Class 4: Equity Quant Investing in Practice

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Jun Pan

Shanghai Advanced Institute of Finance (SAIF)
Shanghai Jiao Tong University

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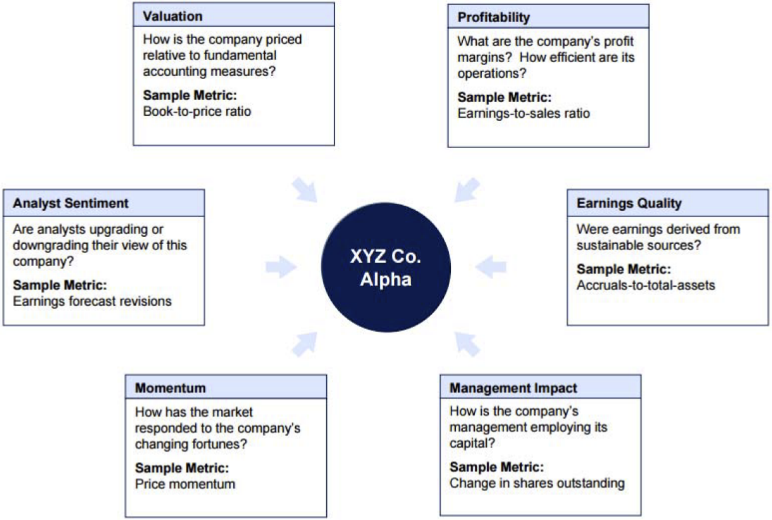
Outline

- Quant investing in hedge funds:
  - Academic influence: Prof. Eugene Fama and his co-authors.
  - Many of the early quant investors: Chicago GSB students in the 1970s.
  - Success in late 1990s: attracts many institutional money managers to join force.
- Crowded trades and over-used signals: factor investing creates unwanted quant risk.
- Lessons from the 2007 quant meltdown:
  - Cannot be too big: whale.
  - Cannot be too crowded: every runs for the exit.
  - Cannot be too transparent: front running.
- Factor investing in mutual funds and ETF.

Quant Signals



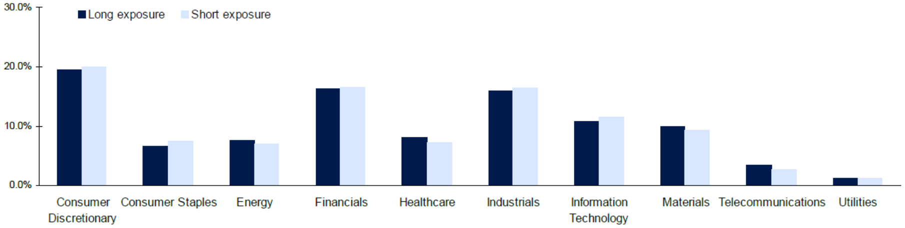
Source: Prof. Kent Daniel

Popular Quant Signals

- **Valuation:** book-to-market, Fama and French 1992.
- **Momentum:** price momentum, Jegadeesh and Titman 1993.
- **Profitability:** earnings-to-sales ratio; profit/book-equity, Fama and French 2014.
- **Earnings Quality:** accruals to total assets, Sloan, 1996.
- **Analysts Sentiment:** earnings forecast revisions, Stickel, 1991.
- **Management Impact:** change in shares outstanding: seasoned equity offering, Loughran and Ritter 1994; share repurchases, Ikenberry, Lakonishok, and Vermaelan 1995. Investment (asset growth), Fama and French 2014.

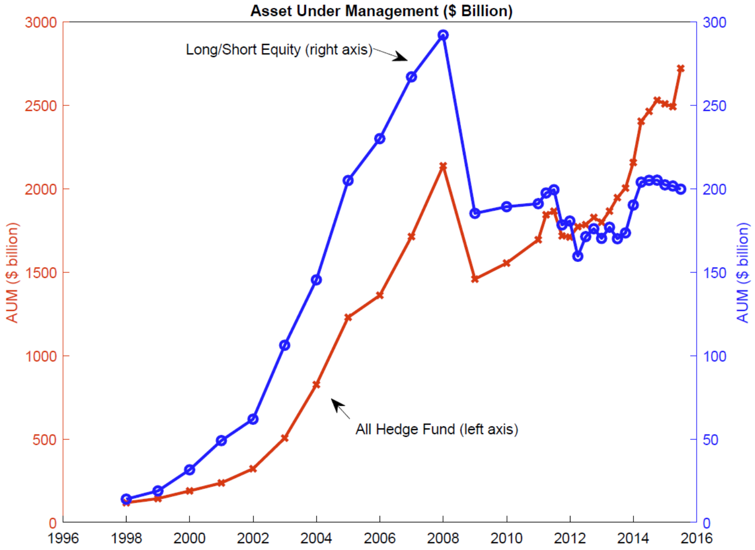
GSAM's Global Equity Opportunities

- +1000 positions on individual stocks.
- Market neutral and industry neutral.
- +\$24 billion and -\$24 billion with 6\$ billion AUM.
- The average holding period: in months.
- Correlation with different quant shops: very low.



Source: Prof. Kent Daniel and Bob Litterman

The Growth of the Hedge Fund Industry



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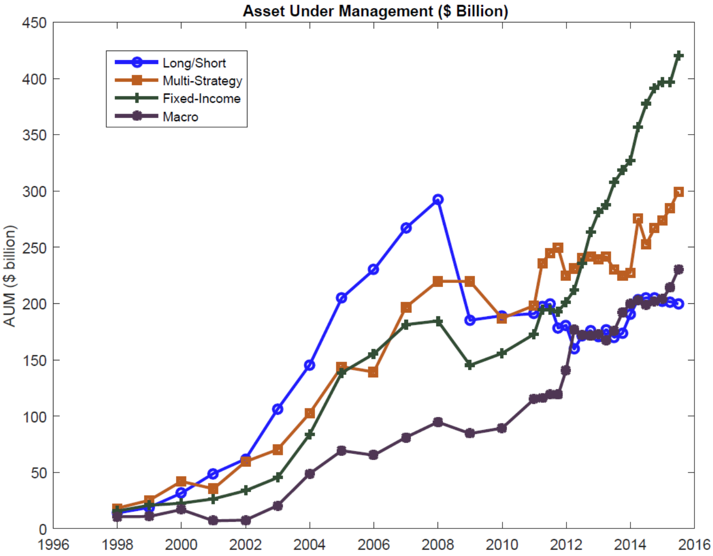
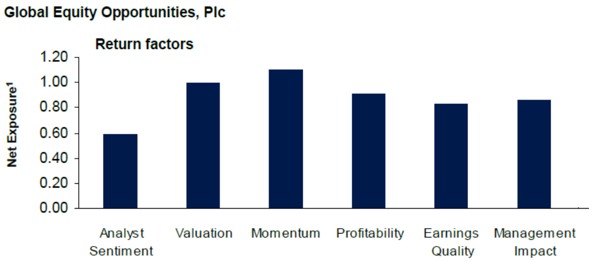


GSAM's Global Equity Opportunities

- Up to June 2007, the average annual return was 15%, and volatility 10%.
- $10\%/\sqrt{52}$: 1.4% per week.
- In July 2007, down by -15%.
- From August 1 through 10, down by -30%.



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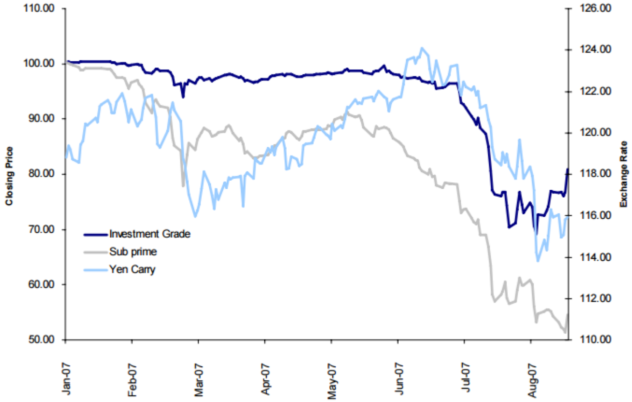
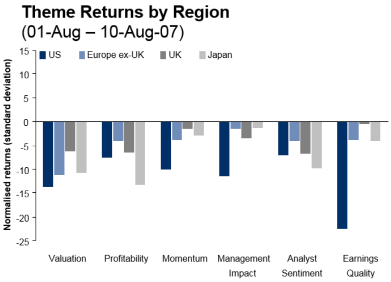
Disruptions outside of quant investing

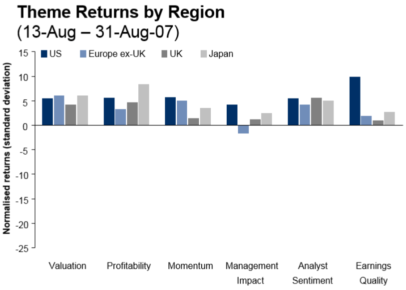
- Sub-prime mortgage market disruption (ABX BBB-Tranch).
- Spillover to investment-grade credit markets.
- Spillover to yen carry trade (USD/Yen exchange rate).



Contagion in Quant Factors

- Multi-strategy hedge funds, with losses in illiquid mortgage and credits, used the liquid holdings in their quant strategies to raise more cash.
- The meltdown affected virtually all quant factors in every major region. A 20-sigma drawdown for GSAM's Global Equity Opportunities Fund:





What Next?

- The search for new quant signals is still on, but this area is just not as exciting and creative as it was 10 or 15 years ago.
- An alpha that looks good on paper does not necessarily translate to real alpha. Transaction costs: price impact, especially when trading an institutional-size portfolio; and short-sale constraints.
- Some quant signals work only in small to medium stocks, but not large cap stocks. Some worked in the past, but have since disappeared.
- The push to equity mutual funds and ETFs is on going. Since 200907, AQR offers momentum funds for large-cap (AUM: $1B) and small-cap (AUM: $432M); Since 201304, Blackrock offers iShares momentum factor ETF ($870M).
- In this long-only space, a large portion of the risk exposure comes not from the quant signal, but from the market risk.