

Interview Process Advice 1/21/11

1. Resume
 - a. If it is on your resume, you will get grilled on it (and it will be fact-checked upon hire). Lying may get you through the resume drop but you will get ripped apart during the interview
 - b. If you emphasize math abilities, be prepared for math questions/puzzles. If you don't, still expect some easier ones.
 - c. If your resume emphasizes previous financial knowledge, be prepared to be battered by complex financial questions – and I guarantee your interviewer will know more on the subject than you do.
 - d. People working in finance pride themselves on their lives outside of finance. If you seem to excel in finance but have nothing interesting in your college life it will reflect poorly.
2. On-Campus Interviews
 - a. In almost every interview, the first question is “tell me about yourself” or “walk me through your resume”. The interviewer has never seen your resume or heard of you before, so this gives him/her a chance to skim it or have you say the important points, and s/he will improvise the interview from there. This is your chance to steer the conversation in your favor from the beginning.
 - b. Most first round/on-campus interviews will be fit-based with some current events. If the interviewer is from an HR role, s/he will not be able to play devils advocate to your argument, and s/he won't ask technical questions.
 - c. The interviewers are going through so many rounds in a day (instead of being at work), so they will be tired and constantly checking their blackberries. Do not be offended or think you're doing terribly. You don't have to wow them either, just prove you're more interesting and capable than the 70 other kids going for the same spot.
 - d. To answer fit questions, I would make a list of 5-7 major life events or significant moments in your education. It can be a group project, how you chose to attend Columbia over other colleges, or anything unique and life-changing. When almost any fit question is asked, you can mold it to one of the responses from your list.
 - e. It's good to have prepared responses, but you should not sound scripted. Practice a few times saying something in different ways, don't memorize one way to tell a story.
3. Super-days
 - a. Super-day interviews are meant to break you down and see how you react under pressure. You're not supposed to amaze every single interviewer, just hold your own.

- b. For most firms, you don't need every interviewer to like you. You only need one to really pull for you, and none to really dislike you. If the rest are ambivalent, you'll still get the job.
 - c. Super-days are like speed-dating, they expose you to many different character to see which ones you click with and see if you clash with any. If you end up working there, you don't need to click with everybody (just your team), but you certainly shouldn't clash with anybody
4. Waiting for offers
- a. Interviews are a crap-shoot. It is impossible to gauge a person's character within half an hour from stupid puzzles and trick questions, but there is really no other way to feed the Wall St. labour force than this. Even the best will not get some offers – don't be discouraged.
 - b. So much of finance can be taught to anybody, so they just want to make sure they can get along with you for 16 hour work days. Each desk from each bank has a different personality, and even if it's your dream job it may not be a good fit because of the people
 - c. You gain experience with each interview, so while you're waiting for some responses keep interviewing – don't shut any doors.
5. Accepting offers
- a. Do not shop around for internship offers. If you are accepted to one and you are waiting for another you would prefer, that is ok, but do not pit companies against each other – interns aren't that important.
 - b. Once HR calls you with an offer, they inform everybody you interviewed with of your decision. If you say you are not ready to accept just yet, know that the people you networked with will know of that within 5 minutes of that phone call.

Finance Interview Questions

Figures to memorize: DJIA, S&P500, Nasdaq, gold, oil, USD/YEN, USD/EUR, 10-yr treasury yield, Fed Funds rate, LIBOR

Fit

- “Please identify a time that caused you to greatly improve your leadership skills.”
- Describe a situation in which you have worked in a team and a problem you have faced.
- What role do you typically play when working on a group project? Provide a recent example.
- “Sell me this pen. Go.”
- What is your greatest strength and why?
- What is your greatest weakness and why?
- Tell me about yourself.
- Walk me through your resume.
- How did you get interested in ____?
- What qualities do you think make someone successful in finance?
- What courses have you liked most?
- What does a Trader do? What does a Salesperson do?
- Do you want to sell or trade equity or debt instruments? Why?
- Tell me about the last time you gave someone negative feedback.
- Tell me what you have done when there was an individual in a group setting not pulling their weight.
- Give me an example in which you went beyond expectations in order to get something done.
- Give me an example where you have been creative to get out of a tricky situation.
- How would your teammate describe you?

Current Events

- Tell me about the economic troubles of Japan.
- What is going on in the markets today?
- Tell me about a stock you like.
 - Don't say a blue chip stock like AAPL. The more micro-cap, the better. The interviewer will know less of it and won't be able to argue against you.
- Where is the ____ (dow, euro, gold, S&P 500, NASDAQ...) at?
- What was QE1, QE2? What was the effect of the Fed promising low rates until mid-2013?
- Explain the recent financial crisis. Who is to blame for the financial crisis?
- Explain the flash crash.
- How do you think the current oil price will affect trading conditions?
- How has the European Debt Crisis evolved? Where does it stand now? Is it over or what do you think will happen next?

- If the European economy enters a deep recession, what effect will it have on the US economy? Which major global economies will be least affected?
- What will the US Equity market do over the next year?
- Is China experiencing an asset bubble? Can they maintain their growth?

Technical – Financial

- I have a call option maturing in one year with 0.5 delta. what's the probability it will expire in the money?
 - $0.5 : \Delta = \Phi(m + \sigma\sqrt{T}/2)$, which is close to actual probability $\Phi(m)$ of expiring ITM. The true probability, the dual delta, is the derivative w.r.t. strike price K .
- How could you quickly decide when to exercise a Bermudan receiver swaption?
 - Consider for each exercise date the effective rate over the tenor of the swaption taking into account the prevailing rate up to the exercise date and the strike rate. Would it be advantageous to wait or exercise?
- Walk me through a DCF.
- What is the Capital Asset Pricing Model and how is it derived?
- What are the inputs into the Black-Scholes option pricing model?
- If interest rates rise, what happens to bond prices, and why?
- What is duration/Macaulay duration/Modified duration?
- If the yen/dollar exchange rate is 100yen/\$ today and the one year forward rate is 105yen/\$, what does this imply?
- Would a price of a call option go up or down when the maturity of the option is longer?
- Which is higher – the cost of debt or the cost of equity?
- What's leveraged finance?
- What is a PE ratio? What does a relatively high PE ratio mean to the market, and how does that differ to what it means for a trader?

Technical – Math

- What is the limit of $((a^x + b^x)/2)^{1/x}$ as x goes to 0?
 - $\sqrt{a \cdot b}$. Look at the log of the formula and use L'Hopital's rule.
- If you had 5,623 participants in a tournament, how many games would need to be played to determine the winner
 - $\log(5623)/\log(2)$
- There's a 60% chance it will rain on Saturday AND Sunday. What is the probability that there will be rain on the weekend?
 - 84%
- Imagine an analog clock set to 12 o'clock. Note that the hour and minute hands overlap. How many times each day do both the hour and minute hands overlap? How would you determine the exact times of the day that this occurs?
 - After 12 o'clock, the minute hand races ahead of the hour hand. By

the time the minute hand has gone all the way round the clock and is back at 12, one hour later (i.e., at 1 o'clock), the hour hand has moved to indicate 1. Five minutes later, the minute hand reaches 1 and is almost on top of the hour hand, but not quite, since by then the hour hand has moved ahead a tiny amount more. So the next time after 12 that the minute hand is directly over the hour hand is a bit after 1:05. Similarly, the next time it happens is a bit after 2:10. Then a bit after 3:15, and so on. The eleventh time this happens, a bit after 11:55, has to be 12 o'clock again, since we know what the clock looks like at that time. So the two hands are superimposed exactly 12 times in each 12 hour period.

- To answer the second part of the puzzle, you have to figure out those little bits of timer you have to keep adding on. Well, after 12 o'clock there are eleven occasions when the two hands match up, and since the clock hands move at constant speeds, those 11 events are spread equally apart around the clock face, so they are $1/11$ th of an hour apart. That's 5.454545 minutes apart, so the little bit you keep adding is in fact 0.454545 minutes. The precise times of the superpositions are, in hours, $1 + 1/11$, $2 + 2/11$, $3 + 3/11$, all the way up to $11 + 11/11$, which is 12 o'clock again.
- Given a fair coin, what is the expected number of tosses you need to get 2 consecutive heads?
- “Out of 25 horses, pick the fastest 3 horses. In each race, only 5 horses can run at the same time. What is the minimum number of races required?”
- Given a bus stop, and two buses come at 10 mins and 20 mins interval.
 1. If you come to the bus stop and see a bus leaving, what is the expected time you need to wait for another bus?
 2. If you come and see no bus at all, what is the expected waiting time?
 3. If you have waited for 9 minutes and did not see any bus coming, what is the expected waiting time
- “Given the numbers 1 to 1000, what is the minimum numbers guesses needed to find a specific number if you are given the hint "higher" or "lower" for each guess you make.”

Puzzles

- You've got someone working for you for seven days and a gold bar to pay them. The gold bar is segmented into seven connected pieces. You must give them a piece of gold at the end of every day. If you are only allowed to make two breaks in the gold bar, how do you pay your worker?
 - 4,2,1
- Given a two-sided balance and 9 marbles, 1 of which whose weights is different from the rest (more or less), how can you identify the odd marble in the least number of weighings?
 - Weigh 3 v. 3. If equal, it's in the third set of 3. If unequal, remove one from each side, swap one from each side onto the other side,

and re-weigh. If equal, it's one that you removed. If unequal and the balance falls to the same side, it's one that you left. Otherwise, it's one that you swapped.

- Imagine a disk spinning like a record player turntable. Half of the disk is black and the other is white. Assume you have an unlimited number of color sensors. How many sensors would you have to place around the disk to determine the direction the disk is spinning? Where would they be placed?
 - 2 right next to each other
- Imagine a cube, made of 1000 of small cubes so it's 10 by 10 by 10. how many of these cubes are facing the outside?
 - $488 : (10^3 - 8^3)$
- You and I are sitting at a round table, playing a game of coin. By turns we put down a coin on the table until the table is full. The first person who cannot put down another coin has lost. Do you want to put down the first or the second coin?
 - First coin - it should be put in the middle. Then no matter where the other person will put his coin, you will put it exactly opposite - this means, if the other person can put down a coin, you will be able to do so as well. Meaning that the first person not being able to put down a coin will be person number two.
- I have a 3 gallon drum and a 5 gallon drum and I want 4 gallons of water. How do I do that with only the 3 and 5 gallon drums?
 - Fill the 5 gallon jug, pour into the 3 gallon jug. Pour out the 3 gallon jug and pour the 2 gallons of water in the 5 gallon jug into the 3 gallon jug. Fill up the 5 gallon jug. Pour 1 gallon from the 5 gallon jug into the 3 gallon jug with 2 gallons of water in it. You end with 4 gallons of water in the 5 gallon jug and a full 3 gallon jug.
- If given a rectangular cake with a rectangular piece removed (any size or orientation), how would you cut the remainder of the cake into two equal halves with one straight cut of a knife?
 - Find the centers of both the original cake and the removed piece. Cut the cake along the line connecting these two centers. As this line cuts the original cake and the removed piece in half, the remainder is two equal halves.
 - Cut the entire cake in half horizontally (i.e. parallel to the table). This will get you two even halves.
- You have 18 coins, one of which weighs twice as the others. You have two-side balance scale which you can use only 3 times to identify it. How do u do it?
- A software engineer has the capability of thinking 100 lines of code in five minutes and can type 100 lines of code in 10 minutes. He takes a break for five minutes after every ten minutes. How many lines of codes will he complete typing after an hour?
- You are in a game of Russian Roulette with a revolver that has 3 bullets placed in three consecutive chambers. The cylinder of the gun will be

spun once at the beginning of the game. Then, the gun will be passed between two players until it fires. Would you prefer to go first or second?

- second

Other

- "In your opinion, what is the most beautiful math equation ever derived?"
- "An apple costs 20 cents, an orange costs 40 cents, and a grapefruit costs 60 cents, how much is a pear?"
- How many pennies can you fill in the room you're sitting in right now? You cant estimate, you have 30 seconds.
- There 3 are hats with an apple under one and you meant to pick which one. Once you made you're selection, I remove one of the other two and ask you if you want to stick to your first choice or switch. What do you do and why?
- Why are manhole covers round?
- How many seats are there on the 1 train?
- How many manholes are there in NYC?
- How many people does the McDonalds in Times Square serve every year?