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Quantitative Hedge Fund Selection

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Newsletter of the BNP Paribas Hedge Fund Centre at SMU

Summary

- Mission of the BNP Paribas Hedge Fund Centres
- Quantitative hedge fund selection by Melvyn Teo
- Update on the Centre's Activities

Mission of the BNP Paribas Hedge Fund Centres

The mission of the BNP Paribas Hedge Fund Centres is to facilitate, encourage, and sponsor high-level academic research on hedge funds. The Centres also provide outstanding education to students, executives, and investors, and publish objective and independent information on hedge funds, while promoting understanding and awareness of alternative investment strategies. Through excellence in research on alternative investments, the Centres are recognized for their capacity to foster stimulating exchange of opinions, and to develop a knowledgeable and objective information base regarding hedge funds.

The primary objectives of the BNP Paribas Hedge Fund Centre at the Singapore Management University are to

1. conduct and disseminate high quality academic hedge fund research
2. educate finance practitioners and the investor public on hedge funds, and
3. raise the profile of the hedge fund industry in Asia and Singapore

To achieve these goals, the Centre will collaborate closely with its sister centres at the London Business School and HEC. Moreover at all times, the Centre is absolutely committed to the highest ethical conduct and will actively avoid any conflicts of interest with outside parties.

Quantitative hedge fund selection

Melvyn Teo[1]

Abstract

Prior research has shown that small funds, young funds, and local funds outperform their older, larger, and distant counterparts. According to the literature, hedge fund performance is driven by fund capacity constraints, managerial incentives, and local information. I revisit these studies on hedge funds and test whether their results hold up in recent data. By doing so, I lay the foundations for a quantitative hedge fund selection framework.

What drives hedge fund performance? The answer to this question has tremendous relevance for investors who are hoping to add value to their hedge fund portfolios by selecting managers that outperform going forward. Traditionally, investors have relied on due diligence to minimize fraud and operation risk. It will be interesting to examine the value add of a quantitative selection framework that could supplement the existing due diligence process. In this issue of the newsletter, I begin the process of building the foundations for such a framework by analyzing the relationship between hedge fund performance and various fund characteristics.

One factor that drives hedge fund performance is fund size. It is well known that hedge funds grapple with capacity constraints. Many funds, having been successful at fund raising, run into capacity issues as they find it increasingly difficult to move in and out of securities without incurring significant transactions cost. It is for this reason that many funds judiciously choose to stop accepting money from new investors and therefore preserve future performance. Capacity constraints can also manifest at the strategy level. For example, Khandani and Lo (2007) allude that the overcrowding of the quant fund sector in 2007 reduced equity market neutral spreads, forcing funds to increase leverage, and causing them to suffer marked draw downs when a large multi strategy fund had to unwind its equity market neutral portfolio in August 2007 in response to problems in the subprime market.

Another driver of hedge fund performance may be fund age. Aggarwal and Jorion (2010) analyze the performance of emerging hedge funds and find that these young funds outperform their seasoned counterparts during the first two to three years of their existence. Their results hold after controlling for backfill bias, which is inherent in publicly available hedge fund databases. They argue that incentive effects are stronger for emerging hedge fund managers. Specifically, the marginal utility of a given annual profit should be higher for managers with lower initial wealth; given that emerging managers are likely to be on average younger than more established managers, profits can be expected to accrue over a longer lifetime.

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Fund fees may also explain fund performance. Managers with superior investment skills may charge higher fees to extract rents from their investors. To the extent that fund manager interests are aligned with those of investors, perhaps via the co-investment of managers' personal capital, funds that charge higher fees may also deliver higher post-fee returns.

Finally, distance from their investment markets may also impact fund performance. Fund managers who adopt a hands-on approach to investing may benefit from being close to their investment markets. This will allow them to tap into local information networks and talk to other companies along the supply chain. Indeed, Teo (2009) shows in his study of Asia-focused hedge funds that nearby equity long short hedge funds outperform their distant competitors by about 3-4 percent per annum after adjusting for risk. The effects of location are stronger for emerging market funds and funds holding illiquid securities.

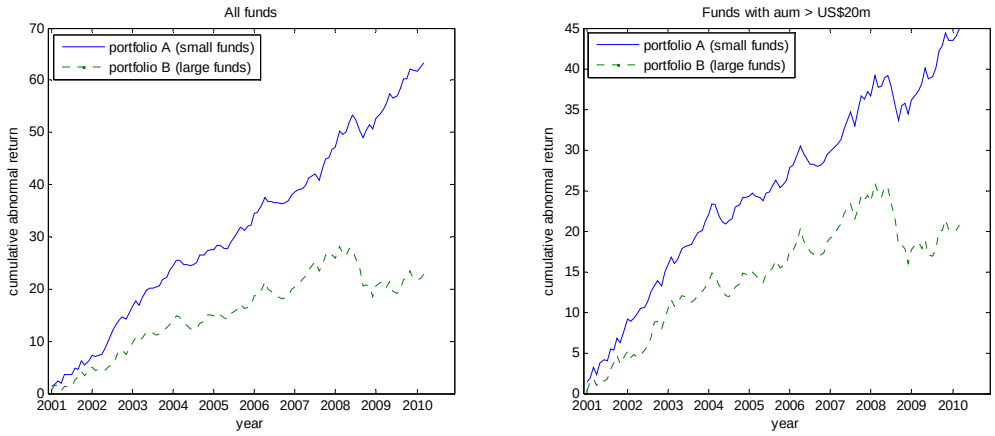
To revisit these issues, I merge the Barclayhedge, Eurekahedge, and Asiahedge databases and sort funds based on fund size, age, fees, and geographical distance to their investment markets. Barclayhedge and Eurekahedge are global databases that contain both non-Asia focused funds and Asia focused funds. By also including the funds from Asiahedge, I increase our coverage of Asia focused hedge funds. The sample period extends from January 2000 to August 2010. In total, our combined database consists of 16,262 funds of which 3,107 are Asia focused funds and 9,137 stopped reporting returns at the end of our sample period.

To investigate the impact of fund size on hedge fund performance, I sort funds every January 1st into quintile portfolios based on fund assets under management in the previous December. Next I hold the portfolios for 12 months and then reform next January. Finally, I estimate the abnormal return of the quintile portfolios by evaluating their performance relative to an augmented Fung and Hsieh (2004) factor model. The Fung and Hsieh (2004) model includes the excess return of the S&P 500 index, the small cap minus large cap index, the term spread, the default spread, and trend following factors for foreign exchange, bonds, and commodities. Following Teo (2009), I augment the model with an additional factor, i.e., the return of the Nikkei 225 index in excess of the risk free rate, to better explain the performance of the Asia focused hedge funds in our sample.

In Figure 1, I plot the abnormal return of the extreme quintiles sorted on fund size over the evaluation period which extends from January 2001 to March 2010. Portfolio A denotes the smallest fund quintile while Portfolio B denotes the largest fund quintile. The evaluation period ends prior to August 2010 as the Fund and Hsieh (2004) trend following factors are only available up to March 2010. The abnormal return is the difference between a portfolio's excess return and its factor loadings multiplied by the risk factors. It is clear from the leftmost subplot of Figure 1 that hedge funds continue to grapple with capacity issues during and after the recent financial crisis. If anything, the crisis appears to exacerbate the difference in performance between large and small funds. The spread between Portfolios A and B widened visibly in 2008. On average, the alpha of the spread is 4.39 percent per year (*t*-statistic = 6.88). One worry is that the size effect is confined to very small funds that are too small to be of interest to most institutional investors. In response to such concerns, I redo the sort for funds with assets under

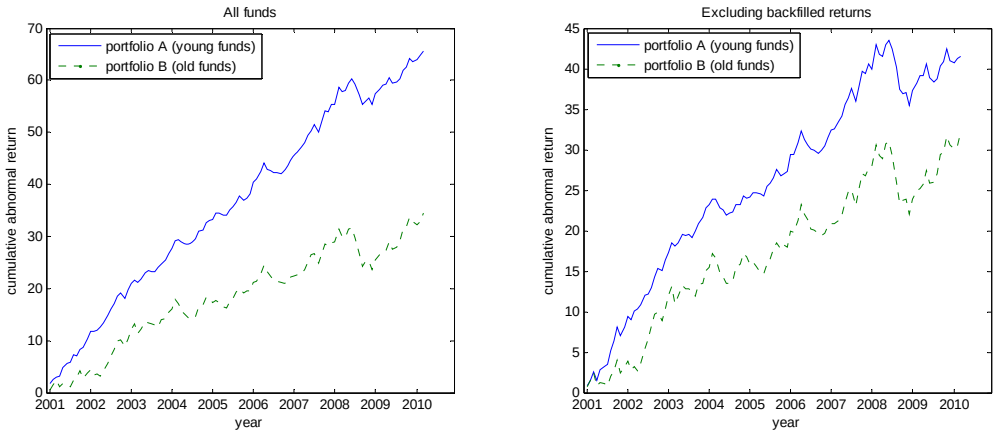
management greater than US$20m. The rightmost subplot of Figure 1 illustrates the cumulative abnormal returns from the extreme quintiles for this sort. I note that while that size effect is stronger for small funds, the quintile spread after removing funds with less than or equal to US$20m in assets under management is still significant at 2.61 per year (*t*-statistic = 4.43).

Figure 1: Portfolios sorted on hedge fund size



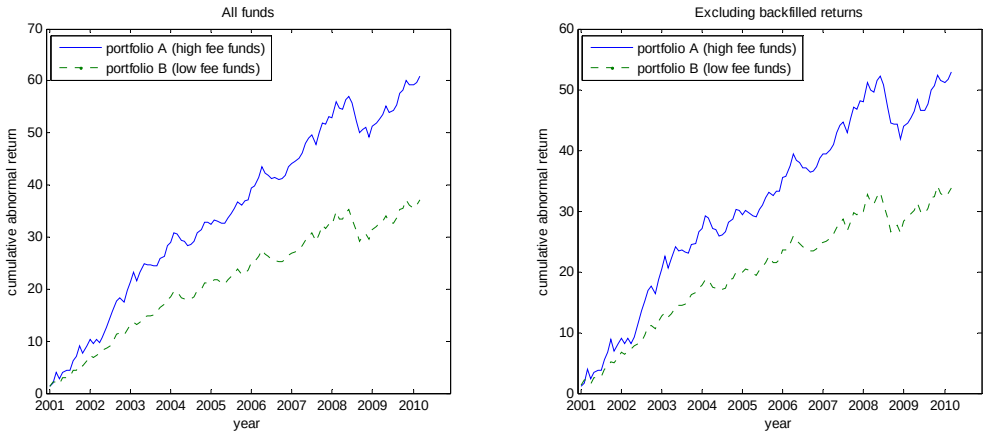
Next, I perform the analogous quintile sort on fund age. That is every January 1st, I place funds into quintile portfolios based on fund inception date and hold for 12 months. The results are displayed in Figure 2. Portfolio A is the quintile with funds that have the most recent inception dates while Portfolio B is the quintile with funds that have the earliest inception dates. I find that young or emerging funds outperform their seasoned competitors by on average 3.37 percent per year (*t*-statistic = 4.83) after adjusting for risk. However, one caveat is that some of the spread alpha may be driven by backfill bias or the practice of including returns prior to the listing date when funds join a database. I find that backfill bias may explain a significant portion of the outperformance. When I remove the first 12 months of returns for each fund from the sample, I find that the alpha spread diminishes to 1.01 percent per year and is no longer statistically significant at the 5 percent level.

Figure 2: Portfolios sorted on hedge fund age



When I stratify funds based on fund management fees, I find that funds that charge high fees outperform funds that charge low fees even on a post-fee basis.[2] High/low fee funds are funds with management fees greater/less than 1.5%. The results are depicted in Figure 3. The high fee portfolio outperforms the low fee portfolio by 2.59 percent per year (*t*-statistic = 3.78) after adjusting for risk. Not only are funds that charge high fees better at asset selection/market timing, they are also willing to share the abnormal returns with their investors. One view is that unlike mutual fund managers, hedge fund managers do not fully capture the rents from their superior investment ability (i.e., by charging even higher fees) because their interests are better aligned with those of their investors. According to the rightmost subplot of Figure 3, backfill bias does not drive the spread. Hence, our findings are not simply driven by the practice of funds charging higher fees conditional on performing well during incubation.

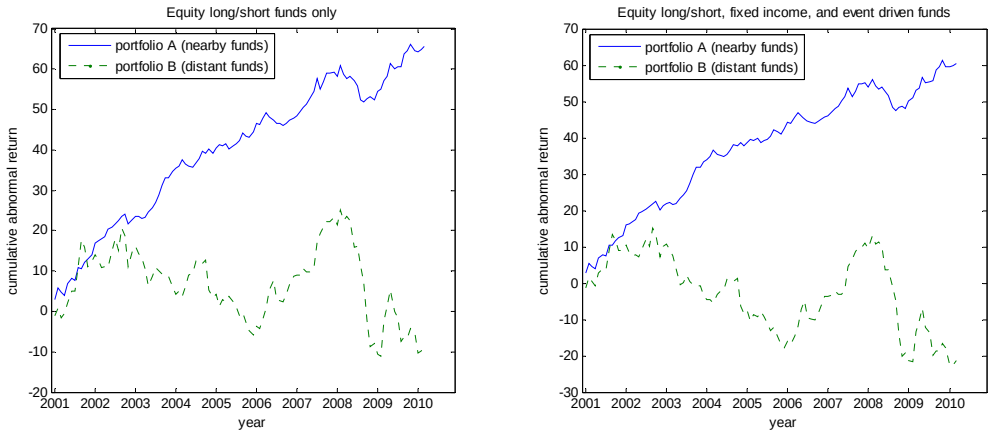
Figure 3: Portfolios sorted on hedge fund management fees



Geographical distance continues to impact hedge fund performance post financial crisis. When I examine the performance of nearby versus distant Asia focused equity long/short funds, I find that the performance spread has visibly widened during and post crisis.[3] Over our full evaluation period, the average abnormal spread is 8.01 percent per year (*t*-statistic = 2.04). Consistent with our observations from Figure 4, the average location spread rose from 7.21 percent per year in the early part of the sample period (January 2001 to June 2006) to 9.17 percent per year in the later part of the sample period (July 2006 to March 2010). When I widen the sample to include event driven and fixed income funds, which may also benefit from local information, I find that the average abnormal spread over the full sample increases to 8.84 percent per year.

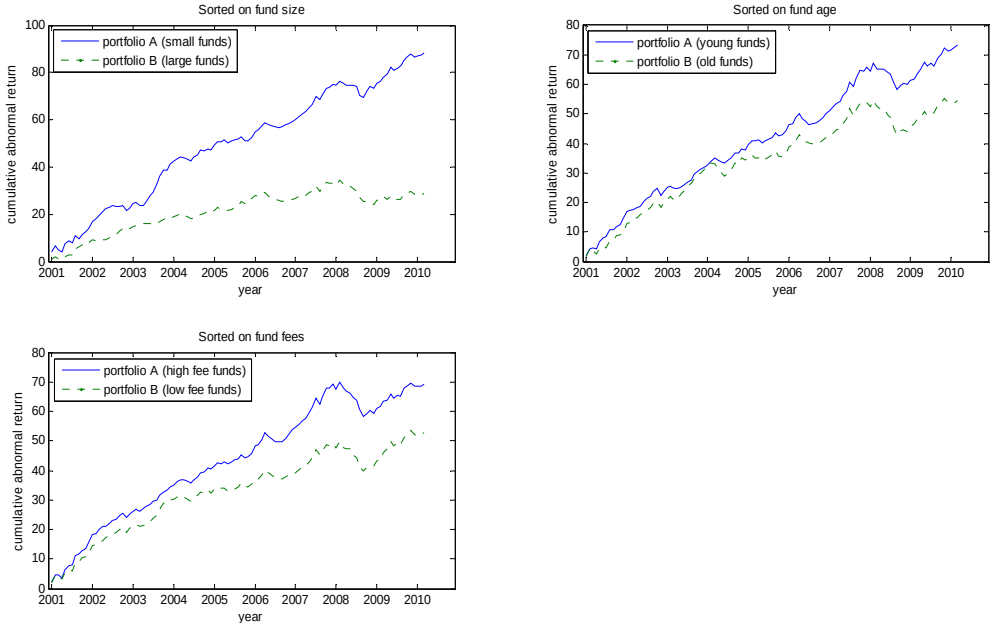
[2] The results are weaker when we sort based on fund performance fee. Specifically, if we define high fee funds as funds with performance fee > 20% and low fee funds as funds with performance fee <=20%, the abnormal spread between the high fee and low fee portfolios is 2.32 percent (*t*-statistic = 1.62).
[3] Teo (2009) also examines Asia focused equity long/short funds, albeit over a shorter sample period, i.e., January 2000 to June 2006.

Fig 4: Portfolios sorted on geographical distance (Asian focused hedge funds)



Lastly, I replicate the size, age, and fee sorts on our Asia focused fund sample. The results, illustrated in Figure 5 suggest that our prior findings are fairly robust. The annual alpha spreads for the size, age, and fee sorts are 6.39 percent, 2.02 percent, and 1.79 percent, respectively. The impact of fund size appears to be stronger for Asia focused funds while the impact of fund age and fee appears to have attenuated. Nonetheless, the spreads remain statistically significant at the 5 percent level.

Fig 5: Asia focused hedge funds sorted on fund size, age, and fees



Summary

Hedge fund performance appears to be related to fund size, age, fees, and geography in a meaningful and durable way. Small, young, high fee, and nearby funds outperform their large, seasoned, low fee, and distant counterparts. These results hold both before and after the recent financial crisis. Of course, one caveat is that it is not always easy for investors to take advantage of such cross-sectional differences in fund performance. Career concerns may prevent institutional investors from taking bets on small and young hedge funds. Hedge fund investors located in the U.S. or Europe may prefer to invest in distant Asia-focused funds based in London, Greenwich, and New York out of convenience. Indeed, for these reasons, it is unlikely that the cross-sectional differences in fund performance will be arbitraged away soon. In the next newsletter, I will explore ways of combining these relationships so as to build a hedge fund selection framework.

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Update on the Centre's Activities

Education

The centre mounted a hedge fund executive education program from the 24-26 of November. The course featured an impressive lineup of instructors including Professor Bill Fung from London Business School and hedge fund managers from Artradis, Apollo, and Alphadyne. The participants, from ANZ Bank, Swiss Asia Financial, Matterhorn Advisory, Citi Prime Finance, Brunei Investment Agency, Lacrosse Global Fund Services, Omnium, National Chung Hsing University, Bloomberg, and BNP Paribas Wealth Management, especially enjoyed the lecture contents, the fund manager discussions, and the combination of academic, practitioner, and investor views.

Our annual hedge fund symposium on 26 November attracted 145 attendees. Christophe Lee from AIMA HK and Frontpoint Partners, Low Han Seng from UOB Group, Professor Bill Fung from London Business School, and Anurag Das from Raintree Capital discussed the topic: Regulations and the other challenges facing the Asian hedge fund industry.

Research

The centre has sponsored two hedge fund papers this year. They are

1) The Long and the Short of it: Evidence of Year-End Price Manipulation by Short Sellers

(by Jesse Blocher, Joseph Engelberg, and Adam Reed, all from the University of North Carolina at Chapel Hill)

2) Inferring Reporting-Related Biases in Hedge Fund Databases from Hedge Fund Equity Holdings

(by Vikas Agarwal from Georgia State University, and Vyacheslav Fos and Wei Jiang from Columbia University)

Working versions of centre sponsored papers are available for download from our research webpage

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For more information regarding the BNP Paribas Hedge Fund Centre at SMU and our upcoming activities, please contact Ms Karyn Tai, centre coordinator (Tel: +65-6828-0933, E-mail: hfc@smu.edu.sg) or visit our webpage at http://www.smu.edu.sg/centres/hfc/index.asp. We look forward to receiving your suggestions and comments.