Mutual Funds and Other 40-Act Funds

Andrew Ang

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Abstract and Keywords

Mutual fund managers are talented, but, on average, none of that skill enriches asset owners. The average mutual fund underperforms the market after fees, investors chase funds with high past returns only to end up with low future returns, and larger mutual funds do worse than smaller funds. While the Investment Company Act of 1940 gives significant protection to ordinary investors, most mutual funds are run for the benefit of mutual fund firms rather than investors.

Keywords: mutual fund performance, survivorship bias, fund flows, mutual fund fees, delegated portfolio management, closed-end funds, ETFs, Janus Capital Group

Chapter Summary

Mutual fund managers are talented, but on average none of that skill enriches asset owners. The average mutual fund underperforms the market after fees, investors chase funds with high past returns only to end up with low future returns, and larger mutual funds do worse than smaller funds. While the Investment Company Act of 1940 gives significant
protection to ordinary investors, most mutual funds are run for the benefit of mutual fund firms rather than investors.
1. Janus
Those heady, growth-crazed days of the late 1990s! The Internet boom was in full force and, driven by investor mania, stocks with even the flimsiest fundamentals were soaring. Pets.com, with its endearing sock puppet and a balloon in the 1999 Macy’s Thanksgiving Day Parade, went public in February 2000. The stock hit a high of $14 on the first day of trading. From then on, it was a downward spiral; shares fell below $1 in August and the company declared bankruptcy in November. Webvan Group went public in November 1999 and was valued at over $1.2 billion at its peak. But the company expanded its grocery delivery service too fast and filed for Chapter 11 protection in July 2001. During the late 1990s, investors were enamored with anything Internet related: just adding “.com” to a company’s name resulted in a 75% return in excess of the market in the ten days after the name change—even if the company had no involvement with the Internet prior to the name change.¹

The Janus mutual fund company epitomized the Internet bubble. Janus was hot. Year after year, enticed by outsized returns on high-flying growth stocks, money poured into Janus funds. In 1996, Janus was one of first fund companies to open a website so investors could peruse its funds. In 1997, the manager of the Janus Worldwide Fund, Helen Young Hayes, was named Fund Manager of the Year (p.520) by Morningstar. Scott Schoelzel, another Janus portfolio manager, was named Manager of the Year by Mutual Fund Magazine in 1998. That same year the magazine rated Janus “Family of the Year.” Janus was the envy of every active mutual fund company. Even President Bill Clinton had part of his IRA in a Janus fund.²

One of the most famous funds was Janus Twenty, designed to invest in only twenty to thirty stocks selected for their growth potential. Panel A of Figure 16.1 graphs Janus Twenty’s assets under management (AUM) and returns. From January 1995 to December 1999, the fund’s AUM mushroomed from $2.5 billion to $36.9 billion. Thanks to the Internet boom, returns averaged 40% per year. Then in 2000, Internet growth stocks crashed. Janus Twenty was hit harder than most funds with its concentrated growth positions, and it returned –32.4% in 2000. Despite this terrible performance, Janus Twenty’s AUM was approximately flat at around $35 billion—money continued to flow into the fund based on the high returns
generated over the previous year. Only in 2001 did the fund record significant negative outflows, and the fund’s AUM leveled out after 2003 at approximately $10 billion, a third of its peak size.

Nearly all of Janus’s funds were like the Janus Twenty and owned large positions in the same booming growth companies, including Cisco, Nokia, Sun Microsystems, and America Online. Panel B of Figure 16.1 shows that the firm’s AUM rose from $50.3 billion at December 1996 to a peak of $257.8 billion at December 1999. Despite the crash of Internet stocks in 2000, the firm’s AUM at December 2000 increased slightly, to $257.8 billion, as investors continued to pile in. Investors chased past returns even though current returns were lousy. Only in the following year did Janus experience outflows.

In 2001, Enron Corp., an energy company that claimed it was generating high earnings but really was engaged in an elaborate accounting fraud, blew up. Janus’s funds owned more than 5% of Enron. In 2002, Janus was also the largest shareholder in Tyco International in 2002, whose share price plunged when it was hit by a corporate scandal. Tyco
executives Chairman and CEO Dennis Kozlowski and CFO Mark Swartz were eventually sent to prison for stealing money.

In 2003, Janus was caught up in a Securities and Exchange Commission (SEC) investigation into market timing. Janus had allowed favored clients to trade more frequently and ahead of other investors, generating profits for themselves while raising the cost burden on other investors in the funds. Janus paid $262 million in fines to settle the charges.

Despite these travails, Janus never posted a loss. In fact, its operating profit margins (the ratio of operating income to revenue) never fell below 10%, as shown in Panel B of Figure 16.1 (During the peak years of the late 1990s, Janus was enjoying operating margins above 40%.) For comparison, the juggernaut of retailing efficiency, Wal-Mart Stores Inc., generates operating margins slightly above 5%. Janus was partly saved by its INTECH division, which managed money using quantitative trading techniques (including a version of the rebalancing premium; see chapter 4). INTECH constituted less than 3% of Janus’s AUM in the late 1990s and grew to over 35% of its AUM in 2006. But the main savior of Janus was its surprisingly loyal investors. Despite poor performance and SEC investigations, enough money remained so that Janus still ranked in the top ten mutual fund families in the mid-2000s. Figure 16.1, Panel B shows that Janus’s AUM settled around $150 billion in 2003. Since fees are levied directly on AUM, Janus remained profitable.

Mutual fund companies throw off lots of cash, much of which they spend on employee remuneration, and that can be cut when performance is poor. Clients, meanwhile, stick around even when things go badly. “It’s pretty hard to mess up a mutual fund company,” said an executive at a mutual fund research firm. “You can’t kill these companies,” said another expert at an investment advisory and management firm.

2. 40-Act
The Investment Company Act of 1940 has allowed the delegated asset management industry to flourish, protects the little guy, and empowers the SEC to police the market. I use the term “40-Act” to refer to the 1940 Act itself, subsequent
amendments (1970) and rules issued by the SEC under the act.

The SEC provides the following summary of the 40-Act:9

This Act regulates the organization of companies, including mutual funds, that engage primarily in investing, reinvesting, and trading in securities, and whose own securities are offered to the investing public. The regulation is designed to minimize conflicts of interest that arise in these complex operations.

The italics are mine. The 40-Act is designed to mitigate principal-agent problems that arise in delegated investing, which we discussed in chapter 15. Companies covered under the 40-Act are called registered investment companies, and they can solicit money directly from the general public (through public offerings). For this privilege, registered investment companies must adhere to minimum standards to “minimize conflicts of interest.” The SEC explains the 40-Act’s role in accomplishing this:

(p.523) The Act requires these companies to disclose their financial condition and investment policies to investors when stock is initially sold and, subsequently, on a regular basis. The focus of this Act is on disclosure to the investing public of information about the fund and its investment objectives, as well as on investment company structure and operations.

The 40-Act emphasizes disclosure so that asset owners have information to make informed choices; disclosure minimizes information asymmetry and reduces adverse selection and moral hazard. The 40-Act further stipulates how the fund manager can be paid and specifies the governance structure of registered investment companies. Thus, it sets behavior-based contracts that place restrictions on what managers can do.

The SEC ends with a warning:

It is important to remember that the Act does not permit the SEC to directly supervise the investment decisions or activities of these companies or judge the merits of their investments.
The 40-Act only establishes a barebones framework that helps investors make informed decisions; it does not guarantee that those decisions will be smart.

2.1. Registered Investment Companies

The 40-Act covers four types of registered investment companies: (i) mutual funds—the vehicle that built Janus into a powerhouse, (ii) closed-end funds, (iii) unit investment trusts (UITs), and (iv) exchange-traded funds (ETFs), which are the newest of the four and rapidly growing in popularity. All of these are tax pass-through vehicles so that investors, not the funds, are taxed. There are two main investing styles practiced by registered investment companies: passive managers closely track benchmarks, usually at low cost (warning: some index funds are expensive!), while active managers, like Janus, try to add value by picking and choosing stocks, thereby deviating significantly from their benchmarks.

Figure 16.2 graphs net assets invested in each of these types of investment companies from the Investment Company Institute (ICI), the industry association of U.S. investment companies. At the end of 2011, investment companies held a total of $11.6 trillion, the bulk of which (90%) was held in mutual funds.

A great many people own shares in registered investment companies—especially mutual funds. At end of 2011, 44% of all U.S. households held investments in mutual funds, and registered investment companies managed 23% of U.S. households’ financial assets.

**Mutual funds** issue shares directly from the fund itself or indirectly through a broker. The *net asset value* (NAV) is the value of the fund’s assets minus liabilities. Dividing the NAV by the number of shares is the price at which investors can ...
buy or sell shares in the mutual fund, not including fees. Mutual fund shares are redeemable daily at the NAV. Mutual funds are said to be open-ended because investors can purchase or redeem shares from the issuer, so the number of outstanding shares can rise (or fall) over time.

Although mutual funds hold the most assets of all registered investment company types, their share has been slowly shrinking. In 2000, mutual funds accounted for 96% of all investment company assets, but by the end of 2011 this proportion had declined to 90%.

In contrast to mutual funds, shares of closed-end funds are not redeemable and are fixed in number. (There can be secondary issues after the fund’s inception, and the fund may offer to repurchase shares, but these are usually infrequent occurrences.) These shares trade on a secondary market after initial public offering (IPO). Closed-end funds are allowed to invest in more illiquid securities than mutual funds (which have to provide daily liquidity).

Mutual funds and closed-end funds are managed by registered investment advisors, which are separate entities from the funds. Investment advisors are compensated through fees paid by the fund shareholders. Often, the registered investment advisor works for the fund sponsor. The fund sponsor is usually an asset management company, like Janus, that creates and markets many registered investment companies. Funds that have the same brand name or manager are called mutual fund families (or complexes). The Janus fund family includes all funds marketed under the Janus name, like the Janus Twenty Fund, but Janus also sponsors funds in different fund families as with its INTECH funds.

Sometimes a fund sponsor can outsource management of a fund to a third-party (a subadvisory firm). These externally managed funds are usually marketed under the umbrella of a fund family. For a while, American Skandia Insurance Co. used Janus as subadvisor to manage its funds. American Skandia terminated the relationship in 2002, after Janus’s disastrous losses in the bursting of the tech bubble. Mutual fund companies use unaffiliated subadvisors to gain access to specialized managers, and these subadvisors in turn gain access to a different distribution channel. Chen, Hong,
and Kubik (2010) show that funds managed externally underperform funds that are managed inside the mutual fund family.

UITs are hybrids between mutual funds and closed-end funds. Like closed-end funds, they issue a fixed number of shares (units). The units are redeemable, like shares in mutual funds, but the UIT sponsor maintains a secondary market so that units are bought and sold between investors. A UIT buys and holds a set of assets until a preestablished termination date, when the UIT is dissolved and proceeds are paid to shareholders. Once a UIT is set up, there is typically no trading of the underlying assets. Unlike mutual and closed-end funds, UITs are so simple they do not need a board of directors or an investment advisor. But UITs are only a tiny fraction of the investment company universe (see Figure 16.2), and for this reason I do not talk about them separately in this chapter. However, the UIT category has been growing lately because some ETFs are technically classified as UITs.

ETFs trade on exchanges like closed-end funds and so offer investors immediate liquidity. Unlike closed-end funds, the number of shares is not fixed, and fund sponsors buy and sell shares to ensure that the quoted price of the ETF adheres closely to the NAV of the fund. ETFs are legally classified as mutual funds or UITs. The ETF market is growing fast. The share of assets in ETFs rose from less than 1% in 2000 to exceed 8% in 2011, and now ETFs hold over $1 trillion of assets.

2.2. Minimizing Conflicts of Interest

Before the 40-Act, investors were at a huge disadvantage to managers. Simply put, managers often stole outright from investors. The 40-Act stopped this and went further to “minimize conflicts of interest.” It created a large class of investment vehicles that protect the common man, and it has been hugely successful in this regard.

The 40-Act mitigates agency problems by . . .

Mandating Transparency

Registered investment companies must issue a prospectus, which discloses the fund’s investment objectives, strategies, risk, expenses, and instructions on how to trade shares. The 40-Act requires that the prospectus and other
reports be regularly filed to the SEC and made publicly available. Reports must be audited, fund holdings have to be reported (quarterly for mutual funds and daily in the case of ETFs), and funds must disclose how they voted their shares in proxy ballots. All this information is largely standardized, so individuals can compare it across funds; some investment advisory companies, like Morningstar, take this information, collate and distribute it, and provide fund recommendations based on the data.

Crucially, the 40-Act ensures that investors know the market value of the fund’s investments through the NAV. Mutual fund investors can take comfort that they are always transacting at the fund’s underlying value, less any applicable fees.

**Mandating Oversight**

Mutual funds have boards of directors. At least 40% of these directors must be independent from the fund management company (but whether they act independently is a different story). Since 2003, the SEC has mandated that every fund and advisor must have a chief compliance officer. Funds are monitored by the SEC to ensure compliance.

One of the most important requirements in the 40-Act is that fund assets are held separately from those of the fund’s advisors. There are three ways a mutual fund company can provide segregated custody for its investments: through a bank (the most popular option), a broker (rare), or self-custody. In the latter case, there are strict requirements including that the mutual fund assets be *physically separated* from the rest of the assets of the firm.

The 40-Act also limits the types of transactions permitted between the fund, fund management, and affiliates. Before and during the Great Depression, many fund assets were sold at below market prices to the fund’s advisors, the fund bought assets at inflated prices from insiders, or the fund made cheap loans to management. The 40-Act prohibits these abuses.

**Fiduciary Standard**

The 40-Act mandates that registered investment advisors be held to a *fiduciary standard*, which means that they must act in the best interests of their clients. Brokers are not fiduciaries and have a *suitability standard*, which means they don’t have to find the best products for you, only products that are
“suitable.” That’s right: most brokers and advisors that sell mutual funds do not have to put clients first. Even if the advisor is a registered investment advisor, the fiduciary standard does not eliminate the principal-agent problem, as chapter 15 emphasizes.

Limiting Leverage
Section 13(a) of the original 40-Act states: “No registered investment company shall, unless authorized by the vote of a majority of its outstanding Voting Securities, borrow money.” Today leverage is permitted, but the SEC restricts its use. Mutual funds have a 300% maximum asset coverage (i.e., they can borrow up to 33.3%), and closed-end funds have maximum coverages of 300% for debt and 200% for preferred stock. Many funds choose themselves not to borrow at all, and also place other restrictions on their investing styles. 14

Limiting Compensation
Mutual fund performance-based fees must be symmetrical around a chosen benchmark, which is referred to as a fulcrum fee, and fully disclosed. 15 In practice, performance-based fees also have an upper and lower limit. The law rules out asymmetric contracts such as contingent bonuses and option-like fees. Chapter 15 showed that using these types of contracts can increase investor welfare. (Hedge funds, which are exempt from 40-Act registration, are free to pay managers in whatever manner they wish; see chapter 17.) Most mutual funds do not employ performance fees. But for the small number of funds that do, Elton, Gruber, and Blake (2003) report that they have a slight edge over their peers without performance fees. However, funds with performance fees tend to increase risk following bad performance.

There are few restrictions on the structure of the general management fee charged by the advisor, except that the 40-Act specifies that the investment advisor of a registered investment company has a fiduciary duty to protect mutual fund shareholders from excessive fees. 16 The usual management fee is a percentage of AUM.

2.3. There Are Still Agency Problems
While disclosure is mandatory, the presentation can be opaque. Few people read prospectuses before investing, and they are dense and require skill to understand in full. Although fees are disclosed, few investors take the trouble to look; a
survey conducted by AARP (formerly the American Association of Retired Persons) in February 2011 found that 71% of respondents thought they did not pay any fees.\textsuperscript{17}

The United States lags other countries in the disclosure of retirement asset fees. There are fees paid to the funds in the retirement plans, to the administrators (p.528) of the plans, to the consultants, and other fees as well. Fees must be disclosed in mutual funds, but few investors saving for retirement know the fees they are paying, including the fees in the mutual funds holding their retirement monies. It was only on August 30, 2012, that the U.S. Department of Labor, which has jurisdiction over retirement savings plans, required that participants be given a breakdown of fees.\textsuperscript{18} According to ICI, mutual funds accounted for $4.7 trillion, or 26 percent, of the $17.9 trillion U.S. retirement assets at the end of 2011. Households held 55% of their defined contribution pension plan money and 45% of their IRA money in mutual funds.

Mutual fund governance is much weaker than that of regular corporations.\textsuperscript{19} Mutual funds are legally separate from the firms that market, sell, and run them. Having a board of directors gives a veneer of independence. But fund managers’ real loyalty lies with the firm that runs the funds, rather than with the investors who are the owners of the fund. The relationship is incestuous, and investors lose. Many directors of the mutual fund—especially the board chair—are insiders of the investment advisory firm. Fund directors usually do not, and in many cases cannot, independently verify the information given by the advisor. Separating the fund’s governance from its sponsor is not enough to ensure protection of the investors.

The Supreme Court has upheld this legal separation between the fund and the fund management company even though for all practical purposes mutual funds are run by mutual fund companies.\textit{Janus Capital Group vs. First Derivative Traders} was one of the cases generated by Janus’s market timing scandal in 2003.\textsuperscript{20} In June 2011, the Supreme Court ruled that Janus’s funds, not the Janus fund management company, were responsible for misleading language in their prospectuses that permitted the market timing that short-changed other investors. Legally, it was all the fault of Janus’s funds. Janus
the firm got a free pass, even though it sponsored, marketed, and managed the funds.\textsuperscript{21}

2.4. Summary

The advantage of being a registered investment company that is you can raise money directly from the public. To protect the little guy, the 40-Act puts restrictions on registered investment companies. The Act mandates disclosure (p.529) and minimum levels of oversight and restricts how managers are paid. These regulations mitigate, but do not eliminate, principal-agent problems.

The 40-Act is imperfect but could be much worse—as we shall see when discussing hedge funds and private equity in chapters 17 and 18, respectively.

\textit{Exchange traded notes} (ETNs) look like ETFs in that they are managed funds traded on exchanges, and they track indexes. But they are not 40-Act funds; they are regulated as fixed income securities and are technically loans to banks. They have high costs, complicated taxes, and prices that can differ significantly from their underlying market value. Unlike 40-Act funds, which must clearly disclose fees, ETNs excel in making their fees nontransparent. Jason Zweig, a financial columnist, waded through some heavy prospectuses to compute some total fees.\textsuperscript{22} The Etracs Daily Short S&P500 VIX Futures ETN has a 1.35% “tracking fee” and fixed hedging costs of 0.077% per week, or 5.35% per annum. The Credit Suisse Long/Short ETN tries to replicate certain hedge fund strategies and charges an “annual investor fee” of 0.45%. There is also an “accrued holding rate” of 0.7% and an “accrued index adjustment factor” fee of 0.5%. The total fee is more than three times the reported fee. This level of obfuscation is not permitted for 40-Act funds.

3. Mutual Funds

Mutual funds love to advertise high past performance. While management companies rave about high returns, the truth is that the average mutual fund underperforms the market. Active mutual fund companies rarely acknowledge this, and the returns they report are biased upward.

3.1. Survivorship Bias

\textbf{Janus Worldwide and Janus Global Research}
Janus Worldwide used to be one of Janus’s most popular funds. It started in the early 1990s and rode the Internet rollercoaster up into the sky in the late 1990s, and then back down after 2000. Figure 16.3, Panel A shows that the fund reached a peak of almost $45 billion in early 2000. Unlike the Janus Twenty (see Figure 16.1), Janus Worldwide’s AUM never stabilized, and outflows continued over the 2000s. Janus Worldwide used to be managed by Hayes, the Janus manager who was named Morningstar Fund Manager of the Year in 1997. She retired in 2003, and her departure was partly driven by the demands of a Janus shareholder (Highfields Capital Management, a hedge fund) to reveal her salary and \( (p.530) \) that of other top executives.\(^{23}\) As of January 31, 2013, Janus Worldwide held $2 billion in assets.

Janus Global Research’s AUM is a sliver of Janus Worldwide. Starting in February 2005, it is also a much newer fund. On January 31, 2013, Janus Global Research’s AUM was just $313 million. You can barely make out its AUM in Panel A of Figure 16.3.

\( (p.531) \) On March 15, 2013, the two funds merged. Janus Worldwide, the bigger fund with the longer history, ceased to exist and was absorbed by Janus Global Research, the much smaller fund with the shorter history. Why?
Panel B of Figure 16.3 plots the year-on-year returns of Janus Worldwide and Janus Global Research from February 2005 to January 2012. Janus Global Research has trounced its much bigger cousin. Over the sample, Janus Global Research averaged 9.9% while Janus Worldwide returned 5.0%. Since both funds have approximately the same standard deviation, at just under 20%, Janus Global Research’s Sharpe ratio (see chapter 2) was double that of Janus Worldwide.

After the merger, the combined fund inherited only the superior performance of Janus Global Research. Janus Worldwide ceased to exist, and its inferior performance disappeared from the Janus fund family.

Killing or merging poorly performing funds is how Janus’s marketing team can state with a straight face, “100 percent of Janus equity funds have beaten their benchmarks since inception.” Surviviorship bias is the tendency of the worst funds, like Janus Worldwide, to vanish through mergers or dissolution. The result is that the universe of funds reporting returns presents far too rosy a picture. This is accomplished by leaving out the returns of euthanized funds.

**How Large Is the Survivorship Bias?**

Since all 40-Act funds are required to report their performance to the SEC, we observe the full universe of funds. We measure the effect of survivorship bias by comparing the returns of live funds, like Janus Global Research, to those that die or merge, like Janus Worldwide. The first large-scale mutual fund database without survivorship bias was put together by Mark Carhart when he was a PhD student at the University of Chicago. His data set, with updates and improvements, has been extensively used since. Carhart graduated in 1995, took a job as a finance professor at the University of Southern California, and shortly afterward was lured away to Goldman Sachs Asset Management. He ended up co-managing one of the largest quant hedge funds in the mid-2000s (which later dissolved after the financial crisis; see chapter 17).

Using only the live funds overstates mutual fund returns by 1% to 2% compared to a universe that includes both live and dead funds. But the difference between live funds and the discontinued funds taken separately is about 4%. Carhart et al. (2002) estimate that the difference in risk-
adjusted returns between live funds and nonsurviving funds is 3.7%. Malkiel and Saha (2005) report that the difference between the returns of live and defunct funds is 4.3%. Unfortunately for investors, mutual fund companies emphasize the returns only of existing funds. Careful academics always use databases like Carhart’s, which include both surviving funds and dead funds; without the dead funds, mutual fund performance is highly overstated.

3.2. (Under-)Performance

The short summary of the enormous mutual fund literature is that the average active mutual fund manager underperforms after fees but slightly beats (or at best equals) the market before costs.\(^{26}\) This literature originally focused just on performance and was started by Treynor (1965), Sharpe (1966), and Jensen (1969). Michael Jensen, now an emeritus professor at Harvard Business School, wrote the article that gets most of the citations.\(^{27}\) These papers found that active mutual funds do not beat the market, and these results have been echoed in many follow-up papers.

Russell Wermers’ (2000) study summarizes the literature nicely. Over his sample, the S&P 500 returned 15.4% per year. Mutual funds beat the markets before fees, with a gross 16.9% return, but underperformed after fees, with a net return of 14.6%. This is an underperformance of 0.8%. Mutual funds with past high returns, however, could just have loaded up on risky stocks in rising markets. After adjusting for market and other factor risks (notably size, value-growth, and momentum factors; see chapter 7), Wermers finds a return in excess of risk factors (or alpha; see chapter 10) of 0.8% before fees. After fees, mutual funds have a return in excess of risk of –1.2%.

Eugene Fama and Kenneth French (2010), two giants of empirical asset pricing at the University of Chicago and Dartmouth College, respectively, estimate the alpha of equity mutual funds before fees is 0.2%, which is statistically equal to zero, and –1.1% after fees controlling for just the market factor.\(^{28}\) Active mutual funds \((p.533)\) underperform by 1.3% after fees. Controlling for more sophisticated risk factors, they find that the returns of mutual funds in excess of their risk benchmarks is only 0.1% before fees, and the corresponding number after fees is –1.0%.
French (2008) goes further in his presidential address to the American Finance Association. He computes the cost of active management to all investors—including individual investors, mutual funds, pension funds and other institutional investors, and hedge funds in the U.S. equity market. He estimates that the average investor would be better off by 0.7% per year switching from active management to index funds.

Even though active managers as a group underperform, do they underperform less (or perhaps slightly add value) during bear markets or recessions? The evidence is mixed. On the one hand, Moskowitz (2000) and Kosowski (2012) find that active mutual funds significantly out-perform during recessions (as defined by the National Bureau of Economic Research). But De Souza and Lynch (2012) find the opposite.

The bottom line is that, with or without adjusting for risk, the typical active mutual fund delivers average underperformance.

**Larger Mutual Funds Do Worse**

Larger mutual funds do worse than smaller ones, so there are diseconomies of scale. As a fund gets larger, it becomes harder for it to take on large positions in stocks. Many alpha opportunities are concentrated in more illiquid segments of the market. Good investment ideas thus are hard to scale. Indeed, large-fund performance is most hampered when funds hold more illiquid stocks. Larger funds also have to employ more analysts, and this makes coordination more difficult. With more employees, it is harder to pass information up the organization and to act on it. (In economics these costs are called hierarchy costs.)

**More Expensive Funds Do Worse**

In most industries you get what you pay for. When you shop at Saks Fifth Avenue, you pay more than at the dollar store, but you get better quality. When you eat at a three-star Michelin restaurant, you pay more than at McDonalds, but you get a more delicious meal in elegant surroundings. In so many arenas, the more you pay, the more you get. But in mutual fund land, it’s the exact opposite: when you pay more, you get less. Carhart (1997) finds that the more fees you pay to a mutual fund, the lower the return. Investors are best served by investing in funds with low expenses. Gruber (1996) finds that top performing funds charge less than the worst.
performing funds. What’s the cheapest type of fund, one that also happens to consistently outperform more than half of active funds? Index funds.

3.3. Persistence
Just like the disclaimer says, past mutual fund returns are no guarantee of future returns. Mutual fund performance just isn’t very persistent. Consistency, where it exists, is of the wrong kind: underperforming funds reliably persist in underperforming, rather than from outperforming funds continuing to generate superior returns.32

Figure 16.4 shows mutual fund alphas controlling for the market (capital asset pricing model; CAPM) and a multifactor model with size, value-growth, and momentum factors as estimated in Carhart (1997) (see chapter 10). Funds are ranked by their return over the past year from lowest in decile 1 to highest in decile 10. The alphas are returns in excess of their risk benchmarks over the following year. Figure 16.4 shows that the average alphas, for both the CAPM and multifactor benchmarks, are negative—which means that the average mutual fund underperforms. There is some interesting persistence in CAPM alphas, but it is asymmetric. Funds with the worst returns over the last year continue to do badly and generate outperformance relative to a market benchmark of −5.4%, but funds with the best returns over the last year continue to do well and generate alphas of 2.4%.

(p.535) The performance persistence goes away once the more sophisticated factor benchmark is used. In the multifactor benchmark, all the alphas are negative over the following year. Note that the worst funds continue to do the worst, with the decile 1 multifactor alphas being much lower (−4.8%) than the decile 10 alphas (−1.4%). The multifactor benchmark controls for momentum, and this is mostly responsible for reversing the persistence.33 Most winning funds hold momentum stocks—stocks with past high returns
that continue to do well—and after adjusting for the high returns coming from a momentum factor strategy, the winning funds do not outperform.

**Some Funds Do Add Value**
There are mutual funds that outperform, but these are hard to find on a consistent basis. Even professors who show that it is possible to find winning mutual funds “concede that their strategy is probably more appropriate for institutions than for individual investors, because it requires the application of complex statistics to a large database of fund returns.”

Some of the best measures of mutual fund selection involve looking beyond past returns and at the managers and holdings of the funds. Chevalier and Ellison (1999a) find that managers who graduate from more selective colleges whose students have higher SAT scores generate higher returns. Cohen, Frazzini, and Malloy (2008) show that the people you know matters for mutual fund performance. The best connected managers place bigger bets on companies with board members who went to the same college. Managers’ performance on these connected companies significantly exceeds the performance of nonconnected companies.

The holdings of funds predict performance. We should be paying active fees for managers who are actually active. Why pay high fees to managers who just mimic the S&P 500? Cremers and Petajisto’s (2009) “active share” measures the deviation of a fund’s holdings from the holdings of its benchmark index. Active share reflects how much active stock selection is going on. Cremers and Petajisto document that funds with higher active shares have higher returns. Interestingly, tracking error—the standard deviation of the difference between the fund’s returns and its benchmark—does not predict returns, indicating you need to look deep into the fund’s holdings to measure the how many active bets the manager is taking. Along these lines, managers who specialize and hold more concentrated portfolios tend to have better performance.

Even with all these measures, finding outperforming mutual fund managers is not easy.

3.4. Flows
Mutual fund investors, in the words of Frazzini and Lamont (2008), are “dumb money.” Cash pours into mutual funds when past returns have been high, but it tends to flow into the wrong funds. Subsequent returns end up being low. Friesen and Sapp (2007) estimate that dumb money flows—investors placing money in funds with high past returns but low future returns—costs investors 1.5% per year. Mutual fund companies trumpet the past high returns of funds in their advertising. This is selective, of course, because only funds with recent good performance get star billing. Money comes in, and future returns are disappointingly low.36

Mutual fund money is sticky. Money flows into good performing funds, but money tends not to leave bad performing funds at the same rate.37 In jargon: the flow-performance relationship is convex. Figure 16.5 shows the relationship between flows into active funds over the following year (y-axis) as a function of the past returns of mutual funds (x-axis). At the end of each year from 1980 to 2012, funds are ranked into deciles by their performance over the previous year. The flows into those funds are recorded over the following year. The figure reports the weighted average next-year flows as a function of weighted average past-year returns, in both cases using AUM weights within each decile at the end of each year. In Figure 16.5, the slope of the flow relationship is less steep for negative past returns, while high past returns induce large increases in new money. Thus, investors do not punish losses in the same way they reward success. This investor inertia saved Janus.


Jonathan Berk, a finance professor at Stanford University, and Richard Green, my sometime co-author and a finance professor at Carnegie Mellon University, wrote (p. 537) a paper in 2004 that fits the main stylized facts of

![Figure 16.5](image-url)
mutual fund performance: (i) managers add value on a before-
fee basis but underperform, on average, after fees; (ii)
investors chase returns; and (iii) investors end up doing poorly
when they move money into funds with the highest past
returns. In the field of delegated asset management, this is the
most important paper published in the past thirty years.

Berk and Green (2004) show that these facts result from a
rational equilibrium in which fund managers have talent, on
average, but some investors are talented and some are not
(there is differential ability to generate excess returns).
Investors know that some managers have talent. Fund
managers, however, have decreasing returns to scale: as their
funds become bigger, the excess returns they can generate
shrink as we observe in data.

Investors know who the skilled managers are, so money flows
to the best managers first. These are the managers that have
generated past high returns—some of this is luck, but some of
it is because they truly are talented. This explains why
investors chase returns. As money flows in, the funds get
bigger. But as these funds increase in size, the managers’
alphas disappear. Thus there is little persistence in
performance.

In allocating money, asset owners go with the best manager.
The new money reduces her ability to generate high returns
and drives her expected return down to the second best
manager’s return. At that point, asset owners put money with
the second best manager. The same thing happens until the
expected returns of the first two managers are forced down to
equal the expected return of the third manager, and so on.
This continues until all investors are indifferent between
investing actively or just putting their money in a cheap,
passive index fund. Although fund managers have talent,
investors receive returns that are the same as the market.
Tack on fees, and active mutual fund returns underperform the
market.

(p.538) The Berk and Green theory is remarkable because it
shows that, although fund managers are talented, none of that
talent filters down to asset owners in equilibrium. That is, the
managers themselves benefit from their skill: highly skilled
managers attract more money and earn more in fees but do not pass these gains to investors.

The Berk and Green story is applicable not only to mutual funds—it is also a good description of all active asset management, including hedge funds and private equity, which we cover in the next two chapters.

3.6. Fees
There are three main ways that mutual funds levy fees:

**Front-end loads** (or the *sales charges on purchases*) take money when you invest. For example, if you put $100 into a fund with a 5% front-end load, your balance is immediately cut to $95.

**Back-end loads** (or the *deferred sales charges*) take money when you leave the fund.

**Operating expense fees** are paid when you are in the fund and are expressed as a proportion of AUM. **Management fees** are paid to actually manage the fund. The total *expense ratio* includes management fees and other annual recurring expenses, which include marketing and distribution fees, called “12(b)-1 fees,” and fees for administrative expenses. **No-load funds** are funds without front-end or back-end loads, where investors only pay only annual expense fees. (Strictly no-load funds can have 12(b)-1 fees as long as they are below 0.25%.)

There are many combinations of these types of fees. Table 16.6 lists fees on Janus Global Research and Janus Worldwide in January 2013. These funds have several share classes—this is common in active mutual funds. Investors would be best off with Class N shares (“N” is usually used for no-load shares), which carry the lowest fees. But why would investors choose other shares with higher fees? Mutual fund companies tend to use different share classes for different *distribution channels*. Active funds do not sell themselves. Front-end loads and 12(b)-1 fees are paid to brokers and other agents, who steer their clients to more expensive share classes.

Class A shares have a front-end load of 5.75%. Some funds (not Janus Global Research or Janus Worldwide) have *break points*, which are levels where the front-end loads change. With break points, larger initial investments have lower fees.
Front-end loads are typically paid to brokers who sell the fund and so are effectively sales commissions. Some funds still charge front loads even though they are not sold through brokers.
### Table 16.6

**Fund Expenses**

<table>
<thead>
<tr>
<th>Janus Global Research Fund</th>
<th>Class A</th>
<th>Class C</th>
<th>Class S</th>
<th>Class I</th>
<th>Class N</th>
<th>Class R</th>
<th>Class T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Load</td>
<td>5.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back Load</td>
<td>1.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Fees</td>
<td>0.74%</td>
<td>0.74%</td>
<td>0.74%</td>
<td>0.74%</td>
<td>0.74%</td>
<td>0.74%</td>
<td>0.74%</td>
</tr>
<tr>
<td>Distribution/Service (12b-1) Fees</td>
<td>0.25%</td>
<td>1.00%</td>
<td>0.25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Expenses</td>
<td>0.23%</td>
<td>0.32%</td>
<td>0.39%</td>
<td>0.23%</td>
<td>0.13%</td>
<td></td>
<td>0.38%</td>
</tr>
<tr>
<td>Total Annual Operating Expenses</td>
<td>1.22%</td>
<td>2.06%</td>
<td>1.38%</td>
<td>0.97%</td>
<td>0.87%</td>
<td></td>
<td>1.12%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Janus Worldwide Fund</th>
<th>Class A</th>
<th>Class C</th>
<th>Class S</th>
<th>Class I</th>
<th>Class N</th>
<th>Class R</th>
<th>Class T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Load</td>
<td>5.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back Load</td>
<td>1.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fund Expenses</td>
<td>Class A</td>
<td>Class C</td>
<td>Class S</td>
<td>Class I</td>
<td>Class N</td>
<td>Class R</td>
<td>Class T</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Management Fees</td>
<td>0.59%</td>
<td>0.59%</td>
<td>0.59%</td>
<td>0.59%</td>
<td>0.59%</td>
<td>0.59%</td>
<td>0.59%</td>
</tr>
<tr>
<td>Distribution/Service (12b-1) Fees</td>
<td>0.25%</td>
<td>1.00%</td>
<td>0.25%</td>
<td></td>
<td></td>
<td>0.50%</td>
<td></td>
</tr>
<tr>
<td>Other Expenses</td>
<td>0.24%</td>
<td>0.28%</td>
<td>0.33%</td>
<td>0.23%</td>
<td>0.08%</td>
<td>0.33%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Total Annual Operating Expenses</td>
<td>1.08%</td>
<td>1.87%</td>
<td>1.17%</td>
<td>0.82%</td>
<td>0.67%</td>
<td>1.42%</td>
<td>0.92%</td>
</tr>
</tbody>
</table>
Class B shares have a back-end load of 1%. Some mutual funds, but not these two, have contingent back-end loads (or a contingent deferred sales charge). In these arrangements, the longer you stay in the fund, the lower the back-end load.

(p.539) The 12(b)-1 fee gets its name from the section of the 40-Act that allows mutual funds to (continually) pay distribution and marketing expenses out of the fund’s assets, rather than out of (one-time) loads. 12(b)-1 fees were introduced in 1980. In 2010, investors paid $10.6 billion in 12(b)-1 fees, of which 40% went to financial advisors, brokers, and other financial professionals like retirement plan record keepers and discount brokerage firms. These financial intermediaries are involved in marketing, distribution, and administering the funds. Shareholder services account for 52% of the 12(b)-1 fees, which includes maintaining shareholder websites, call centers, and so on.\(^{38}\) (One would think expenses like this would be paid out of the management fee or administration fees.) The remainder was spent on fund underwriting and advertising.

(p.540) Classes A, C, and S shares of Janus Global Research carry 12(b)-1 fees of 0.25%, 1.00%, and 0.25%, respectively. Some investors may not realize they are paying 12(b)-1 fees because they are not loads. By setting 12(b)-1 fees on AUM, current shareholders pay for the fund company to increase the size of the fund (which then tends to perform poorly as the fund grows) rather than new shareholders.

The other expenses category includes custodial and legal expenses, accounting fees, and other administrative costs.

The total operating expenses sums up the expense ratio, 12(b)-1 fees, and other expenses. The Class C shares for Janus Global Research are very expensive, at over 2%, more than double the management fees for a typical active mutual fund. The other share classes have total annual expenses around 1%. Good passive index funds have total operating expenses well below 0.2%. In the merger of Janus Global Research and Janus Worldwide in March 2013, the fee schedules of the combined fund were the same as Janus Global Research (since Janus Worldwide disappeared). Table 16.6 shows that the fees on each separate share class are all higher for Janus Global Research. At a stroke, Janus got to collect higher fees on the
much larger $2 billion in Janus Worldwide than just on the $0.3 billion in Janus Global Research by merging the two funds.

**Fees Are Trending Downwards**

Fees in active mutual funds have been trending downward but remain fairly high. Figure 16.7 reports mutual fund fees compiled by ICI. During the 1990s, the average mutual fund fee in equities was 1.0%. At the end of 2011, this had fallen to 0.8%. Bond fund fees declined from 0.9% to 0.6%. Fees have been falling thanks to the rise of low-cost index funds, the shift to no-load funds, and the rise of ETFs (which we discuss below).

**Hidden Fees**

Despite the disclosure requirements in the 40-Act, several important costs are hidden from investors:

**Trading costs** are not reported by funds, nor are they included in the fund’s expense ratio. Yet higher trading costs reduce returns for investors. Trading costs encompass:

1. **Commissions**
   Brokerage costs of buying and selling securities must be disclosed but not in the fund’s prospectus.
2. **Bid–ask spreads**
   These are the differences between the lowest price posted by a seller and the highest price posted by a buyer.
3. **Market-impact costs**
   Large trades will move prices. These costs, though hidden, can exceed commissions or bid–ask spreads.
Trading costs are large. Edelen, Evans, and Kadlec (2007) estimate that trading costs are around 1.4%—exceeding even the expense ratios of active funds. Trading costs are proportional to turnover; the more you trade, the higher the transactions costs. Carhart (1997) and others following him show that the higher turnover is, the lower the fund performance. (Yet another reason to go index.)

In 2012, the turnover of Janus Worldwide was 49% versus 67% in Janus Global Research. Janus Worldwide disappeared in the merger, so its shareholders now pay the higher trading fees of Janus Global Research. Its turnover is less than the average of 80% to 90% for active equity funds. But the turnover for an index fund is usually below 5%.

**Soft dollar costs** are unseen by fund investors. In soft dollar arrangements, the fund directs its trades to a select few brokers who provide “free” services, research, or products so that the fund needn’t buy these things separately. The problem with soft dollars is that firms can hide their true expenses. Instead of running some services through management fees, which are disclosed, they are run through soft dollar arrangements, which as transactions costs are not disclosed.

**Fee Obfuscation**

Also hidden are the complicated compensation arrangements brokers, marketing firms, subadvisors, consultants, and other intermediaries have with mutual fund companies: revenue sharing arrangements, rebate-based compensation schemes, and various bundled services.

Edelen, Evans, and Kadlec (2012) show that greater transparency in fee payments lowers agency costs and results in better return performance. But more opaque payments reduce fund outflows when the going gets tough, perhaps because investors can’t directly see how much they’re paying in fees. Barber, Odean, and Zheng (2005) show that mutual fund investors react only to in-your-face fees, like loads and commissions, rather than less obvious fees, like operating expenses. Active fund companies prefer complexity and opacity to make investor money stickier.39

Even if all fees were clearly marked, investors may simply not pay that much attention to them (to their detriment). Choi, Laibson, and Madrian (2010) conduct an experiment on
Harvard staff, Wharton MBAs, and Harvard undergrads—among the most financially literate members of society. They find that in choosing S&P 500 index funds—plain vanilla products that investors should choose primarily based on fees—their subjects consistently choose funds based on past returns. The subjects continued to ignore fees even when given significant monetary incentives and help to make the best choice.40

**Mutual Fund Company Margins Are High**

Table 16.8 is the income statement for Janus in fiscal year 2011. Janus recovered nicely from its disasters in the early 2000s and enjoyed a high profit margin of 32% in the new decade. This high level of profit is typical of mutual fund companies—the mutual fund business is a great business to be in.

### Table 16.8

**Janus Capital Corporation Income Statement 2011**

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Millions</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment management fees</td>
<td>844.3</td>
<td>86</td>
</tr>
<tr>
<td>Performance fees</td>
<td>-11.7</td>
<td>-1</td>
</tr>
<tr>
<td>Shareowner and service fees and other</td>
<td>149.3</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td>981.9</td>
<td>100</td>
</tr>
</tbody>
</table>

**Operating Expenses**

<table>
<thead>
<tr>
<th>Operating Expenses</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee compensation and benefits</td>
<td>294.9</td>
<td>44</td>
</tr>
<tr>
<td>Long-term incentive compensation</td>
<td>63.0</td>
<td>9</td>
</tr>
<tr>
<td>Marketing and advertising</td>
<td>28.0</td>
<td>4</td>
</tr>
<tr>
<td>Distribution</td>
<td>141.7</td>
<td>21</td>
</tr>
<tr>
<td>Depreciation and amortization</td>
<td>33.3</td>
<td>5</td>
</tr>
<tr>
<td>General, administrative and occupancy</td>
<td>109.2</td>
<td>16</td>
</tr>
<tr>
<td>Goodwill and intangible asset impairments</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td>670.1</td>
<td>100</td>
</tr>
<tr>
<td>Operating Income</td>
<td>311.8</td>
<td></td>
</tr>
<tr>
<td><strong>Operating Margin</strong></td>
<td></td>
<td>32%</td>
</tr>
</tbody>
</table>
Table 16.8 shows that only a minority of Janus’s revenue is performance-linked. In 2011, Janus lost only 1% in incentive fees for poor performance. (Remember that the 40-Act only allows symmetric performance fees, so managers lose if they underperform their benchmarks.) Most of the revenue is thus directly linked to AUM. Janus was able to maintain positive operating margins even in the early 2000s (see Figure 16.1) because a large part of its expenses also fluctuate with AUM; in particular, more than half are salaries. Janus also pays large distribution and marketing costs, which amount to 30% of its total expenses.

Gur Huberman (2010), my colleague at Columbia Business School, thinks that the high profit margins of mutual fund companies are not reflected in their share prices. He argues that the operating margins of 30% or so imply that shares should be priced at 20% to 35% of AUM. But mutual fund companies are typically priced at 1% to 4% of AUM. According to Huberman, Janus’s shares are severely underpriced! Perhaps mutual fund company prices are low because investors anticipate that the active segment of the market will shrink—as it has been, albeit slowly. The ICI reports that index funds represented 7% of all equity funds in 1997, a figure that has climbed steadily to 16% in 2011. Pástor and Stambaugh (2012) claim that the size of the active mutual fund industry will decline very slowly because investors’ learning about underperforming active funds is very slow. The mutual fund industry has hundreds of sponsor companies—ICI reports 713 at the end of 2011—and yet profit margins remain very high.41

3.7. Incubation Bias

Mutual fund companies start mutual funds like Jesus’ parable of the sower, where only the seed that falls on fertile ground takes root, springs up, and is harvested. Fund companies start multiple funds privately, and at the end of an evaluation period, they open them to the public. The incubation bias is the tendency of fund sponsors to open up and market only the successful funds. The opened funds have selection bias. Evans (2012) shows that funds in incubation have returns that are nearly 10% higher than nonincubated funds.42 When these funds are open to the public, money flows in. But the success of these funds during incubation is mostly due to chance. Post-
incubation, Evans finds that the outperformance disappears. There are dozens of Janus’s incubated funds in Evans’s database, but Janus is not alone in practicing incubation. In fact 23% of new funds are incubated.

Some fund companies engage in shady practices during incubation by juicing returns. Fund companies can preferentially allocate good deals to their incubated funds. For example, IPOs typically “pop” on the first day of trading and reach prices well above their issue price. Van Kampen and Dreyfus have both paid fines for unfairly allocating IPOs to their incubated funds.43

3.8. Other Agency Issues
Governance matters in mutual funds.

Funds whose directors have more skin in the game—that is, whose directors have large ownership stakes—perform better.44 Fees are lower at mutual funds with fewer and more independent directors. At the best-governed funds, fees are charged in line with performance. Funds with more independent boards have smaller fee hikes and larger fee cuts.

Then there is the dark side mutual fund governance.45 Fund directors and advisory firms hire each other preferentially and often not based on merit. Mutual fund families strategically favor some funds that increase the firm’s profits at the expense of fund shareholders.

The Employee Retirement Income Security Act of 1974 (see chapter 1) requires trustees to be prudent in finding suitable investments for their 401(k) clients. (p.545) Trustees are typically appointed by the employer who sponsors the plan. Mutual fund families often serve as the trustees of defined contribution 401(k) plans, and they play large roles in selecting a set of funds for the participants. But mutual fund trustees have a competing interest in steering participants to their own funds. Pool, Sialm, and Stefanescu (2013) show that trustee-sponsored funds on average underperform by 3.6% compared to nontrustee funds. Trustee funds are also less likely to be removed from, and more likely to be added to, 401(k) menus. Trustee mutual fund companies tend to overweight the sponsoring company’s stock—chapter 3 shows this lack of diversification hurts beneficiaries—and the way
trustee funds vote in shareholder meetings depends on their sponsors’ business ties. 

Individual investors can improve governance by piggy-backing on institutional funds, who have more resources to monitor and can chastise funds by withdrawing large sums. Evans and Fahlenbrach (2012) show that retail mutual funds with institutional offerings outperform retail funds without institutional offerings by 1.5% per year.

Why do investors stick with poorly governed, poorly performing funds? One reason is taxes—but investors are generally better off paying capital gain taxes now and moving into better funds. Another reason is ignorance and slow learning; it’s just hard to determine whether your fund manager is failing to deliver value.

The behavioral explanations probably resonate more with individual investors. Investors might be reluctant to realize their losses (this is called the disposition effect). And then of course hope springs eternal—maybe the fund will come back (it won’t). Gennaioli, Shleifer, and Vishny (2012) argue that the relationship between a mutual fund shareholder and its advisor is like the relationship between a patient and her doctor. Investors trust mutual fund companies, and this trust does not disappear when mutual funds stumble. Managers exploit this trust, capital is sticky, and managers can keep charging high fees even when they have no skill.

3.9. Summary

Tkac (2004) calls the conflicts of interest in the mutual fund industry a “permanent morass” and pays special attention to the tension between the investor as a customer of a mutual fund sold by a mutual fund company and the legal setup of the investor as owner of the mutual fund represented by a board and procuring services from the mutual fund company. But the 40-Act has eliminated the worst (p.546) of these principal-agent problems and has allowed the mutual fund industry to flourish.

Mutual funds have also encouraged people to save. People do indeed need to save (see chapter 5), and they would have saved far less without mutual funds. Individuals have gained access to investment skills that would be out of reach to them in running their own portfolios, and their funds are protected
from the worst abuses by managers. Unfortunately, the benefit of investment skill accrues to the managers of the funds, on average, rather than to the investors in the funds. Mutual funds underperform, or at best equal, the market, and investors pile into funds with high past returns that aren’t repeated going forward.

4. Closed-End Funds
Closed-end funds are ideal vehicles to hold illiquid assets because the number of shares is fixed and they are traded in the secondary market. That means there can be no redemption from the fund. So closed-end funds can harvest an illiquidity premium.\(^49\) There is, however, a difference between the exchange price of closed-end shares and the underlying value of the fund’s investments (the NAV). This difference can be large, is usually negative, and varies over time. This phenomenon is called the *closed-end fund discount puzzle*.\(^50\)

Figure 16.9 plots the closed-end fund discount from 1934 to 2012, which is an updated series from Baker, Wurgler, and Yu (2012). The last portion of this data is the closed-end fund discount index constructed by Thomas J. Herzfeld Advisors, a firm specializing in closed-end funds. The average discount is 11%, but there is considerable time variation.

Some reasons for this negative average discount are:

1. Taxes
   The discount can arise from *tax overhang*.\(^51\) Managers of a mutual fund can realize capital gains at a time that is inopportune for investors. (This takes away investors’ tax-timing option; see chapter 12.)
2. Irrationality
Lee, Shleifer, and Thaler (1991) argue that the closed-end fund discount is due to investor irrationality. The discount itself is used as an input into investor sentiment indices, like Baker and Wurgler (1997). Investor sentiment, however, does not explain simultaneous discounts and premiums of similar closed-end funds.

3. Agency costs
While the structure of closed-end funds offers advantages, such as the ability to harvest illiquidity premiums, there are also agency costs. Managers charge fees, and when managers have no talent, there must be a discount as fees are paid out of the fund’s earnings. Cherkes, Sagi, and Stanton (2009) show discounts or premiums arise as the trade-off between the benefit of transforming illiquid assets into liquid ones and managerial costs.

A number of activist investors, especially hedge funds, have tried to take advantage of the closed-end fund discount by open-ending closed-end funds. Activists do this by buying enough shares to control the closed-end fund’s board, and then dissolving the fund to collect the discount.

5. ETFs
There has been huge growth in both the number of ETFs and their AUM. ETFs are convenient because you can trade them instantaneously, they are cheap because they are designed for the most part to passively track indices, and there is a lot of variety. There are even ETFs of ETFs. The Economist calls ETFs “one of the more successful financial innovations in recent decades.”

Figure 16.10 plots data from ICI and shows that the number of ETFs rose from about 100 in 2001 to more than 1100 at the end of 2011. While 90% of ETFs are registered investment companies and fall under the 40-Act, the remainder, which mainly invest in commodity futures, are regulated by the Commodity Futures Trading Commission (CFTC). Synthetic ETFs hold derivatives, mostly swaps, to engineer exposure to commodities or illiquid assets. (ETFs that physically hold commodities, like gold, are regulated by the SEC.) New synthetic ETFs have been suspended since March 2010 and
are still suspended at the time of writing in 2013 (but existing ones were allowed to continue).

5.1. ETFs versus Mutual Funds

ETFs have a number of advantages over mutual funds:

1. Immediate liquidity

ETFs trade throughout the day. Investors in mutual funds, in contrast, all receive the same price at the end of the day. The disadvantage of ETFs is that the price investors pay can be different from the NAV—but the design of ETFs ensures that this discrepancy is small, at least during normal times (see below).

2. Tax efficiency

ETFs are generally much more tax-efficient than mutual funds (see chapter 12 for tax-efficient investing). Mutual funds must sell off securities to pay off investors redeeming shares. This capital gain is passed through to investors (p.549) no matter when an investor entered the fund. In ETFs, your tax basis depends only on when you bought the ETF.

3. More transparency

ETF holdings are published daily. Mutual funds report their holdings quarterly. The daily disclosure is actually an impediment for actively managed ETFs, which do not blindly track indices; why would you want to allow everyone to see what you’re doing if you have a secret sauce?

4. Can be shorted

Mutual funds are long-only products. Because ETFs trade on exchanges, they can be shorted. Given the underperformance of active mutual funds, shorting actively managed ETFs might be a way to capitalize on the active management discount.
I see two major disadvantages of ETFs for individuals. First, the fact that you can easily trade means investors trade often. Odean (1999) and Barber and Odean (2000) show that individuals lose money when they trade a lot because they trade pro-cyclically: they are reluctant to sell losing stocks and are too quick to realize their winners. Second, the large assortment of ETFs can lead to some investors becoming attracted to overly narrow products that do not give them adequate diversification (see chapter 3).

5.2. Fair Pricing

ETF prices quoted on an exchange should correspond closely with the NAV through no-arbitrage pricing. ETF shares are created when an authorized participant (brokers or institutional investors, which must be registered with the ETF) deposits a creation basket with the ETF. The creation basket is a portfolio of the underlying securities in the ETF, usually reflecting the index the ETF is tracking. (In some cases, small amounts of cash can be substituted for securities that are hard to obtain.) In return for depositing securities, the authorized participant receives a large block of shares, like 25,000 or even 100,000, which is the creation unit. The authorized participant can then break up creation units and sell the smaller blocks on the exchange. The transactions between the authorized participant and the fund are deemed in-kind transactions and are not subject to tax.

To do the reverse process, a creation unit can be disposed of by selling back the shares to the ETF. In return, the authorized participant receives the creation basket.

If the ETF is trading below its NAV during the day, authorized participants can buy low and sell high. They buy shares of the ETF on the market and then offer them to the ETF and receive the creation basket. As they buy ETF shares, the price of the ETF rises until the ETF price reflects the NAV. Conversely if the ETF trades above its NAV, authorized participants sell the ETF (which is expensive) and buy (p.550) the creation basket (which is cheap). As they sell, the price of the ETF declines until it reaches the NAV.

How close is the NAV of the shares, at which the authorized participants trade, and the market price of the ETF, at which other investors trade? Pretty close, most of the time. Engle
and Sarkar (2006) and DeFusco, Ivanov, and Karels (2011) show that ETFs are efficiently priced. The deviations from NAV are small, not persistent, and last only minutes.

**Flash Crash**

Except sometimes deviations are large, persistent, and last for more than just minutes.

In a mere 20 minutes starting at 2:40 pm on May 6, 2010, major futures and equities markets plummeted more than 5% before suddenly rebounding. The decline began in the equity futures market, where it was (supposedly) triggered by Waddell & Reed, an investment manager based in Kansas. Pressure from high-frequency trading algorithms soon overwhelmed available liquidity, causing an explosion of mispricing to tumble through to equities markets. This was the *Flash Crash*. More than 300 securities had trades executed at prices more than 60% away from values just before the Flash Crash. Accenture, a company that has a market value in the tens of billions of dollars, traded at 1 cent. Sotheby’s had been trading around $34 and then jumped to $99,999.99. This gave Sotheby’s, however briefly, a market capitalization larger than the U.S. economy.

ETFs accounted for 70% of the 326 securities for which trades were canceled. Madhavan (2012) shows that ETFs experienced significantly larger drawdowns during the Flash Crash than for other securities: the average ETF drawdown was 24% versus 8% for other equities. ETFs played a special role in transmitting these shocks. Ben-David, Franzoni, and Moussawi (2011) argue that ETFs served as the conduit for shocks from the futures market (ground zero) to the equity market. It is not surprising that some regulators and others think that ETFs pose systemic risk to the financial system.

There are several lessons for asset owners from the Flash Crash:

1. ETFs require liquid markets for fair pricing;
2. ETFs can exacerbate liquidity shocks; and
3. ETF no-arbitrage relationships are prone to breakdown and are very fragile during crashes.

5.3. **Agency Issues**

*(p.551) The ETF Business*
ETFs have much lower margins than traditional mutual funds. While the average mutual fund has an expense ratio of 80 basis points (see Figure 16.7), the average ETF charges 20 basis points (see French (2008)). Many traditional mutual fund companies have introduced ETFs as money flowing into regular mutual funds has been slowing. They are doing this with reluctance—ETFs are generally less profitable and cannibalize higher-margin traditional funds. Janus, for example, has been late to hop on the ETF bandwagon. It filed with the SEC on September 3, 2010, to launch active ETFs, but as of the time of writing in 2013 had yet to launch an ETF.

The top three ETF sponsors at the end of 2011 were iShares, StateStreet, and Vanguard with AUMs of $448 billion, $267 billion, and $170 billion, respectively. (The rest of the players are much smaller.) The big three are engaged in a “battle of the basis points” in driving ETF costs lower. Some broad-based index ETFs now carry expense ratios below 0.05%.

At the time of writing, there is only one listed pure ETF sponsor company, WisdomTree Investments. This is the only company where we can directly see the profitability of the ETF business—all the other companies that sponsor ETFs do so in divisions of larger companies and do not separately break out ETF revenue. WisdomTree’s AUM was $12.2 billion at the end of December 2011, making it the seventh largest ETF sponsor in the U.S. WisdomTree launched its first ETF in June 2006 and listed on NASDAQ in July 2011. In its 2011 fiscal year, the first in which it posted a profit, WisdomTree posted an operating margin of 5%—peanuts compared with the 32% operating margin of Janus in the same year (see Table 16.8).

Low margins in the ETF business mean that you need a lot of scale. Barclays Global Investors (BGI), now part of BlackRock, launched its iShares division in 1999. The plan was risky because BGI needed $100 billion of AUM to break even. When BGI jumped in, it launched an entire platform of ETFs, along with a comprehensive education campaign for investors. It was a bold, bet-the-firm kind of decision by the CEO of BGI, Blake Grossman, and the CEO of iShares, Lee Kranefuss. They made the right call—BGI’s ETF business took off.

The big ETF guys need to be really big in order to make money. And they need to get even bigger as fees continue to fall.
One area that ETFs have yet to crack is the 401(k) market. Consultants and mutual fund company sponsors still dominate this arena. (Many consultants benefit from some of the 12(b)-1 fees, and consultants and plan sponsors have kickback arrangements with mutual fund companies.) ETFs account for just 0.2% of retirement assets. Retirement asset managers have been able to hold onto higher-fee products partly because fees on 401(k) plans were not required to be disclosed until 2012. As more investors pay attention to fees in retirement plans, money should start flowing to ETFs. The process will be slow, though, because consultants and mutual fund trustees control a lot of these funds, and fund beneficiaries have little say.

**Too Much Trading?**

There is another way that asset management companies can make money off ETFs, even though the margins on managing ETFs are small. John Bogle, the founder of Vanguard, says:

> “The trick of ETFs . . . is that the costs of administration are basically thrown over to the marketplace, so people pay for them with their brokerage commissions and things of that nature.”

Some asset management companies can subsidize ETFs by making money from trading costs—especially if they have their own trading platforms or work hand-in-hand with brokers. Fidelity Investments, for example, began charging high fees in March 2013 for investors who sell “commission-free” ETFs on its trading platform within short time periods. Many ETF sponsors, however, do not directly benefit from their costs of trading. ETF bid–ask spreads average 0.9%, but fixed income and equity funds have bid–ask spreads below 0.25%. The biggest ETFs, however, have very small trading costs and the ten largest ETFs from 2007 through 2012 have average spreads of 0.04%. Nevertheless, even if you trade the biggest ETFs a lot, the expenses start to add up very quickly—and cost many times more than a traditional (buy and infrequently trade) active mutual fund. Mutual funds, in contrast, have zero bid–ask spreads.
Leveraged ETFs

Retail investors must be particularly careful with leveraged ETFs. With these products, daily compounding causes returns over more than one day to differ from the underlying index. Suppose you invest $100 in a traditional fund and $100 in a hypothetical “3 × Leveraged Fund” based on the same index. The index rises 10%. (p.553) The traditional fund returns $110. The 3 × Leveraged ETF adds 30% to return $130.

Leveraged ETFs are “reset” daily. Now suppose on day 2, the index falls 10%. The traditional fund drops to \((1 - 0.1) \times 110 = $99\).

The leveraged ETF returns \((1 - 0.3) \times 120 = $84\). After two days, the index return is \(99/100 - 1 = -1\%\). In comparison, the 3 × Leverage Fund has returned \(84/100 - 1 = -16\%\). This is very different from three times the index return of −1% over two days and contrary to what an ordinary investor might have expected from the fund’s name. Repeat this after many days, and there can be enormous divergence between actual returns and those you expect.

Figure 16.11 plots the S&P 500, the Direxion Daily S&P 500 Bear 3X, and the Direxion Daily S&P 500 Bull 3X. The latter two ETFs are designed to have triple exposure to the S&P 500 in a short and long direction, respectively. Figure 16.11 plots the cumulative return to a $1 investment in each of the three at the beginning of January 2012 until the end of December 2012. The return of the S&P 500 is −11.8%. The Bear 3X fund returned 74.6%, more than six times the S&P 500 return. The Bull 3X fund returned −31.6%, which is 2.6 times the S&P 500 return. These are very different from the expected “3” in the funds’ names.
It’s ironic that while Janus was the poster-child fund of the Internet investing craze of the 1990s, it was owned by an old-fashioned railroad company, Kansas City Southern Industries (KCSI). Janus Capital Corp. was founded by Thomas Bailey in 1969 in Denver. During the 1960s, creating industrial conglomerates was all the rage, and KCSI diversified into financial companies, acquiring an 82% stake in Janus in 1984. Under Bailey, Janus grew fast, but its rise became meteoric after he promoted James Craig to manage the flagship Janus Fund in 1986. Janus’s rise to stardom in the 1990s was due to Craig, Jack Thompson (the COO), and Tom Marisco. Marisco managed the Janus Twenty Fund and left in 1997 to found his own firm after run-ins ("philosophical disagreements") with Bailey.

In 2000, KCSI spun out Stilwell Financial, which was named after one of KCSI’s founders. Stilwell consisted of Janus, which had 97% of its total AUM, plus three smaller investment management businesses. Craig left the firm in August 1999, prior to the spinoff. The stated reason was to create Opportunity Capital, a management company serving his wife’s charitable trust foundation, but rumors were that his resignation was prompted by the forthcoming spinoff. The creation of Stilwell was marked by bitter battles between Janus and KCSI, where Janus felt slighted that it was being lumped with lesser-known and smaller asset management companies in the holding company. Craig’s timing was impeccable: he cashed in his $70 million equity stake in Janus right before the dot-com meltdown.

By this time Bailey was not involved in running the firm’s day-to-day operations, although he retained his large ownership stake. Bailey developed a reputation as “fun-loving,” “sleazy,” “was into marijuana and cocaine,” and had employees cover for him with his wife (they later divorced) when he was meeting other women. The terms of his sale to KCSI stipulated that Bailey had the right to sell his remaining shares at fifteen times Janus’s after-tax earnings per share. Janus was also required to pay out 90% of its profits in the form of dividends. Owning 12.2% of Janus brought Bailey...
In 1999 alone, the dividends paid by Janus gave Bailey $25 million.

(p.555) Janus’s assets were cut in half due to the fallout from the Internet crash in 2001; clearly the sun was setting on the Janus empire. Bailey sold his remaining Janus shares back to Stilwell. Stilwell paid $1.56 billion to acquire shares in Janus, of which approximately $1.2 billion was paid to Bailey.\(^70\) Thus, a large portion of the fees paid by investors in Janus funds ended up in Bailey’s pockets. Bailey sold out of Janus completely; he did not plough back his money into Janus funds or Stilwell stock. This is in keeping with Berk and Green’s (2004) model, which says that mutual fund managers’ talent, if any, accrues to the fund managers themselves and does not trickle down to the shareholders in the funds.

In 2002, Stilwell was swallowed by its more famous subsidiary and the Janus Capital Group was formed. Thanks to the stickiness of mutual fund cash flows, Janus survived the internet meltdown, market timing investigations by the SEC, and terrible performance—like all finance companies—during the 2008–2009 financial crisis.

And what of the stodgy railroad company KCSI, which previously owned Janus? At the end of 2011, it was one of the best performing stocks of the previous twenty years.\(^71\) In the mid-1990s, Janus was earning more than KCSI’s core railroad business, and KCSI’s stock price rose with Janus’s fortunes. In jettisoning Janus in 2000, right at the peak of the Internet bubble, KCSI’s timing was perfect. KCSI got cash to pump back into its railroad operations and avoided the Internet crash that dragged down Janus’s value. The proceeds reinvigorated KCSI in time for a resurgence of rail shipping in the 2000s. (The investing legend Warren Buffet bought a rail competitor of KCSI in the late 2000s.) And as an old-fashioned company, it also fared well in the financial crisis that brought down most financial firms in 2008–2009.

Notes:


(3) Data in Figure 16.1 are from 10-K filings of Stilwell Financial and Janus Capital Group.

(4) Janus was one of several mutual fund companies that engaged in this odious practice. It was uncovered by Eric Zitzewitz (2006), a professor at Dartmouth College.

(5) Wal-Mart’s operating margin in 2011 was 5.9%.


(8) The backbone of U.S. financial market regulation consists of the 40-Act, the Securities Act of 1933, and the Securities Exchange Act of 1934. The latter created the SEC. All this regulation was created as a response to the stock market crash of 1929 and the Great Depression. The entire apparatus was conceived as part of President Franklin Roosevelt’s New Deal and designed to make markets safe for the ordinary investor.

(9) From http://www.sec.gov/about/laws.shtml#invcoact1940

(10) The provision of this *daily liquidity* by mutual funds is costly to the fund shareholders, as shown by Edelen (1999), Coval and Stafford (2007), and Chen, Goldstein, and Jiang (2010).


(13) According to Farina, Freeman, and Webster (1969), an SEC report in 1940 calculated that investors lost over $1 billion in the 1920s and 1930s to investment company misconduct. The report highlighted several ways the investment managers found to steal investors’ money. The variety of malfeasance makes for interesting reading.

Mutual Funds and Other 40-Act Funds

(15) This is under the 1970 amendment of the Investment Advisers Act of 1940.

(16) Deli (2002) and Warner and Wu (2011) investigate mutual fund contracts. Coles, Suay, and Woodbury (2000) examine the compensation contracts of closed-end funds. The standard to prove mutual fund fees are “excessive” is extremely high (called the Gartenberg standard, after Gartenberg vs. Merrill Lynch Asset Management, Inc.) and many argue the law has failed; see, for example, Johnson (2009). Most suits never see trial and are dismissed because they are unable to isolate management fees from administrative costs. An important recent court case, Kasilag et al. vs. Hartford Investment Financial Services, is unresolved at the time of writing and could change this. See Braham, L., “Lawsuit Shines a Harsh Light on Subadvisory Fund Fees,” Bloomberg, Feb. 21, 2013.


(21) In 1974, John Bogle founded the Vanguard Group—which changed the investing world by making index funds available for the mass market—by exploiting the legal separation between the fund and the sponsoring company. After being fired from Wellington Management, Bogle persuaded the board of the Wellington Fund to part ways with Wellington Management to find a new investment manager. See Bernstein (2010).


(25) This is shown in Elton, Gruber, and Blake (1996) and Carhart’s (1997) seminal paper. See also Brown et al. (1992), Carpenter and Lynch (1999), and Carhart et al. (2002). A subtle point is made by Linnainmaa (2013), who notes that while the group of mutual funds that die have lower returns than surviving funds, there can be a positive bias resulting from survivorship bias if fund-level data is used to compute mutual fund alphas, as some of the studies mentioned in Section 3.2, if the chance of a fund dying increases when a fund’s alpha is low. There is no Linnainmaa survivorship bias for studies tracking all mutual funds, some of which die and some of which survive, at a point in time. Linnainmaa finds the “reverse survivorship bias” is small: for a typical fund the Fama-French (1993) alpha is -0.44% per year while the alpha taking into account reverse survivorship bias is -0.41% per year.

(26) Other important studies not mentioned in this paragraph are Grinblatt and Titman (1989), Sharpe (1992), Malkiel (1995), Gruber (1996), and Fama and French (2010). See Ang, Goetzmann, and Schaefer (2011) for further literature review.

(27) Jensen is most famous for introducing the radical idea of paying corporate managers with options. His article Jensen and Murphy (1990) led to the profusion of option payouts in the 1990s—this practice went hand-in-hand with the Internet bubble of the 1990s. Treynor (1965), Sharpe (1966), and Jensen (1969) are also notable because they were the first applications of the CAPM. Treynor and Sharpe were two of the prominent developers of this theory (see chapter 6).

(28) The average bond mutual fund also does not add value. See Blake, Elton, and Gruber (1993) and Ferson, Henry, and Kisgen (2006). Institutional funds also underperform, as shown by Busse, Goya, and Wahal (2010).

See Stein (2002).

For some theoretical explanations see Christoffersen and Musto (2002) and Gil-Bazo and Ruiz-Verdu (2008). In addition, see the Berk and Green (2004) model, which is discussed in section 3.5.


See also Daniel et al. (1997).


Kacperczyk, Sialm, and Zheng (2008) develop a related measure involving the difference between the fund’s return and the return implied by the fund’s previously disclosed portfolio holdings. This “return gap” predicts fund performance. Amihud and Goyenko’s (2013) measure is similar in spirit—funds that move most differently from their benchmarks, or are most active, have higher returns. See Kacperzyk, Sialm, and Zheng (2005) for industry concentration results.

For an academic study on mutual fund advertising, see Jain and Wu (2000). Gruber (1996) and Zheng (1999) show that mutual fund flows predict fund returns, at least in the short run. This is consistent with the Berk and Green (2004) argument (see below) that some investors can identify skilled managers, but performance in the long run suffers as the funds grow. Lou (2012) shows that mutual fund flows predict stock returns.

See Ippolito (1992), Chevalier and Ellison (1997), Goetzmann and Peles (1997), and Sirri and Tufano (1998). We observe the same convex flow-performance relationship in hedge funds (see Agarwal, Daniel, and Naik 2004 and Ding et al. 2009) and pension funds (see Del Guercio and Tkac 2002). Bergstresser and Poterba (2002) find that new money (inflows) is sensitive to past performance, while withdrawals (outflows) have no statistically significant relation to past returns.
Numbers are from ICI’s 2011 Investment Company Factbook. Interestingly, ICI’s 2012 version omits this information.

Carlin (2009) shows this is optimal for funds in equilibrium. Del Guercio and Tkac (2002) find that mutual fund flows do not respond to fees, only to past returns. See also Stoughton, Wu, and Zechner (2011), who construct an equilibrium model with kickbacks. Higher kickbacks are associated with higher portfolio management fees and reduced performance.

See also Hortaçsu and Syverson (2004), who claim that some investors ignore high fees because they have high search costs.

Whether the mutual fund industry is competitive is still an open question. The dean of my institution, Glenn Hubbard, argues it is; see Coates and Hubbard (2007). But others disagree, as in Morley and Curtis (2010).

See also Palmiter and Taha (2009).

Gaspar, Massa, and Matos (2006) study juicing. The tendency of IPO firms to increase from the offer price to the first day closing price is called IPO underpricing. Once IPOs list, they tend to perform poorly over two- to five-year periods compared to more seasoned companies, which is the long-run IPO underperformance puzzle. See Ritter and Welch (2002) for a literature summary of IPO issues.

See Chen, Goldstein, and Jiang (2008) and Cremers et al. (2009) for the skin-in-the-game results. For the other results, see Tufano and Sevick (1997), Gil-Bazo and Ruiz-Verdu (2009), Adams, Mansi, and Nishikawa (2010), and Warner and Wu (2011). Dann, Del Guercio, and Partch (2003) show that closed-end funds with more independent boards also have superior performance.

For these effects, see Kuhnen (2009) and Gaspar, Massa, and Matos (2006), respectively.

See Cohen and Schmidt (2009) and Davis and Kim (2007), respectively.

(48) The term is coined by Shefrin and Statman (1985).

(49) See Stein (2005). Note that the illiquidity premium across asset classes is small, but there are large differences between the returns of liquid and illiquid assets within asset classes; see chapter 11.

(50) See Cherkes (2012) for a summary article on closed-end funds. Some investment companies are economically similar to closed-end funds in the sense that they are listed and the number of shares is fixed. Berkshire Hathaway is a famous example. These are corporations and do not fall under the 40-Act.


(52) This story is originally due to Boudreaux (1973). See also Ross (2005) and Berk and Stanton (2007).

(53) See Bradley et al. (2010).


(56) See Bradley and Litan (2010).


(63) Numbers computed by Paul Tetlock.

(64) In mutual funds, current shareholders absorb the liquidity costs of marginal traders, whereas the liquidity costs are borne by the traders themselves in ETFs. Because of these different liquidity profiles, Guedj and Huang (2009) show that mutual funds and ETFs will co-exist in equilibrium and attract different clienteles with different liquidity needs.

(65) This difference arises from arithmetic vs. geometric returns, see Cheng and Madhavan (2009), chapter 4, and the Appendix. Tang and Xu (2013), however, show that the divergence between the leveraged ETF returns and the leveraged multiple of the underlying index return cannot be explained by just compounding deviations.

(66) In the finance literature, diversified companies tend to have lower returns than predicted if the company were split into a portfolio of specialized firms. This is called the diversification discount. See Lang and Stulz (1994) and Villalonga (2004). The history of Janus is drawn from Elkind, P., 2001, “The Hidden Face of Janus,” Fortune, Jan. 22, 2001, and Goldberg, S. T., “Upheaval at Janus,” Kiplinger, June 2003.

(67) Marisco ended up selling his own asset management firm to Bank of America, which paid $150 million in 1998 for half the firm and $950 million for the other half two years later. Marisco netted half a billion for himself in the transaction. In 2007, Marisco bought back his firm from Bank of America on


