QUANTITATIVE RECRUITING

of Quantitative Hedge Fund Training

Quantitative Recruiting Overview

Before you begin approaching Quantitative Hedge Funds and other firms with quantitative roles, make sure you are familiar with the introductory background we've written about Quantitative Hedge Funds. Learn who some of the major Quant Hedge Fund players are, and what types of trading/investing strategies they employ. Learn what type of backgrounds are the most desirable to hiring managers, and get a better sense of the type of interview questions to expect.

OK—if you're ready, let's begin! First, it is important to know that finding a Quant Job on Wall Street is a little more nuanced, and challenging in some ways, than finding one as an Analyst or Associate in Investment Banking at a bulge-bracket firm. However, it can be every bit as financially rewarding and intellectually stimulating as Investment Banking. We hope this explanation will help you land the Quant Analyst job you've been hoping for.

Practical Job-Searching Advice

Bulge-bracket investment banks typically hire a new incoming class of both Analysts (college graduates) and Associates (MBA graduates) each year. They find most of that incoming class by conducting formal on-campus recruiting processes at the country's top undergraduate and graduate programs every year. However, because Quantitative roles are fewer and more scattered and specialized by comparison, many firms may not actively recruit for such candidates by visiting college campuses.

We should note that some of the larger Quantitative Hedge Funds *do* recruit at top schools. They have found that, like investment banks, students respond well to on-campus recruiting, and they have enough of a need for fresh talent that they can justify participating in an annual on-campus recruiting process. If these firms recruit at your school, by all means, apply to work for them through on-campus recruiting. We're simply pointing out that if you rely solely on on-campus recruiting, you will miss most of the firms that need Quants.

To get a job at most Quant firms, *you're going to need to scout out your own role*, rather than relying on a job board or on-campus recruiting. Hiring opportunities at these firms may be posted online, but once a job is posted, a firm can receive hundreds of resumes for a single position.

As you can see, recruiting for these roles is *challenging*. It is also *extremely competitive*. Therefore, the trick to successfully obtaining a role with those firms lies in securing an initial interview, and impressing a hiring manager with the depth of your knowledge and interest in quantitative methods and modeling.

We at Street of Walls strongly feel that, among the firms that don't recruit on-campus, you should be prepared to approach a firm that is *not* currently advertising for a role. Why? Because your letter will stand out, since it's likely that it's the only letter a potential hiring manager may be reading. Even if a firm is not looking to hire today, that doesn't mean that circumstances won't change tomorrow, and by getting to the front of the queue now you'll have a "first-mover advantage" when an actual job opens up.

Additionally, you should reach out to an alumnus of your school who's currently at or has worked at a bank or hedge fund in which you're interested—preferably if this person has served in a quantitative role. And if you don't share a common university connection? Consider contacting someone who was quoted in an article in the *Wall Street Journal*, on *Bloomberg*, or in a magazine like *Institutional Investor* or *Absolute Return + Alpha*. Most people will be flattered to be noticed in the press and to have you reach out to them.

A good cover letter will detail your quantitative skills and past history by referencing prior work projects or college assignments. If you've taken a course in Stochastic Finance where you derived Ito's Lemma and looked at Martingale and Markov processes, write about it in your letter, and importantly, explain how this background may be relevant for any work you might do at the firm.

As with model-building, the data collection process for hiring is rigorous; frequently, there is no such thing as too much information. So be prepared to impress your contacts with your knowledge and interest in the field. In any letter or email, carefully script your skills and strengths in a way that someone might not otherwise respond to if they're the recipient of a 10-second elevator pitch. Highlight any relevant coursework, projects with professors, papers or theses submitted, trading/investment clubs, or math/science clubs you belong to—and certainly, any programming skills—even if you're self-taught. Coursework in any engineering discipline, mathematics, physics, statistics and computer science will be especially relevant. Show that you know something about the firm; show that you're interested in financial markets, and think of what modeling skills you bring to the table.

Note that while many Quant jobs require programming, not all do; nonetheless, you should be prepared to demonstrate knowledge of Excel macros/VBA or experience with statistical software if you're not already proficient in C++, C# or Perl (to name but a few programming languages). Do you know Excel VBA? Do you have experience with databases? Statistical software? Fourier transforms? Linear algebra? If so, be sure to mention it. And be sure to explain to whomever you're communicating with that quantitative finance interests you, and give solid reasons why.

If you can script a one-page letter that is sent to multiple managers at multiple firms asking for an opportunity to have a 10-minute conversation, you will be surprised at the amount of response you are likely to get—especially if you acknowledge in your email that you are assuming the firm is not looking to expand at present. Yes, of course, you're looking for a job, but by acknowledging the likely fact that a firm is not hiring, your request to meet will come off more like a professional opportunity to network, rather than a "let's talk about why you need to hire me" persuasion session.

A final note on this: be sure to check with your on-campus recruiting center, as larger Quant firms *may* recruit at your school. If they do, they frequently will post available jobs online and will often indicate the type of background necessary for these quantitative roles. This will give you ideas of what other Quant firms will be looking for, and thus can help you prepare for approaching other Quant firms.

How to Approach a Quant Firm

As we discussed earlier, many firms will post jobs seeking Quantitative Researchers and Analysts at the junior and intermediate levels, but these positions will be extremely competitive. Be prepared to approach firms that are *not* currently advertising for a role. Use LinkedIn, industry publications and financial news sites to search for intermediate-to-senior level employees, particularly if you share a common connection with them (fellow college or high school alumni, for example). Note that you should be contacting individuals who work in finance/investments, or directly in quantitative roles. Do *not* write to HR. Why?

The reason is simple: a good cover letter will detail your quantitative skills and past history by referencing prior work projects or college assignments. If you're writing about advanced quantitative concepts, it's highly likely that an HR employee at Quant Firm ABC will not be up to speed on the subjects you're talking about, unless the HR employee herself or himself has a quantitative background. Your goal should be to impress somebody with your quantitative background who you could potentially work for.

In summary, many Quant firms do not participate in traditional on-campus recruiting, and are not actively looking for talent, but are opportunistically looking—particularly in quantitative roles. Outside of investment banks, most quantitative roles will be at smaller buy-side firms—either hedge funds or money managers—and often, it's easier for a manager to hire by word of mouth than it is to sort through stacks of resumes following an ad posted online. Get to the head of the line by sending an email to the right people *before the jobs are posted*.

Preparing for Quant Interviews

Almost all interview questions will relate in some form to mathematics, statistics, econometrics or programming. While finance-specific questions will be relevant depending on whether you've studied finance at university or worked in finance before, the main goal of the interview will be to determine the level of your quantitative ability. (Note that some firms will even ask for SAT scores—even if you're decades out of high school!) Generally speaking, finance-specific formulae and relationships can be taught; it is much harder to teach someone computer programming or advanced statistics concepts, for example.

Before an interview, study a company's website and try to read as many articles as you can about the firm. Distinguish yourself by bringing research to the table—either your own (in the form of a class project or graduate thesis) or others (i.e., research published in the academic press that you have read and are familiar with.) Research is meant to be shared, and the important thing is acknowledge where and how you came across the research; equally important (and impressive) will be the extent to which you can reposition the research in a new light that might be valuable to the firm you're interviewing with. If you've read an interesting article on equity flows, for example, and you're meeting with a quant fixed income shop, think about the ways the same algorithms could similarly be applied to the fixed income world. Showing intellectual curiosity and a willingness to pour through academic journals can only benefit a potential candidate. Popular academic journals, which may be available online through your alma mater's online library, include the following:

Journal of Portfolio Management
Journal of Quantitative Finance
Financial Analysts Journal
Journal of Investment Management
The Journal of Investing

Again, most Hedge Funds that are looking for Quants will not expect you to have strong knowledge of finance yet. Nonetheless, there are some basic concepts you should be familiar with; even if you haven't taken a finance class, knowing some elementary financial concepts shows an initiative to get yourself up to speed in your desired industry. In a later chapter, we will begin reviewing some of these key concepts, along with others:

- The derivation of the Black-Scholes option pricing model
- An understanding of the Black-Scholes model's sensitivity outputs ("the Greeks")
- The difference between futures and forward contracts
- The calculation of historical volatility and how it differs from implied volatility)

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