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Visit the Vault Finance Career Channel at www.vault.com/finance —with insider firm profiles, message boards, the Vault Finance Job Board and more.
Introduction

PREPARATION IS KEY

Why you?

Getting a coveted position in the prestigious industry of hedge funds (“HF”) and private equity (“PE”) boils down to one question: Will you make money for the firm? The entire interview is devoted to determining that answer.

All answers should be prepared accordingly. If you have worked with companies/transactions, you should not only know the details of that particular company, but also the strategic rationale as to why it would be a good investment, or why not. If you have focused on industry expertise, be sure you can pick out specific companies that would be ideal investments based on the specific criteria of the investment strategy of the interviewing firm.

Seriously, why you?

Most likely, you are already in the industry or working in a breeder field like investment banking, sales and trading, or consulting. Even more likely, you are at a prestigious firm that you already sacrificed blood, sweat, and tears to break into.

First, pat yourself on the back for being successful. But next, realize the competition for buy-side gets much worse. If you aren’t already at Goldman Sachs or Morgan Stanley with an Ivy League education, then you better fine-tune your strategy. Also, unfortunately, this book is being written in early 2009 when buy-side jobs are particularly scarce.

You’ll need to make it past the headhunters who pre-judge you, answer technical finance and accounting questions about a field in which you may have zero experience, and even be tested on the spot by being creating an Excel model from scratch or presenting a case study. In addition to being intelligent and capable, you absolutely must fit into the culture.

Note to the audience

This guide covers all levels in the private equity and hedge fund space. However, the more junior the position, the more regimented the interviews and thus they are easier to catalog. Therefore, this guide will highlight the junior, pre-MBA interviews, which are very similar across firms. As the position gets more senior, the more the interview will focus on real work and deal experience over technical questions.

Essentially, positions above associates need only to look at the first four chapters, until “Work/Deal Experience” as technical questions are rare unless you’re from another industry and needs to prove your financial capability.
Wash, rinse and repeat

Practice as much as you can. This author didn’t get comfortable with interviewing until she bombed her first bunch. By the 10th interview, she slept with her eyes open while she spewed out packaged answers.

Reading this guide is only your first step. Good luck!
Breaking into the Industry

THE “RIGHT” BACKGROUND

Entry point

Private equity shops have clearly defined hierarchies of roles versus hedge funds, which may have looser structures. Responsibilities at both can be divided into three groups; the juniors handle the details, the middle manages the details, and the seniors focus on the bigger picture.

From junior to senior, typical roles at PE shops include associates, vice presidents, principals, managing directors and partners. The associates focus on the grunt quantitative work in which they create complex models to illustrate future company cash flows. The middle tier, the vice presidents, manage and coordinate the day-to-day needs of the deals. The top will emphasize the bigger picture, such as sourcing deals with existing or new management contacts.

Hedge funds vary depending on the size of the firm. Typical titles include research analyst, junior trader, trader, vice president, risk manager, portfolio manager, and partner. The hierarchy culture at HFs tends to be much flatter than PE.

Both judge candidates based on a spectrum: 1) analytical abilities, 2) industry experience, 3) track record, and 4) contacts. The most junior position may only demand analytical capabilities but as you move up the ladder, the requirements spread further right.

The “pedigreed”

At the lowest entry point, a college undergrad may join a hedge fund as an analyst. Rarely do recent undergrads go directly into PE. Typically, firms look for traditional buy-side (HF/PE) or sell-side (investment banking) experience. It is possible to have neither, but very difficult, so focus on networking or spend some time at an investment bank.

Typical pre-MBA associates will have had a one- to two-year stint in an investment bank, or to a lesser extent, at a consulting firm. Typical post-MBA associates will already have relevant buy-side experience but may also be recruited from other finance or corporate backgrounds. Pedigrees at prestigious colleges (Wharton, Harvard) and bulge bracket investment banks (Goldman Sachs, Morgan Stanley) improve your marketability.

Senior-level positions are offered on a case-by-case basis, so traditional or unusual backgrounds are considered as long as they are valuable to the firm. If an infrastructure fund is hiring, a project finance background as well as an engineering background will lend itself naturally. Connections are key.
MEET THE HEADHUNTERS

The first obstacle

Headhunters provide the greatest accessibility to jobs in the financial industry. SG Partners, CPI, Dynamics, Glocap, and Oxbridge are the five most popular firms and represent many of the big names. SG’s and CPI’s clients include the most prestigious firms like Bain Capital, Carlyle, Och Ziff, Perry Capital and TPG. Dynamics handles mostly hedge funds, including Citadel. An inclusive listing can be found in the appendix of this guide. You can also draw upon other resources such as networking connections and classifieds.

For the most part, headhunters are the gatekeepers to PE and HF interviews. They will gather thousands of applicants’ resumes and then handpick only a dozen to interview at each client. They are usually genuinely helpful people but remember who fills their coffers; firms pay them anywhere from 10 to 50 percent of first year’s salary. The recruiter’s job is find appropriate candidates and to get them to accept the offer.

The junior pre-MBA process

Mainly applicable to investment banking candidates, you will begin to be contacted by various headhunters in the first year of your analyst program, up to three months before the interviewing season starts. PE firms prefer to interview as late as possible so they can quiz you on work experience. However, HF firms seek out raw intelligence and interview year-round. The big HF’s start whenever they feel like it. (In 2008, Citadel started interviews in March). Because PE shops don’t want to miss out on the pool of talented candidates, they often follow suit as soon as possible.

Typically, a major PE firm will kick off its interviewing season (in 2008, The Blackstone Group started in April); then others follow and there is a month of hot and heavy interviewing for the bulk of PE firms, though plenty of jobs can also be acquired later. It’s quite comical how early the process begins, despite the interviewees barely knowing how to add, much less model, as they have not yet finished their first year working.

The junior post-MBA process

You’ll be relying on your school’s career center more than headhunters. Many firms contact the big business schools directly. The main interviewing season will occur at the beginning of your last year; but many jobs will extend beyond that. Definitely reach out to alumni at the firms or industry you’d like to work in.
Other levels

For those who are looking for jobs immediately after undergraduate college, you can try to contact some headhunters, but don’t expect a call back. You’ll need to rely on your career center or your own resourcefulness.

For senior levels, it’s a good idea to keep in constant contact with headhunters even if you are satisfied with your current job. It keeps you updated on your market worth.

Data gathering

The headhunters will collect your resume and ask you to fill out an informational sheet about your work and education history as well as your career interests and geographical preferences. Be careful if you are interested in something that is very different from your current job. For instance, you are an investment banker covering the energy sector but you’d really like to join the healthcare group at XYZ firm and get out of the energy sector. The recruiter may still slot you for energy specific firms or wherever your experience is most relevant. So position yourself as best you can.

“First-round” interview

Your first test will actually be with the headhunters. They’ll ask you about your background and what you’re interested in. They are already sizing you up to see how you would perform in a real interview, so remember to take these seriously. Show that you are professional, well prepared and earnest.

Some headhunters contact everyone at the big bulge bracket banks or big name firms, but make sure you reach out to all of them. Their high season is the official PE season, so it’s good to schedule appointments with them up to three months before they are too busy to meet you.
What to Expect

OVERVIEW OF THE INTERVIEW

The aesthetics
As with any interview, be well groomed and wear a suit. Your interviewer has an eye for detail and is accustomed to the finer things in life; pick an outfit that is conservative and of good quality. Don’t neglect your shoes and fingernails. Have an extra outfit handy—you could be called back for a second round the next day, and the night can be better spent preparing versus ironing.

The supplies
Bring business cards to exchange. Carry a portfolio (a leather folder available at office supply stores) to hold resume copies, a notepad and a pen. Some candidates keep a calculator handy, but rarely would it be appropriate to use one during an interview.

The time
Be there at least five minutes early. Factor in traffic. If you have a current job, overestimate the amount of time you will be gone from the office, since interviews will often start late or run over the allotted time.

Tip: Create discreet study materials that you can peruse while waiting. For instance, this author was an investment banker so she had a pitch book (spiral-bound client presentation) of her study materials made. Kinko’s and other photocopy stores can assist you. She was able to refresh her memory immediately before an interview while implying she was dedicated to her current job.

The rounds
Few firms will hire you after one round. Your first round will be a filtering session, either with HR or the individual most junior in the decision process. One approach uses short verbal technical questions in the beginning to bring back the smartest candidates and then interview for personality and culture fit. Vice versa, a first round may only consist of behavioral questions and then the second round uses a modeling test or case study to evaluate technical skills. Most firms use a mix of behavioral and technical questions in the first round to filter for intelligent yet personable candidates.

To give you a data point, the typical interview for a junior position is as follows: The first round is an hour of a basic question-and-answer session with one or two interviewers at the associate or VP level. Questions will consist of a mix of the behavioral and technical variety, with a heavy emphasis on deal experience. The second round is either a modeling test or case study. The third and final round will
have the candidate meet with senior-level people and will be more conversational, with you asking the majority of questions. This example is only a median point; interviews can be as short as two rounds or take longer than five. Some have zero technical assessments while others give both in-office modeling tests and take-home case studies. The larger firms tend to have the quickest turnarounds, with some even calling back for a second round the same day. Some of the smaller firms will drag their feet to ensure you are the perfect fit for the firm.

Senior positions will have as many rounds as necessary to meet the relevant superiors or peers to work with.

Your final round will always focus on meeting with the head honchos, the most relevant senior people. Sometimes, only the people in your final round will make the decision but since most groups are small and take recruiting seriously, usually everyone will convene formally to discuss their opinions. The senior people, the group head in particular, have veto power. Those who will be responsible for your work are likely to be the most vocally opinionated.

The questions

Expect to start with either “Tell me about yourself” or “Walk me through your resume.” Prepare an answer but make sure not to sound rehearsed. If you are not already in the industry, you can be certain you will be asked why you want to join.

The behavioral questions usually consist of some variation of “Why did you choose your path,” like how did you pick your college, your current firm, your previous job, etc. Your answers illustrate the strength of your desire to be in the finance industry.

This guide’s ratio of work/deal experience (Chapter 3) to technical questions (Chapter 4 through 10) is almost inversely proportional to the actual interview experience. Technical questions only serve to eliminate people who don’t academically understand finance and should, therefore, reconsider their career aspirations. Your work experience discussions are more closely scrutinized. For both types of questions, the guide will only be able to give you the basic answers and explanations. Anyone can memorize them and answer questions correctly. However, those who display a deeper knowledge that supports genuine interest will stand out.

If you’re interviewing for a senior position, you are likely to experience zero technical questions; the focus is on work experience, strength of industry relationships and investment opinions.

Aim for pointed and concise answers; think less than a minute, with 30 seconds being the sweet spot for in-depth questions. A minute is much longer than you think; observe your interviewer’s body language for signs of boredom or interest.
The attitude

Punctuality and preparation convey requisite employee qualities but your attitude and personality will make the strongest impression. Start with a firm handshake and smile. Radiate confidence, intelligence, reliability, dependability and a personality that your interviewer would enjoy spending most of his waking life with.

Even when you are given an easy question, your body language might imply uncertainty that will discredit your answer. Many people have a tendency to roll their eyes up and speak haltingly when they are thinking. Look at your interviewer (but do not bore into his eyes) and speak loudly, clearly and slowly with your shoulders up and hands neatly clasped.

Interviewing implies you do not want to be at your current job, but leave it as the silent elephant in the room. Even if your interviewer knows you just pulled a miserable all-nighter, focus on the positives rather than accept his sympathy. Enthusiastic underlings who express a desire for more responsibility means someone one can guiltlessly push work down onto. Of course, too much enthusiasm is a line closer than you think; don’t be the overly chipper weirdo. A good guideline is to match your interviewer’s energy level. Pre-offer, do not ask about pay and especially do not ask about hours. People appreciate confidence but most people dislike arrogance, so refrain from going on tangents about yourself; the interviewer is asking enough questions about you. Rather, aim to sound interested by asking your own questions. Flowing conversations are inherently more enjoyable than punctuated questions and answers.

This guide can help you formulate the syntax of a good answer, but mock interviewing will refine your interview attitude. You can do it alone with just the mirror or ask a friend to sit in. When watching yourself in the mirror, think about who you would hire. With others, have mock interviewers give real criticism.

WHY YOU AT XYZ FIRM

The quality of your competitors is quite high, so the recruiting slogan is “the best of the best.” Show that you are more knowledgeable, dependable, harder working, charismatic and desirable than the other candidates. Confidence and maturity justifies a potential employee to lead a team and be presented in front of management/clients.

Disinterest is a turnoff to anyone, so do the research on the firm. Truly understand its investment strategy, and tailor your answers to reflect that. For example, one firm asked five characteristics of an ideal investment; the website listed precisely five requirements of its own investments. The offer was given to the person who listed those five plus a few others.

In addition to conveying your interest to the interviewing firm, many shops will ask about the level of interest in you by its peers. They will often ask about whom else
you are interviewing with and where you are in the process, which really means whether you already have other offers on the table. Popularity basically serves as a measure of credibility. If you are not asked directly and do have exploding offers, let the HR contact know; he will relay the information to the team.

Beyond having the requisite job capabilities, your culture fit will make or break the offer decision. Don’t force yourself to be someone you’re not because then you’ll just be unhappy on the job when you end up spending more time with these colleagues than your own spouse. Just present the best version of yourself.

The best candidates are omniscient

Know the firm: Understand the culture, latest news, the investment strategy, and exactly what your potential position entails.

Know the market: Stay updated on relevant news, both macro and micro. If you’re going into an entry-level job, you’ll need to know at least the basics of the state of the economy and the HF or PE market. As you go up the ladder, you’ll need to have more detailed opinions on specific market niches, like “what do you think of Company X Versus Company Y as an investment?” (HF) and “which emerging market do you think has the best investing opportunities?” (HF) and “what do you think of LBO opportunities in the mining industry?” (PE). You’ll get grilled for anything within your current realm of experience, but don’t be surprised if you’re asked to broadly discuss an industry you’ve never worked with.

Know yourself: Show that you have the desire to take on the job and have gained the appropriate experience to be able to perform. Be prepared to explain everything on your resume, especially deal experience if you have it.

BEHAVIORAL QUESTIONS

There are no right answers to these questions. Be honest, but always lay out a response in its most flattering light.

1. Tell me about yourself/Walk me through your resume.

An easy way to begin the interview—prepare a short spiel in advance that highlights your path to finance.
2. Why hedge funds or private equity?

Prepare a thoughtful answer as you are guaranteed to receive this question. This is the motivation question. Why are you here in the first place? Show that you have the personality traits that support the investing strategy of the firm. For example, what is your time horizon preference: short term versus long term? Are you interested in how Ben Bernanke’s interest rate change affect a stock price tomorrow (macro strategy focused HF) or do you prefer to watch companies that you can shape from the inside for three to five years (PE). Don’t allow someone to poke holes in your answer by saying “Well if you like that aspect, why don’t you pursue X profession instead?” At minimum, you should be an analytical thinker that enjoys looking at companies.

3. What do you hope to gain from this job?

A variant of the motivation question.

4. Why are you working in your current industry?

The motivation should complement your reason to join the HF or PE industry. In fact, it can be exactly the same answer. If it is radically different, be prepared to explain why.

5. Why did you choose the firm you are at now/Why did you chose your group/sector/product/Why did you choose your college?

Again, the motivations should complement the motivation to join the particular firm (versus the “industry” in the previous question) with which you are interviewing.

6. What in particular is attractive about this firm?

Firms like feeling special and wanted. Plus, a solid candidate does his homework. Browse the website, and, if you can, speak to people at the firm beforehand. Knowledge is power.

7. Are you only looking at hedge funds? What else are you looking at? Private equity, asset management, etc.?

The answer to this should support your answer to your motivation question. If you are interviewing at a HF and say you love the stock market where enormous gains and losses can be realized hourly, then admitting to interviewing at PE discredits that answer. HF and PE are very different jobs that emphasize different skills and personality types. Saying you are interested in both suggests that you are simply interested in the main common denominator: the high salary.
Everyone appreciates the money, but the successful employees are the ones who truly enjoy the process of making money.

8. Who else are you interviewing with/Where are you in the process with other firms?

Can be asked for the same reasons as the previous question, but also can be a feeler as to how desirable you are. If many notable firms are interviewing you, they feel reassured that you are a qualified candidate. Also, having multiple offers gives them a sense of urgency that you’re so good you’ll get scooped up by someone else if they don’t give you an offer soon.

9. Do you plan on going to business school? Why or why not?

This question can be a little tricky. Some places require an MBA for you to be promoted and some places don’t want you to disappear for two years after only a year of working. A safe answer is you’d like to attend only if it teaches you skills that help you advance in your career.

10. What do you plan to do in the next five to 10 years?

More importantly, how does this potential job fit in with this plan? It should fit in appropriately by enhancing your professional development. It’s not necessary to paint a picture that you absolutely will be in the same job and at the interviewing firm. If you are applying for a pre-MBA associate position at a PE firm, it may be a strict two-year program and, therefore, a prepared candidate would be aware of this. A mature candidate recognizes the skills that he would like to develop and how his job experiences will help realize them.

11. What qualities/skills do you feel you have that are transferable to this industry?

Do the research as to what skills are the prioritized in the industries. Naturally, analytical and insightful thinking rank at the top.

12. Have you had a performance review? What did it say?

This is the strengths/weaknesses question except also backed by evidence. Obviously, highlight your strengths and when prompted for weaknesses, have a prepared explanation that flips it in a positive way, such as how you are working on improving that criticism.
13. What is your ideal work environment? What qualities would your ideal job have?

Just be sure not to say that you want to work alone. Even HFs demand team players. And don’t say a 9-5 workday, because you won’t find that anywhere.

14. Tell me something interesting about you/What do you do in your free time?

Your interviewer is compiling a mental dossier on you: pro and con bullet points based on your interview answers. To help differentiate your profile, he may ask a few “unique” questions to separate you from other candidates. You want to be memorable, but not in a weird way. It’s also great to have any interesting conversation to develop a connection with your interviewer.

15. What is the most recent book you’ve read?

Another idle question to show something interesting about you.

16. What separates you from other candidates?

The interviewer would like you explain why you should be hired over all the other equally qualified candidates that he will speak to that day. Your answer should be supported by the rest of the interview. If you consider yourself smarter, then be sure to get all the technical questions right. If you have more or better quality experience, be sure to showcase examples. If you have great contacts, cite specific relationships.

17. Are you willing to move to the city where the firm is located (for jobs outside your current location)?

If the firm is located elsewhere, you need a strong answer as to why you are willing to relocate. Firms know it’s tough to go somewhere if you do not have family or friends there, and so they will not give you an offer if they think you will reject it based on location.

18. What is the most difficult experience you have had at work? Why? How did you approach the problem? How would you have done things differently?

Illustrate your ability to handle tough situations with a level head, a logical process, and thorough handling. The interviewer wants to know that you can handle responsibility and lead a team.
19. If there were no such business as hedge funds/private equity, what would you do?

You can show how you desire a job that shares some qualities with HF/PE as well as a more interesting, unexpected side of yourself.

20. What is your outlook on the economy?

Keep up to date on the news and have an opinion on how current events will shape future ones. You should understand the new president’s stimulus plans and how they will affect various sectors, current portfolio companies and future investments. If opining on the United States, know where the Fed Funds rate is and if it is expected to change. The Fed Funds rate is the main tool that the Federal Reserve uses to regulate the supply of money and, thus, affect the overall U.S. macroeconomy (but be familiar with its other strategies!). A reduction in the interest rate promotes bank lending and an increased supply of money into the economy.

21. From what transaction did you learn the most?

Your current job should be great preparation for this next job. Ideally, you have learned what makes a great investment and developed the skill set that makes a valuable employee.
Work/Deal Experience

SWITCH PERSPECTIVES

The crux of the interview

Your work/deal experience will be the pivotal focus of the interview. Your resume should list at least two major deals or projects in which you had a significant amount of responsibility. Whatever you list on your resume is fair game, so know your deals inside and out.

Ideally, you show that you play a role that is above your title. You fully understand the big picture as well as the nuts and bolts of the deal. Finally, you need to prove that you understand what makes a great investment and identify the major points of risk.

You may list transactions that are not yet public knowledge. Do not include the parties’ names or details that would give them away.

Buy-side vs. sell-side

Put yourself in their buy-side shoes. Your interviewers look at every company as an investment. Look at all your work experiences as potential investments. A sell-side person extols all the general strategic merits of a potential acquisition. A buy-side person looks for all the holes. What is the true story behind a company? Which numbers do you believe and which do you discount? Do you trust management? How did the financing structure maximize value? Research reports and news articles provide excellent commentary to study.

For HFs, focus on public companies and discuss how transactions would affect their stock price. Also highlight IPOs and think about potential performance. Be sure to understand the historical market at the time of the deal as well as the current market and your opinion on the future market.

For PE firms, focus on mergers and acquisitions and the relationship between the price paid versus your opinion of the value of the company. If the acquirer is public, how did its stock price react and why? Understand the financing structure and know deal multiples.

Tell a story

Either the interviewer will point to a project based on your experience and tell you to elaborate or he will ask you to choose one yourself. Prepare good introductions that establish the parties, transaction value, capital structure and strategic rationale for each one. As you grow comfortable with interviewing, you should learn how to structure your stories so that they hook your interviewer. That can produce a predictable line of questioning you can anticipate. For instance, if you say the
company is to expect significant growth in revenue, prepare for follow-up questions like what the exact growth rate is, how long this growth is expected for, how it will react to a downturn in the market, is the growth due to increased market share, organic, or overall industry, etc.

If the deal is about a specific company, be sure you understand its competitors and the overall industry outlook. Or, if your work experience is more industry-focused, know specific company names you would suggest as an investment and why.

Again, if you can anticipate the kinds of questions they will ask, you can prepare for them. Questions are always geared to understanding the investment rationale and pitfalls. A candidate who can pinpoint and articulate the heart of a deal will be an indication of a good investor.

SAMPLE QUESTIONS

Both the PE and HF questions will center around whether it was a good investment in various disguises like strategic rationale and projected performance. Some of the following structure-oriented questions are more relevant to a merger and acquisition (“M&A”) transaction and PE interview.

1. What was the strategic rationale?

Be able to list at least three to five points of the merits of the deal. Have the answer flow in a way that creates a story so you don’t sound like a monkey who can only memorize a confidential information memorandum (“CIM”). Be prepared to have concrete evidence that backs up each point, such as projected growth rates, gross margin percentages, etc.

2. Discuss the industry outlook and trends.

Know historical, current and projected themes of the industry. Understand the competitors and where they trade in relation to the target company. Recognize how the target company should outperform, underperform, or be neutral with its industry. You might also be asked to opine on industries outside of your work experience. The interview is probably reviewing the industry or company himself and wants to bounce ideas off you. Unfair if you have no experience in the industry, but handle it gracefully.

3. What were the comps? How did you choose them? What were they trading at?

It’s a routine rookie mistake to not think about this question when you study for your interview since you’re so focused on the target company. You choose comps based on how similar they are to your target company. The similarities are a combination of industry, geography, cash flow characteristics and capital
structure. Key ratios are price to earnings ("P/E"), enterprise value to EBITDA ("EV/EBITDA"), debt to equity ("D/E"), debt to capitalization ("D/cap"). Don’t forget important industry multiples like enterprise value/sales ("EV/sales") for non-profitable companies.

4. How did you value it?

There are three main methods of market valuation. There is the discounted cash flow ("DCF") methodology, trading comparable company multiples ("trading comps"), and comparable transactions multiples ("acquisition comps"). For PE, a fourth technique is the LBO valuation, which is a subset of the DCF. You should know how the company was valued by each methodology. At the end of the day, the DCF shows the intrinsic value of a company, but trading and acquisition comps provide the general boundaries of how the market will perceive the investment.

5. Was it a good deal? Why?

Have a fantastically thoughtful answer to this. Prepare evidence to back up your theory, i.e., the answers to the other questions in this chapter.

6. How did the investment/deal perform?

If you are an investment banker or consultant, remember to refresh your memory on what happened after you finished your work. Especially if the investment is public, check how its stock performed and whether research reports opine on the deal. Sell-side people usually only focus on getting the deal done and then work on getting the next deal versus evaluating the aftermath. Buy-side people are actually tied to performance and thus monitor investments closely until exit. For people who are already traders in the HF/PE industry, or in other buy-side positions, you need talk about your investment track record; what was the entry and exit price, giving what percentage return over what duration of the investment?

7. What were the sources and uses of funds ("S&U")?

This refers to an M&A transaction, and the sources are the financing, like debt, equity, proceeds from targets’ options, and cash. Each deal uses a different mix; be able to explain why this particular mix was used for the deal. Know the names of the different tranches of financing instruments used (such as senior versus mezzanine debt) and the cost (interest rate for debt, exchange ratio for stock) of each. The uses include the price of the asset or equity, transaction costs, purchase of the target’s options, and debt paid off or refinanced. You can apply S&U to an equity or debt offering by discussing the structure and covenants of the
financial instrument and the intended purpose of the funds (general corporate purposes, pay down debt, acquisitions, organic growth, etc.).

8. What were the credit stats?

For M&A, this is the S&U in multiple form; for an existing company, this is its current capital structure in multiple form. The relevant numbers are debt, earnings before interest, depreciation and amortization ("EBITDA"), capital expenditures ("capex"), interest, and funds from operations ("FFO"). They can be combined to form various credit statistics such as total debt/EBITDA, senior debt/EBITDA, EBITDA/interest, (EBITDA – Capex)/interest, FFO/total debt, (FFO + interest)/interest. Especially relevant for PE, this is a measure of how a company can support debt. EBITDA is a proxy for cash flow to debt and equity holders, where debt holders are first in line. Unlike equity, paying debt holders is mandatory, so if interest cannot be paid, then the company is in danger of bankruptcy. Therefore, debt/EBITDA of 6.0x means it would take the company about six years to pay off the debt if EBITDA stayed constant. The higher the metrics of amounts owed/cash flow like debt/EBITDA, the higher leverage and riskier capital structure. Reversely, cash flow/amounts owed metrics like EBITDA/interest are better when they are higher and cannot dip below 1.0x. Note that capex is not an income statement expense but is an outgoing cash flow, so (EBITDA – Capex)/interest is a relevant metric. EBITDA/interest is usually considered to be minimally safe at 2.0x. PE firms will hound you for this kind of data.

9. What were the acquisition multiples?

This refers to price paid/cash flows, giving a benchmark to the value of the transaction. The numerator can be enterprise value or just equity value.

10. What were the projected returns?

You are usually talking about the internal rate of return ("IRR"), which is the relationship of cash flows received versus the initial investment over a period of time. IRR can be unlevered or levered. Unlevered return is to debt and equity holders and does not incorporate capital structure effects. Levered return is only to the equity holders and should be higher than the unlevered return because of the tax shield of debt.

11. What was the premium?

If this is a public company that was bought, then this refers to the relationship between the price paid per share versus the market price paid per share at the time of the offer. The offer price in order to induce shareholders to sell their shares. Sometimes they call this a change of control premium. Premiums are
usually around 10 to 30 percent, but can be lower or higher. You should be prepared to discuss whether this premium is justified; if you think the price paid is more than the intrinsic value of the firm, obviously you believe the premium was expensive.

12. **Would another financial or strategic buyer have paid more?**

If the acquisition is a private sale, you can probably mention players that are more aggressive which may have paid more. Even in a public auction, the seller may go to a buyer with a lower price but a higher certainty of having the transaction complete successfully. If so, understand why a buyer would have paid a higher price. Do they have a lower required return or do they believe they can produce higher cash flows based on operational or financing engineering? Note that the general theory holds that strategic buyers (corporations) can afford to pay more because they may extract additional operational synergies. However, financial players (PE) may be more aggressive in leverage, which can boost returns. The typical acquisition strategies differs between the two types in that a strategic buyer wants to “buy and hold” and the financial buyer wants to “buy low and exit high.”

13. **Why was it an auction/limited auction/private sale/etc.?**

Sellers will generally prefer an auction, as it is good to have bidders compete against one another. Buyers prefer a limited auction or private sale because less competition can mean a lower price. The upside to sellers for limited auctions and private sales is that a serious bidder may feel more comfortable with this process and increase certainty.

14. **Walk me through the model.**

A model in Excel is built to calculate the various components of the deal: return, financing structure, projected cash flows, statistics, operating scenarios, etc. Particularly, you should be able to walk through the line items before cash flow. Also, know how the cash flows change post transaction which can include financing structure effects, accounting changes that impact cash taxes, etc. The objective of a model is to calculate cash flows and returns; walking through the model indicates you understand the work that got you to the answer.

15. **Talk about three to five positive aspects of the deal. Talk about three to five negative aspects of the deal.**

Mostly focus on the strategic merits versus risks of the deal but you can mention the personal side like a good team, learning experience, or client exposure if you’d like.
16. **What was your role in this deal?**

Ideally, you are a candidate that goes above and beyond your title. If you are an investment banking analyst, hopefully you can talk about your creation of the model. As a vice president, give good examples as to how you managed the day-to-day details while summarizing the big picture to your superiors.

17. **What are the drivers of growth?**

Growth can be operationally organic (from inside), acquisition based or financial (recapitalizing). Think about a pharmaceutical company. It relies on various drugs to be sold to consumers. The bulk of cash flows result when a patent is obtained and the drug is popular. Prices are higher at this time because the pharma company has a monopoly on this drug. However, patents expire, so in order to maintain growth, new drugs and patents must be developed. This can be accomplished by internal research and development, or through buying another company that has promising drugs or patents. Understanding the drug pipeline illustrates the level of growth. For instance, sale of drugs for the elderly should increase in volume due to the aging baby boomers.

18. **What were the margins? What is the growth rate of revenue? What is the growth rate of EBITDA? What is the growth rate of net income? What is their market share? Who is the customer base? Who are the suppliers?**

Interviewers can ask many more of these questions. You must fully grasp the business model of the company. Study the historical and projected financials.

19. **What are the fixed versus variable costs? How much maintenance versus growth capex are there?**

These questions are asked to test the resilience of the company to downturns. Fixed costs and maintenance capex must be paid, regardless of the current profit. Variable costs are only paid if a new product is made, and growth capex can be canceled. High fixed costs and maintenance costs create riskier operating incomes.

20. **What other companies could the acquirer have bought?**

Basically, even if this was a good investment, was there a better investment out there? A good investor is a discerning, selective one. HFIs and PEs have a limited amount of money to spend and want to maximize return. Describe the qualities that would have increased growth or decreased risk at these other companies.
**Deal/Investment Notes**

Study your work experience by creating worksheets for each deal or investment you listed on your resume. Tailor as needed.

Name/Date ___________________________________________________

Company Name(s)

Situation Overview / History

My responsibilities

1) Investment Thesis

2) Model drivers
   a) Revenue drivers
      - Volumes
      - Price per unit
   b) Revenue #s, % growth
      - Historical
      - Projected
   c) Cost drivers
      - Raw materials
      - Other
   d) Gross Profit #s, % margin
      - Historical
      - Projected
   e) EBITDA #s, % margin
      - Historical
      - Projected
   f) Free Cash Flow #s
      - EBITDA
      - Capex
      - Change in NWC
      - Cash interest
      - Other
3) Factors affecting company value
   a) Competitive landscape/Company advantages
      - Growth and profitability vs. peers
      - Industry-specific data (subscribers, etc.)
   b) Sector outlook
   c) Specific #s:
      - EV
      - EV/EBITDA
      - EV/EBITDA (comps)
      - EV/Industry-specific fundamental data

4) Capital structure
   a) Pre-transaction / Post-transaction
   b) Where I would invest / why
   c) Intercreditor issues
   d) Negotiating position (strengths and weaknesses) of various creditor constituencies

5) Equity ownership situation
   a) Pre-transaction / Post-transaction

6) Situation-specific nuances (legal, etc.)

7) Situation outcome (price performance, etc.)
Accounting

SOLID FOUNDATION

Since you will be continuously tracking the financial statements of companies, an obvious foundation of accounting is mandatory. You should be comfortable with reading and dissecting financial statements, etc. For practice, browse through public annual statements (10-Ks), which you can find on www.sec.gov or other sites. It is definitely helpful to browse through various companies in the same industry to note common characteristics and line items.

Basically, accounting serves as a set of procedures for companies to report profits. The balance sheet (“BS”), income statement (“IS”), and statement of cash flows (“CFS”) are the top three statements. The BS is a snapshot in time of the company’s assets, liabilities and equity. The IS and CFS represent time periods (usually a year or quarter) of business. The IS seeks to match incurred revenues with incurred expenses. The CFS shows the actual inflow and outflow of cash.

You may read the Vault Guide to Finance Interviews for a review of basic concepts.

Cash, cash, cash

When Nike builds a sneaker manufacturing plant for $100 million, it records this as capital expenditures on the CFS. This plant will produce sneakers that will be sold for revenue, but it will produce sneakers for multiple years, so you would not expense the entire $100 million in one year. Instead, to match revenue to expenses on the IS, you would depreciate it. So you assume a lifespan of the plant (let’s say 10 years) and given the method of straight-line depreciation, you would record $100 million/10 years=$10 million of depreciation expense on the IS after the first year. Note that on the BS, you would have an asset of $90 million under plant, property and equipment (“PP&E”) which is $100 million but $10 million is “used up” or depreciated.

However, depreciation and amortization (“D&A”) is made up. It does not represent real cash. While a company can have great profits, not all of it is cash. At the end of the day, only cash is worth anything. If something does not produce or turn into cash, it is useless. If the sneaker plant burns down tomorrow, then Nike will not see future revenue until it builds a new one in its place. Thus, when HF and PE people review accounting statements, they are most concerned with what is actually valuable. For example, D&A is non-cash; the money has already been spent via capex. Items on the statements issued to shareholders are referred to as “book”; in the U.S., these procedures are regulated by GAAP. In contrast, a different set of statements will be sent to the IRS to calculate the amount of taxes charged. Differences between book and tax line items can cause temporary or permanent cash differences. Another example of misrepresentation of market value to book value is land. On the balance sheet, land is recorded at its price paid or historical value. It is never depreciated because land has an infinite useful life. Conditions in the geographic area can cause the land to wildly fluctuate in value. A New York office
building bought in the 1950s is of significantly higher value today. If the company is bought, this will be taken into account and assets will be “written up” to records its current market value.

HF accounting questions will be geared towards analyzing the financial statements for clues to future profitability. PE will be heavily weighted towards the accounting of mergers and acquisitions.

SAMPLE QUESTIONS

1. You misstated depreciation in your model. It should be $10 million higher. How does this affect the three financial statements?

   Beginning with the IS, depreciation expense is now $10 million higher. Assuming a 40 percent tax rate, net income is $6 million lower. Depreciation is non-cash and you inherit a tax benefit; on the CFS, you add back the $10 million, which results in a $4 million ($6 million net income + $10 million depreciation expense) increase in cash. This cash increase of $4 million flows into the BS under the assets, on the left side. Also, PP&E decreases by the depreciation of $10 million, so total assets went down by $6 million. To balance, the $6 million decrease in net income impacts your shareholders equity on the right side.

2. You sold an asset where you received $500 million in cash. How does this affect your three financial statements?

   The key to this question is inquiring about the book value of the asset when sold. Ask the interviewer for this. For instance, if it is $400 million, then a $100 gain on sale of asset is recorded. Assuming a 40 percent tax rate, net income increases by $60 million. On the CFS, remember that assets are recorded at book value when sold. Therefore, you have a $400 million “sale of asset” under cash from investing activities. Your net cash flow is $460 million. On the BS, cash increases by $460 million and PP&E decreases by $400 million. The $60 million increase on the left side of the BS is offset by the $60 million increase in shareholder’s equity on the right side.

3. List the line items in the cash flow statement.

   The CFS is broken up into three sections: cash flow from operating activities, cash flow from investing activities and cash flow from financing activities.

   In cash flow from operating, the key items are net income, depreciation and amortization, equity in earnings, non-cash stock compensation, deferred taxes, changes in working capital and changes in other assets and liabilities.
In cash flow from investing, the key items are capital expenditures and asset sales.

In cash flow from financing, the key items are debt raised and paid down, equity raised, share repurchases and dividends.

4. If you merge two companies, what does the pro-forma income statement look like? Discuss whether you can just add each line item for the pro-forma company. Please start from the top.

Revenues and operational expenses can be added together, plus any synergies. Fixed costs tend to have more potential synergies than variable costs. Selling, general and administrative (“SG&A”) expense is another source of synergy, as you only need one management to lead the two merged companies. D&A will increase more than the sum due to financing fees and assets being written up. This brings you to operating income. Any changes in cash will affect your interest income. Interest expense will change based on the new capital structure. New or refinanced debt will change pro-forma interest expense. For rolled over debt, since your cash flows will change, your debt paydown may alter, which also affects interest. Based on all the changes previously, this will obviously cause taxes to differ so you cannot just add the two old tax amounts. Also, if any NOLs are gained, those may offset the new combined taxable income. To summarize, nothing can be simply added together. If you have done EPS accretion/dilution analysis, you can mentally work your way through that to formulate your answer.

5. If you could have only one of the three main financial statements, which would it be?

The IS is definitely inappropriate to pick. Income statements are full of non-cash items, which work fine for theoretical purposes, like matching revenue to expenses in appropriate time periods, but if none of it could be liquidated then company is worth nothing. Most pick CFS, because cash is king in determining a company’s health. One interviewer selected BS because you can back out the main components of the cash flow statement (capex via PP&E and depreciation, net income via retained earnings, etc.). The BS is also helpful in distressed situations to determine the company’s liquidation value.
6. A pen costs $10 dollars to buy. It has a life of ten years. How would you put it on the balance sheet?

On the left side, $10 as an asset. Assuming a straight-line depreciation for book and no salvage value at the end of its useful life, it would be worth $9 at the end of the first year, $8 the second year, and so on. Net income will be lowered every year by the tax-affected depreciation, so shareholders’ equity will be reduced by 60 cents, assuming a 40 percent tax rate.

At the end of the second year, you discover the pen is a rare collector’s item. How much is it on the balance sheet?

Still $8. You continue to depreciate it. Assets are recorded at historical values. Some traded financial instruments qualify for “mark to market accounting,” so those assets are valued at market, but this accounting practice has been severely criticized in recent times.

In another scenario, at the end of the second year, the pen runs out of ink and you have to throw it away. How much is it on the balance sheet?

Since the pen is worthless, you’ll need to write down the value of this equipment to $0. Due to the write down, net income declines by $4.8 based on a 40 percent tax rate, which flows to shareholders’ equity. The $8 write-down is non-cash; on the CFS, it is added to the $4.8 decline in net income, resulting in a net cash flow of $3.2. Combined with the write-down of $8 for PP&E, net change in assets is a decrease of $4.8, which balances the $4.8 decrease in shareholder’s equity.

7. What is the link between the balance sheet and income statement?

The main link between the two is profits from the IS are added to the BS as retained earnings. Next, the interest expense on the IS is charged on the debt that is recorded on the BS. D&A is a capitalized expense from the IS that will reduce the PP&E on the asset side of the BS.

8. If a company has seasonal working capital, is that a deal killer?

Working capital ("WC") is current assets less current liabilities. Seasonal working capital applies to firms whose business is tied to certain time periods. When current assets are higher than current liabilities, this means more cash is being tied up instead of being borrowed. For instance, UGG mostly manufactures snow boots. In the winter, demand is higher, so the firm must build up inventories to meet this demand at this time, increasing current assets. Since more cash is tied up, this can increase the liquidity risk. If UGGs suddenly go out of fashion, then the company is stuck holding the inventory. Also, if
people frequently pay with credit for the company’s products, the amount is listed as accounts receivable (“AR”), which represents future profits but is non-cash. Therefore, if the company cannot collect this owed cash in time to pay its creditors, it runs the risk of bankruptcy. This is an issue to note and watch, but it is not a deal killer if you have an adequate revolver and can predict the seasonal WC requirements with some clarity. In general, any recurring event is fine as long as it continues to perform as planned. The one-time massive surprise event is what can kill an investment.

9. If a company issues a PIK security, what impact will it have on the three statements?

PIK stands for “paid in kind,” another important non-cash item that refers to interest or dividends paid by issuing more of the security instead of cash. This can mean compounding profits for the lenders and flexibility for the borrower. For instance, a mezzanine bond of $100 million and 10 percent PIK interest will be added to the BS as $100 million as debt on the right side, and cash on the left side. On the CFS, cash flow from financing will list an increase of $100 million as debt raised.

When the PIK is triggered and all else is equal, interest on the IS will be increased by $10 million, which will reduce net income by $6 million (assuming a 40 percent tax rate). This carries over onto the CFS where net income decreases by $6 million and the $10 million of PIK interest is added back (since it is non-cash), resulting in a net cash flow of $4 million. On the BS, cash increases by $4 million, debt increases by $10 million (the PIK interest accretes on the balance sheet as debt) and shareholders equity decreases by $6 million.

10. If I increase AR by $10mm, what effect does that have on cash? Explain what AR is in layman terms.

There is no immediate effect on cash. AR is account receivable, which means the company received an IOU from customers. They should pay for the product or service at a later point in time. There will be an increase in cash of $10 million when the company collects on the account receivable.

11. Give examples of ways companies can manipulate earnings.

1) Switching from LIFO to FIFO or vice versa. In a rising cost environment, switching to LIFO from FIFO will show lower earnings, higher costs and lower taxes.

2) Switching from fair value to cash flow hedges. Changes in fair value hedges are in earnings, changes in cash flow hedges are in other comprehensive income. Having negative fair value hedges and then shifting them to cash flow hedges will increase earnings.
3) Taking write-downs to inventory will decrease earnings.
4) Changing depreciation methods.
5) Having a more aggressive revenue recognition policy. Accounts receivable will increase rapidly because they’re extending easier credit.
6) Capitalizing interest that shouldn’t be capitalized, so you decrease interest expense on the income statement.
7) Manipulating pre-tax or after-tax gains.
8) Mark-to-market/Mark-to-model.

12. Is goodwill depreciated?
Not anymore. Accounting rules now state that goodwill must be tested once per year for impairment. Otherwise, it remains on the BS at its historical value. Note that goodwill is an intangible asset that is created in an acquisition, which represents the value between price paid and value of the company acquired.

13. What is a stock purchase and what is an asset purchase?
A stock purchase refers to the purchase of an entire company so that all the outstanding stock is transferred to the buyer. Effectively, the buyer takes the seller’s place as the owner of the business and will assume all assets and liabilities. In an asset deal, the seller retains ownership of the stock while the buyer uses a new or different entity to assume ownership over specified assets.

Which structure does the seller prefer and why? What about the buyer?
A stock deal generally favors the seller because of the tax advantage. An asset deal for a C corporation causes the seller to be double-taxed; once at the corporate level when the assets are sold, and again at the individual level when proceeds are distributed to the shareholders/owners. In contrast, a stock deal avoids the second tax because proceeds transfer directly to the seller. In non-C corporations like LLCs and partnerships, a stock purchase can help the seller pay transaction taxes at a lower capital gains rate (there is a capital gains and ordinary income tax difference at the individual level, but not at a corporate level). Furthermore, since a stock purchase transfers the entire entity, it allows the seller to completely extract itself from the business.

A buyer prefers an asset deal for similar reasons. First, it can pick and choose which assets and liabilities to assume. This also decreases the amount of due diligence needed. Second, the buyer can write up the value of the assets purchased—known as a “step-up” in basis to fair market value over the historical carrying cost, which can create an additional depreciation write-off, becoming a tax benefit.
Please note there are other, lesser-known legal advantages and disadvantages to both transaction structures.

14. What is a 10-K?

It’s a report similar to the annual report, except that it contains more detailed information about the company’s business, finances, and management. It also includes the bylaws of the company, other legal documents and information about any lawsuits in which the company is involved. All publicly traded companies are required to file a 10-K report each year to the SEC.

15. What is Sarbanes-Oxley and what are the implications?

Sarbanes-Oxley was a bill passed by Congress in 2002 in response to a number of accounting scandals. To reduce the likelihood of accounting scandals, the law established new or enhanced standards for publicly held companies. Those in favor of this law believe it will restore investor confidence by increasing corporate accounting controls. Those opposed to this law believe it will hinder organizations that do not have a surplus of funds to spend on adhering to the new accounting policies.
**Finance**

Hopefully the fundamentals of finance are not new to you and you can skip to the sample questions to practice.

HF will focus on free cash flow and the time value of money finance questions. PE will ask many M&A-oriented questions. Both will overlap, so the finance questions are combined in one chapter for both audiences to read.

If you need to review basic finance concepts, pick up the *Vault Guide to Finance Interviews*. The following sample questions represent a higher level of difficulty, but many of the questions in the *Vault Guide to Finance Interviews* may be asked in your HF or PE interviews.

**SAMPLE QUESTIONS**

1. **How do you calculate free cash flow to the firm?**  
   To equity?

   To the firm (unlevered free cash flow): EBITDA less taxes less capital expenditures less increase in net working capital. To equity (levered free cash flow): Same as firm FCF and then less interest and any required debt amortization.

2. **What are the four basic ways to value a company?**

   Market comparisons/trading comps/comparable companies: Metrics, such as multiples of revenue, earnings and EBITDA like P/E and EV/EBITDA can be compared among companies operating in the same sector with similar business risks. Usually a discount of 10 percent to 40 percent is applied to private companies due to the lack of liquidity of their shares.

   Precedents/acquisition comps: At what metrics (same as above) were similar companies acquired?

   Discounted cash flow (“DCF”): Based on the concept that value of the company equals the cash flows the company can produce in the future. An appropriate discount rate is used to calculate a net present value of projected cash flows.

   Leveraged Buyout (“LBO”): Assuming an IRR (usually 20 percent to 30 percent), what would a financial buyer be willing to pay? Usually provides a floor valuation.

3. **Of the valuation methodologies, which ones are likely to result in higher/lower value?**

   Precedents usually yield higher valuations than trading comps because a buyer must pay shareholders more than the current trading price to acquire a company. This is referred to as the control premium (use 20 percent as a
benchmark). If the buyer believes it can achieve synergies with the merger, then
the buyer may pay more. This is known as the synergy premium.

Between LBOs and DCFs, the DCF should have a higher value because the
required IRR (cost of equity) of an LBO should be higher than the public markets
cost of equity in WACC for the DCF. The DCF should be discounted at a lower
rate and yield a higher value than an LBO.

When debating whether precedents or DCFs yield higher values, you should note
that DCFs are a control methodology, meaning you select the assumptions that
determine the value. Some interviewers have mentioned that you get projections
from management, which tends to be optimistic and can often make the DCF
the highest value. Regardless, all interviewers are looking for you to say that the
DCF and precedents yield higher valuations than the other two methodologies for
the reasons listed above.

4. What do you think is the best method of valuation?

Depends on the situation. Ideally, you’d like to triangulate all three main
methods: precedents, trading comps and DCF. However, sometimes there are
good reasons to heavily weight one over the others. A company could be
fundamentally different from its peers, with a much higher/lower growth rate or
risk and projections for future cash flows is very reasonable, which makes a good
case to focus on the DCF. Or you may prefer trading comps over precedents
because there are few precedents available or the market has fundamentally
changed since the time those precedents occurred (i.e., 2006 was an expensive
year due to the availability of leverage).

5. What is a WACC?

The “WACC,” weighted average cost of capital, is the discount rate used in a DCF
analysis to determine the present value of the projected free cash flows and
terminal value. Conceptually, the WACC represents the blended opportunity cost
to lenders and investors of a company. The WACC reflects the cost of each type
of capital: debt and equity, weighted by the respective percentage of each type
of capital assumed for the company’s capital structure. Specifically the WACC is
declared as:

\[
WACC = \left(\%\ Equity \times \text{Cost of Equity}\right) + \left(\%\ Debt \times \text{Cost of Debt}(1\text{-tax rate})\right)
\]

6. Name five reasons why a company would want to acquire another company.

1) The target company is seen as undervalued, 2) synergies can be obtained
with the merger of the two companies, 3) a larger company is more industry-
defensible (more resilient to downturns or more formidable competitor), 4) provides growth (versus organic growth, which may have slowed or stalled) and
5) can be a use for excess cash.

7. **Would you make an offer to buy a company at its current stock price?**

No, you would not offer to buy a company at its current stock price because the current shareholders require a premium to be convinced to tender their shares. Premiums usually range from 10 percent to 30 percent.

8. **If a company acquires another company with a higher P/E in an all stock deal, will the deal likely be accretive or dilutive?**

All things being equal, if the acquirer’s P/E is lower than the target, then the deal will be dilutive to the acquirer’s earnings per share (“EPS”). This is because the acquirer has to pay more for each dollar of earnings than the market values for its own earnings; the acquirer will have to issue proportionally more shares in the transaction. Ignoring synergies, you can see mechanically that the pro forma earnings, acquirer’s plus target’s earnings (the numerator in EPS), will increase less than the pro forma share count (the denominator), causing EPS to decline.

9. **Walk me through an accretion/dilution analysis.**

An accretion/dilution analysis (sometimes also referred to as a quick-and-dirty merger analysis) analyzes the impact of an acquisition on the acquirer’s EPS. Essentially, it is comparing the pro-forma EPS (the “new” EPS assuming the acquisition occurs) against the acquirer’s stand-alone EPS (the “old” EPS of the status quo). To perform an accretion/dilution analysis, you need to project the combined company’s net income (pro-forma net income) and the combined company’s new share count. The pro-forma net income will be the sum of the acquirer’s and target’s projected net income plus/minus certain transaction adjustments. Such pro-forma net income adjustments include synergies (positive or negative), increased interest expense (if debt is used to finance the purchase), decreased interest income (if cash is used to finance the purchase) and any new intangible asset amortization resulting from the transaction. The pro-forma share count reflects the acquirer’s share count plus the number of shares to be issued to finance the purchase (in a stock deal). Note that in an all-cash deal, the share count will not change. Dividing pro-forma net income by pro-forma shares gives us pro-forma EPS, which you can then compare to the acquirer’s original EPS to see if the transaction results in an increase to EPS (accretion) or a decrease in EPS (dilution). Usually, this analysis looks at the EPS impact over the next two years.

10. **Why do P/E and EBITDA multiples yield different valuation results?**

EBITDA multiples represent the value to all stakeholders (debt and equity) while P/E ratios only represent the value to equity holders. EBITDA multiples are often
times used to value firms that have negative income (but have positive EBITDA). EBITDA multiples do not factor in the effect of interest and therefore allow for comparability across firms regardless of their capital structure. Note this is why you will never see EV/earnings or Price/EBITDA ratios; the numerator and denominator must correspond to the same set of stakeholders.

11. Company A has assets of $100 million versus Company B which has $10 million. Both have the same dollar earnings. Which company is better?

Company B has a higher return on assets (“ROA”) given that both company had the same earnings but Company B was able to generate it with fewer assets and is, thus, more efficient. Something to think more about is if Company A was entirely debt financed whereas Company B was entirely equity financed. From a return on equity or investment (“ROE” & “ROI”) perspective, Company A might be a better company but it would be riskier from a bankruptcy perspective so the “better” company would be less black and white in this situation. The interviewer is probably looking for the simple answer, though; that Company B is better because it is more efficient with its assets.

12. What is the treasury method? Walk through calculation.

The treasury stock method assumes that acquirers will use option proceeds to buy back exercised options at the offered share price. New shares = common shares + in the money options – (options x strike/offered price).

13. A product’s life cycle is now mature. What happens to the net working capital?

The net working capital needs should decrease as the business matures, which increases cash flows. As the business develops, it becomes more efficient; investment requirements are lower.

14. Why is bank debt maturity shorter than subordinated debt maturity?

Bank debt will usually be cheaper (lower interest rate) because of its seniority. This is because it’s less risky, since its needs to be paid back before debt tranches below it. To make it less risky to the lenders, a shorter maturity helps, usually less than 10 years. Secondly, bank deposits tend to have shorter maturities, so this aligns the cash flows of the bank business. You’ll often see bank debt as the line item “Term Loan A” or “Term Loan B.”

15. What is LIBOR? How is it often used?

The London Interbank Offered Rate tracks the daily interest rates at which banks borrow unsecured funds from banks in the London wholesale money market,
and is roughly comparable to the Fed Funds rate. LIBOR is used as a reference rate for several financial instruments, such as interest rate swaps or forward rate agreements, and they provide the basis for some of the world’s most liquid and active interest rate markets.

16. What is a PIK?

As previously noted in the accounting chapter, PIK stands for “paid in kind,” another important non-cash item, which refers to interest or dividends is paid by issuing more of the security instead of cash. It can be “toggled on” at a particular time, often times at the option of the issuer. It became popular with PE firms, who could pay more aggressive prices by assuming more debt. Flipping on PIK may be an indicator that the company is nearing default on interest payments due to lack of cash because of a deteriorating business. It is a dangerous crutch for companies; PIK can dramatically increase the debt burden on the company at a time when it is already showing signs of difficulty with the existing levels.

17. What is a PIPE?

With the cost of credit rising, private investments in public equity, (“PIPEs”), have become more popular. This is an alternative way for companies to raise capital; PIPEs are made by qualified investors (HF, PE, mutual funds, etc.) who purchase stock in a company at a discount to the current market value. The financing structure became prevalent due to the relative cheapness and efficiency in time versus a traditional secondary offering. There are less regulatory requirements as there is no need for an expensive roadshow. The most visible PIPE transaction of 2008: Bank of America’s $2 billion investment in convertible preferreds of mortgage lender Countrywide Financial.

18. If you put $100 in the bank and got back $2 every year for the next 19 years and then in the 20th year, received $102, what is your IRR?

2 percent. The duration of the investment does not matter.

19. What is a coverage ratio? What is a leverage ratio?

Coverage ratios are used to determine how much cash a company has to pay its existing interest payments. This formula usually comes in the form of EBITDA/interest. Leverage ratios are used to determine the leverage of a firm, or the relation of its debt to its cash flow generation. There are many forms of this ratio. A standard leverage ratio would be debt/EBITDA or net debt/EBITDA. Debt/equity is another form of a leverage ratio; it measures the relation of debt to equity that a company is using to finance its operations.
20. How do you think about the credit metric: (EBITDA – Capex)/interest expense?

How many times a company can cover its interest burden while still being able to reinvest into the company.

21. You have a company with $100 million in sales. Which makes the biggest impact? A) Volume increases by 20 percent B) price increases by 20 percent C) expenses decrease by $15 million.

The answer is B) price by 20 percent. Think about how EBITDA is affected by all three scenarios. It’s not C because EBITDA will only increase by $15 million. Volume will increase the revenue to $120 million but variable costs will increase proportionally. By increasing price, you will capture the entire $20 million impact.

22. If a company’s revenue grows by 10 percent, would its EBITDA grow by more than, less than or the same percent?

Unless there are no fixed costs, EBITDA will grow more. This is because fixed costs will stay the same, so total costs will not increase as much as revenue. Note this is similar to the previous question, but now looking at it in terms of percentage.

23. Why should the fair market value of a company be the higher of its liquidation value and its going-concern value?

Liquidation value is the amount of money that a firm could quickly be sold for immediately, usually at a discount. The fair market value, the rightful value at which the assets should be sold, is higher. Basically a liquidation value implies the buyer of the assets has more negotiating power than the seller, while fair market value assumes a meeting of the minds. The going-concern value is the firm’s value as an operating business to a potential buyer, so the excess of going-concern value over liquidation value is booked as goodwill in acquisition accounting. If positive goodwill exists, i.e., the company has intangible benefits that allow it to earn better profits than another company with the same assets; the going-concern value should be higher than the fair market value.
24. How will a decrease in financial leverage affect a company's cost of equity capital, if at all?

A decrease in financial leverage lowers the beta which lowers the cost of equity capital. With less debt, the firm has a reduced risk of defaulting. This change causes equity investors to expect a lower premium for their investments and therefore reduce the cost of equity.

25. Which corporate bond would have a higher coupon, a AAA or a BBB? What are the annual payments received by the owner of a five year zero coupon bond?

The corporate bond with a rating of BBB will have a higher coupon because it is perceived to have a higher risk of defaulting. To compensate investors for this higher perceived risk, lower rated bonds offer higher yields. The owner of a five-year zero coupon bond receives no annual payments. Instead, the owner will pay a discount upfront and then receive the face value at the time of maturity.

26. Let's say that I have a bond with a 5 percent coupon. What happens to the market price when the prevailing interest rates rise to 8 percent? How are the coupons affected?

When the prevailing interest rates rise to 8 percent, the market price of the coupon bond decreases. This happens because the investor can obtain a higher interest rate on the market than what the bond is currently yielding. To make the bond appealing to potential investors, the market price decreases. This causes the bond’s return to increase at maturity as a means of compensating for the decreased value of coupon payments. The coupons themselves remain constant; the new market price instead balances the yield to keep it neutral with the current market.

27. Why would you use options outstanding over options exercisable to calculate transaction price in an M&A transaction?

Options outstanding represent the total amount of options issued. Options exercisable are options that have vested and can actually be exercised at the strike price. During a potential M&A transaction however, all of the target’s outstanding options will vest immediately and thus the acquirer must buy out all option holders.

28. What could a company do with excess cash on the balance sheet?

First, it can re-invest the cash into organic investments or acquisitions. Second, it can distribute the extra cash to shareholders through the use of dividends.
Third, it can repurchase some of its equity from the market. Fourth, it can pay down debt and decrease leverage.

29. What’s the difference between IRR, NPV and payback?

IRR measures the return per year on a given project and is the discount rate that makes NPV equal to zero. NPV measures whether or not a project can add additional or equal value to the firm based on its associated costs. Payback measures the amount of time it takes for a firm to recoup the initial costs of a project without taking into account the time value of money.

30. Why would a company repurchase its own stock? What signals (positive and negative) does this send to the market?

A company repurchases its own stock if it perceives the market is undervaluing its equity. Since the management has more information on the company than the general public, when the management perceives the company as undervalued, it sends a creditable signal to the rest of the market.

31. If you were to advise a company to raise money for an upcoming project, what form would you raise it with (debt versus equity)?

The right answer is “it depends.” First and foremost, companies should seek to raise money from the cheapest source possible. However, there might exist certain conditions, limitations or implications of raising money in one form or another. For example, although the cheapest form of debt is typically the most senior (corporate loans), the loan market might not have any demand. Or the company might not have the cash flow available to make interest payments on new debt. Or the equity markets might better receive a new offering from this company than the debt markets. Or the cost of raising an incremental portion of debt might exceed that of raising equity. All of this should be considered when answering this question. Be prepared to ask more clarifying questions—your interviewer will most likely be glad you did.

32. What are some reasons why a company might tap the high-yield market?

Companies with low credit ratings are unable to access investment grade investors and would have to borrow at higher rates in the high-yield markets. Other companies might have specific riskier investments that they must pay a higher cost of capital for.
33. What is the relationship between a bond's price and its yield?

They are inversely related. That is, if a bond’s price rises, its yield falls and vice versa. Simply put, current yield = interest paid annually/market price * 100 percent.

34. What are the factors that affect option pricing?

An option conveys the right, but not obligation, to engage in a future transaction on some underlying security. There are several factors that influence an option’s premium, which is intrinsic value plus time value. A change in the price of the underlying security either increases or decreases the value of an option, and the price changes have an opposite effect on calls and puts. The strike price determines whether the option has intrinsic value, and it generally increases as the option becomes further in the money. Time influences option pricing because as expiration approaches, the time value of the option decreases. A security's volatility impacts the time value of a premium, and higher volatility estimates generally result in higher option premiums for both puts and calls alike. Finally, dividends and the current risk-free interest rate have a small effect known as the “cost of carry” of shares in an underlying security.

35. Explain put-call parity.

It demonstrates the relationship between the price of a call option and a put option with an identical strike price and expiration date. The relationship is derived using arbitrage arguments, and shows that a portfolio of call options and x amount of cash equal to the PV of the option’s strike price has the same expiration value as a portfolio comprising the corresponding put option and the underlying option. The parity shows that the implied volatility of calls and puts are identical. Also, in a delta-neutral portfolio, a call and a put can be used interchangeably.

36. Say you have a normal bond that you buy at par and you get the face amount at maturity. Is that most similar to buying a put, selling a put, buying a call or selling a call?

You can liken it to selling a put because if the stock decreases in value, you lose money, like a bond defaulting. But if its neutral, you’re neutral in both cases.
37. You have a company with $500 million of senior debt and $500 million of junior debt. The senior debt has an interest rate of L+ 500 and, in default, would recover 70 percent; the junior debt would recover 30 percent in default. What should the interest rate be on the junior debt?

Loss on default * Probability of default = incremental interest that needs to be paid. So 70 percent loss * 5 percent probability (an assumption you have to make) = 350 basis points over the senior debt or L + 850.

What if this was an LBO scenario and you had a sponsor putting in 500 million of equity?

The company would be less risky because it has more liquidity now.

38. A company has $10 million of cash and $1 million of shares, nothing else. What's its stock price?

Stock price is value/shares so $10 million/1 million, which is a stock at $10 per share.

What if the company wins $10 million in the lotto?

The company doubled its cash and thus its value. Now it’s up to $20 per share.

What if the company uses the lotto money to repurchase shares at $25/share? What's the share price today if the repurchase is in one month?

The stock should be worth $20/share today. With $10 million buying $25/share, you can repurchase 0.4 million shares. You have 1 million - 0.4 million= 0.6 million shares left. The 0.4 shares are worth $25/share because that was what was paid for them. The remaining 0.6 shares are worth the remaining value/remaining shares, which is $10 million/0.6 million = $16.67/share. If you weight the two shares, $16.67 * 60% + $25 * 40%, then your total share price is $20.
Brainteasers

STANDARDIZED ACUMEN

Brainteasers are like standardized tests: of little relevance to the actual subject, but designed to compare all people equally. Ninety percent of brainteasers will encompass probability/statistics. HFs favor these more than PE firms because they test mental math skills.

Obviously, accuracy is key but so is your thinking process. You should expect to explain your reasoning, and a logical verbal breakout followed by a wrong answer is better than just a wrong answer. Pay attention to your interviewer’s face for clues to whether you are going in the right or wrong direction. Brainteasers are meant to be tough, so it’s fine to take a minute to collect your thoughts and outline the steps to calculating the answer.

The Monty Hall Puzzle

To help you get in the tricky probability mindset, refer to a famous brainteaser known as the Monty Hall problem. It is notorious for having a counterintuitive solution.

“Suppose you’re on a game show and you’re given the choice of three doors. Behind one door is a car; behind the others, goats. The car and the goats were placed randomly behind the doors before the show. The rules of the game show are as follows: After you have chosen a door, the door remains closed for the time being. The game show host, Monty Hall, who knows what is behind the doors, now has to open one of the two remaining doors, and the door he opens must have a goat behind it. If both remaining doors have goats behind them, he chooses one randomly. After Monty Hall opens a door with a goat, he will ask you to decide whether you want to stay with your first choice or to switch to the last remaining door. Imagine that you chose Door 1 and the host opens Door 3, which has a goat. He then asks you, ‘Do you want to switch to Door Number 2?’ Is it to your advantage to change your choice? (Krauss and Wang 2003:10)”
Most people assume that each door has an equal probability (1/3) and conclude that switching does not matter. Actually, the player should switch—doing so doubles the probability of winning the car from 1/3 to 2/3.

Think of it this way: let’s say Door 1 is the winning door. Look at the outcome for each door that the player could pick and decide to switch.

1. Picks Door 1 (win). Monty shows Door 2 or 3 with goat. Player switches, and loses.
2. Picks Door 2 (goat). Monty shows Door 3 with goat. Player switches and wins.
3. Picks Door 3 (goat). Monty shows Door 2 with goat. Player switches and wins.

Two out of the three scenarios are wins if the player switches (if the player had stayed, two of the three scenarios are losses), so therefore there is a 2/3 probability that the player wins if he switches.

Put another way, the probability that the player initially chooses the winning door is 1/3, since there are three doors each of which has an equal chance of concealing the car. The probability that the door Monty Hall chooses conceals the car is 0, since he never chooses the door that contains the prize. Since the sum of the three probabilities is 1, the probability that the prize is behind the other door is 1 – (1/3 + 0), which equals 2/3. Therefore, switching is more advantageous due to the doubled probability.

**SAMPLE QUESTIONS**

1. You play a game of dice where you are paid the equivalent amount of dollars to the number you roll (i.e., if a 4 is rolled then you get $4). You roll one fair six-sided die. How much are you willing to pay for this roll?

   The expected return is every possibility multiplied by the probability of the possibility. The average of all the potential die rolls, which each have equal probabilities, is $3.50, the midpoint between 1 and 6.

   How much would you pay to play the same game, but with the option to roll again? If you only roll once you get that score, if you choose to roll again you get the score of the second roll.

   Intuitively, you know the price should be higher since you’re given the option to roll again if you’re dissatisfied with your first roll. You should only roll a second time if the first roll is less than 3.5, the expected value. Thus, you have the following six scenarios: rolling 4, 5, 6 and stopping, or rolling 1, 2, 3, and rolling again. Again, the expected roll is 3.5, so the latter three outcomes have expected returns of 3.5. Therefore, a game of two rolls’ expected return is \((4 + 5 + 6 + 3.5 + 3.5 + 3.5)/6 = $4.25.\)
Again, same games, option for a third roll now. How much will you pay?

Follow the same logic as before; two rolls have an expected return of 4.25 so you will only roll a third time if you get above that. You have an expected return of 
\[
\frac{(4.25 + 4.25 + 4.25 + 4.25 + 5 + 6)}{6} = $4.67.
\]
As the number of rolls approaches infinity, the price you pay gets closer to $6.00.

2. You are given a length of rope, which can be lit to burn for an hour. However, the rope burns unevenly (meaning half of it burnt does not indicate a half-hour has passed). How would you burn the rope to know that a half-hour has passed?

To measure a half-hour, burn both ends at once. One side will burn faster than the other, but the opposite side will burn slower such that when they meet, the equivalent of half the time has passed.

If you were given two ropes, how would you measure 45 minutes?

For two ropes, take one rope and burn both ends like the previous situation. At the same time, light the second rope on only one end. When the first rope burns out, a half hour has passed. The second rope only has 30 more minutes on it. Immediately burn the opposite end of the second rope. The fire will meet at both ends again, which is fifteen minutes.

3. What is 22 times 22?

The interviewer wants you to solve these types of questions quickly and without using paper. Just break down the numbers to simple ones you can do in your head. 22 times 20 is 440. There is an additional two instances of 22, which is 44 and then you can add it to 440 so that the answer is 484.

4. What is the sum of the numbers between 0-100?

The trick is you have 50 pairs, which each sum to 100 (e.g. 0 + 100, 1 + 99, 2 + 98...49 + 51). So, 50 * 100 = 5,000 plus the midpoint of 50 = 5,050.

5. You have stacks of quarters, dimes, nickels and pennies. The number of coins in the stacks is irrelevant. You can take coins from a stack in any amount, any order, and place them in your hand. What is the greatest dollar value in coins you can have in your hands without being able to make change for a dollar with the coins in your hand?

Start adding the highest coin to your hand, the quarter. Four quarters make a dollar, so you can only have three quarters: $0.75. Five dimes would bring it to a dollar, so you can only have four dimes: $1.15 = 0.75 + .40. You can’t add a
nickel because three quarter, two dimes, and the additional nickel would create a dollar. But you can add four pennies for a maximum total of $1.19 = 1.15 + .04.

6. What is the probability of drawing two sevens in a card deck?

You can multiply the individual probabilities to get the cumulative probability. There are four 7s in a deck of 52 cards. Therefore, the probability of drawing the first 7 is 4/52 or 1/13. On the second draw, there are only three 7s in a deck of 51 cards, yielding a probability of 3/51 or 1/17. So 1/13 multiplied by 1/17 equals a cumulative probability of 1/221. (Don’t expect to be able to use paper or a calculator for 13 times 17. You can just simplify the math in your head by saying 17 times 10 is 170, plus 3 times 13 which is 39, and yields 221.)

7. You’ve got a 10 x 10 x 10 cube made up of 1 x 1 x 1 smaller cubes. The outside of the larger cube is completely painted. On how many of the smaller cubes is there any paint?

First, note that the larger cube is made up of 1000 smaller cubes. Think about how many cubes are NOT painted. 8 x 8 x 8 inner cubes are not painted which equals 512 cubes. Therefore, 1,000 - 512 = 488 cubes that have some paint. Alternatively, you can calculate this by recognizing that two 10 x 10 sides are painted (200) plus two 10 x 8 sides (160) plus two 8 x 8 sides (128): 200 + 160 + 128 = 488.

8. What is the square root of 7,000,000 (approximately)?

You know that 2 * 2 = 4 and that 3 * 3 = 9, and that 1,000 * 1,000 = 1,000,000 so the answer has to be between 2,000 and 3,000. Edge closer in, 2.5 * 2.5 = 6.25 and 2.7 * 2.7 = 7.29 so the answer is approximately 2,600.

9. A closet has three light bulbs inside. Next to the door (outside) are three switches for each light bulb. If you can only enter the closet one time, how do you determine which switch controls which light bulb?

Turn on two switches, A and B, and leave them on for a few minutes. Then turn off switch B and enter the room. The bulb that is lit is controlled by switch A. Touch the other two bulbs, which are off. The one that is still warm is controlled by switch B. The third bulb, off and cold, is controlled by switch C.
10. Four investment bankers need to cross a bridge at night to get to a meeting. They have only one flashlight and 17 minutes left to get to the meeting. The bridge must be crossed with the flashlight and can only support two bankers at a time. The analyst can cross in one minute, the associate can cross in two minutes, the VP can cross in five minutes and the MD takes 10 minutes to cross. How can they all make it to the meeting in time?

First, the analyst takes the flashlight and crosses the bridge with the associate. This takes two minutes. The analyst then returns across the bridge with the flashlight, taking one more minute (three minutes passed so far). The analyst gives the flashlight to the VP and the VP and MD cross together, taking 10 minutes (13 minutes passed so far). The VP gives the flashlight to the associate, who re-crosses the bridge taking two minutes (15 minutes passed so far). The analyst and associate now cross the bridge together taking two more minutes. Now, all are across the bridge for the meeting in exactly 17 minutes.

11. A lily in a pond doubles every minute. After an hour, the lily fills the entire pond. When is it one-eighth full?

Work backwards. At 59 minutes, it is half full. At 58 minutes, it’s one-fourth full. Thus, after 57 minutes, it is one-eighth full.

12. What is larger, $3^4$ or $4^3$?

$3^4$. In most combinations, the lower number $^\text{higher number}$ is higher than vice versa because the higher exponential has a powerful multiplier effect. However, $2^3$ is higher than $3^2$, but you can solve that particular anomaly in your head.

13. Say you are driving two miles on a one-mile track. You do one lap at 30 miles per hour. How fast do you need to go to average 60 miles an hour?

Don’t be inclined to guess 90, because the average of 90 and 30 mph is 60 mph. You completed half your goal by going 30 mph. So that first mile took you one-30th of an hour or two minutes. However, if you averaged 60 mph for two miles, then that should take two-60ths of an hour or two minutes to drive two miles. You already drove for two minutes on that first lap, so it’s impossible to average 60 mph. This was a trick question.
Consulting

CASE QUESTIONS

Consulting questions present a business situation for you to evaluate. Great candidates quickly ask the fundamental questions and then concisely summarize the situational highlights and risks. Usually, there is no one “right answer,” but there is usually at least one targeted “point” that you should hit.

Interviewers expect you to walk through your thought process aloud to note your logic skills. Ask a few questions and then take five seconds to think of your starting point. As you speak, watch his body language for any clues that you are going in the right or wrong direction. These questions are among the toughest since there is no specific mathematical formula to memorize.

Think of what constitutes a great investment as per the capital markets chapter for HFs and the leveraged buyout chapter for PE firms. Use those criteria as a starting point for probing questions like, “What kind of experience does the current management have?” and “Can you describe the working capital requirements as it relates to the volatility of the company’s cash flows?” The maximum amount of time spend on these questions is probably 15 minutes; ideally you ask a few specific questions that attack the heart of the situation and then provide a neat explanation of your viewpoint.

Porter’s Five Forces

In combination with knowing what is the criteria for good investments, Porter’s Five Forces nicely frames the parameters of the competition in an industry. A successful investment is one that outperforms competitors; HF and PE firms constantly stake opinions and, subsequently, money on which companies or industries will competitively succeed.
Take, for example, entry into the copy store market, like Kinko’s. How attractive is the copy store market?

**Potential entrants:** What is the threat of new entrants into the market? Copy stores are not very expensive to open—you can conceivably open a copy store with one copier and one employee. Therefore, barriers to entry are low, so there’s a high risk of potential new entrants.

**Buyer power:** How much bargaining power do buyers have? Copy store customers are relatively price sensitive. Between the choice of a copy store that charges 5 cents a copy and a store that charges 6 cents a copy, buyers will usually head for the cheaper store. Because copy stores are common, buyers have the leverage to bargain with copy store owners on large print jobs, threatening to take their business elsewhere. The only mitigating factors are location and hours. On the other hand, price is not the only factor. Copy stores that are willing to stay open 24 hours may be able to charge a premium, and customers may simply patronize the copy store closest to them if other locations are relatively inconvenient.

**Supplier power:** How much bargaining power do suppliers have? While paper prices may be on the rise, copier prices continue to fall. The skill level employees need to operate a copy shop (for basic services, like copying, collating, and so on) are relatively low as well, meaning that employees will have little bargaining power. Suppliers in this situation have low bargaining power.

**Threat of substitutes:** What is the risk of substitution? For basic copying jobs, more people now possess color printers at home. Additionally, fax machines have the capability of fulfilling copy functions. Large companies will normally have their own copying facilities. However, for large-scale projects, most individuals and employees at small companies will still use the services of a copy shop. The internet is a potential threat to copy stores as well, because some documents that formerly would be distributed in hard copy will now be posted on the Web or sent through e-mail. However, for the time being, there is still relatively strong demand for copy store services.

**Competition:** Competition within the industry appears to be intense. Stores often compete on price and are willing to “underbid” one another to win printing contracts. Stores continue to add new features to compete as well, such as expanding hours to 24-hour service and offering free delivery. From this analysis, you can ascertain that copy stores are something of a commodity market. Consumers are very price-sensitive, copy stores are inexpensive to set up, and the market is relatively easy for competitors to enter. Advances in technology may reduce the size of the copy store market. Value-added services, such as late hours, convenient locations or additional services, such as creating calendars or stickers, may help copy stores differentiate themselves. But overall, the copy store industry does not appear to an attractive one.
**Product life cycle**

If you’re considering a product case, figure out how “mature” your product or service is.

![Production Life Cycle Diagram]

**Big to small**

When giving an answer, a logical outline always sounds more harmonious during an interview. Aim for a flowing conversational tone, bulleting each point so the interviewer can mentally check off the requisite answers you covered.

The easiest way to do this is to begin with the most general relevant points and work to the specifics. Go from macro economics to industry to operations to structural considerations, leaving out or minimizing whatever is not applicable.

There are additional frameworks that can organize your thoughts. There are many types; you can read the *Vault Guide to Consulting Careers* for a more comprehensive review. However, understanding what constitutes a good investment is the best framework to use in HF and PE interviews.
Consulting backgrounds

If you can tell that many of current employees are ex-consultants like PE firms Audax and Bain Capital, or if the firm’s strategy centers on operational improvements, beware! You can bet that you’ll get some consulting-focused questions.

Hit the highs

It cannot be stressed enough: try to narrow your answer down to the most key elements as soon as possible. For instance, one large PE firm requested, “Estimate the annual revenue a pizza shop makes.” Many participants began with bottom-up approaches, like the average price of a bill * customers, etc. However, the firm wanted to see if you could identify the “limiting factor,” which was that pizza shops only have X amount of registers which limits how many customers can be handled at a time.

When given business scenarios to evaluate, always begin with the biggest value drivers.

SAMPLE QUESTIONS

1. Say you had a bullet proof vest manufacturer. Given only this information, what are weaknesses you can envision for this company?

Starting with weaknesses, the first major one is the uncompromising need for quality. Lives are on the line if the product fails! Expenses need to accommodate the high cost of testing. Raw materials need to be carefully monitored to be of the appropriate quality, so its supplier chains need to be reliable and/or flexible. The threat of potential liabilities is enormous here; an insurance company will charge a higher premium if it elects to represent this company at all. To some extent, this item is a commodity, but there will definitely be brand differentiation for the players who show consistent quality. R&D will need to be expended to maintain a technological edge for the best vest: maximum usage, lightest, thinnest and weather-resistant. A large portion of the buyers will comprise a few government contracts. This is good, in that contracts are usually long-term, which gives certainty to future revenues and inventory needs. However, governments pick a supplier based on bidding auctions, so there is significant pressure to present the lowest price.
2. How much pizza is sold in New York City every year?

This is a strict consulting case question; you’ll encounter fewer of these in your interviews. HF/PE consulting questions focus more on business scenarios, but you can get asked this type of question as a brainteaser. These “guestimations” can be solved either “top down” or “bottom up.”

*Top down approach:* Assume that 10 million people live in New York City and that 80 percent of them, or eight million people, eat pizza. Let’s say that the average New Yorker eats pizza twice a month, and will eat two slices each time. If a slice of pizza costs $2, then that’s $4 spent at each sitting and $8 spent each month. That equates to $96 (round to $100 for simplicity) every year. Multiply that by eight million pizza eaters, and the market size for pizza in New York is approximately $800 million.

*Bottom-up approach:* A slice of pizza in New York costs approximately $2 per slice. If the average person has two slices with his meal, then the average ticket (not including drinks) is $4. If the average person eats pizza twice a month, then that’s $8 a month or $96 a year (round to $100 for simplicity). Let’s assume that 80 percent of the 10 million people in New York City eat pizza. That means that the eight million pizza eaters in New York spend approximately $100 each every year on pizza, for a total of $800 million.

3. You are giving the following opportunity. A company wants to sell trees in water. In the 1950s, a smelting plant redirected water flow, which flooded a forest used for timberland. A logger, who is also a scuba driver, has discovered this and wants to sell the wood. How would you look at this investment?

This was a real opportunity that this company looked at. It’s easy for interviewers to ask questions about actual investments they’ve looked at because they know all the answers. Ask if the product is actually saleable. It is—being 40 feet under water means the wood is not oxidizable and, thus, doesn’t rot. Ask if there is already an industry that does this. There is, and it is profitable. Ask about all the regular factors that comprise a good investment, including the experience of management. The interviewing firm passed on this opportunity because the scuba driver had no industry experience. Management is incredibly important because finance guys need to rely on current management to turn around the company (relying on equity incentives) or else hire industry experts.
4. Hummus Palace sells gourmet hummus throughout New York City. It distributes its tubs of hummus primarily through two channels: high-end grocery stores and specialty food retailers. Over the past few years, the company has been experiencing a slowdown in its sales. What are three potential growth strategies the company could pursue?

To find out why there’s been a slowdown in sales, start with asking questions about the industry—what is the market size, what are some of the key trends and what does the competitive landscape look like? Then inquire about the company—what is its growth profile and value proposition? Is it a scalable business, and does management have the knowledge and experience to turn the company into a market leader? These questions should provide you with some context to help you come up with growth strategies for the company. Hummus Palace could grow through acquisition or organically. It could expand into new product lines (gourmet falafel), new channels (hummuspalace.com), or new markets (San Francisco).

After debating the merits of each, the interviewer says that the CEO wants to pursue a geographic expansion strategy. Which market should she expand into?

San Francisco could be an interesting market because of its similarity to New York. San Francisco has a young urban population that would likely enjoy ethnic foods and be open to trying new cuisines. The city also would have a large number of high-end grocery stores and specialty food retailers to sell to.

The CEO thinks that San Francisco is a great idea, but this new operation must break even in five years. Should Hummus Palace expand into this new market?

Ask questions about the revenue and cost structure. How much will each tub of hummus cost and how many do they expect to sell? What are the variable and fixed costs? What are the needed capital expenditures, both maintenance and growth? What are the working capital needs?

Your initial investment is $1.5 million and $100,000 of capex/year over the next five years. Each tub of hummus costs $2.75 to produce and will be sold for $4.75. You think you can sell 200,000 plates per year.

Your total fixed costs are $2.0 million ($1.5 million + $100 thousand * 5). The gross margin is $2 which times the volume sold of 200 thousand is $400 thousand of profit per year. $2 million/$400 thousand neatly breaks even in five years, so yes, you can expand in this market.
5. You own a Christmas tree business. What are your working capital needs throughout the course of the year?

Inventory would likely need to be accumulated starting in November, since many people start hanging up Christmas lights and putting up Christmas trees the weekend after Thanksgiving. The inventory buildup would continue through late December. After Christmas however, demand for Christmas trees disappears. Hopefully by then there is very little inventory left, if managed properly. Since this is a cash business, where customers are paying for the trees in cash, receivables have little effect on the working capital balance and are insignificant relative to the company’s inventory requirements. Payables would likely increase in the fall as the company accumulates inventory in anticipation of the upcoming holiday season and pays for the trees with credit.

6. Say you have a phone book business. If you increase your price by 10 percent but lose 10 percent of your advertisers, what’s your revenue change?

1 percent. If ads are $1 and you have 100 advertisers, then you raise to $1.1 but go down to 90 advertisers, which is $99 in revenue. Originally, you had $100 in revenue, so you dropped $1. Mathematically speaking, originally you had 1.0# x 1.0$ = 1.0R. Now you have .9# x 1.1$ = .99R so it went down 1 percent.

Say there is City 1 and City 2. City 1 has 10,000 businesses, 50,000 people and $5,000 cost per ad. City 2 has 2,000 businesses, 4,000 people and $600 cost per ad. Which city do you want to advertise in?

Make this apples to apples. Set City 2 equal to $5,000 per ads, so multiply everything by 8.3 or approximately 8 for easier mental math. City 2 has 16,000 businesses with 32,000 people. Thus you are paying the same for more competition and fewer target consumers. City 1 is the obvious choice now.

What do you think about the paper phone book business?

It’s a maturing business, so future growth rate is likely to be negative. It is an increasingly outdated form of advertising, especially in comparison to the internet. Also, the growth rate in the U.S. is slowing down due to the aging population, which further decreases the future growth rate in comparison to the historical growth rate. The key age demographic to focus on is the elderly, who may not use other prevalent forms of advertising. The main advantage of a phone book that it appeals to a niche audience—the local city population who refers to the phone book to look for local businesses. But the industry continues to mature rapidly because this niche information is increasingly being uploaded to the internet. Paper phone books need to take advantage of the internet channel, which enjoys lower distribution costs, and focus on ways to make online
advertising profitable or to have businesses pay to be included on the site. However, competition is fierce; Google already provides a similar function. A good company that has created a value-added twist on the business is Yelp, a website that posts user-generated reviews of businesses. Businesses can pay to advertise in designated spots of the site based on what the user is searching for.
HEDGE FUNDS

Interview strategy

In theory, all investors have all the available information for public companies/financial instruments. Generally, a hedge fund aims to beat the overall market and produce outsized returns. Usually at the cost of being aggressive, some succeed and others implode.

HFs would love to hire psychics: candidates who could effortlessly tell them which stocks will go up in the next year, but no one has a crystal ball. So the hardest part about the HF interview is that your interviewer will grill you on your market opinion and outlook, but both of you may make the wrong predictions.

To ace the interview, have a strong opinion on whatever your interviewer asks about, but also be prepared to equally argue the opposite side. Furthermore, show depth over breadth. It’s the tiny tidbits of knowledge that demonstrate your prowess as an investor.

Enunciate a logical and succinct thought process; quickly separate the big factors that affect value the most. Always discuss an investment in light of its rationale, risks, peers, industry and macroeconomics. Furthermore, remember that anyone can argue the case for a hypothetical “good” investment, but hedge funds would like to put their limited amount of money to work in the “best” investments. The best investments have the lowest risk and highest growth.

Technical questions

Finance: Many of the technical questions zero in on the time value of money and free cash flow. Valuation measures a company’s future cash flows. Unlevered, free cash flow is the focus of many investors because it provides a good measure of a firm’s ability to generate cash, independent of its capital structure.

Markets: You will be quizzed on your knowledge of the current market, like today’s interest rate.

Investment ideas: You may also be asked specific investment ideas, like stock pitches; this occurs in over 50 percent of interviews. Have at least two ideas prepared.
Hedge fund definition

During the early years of the hedge fund industry (1950s—1970s), the term hedge fund” was used to describe the “hedging” strategy used by managers at the time. “Hedging” refers to the hedge fund manager making additional trades in an attempt to counterbalance any risk involved with the existing positions in the portfolio. Hedging can be accomplished in many different ways but the most basic technique is to purchase a long position and a secondary short position in a similar security. This is used to offset price fluctuations and is an efficient way of neutralizing the effects of market conditions.

Today, the term “hedge fund” tells an investor nothing about the underlying investment activities, similar to the term “mutual fund.” Technically, a hedge fund is a private, unregistered investment pool encompassing all types of investment funds, companies and private partnerships that can use a variety of investment techniques such as borrowing money through leverage, selling short, derivatives for directional investing and options.

Given the devastation that the current economic crisis has wreaked on the market, hedge funds have seen millions to billions of dollars disappear under their management. Many will cease to exist in the near future (try to suss this out before taking an offer!) and expect new distressed funds to pop up.

For interviews, the absolutely essential thing to understand is what kind of investment strategy your interviewing firm employs. If a manager says he trades long/short equity then you know he is buying undervalued equities and selling overvalued equities.

INVESTMENT STRATEGIES

Hedge fund managers utilize a variety of complex and interesting trading strategies. There are many different ways for managers to value stocks, but that is beyond the scope of this book; there are many popular trading investment theory books that you can read.

Here is a basic overview of the valuation process that a hedge fund manager or analyst goes through in picking stocks to invest in.

Valuation process

When an analyst is looking to value a company (to determine what he thinks should be the correct stock price) he goes through a process to determine what he believes the stock price to be. This is similar to the process of buying new clothes or buying a car or house when you figure out how much it is worth to you and how much you are willing to pay. You are looking for the best deal available—if a price is above what you are willing to pay, you do not buy the product; if the price is below what you are willing to pay, you do buy it.
According to Reilly and Brown in their book Investment Analysis and Portfolio Management, there are two basic approaches to valuing stocks: the “top down” and the “bottom up” process:

(1) The “top down” (three step) process

The manager believes that the economy, the stock market and the industry all have a significant effect on the total returns for stocks

*The three-step process is:*

i. Analysis of alternative economies and security markets. Decide how to allocate investment funds among countries and within countries to bonds, stocks and cash.

ii. Analysis of alternative industries. Decide based upon the economic and market analysis, determine which industries will prosper and which will suffer on a global basis and within countries.

iii. Analysis of individual companies and stocks. Following the selection of the best industries, determine which companies within these industries will prosper and which stocks are under/over valued.

(2) The “bottom up” (stock valuation, stock picking) approach

a. Investors who employ the bottom up stock picking approach believe that it is possible to find stocks that are under and overvalued, and that these stocks will provide superior returns, regardless of market conditions.

**How to value these assets?**

Without going into the complex valuation methodologies, the basic process of valuation requires estimates of (1) the stream of expected returns and (2) the required rate of return in the investment. Once the analyst has calculated these expected returns he can then compute his expected value of the stock.

The hedge fund trading strategies aim to maximize investor return while hedging market risk. Let’s now take a look at these strategies in detail.

**Fixed income arbitrage**

Fixed income arbitrage (also known as relative value arbitrage) involves taking long and short positions in bonds and other interest rate-sensitive securities. The positions could include corporate debt, sovereign debt, municipal debt, swaps and futures.

Ineichen describes the fixed income manager as one who invests in related fixed income securities whose prices are mathematically or historically interrelated but the hedge fund manager believes this relationship will soon change. Because the prices of these fixed income instruments are based on yield curves, volatility curves, expected cash flows and other option features, the fixed income managers use sophisticated analytical models to highlight any potential trading opportunities. When
these sophisticated models highlight relationships of two or more bonds that are out of line, the manager will buy the undervalued security and sell the overvalued security.

**Fixed income arbitrage trading example**

Callie is a fixed income hedge fund manager. Her analytical model highlights that the spread of the T-bill/Eurodollar contracts is 120 basis points. Callie believes that this spread is going to widen since she believes that the Eurodollar futures contracts are overvalued.

Callie enters into two trades:

<table>
<thead>
<tr>
<th></th>
<th>Beg price</th>
<th>End price</th>
<th>Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buys 10 T-bill futures contracts @</strong></td>
<td>94.30</td>
<td>94.25</td>
<td>($12.50)</td>
</tr>
<tr>
<td><strong>Sells short 10 Eurodollar futures contracts @</strong></td>
<td>93.10</td>
<td>92.95</td>
<td>37.50</td>
</tr>
</tbody>
</table>

(Sell T-Bill @ 94.25 (loss of 5 basis points $25 per basis point 10 contracts)

(Buy 10 Eurodollar contracts @ 92.25 = 15 basis points $25 per basis point 10 contracts)

Callie’s analysis proved correct when the spread widened to 130 basis points and she made a profit of $2,500.

**Convertible arbitrage**

Convertible arbitrage encompasses very technical and advanced hedging strategies. At its simplest, the hedge fund manager has bought (and holds) a convertible bond and has sold short the overvalued underlying equities of the same issuer. The manager identifies pricing inefficiencies between the convertible bond and stock and trades accordingly.

**Convertible arbitrage trading example**

Heather is a convertible arbitrage manager; she trades her strategy by establishing a short position in the stock that the bond can be converted into. This practice, known as delta hedging, consists of dividing the price of the convertible by the stock price conversion premium and then multiplying by the option delta. Heather buys $1
million Lyondell Chemical Corp convertible bond at 95¾ and sells short 20,000 of Lyondell Chemical company stock. The bond positions were sold at 101½ and the common equity was covered at a loss at $14.43. Even though the short position produced a loss of $18,400, the bonds made $65,521. Overall, Heather made a profitable trade with an overall gain of $47,121.

<table>
<thead>
<tr>
<th></th>
<th>Quantity</th>
<th>Purchase price</th>
<th>Ending price</th>
<th>Total Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long - 9 5/8% SrSec Nts due 5/1/07</td>
<td>$1.0 mm</td>
<td>95¾</td>
<td>101½</td>
<td>$65,521</td>
</tr>
<tr>
<td>Short - Common Equity</td>
<td>20,000 shs</td>
<td>$13.51</td>
<td>$14.43</td>
<td>$(18,400)</td>
</tr>
</tbody>
</table>

**Statistical arbitrage**

Statistical arbitrage encompasses a variety of sophisticated strategies that use quantitative models to select stocks. The hedge fund manager buys undervalued stocks and sells short overvalued stocks. This is also referred to as the “black box” strategy since computer models make many of the trading decisions for the hedge fund manager.

**Statistical arbitrage example**

Suzi is a statistical arbitrage manager at QuantHedge working with a team of quantitative analysts who all hold Ph.D.s in physics or mathematics. The team at QuantHedge has developed a computer-generated mathematical model that picks a large basket of stocks to buy and a separate basket to short based on parameters. The model is used to help predict where the market is going and whether a stock is over- or under-priced. The model uses various data as inputs (historical stock prices, liquidity, pricing inefficiencies, etc.) and these are set forth by the manager.

Based on the inputs, the QuantHedge model generates automatic buy or sell orders. Suzi monitors what the model is doing and notices that the model “Hedgelt” shows AT&T usually trades at $20 and has recently risen to $24. Hedgelt’s analysis predicts that the AT&T is overvalued and automatically generates a sell order. These computer models generate hundreds and thousands of trade orders each day.
Equity market neutral

The most popular statistical arbitrage strategy is equity market neutral. An equity market neutral strategy (also known as statistical arbitrage) involves constructing portfolios that consist of approximately equal dollar amounts of offsetting long and short positions. The equity market neutral strategy is one that attempts to eliminate market risk by balancing long and short positions equally, usually offsetting total dollar amount of long positions with an equal dollar position amount of short positions. Net exposure to the market is reduced because if the market moves dramatically in one direction, gains in long positions will offset losses in short positions, and vice versa. If the long positions that were selected are undervalued and the short positions were overvalued, there should be a net benefit.

Equity market neutral trading example

Adam is an equity market neutral hedge fund manager. He tries to eliminate market risk by balancing long and short positions equally. He normally uses futures to totally eliminate market risk but here is an example where he balances the long and short equity in the portfolio. Adam believes that shares of ABC are overvalued and XYZ are undervalued and hopes to offset any dramatic market movements by holding offsetting equity (total value of longs—total value of shores) positions.

<table>
<thead>
<tr>
<th></th>
<th>Beg price</th>
<th>End price</th>
<th>Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam sells short 500 shares of ABC</td>
<td>$10</td>
<td>$11</td>
<td>$(500)</td>
</tr>
<tr>
<td>Adam buys 200 shares of XYZ</td>
<td>$25</td>
<td>$30</td>
<td>$1000</td>
</tr>
<tr>
<td>Net dollar position is</td>
<td>($0)</td>
<td></td>
<td>$500</td>
</tr>
</tbody>
</table>
Although Adam was wrong on ABC’s price declining, he was correct about XYZ appreciating. Therefore, he made an overall profit of $500.

**Long/short equity**

Long/short equity strategies involve taking both long and short positions in equity. Unlike market neutral portfolios, long/short equity portfolios will generally have some net market exposure, usually in the long direction. This means that managers are “long biased” when they have more exposure to long positions than short. Long/short fund managers may operate with certain style biases such as value or growth approaches and capitalization or sector concentrations.

**Long/short trading example**

Denver is a long/short equity hedge fund manager whose primary trading strategy focuses on sector trades. After conducting analysis of the financial condition of GM and Ford, Denver notices that in the automotive sector, GM is a relatively cheap stock when compared with Ford. Denver purchases 100 shares of GM because GM is undervalued relative to the theoretical price (what Denver calculates) and the stock market is expected to correct the price. Simultaneously, Denver sells short 100 shares of Ford because Ford is overvalued relative to its theoretical price according to Denver’s fundamental analysis.

<table>
<thead>
<tr>
<th></th>
<th>Beg price</th>
<th>End price</th>
<th>Profits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By 100 shares of GM @</strong></td>
<td>55</td>
<td>60</td>
<td>500</td>
</tr>
<tr>
<td><strong>Sell short 100 shares of Ford @</strong></td>
<td>15</td>
<td>14</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$600</strong></td>
</tr>
</tbody>
</table>
Denver predicted that the price of GM would rise and the price of Ford would fall. He was correct and made a total profit of $600.

**Distressed securities (high yield)**

Distressed investing strategies consist of investing in companies that are experiencing financial difficulties—possible bankruptcies. These companies are usually priced very low due to the risk of default—most mutual funds cannot invest in companies whose credit ratings fall below secure—therefore these hedge funds can take advantage of very low prices.

**Distressed debt example**

Jane works for a distressed debt hedge fund manager. As an analyst it is her responsibility to evaluate low-grade debt and calculate the probability that it will pay more when it matures. Jane notices that the low-grade high-yield bonds for AlmostBankrupt Inc are trading for 20 percent to 30 percent of par value. This means that Jane would pay 20 to 30 cents on the dollar for the AlmostBankrupt Inc, bond. After careful evaluation, Jane believes that the bonds will appreciate or have a high percentage chance of paying full par at maturity.

<table>
<thead>
<tr>
<th>Buy: AlmostBankrupt Inc bonds</th>
<th>Price Buy</th>
<th>Sell</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>25</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Jane was correct and when she decided to sell, the bonds were selling for 25 percent more at 25 cents on the dollar. But Jane sees that many of these bonds won’t pay off the full par value. By constructing a diversified portfolio of high yield bonds the manager reduces the risk of the portfolio through diversification.

**Commodities**

Increasingly, hedge funds have been investing in commodities. Indeed, hedge funds were blamed for the sharp 2005 increase in natural gas futures—and the subsequent burst bubble in 2006 that prompted Amaranth Advisors LLC to go out of business. Most of the time, hedge funds simply see commodity trading as yet another tool for hedging against risk and increasing returns. They trade commodity futures much like any other investor. Hedge funds’ success in commodities trading in the first half of the decade prompted major investment firms like Merrill Lynch and Morgan Stanley to bolster their own energy trading operations.
Currencies

Hedge funds have taken to playing the currency markets as another way to find alpha. Investing in foreign equities or bonds often require that investment to be made in local currency. In a good investment, the fund will not only see returns based on the investment itself, but also in a beneficial exchange rate.

In recent years, hedge funds and other investors have also used the carry trade to boost returns. In this scenario, a hedge fund hoping to leverage a trade will borrow money from a bank in a country that has a low interest rate—Japan has been a particular favorite in the past few years. With the benchmark rate in the U.S. at 5 percent and Japan’s at 1 percent, that generally means a 400-basis-point difference.

Currencies example

For example, CarryTrade Hedge Fund wants to buy up Company XYZ stock and use leverage to do so. It has $10 million and wants to borrow another $40 million in leverage. If it were to borrow in the U.S., it might have to pay 10 percent on the loan, or $4 million. But in Japan, the loan only has 6 percent interest, or $2.4 million. So on top of whatever profit it makes on the trade, the fund saves $1.6 million in interest. And if it plays its cards right, it can also gain a few hundred thousand dollars by timing the currency market right.

Private equity

As hedge funds are playing an increasingly important role in taking companies private. At times they partner with more traditional private equity firms, while other times they’ll buy up the bonds used as leverage in the buyout, or even directly extend credit to the buyers in exchange for a stake in the company. The returns are generally longer-term than most hedge funds are used to, so only the biggest hedge funds generally engage in any private equity plays.

Real estate

Hedge funds have increasingly invested in hard assets, particularly real estate. Commercial real estate, in particular, has remained strong despite the downturn in the residential housing market in the United States. Commercial leasing can provide steady returns for hedge funds, which can hedge against risks in other markets. And commercial real estate has generally appreciated in value far more consistently than residential holdings.

Event-driven

An “event-driven” fund is a fund that utilizes an investment strategy that seeks to profit from special situations or price fluctuations. Various styles or strategies may be simultaneously employed. Strategy may be changed as deemed appropriate – there is no commitment to any particular style or asset class. The manager invests both
long and short in equities or fixed income of companies that are expected to change due to an unusual event.

**Event-driven example**

Rob is an event-driven manager who invests in companies that are going through various restructures. Rob and his team at EventsRUs hedge fund analyze many company balance sheets and research industries to find any news that could affect the price of the companies’ stocks. These events include: corporate restructurings (mergers, acquisitions, and spin-offs), stock buy-backs, bond upgrades, and earnings surprises.

Rob has noticed that the market is predicting poor sales for AutoZone (AZO) for the fourth quarter. Rob has researched the company and noticed that while the industry is doing well, other analysts are not pricing in price improvements. He therefore makes a decision to buy AZO under the premise that they will surprise at earnings and the stock price will go up.

<table>
<thead>
<tr>
<th>Buy: 100 AZO</th>
<th>Beg</th>
<th>End</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>85</td>
<td>90</td>
<td>$500</td>
</tr>
</tbody>
</table>

Rob was correct and makes a profit of $500 on the trade.

**Sector**

Sector strategies invest in a group of companies/segment of the economy with a common product or market. The strategy combines fundamental financial analysis with industry experience to identify best profit opportunities in the sector. Examples could be the health care, technology, financial services or energy sectors.

**Sector example**

Denver is a long/short equity hedge fund manager whose primary trading strategy focuses on sector trades. After conducting analysis of the financial condition of GM and Ford, Denver notices that in the automotive sector, GM is a relatively cheap stock when compared with Ford. Denver purchases 100 shares of GM because GM is undervalued relative to the theoretical price (what Denver calculates) and the stock market is expected to correct the price. Simultaneously, Denver sells short 100 shares of Ford because Ford is overvalued relative to its theoretical price according to Denver’s fundamental analysis.
Global macro

Global macro is a style of hedge fund strategy that trades based upon macroeconomic or “top-down” analysis. Normally the securities are global stock index futures, bond futures, and currencies.

Global macro trading example

The classic example of this trading style is the trade that George Soros made against the British pound in 1992. He shorted over 10 billion pounds forecasting that the British government would allow the pound to break the EMS “bands” (fixed exchange rate mechanism tying the pound to the deutsche mark) dictated at the time. At the time, Britain’s economy was struggling because of high interest rates that were necessary to keep the pound/mark exchange rate within the Bundesbank restrictions of the European monetary system. On Black Wednesday in Sept 1992, the British government (after spending billions of pounds in foreign currency reserves to support the pound) allowed the pound to fall out of the EMS. Soros reportedly made more than $1 billion as the price of the pound declined rapidly.

The global macro manager constructs his portfolio based on a macro top-down view of the global economic trends. He will consider interest rates, economic policies, exchange rates, inflation etc., and seek to profit from changes in the value of entire asset classes. An example of a trade would be to purchase U.S. dollar futures while shorting Eurodollar futures. By doing this, a hedge fund manager is indicating that he believes that the U.S. dollar is undervalued but the Eurodollar is overvalued.

Short selling

The short selling manager maintains a consistent net short exposure in his/her portfolio, meaning that significantly more capital supports short positions than is invested in long positions (if any is invested in long positions at all). Unlike long positions, which one expects to rise in value, short positions are taken in those securities the manager anticipates will decrease in value. Short selling managers
typically target overvalued stocks, characterized by prices they believe are too high given the fundamentals of the underlying companies.

**Short selling trading example**

Amy is a trader for a hedge fund that focuses primarily on short selling. During the late 1990s dot-com bubble there were many opportunities for short selling tremendously overpriced securities. Amy sold short Yahoo (YHOO) at $60 and has maintained the position until today. She has made a handsome profit since Yahoo currently trades at $48.

<table>
<thead>
<tr>
<th>Sell short 1,000 YHOO</th>
<th>Sell</th>
<th>Buy</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$60</td>
<td>$48</td>
<td>$12,000</td>
</tr>
</tbody>
</table>

Amy believes that the companies that are prime examples for short selling are those whose stock market values greatly exceed their fundamental values.

**Emerging markets**

Emerging market investing involves investing in securities issued by businesses and/or governments of countries with less developed economies that have the potential for significant future growth.

**Emerging markets example**

A manager would trade equities and fixed income in lesser-developed countries (or emerging nations/markets) including Brazil, China, India, and Russia. Most emerging market countries are located in Latin America, Eastern Europe, Asia, or the Middle East. An example of this would be to trade long the Chinese yuan (CNY) and short the HK dollar (HKD), believing that the yuan will appreciate relative to the HKD.

**Merger arbitrage**

Merger arbitrage involves the investing of event-driven situations of corporations; examples are leveraged buy-outs, mergers, and hostile takeovers. Managers purchase stock in the firm being taken over and, in some situations, sell short the stock of the acquiring company.

**Merger arbitrage trading example**

Mike is a merger arbitrage hedge fund manager following a potential merger between Company A and Company B.
Mike offers one share of Company A, trading at $105, for each share of Company B stock, currently trading at $80. Following the merger announcement, Company B’s stock rises to $100 per share. Mike buys Company stock B at $100 and sells short Company A shares at $105 in an equal to the exchange ratio—in this case 1-to-1. As the merger date approaches, the $5 spread will narrow as the prices of Company B and Company A stocks converge. When the spread narrows, Mike’s profits grow—for example, if Company B stock rises to $101 and Company A falls to $98, Mike earns $1 on Company B (the long investment) and $7 on Company A (the short).

Mike’s risk is that the deal will not go through and Company B’s share price will drop back to $80 resulting in a substantial loss for him.

**Value-driven**

Value-driven is a primarily equity-based strategy whereby the manager compares the price of a security relative to the intrinsic worth of the underlying business. The manager often selects stocks for which he or she can identify a potential upcoming event that will result in the stock price changing to more accurately reflect the company’s intrinsic worth.

**Value-driven example**

Tom is a value-focused hedge fund manager. He pores through the accounting statements of the companies that he invests in and visits executives at many of them. He focuses on companies in the retail sector; because of his industry focus, he is also actually able to visit stores and even speak to the staff working at the company. After extended research, Tom feels that company XYZ is undervalued (i.e., the stock price is low given company fundamentals such as high earnings per share, good cash flow, strong management, etc.) and ABC is overvalued (i.e. the stock price is too high given the company’s fundamentals).

Tom’s valuation was correct and he made a total profit of $600

**Multi-strategy**

A multi-strategy manager typically utilizes two or three specific, predetermined investment strategies, e.g., value, aggressive growth, and special situations. This gives the investor access to multiple strategies with one investment. These funds also allow the manager to shift between strategies so that he can make the most money. This is similar to a situation in which a merger arbitrage manager left his investment mandate broad enough so that he could invest in distressed debt if the opportunity arose. Multi-strategy funds can offset some of the risk of one strategy doing poorly by employing other strategies simultaneously.
Fund of hedge funds (fund of funds)

A fund of hedge funds is also a hedge fund. This strategy invests in other hedge funds, which in turn utilize a variety of investment styles. A fund of funds takes investments from various investors and invests the money into a variety of different hedge funds. This allows for diversification of strategies and markets and increased chance of positive returns with low risk.

Like other hedge funds, funds of funds are organized as onshore or offshore entities that are limited partnership or corporations with the general partner receiving the management and/or performance fee.

 Funds of funds can offer an effective way for an investor to gain exposure to a range of hedge funds and strategies without having to commit substantial assets or resources to the specific asset allocation, portfolio construction and individual hedge fund selection. The objective is to smooth out the potential inconsistency of the returns from having all of the assets invested in a single hedge fund.

A growing number of style or category specific funds of funds have been launched during the past few years; for example, funds of funds that invest only in event-driven managers or funds of funds that invest only in equity market neutral style managers.

The funds of hedge funds now control roughly 35 to 40 percent of the hedge fund market and have grown at up to 40 percent every year since 1997. This allocation creates a diverse vehicle and provides investors with access to managers that they may not be able to utilize on their own. A particular benefit of this type of investment is the ability to establish a diversified alternative investment program at a substantially lower minimum investment than would be required were an investor to invest with each of the hedge fund managers separately.

INVESTMENT CRITERIA

What makes a good investment? Answer this incorrectly and consider yourself toast. Specific criteria vary by investment strategy, but here are some general rules if you’re going long on a traditional stock.

Earnings growth

As a rule, think of investments as a seesaw with growth at one end and risk at the other. You want earnings growth to be as high as possible, but not surpassed by risk. Note, we say “earnings” growth if we are the equity holder; we care about what cash flows to us because debt holders are in line before us to collect on interest. However, all investors carefully monitor unlevered free cash flow to the firm as a proxy for cash flow and to evaluate the underlying business.

Have a clear view on the expected growth. You may evaluate it based on the company’s historical growth rate, peer historical and projected growth rates, expected
growth of the macroeconomics, growth of the market the company services, analyst estimates and more.

Industry

Determine the attractiveness and competition of the industry. You can use Porter's Five Forces as outlined in Chapter 7: Consulting as a beginning point to ask questions. The key factors are to look at the growth of the industry, consolidation, intensity of competition, pricing power and differentiation of products.

The growth of the industry is heavily dependent on the product life cycle (page 49). Businesses that are maturing will have a much lower future growth rate than new industries; it's important to take note of this when observing the historical growth rate of companies. However, don't discredit maturing firms as they can be cash cows with lower levels of risk. Entrepreneurial players will also develop strategies to revitalize the industry, like mobile firms switching to 3G networks.

Consolidation refers to companies in the same industry merging. This creates bigger players who enjoy a competitive advantage that puts pressure on smaller peers. Economies of scale will lower their prices and brand recognition will increase their volumes. Consolidation is a sign of a maturing industry—growth now comes from increases in market share versus industry growth. Rather than the pie getting bigger, competition intensifies to gain a bigger slice. Some HFs screen for takeover candidates to enjoy the quick stock price boost from an acquirer's purchase premium.

The spread between revenue and cost of goods sold is known as profit margin. Buying power determines the ease of which price can be adjusted. It is a function of supply and demand. Kopi Luwak is a type of coffee that can go for up to $300 per pound because supply is so limited; it is made from coffee beans excreted by a small mammal, the palm civet, which is indigenous to Indonesia. The cross of supply and demand applies to suppliers as well. Also, size matters; the bigger the firm, the more power it can exert.

The industry can be made up of commodities or differentiated products, which affects price (charge more for differentiated products) and costs (more expensive materials for higher quality goods). Sometimes an industry can unexpectedly change from a commodity to differentiated product, like bottled water. Also, though coffee is a commodity, the Kopi Luwak serves a niche market that can be extremely profitable for small players (or big, diversified players).

Competitive advantage

Appraise whether the company is better or worse than its peers. Clear evidence includes patents, exclusive contracts, brand or product differentiation, low/efficient cost structure and superior management. Companies usually disclose this information in annual reports. You can evaluate management based on their
experience, which is disclosed, and big hedge funds will regularly keep in direct contact with senior management.

**Capital structure**

Know your place. If you are a common equity holder, you have unlimited upside but you are last in line to collect money in liquidation. The more people (more = number and size) in front of you decreases the likelihood you’ll be paid back in case of bankruptcy. At the same time, you want a certain level of debt so that the company is appropriately minimizing its cost of capital.

**Risk**

Look at all the previous factors and determine where everything can go wrong. Understand the volatility of the industry and recognize that new competitors can come in quickly, leaving existing companies in the dust. Regardless of how great an individual company is, the overall economy and government intervention can shut it all down in a heartbeat.

**Valuation**

Now take everything and attempt to affix a value to it. Given its prospects, is the company a good value? If its price already reflects its growth, plus more, then it may not be. Consider your entry and exit prices. Going long on equity usually means screening for undervalued companies or taking a bet on future positive events.

**Portfolio considerations**

Maybe you really like Yahoo! now but already have 30 percent of your money invested in Google. This increases your risk in the tech sector. Depending on your strategy and objectives, you’ll need to look at your overall portfolio.

**KEEP SHARP**

Preparing your own investment pitches will sharpen your interviewing mindset. Read research reports and other market commentary to gain knowledge depth. Even better, track the interviewing firm’s portfolio.
Track a hedge fund portfolio

13F: Institutional investment managers disclose their holdings on a quarterly basis to the SEC with the 13F form. This applies to any manager overseeing over $100 million. Note that this only applies to equity holdings, so funds specializing in commodities, foreign markets, derivatives, etc., will be tougher to track.

Modeling test

You may need to create a model for a formal test or for your own investment ideas. You’ll rely mostly on DCF and trading comparables, plus any other valuation methodologies that are popular for the company’s peer group. Some research analysts offer their research models to investors; if you can access or buy these, definitely take a look.

SAMPLE QUESTIONS

1. If you had only three questions to ask the senior management of a company, what would they be and why?

The answer to almost every question in this section is “it depends.” Ideally, you want to zero in on the issues that affect value the most, which depends on the company. It should be obvious that you should ignore questions that can be answered through publicly available information. Remember, you are looking for the balance of growth and risk, so your questions will center around the future regarding strategy, industry, competition and capital structure.

2. It’s Friday and you are given 10 potential companies to invest in. You need to present two at Monday’s investment meeting. The companies are in the following industries: biotech, paper products, hotel chain, utility, fast-food chain, pharmaceutical, luxury retailer, discount retailer, computer manufacturer and a conglomerate (General Electric). How do you go about evaluating these?

This question is tough, but quickly gauges your interest in the market. You need to display your breadth in various industries, efficiency in understanding what makes a good investment, and lots of common sense. You don’t have all day to answer this question, and you only have a weekend to review these ideas, so you want to state that you’d like to eliminate as many companies as you can in the beginning so you can just focus on a few investment ideas to present. Throw out General Electric, given there’s way too much to look at and it’s so heavily covered...
by analysts that you won't find anything new in a weekend. Based on the current depression, throw out the luxury retailer and hotel chain. Before the work day ends, call up research analysts at various investment banks for as much information as you can get, like research reports, comps and their personal opinions. After reviewing that information plus historical stock price charts, company filings, and recent news, you'll want to call those contacts up again to answer any more questions that may have arisen. Now, hopefully, you've eliminated a lot more companies. After discussing what the general steps are to evaluating an investment, you'll want to ask your interviewer questions that will help you narrow the field more. The answer isn't exactly which two industries you pick—it is the depth and breadth of your thinking process. A slam dunk answer incorporates industry-specific knowledge.

3. **Give me a bull and bear case on X energy commodity.**

This requires you to keep up on the markets that your interviewing firm tracks. You must always be able to argue both sides of any investment idea equally. Commodities are a strict result of supply and demand. What is today's demand and what is expected in the future? You know that energy needs are rising, but there's a huge push to remove reliance on fossil fuels and move to renewable sources like solar and wind. However, how successful that will be is anyone's guess. On the opposite side, there is a constant discussion concerning supply; oil and gas are supposed to dwindle. These kinds of arguments point to bull cases for certain energy commodities, but crude oil has fallen dramatically from mid-2008 to early 2009 because of the slowing global economy, rising inventories, etc. Again, research reports will give you great insight to answering this question.

4. **You have three companies in three different industries: retail, tech, and pharma. What would you look for in their 10-Ks beyond financials?**

Again, this tests your breadth and depth of knowledge in various industries. You'll want to be more specific than whatever answer can be provided in this guide. The general key thing to look for in retail is its strategy of product differentiation and the sustainability of that strategy (zero in on competitors). For tech, what is the growth of its industry or market share (zero in on longevity of product life). For pharma, measure the current patents in terms of years to expiration, and note the level of development of drugs in its pipeline. Really in all three, you're looking for the same investment criteria, but this question tests whether you can talk the talk, so brush up on your industry lingo.
5. What determines the premium you place on growth stocks relative to their peers?

All the criteria that goes towards a good investment determines the premium you place on a growth stock. A fast way to think about the premium on growth stocks is the P/E versus PEG ratio: P/E/EPS growth. The PEG ratio is a trading valuation metric for evaluating the relationship between the price of a stock, EPS and the company’s expected growth. In general, a P/E ratio is higher for companies with higher growth rates, so dividing P/E by the expected growth rate is a convenient metric to compare companies with different growth rates. A fairly valued company should theoretically have a PEG ratio of 1. Thus, by setting PEG to 1 and solving for growth rate, you can gather a sense of what premium the market is putting on the particular stock.

6. What is the strategy of our fund?

This is specific to the firm with which you are interviewing. Try to do the following:

- Search the Web to find any articles on the fund.
- Search Bloomberg to find any articles written on the fund.
- Use the Hoovers database to see if the management firm is listed.
- Refer to the reference section to figure out whether the fund has any information posted in the databases.

Once you have found the strategy that the fund is pursuing, research the current environment of the fund. For example, if it is a merger arbitrage strategy, look to find any recent announced mergers and prepare to discuss your opinions.

7. You are on the board of directors of a company and own a significant chunk of the company. The CEO, in his annual presentation, states that the company's stock is doing well, as it has gone up 20 percent in the last 12 months. Is the company's stock in fact doing well?

This is a trick stock question that you should not answer too quickly. First, ask what the Beta of the company is. (Remember, the Beta represents the volatility of the stock with respect to the market.) If the Beta is 1 and the market (i.e., the Dow Jones Industrial Average) has gone up 35 percent, the company actually has not done too well compared to the broader market.
8. Do you know what the difference between a put and a call option is?

A put option gives the holder the right to sell the underlying stock at a specified price (strike price) on or before a given date (exercise date). A call option gives the holder the right to buy the underlying stock at specified price (strike price) on or before a given date (exercise date). The seller of these options is referred to as the writer—many hedge funds will often write options in accordance with their strategies.

9. What is meant by the term “securities lending”?

This is the loan of a security from one broker/dealer to another, who must eventually return the same security as repayment. The loan is often collateralized. Securities lending allows a broker/dealer in possession of a particular security to earn enhanced returns on the security through finance charges.

10. What is convertible arbitrage?

It’s an investment strategy that seeks to exploit pricing inefficiencies between a convertible bond and the underlying stock. Managers will typically long the convertible bond and short the underlying stock.

11. What are you assuming when you short the junior piece of a capital structure and long the senior piece?

You are assuming your return will make up the negative carry you will have to pay due to the higher interest rate on the junior piece of debt.

12. Of the four debt covenants (minimum EBITDA, maximum capex, minimum interest coverage, maximum leverage), which one is the most important?

Minimum EBITDA because EBITDA is the basis of valuation, and if the company can’t make its EBITDA covenant, it’s a signal that there might be something operationally wrong with the company. A company can sell assets to pay down debt and reduce interest expense, but that will not solve underlying business problems.

13. Given negative news about a company, what happens to the pricing of the equity versus the senior debt?

Since equity is riskier and there is more uncertainty associated with it, the equity will be more volatile and decline in price by a greater percentage than the debt.
14. You have a 8 percent note maturing in five years trading at 80. What is the current yield?

\[
\frac{20}{80} = 25\% / 5 = 5\% + \frac{8}{80} = 15\% \text{ minus compounding} = -14\%.
\]

15. The current one year interest spot rate is 5.2 percent and the six-month interest spot rate is 5.4 percent. What is the implied forward rate for the second half of the year?

The rate over the first six months and second half of the year must average out to give 5.2 percent for the full year. So \(5.2\% = \frac{5.4\% + \text{unknown forward rate}}{2}\), which solves to 5.0 percent. The spot rate is the price that is to be paid immediately (settles in one to two business days). In contrast, forward rates are the projected spot rates, which can fluctuate based on the market. Basically, buying a forward means you’re locking in a price now for future settlement, though the true spot rate that settles then may be different.

16. Define the difference between the “yield” and the “rate of return” on a bond?

The “yield” on a bond is the return you earn if you hold the bond to maturity versus the rate of return is the actual realized return to the bond holder. So, if the bond is sold before maturity, the rate of return can be higher or lower than the yield. A bond may have a promised yield of 5 percent, but you bought this before the economic crisis, so interest rates have dramatically fallen. This increases your rate of your return if you sell now; if you hold to maturity then your yield and return will be the expected 5 percent.

17. What does the term delta mean?

It is the change in price of an option for every one point move in the price of the underlying security (a first derivative).

18. What is meant by gamma?

Gamma is a measurement of how fast delta changes, given a unit change in the underlying price (a second derivative).

19. What does the term vega mean?

Vega is the change in the price of an option that results from a 1 percent change in volatility.
20. What is meant by rho?

Rho is the dollar change in a given option's price that results from a 1 percent change in interest rates.

21. What does the term theta mean?

Theta is the ratio of the change in an option’s price to the decrease in its time to expiration, also called time decay.

22. What is duration?

Very simply put, duration is the measure of sensitivity of a bond’s price to changes in interest rates. Duration is measured in years. Typically, the longer the bond issuance, the more sensitivity (as there are more cash flows in later periods) to interest rates, and the higher the duration. Therefore, the lower the duration that a bond has, the less volatility and sensitivity to interest rates it will have.

23. What is convexity?

As duration is the measure of sensitivity of a bond’s price to changes in interest rates, convexity is the measure of sensitivity of a bond’s duration to changes in interest rates. In essence, duration could be considered the first derivative of a bond’s interest rate sensitivity and convexity the second.

24. All else being equal, which would be more valuable: a December call option for eBay or a January call option for eBay?

The January option: the later an option's expiration date, the more valuable the option.

25. Why do interest rates matter when figuring the price of options?

Because of the ever-important concept of net present value, all else being equal, higher interest rates raise the value of call options and lower the value of put options.
MORE SAMPLE QUESTIONS

These questions require personalized answers. Maintain a real or ghost portfolio, and keep up to date on the markets.

1. If you had $10,000 to invest, what would you do?
2. What stocks do you own? Tell me about your portfolio.
3. What are your long and short ideas?
4. What is the Fed Funds rate? Other economic indicators?
5. What do you think of the economy?
6. Where do you think interest rates will be one year from now?
7. What do you think of Ben Bernanke and how is he likely to differ from Greenspan?
8. What does the yield curve currently look like, and what does that mean?
9. What happened in the markets during the past three months?
10. Do you read The Wall Street Journal everyday? What’s on today’s front page?
PRIVATE EQUITY’S GOLDEN EGG

The basic definition

A leveraged buyout (“LBO”) employs financial leverage to acquire a company. Often, the assets of the acquired company are used as collateral for the debt; then the bought-out business generates cash flows, which are used to pay down the debt. LBOs allow private equity firms to make large acquisitions without having to commit a lot of capital (equity).

The most popular type of LBO buys a public company, which then is quoted as a company going “private.” The rationale is that a company can be more valuable as a private company. Perhaps the public markets are undervaluing it, or management can be more effective without the scrutiny of quarterly earnings reports to public shareholders. Moreover, the burden of governance, like Sarbanes-Oxley, is removed, which frees up time and resources.

When successful, LBOs generate high return because, as the equity holder, the sponsor receives all the benefits of any capital gains (while debt holders have a fixed return). Leverage magnifies these gains, allowing private equity firms to make outsized returns on investments in boom cycles.

Today, the current credit freeze and economic decline have significantly decreased LBO prospects. Additionally, the changing political climate will affect the way private equity is defined.

THE BEGINNING

The history of private equity can be traced back to 1901, when J.P. Morgan—the man, not the institution—purchased Carnegie Steel Co. from Andrew Carnegie and Henry Phipps for $480 million. Phipps took his share and created, in essence, a private equity fund called the Bessemer Trust. Today the Bessemer Trust is more private bank than private equity firm, but Phipps and his children started a trend of buying exclusive rights to up-and-coming companies—or buying them outright.

Yet, although there were pools of private money in existence between the turn of the century and through the 1950s, these were primarily invested in startups, much like today’s venture capital firms. The notion of a private buyout of an established public company remained foreign to most investors until 1958, when President Dwight D. Eisenhower signed the Small Business Act of 1958. That provided government loans to private venture capital firms, allowing them to leverage their own holdings to make bigger loans to startups—the first real leveraged purchases.
Soon, other companies started playing with the idea of leverage. Lewis B. Cullman made the first modern leveraged buyout in 1964 through the purchase of the Orkin Exterminating Co. Others followed, but the trend quickly died by the early 1970s. For one, the government raised capital gains taxes, making it more difficult for KKR and other nascent firms to attract capital. Pension funds were restricted by Congress in 1974 from making “risky” investments—and that included private equity funds.

**GREED IS GOOD: MODERN PRIVATE EQUITY**

These trends started reversing themselves in the 1980s, when Congress relaxed both pension fund restrictions and capital gains taxes. Money flowed back into private equity funds, and some of the best-known firms were founded—Bain Capital in 1984, The Blackstone Group in 1985 and The Carlyle Group in 1987.

Carl Icahn made a name for himself as a corporate raider with his LBO of TWA Airlines in 1985, and KKR raised private equity’s visibility to a new high with the $31.4 billion acquisition of RJR Nabisco in 1988.

This was a time of growing pains for private equity as well as intense success. Many firms realized that they couldn’t act in a bubble, as KKR found out with a ton of negative publicity surrounding the RJR Nabisco deal. Tom Wolfe’s The Bonfire of the Vanities gave all of Wall Street a black eye, and Gordon Gecko’s “Greed is good” mantra from Wall Street was pinned on private equity firms as a whole. By the time the 1990-1991 recession took hold, private equity firms resumed a low profile, waiting for the next boom.

**The tech boom**

The tech boom of the 1990s was a unique time for private equity. Stock prices soared, even for companies that had no business being publicly traded, let alone having a rising stock price. It became inordinately difficult for a private equity firm to create value through the traditional buyout method.

But at the same time, venture capital was on the rise, fueling a surge of new companies. As one venture capitalist put it at the time, “Look, I’ll throw $1 million at 10 different companies. If one company succeeds, that’ll bring me $50 million. So it’s worth it in the end.” So the major private equity firms shifted gears and participated in the boom through startup funding. LBOs still occurred, but at far less impressive levels than in the 1980s.

**A maturing industry**

The dot-com bust of 2000-2001 brought the markets back to reality and unearthed new opportunities for private equity firms. Some firms swept in to buy good companies on the cheap, waiting for the bust mentality to pass before returning them
to market. Others simply enjoyed the fire sale, and bought technology and patents for resale, dismantling the failed companies in the process.

By 2003, the market had returned to a bull cycle, but with some notable changes. Congress had enacted the Sarbanes-Oxley Act, which tightened regulations on public companies and what they could say and do. The new bull market was very much focused on companies “hitting their numbers” instead of long-term investment in new business. Those pressures combined to make private buyouts seem attractive to potential target companies.

Furthermore, the rise of hedge funds created a great deal of wealth that needed new homes, and broadened the number of potential investors in private equity. Soon, newly wealthy individuals, hedge funds and major Wall Street institutions were all piling into private equity, and the firms enjoyed even more success, leveraging their newfound capital into major multibillion-dollar deals. The record RJR Nabisco buyout was eclipsed twice in 2007 alone.

**THE SUMMER OF 2007**

Early on, 2007 was shaping up to be a remarkable year for private equity firms. Private investors LBO’ed the nation’s largest utility, TXU Corp., in a record $44.3 billion private buyout that had the heads of Blackstone and KKR gladhanding members of the Texas Legislature in what many saw as a symbol for private equity’s increasing clout.

Then, in the summer, the whole private equity wave came crashing down. And it wasn’t even the firms’ fault. LBOs became the latest victim of the housing and mortgage crisis.

**Where it began**

Ever since the dot-com crash and subsequent recession of 2000-2002, investors disillusioned with high-flying stocks started investing in tangible assets, mostly real estate. By 2004, the condo-flipping craze was in full swing. Prices had soared considerably in just three to four years—threefold in places like Los Angeles, Las Vegas and Miami. The national banking system helped fuel the craze with mortgages supported by historically low interest rates and relatively easy terms.

But in June 2004, the Federal Reserve started raising interest rates, which went from 1 percent at the start of 2004 to 5.25 percent in July of 2006, where they remained. Yet housing prices continued to climb as speculators jumped in and out of house purchases. That left the average homeowner struggling to afford a home. In response, mortgage lenders started pushing unusual mortgage products—everything from 50-year mortgages to interest-only, adjustable-rate loans. And because home prices had been on such a strong trajectory, many banks relaxed their lending requirements for “subprime” mortgages—loans to high-risk, poor-credit borrowers.
The reasoning was that even these borrowers could refinance once their home prices appreciated substantially.

The fall

The irrational exuberance in housing started falling apart in spring and summer 2006, when prices leveled off and luxury homebuilders, responsible for half-filled communities of McMansions around the country, started lowering the profit forecasts. Housing prices evened out, then started falling in the majority of cities around the country. And all of those adjustable-rate mortgages began adjusting higher. Without the expected jump in home value, many borrowers, especially those with subprime mortgages, couldn’t refinance and were stuck with payments they could no longer afford.

The effect of all of the late payments, loan defaults and home foreclosures wasn’t limited to mortgage brokers and banks. Many mortgage lenders packaged their loans into mortgage-backed securities—bonds backed by the expected inflow of payments from borrowers as well as the value of the homes mortgaged. But with borrowers defaulting and home prices falling, the value of these bonds dried up. And the big banks and hedge funds holding this paper found themselves hit hard. Bear Stearns had to close two billion-dollar hedge funds in June because of the hit these bonds took, and Goldman Sachs spent $2 billion of its own money in August to prop up another fund.

And, of course, both hedge funds and major banks were hit not only with depreciating mortgage-backed securities, but also a severe correction in the equity markets and bond yields that finally normalized after nearly two years of inversion.

Squeeze down

This resulted in a general tightening of credit. Nearly all major investment banks had mortgage-backed investments, and those with consumer arms also felt the pinch from mortgage defaults. Hedge funds, the other major source of leverage, faced the bond and equity problems, along with increased redemptions from worried investors. The effects were seen as early as June, as Cerberus Capital Partners had difficulty borrowing the $12 billion needed to buy the Chrysler Group. It got the financing, but at less beneficial terms than it had thought. And it’s unlikely that the new ownership will find underwriters to help lever Chrysler’s dwindling assets for investor payoffs, let alone the capital the struggling automaker needs to keep making cars.

Many deals were unable to close after the credit markets froze over. The media watched several unravel given the financing and market conditions, such as J.C. Flowers’s venture for Sallie Mae and Blackstone’s deal for Alliance Data Systems.

“It’s tough to do an LBO without ‘L,’” said Greg Ledford, managing director at private equity firm The Carlyle Group. “Along with the industry, Carlyle is spending a lot of time just on our portfolios to make sure they can ride out the economic slump.”
Future prospects

The defeated market has significant dropped prices, making many asset valuations attractive. However, the problem of nonexistent credit lingers. The year 2009 will be tough, but there’s still money in the funds to be put to work. Restructuring opportunities will be a main focus, and deals will probably be smaller and perhaps shifted to emerging markets.

Given the market, it may be tough to be overly bullish on private equity firms right now. But historically, even during the worst market cycles of the last three decades, private equity firms remained busy, buying companies and generally going about their business. Like most things on Wall Street, private equity experiences boom and bust cycles. The boom since 2003 has been unprecedented, and private equity investors, management and employees made billions. Private equity firms will likely make what acquisitions they can, and then scale back fund raising and operations for a few years until things improve again. They won’t be going away...just retrenching.

HOW PRIVATE EQUITY WORKS

Private equity generally works the same way throughout Wall Street, whether we’re talking about an independent private equity firm, a newly public firm like The Blackstone Group, or a fund that’s part of a major investment bank or hedge fund. Private equity companies, or divisions, have to create a fund and finance it, find potential investments, line up additional financing, make the deal, fix up the company and determine the exit strategy. Here’s a look at how it works.

Creating a fund

Private equity firms can have multiple funds running at the same time. Some are specialized, say in distressed debt or venture capital, while others are simply giant pools of cash the firm can use for any investment it sees fit. To create a fund, of course, the firm has to find cash.

Show me the money

A well-established private equity firm has reasonably dependable sources of capital for its funds. Major banks, pension funds, hedge funds and other Wall Street stalwarts are generally willing to give a fund several hundred million dollars each to get it started. Major universities and charities are also good sources of funds, since their endowments generally aren’t used for operational purposes. Finally, private wealth management organizations sometimes pool the money of some of their high-net-worth clients—and generally only those who can measure their worth in the hundreds of millions—in order to make a private equity investment.
And of course, the managing directors and ownership of the private equity firm also puts capital into any given fund. For successful private equity investors, that can be valued at several hundred million dollars.

All of these sources of capital, pooled together, create the private equity fund. Major private equity firms can have more than $10 billion in assets, though outside a handful of these top firms, such funds tend to be in the $2 billion to $5 billion range.

Why invest?

The funds operate much like a mutual fund, in that each participant or entity receives a return on its investment commensurate with the performance of the fund and how much each institution put in. Yet there are notable differences. Private equity firms require major commitments of time for each investment—you can’t get your money back for anywhere from three to five years, for starters. That’s roughly the same lifespan of a major private equity investment, and the private equity firm won’t be able to execute on its strategy without assurance that the money will be there.

Depending on the kind of fund, there may be regular payouts for its investors, but in many cases, investors may have to wait the full term before getting their returns. It’s because of this wait, in part, that private equity investors start leveraging up their new acquisitions almost immediately upon purchase. Yes, some of the capital is used to expand the business and make the changes that will bring about greater profits—but some is used simply to give investors a chunk of their money back shortly after the investment is made.

Finding a target

Research

Once a fund is created, the private equity firm then needs to find appropriate investments. Depending on the market environment, the time this takes can vary between weeks and years. Until a target is found, the fund’s resources are generally put into relatively safe investments, such as high-grade corporate bonds, blue-chip equities or Treasuries.

Private equity firms are constantly researching possible investments, even before the funds are created. These possibilities, in part, are major selling points for potential investors, who need to be reassured that the fund can put their capital into action as efficiently as possible.

Few private equity firms have the kind of massive staff of analysts on hand to do research on the bulk of publicly traded companies around the globe. Instead, they depend on the major investment banks for basic research, then go through daily reports with a fine-toothed comb for signs of possible investment. Some potential targets are easy to spot—the companies that put themselves up for sale, will attract interest, though these are by no means certain. Some companies may simply not be
worth the time and money needed to turn them around. Even among publicly traded companies, there’s such a thing as a bad company.

There are also companies that privately court private equity bidders. Generally, these contacts aren’t made via press release, but are done quietly, with the head of M&A for a major Wall Street firm making a call to a private equity firm’s managing director. Often, the company’s books are laid open to the private equity firm’s researchers, who can then determine if there are enough efficiencies to be gleaned to make an acquisition worthwhile.

The diamond in the rough

In still other cases, private equity firms will explore companies through their public filings and Wall Street analysts’ research, and go to them independently with the potential of a takeover. In some cases, these companies may not have given much thought to a leveraged buyout—perhaps they had a longer-term plan to achieve the efficiencies that a private equity firm could make happen much faster, or perhaps they didn’t even see the potential for the kinds of major improvements a private equity firm might propose. Sometimes a company is the perfect adjunct to another of the private equity firm’s portfolio companies, and the firm seeks to create a private merger between the two, which would boost the value of both once they’re rolled out into the open market.

Occasionally, a private equity firm will spot opportunity in a previously announced deal between two public companies or an LBO by a competitor. If the research shows the company could do a better job of creating value than the existing bidder, the private equity firm might jump in with a higher offer.

And that’s the key to the entire research process—creating value. The private equity firm’s demonstrated expertise must fit well with the target company’s opportunities, and there must be a relatively quick “fix” that will bring the fund’s shareholders value within the three- to five-year time frame. Most firms have several dozen potential opportunities on their “wish list” at any given time, just waiting for the last few pieces of the puzzle to fit into the investment scheme. Sometimes it’s a question of an anticipated failure in a division, other times it’s simply waiting for the stock price to fall enough to make a deal worthwhile.

Making the deal

The offer

When the opportunity seems ripe, the researchers and deal makers work together to create a buyout offer. This offer doesn’t simply include a per-share price, but rather is a detailed plan for the company over the life of the buyout firm’s involvement. To a degree, it includes the areas in which the private equity firm can bring additional value to the company, as well as how much the firm plans to invest in the company’s operations. Not all the cards are laid out on the table, however. “You don’t want to just spell out exactly how they can unlock billions in value,” says one longtime private
equity negotiator, who asked not to be identified for fear of giving those across the
table from him an advantage. “You want to tell them the value is there, and maybe
lowball it some, but you want them believing that you’re the only one who can dig it
out.”

**Haggling over the terms**

All of the usual tricks and ploys used in traditional M&A deal making are on display
in a leveraged buyout. Both sides can use Wall Street analysts and the broader media
to bolster or hurt the target’s share price. The futures of top management at the
target firm must be taken into account. Projections of cost savings are bandied back
and forth. But in addition to the typical deal-making tactics and rhetoric, private
equity firms have a few aces up their sleeve that a public company buyer might not.

For one, private equity buyouts, in many cases, preserve the target company’s
identity; it’s not getting swallowed up by a larger rival. They also give current
management an opportunity to right the ship without the scrutiny that comes from
being a publicly traded company. Since the dot-com bubble burst in 2000–2002,
many investors have become increasingly insistent that companies “make their
numbers” each quarter, surpassing quarterly revenue and profit estimates from Wall
Street analysts. If they miss estimates, the stock is punished—sometimes severely.
Privately, some CEOs have complained that the drive to make their numbers has
hampered their ability to make the necessary long-term investments to drive long-
term growth of their businesses. Instead, they hit their numbers and store up cash
on their balance sheets to use in share buyback programs and higher dividends to
appease public shareholders.

**The other side: private owners**

To have a private owner willing to invest for even a three- to five-year time frame would
seem like a vacation. And the ability to put free capital back into the company is just
good business. It can be a compelling mix, even for the healthiest company.

And for companies not so healthy, a buyout can be a boon in other ways. For one,
the infusion of capital from private equity owners can bring about big changes in a
short amount of time. Private ownership can also handle the more unpopular chores
related to a turnaround, including layoffs and dealing with past creditors. The private
ownership can also help top managers save face, especially if they were responsible
for distressing the company in the first place. A top manager whose policies may
have failed can still leave with his or her reputation intact by creating shareholder
value for a buyout, usually by getting a bid with a hefty premium over the current
share price. The fact that said management also leaves with a nice golden parachute
is also compelling.

**How long does a deal take?**

Once negotiations start, agreeing to a rough framework of a deal can take months,
but in reality is a two- to four-week process—private equity firms choose their targets
carefully, after all. Once an agreement in principle is reached, it’s announced to the
general public and the target’s management gets to enjoy the subsequent boost in share price. From there, months of additional negotiations take place, during which time the private equity firm gets a complete accounting of the company’s operations and financial health, and the final details on layoffs, compensation, operational adjustments and finances are all ironed out. The deal then goes to the target’s shareholders for approval. Once that happens, the private equity firm pays each shareholder the agreed-upon amount per share, and the company officially becomes a private entity owned by the takeover firm.

Getting financing

You may have already noted that the major deals announced in 2007 are far greater in value than the total value of a typical private equity fund. Welcome to the world of private equity financing, which puts the “leverage” back in leveraged buyout.

It’s rare that a private equity firm will simply buy a company outright with its own money. For one, even the biggest private equity fund could only manage to buy a company on the small end of the large-cap scale. And as any fund manager will tell you, it’s never wise to put all your money into a single investment. So instead, the money that private equity firms raise is, essentially, seed money. To get the rest, private equity firms enlist banks and hedge funds.

Loans

There are plenty of different ways to raise leverage. The first is a simple bank loan—simple, of course, if you consider $10 billion a simple sum of money. But, in essence, the private equity firm promises to repay the bank the money borrowed with a certain amount of interest. This is generally backed by either the private equity firm’s own resources or, more likely, the value of the enterprise to be purchased. In theory, if the firm defaults on the loan, the bank can go after the purchased company and/or the firm itself. In reality, this rarely happens; if there’s a problem, the two sides iron out a solution that, sometimes, can even involve the bank pouring more money into the target company or private equity firm to affect a greater turnaround.

Sometimes these loans are simply that: loans from a bank. In many other cases, the private equity firm will float a corporate bond, based on the perceived value of the enterprise to be purchased. In fact, over the past few years, private equity firms have sought to lever up their new companies as much as possible. That’s not simply because they want as much capital as they can get to expand the companies. At least some of that leverage goes back to the private equity fund as a “special dividend” for the people who just bought the company. Much of that new debt stays on the target company’s books throughout the private takeover period and on through the exit strategy.

Here’s an example, admittedly somewhat extreme, of how financing works. The Ford Motor Co. sold car rental chain Hertz Inc. to Clayton, Dubilier & Rice, The Carlyle Group and Merrill Lynch Global Private Equity for $5.6 billion in September 2005. The three private equity funds put up $2.3 billion—the rest came from debt that
ended up on Hertz’ balance sheet. Indeed, shortly after the sale, the private equity firms got $1 billion back in dividends. Ten months later, Hertz Global Holdings was re-introduced to the marketplace in an initial public offering that raised roughly $5 billion. The three private equity firms logged a $4 billion paper profit on the deal through more special dividends and, it should be noted, about $100 million in fees charged by the private equity firms! Hertz is still paying off the debt used by the private equity firms to buy the company in the first place.

**Working with hedge funds**

Over the past three to four years, private equity firms have increasingly paired up with hedge funds, essentially coming together with pools of private capital to buy out a company. The hedge fund, instead of getting a fixed amount for its investment, will often go along for the ride, hoping for the same outsized returns the private equity investors will get.

**Unlocking the company’s value**

Some companies may not need to be “fixed,” per se, but the whole reason they were brought private was because the private equity investors saw ways to unlock increased value within the company that wasn’t being used. In the next one to five years, the private equity investors go to work on leaving the company, ideally, in a better state than they found it.

**Leaving their mark**

A company bought out by a private equity firm won’t notice what happened the day after the deal closes, but within a year, the firm will have left an indelible mark on the company. Inefficient processes are tossed out without a second thought, activities and supply chains are streamlined, the company’s workforce is often cut back (at least through attrition if not outright layoffs), and new initiatives and, in some cases, new products are introduced.

The firm’s role in this stage of the process is to set definitive goals for improvement and lead the company to make those goals a reality. Targets are set—often during the deal-making process—and are reached through the leadership of the private equity firm’s consultants and hand-picked managers. There are often those within the newly private company who will bemoan the changes; they’re generally the ones who will be shown the exits first. Private equity firms have neither the time nor the inclination to be sentimental about their new purchases, and thus the changes that take place can be jarring and drastic. A good private equity firm, however, will take the time to get the employees to buy into the new program, which helps everyone—the employees keep their jobs and feel good about change, while the private equity firm gets a quicker and more efficient outcome.
Pulling it off

There are, of course, an infinite number of ways to unlock value in a given company. Retail chains are popular targets of late because underperforming outlets can be closed and the real estate sold. (There was talk that Toys “R” Us would be shuttered entirely by private equity owners since the company’s real estate was actually worth more than the toy business. The Times Square property alone would’ve been a billion-dollar parcel.) Industrial companies can be improved with new machinery and tighter supply chains. Payrolls can be reduced, debt can be restructured and a variety of expenses can be cut through using different vendors or items. New customers and contracts are pursued.

Alternatively, the “fix” may involve disbanding the company, either in part or altogether. Smaller conglomerates tend to be unwieldy—so why not focus on the core business and sell off the other divisions? Perhaps there just aren’t enough synergies within the company, so the divisions can be sold off to rivals. So long as it generates capital or the potential of higher profit down the road, the private equity firm will do whatever it takes.

THE EXIT STRATEGY: RETURN ON INVESTMENT

Private equity firms aren’t in the business of actually owning companies. They buy and sell companies like one would buy an old house, fix it up and resell it for a handsome profit. At some point, the private equity firm will want to close out the investment and reap the returns.

The three main options are sale, IPO and recapitalization.

Sale

In an outright sale, the “fixed up” company is sold to someone else, generally a larger public or private company. It can be sold to a strategic company (corporation) or to a financial player, like another PE firm who will reuse it as an investment opportunity.

Alternatively, the private equity firm may opt for a sum-of-its-parts strategy, selling off the company piecemeal. This is particularly popular when a private equity firm purchases a distressed or even bankrupt company that has more than one operating unit. The units can be broken apart and sold to competitors, who are likely to pay a premium to buy up market share at the expense of a one-time rival. Some private equity firms will even purchase a company solely for the purpose of merging part of it with another portfolio company to strengthen the latter, and then sell off the rest of the former company. This is, of course, a necessarily broad overview of how private equity deals work. There are many private equity funds that specialize in distressed debt, early-stage venture capital investing and other wrinkles. But ultimately, the roles and the process are generally the same.
IPOs

The IPO route is quite similar to that of any other company seeking to go public. The private equity firm hires an investment bank to underwrite the offering. The investment bank does an assessment of what it thinks the enterprise is now worth; ideally, the private equity firm has brought enough value to the company to make it worth more than the initial purchase price. The private equity owners and investment bank come to a consensus of value, and then the company goes on a junket with the investment bank, giving institutional investors and Wall Street analysts a “road show” to discuss how much the company has improved and what it’s worth now—and, of course, what it will be worth in the years to come. Ultimately, the company sets an offering price and a date, and stock is floated. Generally, the private equity firms will retain large chunks of equity in the company, floating anywhere from 20 to 90 percent of the stock on the open market. The proceeds of the IPO usually go to the private equity firms. Sometimes the firms will float only a minority of the outstanding shares, leaving them with effective control of the company. The private equity firm may unwind its position in time, of course. Other times, the firm is simply interested in getting out with as much money as possible. It may hold on to a stake to see how much it appreciates, however, building even more value for its own stakeholders.

Private equity firms are partial to IPOs because they bring about returns in several stages. When the firm releases stock to the public, it receives the returns. It then gets to see its remaining stake appreciate, and can participate in dividend and stock buyback programs as well.

Recapitalization

Recapitalization refinances the capital structure so that the private equity firm is leveraging to replace equity with more debt. This extracts cash from the company. Frequently, this route is used if an immediate exit strategy is not opportune at the time.

GENERATING RETURN

As previously touched upon, PE firms seek to unlock value in LBO investments, leaving the company better than first acquired. They realize this value when exiting with a higher equity value than originally invested. The specific ways to increase equity value can be divided in three methods.

EBITDA/earnings growth

The purchase and exit price is based on the company’s earnings prospect. You’ll most frequently see the price quoted as a multiple of EBITDA, so EV/EBITDA. Multiples vary by industry; expect higher multiples with higher growth industries. Therefore, if you buy in at a 6.0x EV/EBITDA and exit at the same multiple, you can
realize a return by increasing the denominator, EBITDA, so that the numerator increases. As long as the relative amount of debt is not higher at exit, then the equity portion of that numerator, enterprise value, will increase. EBITDA can be increased by any of the line items, like increasing sales, improving gross margin, lowering operating expenses, etc.

**FCF generation/debt paydown**

The LBO theory is premised on the large amount of debt used to acquire targets. Using the company's cash flows to pay down the debt increases the equity that goes back to the sponsor. Free cash flow available to pay down debt is basically after-tax EBIT plus depreciation and amortization, less capital expenditures, less increase in net working capital, less interest. PE firms use as much of this FCF as possible to pay down debt. They will also aim to increase FCF if possible, such as the previous strategy of increasing EBITDA/earnings, as well as decreasing capex and working capital needs.

**Multiple expansion**

Selling a company for more than you bought it is always desirable. Again, since prices are usually quoted as a multiple of EBITDA, this strategy is described as “multiple expansion.” Multiples can change based on market conditions, like the boom periods of 2006-2007, which saw historically high multiples, while exiting in this year (2009) may see multiple contractions from that period. Note that the previous strategies of operational improvements can sync to multiple expansion as multiples are linked to growth prospects and operating performance.

**All together**

For example, say you buy a company for $100 million with 40 percent equity and a 10.0x EV/EBITDA multiple. As the sponsor, you put in $40 million at acquisition for a company that is generating $10 million in EBITDA. Five years later, you doubled that to $20 million in EBITDA, paid down $10 million of debt and sold the company at 11.0x EV/EBITDA. This means your exit price was $220 million = 11.0x * $20 million. You’re left with debt of $50 million = $60 million - $10 million. Now you have an ending equity value of $170 million = $220 million - $50 million, which is 4.25x greater than the original investment of $40 million. As you benefited from all three types of strategies, you yielded an equity return of 34 percent.
LBO INVESTMENT CRITERIA

Successful LBO investments involve companies that are able to service the large amount of debt and/or are improved to create more value at the time of exit. Target IRRs usually range from 20 to 30 percent. Here are the basic points that filter for appropriate opportunities:

Steady and predictable cash flow
Interest payments on debt come due on predetermined dates; the target’s cash flow needs to match so it can pay its bills. Also, steady and predictable cash flow allows more debt to be raised.

Clean balance sheet with little debt
Significant pre-existing obligations to other debt holders will make new layers of debt from the buyout fund riskier to pay off. A cleaner balance sheet allows excess cash to go towards the new debt of a LBO. Little debt combined with a heavy asset base will yield a higher credit rating, which lowers the interest rate on the new debt.

Defensible/strong market positions
Investors needs to be assured that the acquired company will make money. The LBO target needs to be in a position where it can generate large profits. A market position that is guarded by high barriers to entry makes a more attractive LBO candidate because it lowers the risk of the cash flows.

Strong management team
Private equity firms are in the business of finance, not operations. While many firms employ consultants and operation specialists, most private equity firms rely on the management of the company to actually execute the company improvements. Significant due diligence is spent interviewing the management team, who provides insights on where value can be extracted and how realistic projections are. PE firms will change management if they feel the current team cannot perform. To align management incentives with their own, PE firms often incorporate options as part of pay so that management shares in the equity upside.

Minimal future capital requirements
The sponsors prefer not to make future, large cash outlays to keep the company running and growing. They would rather use every bit of cash to pay off debt.
Limited working capital requirements

Same as above; increases in working capital decreases the free cash flow available to pay down debt and benefit the equity holder.

Synergies and potential for expense reduction

Here, a PE firm looks at a target and thinks “How can we improve this company?” Reducing expenses is one the first strategy to be employed. LBOs have been criticized for tactics like aggressive layoffs for the sake of improving efficiency. PE firms work closely with management to find ways to increase profits as quickly as possible. Sometimes, follow-on acquisitions or combinations with existing portfolio companies are made to extract synergies.

Large amount of tangible assets for loan collateral

More collateral enables lower-interest financing. This lowers interest payments and lowers the amount of cash needed to repay debt. Potential loan collateral includes current assets such as cash and inventory, as well as long-term assets like property, plant, and equipment.

Divestible assets

Divestible assets provide the acquirers with extra means to raise cash to pay off the debt. Such assets can include equipment, land, brands, etc.

Viable exit strategy

A return only occurs if it’s realized, through a sale, IPO or recapitalization. When determining the purchase price for a acquisition, the PE firm needs to think about how the exit multiple will compare to the entrance multiple. At minimum, they would like it to be the same, and at best, they would like it to be higher. Funds usually exit after three to five years.
ADVANTAGES AND CONSIDERATIONS

Advantages

• There is an opportunity to execute long-term strategy outside of the short-term focus of the public markets (examples: acquisitions, cost reductions, capital investments).
• Use of levered capital structure to increase equity returns. Debt is tax deductible and private equity firms can put up less equity to purchase a firm.
• Private equity firms bring a sense of urgency to the entire business, disciplining the company to quickly seize opportunities.
• Incentive compensation schemes align management incentives with the sponsor’s.
• The company gets a stable shareholder base of long-term investors.
• The company now has the capability to leverage private equity firm’s networks to reach new customers or improve supplier relationships.
• There is also decreased regulatory governance (Sarbanes-Oxley).

Considerations

• There is an increased risk due to additional leverage.
• There is a need for return monetization within a certain timeframe (usually three to five years).
• There is more “hands-on” ownership than what public shareholders exercise.

PAPER LBO

The “paper LBO” can be an unnerving surprise to the unprepared candidate. It's a type of interview question where you are verbally given financial parameters such as acquisition price, capital structure, projected financials (expected growth) and exit price. Based on this, you are expected to “model” the scenario on paper. Expect this exercise to be given in about 10 percent of your interviews.

At first, it can be daunting to be away from Excel or a calculator; mental math under pressure is a big pain. But after a little practice, these questions are a breeze.

Sometimes you are given all the relevant information up front, and sometimes you need to ask the right questions (and perhaps be told to make logical assumptions). The following is the minimal information needed:

• Capital structure (% debt versus equity) for leverage
• Duration of investment for IRR estimation
• Projected EBITDA for FCF (may be given in the form of revenue, growth rate and margins)
• Depreciation and amortization expense for tax calculation
• Cost of debt for interest expense
• Tax rate for taxes
• Cash flow components: working capital, capital expenditures, etc.
• Exit multiple for ending EV

You are probably used to building complex models; your financial scenarios incorporate things like net operating losses (“NOL’s”) or mid-year convention for interest expense or using cash to amortize debt. Rarely would you ever be asked to do this for the paper LBO, the interviewer just wants to see that you understand the fundamental concepts of how to calculate IRR so he has one “right” answer to easily compare across candidates. Just state your assumptions as you work through, and the interviewer can inform you if he’d like to adjust them. You can round numbers. Asking for complex assumptions will just make your task more difficult.

On paper, your answer will consist of the calculations to get to FCF. Then you calculate the ending equity value (“E”) = ending EV + debt – cash. Ending E/Beginning E is the return and the crux of the answer to the paper LBO. The tougher firms will ask you to estimate the IRR (see box on page 98 for details)!
**Paper LBO example**

You buy a retail company for 5.0x. You raised 40/60 debt to equity; the debt costs 10 percent. Next year, the company is projected to generate $100 million in revenue with a 40 percent EBITDA margin. Revenue is expected to increase by $50 million every year and margins are estimated to stay flat. Working capital stays the same every year. Capital expenditures are 20 percent of sales. The depreciation is $20 million every year. The tax rate is 40 percent. You'd like to exit in five years. Does this look like a good investment?

When PE says they a company at 5.0x, they usually mean total price/forward year one EBITDA. The forward year one EBITDA is $100 million of revenue x 40 percent EBITDA margin or $60 million.

The acquisition price is $60 million x 5.0 = $300 million. Your capital mix was 40/60 debt to equity so the beginning debt value is $120 million, and beginning equity value is $180 million.

Now you must calculate the FCF for every year on the paper that is enclosed in the resume portfolio you brought with you to the interview.

<table>
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<th>(in millions)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
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<td>$150</td>
<td>$200</td>
<td>$250</td>
<td>$300</td>
<td>$350</td>
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<tr>
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<td>60</td>
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<td>100</td>
<td>120</td>
<td>140</td>
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<tr>
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<td>40%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>D&amp;A</td>
<td>20</td>
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<tr>
<td>EBIT</td>
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<td>$40</td>
<td>$60</td>
<td>$80</td>
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<td>$120</td>
</tr>
<tr>
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<td>$48</td>
<td>$68</td>
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<td>$108</td>
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<td>35</td>
<td>43</td>
</tr>
<tr>
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<td>EBITDA</td>
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<tr>
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<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
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<tr>
<td>Interest</td>
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<td>$7</td>
<td>$9</td>
<td>$11</td>
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</table>
You add up the accumulated free cash flow ($45 million) that pays down the debt.

Here, we assumed the exit multiple was the same as the initial multiple, which is the assumption you usually want to make unless your interviewer indicates otherwise. This is a good investment, as the equity more than triples. The IRR is ~28 percent.

It sounds a bit silly, but practice writing out your answer. A sloppy paper can confuse you into the wrong answer. Also, remember the point of this question. They just want to see that you understand the fundamental math behind a LBO. They do not expect you to be a human calculator, so feel free to be liberal with your rounding so you can answer more quickly; just simply ask if it's OK.
Estimating IRR

The CAGR formula can calculate the IRR for a paper LBO.

\[ \text{CAGR} = \left( \frac{\text{ending E}}{\text{beginning E}} \right)^{\left(\frac{1}{\text{years}}\right)} - 1 \]

It works because you are only considering an investment and exit cash flow; in real life, there are multiple equity cash in/outflows where you need a calculator/Excel to calculate the IRR. Because of the complexity of this formula, you won’t be able to calculate the exact IRR without a calculator. However, many PE professionals can make an educated guess just by eyeballing the numbers.

Here are a few methods to estimate the IRR:

**Simple Average**

If you doubled your return, you increased your initial investment by 100 percent. If your investment was three years, then you had about 33.3 percent growth each year. However, the compounding effect makes the IRR markedly lower (~26.0 percent). This method just gives you the upper limit of the IRR; you can get a feel for how strongly the compounding effect makes the simple average higher than the IRR. The longer the duration of the investment, the more powerful the compounding effect.

**Rule of 72**

The rule of 72 allows people to estimate compounded growth rates.

\[ \text{Approximate CAGR} = \frac{72}{\text{years to Double Money}} \]

Divide 72 by the number of years you estimate the equity doubles in. So if you doubled your money in only three years, you have an IRR of ~24 percent (72/3). This is not a precise calculation and becomes less accurate with fewer years; obviously if it took one year to double, then you have a CAGR of 100 percent, not 72 percent. This rule was originally devised to estimate interest rates; therefore, there are many pitfalls in using it for equity returns, like negative FCF. As with any mathematical interview question, sanity check your answer.

**Rote Memorization**

You can memorize benchmark return multiples and the corresponding IRRs. Thus, if a five year investment generates 3.0x then the IRR is 25 percent. This won’t work if you are given a different duration other than the one you memorized. If your multiple exceeds 6.0x, double-check your answer, because a return above 40 percent is excessive. Almost always, the paper LBO uses five years. Occasionally you may have three years. Definitely know the other methods for backup.

For a five year investment, here are the relevant IRRs.

Return multiple/IRR (rounded to nearest 1):

1.0x/0%
2.0x/15%
3.0x/25%
4.0x/32%
5.0x/38%
6.0x/43%

So if your ending equity value is $275 million, and your beginning equity value is $100 million, then you know the return multiple is less than 3.0x. Therefore the IRR is between 15 percent and 25 percent, closer to the latter percentage. The actual answer per the CAGR formula is ~22 percent.
Modeling test

This is the more complex version of the paper LBO; now you are actually given a computer and more time. You absolutely must practice this in advance; there is always a time limit and using the firm’s computer means you don’t have access to templates or any personal shortcuts you have on your work computer (so memorize the shortcuts that come standard in Excel!). Be able to build a simple LBO within a half-hour from scratch. Don’t worry about fancy toggles or formatting; just concentrate on the basics. The modeling portion is a filter test to check that you can conduct the mechanics.

Sometimes the modeling test is very simple; you are just given minimal information like a paper LBO and you just need to get the mathematical answer; the IRR. Other times it is paired with a case study that asks you to make a recommendation on the company and you may need to orally explain your answer or provide a written memo. For details, look at Chapter 10: Investment Memorandums.

Assumptions

You may be given all the necessary assumptions, like growth and interest rates, entrance and exit multiples that are needed to model the scenario. Sometimes, you’re not and are asked to make “reasonable assumptions.” You’ll need to keep up to date on the market to make informed assumptions. Remember the obvious stuff like, lower tranches of debt have progressively higher interest rates, high growth rates are not sustainable forever, exit multiples are usually set equal to entrance multiples for the base case scenario, etc.

Basic versus full-blown

The simplest modeling tests just ask for the answer, “What’s the IRR?” of the proposed investment. Here, all you need is the acquisition purchase price, capital structure, projected exit price and operating assumptions to build a free cash flow for debt repayment schedule.

The comprehensive modeling tests will ask for the three financial statements and/or sensitivities. If you’re not specifically asked for the three financials, don’t waste time building them!
SAMPLE QUESTIONS

Technical questions

*Finance:* Mostly focused on M&A accounting and financial concepts.

*Industry Outlook:* Understand the current market and its implications for the PE industry. Also understand which industries may be good for LBO targets.

1. **What are the three ways to create equity value?**

   1) EBITDA/earnings growth, 2) FCF generation/debt paydown, and 3) multiple expansion.

2. **What are the potential investment exit strategies for an LBO fund?**

   Sale (to strategic or another financial buyer), IPO or recapitalization (re-leveraging by replacing equity with more debt in order to extract cash from the company).

3. **Advantages of LBO financing?**

   a) As the debt ratio increases, equity portion shrinks to a level where one can acquire a company by only putting up 20 to 40 percent of the total purchase price.

   b) Interest payments on debt are tax deductible.

   c) By having management investing, the firm guarantees the management team’s incentives will be aligned with their own.

4. **What are some characteristics of a company that is a good LBO candidate?**

   Ideally, LBO’ed companies have steady cash flows, strong management, opportunities for earnings growth or cost reductions, high asset base (for collateral to raise more debt), low business risk and low need for ongoing investment (e.g. capex and working capital). The most important characteristic is steady cash flows, because sponsors need to be able to pay off the relatively high interest expense each year.
5. What are some of the due diligence questions that you would ask?

You might start off with industry questions to determine if it is an industry that the sponsor would want to be in, and then determine how well positioned the company is within that industry. Ask about market rivalry, whether the industry is growing, what the company’s and its competitors respective market shares are, what the primary strategy for product competition (brand, quality, price?) is. Ask whether there are barriers to entry or economies of scale, supplier and buyer power, threat of substitutes, etc.

Then move onto questions about the company’s own operating performance. Zero in on growth, what is projected, how much is attributed to growth of the industry versus market share gains. What is the resilience of this company to downturns? What demographics is the revenue focused in, and how will these demographics change? What is the cost structure, how efficient are the supply and distribution chains? What’s the proportion of fixed to variable costs? How well do you utilize assets? Ask about capital expenditures, growth versus maintenance. Also ask about how working capital is managed. How well do you collect on account receivables or manage accounts payable?

Next, move to financials: How much cash is available right now? What are the projected financials?

Then you want to ask about opportunities: Are there non-core or unprofitable assets or business lines? Is there opportunity for improvement or rationalization?

You also care significantly about the quality of management. How long have they been in their positions, what are their backgrounds? Is the sponsor able to replace them, if needed?

What are the legal and regulatory risks? Are there any HR issues, like union or labor problems?

What’s your exit strategy here? Is the industry consolidating so that a sale might be made easier?

6. If I handed you an offering memorandum, what are some of the things you’d think about?

You would think about how you would value the company; whether it was a good LBO candidate. You’d try to understand the business as much as possible, especially in operational points like capex, working capital needs, margins, customers, etc. You’d examine at the industry, look for growth opportunities and question whether the sponsor and/or management could capitalize on those opportunities. You would wonder what would be appropriate capital structure, and whether it is achievable in the current markets. Most importantly, you’d think about all the potential risks.
7. Walk me through S&U?

Sources contain the variable tranches of capital structure. Some examples from senior to junior are bank debt, junior subordinated notes, convertible preferred, hybrids and sponsor equity. Cash belonging to the target can also be used as a source. Finally, proceeds from options exercised at the target are a source. You need to determine how these sources are used; the main component is the purchase of the company, either of the assets or shares. Then is purchase of the target's options, refinancing debt and transaction costs (banker and lawyer fees).

8. Why do PE multiples and EBITDA multiples yield you different valuation results? Why use EBITDA multiples instead of PE multiples?

EBITDA multiples represent the value to all stakeholders, while the PE multiples only represent the value to equity holders. Three reasons to use EBITDA for an LBO are: 1) it can be used for firms reporting losses, 2) it allows you to compare firms regardless of leverage, and 3) because it represents operational cash flow.

9. What are the ways in which a company can spend available cash/FCF?

Pay down debt, issue dividends, buy back stock, invest in the business (capital expenditures), and engage in acquisitions.

10. Given that there is no multiple expansion and flat EBITDA, how can you still generate a return?

Reduce interest expense, improve tax rate, depreciation tax shield, the simple act of leverage, pay down debt, pay a dividend, reduce capex, reduce working capital requirements and reduce change in other.

11. What is the different between bank loan and high-yield debt covenants?

Bank loans are more strict. For looser covenants, high-yield debt is rewarded with higher interest rates. Covenants can restrict economic activities, finance activities or accounting measurements. Economic activities restricted would include the sale of assets, capex, changes in corporate structure. Finance activities restricted could include issuance of additional debt and payment of cash dividends. Covenants often track accounting measurements, such as interest coverage, current ratios, minimum EBITDA.
12. What determined your split between bonds and bank in the deal? If there is a higher growth capex proportion of total capex, would you still want to use same split?

Typically, you’d like as much bank debt as possible because it’s cheaper than regular bonds. However, this mostly depends on how much a bank is willing to loan. Next, the sponsor and debt holders have to negotiate the agreements/covenants that they can live with. The more senior the debt, like the bank debt, the more restrictive it tends to be. Bank debt also usually requires collateral to be pledged. Finally, the timeline of debt payback needs to be evaluated; bank debt usually has a shorter maturity, so the bank needs to ensure that the company will be able to face its liabilities when due or else face bankruptcy. Growth capex is more favorable than maintenance capex. It’s flexible; maintenance capex needs to be paid every year just to keep the company running, whereas growth capex can be stalled in times of downturn. Also, growth capex implies investments, which yield higher cash flows in the future, that can be used to support more debt.

13. Let’s say you run an LBO analysis and the resulting return is below the required return threshold of your PE firm. What drivers to the model will increase the return?

Some of the things that will boost return are: 1) increase leverage (debt), 2) reduce purchase price, which decreases the amount that the firm has to pay, 3) increase exit/sale price or multiple, which increases the return on the investment, 4) increase the growth rate, which raises operating income/cash flow/EBITDA in the projections, and 5) decrease costs, to also raise operating income/cash flow/EBITDA in the projections.

14. Which valuation will be higher or lower, all else the same? DCF or LBO?

LBO is lower, as it’s discounted at a higher cost of equity.

15. Why do private equity firms use leverage when buying a company?

Using more debt to finance the purchase of a company allows the PE firm to use less of their money (equity) to pay for the deal. If the investment is successful, the higher the leverage, the higher the return when exiting the investment (e.g. selling the company five years later).
16. Assume the following scenario: EBITDA of $10 million and FCF of $15 million. Entry and exit multiple are 5x. Leverage is 3x. At time of exit, 50 percent of debt is paid down. You generate a 3x return. 20 percent of options are given to management. At what price must you sell the business?

To make a 3x return based on the financial parameters, you must sell the business at $90 million. You know the EV is EBITDA times entry multiple: $10 million * 5x = $50 million. Debt is equal to EBITDA times leverage: $10 million * 3x = $30 million. EV minus debt equals equity: $50 million - $30 million = $20 million. Debt needs to be paid down by half or $30 million * 50% = $15 million. To make a 3x return, sponsor equity needs to grow to $20 million * 3x = $60 million. Since management receives 20 percent of the equity in options, the total equity needs to grow to $60 million/(1 – 20%) = $75 million. Since your ending debt is $15 million and ending equity is $75 million, the EV at exit is $90 million.

17. If you have a company with a P/E of 10x and cost of debt of 5 percent, which is cheaper for an acquisition?

Debt. The cost of equity is approximately the inverse of P/E so 1 / 10x = 10 percent. The cost of debt at 5 percent is lower, and, therefore, cheaper.

18. Would you rather have an extra dollar of debt paydown or an extra dollar of EBITDA?

You would rather have the extra dollar of EBITDA because of the multiplier effect. At exit, the EV is dependent on the EBITDA times the exit multiple. An extra dollar of debt paydown increases your equity value by only one dollar; an extra dollar of EBITDA is multiplied by the exit multiple, which results in a greater value creation.

19. You have two investment opportunities: Company A and Company B.

- **Company A:**
  - Revenue: $100 million
  - EBITDA: $20 million
  - Projected annual revenue growth: 5 percent for the next five years
  - Purchase price: 5x EBITDA/4x Debt and 1x Equity

- **Company B:**
  - Revenue: $100 million
  - EBITDA: $20 million
  - Projected annual revenue growth: 10 percent for the next five years
  - Purchase price: 6x EBITDA/4x Debt & 2x Equity
Which is the better investment opportunity based on this information? Assume everything about the companies is the same except for what is given in the information, and assume the exit multiple is the same as the entrance multiple.

Assuming constant EBITDA margins and ignoring compound growth for simplicity, EBITDA for Company A in year 5 will be about $25 million = $20 million \times (1 + (5\% \times 5))$, and Company B will be $30 million = $20 million \times (1 + (10\% \times 5))$. You purchased Company A for $100 million = 20 \times 5x$ and Company B for $120 million = 20 \times 6x$. You sold Company A for about $125 million = 25 \times 5x$ and Company B for about $180 million = 30 \times 6x$. This creates a profit of $25 million and $60 million, respectively. You invested $20 million of equity into Company A, so your return is $1.25x = \frac{25 million}{20 million}$, while Company B has a higher return of $1.5x = \frac{60 million}{40 million}$. Thus you already know Company B is the better investment; also, the higher EBITDA will increase the amount of debt being paid down, which increases the equity return more.

20. A company runs two operating subsidiaries. One sells coffee and one sells doughnuts. You own 100 percent of the coffee subsidiary. You own 80 percent of the doughnut subsidiary. The coffee subsidiary generates $100 million of EBITDA. The doughnut subsidiary generates $200 million of EBITDA. Doughnut companies are worth 5.0x EBITDA. The parent share price is $10 and there are 100 million shares. The company has cash of debt of $500 million and cash of $200 million. What’s the enterprise value to EBITDA multiple for this company?

The enterprise value is market capitalization plus net debt plus minority interest. Market cap is easily to calculate, shares \times share price, so $10 \times 100 million = 1,000 million$. Net debt is debt less cash so $500 million - $200 million = $300 million. The question has given you the approximate market value of the minority interest in the doughnut company which is 5.0x EBITDA, so $200 \times 5.0x \times (1 - 80\%) = $200 million$. As a side note, when calculating enterprise value for comps, you might take the minority value from the balance sheet. This fine to do in such cases. However, a finance professional always chooses market value over book value, so this question gives you enough information to calculate the market value of the minority interest. Back to the answer: you total this all up for EV, which comes to $1,500 million = 1,000 million + 300 million + 200 million$. The total EBITDA is $300 million = 100 million + 200 million$. Therefore, the EV/EBITDA multiple is $1,500/300 = 5.0x$. 

Visit the Vault Finance Career Channel at www.vault.com/finance —with insider firm profiles, message boards, the Vault Finance Job Board and more.
21. A company has $100 million of EBITDA. It grows to $120 million in five years. Each year you paid down $25 million of debt. Let’s say you bought the company for 5.0x and sold it for 5.5x. How much equity value did you create? How much is attributed to each strategy of creating equity value?

The purchase price is $500 million = $100 million * 5.0x. It exits at $660 million = $120 million * 5.5x. This is a profit of $160 million, plus you paid down debt of $125 million = $25 * 5, so your total equity value increased by $285 million = $160 million + $125 million. Obviously the $125 million of the total equity value is due to debt paydown. $100 million comes from the EBITDA growth, ($120 million - $100 million) * 5. Finally, the rest of its equity value increase is attributed to multiple expansion, (5.5x – 5.0x) * $120 million = $60 million. Totaling these up, $125 million + $100 million + $60 million is the $285 million of equity value increase that matches what we calculated earlier.

22. Given $100 million initial equity investment, five years, IRR of 25 percent, what’s exit EBITDA if sold at 15x multiple?

Knowing an IRR of 25 percent over five years is approximately 3.0x equity return (there is no mathematical way of knowing this, so if you don’t know this, try asking the interviewer). The ending equity value is, therefore, $300 million = $3.0x * $100 million, so the exit EBITDA must be $300/15x = $20 million.

23. In an LBO, if cost of debt is 10 percent, what is the minimum return required to break even?

Since interest is tax deductible, the break-even return is the after-tax cost of debt. Assuming tax rate of 40 percent, the break-even return is 6 percent.

24. You have a company with 3x senior leverage and 5x junior leverage, what happens when you sell a business for 9x EBITDA?

It's a de-leveraging transaction because pro-forma the company will have a lower total debt to EBITDA ratio.

Same example as above, what happens when you sell the asset for 8x EBITDA?

On a firm basis, it has a neutral impact, but it is de-leveraging on a senior debt basis.
Investment Memorandums

Written interview

If you actually get the job, a large portion of your workday will be spent reviewing and/or writing investment memos. Some interviews for junior positions may actually ask you to write an investment memo for a case study, either in-office or take-home. Or during a normal verbal interview, you may be asked for specific investment ideas (count on this during an HF interview), where preparing an investment memo on your own will greatly help you outline your answers.

OUTLINE

Use the following section as a guideline, not as hard and set rules.

Situation overview

This is only necessary if there are parameters to the investment that you’d like to mention up front. For example, if this is an LBO investment, you can discuss the company on offer and the proposed capital structure. You don’t need this section if it’s a straight long/short HF/stock idea.

Investment thesis/recommendation

This is absolutely necessary; you state whether or not you would choose to invest in this idea and what type of strategy (e.g. LBO, long/short).

Company overview

Keep this short and sweet—give basic facts about what industry the company operates in and some summary details about its business.

Industry overview

Here, you should discuss all the Porter Five Forces-type issues about the industry, like the outlook and level of rivalry. Highlight nuances that are unfamiliar to non-industry participants but are important to understand for investors.

Investment positives/investment concerns

This is where you provide evidence that supports your thesis. Regardless of whether you say “yes” or “no,” you should be sure to spend significant time on the concerns/risks of the investment. Investors spend more time looking at the reasons
an investment can go wrong. A successful memo will highlight the most important risks that may or may not be obvious.

Look at the investment criteria sections of the capital markets and leveraged buyouts chapters to understand what makes a good investment. You can also look at the 10-Ks of the company or its peers; there, you’ll find plenty of investment points for the positives and negatives of the industry/company.

**Financial summary**

You’ll need to build a model based on your assumptions. Fill this section with a snapshot of important data like free cash flow, credit metrics and EV multiples.

**Investment returns/sensitivity analysis**

You’ll start with a base case scenario and resulting return, but investors always look at a range. Data tables that show the resulting return or share price based on different variables show how sensitive the return relative to the tested variable.

**Key issues for further due diligence**

To create a memo, you’ll only be working with public or limited data. If you actually choose to consider this investment, you would spend more time doing due diligence directly with the investment. Here, you list all the points that you would like to understand better.

**PRACTICE**

The best way to practice is to pick a public company and ask yourself if it is a good investment. Write up a memo and create a model by using some or all the public information available: company financial filings, company presentations, research reports, stock price performance, and recent news. Also, forming a study group lets you bounce off opinions and gain a wider perspective.

**Modeling exercise**

You can use the example below as a quick exercise for simple modeling.

**Instructions**

**Step 1:** From a blank spreadsheet, recreate a five-year, three-statement model: Income statement/balance sheet/cash flow.

**Step 2:** Create a five-year discounted cash flow analysis. Assume 12 percent WACC and a 10x terminal multiple on forward EBITDA.
Step 3: **PE ONLY:** Create a leveraged buyout analysis. Calculate a three-, four-, and five-year return with an exit multiple of 12x. Be sure to include a credit analysis.

## Operating Assumptions

<table>
<thead>
<tr>
<th></th>
<th>2008A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$20,000</td>
</tr>
<tr>
<td>YOY Growth</td>
<td>10%</td>
</tr>
<tr>
<td>COGS (Excl Depreciation)</td>
<td>$9,000</td>
</tr>
<tr>
<td>% Revenue (assume declining margin to 44%)</td>
<td>45%</td>
</tr>
<tr>
<td>General &amp; Administration Expenses (excl. Amortization)</td>
<td>$1,800</td>
</tr>
<tr>
<td>% Revenue (assume constant margin)</td>
<td>9%</td>
</tr>
<tr>
<td>Sales &amp; Marketing Expenses (excl Amortization)</td>
<td>$1,100</td>
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<tr>
<td>% Revenue (assume declining margin to 4%)</td>
<td>6%</td>
</tr>
<tr>
<td>Depreciation (Book)</td>
<td>$1,000</td>
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<tr>
<td>% Revenue (assume constant margin)</td>
<td>5%</td>
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<tr>
<td>Amortization</td>
<td>$12</td>
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<tr>
<td>Capex</td>
<td>$1,750</td>
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<tr>
<td>YOY Growth</td>
<td>0%</td>
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## Other Assumptions

<table>
<thead>
<tr>
<th></th>
<th>2008A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Rate on Revolver</td>
<td>6.0%</td>
</tr>
<tr>
<td>Interest Rate on Straight Debt</td>
<td>10.0%</td>
</tr>
<tr>
<td>Interest on Cash &amp; Equivalents</td>
<td>4.5%</td>
</tr>
<tr>
<td>Minimum Cash Balance</td>
<td>$300</td>
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<tr>
<td>Tax Rate</td>
<td>40%</td>
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<tr>
<td>Dividend Per Share</td>
<td>$0.20</td>
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<tr>
<td>Common Shares</td>
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<tr>
<td>New Shares Issued (First 3 Years)</td>
<td>10,000</td>
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<tr>
<td>Shares Repurchases (Last 2 years)</td>
<td>-</td>
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<tr>
<td>Price per Share Issued</td>
<td>$15.00</td>
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<tr>
<td>Price per Share Repurchased</td>
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</table>
### Opening Balance Sheet

<table>
<thead>
<tr>
<th></th>
<th>2008A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash &amp; Equivalents</td>
<td>$30</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>2,800</td>
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<tr>
<td>Inventory</td>
<td>2,000</td>
</tr>
<tr>
<td>Other Current Assets</td>
<td>100</td>
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<tr>
<td><strong>Total Current Assets</strong></td>
<td>5,250</td>
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<tr>
<td>Gross PP&amp;E</td>
<td>16,000</td>
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<tr>
<td>Accumulated Depreciation</td>
<td>(3,000)</td>
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<tr>
<td><strong>Net PP&amp;E</strong></td>
<td>13,000</td>
</tr>
<tr>
<td>Goodwill &amp; Other Intangibles</td>
<td>150</td>
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<tr>
<td>Other Assets</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>18,900</td>
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<tr>
<td>Accounts Payable</td>
<td>1,200</td>
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<tr>
<td>Accrued Expenses &amp; Liabilities</td>
<td>400</td>
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<tr>
<td>Taxes Payable</td>
<td>350</td>
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<td>Other Current Liabilities</td>
<td>200</td>
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<tr>
<td><strong>Total Current Liabilities</strong></td>
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<tr>
<td>Revolver Debt</td>
<td>3,100</td>
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<tr>
<td>Other Long Term Debt</td>
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<tr>
<td>Other Long Term Liabilities</td>
<td>400</td>
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<tr>
<td><strong>Total Liabilities</strong></td>
<td>13,650</td>
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<tr>
<td>Shareholders Equity</td>
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<tr>
<td><strong>Total Liabilities &amp; Shareholder Equity</strong></td>
<td>18,900</td>
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</table>

### LBO Assumptions

**2009 LBO Transaction Summary**

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<thead>
<tr>
<th>Purchase Price Per Share</th>
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</thead>
<tbody>
<tr>
<td>Financing Assumptions</td>
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<tr>
<td>Bank Debt</td>
<td>3.00x</td>
</tr>
<tr>
<td>Subordinate Debt</td>
<td>1.00x</td>
</tr>
<tr>
<td>PIK Sub Debt</td>
<td>1.00x</td>
</tr>
<tr>
<td><strong>Total Leverage</strong></td>
<td>5.00x</td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
</tr>
<tr>
<td>Fees (Amort over 7 Yrs)</td>
<td></td>
</tr>
<tr>
<td>Bank Debt</td>
<td>2%</td>
</tr>
<tr>
<td>Subordinate Debt</td>
<td>3%</td>
</tr>
<tr>
<td>PIK Sub Debt</td>
<td>3%</td>
</tr>
</tbody>
</table>
Hedge fund-specific case study practice

For most HF interviews, just take any public stock and think about whether you would long/short/do nothing with it. For strategy-specific firms, think about that company in relation to its investment strategy.

Private equity-specific sample case study

Below is a real-life case study for a private equity interview, given in-office. The time limit was three hours. You are expected to read the case and build a model in the time allotted. Then you walk the interviewers through the model and verbally discuss your thesis and support on the potential PE investment.

Company evaluation exercise instructions

- Please spend three hours reading and analyzing the information provided on Frigid Industries (“Frigid”).
- Your analysis should focus on the merits of a private equity acquisition in Frigid.
- As part of your analysis, you should develop a leveraged buyout analysis of Frigid including:
  - Purchase price and capitalization assumptions,
  - Five-year projections for all financial statements, including revenue and operating earnings build-up (assume transaction date of 1/1/07),
  - Exit price assumption and equity returns analysis.
- Please be prepared to lead a discussion of your evaluation of a potential investment in Frigid with the interview team. The discussion is meant to be open but should address key qualitative and quantitative considerations of the investment.
- To aid the discussion, please be prepared to deliver print-outs of your financial model (do not worry about formatting so long as it is clear to follow).

Executive summary

Overview

Frigid Industries, Inc. (“Frigid” or the “Company”) is the leading independent global manufacturer of highly engineered equipment used in the production, storage, transportation and end-use of industrial and hydrocarbon gases. These gases are critical to a multitude of industrial, commercial and scientific applications in a diverse group of end markets totaling billions in annual sales. The Company has developed long standing relationships with customers throughout the liquid gas supply chain including industrial gas producers and distributors, natural gas and liquid natural gas (LNG) processors, petrochemical processors and biomedical companies. Management believes that the Company is generally the #1 or #2 equipment supplier in each of its primary end markets, both domestically and abroad. For the fiscal year ended December 31, 2006, the Company generated sales of $305.5 million and adjusted EBITDA of $56.6 million. For the fiscal year ending December 31, 2007E,
the Company expects to generate sales of $352.2 million and adjusted EBITDA of $60.5 million.

The Company’s products, which operate at temperatures approaching absolute zero (0° Kelvin; -273° Centigrade; -459° Fahrenheit), include (i) heat exchangers and cold boxes for the production of gases, (ii) stationary tanks and advanced delivery systems for the storage and transportation of gases, and (iii) respiratory therapy systems, biological storage systems and other tanks and canisters for the ultimate consumption of gases. Frigid’s products are used in a wide variety of end markets including industrial and hydrocarbon gas processing, LNG production, industrial products, beverage bottling and dispensing, LNG vehicle fuels, biomedical research, medical test equipment, home healthcare and electronics testing markets.

Frigid is the preferred global supplier of engineered equipment used throughout the liquid gas supply chain. The Company has attained this positioning by capitalizing on its broad product offering, proprietary technologies, reputation for quality and a flexible, low cost global manufacturing footprint. The Company utilizes its knowledge of liquid gas handling, vacuum insulation technology and metallurgy to create and maintain product differentiation and a sustainable competitive advantage across all of its businesses.

Company description

Business segments

Frigid serves the liquid gas supply chain through its three operating segments: energy & chemicals (E&C), distribution & storage (D&S) and biomedical. While each segment manufactures and markets different products for different end-users, they share the common proprietary technology of heat transfer and low temperature storage.
Frigid Industries

**Energy & Chemical (“E&C”)**

**Business Description**
- Leading manufacturer of highly engineered equipment used in the production of industrial and hydrocarbon gases

**Product Offering**
- Heat Exchanges
- Cold Boxes
- Liquefied Natural Gas Vacuum

**End-Users**
- Industrial Gas Producers
- LNG and Natural Gas processors
- Petrochemical Processors
- Engineering and Construction Companies

**Representative Customers**
- Air liquide, Air Products, BP Amoco, Bechtel, ConocoPhillips, Cryogenmash, ExxonMobil, Nova Chemicals

**Distribution & Storage (“D&S”)**

**Business Description**
- Leading supplier of cryogenic tanks used in the transportation and storage of liquid industrial and hydrocarbon gases

**Product Offering**
- Bulk Storage Systems
- Packaged Gas Systems
- VIP Systems and Components
- Beverage Liquid CO2 Systems
- Parts, Repair, and On-Site Service
- LNG Vehicle Fuel Systems

**End-Users**
- Industrial Gas Producers and Distributors
- LNG Distributors
- Food and Beverage Businesses

**Representative Customers**
- Airgas, Air Liquide, Air Products, Air Water, Coca Cola, Habas, Kraft, Linde, Messer, McDonald’s, NASA, NaturgassVest, NuCo2, Praxair

**Biomedical**

**Business Description**
- Leading provider of cryogenic tanks and canisters for medical biological and scientific applications

**Product Offering**
- Respiratory Therapy Systems
- Biological Storage Systems
- Magnetic Resonance Imaging (“MRI”) Cryostat Components

**End-Users**
- Home Healthcare Providers
- Medical Laboratories
- Phar & Research Facilities
- Blood and Tissue Banks
- Veterinary Laboratories
- Animal Breeders
- MRI Manufacturers

**Representative Customers**
- Apria, Barnstead, CDC, GE Medical, NIH, Sol, Sunrise, US Air Force, Vivisol, Various universities and research hospitals

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**2006 Segment Financials ($mm)**

<table>
<thead>
<tr>
<th></th>
<th>Sales</th>
<th>Gross Profit</th>
<th>EBITDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy &amp; Chemical (“E&amp;C”)</td>
<td>162.6</td>
<td>32.8</td>
<td>73.3</td>
</tr>
<tr>
<td>Distribution &amp; Storage (“D&amp;S”)</td>
<td>13.8</td>
<td>29.0%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Biomedical</td>
<td>25.8</td>
<td>20.2%</td>
<td>25.3%</td>
</tr>
</tbody>
</table>

**Note:**
1 Excludes corporate expenses, goodwill impairment, restructuring and reorganization charges and adjustments
**Customers**

Frigid currently serves over 2,000 customers worldwide. The Company’s primary customers are the large, global producers and distributors of industrial and hydrocarbon gases. The Company has developed strong, long-standing relationships with these customers, many of whom have been purchasing products from Frigid or one of its predecessors for over 20 years. Frigid’s market position has benefited from a trend by customers to concentrate their purchases with fewer suppliers. Typically, Frigid is one of only two or three qualified suppliers on a given project. In addition, Frigid leverages its deep customers relationships to drive sales across multiple product lines. While the Company’s customers include many large, multinational companies, no one customer accounted for more than 9 percent of 2006 sales.

The Company’s E&C segment serves the major producers of industrial gas who use the Company’s cold boxes and heat exchangers for the separation and liquefaction of air into its component parts (oxygen, nitrogen and argon). In the hydrocarbon gas market, the E&C segment markets products to multinational natural gas and petrochemical processors who use E&C products to cryogenically separate and purify natural gas into liquid methane, ethane, propane, butane and ethylene for a variety of end-uses. The E&C segment also markets products to engineering and construction companies which fabricate hydrocarbon and LNG processing plants.

The D&S segment serves the large producers and distributors of industrial gas, as well as the developing LNG distribution market. These customers use the Company’s bulk storage tanks, packaged gas systems and other cryogenic systems and components for the storage and distribution of liquid gases. In addition, Frigid sells beverage systems to natural restaurant chains, soft drink companies and CO2 distributors.

The biomedical segment markets to a wide variety of customers due to the range of end-uses for the Company’s products. This segment’s customers include home healthcare providers, medical laboratories, pharmaceutical companies and research facilities.

**Manufacturing facilities**

Management believes that Frigid is the low cost provider of cryogenic equipment worldwide due to its focus on driving operating efficiencies and its global footprint of state-of-the-art facilities. Frigid has also developed a solid reputation for high-quality manufacturing, which when coupled with its efficient, low cost production has created a sustainable competitive advantage. The Company serves its customers globally via eight strategically located manufacturing facilities: five in the U.S., one in central Europe and two in China. The Company is currently constructing a third plant in China and plans to consolidate all of its Chinese operations in this new facility by the end of 2007, which will triple existing capacity. The Company is also actively pursuing acquisition opportunities in China.
Reorganization overview

In September 2003, Frigid completed a prepackaged bankruptcy reorganization as a means of substantially reducing its debt and restructuring its operations. The primary cause of the leverage and operational issues leading to the Company’s reorganization was its acquisition of MVE Holdings, Inc. (“MVE”) in 1999. The Company incurred a significant amount of debt to finance the transaction and encountered significant operational issues as it failed to integrate MVE into its existing operations. The Company used the flexibility of bankruptcy to undertake the proper integration of MVE and substantially improved its cost structure and manufacturing efficiencies, simplified its administration, improved its cash flow and strengthened its financial position, all of which has put the Company on strong footing to aggressively pursue market opportunities. As a result of the actions taken during and immediately after the bankruptcy, the Company increased sales by 15.0 percent and adjusted EBITDA by 54.9 percent in 2006. Frigid has also reduced its debt by an additional $47 million or 37 percent since emerging from bankruptcy protection in September 2003.

Investment highlights

Frigid, with its leading market positions and attractive business fundamentals, is uniquely positioned to take advantage of the expected growth in the liquid gas market.

Growth strategy

Attractive segments of the market

Frigid will continue to target faster growing segments within its served markets:

- Industrial gas—Management expects continued, stable growth of approximately 4 to 5 percent in the worldwide industrial gas market. Significantly higher growth rates are projected for the industrial gas market in developing countries where underlying demand drives new manufacturing capacity. Forty-eight percent of the Company’s 2006 sales were derived from this segment.

- LNG—The global LNG market has experienced annual growth of 7.5 percent over the past five years and is expected to grow more rapidly going forward. Frigid will benefit from the expected construction of new receiving terminals and green-field liquefaction plants in the coming years. Eleven percent of Frigid’s 2006 sales were tied to this fast-growing sector.
Respiratory therapy systems—Demand for respiratory therapy should be positively impacted by the increase in the U.S. population over the age of 65, which is expected to grow at a rate of 12.9 percent over the next 10 years. Additionally, the liquid oxygen respiratory therapy systems marketed by Frigid will continue to take market share from concentrators and compressed oxygen as this form of therapy is more effective in treating respiratory illnesses. Twelve percent of Frigid’s 2006 sales were tied to this sector.

International expansion

Frigid intends to take advantage of significant international growth of its served markets:

• Asia—Frigid has developed a strong footprint in China and is aggressively increasing capacity to address the expected rapid growth there and in other Asian countries. Sixteen percent of Frigid’s 2006 sales were tied to this region.
• Central/Eastern Europe—Frigid will capitalize on expected strong growth in Central and Eastern Europe as well as LNG growth in Scandinavia through Ferox, its established base of operations in the Czech Republic. Eight percent of Frigid’s 2006 sales were tied to this region.

Development of new products

Frigid will continue to build on its long track record of working successfully with customers to develop new products to meet their increasing complex needs for advanced cryogenic equipment. Recent examples of the Company’s ingenuity include:

• Large-diameter VIP—VIP with a diameter ranging from 24 to 36 inches for use in LNG terminals
• ORCA MicroBulk—mobile bulk storage tank refilling system
• Spirit 300—portable liquid oxygen unit for home healthcare

Selected acquisitions

Management believes multiple acquisition opportunities exist to expand its business and further penetrate current markets:

• Several opportunities exist that could enable Frigid to further solidify its market-leading position through both new business and product extension acquisitions.
• The Company is reviewing acquisition opportunities in China and expects to add to its leading Asian market position in 2007.

Continued operational improvements

Frigid is focused on continuous improvements in operational efficiencies:

• The Company pursues operational improvements through the implementation of LEAN manufacturing and Six Sigma techniques.
Management's discussion and analysis

Years ended December 31, 2006 and 2005

Sales

Sales for 2006 were $305.5 million versus $265.6 million for 2005, an increase of $39.9 million or 15 percent. 2006 sales were positively impacted by volume increases, market improvements and favorable foreign currency translation as a result of the weakening of the U.S. dollar compared to the euro.

• Sales in the E&C segment increased by $11.0 million or 18.8 percent to $69.6 million in 2006 compared to 2005 sales of $58.6 million. Sales in 2006 were primarily driven by volume increases in both heat exchangers and process systems, as well as LNG pipe sales increases in Asia, Africa and the Middle East.

• Sales in the D&S segment increased by $22.2 million, or 15.8 percent to $162.6 million in 2006 compared to 2005 sales of $140.3 million. Sales in 2006 were positively impacted by volume increases across all product lines, price increases and significant market improvements for industrial bulk storage systems. In addition, favorable foreign currency translation resulted in an increase in sales of approximately $4 million.

• Sales in the biomedical segment increased by $6.7 million, or 10.1 percent to $73.3 million compared to 2006 sales of $66.6 million. Medical products and biological storage system sales increased by $9.1 million primarily due to volume increases while MRI sales decreased by $2.4 million due to lower volume.

Gross profit

Gross profit for 2006 was $94.0 million versus $77.7 million for 2005. Gross margin for 2006 was 30.8 percent versus 29.2 percent for 2005.

• Gross profit in the E&C segment for 2006 was $21.1 million versus $18 million for 2005. The increase of $3.1 million was driven primarily by volume. Gross margin remained relatively flat at 30.3 percent for 2006 versus 30.7 percent for 2005.

• Gross profit in the D&S segment for 2006 was $47.1 million versus $36.3 million for 2005. Gross margin increased 3.1 percentage points to 29.0 percent in 2006 from 25.9 percent in 2005. This increase is attributable to higher volume, favorable currency translation, product pricing increases and the realization of operational savings from the manufacturing plant restructuring. The price increases and restructuring savings resulted in a total margin improvement of over 300 basis points. Favorable currency translation resulted in gross profit increases of approximately $1 million.

• Gross profit in the biomedical segment for 2006 was $25.8 million versus $22.7 million for 2005. Gross margin for 2006 was 35.2 percent versus 34 percent for 2005. The increase in gross profit and margin percentage in 2006 was driven...
primarily by higher volume, lower manufacturing costs and to a lesser extent, product mix.

**Operating expenses**

Operating expenses for 2006 were $49.9 million compared to $51.9 million in 2005. As a percentage of sales, operating expenses decreased to 16.3 percent in 2006 from 19.5 percent in 2005. This reduction in operating expenses is primarily attributable to the operational savings due to the restructuring efforts partially offset by higher incentive compensation expenses due to the improved operating performance in 2006.

**Summary Financial Information**

The following table sets forth Frigid’s summary historical and forecasted performance. The projected financial results reflect various assumptions made by management concerning the future performance of the company, which may or may not prove correct. The actual results may vary from the anticipated results and such variations may be material.

### Selected Financial Data

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<tr>
<th></th>
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<td></td>
<td>2004</td>
</tr>
<tr>
<td><strong>Sales</strong></td>
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<tr>
<td>Energy &amp; Chemicals</td>
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</tr>
<tr>
<td>Distribution &amp; Storage</td>
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<tr>
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<tr>
<td><strong>Total Sales</strong></td>
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<tr>
<td><strong>Gross Profit</strong></td>
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<tr>
<td><strong>EBIT</strong></td>
<td>11.9</td>
</tr>
<tr>
<td><strong>Adjusted EBITDA</strong></td>
<td>$24.2</td>
</tr>
<tr>
<td><strong>Gross &amp; Profit Margins (%)</strong></td>
<td></td>
</tr>
<tr>
<td>Total Net Sales Growth</td>
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</tr>
<tr>
<td>Gross Margin</td>
<td>26.1%</td>
</tr>
<tr>
<td>EBIT Margin</td>
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</tr>
<tr>
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<td>8.8%</td>
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<td><strong>Other Financial Data</strong></td>
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</tr>
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<td>Backlog</td>
<td>$68.7</td>
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<tr>
<td>Capital Expenditures</td>
<td>2.8</td>
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</tbody>
</table>

**Notes:**
1 The historical selected financial data is presented on a pro forma basis to exclude discontinued operations
2 The gross profit and EBIT have been presented on a pro forma basis to exclude goodwill impairment, restructuring and reorganization charges and adjustments
3 Adjusted EBITDA represents earnings before interest, taxes, depreciation, amortization, reorganization adjustments and restructuring charges and includes adjustments for certain other non-recurring items. See section 5 for reconciliation of adjusted EBITDA
# Income Statement Data

($mm, except where noted) | Historical Dec. 31<sup>1</sup>
--- | --- | --- | --- | --- | ---
Sales | 2002 | 2003 | 2004 | 2005 | 2006
--- | --- | --- | --- | --- | ---
Energy & Chemicals | $51.6 | $57.3 | $62.7 | $58.6 | $69.6
Distribution & Storage | 196.8 | 190.0 | 146.0 | 140.3 | 162.6
BioMedical | 53.5 | 58.0 | 67.7 | 66.6 | 73.3
Total Sales | $301.9 | $305.8 | $276.4 | $265.5 | $305.5
Cost of Sales | 2002 | 2003 | 2004 | 2005 | 2006
--- | --- | --- | --- | --- | ---
Energy & Chemicals | $38.7 | $47.0 | $50.5 | $40.6 | $48.5
Distribution & Storage | 141.9 | 139.3 | 111.1 | 104.0 | 115.4
BioMedical | 32.8 | 37.4 | 42.3 | 44.0 | 47.5
Corporate | 1.5 | 1.8 | 0.3 | (0.7) | 0.1
Total Cost of Sales | $214.9 | $225.5 | $204.2 | $187.9 | $211.5
Gross Profit | 2002 | 2003 | 2004 | 2005 | 2006
--- | --- | --- | --- | --- | ---
Energy & Chemicals | $12.9 | $10.3 | $12.2 | $18.1 | $21.1
Distribution & Storage | 54.9 | 50.7 | 34.9 | 36.3 | 47.2
BioMedical | 20.7 | 20.6 | 25.4 | 22.6 | 25.8
Corporate | (1.5) | (1.8) | (0.3) | 0.7 | (0.1)
Total Gross Profit | $87.0 | $79.8 | $72.2 | $77.7 | $94.0
EBIT | 2002 | 2003 | 2004 | 2005 | 2006
--- | --- | --- | --- | --- | ---
Energy & Chemicals | $3.9 | $2.7 | $3.6 | $8.9 | $12.6
Distribution & Storage | 30.2 | 25.4 | 11.5 | 18.2 | 30.2
BioMedical | 12.8 | 13.2 | 18.1 | 15.1 | 17.2
Corporate | (22.4) | (19.9) | (21.3) | (16.4) | (15.8)
Total EBIT | $24.5 | $21.4 | $11.9 | $25.8 | $44.2
EBITDA | 2002 | 2003 | 2004 | 2005 | 2006
--- | --- | --- | --- | --- | ---
Energy & Chemicals | $6.5 | $4.8 | $5.6 | $10.0 | $13.8
Distribution & Storage | 33.9 | 29.5 | 15.5 | 21.6 | 32.8
BioMedical | 14.0 | 14.6 | 19.9 | 17.1 | 18.6
Corporate | (12.1) | (11.1) | (17.8) | (13.1) | (12.5)
Total EBITDA | $42.3 | $37.8 | $23.2 | $35.6 | $52.7
Non-Recurring Adjustments | 1.1 | 1.1 | 1.0 | 0.9 | 4.0
Adjusted EBITDA | $43.4 | $38.9 | $24.2 | $36.5 | $56.7

Notes:
1. Presented on pro forma basis to exclude discontinued operations and restructuring, goodwill impairment and reorganization adjustments.
### Income Statement Metrics

<table>
<thead>
<tr>
<th>(%)</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
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<tbody>
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<td><strong>Sales Growth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy &amp; Chemicals</td>
<td>11.1%</td>
<td>9.4%</td>
<td>(6.5%)</td>
<td>18.8%</td>
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</tr>
<tr>
<td>Distribution &amp; Storage</td>
<td>(3.5%)</td>
<td>(23.2%)</td>
<td>(3.9%)</td>
<td>15.8%</td>
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<tr>
<td>BioMedical</td>
<td>8.3%</td>
<td>16.7%</td>
<td>(1.5%)</td>
<td>10.1%</td>
<td></td>
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<tr>
<td><strong>Sales Growth</strong></td>
<td>1.1%</td>
<td>(9.5%)</td>
<td>(3.9%)</td>
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<tr>
<td><strong>Sales Mix</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy &amp; Chemicals</td>
<td>17.1%</td>
<td>18.8%</td>
<td>22.7%</td>
<td>22.1%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Distribution &amp; Storage</td>
<td>65.2%</td>
<td>62.2%</td>
<td>52.8%</td>
<td>52.8%</td>
<td>53.2%</td>
</tr>
<tr>
<td>BioMedical</td>
<td>17.7%</td>
<td>19.0%</td>
<td>24.5%</td>
<td>25.1%</td>
<td>24.0%</td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy &amp; Chemicals</td>
<td>25.0%</td>
<td>18.0%</td>
<td>19.5%</td>
<td>30.7%</td>
<td>30.3%</td>
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<tr>
<td>Distribution &amp; Storage</td>
<td>27.9%</td>
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<td>23.9%</td>
<td>25.9%</td>
<td>29.0%</td>
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<tr>
<td>BioMedical</td>
<td>38.7%</td>
<td>35.5%</td>
<td>37.5%</td>
<td>34.0%</td>
<td>35.2%</td>
</tr>
<tr>
<td><strong>Gross Margin</strong></td>
<td>28.9%</td>
<td>26.1%</td>
<td>26.1%</td>
<td>29.2%</td>
<td>30.8%</td>
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<tr>
<td><strong>EBIT Margin</strong></td>
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<td></td>
<td></td>
<td></td>
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</tr>
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<td>Energy &amp; Chemicals</td>
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<td>Distribution &amp; Storage</td>
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<td>18.6%</td>
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<tr>
<td>BioMedical</td>
<td>23.9%</td>
<td>22.8%</td>
<td>26.7%</td>
<td>22.7%</td>
<td>23.4%</td>
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<tr>
<td><strong>EBIT Margin</strong></td>
<td>8.1%</td>
<td>7.0%</td>
<td>4.3%</td>
<td>9.7%</td>
<td>14.4%</td>
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<tr>
<td><strong>EBITDA Margin</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy &amp; Chemicals</td>
<td>12.6%</td>
<td>8.4%</td>
<td>9.0%</td>
<td>17.1%</td>
<td>19.8%</td>
</tr>
<tr>
<td>Distribution &amp; Storage</td>
<td>17.2%</td>
<td>15.5%</td>
<td>10.6%</td>
<td>15.4%</td>
<td>20.2%</td>
</tr>
<tr>
<td>BioMedical</td>
<td>26.1%</td>
<td>25.1%</td>
<td>29.4%</td>
<td>25.6%</td>
<td>25.3%</td>
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<tr>
<td><strong>EBITDA Margin</strong></td>
<td>14.0%</td>
<td>12.3%</td>
<td>8.4%</td>
<td>13.4%</td>
<td>17.2%</td>
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<tr>
<td>Adjusted EBITDA Margin</td>
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<td>12.7%</td>
<td>8.8%</td>
<td>13.8%</td>
<td>18.5%</td>
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**Notes:**
1. Presented on pro forma basis to exclude discontinued operations and restructuring, goodwill impairment and reorganization adjustments
Balance Sheet Data As of December 31, 2006

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities &amp; Equity</th>
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</thead>
<tbody>
<tr>
<td>Cash &amp; Equivalents</td>
<td>Accounts Payable</td>
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<tr>
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<td>47.9</td>
<td>33.6</td>
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<tr>
<td>Other current assets</td>
<td>Current Portion of LT Debt</td>
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<td>3.0</td>
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<td>Assets held for sale</td>
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<tr>
<td>Total Current Assets</td>
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<td>PP&amp;E, net</td>
<td>Long-Term Debt</td>
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<td>Reproganization Value</td>
<td>Other Long-Term Liabilities</td>
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<td>75.3</td>
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<td>Intangible Assets, net</td>
<td>Shareholders’ Equity</td>
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<td>Other Assets, net</td>
<td>Total Liabilities &amp; Equity</td>
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<td>2.2</td>
<td>$308.5</td>
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<tr>
<td>Total Assets</td>
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<td>$308.5</td>
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Capital Expenditures

<table>
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<tr>
<th>($mm)</th>
<th>Years Ending 12/31</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
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<tr>
<td>Energy &amp; Chemicals</td>
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<td>BioMedical</td>
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<tr>
<td><strong>Total Maintenance</strong></td>
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<tr>
<td>Initiatives</td>
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<td>Energy &amp; Chemicals</td>
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<td>BioMedical</td>
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<td><strong>Total Initiatives</strong></td>
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<tr>
<td><strong>Total Capital Expenditures</strong></td>
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</tr>
</tbody>
</table>

Visit the Vault Finance Career Channel at www.vault.com/finance —with insider firm profiles, message boards, the Vault Finance Job Board and more.
Final Analysis

As hedge fund and private equity employees constantly evaluate investment opportunities, your interviewers see you as no different. Will you add value to the firm, both tangibly (add profits) and intangibly (culture fit)?

Reassure them through your interview that you will; you can convey your strong command of an industry, ability to take on responsibility and rolodex of management contacts.

If you need incentive, these jobs pay a minimum of six figures and it’s quite feasible to break seven before you’re 30. Moreover, the work is challenging and your coworkers are some of the smartest people in the country. Ask for constructive feedback and build on it. Be confident and believe in your worth.
APPENDIX

Vault Guide to Private Equity and Hedge Fund Interviews

Abbreviations
Finance Glossary
Headhunters
Abbreviations

AR: Accounts receivable
BS: Balance sheet
CAGR: Compounded annual growth rate
Cap: Capitalization
Capex: Capital expenditures
CFS: Cash flow statement
CIM: Confidential information memorandum
COGS: Cost of goods sold
Comps: Comparables
D: Debt
D&A: Depreciation and amortization
DCF: Discounted cash flow
E: Equity
EBITDA: Earnings before interest, depreciation and amortization
EBITDAR: Earnings before interest, depreciation, amortization and rent
EPS: Earnings per share
EV: Enterprise value
FCF: Free cash flow
FFO: Funds from operations
FIFO: First in, first out
HF: Hedge fund
IPO: Initial public offering
IRR: Internal rate of return
IS: Income statement
L: Libor
LIBOR: London interbank offered rate
LIFO: Last in, first out
LBO: Leveraged buyout
M&A: Merger & acquisition
Memo: Memorandum
NOL: Net operating losses
NPV: Net present value
NWC: Net working capital
P/E: Price to earnings per share
PE: Private equity
PIK: Paid in kind
PIPE: Private investment in public equity
PP&E: Plant, property and equipment
ROA: Return on assets
ROE: Return on equity
ROI: Return on investment
SG&A: Selling, general and administrative
S&U: Sources and uses
WACC: Weighted average cost of capital
WC: Working capital
YOY: Year over year
Absolute return: An absolute return manager is one without a benchmark who is expected to achieve positive returns no matter what market conditions. Hedge fund managers are also referred to as absolute return managers where they are expected to have positive returns even if the markets are declining. This compares with mutual fund managers who have relative return objectives when compared with their benchmarks.

Accredited investors: Rule 501 (d) of the SEC provides a ready definition of an “accredited investor.” Generally, for individuals, it is an individual having a net worth in excess of $1,000,000 or income in excess of $200,000 individually or $300,000 jointly with a spouse, in each of the two most recent years with an expectation that these income levels will continue.

Accretive merger: A merger in which the acquiring company’s earnings per share increase.

Administrator: The offshore fund entity that manages the back office work and individual accounts for the fund.

Alpha: Alpha is the measure of a fund’s average performance independent of the market, (i.e. if the market return was zero). For example, if a fund has an alpha of 2.0, and the market return was 0 percent for a given month, then the fund would, on average, return 2 percent for the month.

AML(Anti Money Laundering from the Patriot Act): The Patriot Act was adopted in response to the September 11 terrorist attacks. The Patriot Act is intended to strengthen U.S. measures to prevent, detect, and prosecute international money laundering and the financing of terrorism. These efforts include new anti-money laundering (AML) tools that impact the banking, financial, and investment communities.

Annual report: A combination of financial statements, management discussion and analysis, and graphs and charts provided annually to investors; they’re required for companies traded publicly in the U.S. The annual report is typically filed with the 10-K.

Arbitrage: Arbitrage involves the simultaneous purchase and sale of a security or pair of similar securities to profit from a pricing discrepancy. This could be the purchase and sale of the identical item in different markets to make profits - for example there could be an arbitrage opportunity in the price of gold that is sold more expensively in London than in New York. In this case the arbitrageur would buy gold in New York and sell in London, profiting from the price differential. This could be applied to a variety of transactions: foreign exchange, mortgages, futures, stocks, bonds, silver or other commodities in one market for sale in another at a profit.

Asset classes: Asset class means a type of investment, such as stocks, bonds, real estate, or cash.
AUM: Assets under management.

Balance sheet: One of the four basic financial statements, the balance sheet presents the financial position of a company at a given point in time, including assets, liabilities and equity.

Basis points (bps): The general way spreads are measured in finance. 100 basis points = 1 percent.

Benchmark: A benchmark is a standard that is used for comparison for performance. The benchmarks normally used by mutual fund managers are the S&P 500 or the Dow Jones industrial average.

Beta: A value that represents the relative volatility of a given investment with respect to the market.

Bond price: The price the bondholder (the lender) pays the bond issuer (the borrower) to hold the bond (i.e., to have a claim on the cash flows documented on the bond).

Bond spreads: The difference between the yield of a corporate bond and a U.S. Treasury security of similar time to maturity.

Bottom-up investing: An approach to investing that seeks to identify well-performing individual securities before considering the impact of economic trends.

Buy-side: The clients of investment banks (mutual funds, pension funds and other entities often called “institutional investors”) that buy the stocks, bonds and securities sold by the investment banks. (The investment banks that sell these products to investors are known as the “sell-side.”)

BWIC/OWIC: Bid wanted in comp/offer wanted in comp. This is when a client is intending to trade securities, but wants to check the best bids or offers available from a wide variety of brokers. Therefore, he will send a BWIC or OWIC request to brokers and ask for their bids/offers (without revealing other broker’s bids/offers). Upon aggregating the results, the client will usually execute the trade at the highest bid/lowest offer given to him by the various market makers.

Callable bond: A bond that can be bought back by the issuer so that it is not committed to paying large coupon payments in the future.

Call option: An option that gives the holder the right to purchase an asset for a specified price on or before a specified expiration date.

Capital asset pricing model (CAPM): A model used to calculate the discount rate of a company’s cash flows.

Capital expenditure: A major expenditure by a company on a physical asset in order to operate the business on a day to day basis. CapEx might include purchasing a building, machinery, or even land. Investment bankers make a distinction between growth and maintenance CapEx, when evaluating a company.
**Capital market equilibrium**: The principle that there should be equilibrium in the global interest rate markets.

**Capital structure**: This refers to the composition of a company's debt and equity, including stock, bonds and loans.

**Capital structure arbitrage**: An investment strategy that seeks to exploit pricing inefficiencies in a firm's capital structure. Strategy will entail purchasing the undervalued security, and selling the overvalued, expecting the pricing disparity between the two to close out.

**CFA**: Chartered financial analyst. An individual who has passed tests in economics, accounting, security analysis, and money management, administered by the Institute of Chartered Financial Analysts of the Association for Investment Management and Research (AIMR). Such an individual is also expected to have at least three years of investment-related experience, and meet certain standards of professional conduct. These individuals have an extensive economic and investing background and are competent at a high level of analysis. Individuals or corporations utilize their services as security analysts, portfolio managers or investment advisors.

**Chapter 7**: The portion of the bankruptcy code that results in the liquidation of a company's assets in order to pay off outstanding financial obligations.

**Chapter 11**: The portion of the bankruptcy code that allows a company to operate under the bankruptcy court's supervision for an indefinite period of time, generally resulting in a corporate restructuring with the assistance of an investment bank.

**Chinese Wall**: The separation between public and private sections of an investment bank, including sales, trading and research from corporate finance. Many banks even have physical barriers and/or e-mail restrictions to support this effort.

**Collateralized debt obligation (CDO)**: A type of structured product or derivative, comprised of multiple tranches of debt of different companies. These debt tranches typically take the form of loans or bonds.

**Commercial bank**: A bank that lends, rather than raises money. For example, if a company wants $30 million to open a new production plant, it can approach a commercial bank like Bank of America or Citibank for a loan. (Increasingly, commercial banks are also providing investment banking services to clients.)

**Commercial paper**: Short-term corporate debt, typically maturing in nine months or less.

**Commodities**: Assets (usually agricultural products or metals) that are generally interchangeable with one another and therefore share a common price. For example, corn, wheat and rubber generally trade at one price on commodity markets worldwide.

**Common stock**: Also called common equity, common stock represents an ownership interest in a company (as opposed to preferred stock, see below). The vast majority
of stock traded in the markets today is common, as common stock enables investors to vote on company matters. An individual with 51 percent or more of shares owned controls a company and can appoint anyone he/she wishes to the board of directors or to the management team. Common stock also exists in private companies.

**Comparable transactions or comparable company analysis (comps):** A method of valuing a company for a merger or acquisition that involves studying similar transactions. Comps include a list of financial data, valuation data and ratio data on a set of companies in an industry.

**Consumer price index (CPI):** The CPI measures the percentage increase in a standard basket of goods and services. The CPI is a measure of inflation for consumers.

**Convertible arbitrage:** An investment strategy that seeks to exploit pricing inefficiencies between a convertible bond and the underlying stock. A manager will typically long the convertible bond and short the underlying stock.

**Convertible bonds:** Bonds that can be converted into a specified number of shares of stock.

**Convertible preferred stock:** A type of equity issued by a company, convertible preferred stock is often issued when it cannot successfully sell either straight common stock or straight debt. Preferred stock pays a dividend, similar to how a bond pays coupon payments, but ultimately converts to common stock after a period of time. It is essentially a mix of debt and equity, and most often used as a means for a risky company to obtain capital when neither debt nor equity works.

**Corporate debt:** Non-government-issued, interest-bearing or discounted debt instrument that obligates the issuing corporation to pay the bondholder a specified sum of money at specific intervals and to repay the principal amount of the loan at maturity. It is a bond issued by a corporation, for example AT&T or Ford.

**Cost of goods sold:** The direct costs of producing merchandise. Includes costs of labor, equipment and materials to create the finished product, for example.

**Coupon payments:** The payments of interest that the bond issuer makes to the bondholder.

**CPA:** A certified public accountant is an individual who has received state certification to practice accounting.

**Credit cycle:** The general market cycle of company defaults (companies that declare bankruptcy due to lack of an ability to meet their financial obligations). Credit cycles tend to be at their best (their lowest) during periods of low interest rates and general overall market health. Credit cycles generally occur in five- to seven-year periods.

**Credit default swap:** A credit default swap is a derivative instrument that charges a customer a quarterly premium in exchange for protection against a corporation filing for bankruptcy. Originally invented by JPMorgan, the CDS market is a multitrillion
dollar market today, which trades on thousands of different credits globally. CDS is traded on an index level, as well as on individual credits, and it’s even traded on different capital structure levels of individual credits (i.e., loan CDS that generally references senior secured debt versus regular CDS, which typically references senior unsecured debt). CDS is traded on a spread basis, which is the amount by which a protection buyer would pay a protection seller annually, quoted in basis points.

**Credit ratings:** The ratings given to bonds by credit agencies (S&P, Moody’s, Fitch). These ratings indicate the creditworthiness of a company or a financial instrument.

**Crossed trades:** This is a situation whereby a trader that is a market-maker is able to find a buyer and a seller of the same security at the same time and thus executes both trades without taking on any risk. By “crossing trades,” the market maker earns the bid-ask spread, buying at her bid and selling at her offer.

**Currencies:** Any form of money that is in public circulation. The main traded currencies are the U.S. dollar, Japanese Yen, British pound and the Euro.

**Currency appreciation:** When a currency’s value is rising relative to other currencies.

**Currency depreciation:** When a currency’s value is falling relative to other currencies.

**Currency devaluation:** When a currency weakens under fixed exchange rates.

**Debtor in possession (DIP):** A DIP loan is a loan made to a company currently operating in Chapter 11 bankruptcy. DIP refers to the nature of the loan, whereby the company retains possession of the assets for which investors have a claim.

**Default premium:** The difference between the promised yields on a corporate bond and the yield on an otherwise identical government bond. Also known as the “credit spread.”

**Default risk:** The risk that the company issuing a bond may go bankrupt and “default” on its loans.

**Derivatives:** An asset whose value is derived from the price of another asset. Examples include call options, put options, futures, credit default swaps and interest-rate swaps.

**Dilutive merger:** A merger in which the acquiring company’s earnings per share decrease.

**Discount rate:** A rate that measures the risk of an investment. It can be understood as the expected return from a project of a certain amount of risk.

**Discounted cash flow analysis (DCF):** A method of valuation that takes the net present value of the free cash flows of a company. DCF is most likely the most important concept a corporate finance analyst must master in order to be successful. It is at the very core of most financial modeling.
Distressed securities investing: Investment strategy focusing on troubled or restructuring companies at deep discounts through stocks, fixed income, bank debt or trade claims. Seeks to exploit possible pricing inefficiencies caused by the lack of large institutional investor participation.

Diversification: Minimizing of non-systematic portfolio risk by investing assets in several securities and investment categories with low correlation between each other.

Dividend: A payment by a company to shareholders of its stock, usually as a way to distribute some or all of the profits to shareholders.

Dow Jones Industrial Average: This is a price-weighted average of 30 actively traded blue chip stocks, primarily industrials. The 30 stocks are chosen by the editors of The Wall Street Journal (which is published by Dow Jones & Company), a practice that dates back to the beginning of the century. The Dow is computed using a price-weighted indexing system, rather than the more common market cap-weighted indexing system.

DTC system: “DTC” means depositary trust company. This is a central repository through which members electronically transfer stock and bond certificates (a clearinghouse facility). The depository trust company was set up to provide an infrastructure for settling trades in municipal, mortgagebacked and corporate securities in a cost-efficient and timely manner. The “system” refers to the mechanism whereby trades are matched up at the DTC.

EBIT: Earnings before interest and taxes

EBITDA: Earnings before interest, taxes, depreciation and amortization

8-K: A report filed with the SEC by a public company to update investors of any material event.

Emerging markets investing: A generally long-only investment strategy which entails investing in geographic regions that have undeveloped capital markets and exhibit high growth rates and high rates of inflation. Investing in emerging markets can be very volatile, and may also involve currency risk, political risk, and liquidity risk.

Endowments: A permanent fund bestowed upon an individual or institution, such as a university, museum, hospital, or foundation, to be used for a specific purpose.

Enterprise value: Levered value of the company, the equity value plus the market value of debt.

Equity: In short, stock. Equity means ownership in a company that is usually represented by stock.

ETF: Exchange-traded fund. ETF’s are listed as individual securities in the equity markets and are used to replicate an index or a portfolio of stocks.
Event-driven investing: Investment strategy seeking to identify and exploit pricing inefficiencies that have been caused by some sort of corporate event, such as a merger, spin-off, distressed situation, or recapitalization.

The Fed: The Federal Reserve Board, which manages the country’s economy by setting interest rates. The current chairman of the Fed is Ben Bernanke and the former chairman was Alan Greenspan.

Federal funds rate: The rate domestic banks charge one another on overnight loans to meet Federal Reserve requirements. This rate tracks very closely to the discount rate, but is usually slightly higher.

Financial instruments: An instrument having monetary value or recording a monetary transaction. Stocks, bonds, options and futures are all examples of financial instruments.

Financial sponsor: A general term used to refer to a firm that completes a financial transaction, such as an LBO, on behalf of another company. Financial sponsors are also known as private equity firms.

Fixed income: Bonds and other securities that earn a fixed rate of return. Bonds are typically issued by governments, corporations and municipalities.

Fixed income arbitrage: Investment strategy that seeks to exploit pricing inefficiencies in fixed income securities and their derivative instruments. Typical investment will involve making long a fixed income security or related instrument that is perceived to be undervalued, and shorting a similar, related fixed income security or related instrument.

Float: The number of shares available for trade in the market times the price. Generally speaking, the bigger the float, the greater the liquidity of a particular security.

Floating rate: An interest rate that is pegged to other rates (such as the rate paid on U.S. Treasuries), allowing the interest rate to change as market conditions change.

Forward contract: A contract that calls for future delivery of an asset at an agreed-upon price.

Forward exchange rate: The price of currencies at which they can be bought and sold for future delivery.

Forward rates (for bonds): The agreed-upon interest rates for a bond to be issued in the future.

Free cash flow: The measure of cash that a company has left over after paying for its existing operations. FCF is generally calculated as operating income minus maintenance CapEx minus dividends minus net increase in working capital.

Fund of funds: Investment partnership that invests in a series of other funds. A fund of funds’ portfolio will typically diversify across a variety of investment managers, investment strategies, and subcategories.

Fundamental analysis: Analysis of the balance sheet and income statements of companies in order to forecast their future stock price movements.

Futures contract: A contract that calls for the delivery of an asset or its cash value at a specified delivery or maturity date for an agreed upon price. A future is a type of forward contract that is liquid, standardized, traded on an exchange and whose prices are settled at the end of each trading day.

General ledger entries: A book of final entry summarizing all of a company’s financial transactions, through offsetting debit and credit accounts.

General partner: Managing partner of a limited partnership, who is responsible for the operation of the limited partnership. The general partner’s liability is unlimited since he is responsible for the debts of the partnership and assumes legal obligations (i.e. could be sued).

Generally accepted accounting principles (GAAP): The broad concepts or guidelines and detailed practices in accounting, including all conventions, rules and procedures that make up accepted accounting practices.

Glass-Steagall Act: Part of the legislation passed during the Depression (Glass-Steagall was passed in 1933) designed to help prevent future bank failure; the establishment of the F.D.I.C. was also part of this movement. The Glass-Steagall Act split America’s investment banking (issuing and trading securities) operations from commercial banking (lending). For example, J.P. Morgan was forced to spin off its securities unit as Morgan Stanley. Since the late 1980s, the Federal Reserve has steadily weakened the act, allowing commercial banks to buy investment banks.

Global macro investing: Investment strategy that seeks to profit by making leveraged bets on anticipated price movements of global stock markets, interest rates, foreign exchange rates, and physical commodities.

Goodwill: An account that includes intangible assets a company may have, such as brand image.

Greenshoe option: An IPO over-allotment option that allows for underwriters to issue up to 15 percent more of the underlying firm’s stock, in the event the offering is well received by investors. “Greenshoe” refers to the Green Shoe Company, which was the first to exercise such an option.
Hedge: A balance on a position in the market in order to reduce risk.

Hedge fund: An investment partnership, similar to a mutual fund, made up of wealthy investors. In comparison to most investment vehicles, hedge funds are loosely regulated, allowing them to take more risks with their investments.

High-grade corporate bond: A corporate bond with a rating above BB+. Also called investment-grade debt.

High water mark: The assurance that a fund only takes fees on profits unique to an individual investment. For example, a $1,000,000 investment is made in year 1 and the fund declines by 50 percent, leaving $500,000 in the fund. In year 2, the fund returns 100 percent, bringing the investment value back to $1,000,000. If a fund has a high water mark, it will not take incentive fees on the return in year 2, since the investment has never grown. The fund will only take incentive fees if the investment grows above the initial level of $1,000,000.

High-yield bonds (a.k.a. junk bonds): Corporate bonds that pay high interest rates (to compensate investors for high risk of default. Credit rating agencies such as Standard & Poor’s rate a company’s (or a municipality’s) bonds based on default risk. Junk bonds rate at or below BB+.

"Hit the bid": If a trader says that he’s been “hit” or someone has “hit the bid,” this generally means that he has made a market in a particular security and a client has opted to sell securities to the trader at his bid level. Thus, the trader has purchased the securities, or been “hit.” When a trader is “lifted”, this is the opposite scenario, in which securities were sold by the trader.

Holding period return: The income earned over a period as a percentage of the bond price at the start of the period.

Hurdle rate: The return above which a hedge fund manager begins taking incentive fees. For example, if a fund has a hurdle rate of 10 percent, and the fund returns 25 percent for the year, the fund will only take incentive fees on the 15 percent return above the hurdle rate.

Incentive fee: An incentive fee is the fee on new profits earned by the fund for the period. For example, if the initial investment was $1,000,000 and the fund returned 25 percent during the period (creating profits of $250,000) and the fund has an incentive fee of 20 percent, then the fund receives 20 percent of the $250,000 in profits, or $50,000.

Inception date: The inception date is the date that the fund began trading.

Income statement: One of the four basic financial statements, the income statement presents the results of operations of a business over a specified period of time, and is composed of revenue, expenses, and net income.

Initial public offering (IPO): The dream of every entrepreneur, the IPO is the first time a company issues stock to the public. “Going public” means more than raising
money for the company: By agreeing to take on public shareholders, a company enters a whole world of required SEC filings and quarterly revenue and earnings reports, not to mention possible shareholder lawsuits.

**Institutional clients or investors:** Large investors, such as hedge funds, pension funds, or municipalities (as opposed to retail investors or individual investors).

**Interest coverage ratio:** A financial ratio used by investors to assess a company’s ability to pay the interest on its debt. Usually measured as EBITDA/interest expense, often a fixed number (or a schedule of numbers) is structured into loan contracts. Investors tend to focus very heavily on both the coverage and leverage ratios of a company before investing in its debt.

**Interest rate swap:** An interest rate swap is the exchange of interest payments on a specific principal amount. An interest rate swap usually involves just two parties, but occasionally involves more. Often, an interest rate swap involves exchanging a fixed amount per payment period for a payment that is not fixed. (The floating side of the swap would usually be linked to another interest rate, often the LIBOR.)

**Investment adviser:** The investment adviser is the individual or entity that provides investment advice for a fee. Registered investment advisers must register with the SEC and abide by the rules of the Investment Advisers Act.

**Investment grade bonds:** Bonds with high credit ratings that pay a relatively low rate of interest, but are very low risk. Companies or debt securities with a BBB- or better S&P rating (or Baa3 or better Moody’s rating) are generally considered investment grade.

**Investment manager:** An investment manager is the individual who is responsible for the selection and allocation of investment securities.

**IPO:** An initial public offering is often referred to as an “IPO.” This is first sale of stock by a company to the public.

**Junk bonds:** Corporate bonds with a credit rating of BB or lower. Also known as high-yield bonds, these bonds are usually issued by companies without long track records of sales or earnings or by those with questionable credit standing.

**Large cap securities:** Equity securities with relatively large market capitalization, usually over $5 billion (shares outstanding times price per share).

**Leverage:** Leverage measures the amount of assets being funded by each investment dollar. The primary source of leverage is from borrowing from financial institutions. An example in everyday terms is a house mortgage. Leverage is essentially borrowing by hedge funds using their assets in the fund as a pledge of collateral toward the loan. The hedge fund manager then uses the loan to buy more securities. The amount of leverage typically used by the fund is shown as a percentage of the fund. For example, if the fund has $1,000,000 and is borrowing another $2,000,000, to bring the total dollars invested to $3,000,000, then the leverage used is 200 percent.
**Leveraged:** This refers to companies or debt securities with a BB+ or lower S&P rating (or Ba1 or lower Moody's rating).

**Leveraged buyout (LBO):** The buyout of a company with borrowed money, often using that company's own assets as collateral. LBOs were the order of the day in the heady 1980s, when successful LBO firms such as Kohlberg Kravis Roberts made a practice of buying companies, restructuring them, and reselling them or taking them public at a significant profit. LBO volume fueled the markets in 2004-2007 due to low default rates, low interest rates and investor cash balances.

**Leverage ratio:** A financial ratio used by investors to assess a company's debt obligations in relation to its cash flow. Usually measured as total debt/EBITDA, often a fixed number (or a schedule of numbers) is structured into loan contracts. Investors tend to focus very heavily on both the coverage and leverage ratios of a company before investing in its debt.

**LIBOR:** London interbank offered rate. The risk-free rate by which banks lend to one another in London. Syndicated loans are priced with spreads above LIBOR. Very similar to the Federal Funds rate.

**“Lifted” or “lifted an offer”:** If a trader is making a market in a particular security and is “lifted,” this means a client has opted to purchase securities from the trader at her offer price. To be “lifted” essentially means that the securities were purchased from the trader. When a trader’s bid has been “hit”, this is the opposite scenario, in which securities were purchased by the trader.

**Limited partnership:** The hedge fund is organized with a general partner, who manages the business and assumes legal debts and obligations, and one or more limited partners, who are liable only to the extent of their investments. Limited partners also enjoy rights to the partnership’s cash flow, but are not liable for company obligations.

**Liquidity:** The amount of a particular stock or bond available for trading in the market. For commonly traded securities, such as large cap stocks and U.S. government bonds, they are said to be highly liquid instruments. Small cap stocks and smaller fixed income issues often are called illiquid (as they are not actively traded) and suffer a liquidity discount, i.e., they trade at lower valuations to similar, but more liquid, securities.

**Lockup:** Time period that initial investment cannot be redeemed from the fund.

**The long bond:** The 30-year U.S. Treasury bond. Treasury bonds are used as the starting point for pricing many other bonds, because Treasury bonds are assumed to have zero credit risk take into account factors such as inflation. For example, a company will issue a bond that trades “40 over Treasuries.” The 40 refers to 40 basis points (100 basis points = 1 percentage point).

**Making markets:** A function performed by investment banks to provide liquidity for their clients in a particular security, often for a security that the investment bank has
underwritten. (In other words, the investment bank stands willing to buy the security, if necessary, when the investor later decides to sell it.)

**Management company:** A firm that, for a management fee, invests pools of capital, for the purpose of fulfilling a sought-after investment objective.

**Management fee:** The fees taken by the manager on the entire asset level of the investment. For example, if at the end of the period, the investment is valued at $1,000,000, and the management fee is 1 percent, then the fees would be $10,000.

**Market cap(italization):** The total value of a company in the stock market (total shares outstanding x price per share).

**Market neutral investing:** Investing in financial markets through a strategy that will result in an investment portfolio not correlated to overall market movements and insulated from systematic market risk.

**Markets (stock market):** General term for the organized trading of stocks through exchanges and over-the-counter. There are many markets around the world trading equities and options.

**Master-feeder fund:** A typical structure for a hedge fund. It involves a master trading vehicle that is domiciled offshore. The master fund has two investors: another offshore fund, and a U.S. (usually Delaware-based) limited partnership. These two funds are the feeder funds. Investors invest in the feeder funds, which in turn invest all the money in the master fund, which is traded by the manager.

**Medium cap securities:** Equity securities with a middle-level stock market capitalization. Mid-cap stocks will typically have between $1 billion and $5 billion in total market capitalization (shares outstanding times price per share).

**Merchant banking:** The department within an investment bank that invests the firm’s own money in other companies. Analogous to a private equity firm.

**Money manager:** A portfolio/investment manager, the person ultimately responsible for a securities portfolio.

**Money market securities:** This term is generally used to represent the market for securities maturing within one year. These include short-term CDs, repurchase agreements, commercial paper (low-risk corporate issues), among others. These are low risk, short-term securities that have yields similar to Treasuries.

**Mortgage-backed bonds:** Bonds collateralized by a pool of mortgages. Interest and principal payments are based on the individual homeowners making their mortgage payments. The more diverse the pool of mortgages backing the bond, the less risky they are.

**Multi-strategy:** Investment philosophy allocating investment capital to a variety of investment strategies, although the fund is run by one management company.
Multiples method: A method of valuing a company that involves taking a multiple of an indicator such as price-to-earnings, EBITDA or revenue.

Municipal bonds (Munis): Bonds issued by local and state governments, a.k.a., municipalities. Municipal bonds are structured as tax-free for the investor, which means investors in muni’s earn interest payments without having to pay federal taxes. Sometimes investors are exempt from state and local taxes, too. Consequently, municipalities can pay lower interest rates on muni bonds than other bonds of similar risk.

Mutual fund: An investment vehicle that collects funds from investors (both individual and institutional) and invests in a variety of securities, including stocks and bonds. Mutual funds make money by charging a percentage of assets in the fund.

NASDAQ: The Nasdaq is a computerized system established by the NASD to facilitate trading by providing broker/dealers with current bid and ask price quotes on over-the-counter stocks and some listed stocks. The Nasdaq does not have a physical trading floor that brings together buyers and sellers. Instead, all trading on the Nasdaq exchange is done over a network of computers and telephones.

NAV: Net asset value per share - the market value of a fund share. Equals the closing market value of all securities within a portfolio plus all other assets such as cash, subtracting all liabilities (including fees and expenses), then dividing the result by the total number of shares outstanding.

Net present value (NPV): The present value of a series of cash flows generated by an investment, minus the initial investment. NPV is calculated because of the important concept that money today is worth more than the same money tomorrow. The basic rule of thumb is that if a project is NPV positive, it should be accepted. NPV is also at the very core of most financial modeling by investment bankers.

Nikkei: The Nikkei index is an index of 225 leading stocks traded on the Tokyo Stock Exchange.

NINJA loan: A type of mortgage that requires “no income, no job and no assets.”

Non-convertible preferred stock: Sometimes companies issue nonconvertible preferred stock, which remains outstanding in perpetuity and trades like stocks. Utilities are the most common issuers of non-convertible preferred stock.

NYSE: The New York Stock Exchange is the oldest and largest stock exchange in the U.S., located on Wall Street in New York City. The NYSE is responsible for setting policy, supervising member activities, listing securities, overseeing the transfer of member seats, and evaluating applicants. It traces its origins back to 1792, when a group of brokers met under a tree at the tip of Manhattan and signed an agreement to trade securities. The NYSE still uses a large trading floor to conduct its transactions.

Options: A put option gives the holder the right to sell the underlying stock at a specified price (strike price) on or before a given date (exercise date). A call option
gives the holder the right to buy the underlying stock at specified price (strike price) on or before a given date (exercise date). The seller of these options is referred to as the writer - many hedge funds will often write options in accordance with their strategies.

**Pairs trading:** Non-directional relative value investment strategy that seeks to identify two companies with similar characteristics whose equity securities are currently trading at a price relationship that is out of their historical trading range. Investment strategy will entail buying the undervalued security, while short-selling the overvalued security.

**Par:** In trading, this refers to a debt securing trading at 100. Most loans and bonds are issued at par. If they are issued at a discount, this is anything less than par. Conversely, a premium is anything more than par. When trading at par, the yield of the security can be inferred to be the same as its coupon. When trading below par, the security has a higher implied yield, as securities are eventually redeemed at par. Therefore, a 5 percent bond trading at 98 actually has more than a 5 percent yield, since it will eventually be repurchased at 100. Thus, the investor will get this 2 point increase, as well as the 5 percent coupon.

**Pari passu:** Latin for “without partiality,” this refers to when two or more instruments share the same seniority in a company’s capital structure.

**Patriot Act:** The Patriot Act was adopted in response to the September 11 terrorist attacks. The Patriot Act is intended to strengthen U.S. measures to prevent, detect, and prosecute international money laundering and the financing of terrorism. These efforts include new anti-money laundering (AML) tools that impact the banking, financial, and investment communities.

**Pension:** A pension provides post-retirement benefits that an employee might receive from some employers. A pension is essentially compensation received by the employee after he/she has retired.

**P/E ratio:** The price to earnings ratio. This is the ratio of a company’s stock price to its earnings-per-share. The higher the P/E ratio, the faster investors believe the company will grow.

**Portfolio turnover:** The number of times an average portfolio security is replaced during an accounting period, usually a year.

**Prime brokerage:** Prime brokers offer hedge fund clients various tools and services such as securities lending, trading platforms, cash management, risk management and settlements for administration of the hedge fund.

**Prime rate:** The average rate U.S. banks charge to companies for loans.

**Private equity:** Also called “financial sponsors”, this term refers to the group of investment firms that raise cash from investors to purchase public and private companies through LBOs. Big name firms include: Bain Capital, Blackstone, Carlyle,
Hicks, Muse, Tate & Furst (recently renamed HM Capital), JPMorgan Partners, KKR, Madison Dearborn, Texas Pacific Group and Thomas H. Lee.

**Producer price index:** The PPI measures the percentage increase in a standard basket of goods and services. PPI is a measure of inflation for producers and manufacturers.

**Proprietary trading:** Trading of the firm’s own assets (as opposed to trading client assets). Also occasionally referred to as principal investing.

**Purchase price multiple:** The ratio measuring a firm’s LBO purchase price in comparison to its EBITDA. Purchase price multiples are crucial for private equity firms valuing potential targets.

**Put option:** An option that gives the holder the right to sell an asset for a specified price on or before a specified expiration date.

**Qualified purchasers:** Qualified fund purchasers are individuals or families of companies with $5,000,000 in investments or an entity that holds and controls $25,000,000 in investments. In order to qualify for the exemption offered under Section 3(c) (7) of The Investment Company Act of 1940, all investors in such a partnership must be qualified purchasers or knowledgeable employees for the partnership to qualify for the exemption.

**Rate of return:** The rate of return is the percentage appreciation in market value for an investment security or security portfolio.

**Regulation T:** According to Regulation T, one may borrow up to 50 percent of the purchase price of securities that can be purchased on margin. Known as initial margin.

**Relative value:** Non-directional market neutral investment strategy that seeks to exploit pricing discrepancies between a pair of related securities. Strategy will entail buying the undervalued security and short selling the overvalued security.

**Retail clients:** Individual investors (as opposed to institutional clients).

**Return on equity:** The ratio of a firm’s profits to the value of its equity. Return on equity, or ROE, is a commonly used measure of how well an investment bank is doing, because it measures how efficiently and profitably the firm is using its capital.

**Risk arbitrage:** Relative value investment strategy that seeks to exploit pricing discrepancies in the equity securities of two companies involved in a merger-related transaction. The strategy will entail the purchase of a security of the company being acquired, along with a simultaneous sale in the acquiring company.

**Roadshow:** The series of presentations to investors that a company undergoing an IPO usually gives in the weeks preceding the offering. Here’s how it works: The company and its investment bank will travel to major cities throughout the country. In
each city, the company’s top executives make a presentation to analysts, mutual fund managers and other attendees, while answering questions.

S&P500: Standard & Poor’s 500 is a basket of 500 stocks that are considered to be widely held. This index provides a broad snapshot of the overall U.S. equity market; in fact, over 70 percent of all U.S. equity is tracked by the S&P 500.

Secured debt: Debt that is secured by the assets of the firm is referred to as secured debt. Although usually coming in the form of loans, secured debt can also take the form of bonds. If a company is liquidated, those investors in the firm’s secured debt are paid out first and foremost with the proceeds from the sale of the firm’s assets. Secured debt is almost entirely classified as “senior debt”.

Securities and Exchange Commission (SEC): A federal agency that, like the Glass-Steagall Act, was established as a result of the stock market crash of 1929 and the ensuing depression. The SEC monitors disclosure of financial information to stockholders, and protects against fraud. Publicly traded securities must first be approved by the SEC prior to trading.

Securities lending: This is a loan of a security from one broker/dealer to another, who must eventually return the same security as repayment. The loan is often collateralized. Securities lending allows a broker-dealer in possession of a particular security to earn enhanced returns on the security through finance charges.

Securitize: To convert an asset into a security that can then be sold to investors. Nearly any income-generating asset can be turned into a security. For example, a 20-year mortgage on a home can be packaged with other mortgages just like it, and shares in this pool of mortgages can then be sold to investors. Collateralized debt obligations are a form of securitization.

Selling, general and administrative expense (SG&A): Costs not directly involved in the production of revenues. SG&A is subtracted as part of expenses from gross profit to get EBIT.

Sell-side: Investment banks and other firms that sell securities to investors, both retail and institutional. Naturally, investors purchasing these securities are on the buy-side.

Senior debt: Most often in the form of loans or bonds, this refers to debt that has repayment priority in the event of bankruptcy. “Senior” also refers to the place of the debt in the firm’s capital structure in comparison to other instruments of the same type. If a firm is liquidated, its senior debt is paid out before its junior debt. Therefore, junior debt usually must compensate investors with higher yield from spreads for this increased risk.

Series 7 & 63: The NASD Series 7 General Securities Representative exam is the main qualification for stockbrokers, and is normally taken in conjunction with the Series 63 Uniform State Law Exam.
Short selling: Short selling involves the selling of a security that the seller does not own. Short sellers believe that the stock price will fall (as opposed to buying long, wherein one believes the price will rise) and that they will be able to repurchase the stock at a lower price in the future. Thus, they will profit from selling the stock at a higher price now.

Small cap securities: Securities in which the parent company’s total stock market capitalization is less than $1 billion.

Soft commodities: Tropical commodities such as coffee, sugar and cocoa. In a broader sense may also include grains, oilseeds, cotton and orange juice. This category usually excludes metals, financial futures and livestock.

Sovereign debt: Fixed income security guaranteed by a foreign government.

Special situations investing: Investment strategy that seeks to profit from pricing discrepancies resulting from corporate “event” transactions, such as mergers and acquisitions, spin-offs, bankruptcies, or recapitalizations. Also known as “event driven.”

Spot exchange rate: The price of currencies for immediate delivery.

Statement of cash flows: One of the four basic financial statements, the statement of cash flows presents a detailed summary of all of the cash inflows and outflows during a specified period.

Statement of retained earnings: One of the four basic financial statements, the statement of retained earnings is a reconciliation of the retained earnings account. Information such as dividends or announced income is provided in the statement. The statement of retained earnings provides information about what a company’s management is doing with the company’s earnings.

Stock: Ownership in a company, whether public or private.

Stock swap: A form of M&A activity in whereby the stock of one company is exchanged for the stock of another.

Strategy (trading strategy): A “trading strategy” refers to the investment approach or the techniques used by the hedge fund manager to have positive returns on the investments.

Strong currency: A currency whose value is rising relative to other currencies.

Subprime: Subprime generally refers to a type of mortgage loan issued to someone who has a credit score or other situation that does not qualify him for a typical mortgage. Generally riskier than conventional mortgages, these have higher interest rates and generally also have higher default rates than regular mortgages. Many subprime mortgages were packaged into CDOs and sold to investors, as it was believed that much of the individualborrower risk was diversified away by doing so.
**Subscription period:** The subscription period is the amount of time that the investor is required to keep the investment in the fund without withdrawal, typically one to two years.

**Swap:** A type of derivative, a swap is an exchange of future cash flows. Popular swaps include foreign exchange swaps and interest rate swaps.

**Syndicate:** A group of investment banks that together will underwrite a particular stock or debt offering. Usually the lead manager will underwrite the bulk of a deal, while other members of the syndicate will each underwrite a small portion.

**Syndicated loan:** This refers to a type of loan provided to a company by a group of lenders (investment banks and/or institutions).

**T-Bill yields:** The yield or internal rate of return an investor would receive at any given moment on a 90-120 government treasury bill.

**10-K:** An annual set of audited financial statements of a public company filed with the SEC. The 10-K includes a balance sheet, cash flow statement and income statement, as well as an explanation of the company’s performance (usually referred to as management’s discussion and analysis). It is audited by an accounting firm before being registered.

**10-Q:** A set of quarterly financial statements of a public company filed with the SEC. The 10-Q includes a balance sheet, cash flow statement and income statement, among other things. As the fourth quarter’s performance is captured in the 10-K, public companies must only file three of these per year.

**Tender offers:** A method by which a hostile acquirer renders an offer to the shareholders of a company in an attempt to gather a controlling interest in the company. Generally, the potential acquirer will offer to buy stock from shareholders at a much higher value than the market value.

**Tombstone:** Usually found in pitchbooks, these are logos and details from past successful deals done by an investment bank. Often times for hallmark transactions, these same details will be placed on a notable object and distributed to the company and bankers, to serve as a memento of a deal. For example, a high-yield bond for a sporting equipment manufacturer might be commemorated with actual baseball bats or footballs, inscribed with transaction information.

**Top-down investing:** An approach to investing in which an investor first looks at trends in the general economy, and next selects industries and then companies that should benefit from those trends.

**Trading disclosure:** Trading disclosure refers to revealing actual trades, portfolio positions, performance and assets under management.

**Transparency:** Transparency refers to the amount of trading disclosure that hedge fund managers have to give to the SEC and their investors.
Treasury securities: Securities issued by the U.S. government. These are divided into treasury bills (maturity of up to two years), treasury notes (from two years to 10 years maturity), and treasury bonds (10 years to 30 years). As they are government guaranteed, often treasuries are considered risk-free. In fact, while U.S. treasuries have no default risk, they do have interest rate risk; if rates increase, then the price of UST’s will decrease.

Treasury stock: Common stock that is owned by the company but not outstanding, with the intent either to be reissued at a later date, or retired. It is not included in the calculations of financial ratios, such as P/E or EPS, but is included in the company’s financial statements.

Underwrite: The function performed by investment banks when they help companies issue securities to investors. Technically, an investment bank buys the securities from the company and immediately resells the securities to investors for a slightly higher price, making money on the spread.

Weak currency: A currency whose value is falling relative to other currencies.

Yield to call: The yield of a bond calculated up to the period when the bond is called (paid off by the bond issuer).

Yield: The annual return on investment. A high-yield bond, for example, pays a high rate of interest.

Yield to maturity: The measure of the average rate of return that will be earned on a bond if it is bought now and held to maturity.

Zero coupon bonds: A bond that offers no coupon or interest payments to the bondholder.
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