

CHAPTER 8: Investment Fees & Trading Costs

▲ DRIVERS VS. DECREMENTS TO INVESTMENT RETURN

Chapter Four discussed factors that create an expectation of positive investment returns. Knowledge of these factors is important lest investors succumb to investment stories divorced from economic reality. Wishful thinking about investment results is a poor substitute for understanding basic principles concerning the risk/reward tradeoffs offered by capital markets:

- Absent risk, the only return investors can expect is the risk-free rate produced by U.S. government T-bills;
- ‘Priced’ risk provides an expectation – not a guarantee – of earning a return in excess of the risk free rate;
- ‘Priced’ risk incorporates certain factors that carry the expectation of a positive excess return. These factors include:
- Market risk – exposure to the risk(s) of assets with uncertain future returns (stocks, bonds,

and real estate);

- The risk of ‘value’ style assets;
- Small stock risks;

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- Liquidity risk.
- Other factors may or may not create an expectation of reward because their risks can be mitigated through effective portfolio diversification.¹

Although investors dislike uncertain investment results, returns greater than those of a short-term U.S. Treasury demand some exposure to risky assets.

As a consequence, prudent investing focuses, not on risk avoidance, nor on return maximization, but on risk management.

An understanding of the factors that drive expected return, however, is only one part of the story. A well-constructed portfolio can suffer significant losses because of unwarranted fees and costs. More and more financial economists are beginning to think that cost control is the single most important factor in long-term investment success. A prodigious amount of money may leak out of a portfolio largely unnoticed because of inattention to investment costs.

¹ Harvey, Campbell R., Liu, Yan and Zhu, Heqing, “...and the Cross-Section of Expected Returns,” The Review of Financial Studies SSRN (2015), surveys 313 scholarly articles to identify 316 different factors which may explain stock return patterns over time.

Financial economists use the terms “portfolio friction” or “investment slippage” to describe the detrimental consequences of investment costs (including taxes paid on investment earnings). Several studies suggest that cost control may be more important to long-term investment results than other factors that have historically received greater attention, such as security selection and market timing.² This chapter will help you become a more savvy investor by acquainting you with some ways to address this problem. Specifically, it:

1. Summarizes a 2013 report on mutual fund fees and expenses published by the Division of Investment Management of the U.S. Securities and Exchange Commission (SEC);
2. Describes Exchange Traded Funds (ETF). ETFs have become popular due to their low cost and favorable tax characteristics;
3. Discusses other techniques for minimizing investment costs, such as pursuing low-cost mutual fund share classes, using tax managed vehicles, using tax efficient vehicles, and minimizing turnover and other fees; and,
4. Highlights the degree to which trading – i.e., portfolio turnover – results in anti-performance because of the costs of accessing capital markets.

▲ SEC STUDY OF MUTUAL FUND FEES

In January 2013, the SEC published a comprehensive study of mutual fund fees and expenses.³ In this study, the SEC concludes that investors:

- Do not fully appreciate how much fees

and expenses erode long-term investment returns; and,

- Do not have clear information to help them compare the costs of funds.

The report stresses that, “investors should assess a fund’s costs because they can have an enormous impact on returns.” The report notes, “... seemingly small changes in expenses can have a large impact on the amount of money accumulated for a long-term goal. For example, if you invested \$10,000 in a fund that produced a 10% annual return before expenses and had annual operating expenses of 1.5%, then after 20 years you would have roughly \$49,725. But if the fund had expenses of only 0.5%, then you would end up with \$60,858.” The SEC “also suggests that investors consider a fund’s size, tax consequences, risks, and volatility.” As a part of the effort to enhance investor understanding of mutual fund costs, the SEC Office of Investor Education and Advocacy offers Mutual Fund Cost Calculator as part of its web site at www.sec.gov/investor.

The SEC study examines mutual fund data from 1979 through 2012 to determine how fund fees have evolved during this period. Specifically, the study:

1. Identifies categories of fund costs;
2. Studies trends in fund expenses; and,
3. Determines the statistical significance of various factors that drive fund expenses.

The SEC concludes that current tools for comparing investment expenses across funds are poor. One primary tool is a fee table mandated by 1988 legislation. This table must appear in the fund prospectus, and must be accompanied by a numerical example illustrating the total amount that an investor

² See, for example, Sharpe, William F., “The Arithmetic of Active Management,” *Financial Analysts Journal* (January/February, 1991), pp. 7-9.; Avery, Luther J. and Collins, Patrick J., “Managing Investment Expenses: Trustee Duty to Avoid Unreasonable or Inappropriate Costs,” *ACTEC Notes* (Fall, 1999), pp. 123-136; Dellva, W.L., and Olson, G. T., “The Relationship Between Mutual Fund Fees and Expenses and Their Effects on Performance,” *The Financial Review* (1998), pp.85-103; Bogle, John C., “The Arithmetic of ‘All-In’ Investment Expenses,” *Financial Analysts Journal* (January/February, 2014), pp. 1-9.

³ The essay “Reducing Investment Costs: Past Research and Future Strategies” summarizes the report on mutual fund fees. It also discusses the growing ETF arena and looks at other techniques for minimizing investment costs. It is available on the Schultz Collins website.

would pay on a \$10,000 investment over various time periods, assuming a constant 5% annual return. A second tool is the expense ratio published in the fund's prospectus. According to the SEC, neither tool provides a consistent, comprehensive measure of the true costs of investing. Particularly vexing is the lack of uniformity among funds in reporting the cost elements underlying the expense ratio. Additional complexity develops as mutual funds offer numerous share classes (each of which has its own expense ratio) and distribution systems. These circumstances make it increasingly difficult for investors to make good decisions.

Figuring the Expense Ratio

The expense ratio is the total expenses of a fund, divided by its average net assets. Mutual funds are required to report expenses in three categories:

- **Management Fees:** In general, management fees refer to the cost of services related to managing the portfolio, such as security selection and monitoring. However, some funds also report various administrative and record keeping costs (typically, transfer agent services) as management fees. The report states, "... if fund A has a higher management fee than Fund B, it may mean that Fund A pays a higher fee to its adviser. Alternatively, it may mean that Fund A's management fee pays for services that are provided and charged for separately by Fund B's adviser, an affiliate of the adviser, or outside contractors."
- **Rule 12b-1 Fees:** These are distribution or other expenses incurred by a fund under rule 12b-1 of the Investment Advisory Act. Rule 12b-1 fees are controversial, because they permit a fund's sales and marketing expenses (i.e., costs incurred to attract new shareholders, such as commissions to brokers) to be paid from the assets of the fund (i.e., from the assets of the fund's current shareholders).

However, some funds "adopt 12b-1 fees to cover expenses considered by other funds to be advisory or administrative expenses."

- **Other Expenses:** 'Other expenses' is a catchall category to reflect other costs (either charged directly to shareholders or deducted from assets) not included in the first two categories. However, despite the existence of this category which purports to capture a broad range of costs, a mutual fund's expense ratio does not reflect certain very real costs of investing, such as the fund's cost of buying and selling securities (brokerage commissions, market impact costs, etc.) or sales loads charged to investors.

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▲ LOAD & NO-LOAD FUNDS

Prior to 1980, there were no rule 12b-1 fees. Most funds charged an up-front "sales load," and used it to pay for marketing expenses such as commissions to the selling brokers. The manufacturers of no-load funds, by contrast, paid their marketing expenses directly; these costs were never deducted from fund assets. As no-load funds commanded greater market share (by 1999, no-load funds held more total assets than load funds), load funds developed a plethora of alternative marketing and pricing structures to make

Today, there are at least two classes of no-load funds: true (or pure) no load funds with no sales charges or 12b-1 fees, and extended no load funds that charge annual 12b-1 fees of up to 25 basis points.

the sales load less obvious. One popular alternative was to replace the initial sales load with a contingent deferred sales charge – a fee levied on sales of shares within a period of years after their purchase – and an annual 12b-1 fee to recover commissions paid to brokers at the point of sale. In 1992, the National Association of Securities Dealers (NASD), with the SEC’s approval, determined that funds should not be permitted to charge 12b-1 fees in excess

fees and no sales loads) and,

- I and Y shares (institutional class shares with high purchase minimal but no sales loads or 12b-1 fees – Y shares typically pay a sub-transfer agent fee to certain intermediaries, while I shares do not).

Further adding to the confusion, funds without sales loads and with 12b-1 fees of 25 basis points or less are permitted to market themselves as no-load funds. Today, there are at least two classes of no-load funds: true (or pure) no load funds with no sales charges or 12b-1 fees, and extended no load funds that charge annual 12b-1 fees of up to 25 basis points.

▲ COMPONENTS OF FUND EXPENSE RATIOS

What costs are included in a fund’s expense ratio? This question has no single answer. Costs are interpreted differently by various funds. Sometimes the same cost may be paid by the investment adviser, may be charged directly to the shareholder, or may be deducted from fund assets. **FIGURE 8-1** illustrates the difficulties of focusing on a single expense ratio number when comparing fund investment costs.

Furthermore, mutual funds may not allocate

of 100 basis points per year.

Today, many fund families offer multiple share class options. Common options might include:

- A shares (traditional front end loads with small 12b-1 fees);
- B shares (no front end load, but larger 12b-1 fees combined with a contingent deferred sales load);
- C shares (level load) (with permanent 12b-1

Type of Service	How Paid For	Included in Expense Ratio?
Investment Management	Management Fee	Yes
Administration and Recordkeeping	Management Fee or Fee to Service Providers	Yes
Securities Transactions	Commissions, bid/ask spreads, etc.	No
Marketing and Distribution	Sales loads, and/or 12b-1 fees, adviser profits	Yes if fund has 12b-1 plan; otherwise, No.
Shareholder financial advice	Sales charge, 12b-1 fee, separate fee, separate commission, financial planning charge, wrap fee	Sometimes
Mutual Fund “supermarket” services including consolidated statements	12b-1 fee, adviser profits, separate portion of management fee	No if paid from adviser profits; otherwise, Yes

FIGURE 8-1

expenses consistently to the various share classes offered. Each class may have its own expense ratio calculations, to reflect differing fee and compensation structures. Even though different share classes often invest in the same underlying pool of securities, the pool's expenses may be allocated differently to the various share classes.

Comparing Fund Expenses

Investors seeking to make informed fund purchase decisions must negotiate this labyrinth of organizational complexity while, simultaneously, making reasonable inferences regarding fee and expense trends. Prudent investment decisions require both an understanding of how funds generated (and paid) fees in the past, and accurate projections of trends and changes in a fund's fee structure, and their likely influence on future investment results. The SEC report finds statistically significant relationships between the expense ratio and the following twelve factors:

- **Fund Assets:** as assets increase, the expense ratio decreases. All things held equal, a fund with assets of \$1 billion tends to have an "operating" expense ratio (i.e., excluding 12b-1 fees from the calculation) 66 basis points lower than a similar fund with assets of \$1 million.
- **Fund Family Assets:** as the fund family's assets increase, the expense ratio decreases. All things held equal, a fund's operating expense ratio falls 75 basis points as the fund family's assets increase from \$1 million to \$10 billion.
- **Number of Funds in the Fund Family:** As the number of funds increases, the expense ratio decreases. All things held equal, a fund with ten funds in the family had an operating expense ratio 14 basis points lower than a fund with only a single offering in the family.
- **Fund Category:** Equity funds tend to have higher expense ratios than bond funds;

specialty funds tend to have higher expenses than common equity funds; and, international funds tend to have higher expenses than domestic funds.

- **Index Funds:** All things held equal, the operating expense ratio of a large cap index fund is 68 basis points lower than that of an equivalent actively managed fund.
- **Institutional Funds:** Institutional funds have lower expense ratios than other funds. Institutional funds or share classes tend to have operating expense ratios 22 basis points lower than an equivalent retail fund.
- **Sales Loads:** The operating expense ratio of a fund with a front-end sales load was 6 basis points lower than the operating expense ratio of an equivalent fund without one. However, the data also indicate that the average expense ratio (weighted by distribution category – i.e. bond, stock, international, etc.) of pure no-load funds was 48 basis points lower than for load funds.
- **12b-1 fees:** Share classes with 12b-1 fees tend to have higher expense ratios. The difference is approximately 93% of the fund's authorized 12b-1 charges.
- **Number of Portfolio Holdings:** As the number of securities within the portfolio increases, the operating expense ratio also increases. All else equal, a fund that owns 100 securities tends to

...mutual funds may not allocate expenses consistently to the various share classes offered. Each class may have its own expense ratio calculations, to reflect differing fee and compensation structures.

have an 8 basis point increase in its operating expense ratio relative to a fund that holds only 10 securities in its portfolio (although holding just 10 securities would probably violate IRS diversification requirements that typically require regulated investment companies to invest in at least 20 securities).

- **Portfolio Turnover:** An increase in portfolio turnover (trading activity) results in a higher expense ratio. All else equal, increasing the turnover rate from 1% per year to 100% per year increases the operating expense ratio by 30 basis points.
- **Multi-class Funds:** Multi share class funds tend to have higher operating expenses than single class funds. All else equal, multi-class funds tend to increase expenses by 14 basis points over single class funds.
- **Fund Age:** Older funds tend to have higher operating expenses than younger funds. All else equal, the operating expense of a 10 year-old fund is 11 basis points higher than that of a 1 year old fund. The significance of the regression relationship for the age variable, however, is highly dependent on the fund sample. When four funds with extraordinarily high expenses are removed from the sample, the positive relationship between fund age and fund expenses weakens.

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larger role. For example, taxes reduce the investment performance of the median U.S. stock fund by 2.6% per year. Similarly, undisclosed transaction costs (e.g., commissions for trades, bid/ask spreads, and other market-impact costs) can be substantial. These costs are difficult to quantify; consequently, investors are frequently unable to obtain an accurate estimate of the total costs associated with investing in a fund.

The SEC correctly notes that mutual fund fees and expenses have a significant and deleterious effect on long-term investment returns, and this impact is poorly understood by most fund investors. The SEC

believes that fund expense disclosure can and should be improved, and tools such as its Mutual Fund Cost Calculator can help investors better understand the implications of different cost structures. The SEC concludes that the market represents the most effective approach to driving down fund

expenses, as educated consumers direct their portfolios to lower cost investment options. Further, the SEC reports that cost elements not included in a fund's expense ratio, such as internal fund trading costs, and tax effects stemming from fund trading strategies, also play an important role in determining investor returns.

▲ EXCHANGE TRADED FUNDS

One of the most interesting sources of competitive pressure for the mutual fund industry comes from Exchange Traded Funds, or ETFs. In the United States, ETFs are generally structured as managed "baskets of securities" tracking various equity indices. ETFs trade throughout each trading session on the exchanges where they are listed, just like stocks and bonds do (whereas transactions in shares of open end mutual funds post only at the end of each trading session).

▲ IMPLICATIONS OF OTHER FACTORS

Finally, the report emphasizes that, although fund expenses, as disclosed in the expense ratio, play an important role in determining investor returns, taxes and undisclosed investment expenses play an even

Overview of the ETF Market

As of 2015, most ETFs are offered by just a few providers, including:

- BlackRock (marketing ETFs under the brand name iShares);
- Vanguard (structured as a new share class of Vanguard's open-end mutual funds, but with different contractual and operational characteristics);
- State Street Global Advisors (previously marketed under the name streetTRACKS);
- WisdomTree (generally marketed as a fundamentally weighted ETF provider);
- ProShares (marketed primarily to provide leveraged or inverse exposure to underlying indices);⁴
- PowerShares (marketed as vehicles seeking to outperform traditional benchmarks through the use of fundamental indices and other strategies); and
- Guggenheim Investments (marketed as equally weighted ETFs).

There are many important distinctions between the various ETFs. Some ETFs track relatively broad U.S. equity indices, such as the S&P 500, the Russell 2000 and the Wilshire 5000. Others track style specific indices, such as the S&P/Barra Large Value Index. Some ETFs track industry sectors, such as the Dow Jones U.S. Technology Index or the NASDAQ Biotechnology Index. Another category of ETFs invest internationally, tracking a specific country's stock index, a regional index, or a broad international index such as the MSCI EAFE. The various ETF providers either compete for access to licensing arrangements for the best known and most popular indices, or use their ETF fund products to popularize their own proprietary indices.

▲ COMMON CHARACTERISTICS OF ETFS

The two primary characteristics that all ETFs have in common are:

1. They are traded as individual securities rather than as mutual fund shares. Operationally, this means that ETFs offer trading flexibility not typically available through a traditional mutual fund. ETFs can be:
 - Bought or sold throughout the trading day;
 - Bought or sold at limit prices;
 - Bought on margin,
 - Sold short.

They can also serve as foundations for derivative securities (e.g., options).

Conversely, open end mutual funds are purchased or redeemed by the fund only at the close of trading at a price based on their end of day Net Asset Value. However, open end mutual funds are traded in fractional shares, while ETFs typically trade in whole shares. This makes it difficult or impossible to invest precise dollar amounts in ETFs.

2. For retail investors, ETFs can be purchased or sold only through a brokerage account, but can be traded through virtually any broker. This differs from mutual funds, which can be purchased or sold either directly from the fund, or through a brokerage that maintains a sales relationship with the fund company.

Other than remarking that ETFs offer more flexible trading opportunities, ETF providers generally advance marketing claims along three dimensions:

1. ETFs are cheaper to buy and own than traditional mutual funds;
2. ETFs are more tax efficient than traditional mutual funds; and,
3. ETFs provide investors with greater control

⁴ For a more in-depth discussion regarding leveraged and inverse ETFs please see the working paper "[Understanding Inverse leverage ETFs](#)". It is available on the Schultz Collins website.

Generally, passively managed funds generate far fewer transactions, triggering less capital gains liability, and, therefore, all else equal, realize higher after-tax returns.

over portfolio composition (because ETFs are available in country and sector specific variations).

The first claim is only partially correct. Since ETFs are bought and sold like a single stock, they do not require many services (e.g., shareholder level transfer, record keeping, and accounting activities) that open end mutual funds customarily provide. However, because they are purchased through a broker

and are held by the brokerage house as part of an omnibus or master account, the broker will charge a commission on all transactions. The commission compensates the broker for additional services required to support the ETF holding (allocation of distributions, tax reporting, and so forth). To a great extent, the total cost of services to investors has merely been shifted from a single source (the mutual fund) to two sources (the fund and the brokerage). However, for long-term holders, ETFs may prove more cost efficient, since commissions are incurred only when the fund is traded, while mutual fund expenses are charged continuously. Whether ETFs are cheaper than mutual funds is thus a facts and circumstances calculation dependent primarily on the investor's assumed holding period.

▲ TAX EFFECTS

Many taxable investors prefer the tax efficiency of ETFs relative to indexed mutual funds. In this context, "tax efficiency" relates to the ability to defer taxes on investment gains. All else equal, the greater the period of tax deferral, the better the after-tax return.

Early tax payment means that money is drained from the investment rather than remaining to generate additional future gains through compounding. Investors in traditional mutual funds may be subjected to what economists term "tax externalities." This refers to the possibility that an investor may be taxed not on his or her own actions, but, rather, because of actions taken by others. If other investors redeem their mutual fund shares, the fund may be forced to sell securities that have embedded gains. Selling these securities triggers capital gains taxes that the fund's remaining shareholders must pay. Although these tax payments increase the remaining shareholders' tax basis, having to pay taxes before the shares are sold effectively diminishes after-tax return.

Furthermore, *actively* managed funds may subject shareholders to a second tax externality because frequent purchases and sales of securities for the underlying fund portfolio can generate substantial short- and long-term capital gains. Since most ETFs track indices, they are passively managed funds. Generally, passively managed funds generate far fewer transactions, triggering less capital gains liability, and, therefore, all else equal, realize higher after-tax returns.

For tax purposes, the significant difference between mutual funds and ETFs is that in an ETF, the actions of individual buyers do not directly create or redeem shares from the fund. Only institutional investors can create and redeem ETF shares. ETF shares are created and redeemed not via cash transactions but by swapping the ETF shares for the underlying basket of securities reflected in the fund's index. Under current tax law, this type of transaction does not generate recognized capital gains – hence, no unwanted or unplanned tax externalities for investors. Consequently, the ETF purchaser effectively controls the timing of recognition of most fund gains, and, in the main, is immune from tax implications stemming from the actions of other shareholders of the fund.

▲ LIQUIDITY ISSUES

Mutual funds ensure liquidity by maintaining cash positions and credit lines. When a mutual fund shareholder sells his shares, they are generally purchased by the fund, using available cash or credit. Although mutual funds are legally permitted to distribute shares “in kind” (i.e. instead of sending cash to sellers, they send a block of underlying securities), this provision is rarely, if ever, invoked. Even during the liquidity crisis of October 1987, most mutual funds functioned according to investor expectations. ETFs, by contrast, do not generally buy back their own shares from their shareholders who want to sell. Liquidity risk for those shareholders translates into the risk of being unable to find a counterparty willing to buy their shares at the time – or, at the price – that they want to sell them. There is no mutual fund organization with pre-established credit lines standing ready to provide liquidity. Theoretically, ETFs tracking major stock indices (i.e., security bundles composed of stocks from deep, continuous, and liquid markets), should not pose appreciably greater liquidity risk than an equivalent in shares of individual stocks. However, ETFs that track less well known indices may experience adverse results in a crisis characterized by a significant reduction of market liquidity.

Summary Characteristics of Desirable ETFs

Despite their relatively brief history, ETFs play an important role in many investor portfolios, due to their relatively low cost and tax efficiency. However, ETFs are not created equal. Many ETFs (like many mutual funds)

may be inappropriate choices for most investors. We suggest investors consider the following characteristics (in addition to cost) as they select ETFs for their portfolio:

- ETFs structured as mutual funds are preferable to ETFs structured as unit or grantor trusts, reflecting the greater regulatory oversight afforded to funds registered under the '40 Act and the Act's fiduciary protections for investors;
- ETFs tracking broad, well-known indices are preferable to ETFs tracking sectors or less well-known indices, as they are likely to be traded more regularly, and can be expected to track their index closely;
- ETFs tracking broad baskets of stocks are preferable to ETFs that track a relatively small number of stocks.

ETFs that track less well known indices may experience adverse results in a crisis characterized by a significant reduction of market liquidity.

▲ RANGE OF COSTS

To illustrate the range of costs incurred by different investment strategies in various asset categories, **FIGURE 8-2** compares (in basis points) the expense ratios of the average actively managed mutual fund, the average indexed fund, the Vanguard ETFs, and ETFs from iShares.⁵

Category	Avg. Active Mutual Fund	Avg. Indexed Mutual Fund	Vanguard ETF	BlackRock –iShares ETF
U.S. Large Cap Blend	113 bps	53 bps	9 bps	20 bps
U.S. Large Cap Value	111 bps	70 bps	11 bps	19 bps
U.S. Small Cap Blend	131 bps	65 bps	13 bps	34 bps
International Large Cap	123 bps	62 bps	12 bps	23 bps

FIGURE 8-2

⁵ As of August 10, 2016.

▲ EXECUTION OF PORTFOLIO STRATEGY: THE COSTS OF TRADING

Impact of Investment Strategy on Trading Activity

Chapter Seven outlines several asset management approaches, including Buy-and-Hold, Constant Mix, and Floor + Multiplier (“Portfolio Insurance”). Not only does each approach have a unique set of payoffs; it also has its own pattern of trading activity:

- No trading is required to maintain the Buy-and-Hold approach;
- Periodic rebalancing generates only sporadic trading for the Constant Mix style, and results typically in buying low and selling high;
- Trading for the Floor + Multiplier approach is a function of asset price momentum. The greater the price change of the risky assets, the greater the trading activity required to maintain the multiplier. Momentum-driven trading tends to buy high and sell low.

Portfolio management approaches must be implemented in the real world. Implementation entails trading costs, liquidity costs and (except for qualified retirement plan investors) taxes.

Implementation Shortfall

One way to measure transaction costs is to evaluate return differences between hypothetical and real portfolios. Investors sometimes compare the realized returns of their portfolios to the reported returns generated by a ‘notional’ or paper index such as the S&P 500 Stock Index. If the index’s reported return is higher than that of the portfolio to which it is being compared, the portfolio is said to exhibit

‘implementation shortfall.’⁶ In a pioneering study of trading costs, David J. Leinweber measured implementation shortfall by tracking return differences between the paper portfolio recommended by the Value Line rating service and the actual Value Line mutual fund that replicates the paper index. From 1979 to 1991 the Value Line paper index portfolio had a 26.2% annualized rate of return. The actual Value Line fund, however, earned a net after expense return of only 16.1% during the period.⁷ The return difference measures the (pre-tax) portfolio implementation costs.

At first, it seems incredible that implementation costs caused a live portfolio’s annualized returns to lag its index by 10.1% per year over a thirteen-year period. Most people assume that implementation costs refer to:

1. Commissions paid to buy and sell securities in the marketplace; and,
2. Operating expenses associated with marketing and managing the investments owned within the portfolio.

However, these costs are often insignificant relative to other “hidden” or implicit costs. The following section explains how trading can result in significant implementation shortfall.

▲ ANATOMY OF INSTITUTIONAL TRADING

Once a portfolio manager or institutional investor settles on a particular course of action, the portfolio does not magically spring into being. Rather, the institutional investor must compete in the marketplace to acquire portfolio assets in the quantity appropriate for diversification and risk-control targets.

FIGURE 8-3, discussed from the ‘buy side’ of portfolio transactions, depicts several critical steps in the execution of portfolio management decisions.

⁶ A more valid approach compares a portfolio to an index fund because the fund also incurs a variety of operating expenses.

⁷ Leinweber, David J., “Using Information from Trading in Trading and Portfolio Management,” *Execution Techniques, True Trading Costs, and the Microstructure of Markets* ed. K. F. Sherrerd (AIMR, 1993), pp. 25-26.



FIGURE 8-3

After the portfolio manager communicates his objectives to his organization's trading desk, the trades pass through a sequence of steps where, *at each stop*, there is a high likelihood that events will cause portfolio slippage. Trade costs include:

- **Commissions:** The explicit fee paid to the broker to handle the trade. Usually, commissions are fully disclosed on the trade ticket except where they are subsumed in the bid/ask spread.
- **Bid/Ask Spread:** For dealer markets, this is strategically set by the dealer as a function of his profit, inventory, and risk control objectives. The "bid" is the price the dealer will pay to buy a security from an investor; the "ask" is the price at which the dealer will sell the same security to a customer. In well-functioning markets, the ask price exceeds the bid price. This results in 'spread' income to the dealer.
- **Delay Costs:** The cost of seeking liquidity.⁸ Delay costs are incurred when large orders cannot be completed immediately. The portfolio manager submits the trade request to his or her organization's trading desk. Trade desk personnel "probe" the market to confirm that the trade price that the manager requested is available. Probing seeks to discover the existence of willing counterparty(s), or, if the trade is with a dealer, the price concession(s) that may have to be granted. As the trade unfolds in the market, the necessity to present it in small pieces may result in a delay of several days to complete a particularly large order.
- **Market Impact or Price Impact:** The price adjustment (concession) necessary for

immediate execution of the trade (or piece of the trade) presented to the market. The price impact of a trade fed into the marketplace on a sequential basis is often measured by the changes in dealer bid/ask spreads. For example, if timing probes reveal that a stock is available at \$50 per share (on average) and the (actual) buy order is submitted to the broker at that price, execution at an average price of \$51 indicates a price impact of \$1 per share. Whenever market participants infer there is interest in buying a stock, the positive slope of the demand curve shifts the price upwards.

- **Opportunity Costs:** the costs of failing to complete the entire trade requested by the portfolio manager. If trading activity moves share prices out of the manager's buy range, then the percentage of the unexecuted order is multiplied by the delta in price (holding period rate of return) to arrive at the total opportunity cost.

An Example

Assume that a fund manager wants to acquire 10,000 shares of the XYZ Company. He submits an order to the trading desk when the stock is selling at an average price of \$49.50. Probing and fragmentation of the order (Delay Costs) results in the stock price moving to \$50.00 indicating a \$0.50 delay cost per share purchased. Actual submission of the order over time results in the stock price moving to \$51 indicating a price impact equal to \$1 per share purchased. The manager establishes a buy limit of \$51. At the end of the trade period, the stock is selling

⁸ Seeking liquidity, in this context, means finding one or more counterparties willing to transact (sell the security) at an acceptable price.

for \$52.50. If the entire order could not be executed at or below \$51, the opportunity cost is measured as $(\$52.50 - \$49.50) \times (\text{number of shares not purchased})$. The \$3 opportunity cost divided by the \$49.50 decision price equals an approximately 6% opportunity cost (6% of \$49.50 times the percentage of the order not executed). Commissions are \$0.05 per share purchased.

Total Cost Calculation:

- Delay Cost per share trade = \$0.50
- Market Impact Cost per share traded = \$1.00
- Opportunity Cost per share not traded = \$3.00
- Commission Cost per share traded = \$0.05

The return of XYZ stock on paper – e.g., as part of an index – is $[(\$52.50 - \$49.50) \div \$49.50] = 6.06\%$. The return of the fund whose manager identified a profit-making opportunity is, over the same time period, approximately 3% for the part of the order that was executed. On a 10,000 share order, the paper or ‘notional’ index recorded a 6% gain for a profit of \$600. The fund manager, however, books a gain of approximately \$150 assuming that only half of the order could be placed within the bounds of his price budget. The manager’s profit is only 25% of the profit recorded by the paper index. Trade costs explain, in part, why it is difficult for active managers with high turnover of securities within the portfolio to beat the market.

Although funds disclose expense ratios, trading costs remain opaque. However, Edelen, Evans and Kadlec estimate that average trade costs *exceed*

average expense ratios for U.S. equity funds over the period 1995 through 2006 (1.44% for the former versus 1.19% for the latter).⁹ Depending on the asset class under evaluation, the trading cost differential can be substantial. For example, the average aggregate trade costs for U.S. small-cap growth funds are 3.17% per year. This compares to a trading cost of 0.84%/annum for the average U.S. large-cap value fund. Furthermore, on average, statistical testing indicates that active managers cannot overcome trading costs. Excess costs – not lack of skill – may account for the systemic inability of actively managed funds to beat the market.

▲ COST OF LIQUIDITY

In the early 1990s, Wayne H. Wagner conducted detailed studies into the costs of trading. Wagner points out: “...many costs will be incurred long before the marketplace ever sees the order.”¹⁰ Wagner measured market impact costs to determine how such costs affect a live portfolio’s value. Market impact costs include a broad range of charges assessed against the portfolio by the financial markets in exchange for providing trading liquidity. When a portfolio manager sells a stock, Wagner noted that the sale was rarely to a counterparty that wants to buy the precise number of shares offered. The portfolio manager was forced instead to trade with a liquidity provider, such as a market maker.

For quote-driven markets such as NASDAQ, this is the role of the dealer; on the New York Stock Exchange, it is the role of the exchange floor specialist.¹¹ Specialists are required to trade the stocks in which they

⁹ Edelen, Roger, Evans, Richard, and Kadlec, Gregory, “Shedding Light on ‘Invisible’ Costs: Trading Costs and Mutual Fund Performance,” *Financial Analysts Journal* (January/February, 2013), pp. 33-44.

¹⁰ Wagner, Wayne H., “Defining and Measuring Trading Costs,” *Execution Techniques, True Trading Costs, and the Microstructure of Markets* ed. K. F. Sherrerd (AIMR, 1993), p. 15.

¹¹ Market structure has changed considerably from the time of Wagner’s initial studies. In some contemporary markets, the roles of dealers and specialists have been subsumed by high frequency traders (HFTs). For a popularized discussion of the costs of transacting in a market where the order flow is dominated by HFTs see: Patterson, S., *Dark Pools*, Random House (2012), and Lewis, Michael, *Flash Boys* (W.W. Norton & Company, 2014). For a more technical discussion, a good introduction is Bodek, Haim *The Problem of HFT* (Decimus Capital Markets, 2012). Market microstructure is constantly evolving as traders experiment with different ways of extracting profit from market orders. As of 2014, orders presented by HFTs as a percentage of total market orders has significantly declined.

specialize, at a price they determine, with any floor trader at any time. The specialist buys incoming stock orders at a bid price; takes them into inventory; and resells them at a higher ask price. The specialist sets the bid/ask spread to generate compensation for his risk of holding inventory. Holding inventory ties up capital if the stock cannot be resold quickly. The specialist must also cover the risk of absolute loss on inventory if prices should plummet.¹²

Dealer bid/ask spreads are dynamic. As the flow of buy or sell orders strains a dealer's inventory, the spread adjusts quickly, either up or down. The magnitude of the shift depends on whether the dealer is buying increased inventory or selling surplus. The dealer must negotiate with stock traders whose spreads can be many times greater than his. Thus, when the dealer's inventory is under pressure, he must transact with traders who are under no obligation to buy or sell, and have no market making duties.

This is why even small market orders can have market impact. As a dealer's inventory grows or shrinks, he becomes more and more sensitive to pricing risks inherent in his net position. Therefore even small market orders can have a large marginal effect on the magnitude of the bid/ask spread:

The price obtained by the dealer's customer depends to a large extent on how the customer is trading relative to the crowd. Is the customer trading against the crowd, with the crowd, or independently of the crowd? Think of transaction costs as an

*iceberg with the commission representing the tip above the surface. The major parts of transaction costs are unobservable.*¹³

As Wagner remarks: "Market liquidity is not a free good. Those who absorb market liquidity must pay those who supply it."¹⁴

▲ LIQUIDITY COSTS OF PORTFOLIO MANAGEMENT STRATEGIES

Liquidity costs have a profound effect on the different asset management approaches discussed in Chapter Seven. We have already remarked that the Floor + Multiplier (Insured Portfolio) approach generates significant trading activity. As risky asset prices fall, they are sold (in favor of T-Bills); as prices rise, the investor buys more stocks. Portfolio trading matches market momentum. Buy orders are submitted at a time when buy orders dominate trading activity; and sell orders are entered when most of the market wants to sell. Because trade orders are entered when liquidity is scarce, the Insured Portfolio style must pay a premium price for trade executions.¹⁵

What does it cost to demand liquidity when it is scarce? Wagner and Edwards tracked 54,000 trades and concluded that brokerage commissions (the cost just to enter the order) paid per trade were 5.6 cents per share. When the trades reached the market, dealer/specialist bid/ask spread costs and market impact costs deducted an additional 12 cents per share.¹⁶ Finally,

¹² The replacement of the specialist with order flows from HFTs such as hedge funds seems to create, from time-to-time, a liquidity crisis because the HFTs do not have market making responsibilities. Much of the regulatory change post the financial crisis of 2008-2009 focuses on rules to enhance market stability. See, for example, Madhavan, Ananth, "Exchange-Traded Funds, Market Structure and the Flash Crash," *Financial Analysts Journal* (July/August 2012), pp.20-35.

¹³ Treynor, Jack & Wagner, Wayne, "Implementation of Portfolio Building: Execution," *Managing Investment Portfolios: A Dynamic Process* ed. J. Maginn & D. Tuttle, Warren, Gorham & Lamont (New York, 1990), pp. 12-1 to 12-50.

¹⁴ *Ibid.*, p. 15.

¹⁵ This should not be surprising. Floor + Multiplier is a form of portfolio insurance; and those who buy insurance must expect to pay a premium to those willing to sell it. In this case, investors employing a constant mix approach are announcing their willingness to take the other side of the trade in trending markets. As such, the Constant Mix portfolio approach should, over the long term, realize a profit commensurate with the willingness to sell insurance in volatile markets.

Lack of attention to trading activities and to the costs of the administrative platforms upon which wealth is managed is the surest way to loose buckets of money from investment activities.

the cost of immediate execution (i.e., the cost of liquidity) deducted an additional 99 cents per share. Commissions thus represented only a small fraction of total trading costs. By definition, the Insured Portfolio style entails momentum trading and, to protect the downside floor, demands immediate execution. Clearly, the impact of trading costs on this strategy is

enormous.

Constant Mix portfolio management approach rebalances the portfolio periodically. Trading volume is significantly lower than with the Insured Portfolio style. More importantly, however, Constant Mix employs what amounts to a contrarian approach, selling assets as their prices rise and buying as prices fall. This means those who employ the Constant Mix strategy are liquidity providers, and are in a position to reap profits therefrom.

The implications of trading costs are apparent:

1. Trading stocks frequently is costly. As Wagner states: "As a whole, active management performance falls short of index fund performance by between 100 and 150 basis points. Where does the money go? Into the frictional costs of getting security analysts' and portfolio managers' ideas into the portfolio;"
2. Recovering trading costs is difficult. Charles Ellis estimates the operating costs of the

average actively managed mutual fund amount to 1.6% per year. Over the long term, equity markets have provided a 6 percent premium over the risk-free return. Thus an active fund manager must outperform the 6% equity premium by 26.7% (1.6% divided by 6%) just to recover costs and break even with the market;¹⁷

3. The trading advantage goes to two groups of traders:
 - a) Information-based traders who act quickly and who possess information more valuable than the heavy trading costs; and,
 - b) Passive investors with a value style orientation using periodic rebalancing.

The latter let the market to come to them. The passive investor pays only a small premium for speedy transactions. Empirical evidence suggests that passive, value-oriented portfolios best realize trading cost advantages.

Trading Decisions, Best Execution & Loss of Investor Wealth

Trading is "anti-performance." This should mean that money managers have a strong incentive to control trading costs. Paradoxically, however, this may not always be the case. There is evidence suggesting that money managers sometimes direct trades to venues that do not offer the most favorable trade execution services (although the trades execute at the best bid/offer cost measurement criteria; and, theoretically fulfill the requirements of best execution). For example, small trades for stocks listed on the New York Stock Exchange may be sent to NASDAQ for execution. Selection of the NASDAQ venue may significantly reduce the probability of a trader stepping

¹⁶ Wagner, W. H. & Edwards, M., "Best Execution," *Financial Analysts Journal* (January/February, 1993), pp. 65-71.

¹⁷ Ellis, Charles D., *Investment Policy*, Irwin (Chicago, 1993), p.9.

in to offer price improvement (trading terms better than the Best Bid/Offer). One possible explanation for the propensity of the U.S. money management industry to direct trades to higher cost venues is that the managers receive a bundled service package from brokers. In addition to pure trade execution, money managers may also receive data access, research, computer systems, etc. This is commonly referred to as “soft dollar” compensation. One study indicates that over half of all U.S. institutional commissions are “directed” or “pledged” in advance; and, that the recipients of the directed order flows compensate the money managers through soft dollar arrangements.¹⁸

Regulatory agencies have expressed concern that such arrangements may be a breach of fiduciary obligations to clients. Because this issue has such an impact on the fortunes of retirement plan participants, the Department of Labor has been especially interested in it, and has clearly stated that commissions are a use of a retirement plan’s assets. Plan assets must be managed for the exclusive benefit of plan participants and beneficiaries. Receipt of soft dollar compensation may represent use of client/plan funds to pay for expenses associated with operating a money management firm. Use of client funds alleviates the necessity for the money management firm to commit its own capital for business expenses. It may represent a classic principal/agent conflict of interest.¹⁹

Directed brokerage arrangements are often a hallmark of Wrap Fee accounts sold, primarily but not exclusively, to retail investors. A Wrap Fee account is an “all-in” or bundled service package offered by a brokerage firm to its customers. A single fee pays for all trade costs, custodial services, periodic reporting of account positions, investment manager selection

and monitoring, and performance reviews. Often the single fee arrangement includes a written IPS, asset allocation advice, rebalancing, and other portfolio management services. However, a brokerage company’s wrap fee program may require exclusive trade execution through the sponsoring broker. For clients not participating in the wrap fee program, the manager is free to seek any trade execution venue, including low-cost Electronic Communications Networks specifically designed to promote institutional trading without incurring bid/ask spread costs. In certain cases, money management firms may sequence the wrap fee client trades last to avoid violating fiduciary responsibilities to other clients. That is to say, the wrap fee clients may purchase securities at the tail-end of a buy order (the highest price) or sell securities at the tail-end of a sell order (the lowest price). Such costs are not explicit, and may be many times the explicit costs detailed in the wrap-fee contract.²⁰ Lack of attention to trading activities and to the costs of the administrative platforms upon which wealth is managed is the surest way to loose buckets of money from investment activities.

Lack of attention to trading activities and to the costs of the administrative platforms upon which wealth is managed is the surest way to loose buckets of money from investment activities.

▲ TAXES, INFLATION & TURNOVER

For taxable investors, high portfolio turnover increases investment costs because trading activity

¹⁸ Conrad, J., Johnson, K. & Wahal, S., “Institutional Trading and Soft Dollars,” *Journal of Finance* (Vol. 56, 2001), pp. 397-422.

¹⁹ For a general discussion of ethical issues in the financial product and services industry see, Jennings, Marianne M., *Investment Professionals and Fiduciary Duties* (CFA Institute Research Foundation, 2014).

²⁰ Schwartz Robert A. & Francioni, Reto, *Equity Markets in Action*, (John Wiley & Sons, 2004) pp. 140-141.

ENDING VALUE OF A \$1 FOR A VARIETY OF SECURITIES (1926-1993)

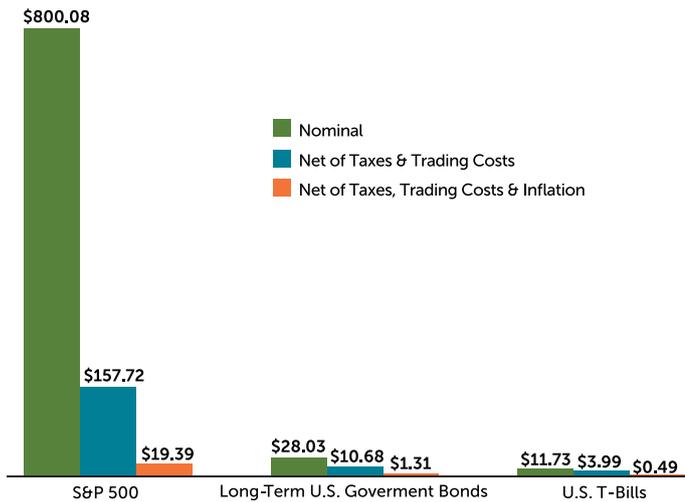


FIGURE 8-4

TAX EFFECT OF TURNOVER: ENDING VALUE OF A \$100 PORTFOLIO HELD FOR 20 YEARS



FIGURE 8-5

often triggers taxable events. Taxable investors must consider the combined impact of trading costs, taxes, and inflation. These three costs erode returns.

“Why aren’t we all rich?” This sentence is the intriguing beginning to a study that appeared in the winter 1995 edition of *The Journal of Portfolio Management*.²¹ The authors examined the long-term investment results of several asset classes during the period 1926 through 1993 to gauge the effect of taxes, inflation and trading costs on overall portfolio return.

For trading costs, the authors used commission costs only. To calculate taxes they assumed a single taxpayer with \$75,000 of earned income measured in 1989 dollars and adjusted for inflation, both prospectively through 1993 and retrospectively back to 1926. Additionally, they applied the actual marginal rates on both capital gains and ordinary income from 1926 (in 1926 income taxes were 1%, and capital gains taxes were 6%) through 1993. They assumed 20% portfolio turnover per year. Finally, they inflation-adjusted the data to determine how much real after-tax, after-trading cost purchasing power investors realized per dollar invested. Their findings are displayed in **FIGURE 8-4**.

These findings are indeed sobering. Although these tax cost calculations assume a 20% per year portfolio turnover (i.e., the average security is retained in the portfolio for five years), by mutual fund industry standards, 20% is a low rate of turnover. A query of the Morningstar mutual fund database as of August 10, 2016 reveals that the average actively managed mutual fund turnover rate for the category most comparable to the S&P 500 - “U.S. Large Company Blend Stock Funds” – is 71%.

What, then, is the relationship between active trading and tax costs? The longer the holding period of the average security, the longer the tax event of a sale can be postponed. “The longer the gains remain unrealized, the more valuable they are, because deferred

²¹ Siegel, S. B., & Montgomery, David, “Stocks, Bonds, and Bills after Taxes and Inflation,” *The Journal of Portfolio Management* (Winter, 1995) pp. 17-25.

taxes on unrealized gains compound for the investor instead of Uncle Sam.”²² **FIGURE 8-5**, taken from a 1993 study, illustrates how various turnover rates influence ending pre-liquidation wealth for a portfolio operating over a twenty-year period. It assumes an investor with a combined federal and state capital gains tax rate of 35% and a growth rate of 6%.

Moving from 0% to 5% turnover decreases the effective holding period from 100 years to 20 years (a factor of 5); while moving from 50% to 55% turnover decreases the holding period from two years to 1.8 years (a factor of 1.1). By the time you reach 50% turnover, most of the tax damage has already been done. Specifically:

- A 5% turnover rate equates to a 0.64% reduction in annual returns;
- A 10% turnover rate equates to a 1.05% reduction in annual returns;
- A 25% turnover rate equates to a 1.63% reduction in annual returns;
- A 50% turnover rate equates to a 1.93% reduction in annual returns.

All else equal, passive (low turnover) portfolios often have considerable advantages for taxable investors.

▲ ROLE OF THE ADVISOR

As the investment universe becomes more complex, investors may turn to a financial advisor for help in determining which fund, class and structure is most appropriate. However, much of the expense structure complexity stems from funds seeking alternate ways of compensating financial advisors. Perversely, although increasing complexity generates an even greater need for advice, the complexity also generates a greater conflict of interest for advisors that accept compensation from mutual fund companies, since the share class they recommend will directly affect their compensation. One way to avoid this conflict is to have the advisory fee paid by the investor, rather than by the fund company. This approach aligns the interests of investor and advisor in minimizing unnecessary expenses.

²² Koontz, Warren N. “Understanding the Tax Constraints on Private Clients,” *Investment Counsel for Private Clients* (AIMR, 1993) pp. 65-71.

