Patient Capital Outperformance
The Investment Skill of High Active Share Managers Who Trade Infrequently

Martijn Cremers
University of Notre Dame

Ankur Pareek
Rutgers Business School
Overview

1. **Active management**
   - Active Share: Difference in holdings
   - Historical Active Shares, by fund type and size
   - Active Share and performance (updated and by style)

2. **Patience: a rare skill?**
   - Fund Duration
   - Active Share, patience and performance in 3 samples:
     - Retail Mutual Funds (net returns)
     - Aggregate Institutional Long-only Equity Holdings (13F)
     - Aggregate Hedge Fund Long-only Equity Holdings (13F)

3. **Conclusion**
Investors face basic choice between
  i) Actively managed funds
  ii) Passive benchmark (index fund or ETF)

What does ‘active’ mean?
  - Basic definition: ‘active’ means different
  - Outperformance only possible if fund is different
    - and fees not too large relative to overlap

How do we measure this?
Alternative Active Share formula

Active Share = 100% − \sum_{i=1}^{\text{overlap}} \text{Min}(w_{\text{fund},i}, w_{\text{benchmark},i})

- Minimum weight across fund & benchmark: overlap

Active Share =

= 100\% - \text{Sum of overlapping portfolio weights}

= \text{Size of the active positions as a fraction of the entire portfolio}

= \text{Proportion (Share) of portfolio that is different (Active) from its benchmark}
What is a ‘low’ Active Share?

- **How many people can be ‘above average’?**
  - What percentage of benchmark assets can beat the benchmark?

- **Logic**: exactly half the holdings
  - Active funds: Active Share (clearly) above 50%

- **Benchmark-specific: S&P 500 versus Russell 2000**
  - 100 *random* stocks from S&P 500, value-weight
  - Result: Active Share of about 80%
  - 100 random stocks from Russell 2000: Active Share of 95%
  - Benchmark concentration / # of stocks / liquidity / etc.
Active Share Distribution of Large-Cap U.S. – Equity Funds

Note: LARGE CAP funds only (% TNA in Active Share deciles)
Active Share Distribution of Mid-Cap U.S. – Equity Funds

Note: MID CAP funds only (% TNA in Active Share deciles)
Active Share Distribution of Small-Cap U.S. – Equity Funds

Note: SMALL CAP funds only (% TNA in Active Share deciles)
For all actively managed all-equity retail mutual funds:

• Calculate Active Share at the end of this year

• Assign benchmark
  – Based on self-declared benchmark if available
  – Otherwise assigned based on holdings overlap

• Calculate fund’s net returns
  – Over the next 12 months
  – Benchmark-adjusted: deduct benchmark return
  – Net: after deducting all fees & trading costs (except loads)

• Repeat everything at the end of next year
Updated results: 1990 – 2013

- At end of year, sort US-equity retail mutual funds into 5 groups
- Calculate benchmark-adjusted net returns over next 12 months

Abnormal performance per year in %

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Low Active Share</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>High Active Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha p/y</td>
<td>-1.50</td>
<td>1.00</td>
<td>-0.50</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Bmk-Adj Return p/y</td>
<td>-1.00</td>
<td>0.50</td>
<td>-0.00</td>
<td>0.50</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Cumulative benchmark-adjusted net returns for U.S. equity retail mutual funds
Small-cap versus Large-cap Funds, 1

- Separately sort small-cap and large-cap funds into Active Share quintiles
- Active Share predicts future performance for both samples

![Chart showing performance of large-cap funds by Active Share in different quarters.](chart.png)
Small-Cap versus Large-Cap Funds, 2

- Separately sort small-cap and large-cap funds into Active Share quintiles
- Active Share predicts future performance for both samples
Why would Active Share relate to future performance?

• Successful managers need
  – **Skill, guts and opportunity**
  – Don’t need skill to have a high Active Share
    • Do need guts and opportunity

• Suppose: I have a lot of guts and opportunity
  – But no skill...: How long would I survive?

• Skill: hard to measure, attracts flows and is expensive
  • Is skill scalable? Time-varying? Transferable? **Rare**?
  • What is a **rare skill**?
Rare skill: patience?  
(with high Active Share)

• **Fund Duration**
  – average length of time an average dollar in the portfolio has been in the portfolio (in the last 5 years)

• **Robustness: turnover & holdings-turnover**

• 3 samples:
  1. retail mutual funds – net returns
  2. all institutional portfolios (13Fs) – quarterly holdings
  3. hedge funds (13Fs) – (long-only) quarterly holdings
Percentage of Number of Institutions by Active Share Range

- >90%
- 80%-90%
- 70%-80%
- 60%-70%
- <60%

Evolution of Duration over Time

(Stock) Duration, Institutional Turnover, (Inverse) Share Turnover, and Institutional Investor Holdings from 1985-2010

- Stock Duration (left axis)
- (Inverse) Share Turnover (left axis)
- Institutional Investor Holdings (right axis)
- Institutional Turnover (right axis)
How short-term are institutions?

Fund Duration for Selected Investors
(Weighted Average Duration Across all Stocks of an Investor)
Percentage of mutual funds by Fund Duration

- > 3 years
- 2-3 years
- 1-2 years
- 6 mon - 1 year
- < 6 months

Examples of Mutual Funds with High/Low Active Share and Fund Duration
Abnormal returns of duration-quintile portfolios of mutual funds by Active Share

Mutual Funds: Annualized 5-factor alphas

Q1 Duration  Q2 Duration  Q3 Duration  Q4 Duration  Q5 Duration

Q1 Active Share  Q5 Active Share
Average Cumulative Abnormal Net Returns for $1 Investment in Portfolios of Mutual Funds

Performance of $1 Initial Investment

Year


Low Active Share/Low Fund Duration

Low Active Share/High Fund Duration

High Active Share/Low Fund Duration

High Active Share/High Fund Duration
Explaining the outperformance of patient mutual funds with high Active Share

**Annualized alpha of Q5-Active-Share & Q5-Fund-Duration portfolio**

<table>
<thead>
<tr>
<th>Linear Construct</th>
<th>Series1</th>
<th>2.30%</th>
<th>1.91%</th>
<th>0.80%</th>
<th>0.59%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net benchmark-adjusted returns</td>
<td>1.92%</td>
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<td>5-factor alpha of net bmk-adj return</td>
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<td>add only BaB</td>
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Percentage of institutional assets by Fund Duration

> 3 years
2- 3 years
1 - 2 years
6 mon - 1 year
< 6 months

Percentage of institutional assets by Fund Duration
Examples of Institutional Portfolios with High/Low Active Share and Fund Duration
Abnormal returns of duration-quintile portfolios of institutional portfolios by Active Share

Institutional Portfolios:
Annualized 5-factor alphas of 13F holdings
Average Cumulative Abnormal Holdings-based Returns for $1 Investment in Portfolios of Institutional Holdings

Performance of $1 Initial Investment

Year


Low Active Share/Low Fund Duration
Low Active Share/High Fund Duration
High Active Share/Low Fund Duration
High Active Share/High Fund Duration
Cumulative Abnormal Holdings-based Returns for $1 Investment in Portfolios of the Holdings of Active and Long-term Institutions
Percentage of hedge funds by Fund Duration

- > 3 years
- 2-3 years
- 1-2 years
- 6 mon -1 year
- < 6 months
Examples of Hedge Fund Portfolios with High/Low Active Share and Fund Duration
Abnormal returns of duration-quintile portfolios of Hedge Funds by Active Share

Hedge Funds: Annualized 5-factor alphas of 13F holdings

Q1 Duration: T1 Active Share
Q2 Duration: T3 Active Share
Q3 Duration: T1 Active Share
Q4 Duration: T3 Active Share
Q5 Duration: T3 Active Share
Average Cumulative Abnormal **GROSS** Holdings-based Returns for $1 Investment in Portfolios of Hedge Funds Holdings

Performance of $1 Initial Investment

- **Low Active Share/Low Fund Duration**
- **Low Active Share/High Fund Duration**
- **High Active Share/Low Fund Duration**
- **High Active Share/High Fund Duration**

Year:
- 1994
- 1996
- 1997
- 1998
- 1999
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012

Performance:
- $0.75
- $1.00
- $1.25
- $1.50
- $1.75
- $2.00
- $2.25
- $2.50
Results robust to...

• Alternative patience proxies
  – turnover (mutual funds)
  – holdings-based turnover (for institutions and hedge funds)

• Controlling for flows / size / year f.e. / etc.
  – In pooled panel regressions

• Controlling for longer-time changes in turnover

• BaB (Betting against Beta) and QmJ (Quality minus Junk)
  – Cannot explain results for institutions & hedge funds
Conclusion

• **Active Share**
  – Low Active Share funds: tended to underperform
  – High Active Share funds: tended to outperform
    • Large cap: high Active Share did not underperform
    • Small cap: high Active Share outperformed

• **Patient funds with high Active Share outperformed**
  – Mutual funds
  – Institutions (holdings-based, long-only, 13Fs)
  – Hedge funds (holdings-based, long-only, 13Fs)

• **Impatient funds (had holdings which) underperformed**
  – Low Active Share funds: More underperformance with more frequent trading
How active is your fund?

And how patient?