

Finding a job in finance

Emanuel Derman gives careers advice to those seeking a job in today's finance markets. You'll have to have plenty of education, and intuition too



In 1985, when I joined Goldman Sachs, there were scores of places to work and you needed no education in quantitative finance. You could look for a position at Goldman, Salomon, First Boston, Merrill Lynch, Morgan Stanley, Prudential, Drexel, Shearson, Lehman, EF Hutton, DJJ, Smith Barney, Paine Webber, Bankers Trust, Chase Manhattan, JP Morgan, Chemical, Citibank and Manufacturers Hanover, to name only a few among the large respectable trading firms. All of them needed people adept at bond maths or options pricing.

In those days, not only couldn't you get a degree in financial engineering, but there was actually no such field. Being a quant was amateur heaven. You learned options theory yourself and made up your own models to fit new products. No-one expected you to know Black-Scholes or CapM; being reasonably smart and flexible was enough. Now, 20 years later, it's a different landscape.

First, many of the big firms have merged, been acquired or self-destructed. Second, education is now *de rigueur*. Academia has not only caught up with the practitioner world, but caters to it. There are scores of MSc and PhD programmes in quantitative finance, financial mathematics or financial engineering; if you can pay you can attend a conference or lecture series each week on everything from credit derivatives to statistical arbitrage. Amateurs are out.

One thing has stayed constant: most quants still come from abroad. A few weeks ago, I took a poll and only one of the 70 students in my class at Columbia right now is American born and educated. Americans want to be managers and have outsourced their menial and quantitative tasks to immigrants. Consequently, quants (that is, for-

eigners) who want to succeed here must make cultural adaptations.

So, what should you do about finding a job in quantitative finance nowadays?

If you want to be a classic 1980s model-builder for a trading desk, get a PhD in finance, physics or some other technical field. You'll need that to do research. But consolidation has killed many of the classic positions during the past decade, and the remaining firms are less inclined to develop models or publish papers about them. You need to be open-minded and take advantage of the fact that as complex products have proliferated, quantitative skills have become increasingly valuable in wider domains.

First, think about risk management, everyone's new categorical imperative. Investment banks, commercial banks and hedge funds need risk managers, not only for their skill but also for the comfort they bring to investors and regulators. Banks need risk monitors to intermediate between risk managers and traders, and risk

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monitors don't need PhDs; they do need to love markets and know what to worry about: bad marks, mis-specified contracts, uncertainty, risk, value-at-risk, illiquid positions, exotic options. Controllers too, who must mark to model the large exotic and illiquid books at trading houses, need analysts with a thorough understanding of derivatives and the models used to price them (*Risk* July 2001, pages 48-50). So do the margin providers in prime brokerage.

Which brings me to alternative asset management and proprietary trading. As the number of investment banks have shrunk, hedge funds have multiplied and grown in sophistication. In the past, most of them focused on global macro or distressed trading; now, many are quant shops, spawned from the proprietary desks of investment banks. Hedge funds can use quants to trade, manage risk and do performance attribution. And, moving up a level, funds of

funds can use quants to evaluate hedge funds.

Then there are the service providers. Accounting and consulting firms need model-savvy staff to perform model audits. Risk management software companies, such as Algorithmics, Barra, Northfield, Numerix and SunGard, need programmer-quants. And everyone needs information technologists and back-office staff who understand models and can help organise a firm's books and records.

I grew up believing, and still believe, that quantitative finance is in essence a multidisciplinary enterprise. To be effective, you must learn finance, mathematics and programming. The latter is critical because most trading innovations involve software, and if you can program, you can always add value. If you can't, you have to be a lot smarter to earn your keep.

More generally, learn how the financial world works. If you want to work in that world, don't pay attention only to academics, who often have great misconceptions about how models are used. Listen to the people who live by their models; go to practitioner seminars and industry conferences; Join the Professional Risk Managers' International Association, the Global Association of Risk Professionals or the International Association of Financial Engineers; read the *Wall Street Journal* and *Risk*; follow markets, rates and spreads.

And, importantly, seek to gain intuition. Quantitative finance isn't mathematics or chess; it's not a field for brilliant idiot savants; it's an attempt to model the world of markets and people, and you need a little wisdom and experience to know what can work.

When you do get a job, even if it's not exactly what you thought you were looking for, stick with it for several years. Get to be an expert in your firm that people around you can rely on. Make the best of what you've found and then, if you move, move cautiously – there are idiot bosses everywhere. A resumé filled with short innings doesn't look that good. And when you leave, don't tell your boss off; he may be interviewing at the same place you just moved to.

I'm grateful to Bob Long, a principal at the search firm Denison Group, for his insights on the job market. ■

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