Value is $600, its P / E multiple is 12x, and its tax rate is 25%, what can you conclude about its Enterprise Value?

An Equity Value of $600 and a P / E multiple of 12x means the company's "apparent" Net Income is $600 / 12 = $50.

The company's Operating Income is $100, and it pays $500 * 4% = $20 in Interest Expense per year, with no Interest Income.

So, its Pre-Tax Income is $80, and its Net Income "should be" $60 at a 25% tax rate.

However, it is clearly lower than that, so the most likely explanation is that the company has **Preferred Stock** in its capital structure.

For example, if the company had $10 in Preferred Dividends, the *Net Income* would be $60, and the *Net Income to Common* would be $50 (which you use in the P / E multiple).

We don't know the exact amount of Preferred Stock, but the company's Enterprise Value **must be higher** than $600 – $100 + $500 = $1000 due to it.

15. Suppose you are building a set of "global" comparable companies operating in the logistics/delivery sector in the U.S., Europe, and Asia. What is the SAFEST valuation multiple in this scenario?

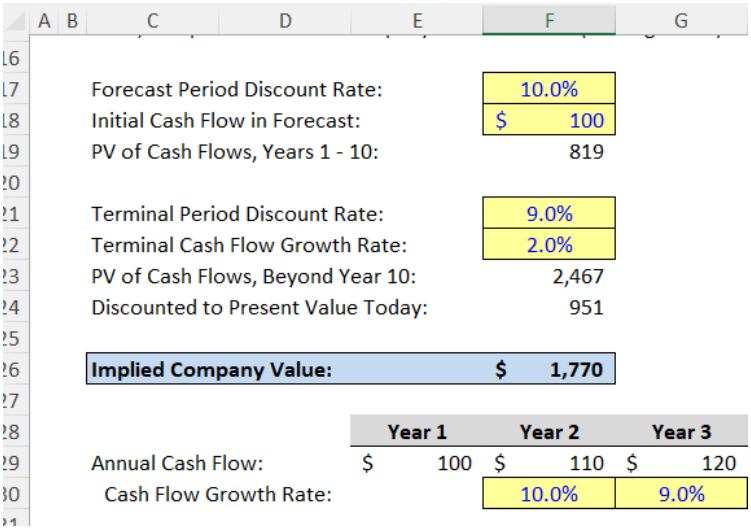
Given the lease accounting differences under U.S. GAAP vs. IFRS, the safest multiple is (Enterprise Value Including All Lease Liabilities) / EBITDAR, where EBITDAR equals EBITDA + Rental Expense.

Under IFRS, EBITDA already adds back or excludes the full Lease Expense, so the Rental Expense is minimal. But under U.S. GAAP, there is still Rental Expense for the Operating Leases.

Therefore, this multiple normalizes accounting and lease composition differences and allows for a proper comparison.

Return to Top.

Discounted Cash Flow (DCF) – Assumptions and Analysis



Forecast Period Discount Rate:			10.0%	
Initial Cash Flow in Forecast:			$ 100	
PV of Cash Flows, Years 1 - 10:			819	
Terminal Period Discount Rate:			9.0%	
Terminal Cash Flow Growth Rate:			2.0%	
PV of Cash Flows, Beyond Year 10:			2,467	
Discounted to Present Value Today:			951	
Implied Company Value:			**$ 1,770**	
	Year 1	**Year 2**	**Year 3**	
Annual Cash Flow:	$ 100	$ 110	$ 120	
Cash Flow Growth Rate:		10.0%	9.0%	

Questions about the DCF analysis are among the most common ones in interviews. Even if you don't understand all the details, you **must** be able to walk through the basic analysis (see the image on the left).

You should also understand the factors that affect the analysis and the importance of the Terminal Value vs. the Discount Rate vs. the Cash Flows in the forecast period.

The **Discount Rate** is such a big topic that we cover it separately in the next section; the Finance Concepts section also explains the main idea.

- Interview Guide – DCF / Valuation | Quiz Questions
- Core Financial Modeling – DCF / Valuation Module

1. Why do you build a DCF analysis to value a company?

In theory, a company is worth the Present Value of its expected future cash flows:

Company Value = Cash Flow / (Discount Rate – Cash Flow Growth Rate), where Cash Flow Growth Rate < Discount Rate

But you can't just use this single formula because a company's **Cash Flow Growth Rate** and **Discount Rate** change over time.

So, in a Discounted Cash Flow analysis, you divide the valuation into two periods: One where those assumptions may change (the **explicit forecast period**) and one where they stay the same (the **Terminal Period**).

You then project the company's cash flows in both periods and discount them to their Present Values based on the appropriate Discount Rate(s).

You compare this sum – the company's Implied Value – to its Current Value or "Asking Price" to see if it's valued appropriately.

2. Walk me through a DCF analysis.

A DCF values a company based on the Present Value of its Cash Flows in the explicit forecast period plus the Present Value of its Terminal Value.

You start by projecting the company's Free Cash Flows over the next 5 – 10 years by making assumptions for the revenue growth, margins, Working Capital, and CapEx.

Then, you discount the cash flows using the Discount Rate, usually the Weighted Average Cost of Capital, and sum up everything.

Next, you estimate the Terminal Value using the Multiples Method or the Gordon Growth Method; it represents the company's value *after* those first 5 – 10 years into perpetuity.

You then discount the Terminal Value to Present Value using the Discount Rate and add it to the sum of the company's discounted cash flows to get its Implied Enterprise Value.

Finally, you add Cash and subtract Debt (and add/subtract all other relevant line items) to get the Implied Equity Value, divide by the share count to get the Implied Share Price, and compare this to the company's Current Share Price.

3. How do you move from Revenue to Free Cash Flow in a DCF?

First, **confirm** that the interviewer is asking for *Unlevered* Free Cash Flow (AKA Free Cash Flow to Firm). If so:

Subtract COGS and Operating Expenses from Revenue to get Operating Income (EBIT).

Then, multiply Operating Income by (1 – Tax Rate), add back Depreciation & Amortization, and factor in the Change in Working Capital (which could be either positive or negative).

If Working Capital increases, the Change in WC is negative, and if it decreases, the Change in WC is positive.

Finally, subtract Capital Expenditures to calculate Unlevered Free Cash Flow.

4. How do you calculate the Terminal Value in a DCF, and which method is best?

You can use the **Multiples Method** or the **Gordon Growth Method** (AKA Long-Term Growth Method, Perpetuity Growth Method, etc.).

With the first one, you apply a Terminal Multiple to the company's EBITDA, EBIT, NOPAT, or FCF in the final year of the forecast period. For example, if you apply a 10x TEV / EBITDA multiple to the company's Year 10 EBITDA of $500, its Terminal Value is $5,000.

With the Gordon Growth Method, you assign a "Terminal Growth Rate" to the company's Free Cash Flows in the Terminal Period and assume they'll grow at that rate forever.

Terminal Value = Final Year Free Cash Flow * (1 + Terminal Growth Rate) / (Discount Rate – Terminal Growth Rate)

The Gordon Growth Method is better from a theoretical perspective because growth *always* slows down over time; all companies' cash flows eventually grow more slowly than GDP.

If you use the Multiples Method, it's easy to pick a multiple that **makes no logical sense** because it implies a growth rate that's too high.

However, many bankers still use and prefer the Multiples Method because it's "easier" or because they don't understand the issues with Terminal Multiples.

5. Suppose you build a Levered DCF instead of an Unlevered DCF. What changes?

First, you use Levered FCF instead of Unlevered FCF, which means you deduct the Net Interest Expense from EBIT before multiplying it by (1 – Tax Rate); you also factor in new Debt issuances and Debt principal repayments, which could make a net positive or negative impact.

Second, you use the Cost of Equity rather than WACC for the Discount Rate because Levered FCF is available only to the common shareholders.

Third, you calculate the Terminal Value using an Equity Value-based multiple such as P / E or Equity Value / Levered FCF.

Finally, there is no "bridge" at the end because in a Levered DCF, you calculate the company's Implied Equity Value directly based on the PV of the cash flows and the Terminal Value.

6. Will you get the same results from an Unlevered DCF and a Levered DCF?

No. The simplest explanation is that an Unlevered DCF does **not** directly factor the Cost of Debt into the FCF projections, while a Levered FCF does. The Unlevered DCF indirectly accounts for it via the WACC calculation, but it won't be equivalent to the Levered version.

That alone creates differences, but the more volatile cash flow in a Levered DCF (due to the Change in Net Debt) also plays a role. It's difficult to pick equivalent assumptions, and it's not worth considering because almost no one uses the Levered DCF in real life.

7. A client company plans to change its capital structure. Currently, it has 10% Debt / Total Capital, but it wants to increase this to 30%. Your co-worker claims that if you use an Unlevered DCF to value this company, it won't be affected by this change in capital structure.

Are they correct?

No. It's true that the *Unlevered Free Cash Flow* won't be affected by this change in capital structure and the higher Interest Expense, but the *Discount Rate* will be affected.

To account for this difference, you should calculate WACC under both capital structure percentages and use a changing Discount Rate each year in the analysis as the company progresses from 10% to 30% Debt / Total Capital over the forecast period.

8. What is the logic behind the main components of Unlevered Free Cash Flow? For example, why does it include the Change in Working Capital but not the Net Interest Expense?

Unlevered FCF reflects the **core, recurring line items available to ALL investor groups**.

That's because Unlevered FCF corresponds to Enterprise Value, which represents the value of the company's core business available to all the investor groups.

So, if an item is **NOT** recurring, **NOT** related to the company's core business, or **NOT** available to all investor groups, you ignore it in UFCF.

The Change in Working Capital is recurring, related to the core business, and available to all the investor groups, so it is included. The Net Interest Expense is related to the company's financing, not its core business, and is only available to the lenders, so it is not included.

9. What's the relationship between subtracting an expense in the FCF projections and the Enterprise-Value-to-Equity-Value "bridge" at the end of the DCF?

If you **subtract** a certain expense in FCF, then you **ignore** its corresponding Liability in the "bridge" at the end (i.e., the place where you add Cash, subtract Debt, etc., to move from Enterprise Value to Equity Value).

But if you **ignore or exclude** a certain expense, you should **subtract** its corresponding Liability in the bridge.

The perfect example is Debt: In an Unlevered DCF, you ignore the Interest Expense, so you subtract the Debt as a Liability in the bridge.

10. Should you add back Stock-Based Compensation to calculate Free Cash Flow? It's a non-cash add-back on the Cash Flow Statement.

No! You should consider SBC a *cash expense* in the context of a valuation because it creates **additional shares** and dilutes the existing investors. So, it's not just a simple "timing difference" line item like CapEx and D&A.

As a real-life example, imagine owning a house, renting it out, and paying someone to manage the tenants for you. Instead of paying them a salary, you give them a 1% stake in your house each year.

If you now sell your house after 10 years, you only get **90% of the proceeds** rather than 100%. You may not have paid this manager in cash, but you still paid them! SBC works the same way but with a company's existing shareholders and their ownership.

11. What's the intuition behind the Gordon Growth formula for Terminal Value?

The typical formula is:

Terminal Value = Final Year FCF * (1 + Terminal FCF Growth Rate) / (Discount Rate – Terminal FCF Growth Rate)

A company is worth more if its growth rate is higher in the Terminal Period and less if its growth rate is lower; it's also worth more if its starting FCF in the Terminal Period is higher.

If the company's Discount Rate is higher, the company is worth less because the denominator is bigger (and vice versa).

12. If you use the Multiples Method to calculate Terminal Value, do you use the multiples from the Public Comps or Precedent Transactions?

It's better to start with the multiples from the Public Comps – ideally, the ones from 1-2 years into the future – because you **don't** want to reflect the control premium in the Precedent Transactions if you're completing a standalone company valuation.

If the selected multiples imply a reasonable Terminal FCF Growth Rate, you might stick with your initial guess; if not, adjust it up or down as necessary.

13. How do you pick the Terminal Growth Rate when calculating the Terminal Value using the Gordon Growth Method?

This growth rate should be *below* the country's long-term GDP growth rate and in line with other macroeconomic variables like inflation.

For example, if you're in a developed country where the expected long-term GDP growth rate is 3%, you might use numbers ranging from 1% to 2% for the Terminal Growth Rates.

14. How can you check whether your Terminal Value estimate is reasonable?

You start by entering a range of assumptions for the Terminal Multiple or Terminal FCF Growth Rate, and you cross-check them by calculating the Growth Rates or Multiples they *imply*.

If these seem wrong, you adjust the range of Terminal Multiples or Terminal FCF Growth Rates until you get more reasonable results.

For example, if the multiple you pick implies a Terminal FCF Growth Rate of 5%, that's too high for developed countries, so you should pick a lower Terminal Multiple.

15. Does it ever make sense to use a negative Terminal FCF Growth Rate?

Yes. For example, if you're valuing a biopharmaceutical company, and the patent on its key drug expires within the explicit forecast period, it might be reasonable to assume that the company never replaces the lost revenue from this drug, which results in declining cash flow.

A negative Terminal FCF Growth Rate represents your expectation that the company will stop generating cash flow eventually (even if it happens decades into the future).

It doesn't make the company "worthless"; it's just *worth less*.

16. Explain how you deal with leases and lease accounting in a DCF.

The easiest solution is to treat the full Lease Expense (from both Finance and Operating Leases) as a simple cash operating expense and deduct it in the FCF projections.

If you do this, you can ignore the Lease Liabilities in the bridge and the WACC calculation, greatly simplifying the analysis.

You could do the opposite and treat Leases as "capital" and add back or exclude the full Lease Expense in the projections, deduct the change in Lease Liabilities, deduct Lease Liabilities in the bridge, and count Leases in WACC, but this adds significant work and barely changes the results.

17. You have just finished building a DCF for a new client. What are some potential "warning signs" that your assumptions may not be correct?

First, the company's revenue and FCF growth should always **decline** and fall to very low levels by the end of the forecast period (right around GDP growth or inflation).

Second, the PV of the Terminal Value might account for far too much value, such as 95% of the total; if this is the case, you should extend the forecasts so the FCF contributes more. If this happens, you should also check the Implied Terminal Growth Rates and Multiples.

Third, you may be double-counting items; if you deduct an expense in UFCF, it should **not** appear in the Enterprise Value bridge.

Finally, be careful with the margin, CapEx, and D&A assumptions. The margins should stabilize further into the forecast period, and CapEx should remain ahead of D&A even into the Terminal Period *if* you are assuming continued growth.

18. Why do you use the mid-year convention in a DCF, and how does it affect the results?

You use it because a company's cash flows do not arrive 100% at the end of each year – the company generates cash flow *throughout* each year.

Using 1, 2, 3, 4, etc., for the discount periods implies that one full year must pass for the first cash flow to arrive (and then another full year after that for the next one).

If you use 0.5, 1.5, 2.5, 3.5, etc., instead, you assume that only *half a year* passes before the first cash flow is generated, which is closer to real life. A full year still separates each subsequent cash flow, but they now arrive in *the middle* of each year.

A DCF using the mid-year convention will produce **higher implied values** because the discount periods are lower, and money in 0.5 years is worth more today than money in 1.0 years.

19. Why might you include a "stub period" in a DCF, and what does it mean?

You might include a "stub period" if you're valuing a company midway through the year and it has already reported some of its financial results.

A DCF is based on *expected future cash flow*, so you should **subtract** these previously reported results and adjust the discount periods as well.

For example, maybe it's September 30th, and the company's fiscal year ends on December 31st.

The company's *future cash flow for this year* will be generated between September 30th and December 31st.

Therefore, you should **exclude** the cash flow from January 1st to September 30th in your projections since that part of the year has already passed.

So, in the first year, you would include only the projected FCF from September 30th to December 31st. To discount the FCF in those 3 months, you would use 0.25 for the discount period because 3 months is 25% of the year.

You would then use 1.25 for the discount period of the next year, 2.25 for the year after that, and so on.

20. Suppose that a company goes from using 0% Debt in its capital structure to 20%. How will its WACC and Implied Value from a DCF change?

Most likely, its WACC will decrease because Debt is cheaper than Equity due to the lower expected/targeted returns and the tax-deductibility of interest paid on Debt.

So, when most companies go from 0% Debt to a low/moderate amount of Debt, their WACCs tend to decrease, which means their Implied Values from a DCF increase.

Above this moderate Debt level, WACC will start to increase as the Cost of Debt and Cost of Equity begin to increase, which will reduce the company's Implied Value.

21. Let's say that the central bank has just raised short-term interest rates from 2% to 5% to fight inflation. How will this affect the WACC and the DCF valuation of a company?

Most likely, WACC will increase, and the company's Implied Value from the DCF will decrease because the Discount Rate is now higher due to a higher Risk-Free Rate.

A higher Risk-Free Rate increases both the Cost of Equity and the Cost of Debt, as the Cost of Equity is based on Risk-Free Rate + Equity Risk Premium * Levered Beta, and the Cost of Debt is based on the cost of issuing additional Debt *today*.

However, higher short-term rates do not always translate into higher *long-term government bond yields*, so we hedged this answer with the "most likely" part. If the 10-year yield you're using for the Risk-Free Rate stays the same, and the other parameters also stay the same, nothing changes.

22. You have just finished building a DCF model. Will it make more of a difference to change the average revenue growth rate from 10% to 5% or to change the Discount Rate from 10% to 5%?

Most likely, changing the Discount Rate from 10% to 5% will make a bigger difference because the Discount Rate affects both the PV of the Cash Flows and the PV of the Terminal Value, and a 5% vs. 10% difference is very significant because it compounds over time.

Changing the revenue growth from 10% to 5% will reduce the company's Cash Flows and Terminal Value, but not by quite the same factor; the Year 10 revenue will be ~35% lower, which may not even translate into a 35% difference in FCF.

23. The government has just decided to cut the corporate tax rate in your country from 35% to 20%. How will WACC and the DCF output of your valuation change?

The tax rate affects both the FCF and the Discount Rate. *If* a company has Debt, a lower tax rate will increase its Cost of Debt because the interest paid on Debt will produce a reduced tax benefit; the Cost of Equity will also be higher because that same tax rate also factors in when levering and re-levering Beta.

So, WACC tends to **increase slightly** from this tax rate reduction, but **FCF also increases**, which tends to be more significant than the increase in WACC. So, the company's Implied Value should most likely increase. If the company has no Debt, its Implied Value definitely increases.

24. You're building a 10-year DCF for a growth-oriented tech company. Your VP reviews your model and asks you to extend the forecast period to 20 years. How will the output change?

The main difference with a longer forecast period is that the PV of the Terminal Value should now account for a reduced percentage of the company's total Implied Value from the DCF (e.g., 50% vs. 70%).

We can't say if the Implied Value will go up or down because it depends on the specific numbers and the relative weight of the Terminal Value vs. everything else.

25. Two companies have the same financial profiles and operate in the same industry, but one is in an emerging market, and the other is in a developed market. How will their DCF outputs differ?

The one in the emerging market should have a higher Discount Rate and, therefore, a lower Implied Value because the geopolitical risk, equity risk, and credit default risk are all higher.

This might not always be true if the emerging market company is also growing more quickly, as the higher growth could offset the higher Discount Rate – but the question says these companies have "the same financial profiles."

Return to Top.

Discounted Cash Flow (DCF) – The Discount Rate

Questions related to the Discount Rate and WACC in a DCF are surprisingly tricky because it's not always easy to explain how the assumptions are linked.

You don't need to know every detail of these calculations, but you should know the **intuition** behind everything.

If you understand that the Discount Rate represents the opportunity cost and that the Debt and Equity levels affect *all* investors, you can answer most of these questions.

1. What does the Cost of Equity mean intuitively?

It tells you the average percentage a company's stock "should" return each year over the long term, factoring in both stock-price appreciation and dividends.

In a valuation, it represents the average annualized return that equity investors might earn over the long term.

To a company, the Cost of Equity represents the cost of funding its operations by issuing additional shares to investors.

The company "pays for" Equity via potential Dividends (a real cash expense) and the dilution of existing investors.

2. What does WACC mean intuitively?

WACC is your expected or targeted annualized return if you invest proportionately in *all parts* of the company's capital structure – Debt, Equity, and Preferred Stock.

To a company, WACC represents the cost of funding its operations by using **all** its sources of capital and keeping its capital structure percentages the same over time.

Investors might invest in a company if the expected IRR exceeds its WACC, and a company might fund a new project, acquisition, or expansion if the expected IRR exceeds its WACC.

3. How do you calculate the Cost of Equity?

Cost of Equity = Risk-Free Rate + Equity Risk Premium * Levered Beta

The Risk-Free Rate represents the yield on "risk-free" government bonds denominated in the same currency as the company's cash flows. You usually use 10-year or 20-year bonds to match the explicit forecast period of the DCF.

Levered Beta represents the volatility of this stock relative to the market as a whole, factoring in both **intrinsic business risk** and **risk from leverage**.

And the Equity Risk Premium represents how much the stock market in the company's country will return above the "risk-free" government bond yield in the long term.

Stocks are riskier and have higher potential returns than government bonds, so you take the yield on the bonds, add the *extra* returns you could get from the stock market, and then adjust for *this company's* specific risk and potential returns.

4. If a company operates in the EU, U.S., and U.K., what should you use for its Risk-Free Rate?

You should use the appropriate yield on the government bonds denominated in the currency of the company's cash flows.

So, if the company reports its financials in USD, you might use the yield on 10-year U.S. Treasuries; if it reports them in EUR or GBP, you might use the yield on 10-year bonds issued by the European Central Bank or the Bank of England.

5. How do you calculate the Equity Risk Premium for a multinational company operating in many geographies?

You might take the percentage of revenue earned in each country, multiply it by the ERP for that country's stock market, and then add the terms to get the weighted average ERP.

To calculate the ERP in each market, you would calculate the average annualized returns of the country's stock market vs. the Risk-Free Rate in that country over the long term. If that is not feasible or the data does not exist, you could also take the U.S. stock market ERP and add a default spread to represent the additional risk of the other country.

6. What does Beta mean intuitively?

Levered Beta tells you how volatile a company's stock price is relative to the stock market as a whole, factoring in both **intrinsic business risk** and **risk from leverage** (i.e., Debt).

If Beta is 1.0, when the market goes up 10%, this company's stock price also increases by 10%.

If Beta is 2.0, when the market goes up 10%, this company's stock price goes up by 20%.

If the market drops by 10%, this company's stock price falls by 10% when the Beta is 1.0 or 20% when the Beta is 2.0.

Unlevered Beta excludes the risk from leverage and reflects only the intrinsic business risk, so it's always less than or equal to Levered Beta.

7. What are the formulas for un-levering and re-levering Beta, and what do they mean?

Unlevered Beta = Levered Beta / (1 + Debt / Equity * (1 – Tax Rate) + Preferred Stock / Equity)

Levered Beta = Unlevered Beta * (1 + Debt / Equity * (1 – Tax Rate) + Preferred Stock / Equity)

You use a "1 +" before the Debt / Equity * (1 – Tax Rate) term to ensure that Unlevered Beta is always less than or equal to Levered Beta.

You multiply the Debt / Equity term by (1 – Tax Rate) because the tax-deductibility of interest reduces the risk of Debt.

When you move *from* Levered Beta *to* Unlevered Beta, you divide by the "risk from leverage" term to remove it and reduce Beta accordingly; it's the opposite when moving from Unlevered to Levered Beta.

You un-lever and re-lever Beta because when you calculate WACC in a DCF, you want to isolate the "inherent business risk" and then take that risk and add the *company-specific risk from leverage* for the company you're valuing.

8. How do you calculate WACC, and why does it pair with Unlevered Free Cash Flow?

The *formula* for WACC is simple:

WACC = Cost of Equity * % Equity + Cost of Debt * (1 – Tax Rate) * % Debt + Cost of Preferred Stock * % Preferred Stock

There is some disagreement around the different ways to calculate each component, but the basic formula is straightforward.

It pairs with UFCF because they both represent all the investors in the company. It is **not** "capital structure-neutral" because *no Discount Rate can be*. Each investor group affects the others!

9. Why is Equity more expensive than Debt?

Because it offers higher risk and higher potential returns and lacks the tax benefits of Debt.

Expected stock market returns usually exceed the Yield to Maturity on Debt, making the Equity cost higher. The interest on Debt is also tax-deductible, further reducing the Debt cost and making Equity even more expensive.

In developed markets, the average annualized stock market return is often in the 7 – 10% range, so a company with a Levered Beta of 1.0 will have a Cost of Equity in that range.

For the Cost of Debt to be higher, the *Pre-Tax Cost* would have to be ~9 – 13% at a 25% tax rate. More speculative companies might pay interest rates in that range, but larger/mature companies tend to pay less than that.

10. How do you determine the Cost of Debt and Cost of Preferred Stock in the WACC calculation, and what do they mean?

These Costs represent what the company would pay if it issued *additional* Debt or Preferred Stock.

To an outside investor, these Costs represent their *expected annualized returns* if they held the Debt or Preferred Stock through their maturities.

You can estimate the Cost of Debt by calculating the Yield to Maturity (YTM), which reflects the coupon rates on the company's bonds and their market values (e.g., a bond with a coupon rate of 5% that's trading at a discount to par value will have a YTM higher than 5%).

If you can't find this information, you could also use a simple weighted average interest rate for the issuances or take the Risk-Free Rate and add a **default spread** based on the company's expected credit rating.

The Cost of Preferred Stock is similar, but Preferred Dividends are not tax-deductible, so you do not multiply by the (1 – Tax Rate) term in the WACC calculation.

Return to Top.

Merger Models – Concepts

It's important to understand the fundamentals of M&A deals and merger models, but they are **less important** than the accounting and valuation topics.

They are more advanced but also less relevant in certain groups (e.g., ECM, DCM, etc.). Unlike accounting and valuation, M&A modeling applies *mostly* to investment banking and other deal-based roles and is less important for "public markets" roles (equity research, asset management, hedge funds, etc.).

You could certainly get quantitative questions related to merger models, such as quick accretion/dilution calculations, but **conceptual questions** are more likely in entry-level interviews.

EPS Accretion / Dilution Analysis	Units:	Premium to Paid to Company B's Share Price: 0.0%	10.0%	20.0%	30.0%	40.0%
Company A Share Price:	$ as Stated	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00
Company B Offer Price per Share:	$ as Stated	5.00	5.50	6.00	6.50	7.00
Company B - Purchase Equity Value:	$ M	**500.0**	**550.0**	**600.0**	**650.0**	**700.0**
Cash Used:	$ M	166.7	183.3	200.0	216.7	233.3
Debt Issued:	$ M	166.7	183.3	200.0	216.7	233.3
Company A Shares Issued:	M Shares	23.810	26.190	28.571	30.952	33.333
Weighted Cost of Acquisition:	%	5.6%	5.6%	5.6%	5.6%	5.6%
After-Tax Yield of Company B:	%	6.0%	5.5%	5.0%	4.6%	4.3%
The Deal is Predicted to Be:	Text	**Accretive**	**Dilutive**	**Dilutive**	**Dilutive**	**Dilutive**

- Interview Guide – M&A Deals and Merger Models | Quiz Questions
- Core Financial Modeling – M&A and Merger Model Module

1. Walk me through a merger model (accretion/dilution analysis).

In a merger model, you start by projecting the financial statements of the Buyer and Seller. Then, you estimate the Purchase Price and the mix of Cash, Debt, and Stock used to fund the deal. You create a Sources & Uses schedule and Purchase Price Allocation schedule to estimate the after-effects of the deal on the financial statements.

Then, you combine the Balance Sheets of the Buyer and Seller, reflecting the Cash, Debt, and Stock used, new Goodwill created, and any write-ups and write-downs. You then combine the Income Statements, reflecting the Foregone Interest on Cash, Interest Paid on New Debt, and Synergies.

The Combined Net Income equals the Combined Pre-Tax Income times (1 – Buyer's Tax Rate), and the Combined EPS equals the Combined Net Income divided by (Buyer's Existing Share Count + New Shares Issued in the Deal).

The EPS accretion/dilution equals the percentage difference between this Combined EPS and the Buyer's standalone EPS.

2. Why might an M&A deal be accretive or dilutive?

A deal is accretive if the extra Pre-Tax Income from a Seller exceeds the cost of the acquisition in the form of the Foregone Interest on Cash, Interest Paid on New Debt, and New Shares Issued.

For example, if the Seller contributes $100 in Pre-Tax Income, but the deal costs the Buyer only $70 in additional Interest Expense, and the Buyer doesn't issue any new shares, the deal will be accretive because the Buyer's Earnings per Share (EPS) will increase.

A deal will be dilutive if the opposite happens. For example, if the Seller contributes $100 in Pre-Tax Income, but the deal costs the Buyer $130 in additional Interest Expense, and its share count remains the same, its EPS will decrease.

3. How can you tell whether an M&A deal will be accretive or dilutive?

You compare the Weighted Cost of Acquisition to the Seller's Yield at the Purchase Price.

- **Cost of Cash** = Foregone Interest Rate on Cash * (1 – Buyer's Tax Rate)
- **Cost of Debt** = Interest Rate on New Debt * (1 – Buyer's Tax Rate)
- **Cost of Stock** = Reciprocal of the Buyer's P / E multiple, i.e., Net Income / Equity Value.
- **Seller's Yield** = Reciprocal of the Seller's P / E multiple, calculated using the Purchase Equity Value.

Weighted Cost of Acquisition = % Cash Used * Cost of Cash + % Debt Used * Cost of Debt + % Stock Used * Cost of Stock.

If the Weighted Cost is **less than** the Seller's Yield, the deal will be **accretive**; if the Weighted Cost is **greater than** the Seller's Yield, the deal will be **dilutive**.

4. That sounds complicated. Are there any shortcuts for guesstimating whether an M&A deal will be accretive or dilutive?

If it is a **100% Stock deal**, you can compare the Buyer's P / E multiple to the Seller's P / E multiple *at* the purchase price. If the Buyer's multiple is higher, the deal will be accretive.

This works because the reciprocals of the P / E multiples in a 100% Stock deal are the Weighted Cost of Acquisition and the Seller's Yield.

For example, let's say the Buyer's P / E multiple is 10x, and the Weighted Cost of Acquisition is 10%.

If the Seller's Current Equity Value is $1000, the Buyer pays a 20% premium, and the Seller's Net Income is $200, its P / E multiple *at* the purchase price is $1200 / $200 = 6x.

Therefore, a 100% Stock version of this deal is accretive because the Seller's Yield is 1 / 6 = 16.7%, which is higher than the Weighted Cost of Acquisition.

5. How do you determine the Purchase Price in an M&A deal?

If the Seller is public, you assume a **premium** to the Seller's current share price based on the average premiums for similar deals in the market (usually between 10% and 30%). You can also use the DCF, Public Comps, and other valuation methodologies to cross-check this figure.

The Purchase Price for private Sellers is based on the standard valuation methodologies, and you usually link it to a multiple of EBITDA, EBIT, or Revenue since private companies don't have easy-to-determine share prices.

If the Buyer expects to realize significant Synergies, it is often willing to pay a higher premium for the Seller because the Present Value of the Synergies might exceed this premium.

6. What is the "true price" in an M&A deal: The Purchase Equity Value or Purchase Enterprise Value? Why?

The "true price" is the Purchase Enterprise Value (or something close to it) because that represents what the Buyer pays *all* the Seller's investors for its core assets. However, the Purchase Enterprise Value is *not* necessarily what the Buyer pays in "upfront capital."

Also, the Purchase Equity Value often drives the Cash, Debt, and Stock used to fund a deal. The Purchase Equity Value is also what the selling shareholders receive in the deal.

Therefore, even though the Purchase Enterprise Value is the true price, both metrics are important in M&A analysis.

7. How does an Acquirer determine the mix of Cash, Debt, and Stock to use in a deal?

Since Cash is the cheapest for most Acquirers, they'll use all they can before moving to the other funding sources. So, you might assume that the Cash Available equals the Acquirer's current Cash balance minus its Minimum Cash balance, also factoring in the Target's Cash and Minimum Cash when applicable.

After that, Debt tends to be the next cheapest option. An Acquirer might be able to raise Debt to the level where its Debt / EBITDA remains in-line with peer companies'.

So, if it's levered at 2x EBITDA now, and similar companies have 5x Debt / EBITDA, it might be able to raise an additional 3x EBITDA worth of Debt. Again, you may also factor in the Target's Debt and EBITDA if they are significant.

Finally, there's no strict limit on the amount of Stock an Acquirer might issue, but few companies would issue enough shares to lose control of the company, and some Acquirers will issue Stock only up to the point at which the deal turns dilutive.

8. Are there cases where EPS accretion/dilution is NOT important? What other analyses could you look at to assess M&A deals?

Yes, there are many cases where EPS accretion/dilution is less important.

For example, if the Buyer is private or has negative EPS as a standalone entity, it won't care whether the deal is accretive or dilutive.

It also makes little difference if the Buyer is far bigger than the Seller (e.g., 10x – 100x its size).

Besides EPS accretion/dilution, you can also analyze the deal's qualitative merits, compare the IRR to the Discount Rate, and value the Seller plus the Synergies and compare that to the Equity Purchase Price.

You can also create a Contribution Analysis to determine how much the Buyer and Seller "contribute" to each financial metric and then compare the contribution percentages to their respective ownership percentages, assuming it's a 100% Stock deal.

Value Creation Analysis to determine how the Buyer's share price will change after the deal closes may also be useful, especially if the Buyer + Seller together will resemble a larger, more valuable public company.

9. How do the assumptions for a cash-free, debt-free deal for a private Seller differ from those of a standard M&A deal for a public Seller?

In a cash-free, debt-free deal, the Seller's existing Cash and Debt balances go to $0 when the deal closes and are **immediately replaced with new Cash and Debt balances**.

The Cash is brought up to the Seller's Minimum Cash, and the new Debt balance is usually the same as the old one because it is simply replaced with a new issuance.

If Debt > Cash, the Seller uses its Cash balance to repay as much Debt as it can, and the remaining Debt is deducted from the proceeds to the selling shareholders (i.e., they earn less because they must repay some of the Debt).

If Cash > Debt, the Seller repays its entire Debt balance using its Cash, and it distributes the remaining Cash to shareholders as the deal closes, which reduces its Equity Value.

In these types of deals, the purchase price is based on a multiple such as TEV / EBITDA or TEV / Revenue rather than a share-price premium because the Seller is private.

Also, the Uses side of the Sources & Uses schedule is based on the Purchase Enterprise Value, the Seller's Minimum Cash, and the Transaction/Financing Fees.

The Sources side is standard and includes the usual Cash, Debt, and Stock line items.

10. What's the purpose of a Purchase Price Allocation schedule in a merger model?

The main purpose is to estimate the **Goodwill** created in a deal.

Goodwill exists because the Purchase Equity Value in deals almost always exceeds the Seller's Common Shareholders' Equity (CSE).

When this happens, the Combined Balance Sheet will go out of balance because the Seller's CSE is written down to $0, but the total amount of Cash, Debt, and Stock used in the deal is greater than the CSE that was written down. Goodwill exists to "plug the gap" and ensure the Balance Sheet balances.

So, you estimate the new Goodwill with this schedule, factor in write-ups of Assets such as PP&E and Intangibles, and include other acquisition effects such as the creation of a new Deferred Tax Liability and changes to the existing Deferred Tax items.

11. Why do Deferred Tax Liabilities get created in many M&A deals?

A Deferred Tax Liability, or DTL, represents the *expectation* that Cash Taxes will exceed Book Taxes in the future.

DTLs get created because the Depreciation & Amortization on Asset Write-Ups is not deductible for cash-tax purposes in a Stock Purchase (i.e., a standard M&A deal where the Buyer purchases all the Seller's common shares and acquires *everything* the Seller has).

As a result, the Buyer will pay more in Cash Taxes than Book Taxes until the Write-Ups are fully depreciated/amortized. Each time the Buyer pays more in Cash Taxes than Book Taxes, the DTL decreases until it eventually reaches 0.

12. Give me an example of how you might estimate the Revenue and Expense Synergies in an M&A deal.

With Revenue Synergies, you might assume that the Seller can sell its products to some of the Buyer's customer base.

So, if the Buyer has 100,000 customers, 1,000 of them might buy widgets from the Seller. Each widget costs $10.00, which is $10,000 in extra Revenue.

There will also be COGS and Operating Expenses associated with these extra sales, so you must factor those in. For example, if each widget costs $5.00, the Combined Company will earn only $5,000 in extra Pre-Tax Income.

With Expense Synergies, you might assume that the Combined Company can close several offices or lay off redundant employees, particularly in administrative functions such as IT, accounting, and HR.

For example, if the Combined Company has 10 offices, management might believe only 8 will be required after the merger.

If each office costs $100,000 per year, there will be 2 * $100,000 = $200,000 in Expense Synergies, boosting the Combined Pre-Tax Income by $200,000.

13. Why do many merger models tend to overstate the impact of Synergies?

First, many merger models do **not** include the costs associated with Revenue Synergies. Even if the Buyer or Seller can sell more products after the deal closes, those extra units **cost something to produce and deliver**, so you must include the extra COGS and OpEx.

Second, realizing Synergies **takes time**. Even if a company expects $10 million in "long-term synergies," it won't realize all of them in Year 1; it might take several years, and the percentage realized will increase gradually over time.

Finally, realizing Synergies **costs money**. There will always be "integration costs" associated with a deal, and certain types of Synergies, such as headcount reductions, will cost even more due to severance costs.

Return to Top.

Merger Models – Calculations

You can determine whether a deal will be accretive or dilutive by comparing the Weighted Cost of Acquisition to the Seller's Purchase Yield (Net Income / Purchase Equity Value), as defined in the previous section.

If you get a question about the Combined Equity Value, Combined Enterprise Value, or Combined Multiples, the rules are shown below.

Note that these rules **ignore** synergies and acquisition effects beyond the Interest Expense on New Debt, Foregone Interest on Cash, and New Shares Issued:

1. **Combined Equity Value** = Acquirer's Equity Value + Market Value of Stock Issued in the Deal (but this may change post-announcement if the Acquirer's share price falls).

2. **Combined Enterprise Value** = Acquirer's Enterprise Value + Purchase Enterprise Value of Target (but this may change post-announcement if the Acquirer's share price falls).

3. **Combined Valuation Multiples:** TEV-based Combined Multiples are in between the Acquirer's current trading multiples and Target's purchase multiples. Equity Value-based Combined Multiples are usually in this range as well, *but they do not have to be*. TEV-based Combined Multiples are not affected by the deal financing, but Equity Value-based Combined Multiples are.

These questions aren't *that important*, but many groups like to ask them if you've had previous banking or M&A experience.

1. Company A has 10 shares outstanding at a share price of $25.00, and its Net Income is $10.

It acquires Company B for a Purchase Equity Value of $150. Company B has a Net Income of $10 as well. Both companies have 25% tax rates. How accretive is a 100% Stock deal?

Company A's EPS is $10 / 10 = $1.00.

Company A must issue 6 new shares to do the deal since $150 / $25.00 = 6, so the Combined Share Count is 10 + 6 = 16.

Since no Cash or Debt is used and the tax rates are the same, the Combined Net Income = Company A Net Income + Company B Net Income = $10 + $10 = $20.

Therefore, the Combined EPS is $20 / 16 = $1.25, so it's accretive by 25% (**mental math:** 25% of 16 is 4, and 20 is 4 greater than 16, so take the $1.00 EPS and increase it by 25%).

2. Suppose that Company A now decides to use 100% Cash or 100% Debt to do this deal. If the Cash interest rate is 4%, and the Debt interest rate is 10%, will this deal be accretive or dilutive under these financing structures?

The After-Tax Cost of Cash is 4% * (1 – 25%) = 3%, and the After-Tax Cost of Debt is 10% * (1 – 25%) = 7.5%.

The Seller's Purchase Yield is $10 / $150 = ~6.7%.

Therefore, a 100% Cash deal will be accretive, and a 100% Debt deal will be dilutive.

3. Company A has a P / E of 11x, a Debt Interest Rate of 8%, a Cash Interest Rate of 4%, and a Tax Rate of 25%.

It wants to acquire Company B at a purchase P / E multiple of 20x using 1/3 Stock, 1/3 Debt, and 1/3 Cash. Will the deal be accretive?

Company A's After-Tax Cost of Stock is 1 / 11, or ~9%, its After-Tax Cost of Debt is 8% * (1 – 25%) = 6%, and its After-Tax Cost of Cash is 4% * (1 – 25%) = 3%.

Company B's Purchase Yield is 1 / 20, or 5%.

The Weighted Cost of Acquisition is 9% * 1/3 + 6% * 1/3 + 3% * 1/3 = 3% + 2% + 1% = 6%.

The deal will be **dilutive** since the Weighted Cost exceeds Company B's Purchase Yield.

4. Company A, with a current P / E multiple of 20x, acquires Company B for a P / E purchase multiple of 10x using 100% Debt.

What interest rate on Debt would make the deal dilutive? Assume a 25% tax rate.

Company B's Yield is 1 / 10, or 10%, so the After-Tax Cost of Debt must be *above* 10% for the deal to be dilutive.

At a 25% tax rate, 10% / (1 – 25%) = ~13.3%, which you can round to "Around 13%" (**mental math:** 75% of 10% is 7.5%, but we're trying to find the number that 10% is 75% of → So it must be higher by at least 2.5%, which you can round up to ~13%).

Most companies do not pay 13% interest rates on their Debt, so a 100% Debt will almost certainly be accretive.

5. Company A has an Equity Value of $2,000 and a Net Income of $200. Company B has a Purchase Equity Value of $1,200 and a Net Income of $100.

How much in Synergies must be realized for a 100% Stock deal to be accretive?

Company A's P / E is $2,000 / $200 = 10x, so its Cost of Stock is 1 / 10 = 10%. Company B's Purchase P / E is $1,200 / $100 = 12x, so its Yield is 1 / 12, or ~8.3%.

Therefore, without Synergies, this deal would be slightly dilutive.

Company B's Purchase Yield must exceed 10% for the deal to turn accretive. This means its Purchase P / E multiple must be below 10x, which means its Net Income must be above $120 (since $1,200 / $120 = 10x).

Therefore, there must be **$20 in After-Tax Synergies** for this deal to be accretive. At a 25% tax rate, that means ~$27 in Pre-Tax Synergies.

6. Continuing with this same example, Company A is paying a 20% premium for Company B, so Company B's Current Equity Value is $1,000.

Suppose the market doesn't "like" this 20% premium, and investors sell off Company A's stock.

How would Company A's stock price change? Assume it has 200 shares outstanding at $10.00 per share and assume that Company B gets a fixed share count in the deal.

The Combined Equity Value in a deal normally equals the Acquirer's Equity Value + Stock Issued in the Deal, so it's $2,000 + $1,200 = $3,200 here before the market's reaction.

If the market does *not* believe in this premium, the Combined Equity Value will fall by the premium paid, so it will go from $3,200 to $3,000 here.

We know that Company A has 200 shares and that Company B gets $1,200 / $10.00 = 120 shares because the question states "fixed share count."

Therefore, the post-market-reaction share price is $3,000 / 320 = ~$9.38, which you could round to "between $9.00 and $10.00" (**mental math:** $3,000 / 300 = $10.00 and $3,000 / ~333 = $9.00).

The **intuition** is that this drop of $0.62 is ~6.2% of Company A's share price, and $200 is ~6.2% of the $3,200 Combined Equity Value.

7. Continuing with the same scenario, your co-worker reviews the changes and claims that Company A's share price would not have fallen if this had been a 100% Cash or Debt deal.

Are they correct?

No. In this case of a "disappearing purchase premium," both the Combined Equity Value and the Combined Enterprise Value fall by the purchase premium *regardless of the financing.*

In this example, Company B still gets a $1,200 Purchase Equity Value in a 100% Cash deal, even if the market disapproves of this 20% premium.

So, Company A still pays $1,200 of Cash to do the deal, which means the Combined Cash balance is lower by $1,200. That normally boosts the Combined Enterprise Value by $1,200.

But in this case, Company A's Equity Value will fall by $200 to reflect the "disappeared purchase premium," so the Combined Enterprise Value will be up by $1,000 rather than $1,200.

The only difference is that if it's a 100% Cash or Debt deal, Company A's share price falls by $1.00 rather than $0.62 since $200 / 200 shares = $1.00.

8. An Acquirer with an Equity Value of $500 million and an Enterprise Value of $600 million buys another company for a Purchase Equity Value of $100 million and a Purchase Enterprise Value of $150 million.

What are the Combined Equity Value and Enterprise Value in a 100% Stock deal?

The Combined Enterprise Value equals the Enterprise Value of the Buyer plus the Purchase Enterprise Value of the Seller, so it's $600 + $150 = $750 million.

If it's a 100% Stock deal, the Combined Equity Value = Acquirer's Equity Value + Value of Stock Issued = $500 + $100 = $600 million.

9. How do these figures change if it's a 50% Cash / 50% Stock deal instead?

The Combined Enterprise Value stays the same regardless of the deal financing, so it's still $750 million.

The Combined Equity Value changes based on the financing because it equals the Acquirer's Equity Value + Value of Stock Issued.

So, in a 50% Cash / 50% Stock deal, the Combined Equity Value is $500 + $50 = $550 million.

10. An Acquirer with an Equity Value of $500 million and an Enterprise Value of $600 million has a Net Income of $50 million and an EBITDA of $100 million.

The Target, with a Purchase Equity Value of $100 million and a Purchase Enterprise Value of $150 million, has a Net Income of $10 million and an EBITDA of $15 million.

What are the Combined P / E and TEV / EBITDA multiples in a 100% Stock deal? Assume 25% tax rates for the Acquirer and Target.

The Combined Equity Value in a 100% Stock deal is $500 + $100 = $600 million, and the Combined Enterprise Value is $600 + $150 = $750 million.

The Combined EBITDA is $115 million, and the Combined Net Income, assuming the same tax rates and no interest effects since it's a 100% Stock deal, is $50 + $10 = $60 million.

Therefore, the Combined P / E multiple is $600 million / $60 million = 10x, and the Combined TEV / EBITDA multiple is $750 million / $115 million = ~6.5x.

11. How do the multiples change if this is a 100% Debt deal funded with an 8% interest rate issuance?

The Combined EBITDA and Enterprise Value stay the same because they do not depend on the deal financing, so the Combined TEV / EBITDA is still ~6.5x.

The Combined Equity Value is now just the Acquirer's Equity Value of $500 million.

The Combined Net Income equals $50 + $10 – $100 * 8% * (1 – 25%) = $50 + $10 – $6 = $54.

Therefore, the Combined P / E multiple is now $500 million / $54 million = ~9.3x, which you can estimate as "between 9x and 10x" (since $500 / $50 = 10x and $500 / ~$56 = 9x).

12. Will the Combined TEV / EBITDA and P / E multiples always be between the Acquirer's multiples and the Target's purchase multiples in a deal?

Ignoring synergies and acquisition effects, the Combined Enterprise Value-based Multiples will be between the Buyer's standalone multiples and the Seller's purchase multiples.

The Combined Equity Value-based Multiples are often in that range as well, but they do not have to be because the two companies could have very different capital structures.

Generally, the combined multiples will be closer to the larger company's multiples (normally the Acquirer), but you can't use a simple average because the company sizes and financial contribution percentages could be very different.

Return to Top.

LBO Models – Concepts

Leveraged buyout models are another more advanced concept in investment banking interviews, but you will likely get a few questions about the fundamentals.

However, you're unlikely to get detailed questions about case studies involving LBO models; these are far more likely in private equity interviews, which are covered in a separate course.

- Interview Guide – Leveraged Buyouts and LBO Models | Quiz Questions
- Core Financial Modeling – LBO Model Module

1. What is a leveraged buyout, and why does it work?

In a leveraged buyout (LBO), a private equity firm acquires a company using a combination of Debt and Equity, operates it for several years, and then sells the company at the end of the period to realize a return on its investment.

During the ownership period, the PE firm uses the company's cash flows to pay for the interest expense on the Debt and to repay the Debt principal.

LBOs work because **leverage amplifies returns**: If the deal performs well, the PE firm will realize higher returns than if it had bought the company with 100% Equity.

But leverage also presents risks because the returns will be even worse if the deal does *not* perform well.

2. Walk me through a basic LBO model (without the full financial statements).

In an LBO model, in Step 1, you make assumptions for the Purchase Price, Debt and Equity, Interest Rate on Debt, and other drivers such as the company's revenue growth and margins.

In Step 2, you create a Sources & Uses schedule to show how much Investor Equity the PE firm contributes and how items like the transaction fees and the company's Cash balance affect this contribution.

In Step 3, you project the company's Income Statement and its partial Cash Flow Statement down to Free Cash Flow.

Then, in Step 4, you use the Free Cash Flow, Beginning Cash, and Minimum Cash to determine how much Debt principal the company repays each year. You then link the Interest Expense on this changing Debt balance to the Income Statement so that FCF deducts the Interest.

Finally, in Step 5, you make the exit calculations based on an assumed EBITDA Exit Multiple, and you calculate the IRR and Money-on-Money multiple based on the proceeds the PE firm earns at the end vs. its Investor Equity in the beginning.

3. Which assumptions impact a leveraged buyout the most?

The Purchase Price and Exit assumptions, usually based on EBITDA multiples, impact a leveraged buyout the most.

A *lower* Purchase Multiple results in *higher* returns, and a *higher* Exit Multiple results in *higher* returns.

After those, the Debt used, based on a percentage of the Purchase Price or a multiple of the initial EBITDA, makes the biggest impact.

If the deal performs well, more leverage will make the numbers even better, and vice versa if it does not perform well.

Next, the company's revenue growth, EBITDA margins, and cash flow profile also make an impact because they influence the exit proceeds and the Debt repaid in the holding period.

Finally, the interest rates, principal repayments, and other terms attached to the Debt may make a difference, but they tend to be less significant than the other drivers.

4. How do you select the Purchase Multiple and Exit Multiple in an LBO model?

Typically, you assume a share-price premium for public companies and check the implied Purchase Multiple against the valuation methodologies to ensure it's reasonable.

For example, you might assume a 30% premium to the company's share price of $10.00, which implies an EBITDA multiple of 10x.

For private companies, you determine the Purchase Multiple via the standard valuation methodologies (comparable companies, precedent transactions, and the DCF analysis).

The Exit Multiple is often close to the Purchase Multiple but could be higher or lower depending on the company's growth rates, margins, and ROIC upon exit.

In robust models, you always sensitize these assumptions and consider the outcomes across different ranges.

5. What is an "ideal" candidate for an LBO?

Almost any deal can work *at the right price*. Assuming the price is reasonable, ideal LBO candidates should also:

- Have stable and predictable cash flows (so they can repay Debt);
- Have relatively modest requirements for CapEx and other ongoing re-investments;
- Operate in an industry that is at least modestly fragmented (to enable add-on acquisitions);
- Have opportunities to cut costs and increase margins;
- Have strong management teams;
- Have solid asset bases to use as collateral for Debt;
- Have realistic exit paths, with returns driven by varied sources (e.g., EBITDA growth and Debt repayment rather than only multiple expansion).

6. Walk me through the Free Cash Flow calculation in an LBO model. How is it different from EBITDA, and why do we need both?

In an LBO, Free Cash Flow = Net Income + D&A +/- Change in Working Capital – CapEx.

You could also calculate it starting from EBITDA like this:

Free Cash Flow = EBITDA – Net Interest Expense – Cash Taxes +/- Change in Working Capital – CapEx.

FCF differs from EBITDA because EBITDA ignores Interest Income, Interest Expense, Taxes, Working Capital, and Capital Expenditures – but all these items affect a company's cash flow in real life and, therefore, how much Debt it can repay.

EBITDA is a quick proxy for cash flow from operations for the core business, ignoring capital structure, but FCF is "the real thing" and factors in the capital structure because of the Net Interest Expense deduction.

7. Explain how a company's Free Cash Flow and the Debt principal it can repay in an LBO are related.

A company's repayment of Debt principal is *related to* its Free Cash Flow, but it is not the same thing because all companies have Minimum Cash requirements and start with different amounts of Cash in each period. The general formula is:

Cash Flow Available for Optional Debt Repayment = Beginning Cash + Free Cash Flow – Minimum Cash – Mandatory Debt Repayments.

You can ignore the last part if there are no required principal repayments.

8. What are the different exit strategies in an LBO? Which one do most PE firms prefer?

The main strategies are **M&A and IPO exits**. In an M&A exit, the PE firm sells the company to another PE firm or a normal company in the industry (called a "strategic").

In an IPO exit, the PE firm takes the company public and sells off its stake gradually over time (selling the entire stake upfront in the IPO would be a huge negative signal).

In certain emerging and frontier markets, some PE firms also use Dividend Recapitalization strategies to "exit" by having the company issue ever-increasing Dividends, but this works only if the company's Dividend Yield reaches *very high* levels.

PE firms almost always prefer M&A exits because they are clean and simple and result in immediate proceeds. IPO exits take longer and carry more risk because of the need to sell the stake over several years.

9. How could a private equity firm boost its returns in an LBO?

The main returns drivers are Multiple Expansion, EBITDA Growth, and Debt Paydown and Cash Generation, so a PE firm could boost its returns by improving any of these.

In practice, this means:

- **Multiple Expansion** – Reduce the Purchase Multiple (e.g., by negotiating a lower price) or increase the Exit Multiple (likely via higher ROIC or growth rates).
- **EBITDA Growth** – Increase the company's revenue growth rate or boost its EBITDA margins by cutting expenses.
- **Debt Paydown and Cash Generation** – Boost Free Cash Flow by reducing CapEx and Working Capital requirements, cutting expenses, and aiming for higher growth. In some cases, using more initial Debt could improve returns from this source (e.g., if the company comfortably repays all the initial Debt currently).

10. How do you determine how much Debt a PE firm might use in an LBO and how many tranches there would be?

You look at recent, similar LBOs and use the median Debt / EBITDA levels from them as references; you could also look at highly leveraged public companies in the industry and check their Debt / EBITDA levels.

For example, if the median Debt / EBITDA for LBOs has been 5x, with 2x Term Loans and 3x Subordinated Notes, you might use these figures for your deal.

Then, you would test these assumptions by projecting the company's leverage and coverage ratios (Debt / EBITDA and EBITDA / Interest) over time.

If they hold up reasonably well – e.g., the company's interest coverage ratio always stays above 2x – you might use the original numbers. If not, you would try different assumptions.

11. Can you describe the different types of Debt a PE firm might use in a leveraged buyout?

Broadly speaking, Debt is split into **Secured Debt** and **Unsecured Debt**, which some people also label "Bank Debt" and "High-Yield Debt" or "Senior Debt" and "Junior Debt."

Secured Debt consists of Term Loans and Revolvers, is backed by collateral, tends to have lower, floating interest rates, may have amortization (required principal repayments), and uses maintenance covenants such as limits on the company's Debt / EBITDA and EBITDA / Interest.

Early principal repayment is allowed, maturity periods tend to be shorter (~5 years up to 10 years), and the investors tend to be more conservative.

Unsecured Debt consists of Senior Notes, Subordinated Notes, and Mezzanine and is not backed by collateral; interest rates tend to be higher and fixed rather than floating, there is no amortization, and it uses incurrence covenants (the company is restricted from taking specific actions, such as selling certain assets).

Early repayment is not allowed, maturity periods tend to be longer (8-10+ years), and the investors tend to be hedge funds, merchant banks, and mezzanine funds.

12. How do you use a Revolver in an LBO model?

You draw on the Revolver when the company doesn't have enough cash flow to make its Mandatory Debt Repayments while maintaining its Minimum Cash balance.

For example, let's say the Beginning Cash is $50, the Mandatory Repayments are $100, the FCF is $75, and the Minimum Cash is $100.

In this case, Cash Flow Available for Debt Repayment = $50 + $75 – $100 – $100 = ($75).

Therefore, the company must draw on its Revolver for $75 to boost its cash flow to make the $100 in Mandatory Repayments while maintaining the $100 in Minimum Cash.

The company will then pay interest and fees on this additional borrowing and repay the Revolver balance as soon as possible.

13. How do you set up the Mandatory and Optional Debt Repayments in an LBO model?

Mandatory Principal Repayment for a tranche of Debt is based on the percentage that amortizes each year, the initial amount of Debt raised, and the amount of Debt remaining.

You should take the **minimum** between Amortization % * Initial Amount and the Debt Remaining because you never want to repay more than the remaining balance (e.g., 20% * $100 million = $20 million per year, but if only $10 million is left, repay only $10 million).

The Optional Debt Repayment formula is similar, but it's based on the **minimum** between the Cash Flow Available *right now* and the Debt balance remaining *right now*.

For example, if, after Mandatory Repayments, the company has $100 million in cash flow and $250 million of Debt remaining, it would repay $100 million.

But if it had only $50 million remaining, it would repay the remaining $50 million.

14. How do you use an LBO model to value a company, and why does it set the "floor valuation"?

You use it to value a company by setting a targeted IRR, such as 25%, and then using Goal Seek in Excel to determine the price the PE firm could pay to achieve that IRR.

For example, if the exit multiple is 11x, which means $1,000 in Exit Equity Proceeds for the PE firm, Goal Seek might tell you that the firm could pay $328 in Investor Equity to achieve a 25% IRR over 5 years.

At a 50 / 50 Debt / Equity split, that means a Purchase Enterprise Value of $656 (ignoring fees).

This method produces a "floor valuation" because it tells you *the maximum amount a PE firm could pay to realize a minimum IRR*. Other methodologies are not constrained in the same way.

15. Would you rather achieve a high IRR or a high MoM multiple in a leveraged buyout?

It depends on the time frame. Over a short period, such as 6 months, a high IRR, such as 50%, is meaningless because you've barely made money (~1.25x multiple).

But over a long period, such as 10 years, a high MoM multiple, such as 3x, means less because it corresponds to a ~12% IRR.

Limited Partners judge private equity funds by their IRRs, but they also don't want the money to be returned to them *too quickly*.

So, the best answer is: "PE firms care more about IRR because that's how they're measured, but over short time frames, it's better to earn a high multiple, and over longer time frames, it's

better to earn a high IRR. Also, if the PE firm has already exceeded its hurdle rate, it will focus more on MoM multiples."

Return to Top.

LBO Models – Calculations

Detailed questions here are **unlikely** outside of private equity interviews, but you could still get a few basic "LBO math" questions about how to approximate the IRR or multiple in a deal.

The basic rules of thumb are:

- **2x Multiple in 3 Years** = ~25% IRR
- **2x Multiple in 5 Years** = ~15% IRR
- **3x Multiple in 3 Years** = ~45% IRR
- **3x Multiple in 5 Years** = ~25% IRR

Be prepared to use these rules to solve for the purchase multiple, exit multiple, initial Debt used, Debt repaid over the holding period, or the initial or final EBITDA. You can always solve for the unknown variable if they give you all the required information.

1. A PE firm acquires a $100 million EBITDA company for a 10x purchase multiple and funds the deal with 60% Debt.

The company's EBITDA grows to $150 million by Year 5, but the exit multiple drops to 9x. The company repays $250 million of Debt in this time and generates no extra Cash.

What's the IRR?

Initially, the PE firm uses 40% Equity, which means $100 million * 10x * 40% = $400 million.

The Exit Enterprise Value = $150 million * 9x = $1,350 million (Mental Math: $150 million * 10x = $1.5 billion and subtract $150 million).

The initial Debt amount was $600 million, and the company repaid $250 million, so $350 million of Debt remains upon exit.

The Equity Proceeds to the PE firm are $1,350 million – $350 million = $1 billion.

$1 billion / $400 million = 2.5x. Since a 2x multiple over 5 years is 15% and 3x is 25%, this IRR is approximately **20%**.

2. A PE firm acquires a business for a 12x EBITDA multiple, using 5x Debt / EBITDA, and plans to sell it in 5 years. The company's initial EBITDA is $100, which grows to $200 by Year 5.

If there's no Debt repayment and no additional Cash generation, what exit multiple do we need for a 25% IRR?

Initially, we buy the company for an Enterprise Value of $1,200 using Debt of $500 and Investor Equity of $700.

To realize a 25% IRR over 5 years, we need to triple our money by earning $2,100 in proceeds at the end.

No Debt is repaid, so we need to sell the company for an Exit Enterprise Value of $2,600.

Therefore, if EBITDA grows to $200 by Year 5, we need an exit multiple of $2,600 / $200 = 13x.

3. Now assume the company repays 75% of the initial Debt balance over 5 years.

What exit multiple do we need for a 25% 5-year IRR?

75% of $500 in Debt is $375, which means that $125 in Debt remains at the end.

We still contributed $700 in Investor Equity initially and, therefore, need to earn back $2,100 in proceeds at the end.

So, we must sell the company for an Exit Enterprise Value of $2,100 + $125 = $2,225.

As a result, we need an exit multiple of $2,225 / $200 = 11.1x (you can round this to 11x since $2,200 / $200 = 11x).

4. You're reviewing the output of an LBO model that a co-worker built. In the model, the 5-year IRR is 20%, and the company's EBITDA grows from $100 to $150 over the holding period.

The EBITDA purchase multiple is 10x, and the exit multiple is 11x. If the PE firm uses 5x Debt / EBITDA in the initial deal, how much Debt does the company repay over time?

A 20% IRR over 5 years means the MoM multiple is approximately 2.5x.

The Purchase TEV is $100 * 10x = $1,000, and $100 * 5x = $500 of Debt is used, so the Investor Equity is $500.

Therefore, the PE firm must earn back $500 * 2.5x = $1,250 in exit equity proceeds.

The Exit TEV is $150 * 11 = $150 * 10 + $150 = $1,500 + $150 = $1,650, which means that $400 of Net Debt remains at the end. Assuming Cash stays the same, the company must repay $100 of the initial Debt balance over this period.

5. A PE firm acquires a business for a 10x EBITDA multiple, using 6x Debt / EBITDA, and plans to sell it in 5 years. The company's initial EBITDA is $100, which grows to $150 by Year 5.

Approximately $300 of Debt is also repaid during the holding period, while Cash stays the same.

What exit multiple does the firm need for a 25% IRR?

Initially, we buy the company for an Enterprise Value of $1,000 using Debt of $600 and Investor Equity of $400.

To realize a 25% IRR over 5 years, we need to triple our money by earning $1,200 in proceeds at the end.

Of the $600 in initial Debt, $300 is repaid, so the ending Debt balance is $300. Ignoring Cash for simplicity, the Exit Enterprise Value must be $1,200 + $300 = $1,500.

Therefore, if EBITDA grows to $150 by Year 5, we need an exit multiple of $1,500 / $150 = 10x, which is the same as the purchase multiple.

Return to Top.

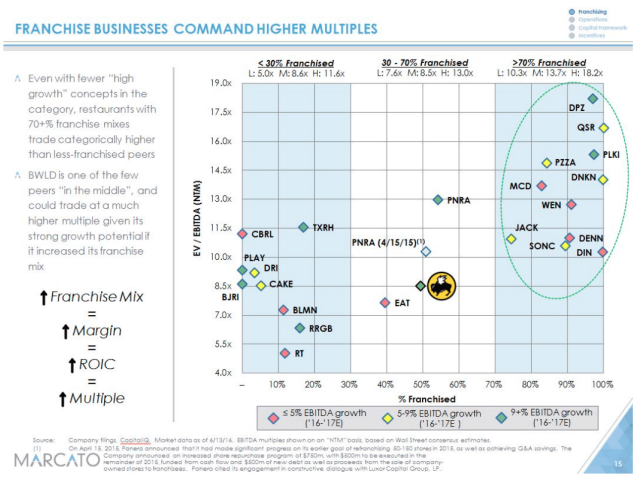
Industry and Group-Specific Technical Questions

These questions are important primarily if you're interviewing with one of these groups. Some groups, such as FIG, are extremely technical, which explains why some sections here are much longer than others.

For all these questions, we strongly recommend reading the relevant industry group primers and product group primers on Mergers & Inquisitions.

The M&I articles have descriptions of each vertical, overviews of the technical differences, and links to real pitch books and valuations from banks.

Consumer/Retail



This section is short because consumer/retail companies are very standard in terms of accounting and valuation.

Most of the differences relate to the key drivers, a few industry-specific metrics, and an understanding of the main verticals.

1. What are the main verticals within consumer/retail, and how would you expect valuation to differ in each one?

The main verticals are **consumer staples** (required items for everyday living) and **consumer discretionary** ("optional" items like cars, appliances, fashion, and restaurants). Some also consider pure-play **retailers** that *distribute but do not produce* to be another segment.

Consumer discretionary companies tend to have higher Betas because they perform well when the economy is doing well but poorly during recessions; consumer staples are the opposite because people always buy products such as toothpaste and toilet paper even if the economy is poor.

So, consumer discretionary companies tend to trade at higher multiples than consumer staples in good economies and lower multiples in poor economies; retail varies and depends on the specific products sold.

2. Would you expect a franchise restaurant or a restaurant that directly owns its locations to trade at higher multiples? Why?

Generally, franchise restaurants trade at higher multiples because they are **capital-light businesses** that do not require much CapEx to grow; they license their brand to individuals who open and operate locations in exchange for a franchise fee.

This business model tends to produce high-margin, predictable businesses, which investors like (though a poorly managed franchise is also risky because a poor reputation could sink it).

3. Let's say you're building a 3-statement model for a retailer. What are some of the key drivers in your model?

Key drivers include the # of stores, the sales per store, the same-store sales, the total number of square feet/meters, and the sales per square foot/meter.

You might look at Gross Margins on a product or segment basis, and the Contribution Margin (i.e., the Operating Margin in different segments or geographies) is also important.

Separating Maintenance and Growth CapEx is also essential because it costs significantly more to open new locations than to maintain existing ones.

4. What is the "4-Wall EBITDA" for a retailer, and how does it differ from standard EBITDA?

"4-Wall EBITDA" is the *asset-level EBITDA* for the company. In other words, it starts with revenue from all stores, subtracts COGS, and subtracts *store-related operating expenses*, such as the rent and the employee salaries and benefits required to operate all the stores.

It *excludes* corporate overhead, such as salaries and benefits for the accounting, IT, and HR teams in the corporate headquarters; some companies might also exclude store opening and closing costs, but this is questionable.

Normal EBITDA does not distinguish between asset-level and corporate-level expenses.

5. Suppose you are creating a set of comparable public companies in the consumer/retail sector. In which cases are the EBITDAR metric and its corresponding valuation multiple most important?

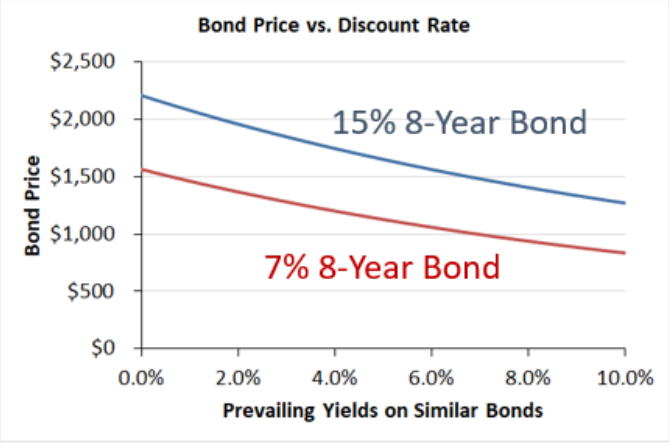
Under IFRS, EBITDAR is irrelevant because the standard EBITDA metric adds back the entire lease expense from both Operating and Finance Leases; it matters only if you include U.S.-based companies in the set. In this case, EBITDAR is essential for normalizing and comparing companies that follow different accounting systems.

Under U.S. GAAP, EBITDAR and the (TEV + Operating Lease Liabilities) / EBITDAR metric are most important when the companies in the set have very different mixes of Operating and Finance Leases (e.g., one company is 90% Operating Leases, but another is only 10%).

EBITDAR normalizes these differences by adding back or excluding the full expense for both Operating and Finance Leases.

Return to Top.

Debt Capital Markets (DCM) & Leveraged Finance (LevFin)



This section does not re-explain the basics, such as what the DCM and LevFin groups do; all those points are covered in the Understanding Banking section.

(We recommend reviewing the DCM and LevFin articles on M&I for more.)

These questions here focus on credit analysis, bond math, and debt vs. equity financing decisions for companies.

You don't need to know the advanced details, but you should understand the basics, such as the different yields and bond valuation.

1. Why might a company issue Debt rather than Equity?

A company might do this if Debt is cheaper than Equity, if it fits the typical profile of a Debt issuer (a mature/value-oriented company), and if it can issue additional Debt because its credit stats are in acceptable ranges.

Most companies have targeted Debt / EBITDA and EBITDA / Interest levels, and lenders might require them to stay within certain ranges if they issue additional Debt.

If the company cannot comply with these ratios, if Equity is *cheaper* than Debt (rare but possible for growth companies trading at high multiples), or if it doesn't fit the profile of a typical borrower, it might issue Equity instead.

2. Walk me through a Debt vs. Equity analysis to recommend the best financing for a company.

First, assess the company's business profile (growth vs. value/mature), its After-Tax Costs of Debt and Equity, and how its WACC would change with additional Debt or Equity.

If it's more of a "growth" company or Equity is cheaper, recommend an issuance such as a Follow-On Offering for a public company.

If Debt is cheaper or it's more of a "value" company, create projections with the anticipated Debt terms, including the covenants, and see if the company could comply with these requirements, even in downside cases (e.g., lower-than-expected growth and margins).

If the company can comply with targets for metrics such as Debt / EBITDA even with poor financial performance, issue Debt; if not, consider a mix of Equity and Debt or a Convertible Bond, depending on the specific problems (a Convertible is best if the cash interest costs on traditional Debt are too high).

3. You're considering 3 companies that want to raise capital: A utility company, a railroad company, and a branded pharmaceutical company.

Which company is most appropriate for 100% Equity, which is most appropriate for 50% Debt / 50% Equity, and which is most appropriate for 100% Debt?

Think about each company's growth vs. value profile and remember that **lenders' #1 priority is to *avoid* losing money**.

The least risky company is the utility firm since consumers always need electricity, heating, and water, and many firms have local monopolies. Utility companies are also more predictable and

offer less growth potential than the others on this list. Therefore, this company is the best candidate for 100% Debt.

The railroad company is riskier than the utility company but less risky than the branded pharmaceutical company because it's subject to market forces, and its freight pricing and volume can shift dramatically based on the economy.

However, it's still *relatively* predictable because you can estimate business declines based on past economic cycles, and it has significant collateral in the form of its factories and physical railroad assets. So, the railroad company is the best candidate for 50% Debt / 50% Equity.

The branded pharmaceutical company is incredibly risky because its products are protected by patents, which expire over time, and it constantly needs to acquire or invent new drugs to replace older ones that have lost patent protection.

On the other hand, there's also huge potential upside if the company discovers a drug that cures cancer. So, this company is the best candidate for 100% Equity.

4. How might you decide whether a company should raise Debt via Term Loans or Subordinated Notes?

You should start with the cheapest form of financing, which means Term Loans. You would create different operational scenarios for the company, project its cash flows, and evaluate how well it can comply with the maintenance covenants (e.g., Debt / EBITDA cannot exceed 5x) and other restrictions on the Term Loans in the downside cases.

If it complies with these restrictions, recommend the Term Loans. If not, consider the Subordinated Notes next since they lack the same restrictions as the Term Loans, albeit at higher interest rates.

If the company's credit stats and ratios decline too much in the downside cases (e.g., its EBITDA / Interest falls to 1.5x when the company doesn't want to go below 2.0x) or it has trouble paying for the cash interest on these Subordinated Notes, you might have to consider a mix of Term Loans and Subordinated Notes.

If that still doesn't work, you might recommend some percentage of Equity instead.

Finally, you should also consider the company's qualitative profile: A pre-revenue biotech startup can't issue Term Loans or Subordinated Notes, but a mature industrial company could.

5. You are analyzing a company whose Debt / EBITDA stays below the maximum of 4.0x and whose EBITDA / Interest stays above the minimum of 2.0x, but whose Debt Service Coverage Ratio (DSCR) falls below the minimum of 1.5x in the more pessimistic cases.

Why might this happen, and how could the company improve its numbers?

Definitions of the DSCR vary, but it's *usually* defined as (FCF Excluding Interest and Other Fixed Charges) / (Interest and Other Fixed Charges) or something close to that.

So, it includes more items than EBITDA-based metrics and might reflect the lease expense in addition to Net Interest.

Healthy leverage and coverage ratios with an unhealthy DSCR tend to happen if the company's **FCF Conversion** (FCF / EBITDA) is low, which could be a result of high CapEx, a negative Change in Working Capital, or other items in Cash Flow from Operations that reduce its FCF.

It might also happen if the company can easily cover its normal interest payments but has other fixed charges, such as lease payments, that consume significant portions of its cash flow.

To improve its DSCR, the company could reduce its CapEx, improve its Working Capital management, reduce its lease obligations, or refinance and negotiate for Debt with reduced interest rates.

6. A company wants to reduce its cash interest expense on Debt by negotiating with lenders to get a lower coupon rate. However, the lenders want to maintain or increase their yield. What are the company's options?

Assuming this is relatively senior Debt, the main options are to offer the lenders something else that boosts their yield in exchange for a lower coupon rate.

For example, the company could issue the new Debt with an Original Issue Discount (OID) that effectively gives lenders an upfront discount; they could also offer generous call premiums or Make-Whole Premiums that result in penalty fees in an early repayment.

If this is more of a stressed, distressed, or restructuring scenario, other options to boost the yield for lenders might include equity options, such as warrants attached to the Debt or something like a Debt-for-Equity swap.

7. What would cause a company's credit rating to change?

A company's credit rating might change if its credit stats, such as Debt / EBITDA or EBITDA / Interest, change significantly or its qualitative risk factors change.

For example, if peer companies with "BB+" credit ratings have Debt / EBITDA between 4x and 5x, and the Debt / EBITDA of the company you're analyzing suddenly jumps to 6x, rating agencies will likely downgrade the company.

But even if a company's financial stats stay the same, its credit rating might decline if its industry experiences a downturn, a major new competitor enters, or its growth outlook declines (for example).

8. Explain the difference between a bond's Coupon Rate, Current Yield, and Yield to Maturity (YTM).

The Coupon Rate represents the fixed interest the bond pays based on its *par value*. If the Coupon Rate is 6% on a $1,000 par value bond, the bond pays $60 in annual interest.

The Current Yield equals the bond's Annual Coupon Payment / Current Market Price. So, if this bond currently trades at $1,080, the Current Yield is $60 / $1,080 = ~5.6%.

The Yield to Maturity is the internal rate of return (IRR) on a bond, with its current market price used as the upfront purchase price.

The YTM assumes that you hold the bond until maturity, the company makes all interest and principal payments in full on the scheduled dates, and that you reinvest the cash flows you earn from the bond at the same rate of return.

To calculate the YTM, we need the bond's maturity and the Discount Rate. Without that information, we can only say that the YTM is less than the Current Yield of ~5.6% because this bond trades at a premium to par value.

9. How do you value a bond?

The same way you value any other asset: You discount its future cash flows (interest + principal repayments) to their Present Values based on an appropriate Discount Rate and add them up.

With bonds, the "appropriate Discount Rate" is linked to the **prevailing yields on similar bonds**.

In other words, if investors bought similar companies' bonds on the secondary market today and held them to maturity, what would their annualized returns be?

If a company issues a 5% fixed coupon rate bond, but similar bonds have 6% yields when held to maturity, the Discount Rate is 6%.

10. You purchase a $100 bond at a 5% discount to par value. The bond's coupon rate is 8%, and it matures in 5 years.

What is the bond's approximate YTM?

You can approximate the YTM with:

(Annual Interest + (Redemption Value – Bond Price) / # Years to Maturity) / ((Redemption Value + Bond Price) / 2)

The **intuition** is that you take the interest earned each year, add the annualized return from the change in the bond's price, and divide by the bond's "average price" over the period.

The annual interest is $8, the redemption value is 100 (since the YTM assumes full repayment), the bond price is 95, and there are 5 years to maturity, so:

YTM = (8 + (100 – 95) / 5) / ((100 + 95) / 2)

YTM = (8 + 1) / 97.5 = 9.2%

You could say "Just above 9%" or "between 9% and 10%" (**mental math:** 9 / 90 = 10%, and 9 / 100 = 9%, so 9 / 97.5 should be below 10% and closer to 9%).

You earn 8% each year from the interest and "amortize" the 5% discount over the 5-year maturity, so 8% + ~1% = ~9%.

11. Will a 10% or 5% coupon rate bond be more sensitive to changes in the Discount Rate?

The 5% coupon rate bond will be more sensitive because bondholders receive less in interest payments during the holding period, so they depend more on the final principal repayment at the end – and the PV of that final repayment is affected *only* by the Discount Rate.

A higher percentage of the *total cash flows* on a 10% bond comes from the interest paid during the holding period, and the PV of each interest payment is affected by *both* the coupon rate and the Discount Rate.

12. Intuitively, what do a bond's Duration and Convexity mean, and how do you use them?

Duration is the first derivative of the bond's price with respect to its YTM, and Convexity is the second derivative of the bond's price with respect to its YTM.

They both measure the bond price's sensitivity to changes in the Discount Rate, allowing us to predict how a bond's price will change when the Discount Rate changes by small amounts.

You can also think of Duration as: "How long does it take for the market price of a bond to be repaid with its internal cash flows (on a weighted-average year basis)?"

For investors, these metrics measure **interest-rate risk**; higher numbers mean the prices of their bonds will change by greater percentages when overall interest rates change.

13. Interest rates have fallen, and prevailing bond yields are now down by ~2% compared to when a company first issued an 8%, 7-year bond.

This company wants to refinance and issue a new bond to the same investors with a 6% coupon rate and a 10-year maturity.

Why might it not be able to do this?

The problem is the **Duration**, which measures interest-rate risk. We can glance at these numbers and tell the Duration will be significantly higher for the 10-year bond with a lower coupon rate than for the 7-year bond with a higher coupon rate.

Even if overall interest rates fall, bond investors want to maintain their interest-rate risk in a similar range, and they manage their portfolios based on metrics like Duration.

This company would likely have to offer a shorter maturity or boost the bond's YTM via other methods (such as an issuance discount or repayment penalty fee) to compensate investors for this higher Duration.

14. What is the Yield to Worst (YTW), and how is it related to the Yield to Maturity (YTM)?

The Yield to Worst is the minimum between the bond's Yield to Call (YTC) on each possible call date and its Yield to Maturity (YTM).

The "Yield to Call" measures a bond's IRR if an investor buys it at its current market price and holds it until the company "calls it" by repaying it early, usually at a premium.

The YTW helps investors evaluate the *worst-case outcome for the bond's yield, assuming the company still repays it in full*.

If the bond trades at a discount, the YTW = YTM; if the bond trades at a premium to par value, the YTW <= YTM.

The intuition is that for discount bonds, investors get a *higher yield* if the bond is repaid early because the discount is spread out over fewer years, so a bond held to maturity *is* the worst outcome. For premium bonds, early repayment often results in a *lower yield* because the penalty fees (call premiums) may not offset the premium paid.

15. What are the most important statistics in an analysis of Comparable Debt Issuances?

You typically screen the issuances by industry, geography, size, time, and credit rating (e.g., only the bonds of investment-grade media companies based in the U.S. over the past 4 years, worth at least $100 million).

You look at statistics such as the median coupon rate, offering amount, bond price, maturity, YTW, YTM, and the leverage and coverage ratios to determine the proper terms to offer on a potential issuance for the company you are advising.

For Convertible Bonds, you also look at the median Conversion Ratio and Conversion Premium to ensure that your offering is in-line with similar, recent issuances.

Return to Top.

Distressed & Restructuring

Calculations for the NEW Bond:	
Coupon Rate:	10.000%
Maturity Date:	2027-09-15
Bond Redemption Value % Par Value:	120.0
Current Yield:	14.286%
Yield to Maturity (YTM):	22.121%
Yield to Assumed Exit:	**35.227%**
Modified Duration:	3.38

Interviews for Restructuring, Special Situations, and Distressed M&A groups tend to be quite technical, but you will still get the standard accounting, valuation, and financial modeling questions.

Certain questions could get **very technical**, but we take a high-level view here and focus on the most common advisory scenarios and some basic "Restructuring math."

Make sure you also review the M&I articles on restructuring IB, distressed private equity, and distressed debt hedge funds for more.

1. Why Restructuring?

You like how it involves many different skill sets: M&A, valuation, credit analysis, and understanding the legal code. Also, there's a wide variety of possible outcomes to each deal, and the technical work is more challenging than in other groups where the outcome is binary (e.g., the company sells itself or does not sell itself in sell-side M&A deals).

You also tend to work on mostly live deals rather than pitches because each engagement is intense and requires more back-and-forth negotiating than other deal types.

Finally, you like how Restructuring lets you understand different perspectives on companies since you advise both debtors and creditors.

2. What are the two different "sides" of a Restructuring deal? Do you know which one we usually advise?

Bankers can advise either the **debtor** (the company itself) or the **creditors** (anyone who has lent the company money). It's like sell-side vs. buy-side M&A – in one, you're advising the company on a sale or resolution of its troubles, and in the other, you're advising the buyer or lenders that are trying to recover what they can from the company.

Most banks with Restructuring teams advise both sides, but some favor one or the other (you should research this with a quick search of the bank's recent deals before interviewing).

3. How are stressed, distressed, and bankrupt companies different?

- **Stressed** – The company can still pay interest on its debt, but it may have trouble with an upcoming maturity or be heading toward a cash crunch.

- **Distressed** – The company has already defaulted by missing an interest payment or maturity or violating a covenant, such as a minimum EBITDA / Interest or maximum Debt / EBITDA requirement.

- **Bankrupt** – The company has already entered a Chapter 7 (liquidation) or Chapter 11 (reorganization) process and wants to achieve the best possible outcome.

4. OK, so what factors might cause a company to become "stressed" and then "distressed?"

A company could become **stressed** due to either macro or micro factors. Macro factors might include an industry downturn or a shock such as a war, energy crisis, or pandemic.

Micro factors could include poor management decisions, such as expanding into the wrong markets, taking on too much Debt, or making too many value-destructive acquisitions.

To go from stressed to **distressed**, a specific catalyst is required. This is usually something like a missed interest or principal repayment on Debt, a violated covenant, a credit rating downgrade, or the Cash balance falling below a minimum level.

5. Suppose that you are advising a distressed company. What are its main options, and what are the advantages and disadvantages of each one?

First, the company could attempt to **refinance** by raising additional debt or equity, which is less disruptive than other options but also very difficult to execute because investors normally stay away from companies approaching bankruptcy.

Second, the company could **sell**, either in parts via a liquidation or as an entire entity; this has a decent chance of repaying at least some creditors, but the company's sale value is likely to be quite low.

Third, the company could **restructure** by renegotiating the terms of its debt with the lenders or doing a debt-for-equity swap; this might resolve its problems without 3rd party involvement, but it can be difficult to get all parties to compromise.

Finally, the company could declare **bankruptcy**, which means a significant business disruption and a likely total loss for the common shareholders. But it might also be the best way to negotiate with the lenders and raise additional funding.

6. What's the difference between a Chapter 7 and Chapter 11 bankruptcy under the U.S. tax and legal code?

A Chapter 7 bankruptcy is also known as a "liquidation bankruptcy." The company is too far past the point of reorganization and must instead sell off its assets and repay creditors. A trustee ensures that all this happens according to plan.

Chapter 11 is more of a "reorganization" – the company survives, renegotiates the terms of its debt, or does a debt-for-equity swap so that the creditors are repaid or receive something of value in the transaction.

7. What is debtor-in-possession (DIP) financing, and how do distressed companies use it?

It is money borrowed by the distressed company that has repayment priority over all other existing secured/unsecured debt, equity, and other claims and is considered "safe" by lenders because it is subject to stricter terms than other financing.

Theoretically, DIP financing makes it easier for distressed companies to emerge from bankruptcy. However, some argue that it could also hurt companies, as some DIP lending firms are known for trying to stage company takeovers at big discounts due to the significant collateral they own.

Sometimes, companies file for Chapter 11 bankruptcy specifically to gain access to DIP financing.

8. What is a Section 363 asset sale, and why might a distressed company pursue it?

A Section 363 asset sale is a faster version of a normal asset sale process that gives *the debtor* (the company) more control over the process than the same type of asset sale in a Chapter 7 bankruptcy.

First, the debtor picks the highest bidder for its assets, and this entity becomes the "stalking horse bidder," with its offer acting as the base price in the auction process (in exchange for breakup fees, expense reimbursements, and other perks).

Next, the debtor wins court approval for an auction process and tries to maximize the price received for each asset; the bankruptcy court then approves the process and sale of each asset.

The process benefits debtors by getting them better prices via the competitive auction process, and it benefits creditors by giving them the chance to object to the sale of certain assets.

9. What is a 13-week cash flow model, and how do you use it for a distressed company?

A 13-week cash flow model is a combined Income Statement and Cash Flow Statement forecast **with more granular detail** in terms of both time (weeks rather than quarters) and line items

since it shows cash receipts and disbursements from different sources in more detail than the normal financial statements contain.

It's split into operating cash receipts (revenue), operating cash disbursements (OpEx), and non-operating disbursements (interest, principal repayments, restructuring fees, etc.), and it tracks the company's beginning and ending cash *each week* to determine when it will have to draw on its DIP financing or Revolver to fund its operations.

This forecast is almost always required for lenders to extend DIP financing.

10. How does valuation change for a distressed company?

You use the standard methodologies most of the time (comparable public companies, precedent transactions, and the DCF), but you often focus on the lower end of the range of multiples and make numerous adjustments to factor in possible issues such as inflated COGS and Working Capital levels.

The DCF might reflect some type of turnaround over the long term, with a wide variety of scenarios built in, and you focus on Enterprise Value-based multiples because distressed companies often have extremely low Equity Values.

You could also use a **liquidation valuation** (see below) to value a company under the worst-case scenario (a wind-down and sale of its assets) and determine its "floor value."

Finally, sometimes you value companies on an assets-only and a current liabilities-assumed basis because you may need to make significant adjustments to the liabilities.

11. Walk me through a typical liquidation valuation.

First, you assign a "recovery percentage" to each Asset and multiply its book value by the corresponding percentage. Cash is almost always set to 100%, while AR, Inventory, and Other Assets could range from 50% to 90%, depending on the specific company and deal.

Net PP&E could be worth almost anything, depending on whether it's equipment/factories or land/buildings; it may require a mini-DCF to value properly.

Goodwill is set to 0%, and Other Intangibles often get a substantial discount (e.g., 50%+).

On the Liabilities side, you multiply almost everything by 100% (perhaps with minor adjustments to reflect points like penalty fees, accrued interest, etc.).

Then, you take the adjusted Assets and subtract the adjusted Liabilities to get the Implied Equity Value. Divide it by the diluted share count to get the company's Implied Price per Share.

12. A distressed company with $100 of EBITDA sells for 3x EBITDA. It has Cash of $50, a $100 Revolver, a $300 Term Loan, and $200 in Subordinated Notes, with no other Liabilities.

What are the recovery percentages for each Debt tranche?

The company's Exit TEV is 3x * $100 = $300, and it has $50 of Cash, so $350 is available for Debt repayment.

These proceeds can fully repay the Revolver (the most senior debt), and the company is now down to $250 in remaining proceeds.

These repay $250 / $300 or ~83% of the Term Loan, and nothing is left for the Subordinated Notes.

Therefore, the Revolver recovery is 100%, the Term Loan recovery is ~83%, and the Subordinated Note recovery is 0%.

13. A holding company ("Hold Co.") has $100 of Debt at the holding company level and owns 100% of 3 companies:

Company A: Enterprise Value of $100 and Debt of $20.

Company B: Enterprise Value of $50 and Debt of $100.

Company C: Enterprise Value of $100 and Debt of $50.

What are the Recovery percentages for Companies A, B, and C and Hold Co. in a liquidation?

Company A's Recovery is 100% because proceeds of $100 can easily repay $20 of Debt in a sale.

Company B's Recovery is 50% because $50 of proceeds can only repay 50% of the Debt.

Company C's Recovery is 100% because proceeds of $100 can repay the full $50 of Debt.

If Hold Co owns 100% of each company, Hold Co's Enterprise Value should equal the sum of their individual TEVs:

$100 + $50 + $100 = $250

You must also consolidate all the Debt because consolidation accounting applies when the parent's ownership exceeds 50%.

So, the consolidated Debt is $100 + $20 + $100 + $50 = $270.

Therefore, Hold Co's recovery is $250 / $270 = ~93%.

The intuition is that this ~93% represents the approximate "TEV-weighted" recovery for all 3 companies (not an exact match, but close):

=(50 / 250) * 50% + (100 / 250) * 100% + (100 / 250) * 100% = ~90%

14. A distressed company with $50 of EBITDA has $150 in Secured Senior Notes and $100 in Unsecured Senior Notes. Peer companies that are not currently distressed trade at 5x EBITDA. What would you expect each Debt tranche to trade at?

If this distressed company were healthy, its Enterprise Value would be 5x * $50 = $250, enough to cover both Debt tranches fully. So, they should trade at face value (i.e., no discount).

However, this company is distressed, which means it trades at a lower multiple, and if it sells, it will sell for a lower multiple.

For example, if it trades at 3x EBITDA, the Secured Senior Notes should trade at 100% of par value, while the Unsecured Senior Notes should be worth 0% because they will not be repaid.

In reality, however, the Secured Senior Notes might trade at slightly less than 100% of par value to reflect the risk of selling for a lower multiple, and the Unsecured Notes might trade at slightly more than 0% to reflect the chance of a slightly higher multiple or company turnaround.

15. A distressed company's Debt is currently trading at a 50% discount to par value with a cash coupon rate of 10% and a 5-year maturity.

Because of this discount, several investors just bought the issuance at a very high YTM, which assumes full interest payments and full repayment upon maturity.

The company is at risk of being unable to pay for the interest on this issuance, so it wants to restructure via a Debt-for-Equity swap based on a solid turnaround plan. How might you structure such a swap?

Start by estimating **the yield to maturity (YTM)** or **yield to exit** the investors would get if the company repaid this issuance upon maturity.

As a simple approximation, if it's a $100 par value bond, the YTM is ($10 + ($100 – $50) / 5) / ($100 + $50) / 2 = ~27% (it's closer to 30% in Excel).

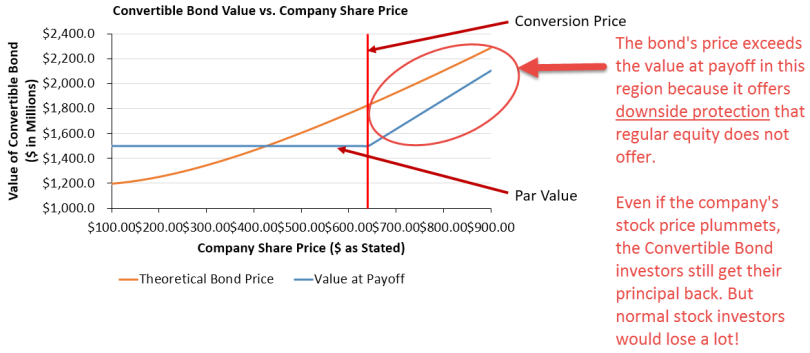
So, you would structure the swap such that the investors are granted an Equity percentage that might produce this same 5-year annualized return.

A 25% IRR over 5 years is a 3.0x multiple, so we need a swap that could produce $50 * 3x = $150 in exit proceeds (in reality, slightly more than that since the IRR is closer to 30%).

So, if the company's Equity is worth $1,500 by Year 5 based on its turnaround plan and the peer company multiples, you might propose 10% Equity in exchange for this current Debt issuance. Depending on the investors' confidence in this plan, this percentage might be higher to account for the execution and market risks.

Return to Top.

Equity Capital Markets (ECM)



You're more likely to get questions about **the process** for equity issuances than the analyses, and many articles on M&I cover these points (see: Equity Capital Markets, SPACs vs. IPOs, etc.).

Also, the Understanding Banking section had questions related to these topics.

Therefore, the questions in this section cover the *technical analysis* for Initial Public Offerings, Follow-On Offerings, Special Purpose Acquisition Company (SPAC)-facilitated IPOs, and Convertible Bonds.

1. Walk me through an IPO model for a private company that wants to go public.

You start by assuming a range of forward multiples that the company will trade at once it is public and then apply these to your company's projected financial metrics.

For example, maybe you assume a range of 12x – 16x for the forward EBITDA multiples, with 14x as the midpoint.

You then multiply by the company's projected EBITDA to determine its **Post-Money Enterprise Value at Trading**.

Then, you back into its Post-Money Equity Value at Trading by adding Cash, including the Net IPO Proceeds from the offering, and subtracting Debt.

Next, you assume the company offers a **Pricing Discount** to the IPO investors to compensate them for the risk they're taking; this discount might be in the 10 – 20% range.

You reduce the Post-Money Equity Value by this Pricing Discount and base the Offering Price per Share on (Post-Money Equity Value at Pricing – IPO Offering Size) / Diluted Shares *Before* Offering.

Then, you calculate the Primary Shares Issued based on the Post-Money Equity Value at Pricing / Offering Price – Diluted Shares *Before* Offering.

For example, a Post-Money Equity Value of $2 billion / $50.00 Offering Price = 40 million shares, so if the company currently has 30 million shares, it must issue 10 million new shares.

You determine the Secondary Shares and Overallotment Shares based on separate assumptions for those (if applicable).

Finally, you calculate the % of the company sold in the IPO and its valuation multiples at pricing and trading, reflecting the Net IPO Proceeds in its Equity Value and Enterprise Value.

2. Wait a minute, how does an IPO model set the valuation? What you just described does not seem to "value" the company.

The IPO model does not "set the valuation"; it determines the number of new shares sold, the discount on these shares, and each group's post-deal ownership percentage.

Valuation in an IPO context is still based on the forward multiples from the comparable public companies, perhaps with a DCF used for additional support.

3. Can you explain Primary vs. Secondary Shares in an IPO or Follow-On Offering?

"Primary Shares" are **new ones** issued by the company in an equity offering. Investors pay the company cash to buy these shares.

They dilute the company's existing investors by reducing their ownership stakes, but they also give the company cash that it can use for different purposes.

"Secondary Shares" are **existing shares sold to new investors** in the offering. They do *not* dilute existing investors, but the company also receives no cash from them.

The percentages of Primary and Secondary Shares should be within reasonable ranges in an equity offering so the market perceives it positively. For example, if an IPO consists of 90% Secondary Shares, new investors will rightfully wonder why so many existing investors want to sell their shares rather than holding them for the long term.

4. What's the impact of a "Greenshoe" or Overallotment provision in an IPO or FO, and when might a bank offer it?

A "Greenshoe" lets a company sell more shares than originally planned in an equity offering. A company might use it if there's higher-than-expected demand for its shares and it wants to raise additional capital to take advantage of this demand.

For example, the company initially planned to offer 10 million shares at $10.00 each, but with a 15% Greenshoe, it can offer 11.5 million shares and raise $115 million instead of $100 million.

In an IPO or FO, a Greenshoe increases the deal size, resulting in a higher percentage of the company sold to new investors.

5. How do you set up a Follow-On Offering model differently from an IPO model?

Unlike IPO models, the key drivers are the company's *current share price* and a range of *discounts* to that price.

You determine the shares issued based on the amount of capital the company wants to raise and the discount it offers; a higher discount means more shares and a lower discount means fewer shares.

Then, you factor in the Overallotment (Greenshoe) and the Primary vs. Secondary Share split and determine the Net Proceeds or Total Primary Shares Sold * Offering Price – Fees.

You still calculate the % of the company sold in the offering based on the Primary Shares Issued / Post-Offering Share Count.

6. Walk me through how a company might go public via a Special Purpose Acquisition Company ("SPAC").

In Step 1 of the SPAC process, a "Sponsor" (a wealthy individual, financial firm, etc.) forms an empty holding company and takes it public, typically at a $10.00 share price.

Investors buy these shares and end up with ~80% of the SPAC, while the Sponsor gets a "Promote" that gives them 20% of the SPAC for *very little capital*. The Sponsor also pays for warrants at exercise prices modestly higher than $10.00; this cash payment covers a small upfront underwriting fee.

In Step 2, the Sponsor identifies a private target company that wants to go public and negotiates an acquisition in which this target company becomes *the majority owner* (i.e., it's a reverse merger).

If the SPAC shareholders approve the deal, the SPAC issues so many shares that the target ends up owning the vast majority (80-90%+) of the combined company. The Cash raised in the IPO goes on the combined company's Balance Sheet, and other investors might also contribute capital in this step via a private investment in public equity (PIPE).

7. What are the trade-offs of a SPAC vs. an IPO for a company going public?

The SPAC process is typically faster than a traditional IPO (months rather than one year+), the regulatory burden is much lower, and there's no IPO Pricing Discount; the private target company just negotiates the best deal it can.

However, SPACs also tend to create more dilution than traditional IPOs, the fees are often the same or higher, and investors often view companies that went public via SPACs as lower quality, resulting in "mixed" stock-price performance (at best).

8. Your co-worker is creating a Payoff Diagram for a Convertible Bond. He claims that the market price will exceed the bond's payoff value when the company's share price reaches the Conversion Price and that above the Conversion Price, the market price will remain above the payoff value.

Is he correct, incorrect, or partially correct?

He is partially correct. In a Payoff Diagram, the bond's market price will remain above its payoff value when the stock price exceeds the Conversion Price because the bond offers **downside protection** to investors, unlike the underlying shares.

However, he is incorrect about the first part: The market price typically starts to exceed the bond's payoff value at a share price *below* the Conversion Price.

This is because the *possibility* of converting into common shares increases the bond's market price and makes it worth more than its payoff value, even at this level.

9. Explain intuitively why a Convertible Bond is not necessarily "cheaper" than traditional Debt, even though some people claim it is.

The *cash cost* of a Convertible Bond is lower than the *cash cost* of a traditional bond because the coupon rate is lower, meaning the company pays less in interest each year.

However, a Convertible Bond is not truly cheaper than traditional Debt because of the **embedded conversion option**, which makes the bond act more like Equity at share prices around and above the Conversion Price.

This possibility of conversion into common shares and the resulting dilution makes Convertible Bonds more expensive than traditional Debt if you consider the total costs.

Convertible Bonds *are* usually cheaper than traditional Equity because of their Liability component, which acts more like traditional Debt.

10. Convertible Bonds seem "too good to be true" since they offer the upside potential of common shares and downside protection if the company's stock price falls.

Why would anyone purchase common shares if the company also has Convertible Bonds?

The disadvantage is that **Convertible Bonds *cost more* than the equivalent number of common shares**, particularly if an investor buys them on the secondary market.

For example, if the Conversion Premium is 30%, getting the same number of shares via a Convertible Bond will *cost at least 30% more* than buying the underlying shares.

So, investors get downside protection from Convertible Bonds but also **pay extra for it**, which is why it's not "too good to be true."

Return to Top.

Financial Institutions Group (FIG)

Aside from Distressed / Restructuring, FIG is perhaps the most technical group in investment banking and requires significant industry-specific knowledge of the accounting, valuation, and modeling differences.

You can't "learn" everything here – that would require a full course – but this summary gets you up to speed on the most important points.

1. How do commercial banks differ from normal companies?

Unlike normal companies, commercial banks make money based on the **interest rate spread:** They issue Loans to customers, collect interest income, and find funding sources to back up those Loans via Deposits and Debt, which both carry interest and fees.

This business model creates the following differences:

1) **Balance Sheet First** – The Balance Sheet drives banks' performance, and you start the financial statements by projecting the Balance Sheet first.

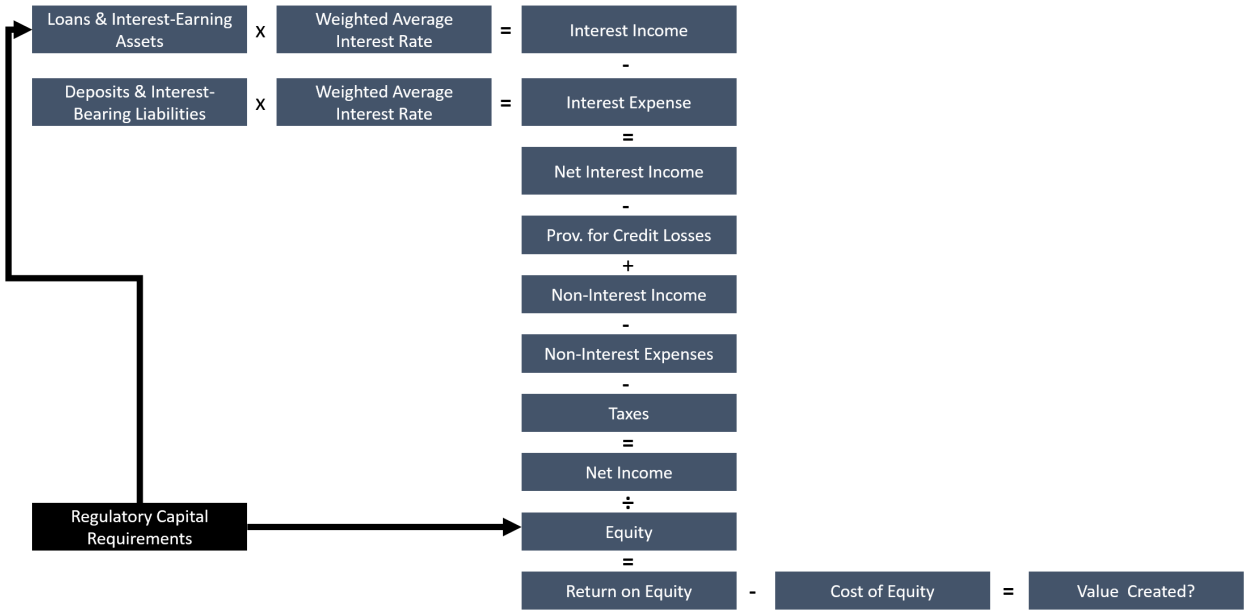
2) **Equity Value Only** – You cannot separate a bank's **operating and financing activities**, so the concept of Enterprise Value does not apply, and you use Equity Value and Equity Value-based multiples instead.

3) **Dividend Discount Models in Place of DCFs** – "Free Cash Flow" doesn't mean anything for banks because the Change in Working Capital and CapEx do not represent reinvestment in the business. So, you use Dividends as a proxy for FCF, Cost of Equity instead of WACC, and the Dividend Discount Model instead of the DCF analysis.

4) **Regulations and Capital** – Banks are highly regulated, and they must always maintain minimum amounts of "capital" (Tangible Common Equity with a few modifications). These requirements constrain their growth.

5) **Different Valuation Multiples** – The Price / Book Value (P / BV), Price / Tangible Book Value (P / TBV), and Price / Earnings (P / E) multiples are all important because these firms are Balance Sheet-driven, and Interest is a huge part of their revenue.

Here's a summary:



2. How are insurance companies different?

Most of the key differences above (Equity Value only, Dividend Discount Models, different valuation multiples, regulations, etc.) also apply to insurance firms, but the financial projections do **not** start with the Balance Sheet.

Instead, **Premiums**, which appear on the Income Statement, act as the key driver rather than Loans and Deposits.

A few other differences include:

- **Non-Interest Revenue** tends to be a higher percentage of total revenue than it is for banks because of the Premiums that insurance firms collect.
- They use **Statutory Accounting**, a system different from IFRS / U.S. GAAP that is closer to cash accounting.
- **Valuation** is like commercial bank valuation, but Embedded Value is an important additional methodology for Life Insurance.
- **Regulatory Capital requirements** differ and are usually linked to "Risk-Based Capital" and the RBC Ratio, which equals Total Adjusted Capital (a variation of Common Shareholders' Equity) divided by the risk-adjusted Total Assets.

3. You've explained commercial banks and insurance firms, but what about other companies in FIG coverage, such as specialty finance, asset management, broker-dealer, and financial technology (fintech) firms?

"Specialty finance" companies are like commercial banks because they still earn money based on borrowing and lending and the interest rate spread; it's just that their regulatory capital requirements are slightly different.

Asset management, broker-dealer, and fintech firms operate more like normal companies since they are based on fees, transactions, or subscriptions.

Therefore, you can still use multiples such as TEV / Revenue and TEV / EBITDA to value them, and the traditional Unlevered DCF still works.

If you're not sure of a company's category, look at the components of its revenue and expenses and how much it earns based on its Balance Sheet.

4. For normal companies, there is often a relationship between the growth rates of metrics such as Revenue and EBITDA and the corresponding valuation multiples, such as TEV / Revenue and TEV / EBITDA.

What types of relationships exist for banks and insurance firms?

In these verticals, there tends to be a strong correlation between **Return on Equity (ROE)** and **P / BV multiples** (and variations, such as ROTCE and P / TBV multiples).

You can even link the multiples and metrics formulaically for "stabilized" banks:

- **P / BV** = (ROE – Net Income Growth Rate) / (Cost of Equity – Net Income Growth Rate)
- **P / TBV** = (ROTCE – Net Income to Common Growth Rate) / (Cost of Equity – Net Income to Common Growth Rate)

There may also be some correlation between P / E multiples and Net Income Growth, but it tends to be weaker than the others.

You can spot a possibly mispriced bank or insurance firm if its ROE-based metrics are similar to peer companies', but its P / BV or P / TBV multiples differ significantly.

5. What is "Regulatory Capital"? Why do banks and insurance firms need it?

Both banks and insurance firms **expect to lose money** from customers defaulting on loans or getting in accidents, dying, and filing claims (not to be morbid – this is life insurance).

They handle **expected losses** with specific items on their Balance Sheets: The Allowance for Loan Losses for banks and the Claims Reserve for insurance companies.

But there are also **unexpected losses**, which Regulatory Capital covers. It consists mostly of Tangible Common Equity (with adjustments and variations), which serves as a "buffer" against these potential, unexpected losses.

For example, if a bank writes down a Loan on the Assets side of its Balance Sheet, something must decrease on the L&E side to balance the change. If the bank has enough Regulatory Capital, that "something" will be its Equity rather than customer Deposits.

Banks must maintain ratios based on Regulatory Capital / Some Type of Assets above certain percentages, such as 7% or 10%.

They must also maintain enough Liquid Assets to cover cash outflows and enough Stable Funding to meet their "Required Stable Funding" (Assets multiplied by adjustment factors).

6. What is Common Equity Tier 1 (CET 1), and why must banks maintain a certain level?

CET 1 equals Common Shareholders' Equity – Goodwill – Other Intangibles +/- Other Adjustments. It's like Tangible Common Equity, but not the same due to the adjustments.

CET 1 is the most basic and important type of Regulatory Capital, which exists to cover unexpected losses.

The CET 1 Ratio equals CET 1 / Risk-Weighted Assets. To calculate Risk-Weighted Assets, a bank multiplies all its on-BS and off-BS Assets by "risk weights" such as 50%, 75%, or 150%, and adds up everything.

The minimum CET 1 Ratio under Basel III is 4.5%, but that climbs to 9.5% when you include various buffers, and it's even higher for large, systemically important banks.

7. A commercial bank has set aside sufficient Regulatory Capital for unexpected loan losses and a sufficient Allowance for Loan Losses for expected losses.

After reviewing data from its borrowers, the bank realizes it could lose more than expected. Walk me through the financial statements if it increases its loss estimates by $100 and explain how the CET 1 Ratio changes.

This is recorded as a $100 increase in the **Provision for Credit Losses** on the Income Statement, which is a non-cash expense that represents an increase in the expected loan losses.

- **IS:** Pre-Tax Income is down by $100, and Net Income is down by $75 at a 25% tax rate.
- **CFS:** Net Income is down by $75, but you add back the $100 of Provisions, so Cash is up by $25 at the bottom.
- **BS:** Cash is up by $25, but Net Loans is down by $100 (since the Allowance is a contra-asset netted against Net Loans), so the Assets side is down by $75. The L&E side is also down by $75 because Equity is down due to the reduced Net Income.
- **CET 1 Ratio:** This decreases, but we don't know the exact percentage because we don't know the bank's Risk-Weighted Assets (RWAs) or current CET 1. The RWAs stay the same because they are based on Gross Loans, not Net Loans, but the CET 1 falls because it is linked to Common Shareholders' Equity, which is down by $75.

The **intuition** is that this bank expects to charge off more of its Loans, so its "buffer capital" decreases to reflect this expected loss. Cash increases due to the tax savings from this non-cash Provision expense. The CET 1 served its purpose by "absorbing" this unexpected loss that has now turned into an expected loss.

8. An insurance company records $100 in Net Written Premiums and $40 in Net Earned Premiums and pays Commissions of 10%.

What happens on the financial statements? Ignore the Claims and Losses corresponding to these premiums for now.

The key point here is that the commissions are **paid in cash** based on the Net Written Premiums in this period, but only $40 / $100 = 40% can be recognized on the Income Statement because this portion corresponds to the Net Earned Premiums.

So, the cash commissions are 10% * $100 = $10, but only $4 appears on the Income Statement.

- **IS:** Revenue is up by $40, we're ignoring Claims/Losses, and Commissions are up by $4, so the Pre-Tax Income is up by $36. At a 25% tax rate, Net Income is up by $27.

- **CFS:** Net Income is up by $27, and the Unearned Premium Reserve is up by $60, so cash flow is up by $87 so far. The Deferred Acquisition Costs (DAC) asset increases by $6 to reflect the additional cash commissions, reducing cash flow by $6. Cash at the bottom is up by $81.

- **BS:** Cash is up by $81 on the Assets Side, and the DAC asset is up by $6, so Total Assets are up by $87. On the L&E side, the Unearned Premium Reserve is up by $60, and Equity is up by $27 due to the increased Net Income, so both sides are up by $87 and balance.

- **Intuition:** The firm collects $100 in Cash for the written premiums but pays taxes on only ($40 – $4) of this amount and pays an additional $6 in Cash Commissions, so its Cash increases by less than $100.

9. What is the Combined Ratio for insurance firms, and how does it make sense mathematically?

The Combined Ratio equals the Expense Ratio plus the Loss & LAE Ratio and gives a sense of the company's *underwriting profitability*, i.e., how much in profits it earns from collecting premiums and paying claims, ignoring its investing activities.

The Expense Ratio equals (Net Commission Expense + Underwriting Expense) / Net Written Premiums, and the Loss & LAE Ratio equals the Loss & Loss Adjustment Expense on the Income Statement divided by the Net Earned Premiums.

Mathematically, this is **inconsistent** because you can't add two fractions with different denominators, but it's an industry quirk that has persisted for decades. Although it's inconsistent, it's not *that bad* if the company's NEP / NWP ratio stays in a tight range.

10. Can you explain, at a high level, how you forecast a bank's financial statements?

You start by projecting the bank's **Balance Sheet**, usually beginning with its Loans, Deposits, and other Interest-Earning Assets and Interest-Bearing Liabilities.

Then, you project the interest rates for all these items and link them to a prevailing rate like the Federal Funds rate or the interbank lending rate.

Use that information to calculate the Interest Income and Interest Expense on the Income Statement. Estimate the Non-Interest Income and Expenses with simple percentage growth, percentage-of-revenue, or percentage-of-Balance-Sheet-line-item estimates.

Project the bank's Dividends based on the Regulatory Capital it's targeting vs. how much it currently has. Complete the full Cash Flow Statement by linking to the relevant IS and BS line items and separately projecting a few additional ones, such as CapEx and D&A.

Everything flows from the Balance Sheet, and the Regulatory Capital constrains both the Loan Growth and the allowed Dividends.

11. How do you calculate the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) for banks, and what do they tell you?

The LCR ensures that the bank has enough high-quality Liquid Assets to cover 100% of net cash outflows during a "stressed 30-day period."

You calculate it with Liquid Assets / Stressed Net Cash Outflows; the minimum is 100%.

The NSFR ensures that the bank has enough stable, long-term funding for its Assets (i.e., the bank should not depend on short-term borrowings that might disappear overnight).

You calculate it with Available Stable Funding / Required Stable Funding, and the minimum is 100%; "Available Stable Funding" is linked to long-term Deposits and Total Capital, while Required Stable Funding is linked to the bank's Assets multiplied by various adjustment factors.

These metrics are important because the CET 1 Ratio and Total Capital Ratio tell you nothing about a bank's liquidity or stability; the bank could still be in trouble if there are significant cash outflows in an emergency.

12. Walk me through a basic Dividend Discount Model (DDM) for a commercial bank.

First, assume an Asset Growth Rate and make the Risk-Weighted Assets a percentage of Total Assets.

Then, project Assets and Risk-Weighted Assets based on these figures. Assume a Return on Assets (ROA) for the bank and use that to project Net Income.

Then, assume a Targeted CET 1 Ratio (e.g., 10% or 12%) and calculate the bank's CET 1 for the year based on that percentage times its Risk-Weighted Assets.

"Back into" the Dividends Issued by taking the bank's CET 1, adding Goodwill and Other Intangibles, subtracting the beginning Common Shareholders' Equity, and subtracting Net Income and anything else that might affect CET 1.

Then, discount the Dividends based on the Cost of Equity, and sum up all the discounted values.

Calculate the Terminal Value using the Multiples Method (typically based on P / TBV) or the Gordon Growth method and discount it to its Present Value using the Cost of Equity.

Add the Present Value of the Dividends to the Present Value of the Terminal Value to determine the bank's Implied Equity Value and compare this to its Current Equity Value.

13. Walk me through an Embedded Value model for a Life Insurance firm.

Embedded Value = Net Asset Value + Present Value of Future Cash Profits from Current Policies.

You start by calculating the firm's Net Asset Value by marking the Balance Sheet to market value and then subtracting all the Liabilities from all the Assets.

Then, you assume the insurance company **writes no new policies in future years** so that its expected after-tax cash flows depend 100% on its policies as of today.

You project the firm's revenue based on its Net Earned Premiums and "Lapse Rate," which represents cancellations, and you add Interest and Investment Income.

The main expenses include Cash Claims, Cash Commissions, and other Cash Operating Expenses. You might estimate these based on historical trends.

You multiply Pre-Tax Income by (1 – Tax Rate) to calculate the After-Tax Cash Flow from the policies in each year; if the company needs more or less capital, you also factor that in, along with the after-tax interest on it.

You project these figures until the current insurance policies "run out," and you discount the After-Tax Cash Flows to Present Value based on the Cost of Equity and add them to the NAV to determine the firm's Embedded Value.

14. How do Property & Casualty (P&C) and Life Insurance companies compare?

Both types of companies collect Premiums upfront, recognize them as revenue over time, recognize Claims as expenses and pay them in Cash over time, and make money from both Underwriting and Investing.

But the specifics are quite different:

- **Policy Length:** Life insurance policies last much longer: 20 – 30+ years vs. 1 – 3 years for P&C.
- **Business Model:** P&C is more of a **flow business**, dependent on winning and servicing new customers and profiting from underwriting activities. Life is more of a **spread business**, dependent on investments and interest rates.
- **Financial Statements:** Life insurance firms have more complex Balance Sheets with additional items, such as Separate Accounts for policyholders.
- **Valuation:** You can use the Dividend Discount Model and the P / E, P / BV, and P / TBV multiples to value both types of firms, but Life also has Embedded Value and related metrics and multiples, such as P / EV and ROEV.

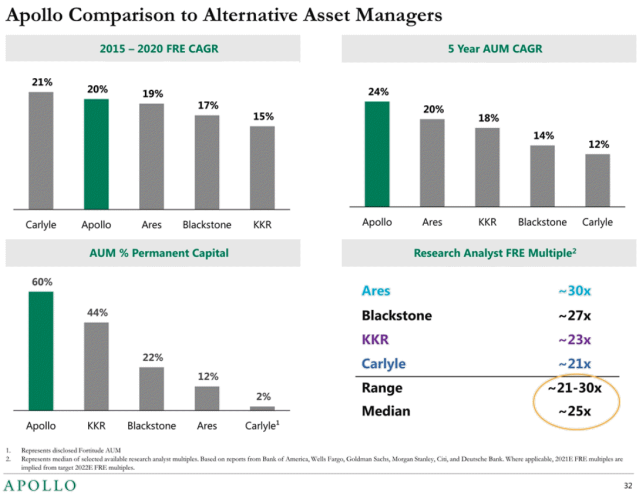
15. How does a merger model differ for commercial banks?

The basic setup and approach of combining the financial statements and measuring accretion/dilution for metrics such as EPS is the same, but several points differ:

- **Transaction Funding:** Most bank M&A deals use 100% Stock, or at least > 100% Stock, because banks' "available Cash" is limited, and they tend to be highly leveraged already.
- **New Line Items and Adjustments:** The Acquirer must mark the Target's Balance Sheet to market value and amortize these "loan marks"; the Target's Allowance for Loan Losses is written down and replaced, and new items such as Core Deposit Intangibles are created.
- **Deposit Divestitures:** The Acquirer may have to divest some of the Target's Deposits if the combined company's Deposits exceed the maximum allowed to be held by a single bank in the country; corresponding Assets must also be divested.
- **Evaluation Methods:** Besides EPS, you can analyze the accretion/dilution of BV and TBV per Share; the IRR vs. Discount Rate Analysis and Contribution Analysis are both important, as is a Synergies valuation.

Return to Top.

Financial Sponsors Group (FSG)



The Financial Sponsors Group (FSG) is tricky because it could be more of a "relationship management" role with light technical work or involve many private equity deals.

We recommend reading the full article on M&I for the details, industry trends, and differences vs. similar groups, such as FIG and LevFin; this section presents a few questions about the technical aspects of financial sponsors.

1. What are the key metrics and valuation multiples for a financial sponsor?

You can still value financial sponsors with traditional multiples, like TEV / EBITDA and P / E, and a traditional DCF, but **Assets Under Management (AUM)** and the **TEV / AUM** multiple are also quite important.

"Fee-Related Earnings" (FRE, or management fees) vs. "Performance Fees" (carried interest) are other important metrics, as is the split between AUM and permanent capital (the capital that must be returned to investors within a specific time frame vs. the amount held/invested on an open-ended basis).

To evaluate individual funds held at a financial sponsor, you can use metrics such as Total Value to Paid-In Capital (TVPI), Distributions to Paid-In Capital (DPI), and Residual Value to Paid-In Capital (RVPI).

TVPI tells you how much the fund has already returned to investors *plus* the value of the remaining assets held, all divided by the investors' cash contributions.

TVPI can be split into DPI (distributions so far) and RVPI (the remaining value or "residual value"). They indicate how much the fund has returned in cash vs. its *potential future returns* if you believe its portfolio company valuations.

2. Suppose that you are valuing a single private equity firm that uses the same strategy and targets the same size company in each of its separate funds.

Why would you use a Sum-of-the-Parts (SOTP) valuation, given that there are no different business segments?

Although there are no different business segments, there are different *earnings sources*: The management fees charged on each fund's committed capital and the performance fees (carried interest) charged on each fund's returns.

The management fees ("Fee-Related Earnings") are more stable and predictable, so they are often valued at **higher multiples**, such as ~20x vs. only ~10x for the performance fees.

In SOTP valuations for financial sponsors, you value each income stream separately and then add them to the firm's Net Asset Value from its most recent Balance Sheet to determine its Implied Value.

3. Suppose you are an FSG banker advising a private equity client.

How would you decide when to pitch the client on bringing one of its portfolio companies to the market for a sale or IPO?

It depends on the holding period of the asset, the timing of the client's next fund, and the current M&A and IPO markets.

Generally, General Partners (GPs) at PE firms want to hold assets for 5 – 7 years to maximize their value, so you would normally wait close to that long before pitching anything. But GPs also want to show evidence of strong performance when they raise their next funds, so if they plan to raise a new fund soon, you might be more likely to pitch an M&A or IPO process.

If the M&A and IPO markets are currently weaker, you might be less likely to pitch one of these processes, but it depends heavily on the context (e.g., is this a short-term downturn or a prolonged, multi-year slow period?).

4. Again, pretend you are an FSG banker advising a private equity client.

When is the ideal time to suggest that the client review its investments and deploy its remaining committed capital?

This type of review is most appropriate when the GPs are preparing to raise their next fund – because they want to show their Limited Partners (LPs) that they have deployed as much capital as possible from their previous funds. LPs might be skeptical if it seems like the PE firm is raising significant capital but not investing all of it.

Sometimes, GPs currently raising a new fund might even invest in new companies *before they finish fundraising* to illustrate what the new investments might look like and win commitments from more LPs.

For example, if the GPs plan to raise a new $1 billion fund over 18 months, they might start investing within 6 months if they've raised $300 million so far – as that could be enough for several deals, depending on the strategy.

If prospective LPs like these early deals, they might be more likely to commit capital.

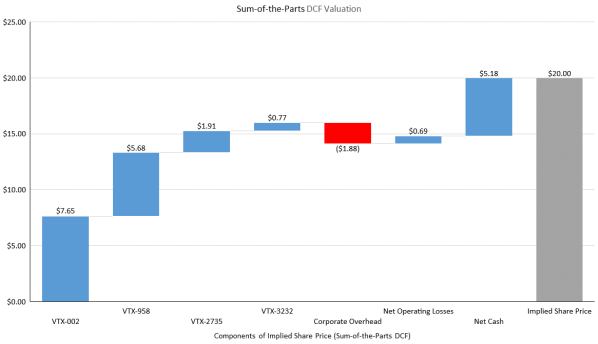
5. Can you explain the different types of private equity deals that we might advise clients on?

A few of the most common PE deal types include:

- **Carve-Out** – This occurs when a company sells a business unit or division (often a non-core asset). Private equity firms acquire the carved-out entity and then improve it as a standalone business.
- **Founder Succession** – In cases where a business founder is looking to retire or transition out, private equity firms might step in to facilitate the succession by acquiring a majority stake and helping to professionalize the management team.
- **Management Buyout (MBO)** – This is a deal in which the existing management team partners with a private equity firm to acquire the company they operate, often using leverage. This aligns the management team and PE firm and ensures operational continuity.
- **Take-Private** – A private equity firm acquires a publicly traded company, delisting it from the stock market. This allows for operational improvements away from public scrutiny, often to restructure and sell or relist later at a higher valuation.
- **Add-on Acquisition** – A private equity-owned portfolio company acquires smaller companies to increase its market share and potential valuation. This is a common growth strategy for buy-and-build platforms.
- **Dividend Recap** – A private equity-owned company takes on additional debt to issue a dividend to its investors. This allows PE firms to extract value from the investment before officially exiting via an M&A deal or IPO.
- **Secondary Buyout** – Not to be confused with a "secondaries" deal, in this transaction, one buyout fund sells the entire company to another buyout fund.

Return to Top.

Healthcare & Biotech



Healthcare investment banking is known as a diverse group with good deal flow in any market environment and not too much specialized accounting or valuation.

That's mostly correct, but some verticals, such as **branded biotech companies**, are more specialized (which is why we have a separate Biotech Valuation course).

1. Can you explain the different verticals within healthcare and how valuation differs?

The main verticals are **Pharmaceuticals, Biotechnology, and Life Sciences** and **Healthcare Equipment & Services**.

The first category includes firms that make branded (patented) or generic drugs and tools to support them; the second includes hospitals, nursing facilities, labs, managed care, and medical device companies.

Valuation in this sector is fairly standard for most companies, so the DCF and multiples such as TEV / EBITDA and P / E apply, as there are no special accounting rules.

However, **branded pharmaceutical/biotech companies** differ because their revenue must be probability-adjusted and will "expire" in the future once patent protection goes away; you tend to use a long-term DCF or Sum-of-the-Parts DCF for valuation in this vertical.

2. Walk me through a valuation for a pre-revenue biotech company that's currently in Phase II clinical trials, aiming to develop and sell branded drugs.

Start by forecasting the R&D expenses required to get the drug(s) through the remaining clinical trials and win regulatory approval. Probability-adjust this in the development period based on the chances of passing each phase.

Then, forecast revenue in the commercial period based on Total Patient Count * Market Share * Price per Patient, and probability-adjust it based on the chance of passing all the phases and winning approval. Also, make sure this revenue falls by ~90%+ when the drug's exclusivity expires and generics enter the market.

Most expense and cash flow items in the commercial period will be simple percentages of revenue. Unlevered FCF = NOPAT + D&A +/- Change in Working Capital – CapEx, and you can discount and sum up all the UFCFs to get the company's Implied Enterprise Value.

You normally **ignore Terminal Value** in pre-revenue biotech DCFs and adjust for the normal bridge items (add Cash, subtract Debt, etc.) to move from the Implied Enterprise Value to the Implied Equity Value.

If the company has multiple products, you may use a Sum-of-the-Parts DCF that values each drug separately, aggregates their values, and subtracts the capitalized values of the corporate-level expenses.

3. Are valuation multiples from public comps and precedent transactions relevant for pre-revenue / clinical-stage biotech companies? If so, which ones are useful? If not, why not?

Valuation multiples may be useful if the company is far enough along for long-term revenue forecasts to make sense (e.g., Phase II of clinical trials, but not the "idea generation" phase).

The most common multiples include variations of forward revenue, such as "L + 5" Revenue (Launch Date of Drug + 5 Years). The "Peak Sales" metric is also common for drugs with consensus opinions about their market potential.

You will see references to multiples such as TEV / Peak Sales and TEV / L + 5 Revenue in biotech valuations based on these metrics.

4. Suppose you are valuing a "platform biotech company" with a mix of existing, patent-protected drugs that already generate sales and new drugs in its pipeline. How does the valuation approach differ from a pre-revenue firm?

The main difference is that you use more of a standard DCF and the standard valuation multiples, such as TEV / Revenue and TEV / EBITDA.

In the DCF, you split the drugs into different categories, such as "drugs with known patent expiration dates," "drugs with unknown expiration or competition entry dates," and "pipeline drugs" currently under development.

For the revenue-generating drugs, you make the normal assumptions about the Patient Count and Pricing to determine revenue and assume a huge price decrease once generics enter.

The pipeline drug projections are like the revenue forecasts for a pre-revenue company: Risk-adjust sales and cash flows for the success probabilities and assume that their revenue will eventually decline to low levels even if they pass clinical trials.

The Discount Rate follows the standard WACC calculation but may change over time as the company's risk profile changes. The Terminal Value still exists but may be "haircut" or use a negative long-term growth rate to reflect the added risk of a company that must constantly create or acquire new products.

5. What are the key drivers for a healthcare facilities company, such as a nursing home provider? How would you forecast its cash flows?

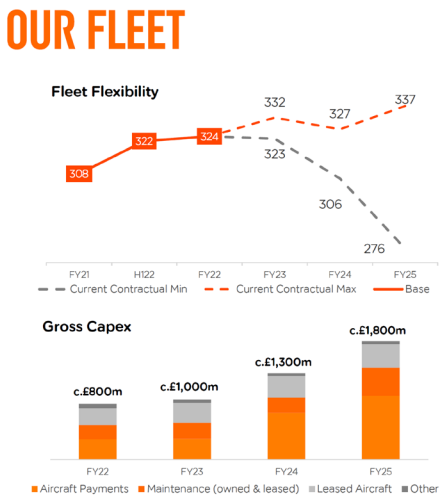
It's like a retailer: Revenue depends on the total number of facilities, the average number of beds in each one, the utilization rate, and the average revenue per bed, which depends on the "Net Revenue per Adjusted Admission" (the base price) and "Average Length of Stay" (ALOS).

Most expenses are linked to the total number of facilities or their total size, and the employee count depends on the number of beds.

The CapEx and Change in Working Capital lines depend on how much the company spends to expand and maintain its facilities.

Return to Top.

Industrials



Like healthcare, industrials is known as a solid group with a good variety of deals, steady deal flow, and standard accounting and valuation.

The difference is that it is much **more sensitive to macro factors** and overall economic conditions than most verticals within healthcare, which helps when times are good and hurts when they're not.

There is *one vertical* within industrials that has unique valuation metrics and methodologies (maritime/shipping), so we feature exactly 1.5 questions about it here.

1. Can you explain how industrials is different from other groups and what the main verticals are?

Industrials companies make machinery or large physical products, transport them, or service them; the customers are usually corporations or governments rather than consumers, and the sector is highly sensitive to the economy and macro conditions, such as credit availability, interest rates, and trade policies.

Many sources divide the industry into **capital goods** (aerospace/defense, building products, machinery, etc.), **transportation** (air freight, airlines, maritime, railroads, etc.), and **commercial/professional services**.

Accounting and valuation are standard in most verticals, but the key drivers and KPIs differ.

2. Walk me through how you would forecast an airline's cash flows, including its key metrics and drivers.

Airlines are unique in the industrials space because their customers are mostly **consumers** rather than companies or governments.

To forecast an airline's cash flows, start with Available Seat Kilometers (ASK) or Available Seat Miles (ASM) as the top-line driver. Then, assume a **load factor** and say that the Revenue Passenger Kilometers = ASK * Load Factor.

Passenger Revenue equals the RPK times the **Passenger Yield**, or Revenue per RPK. There may be Ancillary Revenue from sources such as freight/cargo delivery as well.

Expenses are divided into **Fuel Costs** and **Non-Fuel Costs** (staff, maintenance, rent, etc.).

The Cash Flow Statement follows the usual format, starting with Net Income and adding back a potentially very large Depreciation & Amortization expenses, adjusting for Deferred Taxes and the Change in Working Capital, and deducting all forms of CapEx.

3. What are some accounting and valuation differences in the maritime/shipping sector within the transportation vertical?

First, many companies in this vertical, such as "dry bulk" shipping firms that own huge fleets and transport cargo around the world, have a **General Partner / Limited Partner structure** (like PE firms), which means that cash flows may be split up for distribution to each group.

Distributable Cash Flow, or EBITDA minus CapEx, is a common valuation metric and multiple because CapEx is so high for many of these companies that EBITDA is not always useful.

Leases are very important, and since shipping companies operate globally under different accounting systems, you may use metrics like EBITDAR or EBITDAR minus CapEx to normalize the financials for different systems and lease mixes.

Finally, the **Net Asset Value (NAV) model** is an important valuation methodology; in this version, you estimate the market value of the company's ships and other assets and subtract its liabilities to determine its Implied Equity Value.

P / NAV, based on Equity Value / Net Asset Value, is also a common multiple.

4. Many industrials companies, such as plane and railroad manufacturers, have long lead times to produce and deliver orders. What differences does this create in their key metrics and financial statements?

These timing differences mean that you need to track the **Backlog** as a key metric, add the Order Intake each year, and subtract the Revenue Recognized from deliveries.

The **Book-to-Bill Ratio**, defined as Order Intake / Revenue Recognized in a year, is a key driver that determines how quickly these orders turn into sales.

Fulfilling these orders over time also creates assets and liabilities linked to them, such as Works in Progress and Deferred Expenses; they could significantly impact the company's Change in Working Capital in the cash flow projections.

5. In which verticals within industrials is the Sum-of-the-Parts (SOTP) valuation most and least useful?

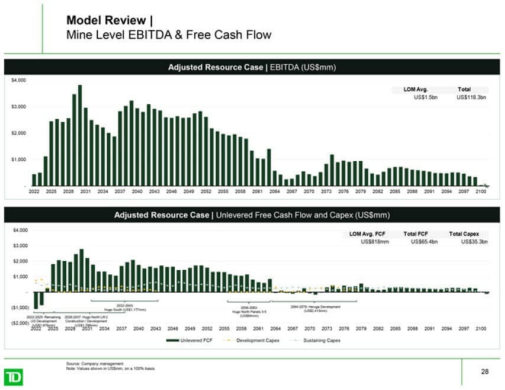
SOTP valuation is most useful when you're valuing a conglomerate that has multiple business segments in very different markets or a maritime/shipping company with a huge variety of ships or fleet types.

In both these cases, it's useful to assign different values to each asset type or different multiples to income from each segment.

The SOTP valuation is less useful elsewhere, such as for a pure-play airline or building products company, because the income streams are not valued at very different multiples.

Return to Top.

Metals & Mining



Metals & mining is similar to oil & gas, but some of the accounting practices, metrics, and valuation multiples differ.

They're both **extractive industries** in which companies are valued based on their cash flows decades into the future, but mining is simpler because there are fewer verticals and company types to explain.

1. Explain the main verticals within metals & mining and the valuation differences.

Some people divide the sector by metal type: **Base metals and bulk commodities** (coal, iron, copper, etc.), **precious metals** (gold, silver, palladium, etc.), and **diversified miners.**

You could also divide the industry into **producers** (they buy the raw materials and turn them into steel and other industrial alloys), **miners**, and **diversified companies** that do both.

Producers follow standard accounting and valuation because they're manufacturing companies that purchase raw materials, sell finished products, and profit based on their margins.

Miners are quite different because they are valued based on their long-term cash flows (going decades into the future), so multiples such as P / NAV (Equity Value / Net Asset Value) and TEV / Reserves or TEV / Resources are more common.

The NAV Model is also used instead of the DCF; it's a decades-long DCF with no Terminal Value that values asset and corporate-level cash flows separately.

Both producers and miners are highly dependent on **commodity prices**, which they cannot control. So, any valuation should consider different scenarios for the long-term prices.

2. Walk me through the valuation of a steel producer in the base metals/bulk commodities segment (i.e., this company produces steel but does *not* mine the raw materials).

You would forecast this producer's financials based on its production capacity, utilization rate, and average realized product prices. You would assume a gross margin on each sale and use the employee count and other operating expenses to drive the overall operating margin.

This type of company is very CapEx-intensive, so you would forecast Maintenance CapEx for its existing factories and Growth CapEx for the new ones it plans to build, which will boost its production capacity.

You would use these assumptions as inputs to the DCF and build scenarios for the commodity prices and margins or sensitize them heavily.

You would select comparable public companies and transactions via the normal criteria (industry, geography, financials, and dates for the transactions) and use multiples such as TEV / EBITDA and P / E.

3. Your VP reviews your valuation of this steel producer and says that you should use TEV / NOPAT rather than TEV / EBITDA to value the firm. Is he correct?

It depends on the purpose of this valuation. If you want to reflect differences in tax rates and *indirectly* reflect each company's capital intensity (since NOPAT is based on EBIT, which deducts D&A), then TEV / NOPAT is a better choice.

So, if these factors heavily influence these companies' values, your VP may be correct.

EBITDA ignores the tax rates and the reinvestment required for maintenance and growth, which is useful if you want to normalize companies with very different policies but not ideal if you want to factor these into the valuation.

4. Walk me through a NAV model for a gold mining company.

First, split the company into "developed mines" and "undeveloped/potential mines" and assume the existing mines continue to produce until they are no longer economically feasible.

Assume the company spends CapEx to develop the new mines, forecast the development time and eventual production volume for each one, and assume that production peaks and eventually declines to near 0.

To forecast revenue, build a price deck with different long-term gold prices, such as High/Base/Low cases, based on the historical price levels.

CapEx should be linked to the individual mines, while the OpEx might have a fixed per-mine component and a larger variable component linked to the production volumes.

Aggregate the cash flows from all the mines, add corporate overhead, and use these to estimate the company's cash flows over the next few decades. There is no Terminal Value since you forecast production until the mines cease economically feasible production.

Discount the cash flows to Present Value, add them, and add/subtract the usual bridge items to calculate the Net Asset Value, which you can compare to the company's Current Equity Value.

The Discount Rate is often set to some industry-standard level, such as ~5% for gold or ~8 – 10% for copper. You might also add a risk premium for emerging/frontier markets.

5. Can you explain the differences between Reserves and Resources and Measured, Indicated, and Inferred Resources?

Mining companies split their minerals into "Reserves" and "Resources."

Reserves have a higher probability of successful recovery, and they're divided into the "Proved" and "Probable" categories.

Resources are a broader category that **includes** all the Reserves but also more speculative mineral deposits with a lower probability of successful, economically feasible extraction.

The Proved and Probable Reserves roughly correspond to "Measured Resources."

The more speculative Resources categories are Indicated and Inferred; some "Indicated Resources" may be part of the Probable Reserves, but Inferred Resources are separate.

When you build a NAV model for a mining company, you need to decide which Reserve or Resource category to use in the baseline assumptions, and you should risk-adjust if you include the more speculative ones.

6. While it is possible to value mining companies using traditional TEV / EBITDA and P / E multiples, there are other options. Which industry-specific multiples are common in the mining sector, and why do you use them?

The most common alternative multiples are P / NAV (Equity Value / Net Asset Value), TEV / Resources, TEV / Reserves, and P / CF (Equity Value / CFO or FCF).

The NAV, Resources, and Reserves multiples are common because companies in this sector trade based on "how much stuff" they have in the ground and what the future cash flows from producing it might be worth today.

The P / CF multiple is common because it reflects the company's CapEx, Taxes, and Change in Working Capital, unlike EBITDA (though this depends on the specific type of "cash flow" used).

7. You're comparing two sets of comparable companies: Pure-play gold miners and pure-play copper miners. How would you expect their valuation multiples to differ? Why?

If both sets of companies are about the same "size" in terms of Reserves and Annual Production and they operate in similar regions, you would expect the **pure-play gold miners** to trade at premium P / NAV multiples (e.g., 1x or above vs. under 1x for copper miners).

Unlike base metals, which are mostly used for industrial purposes, gold is primarily used as a "store of value" and inflation/geopolitical hedge, so its demand is perceived to be more stable, which boosts gold miners' valuations.

Also, gold is one of the most expensive metals (even next to other precious metals), which contributes to miners' premium valuations, as irrational as this may sound.

8. Why do you create and use "equivalent" metrics, such as "Au Eq." for gold or "Cu Eq." for copper?

You use these metrics when you're analyzing one company that mines different metals or you're comparing companies with different metal mixes. They let you "convert" from several different metals into a single "type" for comparison purposes based on the current dollar values of these metals.

For example, if a company has 1,000 ounces of gold and 10,000 pounds of copper, and prices are currently $2,000 per ounce for gold and $4.00 per pound for copper, the "Gold Equivalent" resources are 1,000 + 10,000 * $4.00 / $2,000 = 1,020 ounces.

9. How would you select a set of comparable public companies in the mining sector?

You still screen based on industry, geography, and financial criteria, but for the financial criteria, you should use Resources, Reserves, or Annual Production rather than metrics such as Revenue or EBITDA.

Also, you might use a wider geographic screen than usual, such as "the Americas," because many mining companies operate globally across developed and emerging markets.

Finally, you should screen by **primary metal type** for the industry criteria or select other diversified miners if you're valuing a diversified miner.

10. Would you expect NAV growth and P / NAV to have a strong correlation for mining companies?

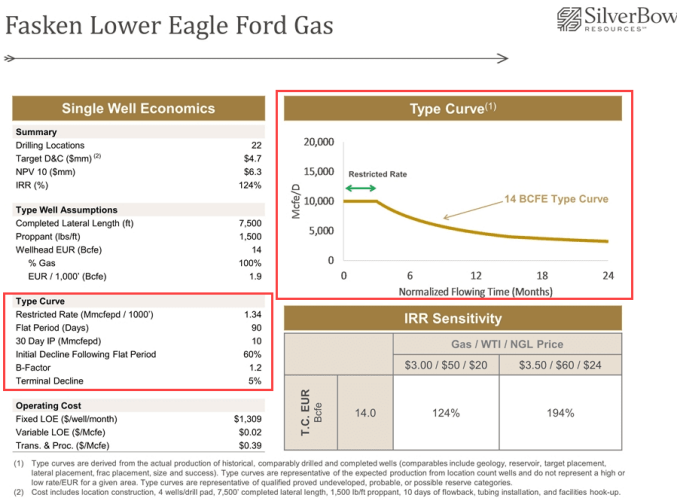
No, probably not. The issue is that NAV growth in a set of comparable public companies only measures short-term changes over one or several years, but a NAV model is based on the company's cash flows for *decades* into the future. Small variations in growth rates over 1 – 2 years barely make a difference in projections extending for 50 or 100 years.

Return to Top.

Oil & Gas

Oil & gas investment banking is arguably more specialized than mining, with more verticals and accounting/valuation differences.

If you're interviewing with an O&G team, it helps to be familiar with the basic concepts, such as the NAV model for E&P companies and valuation differences in the other verticals, but you're unlikely to get detailed technical questions unless you have previous work experience.



We have presented a mix of basic and more advanced questions here because the existing M&I article about this group already covers a lot.

1. What are the main verticals in oil & gas, and how does valuation differ in each one?

The main verticals are exploration & production (E&P) or "upstream" companies, storage & transportation or "midstream" companies, refining & marketing or "downstream" companies, oilfield services, and integrated oil & gas firms.

Valuation is the most different in the E&P vertical because companies cannot control oil/gas prices, they operate based on depleting assets, they are highly cyclical, and accounting standards differ.

To value E&P companies, you normally use the NAV model, a variant of the DCF built at the asset level and with no Terminal Value, along with multiples such as TEV / EBITDAX, TEV / Proved Reserves, and TEV / Daily Production.

Valuation in most other verticals is standard, but the key drivers and KPIs differ.

Midstream is the second most different after E&P because many firms are structured as Master Limited Partnerships (MLPs). MLPs are pass-through entities (no corporate-level taxes) that **distribute** a high percentage of their distributable cash flows and constantly issue debt and equity (since they do not maintain significant cash balances).

Valuation may use standard multiples such as TEV / EBITDA, but yield and cash flow-based multiples are also common, and the Dividend Discount Model may be used in place of the DCF.

2. Walk me through a NAV model for an E&P company.

Start by splitting the company into "existing production" and "undeveloped regions," and assume that its existing oil & gas production declines until its Proved Developed Reserves are no longer economically feasible.

In the undeveloped regions (Proved Undeveloped Reserves and, if you want to be more speculative, Probable and Possible Reserves), assume the company drills X new wells per year until its current inventory is exhausted decades into the future.

Assume that each new well starts producing at its "IP Rate" (Initial Production Rate) and declines over time until its total cumulative production reaches the average EUR, or Estimated Ultimate Recovery, for wells in the region.

Build scenarios for commodity prices, such as high/mid/low for oil, gas, and natural gas liquids (NGLs), and use these to forecast revenue based on the production volume * average commodity price.

Most of the company's CapEx is linked to *new wells* in the form of "Drilling & Completion" (D&C) Costs, but some maintenance and general corporate CapEx is also required. Operating Expenses consist of Production Taxes, Lease Operating Expenses (LOE), and Transportation Costs.

Aggregate the cash flows from all the wells to create a cash flow roll-up and factor in Cash Taxes and the value of G&A and Corporate Overhead at this level.

Discount the company's cash flows to Present Value at the industry-standard 10% Discount Rate (there is no Terminal Value), add them up, and then add Cash, undeveloped acreage, and the values of other businesses, and subtract the TEV bridge liabilities such as Debt and Preferred Stock to calculate the Net Asset Value.

You can then compare this NAV to the company's Current Equity Value (or do so on a per-share basis).

3. You are analyzing a new oil well with a 12-month IP rate of 1,000 Barrels of Oil per day. The EUR is 1 million Barrels, the Decline Rate is 20%, and the D&C Costs are $10 million. The production company has an 80% Working Interest in the well and must pay a 10% Royalty on sales.

Walk me through the IRR calculation for this specific well.

To calculate the IRR, you need the upfront investment, which is the $10 million D&C Costs here. But since the company has an 80% Working Interest, it's $8 million.

After that, you forecast production, which starts at 1,000 * 365 = 365,000 Barrels of Oil per year and then declines by 20% per year.

You reduce the remaining amount of oil by 365,000 Barrels in the first year and then keep reducing it by the annual production until it reaches ~0.

Multiply the annual production by the assumed oil price(s) to determine revenue and distribute 10% to the Royalty holder and 20% to the Working Interest holder that owns the other 20%.

To calculate the pre-tax cash flows, deduct expenses such as the Lease Operating Expense (LOE), Production Taxes, and Transportation/Processing Costs, and multiply each by the same 80% to reflect the Working Interest.

If you want to factor in corporate-level taxes, multiply each pre-tax cash flow by (1 – Tax Rate) before feeding it into the IRR calculation; if not, you can use the pre-tax cash flows with the D&C costs as the first negative to represent the upfront investment.

4. You are working with an E&P client company that claims it is undervalued. According to its internal model, its Net Asset Value is $5 billion, but its Current Equity Value is only $3 billion.

The company's Reserve Life Ratio is 7.0, and its Production Replacement Ratio is 80%. Is the company correct about being undervalued?

The most likely issue is that the company is incorporating more than just Proved Reserves into its internal valuation and attributing significant value to the more speculative Probable and Possible Reserves.

This is because the Reserve Life Ratio is based on Proved Reserves / Annual Production, and it's on the low side (below 10.0), while the Production Replacement Ratio indicates the company is producing *more* than it is finding each year. These are both negative signs for the valuation.

So, either the company's cash flow forecast differs significantly from the market's expectations, or it is attributing far more value to its more speculative reserves. The company might be undervalued, but it could also be making overly aggressive forecasts.

5. Can you explain successful efforts and full cost accounting and their valuation impact?

The main difference is that **unsuccessful exploration is expensed** for a successful efforts company but **capitalized and amortized over time** for a full-cost company.

Successful exploration that results in productive oil wells is capitalized under both standards.

Successful efforts companies tend to have lower Operating Income, Net Income, and PP&E, while full-cost companies have higher DD&A (Depletion, Depreciation & Amortization) and more frequent write-downs and impairments to adjust their PP&E values.

To adjust for these issues, you often use the **EBITDAX** metric, which starts with EBITDA and adds back the Exploration expense on the Income Statement to normalize for these treatments.

6. A company is natural gas-dominant and has 10 billion cubic feet equivalent (10 Bcfe) in Proved Reserves. It produces 600 million cubic feet (600 MMcf) of natural gas and 50,000 barrels of oil (50 MBbl) annually. What is its approximate Reserve Life Ratio?

For conversion purposes based on energy content, 1 Bbl of oil = 6 Mcf of natural gas, and 1 MBbl of oil = 6 MMcf of natural gas.

Therefore, 50 MBbl oil = 300 MMcf of natural gas, or 300 million cubic feet of gas.

We can add this to the natural gas production and say the company produces 900 million of "natural gas equivalent," or 900 MMcfe, per year.

The Proved Reserves are 10 Bcfe or 10,000 Mmcfe, so the Reserve Life Ratio is 10,000 / 900 = ~11.1, which you can round to "Just above 11" (**mental math:** 900 * 10 = 9,000 and 900 * 11 = 9,900, and 10,000 is just above this number).

7. How would you select comparable public companies for an E&P company?

You still screen by geography, industry, and financial criteria, but the financial criteria typically relate to the companies' **Proved Reserves** or **Annual Production** rather than Revenue or EBITDA (due to commodity price fluctuations).

You should never compare pure-play E&P companies to integrated/diversified oil & gas companies; if an E&P company operates in other verticals, split it into parts or find other companies with a similar mix.

You must be careful with the geographic screens because of U.S. GAAP vs. IFRS differences, especially around leases; it's normally best not to mix U.S. and non-U.S. companies.

8. How would you value a midstream company, such as an oil & gas pipeline operator?

Forecasts are based on the company's gathering capacity, utilization rate, and average gathering fee, with OpEx based on both capacity and volumes processed; CapEx is linked to maintenance needs for existing pipelines and any expansion efforts.

You can still use a traditional DCF model and multiples such as TEV / EBITDA, but you could also use a Dividend Discount Model since MLPs distribute high percentages of their Distributable Cash Flow.

Also, you could look at slightly different metrics and multiples, such as Distribution Yields, Cash Available for Distribution (CAFD), and P / CAFD; these are important because different amounts might be distributed to the different investor groups (see below).

9. How does the MLP structure used for many midstream companies in the U.S. affect their valuation?

There are no corporate-level taxes if the company complies with the MLP requirements in the U.S., which changes the valuation, and the General Partner / Limited Partner split means that the distributions for each group might differ.

Therefore, the company might be worth *different amounts to different groups* depending on the rules around these distributions, which are specified in the partnership agreement.

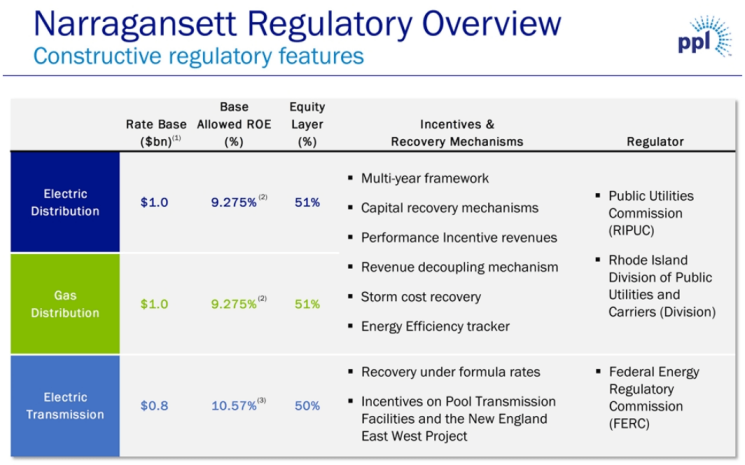
10. How would you value a downstream company like an oil refinery operator?

Valuation is standard and uses the DCF and normal multiples, such as TEV / EBITDA and P / E.

The differences lie in the forecasts: Cash flows are based on factors such as the number of refineries, average capacity, utilization rate, and refining margins.

Return to Top.

Power & Utilities



The Power & Utilities group in investment banking is *somewhat specialized* but far less so than groups like Oil & Gas, FIG, or Real Estate.

You can translate that as: "There are a few valuation, forecasting, and accounting differences, but many of the same methodologies and multiples still apply."

1. Can you explain the main verticals within power & utilities and how valuation differs?

One common split is **regulated utilities** for electricity, gas, and water, **independent power producers** (unregulated), and **multi-utilities** that do a bit of everything.

Unregulated independent power producers are standard companies that buy fuel/raw materials, turn it into electricity, and sell it; some of the metrics differ, but the valuation multiples and approach (e.g., a basic DCF) are the same.

Regulated utility companies are quite different because they operate based on a **Rate Base** (Net PP&E with some adjustments), have an allowed Debt / Total Capital Ratio, and an allowed ROE, so they must "back into" the utility rates they are allowed to charge based on that.

You can still use a DCF to value them, but alternative multiples, such as TEV / Rate Base and TEV / Power Capacity (in $ per MW), are common; multiples such as P / BV and P / TBV are also important due to the Equity contribution to the Rate Base.

2. Walk me through how you would determine the rates charged by a *regulated* electric utility company with the following profile (financials are in millions):

- **Rate Base: $2,000**
- **Allowed Debt / Total Capital: 50%**
- **Authorized ROE: 12%**
- **Pre-Tax Cost of Debt: 6%**
- **Operating & Maintenance Expense: $60**
- **Depreciation: $20**
- **Electricity Sold: 1,500 GWh**

To create this forecast, start with the company's Equity and ROE and "back into" the rate it can charge customers.

In this case, the Rate Base is $2,000, and the Debt / Total Capital is 50%, so the company has $2,000 * (1 – 50%) = $1,000 in Equity. A 12% Authorized ROE means the "allowed" Net Income is $1,000 * 12% = $120.

Assuming a 25% tax rate, the Pre-Tax Income is $120 / (1 – 25%) = $160.

The company has $1,000 of Debt and pays 6% interest per year on it, so we add the $60 of Interest to this $160 and then add the O&M of $60 and Depreciation of $20. $160 + $60 + $60 + $20 = $300 million since the financials are all in millions.

Therefore, this company can charge $300 million / 1,500 GWh, or $0.20 / kWh (**mental math:** the financials are in millions, but gigawatts are in billions; if you divide 1 million by 1 billion, you should get 1,000 in the denominator, corresponding to kilowatts. Also, 300 is 20% of 1,500, so the result of the numerical division should be 0.20).

3. What advantages do multiples such as TEV / Rate Base or TEV / Power Capacity provide over TEV / EBITDA?

Essentially, these multiples let you analyze power & utility companies based *primarily* on their ability to distribute and transmit electricity/gas/water, independent of their capital structures, operational spending, and local regulations.

Yes, TEV / EBITDA is supposed to be "capital structure-neutral," but it's *not quite that way* in this sector because companies' Net Incomes are constrained by their Equity and Authorized ROE – which reflects capital structure and regulatory decisions. EBITDA is strongly linked to Net Income as a result.

EBITDA might be better if you *do* want to factor in these issues because they are important value drivers for the comparable companies in your set.

4. Suppose you are valuing a regulated multi-utility company that distributes electricity, gas, and water. If you built a Sum-of-the-Parts valuation for it, which segment would you expect to be valued at the highest multiples?

It's impossible to answer this question without knowing each segment's Rate Base, capital structure, and Authorized ROE.

Generally, you would expect the segment with the highest ROE to be valued at the highest multiples because a higher ROE means margins and growth can be higher.

If these numbers are similar for each segment, you would expect the one with the lowest operating costs to be valued at the highest multiples because it has more scope to increase its rates eventually.

You would also have to factor in each segment's expansion plans and CapEx requirements because, as in other sectors, higher growth in the fundamentals (Rate Base and Power Capacity) should drive higher valuations.

5. Would you expect an independent power producer (IPP) to be valued at higher or lower multiples than a regulated utility focusing on distribution?

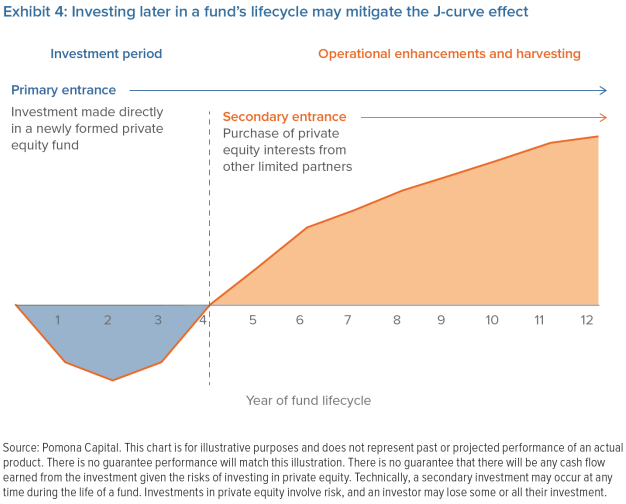
It depends on the current market environment. If power prices are relatively high and fuel costs and sources are reasonable, the IPP will benefit disproportionately because it is not constrained by an "Authorized ROE" and can charge whatever rates it wants.

But when power prices fall, or fuel prices increase by more than electricity (i.e., the "gross utility margin" or "spark spread," "dark spread," or "quark spread" falls), IPPs tend to do poorly because the lack of regulated prices hurts their profits.

In short, IPP firms tend to have higher Betas than regulated utilities.

Return to Top.

Private Capital Advisory (Secondaries)



The Private Capital Advisory group within investment banks facilitates all types of "secondaries," i.e., deals in which a private equity firm sells a stake in a fund or a specific portfolio company to another PE firm.

Depending on your group's focus (GP-led vs. LP-led), you can expect to work on company-level deals, similar to M&A, or fund-level transactions, which require a different skill set.

1. How do LP-led and GP-led secondaries transactions differ?

Both types of transactions relate to buying stakes in *existing funds or assets* rather than investing capital in a new fund that is currently raising money.

In an LP-led deal, one investor buys a stake in *an entire fund*, such as a $50 million commitment that a pension fund wants to sell out of a $6 billion total fund commitment. This requires both a fund-level analysis and a review of each asset the fund holds.

In a GP-led deal, the investor buys *specific assets* from an existing fund, such as 1 – 2 portfolio companies. The GP first sets up a **continuation fund** to transfer the asset(s), and the secondary investors provide capital to that continuation fund. The continuation fund then uses this capital to purchase the asset(s) from the existing fund, and existing LPs have the option to reinvest their proceeds from this sale into the continuation fund if they want to continue owning stakes in these assets.

2. You are evaluating a $100 million commitment in a private equity fund with a 2.0x TVPI multiple, a 0.2x DPI, and a 1.8x RVPI. What factors could influence the pricing of this stake?

First, it depends on the **timing** of the fund. If this is a growth-oriented fund early in its lifecycle, such as Year 3 of 10, it might be acceptable to have a total value heavily skewed toward unrealized gains. On the other hand, if it's a mature fund near the end of its lifecycle, these multiples suggest that it may be exaggerating its performance.

Second, it depends on **asset-level performance and valuation**. For optimal pricing, each asset should demonstrate strong performance and use valuation multiples in line with comparable public companies and transactions; for a secondaries investor to earn a 1.5x multiple, the fund must eventually reach a 3.0x TVPI, which requires a substantial valuation increase.

Third, it depends on the **GP's track record**. Some GPs consistently generate 2.5 – 3.5x TVPI through their funds, while others are less consistent with performance and valuations. A stronger track record and more conservative valuation history would improve the pricing of this stake.

3. Why might a PE fund's Limited Partners liquidate their stakes early, even if the fund has performed well?

First, there can be a **denominator effect**, where an institution is overly exposed to private equity because public market valuations have recently fallen; institutions often rebalance their portfolios by selling PE fund stakes in this scenario.

Second, there may be **investor-specific reasons**, such as a change in the head of investments at an institution, which often triggers the divestment of non-core positions and the liquidation of PE fund stakes.

Finally, there might be a **strategy shift** because of new targeted returns or bureaucratic/political reasons, such as reducing PE exposure due to recent negative news.

4. Why might the GPs of a PE firm set up a continuation fund?

The most common reasons for setting up continuation funds include:

1) **To return capital** to the existing LPs.

2) **To extend the harvest runway on a performing asset** – This allows the GP to continue creating value and generating returns from a strong-performing asset instead of selling early due to the normal fund timeline.

3) **To enhance carry opportunities and annual fee revenue** – Continuation funds typically reset fund economics, allowing the GP to earn additional management fees and carried interest.

4) **To facilitate further value creation through new unfunded commitments** – This is especially useful when a company is planning large follow-on investments or add-on acquisitions.

5) **To introduce new LPs to continuation funds** – This is useful because many investors have both secondary and primary funds.

5. From a banker's perspective, what are the differences between LP-led and GP-led secondaries transactions?

GP-led transaction processes are like typical M&A processes, where advisors help the GPs create marketing materials, conduct financial analysis, find potential buyers, and coordinate the processes to close deals.

Therefore, fees are high, and the deals can be somewhat cyclical, depending on the M&A and IPO markets. There tends to be a higher volume of GP-led transactions when there is a lot of dry powder, and markets are stable/certain.

LP-led transactions are more of a "volume business," in which advisors act like middlemen between the buyers and sellers.

Bankers still coordinate processes and due diligence but do **not** create company-specific teasers, CIMs, or company-level models.

Fees are lower, but transaction sizes are often quite large, and the LP-led transaction volume may be more stable because there tends to be consistent demand from sellers and buyers regardless of the market cycle.

Return to Top.

Private Companies

The "Private Companies" category spans a *huge* range of firms, from companies that are so large they could be public (e.g., SAS Institute) to high-growth tech startups to your local coffee shop.

Most of the accounting and valuation differences apply to "small business" private companies, as they are much riskier than public companies and have much more uncertain cash flows.

We cover the startup-oriented questions, such as SaaS metrics, in the section on TMT.

1. How are private companies different from public companies?

Private companies do not have shares you can buy and sell on the stock market; as a result, their liquidity is far lower, and they don't have the same reporting requirements as public companies.

Private companies often have **non-standard financial statements** that you must adjust, and you often **discount their valuations** due to a lack of liquidity, dependence on key people, and, in some cases, a much smaller size than public companies.

In M&A and leveraged buyout deals, the purchase price for a private company is linked to an Enterprise Value-based valuation multiple rather than a share-price premium, and deals are typically done on a cash-free, debt-free basis. Part of the price may also be deferred or contingent on future performance.

2. How might you adjust a private company's financial statements in a valuation or deal analysis?

First, note that you make major adjustments mostly for "small business" private companies; venture-backed startups and large, established private companies should already have GAAP/IFRS-compliant statements.

For small businesses, you often re-classify revenue and expenses into more standard categories (e.g., Revenue, COGS, SG&A, R&D, and S&M), you re-classify the "Owner's Draw" or "Dividends" as employee compensation, and you remove intermingled personal expenses.

You may also apply a different tax rate, such as the acquirer's or the standard rate for public companies in the country, if the small business has been paying taxes at the owner's personal rate.

Finally, you might apply a "Key Person Discount" to the future cash flows under the assumption that the most important person(s) might leave in the future, resulting in lower sales.

3. At a high level, how is private company valuation different?

Assuming you are valuing a "small business," you start the valuation *after* making the financial statement adjustments described in the previous question.

In the valuation itself, you often **discount** the output of certain methodologies because private companies have illiquid shares, tend to be smaller than public companies, and are often dependent on key individuals.

This translates into literal discounts on the multiples from the Public Comps (e.g., 20 – 40% reductions), a higher Discount Rate in the DCF, and a "haircut" Terminal Value to reflect the risk of the company shutting down or declining.

True small businesses are worth significantly less than public companies with Boards and professional managers, so the EBITDA and cash flow multiples should be much lower.

You would **not** make these adjustments to the same degree for VC-backed startups or large/mature private companies.

4. How does the WACC calculation change for a private company?

You still calculate the Risk-Free Rate, Equity Risk Premium, Cost of Debt, and Cost of Preferred Stock in the same ways.

If you cannot determine the Cost of Debt from the firm's filings, you could use the comparable public companies' costs or estimate its credit default spread and add it to the Risk-Free Rate to estimate the Cost of Debt.

The Cost of Equity calculation changes because private companies do not have share prices or market caps, and their Equity tends to be riskier than public companies'.

So, you often use higher values for Beta when calculating the Cost of Equity (i.e., you may add a risk or illiquidity premium), and you use the median capital structure of the comparable public companies when re-levering Beta and calculating WACC.

Private companies do not have easy-to-determine current capital structures or historical Betas, so you must rely on the data from comparable companies.

5. How might the acquisition of a private company be different from a public company deal?

You still combine the financial statements, create Goodwill based on the Equity Purchase Price minus the seller's Book Value (and other adjustments), factor in the new shares, new interest on Debt, and foregone interest on Cash, and calculate EPS accretion/dilution.

The main difference is that **the purchase price is based on a multiple**, such as TEV / EBITDA or TEV / Revenue, instead of a share-price premium. Also, deals are typically done on a **cash-free, debt-free basis**, with the Sources & Uses schedule based on the Purchase Enterprise Value.

Buyers frequently use "Earnouts" to defer some of the purchase price and make it contingent on the seller achieving certain financial goals.

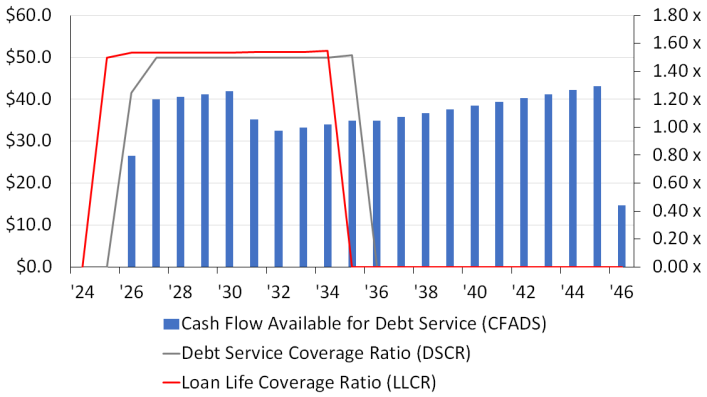
Terms such as Escrows and Management Retention Pools are also common in many private company acquisitions for similar reasons: The Buyer wants to reduce the risk and ensure the management teams of both companies are aligned.

Return to Top.

Project Finance & Infrastructure

Project Finance deals with the debt funding for infrastructure assets, such as power plants, airports, toll roads, and mines. It's like DCM or LevFin but for *these assets specifically*.

Meanwhile, **infrastructure investing** is about the equity side: Firms raise capital from outside investors and then use it to acquire existing infrastructure assets and develop new ones.



These groups are highly specialized, just like FIG, Oil & Gas, and Real Estate, so we have a separate course that covers the topic and includes more detailed questions.

1. How does Project Finance differ from Corporate Finance?

Here's a complete answer in tabular format:

	Corporate Finance	Project Finance
Types of Assets:	Entire companies (full financial statements)	Infrastructure assets (Power plants, toll roads, airports, utilities, natural resources, etc.)
Legal Structure:	C-Corporation (or equivalent outside the U.S.), where all Debt and Equity is at the company level	A "Special Purpose Vehicle" (SPV) isolates each asset and its Debt from the rest of the company
Time Frame:	Typically, 3 – 5 years for the projected period	Often several decades (or more!) depending on the asset type
Model Structure:	Income Statement, Balance Sheet, and Cash Flow Statement with supporting schedules	"Cash Flow Only" with supporting schedules for the Debt, CapEx, Reserves, etc.
Debt Usage:	Typically based on a multiple of EBITDA or a % of the total purchase price	Linked to ratios such as the DSCR or LLCR and sized and sculpted to match the asset's cash flows
Terminal Value:	Usually substantial since most companies are assumed to last indefinitely	Does not exist for many assets because they degrade over time and need to be rebuilt

2. Walk me through an acquisition model for a "brownfield asset" that already exists.

You start by making assumptions for the purchase price, start/end dates, and timeline, including "flags" for different operational phases.

Then, you forecast the revenue, expenses, and cash flows, which are linked to drivers such as the electricity generated, ore mined, or traffic throughput, and you focus on the "Cash Flow Available for Debt Service" (CFADS), defined as EBITDA – Cash Taxes – Maintenance CapEx +/- Change in Working Capital +/- Reserve Contributions and Withdrawals.

Next, you size and sculpt the Debt, typically based on a minimum Debt Service Coverage Ratio (DSCR) or Loan Life Coverage Ratio (LLCR). You "back into" the starting Debt based on the Debt Service in each period and its maturity (i.e., the date on which the balance should reach $0).

Finally, you calculate the returns by deducting the Debt Service from the CFADS to determine the Cash Flow to Equity in each period; the IRR and MOIC calculations are based on these numbers and the initial Equity investment.

3. How does the modeling process differ for a "greenfield asset" that does not yet exist?

Most of the process above is the same, but there are additional steps in the beginning to forecast the development period, including the Debt and Equity the sponsor draws on to complete the construction. Interest and fees in this period are normally capitalized to the Construction Loan balance or paid for with Equity since no cash flows exist to fund them.

Once the development is done, you assume the Construction Loan is refinanced and replaced with a "Permanent Loan," typically sized and sculpted based on the targeted DSCR or LLCR.

Also, the initial Construction Loan's size may be linked to this Permanent Loan so that the refinancing does not impact net cash flow.

4. How would you forecast the revenue and expenses for an individual power asset, such as a natural gas plant?

The top-line driver is the plant's **Capacity**, typically measured in Megawatts (MW) or Gigawatts (GW). The **Energy Generation** is then based on the Capacity * Hours in Period * Capacity Factor, which is often ~50%+ for gas plants (i.e., they produce electricity for about half the day).

Revenue is based on a mix of **Capacity Payments** (fixed) and **Energy Payments** (variable); the baseline rates and escalations are often specified in power purchase agreements (PPAs).

Expenses include labor, operations & maintenance, and natural gas fuel costs. Labor and fuel costs are variable, while the O&M expense is usually linked to Capacity and an escalation factor.

Besides that, there are also Depreciation and Interest expenses, Taxes, and items such as Maintenance CapEx and the Change in Working Capital; these tend to be linked to Revenue, Capacity, or the purchase price and Debt used in the deal.

5. Consider three infrastructure assets: An airport, a utility-scale solar plant governed by a 10-year PPA, and a utility-scale solar plant governed by merchant pricing.

How would you compare the risk and potential returns of each one?

The solar plant governed by a 10-year PPA has the **lowest** risk and potential returns, the solar plant governed by merchant pricing has **higher** risk and potential returns, and the airport has the **highest** risk and potential returns.

A PPA locks in electricity prices and escalations at certain levels over many years, reducing the risk if market prices fall and limiting the upside if they increase.

With merchant pricing, electricity prices are linked to the market rates, which means greater potential upside and downside.

The airport has the highest risk and potential returns because even a small airport is vastly more complex to build and operate than any solar plant, and delays and budget overruns are extremely common.

However, the potential upside is also higher because airports can increase their passenger traffic and fees at any rate; they are not “locked into” specific growth rates. They can even expand by adding new terminals and runways if there's enough demand.

6. Why is Debt often “sized and sculpted” based on the future cash flows of assets in the infrastructure sector?

Many assets in this sector have **predictable cash flows** due to contracts such as power purchase agreements (PPAs) that lock in prices and even volumes in some cases.

Also, linking the Debt size, interest, and principal repayments to the future cash flows **reduces the risk** for lenders and aligns the interests of all parties: There’s more repayment when cash flows are stronger and less when cash flows are weaker.

Equity investors also favor this approach because, in most cases, it means they can use more Debt to fund their deals, which increases their returns *if the deals perform well*. They can use more Debt because this approach gives the asset "credit" for its future cash-flow growth.

7. What are the DSCR and LLCR, and how do you use them in this Debt sculpting/sizing process?

The DSCR equals the Cash Flow Available for Debt Service / (Interest Expense + Scheduled Principal Repayments + Other Loan Fees), and it represents how easily the asset's cash flows can pay for the required Debt Service in each period.

CFADS definitions vary, but it normally equals EBITDA – Cash Taxes – Maintenance CapEx +/- Change in Working Capital +/- Reserve Contributions and Withdrawals.

The LLCR is the Present Value of the CFADS Over the Loan's Remaining Tenor / Current Debt balance.

In PF models, you use the DSCR and LLCR to size the initial or refinanced Debt balances, "stress test" models, and assess the risks of budget overruns, delays, and operational problems.

8. If you can use simple formulas to sculpt and size the Debt based on the DSCR and LLCR requirements, why are they complex to implement in Excel?

First, there's an **inherent circular relationship** if you're using after-tax numbers and factoring in the Interest tax deduction (the future cash flows determine the Debt balance, but the Debt balance also determines the future cash flows due to the Interest deduction); you can use Goal Seek or VBA to resolve this.

Second, the issuance and maturity dates and interest rate on the Debt may vary, making it more complicated to size the Debt based on the proper discount factors.

Finally, additional features like Cash Flow Sweeps, Refinancings, Debt Service Reserves, and a Revolver could affect the cash flows and Debt Service in each period, making the exercise more difficult.

9. From a lender's perspective, how would you evaluate infrastructure assets and determine "worst-case outcomes"?

You normally consider **everything that could go wrong** with an asset and create scenarios to assess the cash flow reduction and its impact on the initial Debt balance you would fund.

For example, for a solar development, you might assume cost overruns or delays during construction, higher-than-expected expense inflation, or availability problems resulting in operational downtime. A "worst case" scenario might combine all these to greatly reduce the asset's cash flows.

If the Debt is not sized/sculpted based on future cash flows, this might look more like a traditional credit analysis, where you examine the covenants against future downside case performances.

10. Why do Construction Loans create circular references in models, and how can you avoid or eliminate them?

A Construction Loan creates circular references because the Issuance and Commitment Fees depend on the maximum Loan size, but the maximum Loan size depends on these fees because they're capitalized to the loan principal during construction and represent part of the total funding required for the asset.

You can resolve this by ignoring the fees and interest during construction (IDC) in the Max Loan Size calculation or, more accurately, by using a copy/paste macro to feed the hard-coded Total Development Costs (including the fees and IDC) into the model.

Using the average Construction Loan balance to calculate the IDC also creates circular references, but you can easily avoid this by using the beginning balance in each period.

Return to Top.

Real Estate (Properties)

The questions in this section are about **individual properties** – not entire real estate companies, REITs, homebuilders, gaming/lodging companies, or anything else like that.

Therefore, they are more relevant for roles at real estate private equity, real estate lending, and real estate development firms. If you're interviewing with a real estate investment banking team, it helps to know the basics, but you're more likely to get questions about REITs.

1. Explain the main property types and how they differ.

Here's a summary table:

	Office/Retail/Industrial	Multifamily	Condominiums	Hotels
Customers	▪ Businesses	▪ Individuals	▪ Individuals	▪ Individuals
Lease Type	▪ Long-term (several years); details vary	▪ Medium (1 year?); very similar leases	▪ N / A – Ownership	▪ Short (days); very similar terms
Timing of Lease or Sale	▪ After building is done	▪ After building is done	▪ Pre-sold	▪ After building is done
Purpose	▪ Business	▪ Residential	▪ Residential	▪ Business or leisure

The main types are office, industrial, retail, and multifamily properties; others include condominiums, hotels, and variants like data centers and healthcare properties.

Office, industrial, and retail properties have businesses as tenants and offer long-term leases of 5 – 10 years. The lease terms are highly variable and often include different rental rates, rental escalations, free months of rent, expense reimbursements, and tenant improvements.

Industrial properties can be constructed more quickly and tend to have fewer tenants, while office and retail properties take more time and money and tend to have more tenants.

Multifamily properties have individuals as tenants and offer short-term leases of 1 year in most cases, with uniform lease terms except for the rent.

Hotels are even shorter-term than multifamily, with guests that stay for an average of a few days; daily rates are based on the room sizes.

Finally, condominiums are different from everything else because they are sold to individuals rather than rented out, and developers typically aim to pre-sell them during the construction period to reduce risk.

2. What is a property's Net Operating Income, and why is it important?

Net Operating Income, or NOI, represents the property's **cash flow from operations on a capital structure-neutral basis before most of the capital costs** ("most" because the treatment of the Reserves is inconsistent).

NOI equals the property's revenue minus operating expenses and property taxes, and it **excludes** interest expense, debt principal repayments, and capital costs such as Tenant

Improvements, Leasing Commissions, and Capital Expenditures (but it may partially reflect these if you deduct the Reserves when calculating it).

Also, NOI *excludes* corporate-level taxes because properties are typically owned by pass-through entities such as partnerships, REITs, or LLCs that pass on income and gains and losses to individual shareholders, who will be taxed at their personal rates.

NOI lets you compare and value different properties, like EBITDA for normal companies.

3. What is the "Cap Rate," and how do you use it in real estate?

The Cap Rate, or Capitalization Rate, equals the **stabilized forward NOI of a property divided by its price** (the asking price or the actual sale price). For example, if the property generates $5 million in NOI next year and its asking price is $100 million, the Cap Rate is 5%.

The Cap Rate is the reciprocal of a valuation multiple; this 5% Cap Rate corresponds to a 20x multiple since 1 / 5% = 20.

You use the Cap Rate to determine the purchase price and exit price of a property in investment analysis.

Typically, you calculate the property's NOI, select a range of Cap Rates based on market data for similar properties in the area, and apply those rates to estimate this property's value.

4. How can property acquisitions use 60% or 70% leverage? Private equity firms do not use that much leverage for normal companies in leveraged buyouts.

A few factors explain this:

- **High Margins and Cash Flow Yields:** Many properties have NOI margins (the rough equivalent of EBITDA margins) of 50%+ and high and predictable cash flow yields due to low ongoing CapEx requirements.

- **Long Amortization Periods:** Even if an investor only plans to hold a property for 5 – 10 years, the real estate loan might amortize over 20 – 30 years, which reduces the total debt service each year.

- **Special Terms:** Many real estate loans have "interest-only periods" in the first few years that further reduce the total debt service when the property's NOI is lower.

As a result, the Debt Service tends to be manageable even if a deal uses 60% or 70% leverage (and even higher numbers are possible in some deals).

5. Walk me through a property Pro-Forma and explain what it tells you.

Assuming this is an office, industrial, or retail Pro-Forma, you start at the top with the **Base Rental Income**, which represents the total potential rental income if the property were 100% occupied at market rental rates.

Then, you adjust for items such as the Absorption & Turnover Vacancy, Concessions & Free Rent, Expense Reimbursements, Loss to Lease, General Vacancy, and Percentage Rent, all of which bridge the gap between potential income and actual income, known as **Effective Gross Income or EGI**.

Then, you deduct Operating Expenses such as Management Fees, Maintenance & Repairs, Utilities, Insurance, Property Taxes, and the Capital Cost Reserves. EGI minus Operating Expenses equals **Net Operating Income or NOI**.

You then deduct the capital costs, such as Capital Expenditures, Tenant Improvements, and Leasing Commissions, to calculate the Adjusted NOI, and you deduct the Debt Service to calculate the **Cash Flow to Equity Investors**.

The Pro-Forma is a combined Income Statement and Cash Flow Statement for a property that shows its historical and projected cash flow and ability to service Debt; the NOI line item also tells you what the property might be worth in an exit.

6. How do NOI, Adjusted NOI, and Cash Flow to Equity differ?

Net Operating Income, or NOI, represents the property's **cash flow from operations *before* Debt Service and most capital costs** ("most" because Reserves are treated inconsistently).

Adjusted NOI equals NOI minus Net Capital Costs (i.e., TIs, LCs, and CapEx netted against the Reserves used to cover them). It's *after* the full operational expenses and capital costs but *before* the Debt Service.

Cash Flow to Equity equals Adjusted NOI minus the Cash Debt Service (Cash Interest and Debt Principal Repayments). It's the "bottom line" because it represents what's available for distribution to the Equity Investors.

All these metrics exclude corporate taxes because properties are normally owned by pass-through entities (see question #2 above).

7. Walk me through a property development model (i.e., one where a new property is constructed and eventually sold).

You start by setting up assumptions for the total amount of land to purchase, the construction costs, and the **Debt and Equity** to use (for example, Debt might fund 50% of the total costs).

Then, you project the **construction costs** and initially draw on Equity to pay for them. Once you reach the maximum Equity, you switch to the Construction Loan and assume that interest and loan fees are capitalized during this construction period.

Once the construction period finishes, you assume that the Construction Loan gets **refinanced** with a Permanent Loan, and you project the "lease-up period," during which individual tenants move into the property.

You create the standard **Pro-Forma** for this lease-up period as the property stabilizes, and you project Debt Service on the Permanent Loan to calculate the Cash Flow to Equity Investors.

Then, you assume the property is **sold** based on its forward, stabilized NOI and a range of Cap Rates taken from market data.

You calculate the **IRR to Equity Investors** based on their Equity contributions during the construction period, the refinancing, the annual cash flows, and the sale of the property and repayment of Debt.

8. Walk me through a stabilized property acquisition model.

You start by assuming a **purchase price** for the property based on a Cap Rate or per-square-foot or per-square-meter figure, and you use certain percentages of Debt and Equity to fund the deal.

You then make assumptions for the property's revenue and expenses, sometimes projecting individual tenant leases (for office/retail/industrial properties) and sometimes using higher-level assumptions such as the average rent or ADR (multifamily and hotels).

You forecast the Pro-Forma over several years, project the Debt Service, and assume a future exit based on a Cap Rate and the property's stabilized forward NOI.

Finally, you calculate the returns based on the initial Equity contribution, the Cash Flows to Equity, and the Exit Proceeds after Debt repayment.

9. What are the 3 main valuation methodologies for properties?

The main methodologies are **Cap Rates** (the equivalent of valuation multiples), the **DCF**, and the **Replacement Cost** analysis.

With Cap Rates, you divide the property's stabilized forward Net Operating Income by the selected Cap Rate, which is based on market data and recent sales in the area.

With the DCF, you project the property's Unlevered Free Cash Flow (Adjusted NOI), calculate the Terminal Value, discount everything back to the Present Value based on the Discount Rate, and add the PV of the Terminal Value and the PV of the UFCFs.

With the Replacement Cost methodology, you estimate the cost of building the entire property from the ground up today and compare that to the property's asking price.

10. Explain the waterfall returns schedule and why it is common in real estate.

A waterfall returns schedule splits up the Equity Proceeds from a deal in a way that is **not proportional** to the Equity contributed by each group.

For example, if the Investors contribute 80% and the Developers contribute 20%, normally the Investors earn 80% of the Equity Proceeds, and the Developers earn 20%.

With a waterfall schedule, the Developers might earn 25% or 30% of the Equity Proceeds if the deal performs well enough (based on the overall IRR or multiple).

For example, the Investors and Developers might earn proportionally to their Equity contributed up to a 20% IRR, but the Developers might receive an extra 10% for the returns between a 20% and 30% IRR and another 10% for the returns above that 30% IRR.

These "Promotes" heavily incentivize the Developers to finish on time and within the budget because they earn a much higher IRR if the deal does well, but they don't "cost" the Investors much since they contribute most of the Equity and still earn most of the returns.

Return to Top.

Real Estate Investment Trusts (REITs)

Park Hotels & Resorts Inc. - Net Asset Value (NAV) Model
($ USD in Millions Except Per Share and Per Unit Amounts in USD as Stated)

Balance Sheet:	Units:	
ASSETS:		
Forward Property Net Operating Income (NOI):	$ M	$ 838
(÷) Assumed Cap Rate:	%	7.5%
Market Value of Gross Real Estate Operating Assets:	$ M	**$ 11,168**
Construction-in-Progress:	$ M	79
(x) Market Value Adjustment:	%	120.0%
Market Value of Construction-in-Progress:	$ M	**95**
Cash & Cash-Equivalents:	$ M	293
Accounts Receivable:	$ M	130
Goodwill & Other Intangibles:	$ M	648
(x) Market Value Adjustment:	%	-
Market Value of Goodwill & Other Intangibles:	$ M	-
Other Assets:	$ M	222
Total Market Value of Assets:	$ M	**$ 11,908**
LIABILITIES & EQUITY:		
Debt & Other Borrowings:	$ M	(3,222)
(x) Market Value Adjustment:	%	100.5%
Market Value of Debt & Other Borrowings:	$ M	**(3,238)**
Accounts Payable:	$ M	(167)
Other Liabilities:	$ M	(2,622)
Noncontrolling Interests (NCI):	$ M	49
Net Asset Value (NAV):	$ M	**$ 5,930**
NAV per Share:	$ as Stated	$ 30.01
Current Share Price:	$ as Stated	$ 27.77

Real estate investment trusts (REITs) are entities that operate, buy, develop, and sell real estate assets and pay little-to-no corporate taxes if they comply with certain requirements; dividends are distributed to the shareholders, who are taxed at their personal rates.

Real estate investment banking groups cover REITs and execute many REIT deals, but they also advise other types of companies (homebuilders, gaming/lodging, real estate operating companies, etc.).

However, most of these other firm types are close to "normal companies"; REITs are the ones with specialized accounting, valuation, and financial modeling, so this section focuses on them.

1. How do REITs operate, and what are their main requirements?

REITs operate, acquire, develop, and dispose of properties and continually raise Debt and Equity to fund these activities.

REITs must **distribute a high percentage of their Net Income as Dividends** (90% in the U.S.), earn a high percentage of revenue from real estate-related sources (often 75%+), and maintain a high percentage of real estate-related Assets (often 75%+).

If REITs follow these requirements, **they pay no corporate income taxes** (or very low taxes). In many countries, there are also requirements related to the number of shareholders and the concentration of shareholder ownership.

2. How do you value an Equity REIT?

You still use Comparable Public Companies, Precedent Transactions, and the DCF, but the multiples and approaches differ.

Multiples such as TEV / EBITDA are still valid, but REIT-specific variations like Funds from Operations (FFO), Adjusted Funds from Operations (AFFO), and the **P / FFO and P / AFFO**

multiples are also used for U.S.-based REITs. IFRS-based REITs may be valued based on Book Value and P / BV, along with FFO alternatives such as EPRA Earnings.

Some banks use the Levered DCF to value Equity REITs under the logic that changes in Debt and the Debt Service are more predictable and important for REITs. But the **Unlevered DCF** is also common, and it requires more attention to the CapEx, Debt, and Equity assumptions than in other industries.

Finally, the **Net Asset Value (NAV) Model** is important for U.S.-based REITs; you mark the REIT's entire Balance Sheet to fair market value, subtract Liabilities from Assets, and divide by the share count to calculate the NAV per Share, which you compare to the current share price.

3. Walk me through a NAV Model for a REIT and explain when it is useful.

The NAV Model is **best for U.S.-based REITs** since they do not mark their properties to market value but instead record them at historical cost minus accumulated depreciation. It is most useful when **local property values** in the REIT's regions have changed recently.

In the NAV Model, you start by projecting the REIT's 12-month forward NOI. Then, you divide it by an appropriate Cap Rate to calculate the Market Value of Gross Real Estate Assets.

Next, you project non-rental income and divide it by a higher Cap Rate to value it, and you make minor adjustments to the other Assets and add up everything to get the Market Value of Assets.

Next, you mark the REIT's Liabilities to Market Value, typically adjusting Debt based on current interest rates, and subtract them from the Market Value of Assets to calculate the Net Asset Value.

Finally, you divide this Net Asset Value by the share count to determine the NAV per Share, which you compare to the REIT's current share price.

4. What are the main differences between U.S.-based and IFRS-based REITs?

The biggest difference is that IFRS-based REITs record Fair Value Gains and Losses on their Income Statements and **mark their properties to fair market value** on the Balance Sheet each year, while U.S. REITs **depreciate their properties** based on their historical cost.

As a result, NAV is easy to calculate for IFRS-based REITs but requires data gathering and multiple steps for U.S.-based REITs.

Also, different metrics may be used in place of FFO or AFFO, depending on the region; for example, EPRA Earnings is the equivalent of FFO for European REITs.

5. Why do REITs use Funds from Operations (FFO), and how do you calculate it?

REITs use Funds from Operations instead of Net Income because they constantly buy and sell properties, creating Realized Gains and Losses that make Net Income fluctuate significantly.

Also, Depreciation and the Fair Value Gains and Losses (for IFRS-based REITs) are significant non-cash charges that affect REITs' Net Incomes.

FFO equals Net Income + Real Estate-Related Depreciation & Amortization + Losses / (Gains) + Impairments; it's an improved version of Net Income that removes these non-recurring and non-cash items.

6. How would you compare a Dividend Discount Model (DDM), Unlevered DCF, and Levered DCF for valuing a REIT?

Both the DDM and the Levered DCF **take more time and effort** to set up than an Unlevered DCF because you must project more than the REIT's Unlevered Free Cash Flow – you also need to forecast its Debt and Equity balances and Interest Expense so that you can calculate its Net Income, FFO, and Dividends.

These analyses won't necessarily produce "better" or more consistent results than the Unlevered DCF, especially since they require more assumptions.

However, **they may be better in certain cases**, such as if the REIT's Dividends fluctuate significantly over time (an Unlevered DCF does not capture this nuance).

The Levered DCF and DDM are nearly identical for REITs; the main difference is that in a DDM, you also project FFO and make Dividends a percentage of FFO instead of stopping at LFCF.

7. At a high level, how does a REIT decide to issue Debt or Equity to fund its operations?

Debt is **cheaper** than Equity but has **higher cash costs and comes with restrictions** ("covenants") that limit the REIT's total indebtedness and operational activities. So, companies tend to raise as much Debt as they reasonably can before switching to Equity.

To determine the specific percentages, a REIT estimates its Costs of Debt and Equity and creates operational scenarios to test its compliance with the covenants, such as a maximum Debt / EBITDA, in the different cases.

The REIT might then target the Debt and Equity percentages that allow for covenant compliance while minimizing its Total Cost of Capital (WACC).

8. At a high level, how do REIT M&A deals differ from deals involving normal companies?

Most REIT M&A deals are **100% Stock or majority Stock** because REITs tend to have low Cash balances due to the Dividend requirements; also, most REITs are already highly leveraged and cannot issue much more Debt.

The **Purchase Price Allocation** and **Balance Sheet adjustments** differ because Accumulated Depreciation is eliminated, Real Estate Operating Assets are written up to fair market value, and new Intangible Assets such as Above- and Below-Market Leases and Acquired In-Place Lease Value are created.

The **treatment of the Seller's existing Debt and Preferred Stock** is also important because assuming vs. refinancing them vs. using a bridge loan could make a big difference.

You still calculate accretion/dilution, but it's often based on metrics such as FFO per Share rather than EPS. You also use **additional analyses**, such as the Contribution Analysis and Value Creation Analysis, to assess how the Buyer's share price might change after the deal.

9. Why are the Contribution Analysis and Value Creation Analysis especially useful in REIT M&A Deals?

These analyses are useful because most REIT M&A deals are 100% Stock or majority Stock, meaning that both the Buyer and Seller care about their **ownership percentages and the value of the Buyer's stock post-deal.**

The Contribution Analysis lets you see if the Buyer and Seller have ownership percentages proportional to their financial contributions (e.g., 70% Revenue, FFO, and RE Assets from the Buyer and 70% ownership).

In the Value Creation Analysis, you assume the combined entity will trade at a higher EBITDA, FFO, or AFFO multiple based on a larger company in the space and then back into what the

Buyer's share price "should be" at this higher multiple, factoring in the Seller's contributions and all the acquisition effects.

This analysis is highly speculative, but it's useful for assessing whether it's *possible* for the Buyer's share price to increase post-acquisition (take the results with a grain of salt if the EBITDA multiple would have to double for the share price to increase).

10. How do REIT LBOs differ from leveraged buyouts of "normal companies"?

REIT LBOs are like traditional leveraged buyouts but with **continual Dividend Recaps and Debt-Funded Add-On Acquisitions**.

REITs maintain their tax-free structure following a leveraged buyout, which means they must continue to issue high Dividends. And they continue to acquire and develop properties, so they must keep raising capital.

However, the private equity owners do not want to use their own Equity to fund these activities, so most REITs shift to a higher percentage of Debt funding.

Instead of the traditional returns sources of Multiple Expansion, EBITDA Growth, and Debt Paydown, REIT LBOs depend on Multiple Expansion, EBITDA Growth, and Dividends – as it is virtually impossible to repay Debt or generate Cash during the holding period.

As a result, REIT leveraged buyouts are even more dependent on market timing than buyouts of normal companies.

Return to Top.

Renewables

Due to surging interest in renewable energy and environmental tech, renewable energy investment banking has attracted a lot of attention.

But it's tricky to describe the sector because there's a ton of overlap with Project Finance & Infrastructure, Power & Utilities, Industrials, and Technology / TMT.

Therefore, even if you interview with a renewables or clean energy team, you should review the questions and answers for these related sectors; we present below only questions that are *specific* to renewables.

Sempra Solar Holdings Operating Assets

Operating investments have a weighted average remaining PPA life of 19 years

JV Assets

Project	State	MW(1)	COD	Offtaker	PPA Term	Tax Equity	Project Debt
Copper Mountain Solar 3*	NV	128	2015	SCPPA	20 years	--	✓
Mesquite Solar 1*	AZ	83	2012	PG&E	20 years	--	✓
Copper Mountain Solar 2*	NV	75	2015	PG&E	25 years	--	✓
California Solar	CA	55	2013	PG&E	25 years	--	✓
Broken Bow II* (Wind)	NE	38	2014	NPPD	25 years	--	✓
JV Subtotal		**379**			**23 years(2)**		

Sempra 100% Owned Solar Assets

Project	State	MW(1)	COD	Offtaker	PPA Term	Tax Equity	Project Debt
Great Valley*	CA	200	2017	Various(3)	15 to 20 years	✓	--
Mesquite Solar 3*	AZ	150	2016	WAPA / Navy	25 years	✓	--
Mesquite Solar 2*	AZ	100	2016	SCE	20 years	✓	--
Copper Mountain Solar 4*	NV	94	2016	SCE	20 years	✓	--
Copper Mountain Solar 1*	NV	58	2010	PG&E	20 years	--	✓
100% Subtotal		**602**			**21 years(2)**		

*Denotes projects that Sempra currently operates; CED will assume operations.
(1) Represents Sempra's ownership stake
(2) Weighted average based on project capacity
(3) SCE/PG&E/Sacramento MUD/Marin Clean Energy

1. What are the main verticals within renewables, and how is valuation different at a high level?

If you go by **deal activity**, most sources divide the sector into solar, wind, biofuels, storage/batteries, electric vehicles (EVs), and diversified/portfolio companies, with smaller areas for hydroelectric and geothermal energy, hydrogen, and carbon capture.

Within the energy segments, you can also divide companies into categories like power production, manufacturing, development, services, and transportation.

For valuation, you use mostly standard analyses and multiples (DCF, TEV / EBITDA, etc.), with slightly different metrics in some cases. The **key drivers** differ and might be closer to a power company, an industrials company, or even an oil & gas company, depending on the vertical.

For example, you might use multiples such as TEV / MW for renewable power producers to link their valuations to their power production capacities; metrics like the Cash Available for Distribution (CAFD) and Dividend Yield are also common for holding/portfolio companies.

2. Can you explain the metrics and multiples commonly used to value renewable companies and their advantages?

The Enterprise Value / Megawatts (TEV / MW) multiple, based on the company's total power production capacity, is common for solar and wind producers because it lets you separate a company's "potential" from how it is currently utilizing and monetizing that potential.

For renewable asset holding companies, metrics such as the Dividend Yield, Cash Available for Distribution (CAFD), and Equity Value / CAFD are also important because renewable assets tend to offer **high yields**, with most spending in the form of upfront CapEx rather than going operating/maintenance expenses.

So, investors often treat these types of companies like MLPs in oil & gas or REITs in real estate, even though the legal/tax structures and requirements differ.

In the other verticals, the most common multiples are the usual TEV / Revenue, TEV / EBITDA, and P / E because the companies are standard manufacturing, service, or transportation firms.

3. Suppose that you are valuing Solar Developer A and Solar Developer B, both of which have 2,000 MW of capacity and similar revenue and EBITDA levels.

Although both companies are developers, they hold their solar assets for the long term rather than selling them to other companies.

However, Solar Developer A trades at 30% higher multiples than Solar Developer B. What might explain this?

If the capacity, revenue, and EBITDA figures are similar, the answer must be related to the **individual assets** or their **upfront development costs**.

With the individual assets, the geography, the power purchase agreement (PPA) terms that determine electricity prices and escalations, and the debt and tax equity attached to each solar plant are critical.

So, one possible explanation is that Solar Developer A has much more favorable terms attached to its assets, such as PPAs with an average remaining term of 20 years rather than 10 years.

Solar Developer A might also have a cost or timing advantage over Solar Developer B, such as the ability to build plants at a lower $ / MW cost or complete them more quickly.

4. How would you compare solar, onshore wind, and offshore wind assets at a high level?

Wind assets tend to be **bigger, riskier, and more expensive** than solar assets, partially because solar installations could come in all shapes and sizes (rooftops on homes vs. utility-scale plants), whereas "small-scale" wind does not exist in the same way.

If you had to rank them, onshore wind would be riskier and more expensive than solar, and offshore wind would be riskier and more expensive than onshore (offshore wind is notorious for delays and budget overruns).

The power production and revenue potential of wind assets are also higher, which explains why they often sell for higher $ / MW multiples – but the standard deviation of these multiples is also greater.

5. You are valuing a company in the biofuels and renewable natural gas (RNG) vertical. How would you think about the forecast and valuation?

It depends on whether the company is a **producer** or **transporter** and its legal/tax status.

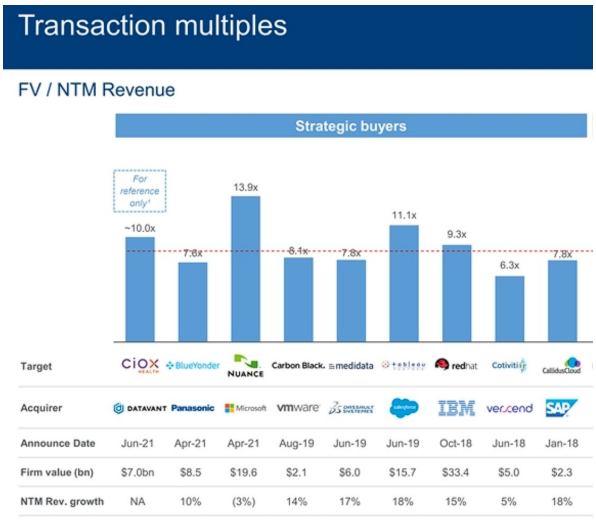
Producers are more like chemicals companies, profiting based on their realized prices and the raw materials and labor required for the end products. Standard valuation multiples and methodologies still apply.

Transporters are more like midstream (pipeline) companies in oil & gas, with forecasts linked to their capacity, utilization rates, gathering & transportation fees, labor, and maintenance CapEx.

You can still use the TEV / EBITDA multiple and the standard DCF, but anything that is MLP-based tends to use the Distribution Yield, Distributable Cash Flow, and Dividend Discount Model because yields are critical for these firms.

Return to Top.

Technology, Media & Telecommunications (TMT)



The Technology, Media & Telecommunications group at banks became one of the most popular over the past few decades as "software ate the world."

Some of the biggest deals happen in this sector; many involve brand-name companies everyone knows.

From a technical perspective, however, *not that much is different*.

It's good to know a few industry-specific metrics, but valuation multiples and methodologies are like those in the industrials, consumer/retail, and healthcare sectors.

1. Can you explain the main verticals within TMT and the accounting and valuation differences?

The three main verticals are **technology**, **media/entertainment**, and **telecom**, and within technology, the main segments are software, internet, hardware, semiconductors, and IT services.

There aren't many significant accounting or valuation differences in these verticals, as the standard multiples, metrics, and methodologies apply to most companies.

The main difference is that the **operational metrics and drivers** often differ, especially for subscription-based companies and early-stage/unprofitable startups.

In addition to these new operational metrics (e.g., LTV / CAC, Churn Rate, ARPU, etc.), accounting concepts such as Net Operating Losses (NOLs) and Content Amortization can be critical and will directly factor into methodologies such as the DCF.

2. Let's focus on the telecom segment. What differentiates a telecom company like a wireless carrier from a semiconductor or enterprise software company?

Both telecom and semiconductor companies tend to be **capital-intensive**, unlike traditional software, which is more weighted toward labor expenses. Therefore, CapEx tends to be a higher percentage of revenue for both telecom and semiconductor companies, assuming the semis companies *produce* chips rather than just design them (e.g., TSMC, not Nvidia).

But telecom companies also tend to have **inelastic demand** and are **heavily regulated**, which makes them different from both semiconductor and software companies – everyone needs mobile/phone service regardless of the economy, so governments regulate these services as "public goods."

The valuation multiples and methodologies are similar for all these firm types, but **Sum-of-the-Parts (SOTP)** is often more important in telecom because many companies are structured as conglomerates or holding companies with many different divisions.

3. You are building a credit analysis for Netflix and have calculated its FCF Conversion based on this definition: FCF = EBITDA – Net Interest Expense – Taxes +/- Change in Working Capital – CapEx. You have also adjusted for Deferred Taxes and Stock-Based Compensation.

Based on this definition, Netflix's FCF Conversion is over 70%. Your co-worker reviews your analysis and says it's wrong, as the company's true FCF Conversion is only around half this percentage due to line items missing from your analysis.

Who's correct? Why?

Your co-worker is correct. The issue here is that "content companies" such as Netflix **spend money to acquire or develop content and then amortize it over time**, which creates line items related to these activities.

Specifically, this "Content Amortization" shows up within the Cost of Revenue on the Income Statement and, therefore, reduces EBITDA, but it's added back as non-cash on the CFS.

The company records its content spending in the *current period* as "Additions to Content Assets" on the CFS, which is like CapEx (i.e., a large cash outflow).

Therefore, if you want FCF to capture the true nature of Netflix's content business, it should include *everything* in Cash Flow from Operations. If you reflect its true content spending via these additional line items, its FCF Conversion should be far below 70%.

4. Suppose you are valuing a semiconductor company, such as TSMC, and a broader "hardware company," such as Samsung.

What types of accounting and valuation differences would you expect?

Assuming the semiconductor company does its own manufacturing, which TSMC does, both firms will focus heavily on **gross margins** and **CapEx**, with valuation often linked to the most efficient firms on these metrics.

Semiconductor companies also tend to have high R&D costs, so they are often "halfway between" hardware and software. They are also more **cyclical** and tend to be affected more by macro factors and market trends (crypto boom, AI boom, etc.).

Also, since semiconductor companies are mostly **enterprise-facing**, they focus heavily on metrics such as the **book-to-bill ratio** (orders received / orders shipped) and their **capacity utilization** to assess market demand.

You would still use the standard multiples and methodologies for both types of firms (DCF, TEV / EBITDA, P / E, etc.).

5. How would you value an unprofitable tech startup that is years away from positive Net Income and cash flow?

There are two main options: 1) Project the company's cash flows until they become positive and use a far-in-the-future DCF that potentially spans decades, or 2) Use more "creative" multiples that are based on non-financial metrics, such as TEV / Monthly Active Users or TEV / Unique Visitors.

6. A Software-as-a-Service (SaaS) company sells a $240 2-year contract on January 1 that will be billed every 6 months. Walk me through the Bookings, Billings, and Revenue for January and February.

The Bookings in January are $240 because "Bookings" represent the total contract value, regardless of the term or recognition period. If it is billed every six months, there are 24 / 6 = 4 invoices over these two years, so the Billings in January are $240 / 4 = $60.

The Revenue in January equals the total contract value divided by the number of months in the contract: $240 / 24 = $10.

The Bookings in February are $0 because no new contract is signed or renewed, and the Billings are also $0 because the next invoice will be issued on July 1. Revenue is still $240 / 24 = $10.

7. Continuing with the same question, if it takes 2 months to collect the cash from customers following receipt of the invoice, explain how Accounts Receivable and Deferred Revenue change in January and February.

On January 1, Accounts Receivable and Deferred Revenue both increase by $60 because of the $60 in Billings based on the invoiced amount.

The AR balance remains at $60 until the cash is collected on March 1, at which point it falls to $0.

The DR balance decreases based on the $10 in recognized revenue each month, so it starts at $60 and then decreases to $50 by February 1 and $40 by March 1.

8. A software company has annual contracts with an average value of $10K per year, and its annual cancellation rate is currently 10%. Customers who do not cancel pay 5% more once every 2 years.

What is this company's approximate average Lifetime Value (LTV)? You may assume this $10K per year figure already deducts the associated Cost of Sales.

The average customer life is 1 / 10% = 10 years, and the average contract value is $10K per year, so 10 years * $10K / year = $100K.

However, this $10K annual contract value (ACV) increases by 5% once every two years, so by the end of 10 years, it will be closer to $12K.

Therefore, the "average" ACV over 10 years is about $11K per year, so the average LTV over this average lifetime is $11K * 10 = $110K.

(If this were a startup or a very young company, you would have to risk-adjust this figure based on the Discount Rate, so it would be significantly below $110K.)

9. You are analyzing a SaaS company's performance. The company claims its LTV / CAC is 4.0x, but its CAC Payback Period is 24 months. What conclusions can you draw?

The LTV / CAC ("Lifetime Value / Customer Acquisition Costs") for a SaaS company measures its average future gross profits from an average customer divided by the sales and marketing required to win that customer.

Higher is better, but LTV / CAC is speculative because of the many assumptions required to estimate the average "Lifetime Value."

The CAC Payback Period is more grounded because it measures the time required to earn back the sales & marketing spend to win a new customer based on the *initial contract terms*.

Most SaaS companies aim for CAC Payback Periods of less than 12 months; 24 months is quite long and means its business model is risky.

Such a long CAC Payback Period should make you **skeptical** of an apparently high LTV / CAC – as it means the company might be using overly optimistic assumptions for its renewal rates, pricing, or gross margins.

10. How does SaaS valuation differ from the valuation of other tech companies?

You still use the same methodologies (public comps, precedent transactions, and the DCF), but you normally screen companies based on revenue and revenue growth, and you may even use SaaS-specific metrics such as Annualized Recurring Revenue (ARR) instead of normal revenue (ARR pairs with Enterprise Value).

Revenue multiples are common for high-growth / unprofitable companies, but EBITDA and UFCF are also possible for later-stage companies. UFCF is useful for companies with large and growing Deferred Revenue balances (common for enterprise companies that collect cash upfront for long-term contracts).

In the DCF, you tend to forecast further into the future to give the company more time to reach maturity, and you may assume a changing Discount Rate over the forecast period to reflect this maturation.

Return to Top.