

Do Mutual Fund Investors Get What They Pay For?

The Legal Consequences of Closet Index Funds

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Abstract

Actively managed mutual funds sell the potential to beat the market by picking stocks that are expected to outperform passive benchmarks like the S&P 500. Funds that are marketed as active vary substantially in the degree to which their portfolio holdings actually differ from the holdings of passive index funds. A purportedly active fund with a portfolio that substantially overlaps with the market is known as a *closet index fund*. Since closet index funds charge considerably higher fees than true index funds but provide a substantially similar portfolio, they tend to be poor investment choices. This article presents empirical evidence on closet index funds, showing that more than 10% of U.S. mutual fund assets are currently invested in closet index funds and that high cost closet index funds substantially underperform their benchmarks. We argue that persistent closet indexing implicates a number of legal issues, including possible liability for fund advisors under the Securities Act and the Investment Company Act. We conclude by discussing potential adjustments to mutual fund disclosures that could help investors identify closet index funds.

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I. Introduction

In a 2007 speech at the University of Pennsylvania Law School,¹ Brian G. Cartwright, then general counsel of the SEC, asked his audience to think of an investment in a mutual fund as a combination of two investments: a position in an “virtual” index fund designed to track the S&P 500 at a very low cost, and a position in a “virtual” hedge fund, taking long and short positions in various stocks.² Added, together, the two virtual funds would yield the mutual fund’s real holdings. Cartwright told the students:

The presence of the virtual hedge fund is, of course, why you chose active management. If there were zero holdings in the virtual hedge fund — no overweightings or underweightings — then you would have only an index fund.³

He went on:

Indications from the academic literature suggest in many cases the virtual hedge fund is far smaller than the virtual index fund.

Which means...investors in some of these ... are paying the costs of active management, but getting instead something that looks a lot like an over-priced index fund.

So don't we need to be asking how to provide investors who choose active management with the information they need, in a form they can use, to determine whether or not they're getting the desired bang for their buck?⁴

A fund that charges for active management, but delivers investments that mostly overlap with the holdings of a much cheaper passive index fund is known in the mutual fund industry as a “closet index fund.” In the years since Cartwright’s speech, the academic literature in finance has made significant progress in confirming that closet indexing is a serious problem for investors, but

¹ SEC Speech: The Future of Securities Regulation; Philadelphia, Pennsylvania; October 24, 2007 (Brian G. Cartwright), <http://www.sec.gov/news/speech/2007/spch102407bgc.htm> (last visited Mar 27, 2012).

² The positions in the “virtual hedge fund” could be computed by taking the actual stock weightings of the mutual fund and subtracting the weightings for the same stocks in a real index fund. The difference between the two is the active, or “virtual hedge fund,” portion of the mutual fund’s portfolio. *Id.* See the discussion of Active Share in Section III below. The Active Share concept is likely the basis of Cartwright’s thought experiment.

³ *Id.*

⁴ *Id.*

Cartwright’s call to bring the benefits of this progress to mutual fund regulation has not been carried forward either by the SEC or by legal academics. The purpose of this paper is to close this gap.

The most important academic evidence on the importance of active management comes from work on *Active Share*, a measure of how different fund holdings are from the holdings of a passive index funds, or—to use Cartwright’s analogy—the relative size of the virtual hedge fund and virtual index fund. The seminal paper on Active Share⁵ was co-authored by one of the authors of this Article, and was first made available the year before Cartwright’s speech.⁶ Since these closet index funds charged fees similar to truly active funds, while holding portfolios that were very similar to the index, the performance of closet index funds is on average considerably lower than the performance of the much cheaper index funds.⁷ Active Share has since become an industry-standard measure of active management. John Rekenhaler, vice president of research for Morningstar wrote in 2014 that “[o]f all portfolio measures invented over the past decade, Active Share has become by far the most popular.”⁸

Mutual fund investors pay a percentage of their investment every year in management fees to fund advisors who are charged with investing the money in the fund. Investors choose between actively managed funds, which offer hand-picked portfolios, and index funds, which seek to mimic the returns of market indices such as the S&P 500.⁹ Actively managed funds typically

⁵ Martijn Cremers & Antti Petajisto, *How active is your fund manager? A new measure that predicts performance*, 22 REVIEW OF FINANCIAL STUDIES 3329 (2009).

⁶ See http://papers.ssrn.com/sol3/papers.cfm?abstract_id=891719. This paper quickly received substantial attention in the press, see e.g. <http://www.petajisto.net/research.html#Media>

⁷ Cremers & Petajisto, *supra* note 5 at 3356.

⁸ See <http://www.morningstar.com/advisor/t/92563289/active-share-what-you-need-to-know.htm>. See also note 51 *infra* for other coverage of Active Share.

⁹ James Kwak, *Improving Retirement Savings Options for Employees*, 15 U. PA. J. BUS. L. 483, 493 (2013); Alan R. Palmiter & Ahmed E. Taha, *Mutual Fund Performance Advertising: Inherently and Materially Misleading?*, 46 GA. L. REV. 289, 297 (2012).

charge higher fees than index funds.¹⁰ These fees are, it is argued,¹¹ justified by the higher research and trading expenses incurred by funds that actively manage their portfolios, and investors who choose actively managed funds hope that the added expense is offset by fund performance that beats the market (and therefore index funds that track the market).

The advisability of choosing to invest in actively managed funds is a subject of long standing debate.¹² This paper focuses on a more fundamental question: To what extent do investors in actively managed funds actually get the active management they pay for and that is promised by the fund company? Our central point is quite simple: In order to *beat* the market, a portfolio must be *different* from the market. To what extent do fund managers deliver on this necessary (if not sufficient) precursor to out-performing the market? Do investors in active funds receive hand-picked portfolios of stocks that, in the view of the fund manager, are likely to do better than the market, or do they receive a portfolio that, to a large extent, *is* the market?

This article employs the Active Share measure¹³, which measures the proportion of the fund's holdings that is different from the fund's benchmark holdings, to quantify the active management services of mutual funds. We show that a large number of funds that purport to offer active management, and charge fees accordingly, in fact persistently hold portfolios that

¹⁰ See e.g., *id.*; Kwak, *supra* note 9.

¹¹ See e.g., *id.*

¹² See e.g., Daniel Solin & J.J. Zhang, *Is There a Case for Actively Managed Funds?*, WALL ST. J., (Mar. 1, 2015, 11:37 PM), <http://www.wsj.com/articles/are-index-funds-really-better-than-actively-managed-1425271058>. See also, Kwak, *supra* note 1, at 495 (“As of mid-2010, a majority of actively managed funds had lower returns than their relevant benchmark indexes in every single fund category over one, three, and five years.”); Jeff Schwartz, *Reconceptualizing Investment Management Regulation*, 16 Geo. Mason L. Rev. 521, 550-51 (2009) (“[W]hen [actively managed funds’] higher costs are taken into account, the average actively managed dollar under-performs a passively managed index of securities...This account leaves open the possibility that some actively managed funds will beat the market...Much, however, conspires against the average investor picking out consistently above-average performers.... Investing in an actively managed mutual fund is betting on one horse in a very crowded field...According to one study, over a fifteen year period, 84 percent of actively managed mutual funds failed to yield returns in excess of the stock market as a whole.”); Sean R. Wilke, *Actively Managed Exchange Traded Funds: Structure, Regulation, and Tax Considerations*, 24 J. Tax’n F. Inst. 5 (2011) (“The ‘added value’ of actively managed funds is attributable to expertise, flexibility, and profitability...[A]ctively managed funds offer the opportunity to see returns in excess of benchmark indices in any market.”).

¹³ See Section III *infra*.

substantially overlap with market indices (i.e., have a low Active Share).¹⁴ These closet index funds are generally poor investment choices because they provide, to large degree, the portfolio of an index fund at the cost of an actively managed fund. We show that closet indexing is a significant drag on the returns of mutual fund investors and that closet index funds underperform the market and leave investors worse off than other investment choices.¹⁵ Consequently, this article argues that closet indexing is a significant regulatory problem for the mutual fund industry, and we suggest a number of potential solutions.¹⁶

We also introduce a new measure, *Active Fee*, which is a fund's expense ratio adjusted for its Active Share, attributing the average index fund fee to the inactive portion of the funds' portfolio.¹⁷ In other words, the Active Fee indicates the fees paid for the part of the portfolio that is different from the benchmark. We show that many funds have Active Fees that exceed the standard asset-based fees in hedge funds (of about 2%).¹⁸

Closet indexing raises important legal issues. Such funds are not just poor investments; they promise investors a service that they fail to provide in full. As such, some closet index funds may also run afoul of federal securities laws. We argue¹⁹ that closet indexing could implicate Sections 11 and 12(a)(2) of the Securities Act,²⁰ which create liability for false statements in prospectuses. Because mutual funds generally self-categorize as actively managed, and active funds often lay out their investment approach, at least in broad terms, in the prospectus, persistent closet index funds may be inducing investors to pay for active management services via prospectus statements that materially differ from the funds' actual management strategies.

¹⁴ See Section IV *infra*.

¹⁵ See Section III, *infra*.

¹⁶ See Sections IV.

¹⁷ See Section II.C, *infra*.

¹⁸ See Section III.B, *infra*.

¹⁹ See Sections IV, *infra*.

²⁰ 15 U.S.C. § 77k and 15 U.S.C. § 77k.

We also argue that closet indexing provides a novel and plausible theory of liability under Section 36(b) of the Investment Company Act.²¹ Section 36(b) is used to challenge funds for charging fees that are alleged to be excessive.²² A recurrent challenge in § 36(b) litigation has been to provide a theoretical foundation for the notion of fee *excessiveness*.²³ Indeed, critics of § 36(b) have been skeptical that fully disclosed fees can ever be excessive. The Active Fee measure that we develop provides a measure of costs that is not, in fact, completely disclosed. Though the total fee is disclosed to investors, the real cost of active management is not, if investors do not have Active Share information available to adjust the fees charged for the level of differentiation that the fund actually provides. The cost of active management is therefore more opaque than generally thought. We show that this adjusted cost for active management is quite high in many instances.

While private litigation can put pressure on the most egregious closet indexers, it is unlikely to solve a widespread problem. Lawsuits can only address one or a few funds at a time. Moreover, there is no way to precisely define closet index funds for purposes of liability, and successful cases are therefore likely to target only the worst funds. Therefore, we argue that the SEC should expand mutual fund disclosure to include explicit disclosures of Active Share and Active Fee.²⁴ Enhanced disclosure could bring competitive forces to bear on a larger swath of the market. Current mutual fund regulations give investors few tools to identify closet index funds. An expanded disclosure regime, coupled with the application of existing securities laws to the most egregious closet index funds, may reduce the amount of closet indexing to the benefit of investors.

²¹ 15 U.S. Code § 80a–35(b).

²² Quinn Curtis & John Morley, *An Empirical Study of Mutual Fund Excessive Fee Litigation: Do the Merits Matter?*, 30 J.L. Econ & Org. 275, 277 (2014).

²³ See, e.g., *In re American Mutual Funds Fee Litigation* No. CV 04–5593 (C.D.CA. Dec. 28, 2009.) (“[T]here is little useful data from which to assess whether a management fee is consistent with arm’s-length bargaining.”)

²⁴ See section IV.B, *infra*.

The rest of this paper proceeds as follows. Section II describes active and passive management in mutual funds and the practice of closet indexing. Section III describes the active share measure and reports empirical results. Section IV describes potential liability for closet index funds and proposes regulatory changes to improve disclosure. Section V concludes.

II. Mutual Funds and Active Management

Mutual funds are the primary means by which individual investors participate in the equity market and play a central role in household investing. As of 2011, forty-five percent of U.S. households owned shares in mutual fund or related securities²⁵ with a total market value of more than \$17 trillion.²⁶ Mutual funds are a critical asset class for household savings and play an important role in most families' retirement plans. Mutual funds are often classified as either actively managed funds or as passive (index) funds.²⁷ Actively managed funds are operated with the goal of producing returns that outperform a particular benchmark (providing higher returns or lower risk, or both)²⁸ by carefully choosing stocks that fit the fund's investing style and that the manager expects to collectively outperform other holdings in the fund's style space. Index funds, by contrast, are designed to closely track a specific benchmark, allowing investors to invest money knowing that they will get performance roughly equal to the performance of the benchmark followed. While index funds enjoy increasing market share,²⁹ actively managed

²⁵ Investment Company Institute, *Ownership of Mutual Funds, Shareholder Sentiment, and Use of the Internet, 2011*, 17 ICI RESEARCH PERSPECTIVE, 2011.

²⁶ Investment Company Institute, *Trends in Mutual Fund Investing*, December 2011, http://www.ici.org/research/stats/trends/trends_12_11 (last visited Feb 17, 2012).

²⁷ See, e.g., Jonelle Marte, Active vs. Passive: How fund managers stack up to index funds, *The Washington Post*, (June 29, 2015) <http://www.washingtonpost.com/news/get-there/wp/2015/06/29/active-vs-passive-how-fund-managers-stack-up-to-index-funds/>.

²⁸ *Id.* Benchmarks are typically market indices that track the performance of a fixed portfolio of assets of a particular type. The S&P 500 index, for example, indexes the performance of the largest firms.

²⁹ Investment Company Institute, 2015 Investment Company Fact Book, Chapter 2: Recent Mutual Fund Trends, Figure 2.15. http://www.icifactbook.org/fb_ch2.html#popularity.

funds continue to hold most assets under management, with only 20.2 percent of equity mutual fund assets invested in index funds.³⁰

A. Active and Passive Funds and Investing Style

All else equal, mutual fund expenses reduce investors' returns, and many investors seek mutual funds that charge very low fees. In general, the lowest cost funds are index funds,³¹ which do not attempt to actively select a portfolio of stock designed to outperform particular market benchmarks. Instead, they allow investors to buy shares that mimic the performance of those benchmarks. Because these funds do not have extensive research or frequent trading costs, index funds can offer their services at lower fees than actively managed mutual funds that attempt to beat their market benchmarks.³² Actively managed funds change their portfolio positions on a regular basis in order to hold securities that, in the view of their advisers, are likely to beat the market. As a result, active managers typically charge higher fees than index funds, and these higher costs are related to the higher expenses associated with research to select stocks as well as the expenses associated with increased trading activity.

A fund's status as active or passive is not a regulatory classification. Instead, funds present themselves as active or passive in their marketing and prospectus materials. Since index funds are selling investors exposure to a specific market index or benchmark, while competing on cost, index funds are typically quite transparent with respect to their marketing strategy. For example, index funds often includes the word "index" or the name of the particular benchmark index tracked by the index fund as part of the fund's name. A fund's status of an index fund will,

³⁰ *Id.*

³¹ See note 9 *infra*.

³² See note 9 *infra*.

similarly, be reflected in third-party fund data sources such as Morningstar.³³ What an investor receives when selecting an index fund is therefore relatively transparent.

With active funds, categorization is considerably more complex. Active funds follow a plethora of different investing styles, such as “large cap growth” or “municipal bond” or focus on specific sectors such as energy or technology. Funds’ prospectuses will usually state the overall investment style of the fund. Current regulation mandates that the prospectus specifies which particular benchmark index is used as the benchmark for evaluating the fund’s performance.³⁴ That is, the fund managers must explicitly state the measure of market returns that they hope to beat through active management. For example, the Fidelity Contrafund, a large-cap growth mutual fund,³⁵ uses the S&P 500 (a large cap equity index) as its benchmark.³⁶ Investors rely on these representations in determining what types of risk they are taking when selecting a fund and how to evaluate the fund performance.

In addition to the fund’s own statements about its investment objectives, the fund must also disclose the detailed contents of its portfolio holdings on a quarterly basis.³⁷ While this periodic disclosure of the detailed holdings is of limited direct use to most individual investors, it permits third parties, such as Lipper and Morningstar, to look beyond a fund’s marketing claims and characterize its style based on the fund’s actual investment choices. Indeed, third party evaluation of funds’ investing style is an industry unto itself, with Morningstar, Lipper, and

³³ See, for example, the Morningstar Page for the Vanguard 500 Index Fund, available at <http://www.morningstar.com/funds/XNAS/VFINX/quote.html>.

³⁴ This is a required disclosure in the performance table for mutual funds. See Item 2(c)(2)(iii) of Form N-1A; Instruction 5 to Item 22(b)(7) of Form N-1A.

³⁵ See, Fidelity’s Performance and Risk page for Contrafund <https://fundresearch.fidelity.com/mutual-funds/performance-and-risk/316071109> indicating “Large Growth” mutual fund.

³⁶ See, Fidelity Contrafund Statement of Additional Information Section 5. Fees and Other Transactions with Affiliates (“performance of Contrafund as compared to its benchmark index, the S&P 500 Index,”) available at https://www.actionsxchangerepository.fidelity.com/ShowDocument/ComplianceEnvelope.htm?_fax=-18%2342%23-61%23-110%23114%2378%23117%2320%23-1%2396%2339%23-62%23-21%2386%23-100%2337%2316%2335%23-68%2391%23-66%2354%23103%23-16%2369%23-30%2358%23-20%2376%23-84%23-11%23-87%230%23-50%23-20%23-92%23-98%23-116%23-28%2358%23-38%23-43%23-39%23-42%23-96%23-88%2388%23-45%2391%23-110%23-107%2337%23-68%2337%23-69%23-103%23-74%235%23-89%23-105%23-67%23126%2377%23-126%23100%2345%23-44%23-73%23-15%238%23-21%23-37%23-17%23-14%23-98%23123%23-18%2345%23-59%23-82%2367%2383%23112%2317%2370%23-78%2378%23-50%2336%23-86%23-90%2381%23-21%23-119%23-30%23120%2349%2328%23-98%2333%2351%23-78%23-119%23-16%2350%23-58%2350%23102%2348%23-17%2352%23-99%23.

³⁷ See SEC Form N-1.

others developing systems to help investors understand what type of active fund they are buying.³⁸ Such services are important because it is not simple to determine, based on marketing and public disclosures, exactly what type of investments a mutual fund will hold. Closet index funds can be seen as taking advantage of this opacity, but there are other issues as well.

Pressure to beat a fund's benchmark index can lead portfolio managers to make investment choices that may not be consistent with a fund's investing style as understood by its investors based on public statements from the fund or third party sources of style information.³⁹ This phenomenon is known as style drift and is a concern of both fund investors and fund complexes, who typically want funds to maintain style discipline also to prevent their own funds from competing against each other.⁴⁰ Since fund holdings are disclosed only quarterly, even attentive investors may not be aware of this style drift, meaning that investors who thought that they bought a fund investing in, say, large cap U.S. equities may end up owning a fund with substantial holdings in small cap U.S. equities that may duplicate (and thus not diversify) the risks in other funds these investors may own.

Another potential issue is that mutual funds may choose a benchmark that is not the most accurate reflection of the fund's style.⁴¹ If a fund that invests mostly in risky, volatile stocks with high expected returns chooses a benchmark of less risky assets and thus with lower expected returns, then over time the fund has a good chance of outperforming the benchmark in absolute terms, and can demonstrate this outperformance to investors in its marketing materials,

³⁸ See, e.g., Lipper Objective and Classification Codes, <http://www.crsp.com/products/documentation/lipper-objective-and-classification-codes>.

³⁹ Sias, Richard W. and Laura T. Starks, 1997, "Institutions and Individuals at the Turn-Of-The-Year," *Journal of Finance*, 52, 1543-1562. Chevalier, Judith, and Glenn Ellison, 1999, "Are Some Mutual Fund Managers Better than Others? Cross-Sectional Patterns in Behavior and Performance," *Journal of Finance*, Volume 54 (3), 875-899.

⁴⁰ Richard B. Evans, Miguel A. Ferreira & Melissa Porras Prado, *Fund Performance and Equity Lending: Why Lend What You Can Sell?* (2015), <http://papers.ssrn.com/abstract=2101604> (last visited Aug 14, 2015).

⁴¹ Berk A. Sensoy, *Performance valuation and Self-Designated Benchmark Indices in the Mutual Fund Industry*, 92 *Journal of Financial Economics* 25 (2009).

but this outperformance could be a result of its exposure to riskier assets rather than of any managerial skill per se. Sensoy⁴² finds that more than one third of actively-managed equity funds in the U.S. use benchmarks that may not be the best match of their investing style, and that investors nevertheless respond to performance that beats these inappropriate benchmarks by increasing the amount of money invested in the fund. Another study⁴³ found that more than one third of funds are “severely misclassified”⁴⁴ based on comparing the funds’ stated objectives with other observable attributes of the fund.

Because investors must rely on funds’ own representations about their investing style and occasional snapshots of funds’ portfolios in order to understand the nature of the fund, investors’ understanding of what they are receiving when they purchase mutual fund shares is imperfect. A diligent investor may, despite careful research, end up invested in a fund that does not match the investing style that she was seeking. In the next section, we turn to a particularly troublesome form of misclassification, closet indexing.

B. Closet Indexing

Closet indexing occurs when a fund that purports to be actively managed holds a portfolio that relatively closely⁴⁵ tracks an index that investors could hold by purchasing an index fund tracking the same index at lower cost. Closet indexing can be understood as a deviation from an active investing style, but one that is different in kind from the style drifting discussed above.⁴⁶ Closet indexing reflects a partial, but considerable, move, not from one active style to another,

⁴² *Id.*

⁴³ Moon Kim, Ravi Shukla & Michael Tomas, *Mutual fund objective misclassification*, 52 JOURNAL OF ECONOMICS AND BUSINESS 309–323 (2000).

⁴⁴ *Id.* at 309.

⁴⁵ While we will more rigorously define “closely” below for empirical purposes, the definition of what constitutes a closet index fund is necessarily subject to a line drawing problem in terms of how closely related the performance of a fund must be to the index that it uses as a benchmark, and for how long, before it qualifies as a closet index fund.

⁴⁶ See Section II.A *supra*.

but from active management to passive management. Like ordinary style drift described above, closet indexing is a matter of degree, hard to define concretely, and hard for investors to identify, at least given the current disclosure regime. Closet indexing also presents additional problems not present in the ordinary style drift context. Investors in a closet index fund are not simply receiving a different type of active management, they are receiving less active management, meaning they are paying active management fees for a service that they are only partially receiving. Moreover, while mutual fund complexes typically try to limit style drift among active funds into other active categories,⁴⁷ closet indexing presents a different incentive problem because it economizes on the costs and reduces the risks of active management for the fund manager. Closet indexing is therefore a distinct issue, with potentially more serious consequences for investors than ordinary style drift.

Closet indexing has long been identified as a potential problem in the mutual fund industry. Jack Bogle, founder of Vanguard and advocate of passive investment strategies, played a role in popularizing the notion that funds that charged for active management, but closely tracked index were “doing investors a disservice.”⁴⁸ In 1999, Bogle argued that constant pressure to post good short-term results relative to a fund’s benchmark index leads many fund managers to closely track an index at the expense of long term returns.⁴⁹ While the general notion that closet indexing was a problem was part of investor consciousness, it was not until the introduction of the Active Share measure⁵⁰ that the problem of closet indexing became an object of precise study

⁴⁷ Richard B. Evans, Miguel A. Ferreira & Melissa Porras Prado, *Fund Performance and Equity Lending: Why Lend What You Can Sell?* 16-17 (2015), <http://papers.ssrn.com/abstract=2101604> (last visited Aug 14, 2015).

⁴⁸ Ross M. Miller, *Stansky’s Monster: A Critical Examination of Fidelity Magellan’s “Frankenfund,”* SSRN ELIBRARY (2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=964824 (last visited Dec 16, 2011).

⁴⁹ John C. Bogle, *Common Sense on Mutual Funds*, Section 11.2 (2d ed. 2010). We will discuss reasons of why a manager of an actively managed fund may resort to closely tracking the holdings of the fund’s benchmark index in more detail in the next subsection. See Section II.C, *infra*.

⁵⁰ Martijn Cremers & Antti Petajisto, *How active is your fund manager? A new measure that predicts performance*, 22 REVIEW OF FINANCIAL STUDIES 3329–3365 (2009).

and intense media attention.⁵¹ Active Share has become an industry-standard measure, widely discussed among mutual fund portfolio managers as well as institutional and some individual investors.⁵² Active Share can be used to classify funds as closet indexers, as we will explain in detail below,⁵³ but this has not eliminated closet index funds from the marketplace, and the dynamics of mutual fund competition, as well as the existing limits on required disclosures from mutual funds, suggest that closet indexers are unlikely to disappear.⁵⁴

Closet indexing is an international problem, and the degree of closet indexing is, in fact, substantially higher in many other countries than it is in the U.S. mutual fund market.⁵⁵ While 10% of United States mutual fund assets are invested in funds classified as closet index funds,⁵⁶ closet indexing in other countries sometimes exceeds 50% of assets invested.⁵⁷ For example, in Sweden, 56% of assets are invested in closet index funds, 58% in Poland and 44% in Finland. Closet indexing has drawn substantial international regulatory attention in some of these

⁵¹ See, e.g., "Mutual Fund Investors Should Crack Down on Closet Indexers," Bloomberg, February 8, 2012. Laise, Eleanor: "Can Anyone Steer This Ship?" The Wall Street Journal, April 23, 2011. Lalloos, Laura: "What You Need to Know about Active Fund Managers," Money Magazine, April 8, 2011; Elston, Peter: "Don't Tar All Actives with the Same Brush," Financial Times, May 30, 2010. Mamudi, Sam: "What Are You Paying For?" The Wall Street Journal, December 8, 2009. "A Lesson in Pursuing Alpha and Beta," Financial Times, July 23, 2007; Gangahar, Anuj: "Advantages of Active Investing," Financial Times, July 9, 2007; Richards, Matthew: "There Are a Few Skeletons Lurking in the Closets," Financial Times, February 10, 2007; Hanson, Tim: "[A Warning for Investors,](#)" *The Motley Fool*, August 30, 2006; Lauricella, Tom: "Professors Shine a Light into 'Closet Indexes,'" The Wall Street Journal, August 18, 2006.

⁵² See e.g. Gary Wendler and Jonatahn Peckham, Think Active Can't Outperform? Think Again, *white paper*, see <https://www.invesco.com/static/us/investors/contentdetail?contentId=413d7cc16a41c410VgnVCM100000c2f1bf0aRCRD>. Mauboussin, Michael: "Seeking Portfolio Manager Skill," Legg Mason investment strategy report, February 24, 2012.

⁵³ See Section III.A *infra*.

⁵⁴ Mutual fund companies with many funds with relatively low Active Shares, i.e., funds whose holdings have substantial overlaps with the benchmark holdings and which (if both the overlaps in holdings are large enough and the fees charged are high enough) may be labelled closet index funds, have countered with their own research suggesting that 'closet indexing' may not be that problematic after all. For example, see Tim Cohen et al. from Fidelity, Active Share: A Misunderstood Measure in Manager Selection (2014), https://www.fidelity.com/bin-public/060_www_fidelity_com/documents/leadership-series_active-share.pdf; Todd Schlanger et al. from Vanguard, The search for outperformance: Evaluating 'active share' (2012), https://pressroom.vanguard.com/content/nonindexed/active_management.pdf, Andrea Frazzini et al. from AQR, Deactivating Active Share (2015), <https://www.aqr.com/library/journal-articles/deactivating-active-share>.

⁵⁵ Martijn Cremers et al., Indexing and Active Fund Management: International Evidence (2015), JOURNAL OF FINANCIAL ECONOMICS (forthcoming), <http://papers.ssrn.com/abstract=1830207> (last visited Jul 24, 2015).

⁵⁶ See Section III.C, below.

⁵⁷ See *Id.* Table 1 at 35.

countries. Regulators in Sweden, Norway, Denmark, and the United Kingdom, as well as the European Securities and Markets Authority have all expressed concern and an intention to crack down on closet index funds.⁵⁸ In Sweden, where more than half of mutual funds are closet index funds under our definition,⁵⁹ a private class action lawsuit has been brought by a shareholder advocacy group, and Swedish regulators have followed up with a full scale investigation into the problem, headed by a Supreme Court judge.⁶⁰ One Swedish regulator referred to closet indexing as a “gigantic mis-selling phenomenon” and suggested banning the sale of high-cost, low Active Share funds in the country.⁶¹

While there are many American funds where closet indexing is a problem, the issue has attracted relatively little attention in American courtrooms or among securities regulators. We are able to identify only a handful of claims where closet indexing has been included among the allegations.⁶²

C. Why Funds Become Closet Index Funds

Why funds become closet index funds is a matter of speculation. As will be seen below, closet indexing is sometimes a factor of the management style of a particular portfolio manager. It is therefore difficult to give a concrete answer to why a fund manager might engage in closet indexing. However, there are incentives in place that may make closet indexing an attractive strategy under some circumstances.

First, active management research is expensive. This is why actively managed mutual funds are more costly to investors than passive ones. Of course, a fund could economize on active

⁵⁸ See, Madison Marriage, “The Future Is Bleak of Closet Trackers,” *Financial Times* (December 7, 2014).

⁵⁹ Martijn Cremers et al., *Indexing and Active Fund Management: International Evidence*, Table 1 at 35. (2015)

⁶⁰ Madison Marriage, “Sweden Begins Crackdown on Closet Trackers” *Financial Times* (March 22, 2015).

⁶¹ Madison Marriage, “Closet tracking: ‘Gigantic mis-selling phenomenon’” *Financial Times* (Nov. 15, 2015).

⁶² These cases are discussed in more detail in Section IV.

management by picking stocks randomly, but a closet index fund economizes on the cost of active management far more safely by holding much of its portfolio in the benchmark. Since the benchmark index is the basis for evaluating the performance of the fund, holding this index is a way to economize on research without risking aberrant performance.

Second, as funds grow in size, identifying attractive investment opportunities that will have a meaningful impact on the fund's performance becomes increasingly difficult. A fund with billions of dollars under management benefits far less from an investment opportunity of a given size than will a small fund with just ten million dollars under management. A large fund therefore faces a challenge in identifying valuable investments, or a more limited investment opportunity set consisting of only investments of sufficiently large size to make a difference for the fund. This relative lack of sufficiently large investment opportunities can lead large funds to hold a larger percentage of their assets in the benchmark.

Third, mutual funds charge fees on the total assets under management. Most mutual funds do not charge fees that vary with performance. This means that, all else equal, larger mutual funds will generate more revenue than smaller mutual funds. Mutual funds therefore compete for assets under management, and the most important factor in growing a fund's asset base is posting returns that beat the market. However, there is an asymmetry in the relationship between flows and performance: while small or new funds seek to post exceptional returns in order to grow their asset base, once a fund is large, the priority may shift from attracting new assets to preserving the current assets and thus to avoid losing badly to the benchmark.⁶³ One obvious way to avoid underperformance relative to the benchmark is to reduce risk by putting much of the fund's assets in the benchmark. While this means the fund will also be unlikely to beat the

⁶³ Erik R. Sirri & Peter Tufano, *Costly Search and Mutual Fund Flows*, 53 THE JOURNAL OF FINANCE 1589–1622 (1998).

benchmark, mediocre performance may be enough to preserve a large fund's asset base, and thus its profitability, so closet indexing may become a valuable strategy for a risk-averse manager seeking to maximize assets under management.

It is notable that closet indexing may also be tied to particular portfolio management methodologies. The rise of closet indexing coincided with increasing use of computer systems that made it easier to measure the "tracking error (volatility)" of a portfolio, that is, the degree to which the fund return deviates from the return of benchmark index.⁶⁴ Some have posited that these technological changes led to a fixation on tracking error that increased closet indexing behavior.⁶⁵ Bogle put some of the blame on the combination of quantitative portfolio management as well as the technology that enabled precise real time observation of these quantitative measures.⁶⁶

Finally, a fund may closely track the benchmark simply because a fund manager sees few opportunities, and views a benchmark-heavy portfolio as optimal for the moment while waiting for alternative prospects to arise. While funds may occasionally take such a position, we would expect such circumstances to be temporary, and we would not call a fund with a significant but only temporary overlap with its index a closet index fund. If the fund holdings closely track the index year after year, however, then the claim that the manager simply sees no other attractive opportunities seems a less plausible explanation for the funds' portfolio than the incentives laid out above.

In the next section we draw on the empirical finance literature to identify and describe closet index funds.

⁶⁴ Ross M. Miller, *Stansky's Monster: A Critical Examination of Fidelity Magellan's "Frankenfund,"* SSRN ELIBRARY (2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=964824 (last visited Dec 16, 2011).

⁶⁵ *Id.*

⁶⁶ John C. Bogle, *Common Sense on Mutual Funds*, Section 11.2 (2d ed. 2010) ("The overarching goal of this era of investment relativism seems to be the avoidance of inferior short-term returns relative to the S&P 500, rather than the achievement of superior absolute long-term returns").

III. Measuring Closet Indexing: Empirical Results

A. Defining Closet Indexing

A closet index fund is one that purports to be actively managed but holds a disproportionate share of its investments in holdings that are identical to the holdings of its benchmark index. This section describes the Active Share measure and describes how it is used in this paper to identify closet index funds. We first describe the concept of a benchmark index in some detail. A benchmark, or index, is simply a portfolio of securities whose performance is designed to track the overall performance of a particular segment of the larger market. For example, the ubiquitous S&P 500 index is a portfolio of 500 stocks of the largest companies in terms of market capitalization, with a weight assigned to each company in proportion to its market capitalization.⁶⁷ The Russell 1000 index is another large cap equity benchmark, consisting of the largest 1,000 U.S. equities in terms of market capitalization at the end of the most recent June (and is thus updated each year).⁶⁸ Other indexes are designed to track other portions of the market: small cap stocks, mid cap stocks, bonds, technology companies and so on.

Since indices are designed to measure the returns of their constituent securities, their portfolio holdings are usually expressed as weights that sum to one, rather than dollar amounts. Thus, any benchmark index can be expressed as a list of weights, assigned to specific securities.

As an illustration, a fictional benchmark index holding 5 stocks has the following weights:

⁶⁷ See Dow Jones Indices: S&P 500, <https://us.spindices.com/indices/equity/sp-500>.

⁶⁸ See Russell 1000 index fact sheet, <https://www.russell.com/indices/americas/indices/fact-sheet.page?ic=US1000>.

C&C 5 Micro Cap Index	
Ticker	Weight
AAA	.3
BBB	.1
CCC	.2
DDD	.15
EEE	0
FFF	.25

A benchmark index is simply a type of portfolio that is used by market participants as a standard against to evaluate the performance of a particular investment such as an actively managed mutual fund. When measuring Active Share, the first step is to identify the fund's benchmark index, which funds are required to disclose in the fund's prospectus. The next step is to take the union of stocks that are included in the fund and in the benchmark. In our fictional example, the benchmark index invests in five stocks, and our illustration of an actively managed fund is a fund that invests in four stocks, with three of those stocks also included in the benchmark. Third, we can then decompose the mutual fund portfolio into two portfolios, one consisting of weights identical to the index portfolio (the Passive Component) and the other consisting of holdings that are different from the market portfolio (the Active Component).

Ticker	Weight		
	Fund Portfolio	Index Component	Active Component
AAA	.3	.3	0
BBB	0	.1	-.1
CCC	0	.2	-.2
DDD	.3	.15	.15
EEE	.2	0	.2
FFF	.2	.25	-.05

Taking the difference between the index and fund portfolios produces a set of active positions that measure how different the fund holdings are from the index holdings. The Active Share is the sum of the absolute value of these active positions, divided by two.⁶⁹ Here, the Active Share is:

$$(0+0.1+0.2+0.15+0.2+0.05)/2 = 0.7/2 = 35\%.$$

Each deviation from a benchmark position needs to be divided by two, as each deviation in holdings in the fund relative to the benchmark results in both an underweight in the benchmark position and an overweight in whatever position the fund deviates towards. In essence, Active Share is the sum of all of overweightings and all of the underweightings, divided by two as each overweighting position can be associated with an equally large underweighting in a benchmark position.

There are two types of overweightings that contribute positively to Active Share: having a larger weight in a benchmark position than the benchmark index, or buying stocks that are not in

⁶⁹ A mathematically rigorous definition of Active Share is presented in Cremers & Petajisto, *supra* note 5 at 3335.

the index. In the example, the first case of overweighting is exemplified by the fund positions in stock DDD. The second case of overweighting is exemplified by the fund position in stock EEE, which makes up 10% of the fund but which stock is not held by the fund's benchmark. Any position in a stock that is not included in the benchmark will contribute positively to Active Share. Conversely, any overlapping position will detract from the fund's Active Share.

There are again two types of underweighting, namely fund positions held that are smaller than those in the benchmark, and not owning a stock at all that is included in the benchmark index. In our example, the first case is exemplified by the fund's positions in stock FFF, which has a weight of 20% in the fund but 25% of the index, such that the fund can be said to have a 5% underweight. The second case is exemplified by the fund positions in stocks BBB and CCC, which are included in the index but are not held by the fund. As a result, even though the fund does not own stocks BBB and CCC at all, we can still say that the fund has an active position in these stocks, namely an underweight relative to the fund's benchmark index. Finally, even though the fund has a substantial position in stock AAA, equal to 30% of the portfolio, we can still say that the fund has no active position in this stock as this stock also has a 30% weight in the fund's index.

Active Share can be interpreted as the share of the total mutual fund assets that are invested in the Active component, while the balance of the fund's assets are invested in stocks with the same weights as those stocks have in the index. Here, an investor who places \$10,000 in the fund will, in effect, be placing \$6,500 in positions that are identical to index positions and \$3,500 in positions that are different, i.e., active.

It is important to recognize that any difference in performance – either underperformance or outperformance – can only come from the proportion of fund holdings that is different from the index, i.e., any difference in performance can only come from the Active Share. Consider the

fund's 30% weight in stock AAA in the example above. As both the fund and its benchmark index have an equal weight in this stock, the fund's relative performance – calculated as the difference between the fund's performance and the performance of its index – is not affected by the performance of stock AAA. No matter how well or badly this stock performance, the performance of stock AAA will equally affect both the fund and its benchmark, and thus the performance of stock AAA has become irrelevant for the relative performance of the fund. The Active Share can thus also be interpreted as the proportion of the fund's assets that contribute to the relative (or different) performance of the fund.

No mutual fund should be expected to have 100% Active Share. A large cap equity fund is generally restricted to taking long positions in large companies and therefore will naturally hold positions that are part of the S&P 500 or Russell 1000. Funds typically invest a large portion of their assets in stocks held in their benchmark index (otherwise one may start to worry about style drift), which will lead to overlapping holdings. This is all a normal part of the mutual fund market.

Nevertheless, Active Share provides critical information to investors. If two funds both market themselves as active, large cap funds, and one fund is essentially putting 60% of investor money in weights identical to S&P 500 index weights (and thus has an Active Share of 40%), while another is only 20% similar to the index (and thus has an Active Share of 80%), then the low Active Share fund must generate considerably higher returns in its active portfolio than does the more active fund, in order for the low Active Share fund to match the performance of the more active fund. In fact, since the active portfolio of the more active fund is twice as large, the less active fund would need to obtain double the return on the active portion of its portfolio, in order to get the same return on its entire asset base.

By way of illustration, assume that an actively managed fund has an expense ratio of 1% per year. If we focus only on the level of returns, the fund has to outperform the benchmark by more than 1% on average before providing any net benefit to investors (ignoring any differences in risk and the cost of investing in the benchmark). A fund with an Active Share of close to 100% will have the full portfolio to achieve this average of 1% outperformance, so that the average active stock position in this fund's portfolio will have to outperform by at least 1%. In contrast, a fund with an Active Share of 50% only has half of its portfolio invested differently from the market (and able to beat the market), so that the average active stock position in this fund's portfolio will have to outperform by at least 2% before providing any benefit to its investors. As a result, a higher Active Share means that a larger percentage of the portfolio holdings will contribute to the fund's difference in performance vis-à-vis the benchmark, and thus the larger the *potential* for outperformance (though, indeed, also for underperformance).

This analysis suggests another way of characterizing the importance of Active Share, namely to adjust the fund's expense ratio for the extent the fund holdings overlap with the holdings of the fund's benchmark index. We call this the 'Active Fee', which is defined as

$$Active\ Fee = \frac{Expense\ Ratio - (1 - ActiveShare) * IndexFundFee}{ActiveShare}$$

Here, the Index Fund Fee is the typical expense ratio charged by index funds that closely track the fund's benchmark index. The Active Fee measures how much investors are paying for the proportion of the fund that is different from the benchmark index, assuming that the overlapping part could be invested in at a cost similar to investments in the benchmark. Accordingly, Active Share not only provides critical information about how different the holdings are, but also allows an investor to determine what they are really paying for the active management services of the fund manager.

For the purposes of developing the results of this paper, we will use a threshold of less than 60% Active Share to indicate that a fund is a closet indexer. This choice is necessarily somewhat arbitrary, and we do not intend to suggest that every fund that meets this cutoff ought to be subject to liability. Nevertheless, the empirical results we present in the next section establish that funds that meet this definition of closet indexing are generally poor future performers and ought to attract regulatory scrutiny. The most egregious of closet index funds may run afoul of existing securities laws, as we will argue below.

At the same time, we can provide some justification for our 60% Active Share threshold for closet indexers as follows. Going back to the basic intuition explained above, any difference in performance between the fund and its benchmark index can only come from the Active Share of the fund, i.e., the portion of the fund's holdings that is different from the benchmark holdings. This suggests that one way to think about the job of an active manager is to consider which of the assets in the benchmark index will perform better than the benchmark return, and combine those with some assets outside of the benchmark to create an actively managed portfolio that is substantially different from the benchmark. To ask what Active Share is consistent with truly active management is akin to asking what percentage of the benchmark assets can be reasonably expected to outperform the benchmark return. By construction, the benchmark return is the weighted average return of all of the securities or stocks included in the benchmark index, using some particular asset-weighting of these (generally, equity benchmark indices are weighted by the market capitalization of the stocks included). By logic inherent in the benchmark return being the average or asset-weighted return, over any time period at most half of the benchmark assets (or weights) will outperform the benchmark return, while at least half of the benchmark

assets will underperform.⁷⁰ This suggests that the absolute minimum Active Share consistent with active management is 50%, as one cannot logically believe that more than half of the assets (or weights) in the fund will outperform the asset-weighted average return of these assets. If 50% is the bare minimum Active Share consistent with active management, then our choice of 60% simply demands just a bit more than the mathematical minimum, though we acknowledge that the additional 10% is more subjective.

B. Two Case Studies of Relatively Low Active Share Funds

In this section we examine two particular funds in detail. We do not take the position that these funds are necessarily closet index funds, though both meet our 60% cut off at various points in time and a plausible case could be made for that claim. Instead, our discussion of these funds allows us to highlight the difficulty investors face in estimating a fund Active Share based on the current disclosure regime.⁷¹ The first is one of the best-known U.S. large cap funds, named the Fidelity Magellan fund, which became the largest mutual fund in America in the early 2000s.⁷² The second case study considers a more surprising example of the AQR (Large Cap) Momentum Fund, which is an example of the recently popular type of ‘smart beta’ funds that largely use quantitative methods for stock selection. Both of these funds had periods of low

⁷⁰ For example, 40% of the assets may outperform over time to become 50% of the fund, while the other 60% of the assets underperform to become the other 50%. Over short periods of time, about half the assets will outperform, and the other half will underperform. Note though that not necessarily exactly half of the stocks (or, more generally, names) in the benchmark will outperform or underperform, but half of the assets, which means incorporating the size of the holdings, or their weights, in the benchmark.

⁷¹ While we propose theories of liability for particularly egregious examples of closet indexing in Section IV.A, our discussion of these two funds should not be taken as an indication that we believe these funds would be or should be subject to such liability.

⁷² Antti Petajisto, Active Share and Mutual Fund Performance, *Financial Analysts Journal*, 73 (2013) identifies Magellan as a fund with low active share using data similar to what we present here. Cremers & Petajisto, *supra* note 5, identified Magellan as a closet index fund. See also, Antti Petajisto, *Magellan's Problem: Closet Indexing*, November 15, 2005, http://www.petajisto.net/media/magellan_oped.pdf. (criticizing Magellan Fund for operating as a closet index fund.). Ross M. Miller, *Stansky's Monster: A Critical Examination of Fidelity Magellan's "Frankenfund,"* SSRN ELIBRARY (2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=964824 (last visited Dec 16, 2011).

Active Share, neither fund was cheap, and we document that both funds did not perform well over the period in which they had low Active Share. In the next section, we will document that low Active Share more generally tend to underperform, indicating that the two case studies discussed here are not isolated cases.⁷³

1. The Fidelity Magellan Fund

In this section we examine the operations of the Fidelity Magellan fund.⁷⁴ Brought to prominence by a period of exceptional performance in the 1980's under the investment direction of Peter Lynch, the fund became the largest in America. For example, the total net assets under management of the Fidelity Magellan Fund at the end of 2001 amounted to \$103.6 billion dollars. Using its expense ratio of 0.75% at that time, this fund would have generated about 780 million U.S. dollars in fees over 2001. However, Fidelity Magellan has since been surpassed in size by a number of funds, including Fidelity's own Contrafund, losing most of its assets under management, with \$16.2 billion dollars under management at the end of 2014.

As Magellan grew, it encountered difficulties familiar to many successful funds. While Peter Lynch's acumen for stock picking produced eye-popping returns for the young fund, as more money poured in, attractive investment opportunities did not proportionately increase, and new strategies needed to be devised to maintain strong performance. Lynch was eventually succeeded at Magellan by Jeffery Vinik,⁷⁵ who adopted a more conservative strategy,

⁷³ Unless noted otherwise, all analysis was done by the authors using mutual fund holdings and performance data from Thomson-Reuters and the Center for Research in Security Prices from the University of Chicago (commonly known as CRSP).

⁷⁴ Antti Petajisto, Active Share and Mutual Fund Performance, *Financial Analysts Journal*, 73 (2013) identifies Magellan as a fund with low Active Share using data similar to what we present here. Cremers & Petajisto, *supra* note 5, identified Magellan as a closet index fund. See also, Antti Petajisto, *Magellan's Problem: Closet Indexing*, November 15, 2005, http://www.petajisto.net/media/magellan_oped.pdf (criticizing Magellan Fund for operating as a closet index fund).

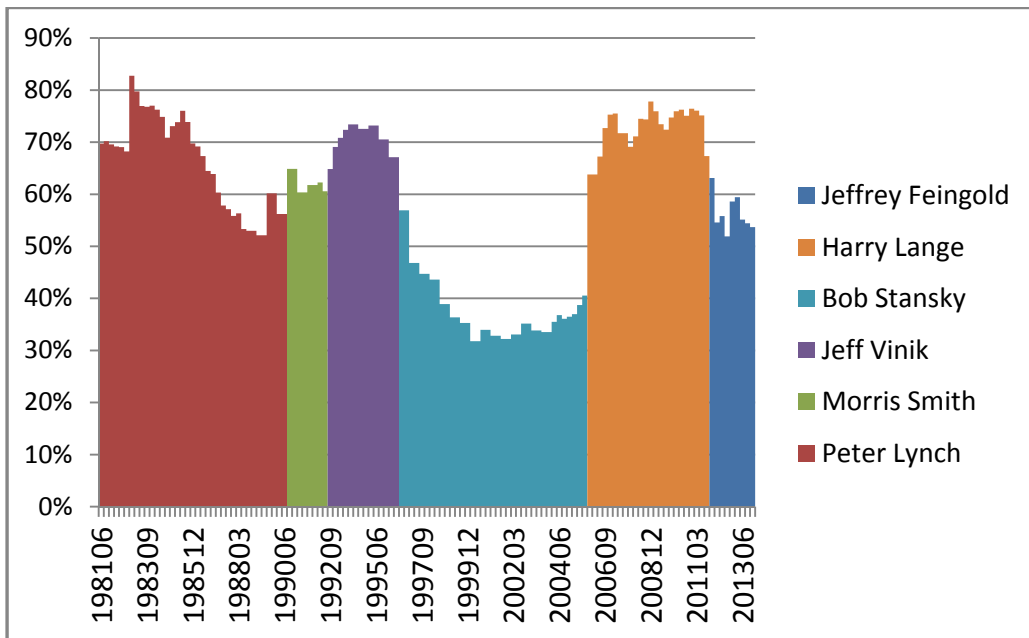
⁷⁵ *Id.*

anticipating a market decline that did not materialize, and causing the fund to badly underperform.⁷⁶ Vinik departed and Robert Stansky took over the fund.

Stansky’s tenure at Magellan was characterized by a sharp, and persistent drop in the Active Share of the fund. When Stansky took over the fund it had considerable positions in fixed income securities, positions taken by Vinik in anticipation of a fall in the market, and positions that likely would have increased the Active Share of the fund. Stansky sold these positions, and the fund’s returns exhibited close to perfect correlation with the S&P 500 for nearly 8 years.⁷⁷

An analysis of the Active Share of the Magellan fund over its lifespan explains why the correlation was so high. During Stansky’s tenure, the fund’s active share plunged deep into low Active Share territory and remained there, as shown in Figure 1, which plots the Active Share of the Magellan Fund over time for the different portfolio managers.

Figure 1: Active Share of the Magellan Fund



⁷⁶ *Id.*

⁷⁷ *Id.*

The extent to which the Active Share of the same mutual fund is dependent on the portfolio manager in this example is striking. Immediately after taking over management of the fund, Harry Lange adopted a strategy that pushed the Active Share back above our closet indexing threshold of 60%, where it remained during his tenure.

While an astute investor may note a change in the portfolio manager, it is significant that a passive investor, buying and holding the Magellan fund, would have received widely different exposures to active management as the fund evolved. Would investors have had notice of these strategic changes? It may be helpful to look to an example of the sorts of disclosures that funds include in their prospectuses. As discussed above, the Fidelity Magellan fund during the years 1997-2005 had a very low Active Share. But prior to 1997 the fund demonstrated more normal levels of active management for a large fund. Were these substantial changes in management style reflected in changes to Magellan's prospectus? Here is how Magellan described its asset management strategy in the in the "Investment Principles and Risks" section of its prospectus dated May 20, 1995:

The fund seeks capital appreciation by investing in securities of domestic, foreign, and multinational issuers. The fund normally invests primarily in common stocks and securities convertible into common stock. The fund may invest a portion of its assets in debt securities of all types, qualities, and maturities issued by domestic and foreign issuers, if FMR believes that doing so will result in capital appreciation. In selecting domestic securities for the fund, FMR may examine U.S.-based corporations of all sizes, industries, and geographical markets. In selecting foreign securities, FMR will favor companies that are large and well-known, although it may choose smaller firms that it believes offer unusual value, even if they involve more risk. The fund may buy securities, including domestic and foreign debt securities that pay dividends. However, no emphasis is placed on dividend income, except when FMR believes this income will have a favorable influence on the market value of the security. ... FMR normally invests the fund's assets according to its investment strategy. The fund also reserves the right to invest without limitation in preferred stocks and investment-grade debt instruments for temporary, defensive purposes.⁷⁸

Here is how the same section appeared in 2002, when the fund's Active Share plunged:

⁷⁸ Fidelity Magellan Fund Prospectus, May 20, 1995.

Investment Objective

Magellan Fund seeks capital appreciation.

Principal Investment Strategies

FMR normally invests the fund's assets primarily in common stocks.

FMR may invest the fund's assets in securities of foreign issuers in addition to securities of domestic issuers.

FMR is not constrained by any particular investment style. At any given time, FMR may tend to buy "growth" stocks or "value" stocks, or a combination of both types. In buying and selling securities for the fund, FMR relies on fundamental analysis of each issuer and its potential for success in light of its current financial condition, its industry position, and economic and market conditions. Factors considered include growth potential, earnings estimates, and management.

FMR may lend the fund's securities to broker-dealers or other institutions to earn income for the fund.

FMR may use various techniques, such as buying and selling futures contracts and exchange traded funds, to increase or decrease the fund's exposure to changing security prices or other factors that affect security values. If FMR's strategies do not work as intended, the fund may not achieve its objective.⁷⁹

By 2007, when the fund's portfolio had shifted back to a comparatively more active strategy (albeit still with a low Active Share) under Lange, the prospectus language remained substantively identical.⁸⁰ An investor relying on the prospectus to understand changes in investment strategies would have little chance of understanding the major shift in the funds' actual investing strategy.

The Magellan story highlights another important point about closet indexing and Active Share: Conservative or bearish portfolios may be no less active than more aggressive portfolios. Closet indexing is therefore distinct from adopting a conservative investment strategy. While

⁷⁹ Fidelity Magellan Fund Prospectus, May 20, 2002.

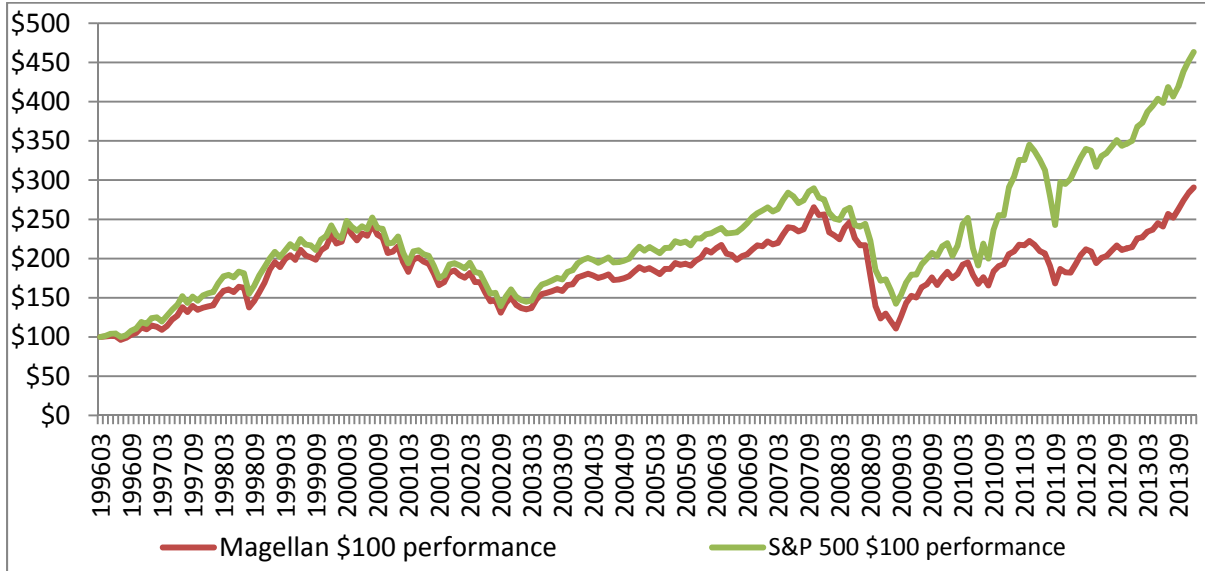
⁸⁰ Fidelity Magellan Fund Prospectus, May 20, 2007. The only exception is the insubstantial change from "FMR may lend the fund's securities to broker-dealers or other institutions to earn income for the fund," in 2002 to "In addition to the principal investment strategies discussed above, FMR may lend the fund's securities to broker-dealers or other institutions to earn income for the fund," in 2005.

Vinik's ill-fated, conservative move to fixed-income securities turned out poorly for investors, it nevertheless took a position that was different from the S&P 500 and had the potential to outperform the S&P 500 if stocks had fallen sharply. Vinik's position was therefore quite active, equally as active as much of Peter Lynch's more bullish positions. While the fund fared poorly *ex post*, it had the potential to outperform *ex ante*. During the Stankys years though, regardless of the direction the market went, Magellan investors were likely to do poorly relative to the benchmark, because they were—in effect—buying the benchmark at high cost. For example, while the expense ratio was only 0.75%, the Active Fee or how much investors of the Fidelity Magellan fund were actually paying for active management at the end of 2001 amounted to 1.95% per year.⁸¹

Figure 2 below shows the performance of a \$100 investment in the Fidelity Magellan fund (after expenses) and the S&P 500 index (assuming no expenses) from right before Stansky took over and significantly reduced the fund's Active Share. The period up to this point had, on average, been good for investors. For example, if investors would have invested \$100 in Fidelity Magellan at the end of 1980, their investment after expenses would have been worth about \$1,770 at the beginning of 1996. As a comparison, a \$100 investment in the S&P 500 over this period would have grown to \$838, with comparable risk exposures to the Fidelity Magellan fund.

⁸¹ The Active Fee is calculated using an Active Share of 34%, an expense ratio of 0.75% per year, and an index fee of 0.13% per year, which was the expense ratio of the Vanguard Total Stock Market Index Fund: $(0.75\% - 0.66 \times 0.13\%) / 0.34 = 1.95\%$.

Figure 2. Cumulative Performance of \$100 Investment in Fidelity Magellan & S&P 500



However, the relative cumulative performance of Fidelity Magellan its Active share fell is decidedly worse than the S&P 500 performance. A \$100 investment at the beginning of 1996 in Fidelity Magellan would have grown to \$187 at mid-year 2005, near the end of Stansky’s close to 10-year tenure, while an identical investment in the S&P 500 would have been worth \$214 at that point, amounting to a cumulative underperformance of the Fidelity Magellan fund of 12.6% (1-187/214), or about 1.3% per year over this 10-year period. As the Fidelity Magellan holdings showed so much overlap with the S&P 500 holdings, the simplest explanation for this underperformance is the fees charged by the Fidelity Magellan fund, which amounted to close to 1% per year.

The period after Stansky left shows that a higher Active Share does not necessarily translate into better performance. A higher Active Share means that the fund has more potential to either underperform or outperform, though at least after 2005 investors in Fidelity Magellan are again receiving what they are paying for, namely an actively (if only moderately so) managed portfolio.

2. The AQR Large Cap Momentum Fund

The prospectus of the AQR Large Cap Momentum Fund (henceforth ‘AQR Momentum’) describes its investment strategy as follows:

The Fund pursues a momentum investment style by investing primarily in equity or equity-related securities (including, but not limited to, exchange-traded funds, equity index futures, and depositary receipts) of large-cap companies traded on a principal U.S. exchange or over-the-counter market that the Adviser determines to have positive momentum. The Adviser considers a security to have positive momentum primarily if it has a return over the prior twelve months that ranks in the top third of its relevant universe at the time of purchase.

The self-declared benchmark of the AQR Momentum Fund is the Russell 1000, or the largest 1,000 U.S. equities. However, the holdings of the fund have consistently been tilted towards growth stocks, which implies better growth opportunities but also more risk. For example, Morningstar, a leading mutual fund research firm, classifies AQR Momentum as belonging to their ‘Large Cap Growth’ category.⁸² Using the most recent information available (of 2015:Q1), the Active Share of AQR Momentum equals 56% with respect to the Russell 1000, and equals 49% with respect to the S&P 500 Growth. As AQR Momentum has consistently displayed a growth-tilt and is classified as a ‘large growth’ fund by the independent research firm Morningstar, we will use the S&P 500 Growth as the most relevant benchmark for AQR Momentum. The most recent Active Share of 49% is typical for the last three years, in which the Active Share of AQR Momentum has been consistently under or close-to 60%. Over this period, the highest Active Share was 60% in September 2013, and the lowest was 42% in June of 2012.

We would argue that the 49% Active Share in March 2013 (and by implication, the relatively low Active Share of the fund throughout the previous three years) plausibly marks AQR

⁸² See <http://www.morningstar.com/funds/XNAS/AMONX/quote.html>.

Momentum as a closet index fund.⁸³ The start of our argument is our previous explanation that with an Active Share of 49%, only about half of the portfolio is distinct from the S&P 500 Growth holdings, and can thus contribute to the relative performance of the fund. Next, the Active Share of 49% means that investors would actually invest about half their money in an S&P 500 Growth fund. However, only 62% of the fund holdings at that time consisted of S&P 500 Growth stocks. That implies that the 51% of overlapping holdings (namely 100% minus the Active Share of 49%) comes from the 62% of the portfolio holdings that could potentially overlap (given that any overlap must be with stocks in the benchmark). As a result, only $(62\% - 51\%) / 62\% = 18\%$ of the S&P 500 Growth holdings in AQR Momentum are *different* from the holdings in the S&P 500 Growth index. However, the prospectus suggests that the fund will invest in only one-third of the holdings in the relevant universe. One plausible reading of the “top third” language is that the fund should have about 67% difference between the holdings of the benchmark and AQR Momentum and the “relevant universe” of growth stocks, rather than the actual 18% difference.

AQR Momentum is not cheap. While S&P 500 Growth funds are available at an annual cost of about 0.15% per year (for example, in the form of the Vanguard S&P 500 Growth ETF), the most recent annual report of AQR Momentum reports that the gross expense ratio of the ‘N’ share class (which comes with a minimum investment of \$1 million) equals 0.84% per year, and of the ‘L’ share class (which comes with a minimum investment in the fund of \$5 million) equals 0.56% per year. Depending on the share class, that means that AQR Momentum is about 4 – 6 times as expensive as the S&P 500 Growth index. Using the 0.84% expensive ratio of the fund

⁸³ We hasten to add that we are not arguing that AQR Momentum is in fact a closet index fund, but rather are pointing out that AQR Momentum could plausibly be interpreted to be one based on the large overlap of their holdings with the holdings in the S&P 500 Growth benchmark, and how that corresponds to their expense ratio and their prospectus language. Furthermore, we are not arguing that AQR Momentum in fact follows a strategy inconsistent with its prospectus language, but rather are pointing out that the prospectus language does commit the fund to a particular investment strategy that could be inconsistent with very low Active Share.

and the 0.15% cost of its benchmark and incorporating its Active Share of 49%, the Active Fee would be $(0.84\% - 51\% * 0.15\%) / 49\% = 1.56\%$ per year. This indicates that after incorporating its low Active Share, the AQR Momentum Fund seems relatively expensive.

In the CRSP daily mutual fund database, the time series for AQR Momentum starts in September 2009 and ends in December 2014. Over this period, the correlation of the excess returns (over the risk-free rate) of the AQR Momentum returns and the S&P 500 Growth index is 97%. Regressing the AQR Momentum excess return on the S&P 500 Growth index return gives an annualized abnormal return of -3.29%. This large underperformance is (marginally) statistically significant, as the alpha has a t-statistic of 1.7 based on robust standard errors, which is associated with a 9% p-value and is thus statistically significant at the conventional 10% level. Using the standard methodology to evaluate mutual fund performance, we can thus conclude that AQR Momentum substantially underperformed over this period.⁸⁴

C. Empirical Results

We begin by presenting descriptive statistics describing Active Share in U.S. equity mutual funds using the most recently available annual data update from the Thomson-Reuters mutual fund holdings database as made available through WRDS, or from December 2014. We only consider funds that invest at least 80% of their assets in U.S. equities, if their strategy primarily involved investing in the broad U.S. market (rather than, e.g., only in particular sectors or

⁸⁴ The regression coefficient on the excess return of the S&P 500 Growth index equals 1.18 (with a t-statistic of 92), and the constant in the regression is estimated at -0.0001315. We annualize the constant estimate by multiplying it by 250 – a typical number of trading days per year – to arrive at -3.29%. The regression's R^2 equals 95%. Comparing the performance to the Russell 1000 instead gives an annualized alpha of -1.4%, which is not statistically significant. Further adjusting for the standard empirical factors for size, book-to-market and momentum – basically employing the so-called four-factor model of Fama and French (1992) – results in negative alphas that are economically large and clearly statistically significant. Using the S&P 500 Growth index as the 'market', the four-factor alpha equals -3.44% per year with a t-statistic of 2.42 (which has an associated p-value of 1.6%). Using the Russell 1000 index as the 'market', the four-factor alpha equals -2.79% with a t-statistic of 2.18 (which has an associated p-value of 3%).

industries) and if they are actively managed. We aggregate all relevant data at the portfolio level, i.e., weighting information for different share classes for a particular fund by the size of the assets in each share class for that fund. If available, we use the Active Share with respect to the self-declared benchmark, and otherwise use the minimum Active Share with respect to all possible benchmark indices used by U.S. mutual funds. For further details regarding sample selection and methodology, please see Cremers and Pareek (2014).⁸⁵

At the end of 2014, our various data checks leave us with a sample of 1,255 different U.S. equity mutual funds, which collectively have \$2.7 trillion under management. These funds can further be classified by the typical size of the companies in which they invest as indicated by their benchmark.

Table 1 below shows the distribution of Active Share for the full sample plus separately for large-, mid-, and small-cap⁸⁶ equity mutual funds. As we are primarily interested in the typical investor experience, we weight all variables by the size of the assets under management. Accordingly, for each of the various samples, we calculate the percentage of assets in funds that have an Active Share below 60% (and can thus be classified as Closet Index funds, assuming their fees are similar to the fees of the other actively managed funds), and the percentage of assets in funds that have an Active Share above 80% and 90%, respectively.

⁸⁵ See http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2498743.

⁸⁶ These classifications reflect the size of the companies in which the funds typically invest, with large-cap funds holding the largest companies, frequently members of the S&P 500. Small- and mid-cap funds hold small and medium size companies, respectively.

Table 1: Summary Statistics for Active Share in 2014

	<i>Assets Closet Funds</i>	<i>in Index</i>	<i>Assets Active > 80%</i>	<i>with Share</i>	<i>Assets with Active Share > 90%</i>	<i>Assets Management</i>	<i>Under</i>	<i>Number of Funds</i>
<i>All Funds</i>	12.24%		32.80%		14.30%	100%		1,251
<i>Large Cap Funds</i>	15.60%		17.70%		4.60%	72.50%		702
<i>Mid Cap Funds</i>	4.40%		63.70%		22.30%	12.50%		228
<i>Small Cap Funds</i>	2.80%		80.20%		54.80%	15.00%		321

As shown in Table 1, about 12% of the assets in U.S. equity mutual funds are in closet index funds at the end of 2014. We can further conclude that closet indexing is largely limited to large cap funds, as the percentage of assets in closet index funds is considerably smaller.⁸⁷ This can be explained by large cap funds having a more limited investment universe (fewer stocks to choose from) and generally a more concentrated benchmark than mid cap and small cap funds. About 18% of assets are in funds with very high Active Shares above 90%.

Figure 4 presents the distribution of Active Share over time. Each year, we calculate the sum of the size of the assets under management for all funds with Active Shares below 60%, between 60% and 70%, between 70% and 80%, between 80% and 90%, and above 90%. Next, we divide that by the sum of the assets under management for all funds in the sample regardless of their Active Share.

⁸⁷ Recall that Active Share is measured with respect to a fund's most similar index, so small- and mid-cap funds are not being compared to the S&P 500, but to indices that more closely track their portfolios. Closet indexing among large-cap funds is not a mechanical effect of the benchmark index.

Figure 3. Active Share Over Time – Annual Percentage of Assets in Active Share Deciles

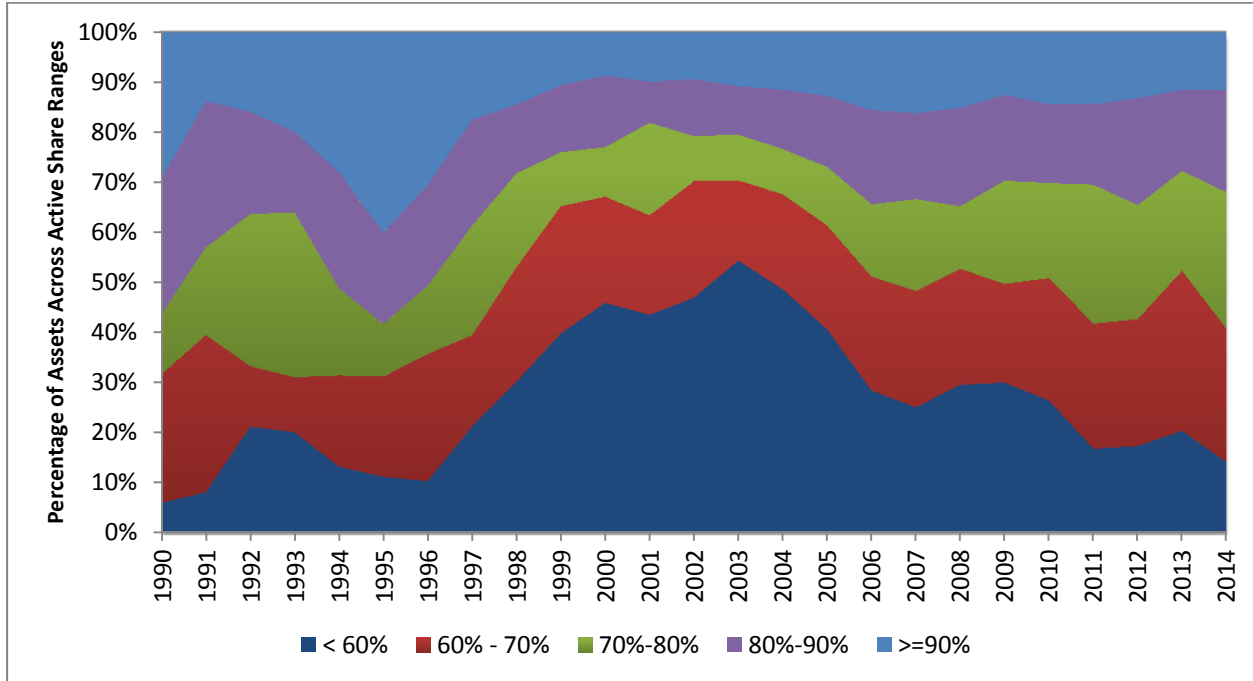


Figure 3 documents the broad trend towards lower Active Shares over time. While closet indexing was very uncommon in the 1980s, the percentage of assets in actively managed funds with Active Shares below 60% rose to about 30% in 2004. After that, the distribution of assets across Active Share has been fairly stable. The main exception is that the percentage of assets in funds with Active Share below 60% has steadily declined after 2009, though almost the entire decline in funds with Active Share below 60% was absorbed by the group of funds with Active Shares between 60% and 70%.

Table 2 presents two panels of summary statistics for large-cap funds only, and using the sample of funds in 2014 only. We only consider large-cap funds in order to have a more appropriate comparison between other characteristics of closet index funds versus funds with an Active Share above 60%. Panel A shows important variables for all large cap funds (the ‘full sample’), while Panel B shows the same statistics just for large cap funds with an Active Share below 60%, our somewhat arbitrary cutoff for closet index funds (the ‘closet index fund

sample'). We show the total assets under management, the expense ratio, the front and rear-end loads⁸⁸, the turnover ratio, the number of different stock positions and the percentage of the fund held in cash. Finally, we also calculate the 'Active Fee', i.e., the expense ratio adjusted for the Active Share of the fund. For simplicity, we use a passive fee of 0.15% for all funds in our calculation of the Active Fee (ignoring slight differences in the cost of investing in passive large cap benchmark indices).

Comparing measures between the two panels in Table 2, we see that the closet index fund subsample has comparable fund size and turnover to the full sample. The average expense ratio for the closet index fund sample of 0.84% per year is 0.21% lower than the average expense ratio for the full sample of 1.05% per year. However, once we adjust the expense ratio for the Active Share of the fund, this reverses. The average Active Fee for the closet index fund sample equals 1.54%, compared to an average Active Fee of 1.36% in the full sample. This difference of 0.18% is also statistically significant with a t-statistic of 3.29 and a p-value of 0.1% using a two-tailed test. This means that adjusted for their level of Active Share, closet index funds are more expensive. Economically, it means that the non-overlapping fund holdings of closet index funds need to outperform by about 1.54% per year before their investors receive any performance net benefits over investing in the benchmark (ignoring other benefits the fund may provide such as risk management and liquidity provision).

⁸⁸ These 'loads' are fees that typically go to the broker that sells the fund and only applies to certain share classes. We have calculated the weighted average of the loads across all fund share classes, weighted by the size of the assets represented by the various share classes of each fund. Rear-end loads are paid when the investors exits the fund, and are often (partially) waived if the investor has held the fund shares sufficiently long (typically after 3 – 5 years).

Table 2: Large Cap Fund Summary Statistics

Sample: Variable	All large cap funds in 2014				Closet Index Funds in 2014 (Active Share < 60%)			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Total net assets (\$ millions)	\$ 2,719	\$ 9,313	\$ 10	\$ 138,896	\$ 2,598	\$ 3,513	\$ 14	\$ 16,227
Expense ratio	1.05%	0.38%	0.01%	4.89%	0.84%	0.37%	0.18%	1.68%
Active Fee	1.36%	0.52%	-0.06%	6.80%	1.54%	0.09%	0.20%	6.80%
Front load	1.14%	1.69%	0.00%	8.42%	1.10%	1.85%	0.00%	7.91%
Rear load	0.13%	0.39%	0.00%	2.01%	0.04%	0.13%	0.00%	0.86%

The main takeaways from these summary statistics are that closet indexing is a phenomenon of large-cap funds. Though closet indexing has declined to some degree in recent years, it continues to affect a considerable portion of large cap funds. Most importantly, low Active Share funds only appear relatively inexpensive if their expense ratios are taken at face value. Once these funds' expense ratios are adjusted for the extent to which their holdings overlap with the holdings in the low-cost benchmark, they are seen to be relatively expensive.

We now turn to the impact of high fees and low Active Share on future fund performance. In this section, we consider the performance of the actively managed funds in the next calendar year depending on their current Active Share and expense ratio. Actively managed mutual funds charge higher fees than index funds and can only recover those fees, relative to the performance of an index fund, if the actively managed portion of the portfolio outperforms. The lower the Active Share, the higher the outperformance of the holdings that are different (but that make up a smaller fraction of the fund) must be in order to recover fund expenses and make the fund a comparatively good deal. Comparing measures between the two panels in Table 2, we see that the closet index fund subsample has comparable fund size and turnover to the full sample. The average expense ratio for the closet index fund sample of 0.84% per year is 0.21% lower than the average expense ratio for the full sample of 1.05% per year. However, once we adjust the expense ratio for the Active Share of the fund, this reverses. The average Active Fee for the closet index fund sample equals 1.54%, compared to an average Active Fee of 1.36% in the full sample. This difference of 0.18% is also statistically significant with a t-statistic of 3.29 and a p-value of 0.1% using a two-tailed test. This means that adjusted for their level of Active Share, closet index funds are more expensive. Economically, it means that the non-overlapping fund holdings of closet index funds need to outperform by about 1.54% per year before their investors

receive any performance net benefits over investing in the benchmark (ignoring other benefits the fund may provide such as risk management and liquidity provision).

The main takeaways from these summary statistics are that closet indexing is a phenomenon of large-cap funds and that information on Active Share is necessary in order to interpret the expenses that are charged. Though closet indexing has declined to some degree in recent years, it continues to affect a considerable portion of large cap funds. Most importantly, low Active Share funds only appear relatively inexpensive if their expense ratios are taken at face value. Once these funds' expense ratios are adjusted for the extent to which their holdings overlap with the holdings in the low-cost benchmark, they are seen to be relatively expensive.

We empirically evaluate the combination of these effects by sorting funds into quintiles, first on costs, and then on Active Share, and using style-corrected, risk-adjusted returns to evaluate fund performance. The details of this analysis are presented in detail in the appendix and summarized here.

Funds that combine low Active Share and high fees are strikingly poor performers. Funds in the lowest quintile of Active Share and the highest quintile of fees under-perform their benchmark by 1.84% a year. To put this number in context, consider a worker saving \$500 monthly for retirement over the course of a 30-year career. Assuming a constant benchmark return of 6%, a 1.84% annual shortfall would be the difference between an end-of-career balance of \$504,876 and \$358,143, difference of 29%.

Underperformance by funds with a combination of low Active Share and high fees is statistically significant as well, at the 10% level. Compared to low-cost, high-Active Share funds, high-cost low-Active Share funds underperform by 1.93% per year, significant at the 1% level. These results are also robust to looking only at large cap funds, where most closet index

funds are concentrated. The underperformance of high-cost, low-Active Share large cap funds is economically and statistically nearly identical, with high-cost, low-Active Share funds underperforming low-cost, low-Active Share funds by 1.79% with a statistical significance well below the 1% level. Notably, we exclude front end sales loads from this analysis. Loads would tend to exacerbate the underperformance problem of expensive, low Active Share funds.

Low Active Share funds, and particularly low Active Share funds with high cost, are on average, both *ex ante* and *ex post*, poor investment choices and investors would be well advised to avoid them. At the very least, investors should be made aware what the Active Share is of the fund they are buying, especially if the fund is not cheap. In the next section we turn to the question of whether a response to closet indexing from policy makers is necessary and what types of responses could be pursued.

IV. Responses to Closet Indexing

This section develops two approaches to the issue of closet indexing. First, we describe several theories on which closet index funds could potentially be liable under existing federal securities laws and other theories, including liability for prospectus misstatements, liability for excessive fees, and liability for fiduciary breach under ERISA when such funds are included in 401(k) menus. Acknowledging the limits of such liability in addressing a widespread problem, we also describe a disclosure regime that would incorporate Active Share. We propose several new disclosure items related to Active Share that would give investors easier access to valuable information about how their funds operate.

While increased regulation and new theories of liability are sure to meet resistance, there are those in the mutual fund industry who would stand to benefit from increased pressure on closet index funds. International attempts to crack down on closet indexing have enjoyed support from

some active fund managers.⁸⁹ This is sensible, because under current disclosure regimes it can be difficult for funds that truly deliver active management to distinguish themselves from closet indexers, and given the low performance of closet indexers,⁹⁰ closet indexing makes actively managed funds a less attractive asset class. One practitioner commented: “There are many fund managers who are closet indexing and overcharging for that. They have been a disservice to the industry,”⁹¹ and a manager in the United States made the argument explicit: “The average performance of ‘active’ managers is being damped down by the inclusion of what we consider to be closet indexers.”⁹² It is notable that the active management industry itself may support reforms aimed at reducing closet indexing.⁹³ On the other hand, funds that offer primarily low Active Share products may resist increased transparency, as suggested by the two cases studies discussed above.

A. Potential Liability for Closet Indexing.

Investors in a closet index fund are harmed by paying fees for active management that they do not receive or receive only partially. There are two ways such a harm could be styled as a legal claim against a fund directly: First, investors in mutual funds could claim they have been misled by a closet index funds’ prospectus and public statements regarding its investing style. Such a claim would provide a theory of liability under 11(a) and 12(a)(2) of the Securities Act. Second, investors in a closet index fund might simply claim that they have been overcharged. This claim would fit within Section 36(b) of the Investment Company Act. This section addresses these two theories of liability, and argues that such claims are both plausible and could

⁸⁹ See, Madison Marriage, “The Future Is Bleak of Closet Trackers,” Financial Times (December 7, 2014).

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ See Section V *infra*.

also help enhance our understanding of the role of 12(a)(2) as applied to mutual funds and 36(b) more generally. It also addresses the possibility of direct SEC enforcement action, as well as the potential use of Active Share in suits brought against 401(k) fiduciaries under ERISA. The rest of this section analyzes these theories liability in detail.

1. Liability for Closet Indexing Under Sections 11(a) and 12(a)(2) of the Securities Act

Section 11(a) of the Securities act provides liability for a fund using a prospectus that “contain[s] an untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary to make the statements therein not misleading.”⁹⁴ Plaintiffs can recover the diminution in value of the securities unless such decline is shown by the defendant not to result from the misstatement.⁹⁵ Section 12(a)(2) of the Securities Act provides liability for anyone who “by means of a prospectus or oral communication, which includes an untrue statement...”⁹⁶ The plaintiff can “recover the consideration paid for such security with interest thereon, less the amount of any income received thereon, upon the tender of such security, or for damages if he no longer owns the security.”⁹⁷ The liability is qualified by a loss causation defense, 12(b),⁹⁸ that provides that if “any portion or all of the amount recoverable under subsection (a)(2) of this section represents other than the depreciation in value of the subject security resulting from such part of the prospectus ... not being true or omitting to state a material fact ...then such portion or amount, as the case may be, shall not be recoverable.”⁹⁹ Thus, 12(a)(2) provides a qualified rescission remedy for misstatements in a prospectus, limited by the provision that only the decline in value attributable to the misstatement is recoverable.

⁹⁴ 15 U.S. Code § 77k(a)

⁹⁵ 15 U.S. Code § 77k(e).

⁹⁶ 15 U.S. Code § 77l(A)(2).

⁹⁷ 15 U.S. Code § 77l(A).

⁹⁸ 15 U.S. Code § 77l(B).

⁹⁹ *Id.*

Neither Sections 11(a) nor 12(a)(2) include a requirement that the plaintiff show reliance on the false or misleading statement or omission. Claims under these sections amount to something approaching strict liability for material misstatements in a mutual fund prospectus. Liability boils down to the question of whether (1) there was a material misstatement in the prospectus and (2) whether a loss causation defense is available.

a. Do prospectuses of closet index fund contain material misstatements?

Whether a prospectus of closet index fund contains material misstatements is a difficult question to answer because both the definitions of both “materiality” and “closet index fund” require subjective line drawing. While we feel that, at least for the lowest Active Share funds that charge similar fees as truly active funds and, among those, funds with particularly strong statements in the prospectus regarding investment style, there is a plausible case to be made that the prospectus is materially misleading, the goal of the following discussion is to evaluate the plausibility of sections 11 and 12(a)(2) as theories of closet indexing liability, not to draft a complaint. Moreover, if closet indexing does not typically implicate these sections, this would not suggest that closet indexing is not a problem, but that closet indexing is not a problem that this form of liability will help solve. As such, we analyze typical prospectus language and compare it with other cases alleging sections 11 and 12(a)(2) breaches in mutual funds.

The conventional definition of materiality is information that “a reasonable [investor] would consider ... important.”¹⁰⁰ Given that actively managed mutual funds charge fees that are typically several times higher than passive funds, it seems reasonable to assume that a fund with an Active Share near zero, that is, a true index fund, that represented itself to be actively managed in its prospectus, would have made a material misrepresentation. But the reality of closet indexing is not so black and white. Recall that we have chosen a threshold Active Share

¹⁰⁰ TCS Industries v. Northway, 426 US 438 (1976).

of 60% to identify closet index funds. This cutoff is, as we have acknowledged, somewhat arbitrary, though we have further argued that only Active Shares above 50% are consistent with truly active management (as at most 50% of the benchmark assets can outperform the benchmark return, which is the asset-weighted return in the individual securities in the benchmark). Moreover, Active Share can change over time. A fund's Active Share on a single day is unlikely to be sufficient to render its prospectus false (as for example a low Active Share may be temporary and reflect the manager's belief that there are few stock-picking opportunities at that particular point of time, but as soon as that changes the fund's Active Share would increase). Nevertheless, there are a number of funds that have a persistently low Active Share and that are not cheap. These funds would be the most obvious candidates for an allegation of material misstatements in their prospectus.

Refer back to the language quoted above from Fidelity Magellan Fund's prospectus.¹⁰¹ Both prospectus descriptions provide extremely broad latitude in terms of the types of stock that Magellan might hold. Nevertheless, there are statements that suggest that the inclusion of a stock in the portfolio is the result of analysis of the particular security: "FMR relies on fundamental analysis of each issuer and its potential for success in light of its current financial condition, its industry position, and economic and market conditions"¹⁰² in the 2002 prospectus for example, or the references to "examin[ing]" companies in the 1995 prospectus,¹⁰³ for example. If anything, the 2002 prospectus statement seems to put more emphasis on selecting individual securities based on security-specific fundamental value. Neither prospectus appear to give clear guidance as to the funds' approach to holding securities in common with the benchmark index, and both emphasize capital appreciation as the goal of including particular

¹⁰¹ See notes 78-80 *supra*.

¹⁰² See *supra* note 78.

¹⁰³ See *supra* note 79.

stocks in the portfolio. Investors would not be limited to statements in the formal prospectus, but could also rely on advertisements and other written descriptions of the fund. Thus, the classification of a fund as actively managed by the issuer may provide additional grounds to support a claim, even if “active management” doesn’t specifically appear in the prospectus.

We do not suggest that Fidelity Magellan Fund violated 12(a)(2) in its 2002 prospectus, rather, the motivation in presenting this language is to highlight that fund prospectuses often contain language that describes an active investment strategy that examines securities individually, and that this language—at least in the case of Magellan—may not change as a fund’s Active Share changes. As a practical matter, an investor relying solely on these sorts of descriptions of investment policy to choose a fund may find themselves misled into believing they are receiving a more active portfolio than they actually are.

Using section 11 or 12(a)(2) to bring suit for closet indexing is, as far as we know, a novel legal approach. Additional insight into the viability of such a claim may be gleaned by drawing an analogy to other suits that allege misleading statements in funds’ description of their investment strategy. A number of such suits grew out of the financial crisis, where funds that marketed themselves as holding safe asset classes suffered losses due to exposure to mortgaged-backed securities.¹⁰⁴ These cases are analogous to closet indexing claims because both involve allegations that a fund’s actual investment practices are inconsistent with its stated policies.

For example, in *In re Charles Schwab Corp Securities Litigation*¹⁰⁵ investors in the Schwab YieldPlus fund alleged that the fund held itself out in its prospectus and marketing materials as an “ultra short term bond fund which sought to keep its average portfolio duration below one

¹⁰⁴ ICI Mutual Claims Trends, <http://www.icimutual.com/system/files/Claims%20Trends%20April%202014.pdf>.

¹⁰⁵ 257 F.R.D. 534 (2009).

year”¹⁰⁶ with an emphasis on capital preservation, but the fund allowed its portfolio average duration to extend past two years and held excessively risky assets, as a result of which investors in the fund suffered losses. The court denied Schwab’s motion to dismiss, noting that, unlike in a 10b-5 case, allegations of scienter made with particularity, which the plaintiffs did not include in the complaint, are unnecessary.¹⁰⁷ The section 11 and 12(a)(2) claims were permitted to proceed and eventually settled.

Plaintiffs in the Charles Schwab case benefited from a concrete investment policy statement regarding the average portfolio duration that made it relatively easy for the court to find a misstatement. A closet indexing complaint would typically rely on a more vague commitment to active management. This may not be a bar to recovery, however. Consider the class action lawsuits brought against certain Oppenheimer funds following the financial crisis.¹⁰⁸ The central claim in these suits was that “while most of the Funds explicitly articulated ‘preservation of capital’ as an overarching investment objective, in actuality they employed an unabashedly aggressive ‘No Guts, No Glory,’ ‘high-risk, high-return’ objective that, given certain foreseeable market conditions, placed investors’ capital at tremendous and undisclosed risk.”¹⁰⁹ This is a more general type of misstatement: that the fund invested in assets more risky than those described in its prospectus. As with the Schwab case, the court denied the motion to dismiss.¹¹⁰

While bringing a Section 11 and 12(a)(2) case based on closet indexing would require a court to find a material misstatement based on the *degree* to which the fund failed to deliver active management and the *degree* to which the prospectus promised active management, such a theory of liability is hardly implausible, particularly for the worst closet index funds. Moreover, as the

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *In re Oppenheimer Rochester Funds Grp. Sec. Litig.*, 838 F. Supp. 2d 1148, 1155 (D. Colo. 2012).

¹⁰⁹ *Id.* at 1155.

¹¹⁰ *Id.*

Oppenheimer case suggests, less than concrete prospectus language is not a bar to establishing materiality.

b. Loss Causation

Even if a material misstatement can be demonstrated, a Section 11 or 12(a)(2) claim will not succeed if the defendant can argue that the investor's loss was not due to the misrepresentation. Loss causation is often described as analogous to proximate or legal causation in tort law. It is not enough to allege that the investor would not have invested in the fund if she had known it was a closet index fund, but rather one must demonstrate that the investor experienced a loss that is directly related to the fund being a closet index fund. Since a suit for closet indexing would amount to an allegation that a fund was charging excessively for little active management, the economic harm would be measured by the portion of fees alleged to be excessive. Since fees are a direct cost to investors, the link between closet indexing and investor losses is relatively straightforward, even if calculating actual damages would not be.

Loss causation in a Section 11 and 12(a)(2) claim for closet indexing is nevertheless interesting to address because it sheds light on a recent debate among courts regarding whether loss causation can ever be shown in claims involving mutual fund prospectuses. Courts have occasionally adopted the view that allegations of misstatements in the prospectus can *never* satisfy the loss causation requirement because mutual fund shares are priced at net asset value (NAV), the total value of the fund's assets under management divided by the number of shares.¹¹¹

The argument proceeds as follows: It does not suffice to allege that an investor would not have purchased shares in a fund if they had been aware of the misstatement. Thus, in a case like

¹¹¹ See David M. Geffen, *A Shaky Future For Securities Act Claims Against Mutual Funds*, 37 Sec. Reg. L.J. 20, 23–24 (2009).

Schwab, the fact that the fund held assets of a different type than the portfolio laid out would not, per the argument, establish loss causation, but only transactional causation. When investors put money in the fund, they receive shares in the fund equivalent to their investment. Though the holdings in the portfolio have been misrepresented in the prospectus, the shares they receive are nevertheless accurately priced, reflecting the true value of the underlying assets, including substantial undisclosed exposure to mortgage backed securities. The actual loss to investors in *Schwab* was a result of a broad decline in the value mortgage backed securities. This loss was not related to any misstatement in the prospectus, but was simply the result of changes in the market. As a result, mutual fund investors who receive shares priced at an accurately-determined NAV can never make out a claim for misstatements in the prospectus, since their loss can only be due to fluctuations in the underlying values of portfolio securities. This theory has been approved, at least in specific instances, by courts,¹¹² and has led to questions about the future of Section 11 and 12(a)(2) liability for mutual funds.¹¹³ Courts are somewhat split on the matter of loss causation in mutual funds, with some courts finding the loss causation argument to prove too much, effectively becoming a bar to liability.¹¹⁴ Since many cases are settled after the motion to dismiss is decided, the issue is not typically fully litigated.

It is the unique NAV-redemption feature of mutual funds that makes this argument workable. If an ordinary corporation materially misstated the market risks it faced in its prospectus, and one of those risks materialized causing a decline in the value of the company, the shareholders would argue that the misstatement had caused the company's stock to be overpriced, and therefore

¹¹² *Id.*

¹¹³ *Id.*

¹¹⁴ Compare *Lentell v. Merrill Lynch & Co.*, 396 F.3d 161 (2d Cir.2005), with e.g. *In re Oppenheimer Rochester Funds Grp. Sec. Litig. (Oppenheimer)*, 838 F. Supp. 2d 1148 (D. Colo. 2012); *Rafton v. Rydex Series Funds (Rafton)*, No. 10-CV-01171-LHK, 2011 WL 31114 (N.D. Cal. Jan. 5, 2011); *In re Evergreen Ultra Short Opportunities Fund Sec. Litig. (Evergreen)*, 705 F. Supp. 2d 86 (D. Mass. 2010); *In re Charles Schwab Corp. Sec. Litig. (Schwab)*, 257 F.R.D. 534 (N.D. Cal. 2009).

caused the loss when the true risks to the company became apparent. Because the price of a mutual fund share is always fixed to the value of the underlying portfolio, this type of mispricing argument cannot be made, though the impact on investors of undisclosed risk is similar.

Closet indexing claims circumvent this difficulty and point to another avenue for identifying losses to investors due to prospectus misstatements: excessive management fees relative to the level of active management delivered. If closet indexing causes investors to pay excessive prices for active management, then the damage to investors is directly attributable to the fees. Though the shares are issued and redeemed at accurate NAVs, in the interim, the investor is paying more for active management (or, equivalently, receiving less active management) than he was led to believe by the prospectus. This is a direct harm to the investor resulting from the misstatement, and establishes that a decline in the NAV is not the only factor in loss causation.

The management fees argument could potentially be extended to fund management strategy cases like *Schwab* by running the analogy between closet index fund cases and management strategy cases described above backwards. Since investors choose mutual funds in order to receive a particular type of asset management—active vs. passive in the closet index case, or short term bond vs. long term bond in *Schwab*—a material failure to comply with the strategy as described in the prospectus deprives investors of the investment strategy for which they are paying and substitutes a strategy that is, subjectively and given the risk-profile of the investors—less valuable. In both instances, this is a harm to the investors that ought to be cognizable under Sections 11 and 12(a)(2). Of course, this would mean that damages would be limited to fees, which would typically be relatively small compensation in such a case, but it would circumvent the loss causation issue in courts where it has become an obstacle to *any* recovery.

2. Liability Under 36(b) of the Investment Company Act

Another possibility to address closet indexing would be a suit under Section 36(b) of the Investment Company Act, which is often used to challenge mutual funds for charging excessive fees. Since the primary harm to investors of closet indexing is overpaying for active management, Section 36(b) was added to the Investment Company Act in 1970 with the express purpose of addressing perceived excessive fees in mutual funds. The provision states:

[T]he investment adviser of a registered investment company shall be deemed to have a fiduciary duty with respect to the receipt of compensation for services, or of payments of a material nature, paid by such registered investment company, or by the security holders thereof, to such investment adviser or any affiliated person of such investment adviser.¹¹⁵

The vague language of fiduciary duty was given greater substance by the second circuit in *Gartenberg v. Merrill Lynch Asset Management, Inc.*, which held:

[T]he test is essentially whether the fee schedule represents a charge within the range of what would have been negotiated at arm's-length in light of all of the surrounding circumstances. . . . To be guilty of a violation of § 36(b), . . . the adviser must charge a fee that is so disproportionately large that it bears no reasonable relationship to the services rendered and could not have been the product of arm's length bargaining.¹¹⁶

This construction of 36(b) was subsequently approved by the Supreme Court in 2010 in *Jones v. Harris Associates L.P.*¹¹⁷ Following the *Jones* decision, mutual funds have faced a vigorous waive of excessive fee litigation.

Mutual fund fee litigation under 36(b), in light of the vague standard of liability, has given rise to a number of theories of what constitutes “excessive” fees. Many cases have failed to state clearly any theory of what makes the fees in question excessive. Other cases have attempted to spin mutual fund scandals, such as market timing, into claims about excessive fees. A recurring

¹¹⁵ Investment Company Amendments Act of 1970, Pub. L. No. 91-547, 84 Stat. 1413-36(b).

¹¹⁶ *Gartenberg v. Merrill Lynch Asset Mgmt., Inc.*, 694 F.2d 923, 928 (2d Cir. 1982).

¹¹⁷ *Jones v. Harris Assocs. L.P.*, 559 U.S. 335 (2010).

challenge, for both plaintiffs and courts, in 36(b) suits has been to identify a theory on which fully disclosed fees can be excessive.

Limited guidance on what constitutes excessive fees under the *Gartenberg* standard has been provided by the so-called *Gartenberg* factors which give a multifactor test including the following considerations:

(1) the nature and quality of services provided to fund shareholders; (2) the profitability of the fund to the adviser-manager; (3) fall-out benefits; (4) economies of scale; (5) comparative fee structures; and (6) the independence and conscientiousness of the trustees.¹¹⁸

One of us has, elsewhere, criticized the vagueness of the *Gartenberg* standard for making the motion to dismiss too easy for plaintiffs to survive.¹¹⁹ Nevertheless, this is the law of mutual fund fees as it currently stands.

The Active Fee measure described above provides a viable theory to bring 36(b) claims against funds with low Active Share. A very high Active Fee over an extended period of time, relative to funds of a similar purported style, indicates both that investors are overpaying for active management, and that the board of the fund has been insufficiently aggressive in seeking more active portfolio management or lower total fund costs. This theory of liability is a good fit for 36(b).

Consider how a closet-indexing based 36(b) claim would map to the *Gartenberg* factors. Closet indexing goes directly to the “nature and quality of the services provided.” The heart of the claim would be that investors are paying for active management services that they are not receiving. While the “quality” of management services is typically difficult to evaluate, the empirical results presented above strongly support the view that a high Active Fee is a serious

¹¹⁸ *Krinsk v. Fund Asset Mgmt., Inc.*, 875 F.2d 404, 409 (2d Cir. 1989).

¹¹⁹ Quinn Curtis and John Morley, *The Flawed Mechanics of Mutual Fund Fee Litigation*, Yale Journal on Regulation (2015).

disadvantage to investors in the fund, suggesting that less active management is, in a strong sense, lower quality.

The Active Fee measure developed above, also goes to the “comparative fee structure” element of the test, as it provides a way to compare fees across funds with different levels of active management. With a significant number of funds having an Active Fees in excess of 1.5% – 2% and low Active Share being linked to predictably poor performance, a high Active Fee seems a reasonable basis on which to claim that a fund is excessively expensive in the *Gartenberg* sense.

A persistent low Active Share may also reflect on “the independence and conscientiousness of the trustees.” Mutual fund boards are different than ordinary corporate boards in that shareholders, who can freely redeem shares, have essentially no incentive to engage in activism. As a result, mutual fund boards are typically nominated by the fund complex, and a fund complex often uses a single set of directors to oversee most or all of its funds. While mutual fund boards have the power to move a fund to a different fund complex, this almost never happens, and the key role of mutual fund boards is to negotiate the management agreement and to assess the performance and cost of the fund. A dissatisfied board might demand the replacement of a portfolio manager, for example. A persistent closet index fund, and particularly one with high Active Fees, may have a board that is insufficiently aggressive in negotiation for better management on behalf of its shareholders.

The other *Gartenberg* factors (i.e., profitability, fall out benefits, and economies of scale) are all related to the operational cost of the fund. Active Share may be relevant to these factors as well, as a fund that has low Active Share may, as noted above, economize on the cost of active management by giving less of it, relative to the size of the fund, than a fund with higher active

share. Funds' profitability is difficult to measure and doesn't have a direct impact on fund investors, but it is at least plausible that closet index funds are unusually profitable in light of their potentially lower operational costs.

All told, closet indexing fits well with the general structure of 36(b) liability, and provides a more plausible theory of overcharging than many other 36(b) claims. Indeed, the difficult-to-detect nature of closet indexing may actually enhance the case for the existence of 36(b) liability, long a contentious topic,¹²⁰ since closet indexing suggests one way in which even fully disclosed fees do not give investors sufficient information to assess the value of what they are receiving.

Section 36(b) claims brought on a closet indexing theory could put pressure on fund boards to monitor the Active Share of their funds, and force low-activity funds to adopt a more active strategy. A board faced with a fund like Magellan under Stansky might put pressure on the portfolio manager to seek out more active investment strategies in order to increase Active Share. Alternatively, a board might ask for fees of a relatively passive fund to be lowered in order to reduce the Active Fee and increase the potential for good net-of-fee performance. In either case, our empirical results suggest that investors stand to benefit from increased board attention to Active Share and Active Fees.

To our knowledge, only one 36(b) case has included allegations that are similar to closet indexing. *In re American Funds Fee Litigation*¹²¹ contains a brief description of closet indexing and R-squared as a measure of indexing, but it also focuses on the large size of the fund, rather than closet index behavior *per se*. While the complaint does not use Active Share as a measure of closet indexing or Active Fees as a measure of the cost of active management, the complaint does include language that reflects concerns about the costs of closet indexing:

¹²⁰ See Quinn Curtis and John Morley, *The Flawed Mechanics of Mutual Fund Fee Litigation*, Yale Journal on Regulation (2015).

¹²¹ 2006 WL 2444110.

American Funds grew so large during the relevant timeframe that only a portion of the Funds was actively managed. However, the size of the management fee reflected an incorrect assertion that the funds should compensate the Investment Adviser Defendant as if the Funds were fully actively managed -- which they were not. Accordingly, the advisory fee was excessive because it was disproportionate to the services rendered.¹²²

The complaint focuses, in particular, on the impact of the increasing size of the fund on closet indexing behavior.

With the huge growth in the American Funds over the past several years, they have functioned more like an index fund. Increased asset size causes the Funds to act similarly to index funds because as the funds grow, managers must increase their number of holdings so they do not have too much money in any one stock.¹²³

The complaint, though, suffers from the absence of precise measurements and comparative information, instead relying on business-press articles regarding fund growth and performance. While this pleading strategy highlights the issue of closet indexing, it falls considerable short of what a more sophisticated pleading based on Active Share and Active Fee could demonstrate with respect to the pernicious impact of low Active Share combined with a high Active Fee on fund performance. The complaint was ultimately dismissed without the court explicitly addressing the closet indexing allegations.

Claims under the Securities Act and 36(b) could be effective deterrents to egregious closet indexing, but it is unlikely that they could address cases of more modest closet indexing. The need to show a material misstatement in the prospectus and the *Gartenberg* language regarding arm's length bargaining, coupled with courts' likely reluctance to interfere too deeply in portfolio management decisions means that there is likely a substantial class of cases of fund that are excessively passive over an extended period of time, but not so egregiously passive that a

¹²² *Excerpt of Second Amended Complaint, In re American Funds Fee Litigation*, 2006 WL 2444110 ¶91.

¹²³ *Id.* at ¶82.

successful claim could be brought against them. Nevertheless, closet indexing-based 36(b) cases would serve to focus the attention of fund directors on Active Share and the fund's Active Fee.

3. SEC Enforcement and Section 13(a)(3)

Section 13(a)(3) of the Investment Company Act provides that a mutual fund cannot alter its “fundamental investment policies” without a shareholder vote. Section 8(b) of the Investment Company Act requires that funds’ registration statements include “a recital of all investment policies of the registrant ... which are changeable only if authorized by shareholder vote,”¹²⁴ as well as a list of policies with respect to certain enumerated issues such as borrowing and lending and concentrating in particular industries.¹²⁵ Since fundamental policies are alterable only with a shareholder vote, funds are careful to outline them in fairly broad terms. For example, the prospectus of the American Growth Fund does not provide any fundamental policies beyond the required enumerations of Section 8(a)(1). By contrast, the Fidelity Contrafund does include, among its fundamental investment policies, a statement of investment objective that could be seen as a constraint on closet indexing: “Fidelity Contrafund seeks capital appreciation by investing in securities of companies whose value the Adviser believes is not fully recognized by the public.”¹²⁶ Like the prospectus statements described above¹²⁷ in the context of Section 11 and 12(a)(2) liability, an argument can be made that such statements of selective investment activity are inconsistent with investing too much of the fund’s asset based in the index. As of December 2014, the Fidelity Contrafund had an Active Share of 55% relative to the S&P 500

¹²⁴ 15 U.S.C.A. § 80a-8(b)(2).

¹²⁵ 15 U.S.C.A. § 80a-8(b)(1).

¹²⁶ Fidelity Contrafund 2014 Prospectus.

¹²⁷ See *supra* notes 78-80.

Growth benchmark, which could be interpreted as relatively little actual stock selection actually taking place.¹²⁸

Section 13(a)(3) does not include an express private right of action. While one district court¹²⁹ has found an implied cause of action under 13(a)(3), most courts to have considered the issue have held that no private right of action is available under 13(a)(3),¹³⁰ leaving breaches of this section to be enforced by the SEC.¹³¹ This limitation, of course, means that the scope of 13(a)(3) would be limited as compared with the other causes of action described above, but, despite this limitation, it is worth noting the important role that the SEC could play in reducing closet indexing via 13(a)(3).

Section 13(a)(3) has been used to sue funds who have deviated from their stated investment objective. These suits have generally succumbed to the absence of a private cause of action in 13(a)(3), but nevertheless, the arguments in these suits provide a guide to the theories that the SEC might press. In *Northstar Financial Advisors v. Schwab*¹³² the complaint alleged that a fund prospectus included a fundamental policy “to attempt to provide a high level of current income consistent with preservation of capital by seeking to track the investment results of [the Lehman Index] through the use of an indexing strategy.”¹³³ The fund experienced substantial losses due to holdings related to subprime mortgages, and the complaint alleged this was

¹²⁸ We hasten to add that we are not arguing that Contrafund in fact follows a strategy inconsistent with its prospectus language, but rather pointing out that the prospectus language does commit the fund to a particular, albeit very broad, investment strategy that could be inconsistent with very low Active Share.

¹²⁹ *Blatt v. Merrill Lynch, Pierce, Fenner & Smith Inc.*, 916 F.Supp. 1343 (D.N.J.1996). Another district court also initially ruled in favor of a private right of action, *Northstar Fin. Advisors, Inc. v. Schwab Inv.*, 609 F.Supp.2d 938, 944–45(N.D.Cal.2009), but was overruled on appeal, *Northstar Fin. Advisors, Inc. v. Schwab Investments*, 615 F.3d 1106, 1108 (9th Cir. 2010).

¹³⁰ *W. Inv. LLC v. DWS Global Commodities Stock Fund, Inc.*, 705 F.Supp.2d 281, 284–86, 2010 WL 1404208, 3–4 (S.D.N.Y.2010); *Bellikoff v. Eaton Vance Corp.*, 481 F.3d 110, 116 (2d Cir.2007) (per curiam); *Olmsted v. Pruco Life Ins. Co. of New Jersey*, 283 F.3d 429, 433 (2d Cir.2002); *Northstar Fin. Advisors, Inc. v. Schwab Investments*, 615 F.3d 1106, 1108 (9th Cir. 2010).

¹³¹ *Northstar Fin. Advisors, Inc. v. Schwab Investments*, 615 F.3d 1106, 1108 (9th Cir. 2010) (Explicitly referring the SEC enforcement of 13(a)(3) violations in lieu of a private right of action).

¹³² *Northstar Fin. Advisors, Inc. v. Schwab Investments*, 615 F.3d 1106, 1108 (9th Cir. 2010).

¹³³ *Id at* 1113.

inconsistent with the stated investing strategy. A similar argument could be made against a (closet index) fund that holds itself out as actively managed, but, in fact, operates largely as an index fund.

While private rights of action could put pressure on closet index funds, such litigation is limited by the economic realities of plaintiff's attorneys who must undertake cases that promise a sufficient, risk-discounted recovery to justify the cost of undertaking the suit. This means that plaintiffs' attorneys are more likely to target large funds that can put considerable recoveries at stake.¹³⁴ The SEC, by contrast, has the flexibility to undertake enforcement in the public interest without regard to such restrictions. The SEC also has authority to bring suits under Sections 11 and 12(a)(2) as well as 36(b) suits.

4. Liability Under ERISA

ERISA is the federal statute that regulates 401(k) plans, pensions, and related employee-retirement accounts. Under ERISA, an employer has a fiduciary duty to exercise reasonable care in investing employees' assets.¹³⁵ Under § 404(c) of ERISA, employers who permit employees to manage their own investments from an employer-chosen menu of investment options will be held to have satisfied their fiduciary duties provided the menu of funds meets certain requirements.¹³⁶ The § 404(c) safe harbor protects employers from claims for breach of their ERISA fiduciary duty related to investment losses when those losses stem from an employee's investment decisions among funds in a sufficiently diversified plan.¹³⁷

A significant number of cases have alleged a breach of fiduciary duty under ERISA § 502(a) and 502(c) when employers include high-fee or otherwise undesirable mutual funds in the menu

¹³⁴ For a summary discussing. See Ian Ayres and Quinn Curtis, *Beyond Diversification: The Pervasive Problem of High Fees and Dominated Funds in 401(k) Plans* Yale Law Journal (2015).

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.*

of investment options. These cases bear a striking resemblance to 36(b) cases, in that it is ultimately the “quality” of the mutual funds that is at stake. The primary difference is that the employer is the target of the litigation rather than the fund.

At least one case has specifically alleged that the inclusion of a closet index fund raises issues under ERISA.¹³⁸ This claim was included among a host of other alleged violations in a complaint that survived the motion to dismiss. The case was eventually settled with little discussion of the merits of the closet indexing argument. While the role of closet indexing in ERISA claims is therefore relatively unexplored, there have been a number of cases that have made allegations regarding fee levels¹³⁹ that have been met with some success. In the context of these cases, Active Fee-based ERISA complaints are likely viable.

There are three primary drawbacks to using ERISA to challenge closet indexing. First, the option is only available for challenging funds in a 401(k) plan. Second, only the decision to include the fund in the plan can be challenged; the only consequence for the fund manager or complex is the potential deletion of the fund from the plan menu. It is the employer’s fiduciary duty that is called into question by the suit, not the operation of the fund itself. Finally, the 404(c) safe harbor has been held, by some courts, to limit the liability of employers whose menus offer both good and bad choices.¹⁴⁰

Taking these limitations into consideration, ERISA suits would likely play a limited direct role in putting pressure on closet index funds, but by making them less attractive options for 401(k) plan menus they may have a substantial indirect effect. Establishing the viability of

¹³⁸ There is at least one case that has pressed a closet-index fund theory in an ERISA claim. The case is *Martin v. Caterpillar*, 2008 WL 5082981. The opinion of the court suggests that the claims were not particularly well-made by plaintiffs’ attorneys, and were part of a scattershot pleading strategy. The court ultimately rejected the claims, but a more focused complaint incorporating active share may be more successful.

¹³⁹ See, for example, Groom Law Group, 401(k) Fee Cases, http://www.groom.com/media/publication/1481_401k_fee_cases_detailed_chart_January_2015.pdf

¹⁴⁰ See *Hecker v. Deere & Co.*, 556 F. 3d 575 (2009).

ERISA closet indexing claims would force plan sponsors and their advisors to pay attention to funds' active share, and to reduce the number of closet index funds in retirement plans. Since these plans are a significant channel for individual investors' mutual fund holdings, this would be an important improvement for retirement investing.

B. Regulatory Solutions

As is discussed above, Active Share has become an increasingly important measure within the mutual fund industry. Much of the mutual fund industry is fiercely competitive.¹⁴¹ A reasonable question is whether market competition can drive out closet indexers. Certainly, the increasing attention to Active Share may have a positive effect, but a precondition to effective competition is the presence of sufficient information for consumers to act. Currently, Active Share is generally not publicly disclosed by funds, and—while it can be calculated based on public information at least at certain points in time—doing so is complex and requires access to expensive data that are not generally publicly available.

In order to enhance competitive pressure on closet indexers and to increase the information available to investors, we call for an incorporation of Active Share concepts into mutual fund fee and performance disclosures. Such a change is both empirically and theoretically well-founded, as well as being entirely practical. It is empirically well-founded because the results presented here, as well as in other publications, have demonstrated the connection between Active Share and future fund performance. It is theoretically well-founded because it is the active portion of the portfolio for which active-fund investors are paying. The “virtual hedge fund” is the product

¹⁴¹ J. C. Coates & R. G. Hubbard, *Competition in the mutual fund industry: Evidence and implications for policy*, 33 J. CORP. L. 151, 155 (2007).

sold, not the index fund, and investors need information that allows them to fully evaluate that product. Finally, Active Share-based disclosure is practical, as evidenced by the increasing role Active Share plays as an industry metric. The rest of this section is designed to sketch-out an Active Share-based disclosure regime.

In discussing the role of disclosure in improving investors' information about Active Share, it is helpful to return to the Cartwright speech that began this article. Cartwright was concerned about the degree to which investors are aware of the level, cost, and efficacy of active management they are receiving. The empirical evidence presented here shows that this concern was well-founded, but what do mutual fund investors need to know? Cartwright provided three questions that he thought were essential, and we concur:

- “Is your virtual hedge fund manager active enough?”¹⁴²
- “How much does your virtual hedge fund cost?”¹⁴³
- “How well did your hedge fund manager do?”¹⁴⁴

These are the fundamental pieces of information that investors need in order to evaluate the real performance of an active fund manager.

1. Active Share Disclosures

Cartwright's suggested investor-needs map well onto the Active Share concepts we have described in this paper. We would suggest that investors in funds subject to the Active Share disclosure requirements receive a brief, perhaps single page, disclosure that would answer the questions Cartwright poses.

¹⁴² See *supra* note 1.

¹⁴³ *Id.*

¹⁴⁴ *Id.*

The first element would be to disclose the Active Share itself, both with respect to the fund’s self-declared benchmark and with respect to the benchmark whose holdings are most similar to the holdings of the fund.¹⁴⁵ This would provide a starting point for investors to answer the question “Is your virtual hedge fund manager active enough?” The first Active Share, with respect to the self-declared benchmark, informs investors how different the fund holdings are relative to the holdings of the benchmark that the fund claims to have in the prospectus. The second Active Share, with respect to the benchmark whose holdings are most similar to the holdings of the fund, informs investors whether there is another benchmark index that the fund resembles more closely than the self-declared benchmark, which benchmark this is, and how different the fund holdings are with respect to this benchmark. This would require the specification of a set of possible benchmarks, which we address in the next section.

If the two Active Shares – with respect to the self-declared benchmark and the benchmark whose holdings are most similar to the holdings of the fund – are substantially different, this would give investors information in two important ways. First, it would tell investors that the fund’s self-declared benchmark may not accurately reflect the fund’s actual investment policy, raising concerns that the fund is manipulating investors by disclosing a potentially inappropriate benchmark that may be easier to beat. Second and relatedly, it may inform investors that the fund is subject to significant style drift, or that the fund is investing in a ‘passive’ manner in securities that are different than the manager’s stated mandate. For example, the fund may classify itself as a large cap fund, but may have substantial overlap with a mid-cap benchmark

¹⁴⁵ It may be sensible to give funds some leeway in terms of the period used to compute the index most closely tracked for Active Share purposes. For example, if a fund has almost always been compared with Index A, and then drifts close to Index B for a single quarter due to a particular investment strategy, it may make sense to allow the fund to continue to use Index A as a benchmark for comparison. This could be accomplished automatically, by using a longer rolling window to identify the closest benchmark index—looking at the index most closely tracked over a year or more, for example. Alternatively, the SEC might create a mechanism by which fund managers could petition to use an alternative index if they believe, in good faith, that the drift closer to another index is temporary.

index. If investors are investing in multiple funds and are counting on diversification benefits across these funds, then such information would indicate to them that the fund may provide less or at least different diversification benefits than advertised by the fund in the form of its self-declared benchmark.

Of course, “active enough” reflects both a positive and normative claim. Knowing the Active Share in isolation might not be of great help to investors, investors must also know the number, its significance, and how it compares to other funds. It may thus help investors to receive comparative information, or even normative guidance on Active Share. For example, consumers might be presented with information that their fund is in the lowest 10% of Active Share among funds of similar style.

Such a disclosure would help investors in two ways. First, it would give investors access to reliable, easily accessible Active Share information directly from the fund. Second, it would allow investors to know which index the fund most closely tracks. While mutual funds typically state the market index that they use as a benchmark, this disclosure is easily manipulated (see Sensoy, 2009) and the stated benchmark may not be the closest index, which could cause difficulty for investors trying to understand their market exposure and diversification benefits.

The second element in the required disclosure would be directed at the question “How much does your virtual hedge fund cost?”¹⁴⁶ This is simply a call for the disclosure of a fund’s Active Fee.¹⁴⁷ As noted above, the underperformance of low Active Share funds is worst among high fee funds. The Active Fee measure combines the expense ratio and the Active Share to present a number that is easy for investors to use for the purpose of comparing funds. It also gives investors critical context in which to interpret the standard fee disclosure of the fund.

¹⁴⁶ See *supra* note 1.

¹⁴⁷ In fact, Cartwright seems to have anticipated the notion of Active Fee in his description of the need for more disclosure.

Finally, the third question: “How well did your hedge fund manager do?” This suggests requiring funds to report a measure we might call *active performance*. This would be the performance of a dollar invested in just the active portion of the portfolio. All mutual funds already report benchmarked performance data, but this performance data does not explicitly disaggregate the actual contribution of active management to the funds’ performance. A fund with low Active Share that lags its index may have very poor performance in its actively selected holdings that are different from the benchmark holdings, giving investors yet another reason to avoid it.

Given that we are able to compute Active Share for the funds in our sample, is it really necessary to mandate Active Share disclosure? We believe that requiring Active Share disclosure makes sense for three reasons. First, mandating Active Share disclosure will make the information more widely available. While some data providers, such as Morningstar, have computed Active Share for equity funds, such computations are currently quite expensive, given both the data and computational requirements, and Morningstar, for example, does not make Active Share computations available in its free public data set. Requiring funds to disclose Active Share would make it more likely that such information would feature prominently in free mutual fund research tools such as Google Finance and Yahoo Finance. Second, requiring funds to compute and make available Active Share on a timelier basis would help improve the reliability of the data, since the fund has daily portfolio provisions and need not rely on quarterly snapshots of holdings that are made available to investors only with a significant lag.¹⁴⁸ Funds could presumably easily report their monthly Active Share number on a timely basis, as knowing only the Active Share does not give away any private information on what the active or different holdings look like. Additionally, the information would be subject to liability for false

¹⁴⁸ See notes 37-41 *supra* and accompanying text.

statements, which would presumably increase its reliability. Finally, requiring the disclosure of Active Share directly from funds would send a strong signal to investors that such information ought to be taken seriously, which—in light of the empirical support for the importance of Active Share—is a desirable outcome.

2. Practical Considerations on Choosing the Benchmark and Computing Active Share

Active Share decomposes a fund into an index component and an active component. The Active Share of a fund depends on the index fund to which it is compared, and the Active Share measures used in this paper are based on the self-declared benchmark index if available, or otherwise uses the benchmark that produces the lowest Active Share from the universe of indices used by mutual funds. However, while funds often explicitly identify benchmarks for their performance, these self-identified benchmarks are subject to manipulation, and a fund might choose a benchmark that does not best reflect its investment strategy in order to post a higher Active Share. Therefore, it makes sense to also ask a fund to report the benchmark with which it has the largest holdings overlap or the lowest Active Share. Disclosure of this ‘Minimum Active Share (benchmark)’ – i.e., that benchmark that the fund holdings most closely resemble – is sensible because it means that the choice of benchmark is objective, free from manipulation, and most closely reflects a fund’s actual investment practices.

The Active Share of the fund is dependent on the set of market indices used as potential benchmarks. A first step in an Active Share disclosure regime would be for the SEC to develop a workable set of proposed benchmark indices. The set ought to be as comprehensive as possible, since a fund that closely tracks an index not available in the set would have an advantage in terms of publishing Active Share measures based on an unsuitable benchmark. Assembling a set of such indices would not be difficult. As an initial matter, this set could include all benchmarks

that are currently used as a self-declared benchmark by actively managed mutual funds.(e.g. based on the full set of benchmarks that funds are disclosing in the prospectus as their self-declared benchmarks, as in Cremers and Pareek, 2014).

It is sensible for funds to compute Active Share themselves. Funds know their portfolio positions on an ongoing basis, and so have the necessary information to do the computation. Funds would also be reluctant to release real time portfolio information, which reveals the funds' investment strategies, and so keeping the information in-house is sensible. Moreover, given the increasing importance of Active Share as an industry measure, it is likely that many funds are already making such computations. The holdings of the benchmarks themselves are easily available from the benchmark providers.¹⁴⁹

An additional practical concern regarding Active Share-based disclosure is the use of such disclosures for funds that are not equity funds. Active Share was developed with respect to funds that hold primarily equity securities and the research supporting Active Share as an important measure of fund performance focused on these equity funds. The Active Share concept could be generalized to other types of funds as a conceptual matter, but the empirical case for its importance has been less well-developed and is more complex for non-equity funds than for equity funds.¹⁵⁰ It makes sense, then, to initially limit Active Share-based disclosure to equity funds. The SEC could implement this limitation in a number of ways. First, Active

¹⁴⁹ If the benchmark providers would charge excessive fees for such access, then we would suggest that a freely accessible substitute is readily available in the form of the publicly disclosed holdings of ETFs and index funds with a low Active Share with respect to the benchmark (all accessible through SEC's Edgar website or many other providers).

¹⁵⁰ For example, one of us has considered private real estate portfolios. Cremers and Lizieri, "How Active is Your Real Estate Manager", 2015, *Journal of Alternative Investments*, Summer, 1-15. These are funds that buy individual buildings. As each building is unique, each portfolio would effectively have a 100% Active Share at the building level. In order to still get a sense of the level of active management, we therefore aggregated the portfolio investments by sector, i.e., a sector-level Active Share. Similarly, for a bond portfolio, it would seem to make sense to aggregate portfolio weights by firm, as many firms could issue bonds at different times and the fund could hold multiple different bond issues of the same firm, into a firm-level Active Share.

Share-based disclosures could be limited to funds that hold more than a certain percentage of equity securities in their portfolio at the time the disclosures are filed. Second, the SEC could limit Active Share disclosure to funds that self-identify as equity funds via their disclosed benchmarks. For example, a fund that reports an equity index as its benchmark could be subject to Active Share disclosure requirements. Finally, the SEC could subject any fund that had low enough Active Share with respect to any of a set of equity indices to the Active Share disclosure regime. This would mean that a fund marketed as a balanced fund, but with a low Active Share with respect to an equity index like the S&P 500 would disclose its Active Share regardless of its purported style or how it was marketed.

While these practical considerations demonstrate that an Active Share disclosure regime would not be trivial to develop, the benefit to investors of improved information about Active Share would be, in our view, worth the regulatory effort.

V. Conclusion

Closet indexing in U.S. mutual funds is a problem that harms investors through high costs and low returns. Investors cannot avoid closet index funds if they don't have clear, timely disclosures that tell the story of funds' closet indexing activities. We argue that smart enhancements to the disclosure regime as well as legal challenges to egregious offenders can reduce the scope of the closet indexing problem and increase the tools available to investors to spot problematic fund management. If the suggestions of the article are taken up by policymakers, mutual fund investors would be faced with a market that is more competitive, more transparent, and can more credibly deliver on active management promises.

Appendix

The empirical implementation exactly follows Cremers and Pareek (2014), so we refer to that paper for more details. At the end of every calendar year, and starting at the end of 1989, we construct five quintile portfolios based on the expense ratio of the funds in the sample at that point in time. Next, within each of the expense ratio quintile portfolios, we further sort all of the funds into five quintile portfolios based on each fund's Active Share at the end of the year. The intersection of this dependent double sort produces $5 \times 5 = 25$ different portfolios, whose performance we track over the next 12 months. By construction, each of the 25 portfolios consists of 4% of the funds at each point of time. Finally, we repeat this process through time, ending in December of 2014, allowing us to analyze the future performance of 25 different mutual fund portfolios that differ in their relative levels of expense ratios and Active Share. We aggregate and adjust the monthly performance of each fund in the different portfolios for their style and exposure to market, size, value and momentum factors as follows.

We first subtract the benchmark return from the net fund return (after all expenses except loads, which are ignored) in that month, using the self-declared benchmark if available and otherwise using the minimum Active Share benchmark. Adjusting for the benchmark allows us to make a basic comparison between the performance of the funds and their low-cost alternative, namely their benchmark. It is also important to control for differences in style, liquidity and reduces noise in performance evaluation.¹⁵¹ We call this the benchmark-adjusted performance of each fund. Next, we average the benchmark-adjusted performance of all funds in a portfolio to generate the benchmark-adjusted, equally-weighted performance of the portfolio each month.

¹⁵¹ See Cremers, Martijn, Antti Petajisto, and Eric Zitzewitz, 2013, "Should Benchmark Indices Have Alpha? Revisiting Performance Evaluation," *Critical Finance Review*, 2, pp. 1-48.

This gives us for each portfolio a monthly time series of 25 years or 300 months of benchmark-adjusted performance.

The main advantage of equally-weighting (rather than value-weighting, where the performance of each fund in a given portfolio is weighted by the size of the assets under management in each fund) is that the results are then less likely to be driven by the largest funds in each portfolio. This is especially important given the large positive skewness in fund size, i.e., the mutual fund industry contains a few very large funds that could dominate the particular portfolio that may be included in if we would value-weight these portfolios.

Finally, we regress the time series benchmark-adjusted performance of each portfolio on a constant and the standard four Fama-French factors that control for any portfolio-level exposure to the market, size, value and momentum factors. The coefficient estimate of the constant in this time series regression is the estimated abnormal return, or alpha, of the portfolio over this time period. The main idea behind controlling for the fund's exposure to these well-known factors is to focus on the fund performance that is not driven by these well-known factors, which investors could get low-cost access to through ETFs and index funds. However, not adjusting the benchmark-adjusted returns for their exposure to these factors would result in similar conclusions.

Table 4 reports the annualized alphas of the $5 \times 5 = 25$ portfolios in the double quintile sort on expense ratios and Active Share. It also reports the annualized alphas of the (single) quintile sorts on the expense ratio and, separately, Active Share. The single sort results are useful to see whether adding the second dimension matters. In Panel A of Table 4, our sample consists of all mutual funds, while in Panel B, we only include large cap funds in the sample (i.e., funds with a large cap benchmark).

We first discuss the results for the full sample. The unconditional sort on lagged Active Share replicates the main result in Cremers and Petajisto (2009), namely that low Active Share funds tend to underperform their benchmarks in the future (their sample ends in 2003, but results remain similar in our extended sample ending in 2014, with low Active Share funds underperforming on average by about 0.86% per year) and high Active Share funds tend to outperform in the future (again, finding similar results in our extended sample, with an average outperformance of 1.14% per year), both net of fees. In netting out fees, we exclude front end loads. Since loads are flat percentage of the total investment and are paid at the time the investment is made, the effect of loads on total returns depends on how long the load fund is held, which varies across investors.¹⁵² Ignoring loads is conservative in this context because it biases against finding a relationship between total cost and performance. The difference in performance between the high and low Active Share quintile portfolios is 2.00% per year, which is strongly statistically significant with a t-statistic of 3.70.

The single sort on the expense ratio shows that more expensive funds (ignoring loads) tend to perform worse than cheaper actively managed funds, albeit with no statistical significance. The average annual expense ratio across the five expense ratio quintiles (averaged first over all funds in each quintile portfolio each year, and then averaged over the full sample) is 0.58%, 0.96%, 1.16%, 1.38% and 1.80%, respectively.¹⁵³

Next, we turn to the 5x5 conditional sort on Active Share and expense ratio. The main result is that funds that have a low Active share and a high cost underperform badly. For the example,

¹⁵² See e.g. Gil-Bazo, Javier, and Pablo Ruiz-Verdú. *The Relation between Price and Performance in the Mutual Fund Industry*. 64 J. FIN. 2153 (2009) (assuming two and seven year holding periods); Ayers and Curtis *supra* note 134 (including loads as part of the total cost where applicable, assuming a holding period of seven years).

¹⁵³ Average expense ratios are similar if only 2014 data is used. In that case, the average annual expense ratio across the five expense ratio quintiles is 0.49%, 0.88%, 1.04%, 1.21% and 1.48%, respectively, showing that expense ratio have declined over time.

the portfolio of funds that are in the fifth (high) expense ratio quintile and the first (low) Active Share quintile has a four-factor alpha of -1.84% per year with a t-statistic of 1.78, which indicates statistical significance at the 10% level, while the portfolio of funds in the first (low) expense ratio quintile has a four-factor alpha of 0.09% per year with a t-statistic of 0.12 (i.e., statistically quite insignificant). The difference between these two alphas is a strongly economically and statistically significant -1.93% per year with a t-statistic of 4.67, which is significant at the 1% level.

In contrast, among high Active Share funds, there is no negative association between the expense ratio and future performance. If anything, more expensive funds with high Active Share perform better than relatively cheap funds with high Active Share. For example, the portfolio of funds in the top expense ratio quintile and the top Active Share quintile has an annualized alpha of 1.25%, and the portfolio of funds in the bottom expense ratio quintile and also the top Active Share quintile has an alpha of 0.19% per year. The difference of 1.06% per year is economically meaningful but not statistically significant with a t-statistic of 1.33.

The results using only large cap funds in Panel B of Table A1 are similar. Among large cap stocks, the evidence that expensive funds underperform is stronger than in the full sample of funds. For example, in the single sort on expense ratio, the difference in abnormal performance between the most expensive (fifth expense ratio quintile portfolio) and the cheapest (first expense ratio quintile portfolio) equals -0.87% per year with a t-statistic of 2.65, which is strongly statistically significant at the 1% level. But this difference in performance rises to 1.79% per year for funds in the low Active Share quintile, which is again quite strongly statistically significant with a t-statistic of 4.85.

Table A1. Active Share, Expense Ratio and Future Fund Performance

The Table reports the annualized alphas of the various quintile, equally-weighted portfolios (in both single and double sorts on expense ratio and Active Share). The t-statistics are given below the annualized alpha between parentheses. '5-1' indicates a long-short portfolio which buys the fifth quintile portfolio and sells the first quintile portfolio.

Panel A. Full Sample Results, 1990 – 2014

Expense Quintile	Ratio	Active Share Quintile						
		uncond	1	2	3	4	5	5-1
uncond			-0.86 (0.93)	-0.73 (0.71)	-0.36 (0.34)	0.00 (0.00)	1.14 (0.90)	2.00 (3.70)
1	-0.02 (0.02)	0.09 (0.12)	-0.05 (0.06)	-0.38 (0.45)	0.06 (0.06)	0.19 (0.19)	0.09 (0.20)	
2	-0.03 (0.03)	-0.66 (0.70)	-0.30 (0.29)	-0.23 (0.21)	-0.22 (0.19)	1.26 (0.99)	1.92 (3.15)	
3	-0.39 (0.34)	-1.12 (1.19)	-0.88 (0.80)	-0.39 (0.34)	-0.54 (0.42)	0.99 (0.71)	2.10 (2.84)	
4	0.18 (0.15)	-0.79 (0.78)	-1.08 (0.96)	-0.12 (0.19)	0.81 (0.60)	2.00 (1.42)	2.80 (3.80)	
5	-0.55 (0.46)	-1.84 (1.78)	-1.33 (1.21)	-0.72 (0.59)	-0.09 (0.07)	1.25 (0.84)	3.08 (3.80)	
5-1	-0.53 (1.32)	-1.93 (4.67)	-1.28 (2.95)	-0.34 (0.59)	-0.15 (0.24)	1.06 (1.33)		

Panel B. Large Cap Fund Sample Results, 1990-2014

Active Share Quintile

Expense Quintile	Ratio						
	uncond	1	2	3	4	5	5-1
uncond		-0.77 (0.86)	-0.68 (0.73)	-0.70 (0.71)	-0.47 (0.45)	0.03 (0.03)	0.80 (1.40)
1	-0.33 (0.40)	0.16 (0.19)	-0.17 (0.22)	-0.37 (0.49)	-0.30 (0.33)	-0.93 (0.90)	-1.09 (1.93)
2	-0.11 (0.11)	-0.61 (0.62)	0.02 (0.02)	-0.34 (0.33)	-0.50 (0.47)	0.88 (0.69)	1.49 (2.03)
3	-0.48 (0.45)	-1.05 (1.28)	-0.67 (0.64)	-0.43 (0.39)	-0.06 (0.05)	-0.19 (0.14)	0.86 (1.02)
4	-0.50 (0.47)	-0.72 (0.74)	-1.17 (1.15)	-0.74 (0.47)	-0.38 (0.33)	0.51 (0.39)	1.24 (1.64)
5	-1.19 (1.12)	-1.63 (1.65)	-1.43 (1.40)	-1.67 (1.47)	-1.14 (0.94)	-0.12 (0.10)	1.51 (2.14)
5-1	-0.87 (2.65)	-1.79 (4.85)	-1.26 (2.71)	-1.30 (2.29)	-0.84 (1.46)	0.81 (1.22)	