Alpha or Beta in the Eye of the Beholder: What Drives Hedge Fund Flows?

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Motivation

• Unique investment vehicles ($3 trillion estimated at the end of 2015)
  – Use of derivatives, short-selling, leverage, invest in global markets
  – Offer many sources of non-traditional (Exotic) risks
    • Option strategies, currencies, commodities, credit spreads, macro uncertainty

• “Sophisticated” investors

• 2/20 fee schedule
Evaluating Performance

• Challenge to separate manager skill from risk exposures

\[ R_{i,t} - R_{rf,t} = \alpha_i + \sum_j \beta_j F_j + \varepsilon_{i,t} \]

• Not reward the manager for mechanical strategies investors could have implemented themselves at very low cost.
Skill vs. Risk Exposure

I told him “You don’t have alpha. Your returns can be replicated with a value-growth, momentum, currency and term carry, and short-vol strategy.” He said, “‘Exotic beta’ is my alpha. I understand those systematic factors and know how to trade them. My clients don’t.” He has a point.

Cochrane (2011)

\[ R_{i,t} - R_{rf,t} = \alpha_i + \sum_j \beta_{j,\text{trad}} F_{j,\text{trad}} + \sum_k \beta_{k,\text{exotic}} F_{k,\text{exotic}} + \epsilon_{i,t} \]

Manager Skill

Returns Attributable to Traditional Risk Exposure

Returns Attributable to Exotic Risk Exposure
Research Agenda

• Research Question: How do (“sophisticated”) investors evaluate hedge fund performance?

• Revealed preference approach to study hedge fund investors’ capital allocation decisions
  – Which alpha best describes investors’ flow?
  – Do investors distinguish between returns attributable to traditional and exotic risk exposures?
    • Has this distinction changed over time?
    • Does it depend on the fees paid by the investors?

• The efficiency of capital allocation decisions?
Research Agenda

• Research Question: How do (“sophisticated”) investors evaluate hedge fund performance?

• Revealed preference approach to study hedge fund investors’ capital allocation decisions
  – Do investors distinguish between returns attributable to traditional and exotic risk exposures? Yes.
    • Has this distinction changed over time? Yes.
    • Does it depend on the fees paid by the investors? Yes.

• The efficiency of capital allocation decisions? Not optimal.
Sample

• Four commercial databases
  – Eurekahedge, HFR, Lipper TASS, and Morningstar
    • 16,185 funds from 1996 to 2012
    • Information on returns, asset under management, and various fund characteristics.

• More comprehensive and representative data
Measuring Flows and Performance

• Infer Hedge Fund Flows from Assets Under Management (AUM) and Returns

\[ \text{Flow}_{it} = \frac{AUM_{it}}{AUM_{i,t-1}} - (1 + R_{it}) \]

• Use 2 years to estimate risk loadings, focus on annual alpha and flow
## Performance Evaluation Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Traditional Risk Components</th>
<th>Exotic Risk Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPM</td>
<td>Equity Market</td>
<td></td>
</tr>
<tr>
<td>FF3</td>
<td>Equity Market, Size, Value</td>
<td></td>
</tr>
<tr>
<td>Carhart4</td>
<td>Equity Market, Size, Value</td>
<td>Momentum</td>
</tr>
<tr>
<td>AN</td>
<td>Equity Market, Size, Value</td>
<td>Momentum, Call Option, Put Option</td>
</tr>
<tr>
<td>FH7</td>
<td>Equity Market, Size, Term spread, Default spread</td>
<td>Currency options, Bond options, Commodity options</td>
</tr>
<tr>
<td>12-factor</td>
<td>Value, Equity Market, Size, Term Spread, Default Spread, Emerging Markets</td>
<td>Momentum, Call Option, Put Option, Currency options, Bond options, Commodity Options</td>
</tr>
<tr>
<td>Max R²</td>
<td>Value, Equity Market, Size, Term Spread, Default Spread, Emerging Markets</td>
<td>Momentum, Call Option, Put Option, Currency options, Bond options, Commodity Options, VIX, Liquidity, Macro Uncertainty</td>
</tr>
</tbody>
</table>
Performance-flow Model Horserace

• Investors allocate capital to managers with skill (positive alpha) => study the performance-flow relation, which should have a positive sign

• Which risk model best describes investors’ capital allocation decisions? => Model horserace.

• Two approaches from: Berk and van Binsbergen (2016) and Barber, Huang and Odean (2015)
Performance-flow Model Horserace: BvB

- Positive relation (Use signs to avoid assumption of linear flow-performance relation)

\[ \beta_{Flow, alpha} = \frac{\text{cov}(\Phi(Flow_{it}), \Phi(\alpha_{it-1}))}{\text{var}(\Phi(\alpha_{it-1}))} > 0. \]

\[ \frac{1 + \beta_{Flow, alpha}}{2} \] is the probability that the sign of outperformance correctly implies the direction of capital flows

- Model 1 performs better than Model 2 if Model 1 predicts the direction of capital flows better than model 2

\[ \frac{1 + \beta_{Flow, alpha, model 1}}{2} > \frac{1 + \beta_{Flow, alpha, model 2}}{2}. \]
Performance-flow Model Horserace: BvB

- All models correctly predict the flow at different probability.
Performance-flow Model Horserace: BvB

- All models correctly predict the flow at different probabilities.
- CAPM wins the horserace.

*CAPM also beats raw returns: Raw returns prob. is 60.79%, t-stat for difference between CAPM alpha and Raw returns is 2.0

• Exploit cases where a fund’s ranking diverges across models

\[ Flow_{it} = a + \sum_k \sum_l b_{kl} D_{kl,i,t-1} + cX_{it-1} + Style_i + \mu_t + \eta_{it} \]

- \( D_{kl,i,t-1} \) is one if fund \( i \) is in decile \( k \) based on Model 1 and decile \( l \) based on Model 2. \( X_{it-1} \) is fund-level control variables, and \( Style_i \) and \( \mu_t \) are style-fixed effects and time-fixed effects respectively.

<table>
<thead>
<tr>
<th>k</th>
<th>l</th>
<th>CAPM_FF3_kl</th>
<th>CAPM_FF3_lk</th>
<th>Diff.</th>
<th>p–value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>9</td>
<td>0.0458</td>
<td>0.1096*</td>
<td>-0.0638</td>
<td>0.3539</td>
</tr>
</tbody>
</table>
Null: investors are equally sensitive to the alphas from Models 1 and 2
Test 1: Summed difference across 45 pairs of $b_{kl}$ and $b_{lk}$ equals to zero
Test 2: Binomial test that the % of (differences>0) equals to 50%

<table>
<thead>
<tr>
<th>k</th>
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</tr>
<tr>
<td>10</td>
<td>8</td>
<td>0.0785</td>
<td>-0.04316</td>
<td>0.1216</td>
<td>0.3226</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>-0.0882</td>
<td>-0.1499</td>
<td>0.0617</td>
<td>0.6147</td>
</tr>
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<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>-0.1877*</td>
<td>-0.3987***</td>
<td>0.2110</td>
<td>0.0092</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>-0.3117***</td>
<td>-0.3661***</td>
<td>0.0544</td>
<td>0.0910</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>-0.2179**</td>
<td>-0.4436***</td>
<td>0.2257</td>
<td>0.0079</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>-0.3255***</td>
<td>-0.4164***</td>
<td>0.0909</td>
<td>0.0856</td>
</tr>
</tbody>
</table>

**Sum of Differences** 5.5356  0.0001

**Percent of Differences > 0** 80.00%  0.0000
Performance-flow Model Horserace: BHO

<table>
<thead>
<tr>
<th>Risk Model</th>
<th>Sum of Difference</th>
<th>% of Diff &gt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPM vs FF3</td>
<td>5.536***</td>
<td>0.800***</td>
</tr>
<tr>
<td>CAPM vs Carhart4</td>
<td>6.424***</td>
<td>0.867***</td>
</tr>
<tr>
<td>CAPM vs AN</td>
<td>7.416***</td>
<td>0.911***</td>
</tr>
<tr>
<td>CAPM vs FH7</td>
<td>6.915***</td>
<td>0.933***</td>
</tr>
<tr>
<td>CAPM vs 12-factor</td>
<td>8.083***</td>
<td>1.000***</td>
</tr>
<tr>
<td>CAPM vs Max R²</td>
<td>8.947***</td>
<td>0.933***</td>
</tr>
</tbody>
</table>

CAPM wins the horserace.
Exotic vs. Traditional Return

- CAPM alpha outperforms in the performance-flow horserace, suggesting that investors pool together “manager skill” with exposures to risks

- Do investors differentiate between traditional or exotic risks?
  - Decompose returns and relation between flows and different components

- Have investors become more aware of exotic risks over time?

- Are investors in high fee funds more cognizant of exotic risks?
Return Decomposition

4-factor example

\[ R_{it} - R_{rf,t} = \bar{\alpha}_t + \text{Traditional Beta Component} + \text{Exotic Beta Component}, \]

Traditional Beta Component \( t = \hat{\beta}_{mktrf,t}MKTRF_t + \hat{\beta}_{smb,t}SMB_t + \hat{\beta}_{hml,t}HML_t, \)

Exotic Beta Component \( t = \hat{\beta}_{umd,t}UMD_t. \)

Performance-flow regression

\[ Flow_{it} = a + b_1\bar{\alpha}_{t-1} + b_2\text{Traditional Beta Component}_{t-1} + b_3\text{Exotic Beta Component}_{t-1} + cX_{it-1} + Style_i + \mu_t + \nu_{it}, \]

- Investors value the return component, \( b_i > 0 \)
- Investors respond to exotic beta return more than the traditional, \( b_3 > b_2 \)
Exotic vs. Traditional

Flow-return component sensitivities
1996-2012

- Investors chase both return components

1% increase in monthly alpha leads to x% increase in annual flows
## Exotic vs. Traditional

**Flow-return component sensitivities, 1996-2012**

<table>
<thead>
<tr>
<th>Component</th>
<th>Traditional Return</th>
<th>Exotic Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carhart4</td>
<td>4.85</td>
<td>6.01</td>
</tr>
<tr>
<td>AN</td>
<td>5.81</td>
<td>6.77</td>
</tr>
<tr>
<td>FH7</td>
<td>4.99</td>
<td>9.03</td>
</tr>
<tr>
<td>12-factor</td>
<td>6.73</td>
<td>7.95</td>
</tr>
<tr>
<td>Max R2</td>
<td>6.19</td>
<td>7.84</td>
</tr>
</tbody>
</table>

1% increase in monthly alpha leads to x% increase in annual flows

- Investors chase both return components
- Investors follow returns attributable to exotic risk more than traditional risk
Exotic vs. Traditional: Learning Hypothesis

- Greater relative emphasis on exotic risk in recent period.
- Little evidence return components themselves differ between sub-periods.

### 1996-2004

<table>
<thead>
<tr>
<th></th>
<th>Carhart4</th>
<th>AN</th>
<th>FH7</th>
<th>12-factor</th>
<th>Max R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exotic</td>
<td>0.7082</td>
<td>8.63</td>
<td>8.07</td>
<td>1.668</td>
<td>8.80</td>
</tr>
<tr>
<td>Traditional</td>
<td>0.8526</td>
<td>7.34</td>
<td>6.51</td>
<td>7.40</td>
<td>8.53</td>
</tr>
</tbody>
</table>

### 2005-2012

<table>
<thead>
<tr>
<th></th>
<th>Carhart4</th>
<th>AN</th>
<th>FH7</th>
<th>12-factor</th>
<th>Max R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exotic</td>
<td>0.0570</td>
<td>9.08</td>
<td>7.85</td>
<td>0.0010</td>
<td>7.42</td>
</tr>
<tr>
<td>Traditional</td>
<td>0.0011</td>
<td>3.30</td>
<td>6.53</td>
<td>4.55</td>
<td>4.74</td>
</tr>
</tbody>
</table>
Exotic vs. Traditional: Fee Hypothesis

- Greater relative emphasis on exotic risk among high fee funds
- High fee funds do not offer greater returns from exotic risk exposures
Efficiency?

• Are investors’ capital allocation decisions justified by future fund performance?
  
  – Chasing returns from traditional or exotic risk exposures implies that these components of hedge fund returns should persist.
  
  – Study persistence in components of hedge fund performance

\[
\text{Return Component}_{t+1} = b\text{Return Component}_t + cX_{it} + Style_i + u_t + \varepsilon_{it+1}
\]
## Performance Persistence

<table>
<thead>
<tr>
<th>Return Component</th>
<th>Carhart4</th>
<th>AN Option</th>
<th>FH7</th>
<th>12-factor</th>
<th>Max R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha_t</td>
<td>0.189</td>
<td>0.229</td>
<td>0.236</td>
<td>0.271</td>
<td>0.159</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Trad. Beta</td>
<td>–0.090</td>
<td>–0.038</td>
<td>–0.085</td>
<td>–0.050</td>
<td>–0.026</td>
</tr>
<tr>
<td></td>
<td>(0.585)</td>
<td>(0.743)</td>
<td>(0.633)</td>
<td>(0.622)</td>
<td>(0.796)</td>
</tr>
<tr>
<td>Exotic Beta</td>
<td>0.010</td>
<td>0.132</td>
<td>0.020</td>
<td>0.082</td>
<td>0.091</td>
</tr>
<tr>
<td></td>
<td>(0.941)</td>
<td>(0.047)</td>
<td>(0.861)</td>
<td>(0.034)</td>
<td>(0.009)</td>
</tr>
</tbody>
</table>

- Traditional Risk returns: no evidence of persistence
- Exotic Risk Returns: modest evidence of persistence

Chasing returns from different exposures based on their past performance is not optimal.
Conclusions

• CAPM alpha outperforms in explaining investors’ flow
• Investors put greater relative emphasis on returns due to exotic rather than traditional risk exposures
  – Emphasis on exotic risk increases in recent years, greater for high-fee funds
• Getting exposures to certain risks by chasing past returns is not optimal
• We advocate using sophisticated models to understand what investors get with 2/20 fees
• Thanks