BANKING AT MICHIGAN: Investment Banking Recruitment Guide

Decoding the Investment Banking recruitment process

Version 3.0 | 2019-20 Academic Year

Disclaimer and Usage

This guide was created in the hopes of providing education and insight for any student interested in pursuing a career in investment banking.

This guide is non-exhaustive and should be used in conjunction with other resources. The author(s) do(es) not take responsibility for the accuracy of any information provided in this guide.

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ABOUT BANKING AT MICHIGAN

Banking at Michigan

Banking at Michigan is a student-led project at the University of Michigan aimed at providing education, guidance and resources to any student interested in investment banking. **Our mission is to help students navigate the recruitment process while making it more accessible and inclusive.**

Team

Our leaders have successfully navigated the recruitment process and are headed to a number of the top firms across Wall St., but are also entering careers outside of financial services

INVESTMENT BANKING OVERVIEW

What are Investment Banks?

- Investment banks are **trusted advisors and financiers to a diverse client base** that can include large corporations, small businesses, governments, financial institutions, and financial sponsors
- Investments banks provide **advisory services** related to a number of financial transactions, such as Mergers & Acquisitions or Restructuring
- Investment banks help clients **raise capital** through debt or equity to take on new projects or strategic initiatives

BANKING AT MICHIGAN

What are Investment Banks?

- Investment banks are **typically** split into **Product** and **Coverage** groups
- Products
  - Leveraged Finance (LevFin)/Restructuring
  - Equity Capital Markets/Debt Capital Markets
  - M&A
  - Corporate Derivatives
- Coverage
  - TMT (Technology, Media & Telecom)
  - FIG (Financial Institutions)
  - Consumer Retail & Healthcare
  - Industrials

Investment Banks

Read about the differences [here]

BULGE BRACKET

Goldman Sachs

J.P. Morgan

Morgan Stanley

citi

MIDDLE MARKET

William Blair

Jefferies

Houlihan Lokey

Piper Jaffray®

BOUTIQUE/INDEPENDENT ADVISORY

Evercore

Guggenheim

Moelis & Company

Centerview Partners

Investment Banks

INDUSTRY SPECIFIC

FINANCIAL TECHNOLOGY PARTNERS

M&A MARLIN & ASSOCIATES

Qatalyst PARTNERS

REGIONAL

GREENWICH CAPITAL GROUP

CASCADE PARTNERS

ANGLE ADVISORS INVESTMENT BANKING

Why start a career in Investment Banking?

- High responsibility and steep learning curve
- Financial modeling and valuation
- Work in a fast paced, collaborative environment
- Mix of quantitative, legal, and strategic thinking
- Exciting and diverse exit opportunities
- Competitive compensation
  - Standard: $85K base, $10K signing, 40-100+% bonus ($120-160K all-in compensation)
  - These figures are historically higher among the more prominent boutique investment banks (e.g. Evercore, Centerview, Moelis)

Why start a career in Investment Banking?

- However, you need to find the right reason for **you**
- Maybe you want to pursue a...
  - Long-term career in investment banking
  - Long-term career in finance, but not necessarily investment banking
  - Career in…
    - Private Equity (TPG, KKR, GTCR)
    - Venture Capital (Insight Venture Partners, Sequoia)
    - Hedge Fund (Citadel, Bridgewater, Two Sigma)
    - Corporate Finance (Microsoft, Disney, Salesforce, Sports)
    - Technology / Startups (Google, Uber, Slack)
- Or maybe you have no idea (broad exposure that translates to other industries)

Why start a career in Investment Banking?

"Don't be the monkey who reaches the top of the tree only to realize it's the wrong tree."

Ross BBA Job Report: ~20% IB & 14% Consulting. This means that ⅔ of Ross pursue other career paths.

TL;DR—it is okay not to pursue investment banking as a career.

What does an Investment Banking analyst do?

- 4 major workstreams
  - Research
    - Bloomberg Terminal, Reuters, Equity Research Reports
  - Due Diligence
    - Ex. Manage communications between buyer and sellers in a Acquisition
  - Pitch Decks (Powerpoint)
    - Large portion of your time will be spent creating decks
  - Financial Modeling & Analysis (Excel)
    - Great technical experience once you gain trust as an intern / analyst
- ~60 to 100+ hour work weeks (variable by Bank / Industry / Group Culture)

BREAKING INTO INVESTMENT BANKING

General Advice

- Have conviction in your reasoning as to why you want to pursue investment banking
    - You do not need to know this reason during your "exploration phase", but certainly by the time you start recruiting
- Have faith in and be confident of yourself and your abilities
- Understand that luck plays a large role in the process
- Take other's advice with a grain of salt
    - Everyone will have a different perspective on certain topics
    - While it is a good idea to hear all these perspectives, certain advice may not be applicable to you/your professional interests
    - TL;DR—take everything in this guide with a grain of salt

General Advice

- Freshmen
  - Enjoy your first year on campus and do not stress about recruitment
  - Work hard in your classes and shoot to maintain a GPA above 3.6/4.0
    - Obviously higher the better, but networking can make up for GPAs (up to a point)
  - Get involved on campus
    - Balance social and professional / career focused clubs and organizations
- Sophomores
  - If banks are coming to campus to recruit, attend their corporate presentations
    - This will help get your foot in the door and meet the people you will begin networking with
    - Realize that they want to recruit you and you are extremely lucky
  - Begin to network / have conversations with bankers that came on campus
  - Tailor your resume, story, and general preparation for interviews

General Advice

Most importantly: trust that everything will work out in the end as it should

Misconceptions about Recruitment

- It will not hurt you if you do not have...
  - Membership in a business fraternity, consulting club, investment club or investment banking club
    - Though these networks can help, don't worry if you are not a part of them
  - Prior internship experience in a finance-related role or company
    - Many instances of students with no finance background whatsoever breaking into Wall St.
  - Finance/Economics major
- You do want to have a...
  - Positive attitude (perhaps most important)
  - Solid understanding of and interest in investment banking
  - Strong work-ethic, leadership, teamwork and communication
    - Shown through various experiences (e.g. curriculum, extracurricular, work)

How Banks Recruit

- Banks typically focus their recruitment efforts on core or “target schools”
  - These “targets” may differ from firm-to-firm
  - One school may be a target for one firm and a non-target for another
- If you are at a target school, most banks have school-specific recruitment teams that typically consist of alumni of your school
  - Often times these recruiting teams will come on campus and give a presentation about their bank
  - Most of your networking will be with these bankers

Timeline

- Fall of Sophomore Year
  - Company presentations & networking sessions (almost purely educational; meant to be a resource for you to ask questions and learn more about careers in IB)
- February of Sophomore Year through October of Junior Year
  - First-round interviews, superdays
  - Certain firms are much more earlier than others
- No guarantee this is the set timeline, it is always moving—this is based on conversations with analysts at many firms

The Recruitment Process

- Research
  - Understand what investment banking is, cultural differences between firms, and the types of transactions firms facilitate
- Networking
  - Have conversations with bankers from firms that are recruiting
    - Follow up / cold email bankers after initial introduction at corporate presentation
  - Opportunity for you to learn about the firm and for them to get to know you
- Preparation (Winter Break sophomore year is a good time to start looking at this)
  - Review and master BIWS and other technical interview guides
  - Prepare for behavioral questions regarding experiences, leadership, etc
- Interviews

The Recruitment Process

- Interviews
  - **First-round interview(s)** can take place over phone, over video interview (bulge brackets may use HireVue), or on-campus
  - **Superdays** are the final step in the recruitment process (e.g. final interview) and typically take place at the firm's HQ
    - Firm's will generally fly you out to their HQ (typically in NYC)
    - Anywhere from 1 hour to 3+ hour process
    - Always includes multiple, back-to-back interviews to assess both fit + technical competency
    - Interviews are typically conducted by senior bankers (VPs, MDs)

Research

- Vault is a great place to start your research
- Speak with as many seniors to get a variety of perspectives
- Define what is important to **you**
    - Location preference (e.g. NY, SF, Chicago)
    - Size of firm (e.g. Bulge Bracket vs. Boutique, this matters more for some than for others)
    - Product preference (e.g. product agnostic or specifically looking for M&A or Restructuring experience)
    - Industry preference (e.g. industry agnostic or Technology, Healthcare, FinTech)
    - Cultural fit (e.g. "highly ranked" doesn't necessarily mean best for you)

Recommended Plan of Action

For sophomores

- Preparing for recruitment during school demands a high level of commitment and work-ethic
    - One method is to block out a set time each week for recruitment preparation
- Winter break offers a great time to prepare the technical section of the interview
    - You can find time to both relax and prepare
- Aim to start networking calls once company presentations begin
- Aim to start mock interviews as soon as you can (you don't need to know all your technicals to start mock interviewing, you can ask your mock interviewer just do focus on "Accounting" or just to focus on Behaviorals)

NETWORKING

Networking 101

- Various forms of networking
  - Personal Network
  - Cold Emailing/Networking Calls
  - Coffee Chats
    - Treks to major cities (ex. New York, Chicago) may be helpful, especially from Michigan
    - If interning in a major city, it's very helpful to meet face-to-face with existing connections
  - Company Networking Events
  - On-campus Company Presentations
    - Get Business Cards (many companies may just hand out a contact sheet) and follow-up shortly after presentations
    - Follow-up emails should be personalized with details from conversation

Networking 101

- Cold emailing
  - LinkedIn & alumni directory
  - Subject lines
    - Michigan Ross BBA interested in Investment Banking (general)
    - MII/AKPsi Brother interested in Investment Banking (some form of connection)
  - Banks typically follow an "email format" such as first.last@firm.com
    - Use Hunter.io to find format for specific firms
- Attaching resume is considered optional and people will differ on their opinions on whether or not to send your resume in the initial outreach
  - e.g. "In case it's helpful to provide more context on my background, I have attached my resume below for your reference."

Networking 101

- General structure of networking
  - Email to establish relationship
  - Maintain relationship over a few months and reach back out to contact when submitting formal application
- Networking is crucial
  - A strong network can make up for a GPA, up to a point
  - It is typically recommended you maintain a 3.7/4.0 GPA; however, there are certainly exceptions and networking is critical regardless of GPA

Keeping Track of Connections

- It is recommended you have an excel sheet (or some form of a system) to keep track of your networking emails
    - Example: Organize by firm name, days since last contact/follow-up, whether they responded or not
- It is not just a numbers game—numbers + consistency = success
- If you do not receive a response in 5-7 days, it is appropriate to send a follow-up email
    - It is recommended to keep number of follow-ups below 3
    - Can experiment with sending emails at different times

Email Etiquette

- Keep emails short and well structured
- Double check your email + avoid typos
- Be wary of copy & pasting your thank you + networking emails!
    - Use CMD + Shift + V to paste **without formatting** versus CMD + V
    - Remove formatting from all text, ensure it's all the same size + font color especially when copy/pasting
    - You will not be able to see formatting differences in your original email when sending out, but it will appear on the receiver's end and can appear unprofessional and reckless
- View the BAM Email Guide

Networking Calls

- Be respectful of time, try to keep to ~15-20 minutes
- Avoid forcing conversation - keep it conversational!
- Make sure to prepare intelligent questions just in case
  - Get some basic ideas from peer coaches, networking guides, business fraternities, student organizations, peers, etc.
- Try to be creative in the questions you ask, try to avoid the typical "How would you describe the firm's culture" or "Why did you join the firm?"
  - These are important questions to consider, but try to get the same information through different styles of questions
- Send a thank you email after each call, try to make it personalized

Sample Questions to Ask

- Really excited about the opportunity to learn, and you've been here for X years. Do you still feel like you are learning each day and how much have you grown in the past year?
- What are the main intangibles you have gotten out of banking?
- What was your career path like for banking?
  - Why did you choose to start your career in banking?
- [IF TRANSITIONED FROM OTHER INDUSTRY] Can you speak about your decision to leave X industry to start a career in Investment Banking?
- Can you speak to your decision to stay and build a career in investment banking versus pursuing any different career paths, within our outside of finance?
- In your eyes, what traits or behaviors make a top analyst?
- Can you tell me about the most interesting or challenging deal you worked on and what your responsibilities were in the process?

INTERVIEW PREPARATION ADVICE

Getting the Interview

- As you will likely experience, **getting an interview** is the **toughest part**
  - There is a large amount of randomness and luck involved in this process
  - Often broken into specific campus recruiting teams consisting of school alumni (though not always)
  - This is where your network plays a huge role
- Good thing: once you get the interview it is almost entirely based on meritocracy
  - Strong candidates who demonstrate a cultural, professional and technical fit will receive offers

Advice for Interview Preparation

- Mock interviews
  - Ross students: take advantage of the Career Development Office and reach out to Juniors/Seniors who have gone through the process
  - Non-Ross: reach out to Juniors/Seniors who have gone through the process
  - Completing mock interviews before your first actual interview will go a long way in providing confidence in yourself (5+ recommended, though 10+ would be even better)

Advice for Interview Preparation

- A note on technicals
  - A strong technical performance is a "box checked" — no one is extended an offer solely based off of technicals
  - Know the fundamental concepts of each, do not expect all questions to be pulled directly from guides
  - Should be able to deal with changing tax rates and numbers
  - Should be able to apply concepts to new questions

Advice for Interview Preparation

- When answering questions
    - For technical questions: only give the information that is asked for—overproviding information increases your chances of slipping up and opens the door for further questioning
    - If you do not know the answer…
        - “I’m not entirely sure, but here is my thought process…”
        - Interviewers will guide you if they see you are struggling!

Getting the Offer

Preparation + Luck + Personal Network = Offer

- The **only** part **fully** in your control is your **preparation**
    - Networking is largely in your control as well, but this is referring more to your network *coming into the recruitment process* (e.g. personal & family connections)
- Other people have seem to have a "stronger network" or "more luck", but at the end of the day you can only control how much work you put into your preparation

INTERVIEW RESOURCES

Resources for Preparation

Find all of our public resources at bankingatmichigan.org/resources

Please note that the **Breaking into Wall St. (BIWS) "400 Questions Guide"** is the most important guide for interview preparation (the 400 questions guide as well as the associated "Learning" guides for each technical topic)

IB Vine is an additional, interactive resource created by BAM that includes hundreds of crowdsourced practice technical questions segmented by technical topic

BEHAVIORAL/FIT QUESTIONS

Behavioral Questions

- Tell me about yourself in 2-3 minutes.
- Why investment banking?
- Why investment banking **at our firm specifically**?
- What does our firm do?
- Where do you see yourself in 5-10 years?
- Which other firms are you interviewing with?
- What typically goes in an investment banking pitch deck?

Behavioral Questions

- Tell me your three greatest strengths & weaknesses.
  - How would your friends describe you in three words?
  - How have your past experiences prepared you for investment banking?
  - Why are you a strong fit for investment banking?
  - Why should we accept you versus all the individuals who we have interviewed who said we should accept them?
  - *All of these are different ways of phrasing the "strengths" question.*

Behavioral Questions

- Have stories for the following "scenarios"
  - Success/Failure
  - Successfully lead a team
  - Overcame a challenge
  - Turned around a team/worked with a difficult teammate
  - Performed under pressure/struggled with a deadline
  - Ethical dilemma
  - Disagreed with someone senior
  - Incorporated diversity into a team or challenge
  - Solved a complex problem using data
  - Quick decision with imperfect information

Behavioral Questions

- Tell me about a recent deal you have followed?
  - Overview of parties involved
  - Financial Details
  - Company Rationale
  - Personal Opinion
- It is recommended to have at least 2 recent deals (past year) in the news, with one being specific to the firm
- Be prepared for follow-up questions and make sure you have an informed opinion

Behavioral Questions

- Recent Deal Example
  - S&P Global's acquisition of Kensho in April 2018
  - Overview of parties involved
    - S&P Global is one of the largest, global financial data providers
    - Kensho is a machine learning analytics firm based out of Boston and backed by notable investors such as Goldman Sachs and Breyer Capital
  - Financial Details
    - $550 million in an undisclosed mix of cash and stock
  - Company Rationale
    - S&P Global able to offer more data-driven solutions to clients
    - Demonstrated commitment to innovation in financial services

Behavioral Questions

- Recent Deal Example (cont.)
  - S&P Global's acquisition of Kensho in April 2018
  - Personal Opinion
    - Kensho is now able to reach a distribution & scale not previously possible, not to mention access to a wealth of data that will go a long way in improving its artificial intelligence capabilities
    - Speaks to a larger theme we are seeing in financial services of a two-way dialogue between incumbents and startups
    - On the one hand, startups excel at speed to market—but lack the brand and infrastructure to reach significant scale and distribution
    - On the other hand, large incumbents can offer brand, scale, capital, data and regulatory support—but need that speed to market

ACCOUNTING QUESTIONS

Answers can be viewed here

Accounting

- Recommended structure for “walk me through the 3 statements” questions
  - Starting on the Income Statement…
  - Moving on to the Statement of Cash Flows…
  - Finally, on the Balance Sheet…
  - … and both sides of the Balance Sheet balance

Accounting

- Walk me through the 3 financial statements and how they are linked together.
- Name 2 scenarios that can cause Shareholders' Equity to be negative.
- How can a company with a positive EBITDA go bankrupt?
- Explain Operating Working Capital.
- Why is Deferred Revenue a liability if you are earning money?

Accounting

Assume 30% tax rate

- Walk me through 3 statements with..
    - $120 decrease in depreciation
    - $50 increase in stock-based compensation
    - $100 interest expense (50% cash interest, 50% PIK interest) and $50 interest income
    - $20 decrease in Deferred Revenue
    - Debt write down of $100 with 5% interest attached

Accounting

Assume 20% tax rate

- Multi-step
  - Year 0: Buy PP&E for $100 using Debt. Walk through the 3 statements.
  - Year 2: PP&E depreciates over 10-year period using straight-line depreciation. After two years, you sell the PP&E for $120. Assume depreciation has been accounted for on the financial statements. Walk through the 3 statements after the sale of PP&E.

Accounting

Assume 20% tax rate

- Multi-step
  - Year 0: Buy Land for $90 using cash on hand. Walk through the 3 statements.
  - Year 2: Straight-line depreciation occurs over a 10-year period. After two years, you sell the land for $90. Walk through the 3 statements after the sale of land.

Accounting

Assume 20% tax rate

- Multi-step
  - You raise $100 debt with 5% interest and 10% yearly principal repayment. You use that money to purchase $100 of short-term assets that have 10% yearly interest income attached.
  - Right when you raise the debt and purchase short term assets, walk me through the 3 statements.
  - After one year, walk me through the 3 statements.

ENTERPRISE & EQUITY VALUE QUESTIONS

Answers can be viewed here

Enterprise Value/Equity Value

- Formula for Enterprise Value?
- Why do you add NCI/subtract cash?
- Difference between Equity Value versus Shareholders' Equity?
- How does ____ affect Enterprise Value?
  - Raise $200m in Debt, use cash to buy a new piece of equipment.
  - Issue $200m in Equity for an IPO.
- Two companies are 100% comparable. Why might one trade at a premium (e.g. higher EV/EBITDA multiple)?
- Would you rather buy a company with a high or low P/E multiple?
- What are some multiples you could use for a company with a negative Net Income?

Enterprise Value/Equity Value

- Company A and Company B have identical EV/EBITDA. Company A has a higher P/E multiple. Why might this be the case?
- You have a company with an EV/Revenue of 2x and an EV/EBITDA of 10x. What is the EBITDA margin?
- A company has a stock price of $20 a share and a P/E of 20x (so EPS is 1). The company has 10M shares outstanding. How does a 2-for-1 stock split affect EV?
- A company has 10,000 shares at $20 a share. There are 100 call options at an exercise price of $10, 50 restricted stock units (RSUs) and 100 convertible bonds at a price of $10 and par value of $100. What is the diluted equity value?

BANKING AT MICHIGAN

VALUATION QUESTIONS

Answers can be viewed here

Valuation

- What are the 4 main valuation methodologies? Rank them from highest to lowest and explain.
- What are some flaws of comparable companies and precedent transactions?
- What metrics do you look at for comparable companies? What additional metric do you look at for precedent transactions?
- What would a situation be where precedent transactions is less than comparable companies?
- Why does a DCF *almost always* produce a higher valuation than an LBO?
- Is a company with a 50x P/E overvalued or undervalued? Why?

Valuation

- What are some other valuation methodologies—other than the main 4?
- How would you value a peach tree?

DCF QUESTIONS

Answers can be viewed here

Discounted Cash Flow

- What is a DCF/can you walk me through a DCF in under 60 seconds?
- Why do you typically use 5-10 years for the projection period?
- How would you change a DCF to value a highly speculative technology company?
- Key assumptions/drivers of a DCF?
- Tell me 3 places where taxes affect a DCF.
- If you are valuing a coal mine company, would you use the Gordon Growth Method or the Multiples Method to calculate the TV? Explain.
- A company buys a factory for $100 in its 4th year. How would the DCF/Enterprise Value change for the company?
- Do you use planned or targeted capital structure in WACC?

Discounted Cash Flow

- What is FCF? Why do we use it in a DCF?
- Walk me from Revenue to FCF for Unlevered and Levered FCF.
- What is WACC, conceptually? How do you calculate it?
  - How do you calculate Cost of Equity? Cost of Debt? Cost of Preferred Stock?
  - What would you use as your discount rate if you are using Levered FCF? Why?
- What is Beta, and why do you have to unlever and relever it?
- When would you rather use the Multiples Method vs. the Gordon Growth Method (GGM)?
- How would you calculate the long-term growth rate for the GGM?

LBO (LEVERAGED BUYOUT) QUESTIONS

Answers can be viewed here

LBOs

- What is an LBO/can you walk me through an LBO?
- What makes a strong LBO candidate? (should know at least 5, and know which one is the most important one & why)
- 3 main drivers of IRR? (should know at least 5, but know the main 3)
- Why do financial sponsors pay less than a strategic buyer?
- Different types of debt you could raise in an LBO?
- What is a dividend recapitalization? What is its effect on IRR?
- What is PIK interest? Why may a distressed company prefer PIK interest?

LBOs

- What happens to the Balance Sheet and IS after an LBO?
- What is a revolver and why is it the cheapest form of debt?
- Paper LBOs may come up during an interview
    - Go through the “Street of Walls Paper LBO” here (should only take 1-2 hours)
    - Going through one of these will go a long way in helping you understand the mechanics of a LBO

MERGER MODELS QUESTIONS

Answers can be viewed here

Merger Models

- Walk me through a merger model.
- What are the two types of buyers?
- Why would a company buy another company? How would this reasoning differ for the two types of buyers?
- 3 main financing methods and why use one over another?
- When would you prefer revenue synergies over cost synergies, and when would you be indifferent? (think of the two types of revenue synergies)
- Why do we look at EPS & accretion/dilution?
- Difference between Mergers vs. Acquisitions?

Merger Models

- What are the 5 main acquisition affects?
- What happens to the Balance Sheet and Income Statement after M&A?
- Company A buys Company B. Company A has a higher P/E ratio than Company B. Would the deal be accretive or dilutive if:
    - The deal is all stock
    - The deal is all debt/all cash
- What is the combined equity value of a company if the deal is not financed with any stock?
- What are Deferred Tax Liabilities and Deferred Tax Assets? Why do they sometimes get created in M&A transactions?

MISC.

Answers can be viewed here

Miscellaneous

- Would you rather us hand you $1,000 today or $100 every year into perpetuity?
- What is the Beta of a gambling ring?
- What is the P/E of cash?
- 5 things a company can do with cash?
- 2 ways you can return cash to shareholders? Why would you prefer one over the other?
- Explain the concept behind the time value of money to a 5 year old without talking about money.

Miscellaneous

- You are evaluating two laundry mat companies. One owns the equipment, while the other leases the equipment. Which one would you rather buy and why?
- How do you value a company with no financials or comparables?
- A company has
  - $2bn in assets
  - 3x Debt to Equity
  - 2x P / BV…
  - What is its market cap?

Miscellaneous

The following are rare in IB interviews, but capital markets groups may be more likely to ask these

- What are the following?
    - Firm's current stock price, market cap, P/E and EPS?
    - DOW, NASDAQ, S&P and RUSSELL 2000 indexes?
    - 10-year and 30-year U.S. treasury yields?
    - Federal funds rate and impact on economy?
    - U.S. GDP/growth, inflation and unemployment?
    - U.S. corporate tax rate?
    - Price of commodities (gold, silver, oil)?

Miscellaneous

- Pitch me a stock (very rare in IB, though not unheard of)
    - More relevant to those who have past experience with valuation
    - If no prior experience, can prepare a general "buy" recommendation—but no need for a specific "price target"

FORMULAS

Formulas

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

Formulas

- Valuation
  - EBIT = Operating Income = Revenue - COGS - Operating Expenses
  - P/E = Price per Share/EPS = Equity Value/Net Income
  - EPS = Net Income/Shares Outstanding
- DCF
  - Unlevered FCF = EBIT(1 - tax rate) + Non-Cash expenses - Change in NWC - CapEx
    - Excludes interest and debt
  - Levered FCF = Net Income + Non-cash expenses - Change in NWC - CapEx - Mandatory Debt Repayments
    - Alternatively, Levered FCF = CFO - CapEx
    - Includes interest and debt

Formulas

- DCF
  - Terminal Value (PV of company's FCF from final year into infinity, as of final year)
    - Multiples Method: Apply exit multiple to the company's Year 5 EBITDA, EBIT or Free Cash Flow
    - Gordon Growth: TV = Final Year FCF * (1 + g)/(r - g)
  - Unlevered Beta = Levered Beta/(1 + (1 - tax rate) * (Debt/Equity))

Formulas

- DCF
  - WACC = (Cost of Equity * % Equity) + (Cost of Debt * % Debt * (1-Tax Rate)) + (Cost of Preferred Stock * % Preferred Stock)
  - Cost of Equity (using CAPM) = RFR + Levered Beta * ERP
    - RFR = Risk-free rate (usually 10-year or 30-year U.S. Treasury Yield)
    - ERP = Equity-risk premium
  - Cost of Equity (without CAPM) = (Dividends per Share/Share Price) + Growth Rate of Dividends
  - Cost of Debt = Interest Rate on Debt
  - Cost of Preferred Stock = Effective Yield on Preferred Stock

Formulas

- LBO
  - Purchase Price = EBITDA * Multiple
  - Initial Investor Equity = Acquisition Price * EBITDA Multiple * % Equity
  - Exit Enterprise Value = Exit EBITDA * exit multiple
  - Debt Remaining on Exit = Beginning Debt - Total FCF
  - Exit Equity Proceeds = Exit Enterprise Value - Debt Remaining on Exit
  - Rules of thumb
    - If a PE firm doubles its money in 5 years, that's a 15% IRR
    - If a PE firm triples its money in 5 years, that's a 25% IRR
    - If a PE firm doubles its money in 3 years, that's a 26% IRR
    - If a PE firm triples its money in 3 years, that's a 44% IRR

Formulas

- Merger Models
  - Cost of Cash = Foregone Interest Rate on Cash * (1-Buyer Tax Rate)
    - Buyer giving up interest on cash in future… can no longer earn interest on cash
    - Pay taxes on interest income
  - Cost of Debt = Interest Rate on Debt * (1 - Buyer Tax Rate)
    - Interest on debt is tax-deductible
  - Cost of Stock = Reciprocal of buyer’s P/E multiple = E/P, or Net Income/Equity Value
    - Buyer's after-tax yield
  - Yield of Seller = Reciprocal of seller’s P/E multiple (using purchase price, not current share price = Net Income/Equity Purchase Price)

Formulas

- Merger Models
  - Combined Net Income$_{actual}$ = Combined Net Income - (Price Paid * % Debt * Interest on Debt * (1-Buyer’s Tax Rate)) - (Price Paid * % Cash * Foregone Interest on Cash * (1-Buyer’s Tax Rate))
    - Adjusting for additional interest on debt and/or foregone interest on cash
    - In an all stock deal, this will just be the combined Net Income
  - Combined Equity Value = Buyer's Equity Value + Value of Stock Issued in Deal
  - Combined Enterprise Value = Buyer's Enterprise Value + Purchase Enterprise Value of Seller
  - Deferred Tax Liabilities = (PP&E & Fixed-Asset Write Ups & Newly Created Intangibles) * Buyer’s Tax Rate

ACCOUNTING ANSWERS

Accounting Answers

- Walk me through the 3 financial statements and how they are linked together.
  - Income Statement (IS), Balance Sheet (BS) and Statement of Cash Flows (SCF)
  - Linking the 3
    - NI from IS flows into Shareholder's Equity on BS AND into top line of SCF
    - Changes to BS items appear as working capital changes on SCF
    - Investing / Financing activities affect BS items such as PP&E / Debt / Shareholder's Equity
    - Cash & Shareholder's Equity items on BS act as "plug" with cash flowing in from final line on the SCF
- Name 2 scenarios that can cause Shareholders' Equity to be negative.
  - LBOs w/ dividend recaps
  - If company losing money consistently, Retained Earnings—which is a portion of Shareholder's Equity—would be declining

Accounting Answers

- How can a company with a positive EBITDA go bankrupt?
    - Too much CapEx expenditures → not reflected in EBITDA, but could still make company cash-flow negative
    - High interest expense & no longer able to afford debt
    - Debt all matures on one date / unable to refi due to "credit crunch" → runs out of cash paying it back
    - Significant one-time charges (e.g. lawsuits)
- Explain Operating Working Capital.
    - (Current Assets - Cash / Cash Equivalents) - (Current Liabilities - Debt)
    - Cash usually invested in T-bills / gov't securities / commercial paper → unlike other current assets, cash earns a fair return / should not be included
    - Debt considered in cost of capital → don't count twice

Accounting Answers

- Why is Deferred Revenue a liability if you are earning money?
  - Since you have received cash but have yet to perform the services
  - Over time, as services are performed, Deferred Revenue “turns into” real revenue on the IS

Accounting Answers

Assume 30% tax rate

- Walk me through 3 statements with
  - $120 decrease in depreciation
    - Starting on the IS...
      - Pre-tax income up $120, NI up 84
    - Moving onto the SCF...
      - NI up 84, back out depreciation as non-cash, net change in cash is down 36
    - Finally, on the BS...
      - A: Assets up 84; Cash down 36, PP&E up 120
      - L: No Change
      - SE: Shareholder's Equity up 84; NI up by 84
    - ...and the Balance Sheet balances

Accounting Answers

Assume 30% tax rate

- Walk me through 3 statements with
  - $50 increase in stock-based compensation
    - Starting on the IS...
      - Pre-tax income down by 50, NI down by 35
    - Moving onto the SCF...
      - NI down by 35, add back 50 in CFO since stock-based compensation is non-cash expense, net change in cash is up 15
    - Finally, on the BS...
      - A: Assets up by 15; cash up 15
      - L: No change in liabilities
      - SE: Shareholder's Equity up by 15; Stock-based compensation up 50 and NI down 35
    - ...and the Balance Sheet balances

Accounting Answers

Assume 30% tax rate

- Walk me through 3 statements with
    - $100 interest expense (50% cash interest / 50% PIK interest) and $50 interest income
        - Starting on the IS...
            - Net interest expense down 50, pre-tax income down by 50, NI down by 35
        - Moving onto the SCF...
            - NI down by 35, add back 50 from PIK interest in CFO, so cash at bottom is up by 15
        - Finally, on the BS...
            - A: Assets up 15, Cash up 15
            - L: Liabilities up 50, Long-term debt up 50
            - SE: Equity down 35, Retained earnings down 35
        - ...and the Balance Sheet balances

Accounting Answers

Assume 30% tax rate

- Walk me through 3 statements with
  - $20 decrease in Deferred Revenue
    - Starting on the IS...
      - Revenue up by 20; assuming no additional expenses, pre-tax income up by 20, NI up by 14
    - Moving onto the SCF...
      - NI up by 14, subtract 20 from Deferred Revenue decrease under CFO, so cash at bottom is down by 6
    - Finally, on the BS...
      - A: Assets down 6, Cash down 6
      - L: Liabilities down 20, Deferred Revenue down 20
      - SE: Equity up 14, Retained Earnings up 14
    - ...and the Balance Sheet balances

Accounting Answers

Assume 30% tax rate

- Walk me through 3 statements with
  - Debt write down of $100 with 5% interest attached
    - Starting on the IS...
      - Pre-tax income up by $100, NI up by $70
    - Moving onto the SCF...
      - NI up by $70, subtract $100 since non-cash revenue
      - Net change in cash = down by 30
    - Finally, on the BS...
      - A: Assets down by 30, cash down by 30
      - L: Debt down by 100
      - SE: NI up by 70
    - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- Year 0: Buy PP&E for $100 using Debt. Walk through the 3 statements.
  - Starting on the IS...
    - No change
  - Moving onto the SCF...
    - In CFI, outflow of cash $100 to purchase PP&E.
    - In CFF, inflow of cash $100 because debt was raised.
    - So, net change in cash is $0.
  - Finally, on the BS...
    - A: Assets up by 100, PP&E up $100
    - L: Debt up $100
    - SE: No change
  - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- Year 2: PP&E depreciates over 10-year period using straight-line depreciation. After two years, you sell the PP&E for $120. Assume depreciation has been accounted for on the financial statements. Walk through the 3 statements after the sale of PP&E.
  - Starting on the IS...
    - Gain on sale recorded positively as 40, pre-tax income up 40, NI up 32
  - Moving onto the SCF...
    - NI up 32, subtract 40 from gain on sale under CFO, add 120 under CFI, so cash at bottom is up 112
  - Finally, on the BS...
    - A: Assets up 32, cash up 112, PP&E down 80
    - L: no change in liabilities
    - SE: Equity up 32, retained earnings up 32
  - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- Year 0: Buy Land for $90 using cash on hand. Walk through the 3 statements.
  - Starting on the IS...
    - No change
  - Moving onto the SCF...
    - In CFI outflow of $90 for purchase of land, so net change in cash is $90
  - Finally, on the BS...
    - A: Assets unchanged, Land up $90, cash down $90
    - L: No change
    - SE: No change
  - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- Year 2: Straight-line depreciation occurs over a 10-year period. After two years, you sell the land for $90. Walk through the 3 statements after the sale of land.
  - Starting on the IS...
    - Gain on sale recorded as 0, pre-tax income up 0, NI up 0 / unchanged
  - Moving onto the SCF...
    - NI unchanged
    - Add 90 from sale of land under CFI, cash up by 90
  - Finally, on the BS...
    - A: Assets unchanged,, cash up 90, land down 90
    - L: no changes under liabilities
    - SE: NI unchanged
  - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- You raise $100 debt with 5% interest and 10% yearly principal repayment. You use that money to purchase $100 of short-term assets that have 10% yearly interest income attached. Right when you raise the debt and purchase short term assets, walk me through the 3 statements.
  - Starting on the IS...
    - No change
  - Moving onto the SCF...
    - In CFI, outflow of $100 for short term assets
    - In CFF, increase of $100 because of debt raised
    - So, net change in cash is $0
  - Finally, on the BS...
    - A: Short-term assets up $100
    - L: Debt up $100
    - SE: No change
  - ...and the Balance Sheet balances

Accounting Answers

Assume 20% tax rate

- You raise $100 debt with 5% interest and 10% yearly principal repayment. You use that money to purchase $100 of short-term assets that have 10% yearly interest income attached. After one year, walk me through the 3 statements.
    - Starting on the IS...
        - Interest income is $10 and interest expense is $5
        - Pretax income increases by $5, Net Income increases by $4
    - Moving onto the SCF...
        - Net Income up by $4, in CFF repay $10 of debt, so net change in cash is down $6
    - Finally, on the BS...
        - A: cash down $6
        - L: debt down $10
        - SE: Retained Earnings from Net Income up $4
    - ...and the Balance Sheet balances

ENTERPRISE & EQUITY VALUE ANSWERS

Enterprise Value/Equity Value

- Formula for Enterprise Value?
  - Enterprise Value = Equity Value + Debt + Preferred Stock + Non controlling interests - Cash and Cash Equivalents
- Why do you add NCI/subtract cash?
  - Own over 50% of company → need to consolidate 100% of its financial statements with your own
  - ...but Equity Value only reflects the value of the percentage that you own (which is not 100%), so you need to reflect 100% of that other company in Enterprise Value → if you did not add NCI, you would only be reflecting 60%, or 70%, or however much you own
  - You subtract cash because you are receiving this when you purchase a company (technically you should only subtract away excess cash / cash excess of what you need to operate the company, but this is fine for entry-level interviews)

Enterprise Value/Equity Value

- Difference between Equity Value versus Shareholders' Equity?
  - Equity Value is the **market** value and Shareholders' Equity is the **book** value
  - Equity Value could never be negative because shares outstanding and share prices can never be negative, whereas Shareholders' Equity could be positive, negative, or 0
- How does ____ affect Enterprise Value?
  - Raise $200m in Debt, use cash to buy a new piece of equipment.
    - EV +200m
    - +200m Debt
    - -200m Cash (borrowing in form of debt)
    - +200m Cash (purchase is a decrease in cash, which is subtracted from EV thereby boosting it)
  - Issue $200m in Equity for an IPO.
    - EV unchanged
    - +200m Equity Value
    - -200m Cash (increase is subtracted)

Enterprise Value/Equity Value

- Two companies are 100% comparable. Why might one trade at a premium (e.g. higher EV/EBITDA multiple)?
    - One company may have high revenue growth rates or high EBITDA margins
- Would you rather buy a company with a high or low P/E multiple?
    - Generally, would rather buy low and sell high, so would want to buy one with a low P / E multiple that increases over time
    - Remember, P / E signifies how much investors are willing to pay per $1 of earnings
- What are some multiples you could use for a company with a negative Net Income?
    - Revenue-based multiples (e.g. EV / Revenue)
    - Cash-flow multiples (e.g. EV / FCF)
    - Industry-specific multiples (e.g. EV / Unique Users for internet companies)

Enterprise Value/Equity Value

- Company A and Company B have identical EV/EBITDA. Company A has a higher P/E multiple. Why might this be the case?
    - Pay attention to the "ITDA" in EBITDA
        - Different capital structures (e.g. one has more debt and thus more interest expense)
        - Different Depreciation / Amortization
        - Different tax rates
- You have a company with an EV/Revenue of 2x and an EV/EBITDA of 10x. What is the EBITDA margin?
    - 20% (EBITDA margin = EBITDA / Revenue)
- A company has a stock price of $20 a share and a P/E of 20x (so EPS is 1). The company has 10M shares outstanding. How does a 2-for-1 stock split affect EV?
    - Does not affect EV, there are now 20m shares outstanding and EPS is now 0.5

Enterprise Value/Equity Value

- A company has 10,000 shares at $20 a share. There are 100 call options at an exercise price of $10, 50 restricted stock units (RSUs) and 100 convertible bonds at a price of $10 and par value of $100. What is the diluted equity value?
    - Options: Company receives $1000, 100 new shares created, company able to buy back 50 shares (50 new shares)
    - Add 50 restricted stock units (so far 100 new shares)
    - Convertible Bonds
        - Par Value / Price = # of shares per convertible bond → $100/10 = 10 shares per convertible bond * 100 convertible bonds = 1000 new shares
        - 1000 + 100 (from prev. steps) = 1,100 → diluted share count is 11,100
    - Diluted Equity Value = 11,100 * 20 = 222,000

VALUATION ANSWERS

Valuation Answers

- What are the 4 main valuation methodologies? Rank them from highest to lowest and explain.
    - Comparable Companies Analysis, Precedent Transactions, Discounted Cash Flow (DCF), & Leveraged Buyout Analysis (LBO)
    - No steady rule as to which will produce the highest valuation
    - Growthy and optimistic assumptions in a DCF might make it highest
    - On average, precedent transactions is almost always higher than comparable companies because of the control premium paid in acquisition scenarios
    - LBO is seen as a floor valuation, what a financial sponsor would shell out to realize a target IRR → typically the lowest

Valuation Answers

- What are some flaws of comparable companies & precedent transactions?
  - Comparable Compaines
    - No two companies are 100% comparable
    - Stock market is "emotional" (multiples may be much higher / lower on certain dates based on market movements)
    - Share prices for small companies w/ thinly-traded stocks may not reflect full value
  - Precedent Transactions
    - Past transactions rarely 100% comparable (transaction structure / size of companies / market sentiment varies greatly)
    - Data on precedents generally more difficult to find than it is for public comps., especially for acquisitions of small / private companies

Valuation Answers

- What metrics do you look at for comparable companies? What additional metric do you look at for precedent transactions?
  - FIG → Financials, Industry, and Geography
  - Precedent → Time frame (e.g. past 2 years)
- What would a situation be where precedent transactions is less than comparable companies?
  - If there are no good M&A transactions in recent years that accurately represent the current deal, you may have to extend the time range even further back and that could ultimately end up with a lower valuation
  - Similarly, if recent M&A market is poor, may lead to depressed valuations

Valuation Answers

- Why does a DCF *almost always* produce a higher valuation than an LBO?
  - LBO = only valued based on TV no value from cash flows in holding period)
  - DCF = takes into account both cash flows in projection period and terminal value
- What are some other valuation methods we could use?
  - Other valuation methods include Sum of Parts (such as for a conglomerate like GE), Liquidation Valuation, and the Dividend Discount Model (used in FIG for banks / insurance)
- Is a company with a 50x P/E overvalued or undervalued? Why?
  - A P/E multiple alone does not tell us if it is over or undervalued… we would need to look at the industry average, the expectations for the company's growth and forward performance, and other qualitative and quantitative considerations
  - Maybe the industry average is 40x and this company seems overvalued relative to its performance, or maybe it is lagging behind and this multiple is "cheap"
  - In the REAL WORLD, that multiple may be high relative to the S&P 500's P/E, but from that number alone we can't say conclusively if it is over or undervalued

DCF ANSWERS

DCF Answers

- What is a DCF/can you walk me through a DCF in under 60 seconds?
  - A DCF values a company with the Present Value of its Free Cash Flows plus the Present Value of its Terminal Value
  - You can divide the process into 6 steps
    - 1. Project a company's Free Cash Flows over a 5-10 year period
    - 2. Calculate the company's Discount Rate, usually using WACC (Weighted Average Cost of Capital)
    - 3. Discount and sum up the company's Free Cash Flows.
    - 4. Calculate the company's Terminal Value
    - 5. Discount the Terminal Value to its Present Value
    - 6. Add the discounted Free Cash Flows to the discounted Terminal Value."

DCF Answers

- Why do you typically use 5-10 years for the projection period?
  - Need to project cash flows until they reach a "steady state"
  - Also, that's about as far as you can reasonably predict for most companies
    - Less than 5 years would be too short to be useful; more than 10 years is too difficult to project for most companies
- How would you change a DCF to value a highly speculative technology company?
  - May employ a longer projection period (may take longer for company to reach "steady state" of cash flows)
  - May use a much higher Discount Rate
  - You may also adjust management's growth or profit expectations
- Key assumptions/drivers of a DCF?
  - Discount Rate
  - Terminal Value
  - Revenue growth rate / margins

DCF Answers

- Tell me 3 places where taxes affect a DCF.
  - Calculating FCF (NOPAT)
  - Calculating Beta (conversion from Unlevered to Levered)
  - Calculating Cost of Debt (interest on debt is tax deductible)
- If you are valuing a coal mine company, would you use the Gordon Growth Method or the Multiples Method to calculate the TV? Explain.
  - Multiples Method
    - Gordon Growth assumes cash flows exist into perpetuity and coal is a depleting resource

DCF Answers

- A company buys a factory for $100 in its 4th year. How would the DCF/Enterprise Value change for the company?
    - Include additional CapEx spending of $100 in Year 4 of the DCF, which would reduce Free Cash Flow for that year by $100
    - The Enterprise Value, in turn, would decrease by the present value of $100 in Year 4
    - You would calculate the difference by dividing $100 by ((1 + Discount Rate)^4). Then you would subtract this amount from the Enterprise Value
- Do you use planned or targeted capital structure in WACC?
    - If you know for sure that the company's capital structure will change in the (near) future, sure, you can use the new Debt and Equity values in all these calculations
    - In real life this almost never comes up because no one "knows" how a company's capital structure will change far in advance

DCF Answers

- What is FCF? Why do we use it in a DCF?
  - "Free Cash Flow" means how much after-tax cash flow the company generates on a recurring basis, after you've taken into account non- cash charges, changes in Operating Assets and Liabilities, and required Capital Expenditures
  - You calculate and use Free Cash Flow in a DCF because that closely corresponds to the actual cash flow that you, as the investor, would receive each year if you bought the entire company
- Walk me from Revenue to FCF for Unlevered and Levered FCF.
  - Unlevered FCF: Revenue - COGS - Operating Expenses= EBIT *(1 - tax rate) + Non-Cash expenses - Change in NWC - CapEx
    - Excludes interest and debt
  - Levered FCF: Net Income + Non-cash expenses - Change in NWC - CapEx - Mandatory Debt Repayments
    - Includes interest and debt

DCF Answers

- What is WACC, conceptually? How do you calculate it?
    - Minimum return a company needs to earn to satisfy all of its investors (equity, debt, preferred stock holders)
    - Firm's overall cost of capital (combination of cost of equity and cost of debt)
    - You're determining the "cost" of each part of a company's capital structure, and then calculating a weighted average based on how much Equity, Debt, and Preferred Stock it has
    - WACC = Cost of Equity * % Equity + Cost of Debt * % Debt * (1 – Tax Rate) + Cost of Preferred Stock * % Preferred Stock
    - How do you calculate Cost of Equity? Cost of Debt? Cost of Preferred Stock?
        - Cost of Equity = Risk-Free Rate + Equity Risk Premium * Levered Beta
        - Cost of Debt = Interest Rate on Debt
        - Cost of Preferred Stock = Effective Yield on Preferred Stock

DCF Answers

- What would you use as your discount rate if you are using Levered FCF? Why?
    - You would use Cost of Equity as the Discount Rate because you only care about Equity investors there, and you're calculating Equity Value rather than Enterprise Value
- What is Beta, and why do you have to unlever and relever it?
    - Beta is the "riskiness" of this company relative to all other companies in the stock market
        - Ultimately a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole
        - If Beta = 1, that means that the company is just as risky as the overall index (f the market goes up by 10%, this company's stock will go up by 10%)
    - Since each company's capital structure is different, unlever to look at riskiness of company regardless of capital structure
    - Re-lever at end to reflect true risk of company, taking into account capital structure when calculating Cost of Equity

DCF Answers

- When would you rather use the Multiples Method vs. the Gordon Growth Method (GGM)?
  - If the industry is cyclical or multiples are hard to predict, the Gordon Growth method may be better; if multiples are easier to estimate, the Multiples Method may be better
  - Can't use GGM in industries with depleting resources (e.g. coal mine company) since it assumes cash flows exist into perpetuity
- How would you calculate the long-term growth rate for the GGM?
  - Normally you use the country's long-term GDP growth rate, the rate of inflation, or something similarly conservative
  - For companies in developed countries, a long-term growth rate over 5% would be quite aggressive since most developed economies are growing at less than 5% per year

LBO ANSWERS

LBO Answers

- What is an LBO/can you walk me through an LBO?
    - Financial sponsors / Private Equity firms buy a company using a combo of debt / equity then sell it after holding period (typically 3-5 years) to realize a return
    - 5 Steps
        - 1) Make assumptions about Purchase Price, Debt/Equity ratio, Interest Rate on Debt and other variables such as Revenue Growth / Margins
        - 2) Create a Sources & Uses section, which shows how you finance the transaction / what you use the capital for / how much Investor Equity is required
        - 3) Adjust the company's BS for new Debt / Equity figures + add in Goodwill & Other Intangibles on the Assets side to make everything balance
        - 4) Project out the company's 3 statements and determine how much debt is paid off each year, based on the available Cash Flow and the required Interest Payments
        - 5) Make assumptions about the exit after several years, usually assuming an EBITDA Exit Multiple, and calculate the return based on how much equity is returned to the firm

LBO Answers

- What makes a strong LBO candidate? (should know at least 5, and know which one is the most important one & why)
    - A number of factors, but **stable and predictable cash flows** (so they can repay debt) is the most important (explains why LBOs rarely happen in industries like oil, gas and mining where commodity prices can fluctuate and drastically affect cash flows)
    - Other factors include:
        - Co. is undervalued relative to peers (lower purchase price)
        - Low-risk biz (helps w/ debt repayment certainty)
        - Low CapEx requirements
        - Opportunities to cut costs / increase margins
        - Strong management teams
        - Solid asset base (used as collateral for debt)

LBO Answers

- 3 main drivers of IRR? (should know at least 5, but know the main 3)
  - Main 3
    - Lower purchase price (reduces cash investment)
    - Larger exit multiple (increases funds received)
    - Increased leverage (reduces amount of upfront equity required)
  - Others
    - Dividend Recaps (recoup equity investment)
    - Time frame (shorter = better, TV of money)
    - Accelerating the company's growth (increase EBITDA / exit multiple)
    - Improving margins (increase EBITDA / exit multiple)
    - Realizing synergies with other portfolio companies or rolling in new acquisitions

LBO Answers

- Why do financial sponsors pay less than a strategic buyer?
    - Strategic buyers can realize synergies that private equity firm cannot unless it combines co. w/ complementary portfolio co.
    - Synergies boost effective valuation of target
- Different types of debt you could raise in an LBO?
    - At a high-level, bank debt and high-yield debt
    - At a deeper-level,
        - Bank debt split into different types of "Term Loans," all of which carry different principal repayment terms, interest rates, covenants, and maturities
        - High-yield debt split into Senior Notes, Subordinated Notes, and Mezzanine, which all have different seniorities, interest rates, maturities, covenants, and more
        - Some debt also has a Payment-in-Kind (PIK) option for interest, in addition to traditional cash interest (PIK interest accrues to debt principal)

LBO Answers

- What is a dividend recapitalization? What is its effect on IRR?
    - LBO candidate is forced to take on additional debt in order to pay out special dividend to financial sponsors
    - Allows financial sponsor to recoup equity investment earlier on, increasing IRR due to the TV of money
- What is PIK interest? Why may a distressed company prefer PIK interest?
    - PIK interest is a non-cash interest expense that accrues to the debt principal
    - Distressed companies may prefer to issue debt with PIK interest to reduce the cash interest expense

LBO Answers

- What happens to the Balance Sheet after an LBO?
  - Liabilities & Equity side
    - New debt is added
    - Shareholders' Equity "wiped out" / replaced by however much Investor Equity the private equity firm is contributing
  - Assets side
    - Cash adjusted for any cash used to finance the transaction / transaction fees
    - Goodwill & Other Intangibles → "plug" to make the BS balance
    - Also may see Asset Write Ups and Write-Downs, DTLs, DTAs, Capitalized Financing Fees, etc...

LBO Answers

- What happens to the Income Statement after an LBO?
  - Cost Savings (may assume PE firm cuts costs by laying off employees, which could affect COGS, OpEx, or both)
  - New Depreciation Expense (from any PP&E write-ups)
  - New Amortization Expense (from written-up intangibles / capitalized financing fees)
  - Interest Expense on LBO Debt (include both cash / PIK interest)
  - Sponsor Management Fees

LBO Answers

- What is a revolver and why is it the cheapest form of debt?
  - Analogous to a "credit card" for a company
    - Starts off "undrawn," meaning that co. doesn't borrow money and doesn't accrue a balance unless it needs it
  - Highest seniority (senior secured) in capital structure
  - Typically lowest interest rates; earliest to get repaid (e.g. gets payed off before Term Loans)

MERGER MODEL ANSWERS

Merger Model Answers

- Walk me through a merger model.
  - Used to analyze the financial profiles of 2 companies, the purchase price and how the purchase is made, and determines whether the buyer's EPS increases or decreases
  - 1) Make assumptions about acquisition (price / financing methods)
  - 2) Determine Valuation / shares outstanding of buyer + seller and project out IS for each party
  - 3) Combine IS, adding line items such as Revenue / OpEx + adjusting for Foregone Interest on Cash and Interest Paid on Debt in the Combined Pre-Tax Income line
  - 4) Apply buyer's tax rate to get combined Net Income, then divide by new share count to determine combined EPS

Merger Model Answers

- What are the two types of buyers?
  - Financial buyers and strategic buyers
- Why would a company buy another company? How would this reasoning differ for the two types of buyers?
  - Several reasons
    - Gain market share / grow quickly
    - Seller is undervalued
    - Acquire seller’s customers
    - Acquire key technology / IP from seller
    - Acquire talent from seller (“acquihire”)
    - Possibility of significant revenue / cost synergies
  - Generally, financial sponsors motivated more by returns / IRR versus strategic buyers are willing to take larger bets / longer-term view on potential success

Merger Model Answers

- 3 main financing methods and why use one over another?
    - Stock, Cash and Debt
    - Assuming buyer has unlimited resources, almost always prefers cash
        - Cheaper than debt (IR on cash < 5% whereas IR on debt usually higher)
        - Cheaper than stock (most P /E multiples are in 10-20x range, which equals a 5-10% "Cost of Stock")
        - Less risky than debt (no chance buyer may default)
        - Less risky than stock (share price can plummet)
    - However, typically see a mix since it may be saving cash for something else or its stock max be trading at an all-time high (which would mean a higher P /E multiple and lower "Cost of Stock")

Merger Model Answers

- When would you prefer revenue synergies over cost synergies, and when would you be indifferent? (think of the two types of revenue synergies)
    - If revenue synergies coming from cross-selling to new customers, and thus selling MORE products, would prefer cost synergies
        - Increase in units sold would come with an associated increase in COGS, whereas cost synergies are realized in isolation
    - If revenue synergies coming from selling same number of products at higher cost (e.g. no associated increase in COGS), would be indifferent between revenue and cost synergies

Merger Model Answers

- Why do we look at EPS & accretion/dilution?
  - Essentially because shareholders care about this metric
  - Can provide “hard” or financial rationale in addition to more “fuzzy” reasons
- Difference between Mergers vs. Acquisitions?
  - Merger: companies are close to same same
  - Acquisition: buyer is significantly larger

Merger Model Answers

- What are the 5 main acquisition affects?
    - Foregone Interest on Cash (buyer loses interest income it would have otherwise earned if it uses cash for the acquisition)
    - Additional Interest on Debt (buyer pays additional interest expense if debt is used)
    - Additional Shares Outstanding (if buyer pays w/ stock, must issue additional shares)
    - Combined Financial Statements (seller's financials are added to buyer's post-acquisition)
    - Creation of Goodwill & Other Intangibles (BS items that represent a "premium" paid to a company over it's "fair value")

Merger Model Answers

- What happens to the Balance Sheet after M&A?
  - Current Assets → add most, but subtract any Cash used by buyer to acquire seller
  - LT Assets → adjust PP&E value up / down, adjust values of Goodwill & Other Intangibles
  - Current Liabilities → add everything here, perhaps adding or subtracting Debt if the buyer uses Debt to acquire the seller or pays off the seller's Debt
  - LT Liabilities → add most items here, but you add or subtract Debt if the buyer uses Debt to acquire the seller or pays off the seller's Debt; you may also adjust the Deferred Tax Liability
  - Shareholders' Equity → wipe out the seller's Shareholders' Equity, but add the dollar value of new shares issued by the buyer

Merger Model Answers

- What happens to the Income Statement after M&A?
    - Synergies → reflect any assumed revenue / expense synergies
    - Depreciation & Amortization → reflect new D&A expense from any changes to PP&E / Other Intangible Assets
    - Foregone Interest on Cash → if buyer used cash, this equals Cash Used * Interest Rate
    - Interest Paid on New Debt → if buyer used debt, this equals Debt Used * Interest Rate
    - Shares Outstanding → if buyer issued shares / used stock, this equals Old Buyer Shares Outstanding + Number of Shares Issued in Deal

Merger Model Answers

- Company A buys Company B. Company A has a higher P/E ratio than Company B. Would the deal be accretive or dilutive if:
  - The deal is all stock
    - Deal would be accretive
    - Buyer "gets" more in earnings for each $1.00 used to acquire the other company than it does from its own operations (remember P /E = how much investors are willing to pay per $1 of earnings)
  - The deal is all debt / all cash
    - P / E multiple of the buyer doesn't matter because no stock is being issued

Merger Model Answers

- What is the combined equity value of a company if the deal is not financed with any stock?
    - Combined Equity Value = Buyer's Equity Value + Value of Stock Issued in Deal
    - Thus, if no stock is issued in the deal, the Combined Equity Value would simply be the Buyer's Equity Value

Merger Model Answers

- What are Deferred Tax Liabilities and Deferred Tax Assets? Why do they sometimes get created in M&A transactions?
    - Normally write down most of the seller's existing DTLs and DTAs to "reset" its tax basis, since it's now part of another entity
    - May create new DTLs or DTAs if there are Asset Write-Ups or Write-Downs and the book and tax Depreciation and Amortization numbers differ
        - Write-ups → Deferred Tax Liability will be created in most deals since the Depreciation on the write-ups is not tax-deductible, which means that the company will pay more in cash taxes
        - Write-downs → Deferred Tax Asset will be created (opposite of above applies)

MISC. ANSWERS

Misc. Answers

- Would you rather us hand you $1,000 today or $100 every year into perpetuity?
  - Depends on the discount rate r
  - PV of Perpetuity = X / r
    - If r < 10%, would rather take 100 every year
    - If r > 10%, would rather take $1,000 today.
- What is the Beta of a gambling ring?
  - 0 - no correlation to the market

Misc. Answers

- What is the P / E of cash?
  - If the price is $1, and at the minimum you can earn an ordinary yield between 1-3% on risk-free assets, the P/E could potentially range btwn 33x to 100x
- 5 things a company can do with cash?
  - Finance future project / CapEx
  - Pay back debt
  - Acquisitions
  - Stock buybacks
  - Issue cash dividends

Misc. Answers

- 2 ways you can return cash to shareholders? Why would you prefer one over the other?
  - Dividends → taxed twice, shareholders have to pay taxes immediately
  - Company buys back shares → signal to shareholders that the company thinks it is undervalued, and shareholders don't need to pay taxes right away (capital gains)
- Explain the concept behind the time value of money to a 5 year old without talking about money.
  - Would you rather have 1 apple seed now or later? Now is worth more since you can plant a tree and get more apples.

Misc. Answers

- You are evaluating two laundry mat companies. One owns the equipment, while the other leases the equipment. Which one would you rather buy and why?
  - For owning, save money on depreciation since its a non-cash expense (tax shield)
  - For leasing, annual expense incurred in form of rent expense, so EBITDA is lower (and thus EV / EBITDA is higher)
    - For owning, annual expenses incurred in form of D&A and interest → EBITDA includes neither, so EBITDA is higher and EV / EBITDA is lower
- How do you value a company with no financials or comparables?
  - Could assign value from network or users
  - e.g. Put a value to each user, could look at how much time each user spends using the service or the website

Misc. Answers

- A company has
  - $2bn in assets
  - 3x Debt to Equity
  - 2x P / BV…
  - What is its market cap?
    - Answer: 1bn
    - A = L + SE
    - If A = 2bn, we know L + SE = 2bn since A = L + SE
    - Thus, since Debt is 3x Equity, we know that Liabilities are 1.5bn and Equity is .5bn or 500mm (add up to 2bn)
    - BV (Book Value) is essentially shareholder's equity, and since the P / BV is 2x, we know that the market cap of the company is 1bn (2 * 500mm)

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