



MAYO CENTER INSIGHTS - NOVEMBER 2017

THE GROWTH OF PASSIVE INVESTING WORLDWIDE

Pedro Matos, Academic Director [matosp@darden.virginia.edu]

Investors have long debated whether to earn market index returns or attempt to outperform these through the purchase of actively managed mutual funds. The differing views of two industry titans illustrate this. In an 1976 interview in The Boston Globe, Ned Johnson, the Chairman of Fidelity Investments said, “I can’t believe that the great mass of investors are going to be satisfied with an ultimate goal of just achieving average returns on their funds”. In 2016, Warren Buffett wrote that “...over the years I have often been asked for investment advice (...) my regular recommendation has been a low cost S&P 500 index fund.”¹

Net flows into passively managed mutual funds skyrocketed in recent years: Vanguard’s net flows for the three years ending in December 2016 was around 8.5 times the rest of the fund industry combined.² No wonder there is increased press coverage on the growth of passive fund management.^{3,4}

What is contributing to this phenomenon?

THE UNDERPERFORMANCE OF ACTIVELY MANAGED FUNDS

Exhibit number one in the case for passive investing is that the majority of active managers in the U.S. have historically not beaten their benchmarks. The data in **Figure 1** comes from S&P Global’s *S&P Indices Versus Active* project (or “SPIVA”). SPIVA compares actively managed funds against their respective benchmarks on a semiannual basis. The reason SPIVA data is widely cited in the press is that it corrects for survivorship bias, compares funds to specific benchmark indices and ensures style consistency.⁵

¹ Berkshire Hathaway’s 2016 Letter to Shareholders.

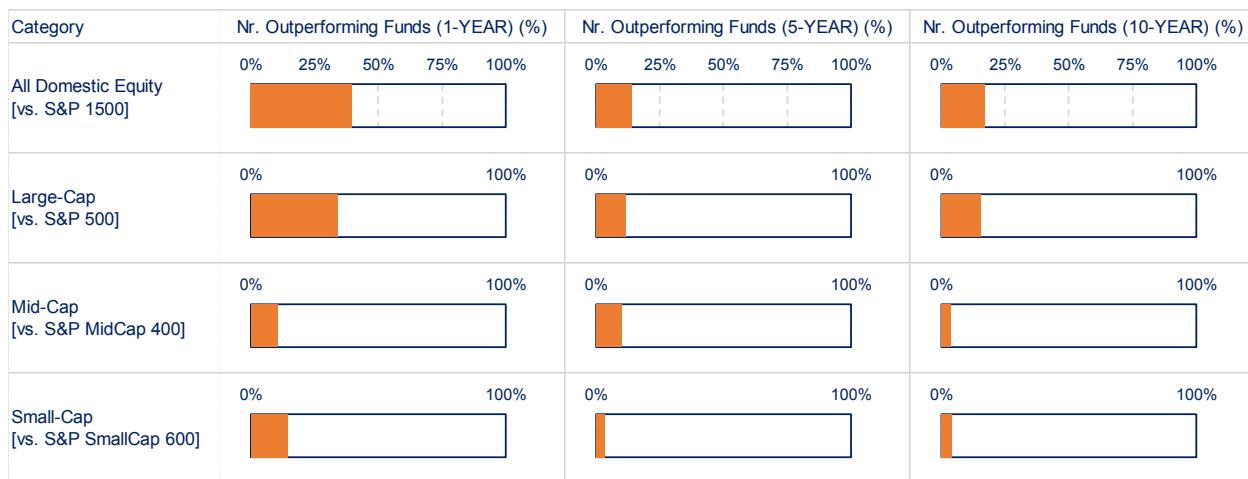
² New York Times, “Vanguard Is Growing Faster Than Everybody Else Combined”, 4/14/2017.

³ Financial Times, “Active Management: Actively Failing”, 7/7/2016.

⁴ Financial Times, “Passive Investing Set to Claim Half of Equity and Bond Markets”, 2/2/2017.

⁵ S&P Dow Jones Indices, “S&P Indices Versus Active (SPIVA)”. <http://us.spindices.com/spiva/#/>

**Figure 1: Percentage of Funds That Outperform Their Benchmark
(U.S. Domestic Equity Mutual Funds as of Year-End 2016)**



Source: S&P Dow Jones Indices, "SPIVA U.S. Scorecard - Year-End 2016". The data was converted to 100%-SPIVA score. The original SPIVA scores are the Percentage (%) of active funds outperformed by their benchmarks.

This data from SPIVA supports the wisdom in Warren Buffett's recommendation. **Figure 1** shows us that the odds of selecting a U.S. equity fund that has beaten its benchmark over time is low. This is more pronounced over longer horizons (5 or 10 years). Similar statistics are found for other asset classes such as U.S. fixed income funds and seems to prevail both in bull and bear markets.

What happens over time if an actively managed fund outperforms its benchmark in the year the investor buys it? We see in **Figure 2**, that, even if an investor finds a fund that outperforms its benchmark, the outperformance does not persist in subsequent years. Put differently, the performance data suggest that last year's winners may not be the winners two years later.

**Figure 2: Persistence in Over-performance over Consecutive Years
(U.S. Domestic Equity Mutual Funds)**



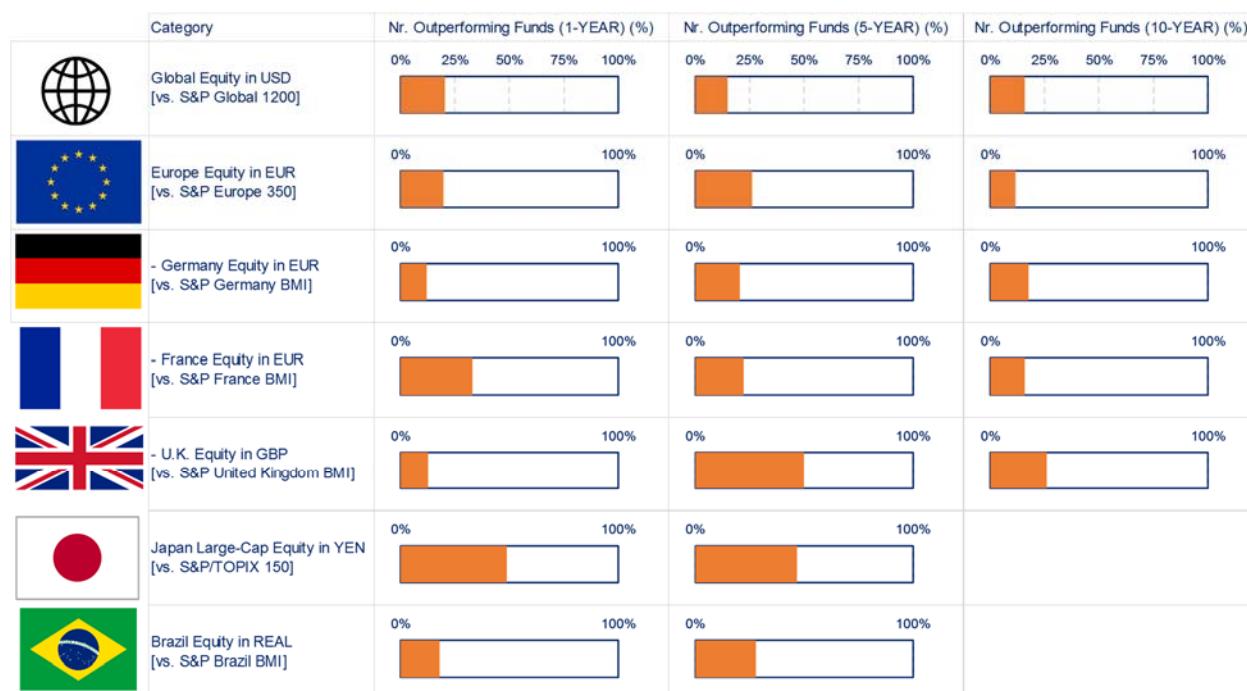
Source: S&P Dow Jones, "15 Years of SPIVA – Where Does the Active Versus Passive Debate Go From Here?", May 2017.

One of the reasons commonly given for the underperformance of active funds is that active management is expensive, i.e., fees for the median active fund are higher than fees for the median index fund or exchange-traded funds (ETFs). As a result, for example, even if an active fund's performance is slightly above its benchmark, its fees are usually sufficiently high such that the performance, net of fees, is below the benchmark.

Vanguard illustrates this point further with its "zero-sum game" concept.⁶ The argument is that the aggregate holdings of all investors in the market is what forms the market benchmark index itself. Hence, if one investor outperforms the market index another must underperform. This is particularly true in a saturated market such as U.S. domestic equities where institutional managers nowadays hold over 75% of outstanding shares. Every "buy" order by a fund manager is likely to be a "sell" by some other fund. Investors get returns net of fees, though, and thus the average return after costs will naturally fall below the benchmark index return.

How does this look elsewhere? In **Figure 3** we look outside U.S. markets, we observe that the odds the average retail investor selects an active fund that can beat its benchmark are again low, though it varies across countries.

Figure 3: Percentage of Funds That Outperform Their Benchmark (International Equity Mutual as of Year-End 2016)



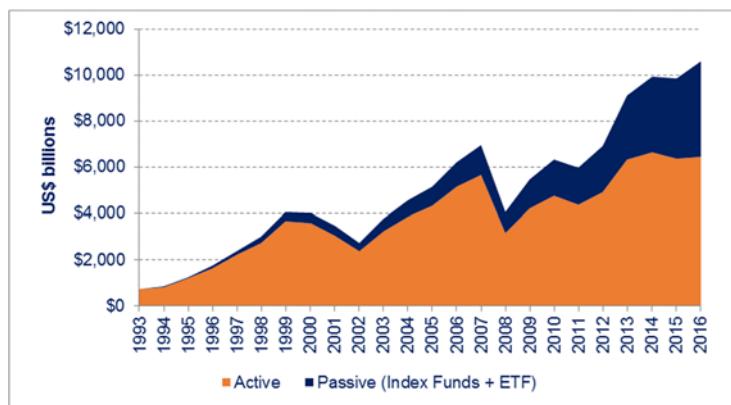
Source: S&P Dow Jones Indices, SPIVA U.S. Scorecards for U.S., Europe, Japan, Latin America and South Africa - Year-End 2016. The data was converted to 100%-SPIVA score. The original SPIVA scores are the Percentage (%) of active funds outperformed by their benchmarks.

⁶ Vanguard, "What is indexing?".

THE GROWTH OF PASSIVE MANAGEMENT

How big is passive fund management? **Figure 4** presents some data from the Investment Company Institute (ICI) which shows that there has been a growth in index funds and ETFs. The fraction of passive management is reaching over one-third of the Assets Under Management (AUM) of U.S. domestic-equity mutual funds.

**Figure 4: Active vs. Passively Managed Funds
(Total Net Assets in U.S. Domestic-Equity Mutual Funds, Monthly 1993-2016)**



Source: based on data from Investment Company Institute, "2017 Investment Company Fact Book".

This growth in AUM is due to a significant investor shift out of actively managed funds, particularly since the financial crisis of 2007–2008. **Figure 5** illustrates how, over the last decade, there have been cumulative net flows out of actively managed U.S. equity mutual funds and into passive funds and ETFs.

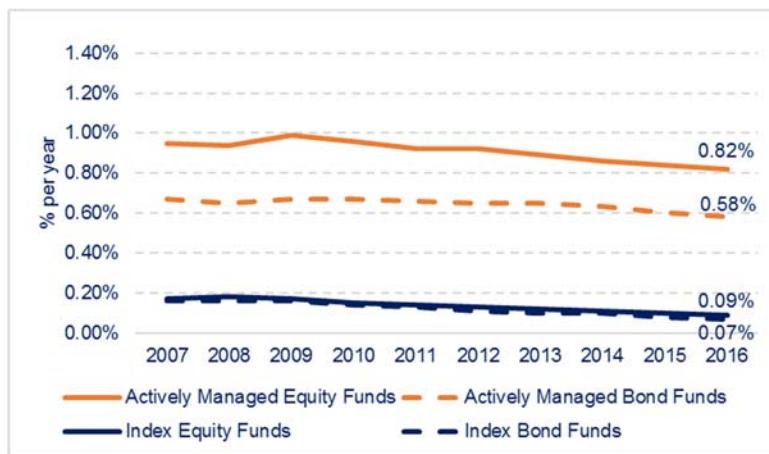
**Figure 5: Cumulative Net Flows
(U.S. Domestic Equity Mutual Funds, Monthly 2007-2016)**



Source: based on data from Investment Company Institute, "2017 Investment Company Fact Book".

A key attraction of passive funds for investors is that index funds and ETFs are much cheaper when it comes to fees. This matters more in a low return environment. Interestingly, **Figure 6** suggests that actively managed funds are experiencing some competitive pressure that is leading to fee compression in active managed funds.

**Figure 6: Average Yearly Expense Ratios
(U.S. Domestic Equity and Bond Mutual Funds, 2007-2016)**



Source: based on data from Investment Company Institute, "2017 Investment Company Fact Book".

ACTIVE VS. PASSIVE MANAGEMENT – A GLOBAL STUDY

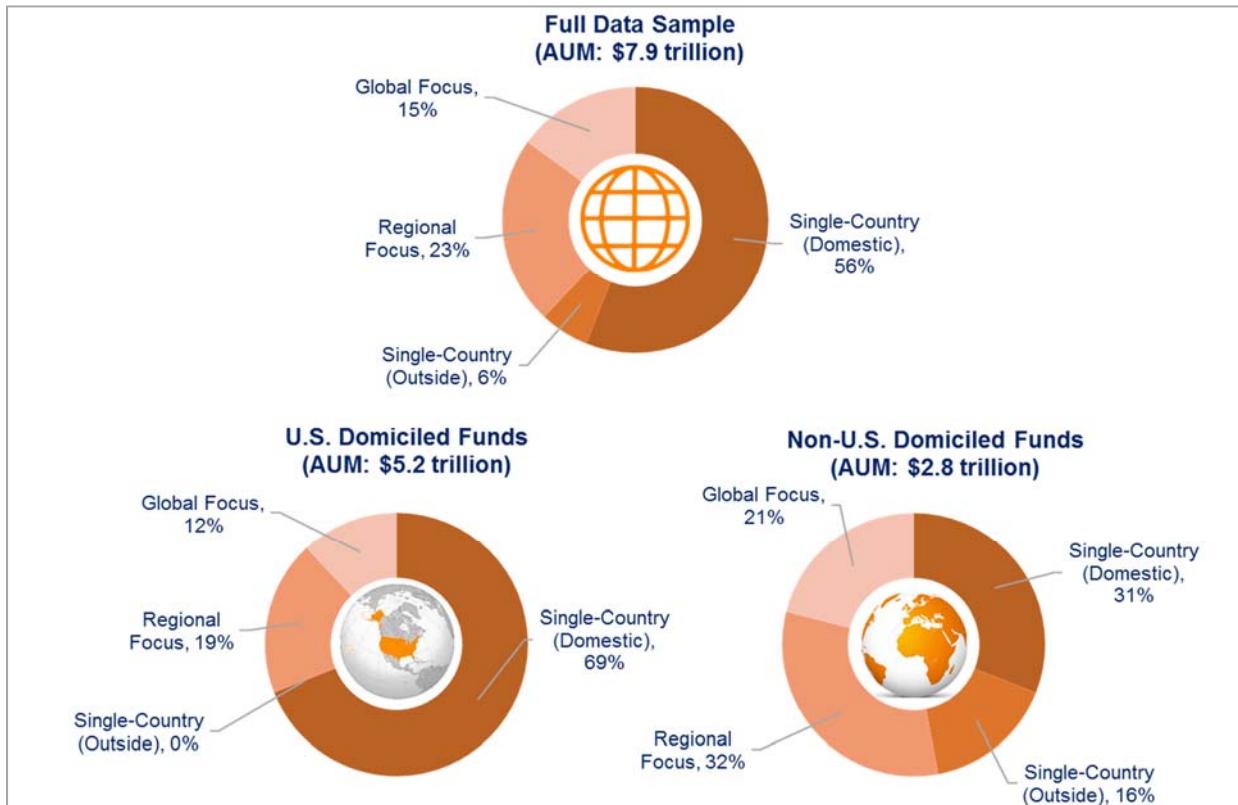
A lot of asset management research has focused on the U.S. mutual fund industry since it claims more than half of global AUM. However, when researching topics like active vs. passive management, taking a more global lens can help drive additional insights. Together with my co-authors, we set out to do just that in a study recently published in the *Journal of Financial Economics*.⁷

The study began by taking a comprehensive set of open-end equity mutual funds investing in equities with a global, regional and single-country focus. The final sample included funds domiciled in 32 countries and managing a combined \$7.9 trillion of equities (as of December 2010).⁸ When we take a global lens, the first thing we see is that funds outside the U.S. are less “home-biased” – in other words, investors allocate less to domestic equity markets and instead diversify more globally (**Figure 7**).

⁷ This briefing summarizes the findings of “Indexing and Active Fund Management: International Evidence”, by Pedro Matos co-authored with Martijn Cremers, Miguel Ferreira and Laura Starks, published in the *Journal of Financial Economics* (June 2016). This research was possible with the financial support from the Richard A. Mayo Center for Asset Management at the Darden School of Business. A pre-publication version is available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2558724.

⁸ The original sample from Lipper included open-end equity mutual funds with combined TNA of \$9.8 trillion. This comes close to the official ICI Global statistics of \$10.5 trillion for December 2010. However, the main analysis of the paper required portfolio holdings from another data source (FactSet/Lionshares) and this reduced the coverage to about 80% of the Lipper dataset.

**Figure 7: Sample of Global Mutual Fund Study
(AUM as of December 2010)**



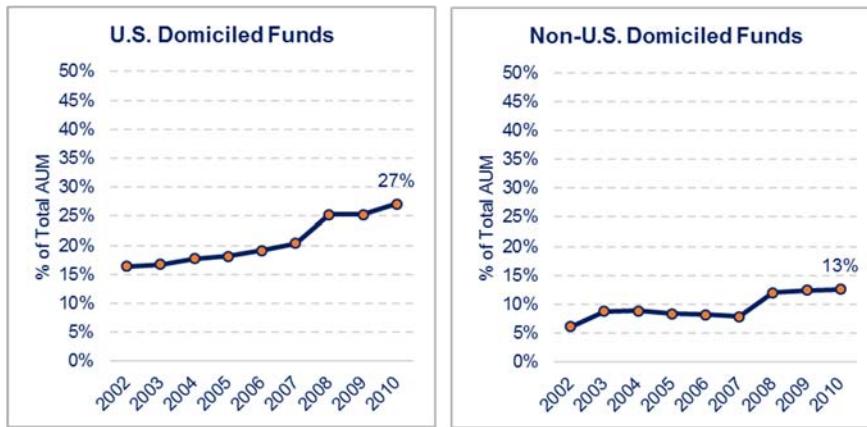
Source: Cremers, Ferreira, Matos and Starks (2016).

The study set out to answer several questions.

Q.1. HOW MANY FUNDS ARE EXPLICITLY PASSIVE IN DIFFERENT MARKETS?

What we see when we look at the data is that, at the end of the last decade (2010), approximately 13% of non-U.S. funds identified as passive (**Figure 8**). At the same time, 27% of U.S. funds were identified as passive (index + ETFs). This would imply that 87% of funds outside the U.S. (and 73% of U.S. funds) are actively managed. But is this true? (Hint: not necessarily!)

Figure 8: Percentage of AUM that is Explicitly Indexed



Source: Cremers, Ferreira, Matos and Starks (2016).

Q.2. WHAT FRACTION OF NON-PASSIVE FUNDS ARE TRULY “ACTIVE” VS. “CLOSET INDEXERS”?

The first step is to evaluate how active a fund actually is. The study used “Active Share”, which is a metric developed by my co-author Martijn Cremers which has received a lot of industry attention and is now currently used in fund ranking services such as Lipper and Morningstar.⁹ Active Share captures the percentage of stock holdings in a fund that differ from its benchmark. For example, if you have a fund whose holdings directly mirror the S&P 500, and that index is the fund’s benchmark, that fund has an Active Share of 0%. If that same fund holds none of the names in the S&P 500 index, it has an Active Share of 100%.

Box 1: Active Share

This measure was introduced by Cremers and Petajisto (2009) and it decomposes a mutual fund’s portfolio into two parts: $\text{Portfolio} = [\text{Index}] + [\text{Portfolio} - \text{Index}]$. It then compares the portfolio weights of the fund from its end-of-quarter portfolio filings vs. the composition of the benchmark index. The Active Share is the fraction of portfolio that is different from benchmark and varies between 0% (passive) and 100% (active).

$$\frac{1}{2} \sum_{i=1}^N |w_{\text{fund},i} - w_{\text{benchmark},i}|$$

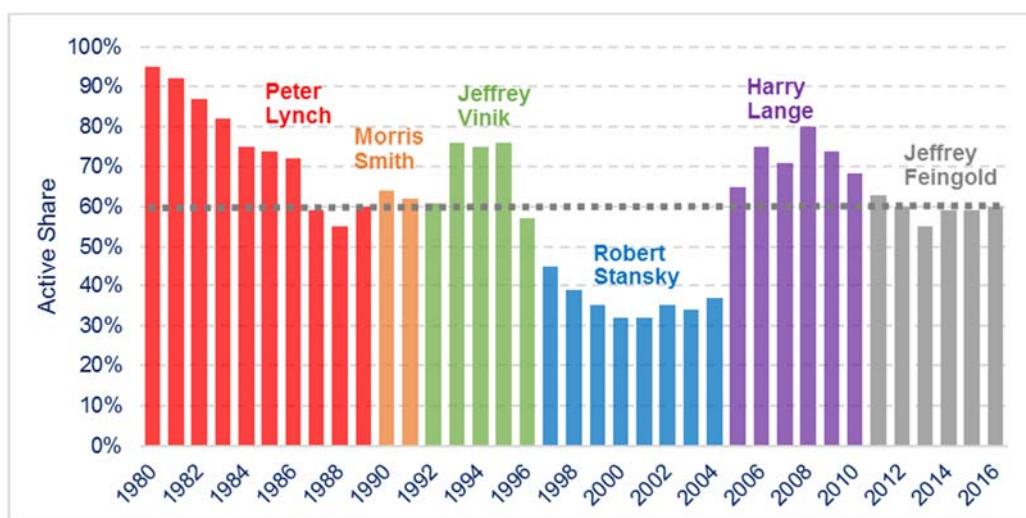
A free resource to check a fund’s Active Share is available at <https://ActiveShare.info>.

A good illustration of the Active Share measure is a look at Fidelity’s Magellan Fund (**Figure 9**). In its early years, the fund was growing under Peter Lynch and its Active Share was above 90%. This was the result of Lynch’s concentrated investments in companies

⁹ Cremers, M., Petajisto, A., 2009. How Active Is Your Fund Manager? A New Measure That Predicts Performance. *Review of Financial Studies* 22, 3329–3365.

as a legendary stock picker.¹⁰ As the Magellan Fund grew larger through both net new flows and capital appreciation, its Active Share plummeted. By the end of the 1990s, the Active Share was just over 30% under the then manager Robert Stansky.¹¹ However, by this time, the fund had become colossal in size (reaching AUM of \$100 billion in 1999). Using Active Share as an indicator, investors were paying high fees for Magellan shares, but around 70% of the fund holdings mirrored its benchmark (S&P 500 index). As Stansky failed to duplicate Lynch's remarkable performance, he left the fund. The next managers (Lange and Feingold) upped the active share of the fund but did not do too well subsequently.

Figure 9: Active Share Example - Fidelity Magellan Fund (FMAGX, 1980-2016)



Source: Cremers and Petajisto (2009) and <https://ActiveShare.info>.

The defense that many fund managers provide is that as funds grow they have increasing difficulty in maintaining a high Active Share. For example, if a mutual fund has \$100 billion in assets, and its benchmark is the S&P 500, achieving a 1% rise in its Active Share means deviating 1% of its holdings from its benchmark. This would require trading \$1 billion in stocks. Such large trades could move stock prices against the fund, eroding its performance in order to achieve higher Active Share.

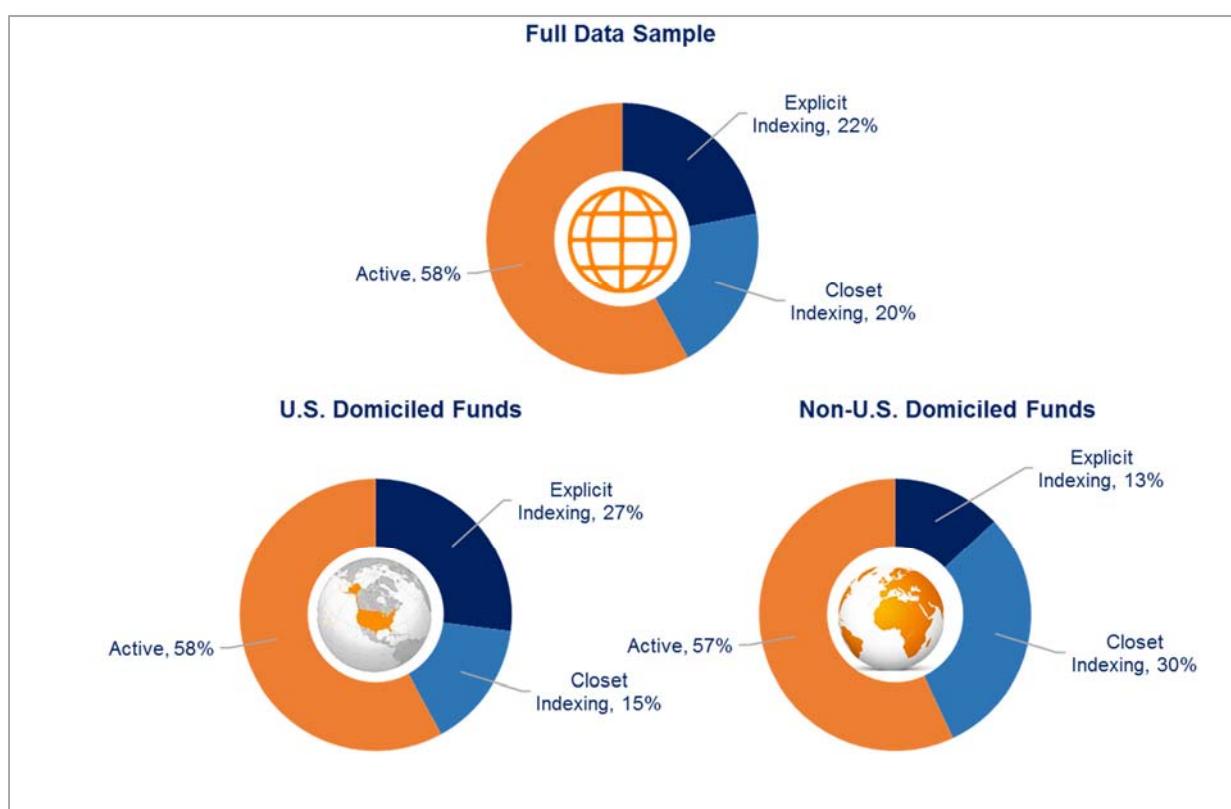
In the study, we defined a fund with an Active Share below 60% as a “closet indexer” – a fund that claims to be active and charges fees commensurate with other active managers but with 40% of its holdings overlapping with the benchmark index. Here is what we found (see **Figure 10**):

¹⁰ Lynch, P. and Rothchild, J. “One Up on Wall Street: How to Use What You Already Know to Make Money in the Market”. New York: Simon & Schuster, 2000.

¹¹ Petajisto, A. “Active Share and Mutual Fund Performance.” Financial Analysts Journal. Volume 69, Number 4, 2013 CFA Institute.

- In the U.S., as of 2010, 73% of funds were categorized as “active”, as opposed to explicitly passive (i.e., index funds and ETFs). The data show that only 58% of these funds are “truly active”; the remaining 15% are closet indexers. Put differently, close to 1-in-6 “active” managers in the U.S. were closet indexers.
- Outside of the U.S., as of 2010, 87% of funds were not explicitly passive. The data show that only 57% of these funds are “truly active”; the remaining 30% are closet indexers. In other word, close to 1-in-3 “active” managers outside the U.S. were closet indexers.

**Figure 10: Explicit and Closet Indexing – U.S. vs. Non-U.S. Funds
(Percentage of AUM as of December 2010)**

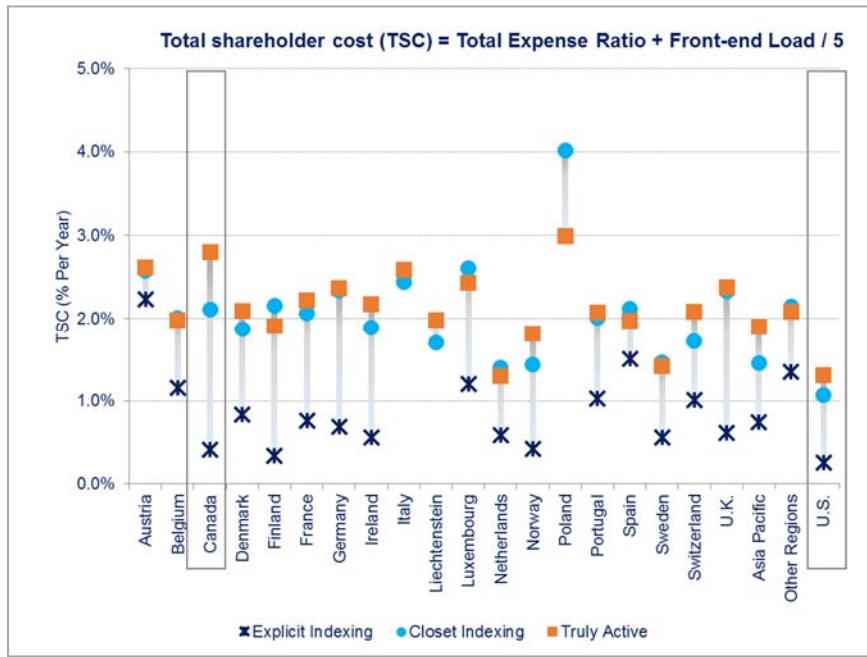


Source: Cremers, Ferreira, Matos and Starks (2016).

Q.3. DO EXPLICITLY INDEXED PRODUCTS EXERT COMPETITIVE PRESSURE ON ACTIVE FUNDS?

When we examined fees across geographies, we noticed that the average total shareholder costs (expense ratios plus load fees) in the U.S. are the lowest. **Figure 11** shows that, across countries, active funds command lower fees when facing competition from low-cost index funds. One can see this when comparing U.S. and Canadian mutual funds, for example.

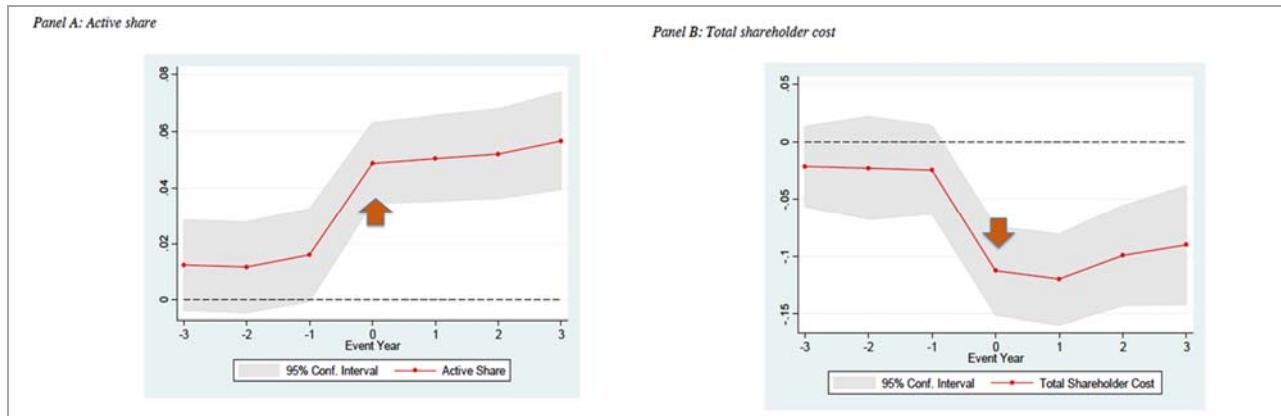
**Figure 11: Average Fees for Indexed vs. Active Funds - by Country of Domicile
(Total Shareholder Cost as of December 2010)**



Source: Cremers, Ferreira, Matos and Starks (2016).

We also studied episodes that sparked the introduction of index funds by examining pension reforms in each market. Over the years, countries reformed their pension systems from defined benefits to defined contributions that encouraged pension providers to opt for low-cost funds. What we observed was that after these reforms, the active funds become more active and the overall fees went down (**Figure 12**). This suggests that pressure from cheaper passive products drives active funds to differentiate more from their benchmarks and to lower their fees.

**Figure 12: Active Management Around the Passage of Pension Acts
(Panel A: average active share and Panel B: average total shareholder cost)**

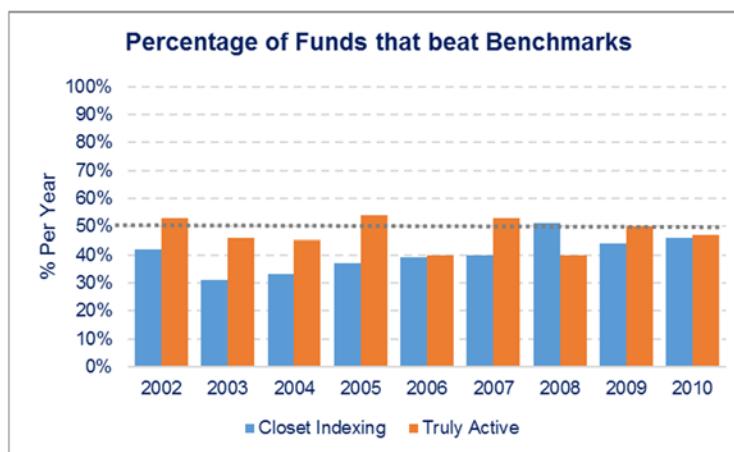


Source: Cremers, Ferreira, Matos and Starks (2016).

Q.4. WHAT IS THE PERFORMANCE OF TRULY ACTIVE FUNDS VS. THEIR CLOSET-INDEXING COUNTERPARTS?

We know that active funds have a difficult time beating their benchmarks over time (**Figures 1-3**). Using global sample, the study compared the performance of truly active funds vs. closet indexers. In **Figure 13**, we plot the same batting averages as **Figures 1-3**, i.e. the percentage of active funds with positive benchmark-adjusted returns. The same message emerges: around the world, most active funds underperform vs. index funds. The new finding from the study is that the “truly active” funds deliver higher performance. Competitive pressure from passive funds pushed the active ones to outperform.

**Figure 13: Returns to “True” Active Management
(Percentage of Funds with Positive Benchmark-Adjusted Returns, by Year)**



Source: Cremers, Ferreira, Matos and Starks (2016).

TAKEAWAYS

The conclusions of the global study are that, outside the U.S., closet indexing is more pervasive but the introduction of low-cost index funds makes active funds “more active”, cut their fees and push “truly active” funds to outperform their benchmarks. This suggests that the growth of index funds and ETFs worldwide enhances competition in the asset management industry.

The study received considerable press coverage in the Financial Times and Reuters and it was picked up by local press in several countries in Europe and also in Canada.^{12,13,14,15} The work came to the attention of regulators worldwide, especially those in countries or regions who have a higher degree of closet indexing. For example, The European Securities and Markets Authority (ESMA) initiated some supervisory work on tracking

¹² Reuters, “Index Funds and Avoiding the Generics Paradox”, 2/4/2015.

¹³ Financial Times, “Closet Tracking: Gigantic Mis-Selling Phenomenon”, 11/14/2015.

¹⁴ Financial Times “Pressure to Reveal Closet Trackers Intensifies”, 2/14/2016.

¹⁵ The Globe and Mail, “Regulators Launch Probe into the ‘Closet Indexers’”, 3/2/2016.

closet indexers, which received some push back from the mutual fund industry association, European Fund and Asset Management Authority (EFAMA).^{16,17}

The topic of active vs. passive investing continues to be debated across the globe. Further, the continued growth of index-based investing could have broader implications for markets and asset prices, which deserves increased attention from future research.

¹⁶ European Securities and Markets Authority, "Supervisory Work on Potential Closet Index Tracking", 2/3/2016.

¹⁷ European Fund and Asset Management Authority, "EFAMA's Report on ESAMA's Supervisory Work on Potential Closet Index Tracking", 7/6/2016.