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19 July 2006

Global Equity Strategy

Come out of the closet, or, show me the alpha

Occasionally, the underperformance of fund managers vs. the index is trotted out as evidence of the efficiency of the market. However, this confuses the absence of evidence with evidence of the absence. A new study suggests that closet indexing accounts for nearly one third of the US mutual fund industry. Stock pickers account for less than 30% of the market, yet they have real investment skill.

- The fact that most fund managers fail to beat the index is not proof that the market is efficient. The managers might fail for a whole host of reasons, from institutional constraints to behavioural biases. None of which would imply efficient markets.
- A new paper by two US academics (Cremers and Petajisto) throws some light on these debates. They construct a new measure called active share. It measures the degree of overlap with the benchmark. For example, an active share of 100% would mean zero overlap with the index.
- By combing active share and tracking error, we can map out various groups of investors. For instance, those with high active share and low tracking error are diversified stock pickers. Those with low active share and low tracking error are closet indexers.
- Cremers and Petajisto show that closet indexing has become a very real problem in the last ten years, rising from 10% of the total mutual fund market to over 30%. At the same time, stock-picking has declined from 60% in the 1980s to under 30% today. Similar numbers from an independent study using a very different methodology show this pattern to be fairly common in developed equity markets.
- This is all the more bizarre when one considers the alphas that these various groups of investors generate. Both diversified and concentrated stock pickers seem to have genuine alpha (in both net and gross terms). However, those placing sector bets (i.e. those with low active share but high tracking error) and the closet indexers seem to have negative alpha. This helps to explain why so many fund managers underperform the index: they are doing the wrong thing! For every $100 invested in US domestic mutual funds, some $68 ends up in the hands of those with negative alpha.
- In terms of investment styles, the diversified stock pickers tend to be large-cap value players. Concentrated stock pickers tend to be more small-cap orientated, but inhabit both value and growth universes. The closet indexers turn out to be momentum players, just like the index they hug.
- The good news is that active share is relatively persistent, so funds with high active share today are likely to have high active share next year and beyond. Cremers and Petajisto also found that past performance was a useful indicator – suggesting that there are a sub-group of managers who really do have investment skill. So the ideal fund would appear to have high active share and high past performance.
- The failure of active managers to beat the index is not proof of market efficiency, but rather testament to the rise of the closet indexer. It is about time they came out!

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Come out of the closet

Every so often an academic economist will argue that markets are efficient. The "proof" offered for this ludicrous statement: the fact that the vast majority of active fund managers underperform the index.

The most recent example comes from Greg Mankiw, a professor at Harvard and former chair of the Council of Economic Advisors[1]. He recently wrote, "*According to Morningstar, over the past 10 years, Vangard's S&P500 fund beat 74 percent of comparable funds on a before-tax basis and 86 percent on an after-tax basis. Even better is Vangard's tax managed capital appreciation fund, which is essentially an index fund that keeps one eye on the tax system. It beat 90 percent of comparable funds on an after-tax basis*". He concludes in another entry, "*The efficient-market hypothesis is not strictly true, but it is close enough to true that most investors are better off believing in it nonetheless.*"

It has always stuck me that taking the idea that most managers fall short of the index as proof of the efficiency of the stock market is confabulating what Taleb calls the absence of evidence with the evidence of absence[2]. The two are, of course, very different beasts. Most fund managers might fail to beat the index[3] because they are trapped in some institutional constraint or bedevilled by behavioural biases[4].

A new paper which crossed my desk may help to explain both the underperformance of most fund managers and help identify ex-ante those who are likely to succeed. Written by Martijn Cremers and Antti Petajisto from the ICF at Yale, it is one of the best papers I've read in recent times[5].

They have come up with a new measure – active share. They argue that any portfolio can be decomposed into a 100% position in the benchmark plus a zero-net-investment long-short portfolio. The long-short portfolio represents all the active bets that the fund is running. Active share is calculated as:

$$ActiveShare = \frac{1}{2}\sum_{i=1}^{N}\left|w_{fund,i} - w_{index,i}\right|$$

Where $w_{fund,i}$ and $w_{index,i}$ are the portfolio weights of the asset, i, in the fund and in the index, and the sum is taken over the universe of assets.

This has the neat interpretation of being the degree of non-overlap with the benchmark index. So an active share of 100% would mean no overlap with the benchmark index at all.

Cremers and Petajisto give the following example:

Imagine that the manager starts by investing $100 million in the index (S&P500), thus having a pure index fund. Assume the manager only liked half the stocks, so he eliminates the other half from his portfolio, generating $50 million in cash, and then he invests that $50 million in those stocks he likes. This produces an active share of 50%. If he invests in only 50 stocks out of 500… his active share will be 90% (i.e. a 10% overlap with the index).

[1] http://gregmankiw.blogspot.com/, Greg is generally quite a sensible chap. He was done a lot of work trying to incorporate some behavioural traits into the macro economic arena

[2] See Taleb's forthcoming book, The Black Swan for much more on this

[3] Why benchmarks are of such importance remains beyond me. I have long argued that it is absolute return that should matter to investors, not relative performance against an arbitrary benchmark but that is a debate for another day

[4] See The seven sins of fund management for more on this, November 2005

[5] Cremers and Petajisto (2006) How active is your fund manager? A new measure that predicts performance, available from www.ssrn.com

By combining their measure of active share with the familiar tracking error, Cremers and Petajisto suggest they can identify various groups of investors. The table below shows the interaction of active share and tracking error. I've also included the various criteria that Cremers and Petajisto use to define the groups.

Those with high active share and low tracking errors are diversified stock pickers. Their active share is a testament to their taking lots of bets but a low tracking error suggests that they are running a portfolio which is large enough to diversify specific sector positions.

In the opposite corner of the diagram, are those with low active share but high tracking error. These fund managers are placing concentrated sector-like bets. They seem to be relatively passive in terms of stock selection.

Of course, some investors try to combine the best of both worlds, running concentrated stock portfolios. They have both a high active share and a large tracking error (inhabiting the top left of our diagram below).

Those funds with low active share and low tracking error are closet indexers. Finally, very low (effectively zero) active share and very low tracking error are the hallmarks of the index funds.

Types of managers

		Tracking error		
		High	**Low**	**Zero**
Active share	**High**	Concentrated stock pickers (Active share > 80%, tracking error > 8%)	Diversified stock pickers (Active share > 80%, tracking error < 8%)	–
	Low	Sector bets (Active share < 80%, tracking error > 6%)	Closet index funds (Active share < 60%, tracking error < 6%)	–
	Zero	–	–	Index funds

Source: Cremers and Petajisto and Dresdner Kleinwort Macro research

Being good empiricists, Cremers and Petajisto submit their ideas to the data. Using a database of US domestic equity-only funds since 1980, they examine the behaviour of various groups. In order to assign benchmarks to the funds, various indices are used including the S&P500, the Barra value and growth indices, the Russell 2000, and the Wiltshire 5000. Funds are measured against each index, and the one generating the lowest active share (i.e. the highest overlap with the index) is then selected as the appropriate benchmark. I've used their definitions outlined above to examine various aspects of the different groups they identified[6].

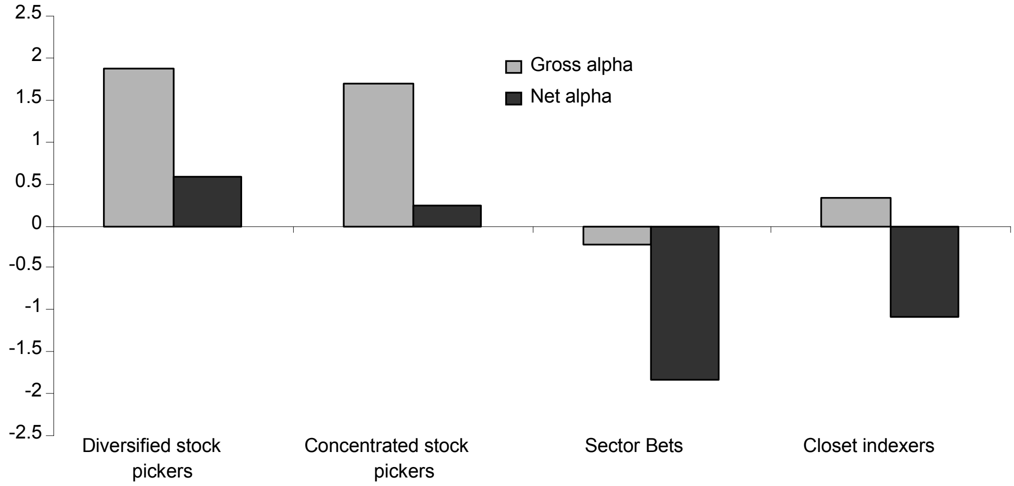
The alpha

The chart below shows the gross and net levels of alpha across the four key groups of funds. The diversified stock pickers seem to have the edge in terms of gross alpha, and manage to maintain that edge when it comes to net alpha. The concentrated stock pickers come in the second slot (although they seem to have slightly higher fees than the diversified stock pickers).

Those funds making sector bets with relatively passive stock selection are the worst performers. They have a negative gross alpha, and therefore a truly appalling net alpha of nearly -2%! The closet indexers also manage to destroy value at the net alpha level.

[6] They themselves don't do this. Cremers and Petajisto use decile sorts as examine performance. I've taken the liberty of combining deciles in accordance with the criteria listed in the table in order to preserve the groups outlined.

Gross and net alphas (% p.a.)



Source: Cremers and Petajisto and Dresdner Kleinwort Macro research

The evolution of the mutual fund industry

How can we reconcile the findings on those with active share having alpha, and Mankiw's comments on the underperformance of most fund managers? The answer lies in the chart below. It shows the evolution of the mutual fund industry in terms of the percentage of mutual fund equity assets.

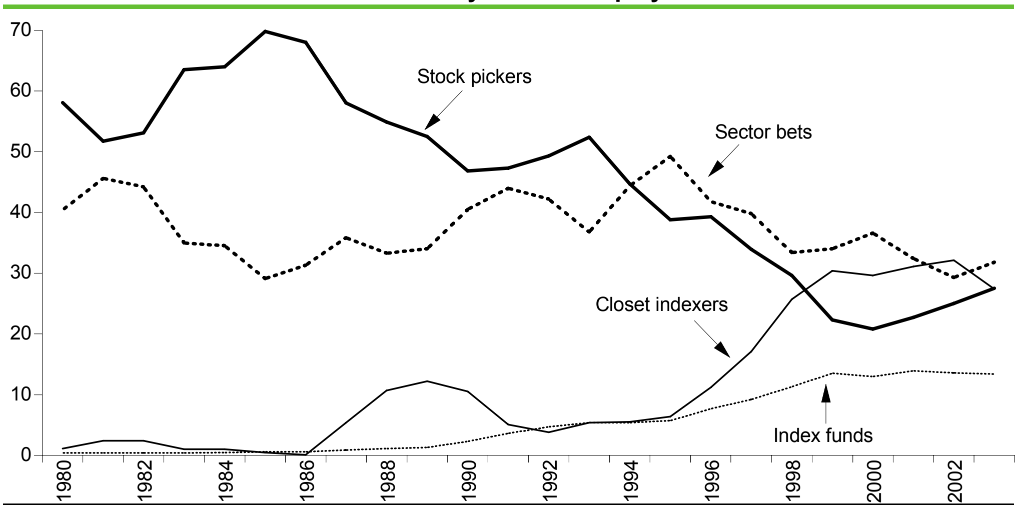
Stock-picking (high active share – regardless of tracking error) has declined massively over the last twenty years. In the early 1980s, it accounted for 58% of the market, today less than one in every three dollars in mutual funds is invested on the basis of stock-picking.

The sector bet guys have been roughly constant in accounting for somewhere between 30-40% of the total assets in equity mutual funds. Given the disastrous nature of the alphas they have achieved on average, it isn't any wonder that so many funds underperform the index. Evidence, perhaps, of misplaced confidence in their own abilities to time the market.

However, it is the rise of the closet indexers that is most noticeable. They appear to have risen in market share terms from nothing in the 1980s to around 30% in the latter part of the 1990s.

This has lead to the perverse situation where for every $100 invested in actively managed funds (i.e. non passive) no less than $68 is given to those with negative net alpha!

The evolution of the mutual fund industry - % of all equity assets



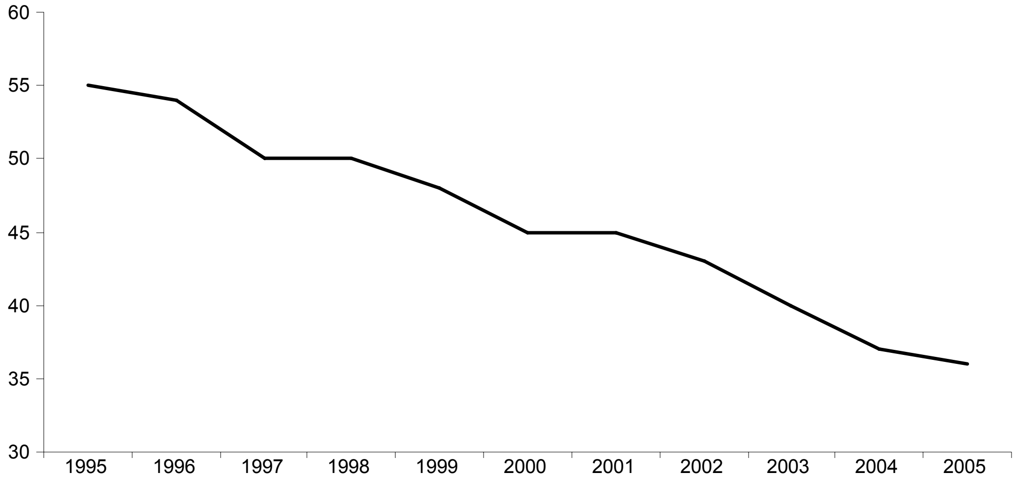
Source: Cremers and Petajisto and Dresdner Kleinwort Macro research

Interestingly, Bhattacharya and Galpin[7] use a very different methodology, but reach a very similar conclusion. They use a clever twist that if everyone is a passive investor, holding a portfolio that mirrors the market, the volume of trade in any single stock would reflect the company's weight in the index – pure and simple. For instance, if the market consisted of just two stocks, one large firm with a market capitalisation of $75m and a small stock with a cap of $25m, and an investor had $1000 dollars to invest, they would spend $750 on the large stock and $250 on the small stock.

They then go on to estimate how much of the volume of trade in a share is explained by the company's size. 1 minus the R^2 from this regression provides a limit on the amount of trade that can be accounted for by stock-picking. The numbers they arrive at are very similar to Cremers and Petajisto's estimates.

The chart below shows their measure of the volume in the market that can be explained by stock-picking for the MSCI developed markets. According to this measure, stock-picking only account for around 36% of total volumes, down from 55% in 1995.

The maximum % of volume explained by stock-picking – MSCI developed markets



Source: Bhattacharya and Galpin

Characteristics of the funds

The table below shows the factor loadings when the funds from the Cremers and Petajisto study are regressed on a Fama French four factor model (market, size (SMB – small minus big), style (HML – high book to price minus low book to price), and momentum (UMD – up minus down). The results in bold are statistically significant.

A cursory glance at the table reveals that the diversified stock pickers tend to be large cap value investors. The concentrated stock pickers tend to inhabit the small cap arena (with a slight growth bias – although not statistically meaningful). The closet index funds are really just momentum players (reflecting the dominance of capitalisation-weighted index construction).

Factor betas by fund management group

	SMB	HML	UMD
Diversified stock pickers	**-0.18**	**1.33**	0.05
Concentrated stock pickers	**1.67**	-0.23	0.15
Sector bets	**0.92**	0.14	0.12
Closet indexers	**0.17**	0.02	**0.07**

Source: Cremers and Petajisto and Dresdner Kleinwort Macro research

[7] Bhattacharya and Galpin (2005) Is stock-picking declining around the world? Available from www.ssrn.com

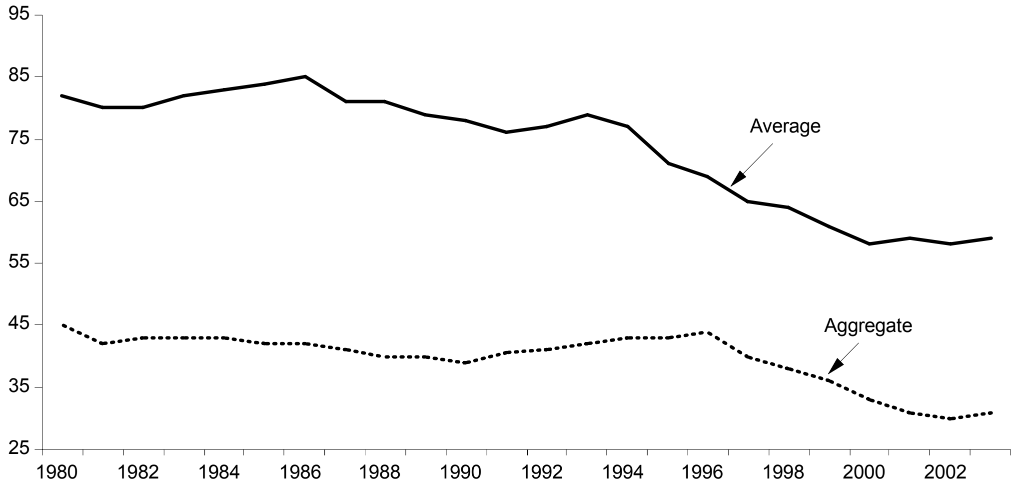
The average and aggregate active share

Cremers and Petajisto also compute the average (value-weighted) active share. Given the findings on the evolution of the mutual fund industry above, it isn't surprising to see this measure decline over the sample, from 80% in the 1980s to 60% today.

They also compute an aggregate active share. This is constructed by taking all the funds that benchmark against the S&P500 and adding all their individual holdings together to form one overall portfolio.

If funds never take positions against one another, the average should equal the aggregate. To the extent these measures diverge, funds are trading amongst themselves. The chart reveals that around half of the active share is taken against other mutual funds. So holding a portfolio of funds may actually reduce your overall active share. This certainly raises questions over the popular core-satellite view.

Average and aggregate active share

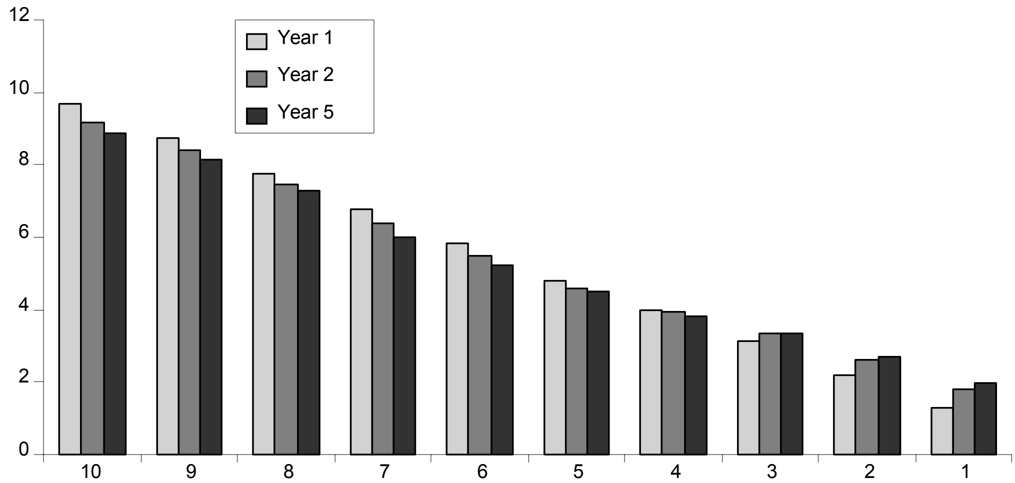


Source: Cremers and Petajisto

Persistence and performance

The chart below shows that active share is highly persistent. If a fund has high active share this year, it is likely to continue to have a high active share next year, and beyond.

Active share decile rank over time

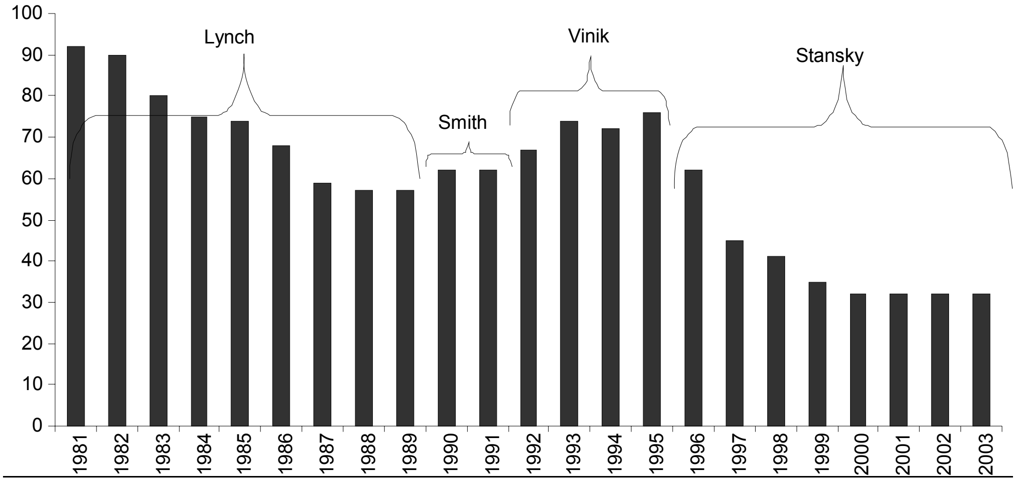


Source: Cremers and Petajisto

Of course, over time funds will change. Petajisto[8] shows the chart below, tracking the active share of the Fidelity Magellan fund over time. It has clearly moved from being a high active share fund to a closet index fund.

[8] http://www.som.yale.edu/Faculty/petajisto/research.html

The active share of the Fidelity Magellan fund: managers matter

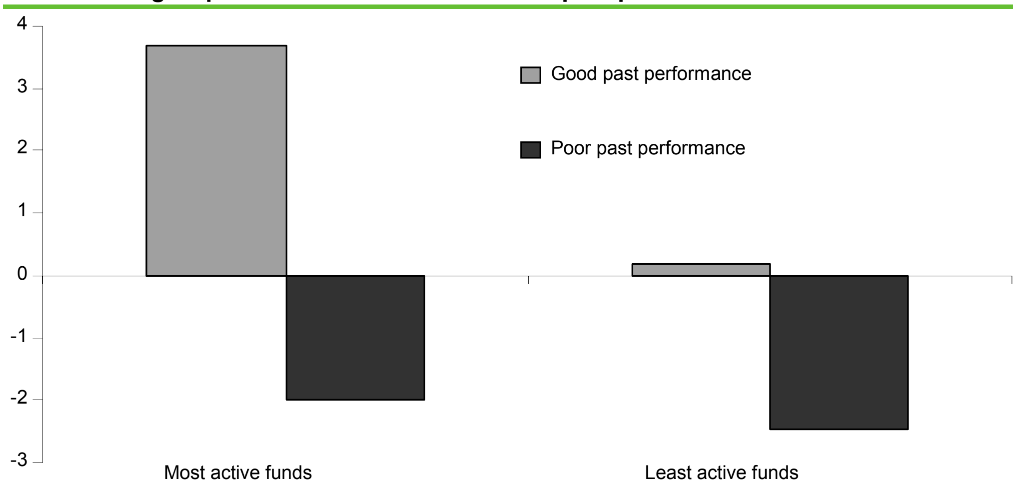


Source: Petajisto

The Magellan example serves to highlight how important managers themselves are. If some managers have skill, we would expect to see persistence across their performance. On the basis of the evidence provided above, this persistence should be greatest amongst those with the highest active shares.

This is exactly what Cremers and Petajisto uncovered. So, past performance might just be a guide to future performance! The chart below shows the average alpha over time for the funds with highest and lowest active share, and good and poor past performance. Those funds with very high active share and good past performance have much higher future alphas than those with high active share and poor past performance. This disparity is far greater in the high active share groups than in the low active share groups. All of which suggests that there are a group of managers who do have skill when it comes to stock-picking, and this skill is persistent.

Future average alpha based on active share and past performance



Source: Cremers and Petajisto

Conclusions

The confabulation of the absence of evidence with the evidence of absence is perhaps the weakest defence of the efficient markets hypothesis that I have come across. It may still be right to argue that the majority of investors are best off in index funds, but not because the market is efficient, but rather because it is full of passive funds masquerading as active funds.

Cremers and Petajisto provide us with a new measure which seems to make intuitive sense, and also have predictive power. Paying for active management is fine, but make sure that is what you are actually getting.

Disclaimer