STRATEGIC GLOBAL ADVISORS, LLC

Conference Notes: Chicago Quantitative Alliance Spring 2013 Conference
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During the so-called "quant meltdown" of August 2007, many investment strategies that used quantitative stock selection models, risk models, and optimizers underperformed significantly over the course of a few days. One of the prominent theories of the cause of the quant meltdown was "manager crowding," meaning that many managers were using similar alpha models and using one of the risk models provided by three or four prominent leading risk model vendors.

Jose Menchero from MSCI (provider of the Barra risk model and optimizer) presented on this topic at the CQA Spring 2013 Conference. His presentation, "Do Risk Models Cause Manager Crowding?" was based on a research paper authored by four of his colleagues at MSCI[1] (see footnote at the end of this article for full details and a link to the paper). While there were many other interesting and thought-provoking presentations at the conference on topics such as risk parity strategies, momentum strategies in futures markets, and investment decision making, this presentation was particularly relevant to SGA given the proprietary quantitative tools we use in our investment process.

Menchero and his colleagues investigated the role that many managers using the same, or similar, risk models played in a fairly large group of managers ending up with similar holdings. This is important because when many of those managers (some of whom were levered) attempted to exit the same positions during the "quant meltdown," the resulting "rush for the exit" caused a dramatic decrease in prices across a large number of these common holdings.

Indeed, the presentation showed that returns to the Barra earnings-to-price factor and momentum factor on several of the days in the week of August 6-10, 2007 were six standard deviations or more beyond their normal range (based on history), meaning that returns of this magnitude had an ex-ante probability of less than 1 in 500,000,000 of occurring. If manager crowding does occur, it could cause manager returns to be correlated in many different market environments, not just in the extreme case just described.

In this presentation, they investigated whether using a standard risk model (specifically Barra) promotes crowding among managers and whether a "proprietary" risk model (one that includes both risk factors and the alpha factors used in the investment process) can reduce or avoid crowding. SGA falls into a third camp as we use a proprietary risk model, but it does not start with Barra or any off the shelf risk model and add in the alpha factors; rather it uses custom risk factors that we developed internally.

For their study, the correlation in holdings and returns was examined between two theoretical managers in two different cases:

In Case 1, the managers had a two-factor alpha model, one of which was exactly the same for both managers (and was in the Barra risk model, specifically the Barra earnings yield risk factor) and the other alpha factor was different between the managers and was not one of the factors in the risk model.

In Case 2, the managers had a two-factor alpha model, with one factor the same for both managers but *outside* the risk model and the other factor being the Barra momentum factor for one manager and the Barra earnings yield factor for the other manager.

Menchero and his colleagues tested the effect on manager crowding using three different portfolio construction techniques for both cases:

- A standard risk model
- A proprietary risk model
- No risk model and portfolio weights simply proportional to the assumed alpha model.

In general, optimization tends to tilt a portfolio to residual alpha, which is the part of the alpha model that is not contained in the risk model, as it seeks to minimize risk exposures.

Given that tendency, it was not surprising to see that when using a standard risk model in Case 1 where the two managers had different residual alphas, the correlation between holdings was relatively low (i.e. less manager crowding). In addition, using a standard risk model resulted in less manager crowding than using a proprietary risk model, which by their definition is one that uses a standard risk model along with the manager's alpha factors. At SGA, we use what they would call a standard risk model, however, as explainer earlier, the SGA risk model uses internally developed risk factors that are different than those used by the major risk model providers.

In case two in which the managers had the same alpha factor outside of the risk model, correlation between holdings was high. This finding justifies trying to make your alpha model not only powerful but also different than other managers to avoid crowding.

The base case they tested used long-short portfolios. When they introduced a long only constraint, they found less crowding among managers and less difference between using a standard or proprietary risk model as the long only constraint partially counteracts the tendency of the optimizer.

The SGA investment process uses an integrated approach that blends our proprietary quantitative systems and fundamental research to produce risk-aware portfolios. All three main components of our quantitative systems are proprietary and developed in-house: the SGA alpha model, risk model, and optimization software.

This presentation showed that if manager alphas are unique (and we believe the SGA alpha model is), using a risk model that does not contain the alpha factors can help make a manager's holdings unique. At SGA we take this two steps further by using a

proprietary risk model that no one else uses and a proprietary optimization engine that will likely further differentiate us when trading off expected return and risk. We believe that this distinction is likely to help us translate more alpha into our portfolio and keep us from crowding with other managers.

The Chicago Quantitative Alliance is an investment management industry organization whose members are primarily quantitative portfolio managers and analysts who are predominately from buy-side institutional firms. The remainder of members consists of plan sponsors, sell-side quantitative strategists, quantitative data and software providers, and academics. The group has 350 members, of which approximately 200 people were in attendance at the recent two-day conference. In addition to this Spring Conference, the CQA also has a two-day Fall Conference, several other smaller events and ad-hoc e-mail exchanges from members on questions primarily related to quantitative investing.

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[1] Jyh-Huei Lee, Oleg Ruban, Dan Stefek, and Jay Yao (October 2012) "Manager Crowding and Portfolio Construction", MSCI Research Insight.
http://www.msci.com/resources/research/articles/2012/Research_Insight_Manager_Crowding_and_Portfolio_Construction_Oct_2012.pdf