

The Exchange- Traded Funds Manual

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The Exchange- Traded Funds Manual

Second Edition

GARY L. GASTINEAU



WILEY

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Published by John Wiley & Sons, Inc., Hoboken, New Jersey.

Published simultaneously in Canada.

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Library of Congress Cataloging-in-Publication Data

Gastineau, Gary L.

The exchange-traded funds manual / Gary L. Gastineau. – 2nd ed.

p. cm. – (Wiley finance series)

Includes bibliographical references and index.

ISBN 978-0-470-48233-9 (hardback)

1. Exchange traded funds. 2. Stock index futures. I. Title.

HG6043.G37 2010

332.63'27–dc22

2010010866

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

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Preface

Authors try to accomplish a variety of things in prefaces. My objective here is to help you get what you want to get from this book. Of course, you are free to chart your own path.

The individual chapters cover specific topics and they are roughly in the order someone new to exchange-traded funds might approach the topic, but there is no need to read all of them or to read them in order. In most chapters you will find footnotes and text references to other spots in the book and to other publications and Internet material that will give you more detail on the subject covered in the chapter or in a section of the chapter. If you are looking for detailed coverage of a particular topic you will probably choose a chapter and follow it where it leads you. A reader looking for an overview will probably read straight through with little attention to footnotes and citations.

If none of the chapter headings seems specific enough, I suggest you look for your topic in the index. The index has an unusually large number of cross-references by design. When you look up terms and topics in the index they will frequently lead you to other references that may help you explore more efficiently.

There are plenty of footnotes. I hope they provide supplementary information at the right time and suggest new paths—always at your option. Also, an interest in one topic will often be linked to an interest in a related topic. The bibliography is confined to works mentioned in the text or in footnotes. Many of these references are worth your attention if you want to go deeper into a topic.

Some ETF topics that are subjects of extensive current discussion are (1) actively managed and other non-transparent exchange-traded funds, (2) securities structures similar to open-end exchange-traded notes that can eliminate most counterparty credit risk and (3) ways to reduce the cost of trading exchange-traded products. The next few years will also see major changes in leveraged ETFs, currency and commodity products, improved fixed income portfolios, and greatly improved equity index funds.

I have no illusions that the present volume will *completely* satisfy any reader's need for information about ETFs, but I hope this explanation of what I have tried to do will help you navigate these pages.

Acknowledgments

No one can write a book of this nature and complexity without a great deal of help and support. I have had a lot of both from a number of terrific people. Conversations with and suggestions from a large number of friends have contributed directly to the current volume and to my understanding of ETFs over the years.

I owe special thanks to Seth Varnhagen and Edward Hynes for extensive comments on the manuscript from their viewpoint as advisors who examine ETFs as possible candidates for their clients' portfolios. Ron DeLegge, Dan Dolan, Matt Hougan, Todd Brooms, Richard Keary, Jim Wiandt, and Michael Dickerson also gave me useful comments and suggestions from a number of perspectives. Richard Shapiro has shared his insights into the U.S. tax code with me for many years, first on options and now on ETFs. His analysis has always been well-reasoned and his comments have always been sound.

A large number of friends contributed information and understanding on one or more key topics. Among these are Jim Angel, Heather Bell, Rebecca Cameron, Don Cassidy, Don Chance, Roger Edelen, Gary Eisenreich, Frank Fabozzi, Ben Fulton, Debra Fuhr, Martin Gruber, Richard Harper, John Haslem, Dodd Kittsley, Mark Kritzman, Craig Lazarra, Michael Lipper, Steven Lotz, Burton Malkiel, Albert Mandansky, Dan McCabe, Kevin McNally, Richard Michaud, Kathleen Moriarty, Nathan Most, James Novakoff, Antti Petajisto, Jim Ross, Vijay Singal, Robert Tull, Wayne Wagner, and Clifford Weber.

My daughters, Gayle and Nicole, provided invaluable research assistance at various times and my wife Nancy has been more patient than I had a right to expect as this book occupied *our* time.

I owe a particular debt of gratitude to my assistant, Rosemary Wieszt. Without her extensive and intensive efforts, this book would not have happened.

CHAPTER 1

An Introduction to Exchange-Traded Funds

EXCHANGE-TRADED FUNDS WERE INTRODUCED AS “SOMETHING TO TRADE”

Many of mankind’s great innovations owe at least some of their success to serendipity. A popular legend suggests that serendipity helped mankind learn the usefulness of fire. As the story goes, one of our ancestors came upon the site of a fire that had been started by lightning. This early human discovered that the fire had burned an animal’s carcass. The “cooked” meat tasted better than raw meat, and men soon learned that cooking enabled humans to obtain nutrition more efficiently, freeing up time and providing energy for other pursuits.¹ This kind of serendipity has been a common theme in many of mankind’s endeavors.

One of the best examples of serendipity in the financial markets—from several angles—is the early development of exchange-traded funds (ETFs). In attributing some features of exchange-traded funds to serendipity, we certainly do not mean to minimize the role of the developers of the early exchange-traded funds. They deserve full credit for the wisdom they displayed in designing the early ETFs introduced in Canada and the United States. Although it is not fashionable to credit regulators with a positive role in financial product development, regulators were almost certainly responsible for some of the shareholder protection features of ETFs. Human efforts

¹The precise circumstances under which mankind first encountered and controlled fire—and then began cooking—are likely to remain obscure. Some archaeologists and anthropologists embrace the idea that the first controlled fire became available when men made sparks by hitting stones together while making tools. For a very concise (if conjectural) history see Dreifus (2009). For more details, see Wrangham (2009), especially pp. 190–194.

notwithstanding, however, some key features became part of the ETF by accident. The features of early ETFs were so important that they are now serving as the basis for some revolutionary financial engineering that promises to reshape the fund industry in the United States and around the world.

We will look at the early history of ETFs in some detail in Chapter 2, so these background comments will be brief. The first viable open-end exchange-traded portfolio basket was introduced in Canada and began trading in 1989 as the Toronto Stock Exchange Index Participations (TIPs). It took nearly four more years for the American Stock Exchange to obtain approval from the Securities and Exchange Commission (SEC) to launch the Standard & Poor's 500 SPDR fund product in the United States. In both cases, the principal purpose of the product launch was to provide something for exchange members to trade.

The labels “exchange-traded fund” and “ETF” are applied to a number of financial instruments. The fact that investors can trade most of the products called ETFs throughout the day at market-determined prices that are close to the intraday value of an underlying portfolio or index is one common feature of these securities. Many so-called “ETFs” are neither funds nor investment companies, as defined by the Investment Company Act of 1940. The ETF label has been attached to some open-end structured notes and to a number of grantor trusts, including HOLDRS and various currency- and commodity-based instruments. Vanguard offers exchange-traded share classes of a number of its mutual funds. Vanguard calls these shares ETFs, but these share classes do not have some important features that characterize the ETFs descended from the original SPDR. While the structure of the product does not matter in every case, shareholder protection, tax treatment, and credit risk can vary significantly among the products casually referred to as ETFs. Some observers have called the nonfund instruments exchange-traded products (ETPs) or exchange-traded vehicles (ETVs), but these names have not caught on. “Exchange-traded fund” or the acronym “ETF” is the almost universal generic label for *all* exchange-traded portfolios, open-end structured notes, and securitized commodity products.

While we will discuss all the financial instruments commonly called ETFs, the most significant and useful of these are and will continue to be the true funds. We begin by focusing on two important characteristics of the investment company ETF that are, in some respects, serendipitous. These characteristics have helped attract investors and they have been important in the early success of ETFs. These characteristics also provide a basis for growth in the true fund ETF model well beyond its impressive beginnings. Not everyone attaches as much significance as I do to these two features, but I am convinced that they hold the key to developing better funds. The two key features of these ETFs are *shareholder protection* and *tax efficiency*.

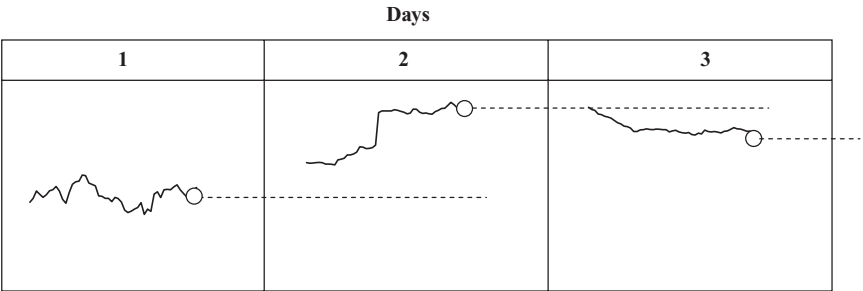


EXHIBIT 1.1 Pre-1968: Buying and Selling Mutual Fund Shares at Yesterday’s Net Asset Value

SHAREHOLDER PROTECTION

Four exhibits will help illustrate the value of shareholder protection² and how it is provided by most true fund ETFs. Exhibit 1.1 shows how mutual funds were priced for sales and redemptions prior to 1968. This diagram shows the pattern of fund intraday portfolio values during market trading hours for three consecutive trading days. At the end of each day, a mutual fund calculates its net asset value (NAV) per share based on the end-of-day value of the portfolio. Prior to 1968, the price at which investors invested in the shares of a fund or redeemed their shares was the net asset value *as of the previous day’s close*.³

In Exhibit 1.1, the fund publishes its net asset value at the end of Day 1. That value is indicated by the circle at the end of the squiggly price line showing the pattern of intraday values for Day 1. Prior to 1968, that net asset value was the basis for fund share transactions until the following day’s market close—and the calculation of a new net asset value. The share price for an order received on Day 2 is indicated by the dotted line extending to the right of the circle through the end of Day 2. Clearly, buying shares of the fund at Day 1’s net asset value as the market rose on Day 2 was a great opportunity for trading profit—and for abuse of the fund’s established shareholders by opportunistic investors. Correspondingly, if someone wanted to redeem shares in the fund, they would know from the intraday behavior of market

²Some of the material in the balance of this chapter first appeared in Broms and Gastineau (2006; 2007).

³The material described in this and the next few paragraphs is widely known, but not frequently discussed. A recent comprehensive description of mutual fund pricing over the years is available in Swenson(2005), pp. 270–294.

indexes on Day 2 that they could probably redeem at a higher fund share price by waiting until after the determination of net asset value on Day 2. As it became clear that the market was going to close lower on Day 3, redeeming fund shares at the net asset value from Day 2 would have seemed like a better idea than waiting for calculation of Day 3's lower net asset value. It would also be clear during the trading session on Day 3 that the price of buying shares would be lower if the purchase were deferred until Day 4. Backward pricing led to abuses by dealers and by traders who could avoid the fund sales charges or "loads" that were more common in that period than they are today.

In 1968, the fund pricing rules changed. The SEC implemented its Rule 22(c)(1), which required fund share transactions to be priced at the net asset value *next determined* by the fund after the order was received. This meant that anyone entering an order after the close of business on Day 1 would purchase or sell fund shares at the net asset value determined at the close on Day 2. Correspondingly, someone entering an order to purchase or sell shares after the close on Day 2 would be accommodated at the net asset value determined at the close on Day 3. This process is illustrated in Exhibit 1.2.

While any mutual fund share *trader* might have preferred the pre-1968 system, most *investors* would agree that the basic idea behind Rule 22(c)(1) was a sound one. Allowing traders to decide today to buy or sell shares at yesterday's price is unfair to established investors in the fund's shares. However, there is still a transaction fairness problem for fund investors with Rule 22(c)(1) in place. That problem is illustrated in Exhibit 1.3.

By pricing all transactions in the mutual fund's shares *at the net asset value next determined*, as required by Rule 22(c)(1), the fund still provides *free liquidity* to investors entering and leaving the fund. As Exhibit 1.3 shows, anyone purchasing mutual fund shares for cash gets a share of the securities positions already held by the fund and priced at net asset value.

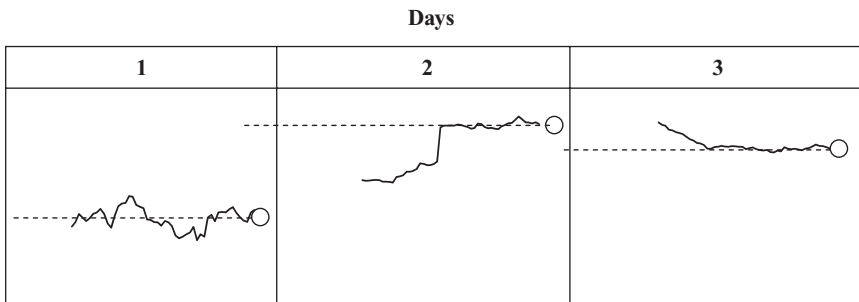
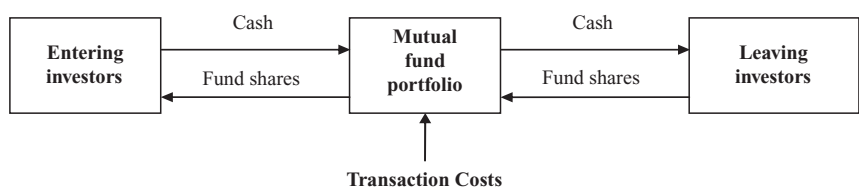


EXHIBIT 1.2 Since 1968: Buying and Selling Mutual Fund Shares at the Net Asset Value Next Determined

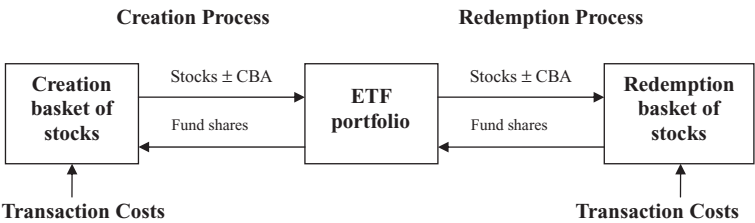


Note: Share purchases and redemptions are priced at the next net asset value calculated by the fund.

EXHIBIT 1.3 Cash Moves In and Out of a Mutual Fund: The Fund Trades Securities to Invest Incoming Cash or to Raise Cash for Redemptions

The new investor typically pays no transaction costs. All the shareholders of the fund share any transaction costs associated with investing the new investor’s cash in portfolio securities. Similarly, when an investor departs the mutual fund, that investor receives cash equal to the net asset value of the shares when the NAV is next calculated. All the remaining shareholders in the fund bear the cost of selling portfolio securities to provide this liquidity. To the entering or leaving shareholder, liquidity is essentially free. To the ongoing shareholders of the fund, the liquidity given transacting shareholders is costly. Over time, the cost of providing this free liquidity to entering and leaving shareholders is a significant and a perennial drag on the fund’s performance. The cost of this free liquidity is increased by the fact that the purchase or sale is usually deemed to occur when the investor’s order is delivered to an agent of the fund. The order entry time is often hours or even days before the fund manager actually receives the order and can act on it to buy or sell securities in the fund.

Exhibit 1.4 shows that exchange-traded funds work differently from mutual funds. For most exchange-traded funds, creations and redemptions



Note: All securities transfers are priced at net asset value.
CBA = Cash Balancing Amount

EXHIBIT 1.4 ETF Creation and Redemption Is In-Kind: Transaction Costs Are Paid by Entering and Leaving Investors

of ETF shares are typically made *in kind*. In a creation, a basket of portfolio securities is deposited with the fund in exchange for fund shares. In a redemption, fund shares are turned in to the fund in exchange for a basket of portfolio securities. We will describe the ETF creation and redemption process in more detail in Chapter 3; but the key feature of this process for the protection of the ETF's ongoing shareholders is that the creating or redeeming entity—in most cases, the portfolio trading desk of a major investment firm acting for a market maker in the ETF shares—is responsible for the costs of investing in the portfolio securities for deposit and the costs of disposing of portfolio securities received in the redemption of outstanding fund shares.⁴ Market makers expect to pass these transaction costs on to investors when the market maker trades fund shares with investors. The cost of entering and leaving a fund varies, depending on the level of fund share trading activity and the nature of the securities in the fund's portfolio. For example, the cost of trading in small-cap stocks can be much greater than the cost of trading in large-cap stocks.

ETFs are different from mutual funds in the way they accommodate shareholder entry and exit in at least two ways: (1) The trading costs associated with ETF shareholder entry and exit are ultimately borne by the entering and exiting investors, not by the fund. (2) An exchange-traded fund does not have to hold cash balances to provide for cash redemptions. An ETF can stay fully invested at all times.⁵ *As a result of these differences, the performance experienced by ongoing shareholders in an ETF should, over time, handily surpass the performance experienced by ongoing shareholders of a conventional mutual fund using the same index or active management investment process.* Ironically, even though the exchange-traded fund was designed to be traded throughout the trading day on an exchange, the ETF is a much better product than a conventional fund for the shareholder *who does not want to trade*. On the other hand, as any mutual fund market timer will tell you, a mutual fund is a better product to trade than an ETF because the shareholders of the mutual fund have traditionally paid the market timer's trading costs.

The conventional mutual fund structure that provides this free liquidity to investors who enter and leave the fund was behind the problems of late trading and market timing that provoked the mutual fund scandals of 2003 and 2004. The SEC has spent a great deal of time and effort trying to

⁴The market makers, or dealers acting on behalf of market makers, even pay a modest creation or redemption fee to cover the fund's administrative expenses associated with creation and redemption of the ETF shares.

⁵We will see in Chapter 6 that lazy ETF portfolio managers don't always keep the fund's cash fully invested.

deal with the problem of market timing trades in mutual funds without eliminating the free liquidity which ongoing shareholders in mutual funds give entering and leaving shareholders. Some fund companies have made a variety of operational “patches” as they attempt to restrict market timing trades. In connection with implementing Rule 22(c)(2), the SEC created a complex and costly reporting structure with almost mandatory redemption fees on mutual fund purchases that are closed out within a week. In the final analysis, the elimination of free liquidity—most easily through the exchange-traded fund in-kind creation and redemption process—is the only way to eliminate market timing without imposing unnecessary costs on all fund investors. Even if there is no such thing as a market timer in the future, long-term investors will fare better in funds that protect them from the costs of other investors entering and leaving the fund.⁶

TAX EFFICIENCY

One of the most frequently discussed advantages of the investment company exchange-traded funds is tax efficiency. The tax efficiency most commonly associated with ETFs is essentially capital gains tax-deferral until the investor chooses to sell the fund shares. Tax deferral in an investment company ETF is a natural consequence of Subchapter M of the Internal Revenue Code which permits fund share redemptions in-kind (delivering portfolio securities to departing fund shareholders) without tax impact inside the fund. Subchapter M mandates that a redemption in-kind initiated by a shareholder does not give rise to a taxable capital gain that would have to be distributed to shareholders of the fund.⁷

This kind of tax efficiency is obviously most important in ETFs that hold common stocks and other securities that can appreciate in value, but some bond funds have capital gains at times. The ability to avoid capital gains distributions even benefits tax-exempt investors because it prevents the build-up of unrealized gains inside an ETF. The build-up of unrealized gains in a mutual fund portfolio can lead to portfolio management decisions that adversely affect tax-exempt shareholders. When the choice facing a portfolio manager is (1) to realize gains on appreciated portfolio securities and distribute taxable capital gains to the fund’s shareholders

⁶For a comprehensive discussion of the 2003–2004 scandals and the market structure behind them, see Gastineau (2004).

⁷For more details on ETF tax treatment, including opportunities for capital gains tax deferral, see the extended discussion of this topic in Chapter 4.

or (2) to hold overvalued securities and avoid realizing capital gains, the portfolio manager faces a conflict between the interests of tax-exempt and taxable investors. This conflict of interest between taxable and tax-exempt investors—inevitable in a conventional mutual fund—disappears in an ETF. Even modest fluctuations in an ETF's shares outstanding from offsetting creations and redemptions give the fund portfolio manager opportunities to deliver the fund's lowest cost holdings of a security in redemptions and gradually increase the fund's average cost basis in each position.

With exchange-traded funds, the decision to change the portfolio can be based solely on investment considerations, not on the tax basis of portfolio securities. The conflict between taxable and tax-exempt shareholders disappears because the achievement of tax efficiency in ETFs is largely a matter of careful designation of tax lots so that the lowest cost lots of a security are distributed in-kind in redemptions and high cost lots are sold to realize losses for the fund when a sale is necessary or appropriate.

Exchange-traded funds grow by exchanging new fund shares for portfolio securities that are deposited with the fund. Redemptions are also largely in-kind. Investors sell their fund shares on the exchange. Dealers buy the fund shares and turn them in to the fund in exchange for portfolio securities. This process lets ETF managers take full advantage of the redemption in-kind provision of the Internal Revenue Code by delivering their lowest cost tax lots without realizing gains that must be distributed to the fund's shareholders. The rules for ETF redemption permit the fund manager to remove a high-cost tax lot from the redemption basket and sell it for cash to realize losses inside the fund.

The early developers of exchange-traded funds were aware of this tax treatment and its ability to defer capital gains taxes for fund investors, but the tax efficiency it gives ETFs was by no means a significant objective in the early development of exchange-traded funds. It is largely serendipitous that most well-managed investment company exchange-traded funds don't distribute taxable capital gains to their shareholders.⁸ Creation and redemption in-kind not only transfers the cost of entering and leaving the fund to the shareholders who enter and leave, it can also help defer capital gains taxes until a shareholder chooses to sell the fund shares.⁹

⁸Later chapters offer a few examples of ETFs that can be much less tax-efficient.

⁹Interestingly, tax deferral helps encourage "shareholder loyalty" to an ETF. An investor in a mutual fund will usually receive taxable gains distributions that, if reinvested, increase his basis in some of the fund shares as their value increases over time. When he sells the higher basis mutual fund shares, the higher basis reduces the capital gains tax on the sale. An investor in an investment company ETF with securities as its principal portfolio holdings should almost never receive a capital

The in-kind ETF creation/redemption process is an efficient, even elegant, solution to several of the obvious problems that continue to plague the mutual fund industry. A growing number of fund industry observers believe that the exchange-traded fund structure will eventually replace conventional mutual funds. To make that happen, however, the serendipity of early ETF development needs to be harnessed through creative financial engineering to overcome weaknesses in the index ETF structure and extend the best ETF features to a wider range of portfolios. We need to innovate selectively and constructively. To extend the advantages of ETFs to a broader range of investment instruments we need to look at some of the other features of ETFs in more detail. Two important topics that are often misunderstood about ETFs are *transparency* and *intraday trading*. Both can be very useful, but it is possible to have too much of what is usually a good thing.

COST TRANSPARENCY IS DESIRABLE, BUT TRADING TRANSPARENCY IS COSTLY

ETFs are appropriately praised for their cost transparency and inappropriately praised for their portfolio transparency. Every investor should be able to identify all of a fund's costs. However, if any fund is going to serve the interests of its shareholders, the portfolio manager needs to implement portfolio changes without revealing the fund's trading plans until *after* trading to implement a portfolio composition change has been completed.

Under current regulations, all investment companies registered with the SEC must reveal their portfolio contents quarterly with a 60-day lag. This means that the holdings of a mutual fund at the end of the March quarter must be published by the end of May. The purpose of this rule is to provide investors with *complete* information on the contents of the fund portfolio at regular intervals. The 60-day lag protects the portfolio manager's ability to trade without revealing the trades until they have been completed. If an investor really wants to know the precise content of a fund portfolio and believes that this knowledge is important for some purpose, there are a lot of

gains distribution. Consequently, the basis of all the ETF shares will stay at the investor's original cost. The tax due on sale of the ETF shares will tend to be greater than the tax due on sale or redemption of an otherwise comparable mutual fund position. An investor with both mutual funds and ETFs can usually defer more taxes by selling mutual fund shares first when he needs money for living expenses. The ETF shareholder will be a more loyal shareholder simply because he wants to continue to defer his tax liability.

benchmark index ETFs and mutual funds that provide daily portfolio transparency. However, the evidence is overwhelming that trading transparency enables scalpers to front-run fund transactions—whether the transactions are in index funds or in actively managed funds. This kind of transparency is contrary to the best interests of the fund’s investors.

Trading transparency can be very costly to a fund’s investors. Whether a fund is attempting to replicate an index or to follow an active portfolio selection or allocation process, portfolio composition changes cannot be made efficiently if “the market” knows in advance what changes a fund will make in its portfolio. A number of recent studies have highlighted the costs of index composition changes. Benchmark indexes like the S&P 500 and the Russell 2000 do not make efficient portfolio templates for long-term investors. Investors in index funds based on these and other popular, transparent indexes are disadvantaged by the fact that anyone who cares will know what changes the fund must make before the fund’s portfolio manager can make them.¹⁰ When transparency means that someone can earn an arbitrage-type profit at the expense of a fund’s shareholders by front-running a fund’s trades, transparency is not desirable.

The cost to ongoing shareholders of preannounced portfolio composition changes in index ETFs should be eliminated whenever possible. The best way to improve index fund performance is to use “silent” indexes. Silent indexes keep portfolio composition changes confidential until after the fund has traded. This requires new procedures for the management of indexes and for the management of index funds. A similar procedure that protects trading confidentiality can be used for actively managed exchange-traded funds. Nearly everyone seems to agree that actively managed funds require confidential treatment of portfolio composition changes until after the fund has traded. Only recently have investors and regulators begun to understand the costs that index transparency imposes on index fund investors. Making portfolio changes confidentially and efficiently requires some changes in the ETF creation/redemption process and in ETF trading. We will discuss these issues in greater depth in later chapters.

INTRADAY ETF TRADING

Intraday trading in ETFs is useful to many investors and traders and there is no question that hyperactive trading in some ETFs has helped call attention

¹⁰This problem is discussed at length in Chen, Noronha, and Singal (2006), Gastineau (2002a), Gastineau (2002d), Gastineau (2005), and Gastineau (2008). The major issues are also discussed in Chapter 5.

to these funds. The fact that some of the most actively traded ETFs make regular appearances on the daily most active stock trading list has stimulated interest in the funds. Active trading has played a major role in the adoption of ETFs for some short- and intermediate-term risk management applications. However, large traders often have an intraday trading advantage over individual investors, particularly individual investors who use less actively traded ETFs. There is asymmetry in the amount and kind of market information available to large traders on one hand and small investors on the other hand. Any trading information asymmetry is unimportant when an ETF trades, say, 10,000,000 shares per day. The bid/asked spread on such actively traded funds is usually just a penny or two. Information asymmetry is *very* important when an ETF is not actively traded and the bid/asked spread is wide. We will discuss NAV-based ETF trading as an antidote to this asymmetry in trading information in Chapter 8.

Many individual investors have a stake in being able to make small, periodic purchases or sales in their fund share accounts. The prototypical investor of this type is the 401(k) investor who invests a small amount in her defined contribution retirement plan every payroll period. The mutual fund industry has developed elaborate procedures that permit small orders for a large number of investors to be aggregated and for cash to enter or leave the fund to accommodate small investors at net asset value. There are ways to adapt ETF procedures so that these small periodic purchasers, while paying a little more than they have paid in the past to cover the transaction costs of their entry and exit, will still be accommodated at low cost. The snowballing push for greater transparency in the costs of defined contribution accounts like 401(k) plans will make fund cost and performance comparisons easier—to the advantage of ETFs and the investors who use them.

COMPARING ETF AND MUTUAL FUND ECONOMICS

Exhibit 1.5 provides an economic comparison of ETFs and mutual funds with the advantages of the ETF cost structure measured in terms of improved investment performance for fund shareholders. In the first column, the possible ETF advantage is listed. The information in parentheses in that column is an estimate of the *range of improved annual investment performance a long-term shareholder who uses an ETF rather than a mutual fund will enjoy*. As these numbers indicate, the advantage of an ETF over a comparable mutual fund can vary over a wide range. Of course, in some cases there is no material difference between ETFs and mutual funds, but sometimes both types of funds would benefit if the fund industry changed current practices.

EXHIBIT 1.5 Using ETFs to Deliver Better Investor Performance

ETF Advantages	Possible ETF Problems	Solutions
Shareholder protection ($<0.1\%$ to $>5.0\%$)	Uncertain transaction costs. Fairness of execution.	Net asset value (NAV)-based trading process improves on basic ETF shareholder protection pp. 197–225
Lower operating costs/cost transparency (0 to 0.35%)	Under the alternative minimum tax (AMT), embedded costs cover fees.	New fund delivery structures pp. 272–273
Capital gains tax efficiency (0 to 2.5%)	None	None needed
Taxable/tax-exempt conflict (0 to 1.0%)	None	None needed
Indexing (equal)	Inefficient indexes hurt all investors: The more popular the index, the greater the performance drag from index transparency.	Silent indexes as portfolio templates pp. 110–126
Active management (equal)	Confidentiality in portfolio changes is essential to all investors.	Same portfolio composition disclosure as mutual funds pp. 187–195

Column two in Exhibit 1.5 lists some possible problems with today's ETF or mutual fund structure and column three offers solutions for implementation, in some instances in a new generation of ETFs. In a few cases (such as the need for more efficient indexes), the silent index solution is equally applicable to conventional mutual funds that follow an indexing strategy. Common sense leads to the conclusion that it is not in any fund investor's interest to pay significant index change transaction costs that the fund incurs because its index is transparent.

Each of these advantages, problems, and solutions merits a more detailed discussion than is possible in this introduction. The page numbers in the solutions column indicate where you will find detailed discussions in the chapters that follow. However, a few of the features that are part of most ETFs merit at least a brief discussion at this point.

The first ETF advantage reflects the value of shareholder protection from the cost of investors entering and leaving a fund as discussed in connection

with Exhibits 1.3 and 1.4 earlier in this chapter. The return comparison in parentheses removes the allocation of all entry and exit costs from ongoing mutual fund shareholders and assigns them to entering and leaving shareholders who use ETFs. *In an ETF transaction, a shareholder pays only the cost of his own entry to and exit from the fund. The mutual fund shareholder pays a pro rata share of the entry and exit costs of all fund buyers and sellers for as long as he owns the fund shares.* The transaction costs don't disappear, but the long-term investor in an ETF pays them only when he personally transacts, not every time any investor enters or leaves the fund.

There have been few appropriately designed studies of the shareholder performance cost of the *flow* of cash into and out of mutual funds. In a study published in 1999, Roger Edelen, then a professor at Wharton, measured the cost of flow for a sample of 166 equity and hybrid mutual funds using data from 1985 through 1990.¹¹ He calculated the cost of flow in terms of its adverse effect on fund shareholder performance at 1.43 percent (143 basis points) per year in the average fund in his sample. The shareholder turnover in the sampled funds was low enough that it is clear that market timing and late trading was not a significant factor in the cost of flow to these funds' shareholders. Shareholder turnover in most large mutual funds is lower today than it was in Edelen's sample. Some transaction costs associated with accommodating flow are also probably lower today.

In a more recent paper, Edelen, Evans, and Kadlec (2007) examined the cost of flow in a larger sample of more recent mutual fund data. They found the average annual cost of flow to be .75 percent (75 basis points), partly because the average mutual fund shareholder stays in the fund longer than he did 10 years earlier. If the cost of flow for the average mutual fund investor (not the average mutual fund) is .75 percent per year for the \$5.6 trillion in equity and hybrid mutual funds in the United States at the end of 2009, this represents a performance loss to investors of \$42 billion per year. If the average cost of flow is as low as 0.50 percent per year, the cost to investors is still \$28 billion per year. This lost performance dwarfs the costs that have been attributed to mutual-fund market-timing transactions under any reasonable assumptions.

Note the wide range we use for the value of shareholder protection from the cost of flow (less than 0.1 percent to more than 5.0 percent per year) in Exhibit 1.5. The less than one-tenth of 1 percent number is representative of some very big, large-cap mutual funds with very low shareholder turnover.

¹¹See Edelen (1999). For a more detailed discussion of this paper, see Gastineau (2004).

The more-than 5 percent annual cost figure applies to some small-cap funds with high shareholder turnover. Clearly, the cost of accommodating market timers and late traders in some funds implicated in the 2003–2004 “scandals” was well in excess of 5 percent per year.¹² There is some cost disadvantage to a mutual fund’s ongoing shareholders relative to an ETF when there is *any* flow. Most ETFs eliminate these costs completely for a fund’s ongoing shareholders with in-kind creation and redemption of their fund shares.¹³

The only “problem” that limits the ability of ETFs to deliver this degree of shareholder protection is that the true transaction costs associated with buying and selling shares of an ETF can be difficult for an investor to determine in advance of an intraday trade. The information available to investors on the intraday value of an ETF and the total cost of intraday trading is not as useful or as readily available as it should be. Calculations of intraday fund portfolio values are made and disseminated, but many investors do not have easy access to the every 15-second net asset value proxy calculations for existing ETFs. In any event, as we will see in Chapter 8, these intraday value proxies are of little value to traders. Furthermore, intraday ETF trading execution costs are difficult or impossible to measure accurately. In many instances intraday trading is much more costly than a new way to trade ETFs that is described in Chapter 8. The solution to the cost and implementation problems that intraday trading creates for some investors is an NAV-based trading process that increases the transparency of ETF transaction costs and, consequently, improves ETF structural shareholder protection without compromising the ETF “gold standard” whereby

¹²The analyses made in connection with financial settlements paid by parties associated with the 2003–2004 market-timing scandals reveal that market timing was practiced by many fund share traders who did not have formal or informal arrangements with fund managers or distributors. In at least one case, “nonarrangement timing” accounted for more shareholder costs than arrangement timing. Furthermore, these analyses document some of the trading and dilution costs Edelen (1999) and Edelen, Evans, and Kadlec (2007) found in connection with ordinary fund share purchases and redemption transactions. See Anand (2006) and U.S. Securities and Exchange Commission File No. 3-11814 (2007), especially Sections III–V for more detail on the costs of market timing to mutual fund investors. One of the most comprehensive discussions of the impact *any* purchase or sale of mutual fund shares has on the broadly defined transaction costs, opportunity costs, and dilution experienced by ongoing fund shareholders can be found in Greene and Hodges (2002).

¹³A small number of mutual funds levy asset-based fees on entering and/or redeeming shareholders in an attempt to protect ongoing shareholders from the approximate cost of flow. This approach is better than ignoring the problem, but such fees cannot capture changes in costs over time or relative to trade size.

investors entering and leaving the fund pay the costs of their own (and only their own) entry and exit.

The second advantage of exchange-traded funds listed in Exhibit 1.5 is that ETFs frequently offer lower operating costs and greater cost transparency than conventional mutual funds. Some of the reduction in operating costs and increase in cost transparency is associated with the elimination of costs associated with shareholder accounting at the fund level. Some of these shareholder accounting costs still have to be borne by someone. The financial intermediary that provides fund share transaction and custody services to the investor may ultimately charge the cost of these services to investors. In addition to the expenses embedded in the fund's expense ratio, sales and advisory charges are often paid outside the fund by ETF investors who use the services of an advisor to select ETF shares.

Unbundling costs can create a problem for taxable investors—particularly for investors who are subject to the alternative minimum tax (AMT). The embedded costs of mutual funds, because they are often taken out before the fund's income distributions are made, are deducted from the income that taxable investors receive. A separately billed advisory fee is not fully deductible to the average U.S. taxpayer and may not be deductible at all to an investor who falls under the alternative minimum tax regime. There can be significant tax savings for many taxable investors if advisory and administrative costs and sales charges are embedded in the financial instrument, rather than billed as separate fees. The solution to this tax problem is a new fund delivery structure that provides tax efficiency by re-embedding some of the costs that have been taken out of exchange-traded funds. Embedding costs in a fund can serve an investor's interests as long as the re-embedding does not reduce cost transparency or increase after-tax costs.

Returning to the next items listed in Exhibit 1.5, capital gains tax deferral and taxable/tax-exempt investor conflict of interest elimination are unmitigated gains for all ETF investors. There are no obstacles to realizing these advantages, so no solution is necessary. These important gains flow to ETF investors automatically.

With respect to the last two issues listed in Exhibit 1.5, performance penalties associated with transparency in indexing and the need for confidentiality of an active manager's trading activity, the solutions for the two fund structures are essentially identical: Eliminate portfolio composition trading transparency. Index funds should be based on efficient indexes. There are some very efficient published indexes available today. An outstanding example of an efficient broad-market index is the Wilshire 5000.¹⁴

¹⁴See Gastineau (2006b).

Even though its changes are transparent, the Wilshire 5000 is more efficient than most indexes because it is designed to have very few composition changes. Some inherently inefficient indexes are used for such small asset pools that scalpers who know what the ETF has to do to match the published composition changes in its index are not likely to try to front-run the fund's portfolio trades.¹⁵

Even if trading transparency is not always costly, there is no reason why the index templates for most index funds should not be silent indexes. All investors should have the opportunity to buy index funds based on silent indexes to protect themselves from the cost of index composition front-running trades.

In most discussions of actively managed ETFs, there has been appropriate concern expressed for the cost of achieving enough portfolio transparency to facilitate trading in ETFs without subjecting the fund's trades to the front-running risk that all of today's index funds experience to some degree. The SEC's Concept Release on actively managed ETFs stressed the importance of finding a solution to this problem.¹⁶ While solutions to this problem are addressed at greater length in Chapters 7 and 8, a full consideration of this topic is outside the scope of the present volume because many aspects of full-featured active management of ETFs do not yet have formal SEC approval. In brief, however, a nontransparent, actively managed ETF can trade efficiently if the manager offers no more information on the fund's portfolio composition than the manager of a conventional mutual fund must publish today. With net asset value based trading, there is no need for disclosure of portfolio changes until after the changes are completed. The level of disclosure required of mutual funds is sufficient to support efficient ETF trades at or near each day's net asset value. Funds that do not require the full measure of confidentiality available under today's rules for fund asset disclosure can reduce transaction costs for their entering and leaving shareholders and for market makers by providing more frequent portfolio disclosure.¹⁷ But more frequent disclosure is not essential. An investment process that requires the maximum permitted portfolio confidentiality can work well for an actively managed ETF.

¹⁵If one of these funds grows in response to unusually good performance, the manager may face the same kind of front-running costs that S&P 500 and Russell 2000 index funds experience regularly.

¹⁶United States Securities and Exchange Commission, (2001), www.sec.gov/rules/concept/ic-25258.htm.

¹⁷Many funds already publish their portfolios more frequently and/or with a shorter lag than the SEC requirement.

CONCLUSION

Fund issuers can build on the compelling advantages of today's exchange-traded funds to offer better and more varied portfolios. Nontransparent portfolios in actively managed and silent index funds can offer shareholders the protection from the cost of entry and exit by other fund shareholders and the tax efficiency that are inherent in the initial generation of SPDR-style exchange-traded funds. Active management and silent indexing require a slightly modified ETF structure and an improved trading mechanism for investors who buy and sell ETF shares. The new ETFs will also offer alternative fund share trading and delivery structures and systems to make ETFs useful to all investors. Transparent index funds will be challenged by silent index funds that provide improved performance as a result of lower fund portfolio transaction costs. Actively managed ETFs will feature flexibility in portfolio disclosure to permit the fund manager to determine the degree of transparency that is appropriate for a specific fund, within established regulatory constraints. These and other changes are coming and investors will benefit substantially from the new opportunities these changes provide.

In expressing confidence in the desirability—and the inevitability—of the improved exchange-traded funds described throughout this book, I am well aware of the obstacles facing innovators in the financial services industry. Professor John Y. Campbell, in his 2006 presidential address to the American Finance Association, addressed this issue:

I suggest that retail financial innovation is slowed by the cost of advertising and educating households, together with the weakness of patent protection for financial products. . . . I speculate that the existence of naive households permits an equilibrium . . . in which confusing financial products generate a cross-subsidy from naive to sophisticated households, and in which no market participant has an incentive to eliminate this cross-subsidy. . . . It may be difficult for new investment products to gain acceptance if sophisticated households, who are the natural early adopters, must give up the benefit of a cross-subsidy when they move from an existing product to a new product.

Campbell raised some important concerns, but there is every reason to believe that the most important ETF innovations will succeed. Mutual funds subsidize the *fund share trading costs* of short-term investors (market timers and all other mutual fund share traders), small investors (young investors and others with few assets), and investors who invest small amounts

periodically (largely owners of 401[k] and similar defined contribution retirement accounts). These trading-cost subsidies come at the expense of some of the most “sophisticated households” that hold mutual fund shares as long-term investments. The regulatory interest in thwarting mutual fund timers and traders is well known. Small investors and 401(k) contributors tend to be long-term investors. They will pay a transaction cost to buy and sell ETF shares, but new delivery mechanisms should minimize this cost and clarify the total ETF cost and performance advantage. The incentives for all long-term investors and regulators to embrace the ETF fund structure are compelling.

CHAPTER 2

The History and Structure of Exchange-Traded Funds—and Some of Their Competitors

The phenomenal growth of exchange-traded funds (ETFs) is a frequent topic in the financial press. These funds, with net asset inflows every year since 1995, have been warmly embraced by most advocates of low-cost index funds. The press coverage of ETFs has correctly described the major features of the most popular ETFs: (1) low expense ratios, (2) high tax efficiency, and (3) intraday trading without large premiums or discounts to the funds' intraday net asset value. However, all the financial instruments called ETFs do not have all three of these defining characteristics and some so-called ETFs may not have any of the three. Furthermore, there is a fair degree of misunderstanding about how ETFs work, why the expense ratios tend to be low, and how most ETFs manage to avoid significant capital gains distributions. This chapter and Chapters 3 and 4 attempt to answer important ETF questions frequently asked by investors and advisors. This chapter begins with a brief discussion of how securities markets have changed in ways that made ETFs possible—and perhaps essential—in the context of investor demand for traded portfolio products. Later in the chapter we look at the historic development of ETFs and compare ETFs with some other basket products that often compete with them.

SOME MAJOR FINANCIAL MARKET DEVELOPMENTS (1975 TO 2000)

Portfolio Trading and Stock Index Futures Contracts

The basic idea of trading an entire portfolio in a single transaction did not originate with the Canadian TIPS or the U.S. SPDRS, the earliest examples

of the modern portfolio-traded-as-a-share structure. It originated with what has come to be known as *portfolio trading* or *program trading*.¹ From the late 1970s, portfolio trading was the then-revolutionary ability to trade an entire portfolio as a basket. In the United States, this was often a portfolio consisting of all the S&P 500 stocks. The portfolio trade was initiated with a single order placed with a major brokerage firm. Similar portfolio trades were available using other U.S. indexes and popular indexes in Canada, Europe, and Asia. Today index-based and customized portfolio trading is available in nearly all of the world's stock markets.

Some relatively modest advances in electronic trade entry and execution technology and the availability of large order desks at some major investment banking firms made these early portfolio or program trades possible. The introduction of S&P 500 index futures contracts by the Chicago Mercantile Exchange (and similar contracts in other markets) created and required an arbitrage link between the new futures contracts and portfolios of the stocks in the index underlying the futures contract. It was even possible, in a trade called an exchange of futures for physicals (EFP) to exchange a stock portfolio position, long or short, for a stock index futures position, long or short. The effect of these developments was to make portfolio trading in cash and futures markets an attractive activity for many trading desks and for many institutional investors. The attraction was a combination of opportunities for arbitrage profits and lower trading costs. The equity arbitrage complex was a natural consequence of these developments.

¹Program trading was vilified in the late 1980s much like collateralized debt obligations (CDOs) and credit default swaps (CDSs) were vilified in 2008. The term "program trading" was popular in the mid-1980s when equity trading desks broke down customer basket orders to assign part of each list to the individual traders who would enter and manage various parts of the order. The breakdown was accomplished by a simple computer program that split the list alphabetically or by some other criterion based on the organization of the trading desk and printed a list of the trades assigned to each trader on the teletypes or line printers used at that time. Traders would hover around the printer(s) waiting for the "program" to print out their list. The program's association with a computer made "program trading" the term of choice to demonize this activity. Computers did not enter or "manage" orders in the 1980s as they often do today. Nonetheless, "program trading" became the buzzword explanation for almost any drop in the major market indexes. "Portfolio trading" did not carry similar public relations baggage, making it the more popular term used by traders to designate basket trading today. In the light of the options available in financial term selection, you should expect to hear more about "asset-backed bonds" and "credit risk insurance" over the next few years, as the terms "collateralized debt obligation" and "credit default swap" are used less frequently and fade from memory.

Equity Arbitrage Complexes

The relationships among trading in equities and trading in various equity derivatives markets are best understood by considering how an arbitrage complex works. The arbitrage complex provides a useful way to think about the range of choices open to users of index (or portfolio basket) financial instruments. The arbitrage complex consists of a number of related financial instruments or groups of financial instruments based on a common basket of underlying assets. The principal underlying assets behind each of the instruments in an equity arbitrage complex may consist of an index, a stock basket determined by the index rules, an exchange-traded fund (ETF), and other financial instruments. The arbitrage complex can cover domestic and/or foreign markets. An arbitrage complex can include components that are nominally debt instruments (structured notes) and it can include options and other components that have a nonsymmetric response to changing stock prices.

Exhibit 2.1 lists some typical equity index arbitrage complex instruments. Among the traditional securities positions, the members of the equity index arbitrage complex are program or portfolio trading of baskets of equity securities and exchange-traded funds. These are simply combinations and extensions of the traditional underlying securities that make up equity portfolios. Trading securities in a basket or as an index derivative is a natural extension of both trading technology improvements and the diversification that is a cornerstone of modern portfolio theory.

The second category in the arbitrage complex is symmetric derivatives. By symmetric, I mean that they move up and down proportionately to movement in the underlying index portfolio or position that determines their market risk characteristics. The most important symmetric equity index

Program (portfolio) baskets	}	Traditional securities positions
Exchange-traded funds		
Stock index futures	}	Symmetric derivatives
ETF “single stock” futures		
Equity/index swaps		
Options	}	Instruments with convexity
Structured notes		

EXHIBIT 2.1 Equity Index Arbitrage Complex Instruments

instruments are stock index futures, ETF single-stock futures contracts, and equity index swaps.

To round out the possibilities, the asymmetrical instruments that make up an equity index arbitrage complex are index options and options on ETFs, futures, and swap contracts. There are also structured notes based on indexes, ETFs, or futures contracts. In contrast to the other instruments in the arbitrage complex, these instruments have stand-alone or embedded options that give them price convexity; that is, their values are not straight-line functions of an underlying price variable.

It is useful to note at this point that referring to these groups of primary and derivative instruments with values that are related by the similarity of their underlying financial instruments as an “arbitrage complex” should not be seen as an implication that there are large arbitrage profits waiting for any reasonably skilled investor. The use of the term *arbitrage complex* means only that price relationships are constrained by the ability of investors to take a position in more than one way. At times there will be small arbitrage profit opportunities available to large trading desks that can operate effectively in a wide range of markets. However, the profit on an individual transaction of this nature will be modest relative to the capital required to support the trading desk.

Investors and their advisors should try to understand the nature of arbitrage pricing relationships. The fact that there are small gains to be made by choosing one instrument relative to another suggests that understanding and monitoring price relationships can be useful; but, more importantly, it also suggests that market forces will usually protect an investor from paying *far* too much or receiving *far* too little because large market participants stand ready to snap up any bargains the individual investor’s trades may create. Market forces assure reasonable fairness, but an astute investor can still get a better return by shopping for the lowest cost way to trade or to hold an equivalent position.

Modern markets have developed around arbitrage complexes because growing trading volumes and declining trading costs have stimulated the growth of these arbitrage complexes. Growth in arbitrage complexes has in turn stimulated further growth in trading volumes and further declines in trading costs. The use of portfolio trading has not reduced the market impact of a large block of a single stock, but it has sharply reduced the cost of trading portfolio products and the cost of trading a few hundred shares of most stocks.

The balance of this chapter examines some of links among the growth of trading volume, the decline of trading costs and the development of new products in the equity markets. My familiarity with U.S. markets is greater

than my familiarity with other markets. Consequently, most of the examples are U.S. examples. This parochialism is not a significant disadvantage because a similar story with similar examples is applicable to most of the world's equity markets.

DECLINING TRADING COSTS INCREASE FINANCIAL ENGINEERING OPPORTUNITIES, AND FINANCIAL ENGINEERING REDUCES TRADING COSTS IN THE NEW MILLENNIUM²

Although portfolio trading did not arrive until nearly 20 years later, 1968 was a landmark year in stock trading in the United States. NYSE trading volumes in 1968 were at record levels of approximately 13 million shares a day—up from just 3 million shares a day in 1960. In fact, one reason for selecting 1968 as a starting point for this commentary is that this high volume (by the standards of the day) created massive operating problems for U.S. securities markets. The New York Stock Exchange closed early on many days in the first half of 1968 and closed every Wednesday during the second half of the year to deal with a “Paperwork Crisis.”

Just 40 years later, in 2008, the average daily trading volume in NYSE listed stocks was about 6 billion shares per day. This is roughly a 450 times increase in volume, but it understates the significance of the increase in equity trading volume. In 1968, the trading volume on other exchanges and the over-the-counter market (not yet NASDAQ) was a small fraction of the trading volume on the New York Stock Exchange and ETFs did not exist. At times today, total equity trading volume runs above 10 billion shares a day and more than 20 percent of share volume on some high volume days is in ETFs. Higher average share prices often give ETFs a more than 30 percent share of trading *value*.

The dramatic growth in trading between 1968 and today—without a repeat of the operational chaos of 1968—is the result of improvements in technology, corresponding changes in the economics of trading, and the development of new “portfolio” or “basket” instruments to trade. The computerization of trading and back office operations has sharply reduced commissions and trading spreads for small trades and for trading baskets of

²For expanded versions of various parts of the material discussed in the next two sections, see Gastineau (2001) and Gastineau (2010a).

securities since 1968. The costs of large trades in a single issue have not declined much, if at all, because their largest cost element is the price of the liquidity these block trades demand from the market.

Long before 1968, and for a few years thereafter, equity commissions were fixed at a high level. The average commission on a stock purchase or sale in 1968 was significantly more than 1 percent of the value of the transaction. Bid-asked spreads were generally measured in quarters (\$.25) rather than the penny (\$.01) spreads common for small trades in many actively traded shares today. The market impact of a large trade in a single stock was significant in 1968, as it is today. The growth of institutional investing was just getting under way in 1968, so large block trades were much less common than they became in the 1970s and 1980s.

Punch card accounting was still common in 1968, but the computer systems available at the time were a dramatic improvement over the hand-written ledgers and clerks with iconic eyeshades that were the state of the art 40 years earlier, in the late 1920s. The technology introduced since the Paperwork Crisis has made much higher volumes possible with far less hands-on human involvement in every step of the trading and trade settlement process.

The workday population on the New York Stock Exchange floor grew for a number of years after 1968, but floor trading activity is not meaningful today. Most recent live videos from the NYSE floor show more quotation monitors than people to watch them. While pictures of the floor are still popular, the floor is often most crowded during the cocktail parties that begin shortly after the formal close of trading. Automated trading and trade processing have changed the “public face” as well as the mechanics and economics of trading.

The total cost to buy or sell stock in 1968 approached 2 percent of the value of the stock. With some fairly rough rounding, total trading costs probably represented a little more than 0.2 percent of the value of the trade for the average stock or ETF transaction by a retail investor in 2008. The average *cost* of a typical retail transaction fell by a factor of nearly 10 while *total share volume* for all stocks and ETFs increased by a multiple close to 75. The reduction in the cost of each trade brought in more traders. While the increases in equity trading volume and in total trading costs are dramatic, they are an almost inevitable consequence of changes in technology and market infrastructure that stimulated a broad range of financial market innovations. The equity derivatives markets that are part of equity arbitrage complexes have their own eye-popping figures for transaction volume growth and for the notional values of both trading and open interest in equity derivative contracts. This is the changing financial market environment where ETFs emerged.

A BRIEF HISTORY OF ETFs

Exchange-traded funds are outstanding examples of the evolution of new financial products. Tracing the history of the ETFs' antecedents—the proto-products that led to the current generation of exchange-traded funds—makes it easier to understand why ETFs have been so successful.

Most of the balance of this chapter illustrates and analyzes financial instruments that trade as portfolio securities. When appropriate, we will mention other markets in an arbitrage complex. From the perspective of most investors, however, ETFs are the most important portfolio financial instruments. The historical development of ETF markets illustrates some of the ways that trading in the components of an arbitrage complex contribute to pricing efficiency and trading cost reduction.

From developments in portfolio trading that originally served only large investors, there arose interest in readily tradable portfolio or basket products for individual investors. The early futures contracts were relatively large in notional size and the variation margin requirements for carrying these futures contracts were cumbersome and relatively expensive for a small investor to manage. The need for a low price point security—for example, an SEC-regulated portfolio product that could be used by individual investors—was increasingly apparent. The first such products in the United States were index participation shares, known as “IPS.” IPS were the first step in the development of ETFs.

Index Participation Shares (IPS)

The Index Participation Shares were a relatively simple, totally synthetic, proxy for the S&P 500 Index. While other indexes were also available, S&P 500 IPS began trading relatively actively on the American Stock Exchange and the Philadelphia Stock Exchange in 1989.³ A federal court in Chicago quickly ruled that the IPS were futures contracts and had to be traded on a futures exchange, if they were to be traded at all. The stock exchanges had to close down IPS trading.

What exchange these instruments traded on would not have been an issue in most other countries. Outside the United States, the same regulator typically oversees securities and futures and there is less legal distinction between a security and a future. Mini futures contracts were eventually developed to fill out the range of futures offerings, but most U.S. investors and their advisors are accustomed to using securities. Most U.S. investment

³Judging the trading activity by 1989 standards.

regulations and tax statutes are designed around securities holdings by individual investors. Trading and, especially, holding futures positions is much less user-friendly in the United States than trading and holding securities positions. While there are indications that U.S. futures and securities regulation may be more integrated in the future than it has been in the past, there will continue to be substantial differences between securities and futures in U.S. markets.

While several efforts to find a replacement product for IPS that would pass muster as a security were underway in the United States, TIPs (Toronto Stock Exchange Index Participations) were introduced in Canada.

Toronto Stock Exchange Index Participations (TIPs)

TIPs were a warehouse receipt-based stock portfolio instrument designed to track the TSE-35 stock index. A later product tracked the TSE-100 stock index. The TSE-100 product was called HIPs. TIPs and HIPs traded actively and attracted substantial investment from Canadians and from international indexing investors. TIPs were unique in their expense ratio. The ability of the trustee (State Street Bank) to loan out the stocks in the TIPs portfolio and frequent demand for stock loans on shares of large companies in Canada led to what was, in effect, a negative expense ratio at times.⁴

The TIPs were a victim of their own success. The TIPS structure proved costly for the Toronto Stock Exchange and for some of its members who were unable to recover their costs from investors. Early in 2000, the Toronto Stock Exchange decided to get out of the portfolio share business and TIPs positions were liquidated or rolled into a Barclays Global Investors (BGI) 60-stock index ETF share at the option of the TIPs holder. The BGI fund was relatively low cost, but not as low cost as the TIPs had been, so a large fraction of the TIPs shares were liquidated at that time. The new ETF structure ultimately proved to be very popular and the fund had about C\$12 billion in assets at the end of 2009.

While the TIPs were flourishing in Toronto in the early 1990s, two other portfolio share products were under development in the United States: Supershares and SPDRs.

The SuperTrust and Supershares

The SuperTrust and Supershares were a product complex using both a trust and a mutual fund structure—one inside the other. Supershares were a high

⁴The negative expense ratio was possible because stock-lending revenue on Canadian stocks typically exceeded lending revenue on comparable U.S. stocks.

cost product. The complexity of the product, which permitted division of the Supershares into a variety of components (some with option and option-like characteristics), made sales presentations long and confusing for many customers. The Supershares were developed by Leland, O'Brien, Rubinstein Associates, the folks behind portfolio insurance. The SuperTrust securities never traded actively and the trust was eventually liquidated. This product failure stemmed from higher costs and greater complexity than investors were prepared for in the early 1990s. The failure was unrelated to Portfolio Insurance.

Standard & Poor's Depository Receipts (SPDRs)

SPDRs (pronounced "spiders") were developed as a trading vehicle by the American Stock Exchange, approximately in parallel with the SuperTrust. The original SPDRs are a unit trust with an S&P 500 portfolio that, unlike the portfolios of most U.S. unit trusts, can be changed as the index composition changes.⁵ The reason for using the unit trust structure was the Amex's concern for costs. A mutual fund must pay the costs of a board of directors, even if the fund is very small. The Amex was uncertain of the demand for SPDRs and did not want to build a more costly infrastructure than was necessary. Only a few other ETFs (e.g., Midcap SPDRs, the NASDAQ 100 QQQs, and the DIAMONDS, based on the Dow Jones Industrial Average) use the indexed unit trust structure. The SEC has not had a request for a new ETF to be organized as an indexed unit trust since 2002. Nonetheless, the S&P 500 SPDRs remain the largest ETF in the United States and the world. In fact, with assets of nearly \$85 billion at the end of 2009, the S&P 500 SPDR is the largest single share class equity or balanced portfolio product registered with the SEC—by a large margin

SPDRs traded reasonably well on the Amex in their early years, but only in the late 1990s did SPDRs trading volume and asset growth take off, as investors began to look past the somewhat esoteric in-kind share creation and redemption process and focus on the investment characteristics and tax efficiency of the SPDRs themselves. It is difficult to ascribe the phenomenal success of the SPDR and subsequent ETFs to a small list of factors but certainly among the features contributing to the SPDRs' success were (1) extremely tight and aggressive market making by the specialist team at Spear, Leeds, & Kellogg; (2) the fact that the Amex was able to get the

⁵State Street has licensed the SPDRs trademark from Standard and Poor's to brand its exchange-traded products. This occasionally leads to confusion when a SPDRs ETF uses a Dow Jones or Barclays index.

SPDRs expense ratio below the expense ratio of the Vanguard 500 mutual fund, the SPDRs' principal competitor; and (3) the steady growth of interest in the tax efficiency of exchange-traded funds which usually permits the holder of this type of ETF to defer all capital gains taxation until the shares are sold.

World Equity Benchmark Shares (WEBS)—Renamed iShares MSCI Series—and Other Investment Company Shares

WEBS were important for two reasons. First, they were foreign index exchange-traded funds, that is, index funds holding stocks issued by non-U.S.-based firms. Second, they were the earliest exchange-traded fund products to use a management investment company (mutual fund) structure as opposed to a unit trust structure. If you are going to create a large number of similar products, a mutual fund series structure can be much less costly to maintain than setting up a separate unit trust for each product.

Another family of foreign index funds designed to compete with the WEBS was introduced on the NYSE at about the same time WEBS appeared on the Amex. For a variety of reasons, the most important of which were structural flaws in the product design, these "Country Baskets" failed and the trust was liquidated.

The Sector SPDRs were the first successful ETFs with domestic stock portfolios in a mutual fund structure similar to the WEBS. They were introduced in late 1998 with support from Merrill Lynch and their assets have grown more consistently than most other specialized ETFs.

The largest family of ETFs today is the iShares family that was introduced by Barclays Global Investors (BGI) in 2000 and acquired by Blackrock in 2009. Barclays licensed most of the major equity and fixed income index families before they launched their first fund. These index licenses gave iShares exclusive rights to use the names of some of the most popular indexes as part of the name of their funds, e.g., the iShares Russell 2000 Index Fund. While some index brands are more widely recognized than others, including the index name in the ETF product name is generally viewed as a sound index ETF branding strategy.

So far our focus has been largely on equity index ETFs where the fund structure developed like the original SPDRs as part of an (S&P 500) index arbitrage complex and was a natural extension of portfolio trading. Once the basic unit trust ETF structure was largely superseded by the open-end investment company ETF product model, development branched in several directions. From an investor's perspective, it makes more sense to look at these branches in terms of the underlying content of the basket or portfolio

rather than the structure. Of course, the structure will be important to an organization interested in developing its own product or product family and the structure often matters to the investor as well. The structure often determines the investor's tax bill and credit risk exposure, among other things; but the choice of a structure usually comes second in the decision hierarchy. The first decision is the choice of the asset class or type of portfolio basket to be offered. Once the portfolio is specified, the choice of product structure is usually an easy decision.

In addition to investment company ETFs, which are the dominant structure for securities portfolios, the other important exchange-traded products (ETPs) are (1) **HOLDERS** and other grantor trust products that provide securities wrappers for stock baskets and physical commodities, (2) securitized commodity funds, and (3) exchange-traded notes (ETNs). For many investors and advisors and for many investment objectives these are important products and no ETF book would be complete without an appropriate discussion of how they work and how they compare to the investment company ETFs. Nonetheless, investment company ETFs are the principal focus of this book. They account for most of the assets in exchange-traded products and they continue to grow rapidly. All of the product structures will be discussed as the topic of a chapter or section relates to a particular product. Readers interested primarily in a single product structure (other than investment companies) may find it useful to consult the index for a list of locations where that product's characteristics and applications are discussed.

Fixed Income ETFs

While some fixed income securities—particularly municipal and convertible bonds—have been successfully marketed in the closed-end fund format, the predominant fixed income fund structure has been the traditional mutual fund. Fixed income mutual funds have thrived for many years and the introduction of a variety of fixed income ETFs was a logical product development. The first fixed income ETFs were based on U.S. Treasury securities because there are a limited number of Treasury issues. These Treasury issues are large; they are actively traded; their prices are easy to monitor; and calculating a Treasury fund's net asset value each day (and even intraday) is a relatively straightforward procedure. Since the turn of the present century, trading technology and price dissemination in fixed income markets have improved markedly. Bond pricing and valuation of fixed income portfolios (other than those based on Treasury securities) will not match the pricing transparency of equity markets in the near future, but dramatic strides have been made in improving trade information and pricing of fixed income securities. Nevertheless, the magnitude of the challenge to record and publish

bond trading volumes and prices is daunting because most bond trading occurs in a dealer market rather than on an electronic exchange.

Most companies have a single class of equity shares. The number of publicly traded corporations in the world is measured in thousands. Most of these companies do not have publicly traded debt, but a company that does issue bonds can have a hundred or even a thousand distinct debt issues outstanding. In addition to corporate bonds, government units issue numerous series of debt securities. The total number of distinct tradable debt securities is measured in millions. Most equity trading is in less than 15,000 common stocks that represent most of the market value of publicly traded equity in the world. Even stocks that do not trade frequently are quoted and available for trading during market hours in their home country. It is not difficult to price the shares of a fund that holds a diversified stock portfolio even if it includes a number of less actively traded shares. In contrast, there are many series of fixed income instruments that trade rarely or not at all. Quotes for inactively traded bonds are frequently offered in response to inquiries, rather than being posted continuously like most stock quotes.

The introduction of a number of fixed income ETFs based on less liquid bond market segments led to several occasions, particularly in 2008, when intraday and closing *prices* of bond ETF shares were disturbingly different from the *net asset value* calculation made by the fund's pricing agent. Bond pricing has improved dramatically over the past 10 years and it will continue to improve, but the large number of fixed income instruments and daily trading volume that tends to be much lower on the average bond than on the average stock make it unlikely that the most successful ETFs with bond portfolios will be drawn from the most illiquid segments of the fixed income markets.

The dominant fixed income ETFs have been and will likely continue to be based on either actively traded investment grade bonds or on broad bond market indexes, probably weighted toward the largest and most credit-worthy issuers. However, the investment company ETF structure (thanks in large part to the in-kind creation and redemption mechanism) was at least as effective as mutual funds (with their emphasis on cash entry and exit by investors) in the stressed market environments of 2007 and 2008. The expectation of many pundits that the ETF structure would work *only* for highly liquid, easily priced securities has proven too conservative. In-kind creation and redemption has made bond ETF pricing more robust in stressed market situations than the pricing of some of the mutual fund structures they are in the process of replacing. Many observers believe that, in volatile markets the market price of an actively-traded ETF can be a better reflection of the current market value of its portfolio than a compilation of dealer quotes for the portfolio's constituent bonds.

With the exception of most leveraged and all inverse funds, equity ETFs are generally created and redeemed in-kind. However, some ETF issuers do not use in-kind creation and redemption for all their fixed income funds. From a tax efficiency perspective, in-kind redemption is certainly less important in the fixed income market than in equities because the potential for capital gains in bonds is small in most market environments. Other things being equal, however, in-kind creation and redemption offers more reliable shareholder protection from the costs associated with assembling or disbursing the portfolio basket used to expand or contract the size of the fund. Under average market conditions, the choice between cash and in-kind creations and redemptions for bond ETFs may not be a significant issue. However, cash creations and redemptions in some fixed income funds seem to have been selected because they might be slightly more convenient for fund share market makers and the fund manager, not because they are better for investors.

A careful reading of fixed income ETF registration documents reveals that the funds that use cash creations and redemptions can require creations and redemptions in-kind if they choose to do so. The possibility of switching from cash to in-kind creations and redemptions would suggest that the difference between these cash funds and more traditional ETFs is relatively superficial. Nonetheless, switching from cash to in-kind creation and redemption during a period of pricing uncertainty will almost certainly be more cumbersome than using the in-kind process in all market environments. The argument that cash creation and redemption are “less costly” than in-kind creation and redemption suggests that some flow costs might be borne by the ongoing investors in the fund. As I have stressed, one of the important reasons for using ETFs rather than mutual funds is to avoid paying the costs of other investors’ entering and leaving the fund. In-kind creation/redemption does not assure that shareholders are fully protected from the cost of other investors’ entering and exiting the fund; but it makes this protection more likely.

Currency ETFs

In some respects, the early currency ETFs were variants of fixed income ETFs with the underlying fixed income instrument(s) consisting largely of short-term investment grade notes or demand deposits at money center banks. The portfolio holdings are denominated in a currency other than the home currency of the country where the ETF is traded to provide the requisite currency exposure. The first currency ETF introduced in the United States was a grantor trust based on Euro deposits. It provides a mechanism for U.S. investors to use the equity market to trade an interest-bearing Euro

bank deposit with the fund's interest income based on rates paid to Euro depositors, less the expenses of the ETF. Because the rates paid on most of these deposits are essentially the overnight rate and because expense ratios are high relative to recent levels of interest rates, these funds have been only modest successes. A combination of (1) higher interest rates and (2) more aggressive pricing by banks willing to pay a rate above the overnight rate for deposits that have been stickier than the typical overnight deposit may attract more investors to these ETFs.

Currency product offerings have expanded to include investment company structures offering exposure to developed market currencies and baskets of emerging market currencies, currency indexed exchange-traded notes, and securitized limited partnership commodity pools that offer leveraged currency futures exposures. It is too early in the product development process to declare a structural winner. The major contest is likely to be between the investment company and securitized commodity pool structures.

Commodity ETFs

Commodity ETFs take a number of forms. The simplest of these is a grantor trust holding a physical deposit in a single high value commodity. The most popular product of this type is the SPDRs Gold Trust (GLD) which holds physical deposits of gold in depository banks and sells small amounts of gold annually to cover the trust's expenses. Similar gold funds are available in most major markets around the world. Silver trusts are available in a few major markets and other precious metal grantor trusts exist, but widespread introduction and asset growth is impeded by thin trading markets in the underlying metals. As discussed on pp. 86–89, metal deposits in these trusts are sterilized in the sense that the metal cannot be used for industrial purposes if it's held by the grantor trust.

A number of single-product securitized futures funds (technically limited partnerships) that trade and hold futures contracts are available in U.S. and foreign markets.⁶ The most successful of these have been the U.S. Oil Fund and U.S. Natural Gas Fund and other hydrocarbon products from the same sponsor, U.S. Commodity Funds LLC. The principal performance issue that arises when a commodity product gets its market exposure from the futures markets is that a fund that uses futures may not track the commodity spot price particularly well. If the commodity futures prices trade with backwardation (more distant futures prices are below the near-contract

⁶Commodity product structures are simpler in most ETF markets outside the United States.

or spot price) the futures fund will generally outperform the spot price. If the futures prices are in contango (more distant futures prices are above the near-contract or spot price), the futures fund will typically underperform the spot price.

Somewhat more complicated than the single commodity products are a number of commodity index funds that also are securitized limited partnerships rather than funds registered under the Investment Company Act of 1940. As described in Chapter 4, the tax treatment and tax reporting of these funds is quite different from the traditional securities-based investment company. While the single commodity grantor trusts provide direct exposure to changes in the spot price of the underlying commodity, the single securitized commodity futures funds; the commodity index funds and some exchange-traded notes provide commodity exposure based on futures contract prices. The number of approaches is so diverse that the name of the product does not always give useful information about its structure, risk characteristics, and tax treatment. Most investors and advisors hate to read prospectuses and the even more valuable SAIs for some products, but these documents are the most comprehensive and reliable source of information on a specific exchange-traded product. The disclosure documents are free and you can choose between an instant electronic copy from the product web site or a hard copy delivered by snail mail within a few days.⁷

Leveraged Long and Inverse ETFs

Leveraged long and inverse funds were widely offered as mutual fund products for many years before they received regulatory approval for issuance as ETFs. These intriguing but complex products have been both hailed and criticized by investors, advisors, and, of course, their more conventional ETF competitors. The original leveraged long and inverse mutual funds had modest leverage (no more than 2X) and were based on securities portfolios and futures contracts, leveraged long and inverse funds in the ETF format usually start at 2X leverage, peak at 3X, and are increasingly based on futures and swap contracts. Any securities linked to the fund's investment objectives are found only in some of the leveraged long funds. The newer ETF products provide leveraged long and short exposure to a wider range of financial instruments and commodities than anything available in a mutual fund format. These leveraged long and inverse funds are specialized

⁷At least one issuer of exchange-traded notes will not deliver a hard copy of a particularly long document to anyone who requests it. As disclosure documents get longer, this unfortunate policy may spread.

products. They are of great interest to some investors and advisors and of no interest to other investors and advisors, so they have their own separate chapter (Chapter 10) beginning on page 245.

OTHER TRADABLE BASKET PRODUCTS

Most readers of this book probably believe that the products described so far cover the entire ETF universe. However there are other financial instruments and basket products that meet specific portfolio investment needs. Some of these instruments are also called ETFs by some people.

My first purpose in this section is to add two categories of portfolio products that compete with the ETFs described earlier in some applications. After that I will offer a relatively straightforward comparison of the features of the various products and structures. There is also a section in Chapter 4 that compares mutual fund ETFs and direct investment vehicles from the perspective of a taxpayer. That section is an important complement to the simple tax efficiency ratings in Exhibit 2.2.

Closed-End Funds

My former colleagues at Nuveen Investments began using the term “exchange-traded funds” for their closed-end municipal bond funds traded on the New York and American Stock Exchanges by the late 1980s or early 1990s, several years before the first SPDRs began trading on the American Stock Exchange. The name “exchange-traded funds” was selected to emphasize the fact that someone buying and selling these municipal bond fund shares enjoyed the investor protections afforded by investment company (fund) regulation and by the auction market on a major securities exchange. The intraday trading convenience and trading cost reduction of the pooled portfolio structure and exchange trading for these closed-end funds was similar in some respects to the contribution of the pooled portfolio structure and exchange trading to the newer “open-end” exchange-traded funds.

Both these types of exchange-traded funds can provide an efficient means to assemble and trade a portfolio of securities—in the case of the closed-end funds, the most successful offerings for a number of years were municipal bond portfolios; in the case of the “open-end” ETFs, the largest funds have offered predominantly stock portfolios. Although only ETFs offer shares that will not trade at a significant discount, closed-end funds and ETFs are often able to deliver higher net returns than an individual, an institutional manager of separate accounts, or the manager of an open-end mutual fund could achieve.

EXHIBIT 2.2 Basket Product Comparison

Product Structure <i>Features</i>	1940 Act Investment Companies				Grantor Trusts		Commodity Funds		Other Products	
	Closed-End Funds	Conventional Mutual Funds	Open UITs (Original SPDRs)	Open ETFs (Current ETF Model)	Leveraged/Inverse ETFs	HOLDERS	Commodities Grantor Trust	Securitized Commodities Funds	Structured Notes	Folios
<i>Legal Structure</i>	Corporate or trust	Corporate or trust	Trust	Corporate or trust	Corporate or trust	Trust	Trust	Trust or limited partnership	Bond or note	Brokerage account
<i>Underlying Portfolio Structures Available Today</i>	Actively managed	Index or actively managed	Index	Index or limited active management	Index	Preset basket of securities	Physical commodity	Index futures fund	General obligation of issuer or segregated assets	Brokerage account
<i>Creation of Shares; Primary Market</i>	Fund receives cash from an initial public offering (IPO)	Cash deposit with fund	In-kind deposit	In-kind deposit	Securities/cash deposits which collateralize swaps or futures	In-kind deposit of securities	Cash or in-kind deposit	Cash deposit fee covers cost to establish positions	Cash in initial public offering (IPO) or open ended	Choice of investors. Typically cash or securities
<i>Redemption of Shares; Primary Market</i>	NA	Cash or, rarely, in-kind redemption	In-kind redemption	In-kind redemption	Cash and/or securities	In-kind redemption	Cash or physical delivery	Cash delivery fee covers cost to eliminate positions	Cash	Cash or transfer of whole shares to another broker

(Continued)

EXHIBIT 2.2 (Continued)

Product Structure	1940 Act Investment Companies				Grantor Trusts		Commodity Funds		Other Products	
	Closed-End Funds	Conventional Mutual Funds	Open UITs (Original SPDRs)	Open ETFs (Current ETF Model)	Leveraged/Inverse ETFs	HOLDRs	Commodities	Securitized Commodities Funds	Structured Notes	Folios
<i>Purchase of Shares: Secondary Market</i>	Open market purchase on or away from an exchange	NA	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange	Open market purchase on or away from an exchange
<i>Sale of Shares: Secondary Market</i>	Open market sale on or away from an exchange	NA	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange	Open market sale on or away from an exchange
<i>Efficiency Factors</i>	Accumulates tax liabilities, cannot sell shares at NAV after IPO	Accumulates tax liabilities	Redemption in-kind, no dividend reinvestment in securities	Redemption in-kind, no need for cash balances	Usually high cost, hard to defer capital gains taxes, if any	Separable losses by redeeming and selling loss positions	Futures or physical commodities pass through tax treatment	Periodic cost to roll futures	Varies	Separable losses on individual positions
<i>Tax Treatment</i>	Regulated investment company (RIC)	Regulated investment company (RIC)	Regulated investment company (RIC)	Regulated investment company (RIC)	Regulated investment company (RIC)	Grantor trust (see-through)	Grantor trust (see-through)	Trust or limited partnership (K-1s)	Bond interest or prepaid contract	Taxation of separate security positions

<i>Typical Investor Tax-Efficiency Rating</i>	2-5	3-4	1	1	2-5	2	3-4	2-4	1-4	2-3
<i>Effect of Structure on Shareholder's Trading Cost</i>	Varies	Varies	Usually reduces	Usually reduces	Varies	Usually reduces	Usually reduces	Usually reduces	Varies	Discount broker-age, but sometimes a separate fee
<i>Investor's Trading Cost Rating (Range)</i>	1-4	2-5	1-2	1-2	1-3	1-2	1-2	1-2	2-4	1-5
<i>Shareholder Attention Required</i>	Minimal	Minimal	Minimal, dividend reinvestment	Minimal, dividend reinvestment	Minimal, dividend reinvestment	Dividend reinvestment, principal reinvestment if company acquired for cash, tax loss sales/replacements	Minimal, depending partly on portfolio holdings	Minimal, dividend reinvestment	Minimal	Dividend reinvestment, principal reinvestment, tax loss sales/replacements
<i>Unusual Non-Investment Risks</i>					Credit of derivatives counter-party			Pattern of futures prices	Credit of note issuer	

Note: Ratings 1 = best, 5 = worst. See text for discussion.

Folios

In contrast to the other ETF variations and competitors described here, folios are neither standardized products nor investment companies. They are baskets of stocks that can be modified one position at a time or traded as a portfolio in a single transaction. The firms that advocate and provide folio baskets for trading offer semistandardized baskets—in some cases based on indexes, and in other cases based on simple diversification rules. In practice, each investor's implementation of the folio basket can be slightly different.

An investor may have \$20,000 to invest. Upon examination of the group of “prefabricated” folios suggested by the firm she trades with, she may decide she likes a specific basket of 40 stocks. The investor can choose how many shares of each stock she would like to buy or she can request a basket prepared by the firm, giving her an “appropriate” number of whole and sometimes fractional shares of each stock in the selected basket. She can modify the basket immediately—or later—until she finds a mix that matches her inclinations.

Because most folio baskets are not standardized, folios are not traded like fund shares or like HOLDing Companies Depositary ReceiptS (HOLDERS). Each of the stocks in a folio trades separately. The folio firm can provide low commissions and even the opportunity to net trades against its other customer trades at selected times during the day.

Folios have been criticized for the tendency of their advocates to minimize the costs of acquiring and holding a folio basket. While some advocates of folios provide tools to measure the diversification effects of changes in the portfolio, to realize losses or to make changes in the composition of the basket, folio baskets lack the inherent discipline of a product that is modified in response to a change in an index or in response to a decision by a portfolio manager with fiduciary responsibilities. Investment managers and index publishers make mistakes and bad decisions, but they are unlikely to let a portfolio drift from neglect, as could easily happen with an unsupervised folio basket. Folios have tended to become a vehicle for advisors working with clients rather than a service for the online trader who manages his own account. Some folios use ETFs like stocks in the construction of an account.

A Side-by-Side Comparison of Tradable Basket Products

The accompanying table, Exhibit 2.2, provides an eclectic comparison of open exchange-traded funds to the other basket products we have discussed in the first two chapters. While there is a lot more material on most of these products in later chapters, Exhibit 2.2 provides some basic information on product structure and some simple tax efficiency, trading cost, and investor

attention requirement ratings as well as risk comparisons that should be useful to some potential users. Most of the items in this table are relatively straightforward and readily understandable, but several items do require some discussion.

These comparisons are based on typical product offerings in each category. At present, nearly all open ETFs and all open exchange-traded unit investment trusts (UITs) are based on indexes. Open ETFs will serve as the vehicle of choice for more efficient index funds and for full-featured actively managed funds in the future.

In assigning tax-efficiency ratings, I have placed greater value on the redemption in-kind feature of the open ETFs and open UITs than on the separable loss feature available in folios with no particular change and in *HOLDERS* through the exchange of the *HOLDERS* for the basket of underlying securities, followed by realization of the loss, re-establishment of the position after the wash sale period is past, and reconstitution of the *HOLDERS*—a relatively complex and not very user-friendly process.⁸ The investor's trading cost ratings are based on the advantages associated with trading a basket at the share level versus transacting separately in all the securities making up the basket. All of the investment company ETFs that hold securities portfolios are ranked highly because trading in the portfolio share is usually more efficient than trading in the underlying positions separately. It is certainly possible to differentiate among individual products in terms of the cost of trading the product or trading the underlying securities separately, but the difference is more related to the nature of the underlying market and the quality of the market in the basket product than it is to the product structure. Mutual funds are rated below most of the exchange-traded products in the expectation that, on average, a mutual fund redemption charge or other obstacles to short-term trading will increase an investor's costs of short-term trading or that the cost of flow trading in connection with the entry and exit of investors will increase the cost of holding mutual fund shares over a period of years.

A rarely mentioned topic that probably deserves more consideration than it typically gets is the shareholder attention required to use each product effectively. Any basket or portfolio product will typically be less risky and require less attention than a random collection of a few of its component securities, and any basket product will provide at least a degree of diversification, though some of the more specialized *HOLDERS* baskets or, for that matter, focused investment company ETFs have concentrated

⁸The *HOLDERS* structure, a variant of the grantor trust, is discussed at greater length in Chapter 4 in connection with its unique tax characteristics.

portfolios. Basket products are generally designed to require minimal shareholder attention from day to day and even from year to year. A few offer automatic dividend reinvestment. Alternatively, the investor can make a variety of arrangements for reinvestment of dividends with the firm holding the account.

HOLDRS and Folios require somewhat greater investor (or advisor) attention than the conventional fund or exchange-traded fund products for at least two reasons: First, to the extent that any of the companies in the HOLDRS or folio basket are taken over in a cash acquisition, the shares of the acquired company will automatically be turned into cash and the shareholder will have to deal with reinvestment of the principal. Also, both these less formally structured products provide for their variety of tax efficiency by permitting tax loss sales of individual securities. Folios and HOLDRS may require replacement or rebalancing attention to maintain diversification. With the other products, either a portfolio manager or the process for weighting or reweighting the index or insuring regulated investment company diversification compliance in a fund will insure a minimal level of diversification without action by the investor or an advisor.

Few, if any, of today's basket products are appropriate as an individual's entire investment position for his full life span. Most investors would benefit (in terms of an improvement in their risk reward trade-off) by holding some fixed-income positions in their portfolio, but target date funds did not deliver much protection in the 2007 to 2008 bear market. Automatic pilots generally work well in airplanes but their usefulness in financial planning remains to be proven. We will certainly see improved lifelong tax efficient asset allocation funds introduced over the next few years.

Most investors' total portfolios require a degree of attention and intervention that relatively few individual investors give their portfolios. An investor who does not earn his livelihood as a financial advisor or a financial planner (or even one who does) could probably benefit from independent, objective, and professional advice in the construction of an overall investment plan. Chapter 14 offers suggestions on finding and vetting advisors.

DIVIDEND REINVESTMENT PLANS FOR ETF SHARES

Some of the earliest ETFs permitted investors to reinvest dividends automatically in additional whole ETF shares if their brokers supported the DTC dividend reinvestment service. This service is less frequently

offered by ETFs today, but some brokers offer dividend reinvestment services into whole or fractional shares for all dividend-paying shares.

Dividend reinvestment has not been widely used by ETF shareholders. Most investors view ETFs as more like stocks than like traditional mutual fund shares. Investors seem to expect cash dividends to be swept into their brokerage account's money market fund to be ready for their next portfolio transaction or for use in adjusting their asset allocation.

CHAPTER 3

The Regulatory Framework and Mechanics of the Open-End ETF

This chapter describes the basic regulatory and operations framework for investment company open-end ETFs, including the transaction cost allocation functions of the in-kind fund share creation and redemption process, in more detail than the brief summary in Chapter 1. Investors who rely on an advisor may decide to skip all but the first few sections of this chapter. Advisors and investors who do not rely on an advisor should read the entire chapter to be certain that they understand ETF “best practices.” They need to be able to evaluate ETFs (and mutual funds) that might cut a corner or two at their shareholders’ expense. The increasing diversity of ETF portfolios increases the range of opportunities for product developers to implement features that meet minimum regulatory requirements in a way that (1) compromises established ETF shareholder protection from the cost of other investors’ entry to and exit from the fund, (2) does not provide the capital gains tax deferral that is almost inherent in most pre-2005 equity ETFs, or (3) combines an unusual investment process with the ETF structure in a way that creates unexpected results. There is nothing necessarily wrong with an ETF that does one or more of these things. There may be perfectly valid reasons for an ETF to have different features, but anyone using an ETF needs to know what that particular fund can or can’t deliver and what features of a specific product might be disappointing.

U.S. FUND REGULATION HAS PLAYED A MAJOR ROLE IN THE STRUCTURE OF ETFs INTRODUCED AROUND THE WORLD

With full recognition of the degree of oversimplification involved, it seems appropriate to devote a few additional paragraphs to the historic

development of ETFs in the context of the regulatory environment in North America (the United States and Canada) and in a somewhat different environment in Europe. ETFs introduced south of the Rio Grande and in the Eastern Hemisphere outside of Europe have often taken some features from the North American regulatory and operating model and some from the European model in developing their own ETF market.

ETF development in the United States and Canada began at approximately the same time, in the late 1980s. The initial Canadian equity products were based on a simpler product structure (since abandoned) than the investment company model dominant in the United States. The Toronto Index Participation Securities (TIPS) began trading almost four years before the introduction of the 500 SPDR in the United States in 1993. The regulatory process in the United States required some exemptions from existing regulations that could only be granted by the Securities and Exchange Commission (SEC); so the first product launch took longer in the United States than in Canada. The delay almost certainly resulted in a better product. As evidence of the U.S. product's durability, I offer two observations: (1) The ETFs available in Canada today bear a closer relationship to U.S. ETFs than to either the original Canadian model or the European model. (2) The U.S. ETF market is far larger than the ETF markets in all other countries combined.

The great success of ETFs in the United States is largely due to the fact that U.S. ETFs offer important cost and structural advantages over other U.S. fund products. These advantages are generally more significant in the United States than similar advantages available in other fund markets. Two reasons for these advantages are (1) the SEC staff members who worked on the initial regulatory approvals insisted that U.S. ETFs be designed to fit the intentions of the U.S. fund regulatory framework better than mutual funds ever fit that framework, and (2) ETFs received some modest cost saving exemptions relative to contemporary mutual fund requirements.

The ETF regulatory process in the United States has been and remains slow and methodical, reflecting a fund regulatory framework that is unique to the United States. ETFs in the United States had to be designed to fit within a fully developed set of fund statutes and regulations that did not readily accommodate an in-kind creation and redemption process or secondary market trading of fund shares. The U.S. regulatory framework was designed around open-end mutual funds that offered shares directly to investors at net asset value and bought them back at net asset value.¹ Given

¹Sales commissions were often charged, but no-load mutual funds were becoming increasingly popular long before ETFs were introduced. Redemption fees unrelated to sales commissions were uncommon before enactment of Rule 22(c)(2).

the important differences between mutual funds and the new ETFs, achieving either improved results for investors or structural elegance was not always easy and it was usually a slow process. The Investment Company Act of 1940 established the terms, conditions, and procedures applicable to collective or pooled securities investment products offered to U.S. investors. As a practical matter it was not possible to create a new statute that would deal specifically with ETFs, so the funds had to be adapted to fit the statute. Fortunately, the Investment Company Act provides for the SEC to grant broad exemptive relief from all provisions of the Investment Company Act that stipulate fund structures and operating processes. This meant that the statute could be adapted to accommodate the key features of ETFs, but it did not mean that adaptations would be easy to achieve.

THE INVESTMENT COMPANY ACT OF 1940

The Investment Company Act of 1940 is unusual among the “family” of United States securities laws enacted from 1933 through 1940 in that it lists specific requirements or prohibitions rather than stressing full disclosure—the focus of most other U.S. securities regulation. Enactment of what is familiarly called the “’40 Act” was preceded by extensive Congressional hearings that uncovered a range of management and marketing abuses in the investment company industry during the 1920s and the 1930s. Congress concluded that disclosure was not an adequate remedy or deterrent for the abuses it had uncovered. Consequently, the focus of the ’40 Act is on direct regulation—on requirements more akin to the prescriptive and proscriptive legal system of Continental Europe than to the Anglo-Saxon legal system that underlies most U.S. law. The ’40 Act is based explicitly on the overriding principle that investment advisors are fiduciaries, and that they bear specific responsibilities.²

Among the provisions of the ’40 Act are a number of structural and operating requirements for investment companies that are not consistent with ETF operations. When you think about it, it is obvious that the rules and operating procedures for a mutual fund that accepts cash purchase and redemption orders from individual investors up until the close of business on each trading day will not be consistent with the rules necessary for the operation of an exchange-traded fund where fund share purchases are often multiples of 50,000 (or more) share creation baskets implemented through the deposit of millions of dollars worth of portfolio securities. ETF redemptions are typically implemented through delivery of baskets

²Frankel (1978), page 25.

of the fund's portfolio securities for multiples of 50,000 (or more) fund shares when the shares are turned in and cancelled by the fund. There is no meaningful secondary market in mutual fund shares, but a large part of the essence of the exchange-traded fund is that its shares trade daily on an exchange market. Clearly, some different structural and fund operating procedures and rules are required for ETFs.

Fortunately, Congress provided the SEC with blanket authority to grant exemptions from the prescriptions and proscriptions of the '40 Act. The specific language in Section 6-(c) of the Act provides that "The Commission by rules and regulations upon its own motion, or by order upon application, may conditionally or unconditionally exempt any person, security, or transaction, or any class or classes of persons, securities, or transactions, from any provision or provisions of this [Act] or of any rule or regulation thereunder, if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of this [Act]."³

It would be difficult to draft language giving the SEC broader power to amend the rules than it has under Section 6-(c), but (from the language of the statute) it is clear that exemptions are not automatic, nor are they likely to be granted casually. One consequence of the necessity of getting ETFs approved through the exemptive process has been considerable delay between the time a request for exemption is filed and the time the needed exemptions are granted. The early development and proliferation of ETFs was significantly—some would say severely—constrained by the process of obtaining a separate exemption for each issuer and each category of funds.

Elected legislatures have mandates to consider and enact changes in the regulatory environment for most activities undertaken by or for their constituents. While many legislative deliberations extend over a long period of time, legislation is sometimes passed quickly. For example, the legislation authorizing many of the payments designed to deal with the financial crisis of 2008 became law before any single individual could possibly have read and understood the legislation in its entirety.

Appointed regulators at the SEC work in an entirely different environment than legislators. They are given a statute and broad but carefully defined authority to approve exemptions and to adopt regulations that may be partly at variance with the statute. They do not have a mandate to create a new statute. If they decide to permit fund innovation, bureaucratic common sense suggests that the new product had better be at least as good as, if not clearly superior to, existing funds from the perspective of the investor who buys the fund shares. Consider the post-2008 environment in which

³See www.law.uc.edu/CCL/InvCoAct/sec6.html.

innovative financial products have been blamed for much of the world's economic grief. In that context, it is not hard to imagine the criticism that would come to any regulator who had facilitated the introduction of credit default swaps.⁴

It is not hard to understand why the '40 Act exemption process seems agonizingly slow to anyone who must rely on it. I can say from firsthand experience that it does seem to work, but in the conservative way we associate with even the most effective bureaucracy. ETFs might have been developed faster without any '40 Act baggage, but they probably would not have been as good for investors without the dominant objective of providing the investor protection that is the cornerstone of the way the SEC interprets its obligations under the '40 Act.

The '40 Act has been amended modestly on several occasions, most extensively in 1980. The amendments affected other structures and businesses, but little has changed in the sections of the original legislation that govern regulation of investment management companies (mutual funds) in the 70 years since the original statute was enacted. In its enforcement of the '40 Act, the SEC has gradually shifted its emphasis slightly in the direction of disclosure, but it has not moved very far away from requirements and prohibitions. The shift has been modest and change is unlikely to accelerate, particularly in light of the market decline of late 2007 and 2008. Proposals to amend the '40 Act are infrequent and I do not detect any enthusiasm for a significant rewrite of the Act.⁵ Changes will continue to be made through the exemption process after adoption of some version of the proposed SEC rule discussed in the next section, but the changes will not be rapid and few of them will be as revolutionary as the changes that have made today's ETFs possible.

EXEMPTIONS FROM THE INVESTMENT COMPANY ACT OF 1940 HAVE BEEN GRANTED TO PERMIT ISSUANCE OF OPEN-END ETFs

For at least 20 years from the first conversations the early product developers of the Super Trust⁶ and the original SPDR had with the SEC staff,⁷ all '40

⁴No specific regulatory relief was needed, so this scapegoat is a mythical beast.

⁵See Gramm (2001), for example. This press release summarized the Senate Banking Committee's legislative agenda for the 107th Congress. Gramm promised a "top-to-bottom review of U.S. securities laws," but, implicitly, seems satisfied with the '40 Act. There is no mention of specific changes proposed for fund regulation.

⁶The SuperTrust products described in Chapter 2 received similar exemptive relief before the SPDR, but the SuperTrust has not survived. See pages 26–27.

⁷Probably in the mid-1980s.

Act ETFs issued in the United States were offered under specific exemptions from various provisions of the investment company and other securities statutes granted to specific parties. By 2005, most ETF exemptive orders were relatively standardized and granted after a brief evaluation by the SEC staff. In March 2008, the SEC proposed a rule to replace the earlier exemptive orders and permit any ETF issuer meeting the requirements of the rule to issue ETFs.⁸ While there were significant changes between the first exemptive order for the 500 SPDR which became effective shortly before the launch of that fund in early 1993 and the rule proposed in 2008, the changes were largely designed to accommodate portfolios that did not consist entirely of relatively large capitalization equity securities and were not based on a major benchmark index that had been published for many years before the ETF launch. As described in Chapter 2, ETF product extensions since 1993 have included fixed income funds, currency funds, custom index funds and leveraged long and leveraged inverse funds comparable to similar products that had been available in the mutual fund format or in some other form for a number of years before they were introduced as ETFs.

Most recently, exemptive orders have permitted limited function “actively managed” ETFs where the portfolio used to calculate the fund’s daily net asset value is still totally transparent, but trading plans need not be revealed until after the market close on the day any trades are made. These transparent funds can trade portfolio components and make portfolio changes without affecting the intraday or end-of-day net asset value of the shares because the net asset value of a mutual fund or ETF is calculated from the start of day portfolio.⁹ These funds must reveal their portfolio changes before trading in the fund shares begins on the following day. Full-function actively managed or otherwise nontransparent ETFs are not yet available in the United States.¹⁰ Understanding how we got from mutual funds to today’s

⁸Proposed Rule 33-8901 Exchange-Traded Funds: www.sec.gov/rules/proposed/2008/33-8901.pdf.

⁹See page 110 in Chapter 5.

¹⁰There are a few ETFs in other markets that do not feature full transparency of the portfolio used to calculate the fund’s net asset value. Some of the earlier funds in this category were described in Thirumalai (2003) but the funds traded today as actively managed ETFs in European markets operate much like the traditional actively managed mutual funds available in the United States. They do not typically create and redeem their shares in large creation and redemption units. They do not usually require in-kind creation and redemption. While they are formally listed on exchanges, they appear to trade off the exchange market much more frequently than they trade on the exchange. The fact that a limited number of shares can be purchased or sold in a secondary market during the trading day at a price that may bear little

ETFs will help investors and advisors understand how ETFs work and understanding today's funds is a useful prologue to understanding where ETFs will go from here.

The '40 Act fund requirements and prohibitions are relatively specific and exchange trading is governed largely by another statute: the Securities Exchange Act of 1934. As a consequence, an open-end ETF, whether it is organized as a management investment company (a mutual fund-type structure) or as a unit investment trust (the 500 SPDR and a few other funds launched in the first years of ETFs), needs a number of exemptions and rule tweaks to operate in a manner consistent with U.S. securities law. In addition to the general exemptions that we describe here, individual ETFs may require additional specific exemptions or other changes that are not obvious to the fund investor. Some of these additional requirements are (1) exemptions granted to the fund issuer or to specific broker-dealers who act as Authorized Participants and market makers or (2) rule changes for the listing exchange and other markets trading the shares. Many of these requirements are so specialized that they are not spelled out here.¹¹

The key exemptions granted to all open-end ETFs were first granted to the Supershares¹² and have been granted to the issuer or sponsor of every open-end '40 Act ETF launched since the Supershares. Key provisions of the proposed rule that cover these exemptions include:

Exchange-traded fund shares are considered "redeemable securities." . . .

A dealer in exchange-traded fund shares is exempt from [certain sections of the '40 Act] with regard to purchases, sales, and repurchases of exchange-traded fund shares in the secondary market at the current market price.

If an exchange-traded fund includes a foreign security in its basket assets and a foreign holiday prevents timely delivery of the foreign security in response to a redemption request, the fund is exempt, with respect to a foreign security, from the prohibition in section 22(e) of the Act (15 U.S.C. 80a-22(e)) against postponing the date of satisfaction upon redemption for more than seven days after the tender of a redeemable security [under certain circumstances].

relationship to a closing or intraday net asset value is all they have in common with what most of us call ETFs.

¹¹See Moriarty (2001), Roye (2002), specific ETF exemptive orders, and Proposed Rule, Release 33-8901, for examples of specific exemptions.

¹²See page 26.

A person who is an affiliated person of an exchange-traded fund solely by reason of holding with the power to vote 5 percent or more, or more than 25 percent, of securities issued by the exchange-traded fund (or who is an affiliated person of such a person), or issued by an investment company under common control with the exchange-traded fund, is exempt from [certain sections of the '40 Act] with regard to the deposit and delivery of basket assets.¹³

Every advisor and most investors will profit from a careful reading of at least one ETF prospectus and statement of additional information (SAI).¹⁴ When you read these documents you may be puzzled by the rationale behind a particular operating procedure or disclosure. The chances are good that any puzzling features are artifacts of the 1930s environment when most securities legislation applicable to U.S. ETFs was drafted.

ETF DEVELOPMENTS OUTSIDE NORTH AMERICA

Development of ETFs in Europe generally started with a cleaner regulatory slate than ETF developers found in the United States. In many European markets a fund manager or other entity interested in introducing a new collective investment product could design the product within a less restrictive framework than that provided by the Investment Company Act of 1940. Remember that the relevant U.S. fund legislation was more than 50 years old when the first ETF was launched in the United States. In contrast, the European Union (EU) was attempting to harmonize and simplify investment company regulations before ETFs began to accumulate assets in North America. Among other objectives, the EU has been intent on developing “passports” that would allow a fund meeting the requirements of its home market regulator to be offered throughout the EU. The effort to implement a common regulatory structure and the passport model within the EU created an impetus for the resolution of cross-border differences. An EU-wide initiative called the Undertaking for Collective Investment in Transferable Securities (UCITS)¹⁵ has gone through several versions that,

¹³Proposed Rule 33-8901 Exchange-Traded Funds: www.sec.gov/rules/proposed/2008/33-8901.pdf.

¹⁴I particularly recommend the prospectus for the 500 SPDR. Because this ETF uses the unit trust structure, the prospectus and SAI information are combined in a single document that many investors will find easier to read.

¹⁵See brief discussions of UCITS on pages 70 and 283 or for more information see Lamandini (2008).

among other features, provide fund diversification requirements broadly similar to the diversification requirement embedded in the tax code in the United States. Fund issuers based in several countries, most notably Ireland and Luxembourg, have undertaken the development of products that could pass regulatory muster in various fund markets in the European Union.

The EU passport model is unique in the history of collective investments. Anyone examining investment company statutes or regulations in force prior to this initiative will be impressed by the almost universality of a requirement that a collective investment instrument be developed specifically to meet the regulations of the country where it is being sold. Not all national fund regulatory regimes are as strict as the United States, but most of them have made it difficult to offer shares in a single investment company in more than a few countries, let alone throughout Europe or around the world. As the diversity of national fund regulations might lead one to expect, the movement toward implementation of an EU fund passport has been slow. A few ETF families trade across some European borders, but full regulatory harmonization within the EU has a way to go.

Even when the proposed SEC rule 33-8901 for issuance of transparent investment company ETFs becomes effective (undoubtedly with some significant changes), the interval between an issuer's filing for exemptive relief and publication of the exemptive order is unlikely to get shorter for funds that do not meet the conditions of the rule precisely. Turnover in SEC staff positions and increasing complexity in ETF structures and regulatory issues suggest that the lag between a novel exemptive request filing and issuance of the first ETF shares under the exemptive order will lengthen again. Shortening the interval will require a change of focus by the SEC. This change could take one of several paths. In addition to blanket exemptions like the proposed rule, the SEC might routinely grant new exemptions to any party who wishes to use them, not only to the applicant. Using this approach, the SEC could turn its attention to the suitability of new fund features.¹⁶ This change in approach would have the desirable effect of freeing resources from repetitive reconsideration of a thoroughly examined and vetted structure and procedure. It also settles and sets aside some issues, permitting new applications to focus on new proposals. The lives of a large number of trees might be saved by this approach.

The success of the investment company ETF structure in the marketplace has stimulated development and extension of a number of related innovations and proposals that incorporate some of the investment

¹⁶The blanket exemptive order might give a limited period of exclusivity to the applicant that filed the request and incurred the requisite legal bills, but that seems unlikely.

flexibility and cost-saving features of the initial equity index ETFs. Some examples include:

- Intraday pricing of conventional funds (Rydex).¹⁷
- ETF share classes of conventional mutual funds (Vanguard).
- Intraday trading of open-end portfolio products not using the investment company format (HOLDERS and other grantor trusts, securitized commodity pools, and open-end exchange-traded notes).
- Reduced expenses for larger fund accounts to reflect the relatively fixed, per-account cost of shareholder accounting (Vanguard's Admiral and Signal share classes).
- Specialized share classes that can be converted from and back to standard ETF shares to improve investor tax efficiency and simplify investor statements.¹⁸

The nature of the financial products industry virtually insures that pundits or competitors will point out any real—and imaginary—problems with any ETF-linked innovation.¹⁹

As this is written, substantial reorganization of the financial regulatory structure in the United States is under discussion, but any major change in investment company structure and regulation seems unlikely. It seems more likely that future use of the '40 Act exemptive process will be based on the proposed rule that is likely to be approved in modified form sometime in 2010 or 2011. This expectation suggests that an understanding of both rule 33-8901 and the exemptive process will be important in understanding and interpreting the course of ETF development in the United States over the next decade.

¹⁷Periodic intraday pricing was available on some Fidelity sector mutual funds for some time before the Rydex offering. Fidelity no longer offers this service on its funds.

¹⁸See Chapter 11, page 272.

¹⁹The SEC's appropriate rejection of a proposal that Folios should be subject to '40 Act regulation comes to mind; but several costly and misleading solutions to imaginary problems have slipped by the SEC staff. The worst example of dysfunctional regulation of ETFs is the requirement that ETFs publish the relationship between closing fund share prices or quotes and their NAVs. This requirement has led to inappropriate comfort for investors using market-on-close orders. This practice is discussed at length in Chapter 8, pages 210–218. A recent example of problem exaggeration is the storm of comments about the performance and market impact of leveraged long and leveraged inverse ETFs. For a balanced discussion of these funds see Chapter 10.

PROPOSED RULE 33-8901 AND LIMITATIONS ON ETF TRADING TRANSPARENCY

The proposed rule reflects the texts of the exemptive orders the SEC granted beginning in 2007 to permit an ETF issuer using a quantitative model or stock-picking investment process to make transactions during a trading day as long as the changes in the fund portfolio are revealed before the opening of trading on the following day. As noted, this procedure is based on the fact that the net asset value of these funds is calculated using the fund's *start of day* portfolio. Hence, a transaction made to change the portfolio during the trading day will have no effect on the net asset value calculated at 4:00 P.M. on that day. This NAV calculation procedure has been used for many years without significant controversy.²⁰

A one-day confidential trading window will work reasonably well for some large-cap actively managed funds. The combination of the size of the fund portfolio and the average trading volume of the stocks in the portfolio will determine the size the fund can reach before the likely volume of trading activity in an individual security will require more than one trading day to complete a significant fraction of its trades. If all the stocks in the portfolio are mega-cap stocks, say the fifty most actively traded stocks in the United States, a multibillion dollar fund could be managed in this way with little difficulty. A small-cap fund, even if it held hundreds of stocks in its portfolio, would have to be very much smaller. Since active management is more likely to add significant value if the typical stock in the portfolio has a smaller capitalization, is followed by fewer security analysts and is less actively traded, the scope for an actively managed fund that must complete most trades in one day to add material value for shareholders is limited.²¹ A mechanism for full-function actively managed ETFs that makes portfolio composition changes at greater leisure and does not reveal portfolio changes daily is discussed at length in Chapter 7.

THE MECHANICS OF ETF CREATION AND REDEMPTION IN-KIND

The greatest advantage of the in-kind ETF creation/redemption process is that it can be implemented under rules that ensure that the fund

²⁰Tufano, Quinn, and Taliaferro (2006) critiques this procedure, but has not created much pressure for change. Changing the procedure for calculating NAV would add to costs borne by investors without a material or consequential effect on fund pricing.

²¹A number of aspects of the cost of trading transparency are discussed in Chapter 5, especially on pages 101–124.

shareholders who are trading fund shares ultimately pay the cost of creations and redemptions—the costs of increasing and reducing the size of the fund. This allocation of costs is in marked contrast to the mutual fund where, as described in Chapter 1, investors buy and sell fund shares at net asset value and the cost of buying securities for the fund's portfolio or selling portfolio securities to raise cash for redeeming shareholders is borne by all the shareholders of the fund.

We will see in Chapters 4 and 12 that in the United States, and in some other tax jurisdictions, the ETF structure can defer capital gains taxation to a degree that is not practical in most U.S. mutual funds. Perhaps less obviously, but certainly not less importantly, the use of portfolio trading in the creation and redemption process reduces the market impact cost of increasing or reducing the size of the fund for the fund's long-term shareholders.

Why Do We Have In-Kind Creations and Redemptions?

The late Nathan Most, the principal developer of the SPDR at the American Stock Exchange (AMEX), had a background in commodities. Partly as a result of this background, he envisioned the SPDR shares as warehouse receipts. His idea was that broker-dealers or large investors would deposit baskets of stock with the fund custodian and receive warehouse receipts (fund shares) in return. The ultimate owners of most of these fund shares would be retail investors who would buy and hold a few shares to obtain an interest in a low cost diversified portfolio that they could sell or add to by trading on the Amex anytime on any trading day. If investors in the aggregate wanted fewer fund shares at some time in the future, dealers would buy the unwanted shares on the exchange and redeem the fund shares for the underlying basket of portfolio securities. If the index on which the fund was based changed its composition in the meantime, the basket the investors would receive in a redemption would change from the basket they had deposited, but it would change according to the index (and fund prospectus) rules.

The Role of Arbitrage

Many discussions of exchange-traded fund creation and redemption transactions suggest that Authorized Participants, the dealers who actually create and redeem ETF shares, engage in this activity to obtain arbitrage profits. Actually, it would be a rare day when accumulating a basket of securities to deliver in the creation of shares in an ETF or delivering ETF shares in exchange for a basket of portfolio securities would provide an Authorized

Participant with much of an arbitrage profit. The market is simply too efficient. Furthermore, there are trading costs and the creation or redemption fee charged by the fund to be considered.

The principal motivation for creation or redemption is inventory management. Market makers make money by buying at the bid and selling at the offer. They can earn a trading profit even when the bid and offer are very close. They do not make much, if anything, from a spread between the value of the fund shares and the value of the portfolio basket.

The creation and redemption process in use by most '40 Act ETFs and many other ETFs around the world is an implementation of Nate Most's warehouse receipt concept. Part B of any of the UIT ETF prospectuses or the Statement of Additional Information (SAI) for most of the management investment company ETFs spells out the detailed creation and redemption process for each '40 Act ETF. The process is very similar across all the funds, but there are special features here and there.

Creation and redemption transactions involve diversified portfolios that trade as portfolios. The portfolio trade assures that investors can buy or sell as many shares of an ETF as they want with minimal market impact. All creation and redemption transactions occur at net asset value with the portfolio securities in the creation basket and the fund shares priced on a consistent basis. The creation/redemption fee (a few hundred to a few thousand dollars per creation or redemption transaction) is largely a function of the number of different securities in the fund portfolio. The per transaction fee permits the creator or redeemer to create or redeem an unlimited number of creation unit aggregations.²²

Creation and Redemption—Diagrammed and Step-by-Step

Exhibit 3.1 shows the standard open-end stock ETF share creation process for a transparent fund. It is useful for the reader to consider each of the numbered steps or transactions in order, but two steps reflect the essence

²²The 500 SPDR and the first iShares funds were launched with graduated per creation and/or redemption unit fees. The SPDR originally charged a larger fee for redemptions than creations. The iShares funds charged a per unit fee for most creations and redemptions. Objections by market makers and a rethinking of the fund issuers' business strategy soon led to the flat "all you can eat" fee structure that is, to the best of my knowledge, nearly universal today. I have heard comments that some funds domiciled outside the United States dispense with creation and redemption fees, but I have never been able to verify an example involving an in-kind creation/redemption process.

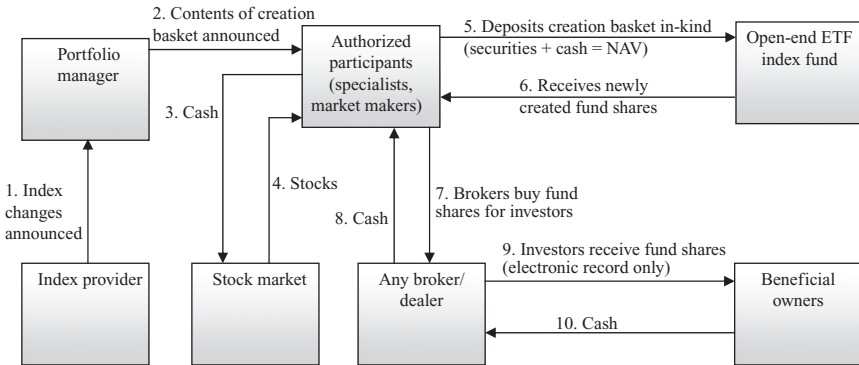


EXHIBIT 3.1 Standard Open-End Stock ETF Share Creation Process

of the creation/redemption process. An Authorized Participant (an investment banking firm trading desk or market maker that has entered into an agreement with the issuer of an ETF under which it agrees to meet certain conditions) is permitted to deliver baskets of portfolio securities and a cash balancing amount in exchange for a creation unit of fund shares in a creation or to deliver a creation unit of fund shares and receive portfolio securities and a cash balancing amount in redemption of the fund shares. In the creation transaction illustrated in Exhibit 3.1, the Authorized Participant deposits securities and a balancing amount of cash that in total equals the net asset value of the requisite number of fund shares in a creation unit (Step 5) and receives newly created fund shares (Step 6).²³ The lower numbered (pre-creation) steps are illustrative of the transactions that precede the creation exchange of portfolio securities for fund shares and the higher numbered steps show the fund share distribution process. The newly created shares are sold by the Authorized Participant through any broker or dealer (Step 7) to beneficial owners (Step 9) who pay cash (Step 10) to the broker-dealer who, in turn, pays cash (Step 8) either to the Authorized Participant or to a separate market maker that is not shown in the diagram.

Exhibit 3.2 shows the redemption process in an open-end ETF. This is essentially the reverse of the ETF creation process—fund shares are tendered

²³The cash balance can flow either way in these transactions. Its only purpose is to equalize the net asset value of the securities being exchanged. Interestingly, there is one exchange-traded product that does not use a cash balance. The SPDRs Gold Trust, often referred to by its ticker symbol GLD, has a totally in-kind creation and redemption process. The dollar value of the gold exchange is calculated to the nearest penny, so no “cash” changes hands between the fund and the Authorized Participant.

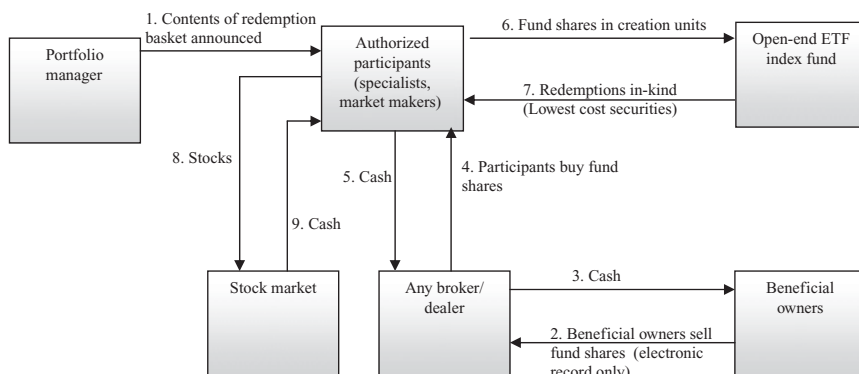


EXHIBIT 3.2 Standard Open-End Stock ETF Share Dedemption Process

to the fund in creation units (Step 6) in exchange for a basket of portfolio securities and cash from the fund (Step 7). Authorized Participants engage in cash transactions (Steps 4 and 5) with broker-dealers. Broker-dealers, in turn, trade with (or on behalf of) customers (Steps 2 and 3). The fund, as in the creation, trades primarily in-kind in the redemption transaction.

What about Creation and Redemption with Actively Managed Funds?

The dominant method of creation and redemption of shares in actively managed equity funds will be nearly identical to the creation and redemption process in index funds. Actively managed stock funds will grow and shrink predominantly through creation and redemption in-kind. If a relatively free-form (as opposed to a distinctly ETF-oriented) active management process is achieved, the fund manager will operate more or less as he or she does today in running an actively managed mutual fund.

There are so many good reasons to retain the in-kind process that it will continue to be the dominant ETF creation and redemption mechanism as the diversity of ETF portfolios continues to increase. With the NAV-based trading described in Chapter 8, it is not necessary to provide every 15-second valuation of ETFs (if it ever was necessary). I will have more to say in Chapter 7 about the creation/redemption process, risk management, and trading in full-featured, actively managed ETFs. The topic of active management has received surprisingly little attention from most of the financial industry's product developers, in spite of the fact that full-featured actively managed funds will offer greater relative value to investors than index funds in the exchange-traded fund format.

Contrast between ETF Creation/Redemption and Mutual Fund Practices

Mutual funds have a variety of ways in which they offer their shares to the public and redeem them. The most common practice among no-load mutual funds is simply to offer shares to investors for cash at the net asset value next calculated after the buyer's payment is received by the mutual fund.

A fund can usually find brokers that will take market-on-close (MOC) orders and guarantee a fill at the close *or better* without charging a commission. From the fund's perspective, this appears to be a "free" transaction for the fund's ongoing shareholders because the ultimate value of their holdings is unaffected by any day's closing prices when they are not trading. The apparent cost of any market impact from the MOC order is borne by entering or exiting fund shareholders. Unfortunately, measuring market impact costs of a mutual fund share purchase or sale is not nearly that simple. Many orders to purchase or sell fund shares do not arrive in time for the fund to trade by the close on the day the order to buy or sell shares is effective. The fund does not usually know its net share purchases or sales by the time the market closes on the day the transaction is effective. Consequently, as illustrated in Exhibit 1.3 on page 5, the ongoing shareholders of the fund pay nearly all of the transaction costs associated with the entry and exit of shareholders in a mutual fund.²⁴

Mutual funds often sell or redeem their shares at a given day's net asset value even if the purchase or redemption request comes into the fund a few days or even a week after the order was received by a broker or bank serving the fund shareholder. To reduce abuses from fund share transactions priced before receipt of the order by the fund the SEC has implemented Regulation 22(c)(2) (see www.sec.gov/comments/s7-07-08/s70708.shtml), which creates an infrastructure that almost mandates the imposition of a redemption fee on mutual fund shares that are redeemed in less than a week after they were purchased. In practice, few of these redemption fees are collected and the nominal procedures of Regulation 22(c)(2) do not alter the fact that all mutual fund investors, unlike ETF investors, bear the cost of the entry and exit of other shareholders for as long as they own the mutual fund shares.

The limited number of Authorized Participants and the large size of transactions make the receipt of ETF creation or redemption orders easy to monitor. The fixed administrative transaction fee charged by ETFs is designed to cover the cost of setting up and running the creation and

²⁴See Gastineau (2004) for a comprehensive discussion of the problems of mutual fund share cash purchases and redemptions.

redemption process as well as the cost of the paperwork for a specific transaction. In large funds with a high rate of creation and redemption, these transaction fees can be a profit center. In the case of the 500 SPDR, for example, the excess of creation/redemption fees over net transaction expenses reduced the fund's pre-cap expenses by about \$5 million in the fiscal year ended September 30, 2009. This is a very unusual case because of the large size of the fund, high trading volume, heavy creation and redemption activity, and the relatively large number of securities (500) in the portfolio. The transaction costs associated with assembling the creation basket for deposit in exchange for fund shares or for taking the redemption basket of portfolio securities and selling it in the market place are borne by the Authorized Participant. If the Authorized Participant is not a market maker, it will recover its costs from the market maker which, in turn, will recover costs of the creation and redemption process from its market-making activities. The bid-asked spread in the secondary market for the fund shares will reflect creation and redemption costs. Whatever the creation and redemption costs are, *they are not borne by the ongoing shareholders of the fund*. In short then, one of the purposes of and the compelling case for in-kind creation and redemption is protection of ongoing shareholders from essentially *all* of the costs from entry and exit of transacting shareholders.

ETFs offered in the United States since the introduction of the 500 SPDR in 1993 have adopted a number of variations on the in-kind creation and redemption process. For a variety of reasons, certain funds provide for partial cash-in-lieu payments on some creations or redemptions. In the simplest case, this may be because a broker-dealer cannot trade in a specific security due to its investment banking activities or because its own shares are part of an ETF portfolio. The broker-dealer will use a custom in-kind basket that excludes shares it cannot hold and will pay or receive the cash value of the excluded shares plus or minus any costs associated with the purchase or sale of the excluded shares by the custodian of the fund or by the fund portfolio manager.

In the case of redemptions, an additional reason for the fund to make a cash payment in lieu of delivering certain securities might be the desire of the fund portfolio manager to realize a loss in the fund by selling securities. In this case, the redemption basket will not include the securities to be sold, but their presence will be taken into account by any market maker for purposes of creating hedging portfolios or by anyone calculating an intra-day fund share value. Positions to be sold by the fund to realize a loss might be removed from the redemption basket at the last minute. While the mechanics vary, the fund will sell the position, market-on-close (MOC), and the AP will buy the position, MOC, for its own account to replace the position that was removed from the redemption basket. By such means, the

protection of ongoing shareholders from the costs of in-and-out transactions by other shareholders has been well maintained in most ETFs.

The original purpose of the in-kind creation and redemption process was simply to allocate transaction costs appropriately. However, as described in the discussion of tax efficiency in Chapter 4, in-kind redemption delivers a serendipitous tax advantage to some ETF shareholders.

The in-kind creation and redemption process does not work in quite the same way when the holdings of the portfolio consist of financial instruments that cannot be easily transferred into and out of a fund. Examples of such instruments include options, futures contracts, and a variety of special purpose derivatives, the most important of which are swaps used in some leveraged long and leveraged inverse ETFs. These instruments typically cannot be transferred because rules of derivatives exchanges do not permit it (listed options and futures) or because the credit of a counterparty to an OTC instrument (options, swaps, and forward contracts) is an issue. The prospectuses and SAIs of ETFs generally indicate that any charges associated with an increase or decrease in the size of portfolio positions needed for the creation or redemption of shares are borne by the Authorized Participant initiating the creation or redemption transaction. Similar provisions are generally in place for ETFs that replicate a buy-write or other option strategy. Funds that deal with a derivative counterparty must transact after the size of a creation or redemption is known. Consequently, they will require a cutoff on creations and redemptions earlier than 4:00 P.M. in the U.S. market or similarly in advance of the close in other markets.

The Mythical 4:00 P.M. Fund Share Trading Cutoff

Nominally fund share purchases and redemptions can be implemented for mutual funds and ETFs until 4:00 P.M. Indeed, standard transparent stock index ETFs do accept orders until 4:00 P.M. If the fund is not an equity index fund, the rules for its cut-off time can be more complicated, but that needs to be checked on a fund-by-fund basis. We need to review a little history to understand how we got to a 4:00 P.M. cutoff for most funds.

With the implementation of Rule 22(c)(1) in 1968, the SEC recognized that the method by which orders to buy and redeem shares in mutual funds were handled had changed considerably since the introduction of mutual funds in 1924 and since the enactment of the Investment Company Act of 1940. Specifically, the methods of communications used by purchasers and redeemers of mutual funds had changed from a predominantly U.S. mail-oriented process to widespread use of the telephone and teletype. In more recent years the provisions of Rule 22(c)(1) have been overwhelmed

by the effect of electronic communications, including e-mail, text messaging, and mobile phones in the current millennium.

The SEC has repeatedly, if only implicitly, recognized the problems associated with providing free liquidity to any investor entering or leaving a fund and pricing the investor's entry or exit at 4:00 P.M. prices. Nominal 4:00 P.M. pricing preserves the illusion that entry and exit is possible until 4:00 P.M., even when a fund adopts shareholder protection policies that make transactions until 4:00 P.M. impossible. A number of years ago Vanguard initiated a solution to the unfairness of free 4:00 P.M. liquidity by creating a mythical mailman. Vanguard cut off orders that came in by wire or telephone earlier in the day, but nominally accepted orders until 4:00 P.M., if the orders arrived by mail. Vanguard technically accepted mail orders until the 4:00 P.M. market close, but mail orders usually go to post office boxes. Vanguard effectively stopped accepting orders when it stopped collecting and opening mail for the day.

Vanguard changed its policies in March 2004, but the mythical mailman survives at other funds. For example, the ProShares Statement of Additional Information for its leveraged long and inverse ETFs states: "A purchase order must be received by the Distributor at 4:00 P.M. Eastern time if transmitted by mail or by 3:00 P.M. Eastern time if transmitted by telephone, facsimile, or other electronic means permitted under the Participant Agreement in order to receive that day's Closing NAV per share."²⁵

Another prospectus for a fund that is no longer active carried the following disingenuous statement: "The Trust will accept orders to purchase Creation Unit Aggregations transmitted by U.S. mail or by certain other specified means discussed below. The Distributor will accept orders to purchase Creation Unit Aggregations received by U.S. mail up to 4:00 P.M. Mail is received periodically throughout the day. When mail is received, it is opened and time stamped. If an order to purchase a Creation Aggregation is received by U.S. mail by 4:00 P.M., then it will be processed that day. . . ."

It has been more than two-thirds of a century since 1940. The United States Postal Service still delivers a few mutual fund buy and sell orders, but an increasing fraction of orders arrive by other means. I doubt that a multimillion-dollar ETF creation or redemption order has *ever* arrived by mail (excluding mail confirmation of an order originally transmitted by other means). The SEC needs to abandon the fiction that there is something desirable about providing the right to enter or leave a fund until 4:00 P.M. at the expense of one's fellow shareholders. It is time to retire this mythical mailman.

²⁵See <http://media.proshares.com/documents/ProSharesSAI06232009.pdf>.

How Do Trades in an Index ETF Portfolio Work?

Exhibit 3.3 shows what happens inside an index ETF on days when there is a change in the portfolio of a pre-trade transparent index ETF. In Step 1, an index change effective at the end of Day 2 that was announced by the index provider, usually sometime during the previous week or so, is incorporated in the fund's creation basket.²⁶ The creation and redemption basket for Day 2, which is generated after the market close—in this case, at about 6:00 P.M. on Day 1—will reflect the change in the contents of *both the creation and redemption baskets*. At the start of Day 2, the fund holdings do not yet reflect changes in the index. Note that in this example, the fund owns 2,000 shares of Security XYZ. In order to conform to the index at the close, the fund needs to hold 1,000 shares of Security C instead of the 2,000 shares of XYZ. During the day on Day 2, the portfolio manager will sell 2,000 shares of XYZ and buy 1,000 shares of Security C. The portfolio manager will make these trades without regard to any creations and redemptions because the creation and redemption baskets *do not include any shares of XYZ*. They do include Security C. In order to be able to meet redemptions or to be certain that the portfolio has the proper number of shares in Security C at the close, any creations and redemptions will include Security C in the basket on Day 2.

Obviously, in the absence of a cash-balancing amount, this example assumes that the position in Security C is purchased at exactly the same value as the position in Security XYZ was sold. A real fund will have far more positions. It is also likely that the value of a new security purchased will be either greater or less than the value of the security eliminated from the portfolio and that one or more positions in other securities in the portfolio will be increased or reduced. For example, anytime there is a change in a capitalization weighted index like the S&P 500 there will be either small purchases or small sales of the other 499 securities in sizes reflecting the difference in the size between the new company added to the index and the departing company it replaces.

In the example of Exhibit 3.3, the fund portfolio and the creation basket are different at the beginning of Day 2. Consequently, using the intraday

²⁶In the case of a limited function actively managed fund a transaction will make the change in the portfolio on Day 1 and a fund transaction may be required on Day 2 to adjust for a creation or redemption transaction at the close on Day 1. That transaction will be small in most instances, but any cost or profit from this transaction apparently will be for the fund's account, a contrast to the principle of full shareholder protection from the cost of flow transactions.

1. Index change effective end of Day 2 announced by index provider.
Creation basket generated based on revised index. (Day 1: 6:00 P.M.)

Index/Creation basket

Security A	Security B	Security C
100 shares	70 shares	100 shares

2. Start-of-day fund holdings do not yet reflect changes in index.
(Day 2:8:00 A.M.)

Fund holdings

Security A	Security B	Security XYZ
1,000 shares	700 shares	2,000 shares

3. Fund portfolio manager trades so fund holdings reflect revised index. (Day 2: before 4:00 P.M.)

Sell

Security XYZ
2,000 shares

Buy

Security C
1,000 shares

4. Participant requests fund shares in exchange for a creation basket (Day 2: before 4:00 P.M.)

Creation basket effective on Day 2

Security A	Security B	Security C
100 shares	70 shares	100 shares

5. Revised fund holdings reflect creations and today's trades.
(Day 2: after 4:00 P.M.)

Fund holdings

Security A	Security B	Security C
1,100 shares	770 shares	1,100 shares

6. No change in index scheduled for Day 3. Creation basket for Day 3 based on revised index/fund holdings (Day 2: 6:00 P.M.)

Index / Creation basket

Security A	Security B	Security C
100 shares	70 shares	100 shares

EXHIBIT 3.3 Standard Open-End ETF: Simplified Example of Daily Processes When an Index Changes

value of the creation basket as a proxy for the intraday price movement of the fund will not be satisfactory. As a result of small differences between the fund and the creation basket composition, ETFs have moved away from the practice of using the creation basket to calculate the intraday pricing proxy. They use a basket based on the actual portfolio of the fund to calculate the intraday proxy (and, of course, the NAV) even when the creation/redemption basket anticipates an index/portfolio change.

In any event, in this particular case, a participant requests fund shares in exchange for a creation basket of portfolio securities before 4:00 P.M. on Day 2. The creation basket, which contains 100 shares of Security C, will be tendered in exchange for fund shares. The revised fund holdings after the deposit of the additional creation unit will reflect the creation and the fund holdings will be in proportion to the index. Since no change in the index is scheduled for Day 3, the creation basket for Day 3 based on the revised index fund holdings is identical to that on Day 2 and is published on Day 2 at approximately 6:00 P.M.

CHAPTER 4

Taxation of ETFs and Their Shareholders

This chapter looks at the tax treatment of exchange-traded funds and other exchange-traded instruments, with special emphasis on the investment companies that make up the largest segment of exchange-traded financial products. The special tax characteristics of grantor trusts, securitized commodity funds, and open-end exchange-traded notes are also described. Although this chapter is the principal discussion of taxation in the book, tax issues inevitably crop up in a number of other chapters. My emphasis in this chapter is heavily on federal U.S. taxation because the U.S. is the tax jurisdiction I know best. Chapter 11's discussion of ETFs for investors outside the United States has some general comments on taxes in other markets. The standard disclaimer that I am not in the business of offering tax advice or qualified to offer such advice is fully applicable. In some cases there is not universal agreement on the appropriate tax treatment in a particular situation. I try to describe any controversies, but investors should obtain any necessary tax advice from their tax advisors—even if I fail to suggest a controversy. Bear in mind that any effort to summarize the tax treatment of investment companies inevitably simplifies things.

TAXATION OF INVESTMENT COMPANIES: SUBCHAPTER M AND REGULATED INVESTMENT COMPANY (RIC) REQUIREMENTS

This section covers key provisions of regulated investment company taxation under Subchapter M of the Internal Revenue Code as those provisions apply to the open-end ETFs available to investors in the United States. All comments are, to the best of my knowledge, based on the statute and on IRS rulings and interpretations in effect at the time the chapter was written.

The discussion covers the taxation of *transactions* inside investment companies and in investment company shares, taxation of investment company *income*, and taxation of *distributions* made by investment companies to their shareholders.

A Regulated Investment Company (RIC) is defined in §851 of the Internal Revenue Code. Oversimplifying the formal definition slightly and attempting to translate the statute into standard English, a RIC (pronounced “rick”) is a corporation or trust that is registered with the Securities and Exchange Commission (SEC) under the Investment Company Act of 1940 (as amended); elects to be a RIC; obtains at least 90 percent of its gross income from direct or indirect investment in securities, currencies, or publicly traded partnerships; and meets certain quarterly portfolio holdings and diversification requirements. Before discussing the diversification requirements and the effect a fund’s holdings have on the taxation of its distributions, let’s look at the general tax principles behind RIC taxation.

Tax Pass-Through Principles for Funds

In the United States, as in most other countries, investment companies are designed as pass-through vehicles for federal income tax purposes. Taxes are usually assessed on the holders of the fund’s shares when they receive distributions from the fund or when they sell their shares. The states usually follow the federal pattern. There is a federal excise tax structure applicable to income or capital gains retained by an investment company, but most taxes at the fund level can be avoided if the fund distributes its income to shareholders at least annually. If excise taxes are paid at the fund level, the shareholder will pay additional taxes when there is a distribution of the fund’s after-tax income. However, few funds that are offered to retail investors will pay material excise taxes on undistributed income. The excise tax structure is designed to discourage accumulation of undistributed income in the fund, not to obtain revenue.

The pass-through principle does not mean that the holder of investment company shares will be treated exactly like an investor who holds a similar basket of securities directly in a brokerage account. Fund taxation is not equally attractive (or unattractive) relative to direct ownership for every kind of investor in a fund, but U.S. investment company tax law is reasonably close to tax neutral relative to separate account holdings and trades. Some countries have appreciably disadvantaged the investment company form at times, but most countries have moved in the direction of tax neutrality between direct investments in securities and intermediary investing where the intermediary is a fund or trust. The rules for pass-through are often complicated. Some of them favor investment in the pass-through vehicle and others make the pass-through vehicle less attractive than direct ownership.

RIC Pass-Through Positives

In general, a U.S. investment company will distribute most kinds of investment related income to its shareholders without a significant change in the character or tax timing of the income. To qualify as a RIC, most funds distribute dividend and interest income, net of fund expenses, to investors and the investors are taxed on that dividend and interest income in the same calendar year the income was received by the fund. Corporate dividends are usually “qualified” for taxation at a special, more favorable rate to reduce the effect of double taxation (once at the corporate earnings level and again when the company’s profit is paid to shareholders as a dividend.) Qualified dividends are discussed in more detail in the text box on pages 96–98.

If a RIC has realized net long-term capital gains through the sale of securities held for more than a year, the gains are passed through to shareholders in their character as long-term capital gains. However, several aspects of capital gains distributed are not fully symmetric with tax treatment in a separate brokerage account. Long-term gains are passed through as long-term capital gains regardless of the investor’s holding period in the fund shares. In other words, a capital gains distribution will be a long-term capital gain to the shareholder even if her shares were purchased shortly before the distribution was made. One reason for long-term capital gains tax treatment that ignores the investor’s holding period in the fund shares is that, with capital gains distributions possible one or more times a year, it may be difficult for a new shareholder to have a full year holding period before first receiving a long-term capital gain distribution. If the distribution was not treated as a long-term gain, investors would be reluctant to buy shares in a fund that was likely to make a capital gains distribution in less than 12 months.

To reduce opportunities for tax arbitrage transactions that might permit investors to convert a short-term gain in another position into a long-term gain by holding a fund’s shares for just a few days around a capital gain distribution, there are restrictions on using any short-term loss realized by selling the fund shares after they go ex-dividend from the capital gains distribution. If an investor realizes a loss on the sale of investment company shares held for six months or less, the loss will be offset first against any long-term capital gain distribution received on those shares and only any remaining portion of the loss will be considered a short-term capital loss.¹

The United States taxes capital gains distributions at the investor’s long-term capital gains rate. If the capital gains are reinvested, the custodian holding the shares increases the investor’s tax cost basis by the amount of the reinvested capital gains distribution. The taxpayer or the custodian holding

¹§852(b)(4)(A).

the fund shares for the taxpayer must keep track of this basis adjustment to avoid double taxation on the reinvested capital gains when the shares are finally sold.

One (usually minor) advantage of the RIC long-term gains distribution rules is that the capital gains distribution year ends at the end of October. Fund portfolio capital gains realized in November and December will be deferred into the investor's next tax (calendar) year. The Halloween text box describes an instance when this feature proved significant.

HALLOWEEN CAN BE AN IMPORTANT DAY FOR INVESTORS

The background story on the October 31, 2005, manager change at Fidelity's Magellan Fund and the results of that change illustrate the problems a mutual fund can have in dealing with the conflicting interests of tax-exempt and taxable investors. The Magellan manager change led to the realization of substantial embedded capital gains that had given the fund a very large capital gains "overhang" prior to the beginning of the 2006 tax year. The new Magellan manager realized capital gains, dramatically changed the composition of the portfolio, achieved good near-term performance—and distributed a mammoth capital gain that was taxable (to Magellan's taxable shareholders) in 2006.

The Halloween date of the change in Magellan's manager was no coincidence. The timing of the manager change announcement made it clear to anyone familiar with Regulated Investment Company (RIC) tax rules that dramatic portfolio changes were coming. Under RIC tax rules, long-term capital gains realized in the last two months of the calendar year need not affect investors' tax returns for that year. Rather than wait until the end of 2006, Magellan distributed capital gains equal to about 19 percent of the fund's assets to its shareholders in May, as described in Laise (2006).

This manager and investment policy change was certainly the best choice open to Magellan. Magellan had performed poorly for a number of years before 2005, partly because its managers had been reluctant to realize gains by selling low-cost portfolio securities. Portfolio managers of mutual funds often defer transactions that they believe would improve pre-tax performance because they do not want to trigger the distribution of taxable capital gains.

The conflict of interest between taxable and tax-exempt investors—invariably in a mutual fund—disappears in an ETF. With exchange-traded funds, the decision to change the portfolio can be based solely on investment considerations, not on the tax basis of portfolio securities. The conflict between taxable and tax-exempt shareholders disappears because the achievement of tax efficiency in ETFs is largely a matter of careful designation of tax lots so that the lowest cost lots of a security are distributed in-kind in redemptions and high cost lots are sold to realize losses in the fund when a sale is necessary or appropriate. The way this works is described on pages 73–81.

Pass-Through Limitations

There are some important limitations on pass-through tax treatment for a RIC's shareholders. One important pass-through limitation results in a change in the character of some income when it is distributed to the fund investor. Specifically, a regulated investment company cannot distribute short-term capital gains *as* short-term capital gains. Any net short-term capital gains realized by a fund that are not offset by short- or long-term capital losses at the fund level in the current year are distributed *annually* as ordinary income. The fund's financial reports will enable an investor to see how much of the "income" behind the distribution is from short-term capital gains, but a shareholder cannot offset this part of the distribution with any capital losses on her investment in the fund shares or on other capital assets. Furthermore, the dividend distribution based on a short-term capital gain is an ordinary dividend, not a qualified dividend, subject to taxation at a lower rate. The tax character of a gain or loss and the pass-through of that gain or loss is immaterial in tax-exempt accounts such as 401(k) and IRA portfolios, but it can be very significant if the account is taxable. The source of a fund's income distribution is also important in evaluating the performance of a fund manager. Other things being equal, a good fund manager will rarely realize net short-term capital gains as ordinary income.

Diversification and Taxation

Unless a fund meets the minimum diversification requirements for a RIC, the fund does not qualify for tax-free pass-through of income and long-term capital gains. In fact, a fund's portfolio composition can affect the tax treatment of a fund distribution in the hands of a fund investor in a number of ways.

The basic RIC portfolio diversification requirements are relatively simple: With the exception of the U.S. government, (1) no single issuer's securities can account for more than 25 percent of the total assets of the fund, and (2) the combined issuers each accounting for more than 5 percent of the total assets of the fund cannot exceed 50 percent of assets at the end of each quarter of the fund's fiscal year. What these diversification rules mean is that a fund can qualify as a RIC if it holds stock or bond positions from as few as 13 issuers—two issuers, each accounting for just less than 25 percent of the fund's assets, and 11 issuers, each accounting for less than 5 percent of the assets of the fund. All of the assets of a fund can be invested in U.S. Treasury securities, in reliance on the U.S. government securities exemption from the diversification requirement.

Exhibit 4.1 shows the minimum non-U.S. government fund diversification requirements for a RIC in the United States and for a *non-index* UCITS fund that might be offered in Europe. While UCITS *index* funds could have significantly higher concentrations in a few positions, there is sufficient overlap in the rules for RIC and UCITS diversification that many fund portfolios could meet the requirements for both RIC in the United States and UCITS in the EU without difficulty, as indicated by the third section of Exhibit 4.1. The ability to increase the size of some large positions in an index UCITS makes the maximum position size constraints even closer in an index fund.

EXHIBIT 4.1 Fund Diversification Requirements

Minimum Diversification Requirements for a Regulated Investment Company (RIC)	
Position 1	24.9%
Position 2	24.9%
Position 3	4.9%
Position 4	4.9%
Position 5	4.9%
Position 6	4.9%
Position 7	4.9%
Position 8	4.9%
Position 9	4.9%
Position 10	4.9%
Position 11	4.9%
Position 12	4.9%
Position 13	1.2%
100.0%	

EXHIBIT 4.1 (Continued)

**Minimum Diversification
Requirements for a Nonindex
Undertaking for Collective
Investment in Transferable Securities
(UCITS) Fund**

Position 1	9.9%
Position 2	9.9%
Position 3	9.9%
Position 4	9.9%
Position 5	9.9%
Position 6	9.9%
Position 7	4.9%
Position 8	4.9%
Position 9	4.9%
Position 10	4.9%
Position 11	4.9%
Position 12	4.9%
Position 13	4.9%
Position 14	4.9%
Position 15	1.4%

100.0%

**Minimum Diversification
Requirements for Both RIC and
Nonindex UCITS Funds**

Position 1	9.9%
Position 2	9.9%
Position 3	9.9%
Position 4	9.9%
Position 5	9.9%
Position 6	4.9%
Position 7	4.9%
Position 8	4.9%
Position 9	4.9%
Position 10	4.9%
Position 11	4.9%
Position 12	4.9%
Position 13	4.9%
Position 14	4.9%
Position 15	4.9%
Position 16	1.5%

100.0%

In a few RIC portfolios, there is a portfolio *concentration* requirement that should be met to keep the *character* of some distributions intact for tax purposes. For example, if a fund holds tax-exempt securities (most municipal bonds issued before 2009),² tax-exempt securities must account for *more than half* the total assets of the fund at the end of each quarter of the fund's fiscal year or the income loses its tax-exempt character when income dividends are paid to shareholders. If eligible municipal bonds are more than half the fund's assets, all tax-exempt income earned by the fund is passed through as tax-exempt income when distributed to shareholders.³

Another portfolio concentration requirement with tax implications applies to funds holding foreign equity securities that are subject to withholding at the source by the host government of a company. If foreign securities are more than half the assets of the fund at the end of its fiscal year, the fund can elect to pass these withholding tax payments through to shareholders for their use either as a deduction or as a potentially more valuable credit against the shareholder's U.S. income taxes.

These portfolio concentration provisions usually make it desirable to hold municipal bonds as the predominant securities in any fund that holds municipal bonds and foreign securities as the predominant securities in any fund that holds foreign equity securities. The fashion for global equity index funds and largely domestic equity funds that hold a few foreign stocks has led to the creation of some tax inefficient funds that hold U.S. securities as more than 50 percent of their portfolios.

Capital Losses Cannot Be Distributed

A RIC cannot pass through capital losses. If a fund has realized capital losses on sales of securities in its portfolio, the only way a shareholder might realize any part of those losses quickly—and as short-term losses—is to sell the fund shares at a loss before the shareholder's position in the fund shares goes long-term. In contrast to an investor who holds individual security positions in a brokerage account, it is not possible for the fund to selectively harvest losses and pass the losses through to shareholders to offset gains those shareholders obtained elsewhere. Losses realized by the fund from the sale of portfolio securities can be carried forward by the fund for up to

²Build American Bonds, a new type of federally subsidized taxable bonds issued by state and local governments, seem likely to replace most new issues of tax-exempt bonds.

³Not all tax-exempt income is equally tax exempt because of the alternative minimum tax, but that qualification is unrelated to the fact that the income passes through a RIC.

eight years and used to offset future capital gains. The oldest losses are used first. There are some examples of such loss carry forwards later in this chapter in a comparison of two funds' gain and loss positions.

The absence of capital loss pass-through is the second most widely criticized provision in U.S. investment company taxation.⁴ Fortunately, there is an additional feature of RIC taxation that affects ETF investors more than mutual fund investors and that can help make up for a fund's inability to pass through capital losses. That feature is the treatment of in-kind redemption of RIC (fund) shares. To understand how in-kind redemption works, we need to take a close look at the tax rules for RIC capital gains taxation.

THE MECHANICS OF RIC SHAREHOLDER CAPITAL GAINS TAXATION

RIC taxation rules are often severely criticized, particularly as they apply to conventional mutual funds. For example, Coates (2009a) discusses the problems which accumulation of unrealized capital gains in a mutual fund can create for investors and for fund managers as unrealized gains grow in a rising market. Coates notes the tax costs that can be associated with the distribution of capital gains to investors who invest in a fund after its portfolio securities have appreciated. These investors buy an interest in a fund with accumulated capital gains and they end up paying taxes on distributions of gains the fund had accumulated before they bought their shares. While Coates acknowledges the claims for ETF tax efficiency (in one of his 277 footnotes, he notes that the first edition of *The Exchange-Traded Funds Manual* was "touting tax advantages of ETFs over mutual funds"), he does not seem to understand how or why the ETF structure can *eliminate* (1) the problem of accumulated capital gains inside a fund and (2) the need to distribute *any* realized capital gains.⁵ While I share Coates's feeling that the taxation of all RICs should be changed to defer taxation of any capital gains realized in the fund portfolio until an investor sells the fund shares, the ETF structure substantially eliminates most of the capital gains distribution problems that continue to plague mutual funds.⁶

⁴The most widely criticized feature is the distribution and taxation of capital gains realized by the fund's portfolio manager when the investor in the fund shares has not sold fund shares.

⁵Coates explicitly states: "ETFs must also distribute gains just like traditional mutual funds. . . ." This statement is literally true but it reveals his lack of understanding of the effect of ETF redemptions in-kind as described in the following paragraph.

⁶See Coates (2009b).

The key to ETF tax efficiency is found in §852(b)(6) in Subchapter M of the Internal Revenue Code.⁷ Under this provision of the statute, redemptions in-kind made by a RIC at a shareholder's request do not give rise to a taxable capital gain inside the fund even if the portfolio securities distributed in the redemption have a very low-cost basis to the fund. This long-time provision of the tax code appears to have been designed to permit a fund's advisor to distribute positions the fund has held at a low cost basis to departing shareholders, protecting nonredeeming shareholders from being stuck with large tax bills from gains on shares that might be sold to meet redemptions.⁸ With reasonably careful tax lot management by the fund manager, this provision can permit ETF investors to defer capital gains taxation until they sell their shares. This provision merits more careful examination than Coates and many others have given it. Investors in ETFs will, appropriately, pay capital gains taxes on any gains they realize when they sell their fund shares. Unlike the mutual fund investors Coates is properly trying to protect, ETF investors usually will not pay taxes on long-term capital gains distributions because investment company ETFs holding traditional securities rarely make such distributions.

A word of caution is appropriate. Not every ETF portfolio can benefit from this provision. It only applies to RIC compliant funds. It is of only modest value to most fixed income funds and it will not help investors in all leveraged long ETFs. I don't see how it would help investors in leveraged *inverse* ETFs at all. For common stock funds, balanced funds and funds that can make major strategy changes over time (e.g., target date or other changing allocation funds), this rule can provide deferral of most or all capital gains on securities until a shareholder sells the ETF shares. It is essential to look at an ETF versus mutual fund example because few investors fully appreciate the significance of the tax efficiency that redemptions in kind can provide for exchange-traded funds.

Exhibit 4.2 compares the capital gains tax status of the Vanguard 500 mutual fund and the 500 SPDR ETF, two funds tracking the S&P 500 index that have been in existence for a number of years—about 17 years for the SPDR and over 30 years for the Vanguard 500. Both funds had high rates of asset growth in a generally rising equity market prior to late 2007. Neither fund has distributed material capital gains in recent years. The market decline of 2007 through early 2009 changed the absolute level of accumulated capital gains inside the two funds and gave the Vanguard

⁷See www.law.cornell.edu/uscode/26/usc_sup_01_26_10_A_20_1_30_M.html.

⁸I have not attempted to determine the genesis of this tax provision, but I first became aware of it as a mutual fund portfolio manager in the late 1960s. This suggests that it dates at least to the major codification of the tax code in 1954.

EXHIBIT 4.2 Capital Gains Overhang/(Underhang) Vanguard 500 vs. SPDR

Fund	SPDR	Adjusted* SPDR	Vanguard
Date of Financial Statement	9/30/2009	12/31/2009	12/31/2009
Fund Assets	100.00%	100.00%	100.00%
Unrealized Gains/(Losses)	13.52%	18.02%	18.89%
Accumulated Net Realized (Losses)**	(12.80%)	(12.13%)	(3.06%)
Capital Gains Overhang/(Underhang)	0.73%	5.89%	15.83%
S&P 500 Index Level	1057	1115	1115
Actual Fund Assets (\$Billions)	\$71.7	\$84.9	\$93.3***

*Adjusted for appreciation in the S&P 500 from 9/30/2009 through 12/31/2009. This adjustment increases unrealized gains as a percent of adjusted net assets for the SPDR. The adjusted net assets for the SPDR as of 12/31/2009 would have been \$75.6 million, in contrast to the actual assets shown.

**Realized losses in a fund may be carried forward for up to eight years as noted in the text.

***Includes Investor, Admiral and Signal Shares.

500 a needed respite from possible capital gains distributions. To make the comparison as simple as possible, the relationships in the table are stated as percentages, with each fund's net assets representing 100 percent.

The dates of the latest available financial statements for the two funds are different: September 30, 2009, for the SPDR and December 31, 2009, for the Vanguard 500 fund. I adjusted the unrealized gain figure for the SPDR forward to 12/31/2009 to approximate the increase in portfolio values from the rising market in the last quarter of 2009. The appropriate columns for the capital gains overhang/(underhang) comparison are the adjusted SPDR column for 12/31/09 and the Vanguard 500 column for the same date.⁹

Capital gains overhang is equal to a fund's unrealized gains less unrealized losses and any accumulated net realized losses that are being carried forward. Capital gains overhang is the best single measure of the likelihood that a fund will be able to avoid capital gains distributions in the near future. If the capital gains overhang is large and positive, the likelihood of a capital gains distribution grows as the capital gains overhang increases in size. If, as is sometimes the case in an exchange-traded fund, the capital gains overhang is negative (a capital gains "underhang"), the probability of

⁹This adjustment does not consider the tax effects of the net new money invested in the SPDR in the last quarter of 2009 or the creations and redemptions that occurred during that quarter. Both these effects would have reduced the capital gains overhang from the percentage assumed.

a capital gains distribution any time soon is quite small. The essential difference between the Vanguard and SPDR funds is that the SPDR investor is protected from a capital gains distribution by both larger realized losses and smaller unrealized gains. The Vanguard 500 shareholder might face capital gains distributions if the market recovers substantially and the fund suffers net redemptions. It is hard to imagine circumstances other than a change in the tax code that would require the 500 SPDR to make a capital gain distribution.

Capital gains overhang is far more useful than the required historic after-tax return calculation in predicting a fund's long-term tax efficiency. Capital gains overhang is forward looking as well as a reflection of past results. A *mutual fund* with accumulated capital losses may have some significant portfolio management shortcomings, but "book" losses in an *ETF* usually reflect nothing more or less than appropriate tax management. Capital gains overhang (or underhang) is easy enough to calculate from a fund's financial statements. Some fund advisory services state that they calculate a similar number, but the advisory service calculations are not always accurate and the fund services often underemphasize the importance of this calculation.

The most obvious difference between the two S&P 500 funds examined in Exhibit 4.2 is in the level of *realized* losses. The Vanguard 500 had realized losses of 3.06 percent of assets at 12/31/2009 whereas the SPDR had realized losses equal to 12.13 percent of adjusted assets. Historically, the SPDR has realized more capital losses than it has been able to use. Over \$400 million in realized losses expired at the end of the September 30, 2009 fiscal year. The earliest to expire of the Vanguard 500's realized losses will not be at risk of expiration until the end of 2014.

Vanguard has done an excellent job of managing its 500 index fund to defer realization and distribution of capital gains. The task was simplified until a few years ago by a steady stream of new assets that kept the average cost basis of the fund's holdings from falling too far behind a generally rising stock market. However, significant net new investments from individual investors stopped flowing into the Vanguard 500 several years ago. Fidelity challenged Vanguard with 10 basis point expense ratios on Fidelity's S&P 500, Total (U.S.) Market and Extended Market index mutual funds. These Fidelity funds have drawn both individual investors and tax-deferred accounts away from the Vanguard 500, as some 401(k) providers replaced Vanguard index mutual funds with lower fee Fidelity funds. Vanguard responded to this price competition with its own 9 basis point Admiral and Signal share classes for the Vanguard 500. The clear long-term tax advantages of the two available S&P 500 ETFs (the 500 SPDR and the iShares S&P 500 Fund) have reduced the Vanguard 500's growth potential by attracting taxable investors to ETFs. Vanguard has also offered very low expense ratios on its large cap and broad market index funds' exchange-traded

share classes. Vanguard's own ETF share classes have helped cannibalize the Vanguard 500, which will not have an exchanged-traded share class.

The 500 SPDR's total capitalization has fluctuated far more widely than the capitalization of the Vanguard 500 because the SPDR is one of the most actively traded components of the S&P 500 index arbitrage complex. The increase in SPDR net assets in the fourth calendar quarter of 2009 was over \$10 billion, but the SPDR lost nearly \$19.5 billion in net assets for calendar 2009. The SPDR's quarterly cash flows are significantly affected by use of the SPDR in an unusual tax deferral strategy. Some cash basis taxpayers (primarily securities dealers) use positions in the 500 SPDR hedged with futures contracts to defer tax on the SPDR quarterly dividend from one tax year to the next. SPDR shares outstanding tend to increase near the end of a quarter, particularly the last calendar quarter, and decline early in the subsequent quarter. These tax deferral transactions, incidentally, make most monthly and quarterly U.S. ETF industry fund flow statistics almost meaningless.

The size of the capital gain overhang that the Vanguard 500 fund could support in the absence of large redemptions might be as much as 40–50 percent because turnover in the composition of the S&P 500 index is relatively modest in most years. On the other hand, the Vanguard 500's use of the S&P 500 benchmark index may increase the fund's vulnerability to redemptions. Investors are beginning to realize that the S&P 500 is an overused index.¹⁰ It remains dominant in large cap equity risk management transactions, but it has been losing investor market share to indexes with less obvious composition change costs. When merger and acquisition activity in the United States brings composition turnover in the S&P 500 index up to historic levels in a rising market, capital gains distributions in the 500 fund will be harder for Vanguard to avoid.¹¹

The Halloween text box starting on page 68 illustrates how the accumulation of unrealized capital gains in an actively managed mutual fund can adversely affect the fund manager's flexibility and the fund's performance. Like the former Magellan manager, the S&P index committee tries to minimize index turnover. It is possible that reducing turnover in the S&P 500's composition to avoid changes that might lead to fund capital gains distributions could have the same effect on S&P 500 index fund performance as reducing portfolio turnover had on the Magellan fund's performance. However the S&P index committee's stock selections perform, SPDR shareholders do not need to worry that *their* fund will accumulate meaningful unrealized gains.

¹⁰See Gastineau (2002) and Chapter 5, pages 108–110.

¹¹Cross-border mergers, which seem more likely in the future than they have been in the past, could also increase S&P 500 index turnover.

In-kind redemption opportunities are plentiful for the SPDR. In fiscal 2009, SPDR redemptions were equal to over 177 percent of end-of-year net assets. This level of redemptions suggests that the 500 SPDR could deliver more low basis stock positions in redemptions to reduce unrealized gains. The SPDR could also sell more shares at a loss than it has in the past, but there is little purpose in banking realized losses that are likely to expire unexercised.

It is not reasonable to extrapolate the protection SPDR shareholders enjoy from capital gains distributions to all other ETFs. The SPDR has been very actively traded, and the rate of SPDR redemptions (even relative to fund size) has been significantly higher than the rate experienced by most other exchange-traded funds. Nonetheless, there is much greater likelihood of a capital gains distribution in most mutual funds than in comparable ETFs. Dependable long-term capital gains tax deferral in taxable accounts is much more likely if you own equity ETFs than if you own equity mutual funds. While shares of actively-managed ETFs will trade less and have lower rates of creation and redemption than the 500 SPDR, deferring capital gains in most equity ETFs should not be difficult under the current tax code.

Several more comments seem appropriate before moving beyond capital gains overhangs and underhangs. In the aftermath of the market decline in 2007/2008 many funds had capital losses—both realized and unrealized—that exceed their remaining assets. Korn (2009), for example, suggested picking mutual funds with good managers that had large negative potential capital gains exposure (PCGE)—the same calculation as capital gains underhang—at the bottom of the market. He listed a number of funds with capital gains underhangs exceeding the assets of the fund. The temptation to buy these funds in preference to an ETF might seem compelling at first glance, but asset inflows for some of these funds that were very small early in 2009 could dilute the value of their accumulated losses. The possibility that new shareholders will share in the available losses makes these funds doubtful choices relative to an ETF that should be able to provide capital gains tax deferral long after these mutual funds are making capital gains distributions, assuming they achieve good performance.

While the SPDR/Vanguard 500 table in Exhibit 4.2 only suggests it, a mature ETF can *grow* in tax efficiency over time. When fund assets are growing in a generally rising market and changes in the portfolio composition are modest, avoiding capital gains distributions is simple in most funds. If growth stops, or if the fund faces net redemptions (as most funds do at some times in their life cycle), avoiding capital gains distributions is still relatively easy for an ETF. The ETF's lowest cost tax lots in each of the securities it holds are the first positions delivered to redeeming shareholders. Securities that can be sold at a loss are sold inside the fund with the losses used to offset any gains on positions that the manager sells to change the

portfolio composition. The ETF's average tax cost on its remaining portfolio securities tends to *rise as fund assets decline*. In the case of the SPDR, a period of net redemption would increase realized and unrealized losses as a percent of assets under most scenarios. The precise opposite is true of most mutual funds: Cash redemptions usually increase the probability of mutual fund capital gains distributions.

A mutual fund will typically sell its highest cost tax lots first to put off the day when it will have to make capital gains distributions. The portfolio and tax management processes in a mutual fund are likely to become more and more constrained over time as low cost basis positions reduce the portfolio manager's flexibility. Rising stock prices, significant portfolio changes and inevitable periods of net fund redemptions are likely to lead to substantial capital gains distributions in any successful equity mutual fund.

Neither the SPDR nor the Vanguard 500 is likely to distribute any capital gains over the next few years. However, any investor looking for tax efficiency beyond, say, 2015 will find the SPDR to be the obvious choice of the pair. The Vanguard 500's first capital gains distribution after a number of years without capital gains distributions will highlight that fund's tax vulnerability as taxable investors look forward to a formidable string of capital gains distributions from a shrinking fund.¹²

Mutual funds *occasionally* redeem their shares in-kind.¹³ Most unleveraged RIC-compliant equity ETFs redeem their fund shares *largely* in-kind under ordinary circumstances. To the extent that the fund delivers its lowest cost positions first, in-kind redemption enables an ETF to defer taxation and be more tax efficient than an index mutual fund based on the same underlying index could possibly be.

One feature of in-kind redemption that is often misunderstood is the absence of any link between fund and shareholder tax basis. The fund has a tax (cost) basis in each of the portfolio positions it holds. Collectively,

¹²Barclay, Pearson, and Weisbach (1998) offer evidence that fund managers intentionally realize and distribute some capital gains to avoid a capital gains overhang that will exceed 30 to 40 percent and discourage new investment by taxable investors. The Vanguard 500 could support a higher capital gains overhang than 30 to 40 percent because of low turnover in the S&P 500 index. In contrast to the estimates by Barclay, Pearson, and Weisbach, I expect Vanguard to defer capital gains distributions in the 500 fund for as long as possible. However, the first distributions may trigger increased redemptions that will, in turn, trigger realization of even more capital gains.

¹³Some mutual funds *may require* a departing shareholder redeeming more than \$250,000 worth of fund shares in a single day to take a redemption in-kind, but this requirement is rarely imposed.

the fund's basis in its portfolio may be above or below the current market price of each portfolio security as illustrated by the unrealized gain or loss calculations in the SPDR and Vanguard example in Exhibit 4.2. The fund's basis in each lot of each security is determined by a set of rules based on the price that the fund paid for the security. In the case of an in-kind ETF creation, the fund's basis is the price of the securities at the market close on the day the securities were deposited in the fund.¹⁴

In an in-kind redemption, the basis of the redeeming Authorized Participant (dealer) in the securities received in the redemption is also the price of each security at the market close on the day the fund shares were redeemed. An in-kind redeeming shareholder pays taxes based on its own net gains on the fund shares, not on appreciation within the fund's portfolio. The treatment of the fund's basis on a security it redeems in-kind is an extremely important feature behind the tax efficiency of ETFs and it merits a brief, non-technical comment. The relevant section of the tax code exempts any gain on a redemption in-kind requested by a shareholder from taxation levied on the fund's remaining shareholders because there is no gain distributable to the remaining shareholders. All ETF redemptions are requested by a shareholder and most ETFs only allow redemptions in-kind unless the fund *elects* to deliver cash rather than securities in redemption. It's that simple.¹⁵

Mutual fund shareholders justifiably complain that they have no control over the character and timing of taxable capital gains distributions. Any distribution of realized capital gains is not linked to the shareholder's own transaction timing. Gains are realized within the portfolio of a mutual fund on a schedule determined by arrivals and departures of investors or modifications of the portfolio by a portfolio manager (or the rules of an index). The shareholder who buys mutual fund shares and is hit with a sizeable capital gains distribution has done nothing on her own volition which would "merit" taxation on that distribution. Even more objectionable than a distribution shortly after a fund purchase is a distribution at the end of a

¹⁴There is one esoteric exception to this statement. If an 80 percent holder of the fund's shares deposits portfolio securities that had a basis to the holder that was different from the market close on the day of deposit, the fund inherits any lower basis. All ETFs take steps to avoid such problems by requiring proof and/or certification that an 80 percent holder is depositing shares with a contemporary cost basis. ETFs have provisions in their participation agreements to assure that their basis in any shares acquired is the basis at the close of the market on the day the shares were deposited.

¹⁵In an equity fund, the most common reason to deliver cash is that the fund manager has removed a high cost security from the redemption basket to sell it and realize a tax loss.

bad performance year for the fund. The accumulation of unrealized gains inside a mutual fund over a number of years makes these events distressingly common for mutual fund shareholders. None of these problems are likely to occur in a well-run ETF with an equity portfolio.

THE WASH SALE RULE

Wash sales can adversely affect the tax treatment of transactions in a RIC portfolio and investor transactions in RIC shares. A wash sale occurs when, within 30 days (before or after) of the realization of a loss, a taxable entity acquires securities substantially identical to the securities that were sold at a loss. In the event of a wash sale, the loss is not immediately recognized, but is added to the basis of the purchased securities. Any loss is recognized when those securities are ultimately sold—as long as the later sale is not made a wash sale by another purchase.

An ETF portfolio manager may realize a loss on a portfolio security by selling it for cash and distributing the resulting cash as a substitute for the security in a redemption basket. However, an in-kind creation transaction within a period beginning 30 days before and ending 30 days after the realization of this loss might bring the same number or more new shares of the portfolio security sold at a loss back into the portfolio. If that happens, the loss will be deferred and the amount of the loss will be added to the cost basis of the newly acquired shares. If this occurs frequently because the portfolio composition is stable, the addition of wash sale losses to the basis of security positions can lead to substantial unrealized losses in a fund that has, overall, a reasonable performance record.

If the ETF needs to recognize a loss to avoid distributing capital gains, the portfolio manager can remove the security on which a loss is realized from the creation basket for a while to avoid a wash sale. Sometimes the wash sale rule can defer loss realization in an ETF and prevent a large buildup in realized losses that expire after eight years. The 500 SPDR apparently was not able to do this fully in its 2009 fiscal year and over \$400 million of loss carry-forwards expired.

The wash sale rule can also affect an investor who realizes a loss on a position in the shares of a fund. The investor can realize this loss simply by selling the fund shares, but at least one question remains: Does the purchase within 30 days of a different fund holding a similar portfolio trigger the wash sale rule? Some observers argue that buying a fund tracking a different index is enough to avoid the effect of the wash sale rule. Most would argue that the return correlation between the two funds should not be too close. Check with a personal tax advisor to get appropriate comfort before making

a similar fund purchase within 30 days before or after realizing a loss on the sale of fund shares. In my experience there is no unanimity among tax advisors on how closely the replacement fund can resemble the fund on which the loss was taken.

The wash sale rule interacts with other tax provisions in ways that can sometimes make it a taxpayer's friend. Robert Gordon of Twenty-First Securities, one of the best tax-aware investors around, has described a way to use the wash sale rule to sell an index fund while maintaining exposure to the index, realizing the loss and even converting part of a long-term loss into a short-term loss. Gordon (2009) describes selling an S&P 500 index mutual fund or ETF that the taxpayer holds at a long-term loss and buying a listed S&P 500 *index* call option that expires in the following year. The loss is added to the cost of the index option, but the option is subject to §1256 of the tax code and must be marked to market on December 31. The mark to market should trigger realization of the investor's loss for tax purposes and any mark-to-market gain or loss is taxed as 60 percent long-term and 40 percent short-term. Needless to say, you should confirm this with your own tax advisor.

OTHER PASS-THROUGH COLLECTIVE INVESTMENT VEHICLES

Although RICs are by far the most widely used collective investment vehicle for ETFs in the United States, restrictions on the nature of the income a RIC can earn and restrictions on the nature of the assets a RIC can hold limit their flexibility. Fortunately, there are other pass-through vehicles that can provide exposure to positions or portfolios that do not work in a RIC. These other pass-through vehicles include grantor trusts, securitized commodity funds, and exchange-traded notes (ETNs). These three are the most important of the non-RIC collective pass-through vehicles used for exchange-traded investments.

Grantor Trusts

The most important and probably the best examples of the grantor trust structure are HOLDRS and the SPDR Gold Trust. Their shareholders are taxed as if they hold the underlying position directly. The grantor trust's underlying portfolio does not change over time with a change in an index or in an actively managed basket of securities. When additional units of the trust are created, the party creating the shares will deposit a portfolio or

a position that matches the existing percentage composition of the trust's holdings exactly. Most investors are under the impression that the creation and redemption basket of a RIC ETF matches the composition of the portfolio exactly. This is not necessarily true even for benchmark index RIC ETFs. In the case of a grantor trust, however, the deposit and redemption baskets are identical in composition to the ongoing trust portfolio. For example, in the case of the SPDR Gold Trust, all holdings (with the exception of a small amount of unallocated gold equal in value to a fraction of a standard gold bar) are in allocated gold bars on deposit with a custodian bank. Each creation unit of 100,000 shares of the trust originally consisted of 10,000 Troy ounces of gold. A small amount of gold is sold regularly to cover expenses. Custodian banks cannot lend or make any other use of the trust's gold.

HOLDRS are an interesting grantor trust product developed by Merrill Lynch. The first HOLDRS were based on the split-up of the Brazilian telephone company, Telebras, into 12 separate companies in mid-1998. The Telebras HOLDRS are interests in a grantor trust that holds the spin-off companies, much as several unit trusts were set up to hold the component pieces of AT&T at the time of the court-mandated divestiture of the regional telephone operating companies in 1984.¹⁶ The original Telebras HOLDRS still hold shares in four of the Telebras companies and the Telebras HOLDRS still trade in small volumes on the New York Stock Exchange. Subsequent HOLDRS baskets with portfolios selected by Merrill Lynch were launched from 1999 through 2001. Some of these HOLDRS originally held 20 securities in each of a number of narrowly defined industries and some held a larger number of securities and provided broader diversification.

Like the gold trust or '40 Act ETFs, the number of HOLDRS units outstanding expands and contracts in response to changes in demand. The creation unit aggregation for RIC ETFs usually ranges between 25,000 and 600,000 fund shares, but the minimum trading unit on the secondary market is a single fund share. In contrast, the creation unit *and* the minimum transferable trading unit in HOLDRS is 100 shares. Some brokerage firms will not deal in fractional shares or odd lots of HOLDRS.¹⁷ An investor can buy and sell HOLDRS in the secondary market or an existing HOLDRS position

¹⁶These unit trusts were different in structure from the SPDR in that they could not make replacement transactions in the deposit portfolio and were in most respects closer to the grantor trust model than to an index ETF version of the unit trust.

¹⁷The Depository Trust and Clearing Corporation (DTCC) does not transfer fractional shares or fractions of the basic trading unit of a security, which is 100 shares in the case of the HOLDRS. Fractional trading unit positions will not be transferred if you want to move your account to a different firm. However, many firms use internal trading and accounting systems that accommodate fractions of the nominal

can be redeemed (exchanged for its underlying stocks). A new HOLDRS position can be created by depositing the securities in the 100-share HOLDRS unit with the Bank of New York Mellon, the HOLDRS custodian.

The original stock basket underlying a 100-share HOLDRS unit will always consist of whole shares of the component stocks. In the event of a merger affecting one of the companies, any cash proceeds will be distributed. A surviving company's whole shares in a stock merger will usually be retained in the HOLDRS basket, but fractional shares will be sold and the cash distributed. The creation/redemption fee for HOLDRS is at least several times greater in *relative* magnitude than the comparable fee on RIC or other grantor trust ETFs. The HOLDRS fee is per unit, with no assurance of a break for large transactions. The pricing principles and arbitrage pricing constraints operate in a similar way to those affecting other ETFs.

To the extent that one of the stocks in a HOLDRS basket performs poorly and the investor wants to use the loss on that stock to offset gains elsewhere, the HOLDRS can be taken apart and later reassembled without affecting the tax status of any shares not traded. The ability to realize a loss on an individual position may give the HOLDRS structure a slight tax advantage over the investment company-based ETFs in some circumstances. On the other hand, unlike redemption in-kind of the shares of an open ETF, the HOLDRS structure does not permit elimination of a low-cost position in the HOLDRS portfolio without realization of the gain by the investor.

The principal disadvantages of HOLDRS are that they lack the indefinite life of an investment company and there is no provision for adding positions to offset attrition through cash acquisitions (or bankruptcies) of basket components. No HOLDRS component that disappears in a cash merger can be replaced in the HOLDRS basket. The thematic nature of a HOLDRS basket may change when component companies become small divisions of large companies that acquire them.

Some HOLDRS share an important trading characteristic with index ETFs: It is frequently less costly to trade the basket in the form of HOLDRS than it is to trade the individual shares, particularly for a small- to mid-sized investor who might be trading odd lots in many of the basket components, if HOLDRS or ETFs were unavailable. Information on the Merrill Lynch HOLDRS is available at www.holdrs.com/holdrs/main/index.asp?Action=Home.

minimum unit of a security. Some of these systems were originally designed to accommodate the New York Stock Exchange's Monthly Investment Plan (MIP) over 50 years ago. MIP was designed to let investors buy odd lots and fractional shares as a start in owning their share of America.

Securitized Commodity Funds

GLD and other grantor trusts with commodity holdings that do not deteriorate over time and that can be stored at a modest cost relative to the value of the position, offer a reasonably efficient way for investors to invest in gold, or even a lower value metal like silver. Agricultural commodities, less valuable metals, and oil and natural gas can lose value in storage and, more importantly, have low value relative to the cost of storing them. Producers and users store working inventories of these commodities, but they rely on annual crop production and continuous extraction to meet their ongoing needs. They use informal forward transactions and more formal futures markets to manage their inventory and price risks. Small investors have not used commodity futures markets routinely in the United States, but the introduction of a number of commodity-futures-based ETFs has provided small investors with investment access to agricultural and industrial commodities that is very roughly parallel to the investment access GLD provides to gold.

Until you look carefully at their prospectuses or other disclosure documents you may not realize that some of the fastest growing exchange-traded commodity funds are not '40 Act investment companies. They are securitized commodity funds. (The legal form is usually a limited partnership.) The most popular of these are the U.S. Oil and Natural Gas Trusts and the Deutsche Bank PowerShares commodity funds. Most of what I have said about investment company taxation does not apply to these funds. There are, of course, pass-through features but the distributions of these funds have the mixed short- and long-term capital gain and loss characteristics of distributions from a limited partnership commodity pool. Rather than a Form 1099 from their broker, investors in securitized commodity funds receive a K-1, the same tax document that is distributed by partnerships, limited liability companies, and many trusts. When these securitized commodity funds were first introduced there was considerable concern over how investors would react to receiving a K-1—which is certainly a less familiar tax form to the average fund investor than the Form 1099 distributed by a brokerage firm, a mutual fund, or a bank. Somewhat surprisingly, the accounting firms that work with these funds have made the funds' K-1s relatively painless at tax return preparation time and readily acceptable to investors.

These futures-based products show every sign of growing in popularity. Looking out five to ten years, I expect them to be second in popularity only to investment company ETFs. The securitized commodity pool limited partnerships and the grantor trust commodity ETFs have both securitized and democratized access to futures and spot investment and trading in a

wide range of commodities. With few exceptions, the ordinary U.S. retail investor found it difficult to invest in commodities before these products were introduced. Commodities and futures contracts can't be held in a securities account and futures margining is very different from securities margining. As noted previously, futures variation margin changes result in cash flows into and out of the account that a small investor can't manage efficiently. The futures industry had not found a way to accommodate these small investors until the gold trust accommodated small securitized commodity investments in a grantor trust and securitized master limited partnerships were adapted to provide access to indexed and managed futures positions and portfolios. Expect to hear more about the democratization of these markets as the futures position limit issue plays out over the next few years.

COMMODITY FUTURES POSITION LIMITS AND PRICE IMPACT ISSUES

There is considerable uncertainty over the fate of some commodity ETF products that rely on futures markets to maintain positions in politically and economically sensitive commodities. Market regulators in the United States, principally the Commodity Futures Trading Commission (CFTC), have been given a mandate to establish and enforce limits on the positions any individual or entity can hold in many commodities futures markets. The principle notion behind the push for strict position limits is concern that large, concentrated futures positions in key agricultural and industrial commodities might have an adverse impact on users of these commodities.

The history of commodity markets includes many examples of speculation gone awry. Having examined many of these episodes, I can report that they have usually been more painful for the speculator than the industrial or individual users or the producers of the commodity.¹⁸ Attempts by governments to dampen fluctuations usually make matters worse. The present enthusiasm for position limits seems to stem from perverse convictions that speculative positions can somehow cause producers to realize lower prices while consumers

¹⁸The principal effect on the "real" market from rising futures prices is short-term over stimulation of production.

simultaneously pay higher prices. Common sense suggests that such a combination is a highly improbable outcome, but the position limit debate has generated a number of such statements.

The questionable rationality of commodity futures position limits as a way to dampen fluctuations aside, investors in commodity-linked exchange-traded products are typically small investors who would not have been able to take a position (long or short) at a reasonable cost without the exchange-traded product. Large investors can take positions directly in the futures markets at lower cost than they can buy a commodity ETF. The relevant position for any control purpose is the position of each investor, not the total position in a public fund portfolio. The ultimate practical effect of commodity position limits will be to stimulate the introduction of a number of similar (clone) exchange-traded instruments by a number of issuers. Each traded product will have its own separate position limit under the rules that appear to be under development.

A secondary argument behind the rush to impose position limits is a concern that speculative interest in these markets may create artificial demand leading to a price bubble. The introduction of a lot of new investors to just the *long side* of the futures markets *might* have that effect. The notion of a bubble stimulated by the flow of new money has come up in connection with the growth of emerging market fund assets (see pages 126–129 in Chapter 5). I admit to scratching my head over the price levels and patterns in the natural gas market; but if markets work as well as I believe they usually do, commodity fund issuers will eventually create more funds that take *short futures positions* if prices reach unsustainably high levels. Alternatively, investors will sell short shares in funds or trusts that hold long positions. In the intermediate- or long-term, any effect position limits might have on underlying prices of agricultural, industrial, and energy commodities is likely to be negligible.

As you observe the effect of these regulatory efforts, keep in mind that growth in securitized commodity funds holding futures positions may temporarily affect price levels and the pattern of spot and forward prices for an underlying commodity, but they do not remove physical commodities from commercial and industrial spot markets.

On the other hand, grantor trusts holding gold, silver, platinum, and palladium ingots do reduce the metal supplies available to

(Continued)

COMMODITY FUTURES POSITION LIMITS AND PRICE IMPACT ISSUES *(Continued)*

industrial users. Consequently, these trusts can have an intermediate or even a long-term effect on the equilibrium price of the metals they hold. The reason grantor trusts are different from securitized futures funds is that the grantor trust structure “sterilizes” the metal held by the trust. Depositing “allocated”¹⁹ metal with a custodian in a grantor trust withdraws it from the market for as long as it is held by the custodian. Some of the effect of removing this metal from the market is psychological but much of the effect is real.²⁰

The most recent numbers I have seen indicate that the GLD trust holds substantially less than 1 percent of the world’s refined gold supply. Cornering the gold market is inconceivable because the amount of gold that could be produced would be enough to create dozens of GLD trusts every year *if gold producers could secure long-term fixed price contracts to sell gold at prices current in 2010*. The economics of producing gold, silver, platinum, and palladium vary considerably, but no knowledgeable user of these metals would argue that there will be demand for ever growing amounts of any of these metals at progressively higher prices. There is enough of all these metals in the ground to assure an exponential increase in supply in response to high contractual prices for future delivery. Of course, producers will not gear up to produce huge new supplies without some assurance of continuing favorable prices. Grantor trusts can be a source of metal supply if speculators feel the price has peaked. If there is growing

¹⁹Allocated metal is metal that actually exists, can be identified, and is owned by a specified party. Unallocated metal can be traded, but it may not actually exist. Banks that may or may not hold any physical metal can trade the metal “on paper.” Someone who purchases, say, unallocated gold bullion is not purchasing a share in a bank’s gold holdings. A bank need not actually have any gold physically on-site in order to trade in unallocated gold. If the bank fails, any unallocated gold that the bank does hold becomes the property of all the bank’s creditors. An investor who has taken a position in unallocated bullion becomes, at best, a general creditor of the bank. A holder of allocated gold should be able to secure delivery of his gold.

²⁰The SEC has imposed limits on the size of some of these trusts to constrain price impact. The principal effect of these size limits has been to stimulate rather than reduce speculative fervor.

industrial demand, refined metal can be removed from a grantor trust much more quickly than it can be mined and refined.

A significant factor in the growth of precious and semiprecious metal grantor trusts has been the expectation/hope that the existence of these investment products will create enough new demand for the underlying metals to drive their price ever higher.

Exchange-Traded Notes (ETNs)

Open-end exchange-traded notes are a relatively simple modification of underwritten structured corporate notes with an embedded securities or commodity exposure. Such notes have been offered in many financial markets for a number of years. The early structured equity- or commodity-linked notes have been modified to make them open-ended, at least partly in response to the popularity of investment company ETFs. The open-end notes are often linked to the performance of a currency, a commodity index, or some other variable that is not easily incorporated in a RIC format, but some are linked to equity indexes, particularly indexes that track equities that would be “foreign” in the country where the notes are offered and traded.²¹

During the financial turmoil of 2008, the popularity of these notes declined because they are exposed to the credit of the issuer. Lehman Brothers had been an issuer of some of these notes shortly before its financial problems became acute. As Lehman’s troubles were widely discussed, investors and market makers liquidated most of the Lehman exchange-traded notes prior to the firm’s bankruptcy.

Exchange-traded notes fall into two categories for tax discussions. One type typically provides exposure equivalent to a money market instrument denominated in a foreign currency. The other type offers long-term exposure to a return based on an unusual equity index, a commodity index, or an economic index (such as the cost of living), which is not readily investable for retail investors through more traditional financial instruments. The IRS issued Revenue Ruling 2008-1 stating that a single currency-linked ETN should be characterized as a debt instrument with income taxable to the holder on a current basis, generally as ordinary income.

The IRS also issued Notice 2008-2 asking for public comment on the tax treatment of long-term ETNs. The possible resolutions for taxation of

²¹Some equity linked notes on foreign equity indices exploit tax arbitrage opportunities.

long-term ETNs include indefinite tax deferral, taxes levied on undistributed income, and even withholding taxes on foreign holders. No resolution of the tax treatment on non-currency ETNs is in sight. The IRS has neither accepted nor denied the prepaid forward contract treatment preferred by issuers and investors in ETNs that accumulate value over time. Since there are usually no distributions on these notes before they mature, prepaid forward contract treatment would mean no taxation until the investor sold or redeemed the contract/note. At this writing, about two years have passed since the date set for public comment on the appropriate treatment of these longer-term notes and no IRS ruling has been published. This is probably the most significant unresolved tax issue affecting exchange-traded products. Only if resolution of the tax uncertainty leads to tax deferral until the note is sold or redeemed (an uncertain outcome) will ETNs rival investment company and commodity pool ETFs.

THE RELATIVE TAX-EFFICIENCY OF MUTUAL FUNDS, EXCHANGE-TRADED FUNDS, AND PORTFOLIO BASKETS

Advocates of mutual funds, exchange-traded funds, and separate stock portfolios (including HOLDRS and Folios) have long disputed the relative tax-efficiency of their respective approaches to equity portfolio holdings. The purpose of this section is to codify appropriate information for investors who may be justifiably confused by what they have been reading or hearing from diverse sources. While I have attempted to summarize conclusions on the relative tax-efficiency of the three portfolio structures in Exhibit 4.3, the answer to the question, “Which way of holding a portfolio of common stocks offers the greatest tax-efficiency?” will usually be, “It depends on investment results.” At the risk of removing an element of suspense before the story begins, it is possible to choose between mutual funds and ’40 Act ETFs. The ETFs should be the vehicle of choice for any *fund* investor. Discussing the principal tax issues highlighted in Exhibit 4.3 should help investors understand what tax features are most important as the first step in making an informed choice, given their personal circumstances. In many instances, the appropriate choice will depend on holdings (or gains and losses) outside the fund or basket under consideration.

Deductibility of Investment Management Expenses

As suggested by the plus signs (+s) in the fund columns of Exhibit 4.3, any investment management or other expenses incurred by a fund are

EXHIBIT 4.3 Factors Affecting Tax Efficiency of Mutual Funds, ETFs, and Direct Accounts (Including HOLDRS, Folios, Etc.)

	Mutual Funds	Exchange Traded Funds	Direct Accounts (incl. HOLDRS, Folios)
Deductibility of investment management expenses	+	+	–
Pass-through of losses	–	–	+
Pass-through of STG (in character)	–	–	+
Deferral of STG	–	+	–
Deferral of LTG (with changing portfolio)	o	+	o
Step-up of basis at death	o	+	+
Appreciated shares for charitable gifts	–	o	+
Tax impact of stocks acquired for cash in mergers	–	+	–
Successful portfolio: little turnover	o	+	o
Successful portfolio: high turnover	–	+	–
Mediocre portfolio	o	o	+
Capital gain/loss accounting	+	+	check with advisor

Key: + Best

o Okay

– Worst

STG = short-term capital gains

deductible from the fund's income before anything is distributed to shareholders. This expense deductibility holds for both conventional mutual funds and exchange-traded funds. An investor who pays any investment advisory expenses such as a traditional wrap fee that covers advice as well as replaces stock trading commissions in connection with HOLDRS or Folios, will not be able to deduct those expenses for tax purposes unless they and other miscellaneous itemized deductions exceed 2 percent of the investor's adjusted gross income. More important in recent years has been the fact that most investors face additional obstacles in claiming these deductions because of the alternative minimum tax (AMT), which restricts the deductibility of a wide range of expenses. The fact that the funds' expenses come "off the top" before taxable income is calculated can be a significant cost advantage for the taxable fund investor. As described in Chapter 11, I expect new fund share classes to incorporate advisory fees that might not be deductible for many investors if they were paid directly to an advisor.

Pass-Through of Losses

Here, the direct portfolio investor is at an advantage over the investor who purchases shares in a '40 Act fund. If some of the stocks in the underlying portfolio go up and some go down, the mutual fund and investment company exchange-traded fund cannot pass net losses through to the shareholder. In the direct ownership pass-through portfolios such as HOLDRS and folio/basket products, the shareholder owns each of the securities in the basket product, and can (perhaps with effort and some modest expense in the case of the HOLDRS) decompose the portfolio, take losses on positions that have experienced losses and, if they choose, repurchase the loss position after the 30-day wash sale period. Of course, the funds' losses cannot be passed through to the shareholder or easily offset against gains on positions outside the portfolio. The only way to take a capital loss on a fund position is to sell the fund shares. If you sell the fund and replace it with another fund, avoiding a wash sale is probably a little easier than if you are taking losses on individual stocks in a separate account portfolio.

Pass-Through of Short-Term Gains with Character Retained

When describing the taxation of regulated investment companies, I noted that any net short-term gains are reported and taxed as ordinary income, as opposed to treatment as short-term gains on the fund investor's tax returns. An investor with realized or unrealized long-term or short-term capital losses in other investments would be unable to offset short-term capital gains from distributions made by a fund against capital losses outside the fund. The investor in HOLDRS, folios, or other separate stock basket products could offset realized short-term stock gains on his tax return with capital losses realized from another source. Short-term capital gains are unlikely to be a material issue for most equity funds. Unless a fund manager is either making extensive use of initial public offerings (new issues) to spike performance or assumes most fund shareholders do not benefit from the lower tax rate on long-term capital gains, realized *net* short-term gains in an equity fund that is more than a year old are improbable. An index fund based on an index that has very high turnover would be an unusual and unattractive exception.

Deferral of Short-Term Gains

Whenever deferral of a portfolio capital gain (short-term or long-term) is desired, the ETFs stand out relative to both conventional mutual funds and the separate portfolio products for the simple reason that an astute ETF

portfolio manager should be able to redeem out enough of the portfolio's net capital gains so that the *value* of gains can be retained, untaxed, in the fund even if the portfolio is changed. Barring the presence of offsetting losses, holders of a mutual fund or a separate portfolio product will be taxed at their full marginal ordinary income tax rate on any short-term capital gains. Holders of mutual fund shares will not be able to offset the short-term gains with capital losses outside the fund because the short-term gains will be taxed as an ordinary income dividend when the fund distributes them. Again, net realized short-term gains should be rare in most equity fund portfolios. If a fund does have short-term gains, the effect of an in-kind redemption is the same, whatever the fund's holding period in the redeemed security.

DEFERRAL OF LONG-TERM CAPITAL GAINS

Each of these vehicles should be able to defer long-term gains—as long as there are no changes made in the portfolio. If portfolio changes are made and resulting long-term gains are likely to be material, the ETF once again stands out as the vehicle of choice. The investor who owns any other nonfund portfolio products may be able to offset long-term gains with losses on other components of the portfolio or other positions outside the portfolio, but this process offers less flexibility than the ETF which defers the gains, but permits a very wide range of changes in the portfolio—including complete portfolio turnover without realization of taxable gains to use an extreme example.

Step-Up of Cost Basis of Stocks at Death²²

Here both the ETF and the separate stock portfolio products can shine. Other things equal, the very long-term holder of an ETF could have most of a lifetime's return in the form of unrealized capital gains. With astute management, the holder of a separate stock portfolio might approach this ideal, but rating the separate portfolio as equal to the ETF is certainly generous treatment for the separate portfolio. Under the assumption that the investor has held a number of stocks for most of the period from initiation of the position until death, the heirs of the holder of the mutual fund are unlikely to avoid as much capital gains tax as the heirs of ETF or separate portfolio investors because more capital gains will almost certainly have been realized, distributed, and taxed over time in a successful mutual fund.

²²Step-up of cost basis at death was curtailed for some large estates at the start of 2010 and, like most changes made by the 2001 tax law, it is scheduled to be reinstated in 2011. There is considerable uncertainty as to exactly what will happen.

Appreciated Shares Usable for Charitable Gifts

Here the separate portfolio products may triumph. Individual stock positions can be separated and the one with the greatest appreciation—that is, the one with the lowest relative cost basis—can be donated to charity to maximize the deductible donation without paying tax on the gain. In the case of the ETF, the stock positions are combined or averaged so the appreciation of the fund shares will be approximately the average capital gain return on the portfolio as opposed to the separate account portfolio where the most appreciated security would be the one chosen for a charitable deduction. Of course, the ETF has so many other advantages that the astute investor is more likely to use ETFs rather than a large separate account, leaving fewer significant individual stock holdings. A low-cost holding in a security associated with the investor's employment is more likely to be large enough to consider for this purpose than an ordinary investment holding. With a mutual fund, more capital gains likely will have been realized so that some of the appreciation of the shares will have been taxed previously. Over time, the tax basis on mutual fund shares may be increased by reinvestment of realized gains, making mutual fund shares relatively poor candidates for in-kind charitable contributions.²³

Tax Impact of a Low-Basis Stock Holding Acquired by Another Company for Cash

Here the dominant portfolio format is the exchange-traded fund under the assumption that the portfolio manager will be able to redeem out the appreciated stock in-kind. If the stock is redeemed out in-kind rather than sold, no gain is realized for tax purposes and, thus, nothing is distributed to shareholders. The mutual fund and the separate portfolio product would have experienced taxable capital gains with few opportunities to shelter or defer them.

Let's look at three market scenarios in an attempt to determine the environment(s) where each of the portfolio structures does best.

Highly Successful Portfolio—Relatively Little Turnover Here, all the portfolios do well because there is no need to shelter or go to extraordinary lengths to defer gains. ETFs should do slightly better because they may be able to shelter *all* net capital gains from taxes without losing effective

²³ Consider that the step-up of basis at death and the use of appreciated securities for charitable gifts are two significant ways to realize more of the value of capital gains tax deferral.

diversification. Mutual funds and separate accounts are less able to maintain diversification or reduce exposure to their best performing stocks in a runaway bull market without adverse tax consequences.

Highly Successful Portfolio—High Turnover In this case, the ETF shines alone because of the ETF portfolio manager's ability to redeem out many of the gains in securities the manager of an active fund wants to unload or, in the case of an index fund, has to sell to continue to track the index. Unloading a successful position in either a mutual fund or a separate portfolio will usually lead to substantial capital gains taxes.

Mediocre Portfolio Performance In this case, neither the ETF nor the mutual fund portfolio is likely to do quite as well as the portfolio of separate securities, but taxes are of limited importance under these circumstances because any net gains are modest. The ability to realize losses on unsuccessful positions may, under these conditions, be slightly more valuable when the positions are held in a separate account. With a separate account, losses can be realized to offset any gains, both in the portfolio under discussion and in other positions that the investor holds.

Consolidated Accounting of Gains and Losses for Tax Filings

The rankings on this topic can be important if the portfolio is traded actively. In both the mutual fund and the exchange-traded fund, all of the accounting information an individual needs to complete a tax return is provided by the fund, a brokerage firm, or a bank except, in some cases, the investor's basis in the fund shares. To the extent that the separate position investor is an active trader, it can be extremely important that the broker or advisor provide a schedule of gains and losses. In the direct accounts, the schedule of gains and losses should be comprehensive—that is, if the investor deposits securities with the firm rather than using cash to buy all new positions there, the consolidated accounting of gains and losses must be based on the investor's correctly entered and adjusted cost basis. Ordinarily, a brokerage firm 1099 statement and related documents will provide adequate detail on such things as dividends and interest received and interest expense; but an investor who is an active trader may have to devote considerable time to preparation of a schedule of realized gains and losses. Every investor should ask about consolidated reporting of gains and losses for tax accounting. Folio accounts usually have access to a capital gain and loss schedule, but users of HOLDERS may have to do some work or pay an accountant to do it for them. Financial intermediaries will be required to supply comprehensive

statements of gains and losses on securities to investors within a few years, but in some cases these statements will be only as good as the information the investor can furnish on positions acquired elsewhere and transferred into the reporting firm.

Making a Choice

Even a cursory examination of the table indicates that the ETF dominates the mutual fund under essentially all the conditions discussed. The decision is more complicated when comparing an ETF with HOLDRS, folios, or baskets where each position can be treated as a separate position as opposed to a component of a portfolio inside a regulated investment company. Here, too, however, some generalizations are possible. To the extent that the period over which the portfolio or fund is held is a period characterized by poor or mediocre returns, it might be that the basket product—HOLDRS, Folios, and so on—would be more attractive because of the ability to separate and realize losses. Of course, to the extent that a portfolio has capital losses, such losses do not have a great deal of value for most investors unless they can be offset against gains elsewhere in the same tax year, or on a carry-back or carry-forward basis.

If an investor does not have a reservoir of unrealized gains outside the portfolio under discussion or if the return from the portfolio is quite high and the investor experiences a high rate of portfolio turnover, then the ETF is a conspicuously superior choice from a tax-efficiency perspective.

INVESTMENT COMPANIES AND QUALIFIED DIVIDENDS

Beginning in 2003, dividends paid on corporate equity securities such as common stocks and preferred stocks began to be taxed differently from other types of investment income such as interest on fixed income securities and, in the case of regulated investment companies, short-term capital gains. These qualified dividends are now taxed at essentially the same rates as long-term capital gains for most investors. The tax rate may rise in 2011, but the rate on qualified dividends and long-term capital gains will probably remain lower than the ordinary income rate.

Congress wanted to discourage funds and individual investors from trading dividend-paying shares to maximize their receipt of lightly

taxed qualified dividends. Consequently, the enabling legislation that created the preferential qualified dividend tax rate requires that the security paying the dividend has to be held by a fund that would pass the dividend on to its shareholders *and* the fund shares have to be held by the shareholder for at least sixty-one (61) days, including the day on which the dividend is paid. As we have seen, creation and redemption activity in an ETF requires active tax lot management to assure capital gains tax efficiency by redeeming out their lowest cost shares and selling their highest cost shares when a redemption occurs. Tax lot management is complicated by any attempt to hold a dividend paying stock for sixty-one (61) days around the time the stock pays a dividend, if that objective conflicts with capital gain deferral objectives. If the fund does not meet the holding period requirement, the dividend will not be qualified and will be treated as an ordinary income dividend subject to higher ordinary income tax rates. As described in Chapter 6's discussion of fund evaluation, it is appropriate to evaluate a fund manager's effectiveness partly on the basis of the percentage of eligible dividends that are distributed as qualified dividends. Keeping dividends qualified is usually easier for a mutual fund manager, but most ETF managers should be able to accomplish it.

In addition to concern about the fund manager's effectiveness, there is an additional tax concern for individual investors who hold their dividend-paying ETFs in a margin account. Most equity ETFs distribute dividends that are largely or fully "qualified" for a reduced dividend tax rate. The dividends received by investors from funds paying qualified dividends are not always taxed as qualified dividends because brokerage firms can loan customer securities held in margin accounts under a variety of circumstances. A substantial number of investors have found that some of the qualified dividends paid by their ETFs have been categorized as payments in lieu of a dividend rather than as "qualified" dividends on 1099 forms from their brokers. The treatment of an ETF's entire annual dividend or a specific quarterly or monthly payout as a nonqualified dividend or a payment in lieu usually happens because the investor's shares have been loaned to a short seller over a period including the fund's dividend record date. Unfortunately, yelling at your broker *after* you get your 1099 will probably not prevent or compensate you for the cost of this "tax enhancing" event.

(Continued)

INVESTMENT COMPANIES AND QUALIFIED DIVIDENDS *(Continued)*

Brokers have long been permitted to lend customer securities if the customer is using some of the services available in a margin account. Putting a security in a cash account usually prevents share lending. SEC Rule 15c3-3 describes the conditions on which brokers can lend shares from customer accounts if you want to do your own research. If you need to use a margin account for financing or for your own short selling, you might consider asking the broker for written assurance that your shares will not be loaned or that you will be compensated for any adverse tax consequences if they are loaned. At least one brokerage firm has indicated that it will attempt to make customers whole for adverse tax effects of a securities loan, but many firms explicitly state that they will not.

Even if your 1099 shows that the dividends are qualified, there is some risk of receiving an amended 1099 *long after* you file your tax return. In short, it is a good idea to deal with possible problems in advance.

OUTLOOK FOR CHANGES IN INVESTMENT COMPANY TAXATION

This chapter was written with growing concern about tax increases and possible tax changes in the air. There is little doubt that tax rates will increase after 2010. Changes in the tax structure have always been less frequent than rate changes and harder to predict. The purpose of this section is more to highlight the issues than to predict the outcome. My bias is to suggest that the basic structure of the tax code will remain. Aggressive interpretations of the tax code may be at greater than usual risk, however. For a number of years, members of Congress have regularly introduced bills that would defer or eliminate taxation of capital gains distributions by mutual funds up to a few thousand dollars per family. These bills have not passed. It is hard to assess the probability of such a feature being part of future tax legislation; but it is probably no more than an outside possibility in the context of recent tax policy discussions. Coates (2009a and 2009b) develops a sometimes passionate plea for liberalization of investment company capital gains taxation, but there is little political support for this effort.

A topic occasionally raised by tax pessimists is the possibility that the deferral of gains through redemption of fund shares in-kind might be eliminated. Complete elimination would require legislation because the provision is part of the Tax Code. An interpretation or IRS ruling that would require a redeeming fund to deliver shares at, say, the average cost of the shares held in each security in the fund is theoretically possible, but it would clearly run counter to the apparent intent of Congress when our representatives included this provision in the Tax Code. Furthermore, this feature is important as a partial offset to the inability of investment companies to pass on losses to their investors. It also appeals to the sense of fairness that a capital gains tax should only be levied when an investor takes cash out of the fund. As indicated in the discussion of non-U.S. funds in Chapter 12, some other countries permit deferral of capital gains realized in a fund until the fund shares are sold. If there is political interest in improving the U.S. investment management industry's international competitive position, changing this tax provision is not the way to proceed.²⁴

I am not aware of any significant effort to change the tax treatment of investment company redemptions in-kind. Given the public enthusiasm for tax efficiency combined with the small number of investors who actually benefit directly from it, there is little reason for even the most aggressive tax hawk to champion a change in this provision, particularly after the 2008 market decline. Many investors would be angered and additional tax revenue would be negligible for some years to come. From a tax policy perspective, the most important change in fund taxation that would be perceived as improving "fairness" would be to defer all taxes on capital gains reinvested in '40 Act funds until the shareholder sells her or his fund share position and, as indicated previously, that seems even less likely.

Another tax issue that occasionally comes up in fund discussions is the diversification requirement for a regulated investment company, because diversification is a tax requirement rather than an SEC requirement.²⁵ Many portfolio managers would prefer to be able to use whatever distribution of holdings they chose or whatever distribution is dictated by the composition of an index (similar to the liberal index requirement under the UCITS rules in Europe). There seems little likelihood that Congress will revise the RIC diversification requirements anytime soon. Many legislators are fully aware of the risk reduction advantages of diversification and they are unlikely to go out of their way to help investors *reduce* their level of diversification.

²⁴See Chapter 12, pages 283–284.

²⁵Investment companies are required by the SEC to undertake in their registration documents to qualify as regulated investment companies, making their continued qualification the only SEC issue.

EQUALIZATION ACCOUNTING AND EXCHANGE-TRADED FUNDS

Mutual funds that have experienced significant redemptions may use special allocation rules to protect ongoing shareholders from having to pay a disproportionate share of the taxes due on the fund's income and/or capital gains. These allocation rules are called equalization accounting.

With equalization accounting, a portion of the fund's taxable distributions are attributed to redeemed shares. The net asset value of the remaining shares is unaffected, but the distribution to shareholders staying in the fund may be reduced.

Equalization applied to capital gains in a mutual fund may protect ongoing shareholders from some of the effects of stock sales necessitated by departing shareholders redeeming for cash. An ETF can avoid most gains distributions for its ongoing shareholders by allocating low-cost basis shares to redemption baskets, making capital gains equalization unnecessary for most equity ETFs. A number of ETFs use equalization accounting for income distributions.

The only significant question about the use of equalization with respect to gains distributions by ETFs has been in leveraged long and leveraged inverse funds. As described in the chapter on these funds, some successful inverse funds made substantial distributions in 2008. Equalization appears to have been used to protect investors in some of these funds from inappropriately large tax bills from those distributions. Equalization might be used in a fund that has both conventional and ETF shares. How, if at all, to use equalization is an issue for each fund's directors and tax advisors.

CHAPTER 5

The Economics of Indexing, Trading Transparency, and Limited-Function Active Management of ETFs

The first edition of *The Exchange-Traded Funds Manual*¹ devoted a lot of attention to indexing and the selection of indexes. It stressed the importance of avoiding overly popular indexes and described how to look for an index fund manager who tried to beat rather than just match a benchmark index. There was also extensive discussion of the offerings available from ETF issuers at the time of its publication and where readers could go for updated information. Index topics are also covered in this edition, but the emphasis has changed to reflect changes in the ETF marketplace. The scope of continuing ETF innovation and the availability of improved information on the Internet are both so extensive that individual investors and advisors can get most of the fund specific information they need from electronic sources that make regular updates. However, the Internet is not necessarily the best place to find information that is digested and organized to help investors and advisors make appropriate analyses and reach financially rewarding decisions. One key objective of this edition is to provide more of that digestion and organization.

This chapter and the next two chapters contain some of the most important information in the book. They share a focus on making an appropriate analysis and evaluation of an ETF's investment attractiveness based largely on the characteristics of its template index or investment process and looking outside the traditional fund evaluation process for better fund structures and fund managers. As you read these chapters you will encounter a

¹Gastineau (2002b).

number of examples that emphasize three essential principles that will help you improve your fund investment experience:

1. Reducing the total costs associated with purchasing and holding the portfolio that underlies an ETF is extremely important, but be sure you are *looking at all the costs and measuring them accurately*.
2. The concept of “transparency” is often overemphasized, even eulogized, in discussions of index ETFs. You should know the investment objective and the collective stock, bond, and other exposures in the portfolio of every ETF you own. However, if you have an appropriate degree of diversification among domestic and international equities, fixed income positions, and other assets, your portfolio will represent ultimate beneficial ownership of at least several thousand underlying financial instruments. The degree of portfolio transparency that would permit you to “know” and track your exact holdings in each of these financial instruments from moment to moment does not give you any useful information. On the other hand, *if your funds reveal their trading plans in advance, that trading transparency is certain to reduce your returns*.
3. In categorizing portfolio management methods, there is a gradation between passive management (primarily indexing) and active management (a variety of methods that attempt to beat rather than match a benchmark). Extreme advocates of passive or active management often display almost religious commitment. The viewpoint underlying these chapters is that *investing should be an objective economic process* for shepherding and augmenting your family’s or your client’s assets. Faith is not an investment strategy, hope is not an investment policy, and avoiding unnecessary fees, other costs and taxes is a more certain way to improve investment returns. Open your mind to a practical rather than an ideological approach to effective investing.

INDEXING WORKS BEST WHEN APPROACHED WITH COMMON SENSE

Indexing originated from the commonsense suggestions of some uncommon visionaries. Anyone who reads the prophetic suggestions of Burton Malkiel (1973) and Paul Samuelson (1974), the logical analysis of Bill Sharpe (1991) and Peter Bernstein’s extraordinary description of the early days of indexing (1992) cannot fail to be impressed by the simple and compelling logic of the original ideas behind indexing. From the beginning, the focus of indexing was on reducing unnecessary costs that are the enemies of good investment

performance. Keeping that original focus in mind will help you avoid the problems with indexing as it is often practiced today.

Passive Principles

An observer familiar with its beginnings and looking closely at *today's* indexing activity has to be puzzled by many current index fund offerings. Nominal emphasis on low cost remains the focus of most indexing discussions, but some of the largest costs experienced by today's index funds are often ignored by index investors and the advisors who serve them. The folks who pioneered *passive investing* and its marquee implementation, *indexing*, were experienced observers of and usually participants in the financial markets. When they proposed index funds as a different approach to investing, they were reacting to objective evidence that the active management process practiced by many managers then and now is flawed. Ironically, many of the flaws these indexing pioneers observed in actively managed funds now afflict most index funds.

Actively managed portfolios are often more aggressively traded than the quality of the manager's investment ideas can justify. In some cases, actively managed portfolios are traded without enough attention to the value added—or subtracted—by the trade. Trading costs associated with buying and selling institutional-sized blocks of most stocks have always been and probably will always be large enough to require that the portfolio manager must be making a value-added trade most of the time to achieve reasonable performance. As institutional investments have grown in size, larger trades have increased the effect funds have on the cost of their own executions. This market impact increases the burden on an active manager who is trying to trade with the expectation that a change in the portfolio will improve returns after all costs.

Many analytical tools are used to evaluate the past and prospective performance of portfolio managers. The power and precision of these tools is uneven; but their use has led to a growing conviction that, for most investors, well-constructed and well-managed index funds should be a good place for their savings. If a fund manager is only average, active portfolio selections and the cost of their implementation are more likely to create costly “noise” and reduce returns than to add value. If an active investment process does not systematically add value, a portfolio's returns will be better if the manager systematically reduces costs. There remains ample evidence that superior active managers do exist, but it can be difficult for the average investor to find them.

Academic observers and objective practitioners agree that the most sensible approach to investment for most investors is to trade as little as possible

and to keep investment management costs in line with the value added by the investment process. However, as might be expected with any widely used investment method, what started as “low cost” indexing developed a life and internal rationale all its own. The linkage of indexing practice to its intellectual origins grows more tenuous each year. Today, it is as difficult to be confident you have found a well-managed index fund as it is to be confident you have found a superior active manager. To understand how this reversal of fortune came about, we need to look closely at some key developments in the history of indexing.

Why Indexes?

As Peter Bernstein’s (1992) history of passive investment makes clear, the first “index fund” was not based on an index at all. The first portfolio based on the passive investment strategies embraced by indexing’s pioneers was created in 1971. As Peter described it, that first portfolio was designed “to hold an equal dollar amount of each of the 1,500 or so stocks listed on the New York Stock Exchange, which seemed the most appropriate replication of ‘the market.’” One problem with this unindexed beginning was that equal dollar weighting is not consistent with the capital asset pricing model (CAPM) that has been widely embraced by the academic finance community. More important for passive management’s stress on trading cost reduction, *maintaining* equal dollar weighted positions in a portfolio can require a significant amount of costly trading to rebalance positions. The original equal dollar positions were soon replaced by capitalization-weighted positions that were consistent with the market portfolio of CAPM and required less trading to rebalance positions.

Given the limited number of indexes available in the early 1970s, it is not surprising that the S&P 500 and the data available on its composition and performance attracted most indexed assets. Using the most popular indexes became almost mandatory in the minds of many passive investing advocates. This was certainly the easiest choice 35 years ago, but most index fund investors carry unnecessary transaction-cost baggage because of this historical decision.

The two most popular fund template indexes, in their respective capitalization ranges, are the Standard & Poor’s 500 and the Russell 2000. A back of the envelope calculation indicates that these two indexes and their component subindexes (i.e., growth, value, and sectors) serve as templates for significantly more than half the indexed portfolio assets in the United States. Several MSCI multicountry indexes are important in their market segments, but indexing is generally more popular in the United States than in other markets and indexing is used for more domestic stock portfolios than for non-U.S. stock portfolios. Consequently, the S&P 500 and the

Russell 2000 are in a class by themselves in terms of the market impact costs of their index composition changes. The cost of index composition changes will be a recurring topic in this chapter.

Passive Trading

Indexing is not the only passive management technique that stemmed from the work of the thinkers behind indexing. The most general form of passive investing (where a major objective is to avoid high trading costs) *provides* rather than *demand*s liquidity in a portfolio's trading activity. Passive trading recognizes that the market impact associated with an aggressive purchase or sale transaction can increase an investor's trading costs. Passive traders are patient traders. They are prepared to wait to buy until someone else wants to sell, letting the seller bear the cost of the market impact.

Waiting for an order on the other side of the market is more labor intensive than rote replication of an index in a portfolio. The capacity and operating cost of an opportunistic passive trading desk is largely a function of the number of traders employed and the number of trading opportunities those traders can evaluate. Even with automation, there are relatively few economies of scale in passive trading. If anything, the larger a passive trading operation, the less attractive its average opportunity to provide liquidity will be. Ironically, the largest practitioners of liquidity-providing passive trading are hedge funds, not low fee funds offered to the average investor. There is one well-known exception. Dimensional Fund Advisors (DFA), a firm founded by quantitative analysts (quants) with backgrounds in the efficient markets/random-walk research stream that fostered indexing, uses this passive trading approach for transaction cost reduction in its mutual fund portfolios.

In contrast to passive trading that has relatively high operating costs and low—sometimes negative—trading costs, most index funds have very low operating costs and high portfolio composition change transaction costs. The operating cost of managing an additional \$10 to 20 billion in assets tracking benchmark indexes with an established index portfolio management group is usually less than a basis point (0.01 percent) per year. As we will emphasize over the balance of this chapter and elsewhere, the market impact costs associated with composition changes in the most popular indexes are many times greater than index fund operating expenses.

What Is Wrong with Indexing Today?

Many of today's indexing implementations do not measure up to the ideals of limiting trading and keeping costs low. We need to examine the high trading costs associated with transparent index portfolio composition changes

to get a handle on this problem. Indexing's zealots often ignore these costs and focus on low operating expense ratios and on the low trading costs associated with basket trades of standard index portfolios. The cost of trading a portfolio basket matching any popular benchmark index has dropped dramatically over the past 30 years. Efficient portfolio trading certainly reduces the cost of getting into or getting out of an index portfolio. Over that same 30-year period, however, the market impact cost of *index composition changes*, particularly in the most popular indexes used as portfolio templates, has increased. In fact, index composition change costs have become so troublesome that the principal index publishers have adopted strategies to reduce the cost of composition changes—and to make it more difficult to measure these costs.

Most index fund managers follow their index publisher's recipe for composition changes very closely. This policy minimizes tracking differences between the portfolio return and the index return. Devotion to matching the index composition closely is rarely necessary to keep investors happy. In truth, there has been little concern among investors, analysts, and advisors over departures an index fund manager might make from matching the composition of the fund's benchmark index. In most cases, *no one* seems to care very much about tracking differences—nor should they care about tracking if the manager can add value by reducing transaction costs to improve the index fund return.

Some recent trends in indexing techniques adopted by specialty ETFs have been away from reducing composition change costs and in the direction of (1) actively trading portfolio securities to follow quantitative models that create an ETF with high composition turnover and (2) different (noncapitalization-based) index weighting schemes that tend to increase the trading costs embedded in the index composition change process. Many departures from traditional cap- or float-weighting have merit. Weighting on a basis other than capitalization can make sense, particularly if rebalancing costs are moderate; but the cost differences should be understood and evaluated.

I don't suggest for a moment that indexing advocates ignore costs. However, their focus is often on a single easily measured cost element, the fund's expense ratio, rather than on the total cost picture. Many, if not most, indexing zealots recommend the index fund with the lowest nominal expense ratio in its category, without considering the impact of trading costs associated with (1) index composition trades and (2), in the case of mutual funds, the cost to all the fund's investors of accommodating the flow of cash into and out of the mutual fund.

On the latter point, when you hear someone arguing that an exchange-traded fund (ETF) is more costly to trade than a mutual fund, keep in

mind the point raised in Chapter 1 that all the shareholders of a mutual fund are paying the costs associated with the entry and exit of mutual fund investors, day after day and year after year, whereas the investors in most ETFs pay their own costs of entry and exit and *only* their own costs. In most ETFs, the in-kind creation and redemption of fund shares protects ongoing ETF shareholders from the cost of this flow. For most index mutual fund investors, the cost of the two types of trades not usually considered by indexing enthusiasts—transparent index composition change trades and investor flow trades—dwarf the index fund’s expense ratio.

How Should Investors Approach Indexing?

Before we examine the magnitude of index composition change costs, we need to consider what we are looking for. There are several clear lessons to be drawn from the consequences of the over popularity of a small number of indexes used as templates for most of the investor dollars committed to indexed portfolios. A sensible passive/index investor who plans to invest for the long term should avoid funds based on the most popular indexes. In fact, whether a fund is engaged in either a passive or an active investment strategy, it makes sense to take advantage of predictable index fund composition changes and their effect on securities prices rather than to be a victim of those composition changes.

The simplest way to improve index fund investment results is to pick as broad an index with as little composition turnover as possible. My personal favorite index is the Wilshire 5000, the broadest, lowest turnover index for U.S. stocks (Gastineau, 2006). The Wilshire 5000 is a passive way to avoid most of the trading cost impact of index composition changes.

There is also an “active” way to profit from index composition changes. I expect to see a growing number of funds designed to exploit the market impact of composition changes in today’s most popular indexes. For example, a fund that might be nicknamed NTR 2000 (for “Not The Russell 2000”) could modify its small- and mid-cap portfolio with trades made at times and using orders designed to take advantage of the high impact trading associated with Russell’s annual reconstitution and with other features of the Russell index composition updating process. While the opportunities associated with the Russell reconstitution are most popular with proprietary trading desks and hedge funds, at least one major index portfolio manager has openly offered Russell reconstitution exploitation strategies to its institutional clients.

Most of the obvious examples of opportunities to beat indexes come from the equity markets. Stock index funds are more familiar to most investors than bond index funds and stock price changes are easier than

bond price changes for most investors to follow. However, Cavalieri, Hu, and Worah (2009) have made a strong case for active rather than passive management of funds holding Treasury Investment Protection Securities (TIPS). They point to some of the same transaction impact and trading transparency problems that adversely affect index portfolio performance in equity markets.

In both fixed income and equity markets, acting as a liquidity provider—trading as a counterparty to investors who insist on matching an index composition change exactly—can systematically improve a portfolio's results. Many successful hedge funds provide passive liquidity, and this activity often makes an important contribution to their performance. A trader who sells (buys) a security being added to (deleted from) an index and reverses the trade after the temporary demand (supply) is accommodated will often profit.

Unless the mandate to track an index is unusually strict, effective managers of indexed portfolios can avoid trading at the time of greatest index change market impact. If you don't have information on a stock's value—other than information that it is going to be involved in a change in an index—trading away from the official time of the index composition change often enhances the performance of a passive portfolio. For compelling evidence of this, see the analysis of Russell 2000 changes and the subsequent performance of stocks added to or removed from the index in Cai and Houge (2008). Later in this chapter, we will look at composition change costs in the S&P 500 and the Russell 2000 in more detail. Avoiding the cost penalty from trading *with* the composition changes in an index, and actively trading *away* from them are techniques totally consistent with the *principles* behind *passive investing*. Successful passive investors see the index composition as a map of the territory, not as a straitjacket.

If an index fund manager undertakes to make index composition changes away from the schedule posted by an index publisher to pick up some of the up-to-\$1,000,000 bills that precise index replicators leave lying in the street, give her a (figurative) hug and invest in her fund. I am aware that the largest U.S. currency denomination ever in general circulation was a \$10,000 bill, but the financial reality is greater than a realistic paper money analogy can encompass. The value that can be added by astute trading around a single reconstitution trade in a large index fund portfolio will often exceed \$1,000,000 per incident.

THE CONTINUUM: FROM PASSIVE TO ACTIVE

The two oldest major equity indexes in the United States, the Dow Jones Industrial Average and the Standard & Poor's 500, are *actively managed*

indexes. Committees make changes in both. There are no rigid rules. In the case of the Dow Jones Industrials, many companies that are not industrials, most conspicuously financial companies, have been added and removed over the years. The components that make up the S&P 500 index were selected and managed by the Standard & Poor's Index Committee for years before the index was first used as a fund template. The S&P Committee now manages the newer S&P 400 Mid Cap and 600 Small Cap indexes as well. The notion that indexes should or even could be determined by fixed rules does not go back much further than the 1980s.

The early history of the effect of transparency on the trading cost of changes in the S&P 500 composition is fascinating. The S&P 500 is by far S&P's most important index. For many years it was S&P's only significant index. The introduction of the S&P 500 was Standard & Poor's attempt to displace the Dow Jones Industrial Average as the index that investors look to as their indicator and measure of what is going on in the market. Through August 1976, S&P made no public announcements of index changes. If investors or reporters called, Standard & Poor's would give them information about changes in the index, but indexing was not yet popular and there was no reason to believe that many people cared about changes in the S&P 500 index composition. From the beginning of September 1976 through the end of September 1989 changes in the S&P 500 were announced *after the close of the market* on Wednesdays and the *change became effective the next day upon the market's opening*.

By 1989 indexing portfolios had begun to have a significant impact on the prices of stocks entering and leaving the index. The amount of trading taking place at the market opening after an index change eventually had enough impact that index fund operators and others demanded preannouncement of changes so that they could trade at the moment the change became effective. Without an announcement before the change was effective, their index funds were lagging the index performance because of what soon became known as the "index effect."² On October 1, 1989, Standard & Poor's began preannouncing index changes. The period when it was impossible to match the index was followed by what has come to be known as the "Golden Era" of indexing, in spite of the fact that scalpers began to front-run the trades that committed index fund operators were required to make to track the index. Chen, Noronha, and Singal (2004) chronicles this history in detail and illustrates many index effects.

Any student of the history of the Standard & Poor's 500 index and the operations of the Standard & Poor's Index Committee will recognize

²Index effect has become a reference to a broad range of effects that indexing and index changes have on stock and portfolio returns.

the truth of the statement that there is a continuum between indexing and active management. Since Standard & Poor's began preannouncing index changes in October of 1989, indexing industry practice has been that anyone who cares can know about changes in an index as soon as the manager of an index fund. The most important result of this practice for investors is *not* that index funds can track the index closely if they chose to; it is that opportunistic traders can front-run the trades of index funds. Even rules-based indexes are subject to front-running because the index rules are usually "transparent" and anyone who cares can trade in anticipation of changes in those indexes as well. This has been a particular problem for the rules-based Russell 2000 small-cap index—as we will see.

The manager of a benchmark index fund is not permitted to know any more about changes in the index before the changes are published than anyone else can know or learn. Benchmark index funds are the only type of fund in the world that operate under such an information disclosure handicap. When indexing was in its infancy, the market impact of index funds trying to match index changes was not significant. These market impact costs have risen significantly and—until the early years of the present century—without much fanfare.

BENEFITS FROM A DECLINE IN ETF TRADING TRANSPARENCY

The first actively managed exchange-traded funds (ETFs) in the United States were launched in 2008. These limited-function actively managed ETFs must reveal their portfolio changes before the market opening *on the day after any trades are made*. This is not a massive change, but it is significant. Hougan (2008) correctly concludes that reducing these funds' trading transparency or, in his words, reducing their "front-running" costs, is the primary motivation for this change. Any interest in these early actively-managed ETFs will develop not because they are a major innovation but because they avoid at least some of the costly trading transparency of index ETFs. Transparency in trading has become a costly mantra that ETF investors can most profitably do without.

The S&P 500 and the Russell 2000 are well-known U.S. indexes with thoroughly studied trading transparency costs. The use of "fundamental" indexes, back-tested custom indexes, and benchmark indexes from publishers other than S&P and Russell as templates for exchange-traded funds (ETFs) has created additional opportunities for traders to profit from transparent changes in indexed portfolios. A characteristic of all of today's indexed portfolios is that index changes are public knowledge *before the*

portfolio manager trades to implement the change. At present, most of the index changes for newer ETFs have a trivial market impact relative to the S&P and Russell index changes, but changes in a few of the more successful new ETF custom indexes are starting to appear on index composition arbitrage lists.

In nearly all actively managed mutual funds and other actively managed portfolios, trading plans are considered highly confidential.³ Absent confidentiality, advance disclosure of portfolio changes could be misused by traders who value any information that might help them scalp a profit by anticipating or participating in someone else's trading activity. As we discuss the effects of information that is made available to various market participants about a portfolio manager's trading intentions, keep in mind that this is not an active management versus passive management issue. It is a disclosure issue and most fund managers sensibly prefer not to disclose their trading plans. You, as an investor or an advisor, need to decide how comfortable you are with the amount of knowledge that is available to anyone who cares about the trading plans for a fund where you and/or your clients are shareholders.

Revelation of any portfolio trading plans in advance of the trade execution discloses a specific demand for liquidity from securities markets. If liquidity demands are revealed only by the entry of anonymous orders that might be executed over a number of days or weeks, the market impact of these liquidity demands is often modest. However, if liquidity demands are openly published and specified as to source, size, and time, the market impact cost of a transparent trade is likely to be significantly greater than the cost of an anonymous trade that can be executed without such fanfare.

With increasing use of transparent trading by hundreds of exchange-traded index funds, it is inevitable that multiple transparent traders will sometimes announce plans to buy or sell the same security during the same narrow time window. Once similar trading intentions have been announced at the same time by several of these funds, it will be difficult for any of the funds to change course or delay the trade. If these trades were not disclosed, one or more of the managers could decide to trade patiently—or not at all if prices changed too much to make the trade attractive. One problem with changing an announced trading plan to reduce the cost of transparency is that market participants will rely on published trading intentions. Indeed,

³The SEC mandates a Code of Ethics for employees of Registered Investment Advisors under Rule 17j-1 of the Investment Company Act of 1940. Among the requirements of this rule is detailed reporting of securities transactions by Access Persons and Advisory Persons who have knowledge of fund transactions.

a transparent trading product structure may even create the perception of public entitlement to knowledge of trading plans.

To measure the cost of trading transparency to investors, we need to separate the cost of *transparency* from the cost of *liquidity* in transparent trades. To this end, it is useful to define the cost of trading transparency as *the total trading cost of implementing a fully or partially transparent transaction minus the liquidity cost of an otherwise comparable nontransparent transaction*.⁴ Much of the price change associated with transparency in a benchmark index portfolio usually precedes the heavy trading volume associated with liquidity demand; but some transparent trades do not feature a time lag between determination of the change and the beginning of its implementation. A definition focusing on cost differences covers all cases and the cost differences can be measured in many of those cases.

HOW TRADING PLANS BECOME TRANSPARENT⁵

This section is relatively complex in that it illustrates a measurement of the cost of trading transparency in the S&P 500 and Russell 2000 indexes and the *implications* of these indexes' changes for other transparent trades. Readers more interested in the implications of this analysis than in the analysis *per se* may want to skip to the beginning of the next section on page 121.

The transparent trading process of ETFs using custom indexes and other preannounced trades should give us enough information to isolate the incremental cost of a number of kinds of trading transparency for fund investors. Before we attempt to measure transparency cost in these newer funds, however, we need to examine some of the ways that trading plans become transparent and examine measures of transparency costs in benchmark index funds. Exhibit 5.1 lists major categories of transparent and semitransparent trades. The *type* of transparency characteristic of an index or an active management investment process determines how easily we can isolate and measure the cost of any trading transparency. Some index and trade disclosure policies make the cost of transparency easier to isolate than other disclosure policies. It is worth examining the first three types of composition change trades listed in Exhibit 5.1: Benchmark Index Composition Changes,

⁴If transparency "rules" suggest a point-in-time execution (e.g., at a market close for index calculation purposes), the comparable nontransparent trade typically would be a more patient trade that might use a VWAP or other market impact minimizing algorithm. If the trade were relatively small, the comparable nontransparent trade might be a small market-on-close transaction.

⁵Much of the material in the balance of this chapter is based on Gastineau (2008a).

EXHIBIT 5.1 Transparent Trades and Their Market Impact

Type of Trade Characteristics	Benchmark Index Composition Changes	ETF Custom Index Fund Composition Changes	Actively Managed ETF Trades	Fund Portfolio Scale Trades
Speed of Implementation	Revealed gradually (rules-based) or announced in advance. The official change is at a precise moment.	Revealed gradually (rules-based) or announced. Implementation in a single trading session or less.	Single trading session	Continuous
Ease of Market Impact Measurement	Slightly more difficult as index publishers change methodologies.	Varies with index methodology. May be easy to measure.	Depends on fund policy. May be easy to measure.	Systematic measure would be of limited value.
Market Impact	Function of the popularity of the index as a fund template. Many studies.	No systematic studies yet. Largely a function of trade size and stock float.	No systematic studies yet. Largely a function of trade size and stock float.	Few definitive studies. See Edelen, Evans, and Kadlec (2007).

ETF Custom Index Fund Composition Changes, and Actively-Managed ETF Trades. Fund Portfolio Scale Trades are often low-cost basket trades that don't have important implications for the present discussion.

Benchmark Index Composition Changes

In the early days of indexing, none of indexing's advocates anticipated the magnitude of the transaction costs regularly experienced today by investors in portfolios based on some major indexes. No one could have anticipated in the mid-1970s that indexing would be so successful that index changes would lead to index fund trading costs far greater than the trading costs in an actively managed fund with portfolio changes similar in size but less transparent to other traders. In fairness to the publishers of benchmark indexes, they have been sensitive to the impact of transaction costs on index fund

investors and have taken steps to minimize changes. Of course, index publishers cannot eliminate all composition changes. Companies are acquired or go out of business and new companies sell shares to the public.⁶ Only the S&P 500 and the Russell 2000 have had enough committed indexed assets for their composition changes to generate much excitement. Now, the fact that transparent index composition trades are often costly is well understood.⁷

There are two very distinct types of benchmark index composition change transparency:

1. Most major benchmark index families are based on rules. The rules for indexes in the Russell, MSCI, FTSE and Dow Jones⁸ index families and most S&P indexes outside the S&P 1500 are well-known to index composition arbitrage traders.
2. In contrast, Standard & Poor's has an Index Committee that makes decisions to change the composition of its best-known indexes in secret and announces the changes, after the market close, a few days before the change becomes effective.⁹

Looking first at Standard & Poor's, the S&P Index Committee that manages the S&P 1500 indexes has a number of formal policies;¹⁰ but the Committee's selection of a replacement company is rarely so inevitable that traders will mark up the share price of a replacement candidate on the chance that it will be selected by the Committee on a specific date. David Blitzer, Chairman of the S&P Index Committee, has estimated that there are probably 50 or more companies not in the S&P 500 that meet the criteria

⁶To illustrate the inevitability of index changes, General Electric is the only company now in the Dow Jones Industrial Average that was in the DJIA when it was first calculated in 1896 (Prestbo 1999, p. 11). Even G.E. has not been in the index continuously since 1896.

⁷Two excellent recent studies of index composition change costs are Blume and Edelen (2004) and Chen, Noronha, and Singal (2006). Murguía and Umemoto (2006) and Gastineau (2006a and b) describe these and other studies.

⁸While the Dow Jones Industrial Average is not a rules-based index, all other major Dow Jones Indexes used as portfolio templates are rules-based.

⁹Changes in the Dow Jones Industrial Average are also made in a deliberative rather than a rules-based process, but changes are infrequent and use of the DJIA as a fund template is limited largely to the DIAMONDS ETF.

¹⁰The Index Committee occasionally ignores one or more of these policies when it makes an index change.

for inclusion at any moment.¹¹ It is usually safe to assume that the market impact of an S&P index addition begins when it is announced.¹² Deletions from S&P indexes are usually easier to predict than additions—and typically have much less market impact.¹³

Dow Jones, FTSE, MSCI, Russell, and other rules-based index publishers sometimes have their own index committees, but their committees have far less scope and influence than the Standard & Poor's Index Committee. Anyone familiar with these index publishers' rules can anticipate index changes in advance of any formal announcement or the arrival of a reconstitution date. An important characteristic of most of these indexes is that the transparency of future composition changes builds as the probability of a specific change approaches certainty. Because the probability of a specific change gradually approaches 100 percent over a number of months, it is more difficult to choose a time to start measuring transparency costs than in the case of transparency by press release that characterizes S&P index changes.

As the market impact of rules-based index composition changes became increasingly apparent—and increasingly disruptive—index publishers modified their rules to reduce the number of index composition changes, spread the changes over time and made the market impact of changes harder for analysts and traders to measure. For example, in an attempt to tame its reconstitution beast, Russell recently inserted a buffer zone between the

¹¹Standard & Poor's (2007, p. 6).

¹²DeSouza (2009) and other publications of the same nature suggest that not everyone is willing to wait for the announcement. In 2010 an unusual addition to the S&P 500 occurred when Berkshire Hathaway acquired Burlington Northern. Burlington Northern was already a member of the S&P 500 and Berkshire Hathaway's B shares were split to make them more readily tradable. The flurry over the merger, the fact that Berkshire Hathaway was the largest eligible firm not already in the S&P 500 and the downgrade of Berkshire Hathaway's credit rating by Standard & Poor's combined to create a circus atmosphere. Berkshire Hathaway like most additions to the S&P 500 clearly received a price boost from index fund buying. The classic volume spike at the close on the day the shares entered the S&P 500 accompanied by a price jump was followed by a decline in the share price on the next trading day—in spite of a strong overall market on that day.

¹³Part of the reason S&P 500 deletions have less market impact is that most of them are the inevitable result of a change in the company's status that is obvious before the Index Committee makes the change official. Only uncommon deletions like S&P's decision to drop foreign companies from the S&P 500 in 2002 or an occasional house cleaning to eliminate one or more stocks that no longer "reflect and represent the U.S. stock market" are difficult to anticipate.

Russell 2000 and the Russell 1000 to reduce disruptive movement between those two indexes.¹⁴

Chen, Noronha, and Singal (2006), hereafter CNS (2006), measured the *liquidity* cost of Russell additions or deletions from the time the additions or deletions were fully determined by the Russell rules for 1990 through 2002. The CNS (2006) calculations of the cost of index composition changes capture the cost of liquidity, but they *do not include any significant element of the cost of transparency in the Russell changes because the changes were fully determined by the date CNS (2006) began to measure the composition change effect for each year.*

Relative to announced S&P index changes; the trading transparency cost of Russell index changes is difficult to measure accurately or directly. The Russell rules-based index changes become certain gradually as the end of May approaches. While the changes are not certain until the end of May, a moment's reflection will suggest that the number of stocks whose status is significantly in question will be very small sometime before the composition changes are official.

The effect of transparency cost is relatively easy to measure in S&P index additions. A change is 100 percent certain when it is announced by S&P. As noted, we need not be concerned about anticipatory trades because few traders speculate on the S&P Committee's choice before the announcement. Using S&P 500 additions data from October 1989 through December 2002, CNS (2006) found that the abnormal return for stocks added to the S&P 500 on the first trading day after the announcement of their selection (+5.12 percent) was over 60 percent of the total abnormal return from the closing price just before the announcement until the close on the effective day of the index change (+8.37 percent). The trading session on the effective date is the time of greatest trading volume (liquidity demand),

¹⁴Most other rules-based index publishers use buffer zones as well. Soe and Dash (2009) speculate that the Russell 2000's tendency to underperform relative to the S&P 600 will be less prominent, in part because of Russell's introduction of buffer zones. These changes will help, but I don't expect the improvement in performance to be permanent. The Russell 2000's rare outperformance of the S&P 600 in 2009 is readily explained by the annual reconstitution, by some composition differences that Soe and Dash (2009) noted and by the unusual nature of the 2009 market rally. The Russell 2000 outperformed the S&P 600 in only 5 of the 16 years from 1994 through 2009 and the Russell 2000's long-term underperformance relative to the S&P 600 and other small-cap benchmark indexes is likely to continue. Of course, systematic underperformance does not hurt an index's chances of being selected as a benchmark. Many parties involved in the selection of a benchmark prefer a benchmark that is easy to beat.

but the price change on the first day of trading after the announcement is usually the largest daily price change. Trading volume on the first day after the announcement is usually much larger than volume on an average trading day, but that day's volume is typically much smaller than volume on the effective date when the demand for liquidity is manifest. If we take the first day after the announcement's abnormal return as a reasonable proxy for an S&P 500 addition's transparency cost, observed price behavior suggests that transparency cost has been more than 60 percent of the total market impact of S&P 500 additions through the moment the change becomes effective.

While CNS (2006) did not attempt to measure the transparency cost reflected in gradual price changes over the period *before* the Russell 2000 additions and deletions were fully determined, Madhavan (2003) measured at least *part* of the Russell transparency cost. Using Russell reconstitution data for 1996 through 2002, Madhavan calculated differential returns of Russell 2000 addition and deletion portfolios for the three months (March through May) *before* the changes were fully determined,¹⁵ and the returns for June *after* the index changes were fully determined and the demand for liquidity caused price changes through the end of June.¹⁶ Madhavan found that the June return (+10.78 percent) was less than 40 percent of the total March through June cumulative return of the differential portfolios (+29.04 percent).

These two very different indexes and different analytical methodologies suggest that more than 60 percent of the measurable cost of S&P 500 and Russell 2000 composition changes has been attributable to either the sudden arrival (S&P) or the growing certainty (Russell) of information on index changes—to the transparency of pending trades.¹⁷ This evidence indicates that the transparency cost element is greater than the cost of the liquidity

¹⁵To clarify, Madhavan constructed and calculated returns for portfolios that were long the ultimately determined Russell 2000 additions and short the ultimately determined Russell 2000 deletions beginning three months before market participants could be certain what the ultimate additions and deletions would be. The prices of these stocks generally moved up (additions) or down (deletions) as their status became clearer. In contrast to S&P deletions, which usually coincide with a corporate event, stocks are removed from the Russell 2000 in the annual reconstitution solely on the basis of an increase or decrease in their capitalization ranking.

¹⁶The official reconstitution—and the heaviest demand for liquidity—occurred at the end of June during these years.

¹⁷The differences in methodology are not disturbing because the authors of both papers are focused on market impact costs associated with index composition changes. Madhavan (2003)'s use of a three-month window to measure what we

needed to support the actual trading undertaken to implement changes in portfolios tracking these indexes.

These index studies certainly indicate that the cost of transparency is greater than many observers have believed, but the very large, high profile S&P 500 and Russell 2000 index changes may not be fully representative of smaller transparent trades. It is also possible that the price changes we attribute to transparency in these index changes tend to reduce or offset price changes that would otherwise *increase* the costs we attribute to liquidity demand. To state the possible effect in another way: Price changes occurring in advance of full determination of an impending change may reduce the apparent liquidity cost. We need data on more diverse trades to reach a conclusion on the cost of transparency in a wider range of transparent trading situations.

S&P's announcements of index changes based on a nontransparent committee selection process are easier to evaluate for transparency cost than the rules-based procedures of most other index publishers that reveal the growing certainty of changes as the determination date approaches. The trading associated with the Russell reconstitution is largely invisible to the mainstream financial community, but the probabilities of specific Russell composition changes are carefully evaluated by participating traders. If index composition arbitrage players can profit by monitoring other rules-based indexes, upcoming composition changes in those indexes will also be anticipated by changes in the market prices of affected stocks in advance of full certainty of the index change. However, given the complexity of measuring the degree of trader anticipation of rules-based changes, the S&P-style press release or announcement disclosure model is likely to be our most useful source of transparency cost data.

ETF Custom Indexes

The name brand indexes were licensed quickly for use in the names of ETFs, so issuers of new exchange-traded funds after 2001 had little choice but to base their products on less popular benchmarks or on custom indexes designed specifically for the ETF market. In most cases, these indexes have no significant applications other than as a fund template for a single ETF. This singularity of application suggests the possibility of relatively uncomplicated transparency cost analysis.

Most of the new custom index ETFs are small, but some new funds that captured investors' imaginations attracted more than a billion dollars

characterize as the market impact cost of trading transparency is necessarily arbitrary, but reasonable.

in assets in a relatively brief period of time.¹⁸ The use of index weighting policies that are not based on the number of shares available to trade will increase trading costs for some small-cap issues entering or leaving these funds. The more the portfolios of these ETFs depart from the standard of capitalization weighting with a float adjustment, the greater the demand for liquidity will be whenever a composition change includes transactions in less liquid securities.¹⁹ A mix of relatively larger transactions in small-cap stocks and smaller transactions in large-cap stocks will provide a diverse database for trading transparency cost measurement.

If a custom *index process* or a transparently traded ETF *investment process* is opaque—with trading transparency achieved by announcement—the cost of the trading transparency can be readily measured relative to the cost of a comparable non-transparent trade. Pre-trade transaction cost models provide good estimates of average transaction costs if a trade is executed efficiently. These pre-trade cost estimates are developed from data on millions of anonymous trades. A press release transparent fund that consistently experiences higher transaction costs than pre-trade transaction cost models predict will give us a useful measure of the incremental cost of trading transparency²⁰ to the fund's investors.

A database of S&P-style press release transparent trades is already being accumulated with each composition change in custom index ETFs that

¹⁸Of course, some instantly successful funds became small again when enthusiasm for the securities in the fund waned.

¹⁹On average, the composition change transaction costs for these index funds will be greater than for a cap-weighted fund, slightly offsetting some of the expected performance advantages described in Arnott, Hsu, and Moore (2005) and Treynor (2005). Examples of this phenomenon were noted in Scism and Salisbury (2008).

²⁰Pre-trade transaction cost estimation models assume that a trader uses an execution strategy designed to minimize transaction costs. If a transparent trade must be executed within a narrow time window or if procedural requirements for an ETF portfolio change otherwise require a suboptimal execution strategy, the portfolio will often experience higher trading costs than it would incur with an efficiently executed anonymous trade. Such requirements undoubtedly account for some of the index change costs in the S&P 500 and Russell 2000 experience. Although the additional cost may not be solely a result of revealing a demand for liquidity, the additional cost is part of the transparent trade execution process. Almgren and Chriss (2000) supports relatively aggressive trading tactics even when trading is anonymous, but many portfolio managers practice patient trading because they believe they improve returns by providing rather than demanding liquidity. Khandani and Lo (2007) describe a historically profitable hedge fund trading strategy that provides liquidity to aggressive traders, suggesting that hedge funds have often profited from the fact that patient trading generally reduces transaction costs and improves returns.

do not disclose their index rules. The cost differences between transparent trades initiated by changes in these indexes and comparable trades made anonymously in other portfolios will enable us to measure the added cost of transparency for the ETF's trades.²¹

Many of the custom indexes used for ETFs are similar to the Russell indexes in the sense that the rules are published and anyone who cares can determine the changes before they are officially announced, simply by applying the rules. The extent to which index arbitrageurs attempt to front-run these funds' transparent portfolio changes is more difficult to measure than the transparency cost of press release disclosures of portfolio changes. While an analysis along the lines of Madhavan (2003) could be used to measure the cost of this rules-based transparency, there is no reason to believe that observations from press release portfolio changes will not provide a reasonable estimate of transparency costs for less readily measurable rules-based portfolios as well. Clearly, a custom index ETF that has a few billion dollars in assets and a portfolio of stocks with small average capitalizations will soon become known to and loved by arbitrageurs and front runners, however its trading plans are disclosed.

For readers interested in learning more about fund transaction costs and transaction cost measurement, Edelen, Evans, and Kadlec (2007) is useful and thought-provoking. Extensive background publications listed on the ITG web site, www.itg.com, explain both the role of pre-trade cost analysis models and the calculation of actual trading costs.

Limited-Function Actively Managed ETF Trades

Analysis of actively managed ETF trading transparency will be like analyzing a press-release announced custom index ETF trade when the announcement comes after the trade. We don't have useful historical data on anything like this, but the process has some weaknesses from both the portfolio manager's and the investor's perspective. The initial actively managed ETFs will make most of their portfolio changes in a single trading session unless and until the fund becomes too large to make such trades efficiently on a single day. If a particularly large trade is to be made in a fund with a one-day-to-trade active management process, the transaction might be announced piecemeal and executed in tranches over several days. More likely, an attempt will be made to work with a dealer that would accumulate securities and trade with

²¹The random arrival of orders makes actual transaction costs highly variable in specific instances. This variability requires analysis of a large number of transactions and calculation of average costs.

the fund on the day before the announcement of the portfolio change. The latter technique would make comparisons with the cost of compressing or stretching out a non-transparent trade difficult.

A secondary issue affecting measurement of the cost of transparency in these actively managed ETFs is that an active manager's trade is not "informationless."²² In an actively managed fund with a portfolio selected by a quantitative model that has stock-picking capabilities or by a human portfolio manager who has skill, a stock purchase has greater future fund performance implications than an index composition change.²³ The evidence that there is value in the purchase and sale decisions of at least some mutual fund portfolio managers is very persuasive.²⁴ In this context, front-running a good manager's trades may hurt the performance of the good manager by *more* than the cost of informationless transparency in an index fund trade. On the other hand, any absence of arbitrage activity around an actively managed fund's transparent trades suggests that the market has low expectations for the manager or management process.

EFFECT OF TRANSPARENCY COSTS ON FUND PERFORMANCE

Brash generalizations in advance of collecting data are called hypotheses. With an immeasurable mixture of brashness and trepidation I would like to hypothesize the range of trading transparency costs various kinds of ETFs might incur.

The cost of trading transparency is unlikely to be a major concern for every custom index or actively managed ETF. Some funds will make very few

²²The addition or deletion of a stock in a benchmark index or a custom index designed as the template for an exchange-traded fund carries no information other than that the index composition is being changed and, as a consequence of the index change, a stock will be added to or deleted from one or more portfolios. The fact that some of these indexes are called active, dynamic, fundamental, or intelligent indexes has not been a reason to believe that the purchase by an index ETF of a security that has been added to its index has long-term implications for the performance of that security.

²³When the total assets of index funds tracking the S&P 500 were growing, index membership conferred the benefit of an index effect that caused members of the index to outperform most comparable stocks for years after they joined the index. For information on this historic phenomenon the best source is Jacques (1988). The S&P 500's market share as an index fund template has not been growing in recent years.

²⁴See pages 142–146.

portfolio composition changes and some small actively managed funds that trade before disclosing a change will be able to make most trades efficiently in a single day before the change is revealed.

Because actively managed ETFs will hold and trade securities with highly variable liquidity characteristics and will change the composition of their portfolios at highly variable rates, the expected cost of a fund’s portfolio composition trading depends on its specific costs of transparency, that is, on the cost of liquidity in the securities the fund trades, and on the annual percentage change in the composition of the fund’s portfolio. Trading transparency is costly because traders attempting to exploit transparency anticipate a profit when subsequent liquidity demand causes additional market impact. The logic behind trading in front of a transparent trade is that any front-running profit will be roughly proportional to the liquidity cost of the anticipated trade. Thus, the expected cost of anonymous liquidity trading is a logical base for transparency cost analysis to build on. While strict proportionality between transparency cost and liquidity cost is an oversimplification, the reason arbs trade on transparency information is the expectation of a further price change from liquidity demand that will permit them to unwind the trade at a profit. In this context, proportionality is a reasonable working hypothesis.

Exhibit 5.2 illustrates a range of anonymous trading liquidity costs associated with two hypothetical funds. The first fund is a large-cap fund. With minimal (5 percent per year) portfolio changes, the fund’s expected liquidity transaction costs (two-sided) are just 3.3 basis points annually. With 50 percent composition changes, the annual liquidity trading cost for the large-cap fund rises to 33 basis points. The second fund is a small-cap fund. With 5 percent annual composition changes each year, two-sided liquidity costs for that fund are 13.1 basis points, rising to 131 basis points with 50 percent two-sided composition changes. The liquidity trading cost

EXHIBIT 5.2 Annual Liquidity Transaction Cost Estimates

	Basis Points		
	(1) Spread and Price Impact (One-Side)	(2) 5% Portfolio Change .05 x Two Sides x Col (1)	(3) 50% Portfolio Change .50 x Two Sides x Col (1)
Large-Cap Fund	33	3.3	33
Small-Cap Fund	131	13.1	131

Source: Edelen, Evans, and Kadlec (2007).

assumptions are the sum of spread plus price impact from Table III of Edelen, Evans, and Kadlec (2007) for the large-cap and small-cap funds in their sample. Commissions are not included. These costs are very close to Plexus Group data for similar institutional trades.²⁵

Only additional research on the transparency cost of ETF portfolio trades can pin down the relationship between transparency and liquidity costs. If the cost of transparency relative to the cost of liquidity is as great in these ETFs as the S&P 500 and Russell 2000 data suggest, the transparency cost will be slightly more than 1.5 times the liquidity cost *of the trades that are transparent*. If the 1.5 times multiple is approximately correct, the cost of trading transparency in many indexed and actively managed ETFs will be greater than many of these funds' cash expense ratios and it will be highly variable from fund to fund.²⁶ The fact that most of the limited-function actively managed funds introduced and proposed to date plan to confine their portfolios to large-cap stocks suggests that completing their trades in a single day before anyone can front-run them is an important element of their business plan, but it is certainly not a comprehensive solution to the problem of trading transparency. Similarly, the trade-in-one-day fund model is not suitable for all actively managed portfolios.

The information we have today on the cost of transparent trading comes almost entirely from index composition changes and two very limited experiments with trading transparency. The largest of these experiments was "sunshine trading," which was used briefly in connection with dynamic, liquidity demanding portfolio insurance transactions prior to the 1987 market break.²⁷ Of these data sets, index composition changes have been studied

²⁵Cited in Edelen, Evans, and Kadlec (2007, p. 8). In general, trades in "growth" stocks are slightly less costly than trades in "value" stocks, but I ignore this distinction in the table.

²⁶In a recent paper in the market microstructure/execution immediacy literature, Chacko, Jurek, and Stafford (2008) analyze the market impact of S&P 500 additions as an extreme example of the cost of demanding immediate execution. It will be interesting to compare the results from this approach to results from the comparison of actual transparent executions to the expected cost of an efficient execution suggested in this paper. There is reason to expect complementary results.

²⁷The possible resurrection of sunshine trading to accommodate liquidity demands such as those associated with the apparent deleveraging of long-short hedge fund portfolios in August 2007 is raised by Khandani and Lo (2007, p. 29). Definitive comparisons of the opaque trading that initiated this market event with the more transparent liquidation of Long-Term Capital Management (LTCM) in 1998 are not yet available. It is likely, however, that the first fund to deleverage in 2007 fared better than it would have with preannouncement of its trading intentions—and far better than investors in LTCM fared in 1998.

most intensely and over several decades; but this transparency “experience” does not give us the kind of data we need to measure the cost of trading transparency in smaller trades.

The growth of custom index ETFs and fully or partially transparent actively managed ETFs should generate useful data on trading transparency costs. Until the database of such trades is larger and covers a longer period, the only reasonable working hypothesis is that trading is costly and that transparent trades are significantly more costly than nontransparent trades.

As the transparency cost database builds, investors will realize that indexing is a low cost way to obtain market matching returns *only if the template index for a fund does not have significant embedded trading transparency costs*. The continuing growth in indexation and the documentation of trading transparency costs mean that investors and their advisors must evaluate funds in a new way. The focus of most fund analysis on expense ratios is misplaced. Trading costs for many index funds, especially when we include the costs of trading transparency, are greater—often much greater—than the funds’ disclosed expenses.

SILENT (NONTRANSPARENT) INDEXES

Silent indexes can be a large part of the solution to index trading congestion and the transaction costs associated with transparent index funds. There are no silent index funds today. The SEC requires that fund index templates be transparent. Front-running and transparency transaction costs are the inevitable result of this regulatory requirement. This requirement will not be an obstacle because silent index funds will almost certainly not be marketed as “index funds.” They might be marketed as actively passive funds or under some other name that describes how they operate in a way that meets regulatory labeling requirements.

A silent index, then, is an index or, better, a passive management process developed and maintained for the use of a single exchange-traded fund (or a single mutual fund). It is not designed to serve as a performance benchmark, as an underlying index for multiple funds or for stand-alone derivative instrument trading. The fund itself may have derivatives²⁸ or there may be derivatives on an index developed from the fund’s sequence of net asset value calculations, but the template index for the fund portfolio is used exclusively as a template index for that fund. Changes in the silent index will not be made public until after its fund has acted on index changes

²⁸Options or single stock futures.

to change the composition of the fund portfolio. Barring an ill-considered regulatory mandate requiring deferred publication, there is no reason the index information needs to be made public at all.²⁹

The silent index fund's performance should be superior to an index fund based on a benchmark index because of the benchmark index fund's higher transparent transaction costs. Multiple funds replicating benchmark indexes, together with speculators and investors, who easily acquire knowledge of benchmark index changes, impose a transaction cost penalty on any fund using the benchmark indexes. Benchmark index funds make portfolio changes amid a flurry of market activity caused by the announcement of changes to their index. Benchmark index funds typically buy high and sell low when they trade to modify the portfolio.

A silent index can be based on the same *kinds* of rules as a rules-based benchmark index—but the specific silent index rules should not be published. The rules have to be sufficiently obscure to protect the fund from speculators attempting to front-run trades by the fund portfolio manager. The rebalancing date(s) of the fund and the capitalization range might be randomized from year to year. Of course, the rebalancing dates and capitalization range would not be disclosed. As a result of the delayed disclosure of index changes and the elimination of transparency costs, a silent index fund should outperform a comparable benchmark index fund by anywhere from a few basis points to a few hundred basis points per year, depending on the benchmark index's rules, capitalization range, and popularity.

A silent index will be far less well-known than similar benchmark indexes and, consequently, there may be a fund marketing penalty associated with an obscure index. On the other hand, silent indexes can be created and maintained by well-known index publishers with marketable brands. In any case, good performance is ultimately a fund's best advertisement. A small but consistent performance advantage based on the easily understood principle of confidential treatment of planned fund transactions should ultimately overwhelm any cachet attached to a benchmark index. The silent index fund, being smaller, will probably have a slightly higher expense ratio than a major brand index fund; but a lower cost of rights to use the index might make up for some increased operating costs. There will be index data and calculation costs similar to the costs of publishing a benchmark index. In fact, the silent index methodology will typically be a little more complicated

²⁹Revealing details about the index changes might inappropriately help scalpers figure out ways to front run future index changes.

than a benchmark index because of the need to insert random elements *to prevent transparency*.

Silent index funds, by whatever name they go, will have the flexibility of full-function active management. The limited-function active managed ETFs that have a single day to trade before they announce a portfolio change are not a full-fledged actively managed ETF solution. Silent index funds will operate very much like the full-function actively managed funds described in Chapter 7.

Before we leave the topic of index fund performance for Chapter 6's discussion of fund selection and evaluation, I would like to introduce a comparison of two ETFs that have used the same index in different ways with different results. This comparison reflects a number of the index fund management topics addressed to this point. One key topic that is missing from the public discussion of these funds is any analysis of the cost of making composition changes in this popular index. I suspect that topic has not come up for two reasons. First, the index modification process is unusual and the cost of changes is hard to price using the techniques available to evaluate changes in U.S. domestic indexes. The second reason the cost of index changes has not been addressed is that several other issues peculiar to these funds are occupying everyone's attention.

A BATTLE OF CONTRASTING INDEX FUND MANAGEMENT STRATEGIES

As Chapter 6's discussion of fund evaluation and selection will emphasize, there are a lot of things to consider in choosing which fund(s) an investor or advisor should use. The decision is rarely a simple one, but most of us would expect some choices to be easy. In this section I want to compare the relative performance/attractiveness of two ETFs based on the same index to illustrate two very different approaches to index tracking and ETF management. This example highlights some factors that can and should affect ETF purchase decisions in a case where a naïve assumption would be that the two index funds should deliver nearly identical results, except perhaps for the difference in their expense ratios. In this case, the difference in the expense ratios is essentially irrelevant.

The Vanguard Emerging Markets ETF share class (trading symbol VWO) attempts to track the MSCI emerging markets benchmark closely. An early 2010 check of the fund's web site found that the fund owned 816 positions—more positions than the 761 companies in the MSCI Emerging Market Index it uses as a benchmark. The iShares MSCI Emerging Markets ETF (EEM) carries the index name and uses a representative sample of the

stocks in the index. The iShares fund reported 429 positions on the same day as the Vanguard position check. The stated management policies of the fund managers indicate that these numbers are representative of what position checks on other dates would have revealed.

We should not expect the iShares fund to track the index as closely as the Vanguard fund and, in fact, it has not. This first became a topic for discussion in 2007. For the first 10 months of 2007, Bell (2007) reported that “the Vanguard Emerging Markets ETF ... returned 51.71 percent ... and ... the iShares MSCI Emerging Markets ETF was up just 44.50 percent for the same time period.” Heather Bell’s colleague, Matt Hougan (2007) had made the earliest mention I have seen of this performance disparity several months earlier. Morgan Stanley analysts Paul Mazzilli and Dominic Maister (2008) published full-year “tracking errors”³⁰ for the two funds. The performance difference was 450 basis points or 4.5 percent for the full year 2007. The Vanguard fund trailed the index by 33 basis points (.33 percent) and the iShares fund trailed the index by 483 basis points (4.83 percent). The sampling strategy that penalized the iShares fund’s performance by a relative 450 basis points in 2007 helped it beat the benchmark by 332 basis points in 2008 while the Vanguard fund lagged the benchmark by 9 basis points for a net 2008 performance difference between the two funds of 341 basis points (3.41 percent).³¹ In 2009 VWO was up 76.3 percent to EEM’s 71.8 percent gain and the index’s 78.5 percent gain. Just looking at these annual returns might suggest that the Vanguard fund beat the iShares fund badly, but that was not the case. The Vanguard fund’s large drop in 2008 hurt more than a simple arithmetic average of the annual return would suggest. For the three years, the Vanguard fund came out ahead by an average of only .06 percent or 6 basis points per year.

Information on how closely index funds track their benchmarks is widely available. It is not usually a significant factor in investors’ fund choices, but this case is unusual. The Vanguard Emerging Market Fund gained some market *share* at the expense of the iShares Emerging Market Fund during this period of marked year-by-year differences in performance, but the absolute dollar amount flowing into EEM was much greater through 2008. Any analysts who might have recommended a switch from EEM to VWO probably stressed the difference in the funds’ expense ratios. During 2007 and 2008, the difference in the two funds annual expense ratios was

³⁰There is an extensive discussion of tracking error coming up on pages 155–161. For present purposes, concentrate on the difference between the performance of the two funds and the difference between each fund’s return and the index return.

³¹Of course, all performance numbers are after expenses.

EXHIBIT 5.3 Comparison of Vanguard (VWO) and iShares (EEM) Emerging Market Fund Results

	Annual Performance		
	VWO	EEM	MSCI Index
2007	+39.1%	+34.6%	+39.4%
2008	−53.4%	−50.0%	−53.3%
2009	+76.3%	+71.8%	+78.5%
	Annual Net Cash Inflows (\$ million)		
2007	\$2,721	\$8,378	
2008	\$3,674	\$5,696	
2009	\$8,886	\$5,301	

Source: Morgan Stanley.

50 basis points, with the VWO expense ratio lower. The difference is now 45 basis points. The difference in the expense ratios is certainly not trivial but its importance is dwarfed by the effect of the differences in the managers' approaches to tracking the index—and by the magnitude of the yearly movements of the index over the period under discussion. Exhibit 5.3 shows the comparative performances and net cash flows for the funds from 2007 through 2009. These price movements are extreme and we would probably not find this example interesting if the index had moved between 5 percent and 10 percent in each of these years.

The iShares Emerging Markets Fund was a frequent occupant of a slot on the most active stock list by the end of 2009. VWO volume was consistently modest until 2009, but VWO's bid/asked spread has narrowed and was similar to EEM's at about \$0.01 per share by the third quarter of 2009. I speculate that the trading spread for VWO was narrowed by the ability of arbitrage traders to use the similarity of the day-by-day and intraday price movements in the two funds and futures contracts on the index to make much tighter markets than would have been possible in VWO if it were the only trading instrument based on the MSCI Emerging Markets Index.

One of the important reasons EEM uses an optimized portfolio is to reduce trading costs associated with creations and redemptions as described in Murphy (2009). Ironically, that policy probably reduced the cost of trading, creating, and redeeming the competitor's ETF shares as well.

It is not clear what impact the difference in expense ratios or any of the other differences had on the funds' relative growth. The *percentage increase* in shares outstanding was greater for the much smaller Vanguard

fund in all three years (2007 to 2009), but the *dollar value of net new shares purchased by investors* was much greater in the iShares emerging market fund until 2009, when the Vanguard fund took in more new money than the iShares fund. Apart from performance and fees, the absolute and relative asset growth of the two funds before 2009 was probably influenced by the fact that annual trading volume in the iShares fund shares was running about 20 times the Vanguard fund's share volume until 2009. In early 2010 the ratio was about 5 times. The trading volume was, in turn, influenced by the fact that the size of the bids and offers for the Vanguard ETF share class has been much smaller than the bids and offers for shares in the iShares fund. The differences between these two funds along a number of dimensions that I would expect to be similar suggest that the simple choice of which index fund to buy will be even more complicated when we have a choice of *indexes* covering roughly the same slice of the market.

The VWO versus EEM rivalry barely touches on the issue of choosing between index funds and actively managed funds. The decision by the managers of EEM not to replicate the index closely is something of an active choice. When results are less influenced by massive annual market moves, I would expect the cost of annual index composition changes to have a greater relative impact on the performance of VWO, but that is no more than a conjecture. This fund pair will continue to give analysts much to examine and argue about.

There is at least one more point of interest. Zweig (2009) carried the headline, "Are ETFs Causing an Emerging-Markets Bubble?" After toying with the notion that the availability of these ETFs offering ready access to emerging markets was driving up the stock prices in the emerging market countries, Zweig concluded that the hedge fund managers who suggested the bubble idea to him were probably wrong. It seems clear, however, that both this tale of two funds and other discussions of how ETFs affect prices will be with us for a long time.

CHAPTER 6

Fund Ratings and Rankings—The Evaluation and Selection of ETFs and Mutual Funds¹

This chapter considers fund ratings and rankings and a number of other methods used to evaluate and select funds. Along the way, we will examine the mutual fund and ETF economics that have a significant impact on fund performance and the nature of the guidance currently and prospectively available to investors and advisors as they make mutual fund and ETF purchase and sale decisions.

AN INTRODUCTION TO FUND RATINGS

The reason for including mutual funds as well as ETFs in this discussion is that the most widely cited analyses and ratings of ETFs are published by firms that also publish mutual fund information. It is not surprising that their ETF evaluations/ratings are usually based on some of the same criteria as their mutual fund ratings, but there are at least five important—and sometimes strange—differences between typical ETF and mutual fund evaluations.

The Strange State of ETF Evaluations and Ratings

First, anyone who reads very many articles about ETFs can't miss the fact that ETF comparisons tend to focus much more heavily on fund expense ratios than most mutual fund evaluations do. This is puzzling because index ETF expense ratios vary less from fund to fund than mutual fund expense

¹Portions of this chapter appeared as a series of articles in the *Journal of Indexes* in 2009 and 2010.

ratios vary. The emphasis on ETF expense ratios is partly the result of the ready availability of this metric. The expense ratio is one of the first things an investor sees when she examines an ETF's "Fact Sheet." Another reason for focusing on the ETF expense ratio is probably that, while mutual funds often have a number of share classes and fee structures, the basic ETF share class charges every investor the same fee. Finally, because ETF expense ratios are lower on balance than mutual fund expense ratios, ETF proponents have emphasized expense ratios in making the case for ETFs. This is far too much emphasis on a cost item that varies relatively little among funds and is usually dwarfed by the index composition change trading costs discussed in Chapter 5.

A second difference between mutual fund and ETF evaluation is that, as ETF trading volume has expanded, there has been increased emphasis on comparing the bid/asked spreads in the markets for various ETFs.² The message investors receive from the focus on the bid/asked spread is the obvious one that a narrow spread is better than a wide spread when you are trading an ETF. This point is indisputable, but, as we will discuss in more detail in Chapter 8, the numbers cited for an ETF's average spread usually understate the spread an investor will encounter when she checks a live quote. Furthermore, for a long-term investor, the spread is paid only twice—once when she buys the shares and once when she sells them. The cost to trade ETF shares is important for a number of reasons, but trading cost will rarely be a make-or-break item for a long-term investor. Nonetheless, investors appropriately want to know that a reasonable market exists in the shares of any ETF they might buy. Sadly, mutual fund evaluations rarely consider the cost to all mutual fund investors of accommodating buyers and sellers of mutual fund shares.

A third characteristic of ETF evaluation that differs strangely from mutual fund evaluation is that analysts usually give more attention to ETF tracking error—a measure of the relative performance of the fund and its benchmark index—than investors give to this measure. Tracking error gets analysts' attention because it is relatively easy to calculate, but most fund raters are not sure what to do with it. We will discuss several definitions and implications of tracking error and use one of the definitions as a practical way to organize our fund performance analysis and evaluation.

Fourth, the approach most fund analysts take in evaluating ETFs and their managers is qualitatively as well as quantitatively different from the approach they take to evaluation of mutual funds. Most ETFs are index

²The trading volume figures in Exhibit 8.4 on page 207 suggest that high ETF trading volume probably stimulates interest in these comparisons.

funds and index fund managers have yet to capture the imagination of fund analysts and investors in the way that some active portfolio managers have done. There are no chatty articles about index fund managers, their families, their pets, and their hobbies. There are more articles than ever before on index construction and on what makes one index better than another. These index articles do not resonate with most investors. It is harder to put a face on an index than on a manager. Chapter 5 did not attempt to put a face on indexes but it did suggest that funds using unpopular indexes are better candidates to deliver good performance than funds using popular benchmark indexes, and that transparent index composition changes are usually a more costly drag on fund performance than most of the features ETF analysts emphasize in their comparisons. Although I don't stress the point, there is plenty of evidence that all index managers are not equal. The approach the manager takes to tracking the index can affect both risk and return significantly.

Last on this list of differences is a new initiative in ETF comparisons. At least two major fund-rating firms compare ETFs (and other funds) partly on the basis of ratings on the holdings in the fund portfolio. A fund with higher rated portfolio components might get a higher overall rating. The implicit assumption behind this methodology is that the process evaluating the holdings can do a superior job of selecting stocks and bonds. This idea is only as good as the securities evaluation skills behind the holdings rankings. I venture to predict that holdings-based ETF ratings will prove embarrassing to at least some of the firms publishing them.³ We will look briefly at the application of holdings-based ratings in a later section.

Fund Ratings: The Recent Past

All publishers of fund ratings note that past performance is not necessarily indicative of future results. The legal and regulatory structure that requires this acknowledgment of future performance uncertainty is appropriate because (1) most fund ratings have been based primarily on past performance, and (2) the evidence of predictive value in these fund ratings is uneven at best. Let's look at the evidence.

Amenc and Le Sourd (2007) provide a useful evaluation and comparison of the major U.S. fund-rating services. They found little merit in the fund-rating methodologies of Lipper, Morningstar, and Standard & Poor's at the time of their study. (Their analysis addressed only the value of the fund

³I resist the urge to explore the perils of ETF template indexes based on top-rated stocks and bonds that might be licensed by fund-rating firms.

ratings, not the other services, including data, that these vendors provide.) Amenc and Le Sourd (2007) include an appendix that explains the mechanics of the three major fund-rating methodologies as of the date of their study in some detail for anyone interested in exploring the nuanced differences between five stars and five checkmarks.

It is useful to consider the *nature* of the limitations of the generation of fund ratings that Amenc and LeSourd studied. Morey and Gottesman (2006), arguably the most laudatory evaluation of a fund-rating service published in recent years, concluded that the Morningstar rating system (as revised in 2002) predicted *relative* mutual fund performance *within nine domestic equity fund categories* pretty well over the following three years. The principal change in the Morningstar rating system in 2002 was to switch from a single domestic equity category to nine categories analogous to the Morningstar style boxes. Lipper has similarly increased the number of categories for its evaluations and Standard & Poor's has adopted Lipper's categories. Within these narrow categories, common sense suggests that it is not unreasonable to hope that whatever caused better *relative* fund performance over three years might continue to affect relative performance for a few more years. A number of studies have found that fund relative performance tends to persist. Past performance *should* be useful in selecting the better performers among, say, large-cap growth funds. Of course, the ratings primarily reflect the recent relative performance of the funds, so it is difficult to see any need to transform recent fund performance into a rating system. The transformation may create a saleable proprietary product, but it does not necessarily improve the usefulness of the information delivered to investors. The Morey and Gottesman results suggest that investors would be as well served with simple past performance comparisons as with formal ratings. I also look forward to an analysis that carries their study through the end of 2009 to include a violent bull and bear cycle.

Unfortunately, none of the major fund-rating systems has given investors and advisors demonstrably useful guidance in choosing *among* fund categories as circumstances changed from year to year during the period studied by Amenc and LeSourd. Furthermore, there is no assurance that the best funds in a category added value relative to any benchmark other than the peer group of funds selected by the rating service. The principal performance comparison in the Morningstar and most other fund ratings is *to other funds selected by the ratings service*.

In the press, in online commentaries, and in a fund's reports to its shareholders, a single fund's performance is often compared to the performance of a benchmark index. The appropriate performance comparison is certainly a comparison of a fund to another fund but it is not the comparison the fund-rating services use. I have long been puzzled by the fact that actively

managed fund performance is uniformly compared *either* to other actively managed funds *or* to benchmark indexes such as the S&P 500 or the Russell 2000. The most meaningful comparison will be between an actively managed fund and index funds based on an appropriate benchmark index. There are performance records on index ETFs—the most efficient structure for an index fund—tracking most important benchmark indexes since at least the beginning of 2001. An active fund to index fund comparison would certainly be more appropriate than either a comparison of the active fund to other actively managed funds of uncertain quality or to an index that bears none of the expenses that funds bear.⁴

Recent Developments in Mutual Fund and ETF Rating and Ranking Methodology

As I was preparing this discussion of the major mutual fund and ETF services, Standard & Poor's radically changed its mutual fund ranking methodology. S&P stated (September 2009) that it was “moving away from an approach based solely on risk-adjusted past performance towards a more holistic approach that incorporates a holdings-based analysis focused on performance analytics, risk considerations and cost factors.”⁵ Morningstar had earlier announced a decision to incorporate analysis of a fund's holdings in its fund data—with less fanfare than S&P.

While S&P's September 2009 document did not discuss ETFs, S&P's focus on holdings is even greater in ETFs than in mutual funds, primarily because most ETFs to date are based on indexes and S&P believes that the composition of the ETF portfolio is more important than the past performance of the index or the index fund manager. S&P does not (at least not yet) compare mutual funds to ETFs in terms of past performance, portfolio holdings, risk and costs.

⁴Guarini (2009) is an excellent example of a recent study that concludes actively managed funds tend to underperform benchmark indexes. His active versus passive performance comparison is active fund returns after expenses versus expense free indexes. I concluded from this comparison that his employer, State Street, is not planning to introduce actively managed ETFs any time soon. Guarini also compares the 500 SPDR's capital gains distributions with the average cap gains distributions of S&P 500 index mutual funds, another set-up. I prefer the comparison of Exhibit 4.2 that pits the SPDR against the Vanguard 500, a worthy competitor. The case for the 500 SPDR relative to the Vanguard 500 rests not on past tax efficiency but on the embedded capital gains overhang in the Vanguard 500 mutual fund.

⁵Standard & Poor's (2009) p. 1. www2.standardandpoors.com/spf/pdf/equity/MFMethodology.pdf.

The notion of evaluating the components of a fund portfolio for expected performance and quality is appealing, but the scope of holdings analysis is inherently limited because no research organization in the world can provide comprehensive research coverage of all or even most of the securities that appear in mutual fund portfolios.⁶

S&P, like most other fund services, offers a more fully-developed ranking of mutual funds than of ETFs. This is understandable because there are more assets, investors and funds in the mutual fund universe than in the ETF universe. Furthermore, the '40 Act investment company is the only structure used by mutual funds. The term "exchange-traded fund" or "ETF" encompasses a range of grantor trusts, securitized commodity funds, and exchange-traded notes as well as investment companies. However, S&P approaches the evaluation and ranking of investment company ETFs differently from the way it evaluates and ranks mutual funds.

In its holistic approach Standard & Poor's has gone beyond the introduction of fundamental holdings analysis to incorporate other data. In addition to incorporating its STARS stock rankings for equity funds and credit analysis, quality assessments, data from a quantitative fair value calculation for most of the securities the fund owns and information on the level of risk the fund has been taking; S&P uses information on the costs associated with purchasing and holding the fund's shares. The inputs incorporated in S&P's mutual fund and ETF evaluations are listed in Exhibit 6.1. Note that the mutual fund and ETF inputs are not identical within any of the three major ranking categories.

S&P states that the weightings it assigns to the various inputs in achieving its fund rankings are proprietary. At first I was puzzled by that statement, but as I examined the input data (which is more detailed in the downloaded ETF rankings than in the mutual fund rankings) it became clear that the

⁶At first glance it might appear that the holdings information available for an actively managed mutual fund might be out of date by the time it was available to Standard and Poor's. Currently available ETFs report their portfolios daily, so getting up to date holdings for them is not a problem. All U.S. investment companies are required to report holdings publicly as of the end of each quarter with a 60-day lag. Discussions with a number of portfolio managers and other industry sources indicate that many funds report their holdings monthly with a 30-day lag. Such reports will not be sent to shareholders but they are typically available to inquiring investors and they are usually sent to Lipper which provides this information to S&P and others. With a reported portfolio that is, on average, 1 1/2 months behind the actual portfolio, the holdings available for analysis would probably correspond to 90 percent of the current positions in a typical fund. This is certainly good enough for a holdings analysis.

EXHIBIT 6.1 Standard & Poor's Equity Mutual Fund and ETF Ranking Inputs

Mutual Fund	ETF
PERFORMANCE ANALYTICS	PERFORMANCE ANALYTICS
S&P STARS	S&P STARS
S&P Fair Value	S&P Fair Value
3-Year vs Peers	S&P Technical
1-Year vs Peers	
RISK CONSIDERATIONS	RISK CONSIDERATIONS
S&P Quality Rank	S&P Quality Rank
S&P Credit Rating	S&P Risk Assessment
Manager Tenure	S&P Credit Rating
Sharpe Ratio	Standard Deviation
Standard Deviation	
COST FACTORS	COST FACTORS
Expense Ratio (Net)	Expense Ratio (Gross)
Sales Load	Price to NAV
Turnover	Bid/Asked Spread

Source: Standard & Poor's (2009) and MarketScopeAdvisor (January 26, 2010)

weightings cannot be consistent across even broadly similar funds because the amount of information S&P has is not consistent from fund to fund. One of the great virtues of S&P's ETF rankings is that the downloaded version shows the percent coverage of some of the inputs.

Exhibit 6.2 shows some detail on two fund reports. On the Vanguard Emerging Market Stock Index Fund ETF (VWO) report dated January 26, 2010, the ranking details show that there was no S&P STARS ranking because only 29 percent of the portfolio was covered by S&P STARS rankings. Similarly, only 7 percent of the weighted holdings were covered by the S&P Fair Value rankings. Under Risk Considerations, the S&P Quality Rank was available for 63 percent of the portfolio holdings. Because that weighting was above S&P's 50 percent coverage requirement, a ranking was calculated and the ETF got a *market weight* (neutral) ranking in that category. On S&P's Risk Assessment, coverage was 7 percent and on S&P's Credit Rating, coverage was 48 percent; so there were no ETF rankings on those categories. The S&P Technical Rank, Standard Deviation, and the various Cost Factors (Expense Ratio, Price to NAV and Bid/Ask Spread) are available from fund disclosure documents or market data sources; so the fund got rankings in those categories. Because all the Cost Factors were covered,

EXHIBIT 6.2 Comparison of Standard & Poor’s Ranking Details for Vanguard Emerging Markets Stock Index Fund Investor Shares (VEIEX) and ETF Shares (VWO)

Mutual Fund VEIEX	Information		ETF VWO
Ranking	Performance Analytics	Percent Coverage	Ranking
NR	S&P STARS	29%	NA
NR	S&P Fair Value	7%	NA
NR	S&P Technical		+
+	3-Year vs. peers		NR
0	1-Year vs. peers		NR
	Risk Considerations		
0	S&P Quality Rank	63%	0
	S&P Risk Assessment	7%	NA
–	S&P Credit Rating	48%	NA
+	Manager Tenure		NR
+	Sharpe Ratio		NR
0	Standard Deviation		–
	Cost Factors		
+	Expense Ratio (Net)		
+	Sales Load		
+	Turnover		
	Expense Ratio (Gross)		+
	Price to NAV		+
	Bid/Ask Spread		+
*****	Overall Ranking		“Not Available”

Key:
NR No ranking provided for this fund on this input without explanation.
NA Specific notation on the report that a ranking was not available.
Percent Coverage These percentages appeared on the downloaded ETF reports.
+ Positive for mutual fund, Over Weight for ETF
0 Neutral for mutual fund, Market Weight for ETF
– Negative for mutual fund, Over Weight for ETF
Source: Standard & Poor’s MarketScopeAdvisor (January 26, 2010).

the ETF got a ranking (positive or *overweight*) on Cost Factors. The overall ETF ranking is “Not Available” because of the absence of adequate data on holdings performance and risk.

Exhibit 6.2 compares the VWO ETF share class with the Vanguard Emerging Markets Stock Index (VEIEX) mutual fund that shares a *portfolio*

with the ETF. They are share classes of the *same* fund.⁷ VEIEX gets positive rankings on all three broad ranking categories, though several of the component rankings are market weight and the S&P Credit Rating is even negative. Note that the S&P STARS and S&P Fair Value criteria introduced in September 2009 are not listed among the ranking details in the VEIEX report. On the mutual fund ranking, the S&P Credit Rating is negative as opposed to NA on the ETF share class and the Standard Deviation is neutral for VEIEX in contrast to the underweight (negative) ranking on Standard Deviation for the ETF shares.

My examination of these S&P rankings suggests that they are still very much a work in progress—particularly as they are applied to ETFs. S&P acknowledges that they generate a ranking for a mutual fund on the basis of the data that they have. If, as in the case of VEIEX and other international equity mutual funds, they do not have enough STARS and fair value data, they go with the 3 year and 1 year performance versus peers calculation to provide a ranking using the information available. When data are limited, the category may be omitted or underweighted in the mutual fund rankings and eliminated entirely in the ETF rankings. Many ETFs did not have rankings in January 2010.

Like any service that provides data and evaluations of thousands of funds, S&P's service needs reliable data and attention to detail. The holdings data and the fund classification data they get from Lipper are well designed, highly regarded, and the best available for their purposes. S&P's equity research service is highly regarded; but, in spite of the fact that S&P's equity research group is one of the largest, its STARS coverage is adequate only in North America and only for large- and mid-cap stocks. For the bottom half of the Russell 2000 and smaller companies in the United States and for foreign stocks, S&P has relatively few STARS rankings. For example, on the iShares S&P/TOPIX 150 Index ETF, a fund based on an S&P branded index of 150 of the largest companies in Japan, STARS coverage is only 20 percent.

The fund reports I downloaded were not error free. The reports for the two Vanguard Emerging Markets fund share classes listed the same top 10 holdings at *exactly* the same weighting. That they hold the same securities is almost certainly true because the funds share the same portfolio. However, the ETF report says the portfolio is "(as of 1/26/10)" while the mutual fund report dates the holdings at "(9/30/09)." If they get data daily in this case, both reports should reflect that fact correctly. The STARS rankings are listed

⁷Vanguard believes that it can manage the inherent conflicts between the interests of mutual fund and ETF investors equitably. Consequently, many Vanguard funds have conventional mutual fund share classes and an ETF share class.

for the top 10 holdings that have STARS rankings on both reports but, as indicated in Exhibit 6.2, and in the Ranking Details on the VEIEX report, STARS rankings do not play a role in this mutual fund's ranking.

S&P does not star rank funds strictly relative to other funds in their category as would typically be the case with Morningstar. This means that a disproportionate number of five-star equity fund rankings might be in technology, for instance. The fact that the fund rankings in this sector were higher than in other sectors might or might not be a reliable indication that overweighting the sector was a good idea. S&P has not published data specifically addressing this point, but the back-tested results they have provided on their equity research record suggest that there might be some asset class or sub-class selection value in the rankings. If that value is material, it is a good bet that they will let us know.

A desirable feature of the S&P service is that it is possible to examine and recombine ranking inputs in various ways. If you are relatively unconcerned about risk characteristics when the market environment is good, you can estimate the effect if you removed Risk Considerations from the ranking. Obviously you cannot do that with precision, but a fund that was top-rated on everything but risk would move up in rank if a negative risk rating was removed.

The S&P ETF and mutual fund ranking services are delivered through S&P's MarketScopeAdvisor platform. If they are used widely, S&P rankings will probably be incorporated in ETF advertisements or web sites. If that happens, you will want to check that the published ranking is fresh. S&P fund rankings can change frequently. In most cases, portfolio updates will be available to S&P monthly and other data items are updated frequently. Investors and advisors should concentrate on the depth of coverage S&P has in each category rather than on overall rankings.

The S&P rankings are probably as good as we will get from a service that covers thousands of funds. However, its limitations are significant and there is reason to believe advisors can do better if they focus on in-depth analysis of groups of competing funds, perhaps groups initially screened by a ranking service.

WANTED: A COMPREHENSIVE BUT ECLECTIC APPROACH TO FUND EVALUATION AND ANALYSIS

It is not my purpose to develop a new family of formal fund ratings or to endorse or disparage any fund-rating or ranking methodology. My objective is to suggest a framework that investment advisors can use to evaluate and select mutual funds and, especially, exchange-traded funds that will serve

their clients' objectives more effectively than one-size-fits-all ratings or rankings that cannot adequately consider the diverse objectives of fund investors and the widely diverse results achieved by funds investing in different market segments.

This framework will provide more useful absolute and relative evaluations of funds against an appropriate benchmark index fund selected by the user. It will help an advisor with reasonable skills understand why a fund has done well or poorly. The framework permits comparisons of funds across categories because it uncovers the strengths and weaknesses of an individual fund in detail. The framework will not indicate the relative attractiveness of, for example, domestic growth stocks versus emerging market bonds. Unfortunately, there is no shortage of questionable advice on the relative attractiveness of various market segments. Fortunately, there is also no shortage of useful advice on diversification, risk management, and long-term asset allocation.

Better fund evaluations can help us select better actively managed funds and better index funds. Better approaches to active management—and to indexing—can beat the *average index fund*. Unless and until someone can extract a foolproof formula for low-risk, high-return investing from the markets of 2007 and 2008, risk-adjusted performance is what most of us will continue to seek.

MEASURING AND COMPARING FUND PERFORMANCE

The fact that most fund ratings emphasize performance relative to a peer group of funds is a significant weakness of most fund evaluations. Every investor would not necessarily have (or want) access to the peer group funds that a fund evaluation service selects for its comparisons. Furthermore, it is usually possible to invest in an asset class or category without using *any* of the funds in a mutual fund peer group. ETFs and structured notes are alternative vehicles, for example. Even if comprehensive fund peer group scores and rankings are sometimes useful to investors, the appropriate way to evaluate a fund varies as costs, fund holdings, fund structures, and investor objectives change.

Advisors and fund-ratings publishers who recognize the diversity of investor requirements sometimes develop customized fund ratings for groups of investors with common needs and preferences. The Lipper categories of check ratings covering different risk or tax characteristics are probably the best known example of this approach. On balance, however, an *analytical framework* with customization for a specific investor rather than for a group of funds or a group of investors seems most useful. Some of the reasons to

prefer this framework to a simple “buy this” conclusion can be clarified by a discussion of the way a fund’s internal transaction costs affect the fund strategies of different investors later in the chapter.

To illustrate how an advisor might develop and use detailed fund information effectively, consider how to enhance an investor’s or an advisor’s understanding of the elements of fund performance. Even if a fund-rating calculation considers a fund’s ability to do better than its peers during the most recent bear market, the performance measurement that dominates most fund ratings is a single performance number for each fund for each year or some other period. A breakdown of *how* and *why* the performance of the fund was achieved in that period is a better guide to what the future might hold for that fund than a simple historic return calculation or a longer term comparison of returns among a group of funds. For example, good performance achieved by consistent implementation of a stock valuation strategy with patient trading is likely to be more sustainable than performance achieved by a single fortuitous allocation shift or by moving from equities to cash and back again in an attempt to predict the market’s direction. It is essential to look beyond ratings and into the fund manager’s actions for better ways to identify funds with superior investment processes and prospects and to develop comprehensive information that will improve fund choices.

Understanding how a fund operates and what is behind a fund’s results is easier today than it ever has been—and it will get easier over the next few years. Improvements in fund data availability, ETF trading methods, and analytical tools over the next few years will change the way advisors choose funds for their clients. These changes will provide both opportunities and challenges to the providers of fund advice. While the view in the crystal ball is still cloudy around the edges, fund advice will almost certainly become more customized and more relevant to a specific investor or to homogeneous groups of investors. Fund advice will be delivered in a more individualized “package,” often assembled by an advisor who is in one-on-one contact with the investor. The development of new software to organize data will permit an advisor who is a generalist rather than a fund specialist to deliver customized fund information and analysis to clients.

A PERSPECTIVE ON THE LIMITATIONS OF FUND ANALYSIS TODAY

Some of the topics addressed in the balance this chapter are not ready for “prime time” in the sense that most advisors and investors will not be able to make practical use of them today. The scope for effective fund analysis and selection has never been greater than it is today, but the opportunity

for advisors to add value will improve at an accelerating pace over the next few years. In this context, it is useful to consider what we know about funds today and what might be possible to know in the near future. The state of academic knowledge about fund performance is much more complicated than most articles in the popular press suggest.

A number of academic studies have shown that:

1. Active fund manager value-added is obscured by combining good results for true active managers with poor results from closet indexers who are charging active management fees to their investors but not delivering value—Cremers and Petajisto (2009). *We need to examine and understand how managers propose to add value.*
2. The ability of fund managers to value securities and make performance-enhancing portfolio transactions can be obscured and overwhelmed by flows of investor funds into and out of mutual funds—Greene and Hodges (2002); Alexander, Cici, and Gibson (2006); Edelen, Evans, and Kadlec (2007). *We need to determine the cost of flow transactions to the ongoing investors in a fund.*
3. Portfolio transaction costs for funds exceed the fund's expense ratio on average, but funds add value with some of their discretionary transactions. Transactions made to accommodate investor flow into and out of a fund and transactions larger than the average trade size in comparable competitive funds will hurt performance. Soft-dollar trades are associated with higher trading costs and with negative trading effects on fund performance—Edelen, Evans, and Kadlec (2007). *We need to dig into a fund's trading activity and its costs.*
4. Managers with superior stock selection skills can be identified and their skills persist over time—Harlow and Brown (2006); Wermers, Yao, and Zhao (2006); Kacperczyk, Sialm, and Zheng (2008); and Cremers and Petajisto (2009). *Past performance may not be a reliable indicator of future results, but it is not meaningless.*

These studies *do not* contradict Bill Sharpe's tautology that fund managers in the aggregate cannot beat the performance of a reasonably constructed representative stock market index—but, for one thing, you can't invest directly in an index. These studies simply indicate (1) that active management is not necessarily the futile effort it is sometimes said to be, and (2) that it is possible to pick better managers. Active management survives and thrives, in part, because hope springs eternal, in part, because there are some good managers out there, and, in part, because some of the most popular benchmark indexes have performance problems that are reflected in the performance of index funds that use those indexes as fund

templates. Evidence that many of the indexes used to allocate index fund assets may not qualify as “reasonably constructed representative stock market indexes” adds even more impetus to a search for better fund evaluation methodology.⁸

Some of the findings of the studies cited and other research can help us improve the techniques we use to evaluate funds.⁹ The information and techniques developed in the articles cited will not be part of everyday fare for more than a small number of investors and advisors for at least several years. However, the findings of these studies will play an important role in the development of software packages that smart advisory firms will use to develop fund recommendations for their clients. Fund analysis and evaluation is in the early stages of a revolutionary change.

The role of the professional advisor in mutual fund and ETF selection is growing rapidly. More and more frequently, fund investors are concluding that they need help from an advisor to select funds. The argument that individual investors are empowered by information from the Internet and easier access to low-commission-cost or “free” online trading in individual securities and ETFs is an extremely deceptive description of the individual’s changing role in financial markets. Little more than a generation ago, individual investors dominated the equity securities markets in the United States. Today, orders entered by individual investors account for only a few percentage points of equity market trading—and the individual investor’s share of equity trading continues to decline. At least two-thirds of U.S. equity market volume is driven by high-frequency trading controlled by computerized order management systems that can enter and cancel orders in less than a millisecond (.001 second). While individual investors’ commission rates and some other costs of trading have declined in the current trading environment, few individual investors trade with confidence. Individuals are overwhelmed by too much information that they do not have the ability, time, or inclination to evaluate.

ETFs are an equity market segment that has above-average individual investor participation. Much of the individual investor interest in these funds would have been focused on single stocks a few years ago. However, large traders dominate even ETF trading. While individual investors hold most

⁸See Blume and Edelen (2004), Chen, Noronha, and Singal (2006), Murguía and Umemoto (2006), and Gastineau (2006 and 2008) and Chapter 5 for discussions of the cost of index composition changes.

⁹The articles cited are but a small fraction of the academic mutual fund literature. The data available to researchers have increased steadily over recent years. As comments later in this chapter indicate, there is every reason to believe that the quality of fund data will continue to improve.

ETF shares,¹⁰ risk management, and other trading applications for broker-dealers' trading desks and hedge funds drive most of the trading activity in ETFs. ETF trading for 2007 was fewer than 700 million shares per day, but up from about 400 million shares per day in 2006. In 2008, ETF trading volume averaged over 1.5 billion shares a day with ETF volumes over 1.8 billion shares per day in 2009. One-third to one-half of the most actively traded "stocks" are ETFs on most days and, in total, ETFs accounted for about 19 percent of equity securities share volume in the United States in 2009. Because the average ETF share traded has a higher price than the average stock traded, the dollar value of the ETFs traded is an even higher percentage of trading value.¹¹

It is important to stress that there is no correlation between an ETF's trading activity and its attractiveness as an investment. Also, trading ETFs is different from trading stocks in a number of ways that are discussed at length in Chapter 8.

ETF information from sources other than the fund-rating services is based on data that the source (1) can obtain and (2) thinks might be relevant to fund selection. Much of the data on ETFs available to investors are earnestly compiled, but not necessarily useful for decision making. The best ETF information and analysis I see has generally come from brokerage firm analysts and from some of the web sites cited in Chapter 14. Some advisors have begun assembling their own ETF data and evaluation approaches. The fastest growing segment of many advisors' business is providing advice on their clients' use of funds. Increasingly, ETFs are the advisors' funds of choice. The depth of the reasoning behind this choice varies greatly. The choice is sometimes as simple as a reference to low expense ratios and tax efficiency. The better advisors dig much more deeply.

The best advisors and their service providers recognize the need for better support of fund purchase and sale decision making and for comprehensive cost and risk/return-based integration of ETFs and other fund positions into a client's financial plan. The principal constraint on the development of improved fund support software is the sorry state of available

¹⁰The individual's fund holdings are chosen by or with the assistance of an advisor with increasing frequency.

¹¹The share volume figures are from Nasdaq. Zilbering and Bennyhoff (2009) summarize the recent growth in ETF trading activity and state the ETF share at over 30 percent. They focus on the value of shares traded rather than the number of shares, perhaps overemphasizing the significance of ETF trading, particularly in the hyper-active, high-priced 500 SPDR. The National Stock Exchange web site, www.nsx.com, provides data on the value of fund shares traded for all funds and fund issuers.

fund data. Fortunately, we are on the threshold of a new era in the quality and availability of fund information. New fund analysis programs using these data will be sophisticated enough to impress seasoned executives with strong financial backgrounds, yet clear and compelling enough to provide appropriate comfort to much less sophisticated investors. Improved data will diminish the role of the traditional fund data providers; but these firms have developed a variety of analytical tools. If their tools are superior, the fact that they no longer have a monopoly or oligopoly on data will not necessarily reduce their profitability when fund data become a free or nearly free commodity.

Later in this chapter, we will examine some significant innovations that will improve the investment experience of many fund investors and dramatically improve the fund information and analysis available to investors and advisors. Improvement will be gradual, but improvements in data, improvements in software, improvements in ETF trading, and, at least as important, improvements in the fund products available to advisors and their clients will be no less than revolutionary over the next few years. The common element linking the topics addressed in this chapter is finding ways to deliver more useful fund information and better investor results.

At this point it is useful to take a high-altitude view of fund economics from an investor's perspective. The first part of this view is pretty conventional, but as the discussion unfolds it will be clear that fund economics are more complex than most discussions of fund costs suggest.

ELEMENTARY FUND ECONOMICS

Every investor should have a rudimentary understanding of fund economics. Exhibit 6.3 illustrates how the readily observable operating expenses of a mutual fund or an exchange-traded fund change as the fund's assets grow.

The expenses illustrated in Exhibit 6.3 are fund operating costs. Marketing costs are not explicitly illustrated because they vary greatly among funds and across distribution channels, not because they are unimportant. The structure of marketing costs in mutual funds and exchange-traded funds is probably more in flux than at any other time in recent memory. The Department of Labor is requiring full-cost transparency in defined contribution retirement plans; the SEC is reconsidering the appropriate uses of 12(b)(1) fees; an increasing number of mutual funds find that they are selling more Class A shares through fee-based advisors, who are collecting an annual fee directly from their client rather than through brokers who are paid a front-end load for the transaction; and significant marketing costs for a number of funds, particularly ETFs, are covered out of a unitary fee that does

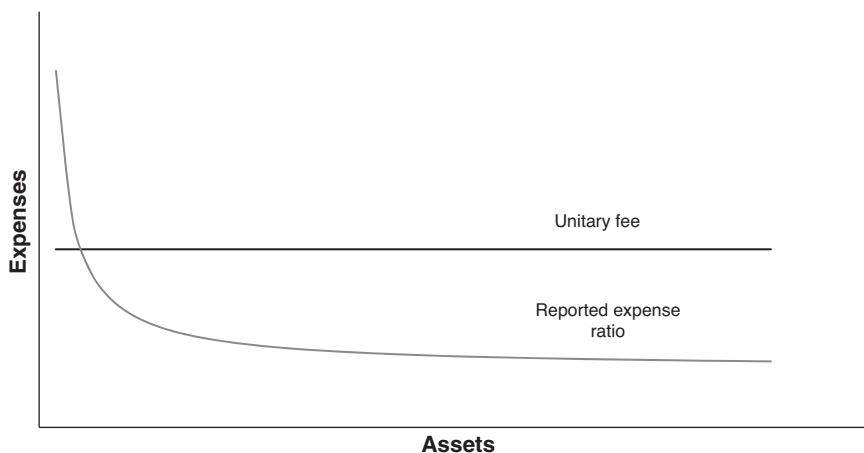


EXHIBIT 6.3 Nominal Fund Expenses and the Effect of a Cap or Unitary Fee

not necessarily decline as fund assets grow. These developments all suggest continuing changes in fund marketing structures and economics. While it may be appropriate to address marketing costs when some of the current marketing cost uncertainty is resolved, investors and advisors already have some choices in how marketers are paid.

The shape of the expense line in Exhibit 6.3 reflects the fact that all funds have substantial fixed expenses. The fixed expenses of a fund will be determined primarily by its operational complexity and whether it is a stand-alone fund or part of a fund family. Fixed costs are highest for an unusual fund or for an isolated fund that is not part of a family of funds that share costs. Fixed costs include most legal and financial accounting expenses; an allocation of the shared cost of maintaining a compliance organization for a group of funds; the fixed component of custody, fund accounting, and transfer agency fees; systems development and maintenance; fees paid to fund directors; insurance; preparation costs for prospectuses, annual reports, and other required documentation; and a very modest exchange listing fee in the case of an exchange-traded fund.

Variable costs (costs that increase and decrease as assets under management increase and decrease) consist primarily of an investment management fee; variable elements of custody, fund accounting, and transfer agency costs; and the cost of printing and distributing shareholder reports. An index or other intellectual property license fee, if applicable, is usually a variable cost. Depending on the nature of the fund, the most significant variable costs are likely to be the investment manager's fee, followed closely in the case of some index funds by an index licensing fee. Shareholder servicing costs are a

significant variable cost element in mutual funds, but they are usually much smaller for exchange-traded funds. Costs to deliver information to present and prospective shareholders will continue to decline in relative importance for all funds as electronic delivery of fund information and investor reports increases. The sum of the fixed and variable costs listed here will usually appear as the fund's expense ratio and will be paid by the fund's shareholders out of fund assets.

Funds with few assets have to cover their fixed expenses from a small asset base or from the resources of the fund sponsor. Fee caps and unitary fees have been very popular in the ETF market because the expense ratios of ETFs have been closely watched and avidly compared by analysts and investors. The fund's investment advisor or some other party absorbs any expenses above the cap or unitary fee. While Exhibit 6.3 shows the gap between a unitary fee and the expense ratio growing as fund assets grow, market forces tend to encourage expense reductions for very successful funds, particularly for index funds. One fund's success will often stimulate launch of a similar fund with a lower expense ratio to compete aggressively for assets from the same investors. In both the mutual fund and ETF markets, fees generally decline, at least slightly, as fund assets increase.

Before the introduction of exchange-traded funds, few fund investors knew what a basis point was unless they had significant exposure to the bond markets where the basis point, 1/100 of a percentage point, is discussed in connection with bond yield changes and expenses.

Few exchange-traded funds currently offered in the United States carry expense ratios above 99 basis points (0.99 percent). Consequently, it seems appropriate to spend a moment looking at the financial significance of a basis point in fund expenses. A basis point is one divided by 10,000 or 1/10,000 of whatever notional amount the basis point measure is being applied to. A basis point on a billion dollars is \$100,000. A \$1 billion fund with a 10-basis point expense cap or unitary fee has \$1 million a year to cover its expenses. A \$1 billion fund with a more typical index ETF expense ratio of 30 basis points has \$3 million a year to cover its expenses. The number of mutual funds or exchange-traded funds with assets over a billion dollars is a relatively small fraction of the total fund population, but billion-dollar-plus funds hold most mutual fund and most exchange-traded fund assets.

It is probably safe to assume that most billion-dollar funds, even billion-dollar funds with very low expense ratios, can be profitable to their sponsors. But every fund can't operate profitably with a 10-basis point or even with a 30-basis point expense ratio. Costs increase slightly as the number of different securities held by the fund increase. Funds investing in foreign securities, particularly securities traded in less developed financial markets, are more expensive to run than funds holding domestic securities. Index

license fees are most commonly levied as a percentage of the fund's expense ratio, but some funds, particularly those with extremely low expense ratios, have index license fees that do not decrease if the expense ratio declines. In a few cases index license fees are the largest single component of the fund's total expenses.

Active fund management costs substantially more than index fund management. A small staff of index fund managers can handle a large asset pool and a number of different indexes at very low cost—no more than a basis point or two for most domestic index funds. Whether an active manager delivers good value to fund investors or not, the process of selecting and incorporating individual securities into an actively managed portfolio is much more labor-intensive than managing an index fund with many more positions. The costs of effective active management rise particularly fast in the case of small capitalization stock funds or funds holding significant positions in foreign securities. The growing use of quantitative tools and “enhanced” index strategies can reduce an active manager's costs somewhat, but both the fixed and variable cost elements associated with assets under management for an actively managed fund are greater than comparable cost elements in index fund management. Of course, the typical index fund is larger than the typical actively managed fund and that will be even more emphatically the case with ETFs for a number of years.

This discussion of fund expenses is deliberately general. As noted, the fact that an ETF's expense ratio (or unitary fee) is stressed by ETF marketers and by advisors has made the expense ratio a much more popular topic in fund discussions than it deserves to be. Expenses are important, and there is no reason investors should overpay, but there are usually more important and more variable cost elements affecting an investor's experience with a fund than the expense ratio. In the next section we examine a fund cost category that is usually larger than the reported expense ratio but that is rarely mentioned in fund analysis: the cost of trading the fund's portfolio securities.

THE LARGEST COST FOR MOST FUNDS IS NOT REPORTED TO THE FUND'S INVESTORS

As Exhibit 6.3 and the expense discussion so far in this chapter suggest, owners of fund shares generally benefit from economies of scale as fixed costs are spread over a growing pool of assets—at least up to a point. Most indexes used as fund templates and most active management investment processes become dysfunctional when assets committed to them become very large. It is not fund size that causes this problem; it is the need to trade

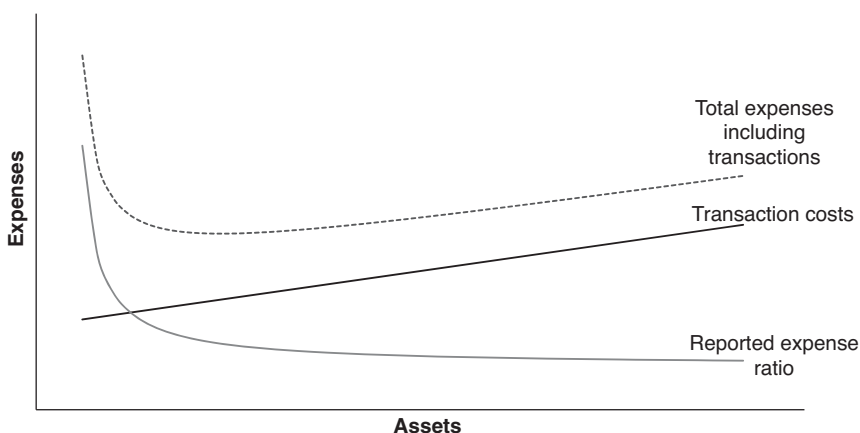


EXHIBIT 6.4 Total Fund Expenses, including Transaction Costs

securities in ever-larger transactions relative to available market liquidity that eventually overwhelms the economies of scale in fund operations.

Exhibit 6.4 removes the Unitary fee line of Exhibit 6.3 and adds transaction costs that tend to grow as a percent of assets as the fund trades securities in ever-increasing lot sizes. For simplicity, we define transaction costs to include commissions, one-half of the bid-asked spread, and the market impact of the trade.¹² Exhibit 6.4 is meant to be suggestive. It is not offered as representative of the cost structure of any particular fund, but it is not very different from the transaction cost structure of many funds. It approximates some of the findings of Berk and Green (2002) and Edelen, Evans, and Kadlec (2007). Exhibit 6.4 simply illustrates the transaction costs a fund incurs to accommodate portfolio composition changes and, in a mutual fund, investor flow into and out of the fund. Rising transaction costs drag performance down and they reduce the efficiency of fund trading as assets grow.

With encouragement from fund-rating services, investors tend to buy funds that performed well relative to their competitors *last year or last quarter*. Investors cannot be counted on to remember—or even to know—that the larger a fund gets or the greater the assets tracking an index become, the greater the *diseconomies* of scale will eventually become.

¹²The academic literature appropriately stresses implementation shortfall as a comprehensive definition of transaction costs. I break the transaction cost into these three components and avoid the discussion of opportunity cost because most investors find this combination easier to understand.

Conscientious mutual fund managers sometimes close their funds to new investors when the fund's size challenges the capacity of the manager's investment process to add value for the fund's investors. With appropriate regulatory consent, a similar asset-limiting process is possible in an exchange-traded fund without destroying the tax efficiency of the ETF structure. If they stop accepting new investments, the fund manager and the fund board can provide some protection from fund diseconomies of scale. Unfortunately, for investors, the fund manager's interests are usually better served by asset growth than by higher investor returns on a small asset base.

Although a fund's portfolio trading costs are one of the most important determinants of fund performance, to the best of my knowledge, they are not adequately addressed or analyzed by any fund service. Edelen, Evans, and Kadlec (2007) found that *mutual fund portfolio transaction costs equal or exceed the expense ratio of the average fund*. Not surprisingly, they also found *a stronger negative correlation of fund performance with trading costs than with expense ratios*. To phrase this point another way for emphasis, *investors should be more concerned about fund trading costs than about the fund's expense ratio*. This point applies with *at least* equal force to ETFs. Most investors and advisors have never seen a comparative study of fund portfolio trading costs because such comparisons are hard to make today. Fortunately, obtaining good fund transaction cost data should get easier over the next few years.

The portfolio composition change trading costs we have been discussing so far are costs experienced by any fund that makes changes in its portfolio. In index ETFs, highly variable trading costs from fund to fund are essentially the costs of implementing index composition changes in the fund. Both the annual percentage of portfolio composition change and the cost of trading to make the changes vary greatly among ETFs and among indexes. The transparency of making portfolio changes in an index fund and the fact that numerous funds benchmarked to a small number of popular indexes are changing their portfolios at the same time, make this kind of trading very expensive in the typical benchmark index fund. The section on the cost of trading transparency in Chapter 5 documents the performance penalty associated with trading transparency and the use of over-popular indexes. Anyone using index funds should read or re-read Chapter 5 carefully, but a few comments for emphasis are appropriate here.

The fact that *transparent index fund composition changes are usually more costly than lower profile trades in actively managed funds* has a clear implication: Avoid index funds with high rates of portfolio change. If the portfolio composition changes in an index have exceeded 10 percent per year on average for the past three years, it is probably a good policy to avoid the shares of a fund tracking that index. Exceptions to this rule *sometimes*

include changes in growth and value splits within a capitalization range or a multicap broad market index family. Composition changes that can be accomplished by transferring securities between two funds using indexes in the same index family can cancel out market impact elements of the trade and preserve returns. In general, however, index fund composition changes in excess of 10 percent annually suggest that something very different from classic indexing is being practiced. After all, the most important of the original ideas behind indexing was to minimize transaction costs. Most funds tracking popular indexes don't do that very well today.

In addition to trading to change a portfolio's composition, mutual funds—but not most ETFs—must trade to accommodate investors who enter and leave the fund each day when they trade with the fund at that day's net asset value. For many mutual funds, the cost of accommodating flow (i.e., transactions made because investors are moving in or out of the fund) is the largest component of transaction costs. As noted earlier, Edelen, Evans, and Kadlec (2007) found that the average mutual fund's cost of flow was 75 basis points (0.75 percent) annually. A large-cap mutual fund with little shareholder turnover will have a much lower cost of flow, but a small-cap mutual fund or a mutual fund that has high shareholder turnover can have much larger flow trading costs that will be borne by all the fund's shareholders.¹³

The cost of flow into and out of most ETFs offered in the United States is borne by the investors going in and out of the ETF. The in-kind creation and redemption process followed by most ETFs protects long-term ETF shareholders from the costs of other investors' flow transactions. As noted from Chapter 1, this is one of the greatest economic advantages of the ETF structure. Because the ETF's protection of investors from the cost of flow improves performance for *all* long-term ETF investors, this investor protection is arguably more important than ETF tax efficiency.

An investor or advisor can readily calculate a mutual fund's flow. Mutual funds usually report purchases and sales of fund shares in transactions with investors semiannually. The size of this flow for a fund can be calculated by adding fund shares purchased plus fund shares sold, dividing the total by the average number of shares outstanding for the period and annualizing the result. Do not use the standard calculation of *turnover* of shares as a proxy for the calculation of flow. Reported fund share turnover systematically

¹³Sometimes shareholder purchases and sales offset each other, but on a given day most flows are in one direction. In practice, counting on inflows from new shareholders to offset outflows to departing shareholders is, as Samuel Johnson once said about a second marriage, "the triumph of hope over experience." Using gross flow as a relevant metric is a reasonable simplification.

understates flow, sometimes significantly.¹⁴ Any useful comparison of a mutual fund to an ETF must recognize and measure the transaction cost differences. With rare exceptions, when the sum of a mutual fund's *annual* fund share purchases by new investors plus fund share sales by redeeming investors is more than, say, 50 percent of the average shares outstanding, the ongoing investors of the fund are paying substantial transaction costs associated with accommodating investors entering and leaving the fund.¹⁵

Another category of fund trading costs worth addressing is the shareholders' cost of transacting in the fund shares. Most investors who use no-load mutual funds do not incur material costs to buy or sell mutual fund shares. In general, contemporary comparisons of mutual funds and exchange-traded funds explicitly consider *only* the investor's trading costs associated with entry to and, in the case of ETFs, exit from the fund—if they consider fund share trading costs at all. The significance of *fund share trading costs* varies greatly among investors. A long-term fund investor may not care about small differences (1) in the cost of trading ETF shares or (2) in the front-end loads of mutual funds. To the extent that a growing percentage of mutual funds' Class A shares are purchased through advisors without the investor paying a front-end load, there is no consistent measure of investor transaction costs for users of these shares. Furthermore, as we will see in Chapter 8, reasonable attention to trading methods can sharply reduce the cost of trading many ETF shares.

In contrast to traditional fund evaluations that stress differences in fund expense ratios and peer group performance, advisors who focus on various types of transaction costs and on what transaction costs reveal about a fund's investment process are serving their clients well. A focus on transaction costs is much more likely to find and measure value added or dissipated by the fund's investment manager (and/or index provider) than a focus on the fund's expense ratio.

The key lessons from any examination of transaction costs are (1) that fund transaction costs are typically larger than a fund's expense ratio and (2) that a fund manager's success in delivering good performance sows some seeds that make continued strong performance increasingly difficult as the fund grows. On the latter point, diseconomies of scale are particularly costly and usually appear at lower asset levels in funds that specialize in small-capitalization stocks and other less liquid (high trading cost) securities. Other things being equal, the diseconomies of scale in a fund *increase*

¹⁴See Edelen, Evans, and Kadlec (2007, pp. 7–9) for a modest but devastating critique of turnover as a proxy for flow.

¹⁵Re-read pages 4–7 if you have any doubts on this point.

(1) as the index's or active manager's asset coverage¹⁶ *decreases*, (2) as the securities in the fund *decrease* in average relative floating capitalization and (3) as the value of the assets committed to the indexed or the active management investment process *increase*, to list a few of the more significant relationships between a portfolio's size and its performance. Advisors should be skeptical of an extremely low expense ratio for an index fund unless they are confident that the index used by the index fund is efficient. The cost of an index composition change increases as the popularity of the index increases. Expenses are certainly important, but consider *all* expenses, including transaction costs, in your analysis.

Reducing transaction costs was one of the basic arguments for indexing in the 1970s.¹⁷ Today's index fund transaction costs are often disproportionately high when the fund uses a very popular index or the index has a high rate of composition change.

Commissions are usually a small component of fund transaction costs, but they may not be trivial. High commission rates also can be a symptom of other cost issues. If a fund is paying more than, say, \$0.04 per share or if the fund is making formal "soft dollar" commission payments for research or other services, the commissions almost certainly cover much more than the cost of trade executions.¹⁸ In most cases, investors would be better off compensating the manager directly through a higher advisory fee rather than through higher commissions that are used to pay some of the manager's expenses. Information to help you—or a fund service—evaluate all these costs is available, with some digging, from fund filings with the SEC.

Don't be so obsessed with a fund's expense ratio that you lose sight of your investment goal. Extreme transaction costs are much harder to overcome than a slightly above average management fee. A great active or index manager is worth a higher fee. Effective fund analysis should help you keep fee and expense issues in an appropriate perspective and help you find all the expenses.

Now that we have a pretty clear picture of how traditional published expenses and less visible expenses—the most important of those being transaction costs—affect fund performance, it is time to look at a useful

¹⁶Asset coverage is the total market value of the universe of securities eligible for inclusion in the index or the actively managed fund. For example, any sector-, style-, or cap-constrained fund has narrower asset coverage than a multicap, multistyle broad market index or fund.

¹⁷See Malkiel (1973) and Samuelson (1974), for example.

¹⁸Pure electronic execution commissions for most large investors are less than \$0.01 per share. Few funds paid average commissions as low as \$.04 per share in 2007, but commission rates are continuing to fall.

framework for analysis of the remaining elements affecting fund performance: This framework for analysis is tracking error.

WHAT IS TRACKING ERROR?

Tracking error was not widely used in fund analysis and evaluation until a large number of ETFs tracking multiple indexes became available to investors. Index tracking had been discussed in connection with index mutual funds, but the number of index mutual funds was and is small and the number of indexes used by mutual funds is even smaller. It is useful to discuss the growing interest in index tracking in connection with the growth of index ETFs and then examine how a tracking error framework can be useful in evaluating all types of funds.

Tracking error is one of a relatively small number of financial terms that has been defined differently in different situations. In most academic finance papers, tracking error is defined as “an unplanned divergence between the price behavior of an underlying position or portfolio and the price behavior of a hedging position or benchmark.”¹⁹ In these academic applications, tracking error is usually expressed as the expected or experienced one standard deviation annualized percentage variation of a portfolio value from a benchmark index value. Among finance practitioners this definition is used largely to measure how much an actively managed portfolio strays from the benchmark as the manager tries to add value. We will return briefly to this definition later in the chapter, but it is *not* the definition used in most discussions of ETF tracking error.

In discussing tracking error in the context of exchange-traded index fund returns relative to the fund’s benchmark index, the notion of a standard deviation would not be useful before data for at least several years had accumulated. However, “tracking” comparisons of ETFs were called for and made when ETFs had been in operation for little more than a year. The purpose of these early comparisons was simply to measure how closely the exchange-traded index fund return matched the return of the index. Most fund users neither know nor care about standard deviations, so the comparison that fund analysts published was simply *the return of the fund minus the return of the index*. This difference was usually expressed in basis points (or .01 percent) because most index ETFs have tracked their index closely and the difference was usually small.

When a standard deviation is used as the measure of tracking error, the tracking error is always expressed as a positive number because the test is

¹⁹Gastineau and Kritzman (1999) p. 315.

measuring the absolute size of the variability in results from an investment process that presumably minimizes tracking error over a period of years. However, the *difference* between a fund's performance and the performance of its benchmark can be positive or negative, depending on whether the fund performs better or worse than the index. It certainly matters whether the fund does better or worse than the index. Understandably, there was some confusion over the sign of a tracking error measure until ETF analysts clarified what they were doing. The tracking error measure used in connection with ETFs today is positive when the fund's NAV outperforms the index and negative when the fund underperforms the index.

As a simple example, if a fund return was +8.75 percent for the year and the total return on its benchmark index was +8.65 percent, the tracking error would be reported as +10 basis points. If the returns were reversed, the tracking error would be reported as -10 basis points. Calling this difference "tracking error" seems reasonable and intuitive to ETF analysts and users. It rarely confuses anyone except finance PhDs.

A few people have calculated a "tracking error" as the difference between the market value return of the ETF and the return of the index, but the most frequent comparison is between the net asset value return of the ETF and the return of the index. ETF market prices will converge on NAV over any long period, making the long-term difference between the ETF market value and net asset value negligible. While some comparisons are done for shorter periods, the most widely discussed and distributed ETF tracking error comparisons are done annually.

Most ETFs have relatively low expense ratios; consequently there is not complete standardization on how the expense ratio is treated in tracking error calculations. Some performance tracking calculations add the fund's expense ratio back to the fund return on the theory that the fund manager does not control these expenses. However, the expense ratio comes out of the investor's return and it seems appropriate to compare funds uniformly after expenses. Consequently, most tracking error comparisons *do not* add the expense ratio to the fund's return, but it is a good idea to check.

A number of index ETFs deserve extra attention because they fail to track their benchmark indexes very well. There are five principal reasons why an ETF will exhibit significant tracking error by this performance difference measure. These reasons are worth discussing because they account for most high double-digit or triple-digit basis point index ETF tracking errors.

Non-RIC or Non-UCITS Compliant Benchmark Indexes

The U.S. Internal Revenue Code imposes diversification requirements that investment companies in the United States must meet to qualify as Regulated Investment Companies (RICs) for favorable pass-through tax treatment. RIC

tax treatment permits the distribution of interest, dividends, and capital gains to holders of shares in the investment company without taxation at the fund level.²⁰ In Europe, Undertakings for Collective Investment in Transferrable Securities (UCITS) rules impose regulatory rather than tax diversification requirements on funds in the European Union.

The RIC diversification rules require that no more than 25 percent of a fund's assets can be in the securities of a single issuer except the U.S. government. Furthermore, with respect to 50 percent of the assets of the fund, no more than 5 percent of the securities can be those of a single issuer, again except for the U.S. government.

The UCITS requirements are structure rules, not tax rules, and they are a little more complex than the RIC rules. Under what is known as the 5/10/40 rule, a non-index UCITS may invest no more than 10 percent of its net assets in transferrable securities or money market instruments issued by the same entity. With respect to 40 percent of its investments, the UCITS can invest no more than 5 percent of assets in the instruments of a single issuer. Interestingly, there is a more flexible UCITS provision for index funds. An index replicating UCITS fund may invest up to 20 percent of its net assets in shares and/or debt securities issued by the same entity. The 20 percent limit can be raised to 35 percent under "exceptional market conditions." To qualify for these larger positions, the benchmark index must use a recognized methodology that generally does not result in the exclusion of a major issuer in the market the index represents.

Benchmark replication inside an ETF does not appear to be a significant diversification issue in the EU countries where UCITS prevails or elsewhere outside the United States. However, a number of U.S. ETFs are based on non-RIC compliant indexes. A few single country ETFs and some sector funds issued by iShares, based on Dow Jones sector indexes, and by Vanguard, based on MSCI sector indexes, are not based on RIC-compliant indexes. The S&P sector indexes used for the Sector SPDRs are specially weighted to be RIC compliant. Most indexes introduced as ETF benchmarks have been RIC and/or UCITS compliant.²¹ All or nearly all index publishers are willing to provide RIC and UCITS compliant versions of any of their indexes. The use of noncompliant indexes is an unfortunate decision, usually made by the fund issuer. Fortunately, it is easy for an investor to avoid funds that are based on noncompliant indexes and that, consequently, conceal the quality of their portfolio management process. If you already own shares in a

²⁰See Chapter 4 for more detail.

²¹In addition to the indexes for the Sector SPDRs, the NASDAQ 100 capitalization weightings are modified to make that index RIC-compliant. The price-weighted Dow Jones Industrial Average is usually RIC-compliant without modification, but it dropped out of compliance briefly at the end of March 2009.

non-RIC-compliant index fund and prefer not to change, suggest to the fund's manager that they consider changing to a RIC-compliant version of the index.

Optimized Portfolios Designed to Reduce Trading Costs

Many ETFs based on an unusually large number of stocks such as U.S. total market funds and multicountry funds often have portfolios that are optimized or sampled to reduce custodial costs and the administrative costs involved in handling creation and redemption baskets that might otherwise include up to several thousand securities. While there is no universal pattern for optimized portfolios, they often underweight the smaller capitalization stocks in the index, as in the emerging markets funds example on pages 126–129. If small caps are underweighted, the fund will outperform the benchmark when the small-cap components underperform the balance of the index. When small-cap stocks outperform the large-cap stocks in the benchmark, the optimized fund will underperform the benchmark. Some issuers of funds with a large number of securities in their benchmark resort to completion baskets or completion swaps covering the small-cap portion of the portfolio to improve tracking while simplifying fund management and reducing the cost of creation and redemption.

Illiquid Index Components

A number of back-tested “concept” indexes have been designed solely to serve as ETF templates. The resulting ETFs are often sold based on a combination of good back-tested performance and an investment concept that suggests rapid future growth. The indexes—and the ETF portfolios—often include some small and illiquid issues. If the back-tested index fund succeeds in attracting substantial assets, the portfolio manager may—for reasons that include (1) the risk or difficulty of trading large positions in illiquid stocks and (2) position reporting requirements—decide not to increase the fund's position in a small company beyond 5 percent or 10 percent of the company's outstanding shares as the assets of the ETF grow. If the portfolio manager does not hold shares in these positions at the index weighting, the performance of the fund will diverge from the performance of the index.

The Lazy Portfolio Manager

Lazy portfolio managers are probably the greatest single reason for index fund tracking errors that are consistently favorable (positive)

when the market is weak and unfavorable (negative) when the market is strong.

One of the potentially important differences between investment company ETFs and mutual funds is that the ETF portfolio manager does not need to hold cash balances to meet cash redemptions. The ETF portfolio manager who wants to manage cash aggressively can be invested down to the fund's last few dollars each day without any unusual cash-flow management problems. In fact, however, many ETF portfolio managers do not invest their cash aggressively. Many funds show a pattern of returns that suggests the manager consistently holds excess cash. During years when the market rises, these funds lag the performance of their benchmark index because interest on cash balances is not keeping up with the return on positions in the index. The same index funds will look too good to be true in a year like 2008 when their cash balances earn modest positive returns while portfolio positions perform poorly. In retrospect, a cash balance would not have been a bad idea in 2008, but the long-term question is what the portfolio manager in an index ETF should be doing. Clearly, an important part of the mandate for an index fund manager is to deliver a return representative of the index. If the portfolio manager's mandate is asset allocation or market timing (in the sense of reducing or increasing equity exposure to anticipate the direction of the market) then a cash balance is certainly appropriate—at times. In most index ETFs, however, holding cash balances all the time is not part of the portfolio manager's job description. Exhibit 6.5 shows some suspiciously lazy returns in three strong market years and two weak market years.

Exhibit 6.5 shows tracking error calculations for a group of 30 U.S. ETFs based on RIC-compliant indexes that have been in existence since the beginning of 2002. These funds all have domestic U.S. stock portfolios. While the S&P 500 annual performance indicated at the top of the column for each year is not representative of the portfolio of each fund, it is a fair surmise that 2002 and 2008 were down years for all of these funds and 2003, 2006, and 2009 were up years. As the column totals and the average tracking error for each fund in these years indicates, the tracking errors were smaller in the down years. In 2008 the average ETF even had a small positive tracking error. In the up years of 2003 and 2006 every one of the ETFs had a negative tracking error and the size of the negative tracking error was usually greater than the size of the negative tracking errors in the comparable funds for 2002 and 2008. At least one of the two funds that had positive tracking errors in 2009 had substantial earnings in that year from securities lending. The only reasonable interpretation of these results is that, on balance, most of these funds carried significant cash balances in all five years. This example illustrates one small aspect of fund performance that a tracking error analysis can help us find and evaluate.

EXHIBIT 6.5 Annual Tracking Error in Two Down Years and Three Up Years

S&P 500 Annual Performance		Down Years		Up Years		
		-21.98	-36.55	28.25	15.49	26.46
Fund Type	Symbol	Down 2002	Down 2008	Up 2003	Up 2006	Up 2009
S&P Depository Receipts (SPDR)	SPY	1	12	-30	-14	-19
iShares Russell 1000	IWB	-7	3	-25	-17	-10
Vanguard Total Market ¹	VTI	-10	7	-21	-5	6
iShares Russell 3000	IWV	-9	1	-29	-20	-14
iShares DJ US Total Market	IYY	-9	-10	-33	-25	-24
Power Shares QQQ ²	QQQQ	-12	-10	-34	-26	-16
Diamonds Trust	DIA	-11	-1	-30	-23	-21
S&P MidCap 400 SPDR	MDY	-5	-43	-46	-30	-53
iShares S&P MidCap 400	IJH	-21	3	-25	-18	-15
iShares S&P MidCap 400 Growth	IJK	-24	-1	-19	-6	-23
iShares Russell MidCap	IWR	2	4	-33	-22	-22
iShares Russell 2000	IWM	-4	13	-31	-19	-4
iShares S&P SmallCap 600 Growth	IJT	-19	6	-26	-24	-13
iShares S&P SmallCap 600	IJR	-11	-2	-20	-18	-8
Vanguard Extended Market ETF ³	VXF	-24	34	-29	18	-4
iShares S&P 500 Growth	IVW	-9	-3	-24	-20	-22
iShares Russell 1000 Growth	IWF	-11	-3	-29	-20	-28
iShares Russell 2000 Growth	IWO	-3	11	-35	-22	-9
iShares S&P 500 Value	IVE	-13	-2	-28	-21	-1
iShares Russell 1000 Value	IWD	-16	2	-32	-24	-6
iShares Russell 2000 Value	IWN	-9	18	-41	-29	-18
Technology Sector SPDR	XLK	-15	40	-46	-22	-50
iShares S&P North American Technology ⁴	IGM	-31	-18	-61	-53	-83
Financial Sector SPDR	XLF	-19	6	-53	-39	25
iShares DJ US Financial Sector	IYF	-46	-6	-86	-62	-23
Consumer Discretionary Sector SPDR	XLY	-21	6	-44	-19	-17
iShares US Consumer Goods ⁵	IYK	-58	-21	-73	-59	-67
Energy Sector SPDR	XLE	-19	-9	-49	-28	-27
Industrial Sector SPDR	XLI	-22	1	-59	-30	-16
Column Totals		-455	38	-1091	-697	-582
Average per fund (rounded)		-16	1	-38	-24	-20

¹Formerly Vanguard Total Market VIPERS²Formerly NASDAQ-100 Index Tracking Stock³Formerly Vanguard Extended Market VIPERS⁴Formerly iShares Goldman Sachs Technology Index⁵Formerly iShares DJ US Consumer Cyclical

All calculations are Fund Return minus Index Return so the tracking error includes the expense ratio.

Sources: Morgan Stanley, Barclays Global Investors, State Street Global Investors, Thomson, Bloomberg.

Leveraged Long and Leveraged Inverse Funds

These funds track their leveraged benchmarks pretty well on a day-to-day basis, as they are designed to do. Tracking may not be close when it is measured point-to-point over a period longer than one day. This issue is explored in depth in Chapter 10.

Apart from showing how intensively an index fund manager is keeping your money at work, tracking error can be a useful framework for measuring how an active portfolio manager is doing. Breaking the total tracking error measure of the return difference between an index and a fund into positive and negative elements can be a useful way to evaluate what is going on in an actively managed fund and how well or poorly the fund's investment process works. In that spirit, we turn next to analysis of differences in performance between the net asset value of a fund and one or more benchmarks (indexes and funds) as a framework for analysis of an actively managed fund's performance.

NET TRACKING ERROR AS A FRAMEWORK FOR FUND PERFORMANCE EVALUATION

This section illustrates one way to organize an examination and evaluation of transaction costs and other major cost and value-added elements that determine fund performance. The example is an actively managed mutual fund (to illustrate the breadth of the analytical possibilities), but most of the hidden cost and value-added elements apply to ETFs just as well. After all, even if an index fund is passively managed, “passive” should not mean “mindless.” Transaction costs offset at least some of any value added by both active and passive investment processes. Transaction costs associated with index composition changes are a deadweight drag on the performance of any portfolio that replicates an index. In most cases the composition change transaction costs are embedded in the performance of the index; but that does not mean we can't estimate them; it does not mean that they don't penalize performance; and it does not mean that a good index fund manager can't trade away from the moment of the maximum market impact cost of an index change.

In my youth, I was a great fan of the late Don Herbert's *Mr. Wizard* science TV show. While childhood memories are sometimes inaccurate, I recall having heard from time to time, as Mr. Wizard and his youthful apprentices donned safety glasses, an admonition something like “Don't try this at home.” While that may not have been the precise warning Mr. Wizard used, it is probably an appropriate warning for anyone who

might try to assemble the data described in this section from the fund databases available today. While most of the information described here can be developed from SEC filings, the data assembly and calculations are beyond what most advisors, let alone most individual investors, have the resources to undertake. The purpose of this discussion is to illustrate what should soon be possible, and to offer a preview of how better data on mutual funds and exchange-traded funds that should become available over the next few years can raise the level of analytical discourse and improve the fund selection process. Improvements in data availability should make this kind of fund analysis almost routine within a few years.

As indicated at the beginning of this chapter, most fund-rating systems explicitly recognize the limitations of past performance as a predictor of future investment results—and then proceed to focus on just such performance comparisons. In the final analysis, the dominant focus of most fund service ratings is on comparisons of a fund's historic performance to peer group performance. One problem with past performance is that it is a “noisy” measure, at best, of the value added or subtracted by a fund's investment process. Effective fund evaluation will attempt to break down the components of performance to separate the wheat (value added elements and costs) from the chaff (noise).

I propose to use the net tracking error difference calculation as an organizing framework to incorporate all the favorable and unfavorable elements affecting fund performance. The fund manager's objective should be to achieve the best possible performance for investors, not the smallest possible tracking error relative to a flawed benchmark—or relative to any benchmark, for that matter. The objective of the manager of any fund—indexed or active—should be to maximize positive tracking error relative to an appropriate benchmark and subject to risk constraints that are appropriate for the fund.²² Calculating tracking error relative to several benchmarks lets us use the multiple comparisons to increase our understanding of *why* a fund's performance has been good or poor. A large positive tracking error in fund performance is almost certainly more desirable than a negative tracking error (or than no tracking error at all), but any useful analysis is much more complex than that statement suggests.²³

²²The risk constraints will be relatively tight for an index fund, but they should not discourage an index fund manager from trading away from the implementation time of an index change. In many large index funds, avoiding the official index implementation trading frenzy is akin to an opportunity to pick up money from the sidewalk, as discussed in Chapter 5.

²³Israelson and Cogswell (2007) appropriately argue that the magnitude of tracking error (standard deviation version) is not a suitable performance indicator for active

To make it most useful, the net tracking error should be viewed as a summary measure of the positive and negative causal elements of value added—or of poor performance. Calculating the individual elements of cost and performance and displaying them as offsetting components of a net tracking difference calculation can provide useful insight into the interaction of the determinants of performance. Some of these calculations require data and methodology that go far beyond what fund services can offer today, but this kind of analysis can enlighten investors in ways that make development and application of this methodology inevitable as the available data improve. Of course, there will always be random elements that limit the value of even the best analysis. Noise that is not subject to an unequivocal explanation can be a sizeable component of any fund evaluation. While noise limits the usefulness of the tracking error framework, we are looking for the causes of performance and we are asking appropriate questions. That alone is a substantial improvement over what is being done by most fund evaluators today.

There is no reason to calculate tracking error only relative to the template index of an index fund or only to a benchmark for a market segment similar to the fund's portfolio. Tracking error for both indexed and actively managed funds measured relative to several indexes can highlight important index and fund characteristics. It can reveal elements of index transparency costs, the quality of the selections in a fund based on a quantitative security selection process, or the astuteness of the stock picks of a traditional active manager. Multiple tracking error calculations can reveal that a poorly performing benchmark is being used as an index fund template. Tracking error measured relative to competitive funds, particularly with the comparative or comprehensive tracking error divided into operating costs, trading costs, and other elements, can highlight features that a skilled fund analyst or a determined do-it-yourself investor can use to improve fund selection.

Multiple tracking error comparisons can measure the periodic (usually annual) total return of a fund minus the total return of any relevant (1) index, (2) index fund, (3) alternative portfolio, or (4) composite of competitive funds for the same period. The value of these measures is that a series of such comparisons over time and against appropriate standards will provide a comprehensive picture of how the fund has been run and how alternative funds and indexes compare to it. When the net tracking error is broken down into security selection value added, operating costs, transaction costs, and

managers. I agree, and I use tracking error (performance difference version) only as an organizing framework. It is not the only possible framework but it can be a very useful one. We will also be looking at other calculations and fund comparisons as we proceed.

other measures that incorporate and highlight cost elements and the effect of any risks accepted and management decisions made, the result is a rich tapestry that reveals important characteristics of the fund and its investment process that an advisor will want to understand. Harking back to my earlier warning, this analysis is not something for the average do-it-yourself investor or even an advisor to undertake at the present time. However, advisors need to prepare their thinking for this kind of analysis. Investors increasingly pay advisors for advice in fund selection. Advisors who can prepare themselves to undertake this kind of analysis over the next few years will provide much better service to investors they have “trained” to appreciate the analytical nuances that will soon be routine.

A detailed *breakdown* of the cost and performance elements that make up tracking error is more useful than conventional portfolio-to-portfolio or portfolio-to-index performance comparisons because an appropriate breakdown of performance elements focuses on the performance of a fund relative to the manager’s opportunity set. Focusing on actual performance relative to the possibilities is useful whether the fund is an index fund, a quantitative model-driven fund, or a classic actively managed stock-picking fund.

A fund’s expense ratio is appropriately reflected as a readily measurable cost component of tracking error. A low expense ratio in a fund based on a popular index may obscure the effect of heavy transaction costs associated with index composition changes or with costly trading to accommodate entering and leaving shareholders of mutual funds. We also need to calculate tracking error against at least one appropriate independent benchmark. If the fund consistently underperforms that benchmark by more than its expense ratio, we want to understand why it underperforms. Without looking at tracking error relative to several benchmarks, a low expense ratio in a relatively large, actively managed fund might obscure the effect of diseconomies of scale associated with a fund that has outgrown the capacity of its investment process. Using tracking error and breaking it down into component elements associated with transaction costs and the value of an investment process should help an advisor organize the quantitative side of the fund evaluation process more effectively.

All index ETFs should be evaluated relative to benchmarks other than their template index. Whether an index fund is based on (1) a popular benchmark, (2) a custom back-tested index touted to outperform a specific market segment, or (3) an index constructed to have less costly composition changes or to lack trading transparency, the fund’s performance should be evaluated by calculating its tracking error relative to one or more appropriate *independent* benchmarks. ETFs using indexes that were created from a back-test can *only* be meaningfully evaluated relative to an independent benchmark. In the long run, the most appropriate single measure of the value *any fund*

delivers to its shareholders is its tracking error relative to an independent benchmark that represents a comprehensive, RIC-compliant, float-weighted basket of the securities in the universe eligible for inclusion in the fund portfolio. The result of such a calculation may be very different from what we get from a tracking error calculation relative to an index fund’s template index, particularly if tracking errors are calculated and evaluated over a period of years. The ideal benchmark would be an index that meets the investability requirements for a benchmark yet does not serve as a template for *any* portfolios. The performance of an index that serves as a portfolio template will be adversely affected by the costs of implementing index composition trades in the portfolios that track it.

Let’s start to break tracking error down into a few of its components to illustrate some of the possibilities. The breakdown that follows is certainly not the only way to decompose these elements, but it is a useful illustration. Some possible values for breakdown components are illustrated in Exhibit 6.6, but keep in mind that these values are for purposes of illustration. They do not represent an actual fund.

Fund Expense Ratio

Of course the easiest fund cost element to find is the fund’s operating expense ratio. The expense ratio—and often a breakdown of its components—is readily available for all funds. In some cases, there is a cap on expenses or

EXHIBIT 6.6 Illustrative Breakdown of a Mutual Fund’s Net Tracking Error Relative to an Appropriate Benchmark Index

Negative (Cost) Elements		Positive (Value-Added) Elements	
Expense ratio	−1.21%	−0.02%	Market timing
Expenses charged to transactions or securities lending	nm	nm	Miscellaneous fund income
Trading costs flow	−1.08%	+0.79%	Apparent value added by fund management decisions
Discretionary	−0.36%		
Withholding taxes	nm		
Total costs	−2.65%	+0.77%	Total value added
Net tracking error	−1.88%		

a unitary fee that determines the expense ratio, independent of actual costs. Expenses are a negative component of the net tracking error calculation. The ready availability of the expense ratio and publicity given relatively low expense ratios by index mutual fund and ETF sponsors has made it the second most popular measure used for fund evaluation.²⁴

"Obscured" Expenses Charged to Transactions or to Securities Lending Revenue

Apart from brokerage commissions on fund portfolio trades, which are universally excluded from the fund's expense ratio, two other cash expense items are not ordinarily included in the fund's expense ratio. The most common of these excluded expenses are transaction-linked ticket charges and line-item charges collected by the fund's custodian. These charges are usually small and will be reflected in one way or another in the cost or proceeds of transactions made for the portfolio. These charges are an "obscured," if not hidden, expense.

A second expense element that is usually not part of the expense ratio is the portion of any securities lending fee that is retained by the fund's securities lending agent. The portion of securities lending fees retained by the securities lending agent has a negative impact on any net tracking error or performance calculation. The gross securities lending fees received are a positive element, as described later.

In most funds, securities lending revenue and, correspondingly, fees to the securities lending agent are not material relative to the total assets of the fund. But in some small-cap funds and in funds holding non-U.S. securities, this lending revenue can be material—and fees retained by the securities lending agent can be a significant profit center for that fund service provider.²⁵

Trading Costs

Trading costs of a fund are not published as an identifiable cost item, but they can be calculated with reasonable accuracy from data that is reported on a fund's trades. The most easily determined element of trading costs is cash commissions paid by the fund to brokers that execute the fund's transactions. Commissions are reported to the SEC for a fund or for all funds

²⁴The most popular measure is prior period performance.

²⁵In 2009, a few low expense ratio, financial sector ETFs earned enough from securities lending to offset all of their operating expenses. For most of these funds, this will probably turn out to be a once in a century occasion. See Jannarone (2010).

in a series. While careful analysis (described in Edelen, Evans, and Kadlec 2007) may be necessary to obtain a figure for the commission payment per share traded (the most common measure used), such calculations are well within the capabilities of fund services today. Fund commission rates that average more than four cents per share will be unusual within a few years.

Commissions are usually the smallest part of a fund's transaction costs, but high commission rates can point to other issues. For example, significant "soft dollar" commission payments used to pay for services provided to the fund manager are equivalent in most respects to an addition to the investment management fee. Soft dollar commissions are an inefficient way to compensate the investment manager indirectly because they encourage the manager to "overtrade." Overtrading increases other trading cost elements by a multiple of the additional commissions paid for services.

The largest components of portfolio transaction costs are noncash costs that consist of the effective spread from the mid-point of the bid and offer at the time the order is entered, plus any price impact caused by the fund's transactions. Edelen, Evans, and Kadlec (2007) is particularly helpful in describing the character and magnitude of fund transaction cost components and how to measure them for a large number of funds.

The Edelen, Evans, and Kadlec paper illustrates how analysts can develop a close estimate of the transaction costs of a fund from that fund's reports of securities transactions to the Securities and Exchange Commission. Edelen, Evans, and Kadlec's method will *underestimate* the noncash elements of trading costs in most funds, but for a few funds, their calculation might be high. If a fund disagreed with a fund analyst's estimate of its transaction costs, it could provide internal transaction cost data reflecting its actual trading experience to a calculation agent on a confidential basis and the agent could calculate the fund's actual trading costs to facilitate the trading cost analysis.

The ITG website, www.itg.com, has a great deal of information on pre-trade transaction cost estimation models and post-trade cost analytics. In addition to breaking out the difference between the bid-asked spread and the market impact of orders executed beyond the spread, it is useful to divide mutual fund portfolio trading costs into (1) costs associated with accommodating the flow of investors into and out of the fund and (2) costs associated with discretionary portfolio composition changes that reflect an active manager's selections. If the fund is an index fund, it is useful to evaluate the extent to which transaction costs are increased by the transparency of the index as discussed in Chapter 5.

In considering the implications of transaction costs for fund selection, an investor should view high costs of accommodating investor flow into and out of a fund as an extremely undesirable feature of a fund with substantial

flow transactions. While the cost of accommodating flow transactions is a significant drag on performance for most mutual funds, flow is a particular problem for small-cap mutual funds and for any mutual fund with more than 50 percent annual investor flow.

Separating discretionary portfolio composition trading costs and flow trading costs in an actively managed mutual fund is worthwhile because it is discretionary trading that is the source of any value an active manager adds with portfolio changes. Flow trading costs are invariably a deadweight loss to the ongoing shareholders of a fund. Flow trading costs should be considered to be *the precise equivalent of an increase in the fund's expense ratio*.

Withholding Taxes

Funds holding equity securities issued in foreign countries are often subject to withholding taxes on dividends, some of which may be recoverable by application to the foreign country's taxing authorities. The tax withheld might be listed on the negative side, and recoveries or tax credits could be listed on the positive side of the table. For most funds, these taxes and/or recoveries will be insignificant. If a fund does not meet the refund requirements of a country where a security is issued or traded, or U.S. requirements for efficient taxation of foreign dividends received by a fund, effective tax analysis should reveal this feature of the fund.²⁶

POSITIVE (VALUE-ADDED) ELEMENTS

In contrast to the negative elements that are always *costs*, some of the "positive elements" listed are not always positive numbers that contribute positively to fund returns in every case.

Market Timing

To the extent that the fund holds a cash balance that is earning interest, the market timing contribution to tracking error is simply a measurement of the net benefit (or net cost if it is negative) of holding whatever cash balance the fund held, relative to the effect of having the cash invested in the fund's

²⁶ A fund that combines small foreign holdings with a largely domestic U.S. portfolio may have an adverse tax effect for some of its shareholders that can be avoided by a fund that holds predominantly non-U.S. securities. Global funds with predominantly U.S. holdings are often tax inefficient for U.S. investors. This tax issue is discussed briefly on page 72.

portfolio securities as discussed in connection with Exhibit 6.5 earlier in this chapter. This element may be no more than a few basis points in some years but it could be more significant in a year when the fund's portfolio securities do very well or very poorly. As suggested in the discussion of Exhibit 6.5, unless the fund manager is expected to add value by market timing, a positive return here is not necessarily a reason to praise the manager's performance.

Miscellaneous Fund Income

This is the sum of a variety of small income items including gross securities lending income and any redemption fees levied on mutual fund share traders who redeemed fund shares before the fund's minimum holding period for avoiding the redemption fee had passed. These income items will rarely be significant enough to justify a finer breakdown, but securities lending income sometimes can be surprisingly large for a few small-cap funds and funds holding foreign securities. On the other hand, some foreign securities lending markets are considerably more efficient—and less profitable—than they were just a few years ago.

I have not seen a comprehensive study of the economic impact of the short-term trader redemption fees imposed by many mutual funds in the wake of the market timing and late trading scandals of 2003 to 2004; but small-cap funds, international funds, and other funds most affected by the cost of flow are more likely than large-cap domestic equity funds to require and collect redemption fees from investors who enter and leave the fund within a short period. Discouraging costly flow in this manner is a good idea, but the maximum permissible redemption fee of 2 percent will not cover the flow transaction costs to ongoing shareholders in many of these funds. In most funds that impose redemption fees, the fee can be avoided by holding the fund's shares beyond a short period (often just one week) during which the redemption fee is imposed. I would be surprised if much redemption fee revenue is being collected.

Apparent Value Added by Fund Management

This element is the approximate value that *appears* to be added to the fund by the portfolio management process. Analysts eventually will be able to break the performance contribution of active managers down in a variety of ways. For example, it is possible to calculate the value added by the transactions the fund manager has made to change the composition of the portfolio during a quarter or a year or to compare the beginning of the period portfolio's performance with the performance of an index. There is

scope for ingenuity in analyzing an active manager's ability to add value or highlight aspects of the investment process that have worked less well. As the availability of fund data from SEC filings improves, analyses of transaction costs and value added by a fund's investment process will become more sophisticated. For example, the value added by fund management will be broken down into a number of distinct components and a noise element. The total apparent value added is a residual in the example in Exhibit 6.6. When we subtract the net tracking error (−1.88 percent) from the total of the cost elements in the left column (−2.65 percent), we get a total for the positive elements of (+0.77 percent). Adding the market timing loss (−0.02 percent), we get an apparent value added residual of (+0.79 percent) for the fund manager's security selection efforts.

What Is the Significance of Exhibit 6.6?

Exhibit 6.6 is simply an illustration of the kind of fund performance breakdown that is theoretically possible today and will ultimately be routine. To the extent that tracking error is measured relative to a reasonable benchmark, the costs incurred by the average fund will cause the net tracking error to be negative. The breakdown into cost and performance elements and comparisons to other funds and other managers will enhance the fund selection process. A fund analyst's ability to perform this kind of analysis—and even more detailed breakdowns—depends on the fund industry's adoption of a new data standard: XBRL.

EXTENSIBLE BUSINESS REPORTING LANGUAGE (XBRL): THE NEW DATA STANDARD

So far fund industry use of XBRL consists of a few overpublicized SEC filings of risk/return summary information from a small number of mutual fund prospectuses. The published information includes details of the funds' investment objectives, costs, and historical performance. The applicability of XBRL to a full range of financial data is illustrated by the fact that it is now mandatory for many corporate filings with the SEC. With required use of XBRL, the accuracy of available corporate financial data has improved dramatically. The Investment Company Institute (ICI) has created some XBRL categories and templates for mutual fund filings.²⁷ When this project

²⁷The early status of the Investment Company Institute XBRL Initiative is summarized in McMillan (2007). The timing of further XBRL implementation is

is fully operational, funds will report to the SEC using the XBRL format and fund analysts and advisors will be able to assemble data for a full range of fund analyses and comparisons.

The significance of full XBRL fund reporting is that analysts will be able to access specified elements of data, analyze data from an individual fund, or do comparative analyses of competitive funds. Most of the analyses illustrated earlier in the chapter will be performed using spreadsheets and macros or formal programs for periodic reports and comparisons. The key underlying change will be standardization and tagging of fund data elements so that *everyone* can use all the data the fund files with the SEC.

To understand the potential significance of comprehensive XBRL data, one need only read the descriptions of gathering, “cleaning,” and screening mutual fund data in the academic studies of funds that have been undertaken over the past 20 years. Mutual-fund data extraction has moved from handwritten ledgers to manual copying of poorly formatted hard-copy SEC filings to special purpose text search methods that extract data from eclectic electronic reports filed with the SEC. Changing formats, missing data items, and confusing aggregations of fund family data that differ in format from one period to the next make data collection the hardest part of any comparative analysis of funds. Different fund services may publish different numbers for the same fund. The adoption and widespread use of XBRL for fund data will not eliminate fund-data problems overnight, but it promises to revolutionize most fund comparisons. The best description of the advantages XBRL brings to fund-data analysis that I have seen is in a speech former SEC Chairman Cox gave to a group of financial analysts (Cox 2008). In his speech, Chairman Cox applied the “Don’t try this at home” admonition (which he attributed to reports describing one of Harry Houdini’s feats) to the difficulty of extracting useful fund data from SEC reports without XBRL. (On my Scout’s honor, the Mr. Wizard story earlier in this chapter and most of this discussion of XBRL was in draft form before the former Chairman made his speech.)

XBRL is an open standard. It carries no royalty or licensing fees. The availability of clean data in a standard format from most funds will permit an advisor or even a committed individual investor to analyze funds effectively. In addition to data assembly and analytical macros provided by financial

difficult to forecast, but the ICI seems to be the fund industry’s organization of choice for this effort. You can see where the SEC stands on XBRL by starting at www.sec.gov/spotlight/xbrl.shtml. There is even a rudimentary Mutual Fund Viewer that lets you create a simple Fund Comparison Report for two or three funds. A visit will impress you both with the potential for improved fund data and with how far the process has to go.

web sites, a wide range of analysts and market pundits will be able to produce custom analyses at low cost. Questions that are rarely asked because the data to answer them have been inaccessible will be asked and answered with ease. Everyone who cares will have free or nearly free access to a better fund database than any fund service could assemble today. The fund-rating organizations will be competing with developers of new fund analysis and evaluation software. Investors and their advisors will be the beneficiaries of this competition.

The downside to the XBRL story is that a full XBRL reporting standard is not yet mandatory for funds. Some funds may decide not to use XBRL for all data, including important nonfinancial data. It is impossible to predict the pace at which the XBRL standard will be rolled out and the data from it will roll in. If most of the major fund companies submit a full range of XBRL data, the pressure on other funds to conform will be powerful. Realistically, however, a critical mass of funds is unlikely to submit full data without a mandatory standard.

The financial crisis of 2007 to 2009 diverted attention from the SEC's normal operations and, unfortunately, diverted attention from XBRL. Former Chairman Cox was a major advocate of XBRL. Chairman Schapiro is fully attuned to the regulatory needs of fund investors, but she has many pressing issues that need her attention. Fortunately, the case for XBRL fund data is compelling. The advantages of XBRL data for funds are so great that the XBRL roll-out will provide data which will reduce other elements of the SEC's workload.

THERE IS A WIDE RANGE IN THE QUALITY OF FUND TOUTS, TOOLS, AND TECHNIQUES

Consider the Source of a Recommendation

After an advisor and investor have worked together for a reasonable period of time, the investor might understand the advisor's thinking process well enough that a simple statement of a recommendation to buy or sell a specific ETF might be accepted at once. Obviously, that level of acceptance will only be possible after the investor is thoroughly familiar with the advisor's decision-making processes and has no specific questions about the proposed transaction. The investor will know that if he has a question the advisor will have the answer and, from experience, that the answer will be fully satisfactory.

An investor might develop a high degree of confidence in the analysis and recommendations of a published fund evaluation or rating service; but most casually published recommendations are either (1) based on one or a very

small number of fund characteristics, (2) proceed from a complex weighting of factors which is not thoroughly revealed and which may vary considerably from one recommendation to another in a way that makes it difficult for the investor to understand the recommender's "thinking" process or (3) appear without any context or substantiation. Common sense suggests that an investor should try to understand what is behind any recommendation. Be skeptical and ask questions. If you can't get your questions about a recommendation fully answered, you should look for another source of investment advice.

Some of the data available from the fund rating services can be very useful, particularly data that are organized to answer the kinds of questions an investor or advisor might ask. However, much fund data aggregation and commentary does not explain the data assembly or analytical process and many recommendations are just hanging in space with no visible means of support.

One of the most frustrating and least useful practices in spreading the word on fund recommendations is publication of recommended lists of mutual funds and/or ETFs from a person without obvious credentials, an anonymous web master or one or more unidentified "staff" members. It is not unusual to find an unrevealed bias in the recommendations from one of these sources. I came across a list of recommended ETFs on a popular web site that included no funds from one of the largest ETF providers. When I examined the funds on the recommended list they were uncomfortably similar to the funds that advertised on the web site.

We buy one fund rather than another because we expect the chosen fund to deliver a better return. Even if we believe securities returns proceed from a random process, the fund that holds the securities does not have random costs and random quirks. There is certainly scope for fund analysis and evaluation even if you believe that security selection is useless. Accepting and acting on what may be, at best, a random fund recommendation is not a sound investment policy.

Looking For Useful Tools

Free tools abound on the Internet. Free is a great price, but it is important to understand the reason something is free and consider how that reason affects our ability to use the tool productively. In short, we need some criteria to screen tools before we use the tools to screen funds.

I happen to like a relatively new fund comparison tool that is available on the iShares web site. It is simple, clear, and it offers relevant (if not comprehensive) comparisons of up to five mutual funds and ETFs. The tool is designed to permit advisors to construct a comparison of an iShares ETF with mutual funds and other iShares ETFs. The graphics are attractive and

most of the comparisons made are relevant to the selection of one fund over another. The usefulness of the tool is limited by the fact that the only ETFs that can be used for cross fund comparisons are iShares ETFs. I can certainly understand the thinking behind restricting the usable ETFs to your own funds, but comparison software that permitted use of a wide range of competitive ETFs would certainly be more useful. I like this tool, but I would suggest using it as part of your fund selection process in a different way than the iShares folks have in mind. Accept the limitation to iShares ETFs and compare one or more iShares ETFs to appropriate mutual funds. Once you determine that an iShares ETF looks better than any of the mutual funds (an ETF usually will), use another method to compare the iShares ETF(s) to other ETFs. If the best other ETF and the best iShares ETF finish in a dead heat, buy the iShares fund to thank iShares for access to this tool.

A number of stand-alone fund evaluation tools and techniques are worthy of investor and advisor attention. I do not suggest these tools as comprehensive methods of fund selection, but they can offer useful insights, particularly when used in combination or in conjunction with a more comprehensive analysis along the lines of the tracking error breakdown illustrated in the previous section or the analyses provided by one of the major fund rating services.

Unfortunately, one of the greatest problems in using tools provided on fund web sites is that many of them are thoroughly “lawyered,” reducing their usefulness and, in many cases, reducing the access of investors to the tools. A number of ETF and other fund web sites have two levels of access, one for “investors” and another for “professionals.” In order to obtain access to some of the most useful information on a fund web site, you may have to state that you are an advisor who is presumed to be qualified to use it. Standards as to what kind of information can be made available to most investors and what can be provided only to advisors are not consistently applied over all web sites.

I have a picture of my daughter’s late golden retriever wearing a tote bag around her neck. She received the tote bag after signing up as an advisor on a fund web site. I believe a large number of investors take the maxim expressed in the classic New Yorker cartoon that “on the Internet no one knows you’re a dog” seriously and sign on as advisors at fund web sites to get more comprehensive information. You may want to discuss ways to access the “professional” level of information and professional tools with your own pet.

Portfolio Return Correlations

The most important reason to hold a diversified portfolio is that financial instrument returns are not perfectly correlated. Diversification is usually

the easiest and lowest cost way to improve the risk-adjusted return of a portfolio. Risk, defined as the variability of returns, is almost automatically reduced by sensible diversification. If all securities are fairly priced relative to their risk and return contribution to the market portfolio, diversification *toward* the market portfolio's composition should improve an investor's *risk-adjusted* results. In the context of diversification, most asset allocation discussions focus at one point or another on the correlations between and among baskets of assets or asset classes.

The arguments for diversification emphasize the risk-offsetting effect of imperfect correlation among the positions that are combined to create a portfolio. Useful data for any fund being evaluated include correlations to standard indexes and frequently used combinations of indexes.

Some of the better ETF web sites provide correlation information and even correlation tools. The best of the ETF web site tools I have seen are on the Sector SPDR web site, www.spdrsindex.com, and the iShares web site, at www.ishares.com. The iShares correlation tool is less useful than it used to be in some ways and much more useful in others. It provides index correlations only with indexes used by iShares products, but it is possible to calculate correlations between an iShares index or fund and a competitor's ETF that is based on the index of interest.²⁸ Limited rolling historical correlation calculations are possible with both the iShares and the Sector SPDRs correlation tools, but they are not always easy to set up and the period covered by historic data for some of these correlations is pretty short. The overall best web site I have seen, especially for rolling historical correlations, is www.assetcorrelation.com.

The reason for measuring correlation over a sequence of periods is that correlations that may be low in normal markets are often high in bear markets. This is often observed in cross-border equity markets where low correlation in bull markets is replaced by near-perfect correlation in bear markets, the precise time when lack of correlation or, even better, negative correlation is most valuable.²⁹

Active Share

Active security selection is undertaken to create a portfolio that is different from a fund's benchmark index in ways that are expected to improve investor returns. A useful measure of portfolio differentiation *relative to a benchmark*

²⁸In fairness to iShares, the cost for them to license a wide range of indexes just for this application would probably be prohibitive.

²⁹Chau, Kritzman, and Paige (2009) provides a useful look at the asymmetry of diversification.

EXHIBIT 6.7 Percentage Holdings Calculation of Correspondence and Active Share

Stock	Fund	Index	Correspondence
A	35%	20%	20%
B	40%	20%	20%
C	20%	35%	20%
D	5%	25%	5%
Total	100%	100%	65%

$$\begin{aligned}\text{Active Share} &= 100\% \text{ minus Correspondence} \\ &= 100\% - 65\% = 35\%\end{aligned}$$

index is a calculation called Active Share. This calculation is described and developed extensively in Cremers and Petajisto (2009) and illustrated in Exhibit 6.7. Active Share measures the extent to which a portfolio differs from a benchmark index. To calculate a fund's Active Share relative to an index, the easiest procedure is to calculate the percentage composition of the index, security by security, and perform a similar percentage composition calculation for the portfolio whose Active Share is being evaluated. To the extent that the same security appears on both lists, the *smaller* percentage for that security in *either* the index or the fund portfolio is listed in a third column and the percentages in that column are summed as illustrated in Exhibit 6.7. If the correspondence percentage or overlap between the index and the portfolio sums to 65 percent, the Active Share—that is the *difference* in portfolio composition as a result of the fund's active investment process—is 100 percent minus 65 percent or a 35 percent Active Share.

The greater the Active Share, the greater the divergence of the fund portfolio from the benchmark index and, presumably, the more active the investment process. A fund with a high Active Share shows indications of being a truly actively managed fund—at least relative to the index used as a benchmark.³⁰ The Active Share can be a useful measure of the intensity of the fund manager's effort to deliver an active management return. A fund

³⁰In calculating Active Share, it is often useful to make the calculation relative to a number of benchmark indexes. While the S&P 500 and the Russell 1000 are highly correlated, a closet indexer using the Russell 1000 as a fund template might have a larger Active Share measured against the S&P 500 than measured against the (more relevant for this fund) Russell 1000. Cremers and Petajisto (2009) measured Active Share against a variety of major indexes and assumed the benchmark was the index that showed the lowest Active Share (p. 3,340). Sensoy (2008) examines the designated benchmarks of a number of mutual funds and finds that some fund

with a low Active Share suggests the manager's lack of confidence in an active investment process or, simply, inability to deliver active management.

Some "enhanced" index funds attempt to provide only modest deviations from the benchmark and keep tracking error (standard deviation definition) low relative to the benchmark index. This is a reasonable investment strategy, and failure to achieve a substantial Active Share is not necessarily an indictment of an enhanced index fund manager whose mandate includes a standard deviation constraint. However, a small Active Share does suggest a relatively modest effort at return enhancement and should command a relatively modest active management fee.

Part of the significance of Active Share is that Cremers and Petajisto found that funds with higher Active Shares tended to deliver significantly better performance. The best single explanation for that result is that the managers of funds with low Active Share measures were closet indexers with active management fees. It is certainly worth looking at an Active Share calculation as an indication of the nature of a fund's investment process.

The magnitude of a fund's tracking error (standard deviation definition) has no apparent effect on performance, suggesting that individual stock selection is a better strategy than factor bets.³¹ An above-average prior year return combined with a large Active Share tends to presage further above-average performance.³² Average tracking error (standard deviation definition) has little correlation with performance.³³ An Active Share over 80 percent combined with a modest tracking error (standard deviation) suggests careful risk management *and* a serious attempt to deliver value for investors. Little (2009) illustrates how one skilled fund analyst used Active Share to confirm information about the investment process at selected funds.

There is an important caveat to bear in mind when considering the implications of Active Share. Like many other variables that are measured, the act of measuring Active Share may cause its significance to change. That the act of measurement can change the characteristics of the item measured is a maxim in such diverse disciplines as quantum physics and monetary policy.

companies appear to deliberately choose a benchmark that does not match the fund's actual investment style. This mismatch often enables the fund to enjoy more investment inflows when it beats its inappropriate benchmark than the outflows that come from underperforming. The combination of Cremers and Petajisto (2009) and Sensoy (2008) suggests that a useful metric for a fund service to provide would be an Active Share calculation relative to an assortment of indexes to help investors identify true active managers and mismatched benchmarks.

³¹Cremers and Petajisto (2009, p. 3,332).

³²Ibid., pp. 3,354–3,355).

³³Ibid., pp. 3,350–3,353).

If Active Share becomes a popular calculation, a closet indexer might create an artificially high Active Share by systematically increasing a portfolio's composition differences without even attempting to improve the fund's return. The possibility of gaming a solitary Active Share measure is a particularly strong argument for the proposition that no single fund evaluation measure should stand alone.

Statistical Measures of Active Manager Performance

In addition to Correlation and Active Share calculations, a number of other tools are available to permit investors to measure both the degree of active manager effort and the effectiveness of the manager. *Beta* can provide a measure of the extent to which the portfolio manager is increasing or reducing the risk in the portfolio, usually to reflect increased bullishness or bearishness on the overall market or on the portfolio's composition. Analysis of *Sharpe ratios*, *information ratios*, and *return-based performance analysis* are additional tools that fund performance analysts can bring to bear on the analysis of active management efforts. For information on some of these measures, see Wright (2008) and Gastineau, Olma, and Zielinski (2007).

Tax Efficiency

Some of the tax efficiency comparisons provided by existing fund services are acceptable—as far as they go—but some attempts to rank funds by tax efficiency are seriously misleading. Two measures of different aspects of expected and actual tax efficiency are appropriate for most funds, be they conventional mutual funds or ETFs. The first and most important of these measures is *capital gains overhang*, as illustrated in Chapter 4. Capital gains overhang is a fund portfolio's net unrealized gains less any accumulated realized losses carried forward as a percentage of the fund's assets. Capital gains overhang can be calculated from fund shareholder reports as of the end of any fund reporting period for which balance sheet and gain and loss information is reported.

For more information on capital gains overhang, see the comparison of the S&P 500 SPDR and the Vanguard 500 mutual fund on pages 74–78.

Another calculation that is useful in assessing a fund's tax efficiency (and the portfolio manager's attention to detail) is the percentage of any eligible dividend distribution that is qualified for the reduced qualified dividend tax rate—*percentage of eligible dividends qualified*. While some fund “dividend” distributions—for example, short-term capital gains and distributions from real estate investment trusts (REITs) and bonds—are not

eligible for treatment as *qualified dividends*, fund shareholders should be able to count on most *eligible dividends* being delivered to them as qualified dividends.

Simple percentages for capital gains overhang and percentage of eligible dividends qualified for recent years will provide an investor with all the information needed to estimate the probable future tax efficiency of a fund under most circumstances. The temptation to translate these simple and useful percentage numbers into proprietary relative ratings should be firmly resisted. These numbers are most useful in a simple percentage format.

Short Interest

Some exchange-traded funds regularly have short interest percentages in excess of 100 percent. A 100 percent short interest percentage means that a fund with 1 million shares issued by the fund has more than 2 million shares carried long in accounts held by various investors. A short interest over 100 percent indicates that some financial intermediaries have loaned and re-loaned securities to other firms to facilitate short sales in the ETF shares. To the extent that the securities trading and lending process turns into a round robin, it is not at all difficult to have an ETF with a short interest of several hundred percent; that is, where the shares held long in accounts are a multiple of the actual shares issued by the fund. Sometimes this occurs because a specific group of investors finds that selling an ETF short is easier, less costly, or better meets their objectives than the purchase of an inverse fund (e.g., some of the “short” funds offered by Direxion, ProShares, and Rydex discussed in Chapter 10), or than using an index derivative like a futures contract to take a short equivalent position. A large short interest can sometimes suggest an inefficient index or an ineffective investment manager. These latter possibilities are among the reasons to consider the possible implications of an unusually high short interest percentage as part of the evaluation of a specific ETF. For more information on ETF short sales and short interest data, see Chapter 9.

FUND GOVERNANCE

The mutual-fund scandals of 2003 to 2004 and various efforts to mandate fund governance changes have led some fund services to offer evaluations of fund governance. The ethics, business reputation, and practices of the manager of a fund are certainly appropriate concerns for an investor and an advisor who are considering ownership of shares in the fund. It is also appropriate for a fund service to provide *information* and even basic *analysis*

on various aspects of governance, including the independence of the chairman, and the nature and timing of any regulatory investigations or settlements with the SEC or state attorneys general, and so forth. On the other hand, complex relative evaluations of governance practices at funds are of doubtful value as long as the fund's practices comply with relevant laws and regulations.

Ertugrul and Hegde (2009) found that corporate governance ratings (which have been around far longer than fund ratings) have been of little value in predicting company operating and stock market performance. Wellman and Zhou (2008) found that the initial Morningstar governance ratings were more closely correlated with performance *before* the ratings were published than with subsequent performance. Nearly all of the "predictive" value for post-ratings performance was in two (Board Quality and Fees) of the five components of the overall ratings. For some reason, Morningstar has doubled the weighting of "Corporate Culture,"³⁴ a rating component that showed no predictive value in Wellman and Zhou's analysis.

Codifying regulatory actions by the SEC, state securities commissioners, or other regulators or law enforcement organizations can be a useful service, but fund-rating services have no obvious qualifications that make them more appropriate commentators on fund governance issues than anyone else. The notion of turning data into a governance rating is a stretch. The publication of a formal adverse governance rating tends to discourage investors and advisors from examining the facts and making their own considered decisions based on their personal circumstances and values. Furthermore, an abstract rating lets a fund governance analyst act as judge and jury, perhaps without adequate disclosure of the full story behind the rating.

Differences in investor values are behind the fact that both "sin" funds and socially responsible investing (SRI) funds find investor constituencies. That there is less than universal agreement on a number of governance issues suggests that differences in personal values make the notion of formal governance ratings highly questionable. To illustrate the scope of differences of opinion along several dimensions that might be considered in a governance discussion, Wallison and Litan (2007) present a strong argument that requiring fund directors to approve a fund's investment management fee discourages price competition among investment managers. The overemphasis on expense ratios in fund comparisons suggests that Wallison and Litan have a point. It would certainly not harm investors in *existing* funds to permit managers of *new* funds to experiment with a fund's fee structure. As long

³⁴Haslem (2010), p. 312.

as disclosure of the possible range of fees is adequate from the first day the fund is offered to investors, changes in fees by these new funds and adoption of fee structures that are different from the fulcrum performance fees now required should also be possible. The fact that a case involving fund fees reached the Supreme Court suggests far from universal agreement.

If a fund service insists on taking a stance on fund governance, it should consider any specific governance issue it deems relevant to a fund and either accept the governance and ethical standards at a fund company or reject them entirely. Either a question or problem is serious enough to encourage investors to avoid the fund or it is not important enough or definitive enough to affect an investment decision. Beyond a statement of the facts of a situation, complexity in fund governance analysis and relative governance ratings will rarely be either fair or useful.

CHAPTER 7

How Will Full-Function Actively Managed ETFs Work?

THE SEC CONCEPT RELEASE AND LIMITED-FUNCTION ACTIVELY MANAGED ETFs

By the late 1990s the dramatic success of the S&P 500 SPDR and strong receptions for other index ETFs led many fund developers to consider how this extraordinary portfolio instrument could deliver active portfolio management to investors. In 2001, the Securities and Exchange Commission published a Concept Release¹ in which it summarized the issues that needed to be addressed before actively managed ETFs could be offered. The Concept Release asked four fundamental questions:

1. How are actively managed ETFs likely to be structured, managed, and operated?
2. How will investors use, and benefit from, actively managed ETFs?
3. Would the exemptive relief that the Commission has granted to index-based ETFs be appropriate for actively managed ETFs?
4. Are there any new regulatory concerns that might arise in connection with actively managed ETFs?

In addition to these four highlighted questions, about 40 additional questions were included in the text of the Concept Release. The Commission received 20 formal comments from individuals and organizations.² Some of these comments addressed the issues raised in the Concept Release, some challenged the notion that an ETF could be actively managed and still be like

¹Securities and Exchange Commission 17, CFR Part 270 (Release No. IC-25258; File No. S7-20-01). See www.sec.gov/rules/concept/ic-25258.htm.

²See www.sec.gov/rules/concept/s72001.shtml.

the index ETF(s) the commenter knew and loved, and some commenters simply took the opportunity to discuss whatever was on their minds—whether or not it was related to the topics addressed in the Concept Release.

Among other topics, my own comment on the Concept Release (Gastineau 2002a) described a tentative first step that was incorporated in the limited-function actively managed ETFs that were introduced in 2008. These first actively managed ETFs take advantage of the fact that a fund's daily net asset value is calculated on its start of day portfolio. Any trade made today does not affect the composition of the portfolio used to calculate today's net asset value. This feature can be used to allow the fund to trade for one day before its transactions are revealed—and reflected in tomorrow's net asset value calculation. Trading transparency is deferred for a day, but the portfolio used for the daily NAV calculation is still transparent each day.

The limited-function, actively managed ETFs that rely on this feature of the NAV calculation have not attracted many assets or much trading volume. Part of the reason for their lack of trading volume is the absence of an effective trading mechanism that concentrates trading liquidity for a portfolio that does not have the “natural” arbitrage complex liquidity of a benchmark index ETF. In contrast to benchmark index ETFs, any portfolio that does not have preannounced changes can't be part of an arbitrage complex that includes instruments like index futures and options. Even small unannounced changes in the portfolio of one of these funds may increase a market maker's expected hedging costs the following day by a small amount. The fact that there will be an overnight disconnect between today's portfolio and tomorrow's means that a market maker can't determine or control hedging costs exactly. This overnight disconnect contrasts with the preannounced trades of index ETFs, but hedging costs are a much less important obstacle to effective intraday market making than the absence of the natural, multiple instrument trading liquidity that benchmark index ETFs enjoy.

The delay in developing a clear path to the launch of full-function, nontransparent ETFs in response to the Concept Release is attributable to the time it took ETF fans to look beyond the initial ETF implementations where the most profitable function of the Canadian TIPS, the SPDR, and their successors was to provide something to trade on an exchange. From the launch of the original SPDR through the first decade of the new century, growing numbers of observers have realized that ETFs are something special, that they are a superior product to mutual funds, and that they are much more than something to trade on an exchange. From my own perspective, I needed to understand the cost to investors of the mutual fund market timing and late trading scandals of 2003 to 2004 before I appreciated the full value ETFs can deliver to investors and understood how actively managed ETFs

could and should build on the shareholder protection legacy of their indexed predecessors.³

Equity Market Developments and Their Implications for Actively Managed ETFs

The dramatic increase in equity trading volume chronicled in Chapter 2 has reduced most equity trading costs dramatically in markets around the world. All but the largest traders can usually assume that their large-cap stock-trading volume will not represent a large fraction of the average daily volume of a stock they want to trade. As the limited-function actively managed ETFs have been introduced, a common observation has been that this model will work reasonably well for large-cap portfolios, but not particularly well for a mid-cap or a small-cap portfolio or any portfolio that has significant mid-cap or small-cap content. This conclusion is basically correct but it probably overstates the extent to which high-frequency trading and high trading volume have increased the fundamental liquidity of many large-cap stocks.

The principal beneficiaries of the increase in trading volume and the decline in trading spreads in recent years have not been institutional traders or portfolio managers who are interested in buying or selling several hundred thousand or several million shares of a specific stock. Block trades, which were a significant characteristic of world stock markets in the 1980s and 1990s have virtually disappeared except for some of the transactions made in crossing markets like POSIT, SIGMA X, and Liquidnet. The average stock transaction reported today is only a few hundred shares. Large numbers of shares of a single stock certainly can be traded, but the trader who wants to buy or sell a lot of shares has to choose between patience and costly market impact. Investment banking firms do not make principal bids for large blocks of stock. While many large-cap stocks trade more than, say, 10 million shares a day, some of the transactions are part of portfolio trades where an index basket is being traded. Some high volume stocks, particularly low-priced stocks, are active because there are incentives to trade them in today's high frequency markets. The fact that 10 million shares of a stock are trading certainly makes it easier to trade an additional 500 thousand shares than it would be if volume was lower, but generally the larger the need to buy or sell shares of a specific stock, the greater the market impact on the price of that stock. Transaction cost estimates that scale-up for size reflect the beneficial

³Gastineau (2004) illustrates the development of my thinking about the key shareholder protection advantages of ETFs.

effect of high-frequency trading on a stock-by-stock basis. However, these examples also reflect the significant market impact that a modest block order can have on the cost of execution. Astute traders are aware of the value of information about their purchase or sale of a particular stock and, correspondingly, of the market impact associated with their transaction and the possible market impact of orders from other investors who want to make the same trade. The shorter the period over which a large trade is concentrated, the greater the market impact will be. If the value of the idea is high and the stock is interesting to other market participants, a quick execution will be both desirable and costly.

It is important to note that the cost of trading a single common stock in size will always be substantially greater than the cost of trading any reasonably actively traded ETF, because the capitalization of the stock reflects the value of the underlying and the urgency of the trade reflects the value of the information. In the case of the ETF, the capitalization weighting might vary, depending on the portfolio composition; but the ETF trade's market impact will usually approximate the market impact of a typical portfolio trade. Not only is the total capitalization of the ETF components typically much greater than the capitalization of a single stock, any information behind the ETF purchase is almost certainly less specific than the information behind the single stock purchase.

The facts that (1) ETFs now account for nearly 20 percent of equity share volume and options on ETFs account for about 30 percent of all option contracts traded in the United States, testify to the success of ETFs as trading products. This much ETF volume and option activity is unimaginable without fund shares that trade close to the intraday value of the portfolio. This volume is also unimaginable without arbitrage-linked trading between and among the components of an *index* arbitrage complex. However, active, arbitrage-linked trading near an intraday value is an *index* ETF feature. Trading near an intraday value is neither necessary nor inherent for all funds that trade in secondary markets. Nonbenchmark index ETF shares and non-transparent ETF shares will never achieve the volumes that the SPDR or the QQQQs attain. Other ETFs can, however, trade at low cost in a secondary market if they trade throughout the day *at a price contingent on the fund's end-of-day net asset value*. The fact that some benchmark index ETFs routinely trade hundreds of millions of shares a day at prices close to intraday values attests to their usefulness in risk management applications for traders in other index instruments, including futures, options, and portfolio trades for institutional investors. ETF trading volume has nothing to do with the usefulness of the most actively traded funds to *investors*. Benchmark index ETF investors may buy and sell fund shares more cheaply because of the ETF's risk management applications. Actively managed funds and silent

index funds do not need to trade this actively, or even in this way to offer value to investors.

An ETF designed to provide better investment results rather than just something to trade *does not* require intraday pricing or millions of shares trading each day to achieve reasonably tight bid/asked spreads around each day's closing NAV. Trading success for nontransparent funds *does* require a trading methodology that enables investors to buy and sell shares at a measurable and predictable relationship to a specific net asset value calculation, much as mutual fund traders have been able to do—in the mutual fund case at the expense of other mutual fund investors. NAV-based trading in ETF shares will be secondary market trading, preserving the traditional shareholder protection offered by ETFs.

All participants in the secondary market for ETF shares (including market makers and other traders who might take positions from time to time) need to know the expected costs and the risks associated with their ETF trading. With knowledge of expected costs, trading ETFs at or relative to a closing net asset value enables all market participants to manage their risks—and costs. If ETF market makers and investors choose to use bids and offers developed from intraday values that the market makers, the fund, or some independent third party posts as a frame of reference for intraday trading, they are free to do so. However, intraday trading close to intraday NAVs is not essential to *investors* in these funds. Market makers and investors can be attracted to end-of-day NAV-based markets by a combination of smaller creation units and the availability of supplementary fund information, including estimates of the costs associated with nontransparent portfolio creation and redemption transactions.

NAV-based secondary market trading is described in more detail in Chapter 8, but a brief introduction here is appropriate. Market participants will be able to enter various types of orders throughout the trading day at or relative to a proxy value for the end-of-day net asset value of the ETF. A trade executed a penny above the proxy price will be filled at a penny over the NAV calculated at the end of the day. There are more details in Chapter 8, but it is really that simple. NAV-based trading *will not* replace intraday trading in benchmark index ETFs. NAV-based trading *will* be the dominant trading method for some index ETFs and for all active-managed ETFs. It *will supplement* intraday trading in most benchmark index ETFs. NAV-based trading *will provide additional choices and additional risk management opportunities* to ETF market participants. For example, NAV-based trading, alongside a traditional ETF intraday trading order book, will permit market makers and other traders to modify the size of their net long or net short positions at prices linked to the terms on which they will be able to create or redeem ETF shares at the end of the day. Alternative trading methods, much

like additional market participants and multiple trading venues, generally increase liquidity and trading volume in financial instruments. When volume rises, bid-asked spreads narrow, but the total profit of market makers increases because the volume is so much greater. This is the trading spread and volume pattern we saw in Chapter 2 in connection with the explosion of equity trading volume that followed resolution of the Paperwork Crisis of 1968.

In contrast to the market-on-close (MOC) order type and informal trading instructions or trading algorithms that a trader might use to obtain an execution close to a market close, secondary market NAV-based transactions are firm contracts for settlement at a specific relationship to an NAV calculation based on the closing value of the fund's portfolio securities.⁴ As described in more detail in Chapter 8, NAV-based trades provide for settlement of a trade at NAV or at an agreed premium or discount to the fund's daily NAV.

Net asset value-based trading in exchange-traded funds permits investors accustomed to the net asset value trading practices of mutual funds to trade exchange-traded fund shares at or close to the net asset value determined at the end of the day. These investors obtain market liquidity by using a trade timing option they have given away for no value when they have made mutual fund transactions in the past. Commitments by investors to trade at or relative to NAV can be of value to a market maker early in the day if NAV-based investors let the market maker reduce inventories or reduce the risk of making a creation or redemption commitment. NAV-based trading can also make costs more predictable and controllable for ETF investors in defined contribution retirement plans, permitting those accounts to use ETFs at a *lower total cost* than they now experience with mutual fund shares. These retirement plans will be able to settle trades and carry whole and fractional share exchange-traded fund positions in a manner that is similar to the way they trade and carry mutual fund shares today.

An important characteristic of NAV-contingent markets is that risk and position management for a market maker active in these markets is different from traditional ETF trading. NAV-based trading supplements the risk and position management model a market maker uses when trading in traditional intraday ETF markets. The interaction between a continuous auction market at intraday prices and NAV-based secondary market trading can significantly reduce market maker costs and enrich the market maker's opportunities for risk management.

⁴As Chapter 8 describes, market-on-close (MOC) orders to buy or sell ETFs often deliver executions far from the fund's closing NAV.

If a traditional continuous auction market is the only organized market for an exchange-traded fund's shares, the market maker must focus on contemporary bids and offers in that market throughout the trading session and hedge price risk intraday as the market maker's inventory increases and decreases. In some cases, market makers hedge price risks with the specific portfolio components of indexed exchange-traded funds. Increasingly, however, market making firms trade a number of different exchange-traded funds that collectively reflect risk exposures that can be hedged most effectively and economically with broad market hedging tools. ETF market makers increasingly use hedging instruments covering broad swaths of the investible universe to manage their risks on a low-transaction cost, macro risk basis. These market makers often conclude that accepting some stock specific or factor risk is an attractive risk management choice if the magnitude of the transaction cost reduction is large enough and the price risk is either random or of predictable and manageable size. Special risk management information described later in this chapter will facilitate a market maker's analysis and management of ETF transaction costs and risk tradeoffs when an ETF's portfolio is not transparent.

The risks and costs market makers face in secondary market NAV-based trading of ETFs are different from the risks of providing liquidity in traditional ETF intraday trading. Traditional trading in exchange-traded funds with the continuous auction market model calls for market makers to provide continuous liquidity to buyers and sellers near the intraday value of the shares. The market maker extracts a spread between bids and offers over the course of a trading day and can create additional shares in the exchange-traded fund or redeem excess shares at the fund's net asset value each day. The market maker will try to hedge the risk of a large intraday purchase or sale of the ETF's shares by trading a basket product using the same index as the fund at approximately the same time. If other basket products such as index futures or options are not available on a basket similar to the nontransparent ETF portfolio, the market maker's hedging costs will be greater and the bid/asked spread will be wider. The costs of trading transparent index portfolio baskets and the administrative costs of creation and redemption are well-known to the principal market participants. They are also generally low and consistent over the course of the day. If the index underlying an ETF is not used for any purpose other than as a template for a single ETF, risk management must be done either as part of a macro hedging process or using a close approximation of the index basket, if the market maker is to hedge at all.

When NAV-based trading is available, risk management by market makers in the shares of actively traded ETFs will usually consist of managing bids and offers relative to NAV to minimize net inventory or to calibrate the

size of the inventory with the size of the fund's creation basket at the end of each day. If either buyers or sellers are very numerous, their bids or offers respectively will enable the market maker to sell or buy enough shares to profit from a creation or redemption at the end of the day. The complexity of managing a market maker's risks and costs *increases* with the introduction of nontransparent ETFs, but it *declines more than correspondingly* with the introduction and growth of NAV-based trading. The availability of NAV-based secondary market trading provides a *direct* mechanism for the market maker to adjust the number of shares it needs to create or redeem at the close. The market maker can adjust bids and offers in the two markets (intraday value and NAV-based) to virtually eliminate most net risk exposure over the course of the day. As we will see in the next section of this chapter, the market maker's costs to create or redeem shares in an actively managed (nontransparent) ETF at the closing net asset value can be predicted using supplementary information provided by the fund or by the fund's service providers.

How NAV-Based Trading Helps Market Makers Control Their Risk

In the balance of this chapter I will use the terms nontransparent ETFs and actively managed ETFs interchangeably. When I refer to either a nontransparent or an actively managed ETF, I will be referring to the traditional active management processes used today in fund portfolio management as well as the silent index nontransparent funds discussed briefly in Chapter 5. I expect nontransparent silent index funds to dominate the transparent benchmark index ETFs for use by indexing *investors*, but that dominance will not be manifest until the nontransparent index funds have been available and demonstrated the ability to deliver superior performance over many years. None of these nontransparent funds will ever enjoy the trading volume of the SPDR or the other major benchmark index ETFs, but I believe that index publishers, index fund providers, and, most important, index investors will recognize the desirability of reducing portfolio composition trading transparency. I will use the term active management more frequently than nontransparent because I believe that full-function active management will be the dominant application in the initial rollout of nontransparent ETFs.

The balance of this section will describe supplementary information to facilitate trading and market making in actively managed ETFs. Most comments about market making in nontransparent ETFs apply to market making in low volume transparent ETFs as well.

Because fund portfolios and transactions by actively managed ETFs are not fully transparent, their shares are likely to be much less actively traded

than benchmark index ETF shares. The trading spreads for shares of these funds will be wider than the bid-asked spreads for actively traded index ETFs. Nonetheless, as with index ETFs, shareholders in actively managed ETFs will bear transaction costs associated with increasing or reducing the size of the fund *only when they trade* a position in the fund shares for their own account. The earlier creation/redemption commitment cutoff time and transactions made by the fund between the cutoff time and determination of the prices used to calculate the net asset values of both fund shares and creation/redemption baskets will transfer the transaction costs associated with increasing or decreasing the size of the fund from the fund to the creating or redeeming market makers. The market makers will pass on those costs, in turn, to purchasers and sellers of fund shares in the secondary market. This mechanism preserves nontrading shareholder protection from the cost of other people's trades.

The next two subsections describe some risk and cost management information that is designed to meet the needs of market makers and other investors who trade nontransparent exchange-traded funds in either conventional markets or for settlement at or relative to a daily net asset value calculation. These information items are risk and cost management tools for market makers but that statement is not meant to suggest that only market makers would find the information useful. Securities laws in the United States do not permit a fund or any other issuer of a security to limit distribution of material information that is not readily calculable from public information to favored traders. Calculation of the nontransparent ETF trading support information illustrated here requires use of confidential data from a fund and/or the fund's service provider(s). Consequently, the results of these calculations must be disclosed to any interested party at no charge. These two calculations are important but they are described here only to illustrate the kind of information that will support tight spreads on NAV-based trades in nontransparent ETFs. The availability of this information will protect market participants from unduly wide trading spreads without compromising the integrity of the nontransparent ETF investment process.

Correspondence

Correspondence is a percentage measure of the degree to which the portfolio composition file (PCF)—the basket of securities used for creation and redemption of shares in an exchange-traded fund—matches or overlaps with the fund portfolio. Exhibit 7.1, which is similar to Exhibit 6.7, illustrates the calculation of correspondence (or “overlap”) in a simple case. It compares hypothetical percentage holdings of a fund and the portfolio composition file used in creation/redemption of the fund's shares. The illustration is overly

EXHIBIT 7.1 Percentage Holdings: Calculation of Correspondence

Stock	Fund	PCF Basket	Correspondence
IBM	35%	35%	35%
GE	40	40	40
MSFT	20	25	20
GOOG	5	0	0
	100%	100%	95%

simplified because it shows only four securities. The typical actively managed mutual fund holds between 80 and 100 positions and there is no reason to believe that the typical actively managed ETF will have either a significantly smaller or larger number of positions. The first data column shows the percentage held in each of four securities by the fund, the second data column shows the percentage of the same securities in the PCF basket used in creation and redemption transactions. The third data column shows the correspondence percentage between the two portfolios.

As in the discussion of Active Share in Chapter 6, Correspondence is determined in this simple example by listing the smallest of the two percentage positions in the first two data columns of each row in the third data column and adding the corresponding percentage positions in the third data column. The positions in the fund and in the PCF in IBM and GE are identical. Apparently, no transactions to increase or reduce the relative size of these holdings are under way. In the case of Microsoft (MSFT), the fund holds less stock (20 percent) than is reflected in the PCF basket (25 percent). The smaller of these two numbers is entered in the right-hand column to be used in the calculation of correspondence because Microsoft accounts for at least 20 percent of both the portfolio and the basket. An appropriate interpretation of the smaller Microsoft position in the fund is that the fund is in the process of reducing or liquidating the Microsoft position. The Microsoft position in the PCF has not been reduced because reducing it would reveal that the fund is in the process of selling Microsoft. The PCF will not be changed until after the Microsoft position change is completed—or even later if the fund’s portfolio disclosure policy calls for a further delay.

The fund has a 5 percent position in Google (GOOG) that is not reflected in the PCF Basket column. An appropriate interpretation of this information is that Google stock is being accumulated by the fund. The portfolio manager will not add Google to the disclosed PCF basket before the planned Google purchase is completed, that is, until the Google position reaches its target percentage of the fund portfolio. The value for Google in the correspondence

column is zero. The sum of the numbers in that column is 95 percent. Ninety-five percent is the correspondence between the fund and the basket. When the market making firm learns that the correspondence is 95 percent, the market maker knows that 95 percent of the value of positions in the revealed PCF basket matches the value of corresponding holdings of the fund exactly. The market maker does not know that Microsoft is being sold and that Google is being purchased, only that the fund will probably sell about 5 percent of the value of the creation basket and buy about 5 percent of the value of the corresponding position in the fund portfolio between the cutoff time for the creation or redemption notice and the market close. If the market maker is redeeming, the impact of the transactions will be reversed, but the market maker will indirectly bear the cost of at least some of these transactions in the securities in the PCF.⁵

The percentage correspondence between the fund portfolio and the portfolio composition file (PCF) will be calculated and published daily. Correspondence is the first stage in the calculation of other pieces of information that facilitate hedging and transaction cost management in nontransparent ETF trading and market making. One of the other tools is the Portfolio Adjustment Cost of Trading (PACT). Understanding PACT is an important step in using the supplementary information a nontransparent fund will provide each day.

Portfolio Adjustment Cost of Trading (PACT)

PACT is an estimate of transaction costs that would be incurred indirectly by the market maker who creates or redeems fund shares and uses the PCF as a hedging basket. Knowing the expected Portfolio Adjustment Cost of Trading (PACT) and how the PACT varies under a variety of circumstances will help a market maker or any other trader manage the risk and cost of trading, creating, and redeeming shares of a nontransparent ETF. A PACT estimate is important because the portfolio manager of the nontransparent ETF will trade to adjust the fund portfolio between the time a market maker commits to a creation or redemption transaction and the calculation of the end of day NAV. The fund manager's trades during this period can affect

⁵The calculation of correspondence is equivalent to calculating the complement percentage of Active Share, an important measure of the extent of active management in a portfolio that was discussed in Chapter 6. Just as a low value for Active Share indicates a close correlation to an index portfolio, a high value for correspondence indicates a close match between the creation/redemption basket and the fund portfolio. Application of the two concepts is quite different, but both calculations measure the similarity or difference in two portfolios or securities baskets.

the determination of the end-of-day prices used (1) to calculate the fund's net asset value and (2) to price the PCF used as the creation or redemption basket. PACT is calculated from trading cost estimates for the securities to be traded, but it is expressed as a percentage of the value of the creation unit of fund shares. The reason for expressing PACT as a percentage of the value of the creation unit is that the PACT is a *measure of trading costs specifically associated with the absence of trading transparency in a fund*. The cost of trading that PACT represents is only meaningful as a percentage of the value of the fund shares created or redeemed in a specific transaction on a specific day. The cost of this element of the fund's trading can be an indirect expense of the market maker. Hence, the market maker needs a useful measure of these trading costs in order to take them into account in evaluating appropriate bids and offers to post when making markets for the exchange-traded fund's shares and in deciding on appropriate hedging and inventory management policies.

Rather than insert a formula for PACT that would alienate any readers who do not already feel that they have more information than they want about the nuances of risk management for market makers of nontransparent ETFs, I will not go deeper into this subject. PACT and a variety of associated calculations, extensions, and refinements of PACT will provide information on the probable costs the market maker (and other traders in the ETF's shares) will bear as a result of transactions the fund portfolio manager will make to eliminate positions in the creation basket that are not in the fund and to take positions that are not in the creation basket that are in the fund—or in reverse, if the market maker engages in a redemption transaction. Other information distributed (including variations on PACT) will consider various approaches the market maker might take to managing its position and various numbers of creation or redemption units that might be traded on a given day. The number of baskets is significant because the market impact cost of trades associated with 10 creation baskets will be a greater percentage of the value of the transaction than the cost of trades associated with one creation unit.

Correspondence and PACT information will be supplemented by a variety of other data that are unnecessary in transparent ETFs when the creation and redemption basket essentially match the portfolio. The nature and amount of information that actively managed ETFs will make available to market makers—and of course to anyone else who chooses to examine the information—will vary greatly depending upon the nature of the fund. While the SEC may mandate certain information, this is clearly an instance where market forces can be relied upon to work. The fund must provide market makers and others who need an incentive to create and redeem shares in the fund with information that will help them estimate their costs. If market

makers or others do not see an opportunity to perform this function at a profit and without unacceptable risk, the fund will not attract market makers. On the other hand, if investors perceive that the amount of information provided to market makers compromises the integrity of the fund's investment process, investors will stay away. Avoiding the extremes is likely to be a relatively simple matter for most investment managers who now operate conventional actively managed mutual funds.

Other Actively Managed Fund Issues

Risk management and portfolio management activity inside the portfolio of an actively managed or other nontransparent ETF will not be materially different from running an actively managed mutual fund portfolio.

Seeding ETFs has become an increasingly important issue as most new ETFs have used obscure indexes or, most recently, no index at all. Market makers have generally seeded transparent ETFs, following the tradition that the specialist on the listing exchange seeded benchmark index ETFs. The specialist made a seeding commitment as part of the competition to get the specialist assignment. Markets and market making have changed dramatically over the past few years. A specialist/market maker can no longer count on significant order flow in a newly listed ETF. Whether an actively managed ETF is seeded by a market maker engaged by the fund issuer or by the issuer directly—as with most newly launched mutual funds—the issuer will almost certainly bear the cost of seeding nontransparent ETFs.

Market makers—on the listing exchange or elsewhere—have no assurance that they will see most of the customer orders for a fund trading in today's electronic markets. Furthermore, nonbenchmark index ETFs will rarely generate intraday trading volume of 100,000 shares a day, let alone 100,000,000 shares per day. On the other hand, trading spreads for a nontransparent ETF will be wider and the cost of carrying positions will be smaller with smaller creation units and the market maker inventory reduction that NAV-based trading facilitates. ETF market makers that are effective risk managers will earn highly satisfactory and consistent profits with NAV-based trading. Chapter 8 will help clarify how all this works.

CHAPTER 8

How to Minimize Your Cost of Trading ETFs

There is a great deal of misinformation in circulation about the cost of trading ETFs and how to trade them efficiently. This chapter will help you evaluate the quality of ETF markets and keep your ETF share trading costs low.¹

ETF TRADING IS DIFFERENT FROM STOCK TRADING

A natural reaction by some investors to the title of this chapter may be “Why bother to write about trading ETFs when they trade ‘just like a stock?’” In fact, the principal reason for writing this chapter is that *ETFs don’t trade like stocks*. Only in a very superficial way does the intraday ETF market operate the same way the stock market operates. ETF markets behave differently from stock markets and ETF shares trade differently from stocks in a number of ways. Exhibit 8.1 lists some features that are responsible for similarities and differences between ETF and stock trading. To illustrate one difference, ETF investors have learned that ETF bids and offers in the intraday market usually change much more frequently than stock bids and offers. These frequent changes in ETF bids and offers can make ETF investors uneasy. Investors see changes in ETF bids and offers and they know they do not have as much information as professional traders have about what the ETF price should be or when and how the ETF bid or offer will change next.

This chapter will help investors find and stand on the level stretches of the ETF playing field where professional traders and investors have equally secure footing—and avoid the slippery slopes. Once you understand how the ETF market works, and how trading ETFs differs from trading stocks,

¹Portions of this chapter first appeared under the same title as Gastineau (2009).

EXHIBIT 8.1 Comparison of Stock Trading and ETF Trading

	Stocks	ETFs
Trading hours	9:30 A.M.—4:00 P.M.	9:30 A.M.—4:00 P.M. With substantial post-close trading until 4:15 P.M.
Net asset value (NAV) determined	—	4:00 P.M.
Closing price determined	4:00 P.M.	4:00 P.M.
Market-on-close (MOC) rules to offset order imbalances	Yes	Yes (But MOC is not NAV)
Volume concentrated	First half-hour, last hour	First half-hour, last hour (more extreme)
Share <i>value</i> determined	Stock market	Stock market (for equity funds)
Share <i>price</i> determined	Stock market	ETF market
Share <i>value</i> published	Every stock trade	Indicative value every 15 seconds
Share <i>price</i> published	Every stock trade	Every ETF trade
Share bids/offers published	Every time quote changes	Every time quote changes
Frequency of quote changes	Loosely linked to trading activity	Derivative auto quoting loosely linked to trading activity, volatility and number of issues in the ETF portfolio
Capitalization	Nearly fixed over long periods	Can be increased or decreased each day by creation or redemption transactions
Role of market maker	Intermediates between buyers and sellers to provide liquidity	Literally manages the fund's capitalization through creation and redemption of shares
Trading costs: intraday market	Easy to measure relative to bid and offer at order arrival	Impossible for most investors to measure relative to fund value at time of order arrival
Trading costs: market-on-close order impact	Very hard to measure	Can measure difference between close and NAV but comparison is not common
Trading costs: NAV market	—	Easy to measure and control

you will be able to trade ETF shares confidently and efficiently. In fact, with the introduction of net asset value (NAV)-based trading in ETFs, trading ETFs can be much simpler and less stressful than trading stocks.²

The fact that ETFs and stocks trade on the same exchanges does not mean that they trade in the same way. Some interactions of market participants in the ETF market are quite different from interactions of stock market participants. Even if your only interest is in day-trading one of the several dozen major benchmark index exchange-traded funds that trade more than 10 million shares (and in some cases more than 100 million shares) on an average day, the market in ETFs is different from the market in common stocks in ways that can affect your trading results. *If you trade ETFs that are not based on major benchmark indexes or that trade fewer than 10 million shares a day, ignoring the significant differences between ETF and stock trading can be very costly.* With a little study, individual investors and investment advisors who trade ETFs for their clients can reduce ETF trading costs—and trade in comfort and confidence.

While the focus of these comments is on U.S.-listed ETFs holding U.S. common stocks, most of the observations apply to other nations' ETF markets and to ETFs with other portfolio holdings. With the features listed in Exhibit 8.1 in mind, let's examine stock versus ETF trading similarities and differences. As we compare the stock market and the ETF market in more detail throughout this chapter, the usefulness of approaching ETF trading in a different way than we approach stock trading will become increasingly apparent.

The first entry in Exhibit 8.1 that generates a significant number of questions and comments from investors is the trading hours for ETFs. Trading after 4:00 P.M. presents both opportunities and hazards to ETF traders. Trading in ETFs is active until well after 4:00 P.M., partly because the major benchmark index ETFs (such as the S&P 500 SPDRs, the iShares Russell 2000, and ETFs tracking a number of other popular benchmark indexes) are part of major arbitrage complexes. As described in Chapter 2, these arbitrage complexes typically consist of an index that serves as a template for index mutual funds and other indexed portfolios and for a variety of index derivative financial instruments including index futures contracts, index options, and, of course, index ETFs. The arbitrage complexes also include derivatives on these derivatives such as options on futures, options on ETFs, and securities futures products (single "stock" futures) on ETFs. There are also exchange-traded and over-the-counter structured products and risk management contracts linked to many of these indexes.

²Net asset value-based trading is covered by two U.S. patents and a number of pending patent applications.

Until the NYSE acquired the Amex in 2008, ETFs, like most of the other tradable components of the index arbitrage complexes, traded in a regular session that lasted until 4:15 P.M. to provide an ETF market that was fully contemporaneous with the futures markets. Since the change to a formal close at 4:00 P.M., ETF volume between 4:00 P.M. and 4:15 P.M. has not changed materially. On some days, ETFs are four of the five most active issues in after-hours trading. One or two of the most active after-hours ETFs on some days are based on indexes that do not have an active futures contract. In short, the earlier formal close of the regular ETF trading session has not had a material effect on ETF trading volume after 4:00 P.M.

ETF INTRADAY NET ASSET VALUE (NAV) PROXIES

When trading began in the S&P 500 SPDR in 1993, the SEC required that the sponsors of the SPDR arrange for dissemination of an intraday share value proxy for the SPDR at 15-second intervals. These proxies are usually called “indicative optimized portfolio values” (IOPVs). The requirement for publishing these values was extended to every domestic equity ETF launched since 1993 and, with modifications, to ETFs holding foreign equities, fixed income instruments, and other financial instruments. In spite of improvements in trading data calculation technology and the introduction of ETF portfolios that hold infrequently traded securities, calculations of these intraday value proxies are still based on the most recent trade of each portfolio component. Hougan (2009) discussed the inadequacy of last-sale-value proxies. The essence of Hougan’s critique is that a last-sale calculation is probably reasonable for an ETF that holds only large-cap domestic equities. If the market is moving or if the ETF holds anything other than frequently traded large-cap stocks, the IOPV is somewhere between useless and misleading.

Professional ETF traders and market makers do not use the “official” every-15-second proxy value calculations to help them determine their ETF bids and offers. Professionals develop their own valuations or subscribe to real-time ETF value calculations based on contemporary bids and offers rather than last sales of the ETF’s portfolio securities. The fact that they do not use the free IOPV does not mean that these professionals lack faith in the National Securities Clearing Corporation’s (NSCC) ability to calculate correct values. The simple facts are that the last sale is not a reliable indicator of contemporary values in many market situations and the 15-second interval between calculations is too long for the values to be useful to a trader.

Because an ETF is a derivative security, its current value changes every time the bid or offer for any material component of the ETF

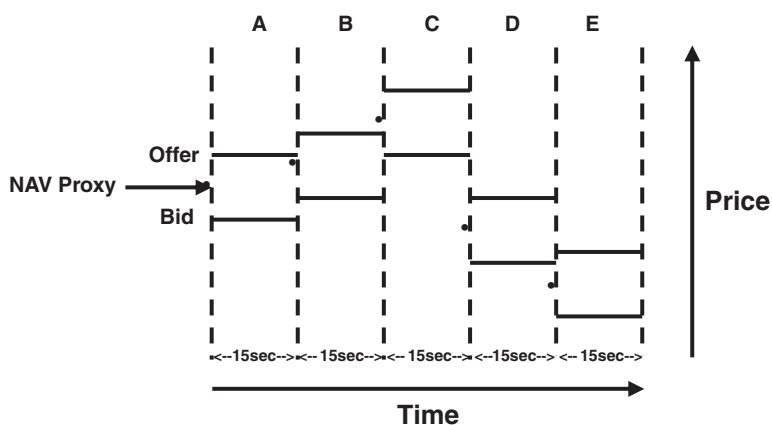


EXHIBIT 8.2 Using the Every-15-Second NAV Proxy to Determine Bids and Offers

portfolio changes. The ETF value proxies used by professional traders are often calculated from the midpoint of the bid and offer for each position in the ETF portfolio rather than the last sale. Frequently, the value calculations made by and for professionals use the size of bids and offers and the pattern of “changes” to forecast short-term trends. Exhibit 8.2 illustrates how a naïve investor might attempt to use the “free” intraday proxy information to develop a bid or offer for ETF shares.

In Exhibit 8.2, the latest IOPV is represented by a dot at the beginning of each of the five 15-second intervals illustrated. Investors might place limit orders at prices close to the most recent per share value proxy. Columns A through E illustrate how bids and offers entered at equal distances, respectively, below and above a sequence of these every 15-second NAV proxy calculations might become transactions—but not always the transaction that the investor entering the order hoped to achieve. An offer to sell the ETF’s shares slightly above the proxy value posted at the beginning of time interval A would probably be lifted as the fund portfolio value rose during intervals A and B. That offer was below the changing per share proxy value by the time that value was updated at the beginning of interval C—less than 30 seconds after the order was entered. The offer was also below the likely bid in the market at that time. Of course, some of the last-sale prices used to calculate each 15-second proxy might be more than a few *minutes* old at the time the calculation was made. Using the free 15-second values can be costly, but even if investors had access to proxy values based on every 15-second midpoints of bids and offers and could enter orders as soon as

the value was published, a lot can change before or shortly after the next proxy value is calculated.

In my experience, many investors are aware of the existence of the every-15-second last-sale NAV proxy values, but few know how to find the proxy value for a particular ETF and even fewer think about how, if at all, to use it. It is probably a good thing that these proxies are not widely used. Any attempt to use them to manage an order is more likely to lead to disappointment than to a good execution. The information on share values, transaction prices, bids, and offers summarized in Exhibit 8.1 reflects the fact that ETF bid and offer updates are usually made by an auto-quote system every time a significant portfolio component's bid or offer changes materially, making the ETF share bids and offers a much better indication of the current value of an actively traded ETF share than the every-15-second last-sale proxy calculation could possibly be.

The posted ETF bids and offers also have the advantage of being something you can trade with. You cannot trade with the every 15-second NAV proxy because it does not represent a bid or offer for the ETF shares. An investor can be confident that, even if his market data vendor is a bit slower and updates quotes less promptly than the best data vendors, he will not be seriously disadvantaged *relative to other retail market participants*. Bids and offers for the most actively traded ETFs tend to be both tighter and to change more frequently than stock quotes during active trading periods. In active trading periods, spreads are frequently a penny per share (or less) between the bid and offer for some of the most actively traded ETFs. These periods of active trading are the best time to trade ETFs. If trading is not active, the quotes in the market tend to reflect a wide spread between the bid and the offer and available quantities are difficult to predict.

THE BRAVE NEW WORLD OF HIGH-FREQUENCY ELECTRONIC TRADING

Few individual investors have the kind of ETF valuation information that professional traders use or the capability to change their bids and offers as fast as the quotes on an ETF share change in common market situations. Professional traders and market makers not only calculate intraday bid/offer values for ETF shares continuously throughout the trading day, they use automated quote management systems that can change their ETF bids and offers in a *millisecond* or so (a millisecond is .001 of a second), every time the bid or offer changes for any security in the ETF's portfolio. The fact that regular session ETF trading volume has frequently exceeded 2 billion shares per day is partly due to the speed of order entry and execution

as high-frequency traders attempt to capture small changes in value. The quest for speed of execution has led the NASDAQ market to boast “peak [round-trip] trading speeds of 250 *microseconds*” (a microsecond is .001 of a millisecond or .000001 of a second). In this high-speed trading environment, time lags associated with information traveling even a few hundred miles at approximately the speed of light confer a premium value on computer centers located within a few yards of an exchange order matching system.³

The mainstream financial press was slow to undertake a comprehensive explanation of what high-frequency trading meant for the financial markets. Record volume did not make the headlines. Explanations were sparse and oversimplified. Specialized publications like *Wall Street and Technology* and *Advanced Trading* did a good job, but they reach mostly “involved” readers. Dick (2010), Preece (2010), and Decovny (2010) appeared in a single issue of *CFA Institute Magazine*, not a major forum for trading technology but a good indicator of the “hotness” of a topic. Urstadt (2010) took more of a market risk perspective and less of a technology perspective than readers of MIT’s *Technology Review* expect to see.

While electronic message speeds and trading volumes were not the stuff of *any* headlines until the summer of 2009, anyone using the financial markets should check on the state of the trading art from time to time. If you have access to an institutional equity trading desk, ask to see an active montage monitor of the best bids and offers from all the markets trading SPY or QQQQ during regular trading hours. I have not included a static illustration of the montage monitor display because a snapshot cannot convey a sense of the frequent and rapid changes in bid and offer prices and sizes. I have not seen comparable displays from any other activity except, perhaps, the last digit or two in an electronic sign showing an update of the estimated U.S. population or the national debt. The population sign has only one or two high-frequency updating digits. The montage monitor for one of the more actively traded ETFs looks like a time-lapse video of a beehive.

An individual investor can benefit from high-speed trading developments to the extent that such trading compresses bid/offer spreads and increases quantities traded. Investors using actively traded benchmark index ETFs trade in a very efficient market with narrow spreads, thanks to high-speed trading. On the other hand, if the ETF you want to trade is not an active trader, conventional intraday ETF trading may not work well for you.

Auto-quote systems eliminate most of the need for hands-on attention by a market maker’s or professional trader’s staff. Consequently, even though

³The owners of computer servers located on or near the premises where the matching engine is located pay a premium for this “colocation.”

the bid/offer spread is usually wider in a less actively traded ETF, the quote updates in the less active shares will still be considerably more frequent than quote updates in a similarly active common stock. The frequency of quote changes is linked to the number, size, and price volatility of positions in the ETF portfolio more than to the level of trading activity in the ETF shares. While the quality of the quotation services available to investors varies, it is usually possible to get a current bid and offer, and the quantity bid for or offered, at the best bid and offer for any ETF of interest. Because the best bid and offer are more useful than the every-15-second NAV proxy (which you cannot trade with anyway), the size of bids and offers and the spread between them are the best indicators of how many shares you can trade easily and at what price you might expect to complete a transaction. This bid and offer “book” information is key to effective trading in the traditional intraday ETF market.

The bar graph in Exhibit 8.3 shows average aggregate ETF share volume by 15-minute intervals for a week of trading. The relatively heavy trading volume in ETFs in the first half-hour of trading both attracts and reflects retail ETF orders. A similar volume pattern in stock trading is usually attributed to institutional trading.⁴ There is substantial evidence that stock prices are, on average, very slightly lower in the first half-hour of trading and very slightly higher in the last half-hour of trading than over the balance of the trading day. This daily price pattern is statistically significant and is usually attributed to an artifact of institutional equity trading practices. It may not be economically significant for ETF traders, however.⁵ Traders who are concerned about their trading costs, especially the bid-asked spread and the ability to trade in size with minimal market impact, will usually wait until the markets in all an ETF’s portfolio components are open and updated quotes are available. Spreads on ETF shares tend to be relatively wide right after the opening and the sizes of market maker bids and offers are small early in the day. Trading is usually less costly later in the day because trading volume rises again in the last hour of trading when the pattern of bids and offers has had time to stabilize.

A number of organizations and web sites publish information on “average” bid/offer spreads for specific ETFs. Most of this information is

⁴Individual investors probably follow similar trade patterns in stocks. These comments reflect conventional wisdom, not a systematic study of the underlying cause by the author.

⁵For discussion of these patterns and references to other research that has found similar patterns, see Heston, Korajczyk, and Sadka (2009). We will return briefly to the issue of intraday price patterns at the end of the chapter.

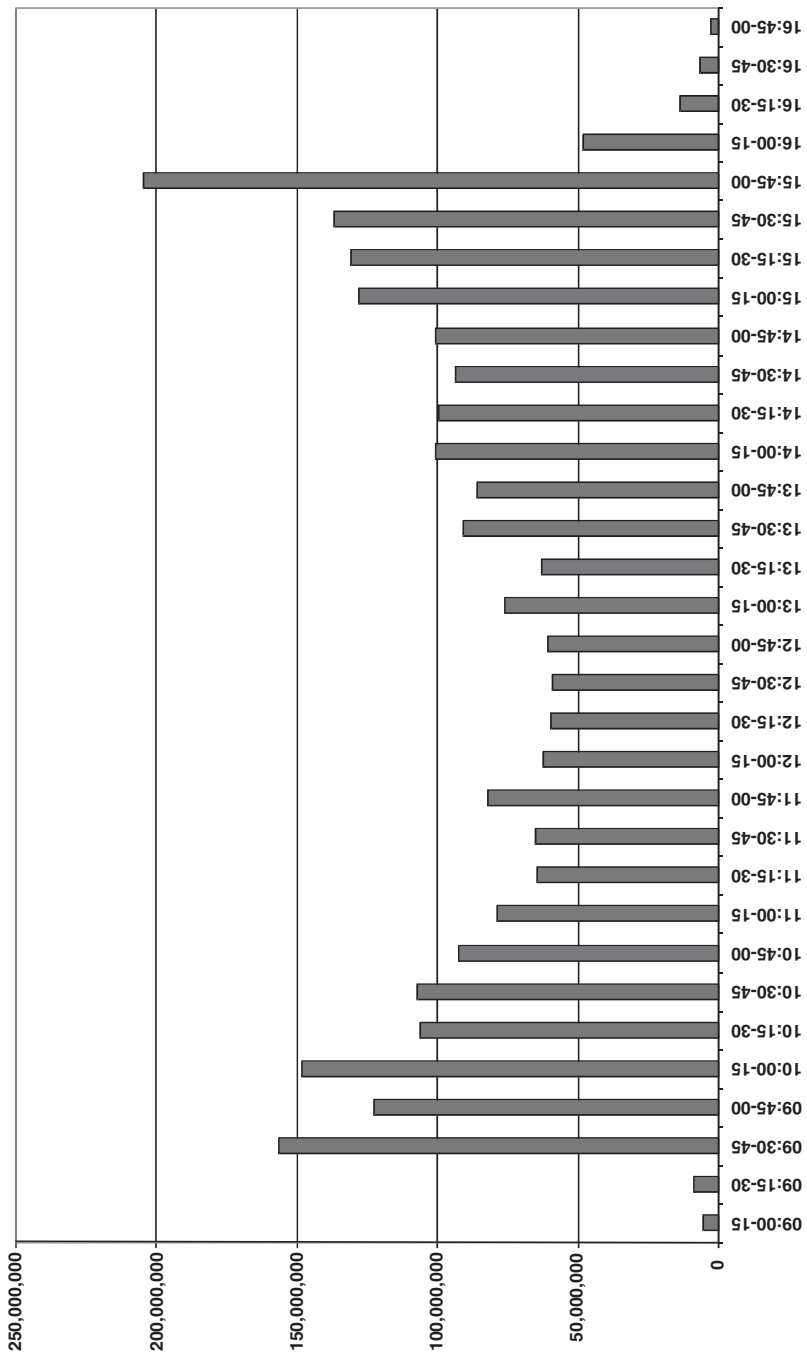


EXHIBIT 8.3 Average Daily Consolidated ETF Trading Volume in 15-Minute Increments for the Week of February 23–27, 2009
Source: NASDAQ OMX.

based on data provided by NYSE Arca.⁶ Depending on what time of day you check the bid and offer prices and sizes for a specific ETF, you will probably find that the published “average” spread is narrower than the spread you see in actual quotes. The spread you observe is likely to be wider than the reported “average” spread because the published “average” spreads are weighted by the size of the bids and offers available at various times during the day. This weighting scheme means that a heavier weight is assigned to the spread at times when bid and offer sizes are larger. Larger bid and offer sizes usually coincide with times when trading volume is highest and spreads are tightest—times near, but not necessarily at, the market close.

Trading in many ETFs is active between 4:00 P.M. and 4:15 P.M., but much of this trading is linked to futures markets and bids and offers are often erratic. This trading is apparently not included in the data used to calculate the average spread because it is not part of the regular trading session—and it would probably make the reported average spread wider. The period between 3:00 P.M. and 4:00 P.M. is generally the time when the cost of a conventional intraday trade in an ETF is lowest. This period of high volume and large bid and offer sizes, largely determines the published “average” spreads. This period is when the average spread on the 500 SPDR will be less than a penny—temporarily “locked” or even “crossed” markets in the most actively traded ETF shares are common.⁷ Even if you are planning to trade shares in one of the most actively traded benchmark index funds which appear regularly on the most active list, the end-of-day period is almost certainly the best time to enter your ETF order, assuming that trading cost minimization is a significant objective of your trading plan and you decide to use the conventional ETF trading process.

Market Microstructure Has Changed

One of the most significant areas of research in finance over the past 20 years has been financial market microstructure. Harris (2003) is the classic market microstructure text. Harris’s book and the papers cited in both it and in Chacko, Jurek, and Stafford (2008) are relevant to many

⁶One of the best articles describing these data is Hougan (2008). See also one of Hougan’s blogs, comparing spreads in October 2007 and October 2008: www.indexuniverse.com/blog/4768-etf-spreads-widen-substantially.html?year=2008&month=10&Itemid=3. The Index Universe web site, www.indexuniverse.com, lists monthly ETF average spreads. When you visit the web site, click on Section and then on Data.

⁷In a locked market, the bid and the offer are identical. In a crossed market, the bid is briefly above the offer.

aspects of trading in ETFs. However, the development of high-frequency trading and the current rules for implementation of the National Market System (NMS) are a dramatic departure from the traditional exchange model which stressed a single specialist or primary market maker and a dominant exchange's limit-order book where most long latency orders resided and low latency orders came to seek a trading counterparty.

Trading volume in today's high-frequency trading environment has exploded. The economics of the exchange trading model have changed dramatically. Exchange transaction charges and credits and new allocations of market data revenue have revolutionized the way market and limit orders from various sources interact at high speed. Small orders increasingly dominate equity trading. A few years ago the average stock transaction dropped below 400 shares. Today, the average trade is much smaller. Large stock orders can still be completed but they are typically broken up into very small pieces. The traditional block positioning firms no longer make principal bids. "Dark pools," a new name for a modified form of what once were called crossing networks, still play a significant role in the execution of some large transactions.

As described in Chapter 2, ETF transactions are often linked to portfolio trades and to the portfolio trading desks of major investment banks. There are important remnants of earlier market structures, but few features of the securities markets in 2010 operate in the way they operated as recently as 2005.

ETF TRADING VOLUME IS HUGE, GROWING, AND HIGHLY CONCENTRATED

The growth of trading volume in the most actively traded ETFs has been nothing short of phenomenal, as Exhibit 8.4 shows. ETFs now account for more more than 18 percent of U.S. equity trading volume. ETF trading often exceeds 2 billion shares per day. Most of the increase in ETF volume has

EXHIBIT 8.4 Average U.S. Daily Regular Session Share Volume

Date	ETFs	Stocks	Total Equities	ETF % of Total	Stocks % of Total
2009	1,836,636,815	7,942,727,992	9,779,364,807	18.8%	81.2%
2008	1,531,157,474	7,298,488,173	8,829,645,646	17.3%	82.7%
2007	685,797,955	5,386,666,216	6,072,464,171	11.3%	88.7%

Source: NASDAQ OMX.

been in the most actively traded funds. Zilbering and Bennyhoff (2009) and a number of other studies measure trading volume in terms of the value of the traded shares rather than the number of shares. The high per-share price of the 500 SPDR and a few other ETFs helps account for the fact that ETFs account for 30 percent of equity trading by value and the 20 most actively traded ETFs account for about 80 percent of total ETF volume by value. Regardless of the unit of measure, most of the hundreds of ETFs listed in the United States *do not* trade very actively.

Typically, between one-third and one-half of the Most Active “stocks” listed each day in the *Wall Street Journal* are ETFs. The most actively traded funds are often not the most attractive investments, however. In any event, you do not necessarily have to pay a wide spread to trade a less active ETF if you trade carefully. Beginning with some useful “rules of thumb” for intraday ETF trading, let’s look at how ETF investors can reduce their transaction costs, particularly on less actively traded ETFs.

HOW TO TRADE ETFs EFFICIENTLY

If (1) you are trading no more than, say, 2,000 shares of one of the major benchmark index ETFs that trades more than 10 million shares a day, (2) the current price of the shares is consistent with your objectives and (3) the quote spread is close to the minimum of \$.01 per share, entering a market order at 3:30 P.M. is generally safe. However, I would recommend comparing the size of your order to the quoted size on the other side of the market before you push the button to execute a market order. If the thought of entering a market order in a volatile market environment is unsettling, you can enter a marketable limit order. A marketable limit order is an order to buy at the offer price or sell at the bid price currently posted in the market. As long as your order is not too large, it will usually be executed in full as long as the quote has not moved by the time your order reaches the market. Given the rapid changes that are often characteristic of ETF bids and offers and the heavy volume characteristic of the last hour of trading, there is always a risk that your limit order will not be a marketable order when it reaches the market and, consequently, it will not be executed. You should compare the opportunity cost of failing to execute to the risk of a worse price with a market order.

If an ETF trades less than a million shares per day, take a close look at the bid/offer spread, at the number of shares bid for and offered, and at recent changes in the bid and offer; then consider a marketable limit order—or read on for more analysis and more options.

Most commentary on the cost of trading securities suggests that the appropriate way to measure the cost of the bid/offer spread in a purchase

or sale is to assume that your cost of trading will include half of the spread on the purchase and half of the spread on the sale. That is a reasonable rule of thumb when you are trading common stocks in small size. However, it is not safe to assume that an inactively traded ETF's current value is between the bid and offer in the intraday market. Most *investor* orders to buy or sell shares of an ETF (or a mutual fund) on a given day will be on the same side of the market. If a fund has just been introduced, has enjoyed favorable commentary in the financial press, or is being actively purchased by advisors for their clients' accounts, most investor orders will probably be on the buy side for days or weeks at a time. In contrast, if a particular market segment is out of favor or a fund has underperformed its peers, the predominance of investor orders for a fund will probably be on the sell side for long periods.

For very actively traded benchmark index ETFs (where the spread during the last hour of trading will typically be a penny with large quantities available on both sides of the market), the location of the midpoint of the bid and offer will nearly always be close to the fair value of the ETF. Arbitrage forces and heavy trading will ensure this closeness. In the case of less actively traded ETFs where cross-market arbitrage forces do not provide much pricing discipline, the midpoint of the spread will reflect the supply/demand pressures of investor purchases and sales of the ETF shares much more than the prices in the underlying portfolio securities markets. If you are an ETF investor trying to make the same trade as other investors, you should expect your trading cost to include much more than half of the posted spread on most of your trades, particularly in less actively traded ETFs.

If an ETF trades less than, say, 100,000 shares a day, investor supply or demand may move the bid/asked range so that it does not even encompass the contemporary share underlying asset value. In other words, the bid may be above a contemporary NAV value calculation and the spread to the true intraday NAV for a purchaser of the shares may be greater than the posted bid/offer spread. *Arbitrage forces are undependable when the potential for aggregate arbitrage profit is small due to lack of volume.* If you are interested in an ETF that trades fewer than 500,000 to 1,000,000 shares a day, trade only between 3:00 and 4:00 P.M. and don't consider anything other than marketable limit orders when you are trading in the intraday ETF marketplace. If your order is larger than the number of shares quoted at your limit, expect to spend some time working the order—at best. If you are an advisor trading ETFs for a number of accounts, your broker may give you access to an algorithmic trading model that manages bids and offers relative to changes in the bids and offers for the securities in an ETF's portfolio, much like a market maker would use.⁸ Even better, your broker

⁸Do not rely on the published IOPV for any purpose. Do not reference it in an algorithmic trade, for example.

may arrange a dialogue with a market maker in the ETF's shares. Working with a market maker on a large transaction is usually a good idea. The market maker can trade at lower risk if he is filling an order rather than guessing what might be behind an anonymous bid or offer. The probability of repeat business with you may also favorably affect the terms of a trade.

If you see an ETF quote with a bid for a few hundred shares and an offer of a few thousand shares, the pattern may indicate that a market maker is willing to sell inventory at the offer but is not enthusiastic about buying shares to increase inventory. Investors interested in this ETF should definitely try to initiate a dialog with a market maker or turn to the NAV-based trading process described later in this chapter. Market makers in the conventional intraday ETF market often have long positions in the fund shares because they have helped to seed the fund to get it started. With newer funds and NAV-based trading, I expect most seeding to be financed by the fund issuer. The market maker will trade from a relatively neutral position unless net demand or supply provides the incentive for the market maker to create or redeem fund shares on a particular day. Modern electronic markets are wonderful things, but most of the volume you hear about is in a small number of securities. Sometimes a simple inquiry to define the depth on the other side of a thin market is the best approach. Don't despair, there will be more options.

After we take a close look at the risks and costs of market-on-close orders in ETFs, we will examine the NAV-based trading mechanism, where orders will be entered for execution at or relative to the closing net asset value of the ETF. This new trading method will be particularly useful to ETF investors who want a good execution without spending a lot of time on order management and who have had unfavorable experiences with the intraday ETF market or with market-on-close (MOC) orders for ETFs. This trading method is important because *ETF trading volume is increasingly concentrated in the most actively traded ETFs, while the most attractive investments are often in the less actively traded ETFs, which usually have wider bid-asked spreads*. An NAV-based trading mechanism that concentrates liquidity on a single contingent portfolio value for the entire trading day can narrow spreads and reduce total trading costs on less actively traded ETFs. NAV-based trading can change the ETF landscape in many important ways.

MARKET-ON-CLOSE (MOC) TRANSACTIONS IN ETFs

There is a great deal of misunderstanding about how market-on-close transactions in ETFs work. This section probably contains a great deal more information on these transactions than most investors will want, but any

investor who considers using ETF market-on-close orders will find a careful reading of this section invaluable, because MOC transactions in ETFs can prove costly. The principal message of this section is that *a market-on-close execution in an ETF will not necessarily be priced at or even close to either (1) the midpoint of the indicative closing bid and offer published on the fund's web site and in its prospectus or (2) the fund's closing NAV.*

Reported ETF Premium and Discount Pricing

As a prelude to an examination of market-on-close orders, it is important to understand what the information on premiums and discounts published in fund prospectuses and on fund web sites means and *how the mere fact that this information is published can increase the cost of your market-on-close trade.*

ETF issuers collect information on ETF share bids and offers *on the listing exchange market* each day at 4:00 P.M. and compare the midpoint of these quotes to that day's net asset value (NAV) calculation for the ETF. Premium and discount tables or graphs reflecting these comparisons are published on ETF web sites and in ETF prospectuses and annual reports. The comparisons give investors and advisors inappropriate comfort that end-of-day ETF transactions occur very close to net asset value. *The quotes versus NAV comparisons do not indicate anything of that sort.*

Market makers in even the most thinly traded ETFs understand that the midpoint of their daily 4:00 P.M. quote will be preserved in prospectuses and on ETF web sites for years. These market makers have a stake in drawing traders to the ETFs they trade. Consequently, they monitor their real-time bid/offer NAV calculations very closely as 4:00 P.M. approaches. Even if they have to widen or otherwise change their spread for a few seconds, they will work to get the *midpoint* of their bid and offer as close to the expected 4:00 P.M. NAV⁹ as possible. Their 4:00 P.M. quote is the most widely scrutinized and least useful bid/offer of the day.

Publication of premium and discount information based on 4:00 P.M. ETF share quotes and several other characteristics of ETF markets have led to overuse of market-on-close (MOC) orders, especially for some ETFs that are thinly traded. Most investors do not realize that *MOC transactions in ETFs are not reflected in most ETF reported premiums or discounts in any way.* Nonetheless, MOC orders are often used by individuals and defined contribution retirement plan investors who are accustomed to mutual fund

⁹They will use their proprietary value calculations to estimate NAV, not the posted IOPV. Investors will do well to forget that the IOPV calculation exists.

trades at net asset value and to MOC orders on stocks. Many investors do not distinguish between the closing price of a derivative instrument, like an ETF, that has a closing *value* derived from the value of the securities in its portfolio, and the closing price or value of a stock where the closing price *and* the closing value are determined by the market-on-close trade.

MOC Orders for ETFs

The majority of ETF market-on-close orders are not likely to be executed at or even close to NAV. The orders often result in executions at a much greater distance from the fund’s end-of-day net asset value than the reported premium and discount data indicate to investors. It is important that anyone trading ETFs understand how these orders work and how MOC ETF orders differ in important ways from MOC stock orders.

Market-on-close orders in both stocks and ETFs are integrated with the limit-order books for the securities. The hypothetical schedule of bids and offers (limit orders) for an ETF near the end of the trading day displayed in Exhibit 8.5 will help illustrate how this integration works. In this limit-order book, the best bid is for 2,000 shares at \$24.90, and the best offer is at \$25.10 for 2,000 shares. The market-on-close book will operate alongside this limit-order book with buyers and sellers entering market orders of various sizes for execution at the close. If the balance of the MOC orders is to buy 4,000 shares of the ETF at the market-on-close, and the limit-order book matches the table, *all* the MOC orders will be filled at \$25.30, unless a market maker

EXHIBIT 8.5 Hypothetical ETF Limit-Order Book at the End of the Trading Day

	Bids	Offers
\$25.30		10,000
\$25.25		
\$25.20		
\$25.15		
\$25.10		2,000
\$25.05		
\$25.00		
\$24.95		
\$24.90	2,000	
\$24.85		
\$24.80		
\$24.75		
\$24.70	10,000	

or a last-minute customer order improves on the \$25.30 offer. The lowest price at which an order to buy 4,000 shares can be filled is \$25.30 and market rules require that all 4,000 shares trade at that price.

Until the official trading close for ETFs was changed from 4:15 P.M. to 4:00 P.M., MOC orders for ETFs were not subject to the same rules as MOC orders on stocks. Now, all MOC orders are accepted until an exchange-specified cutoff time for such orders, currently 3:45 P.M. After that time, orders to trade at the market-on-close will be accepted *only on the side of the market that will reduce any trade imbalance*. Specifically, if the balance of market-on-close orders is to *buy* 4,000 shares of XYZ, additional MOC *buy* orders *will not* be accepted after 3:45 P.M. MOC *sell* orders *will* be accepted to reduce the imbalance. Many types of orders that arrive after 3:45 P.M. can interact with the limit-order book and limit orders can be entered or cancelled until 4:00 P.M. If you are puzzled by the purpose of the 3:45 P.M. one-sided MOC order entry cutoff in the context of the ease with which other orders can be changed, I am equally puzzled.

Any coherent MOC rules will work reasonably well for very actively traded index ETFs because active trading in index-linked instruments attracts arbitrageurs. Spreads on the limit-order book for actively traded ETFs are usually tight and deep because the orders on the books are typically managed by multiple auto-quote systems. MOC orders for less-active ETFs often lead to trades far from net asset value because *investor* limit orders are sparse and because market makers, as indicated earlier, tend to widen their spreads just before 4:00 P.M. In addition, less actively traded ETFs are not subject to continuous monitoring by arbitrage-motivated traders.

In our numeric example of an ETF MOC trade, the net asset value of the fund is \$25.00. The midpoint between the bid and offer at 4:00 P.M. is also \$25.00. Yet, barring a last-minute MOC sell order or a new limit order to sell at least 2,000 shares at less than \$25.30, market-on-close orders will be filled at \$25.30, 1.2 percent above the net asset value. The ETF's premium/discount calculation for the day will show that the "market price" based on the best bid and offer at 4:00 P.M. on the limit-order book matched the net asset value at 4:00 P.M. Publication of a zero premium or discount based on 4:00 P.M. quotes relative to NAV encourages ETF investors who do not understand the transaction mechanism to assume that an MOC trade will be filled at or very close to NAV. Under this mistaken belief, too many ETF investors use market-on-close orders incautiously.¹⁰

¹⁰Both the price of the daily closing trade and the net asset value for any ETF are easy enough to look up the next morning, but I am not aware of any source an investor or advisor can consult to find a series of day by day comparisons.

The market-on-close problem in ETF trading is aggravated by the fact that some brokerage firm trading desks do not accept or use limit orders to “work” ETF orders below a specified size. Advisors responsible for ETF accounts at these firms are faced with the necessity of trying to work the orders themselves (if that is feasible) or using market orders for ETF trades. This is not a significant problem if the advisors are using only major benchmark index ETFs, but if these advisors and their clients want to use one of the less actively traded ETFs, a market order entered at any time carries a great deal of market impact risk. Often these advisors either stick to the most actively traded ETFs or conclude that the least risky way to trade a less actively traded ETF share is with an MOC order. The best way to handle this dilemma in the traditional ETF market is a dialogue with a market maker, a process that requires cooperation from the trading desk—and even more of the trading desk’s time.

While the premium/discount information published for ETFs is calculated as the prospectus says it is, this calculation has led to unanticipated results for many investors. *I can think of no reason why an investor or advisor should use an MOC order to trade any ETFs if he or she understands how thin some of these closing markets are and how the MOC orders are filled.* For actively traded ETFs, the intraday market in the last hour of trading operates extraordinarily well and spreads are among the tightest of any time during the day. For less actively traded ETFs and for investors who want a more easily managed and monitored trading option, the NAV-based market (described at length in the next section) should deliver executions that are consistently closer to net asset value than either an intraday or an MOC execution. The availability of NAV-based secondary market trading will let an investor lock-in a price related to a specific net asset value calculation. Investors can access liquidity available during the entire period that the NAV-based secondary market is open—a full daily trading session, at minimum.

Without NAV-based trading, defined contribution plans like 401(k)s and advisors accustomed to buying and selling mutual funds at net asset value have tended to use MOC orders for ETF transactions. The deviation of market-on-close executions from NAV may increase as these plans and advisors make greater use of ETFs, especially less actively traded ETFs.¹¹

¹¹Engle and Sarkar (2006) found that ETFs holding domestic stocks had an end-of-day average premium of the closing price over the reported net asset value of just +1.1 basis points (a discount would be reported as a premium with a negative sign). However, this tiny average premium is misleading. The average standard deviation of the last trade premium was 42.1 basis points with a range of 17.6 basis points

Market-on-Close Orders for ETF Traders versus Common Stock Traders

At first glance, the risk of knowledgeable market participants taking advantage of small investors who place unwise market-on-close orders looks the same for ETF and for common stock MOC orders. However, there are a number of reasons why the ETF and stock late-day markets are different and why the ETF MOC trade problem is a bigger problem.

ETFs typically have a much smaller market “footprint” than a stock. A stock listed on the New York Stock Exchange must have at least 400 round-lot¹² shareholders and a total market value of \$100 million at the time of listing.¹³ A newly issued ETF often has assets of less than \$5 million and just one shareholder—the Authorized Participant that made the initial creation deposit. The median asset size of U.S. ETFs was only \$74 million in late 2009.¹⁴ To put this ETF capitalization in a stock market perspective, the median market capitalization of the stocks in the Russell Microcap Index was about \$140 million on September 30, 2009.¹⁵ This median microcap company has about twice the market cap of the median ETF, yet it was only the 3,000th largest market cap company in the United States.

The participants in ETF markets are often different from the participants in stock markets. All funds start with seeding investments by their issuers or, in the case of many index ETFs, by their market makers. Since there

to 142 basis points for various funds. A 42-basis point standard deviation is more than four-tenths of a percent of the value of the fund share. Using this standard deviation as a rough indicator of the cost of a market-on-close execution neglects the effect of “last” transactions that occurred before or after 4:00 P.M. Nonetheless, the average bid-asked spread for these domestic stock ETFs at the close was 37.7 basis points. Neither this spread nor the reported premiums and discounts provide a useful indication of the price an investor should expect on a market-on-close transaction today. The study was based on a set of data that ended in September 2000. The procedures for trading ETFs around the market close have changed in a number of ways since then. The domestic stock ETFs that Engle and Sarkar studied now trade tens of millions of shares daily, but today’s less actively traded ETFs display the same variability of premiums and discounts they found in the earlier data. Antti Petajisto, a colleague of Engle’s at NYU, is studying *contemporary* ETF trading. His analysis should make interesting reading.

¹²A round lot in most stocks is 100 shares.

¹³Exceptions to the market capitalization rule are made for IPOs, Spin-offs, Carve-Outs, and Affiliates, which must have a capitalization of \$40 million (see NYSE Listing Standards).

¹⁴Index Universe.

¹⁵Russell Fact Sheet: www.russell.com.

are few individual shareholders immediately after the launch of an ETF, market makers will be the principal sellers. Until investors are significant buyers, market makers will usually be the most frequent buyers as well. Trading reports show that market makers participate in a much larger share of ETF trades than of stock trades. This pattern of relatively heavier market-maker participation applies even to the most actively traded ETFs, probably because of arbitrage effects.

Stock trading typically operates very differently from ETF trading, particularly in terms of the role of the market maker. After the initial distribution process for a stock,¹⁶ there are usually enough existing and would-be investors in the typical publically traded stock to ensure that their bids and offers largely determine the price and trading volume. Market makers serve as intermediaries in stock trading, but they rarely hold significant stock positions for long periods or even overnight. All market participants know that there is a fixed supply of a stock. If there is a lot of investor interest in buying the stock, the price will almost inevitably go up. If this investor interest declines, the stock price will decline. The fixed supply of shares is allocated by the prices that market participants are willing to pay to own the shares. Unlike the ETF, there is no net asset value for a common stock at which an extremely large number of new shares can be created or redeemed without a material impact on the share price.

As long as arbitrage forces are active, even strong investor interest in buying the shares of an ETF will not push the price up more than a few pennies unless that interest is shared by investors who are taking positions directly in the ETF's portfolio securities. The market impact of demand for the ETF's shares on the value of the ETF's portfolio securities is not likely to be material in the short run. The median market capitalization of the stocks in the ETF's portfolio dwarfs the size of most new ETFs. With the exception of a few very small-cap stocks in specialized funds, the median-sized ETF will rarely own as much as 1 percent of the outstanding shares of one of its portfolio stocks. What someone is buying when they buy shares in an ETF or any other fund is a way of participating in a particular market segment or investment process. They are not buying into the fortunes of a single business enterprise with a fixed capitalization.

Markets in small ETFs are often characterized by wide spreads. Yet, even if the spreads are wide, the size of the intraday bids and offers posted by

¹⁶The initial distribution can take place by way of an underwritten IPO, a spin-off to a parent's diverse shareholder base, or simply expansion of a company's shareholder base as the company grows over a number of years.

market makers are often very large, at prices sufficiently above or below the fund's contemporary net asset value to reflect the cost and risk of fund share creation or redemption. In contrast to the market in a relatively small-cap stock, the number of *customer* limit orders on the book in most ETF markets at any time is relatively small. The share value, and to a large extent the price, is derived from the value of the portfolio. Investors presume that they will buy or sell at a price very close to the contemporary net asset value, but the conventional ETF market does not always deliver that expected result, especially when a market-on-close order is used, as the example on pages 212–213 illustrates.

Market-on-close orders are often used to trade the common stocks of large capitalization companies late in the trading day. The investors or portfolio managers behind most of these MOC trades have learned that the volumes traded at the close and the MOC order handling procedures cannot provide assurance that the closing price will not be affected by small trades. Consequently, they enter and monitor MOC orders for stocks with more care than ETF investors often use for MOC orders. High overall volume up to and at the close can ensure that the MOC rules operate as they are designed to operate in actively traded stocks, but users of this market for stocks understand the rules and the risks. If an MOC order in a stock leads to an execution away from the rest of the day's trading range, other market participants tend to assume that the trader had access to information that may have justified the price change. In the case of a common stock there is no net asset value calculation independent of the exchange market price discovery mechanism and there is no reason to expect the price to reverse after the MOC trade. Any MOC stock order might reflect knowledge of an economic or corporate development that will cause the stock to continue to move further in the same direction during the next trading session.

An MOC trade in an ETF carries different and much clearer information to other market participants. If one trader has good information on the contemporary net asset value of an ETF share, that trader may be able to purchase shares significantly below that net asset value, or sell them significantly higher than that net asset value, to fill an unwisely entered market-on-close order. The probability is high that the informed trader can close that ETF position out at a profit on the following day—or even in late trading on the same day—because the *value* of the underlying shares in the portfolio determines the *value* of the ETF share. The value of the portfolio will not be affected by the market-on-close transaction price in the ETF share. The fact that an unwise purchaser or seller caused the ETF price to change significantly from NAV at the close is unlikely to persuade anyone

that the value of the shares has changed or that the MOC execution is going to lead to changes in the prices of the ETF's portfolio securities.¹⁷

INTRODUCING NAV-BASED TRADING IN EXCHANGE-TRADED FUNDS

Orders to trade at or relative to the day's official NAV are the essence of this new market that lets buyers and sellers express their bids and offers relative to net asset value. The transaction cost to buy or sell an ETF share in the NAV-based market is the sum of any fees and commissions plus (or minus) any difference between the execution price and the NAV. With limit orders stated relative to NAV, an investor both knows and controls trading costs by this measure, whether the ETF is thinly or actively traded.

As noted in Chapter 1, one of the compelling advantages of most ETFs for long-term investors is that each shareholder pays only the cost of his or her own fund share transactions and is protected by the ETF structure from the cost of other investors' purchases and sales of fund shares. Secondary market net asset value (NAV)-based trading in ETF shares preserves this protection from other investors' fund share trading costs while enabling investors to buy and sell ETF shares at a price related to—and no further than a predetermined distance from—net asset value. We will see that, in contrast to trading cost uncertainty in the intraday trading of ETF shares that really do not trade “just like a stock,” NAV-based trading makes it possible for investors to *know* and *control* their ETF transaction costs with minimal order monitoring.

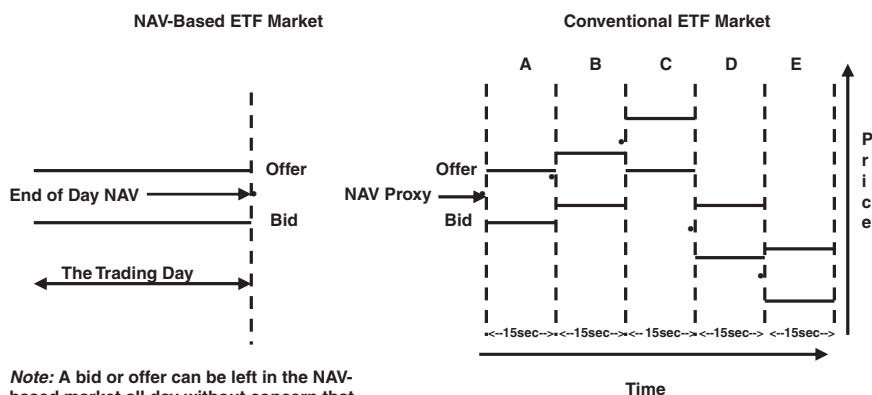
Entering an order to buy or sell ETF shares at or relative to the current day's net asset value is only superficially like entering a limit order to buy or sell shares in the traditional intraday ETF market. NAV-based buy and sell limit orders are entered and executed relative to a proxy of, say, 100.00 for the per share net asset value that will be calculated based on the value of the ETF's portfolio securities at 4:00 P.M. A transaction at net asset value plus one cent per share would be recorded at 100.01. If the fund's NAV for the day turns out to be \$20 per share, the 100.01 transaction would translate to a price of \$20.01 because each .01 translates into \$0.01 (one cent)

¹⁷This argument does not apply to an ETF that holds securities that are not traded regularly during the trading session in the ETF's home market. For example, the NAV calculated today for a U.S.-based ETF holding Chinese securities might not accurately reflect the value of the underlying portfolio at the end of U.S. trading hours.

per share. (We omit \$ signs on the proxies to avoid the implication that the transaction will occur near \$100 per share. 100.00 is merely a reference point.)

Most investors will want to check current bids and offers in the NAV-based market before entering *any* orders. The NAV-based quotation in a relatively actively traded ETF might be stated as “10,000 Bid at 99.99, 20,000 Offered at 100.01,” reflecting buy orders totaling 10,000 shares at one penny below the end-of-day net asset value and sell orders totaling 20,000 shares at one penny above the end-of-day net asset value for the ETF. It may be possible to buy ETF shares below the NAV or to sell them above the NAV, depending on the bids and offers available in the market over the course of the trading day and their interaction with market orders. Even if a standing limit order to sell below NAV is not available in the marketplace when an investor checks the quote, an investor can place his own *bid* below net asset value at the market close and that bid may be hit by an order to sell during the course of daily trading activity. Limit orders on the NAV book can be cancelled and new limit orders or market orders can transact with the limit order book until a designated time *after* the close of traditional ETF trading. Transactions will occur throughout the day at or relative to NAV and the dollar execution price for each trade will be determined when the NAV is published, sometime after 4:00 P.M. After hours trading relative to the current day’s and the next day’s NAV will also be possible. Orders to trade at the next day’s net asset value will be particularly useful when an ETF’s portfolio holds foreign securities that do not trade actively throughout U.S. trading hours.

The ability to create or redeem ETF shares each day should limit the size of any premium or discount on an ETF share as long as professional traders acting as market makers and arbitrageurs are reasonably attuned to the costs and opportunities of meeting demand for additional shares or redeeming existing shares of the ETF. Transactions in the NAV-based and traditional ETF markets are subject to similar fees and commissions. Information on these costs and trading choices will be available from your broker or advisor. Investors can compare differences in the spreads between contemporary bids and offers in the conventional intraday market and in the NAV-based market throughout the trading day. We have seen that locating the midpoint of the bid/offer range relative to an intraday ETF value is not easy for the average investor in the traditional ETF market. Even if an investor has ready access to intraday NAV proxy calculations based on contemporary bids and offers for an ETF’s portfolio securities, the portfolio value of many ETFs can change by much more than the typical bid/offer spread in just a few seconds. In conventional ETF trading, most investors cannot be confident that their execution will be as close to the contemporary



Note: A bid or offer can be left in the NAV-based market all day without concern that the order will be “picked off” by a trader with better information. You will know and control your transaction cost relative to the closing net asset value of the shares if the order is executed.

EXHIBIT 8.6 Entering Bids and Offers in NAV-Based and Intraday Markets Relative to End-of-Day NAV or a Series of NAV Proxy Values

NAV as they intend. An investor receiving an execution at a penny over NAV will be able to calculate her trading cost exactly. Many of the earlier chapters have stressed it is cost transparency, not immediate knowledge of any changes in the portfolio that is most useful in evaluating the performance prospects for any fund.

The diagrams in Exhibit 8.6 compare limit orders in the NAV-based market (where an unchanged limit order may be appropriate for most or all of the trading day, with little need for monitoring) with a sequence of limit orders in the intraday ETF market (where the appropriate level for a bid or offer can change more quickly than most investors can react). The right-hand side of Exhibit 8.6 illustrates the variability in the intraday value of the fund and highlights the limit order management problem that most investors face in the conventional ETF market as fund share values change. As noted, an investor’s order can trade only with bids and offers that are available in the market. Orders must be entered in the conventional ETF market to buy or sell at the market or at a specific dollar price, say \$20.00 per share. *Orders to buy or sell ETF shares relative to a contemporary or future ETF (portfolio) value are not accepted in the conventional ETF market.*

The spectacular dives and leaps in stock markets from 2007 through 2009 raise the question of investor exposure to an unusually large change in net asset value. For example, a major market move at the end of the day

might force an investor to pay more than he had anticipated or would be willing to pay for an execution at net asset value. One important aspect of NAV-based trading for most investors is that they accept the market's judgment on the value of the portfolio and simply want to control trading costs. They don't want to accept the risk of a significant net asset value change.

There are at least two ways to deal with the possibility of a dramatic move in the market late in the day. A separate order book might permit NAV-based traders to put limits on the dollar amount they pay if NAV changes dramatically relative to the prior day's NAV. An order to buy at NAV +.02 could carry a 1.00 limit, meaning that the trade would be canceled if NAV rose more than \$1.00 per share from the prior day's NAV. Another NAV investor or a market maker would take the other side of this trade. A simpler way to deal with this situation would be to encourage traders averse to the risk of needing to come up with more money to wait for the introduction of an execution service based on the NAV-based market that would fill orders expressed in dollar amounts or in whole and fractional shares. This service would be provided by a financial intermediary and would serve defined contribution retirement accounts as well as investors who want to use the NAV-based trading mechanism but are concerned about the risk of significant price changes.

Professional traders and market makers understand that the economics of their business is based on the volume of trades they participate in and on risk management. Most of them welcome the introduction of NAV-based trading because it will substantially increase trading volumes in ETFs that are not actively traded today. These market professionals will earn far more from small profits on a lot of trades than from large profits per share on very few shares traded. NAV-based trading also gives ETF market makers a way to reduce their inventory risk.

How a Market Maker Will Facilitate NAV-Based Trading

NAV-based trading will not replace the conventional intraday market for index ETFs. To put its likely role in perspective, NAV-based trading will not account for more than a small fraction of the total trading volume in major benchmark index ETFs—the funds that trade tens or hundreds of millions of shares per day. For less actively traded index ETFs and for all actively managed ETFs, NAV-based trading will probably become the dominant trading mechanism. Conventional intraday trading and NAV-based trading will operate side by side and, in many cases, the same market makers will participate in both trading mechanisms. The opportunities to

integrate risk management in the conventional intraday market and the NAV-based market will be important to some market makers, but discussing integrated risk management complicates the picture unnecessarily and, in any event, one trading mechanism or the other will often dominate the market for a specific fund's shares. It is easier to understand NAV-based market-maker risk management if we focus on NAV-based markets alone.

It is important to recognize that the typical actively managed ETF market maker will probably *not* maintain a significant position in the shares of the fund. The initial seeding of actively managed ETFs will be done by the issuer of the fund, not by a market maker. Most mutual funds have been seeded by the issuer, so this is nothing new that active managers will have to adjust to.

The market maker will post bids and offers relative to the net asset value proxy. The market maker will set its opening bids and offers and adjust bids and offers throughout the day to reflect its experience with (1) customer orders that arrive on each side of the market, (2) the liquidity of the securities in the underlying ETF portfolio, and (3) the cost of creating or redeeming various numbers of creation units of the ETF's shares. If the market maker does not have a significant net inventory, it need not hedge market price risk; but the cost of creating or redeeming is an important consideration in making markets relative to NAV. Net orders from either buyers or sellers may require the market maker to create or redeem fund shares at the end of the day to maintain an approximately "flat" or neutral position in the fund's shares. The cost of any creations or redemptions will have a significant effect on market maker profit.

The basic trading strategy of the market maker in the NAV-based market is deceptively simple: Enter a bid that is slightly below the net asset value proxy and an offer that is slightly above the proxy. How wide the spread should be between the bid and the offer will reflect an attempt to maximize expected market making profit. A spread of \$.50 per share between the bid and the offer will yield a large profit *if trading is active at this spread*. Realistically, trading will be almost nonexistent in most ETFs at a \$.50 spread. If the fund is reasonably popular with investors, a spread of a penny (\$.01) between the bid and the offer might generate a volume of hundreds of thousands or even millions of shares in daily trading volume, but even the most careful management of bids and offers relative to the NAV-proxy might not ensure a market making profit if the cost of creation or redemption is substantial and frequent sizeable creations and redemptions are necessary to flatten the market maker's exposure at the end of each day.

The astute market maker will experiment with bid and offer prices and sizes and analyze the behavior of investors to develop profitable bid and offer patterns and policies. The midpoint of the market maker's bid

and offer will be moved to manage its ETF share inventory. Market maker strategies will be subject to change during periods of, for example, unusually heavy or unusually light trading volume. However, the market maker's most important task will be to monitor the impact of net purchases or net sales over the course of the day and attempt, other things being equal, to end the day either flat or with a position that will be flat after creating or redeeming one or more whole creation units of shares. It is likely that the basic economics for some market makers will be improved by incentive payments from fund issuers who want to encourage the market maker, in one way or another, to maintain narrow bid/asked spreads. It is also likely that the NAV-based market maker will have to "invest" in the market for a period of time to attract order flow, as market makers invest in most other new trading books.

Market making operations in the NAV-based market will be very different from the operations of an ETF market maker in the conventional intraday ETF market. The benchmark index ETF market maker buys and sells ETF shares around his best estimate of the intraday value of the fund share and manages market risk by taking offsetting positions in other components of the ETF's index arbitrage complex. Market exposure is neutralized with these risk offsetting positions, but both the long and short positions might be large during the day.

The role of the market maker in the NAV-based market is closer to the role of a market maker in the stock market. In the stock market, the supply of shares is fixed and the market maker's role is primarily to intermediate between buyers and sellers, offering shares of the stock above what the market maker deems to be the equilibrium price and buying shares below that equilibrium price. The market maker strives to minimize exposure to changes in the value of the stock unless the buyer or seller is willing to "pay" enough for liquidity to make the transaction price favorable enough to compensate the market maker for taking on increased risk.¹⁸ The market maker's risk in the NAV-based market is smaller and easier to manage than the risk of market making in the stock market. The net asset value calculation at the market close provides a much more objective measure of the appropriate price of a fund share than any value estimate available for a common stock. The size of the fund can change to reflect investor demand, subject to a cost to create or redeem the fund shares. That cost is readily estimated and most of the cost of creation and redemption is reflected in

¹⁸The literature on the pricing of liquidity offered by market makers in larger transactions goes back at least to Black (1971a and b). These articles, conceived in one of the greatest minds that ever studied financial markets, are remarkably prescient.

the net asset value on the day of the transaction. There are other more subtle differences, but they generally make the risk of ETF market making significantly less than the risk of stock market making.

If the ETF has a required cutoff time for notification of a creation/redemption before the market close, the market maker's spread will typically widen after he can no longer initiate a creation or redemption at that day's net asset value. The wider spread after the cutoff time may complicate the market making process, but trading can begin relative to the next trading day's net asset value at or before the creation/redemption cutoff time.

CONCLUSION

While the conventional ETF market usually works well for investors who know how to use it to trade the largest and most actively traded ETFs, it simply does not serve investors in less actively traded funds very well. Trading costs are high and hard to measure in the conventional market for less actively traded ETFs. When an ETF's trading volume is low in the conventional ETF market, its bid/offer spreads are generally wide and professional traders have little choice but to respond opportunistically to retail orders rather than to arbitrage pricing relationships.

NAV-based trading increases the opportunity for ETFs based on newly developed indexes to trade at a low-enough cost to compete with ETFs based on established benchmark indexes. It makes trading easier for advisors and defined contribution retirement plan participants who are used to buying mutual fund shares at net asset value. In an extension of NAV-based trading services, I anticipate the availability of executions based on dollar amounts and fractional shares provided by a financial intermediary to reduce ETF trading costs and simplify trading for advisory accounts, defined contribution plans, and other accounts that now use the mutual fund NAV purchase and sale mechanism. The importance of making ETF shares available to retirement accounts is widely recognized, but this secondary market NAV-based trading is the only approach that can provide access at low cost by using many of the systems that have been developed to manage mutual fund flows and transactions for these accounts. The most important motive behind the development of NAV-based trading is that it is essential for the development of nontransparent ETFs that offer active portfolio management and nontransparent indexes that are not plagued with high composition change costs. In an actively managed fund, as readily as in an index fund, the ETF structure protects shareholders from the cost of other investors' fund share purchases and sales and can insure tax efficiency.

Finally, in an earlier paragraph and in footnote 5 of this chapter, I cited statistically significant evidence that the average *stock* trades at a slightly lower price near the market opening than near the close on the same day. A fund net asset value can be calculated from opening prices as well as from closing prices. If there is demand for it, NAV-based trading around opening or hourly portfolio values as well as the traditional end-of-day NAV calculation is certainly possible.

CHAPTER 9

Economics and Market Effects of ETF Short Selling

*He who sells what isn't his'n,
Must buy it back or go to prison.*

—Attributed to Daniel Drew

Most readers of this book will rarely, if ever, consider selling shares of an ETF short as part of their investment program. However, short selling in the ETF marketplace is a large part of ETF trading volume, and ETF short positions are often so large relative to total ETF shares outstanding that the investor who does not understand the effects of short selling on his ETF position risks (1) paying unnecessary taxes on ETF dividends, (2) misunderstanding the significance of ETF market statistics, (3) missing the best way to take some positions, and (4) missing some unusual but attractive investment opportunities. Before we address these problems and opportunities, it is useful to take a careful look at the *risks* associated with selling ETFs short, in order to put things in perspective.

UNDERSTANDING THE RISKS OF SELLING ETFs SHORT

Anyone who has wandered by video monitors in the windows of a ski or surf shop has seen dramatic pictures of skiers or surfers in obvious peril. A skier jumps from the edge of a cliff above the camera and disappears from view with no apparent chance of survival—until the scene cuts to another camera showing a safe landing on a 55-degree slope. At the surf shop, a surfer dude—or, with increasing frequency, a surfer girl—is tucked in the

curl of a six-story wave headed for shore. Both skier and surfer lack obvious exit strategies.

At first glance, it might appear that an investor who sells ETF shares (or any other shares) short is taking risks similar in magnitude to those of these extreme ski and surf enthusiasts. When we understand that the short interest in the average U.S. common stock is less than 2 percent of the stock's capitalization, while the short interest in ETFs often ranges from 20 percent to as much as several hundred percent of the ETF's outstanding shares, the comparison of ETF short sellers to extreme skiers and surfers seems especially apt. In fact, however, the risks associated with ETF short selling are more in line with the risks taken by a competent skier cruising on a recently groomed intermediate trail. The ETF short seller, like the cruising skier, has to be alert and follow the rules, but the risks are clear and readily manageable.

A number of important safety features protect ETF short sellers. We discuss some of them in the remainder of this section.

ETF Short Squeezes Are Virtually Unknown

It is nearly impossible to suffer a short squeeze in cap-weighted, float-adjusted equity or fixed income index ETF shares. Most of the major benchmark indexes that serve as the basis for futures contracts and the other components of an index arbitrage complex are cap-weighted, usually with float adjustments. A few major equity indexes, such as the NASDAQ 100 and several of the S&P 500 sector indexes used as templates for the Sector SPDRs, have weighting adjustments to meet the diversification requirements for RIC-compliance, but these adjustments do not materially reduce their portfolio liquidity. The funds based on cap-weighted indexes are generally the largest ETFs, they are the most actively traded, and they generally have the largest short interests. The opportunity for any significant weighting problems leading to a short squeeze in any of these ETFs is remote. Furthermore, in contrast to most corporate stocks where the shares outstanding are fixed in number over long intervals,¹ shares in most benchmark index ETFs can be greatly increased on any trading day by depositing baskets of portfolio securities into the fund. Creations or redemptions in large ETFs, such as the S&P 500 SPDRs, the NASDAQ 100 QQQs, and ETFs based on the most popular fixed income indexes, can be worth billions of dollars

¹Exercise of employee stock options, acquisitions for stock, and sale of new stock by the corporation increase the number of shares outstanding from time to time, but most corporate capitalizations usually change very slowly.

on a single day. The theoretical maximum size of the typical benchmark index ETF—given the large number of components, cap-weighting in the most popular indexes, and the open-end in-kind ETF creation process—can be measured in hundreds of billions of dollars of market value. The open-ended capitalization and the required diversification of benchmark index ETFs takes them out of the extreme risk-of-short-squeeze category. As a practical matter, “cornering” a benchmark index ETF market or even facing a significant short squeeze is unimaginable.

ETFs using other weighting systems are typically small, but they have fully adequate short squeeze control features. There are a variety of weighting schemes in use for some of the custom indexes developed for ETFs in recent years. None of these weighting approaches is likely to lead to a short squeeze for a number of reasons. Fundamental indexes—where weighting is based on characteristics other than the value of the company’s market capitalization—are based on metrics that are correlated with the size of the company, if not precisely with its market value. Specialized funds that emphasize dividends often weight stocks with high dividends more heavily, but they have controls on how large a part of the capitalization of any stock they can own. All ETFs are subject to uniform exchange rules (imposed by the SEC) that limit their investments in microcap companies. Specifically, Rule 5.2(j)(3).1.(a)(A)(1) of NYSE Arca, which matches the rule at other exchanges listing ETFs, requires that “Component stocks (excluding Units and securities defined in Section 2 of Rule 8, collectively, “Derivative Securities Products”) that in the aggregate account for at least 90 percent of the weight of the index or portfolio (excluding such Derivative Securities Products) each shall have a minimum market value of at least \$75 million.” Clearly a company with a market value of \$75 million dollars that accounted for 1 percent of the value of an ETF would be a constraint on the ability of the fund to grow if its weight in the fund was fixed. Moreover, most fund managers will not want to own more than 5 percent of any portfolio component’s shares outstanding. Keeping the weighting of this stock at 1 percent of the portfolio would make the maximum fund size only \$375 million. Because they do not want to limit the fund size, these funds will buy more shares of larger cap stocks and typically limit any component to 5% of its capitalization—even if capping positions means that the fund no longer tracks its index closely.²

²At the 5 percent holding level a fund position must be reported to the SEC. Most funds prefer not to file or update such reports. Consequently, a position that approaches the 5 percent level will usually disappear from an ETF’s creation basket. Very few ETF managers lose sleep worrying about failing to track an index closely.

In contrast to the short sale of a stock—where you have to deliver the exact shares you sold short—the ETF portfolio may change between the time you short the ETF shares and the time you buy them back. The portfolio manager of an ETF will usually want to protect you (and her fund) from a short squeeze in one of the fund's portfolio securities by limiting additional purchases of that security if the security would become too large a part of the fund's portfolio. The rules for ETF management offer plenty of protection from a squeeze on a small position in the ETF portfolio. ETFs can lend their portfolio securities to Authorized Participants who want to create more shares. These securities loans are subject to SEC-imposed limitations on the percentage of a fund's *total* holdings that can be loaned, but the whole process is designed to reduce the risk of a short squeeze.

I anticipate that some actively managed ETFs may cap the number of shares that they will issue. If the number of shares is capped, the ETF shares may trade at a premium to their net asset value, but this will be no more than the premium sometimes found on shares of closed-end funds with good performance. Any scarcity value will reflect no more than the scarcity value of superior performance delivered by the fund manager. The limitation on the size of the fund and the policy on capping will be known from the time the fund is launched, so any premium will not come as a surprise.³

Most Short Sales are Used for Risk Management

Most ETF short sales are made in essentially cap-weighted benchmark index ETFs and they are used to reduce, offset, or otherwise manage the risk of a related financial position. The dominant ETF short sale transaction offsets all or part of the *market risk* of a related long position. The upside risk of any short sale is *theoretically* greater than the downside risk of a (long) purchase, but the upside risk of the short position is reduced by the way most ETF short sales are used in arbitrage-type transactions to offset other risks. For example, a small-cap stock manager may sell shares in the iShares Russell 2000 ETF short because that fund tracks an index that is notoriously easy for active small-cap managers to beat—particularly during the middle six months of the year, when the index fund's performance is most adversely affected by the annual Russell index reconstitution. Unlike the aggressive skier or surfer, the risk manager who sells ETF shares short is nearly always reducing the net risk of an investment position. In contrast

³Of course, the ETF shares will still be fully redeemable at the end of any trading day, so there will be none of the persistent discounts that often annoy investors in closed-end funds.

to extreme athletes, the managers selling ETFs short are using the short position like the ski patrol or lifeguards at the surfing beach: They sell ETFs short to reduce the total risk of their activities.

Short Selling Declines in High-Risk Environments

The cost and sometimes the difficulty of borrowing shares constrains the growth of short selling in high-risk market environments. In the turbulent market of 2008, stock lending and short selling began to lose popularity even before short selling of financial stocks was restricted. Securities lending was supposed to enhance the lender's return with a premium earned on invested cash collateral, but a number of stock lenders and/or their stock-lending agents incurred losses on holdings of auction-rate securities that could not be sold at their nominal value or on commercial paper and other obligations of failing firms. As a consequence, some securities lending resulted in losses. Furthermore, as the Federal Reserve reduced interest rates, opportunities to profit from investing the proceeds of a short sale in safe debt instruments were limited, adversely affecting the economics of securities lending and effectively increasing the cost of borrowing securities.

THE IMPLICATIONS OF ETF SHORT SELLING

All investors need to understand the implications of ETF short selling. The fact that ETF short selling is rarely a high-risk activity does not mean that ETF investors can ignore the effect of short selling on their positions. Short selling in ETFs is so active that it does create occasional problems and, correspondingly, occasional opportunities for investors.

Securities Lending to Short Sellers Can Change the Tax Treatment of Your ETF Dividends

Most ETFs with stock portfolios distribute dividends that are largely or fully qualified for a reduced dividend tax rate. If your broker loans your shares, the ETF dividend credited to your account might not be a qualified dividend for tax purposes. A number of investors have mentioned to me that some of the dividends paid by their ETFs with stock portfolios have been categorized as payments in lieu of a dividend rather than as qualified dividends on 1099 forms from their brokers. The treatment of an ETF's entire annual dividend or a specific quarterly or monthly payout as a nonqualified dividend or a payment in lieu usually happens because the investor's shares were loaned to a short seller over a period that included the fund's dividend record

date. Unfortunately, yelling at your broker *after* you get your 1099 will probably not change or compensate you for the cost of this “tax-enhancing” event.

Brokers have long been permitted to lend customer securities if the customer is using some of the services available in a margin account. *Putting an ETF or any other security in a cash account usually prevents share lending.* See pages 96–98 for suggestions on protecting yourself from “disqualified” dividends.

Heavy ETF Short Selling Makes Some ETF Ownership Statistics Misleading

To illustrate how short selling makes ownership statistics misleading, consider the relationship between the short interest in a typical common stock and the short interest in some ETFs. A typical large-capitalization common stock without significant insider holdings may show institutional investors accounting for 70 to 80 percent of its share capitalization. Institutional shareholder data for any equity security can be accumulated from 13-F reports filed with the Securities and Exchange Commission. The institutional share of ETF ownership varies over time and across funds, but the last figures I examined showed typical ETF institutional shareholdings at about 40 percent (plus or minus 15 percent) of the ETF’s capitalization, far below the 70 to 80 percent of institutional holdings in most U.S. common stocks.⁴ Whatever the level of *reported* institutional ownership is for an ETF, it often distorts the *percentage* of ETF shares held in institutional accounts because the reported holdings are not adjusted for the large short interest in some ETFs.

ETF institutional shareholder percentages should be evaluated relative to the total ETF positions held in investor accounts. With the short interest running about 2 percent of shares outstanding for the average common stock, it is not important that 2 percent of a company’s shares outstanding may be reported as being held by two accounts. One shareholder’s position may be lent and the shares sold to another investor so that long positions total 102 percent of the shares actually outstanding. With a 2 percent short interest, double counting all or part of the short interest in the 13-F reports does not distort the reported institutional ownership of most common stocks very much, because the short interest is such a negligible part of the total capitalization. However, the large short interest in some ETFs affects the institutional holdings reports considerably because *all shares that*

⁴Of course, the advisors of each ETF report the ETF’s *stock* positions as institutional holdings on *their* 13-F reports.

have been sold short appear as long positions in two investor's portfolios. Consequently, the ETF institutional ownership percentage reflected in the 13-F reports is *overstated* when it is shown as a percentage of total shares outstanding. A simple calculation illustrates the effect of a large ETF short interest on reported institutional ownership. If the short interest in an ETF is reported at, say, 45 percent of its capitalization, *the number of shares shown on the books of all holders of the ETF's shares will total 145 percent of the number of shares outstanding.* If the 13-F reports show that institutions hold 45 percent of the ETF's shares outstanding, that is actually 45 percent of the shares issued, but only about 31 percent of the shares that all the ETF's investors combined show long in their accounts. The large short interest in the typical ETF makes relative institutional ETF ownership look greater than it is.

I have seen a few cases where institutional ownership is reported as more than 100 percent of an ETF's shares outstanding, partly because of a large short interest.⁵

The average ETF's short interest as a percent of shares outstanding has declined gradually as total ETF assets have grown. The short interest tends to be concentrated in actively traded, popular benchmark index funds. The short interest in many of these funds regularly exceeds 40 percent of the shares outstanding but the ETF industry average short interest has declined to the point where it is not much over 10 percent of shares outstanding.

Growth of ETF Institutional Ownership

ETF institutional ownership has grown and will continue to grow, but it is not similar to institutional ownership of stocks. There is no doubt that institutional ownership of ETFs has grown in recent years, but this growth is not the result of major corporate and public pension plans or mutual funds taking large positions in ETFs. Index ETFs are a very low-cost product from the point of view of the retail investor, but major pension plans and mutual funds can obtain much lower fees from institutional index portfolio managers than the fees available on any ETF.

Part of the reported growth in institutional ownership comes from the use of ETFs by mutual funds to manage the fund's cash flows late in the trading day. While this ETF application by mutual funds has grown in *absolute* terms, it will decline in relative importance as the growth of ETF assets continues to outpace the growth rate of mutual fund assets.

⁵Most of these cases involved (1) foreign equity funds with unusual stock transfer restrictions in the primary market where the fund's portfolio securities are traded, (2) round-robin re-lending of the ETF's shares, or (3) both.

In recent years, the principal reason for growth apparent in 13-F reports of ETF institutional ownership has been that more and more ETF investors are advised by registered investment advisors whose firms are required to file 13-F reports listing the assets they manage for their clients. This kind of institutional ETF ownership will continue to grow. It will be the largest category of ETF ownership—if it isn't the largest category already.

All the ETF short interest comparisons in this book and most ETF short comparisons you will see elsewhere use the “short interest ratio” defined as the short interest as a percentage of an ETF's shares outstanding. Many stock traders and published reports on *stock* short sales define the “short interest ratio” as the number of shares that have been sold short divided by the stock's average daily trading volume over a recent period. This calculation, also called “days to cover” stresses the relationship between the size of the short interest and trading volume. Most ETF analysts use short interest as a percentage of total shares outstanding in the belief that it is the most useful measure of ETF short interest, but be sure you check what definition your source of information is using.

The magnitude of the short interest percentage of shares outstanding varies considerably from ETF to ETF and from month to month. Morgan Stanley Research publishes a list of the ETFs with the largest short interest percentages quarterly and Deborah Fuhr at Black Rock publishes a similar list as well as aggregate short interest figures each month in her *Landscape Industry Review*. State Street's monthly ETF short interest list has short interest levels and changes by “asset class.” You can get the latest reported short interest for an individual ETF traded in the United States at www.shortsqueeze.com/. This web site gives you the data you need for any short interest calculation, but you need to read their output carefully. They are one of the places that defines the short interest ratio as “days to cover.”

Short interest percentages of shares outstanding over 100 percent are relatively common and I have seen individual ETF monthly short interest percentages over 700 percent. A 700 percent short interest percentage indicates that the average share the fund has outstanding has been lent and re-lent seven times with a round-robin effect.

ETF SHORT SELLING FOR TRADITIONAL INVESTORS

Short Selling and Arbitrage Transactions

Most investors reading this book are interested in improving the performance of their own investment portfolio through the intelligent use of ETFs.

Few of these readers are candidates to become arbitrageurs. Nonetheless, all investors will use ETFs more effectively if they understand the significance of arbitrage pricing in the ETF market and if they are attuned to the limitations on arbitrage pricing in lightly traded ETFs. Chapter 8's discussion of ETF trading offers some practical applications of these principles to ETF trade executions.

It is possible to trade even the least actively traded ETF relatively efficiently and cheaply if an investor understands how arbitrage forces work and when they don't work. An astute investor will try to make arbitrage work *for* her rather than offer profit opportunities to arbitrageurs by entering ill-informed orders. Professional arbitrageurs attempt to profit from mispricing in one or more of the components of an arbitrage complex. In the simplest example, an arbitrageur will take two positions, a long and a short. Often a large portfolio trading desk will manage the risk of diverse positions in a way that approximately offsets risks, a technique called statistical arbitrage because it relies on probabilities, not on strictly matched risk offsets. These trading desks rely on correlations among the movements of diverse financial instruments. For the overwhelming majority of investors who do not have access to the tools and capital these large traders bring to the market, the existence of these traders should provide a degree of comfort that large pricing discrepancies usually will be arbitrated away quickly. On the other hand, hastily entered market orders and ill-considered limit orders provide professional arbitrageurs with the opportunities that make their business profitable. Chapter 8 offers some suggestions that will help ETF investors avoid being on the wrong end of trades. An important lesson that should come out of any short-selling discussion is that the presence of short sellers is an important element in making the arbitrage pricing mechanism work effectively. Because they furnish liquidity as they exploit and eliminate temporary price anomalies, short sellers are some of an ETF investor or trader's best friends.⁶

The Short Side of 130/30 Investing for the Conservative Portfolio Manager

Many long-only investors and investment managers have watched the financial industry's enthusiasm for what are formally called "enhanced long strategies" or "constrained long-short portfolios" with a mixture of interest and concern. The most common label for these portfolios, "130/30,"

⁶See Sloan (2009) for a comprehensive and reasonably balanced discussion of the effects of short selling.

anticipates that the portfolio manager's investment process will select long positions equal to 130 percent of the nominal capital invested and offsetting short positions equal to 30 percent of that nominal capital for a net market exposure of 100 percent. It is convenient to use 130/30 as a shorthand label for various implementations of this investment method. These portfolios did not do particularly well in the difficult market of 2008, but they still interest many investors and fund managers.

The major premise behind 130/30 and its "cousins"—from 120/20 to 200/100—is that most institutional investment processes evaluate a broad range of investment opportunities. If client portfolios are limited to long positions, any negative information that the manager accumulates is used only to exclude unattractive positions from portfolios. Consequently, clients do not get the full benefit of the manager's entire research effort because the long-only manager cannot take a short position.

The theoretical grounding for 130/30 portfolios and calculations describing how the underlying investment process can add value by leveraging selected long positions and using information now "wasted" to select short positions is well developed in a number of articles and books.⁷ Both theoretical models and empirical studies of 130/30 portfolios provide ample support for the notion that this long-short structure can be a better way for many investment managers and their clients to approach equity investment. One paper in particular, Jacobs and Levy (2007a), provides insights on a number of 130/30 issues not addressed here. The basic principles are developed in full mathematical glory in Grinold and Kahn (2000a, 2000b), Jacobs, Levy, and Starer (1999), and Sorensen, Hua, and Qian (2007). The specific purpose of the present discussion is to describe how a conservative portfolio manager with little or no experience in short selling can use the sector evaluations from her firm's investment process to add alpha with short positions in ETFs.

There are a number of reasons an investment manager might use sector ETFs rather than individual stocks as the short components in an initial 130/30 product offered to clients. Some portfolio managers do not welcome the additional flexibility of a 130/30 model because they are not used to evaluating the risks and rewards of the short side of investing. Viscerally, managers may overestimate upside risks or simply be uncomfortable with company-specific upside risks. A long-only manager is used to looking at

⁷See Bernstein (2003, 2004); Clarke, deSilva and Thorley (2002); Ennis (2001); Fabozzi (2004); Grinold and Kahn (2000a, 2000b); Jacobs and Levy (1993, 2006, 2007); Jacobs, Levy, and Markowitz (2006); Jacobs, Levy, and Starer (1999); Magnin, Tuttle, McLeavey, and Pinto (2007) and Sorensen, Hua, and Qian (2007).

cash balances and trade management in ways that may not be fully compatible with an integrated long-short portfolio. Probably the single most important objection likely to be raised to integrated long-short portfolio management is that the manager's investment process information is not organized to support the analysis and risk management of short positions in individual stocks. For example, there may be no buyback discipline for short positions comparable to the firm's sell discipline for long positions.

These are all valid concerns for some managers, but it is possible for an investment organization to approach short selling and 130/30 portfolios in an incremental way, even if a firm has not organized the collection and integration of negative company information into its security selection and risk management systems. Most large investment organizations have well-developed policies on the relative attractiveness of various market segments, including large-cap versus small-cap, value versus growth, and, most significantly for present purposes, the relative attractiveness of various market sectors.

Exhibit 9.1 shows the range of typical performance differences that can be achieved in some common ways of segmenting active management choices.

As intuition suggests, the graph indicates that successful individual stock selection has the greatest potential to add value, but the difference in performance among various domestic sectors is a relatively close second to the difference in performance among individual stocks. When the dispersion in sector performances is combined with some advantages of using

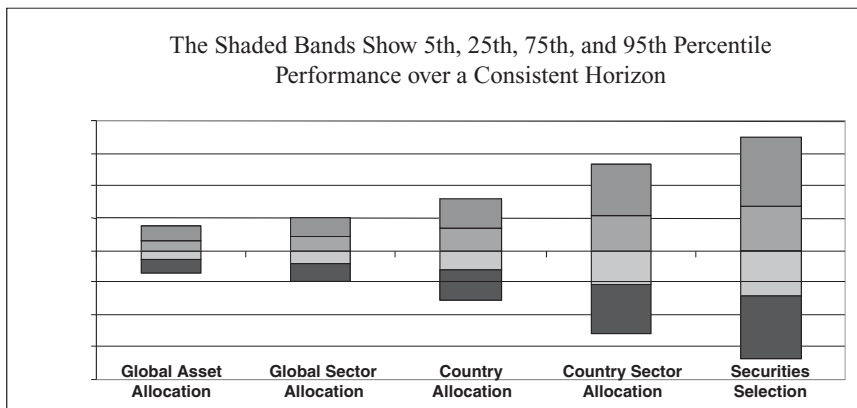


EXHIBIT 9.1 Comparative Performance Volatility

Source: Mark Kritzman and Sebastien Page, "The Hierarchy of Investment Choice," *The Journal of Portfolio Management* 29/4, Summer 2003, pp. 11–23.

exchange-traded funds to implement short sector positions, the use of sector ETFs to establish the short side of a 130/30 position can be a compelling choice for investment managers unprepared for fully integrated long-short stock portfolios. Some sector ETFs are easy to trade, easy to borrow, and easy to integrate as the short side of a long-short portfolio.

At least one ETF in each of a number of U.S. domestic sectors offers opportunities for efficient implementation of short positions without concern for some of the issues often raised in connection with short selling. When you consider the sector ETF short selling approach to 130/30 portfolios you should keep a few things in mind:

1. For institutional size accounts, borrowing sector ETF shares to sell short is simple, and low in cost.
2. The possibility of either a short squeeze or a significant increase in securities borrowing costs is very small.
3. The dispersion of returns for the selected active management choices illustrated in Exhibit 9.1 reflects the opportunity set available to an active manager. Domestic sector selection provides return dispersion closer to individual security selection than the other active management choices.
4. Some small companies with doubtful operating records and prospects have objected volubly that short sellers are “attacking” their stocks. The managements of these companies have created ongoing distractions for fund managers that have shorted their stocks.⁸ In the second half of 2008 a number of large financial company CEOs called for and obtained a temporary ban on short selling in their stocks. If the manager’s short position is in an exchange-traded fund, there is no link between the short position and a specific company’s stock. While the managers of ETFs are sometimes ambivalent about short sellers, they like the active trading that the sales and repurchases of short sellers generate and they recognize that active trading and tight trading spreads make their funds more attractive to long investors.

For investors intrigued by this opportunity I refer them to Gastineau (2007) which examines the available sector ETFs and concludes that the Sector SPDRs are usually the appropriate choice for this kind of short selling operation because of their liquidity, ease of borrowing, and standardization relative to the work of financial analysts and the baskets traded by portfolio trading desks.

⁸See McLean and Hajim (2005).

A detailed plan for implementing a 130/30 program with sector ETFs as the short side and other short selling applications are outside the scope of this chapter, but a few comments are appropriate. Depending largely on the custody options open to a specific institutional portfolio, either a prime brokerage account or a traditional margin account will be used. The principal operating advantage of selling sector ETFs short is the ease and low cost of borrowing the necessary ETF shares. It is time to examine the share borrowing process.

Borrowing ETF Shares

ETF shares are easy to borrow—if you want to borrow enough of them. One of the greatest misunderstandings in ETF short selling is the belief that ETF shares are difficult to borrow. It is true that a small investor who wants to sell short a few hundred or a few thousand shares of an ETF will frequently be told by a broker that the shares are hard to borrow. It is also true that if a large investor asks about borrowing 100,000 ETF shares, the answer will nearly always be that the shares are available for prompt delivery against a short sale. . . . What is going on here?

The answer is simple. Securities borrowing and lending is a labor-intensive process by securities industry standards, and a small stock loan transaction is not worth a broker's effort. However, exchange-traded fund shares can be created in nearly unlimited quantities. Market makers in ETFs will readily create shares in most ETFs for the express purpose of lending the shares. If shares must be created to lend, the cost of borrowing them will be slightly greater than the general collateral rate that would apply to the loan of an S&P 500 component stock. Any added cost to borrow shares in an ETF will be a function of the effect of the fund expense ratio on the securities lender's costs. Rates may vary, depending on the natural availability of shares to lend in a specific ETF. Even with the effect of the expense ratio, if shares must be created to lend, ETF shares are neither hard nor expensive to borrow. As noted earlier, at times when interest rates are low, the interest earned on the use of proceeds from the short sale can have at least a psychological effect on the perceived cost of borrowing and the value of the proceeds from lending securities.

Large ETF short interests mean that short sellers play important roles in the size of an ETF and in its trading activity. In the past, specialists and other market makers frequently maintained significant inventories of ETF shares to lend to short sellers. Today, most large-scale fund share lending is managed by the portfolio trading desks at a small number of major investment banking firms. These ETF share lenders hedge their positions and obtain fees from

the securities lending operation, making creation of ETF shares for securities lending a consistently profitable business activity.

Some of the ETF share borrowing needs of short sellers can be accommodated by institutional ETF holders, by brokerage firms carrying retail margin accounts, and by other dealers. With or without market makers' ETF lending portfolios, substantial numbers of ETF shares have been made available to short sellers by institutions and by brokerage firms from their retail investor accounts. Broker-dealers, in their roles as market makers and for their own risk management operations, are also substantial holders, lenders, and short sellers of ETF shares. There is little published data quantifying all these participations, but the marginal lender of ETF shares in most actively shorted funds will probably continue to be the portfolio trading desk of a major investment banking firm.

Hedge Fund Replicating ETFs

While some hedge fund replicating ETFs do not replicate long/short funds, they replicate any of a variety of hedge fund strategies. Many hedge fund strategies involve short positions and this is as logical a place in the book as any to address these products. Excellent analytical work by Hasanhodzic and Lo (2007) and Amenc, Martellini, Meyfredi, and Ziemann (2009) has amply demonstrated the facility with which the *pattern* of performance for a variety of hedge fund strategies can be replicated. Moving from the basics of replication to replication in an index ETF product is straightforward. Several such products have been introduced. The problem with these funds is that, whether you favor hedge funds or not, real hedge fund managers seem to be able to produce better returns than the hedge fund replicating strategies typically achieve. Most of the studies of hedge fund replication strategies have reached the conclusion that the replicated portfolios systematically have lower returns. As Amenc, Martellini, Meyfredi, and Ziemann (2009) state in their abstract and demonstrate effectively, "Overall, we confirm the findings in Hasanhodzic and Lo (2007)—the performance of the replicating strategies is systematically inferior to that of the actual hedge funds." The early performance of the first hedge fund replicating ETFs seems to support this finding.

Single Stock Futures (SSF) Contracts

Single stock futures (SSF) contracts can enhance returns for both long and short ETF investors. One of the most interesting financial instruments to be introduced since ETFs are "single stock futures" (SSFs) or, as they are sometimes called, "securities futures products" (SFPs). SSFs are jointly regulated

by the SEC and the Commodity Futures Trading Commission (CFTC) and can be held in either a securities or futures margin account.

One of the reasons that single stock futures on ETFs are not widely used is that a small number of market makers make indifferent markets in a large number of thinly traded ETF SSF contracts. There is little or no effective arbitrage between ETF and ETF SSF markets to narrow the ETF SSF trading spreads. SSF contracts are of limited duration and the ability to exit at a reasonable price can be as important as the ability to take the position on good terms in the first place. Improving the market for single stock futures on ETFs with NAV-based trading should eliminate liquidity problems in this market and increase both retail and institutional participation.

The great opportunity presented by single stock futures on ETFs is that they bring long and short investors together in a way that both parties can be better off than if they executed their transactions directly in ETFs. Improved performance for both sides of the trade is possible because both long and short positions are margined as futures contracts rather than as securities positions, and the costs and complexities of the securities lending process are sidestepped.⁹ The long and short positions in the single stock futures transaction share the economic benefits of avoiding securities lending costs and procedures in the single stock futures market.

The example in Exhibit 9.2 illustrates the contrasting economics of trading in the ETF and in the SSF ETF markets. The top part of the table illustrates a securities market transaction in the ETF where the long buys 1 SPDR share (ticker symbol SPY) at \$110 and sells it 61 days later for \$110, incurring neither a profit nor a loss. The short similarly sells the SPDR share short at \$110 and buys it back at \$110 at the end of the 61-day period. The short seller's broker would have to arrange to borrow shares to sell short, a process with a number of manual steps that is not practical unless the transaction is significantly larger than this one. The broker would be compensated for arranging this securities loan, but typically the retail short seller will neither share in nor contribute to this compensation. For simplicity in these calculations, we have chosen a period without a dividend payment. Introducing the dividend would increase the complexity of the calculation

⁹A full discussion of margin requirements for single stock futures is both beyond the scope of this chapter and unnecessary for present purposes. The margin deposit can be, for example, any of a wide range of securities positions that serve to guarantee the investor's performance. There is no cash variation margin flowing between accounts as prices rise and fall. The collateral deposit can not be used for other purposes while the SSF position is open, but there are no interest charges or credits and no cash flows between the accounts until the SSF position(s) are closed out.

EXHIBIT 9.2 Comparative Economics for Securities and Single Stock Futures ETF Trades

Securities Market Transaction			
Long	Profit (loss)	Short	Profit (loss)
Buy 1 SPY share @ \$110		Sell 1 SPY share short @ \$110	
Sell 1 SPY share @ \$110		Buy 1 SPY share back @ \$110	
	0		0
<i>Note: Both parties lose their commissions and use of their money for 61 days.</i>			
Single Stock Futures Transaction			
Long	Profit (loss)	Short	Profit (loss)
Buy 1 share SSF SPY @ \$110		Sell 1 share SSF SPY @ \$110	
Sell 1 share SSF SPY @ \$109.50	(\$0.50)	Buy 1 share SSF SPY @ \$109.50	\$0.50
Interest on \$110 @ 6% for 61 days	\$1.00		
	\$0.50		\$0.50
<i>Note: Both parties earn a profit before commissions.</i>			

without changing the results. In this simple transaction both parties lose any commissions they paid and they lose the use of their cash for 61 days.

Although a single stock futures contract covers 100 shares of the underlying ETF, let's take an SSF example based on the equivalent of a single share, to keep the calculations as simple as possible. In the case of the single stock futures transaction illustrated in the lower part of the table, we change the price a bit to *illustrate how both parties can earn a profit*. In this case we assume a single share single stock futures contract on the SPDR trades at \$110 at the beginning of the 61-day period. The long investor buys it at \$110 and sells it at \$109.50 at the end of the period for a \$0.50 loss. However, she earns interest on the \$110 in cash that she would otherwise have invested in a SPDR share. At a rate of interest of approximately 6 percent for 61 days, the interest would be about \$1.00, giving her a net profit of about \$0.50 per underlying share before commissions.

The seller, on the other hand, sells a single share single stock futures SPDR contract at \$110. He buys it back 61 days later at \$109.50 for a \$0.50 profit. In this example both parties have earned a profit before commissions.

The reason for the difference in the two outcomes is that *any interest on the proceeds of the short sale in the securities market belongs to the parties handling the securities lending transaction.*

The limited liquidity and wide spreads in today's single stock futures market do not allow investors to use these contracts effectively to avoid the cost and inconvenience of securities lending. If investors could use NAV-based trading in SSF markets, these markets would be a great deal more active and the relative economics of trading and holding ETF positions in securities and single stock futures contracts would change for many market participants.¹⁰

This simple example illustrates an important advantage of the single stock futures market under some circumstances. An NAV-based trading process will make this market an attractive venue for investors who want to take relatively short-term positions in ETFs more efficiently. For more information on Single Stock Futures, see www.onechicago.com.

¹⁰The net asset value objectives of the parties to a SSF transaction would incorporate a basis adjustment reflecting the value of the cash market analog of the SSF contract.

CHAPTER 10

Leveraged Long and Inverse Exchange-Traded Funds

TRADING SARDINES

Once upon a time, during a bull market in an earlier century, the eastern end of Wall Street was close to the southern end of the Fulton Fish Market. Before the fish market moved to the Bronx and before there were any ETFs, it was not unusual for Wall Street workers and workers in the fish market to cross paths, especially during their lunch hours. On one memorable day, a legendary Wall Street stock trader was making his way through the fish market when he came across a scene that would warm the heart of any trader.

A stocky man wearing a rubber apron and boots was standing on the back of a truck selling cases of canned sardines in transactions with a small crowd that had gathered around the truck. The stock trader watched for a few minutes to observe the banter between the sardine trader standing on the truck and the buyers and sellers in the crowd facing him. When the stock trader thought he saw an opportunity he shouted, “Buy three (cases) at (\$105!” A few casual observers stood aside to let him get closer to the action and he began a frenzy of bidding and offering—and trading—in what had become a “crowd” of sardine traders.

By the time his lunch hour was over and he had to return to work on the stock exchange floor, the stock trader had disposed of all the sardines he had purchased—except for a single case—and he had cleared a little over \$5,000. He kept one case of sardines because he thought it might be interesting to have a case of sardines and, frankly, he wanted to see how they tasted.

When he opened one of the sardine cans, the odor was horrific. He threw the can and the rest of the case into a nearby waste container (New York City had strict litter laws even then) and shouted, “These things are terrible. You can’t eat them.” One of the other traders said to him, “Of course you can’t eat them. These are trading sardines, not eating sardines.”

We might draw a number of points from this story, but the one I have in mind is that many users of ETFs argue that, regardless of their popularity, leveraged long and inverse ETFs are strictly trading sardines. A number of writers have argued that leveraged long and inverse ETFs serve no useful purpose for a serious investor, that they are strictly the province of the short-term trader who wants to speculate, perhaps on his lunch hour, or is looking for a way to get leverage in a retirement account that is not permitted to take a leveraged position by buying a traditional ETF on margin.

I will not pound the table and declare that every investor should either use leveraged long and inverse ETFs or avoid them like the plague, but I will argue that anyone who considers using them should understand them thoroughly. These funds can be very useful for a small number of traders who understand how they work and who want something that works this way in their portfolios. These funds can disappoint an investor who does not understand how they perform in different market environments. The principal purpose of this chapter is to help you understand these funds well enough to decide if they have a place in your portfolio.

HOW LEVERAGED LONG AND LEVERAGED INVERSE ETFs CONSTRUCT THEIR PORTFOLIOS

While all families of leveraged long and inverse funds do not operate identically, they are similar enough that we can describe “generic” leveraged long and leveraged short ETFs without seriously misleading any reader. The principal sponsors of these funds use similar structures and processes. When one of them introduces a slight improvement, the others typically learn about it and adopt it. Although all the major leveraged fund families are making increased use of swaps, most U.S. leveraged long equity funds tend to invest 85 to 90 percent of their assets at the end of a trading day in equity securities, typically representative securities from the index the fund is designed to track. These securities and the remaining 10 to 15 percent of the leveraged long fund’s assets serve as collateral for futures contracts or swap agreements designed to deliver the desired leveraged exposure to the index *over the next trading day*.¹

¹Plans to offer leveraged ETFs that will reset monthly rather than daily have been announced, but the monthly reset funds are not yet available. The variable leverage these funds will provide between reset dates makes some aspects of their return behavior and its disclosure more complex than daily reset funds. I would not be surprised if reset periods longer than a day are never offered.

If the fund is a leveraged *inverse* fund or if the fund offers leveraged fixed income or commodity exposure, the securities held by the fund often bear no resemblance to the index portfolio that the fund is designed to track. In some cases, the entire portfolio of a leveraged fund might consist of fixed income instruments serving as collateral for futures positions and/or for swap agreements that provide contractual leveraged long or inverse exposure to the designated index. The portfolio structure of these funds can have tax consequences that may be either very similar or very different from the tax results investors expect from ETFs. We will examine the tax issues these funds raise in a later section.

Return Patterns: The Daily Double or Triple

It is important that any user of these funds understand exactly what return pattern the fund is undertaking to multiply by two or three times. Specifically, a two to one leveraged long fund will be designed to provide as close as possible to twice the return of the benchmark index on *each trading day*. In other words, if a two times long fund tracks the S&P 500, the fund should deliver very close to twice each day's return on the S&P 500 index before any adjustment for expenses, dividends, and so forth.

Any creation or redemption orders are received by 3:00 P.M. Between 3:00 P.M. and 4:00 P.M., the end-of-day portfolio adjustment process sets the "portfolio" up to deliver the designated leveraged return *for the next trading day*. The end-of-day adjustments consist largely of resetting the terms of swap contracts and/or adjusting futures positions to reflect the share value at the close and the desired leverage on *tomorrow's* index performance. Inverse leveraged funds will be set to capture the appropriate daily multiple of the inverse of the index percentage change.

Implicit borrowing costs associated with carrying a leveraged long position or the availability of a return on cash generated from a short or constructive short position are usually more favorable for these funds than the terms an individual investor could obtain with a traditional long or short ETF position leveraged in a margin account. Unstated costs associated with daily changes in the portfolio's leveraged long or short exposure are reflected in the performance of the fund, but the costs of taking and maintaining these leveraged market exposures may have a smaller daily effect on the leveraged fund's returns over a short time period than the costs a typical investor would have in holding a leveraged long or short ETF position in a margin account.

The most important unusual feature of these funds is that, if an investor holds these funds for more than a few days or in a fluctuating market, a meaningful comparison between the returns on these funds and a

conventional leveraged position will be very complex. This feature leads to unusual return patterns and it has generated a great deal of criticism and confusion. The best analysis of comparative return patterns on these funds with more traditional fund return patterns is in Trainor and Baryla (2008), but their analysis is necessarily probabilistic. There is no simple link between the returns of these ETFs and returns on an index ETF position that is unleveraged or that is leveraged in a margin account.

It is important that investors using leveraged ETFs understand the absence of simple comparability between these ETFs and a margin account as a way to leverage an ETF position. As indicated above, leveraged long and inverse ETFs are often used by investors who want to take a leveraged long or short position in an account that is not permitted to use margin, such as a 401(k) or an IRA. Those accounts cannot use traditional margin borrowing because the possible loss on a margined position might exceed the equity in the account. The loss on an ETF that is leveraged internally cannot exceed the investment in the ETF, so the funds can be used in accounts that cannot carry a debit balance and cannot be exposed to a loss exceeding the investment made in the shares. Personal retirement accounts have few, if any, alternatives to the leveraged long and inverse ETFs as a way to take a leveraged position.² An investor using leveraged ETFs should understand how the limitation on any loss changes the day-by-day return pattern for these funds and how the multiday return pattern responds to different market return patterns. Ultimately, the investor must consider whether the return pattern is acceptable.

The Mechanics of Compounding Leveraged Daily Returns

The prospectuses and statements of additional information (SAIs) from each daily reset leveraged ETF family take similar approaches to explaining the impact of daily leveraged returns compounded over time. (The examples invariably cover one year.) These disclosure documents are accurate and they explain why a sequence of doubled or tripled daily long or short returns will not deliver the same result as doubling or tripling the reported return for a period longer than a single day. These explanations are as good as anyone could make them in documents that must meet complex legal and regulatory standards. The explanations may not be important or necessary in a quiet market environment, but they are essential if the index or instrument

²There are mutual funds with similar investment strategies, but ETFs increasingly dominate this market.

underlying the fund displays much return volatility. Since volatility can come at any time, every user of these funds should understand its impact.

There is plenty of evidence that investors rarely read prospectuses. Leveraged ETFs are one product family where most investors and any advisor using these funds in client accounts should read both the prospectus and the statement of additional information (SAI) with care. Tables and explanations now provided in both the leveraged funds' prospectuses and SAIs illustrate the combined effects of (1) daily leverage resets and (2) volatility in the day-by-day returns one of these funds will deliver. The SAI examples and tables are generally more comprehensive than and at least as easy to understand as the prospectus tables. Examples of the compound returns one year table data from an SAI are included as Exhibits 10.1 and 10.2.

The returns in the tables are before expenses (including financing costs, net of credits) and dividends. Differences in precision in calculating the data in the tables offered by each fund issuer and the usual legal disclaimers suggest that the tables should be regarded only as a frame of reference. Nonetheless, the tables do a very fair job of showing what to expect after one year under the cumulative index return and return volatility assumptions covered in the tables. In using these tables don't forget that when you invest in one of these funds, you don't know what the index return will be, you don't know how volatile (variable) daily index returns will be, and you are not likely to hold the position for precisely a year. Even with these uncertainties, the tables will help you answer the question "What if ... ?" for a useful subset of the possible outcomes.

Examine each chart to see the return and volatility combinations where the fund return will *outperform* the nominal multiple times the index return. You will see that, as volatility increases toward and beyond the right side of the chart, the return range where the fund results will be better than double the index return is smaller and the wedge where the returns will be worse grows larger. Most dramatically, if the net return for the year on the underlying index is small and the volatility is high because the index has been bouncing around while going nowhere, you will lose more and more money as the volatility goes higher. If you are using a leveraged long or leveraged inverse ETF, you have an obligation to yourself and to your heirs to read and understand the disclosure documents provided by the issuer of the fund. The discussion of return patterns later in the chapter should also be helpful.

The important point emphasized in all of the prospectus and SAI explanations and in the better-leveraged ETF performance discussions in numerous articles written about these funds is that *when an index value is not moving consistently in one direction, the cumulative return of these funds over time will tend to fall below the nominal multiple of the index return.*

One Year Index Performance	200% One Year Index Performance	Index Volatility												
		0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%
-60%	-120%	-84.0%	-84.0%	-84.2%	-84.4%	-84.6%	-85.0%	-85.4%	-85.8%	-86.4%	-86.9%	-87.5%	-88.2%	-88.8%
-55%	-110%	-79.8%	-79.8%	-80.0%	-80.2%	-80.5%	-81.0%	-81.5%	-82.1%	-82.7%	-83.5%	-84.2%	-85.0%	-85.9%
-50%	-100%	-75.0%	-75.1%	-75.2%	-75.6%	-76.0%	-76.5%	-77.2%	-77.9%	-78.7%	-79.6%	-80.5%	-81.5%	-82.6%
-45%	-90%	-69.8%	-69.8%	-70.1%	-70.4%	-70.9%	-71.6%	-72.4%	-73.2%	-74.2%	-75.3%	-76.4%	-77.6%	-78.9%
-40%	-80%	-64.0%	-64.1%	-64.4%	-64.8%	-65.4%	-66.2%	-67.1%	-68.2%	-69.3%	-70.6%	-72.0%	-73.4%	-74.9%
-35%	-70%	-57.8%	-57.9%	-58.2%	-58.7%	-59.4%	-60.3%	-61.4%	-62.6%	-64.0%	-65.5%	-67.1%	-68.8%	-70.5%
-30%	-60%	-51.0%	-51.1%	-51.5%	-52.1%	-52.9%	-54.0%	-55.2%	-56.6%	-58.2%	-60.0%	-61.8%	-63.8%	-65.8%
-25%	-50%	-43.8%	-43.9%	-44.3%	-45.0%	-46.0%	-47.2%	-48.6%	-50.2%	-52.1%	-54.1%	-56.2%	-58.4%	-60.8%
-20%	-40%	-36.0%	-36.2%	-36.6%	-37.4%	-38.5%	-39.9%	-41.5%	-43.4%	-45.5%	-47.7%	-50.2%	-52.7%	-55.3%
-15%	-30%	-27.8%	-27.9%	-28.5%	-29.4%	-30.6%	-32.1%	-34.0%	-36.1%	-38.4%	-41.0%	-43.7%	-46.6%	-49.6%
-10%	-20%	-19.0%	-19.2%	-19.8%	-20.8%	-22.2%	-23.9%	-26.0%	-28.3%	-31.0%	-33.8%	-36.9%	-40.1%	-43.5%
-5%	-10%	-9.8%	-10.0%	-10.6%	-11.8%	-13.3%	-15.2%	-17.5%	-20.2%	-23.1%	-26.3%	-29.7%	-33.3%	-37.0%
0%	0%	0.0%	-0.2%	-1.0%	-2.2%	-3.9%	-6.1%	-8.6%	-11.5%	-14.8%	-18.3%	-22.1%	-26.1%	-30.2%
5%	10%	10.3%	10.0%	9.2%	7.8%	5.9%	3.6%	0.8%	-2.5%	-6.1%	-10.0%	-14.1%	-18.5%	-23.1%
10%	20%	21.0%	20.7%	19.8%	18.3%	16.3%	13.7%	10.6%	7.0%	3.1%	-1.2%	-5.8%	-10.6%	-15.6%
15%	30%	32.3%	31.9%	30.9%	29.3%	27.1%	24.2%	20.9%	17.0%	12.7%	8.0%	3.0%	-2.3%	-7.7%
20%	40%	44.0%	43.6%	42.6%	40.8%	38.4%	35.3%	31.6%	27.4%	22.7%	17.6%	12.1%	6.4%	0.5%
25%	50%	56.3%	55.9%	54.7%	52.8%	50.1%	46.8%	42.8%	38.2%	33.1%	27.6%	21.7%	15.5%	9.0%
30%	60%	69.0%	68.6%	67.3%	65.2%	62.4%	58.8%	54.5%	49.5%	44.0%	38.0%	31.6%	24.9%	17.9%
35%	70%	82.3%	81.8%	80.4%	78.2%	75.1%	71.2%	66.6%	61.2%	55.3%	48.8%	41.9%	34.7%	27.2%
40%	80%	96.0%	95.5%	94.0%	91.6%	88.3%	84.1%	79.1%	73.4%	67.0%	60.1%	52.6%	44.8%	36.7%
45%	90%	110.3%	109.7%	108.2%	105.6%	102.0%	97.5%	92.2%	86.0%	79.2%	71.7%	63.7%	55.4%	46.7%
50%	100%	125.0%	124.4%	122.8%	120.0%	116.2%	111.4%	105.6%	99.1%	91.7%	83.8%	75.2%	66.3%	57.0%
55%	110%	140.3%	139.7%	137.9%	134.9%	130.8%	125.7%	119.6%	112.6%	104.7%	96.2%	87.1%	77.5%	67.6%
60%	120%	156.0%	155.4%	153.5%	150.3%	146.0%	140.5%	134.0%	126.5%	118.1%	109.1%	99.4%	89.2%	78.6%

EXHIBIT 10.1 Estimated Fund Return over One Year when the Fund Objective Is to Seek Daily Investment Results before Fees, Expenses, and Leverage Costs That Correspond to 200 Percent of the Daily Performance of an Index

Source: ProShares.

One Year Index Performance	200% Inverse of One Year Index	Index Volatility												
		0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%
-60%	120%	525.0%	520.3%	506.5%	484.2%	454.3%	418.1%	377.1%	332.8%	286.7%	240.4%	195.2%	152.2%	112.2%
-55%	110%	393.8%	390.1%	379.2%	361.6%	338.0%	309.4%	277.0%	242.0%	205.6%	169.0%	133.3%	99.3%	67.7%
-50%	100%	300.0%	297.0%	288.2%	273.9%	254.8%	231.6%	205.4%	177.0%	147.5%	117.9%	88.9%	61.4%	35.8%
-45%	90%	230.6%	228.1%	220.8%	209.0%	193.2%	174.1%	152.4%	128.9%	104.6%	80.1%	56.2%	33.4%	12.3%
-40%	80%	177.8%	175.7%	169.6%	159.6%	146.4%	130.3%	112.0%	92.4%	71.9%	51.3%	31.2%	12.1%	-5.7%
-35%	70%	136.7%	134.9%	129.7%	121.2%	109.9%	96.2%	80.7%	63.9%	46.5%	28.9%	11.8%	-4.5%	-19.6%
-30%	60%	104.1%	102.6%	98.1%	90.8%	81.0%	69.2%	55.8%	41.3%	26.3%	11.2%	-3.6%	-17.6%	-30.7%
-25%	50%	77.8%	76.4%	72.5%	66.2%	57.7%	47.4%	35.7%	23.1%	10.0%	-3.2%	-16.0%	-28.3%	-39.6%
-20%	40%	56.3%	55.1%	51.6%	46.1%	38.6%	29.5%	19.3%	8.2%	-3.3%	-14.9%	-26.2%	-36.9%	-46.9%
-15%	30%	38.4%	37.4%	34.3%	29.4%	22.8%	14.7%	5.7%	-4.2%	-14.4%	-24.6%	-34.6%	-44.1%	-53.0%
-10%	20%	23.5%	22.5%	19.8%	15.4%	9.5%	2.3%	-5.8%	-14.5%	-23.6%	-32.8%	-41.7%	-50.2%	-58.1%
-5%	10%	10.8%	10.0%	7.5%	3.6%	-1.7%	-8.1%	-15.4%	-23.3%	-31.4%	-39.6%	-47.7%	-55.3%	-62.4%
0%	0%	0.0%	-0.7%	-3.0%	-6.5%	-11.3%	-17.1%	-23.7%	-30.8%	-38.1%	-45.5%	-52.8%	-59.6%	-66.0%
5%	-10%	-9.3%	-10.0%	-12.0%	-15.2%	-19.6%	-24.8%	-30.8%	-37.2%	-43.9%	-50.6%	-57.2%	-63.4%	-69.2%
10%	-20%	-17.4%	-18.0%	-19.8%	-22.7%	-26.7%	-31.5%	-36.9%	-42.8%	-48.9%	-55.0%	-61.0%	-66.7%	-71.9%
15%	-30%	-24.4%	-25.0%	-26.6%	-29.3%	-32.9%	-37.3%	-42.3%	-47.6%	-53.2%	-58.8%	-64.3%	-69.5%	-74.3%
20%	-40%	-30.6%	-31.1%	-32.6%	-35.1%	-38.4%	-42.4%	-47.0%	-51.9%	-57.0%	-62.2%	-67.2%	-72.0%	-76.4%
25%	-50%	-36.0%	-36.5%	-37.9%	-40.2%	-43.2%	-46.9%	-51.1%	-55.7%	-60.4%	-65.1%	-69.8%	-74.2%	-78.3%
30%	-60%	-40.8%	-41.3%	-42.6%	-44.7%	-47.5%	-50.9%	-54.8%	-59.0%	-63.4%	-67.8%	-72.0%	-76.1%	-79.9%
35%	-70%	-45.1%	-45.5%	-46.8%	-48.7%	-51.3%	-54.5%	-58.1%	-62.0%	-66.0%	-70.1%	-74.1%	-77.9%	-81.4%
40%	-80%	-49.0%	-49.4%	-50.5%	-52.3%	-54.7%	-57.7%	-61.1%	-64.7%	-68.4%	-72.2%	-75.9%	-79.4%	-82.7%
45%	-90%	-52.4%	-52.8%	-53.8%	-55.5%	-57.8%	-60.6%	-63.7%	-67.1%	-70.6%	-74.1%	-77.5%	-80.8%	-83.8%
50%	-100%	-55.6%	-55.9%	-56.9%	-58.5%	-60.6%	-63.2%	-66.1%	-69.2%	-72.5%	-75.8%	-79.0%	-82.1%	-84.9%
55%	-110%	-58.4%	-58.7%	-59.6%	-61.1%	-63.1%	-65.5%	-68.2%	-71.2%	-74.2%	-77.3%	-80.3%	-83.2%	-85.9%
60%	-120%	-60.9%	-61.2%	-62.1%	-63.5%	-65.4%	-67.6%	-70.2%	-73.0%	-75.8%	-78.7%	-81.5%	-84.2%	-86.7%

EXHIBIT 10.2 Estimated Fund Return over One Year when the Fund Objective Is to Seek Daily Investment Results before Fees, Expenses, and Leverage Costs That Correspond to 200 Percent of the Inverse of the Daily Performance of an Index

Source: ProShares.

Leverage will work increasingly in your favor as the value of the fund moves up consistently day after day, but, when returns alternate between up and down, the fact that you have a percentage decline from a higher value followed by a similar percentage gain from a lower value will gradually erode your equity. An additional return characteristic of an alternating up-and-down return pattern is that larger fluctuations (higher volatility) in daily index returns will reduce your cumulative return more than small fluctuations (lower volatility). Also, keep in mind when using the tables each issuer provides that the tables express the relationship between returns and volatility over a period of a year. Translating this relationship to a different time period is not necessarily intuitive, but higher volatility over shorter periods than the assumption in the tables has been the cause of most of the criticism of these funds. High volatility has made it necessary for some of these funds to implement reverse splits to bring the prices of their “penny shares” up to a viable trading range.

In a number of cases where short-term underlying return patterns have been extraordinarily volatile, the results of investing in these funds have surprised investors. For example, a leveraged short fund that was designed to provide a *positive* return of two times the daily *decline* in a Chinese index actually experienced a loss when the Chinese index declined substantially—but with extraordinary volatility—during 2008. Specifically, Hougan (2009) reported that for 2008 the index used by the ProShares Ultra Short FTSE/Xinhua China 25 Fund (FXP) declined by 49.35 percent. If a linear 200 percent inverse return had been achieved in this fund, its shareholders would have had a positive return for the year of 98.70 percent. Apparently, extreme fluctuations in the index during the year led to a negative return of 53.61 percent for the fund. This suggests a level of return volatility off the right-hand side of the $2\times$ inverse table. There might have been other factors in addition to extraordinary volatility that contributed to this result.

While returns with an appropriate sign but below the nominal return multiple times the cumulative index return are the most common outcome in typical market environments, a position held for a short period in a market that is rising or falling *consistently day after day* can deliver more than the expected leverage. A leveraged inverse fund, the Direxion Large Cap Bear $3\times$ (BGZ) based on the Russell 1000, delivered substantially *more* than three times the leveraged return its name implied because the daily index returns were consistently and strongly negative over a period of several weeks. Zweig (2009) reported that from November 4 through November 20, 2008, the Russell 1000 Index lost 25.6 percent while the Direxion Large Cap Bear $3\times$ went up 109.2 percent, more than four times as much as the Russell Index went down.

Investors should consider these and other examples from an appropriate perspective. Writers commenting on leveraged long and inverse ETFs seem to compete to find examples of unexpected results. Circumstances more typical of market history than the markets of 2008 would find leveraged long and inverse ETFs delivering cumulative returns closer to the two or three times multiple the name of the fund implies. Hougan (2009) and Hill and Foster (2009) do an excellent job of looking at these funds' return patterns in a variety of environments. The important thing to learn from the extreme cases and from tables like Exhibits 10.1 and 10.2 is why the performance results may not be what you expect. These examples will help you understand how to modify your expectations as market events unfold.

In addition to the explanations in the fund prospectuses and SAIs, a number of financial writers have taken their own cuts at explaining why the return on a two times leveraged fund is often significantly less than twice the gain or loss in the relevant index over a period longer than a day. Most of these explanations begin by trying to explain how compounding a daily return that changes in a leveraged way and to a varying degree over a number of days or weeks does not bear a simple relationship to doubling the cumulative return on an unleveraged index portfolio over the same period. Most of these illustrations of the effect of compounding leveraged returns in moderately volatile markets correctly indicate that the most common experience investors will obtain with leveraged long and short ETFs is a multiplier of the return over a period longer than a day that is less than the two or three times suggested by the fund's name. Warnings that the results can be even worse in a volatile market are standard. That is exactly the message of the text and the tables in each fund's prospectus and/or SAI.

Ordinarily, the daily return actually delivered to an investor who purchases these fund shares at net asset value (at the close) on one day and sells them at net asset value (at the close) on the following day will closely match the multiplier times that day's return on the index. For a one-day return when there is a 1 percent or greater change in the index, all of these funds do a highly credible job of providing a daily double or triple return before expenses.³

Because the fund structures are so similar, a single explanation should suffice reasonably well for all of the funds. In my experience, however, various investors understand different explanations more or less readily. Readers of this chapter should look at the prospectuses and SAIs and at articles by various analysts and pundits who approach the cumulative

³See Mazzilli, Maister, Schorr, and Perlman (2007).

performance issue from different perspectives.⁴ I am not going to repeat the analyses from these articles, but I am going to provide what I think may be a useful perspective for some potential users of these funds that is different than anything else I have seen in print. I do not suggest that everyone will necessarily find this to be a more comprehensive or lucid explanation than others have offered, but you can judge the value of the next two sections by their effect on your own understanding of how these funds perform.

IS IT USEFUL TO DESCRIBE LEVERAGED FUND RETURNS AS PATH DEPENDENT?

Several of the articles written on the failure of leveraged long and leveraged inverse ETFs to deliver returns equal to twice or three times the target index performance over a period longer than one day, describe the returns of these funds as *path dependent*. Path dependency is defined broadly in academic financial analysis as “a situation where the terminal value of an option or a dynamic hedging strategy depends on the particular path of the underlying risky asset’s price changes.”⁵ By contrast a path *independent* strategy’s terminal value depends only on the terminal value of the underlying risky asset. In finance, path dependency is used most commonly in the analysis and evaluation of certain kinds of options. While path dependency might describe what happens in these leveraged long and leveraged inverse ETFs over a period longer than a day, I do not think it is useful to think primarily in terms of the path the index return follows. We will see some return patterns shortly which indicate that you can get to the same result with these funds following a variety of very different paths. More to the point, the most useful way to understand the circumstances when leveraged funds will deliver unusual results is to think in terms of average return and volatility. Obviously, if the return on the underlying index goes in the wrong direction, you will lose money at a leveraged rate. More subtly, and more to the point, if volatility (in simple terms, the size and frequency of alternating up and down moves) is high, the leverage will hurt you more on the days you lose money than it will help you on the days your return is positive.

⁴Some additional articles worth examination include: Bell (2009), Cheng and Madhavan (2009), Eidelman (2009), Gerstein (2009), Horizon Asset Management (2009), Maister, Schorr, and Perlman (2009), O’Neill (2009), Penn (2009), and Cheng and Madhavan (2009).

⁵See Gastineau and Kritzman (1999), p. 232.

The tables in the funds' prospectuses and SAI's illustrate how the cumulative returns on the funds are dependent on the cumulative return of the underlying *and on the volatility of the return*. Focusing on the path is less useful than simply appraising the effect of the level of volatility/uncertainty in the market. The tables only show volatility levels up to 60 percent annually. This is very high volatility, and a 60 percent rate is unlikely to be matched in very many years. However, volatility over a period of a few weeks can be much higher than a 60 percent annual rate. Volatility for many of the indexes used by these funds was at a much higher annual rate than 60 percent for short periods a number of times during 2008. The volatility measure incorporates the effect of the cumulative leveraged return patterns. If volatility is even briefly "off the chart," it can consume much of the value of your leveraged fund share, unless the daily returns are nearly all in a favorable direction. If you keep in mind that leverage increases *after* the underlying index has moved in a favorable direction and leverage declines *after* the underlying has moved in an adverse direction, you will not be surprised by the adverse effect of a sequence of large up and down movements on the value of your leveraged shares. Tables like Exhibits 10.1 and 10.2 capture this effect better than any notion of path dependency.

LEVERAGED FUND RETURN PATTERNS

Exhibit 10.3 illustrates with some specific examples that the problem is not the specific path but how return volatility affects the way that the sequence of returns interacts. Exhibit 10.3 looks at the interaction of returns on some similar and some different paths.

In Exhibit 10.3, the initial investment on each path is \$100.00. That \$100.00 is subject to changes described in the Return Pattern column and calculated in numbered columns 1 to 6. We use the designation "path" for each row, not to endorse thinking in terms of path dependency but because some very different paths take us to the same value outcome. The returns in the return pattern column are the period fund returns for the leveraged fund, not the underlying index returns. The result of the calculation will generate an average return over six periods for each path. The average return is listed in the right-hand column of the table. The purpose of this exercise is to illustrate with a small number of related examples how compounding and return volatility determine multiperiod investment results in a daily reset leveraged ETF.

In paths 1 and 2 we examine the effect of a simple up 10 percent, down 10 percent fund return pattern. In path 1 the \$100.00 investment goes up

EXHIBIT 10.3 Some Effects of Daily Return Volatility on Cumulative Return

Path	Initial Investment	Return Pattern	1	2	3	4	5	6	Average Return
1	\$100.00	Up 10%, down 10%	\$110.00	\$ 99.00	\$108.90	\$ 98.01	\$107.81	\$ 97.03	-0.50%
2	\$100.00	Down 10%, up 10%	\$ 90.00	\$ 99.00	\$ 89.10	\$ 98.01	\$ 88.21	\$ 97.03	-0.50%
3	\$100.00	Up 10% 3×, down 10% 3×	\$110.00	\$121.00	\$133.10	\$119.79	\$107.81	\$ 97.03	-0.50%
4	\$100.00	Down 10% 3×, up 10% 3×	\$ 90.00	\$ 81.00	\$ 72.90	\$ 80.19	\$ 88.21	\$ 97.03	-0.50%
5	\$100.00	Up 15%, down 15%	\$115.00	\$ 97.75	\$112.41	\$ 95.55	\$109.88	\$ 93.40	-1.10%
6	\$100.00	Down 15%, up 15%	\$ 85.00	\$ 97.75	\$ 83.09	\$ 95.55	\$ 81.22	\$ 93.40	-1.10%
7	\$100.00	Up 10% each day	\$110.00	\$121.00	\$133.10	\$146.41	\$161.05	\$177.16	12.86%
8	\$100.00	Down 10% each day	\$ 90.00	\$ 81.00	\$ 72.90	\$ 65.61	\$ 59.05	\$ 53.14	-7.81%
9	\$100.00	Up 15% each day	\$115.00	\$132.25	\$152.09	\$174.90	\$201.14	\$231.31	21.88%
10	\$100.00	Down 15% each day	\$ 85.00	\$ 72.25	\$ 61.41	\$ 52.20	\$ 44.37	\$ 37.71	-10.38%

10 percent in the first period, that is, on the first day after purchase of one of these daily reset leveraged or inverse funds at its end-of-day net asset value.⁶ In the second period the fund is down 10 percent and its value drops to \$99.00. In the third period it rises to \$108.90, in the fourth period it drops to \$98.01, and so on until at the end of the sixth period the \$100.00 starting value has declined to \$97.03 for an average return per period of -0.50 percent. In path 2 the 10 percent decline in the first period is followed by a 10 percent advance in the second period. Note for paths 1 and 2 that columns 2, 4, and 6 (the periods when an up 10 percent is followed by a down 10 percent, or a down 10 percent by an up 10 percent) have values for the portfolio that are identical. Furthermore, while these paths are different, the percentage changes and volatilities are identical and the cumulative returns are the same at the end of the even-numbered periods. The terminal values and the average returns are also the same.

Paths 3 and 4 illustrate further the independence of the order in which the returns occur so long as the volatility is identical. In path 3 the value is up 10 percent three times and then down 10 percent three times. In path 4 it is down 10 percent three times followed by up 10 percent three times. Here, as in the cases of paths 1 and 2, the terminal values are identical, at 97.03, and the average return is still -.50 percent. Again, what we see in these examples is that the path is unimportant as long as the returns and volatilities are identical. We also see that the compounding effect drags down the higher values more than it builds up the lower values. The value at the end of the period is lower and the average return is -0.50 percent per period in each case.

Paths 5 and 6 are similar to paths 1 and 2 except that the average return that is compounded is up 15 percent and down 15 percent, rather than the 10 percent of paths 1 through 4. In this case the greater variability of the returns leads to a lower value at the end of the period (\$93.40) and an average decline per period of -1.1 percent. This is consistent with the pattern of the tables published by the funds that show a lower cumulative return when volatility is higher.

In paths 7 and 8 we see the effect of a consistent return, period after period. In path 7 the return is up 10 percent each day from period 1 through period 6. This gives us a terminal value in path 7 of \$177.16, or an average return for each period of 12.86 percent. The average arithmetic return of 10 percent has been multiplied by a steadily compounding prior period value

⁶The assumption of purchase and sale at net asset value should usually reflect the average transaction, but in all events it reflects the fund return and the return of any transaction based on a creation and redemption.

and, with compounding, we get a higher average return than the arithmetic return. In path 8 where the return is consistently down 10 percent each day, the loss is a lower absolute return than the gain provides because the decline is being calculated on a lower value each day. The average period return is -7.81 percent. In path 9 we have an increase of 15 percent each day, which leads to a terminal value of \$231.31 and an average period return of 21.88 percent, substantially greater than the 15 percent arithmetic return because of the effect of compounding. In path 10 the arithmetic decline of 15 percent each day gives us an average period decline of -10.8 percent, compared to the -7.81 percent average period decline of path 8.

There are a number of items of significance in this table and each reader will view it from a personal perspective. It should be clear to every reader that the maximum return is achieved by an investor who succeeds in purchasing one of these funds at the beginning of a series of consistent daily moves in the direction that gives the desired payoff. In other words, if a leveraged long fund is purchased at the beginning of a period of consistent daily increases in the value of the index or a leveraged short fund is purchased at the beginning of a period of consistent daily declines in the index, the growing leverage of the position will benefit the investor and values will compound at a rate greater than the nominal two or three times the index return. If a series of large moves in one direction is offset by comparable moves in the other direction while an investor holds the shares, the greater the magnitude of the offsetting moves (volatility), the greater the drag on the cumulative return. The best example is a comparison of the up and down 10 percent pattern in path 1 to the up and down 15 percent pattern in path 5. The more variable path (path 5) delivers a lower terminal value. However, if a leveraged long position is purchased before a period of consistent up moves in the value of the fund (paths 7 and 9) the leverage will work more strongly for the investor than the nominal leverage of the fund suggests.

If it was not clear before the exercises in Exhibit 10.3, it should be clear now that there is no simple way to compare leveraged long and inverse ETFs with a conventional margined long or short position in an index fund that is not rebalanced daily, as the leveraged funds are.

Apart from the different leverage the funds provide with different return patterns, leveraged long and leveraged inverse fund returns are affected by operating expenses, financing costs, credits, and dividends in a different way from positions leveraged in a margin account. The expense ratios of the leveraged funds are higher than the expense ratios of plain vanilla unleveraged long or inverse index funds. Trading and hedging expenses in the leveraged fund and the net effect of financing costs and credits and dividends will usually be more a function of return volatility than any other single variable.

In general, the more volatile the market and the more extensive the daily adjustments in the fund's leveraged position in futures or swaps, the greater the drag on performance from expenses is likely to be. However, the magnitude of any drag from expenses is unlikely to approach the drag from frequent reversals of market direction from day to day. The fact that the leveraged fund's intermediate or long-term performance is likely to lag the performance of a simple leveraged long or leveraged short position financed by margin borrowing does not mean that leveraged funds are not useful. An investor who wants to take a leveraged long or short position in an account that is not permitted to borrow on margin, such as a 401(k) or an IRA will probably find these daily reset leveraged and inverse funds to be his best choice.

TAXATION AND DISTRIBUTIONS FROM LEVERAGED ETFs

To state the case in the simplest possible way (which is too simplified by far), the rules for taxation of leveraged long and leveraged inverse investment company ETFs are identical to the rules for taxation of any other investment company ETF. Just like other investment company ETFs, the size of your leveraged ETF tax bill depends largely on what is in the fund portfolio, how it leaves the portfolio, and how gains or losses in the fund or on sales of the fund shares are characterized under the Internal Revenue Code. Unlike the relatively straightforward capital gains tax deferral possible with most unleveraged equity ETFs, the net tax results for these leveraged funds have been diverse.

Some holders of leveraged funds were surprised by their tax results, particularly before 2009. There were a number of reasons for these surprises. The contents of leveraged long and leveraged inverse investment company ETF portfolios are often very different from traditional ETF portfolios and the contents depend partly on the return being leveraged. Leveraged long stock index equity ETFs usually hold some stocks, so they might defer capital gains on occasion in the same manner as unleveraged equity ETFs. If the fund makes extensive use of futures, 60 percent of any profit or loss on a futures contract is treated as a long-term capital gain or loss and the other 40 percent as a short-term capital gain or loss. Apparently some funds charge expenses first against any short-term gain portion when it is recharacterized as ordinary income, leaving a proportionately greater percentage of long-term gains as a possibility. To complicate the possibilities, many of these funds use indexes that do not have futures contracts. If an active futures contract is not available, the fund will typically use dealer swaps,

and, as noted earlier in the chapter, most leveraged funds rely increasingly on swaps.

All transparent ETFs, including leveraged funds, give investors a very clear picture of their portfolio structure day-by-day. A tax professional who is thoroughly familiar with the structure, tax treatment, market response, pattern of creation/redemption activity, and several other features of a leveraged fund could probably model the cumulative tax effects over time—but it would not be a simple task. Instead of engaging such an expert, I would urge anyone who plans to use these instruments to read the exhaustive tax discussions in the disclosure documents. No matter how conscientiously the issuers of these funds may attempt to indicate probable tax results, there is a limit to how far they can go in discussing the nature and timing of any distributions or in anticipating possible changes or challenges in tax treatment. Given the inevitable tax uncertainty, I offer two suggestions: (1) No investor should rely too heavily on favorable tax treatment of gains inside the fund or distributions by the fund. If it makes sense, given your personal risk appetite and tax situation, to use these funds in a tax-exempt retirement account, that should be your choice. (2) Use the DTC dividend reinvestment service available through many brokers. If you use this service, a surprise distribution will not arbitrarily reduce your exposure to the leveraged return.

OTHER ISSUES AFFECTING LEVERAGED ETFs

Traders who engage in short-term trading of these funds should be aware that the funds' intraday prices do not reliably track the index value, particularly late in the trading day. While the same could be said of many other ETFs at times, the tracking of leveraged ETFs is particularly weak late in the trading session because the effective cutoff time for committing to creation or redemption of shares in these ETFs is typically 3:00 P.M.⁷ A market maker cannot hedge the risk of a position change after 3:00 P.M. by creating or redeeming, so trading spreads will often widen between 3:00 P.M. and the market close. As discussed in Chapter 8, investors might be able to sidestep this period of wider spreads by using the NAV-based ETF market earlier in the day. Market makers can also use the NAV-based market to manage their inventories.

⁷To protect all the fund's shareholders, the early cutoff is necessary because a leveraged long or inverse ETF's manager will not be able to trade futures contracts or find a dealer who will enter into or modify a swap agreement that provides leveraged exposure after the markets have closed.

Due to the perceived erratic behavior of these funds during the volatile markets of 2007 and 2008 the regulatory environment for leveraged long and inverse ETFs has not been favorable. Regulators have required beefed up disclosure and many firms refuse to let their customers purchase these funds. Margin requirements for these leveraged products are designed to limit the use of leverage beyond the leverage built into the structure of the fund.

There might be a number of circumstances in which these funds find it difficult to operate because of the market environment. The restrictions on short sales of financial stocks made it difficult for some swap counterparties to maintain appropriate hedged positions in some cases. While the funds were not affected by bankruptcies of financial firms, the failure of some of their former swap counterparties drew attention to the counterparty risk associated with swap contracts. In spite of these obstacles, the leveraged and inverse ETFs remain popular with a sizable number of investors. It is also fair to say that investors and advisors are open to the possibility of alternative ways to obtain leveraged long and inverse positions.

ANOTHER WAY TO OBTAIN LEVERAGE WITHOUT BORROWING

In November 2009, Barclays Capital introduced a series of leveraged long and inverse exchange-traded notes that offer a return pattern that closely approximates the results an investor would achieve by taking a *leveraged* long or short position in an *unleveraged* index ETF in a margin account, <https://ecommerce.barcap.com/investorsolutions/contentStore.app?id=152261>. These exchange-traded notes do not perfectly replicate a margined position because they have to be set up to be closed out to protect the bank that issues them in the event of a major decline in the value of the position. The issuer of these leveraged exchange-traded notes deals with the problem of keeping leverage from creating an unsecured liability by liquidating any series of notes (which begin trading at a price near \$50) if the value of the note drops below \$10. Both the leveraged long and inverse daily reset funds and these exchange-traded notes effectively prevent a loss greater than the initial investment.⁸

Most observers have not found these leveraged notes easy to compare to the purchase of an unleveraged fund in a margin account or to the daily reset leveraged funds. I believe the reason these notes are not easily understood

⁸The leveraged note could theoretically create a loss for the issuing bank, but the risk is extremely small and the bank is willing to accept it under specific circumstances.

is that the disclosure documents for the notes introduce new terminology which anyone reading the prospectus has to learn before he or she can work through the explanation of the notes' structure, risks, and expenses. Once you get beyond the terminology barrier, the parallel to a margin purchase or margined short sale is readily understood. These notes have only been available for a few months at this writing and they have not begun to attract investor attention or a meaningful flow of assets. They do not trade actively. Leveraged notes may ultimately overcome the unusual vocabulary in their risk disclosure documents, but I expect that the daily reset funds will continue to dominate the leveraged long and inverse market segment. The tax opinion in the disclosure documents for these notes cites the pre-paid forward contract principle as the basis for deferring distributions—and deferring taxation of gains until shareholders sell their positions.

THE BOTTOM LINE ON LEVERAGED ETFs

Leveraged long and leveraged inverse ETFs do almost exactly what their prospectuses and SAIs say they will do. Some users of these funds have found to their regret that what the prospectuses say and what the funds do is not exactly what they were looking for. These funds are not tools of the devil as some pundits have implied; nor are they an ideal way to obtain leverage in a 401(k) or IRA unless an investor has a strong conviction on the direction and magnitude of the near-term price movement of the underlying index. Personally, I very rarely have an overwhelming short-term opinion on the direction and magnitude of the movement in an index or significant market segment and I don't feel a need to add the spice of leverage to my portfolio. Consequently, I am not a candidate to use these funds. However, as long as any would-be user of these funds has thought through the issues discussed in these pages and feels that these funds *are* appropriate for a personal investment, these funds offer an investment experience that an investor who wants this kind of leverage should be free to choose.

There is a special application for these funds that might interest investors who are looking not for leverage but for a way to offset volatility risk. This application is addressed in Chapter 11, pages 274–275.

CHAPTER 11

ETF Applications for Individual Investors and the Advisors Who Serve Them

ETF enthusiasts are hard to subdue once they start describing applications for their favorite investment instrument. However, the purpose of this chapter is not to advance the proposition that ETFs are the best investment idea to come along in at least a generation, however true that proposition might be. My purpose is to discuss ETF applications with appropriate balance and with emphasis on the economics of different ways to take and hold a position. The idea is to suggest possibilities, not to reach definitive conclusions.

Index ETF holding and (fund share) trading costs have generally fallen more rapidly than comparable futures and stock basket trading costs have declined since ETFs were introduced. In addition, the convenience of ETFs often overcomes slightly higher costs associated with some ETFs relative to the other financial instruments in an equity arbitrage complex. Of greatest interest to some readers will be suggestions for using ETFs to meet specific needs in integrating a group of accounts for an individual or family. A discussion of how to approach trading ETF shares to establish a preliminary asset allocation should send some readers back to Chapter 8's discussion of ETF trading for a refresher. This chapter also describes how to compare the cost of trading and holding ETFs with the comparable costs for futures in risk management applications.

The context of this discussion of ETF applications is the relationship between an investor and a professional advisor who specializes in ETFs. It is clear from the investor and advisor publications I see regularly that the range of applications that advisors and their clients are using is increasing steadily. One of the things I hope to do in this chapter is provide

illustrations and a frame of reference for a number of present and prospective ETF applications. Investors should look to their ETF advisors and to the sources listed in Chapter 14 for up-to-date material on applications. The discussion in this chapter is necessarily more general than readers will need for many implementations, but effective use of ETFs will come naturally to investors and advisors who recognize the ETF as a prefabricated portfolio—not just of stocks or other instruments, but of risks and rewards, and of costs and returns. Each ETF is a package that needs to be analyzed for its contribution to an investment program and evaluated for its efficiency. Chapters 5, 6, and 14 should help advisors and investors make these analyses and evaluations.

In most respects using ETFs in advisory accounts is a relatively simple extension of the way other securities and financial instruments are used. For the vast majority of investors and their advisors, the financial instruments used in investor accounts will be limited to individual securities, traditional mutual funds, exchange-traded products like ETFs (broadly defined), and an occasional option, futures, or securities futures contract. In some cases ETFs will be introduced first as replacements for mutual funds or for what otherwise would have been a basket of stocks selected by the advisor to provide exposure to a market segment or a particular investment theme. A broad-market ETF might provide a convenient, low-cost package to deliver equity exposure to the client for a substantial segment of the portfolio. An indexed or actively managed international ETF might offer exposure to international markets at a lower effective cost than individually tailored or managed stock positions. It has become increasingly clear in recent years that investors are inclined to use index or passive portfolio baskets unless they are persuaded that a specific active management technique will deliver better results. As described in Chapters 5 and 6, the case for passive management is strong but the case for traditional indexing is much weaker than it has been at times in the past.

Two of the important skills an advisor to individual investors must develop are (1) the ability to understand his or her own strengths and weaknesses and (2) the ability to evaluate the claims of others who would provide services and manage segments of client portfolios. The ETF is an easy way to delegate responsibility for a portfolio segment while the advisor retains overall responsibility for asset allocation, risk management, and financial planning. As the ETF structure becomes increasingly flexible (facilitating use of a wider range of active management skill sets), management of securities portfolios and other investments will be embedded in and assigned to specialized exchange-traded instruments to a greater and greater degree.

SHORT-TERM ETF TRADING SOMETIMES MAKES SENSE

Depending on the types of financial instruments that the advisor used before adopting ETFs for significant segments of the advisory firm's accounts, the mechanics of using ETFs may proceed in one of several ways. If the advisor typically used individual stocks or baskets of stocks prior to adopting ETFs, the advisor is probably used to handling stock transactions either in-house or through a broker who provides a customized execution service. If the advisor has assumed that ETFs trade "just like a stock," a careful reading of Chapter 8 will be enlightening because many trading practices used for stock transactions do not work very well when you are trading ETFs. Many trading practices that work well with individual stocks like limit orders on the bid side for purchases and on the offer side for sales, do not work well with inactively traded ETFs. As I described in Chapter 8, market-on-close orders often deliver extremely poor executions in ETFs.

If ETFs are replacing mutual funds in the advisor's client portfolios, the advisor is unlikely to have much experience that is applicable to intraday ETF trading. Advisors are accustomed to entering mutual fund purchase orders denominated in dollar amounts for execution at the closing net asset value of the mutual fund on the day the order is entered. To trade the kind of ETFs that will serve long-term objectives effectively, advisors need to learn about ETF trading *or* find a firm that can deliver executions that look and function like mutual fund trades, that is, executions priced close to net asset value with a specified total value and consisting of whole and fractional fund shares. This can be a trivial issue for investors with advisors who are experienced in trading ETFs, but it is not something every advisor is prepared to deal with. Whole and fractional shares have been handled routinely by mutual funds for a generation or two, but the ability to transact ETFs in whole and fractional shares is not yet available to or through all advisors.

When an advisor first opens an account for a new client, there may be risk management and investment policy reasons to get the account invested or to modify its positions quickly before fine-tuning the portfolio composition over a period of a few weeks or months. One of the advantages of ETFs is that funds based on benchmark indexes can be purchased and sold at extraordinarily low cost and, unlike most mutual funds, there are no holding period requirements or redemption fee penalties associated with short-term trades in ETFs. Bid/offer spreads are frequently just a penny per share in benchmark index ETFs. In some of the most actively traded funds, locked and even crossed markets are common. Because fund share transaction costs are extremely low, it is a simple matter to achieve reasonable diversification

and exposure to major market segments quickly and efficiently before fine-tuning the client's positions. Any initial fund selection bias should be toward using ETFs with narrow trading spreads to establish an appropriate asset allocation and then moving at leisure to ETFs likely to perform better because they avoid high index composition transaction costs or have other advantages over benchmark index funds. The best funds for the long-term often have trading spreads that are wider than a few pennies.

Unless the client is a regular user of futures, taking such temporary exposure with futures contracts will probably require more education and paperwork than any cost saving might justify. On the other hand, using futures for a risk-offsetting short position might justify a discussion of futures in the context of the last section of this chapter.

Outsized positions in one or a few stocks are common in large investors' personal portfolios. Sector SPDRs often combine well with such large low-tax basis positions to provide diversified large-cap domestic stock exposure.

ETFs AS PORTFOLIOS AND AS COMPONENTS

With the exception of some specialty products, ETFs start out as baskets of securities or commodities and as either concentrated or diversified portfolios. If an ETF has a highly specialized portfolio it usually will be a small component of an investor's total holdings. A broad-market ETF might represent a sizeable fraction of the diversified portfolio an investor needs. One key feature which many index ETFs have and at least some actively managed ETFs *will* have is that the *portfolio basket can trade efficiently as a unit*. The fund and the basket of underlying instruments often trade at lower cost than the individual components would trade separately. The fund (or its index/basket) needs to be a relatively standardized trading basket and trading counterparties cannot be concerned that the party on the other side of the trade has company specific information that gives that party a significant advantage. A standardized basket will be cheaper to trade by virtue of its relationship to the ETF. Relatively few baskets other than benchmark indexes achieve this level of popularity.¹

¹Most of the very actively traded ETFs are based on popular benchmark indexes. Sometimes newly created indexes or baskets have proven to be unusually popular. For example, the QQQQ introduced by NASDAQ and the HOLDRS introduced by Merrill Lynch sharply reduced the cost of trading the baskets of NASDAQ stocks and stocks in some specific industries or market segments represented in the HOLDRS. There are fewer opportunities for new instantly standardized baskets available today than there were in the late 1990s when the QQQQs and HOLDRS were introduced.

After addressing key issues such as the cost of trading transparency in a popular index or the quality of an actively managed fund's investment process, an advisor's evaluation of a particular ETF should address its usefulness in isolation and its usefulness as a proxy for a key market segment. Some aspects of the first stage of this evaluation are addressed in Chapter 5, and Chapter 6 addresses broader fund evaluation issues.

To the extent that a fund has derivatives, similar risk/reward positions can be taken in a number of ways. To the extent that options on an ETF, single stock futures, or swaps are available, the appropriate way to invest in a market segment will ordinarily turn on the relative attractiveness of a specific application of the basket product. Each way to take a position has its own characteristics and usefulness to various investors. While ETF options account for 30 percent of option contracts traded in the United States, the volume is concentrated in options on very few actively traded funds. Options that are physically settled into the ETF and physically settled single stock futures will probably work very well with nontransparent ETFs—when that product combination becomes available.

The use of a particular ETF in conjunction with other ETFs will largely be a function of its contribution to the risk and return structure of the entire portfolio. Ideally, any newly acquired ETF will be relatively uncorrelated with other components of the portfolio and, in the aggregate, it will move the portfolio in the direction of the risk characteristics of the market portfolio or otherwise favorably adjust overall risk exposure. A useful ETF in this context will have low composition cost changes. If it is an actively managed ETF, it will have a manager with good skills in position selection within the market segment represented by the portfolio.

INTEGRATING DIVERSE FAMILY ACCOUNTS

A number of advisors first used ETFs in some of the small accounts that proliferate in any family group with significant assets. It is not at all unusual for two or three generations of a single family to have dozens of investment accounts. Custodial accounts for minors; conventional IRAs, Roth IRAs, or 401(k)s; trusts of various sizes and with diverse objectives; and small, medium, and large personal accounts seem to proliferate in families that accumulate even modest wealth. Each account does not need a distinct philosophy or a complex investment plan. From the family perspective, they usually can and should be integrated into an overall familial investment objective. Each account needs only enough specific attention to assure that it is appropriately and fully invested in ETF portfolios that recognize its unique characteristics (e.g., tax features). The account objectives and exposures

also need to be integrated with the other family accounts and examined periodically to ascertain that each is fulfilling its assigned role.

The investment manager who handles the family's "serious" pools of capital is expected to help with the mélange of small accounts. ETFs can be appropriate vehicles for integrating them into the family asset allocation plan without a great deal of extra work and at a lower cost than mutual funds or individual stocks. Such a comprehensive account management process can be useful to the family without being a drag on the advisor.

TAX MANAGEMENT

An important feature of any ETF application for a taxable account or series of related accounts should be tax management. This statement is true even if some of the accounts in a group are tax-deferred pension and profit-sharing accounts or special purpose trusts. A great deal has been said and written about the tax efficiency of ETFs² and while ETF applications in tax-exempt accounts do not take advantage of (or need) this tax efficiency,³ an astute asset allocation program for an individual or a family will be sensitive to the tax treatment of various portfolio components.

Integration of Taxable and Retirement Accounts

A tax management program may take into account and coordinate the management of tax-deferred retirement plans such as 401(k), IRA, and Keogh accounts as well as fully taxable personal accounts. The decision on where specific types of assets should be held—between a tax-deferred retirement plan and a taxable personal account—has received a great deal of attention from tax planners over the years.⁴

For many investors, where to put specific investments is an easy decision because there is not much choice—the asset classes have to go where the assets are. Most investors' assets that can be managed or allocated are predominantly tax-deferred or predominantly taxable. Moderate net worth investors generally have substantial tax-deferred investment accounts, but small taxable portfolios. As a family's net worth climbs, tax-deferred asset growth is limited by the tax statutes and asset growth tends to occur in taxable accounts. Most investors, appropriately, put as much in tax-deferred

²Including a substantial part of Chapter 4.

³See, however, footnote 9 in Chapter 1.

⁴See, for example, Chapter 3 of Gastineau (2005).

accounts as possible because the assets working for an investor shrink when taxes are paid. When attractive tax-deferral opportunities are exhausted, income taxes are paid and most incremental cash flow goes into taxable investment accounts until assets reach the level where complex estate management techniques become appropriate. ETF tax deferral opportunities will change some traditional allocation and location decisions.

Most investors and advisors start with the presumption that, other things being equal, any taxable bonds should be held in a tax-deferred retirement plan and that equities, particularly equities without high dividend payouts, should be held in taxable personal accounts. Actually, most comprehensive tax-managed accounts are handled somewhat differently. To the extent that it is appropriate to hold substantial equities, a common conclusion has been that relatively high yield equities should be held in tax-deferred accounts and tax-exempt debt should be held in taxable personal accounts. The notion has been that low-yield equities should be held in taxable accounts and should almost never be sold, while mutual funds should not be held in taxable accounts until space in tax-deferred accounts is filled.

The introduction of ETFs has changed much of this thinking. Holding funds preferentially in tax-deferred accounts is based on generally sound analysis when the funds are mutual funds. Part of the rationale for keeping equity mutual funds in tax-deferred accounts has been the frequency and magnitude of mutual fund capital gains distributions when the fund performs well. If an investor can make a long-term commitment to a particular fund and the fund is able to avoid capital gains distributions without constraining its portfolio flexibility, the appropriate allocation strategy changes. Indeed, with ETFs, virtually complete avoidance of capital gains realization should be possible for an astute portfolio/tax manager. The ETF that avoids cap gains distributions can be compelling in a taxable account. The ETF portfolio manager can often redeem a winning position out of an ETF without immediate tax consequences.

A well-run, equity ETF used by long-term investors in their personal (taxable) accounts should not make any capital gains distributions. Most ETFs are managed for a variety of types of investors, but ETFs do not and need not take extraordinary steps to avoid capital gains distributions. Advisors should expect to see a variety of target date or real return ETFs designed to change strategies over time without capital gains tax consequences to meet the needs of their high tax-bracket clients, who want to reduce equity risk over time.

There are a number of long-term tax advantages associated with the placement of equity positions in taxable accounts. First, when cash is needed to support expenditures, any taxes paid from the sale of appreciated ETF shares *will be taxed at the capital gains rate and only on the amount of any*

realized gains. The capital gains tax rate has changed frequently over the years, but it has consistently been below the tax rate on ordinary income, which rate must be paid on the *total amount of any distributions from a tax-deferred retirement account*. Second, appreciated ETF shares, like appreciated single-stock positions, are candidates for charitable gifts because the appreciation will escape the capital gains tax and the deduction will be approximately equal to the market value of the security if the shares are given as a donation. A third advantage of holding equities in a personal account is that if appreciated shares are held until the death of the original owner, heirs may receive them with a stepped-up cost basis.⁵

If the same shares had been held in a tax-deferred retirement account, the account would be part of the estate for tax purposes, but most IRAs can be rolled over to beneficiaries and some of the taxable distribution deferred. The assets of the retirement account will be subject to tax at ordinary income rates when they are distributed. Many investors with estates subject to the maximum estate tax rate have found it attractive to make 401(k), IRA, and Keogh accounts the subject of charitable bequests when there is no surviving spouse to receive them, but I defer to retirement plan expert Ed Slott on all defined contribution account tax issues.

The distribution of investment structures and asset classes between tax-deferred retirement accounts and taxable accounts has received a great deal of attention dating back to a classic article by the late Fischer Black (1980) and an extraordinary paper by Jeffrey and Arnott (1993). Most such articles make the sadly realistic assumptions that investors cannot resist the urge to trade or cannot find a fund that can avoid material capital gains distributions. A patient investor with a well-run equity ETF should put it in her personal account and take a cold shower at the onset of any temptation to sell. For discussion of these retirement and bequest issues, see Gastineau (2005, Chapter 3), Dammon, Spatt, and Zhang (2004), Ellis (2002), and the most recent book available from Ed Slott, who covers the practical care and handling of tax-deferred accounts better than anyone else.⁶

OTHER TAX ISSUES

In contrast to virtually all conventional mutual funds, and to a greater extent even than typical individual stock portfolios, the capital gains realizations from a long-term holding in an equity ETF will typically be modest. The

⁵The topic of the step-up of basis at death is addressed briefly in Chapter 4.

⁶See Slott (2003) and Slott (2005), for example.

equity ETF can and should be an extraordinarily tax-efficient position and a successful ETF can be held as readily in an individual taxable account as in a retirement account, if the investor can resist the urge to sell the shares. Selling the shares, of course, triggers capital gains taxes on a profitable position and places a serious dent in the rationale for this kind of tax planning. An investor who can follow a buy-and-hold strategy should be extremely well rewarded, but the typical transaction-oriented behavior of some fund shareholders holds out little hope that this will be as popular a strategy as it should be.

Trade in a Tax-Exempt Account

If an investor plans an aggressive ETF trading program, it makes sense to make the trades in a tax-deferred retirement plan. The inherent tax efficiency of the ETF will not add value in a taxable trading account. John Bogle frequently rants at the level of trading activity in ETFs and argues that the level of trading is totally inconsistent with tax efficiency. He would be correct if the trading was done by individual investors, but, for the most part, it is done by dealers and hedge funds. High-frequency trading can make getting in and out of an ETF less costly for long-term investors who might be trading at the beginning or end of a 20 to 40 year period of holding the shares without any interim trades. Of course, as earlier chapters have stressed, long-term investors will usually be better off with an ETF based on a less-popular index or an investment process that has less trading transparency than the most actively traded benchmark index ETFs.

Short-term trading in most individuals' accounts makes sense only when it is an attempt to capture an opportunity that the trader believes is not valued correctly by the market. Successful traders are marked by an ability to know how to identify opportunities and how to keep their trading costs low to improve the probability of a profitable trade. Trading will always be of interest to some users of a product as easy and inexpensive to trade as benchmark index ETFs. Some simple suggestions might help someone committed to trading minimize the probable costs of that trading. Committed traders should pick ETFs for their high trading volume and low trading costs and ignore most of my heartfelt comments in other chapters about benchmark ETFs being less attractive investments than funds with lower composition change costs. If you are going to own a fund for only a few days, even a Russell 2000 ETF might be a trading candidate on the long side at times.

It makes sense to use benchmark index ETFs for trading if they have the correlation or exposure that a trading idea requires. The trade usually has a low-market impact cost and the fund has a well-understood correlation

with a sector or a style in some capitalization range or in a foreign market. Benchmark index ETFs are usually easier, cheaper, and less risky to trade than a basket of a few stocks that might be chosen to implement the same basic trading idea. Assuming that ETFs will often be the preferred vehicle for implementing a trade that is not based on a stock specific expectation, the trader's most important task is to choose the right fund to implement the idea most effectively. Some funds will respond more predictably to a correctly developed trading idea than others. For example, some style funds are not very pure in their style by most standards and some pure style funds are strangely weighted and less actively traded. Comparing price volatility, correlations, and trading spreads across funds will always be a fertile ground for fund analyst activity. Trading is not the heavy commission generating activity that it was 40 years ago. Discount and deep discount brokers have cut commissions to nominal levels. If an active trader needs research or other support from a broker, periodic fees such as those charged on wrap accounts often replace transaction-based commissions. The fee-for-service (per-trade commission) business model includes some very low commission offerings. Anyone planning an active ETF trading program should read Chapter 8 with care because commissions are much easier to control than some much larger trading cost elements.

Use Specialized ETF Share Classes to Pay Advisory Fees Efficiently

Under the U.S. tax code, separately billed fees paid by individuals for investment management services and various other services provided by financial intermediaries are not fully deductible against ordinary income taxes. For individuals subject to the Alternative Minimum Tax, separately billed fees may not be deductible at all. Fees are usually paid more tax efficiently when they are embedded in the costs of the fund and deducted from the income distributed by the fund. Because investors want an increasing variety of services, it will make sense to pay for them by using custom shares that embed ETFs and carry higher fees. Standard ETF shares will still be the shares traded on the market and those shares will still be created and redeemed (largely) in-kind, but it will be more tax-efficient for investors to *hold* specialized share classes that embed advisory fees.

The specialized share classes that will become available for a number of ETFs will enable an investor to exchange the standard ETF share class which trades actively in the marketplace for a specialized share class which, at the owner's option can be changed back into the standard share class for sale in the market. These specialized share classes would pay a fee to the DTC participant that holds the shares as compensation for various services.

This compensation would be taken out of the fund's distribution stream at a pre-tax level, making payment of the fee more tax-efficient. The conversion to and from the specialized share class might or might not be a taxable event, but presumably it would only occur when the investor first purchased his shares or when he was planning to liquidate the position, making the tax status of the share class exchange largely irrelevant.

Taxes, Diversification, and Asset Allocation

Most investment advisors who use mutual funds and/or ETFs in the development of investment programs are keenly aware of the benefits of diversification. They know that diversification can be increased by adding additional ETFs representing different markets, market segments, styles, and so forth. It is a relatively simple matter to measure the degree of overlap in composition between any two funds and, correspondingly, to measure the improvement in diversification from adding additional funds to an investor's holdings. With ETFs, it is possible to add additional markets and exposures that would not be economically interesting if the investor were dealing with individual stocks. Foreign country funds, fixed income funds, and low correlation market segments not represented in some broad market indexes are worth considering in this context.

The temptation is great to obtain diversification by investing in a relatively small number of highly diversified funds, but, from the viewpoint of tax management and operating efficiency, broad-market funds are often too diversified to generate as many tax loss realization opportunities as a portfolio that achieves diversification by holding a larger number of more specialized funds. The tax advantage of getting diversification from a number of specialized funds rather than a single broadly diversified fund is that some of a group of funds may decline in value while the others rise or at least maintain their value. The funds that decline can be sold to realize losses that can offset taxable gains from a large, low-cost stock position that might be reduced and the assets reallocated to increase overall diversification.

The use of a number of narrow portfolio specialized funds rather than a single broadly diversified fund raises the question of what effect this has on the investor's total costs. There is no reason why the total expenses of these specialized, concentrated funds need to be materially higher than the expenses associated with broad market index-type funds that have low composition change costs, but the specialized funds must be designed for low portfolio turnover. Lower embedded transaction costs and the ability of managers to spread expenses over a number of funds should enable well-designed specialized funds to compete effectively with broad market funds.

Fund Transaction Settlements

There are differences between settlement practices on ETF and mutual fund transactions. The next-day settlement practice of defined contribution plans has been more readily accommodated by mutual funds than by ETFs to date. Most individual investors and even most advisors do not need to spend much time dealing with settlement timing issues, but ETF service providers will begin to accommodate the settlement conventions of retirement accounts to make ETFs more attractive in these accounts.

Limitations on the Value of Asset Allocation

Equity investors tend to diversify by adding more equities that they hope or believe will have low correlations with the equities they already hold. Sometimes this works, but even cross-border equity correlations have shown a distressing tendency to rise during periods of market weakness. A better idea is to add low-risk (sovereign) debt exposure to get this diversification. Much of the grief investors suffered in 2007 and 2008 was due to the fact that their fixed income portfolios had equity equivalent risks.

THINKING OUTSIDE THE BOX

ETFs are approaching the twentieth anniversary of their introduction in the United States. Most financial products are thoroughly mature long before they have been around for 20 years. In spite of their age, ETFs have maintained a reputation for creativity and innovation, and there is no reason to think that ETF development will slow down anytime soon. Apart from the vast unrealized potential of actively-managed ETFs, new index ETF variations and applications turn up every year.

An important application for leveraged long and leveraged inverse ETFs came out of the 2007–2008 market break, just as these leveraged funds were being disparaged by some observers as the lemons of the ETF family. A few advisors found an opportunity to use these funds to make lemonade *in the same volatile market environment that was the cause of controversy over these funds*. The fact that high market volatility often caused *both* leveraged long and leveraged short ETFs on the same underlying to decline showed some advisors a way to profit from correctly anticipated volatility. These astute advisors *sold short* both the leveraged long and the leveraged short ETF on the same underlying. They sometimes made money on both short sales as the market alternately rose and fell, but even if one position moved against them, the volatility was often high enough to give them a significant overall profit on the combined short position.

The CBOE's VIX index is the standard measure of expected stock market volatility, but it is notoriously difficult to use the VIX to obtain market volatility protection. The VIX futures contract price reflects *expected* volatility, so it may not be possible to take a position that will provide protection from *future* volatility if the futures price is already marked up by high volatility expectations. In contrast to uncertainty on how the VIX futures will respond to actual volatility, the combined short position on both leveraged long and leveraged short ETFs can deliver excellent results in a period of high experienced volatility. This relatively simple example of an unanticipated ETF application suggests potential rewards for other ETF thoughts outside the box.

MEASURING THE COMPARATIVE ECONOMICS OF TRADING AND HOLDING DIFFERENT COMPONENTS OF AN INDEX ARBITRAGE COMPLEX

Most investors and advisors will not need to evaluate futures or options as alternatives to straightforward positions in ETFs for portfolio applications, but a few words on this topic seem appropriate in a chapter addressed to a wide range of advisors and ETF users. A large account may occasionally need to use index instruments in a short- or long-term risk management transaction. The most common choice a risk manager is likely to face is the choice between stock index futures and ETFs and the most common equity index instruments for this purpose are linked to the S&P 500.

The prototype ETF versus index futures cost comparison in Exhibit 11.1 was prepared a few years ago by Kevin McNally in collaboration with his futures and portfolio trading desk when he was at Salomon Smith Barney. Such comparisons are often made but not often published. If you need this kind of support most full-service brokerage firms can help you.

In this illustration, the ETF holding and trading economics are compared with the S&P 500 futures contract traded on the Chicago Mercantile Exchange. The estimated commissions on the ETFs reflected the cost of assembling a stock portfolio for delivery as a creation basket to obtain ETF shares. Similar costs would apply on the short side. Futures commissions reflect commissions on the CME floor at the time the analysis was done. The bid/offer "spread" will be based on the current difference between the bids and offers on the floor of the futures exchange. The bid/offer spread on the stocks is included in the impact estimate at the bottom of the ETF column. In this long side comparison, the management fee for the fund is shown as a cost for the long investor. On the short side, this 9.5 basis point figure would be replaced by a stock loan premium, usually in the range of 10 to

EXHIBIT 11.1 ETFs versus Futures: One Year Cost Comparison

	iShares S&P 500	S&P 500 Futures
Notional value as of 12/20/02	\$100,000,000	\$100,000,000
Based on a price of	\$94.13*	\$934.53**
Multiplier	1	250
No. of shares/contracts	1,062,361	428
	Estimated Cost (BPS)	
Commission (round trip)	8.7	1.7
Bid/offer spread (round trip)	0	5.35
Management fee (annual)	9.5	0
Mispricing	0	10.7
Roll risk	0	22.5
Impact	30	21.4
Total	48.2	61.66

*Price per share

**Index value

Sources: Salomon Smith Barney, Stock Facts PRO.

20 basis points that might be offset by a credit for part of the management fee. The management fee may be a small benefit to short sellers, relative to using the futures contract.

The pricing of the futures transaction relative to the transaction costs in the underlying equity market and the roll risk—the expected cost of rolling the first futures contract to subsequent contracts—in this one-year comparison are the two major components that most significantly affect the futures contract’s competitive standing versus the ETF. The market impact of the ETF transaction is shown to be somewhat smaller than the market impact plus the roll risk and mispricing of the futures contract. The principal reason why the ETF will look better in this comparison is that the ETF position is only taken once whereas the S&P 500 futures position would have to be rolled over to a new futures contract three times over the course of a year—with a substantial roll risk each time.

This comparison highlights the importance of trying to estimate when you take a risk management position how long you’re likely to want to keep it in place. A short-term hedge that can be taken and closed with a single futures contract *without a roll forward in time* would likely be advantageous relative to using the ETF at the transaction size illustrated.

Smaller and larger positions would change in cost by differing degrees. The only significant relative size difference would probably come from a much smaller position where the market impact cost of transacting in the ETFs would be smaller. SPDRs markets are often locked (the bid and offer are equal) or even crossed (the bid is higher than the offer) a significant fraction of the time, sharply reducing the cost of a small transaction, say, up to as much as \$10 million in ETFs. You will want to consult your full-service broker for current information, if and when you need it.

CHAPTER 12

ETFs for Investors Living Outside the United States

My experience with ETFs has been principally in the United States. I have had enough exposure to ETFs offered in other countries to understand that most of them have many of the same features found in the best ETFs offered in the United States. However, I have seen a number of news reports and academic papers that inaccurately attribute some characteristics of U.S. ETFs to ETFs in Europe, Asia, or Latin America. I know from my examination of non-U.S. ETFs that many of them operate differently from most U.S. ETFs. What I attempt to do in this chapter is to describe my understanding of some significant similarities and differences and what investors outside of the United States should look for in the ETFs offered to them.

SOME FEATURES OF THE ETFs DESCRIBED IN THIS BOOK ARE NOT UNIVERSAL

As indicated in various places in the earlier chapters of the book, there are at least three standard features of most U.S. ETFs, particularly the investment company-based ETFs that are similar to exchange-traded *fund* products offered to investors in many countries. The first of these features is investor protection from the cost of accommodating investors entering and leaving the fund. This kind of investor protection is something most U.S. investment company ETFs have done extraordinarily well. Many of the ETFs offered by major providers in other countries seem to do this equally well, but I will have more to say on this topic later in the chapter. The second feature is tax efficiency. The way tax efficiency is achieved in U.S. ETFs is unique to the United States in a number of respects, but very roughly similar tax deferral seems to be available without any special effort in *some* other countries. It is definitely not available everywhere. Finally, the secondary market trading

and the arbitrage constraints on pricing that work extremely well in the United States for large actively traded investment company ETFs seem to work well for those same types of ETFs in other countries. Less actively traded ETFs do not always enjoy efficient trading in either the United States or in other countries. The solution to this problem is the same—NAV-based secondary market trading—wherever the problem occurs. Each of these features or its absence deserves specific attention in an international context.

Investor Protection: Occasional Problems Outside the United States

Most U.S. ETF prospectuses—whether the structure of the product is one of the early unit trusts, an investment company, a grantor trust, a securitized commodity fund, or an exchange-traded note—describe a share creation and redemption process that seems to provide appropriate investor protection from the cost of investors entering and leaving the fund at the expense of ongoing shareholders.¹ I do not claim to have read a large-enough number of prospectuses for products offered outside the United States to offer a definitive opinion, but my reading has given me some comfort that the major providers of index ETFs based on each country's version of an investment company have adopted this feature. Likewise, the limited-function actively managed ETFs that have been offered on a small scale in the United States and in a few other countries seem to have an in-kind creation/redemption process similar to the index ETF process described at length in Chapters 1 and 3. Creation and redemption in most funds, except some of the funds that make extensive use of derivatives (covered call writing funds and leveraged long and leveraged inverse index funds) seem to have in-kind creation and redemption processes that closely parallel best practices in the United States.

I have heard but have not been able to confirm reports that some ETFs offered in Europe have dispensed with creation and redemption fees. While there may be a good reason for this in a specific instance, charging such a fee is consistent with appropriate protection of ongoing shareholders from the costs of entry and exit by other investors. I invite readers to send me prospectuses (in English or French) for any funds that do not impose a fee for creation or redemption transactions. I would like to take a closer look at these creatures.

¹The way shareholders are protected from inappropriate trading costs is not always as clear in the other products as in the investment companies, but it generally works in the U.S. versions of the grantor trust securitized commodity funds and exchange-traded notes.

There are a large number of funds described as actively managed ETFs available in a number of markets in Europe. These funds are listed on major exchanges but, based on the prospectuses I have read, they look more like mutual funds than like ETFs. In addition to being available for direct purchase from the fund's sponsors, they trade in a secondary market nominally on, but usually away from, the major electronic marketplaces. Thirumalai (2003) described a small group of actively managed funds that were traded on a secondary market in Germany at the time his paper was written. Funds with the same names as those he studied are now trading in modest volumes in Germany and other countries. Based on my reading of recent prospectuses for some of these funds it appears that they are quite similar to the typical actively managed mutual fund available in the United States and most other countries around the world. Their only obviously ETF-like characteristic is that they are available for small-scale retail trading at an inadequately described and defined intraday price. It is not apparent from these funds' prospectuses that portfolio trading costs associated with creating and redeeming shares are borne by the fund share traders. It is also not clear that secondary market trading costs are reasonable or that transaction prices bear any meaningful relationship to the fund's intraday net asset value. I know that trading cost is a significant issue in the United States and I see no reason to believe it is less of an issue in other markets even if it is not always fully recognized as a problem.

Investors should look for evidence that investors entering and leaving their local funds are paying the costs of their entry and exit. I recognize this means that you will pay the cost of *your* transaction, but it also means that you will have protection from the costs of everyone else's entry and exit for as long as you own the fund shares. This is the most universal feature of ETFs and should not be compromised except for a very good reason. Frankly, I can't think of any good reasons.

Tax Efficiency: Some Non-U.S. Funds Can Get There Easily

As explained in Chapter 4 (in more detail than any non-U.S. investor could possibly want and than most U.S. investors will appreciate), the tax efficiency of most U.S. investment company ETFs is based on a provision of the U.S. tax code that permits deferral of capital gains taxes by eliminating the necessity for the fund to distribute taxable capital gains under certain circumstances. The sole effect of this feature is to defer the payment of capital gains taxes until an investor sells the fund shares. I personally feel that this is appropriate timing for the taxation of any capital gains.

My limited Internet research on fund taxation outside the United States indicates that fund capital gains are not taxed until the investor sells the fund shares in some countries and taxed in the year the gain is realized by the fund in other countries. In the former case there is either no formal distribution of taxable gains or else special “growth shares” accumulate capital gains generated by changes in the fund portfolio until the investor sells the shares. To the extent that your market offers this latter type of share you will achieve essentially the same kind of tax efficiency available to U.S. investors in investment company ETFs. In the United States, this particular kind of tax deferral is typically not useful on most ETFs that do not hold common stocks. However, as described in Chapters 4 and 10, other U.S. ETFs often achieve different kinds of tax deferral.

I described some of the efforts to harmonize investment company regulation throughout the European Union in Chapter 4. In examining these efforts I also found changes in some country tax codes that appear designed to accelerate the taxation of gains realized inside an investment company. At the risk of great oversimplification, it appears that the effort in the European Union to provide a passport permitting a fund offered in one country to be offered in other countries is accompanied by efforts to speed up tax receipts from funds. To the extent that capital gains tax deferral is important to you, your tax advisor may have some helpful suggestions on fund selection.

Trading and Arbitrage Constraints on Pricing

Chapter 8 describes the present and developing trading markets for ETFs in the United States. I have not studied ETF markets in other countries closely enough to comment on them extensively, but the description of the strengths and weaknesses of trading in the U.S. ETF share markets should help you to evaluate the strengths and weaknesses of trading in your own ETF market. You should be able to identify how closely the price you are paying matches a contemporary net asset value (NAV). If NAV-based trading, as described in Chapter 8, is offered in your market, you will be able to measure what your trading costs are relative to closing net asset value. If you are buying or selling an ETF based on a major index and the ETF trades tens of millions of shares per day, the available spread in the market—particularly during active trading periods—should give you some idea of your trading costs.

I question whether actively managed mutual fund-type products that do not have in-kind creation and redemption are appropriate vehicles for an ETF investor. The trading spreads appear to be relatively wide and, from the information I have, transactions do not appear to take place at a measurable relationship to a contemporary net asset value calculation.

Can You Trust Your Local ETFs?

If you have considered the issues addressed so far in this chapter carefully, you probably can answer this question. If you can't, a close comparative reading of offering prospectuses should tell you how closely your local ETFs parallel the best U.S. ETFs described in the earlier chapters of this book. Fund regulatory documents differ surprisingly little in format from one regulatory regime to another, though you and your advisors should be alert to subtle but significant differences. The most important characteristics to look for are: (1) an in-kind creation and redemption process with a fee paid by the transacting entity, and (2) oversight by a competent and conscientious regulator.

Can You Buy a RIC or UCITS ETF?

If you are not certain about the quality of your local ETFs, consider purchasing a RIC or UCITS ETF. Historically, the countries in which investment funds are offered have gone through extraordinary steps to ensure that no investment company from outside the country can be offered to local investors. Interestingly, things have changed at least slightly in recent years. The most highly publicized effort to offer funds across borders has been the attempt to create a "passport" that would permit UCITS compliant funds originating in one country in the EU to be offered to investors throughout the EU area. One effect of this effort is to promote consolidation of funds in the EU to permit economies of scale in fund costs.² Of course, this passport may come with a substantial cost if it accelerates the payment of capital gains taxes by investors.

The exchange listing and trading of ETFs has certainly increased access to the best funds. Cross-border trading of ETFs may eliminate even more of the obstacles that have denied investors access to funds domiciled in other countries. The internationalization of exchange trading and more consistent global regulation of collective (pooled) investment vehicles has been a remarkable development.

Australia is a leader in the internationalization of ETF trading. It has one of the most constructive approaches to ETF trading that I have seen. U.S. ETFs from a number of issuers are listed for trading on the Australia Securities Exchange (ASX) for sale to Australian investors. If this idea spreads, you may not need to worry about whether you can trust your local fund. If you can purchase and trade either RIC-compliant ETFs from the

²Costs are important but any reader who considers the funds' expense ratio of overwhelming importance should read or re-read Chapters 5 and 6.

United States or UCITS-compliant ETFs from the EU, you should be able to count on above-average regulatory protection. Unless you are a resident of Australia, you will probably find the UCITS products more readily available. However, if you have a choice, the tax treatment of capital gains may be better for owners of RIC funds, wherever they live. As U.S. tax law stands, there are no taxable capital gains realized inside U.S. RIC ETFs if a low-cost portfolio security leaves the fund in an in-kind redemption. Of course, there are other tax and regulatory issues facing non-residents of the U.S. who would purchase shares of U.S. funds, and I am not qualified to give you legal or tax advice on these issues.

CHAPTER 13

A Few Things Everyone Should Know about Investment Returns and Retirement

The most powerful force in the universe is compound interest.

—Albert Einstein

If we could ask him, Einstein would certainly agree that other forces interact with compound interest and affect its power. If you are going to achieve good investment results, it is important that compound interest work for you, that it work for you consistently, and that it work for a long time. Most investments do not generate high *long-term* compound returns. The significance of variability in compound interest rates is well-illustrated by looking at everyone's favorite example of what compound interest can do: calculations of the twenty-first century value of the beads and trinkets used to purchase the island of Manhattan in 1626.

The gullible Dutch purchasers dealt with a group of Native Americans who probably did not have a legitimate ownership claim on the island. Apart from the issue of title to the property, the Dutch also failed to hold onto the island—illustrating the difficulty of keeping your investment working for you for a long period.

Investment risks aside for a moment, the calculation of what compound interest can do over a long period is interesting. The original value of the beads and trinkets has been variously estimated from \$16 to \$162. Based on the \$162 estimate, one observer has calculated the value of the original payment in 2006 at various compounding rates, as follows:¹

¹See www.pfadvise.com/2006/01/15/compound-interest-manhattan-the-indians/.

1%: \$7,230
2%: \$321,666
3%: \$14,265,720
4%: \$630,686,305
5%: \$27,795,017,449
6%: \$1,221,115,163,451
7%: \$53,479,172,822,455
8%: \$2,334,819,853,128,382

That last number, based on compounding at an 8 percent rate, is more than \$2 quadrillion or, in more familiar terms, \$2,000 trillion. These results clearly indicate that the power of compound interest is very much a function of the annual rate. For a period this long, a slightly higher rate leads to a dramatically higher terminal value.

Since none of us can have a personal perspective lasting nearly four hundred years, some shorter-term examples of the effects of compound interest are useful.

As illustrated in Exhibit 13.1, the first of two investors, Joe, finds an investment that returns a steady 7 percent a year for 40 years. He invests \$10,000 and at the end of 40 years the value of his position, with nothing taken out for taxes, is \$149,745. Our second investor, Pete, is less fortunate. At the same time Joe invests his \$10,000 at 7 percent, Pete invests \$10,000

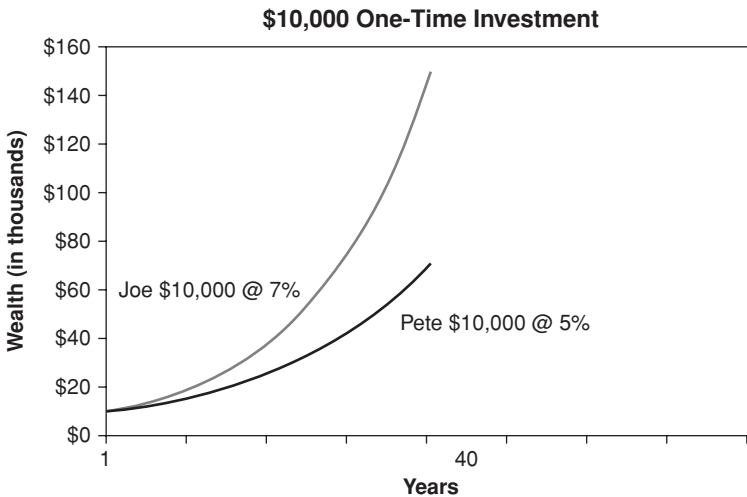


EXHIBIT 13.1 Joe and Pete Invest for 40 Years

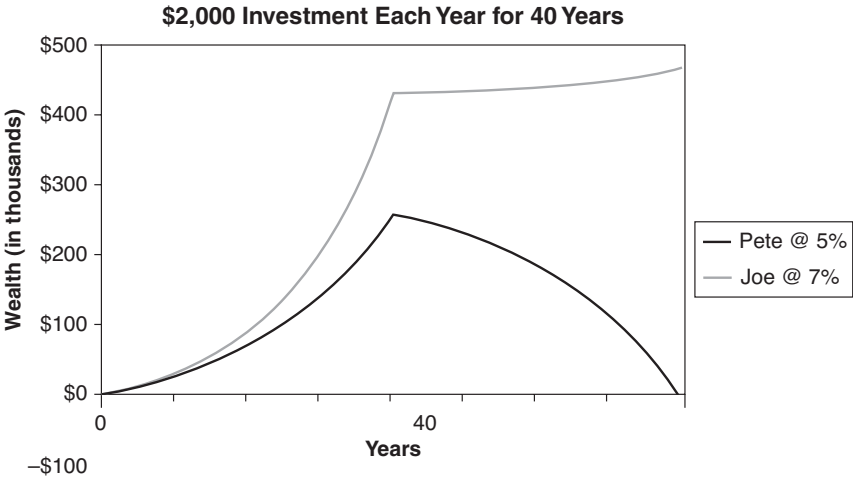
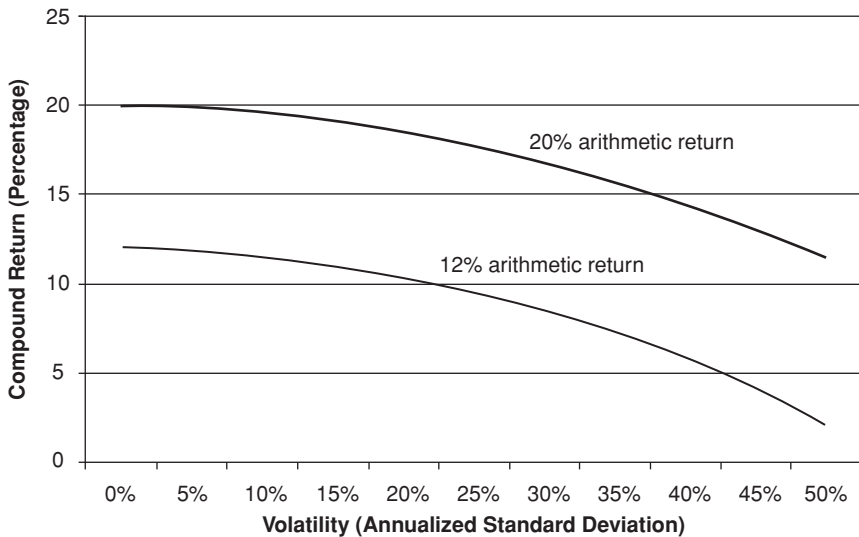


EXHIBIT 13.2 Joe and Pete Have Different Results in Their Retirement Accounts

at 5 percent, just two percentage points lower. At the end of 40 years Pete’s investment is worth less than half as much as Joe’s: \$70,400. Clearly, over a 40-year period the 2 percent difference in the interest rate adds up. As the Manhattan purchase example demonstrated, the difference is increasingly important the longer the period. The difference in the value of the two investments at the end of 40 years as well as the difference between the initial \$10,000 deposit in each case and its value at the end of 40 years are part of what Einstein had in mind when he cited the power of compound interest.

Exhibit 13.2 illustrates a different investment strategy for both Joe and Pete. In this example, each of them invests \$2,000 per year for 40 years, an amount a worker might contribute to a 401(k) plan. At the end of 40 years on the job, a 7 percent return has given Joe \$431,178 in his 401(k) account. Pete, who earns a 5 percent return, has a substantially smaller \$256,350. Upon retirement after 40 years of work and saving, Joe begins to take out \$30,000 a year and his remaining balance continues to earn 7 percent a year. Pete takes out half as much, \$15,000 a year. Pete’s account balance continues to earn 5 percent per year, but the balance falls steadily until it is essentially wiped out 80 years after the account was opened. In all probability Pete will be “gone” before his account is completely drawn down under this set of assumptions. However, the rate of interest earned has a very substantial effect, not only on the amount of money available to each man but on how long it will last in his retirement. Whereas Pete’s account is empty 80 years after it was opened, Joe’s account value grows slightly during his retirement years, even though he takes out twice as much each year as Pete.



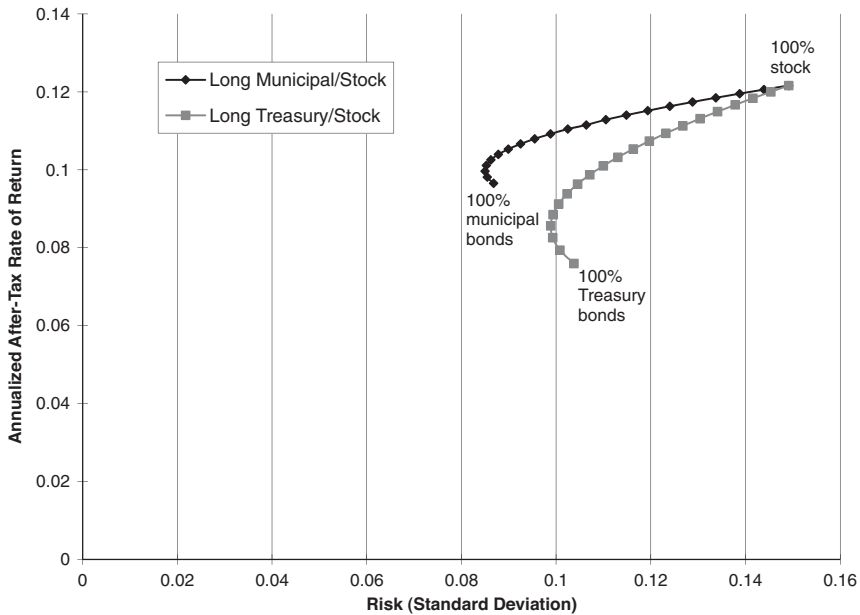
Assumption: Arithmetic return is compounded annually for 40 years. Results are not very sensitive to use of a shorter period or a higher compounding frequency.

EXHIBIT 13.3 The Effect of Volatility on the Compound Return of a Portfolio

Exhibit 13.3 shows the effect of return volatility on the compound return achieved at two different levels of arithmetic or “average” return. The returns used in this example are higher but the same principle would apply with returns in the 5 to 7% range we used in the Pete and Joe examples. One obvious difference is that the possibility of a negative return increases as the arithmetic return declines. Specifically, this figure shows that a 20 percent arithmetic return is substantially reduced as the volatility of the return, measured by the annualized standard deviation, increases. For example, the compound return will drop from 20 percent to approximately 12 percent and a 12 percent arithmetic return will drop to less than 3 percent if the volatility is 50 percent for the year. To put the 50 percent volatility measure in perspective, the VIX (volatility index) calculated by the Chicago Board Options Exchange measures the market’s expectation for the annualized standard deviation percentage for the S&P 500 index over the next several months. VIX index levels exceeded 80 percent (annualized) several times during 2008. A more typical VIX level (and S&P 500 standard deviations actually experienced) before 2008 was less than 20 percent, though periods in the 40 percent volatility range were not uncommon. The returns we assumed for Pete and Joe had *no* volatility. If there had been volatility

around their average returns, their cumulative returns would have been significantly lower. Historically average volatility for the S&P 500 would have about as much adverse impact on an investor's compound return as a reduction in the arithmetic return from 7 percent to 5 percent. Obviously, a big loss year like 2008 was a major setback for most savers and investors who held anything more venturesome than short-term Treasury debt.

Exhibit 13.4 shows the effect of diversification on the trade-off between risk and after tax return in long-term portfolios that range from a 100 percent commitment to common stocks to either a 100 percent commitment to municipal bonds or a 100 percent commitment to Treasury bonds. The significance of this diagram is that a mixture of a relatively low-risk bond asset and a higher-risk common-stock portfolio can lead to a better combination of return and risk (as measured by standard deviation) than exposure



Methodology: All investment income generated by the portfolio is reinvested, along with the after-tax proceeds of a 20 percent annualized turnover rate. The allocation between the two assets is allowed to roam within a 5 percent band around its target before re-balancing. Investment income was taxed at representative rates of an individual earning \$100,000 in 2000 dollars, with net capital gains deducted at the rate appropriate for the period. At the end of 2000, the portfolios were fully liquidated to recognize the existing tax liability. The asset class returns were proxied by the returns of representative indices.

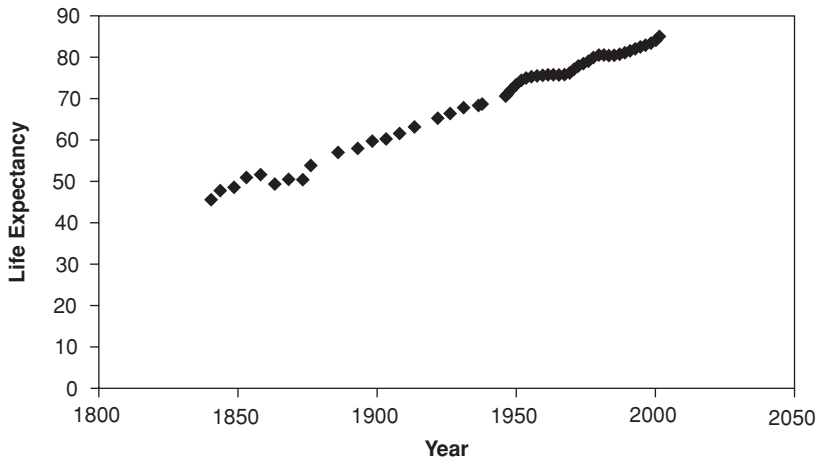
EXHIBIT 13.4 The Risk-Return Tradeoff of Bonds and Stocks in the United States (1981–2000)

to either of the component portfolios alone. The returns on the fixed income portfolio and the stock portfolio sometimes move in different directions, offsetting some of the risk of the other asset class. Diversification is often described as a “free” increase in risk-adjusted return. As an investor increases diversification within the framework of the overall market portfolio, expected risk-adjusted return will generally increase.

Diversification can be tricky, however. A classic example of inadequate diversification is a 401(k) plan that holds a number of large-cap U.S. common stock funds. The returns on these funds will be highly correlated and the amount of diversification from using a number of funds rather than just one will be very modest. Diversifying the large-cap U.S. stock fund with positions in small capitalization stocks, fixed income securities, and, to some extent, international diversification might increase the 401(k) account’s risk-adjusted return, but adding another large-cap stock fund will do little to reduce risk or improve risk-adjusted return.

It is useful to compare the correlation of various investments over different periods to see if they provide useful diversification under a variety of circumstances. The popular strategy of diversifying by adding non-U.S. common stocks (including emerging market stocks) has fallen into disrepute in recent years. In 2008, investors in emerging market funds learned what many investors in developed country funds had learned earlier: that equity markets around the world tend to be highly correlated during periods of market distress. When you need diversification most because your home country’s stock market is declining, correlations will tend to be highest as all stock markets decline more or less at the same time. The correlation in good times is far less important than the correlation in bad times. Correlation among most financial markets tends to *rise* during periods of market decline, when diversification would be most valuable.

Exhibit 13.5 illustrates the effect of human longevity on individual and government retirement planning. The sequence of data points illustrates the historical extension of female life expectancy in Japan, which has increased by approximately a quarter of a year per year for the past 160 years. Men have not done quite as well as women but their life extension *pattern* is similar. The researchers who assembled these life expectancy data characterized them as the “most remarkable regularity of mass endeavor ever observed” and “an extraordinary constancy of human achievement” (Oeppen and Vaupel (2002)). Life expectancy has increased by approximately 30 years since Bismarck set the original retirement age in Germany at 70 in the world’s first old-age insurance plan. Today’s standard retirement age is between 65 and 70 in most countries. If the typical retirement age stays in this range, continuing longevity increases will place ever-growing demands on retirement resources.

**EXHIBIT 13.5** Life Expectancy Has Been Increasing Steadily

Source: Oeppen and Vaupel (2002), "Life Expectancy of Japanese Women."

Even if the increase in life expectancy slows or even stops, most retirees are financially unprepared for 30 years or more in retirement. When 65 or 70 became the accepted age for retirement in the nineteenth century, no government or employer had to worry about providing for a large pension liability. Few people lived long enough beyond retirement to create a significant pension obligation. The increase in life expectancy illustrated in Exhibit 13.5 has changed the worldwide work and retirement dynamic. In the examples of Joe's and Pete's savings and investment programs, if we assume that Pete began work on his 20th birthday, his retirement savings would be exhausted by the time he reached the age of 100. If the pattern illustrated in Exhibit 13.5 continues, an increasing number of us will reach and pass our 100th birthday. The increase in longevity, the increase in the period after retirement, and the unreliability of any forecast of a compound return make retirement planning increasingly difficult and our lifestyles increasingly precarious.

The point of this discussion is that the combination of uncertainty and volatility of returns and the steady extension of lifespans beyond what has been considered a normal retirement age makes a comfortable retirement less likely for each new generation, particularly if we continue to retire between 65 and 70.²

²Beck (2009) and Bodie, Siegel, and Sullivan (2009) offer useful perspectives on many of the issues raised by the increase in longevity.

The financial distress of 2008, the increase in government debt incurred to stimulate/support the economy in 2009, and the financial damage absorbed by individuals and pension plans from the decline in the value of their investments combine to put retirement income security at great risk. The significance of even a slight change in return on investment, a slight increase in volatility, or, in the case of life extension, a continuing increase in longevity all increase the risks to our lifestyles. The obstacles we face in achieving financial security are simply illustrated by the examples in the exhibits. In them we have been guided by another maxim attributed to Einstein, "Things should be made as simple as possible, but not any simpler." Unfortunately, Einstein is not available to help us simplify the increasingly complex financial planning challenge we face today. If he were still with us, he would probably find ETFs to be useful tools in dealing with the retirement challenge. The principal advantage of ETFs is their relative efficiency: The investor captures more of the return from the underlying portfolio process if the investment vehicle is an ETF. That helps achieve retirement goals, even if it not a complete solution.

CHAPTER 14

Where to Look for Help in Using ETFs

The success of exchange-traded funds has stimulated growth in the client lists of advisors who help investors choose and use ETFs. Among the causes of this growth are (1) investor concern about their retirement funding and (2) perceived increases in the complexity of investment decisions after the 2007 to 2008 market decline. On the first point, investors are justifiably concerned about the global decline in the availability of defined benefit retirement plans and the corresponding need for individuals to take greater charge of their retirement investments and retirement planning. The second reason reflects investor needs for comfort and support as well as specific advisor knowledge. Each individual investor must decide how much professional help is needed and when a do-it-yourself approach might be appropriate. I have been in the investment business most of my life as an analyst, portfolio manager, and financial product developer, but I rely on professional advisors for help on many aspects of my personal financial planning. Most investors need at least *some* professional help, and many advisors patronize other advisors for specific kinds of help.

SOURCES OF PROFESSIONAL HELP

The most important decision any investor will make in selecting professional help will begin with evaluation of an individual or an advisory firm for a specific support role. While there are a number of professional designations that require specialized study and a passing score on one or more qualifying examinations, five professional designations stand out as qualifications for financial advisors. If a candidate for your personal financial advisor has one or more of these designations (a fact that you should be able to verify by checking with the sponsoring organization for each designation), you should

be able to count on at least a minimal level of competence—and probably much more. Each of these professional designations is different and the following paragraphs should help you determine whether the qualifications represented by an advisor with that designation are what you are looking for. All of these designations, except the CFA, are very U.S.-oriented. That may be important if you need tax or other country specific planning help.

Chartered Financial Analyst Charterholders (CFA Charterholders)

Chartered Financial Analyst charterholders undertake extensive study and three comprehensive exams to earn the CFA designation. The material studied encompasses a wide range of investment techniques and financial markets and instruments. A CFA charterholder who has made a specialty of working with individuals could be an excellent candidate for your financial advisor. Check his or her specialties to be certain that they are consistent with your needs.

Chartered Investment Counselors (CICs)

Chartered Investment Counselors (CICs) are investment specialists who work directly with clients, often family offices or substantial individual investors. In general, a CIC might have less specific investment knowledge than a CFA and less knowledge of financial planning than a specialist in planning—but a reasonable level of expertise in both areas.

Certified Financial Planners (CFPs)

Certified Financial Planners (CFPs) typically offer a broad range of financial planning for individuals and families. Many of them have a special expertise in taxation, estate planning, or investments, and most can help with the integration of taxable and nontaxable investment accounts, but the depth of their knowledge will vary greatly. This is the most common certification held by advisors who work closely with individual investors. The orientation of the CFP course of study is more likely to mesh with the typical individual investor's needs than either the CFA or CIC course of study.

Certified Investment Management Analysts (CIMAs)

Certified Investment Management Analysts (CIMAs) are investment specialists with presumed expertise in asset allocation and portfolio construction. This is a much less common designation than either the CFA or CFP.

Chartered Retirement Planning Counselors (CRPCs)

Chartered Retirement Planning Counselors (CRPCs) are, as the name implies, specialists in retirement issues. The administration of the CFP and CRPC exams has overlapped. Consequently, you should not be surprised to see one individual with both designations.

As a very broad generalization CFAs, CICs, and CIMAs are more likely to specialize in investment management, whereas CFPs and CRPCs are more likely to be able to help you with tax and other financial planning issues. Advisors are not interchangeable. The qualifications you will be looking for depend in large measure on what you want the advisor to do for you. If you are financially naïve or simply lack financial knowledge, you will probably want a financial planner to help you understand your situation and align your resources with your needs and objectives. If you are looking only for investment advice and support, you will probably choose someone who emphasizes investment advice.

An advisor that you verify has one or more of these designations is certainly a candidate to be your primary advisor. There are a number of web sites that offer to help you find or evaluate an advisor. A Google search for “financial advisor selection” will eventually lead you to one or more of these sites, but there is no foolproof way to select an advisor you will be comfortable with or who is certain to be able to help you with investment and financial planning decisions.

There is an unusual ETF-oriented advisor listing that might be useful in your search for a compatible advisor: iShares (2009) is similar to “Facebook” (but with no pictures) and offers advisors specializing in ETFs an opportunity to post sample portfolios, investment policy information, and company profiles to be viewed by prospective clients. New versions appear periodically. Hard copies of this document are not likely to be available much longer because it already exceeds 300 pages in length.

A financial planner or advisor, who is working with you on the development of a securities portfolio, whether the securities are individual stocks and bonds or basket products like ETFs, should have a solid background in securities investments. If you will be using funds, the advisor’s knowledge should extend to the mechanics and economics of the funds. You should understand how and how much you are paying the advisor and how and how much the manager of the funds receives. Avoid advisors who are not willing or able to explain costs clearly. On the other hand, as Chapter 6 emphasized, easily measured costs should not be the dominant issue unless your assets are so modest that the cost of engaging an advisor can eliminate any return. When you pose questions on costs or any other issue, you should try to use your advisor’s time wisely. Keep in mind that your face

time with the advisor is only part of the time the advisor will devote to your interests.

Brokers and Registered Investment Advisors

Most advisors have not qualified for a professional certification. Most certifications require a significant period of study and at least a year or two and sometimes more to take and pass one or more tests. Most advisors, whether they have any certifications or not, will be employed by major brokerage firms or by firms that serve as Registered Investment Advisors (RIAs). Depending on their affiliation, they may be subject to regulation by FINRA, the Securities and Exchange Commission or a state securities commission.

There is considerable controversy over the appropriate legal or regulatory relationship between an advisor and a client. If the advisor is a Registered Investment Advisor or is affiliated with an RIA, a fiduciary relationship typically exists. If your advisor is a Registered Representative at a brokerage firm and the firm is not acting as a Registered Investment Advisor, the relationship may not be a fiduciary relationship. Whether a fiduciary relationship is important to you will depend on your needs and expectations. Ask prospective advisors on both sides of this issue for information and consider your needs.

As this chapter was being written, the Securities and Exchange Commission proposed to change the working rules for brokers in ways that would impose more fiduciary responsibilities on them. If fiduciary standards for brokers are adopted, some concern over this issue may disappear, but no rule can protect you from the predations of a rogue advisor. You have to make your own checks and use your own common sense. If someone suggests that you make an investment that seems too good to be true, it probably *is* too good to be true. Reference checks are not foolproof, but any advisor who has been the subject of a lot of complaints filed with regulators should be avoided.

THE ADVISORY RELATIONSHIP

Be sure you and your advisor have the same perception of your relationship. Most advisors will provide as much service as you are willing to pay for, but you should have a clear mutual understanding of what the advisor will do, what it will cost, and how you will pay for it.

After the preliminaries, which will vary with the nature of the prospective advisory relationship, you and your planner or advisor will discuss your

investment and personal objectives with a view to arriving at an allocation of the securities component of your investable assets and the relationship of that asset allocation to your financial situation, lifestyle, retirement plans, bequest objectives, and, most importantly, your risk tolerance.

There is a widely accepted notion that asset allocation is the most important part of a financial plan. This belief stems in large part from a study made many years ago by Brinson, Hood, and Beebower (1986) that examined the investment policy, market timing, and security selection decisions of a number of major U.S. pension plans. More recent studies such as Kritzman and Page (2003a and 2003b) look at the issue in a very different way. They show that opportunities to add value through securities selection are much greater than opportunities to add value through reasonable variations in asset allocation. In my experience, the asset allocation decisions that a sensible individual makes with the guidance of a sensible advisor are rarely controversial or unusually dangerous. Your advisor will work with you to develop an appropriate asset allocation given your objectives and risk tolerance and help you set up a program for rebalancing your asset allocation in the light of the subsequent performance of different segments of your portfolio. Without in any way minimizing the significance of an appropriate asset allocation and provisions for periodic rebalancing, asset allocation is essentially a risk management, not a return generation decision. Getting the risk level right for you is important, but for most people, it is a relatively straightforward decision. The hard parts of investing are keeping the total cost down and finding superior investment processes to implement each of your asset allocation choices effectively.

Your investment advisor (or your financial planner wearing an investment hat) will contribute most to the return side of your investment program by helping you with the analysis of investment structures, costs, and performance expectations. A good advisor will not necessarily initiate discussions of the characteristics of individual funds with you in detail or in the context of fund structure, costs, historic performance, and expectations, but the advisor should be able to answer your questions and will usually be pleased that you are interested in what he or she knows to be important in the selection of appropriate funds and, in some cases, manager relationships.

An investment-oriented advisor should have a coherent framework for the evaluation of investment managers and fund structures. Because individual portfolio managers come and go, the evaluation of a manager will usually center on evaluating investment management companies. This is appropriate because the individual portfolio manager selection, the development of fund structures and products, and the oversight of the fund investment process

are the responsibility of the fund company, not of a specific employee of the fund management firm. Similarly, if you are using index ETFs or mutual funds, index selection is a significant issue, as discussed in Chapter 5.

For actively managed funds, the prospectus, statement of additional information (SAI), and periodic reports to shareholders should discuss various aspects of the fund's investment process. While you should keep in mind that these are legal documents and not necessarily the most effective way of communicating what the portfolio manager is doing, most investors should read prospectuses and SAIs occasionally. At the very least, your reading will help you appreciate what your advisor should be doing on your behalf.

Just because an advisor agrees with me on all these points does not necessarily make him a good advisor. If the advisor disagrees with me that does not mean you should look for someone else. Ask questions. Consider the clarity of the advisor's reasoning. Discussing the advisor's approach and thinking process will go a long way toward increasing your comfort with the advice you are getting.

SOURCES OF ETF INFORMATION

Whether or not you employ an advisor, if you are going to make significant investments in ETFs, you will want to spend some time following developments in the investment management industry, particularly developments involving ETFs and other instruments used in your portfolio. Fortunately there are plenty of sources for this information.

The Age of ETFs has coincided pretty closely with the Internet Age. Not surprisingly, many of the best sources of information on ETFs are on the Internet. However, there are a number of print publications with good ETF coverage: the *Wall Street Journal* and *Barron's* are the most widely distributed financial publications with extensive ETF coverage. A specialty publication, *The Journal of Indexes*, which is available free online or in hard copy at www.indexuniverse.com is devoted to indexes and, more important, to all aspects of the ETF market. The coverage and quality of *The Journal of Indexes* and the Index Universe web site are without peer. The Index Universe folks also publish *ETFR: Exchange-Traded Funds Report*, an approximately 30-page monthly newsletter that most advisors and some serious ETF investors should read. An annual subscription costs \$279. If you have to choose one source of regular ETF information, Index Universe should be your choice, but there is no need to pick just one. Other specialty publications with user-friendly ETF coverage include Ron DeLegge's regular

ETF coverage in *Research Magazine* (www.researchmag.com) and coverage by a number of writers at *Investment News* (www.investmentnews.com). Both these publications and their web sites are designed more for advisors than for investors, but that need not stop you from using them. My own web site, www.etfconsultants.com, contains a variety of documents that predate the present volume. I plan to add a section that will update the list of resources in this chapter from time to time. If you find resources that I should examine, please send me an e-mail at gary@etfconsultants.com.

A number of brokerage firms publish good-quality coverage of the ETF market. Generally the analyst or group of analysts that covers closed-end funds at each firm also covers ETFs. I do not see most brokerage firm ETF reports regularly, but one firm that has offered consistently high-quality ETF research that I do see regularly is Morgan Stanley.

The most comprehensive material on specific ETFs is available on the web sites supported by the ETF issuers, ETF service providers, and the exchanges where ETFs are traded. Exhibit 14.1 lists some issuer, exchange, and service provider sites that I have found useful. As noted in Chapter 6, many of the issuer web sites have separate tracks for retail investors and investment professionals. While the difference in the quantity of material available on the separate tracks is not always profound, you might want to declare yourself a professional when you register on these web sites. Even if an issuer web site does nothing else, it gives you access to the regulatory documents filed by the funds, most important, the prospectus and the SAI. If you need to look up specific information on a fund, this access is invaluable.

At various points in earlier chapters, I have referred to the SEC web site, www.sec.gov. The SEC web site has a search mechanism that usually gives me more references than I can process on a topic. Nonetheless, it is worth a try to find detailed information on a narrow topic of regulatory import. The SEC web site is also a good place to look for some types of filings and for speeches by the SEC commissioners and staff on ETF topics.

Exhibit 14.2 lists a number of web sites that have come up in various ETF searches. The listing is alphabetical by the web site name, not the URL. The value of a web site will vary greatly from one investor to another. The major search engines do a pretty good job of taking me to the latest information on important ETF developments.

The variety and quantity of ETF data available on the Internet is amazing. Yahoo! and Google are the most popular price and volume web sites for data associated with recent trading. Both sites let us examine some of the details of the intraday trades in individual ETFs. IndexUniverse, www.indexuniverse.com, has expense, trading quality, and return data on most U.S. ETFs. The National Stock Exchange (NSX), www.nsx.com,

EXHIBIT 14.1 Web Sites of Major ETF Issuers and Service Providers

ALPS ETF Trust: www.alpsetfs.com/ www.alpsinc.com/Exchange.html
Bank of New York: www.bnymellon.com/products/assetservicing/etfundsservices.html
BetaPro Management: www.hbpetfs.com/index2.asp
China Asset Management: www.chinaamc.com/portal/en/home/index.jsp
Claymore Securities: www.claymoresecurities.com/etf/
Commerzbank ComStage:
www2.comstage.commerzbank.com/Products/ProductSearchPage.aspx?pc=1&c=205088
Credit Agricole Structured AM: www.casam.com/home_
Credit Suisse Asset Management: www.xmtch-etf.com/UI/Pages/en/Home.aspx
Daiwa Asset Management: www.daiwa-am.co.jp/english/index.html
Db x-trackers: www.dbxtrackers.com/EN/showpage.asp?pageid=230
Direxion Shares: www.direxionshares.com/index.html
EasyETF: www.easyetf.com/portal/ep/home.do
ETF Securities: www.etfsecurities.com/us/welcome.asp
ETFlab Investment: www.etflab.de/en
Fidelity Management & Research: <http://content.members.fidelity.com/etf/frame/0,,315912808,00.html?refpr=zwycbetf007>
First Trust Advisors: www.ftportfolios.com/
Grail Advisors: www.grailadvisors.com/
Hang Seng Investment Management: www.hangseng.com/hbsb/eng/per/invs/hsss/etf2/home/fxi.html
IndexIQ Advisors: www.indexiq.com/etfs.html
iShares: www.ishares.com/home.htm
J P Morgan Chase: www.jpmorgan.com/cm/ContentServer?c=TS_Content&pagename=jpmorgan%2Fis%2Fts_Content%2FGeneral&cid=111473538956
Javelin Investment Management: www.javelinfunds.com/
Lyxor Asset Management: www.lyxor.com/
Nikko Asset Management: www.nikkoam.com/english/funds/etf/
NSX / National Stock Exchange: www.nsx.com/
Nomura Asset Management: www.nomura-am.co.jp/english/nextfunds/product.html
Polaris: www.polaris.com.hk/finweb/EN/aboutus/aboutTW.aspx
PowerShares: www.invescopowershares.com/
ProShares: www.proshares.com/
Rydex: www.rydex-sgi.com/products/etfs/home/etf_home.rails
SG Asset Management: www.sgametf.com/
State Street Global Advisors: www.ssga.com/index.html
UBS Global Asset Management: www.ubs.com/
Van Eck Associates Corp: www.vaneck.com/
Vanguard: www.personal.vanguard.com/us/funds/etf
www.advisors.vanguard.com/VGApp/iip/site/advisor/home
Wisdom Tree Investments: www.wisdomtree.com/index.asp
XACT Fonder: www.xact.se/en/Home.htm
Zurich Cantonal Bank: www.zkb.ch/de/startseite/privatkunden/anlagen_und_boerse/fonds/exchange_traded_fonds1.html
For more up-to-date listings of ETF providers' web sites visit the ETF guide web site:
www.etfguide.com/etfdirectory.htm#etfakproviders.

EXHIBIT 14.2 ETF Information Web Site Names and URLs

Name of Web Site	URL
About.com	http://etf.about.com/
Bogleheads Forum	www.bogleheads.org/forum/index.php
ETF Connect	www.etfconnect.com/education/faq.asp
ETF Database	http://etfdb.com/
ETF DIGEST	www.etfdigest.com/index.php
etf Securities	http://etfsecurities.com/us/welcome.asp
ETF Trends	www.etftrends.com/
ETF.com	http://etf.com/
etfguide	http://etfguide.com/
ETFZone	http://etfzone.com/
Exchange-Traded Funds	www.etftopics.com/
Google	www.google.com
Index Show	www.indexshow.com/
IndexUniverse.com	www.indexuniverse.com/index.php
Investment Company Institute	http://ici.org/
INVESTOPEDIA	www.investopedia.com/terms/e/etf.asp
Market Watch	www.marketwatch.com/investing/etf
Morningstar	www.morningstar.com/
NASDAQ	www.nasdaq.com/investing/etfs/ education.aspx
National Stock Exchange	www.nsx.com/content/market-data
NYSE Euronext	www.nyse.com/about/listed/funds.html
OneChicago	www.onechicago.com/?page_id=754
Seeking Alpha ^α	seekingalpha.com/dashboard/etfs
SmartMoney	www.smartmoney.com/investing/etfs/
SPA exchange traded funds	www.spa-etf.com/home
The Motley Fool	www.fool.com/etf/etf.htm
TheStreet.com	www.thestreet.com/life-and-money/etf- center/index.html
The Wall Street Journal ETF CENTER	http://online.wsj.com/ad/etfcenter
U.S. Securities and Exchange Commission	http://sec.gov/answers/etf.htm
Wikipedia	http://en.wikipedia.org/wiki/Exchange-traded_ fund
Yahoo! Finance	http://finance.yahoo.com/etf

offers a variety of current and historic data on U.S. ETF assets, net cash flows and notional volume (trading volume weighted by the value of the fund shares traded.) The NSX data are available by issuer, by fund category, and by individual product. Share trading volume is available by issuer.

One thing I have not found is a web site with links to other web sites that provide different kinds of up-to-date ETF information. This web site would be very useful to many ETF investors.

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Glossary

Most of the terms in this glossary are fund- and portfolio-related terms from the *Dictionary of Financial Risk Management*¹ and other words used in connection with ETFs. In some cases the more comprehensive formal definition has been modified to focus on funds. I have omitted some terms that are discussed in greater depth in the text than is possible in a brief formal definition. If you do not find a term of interest in this list, check the index.

12(d)(1) limit: Section 12(d)(1) of the Investment Company Act of 1940 limits the ability of registered investment companies to invest in other investment companies. Without specific exemptions from this section, no registered investment company may acquire more than 3 percent of the outstanding stock of another investment company, or acquire securities from a single investment company with an aggregate value of more than 5 percent of its total assets, or acquire securities from multiple investment companies with an aggregate value in excess of 10 percent of its total assets. For example, a fund could not hold more than 3 percent of all outstanding 500 SPDRs or QQQQs. Certain funds of funds have obtained exemptions from these limits.

12b-1 fee: A mutual fund fee (named for the SEC rule that permits it) used to pay for distribution costs, such as advertising and trailer commissions paid to brokers. If the 12b-1 fee exceeds 0.25 percent of assets, the fund is characterized as a load fund.

'40 Act: See Investment Company Act of 1940.

401(k) plan: A defined contribution, income tax-deferred retirement plan under which employees of a company may elect to make pre-tax contributions to an employer-sponsored plan in lieu of receiving currently taxable income. In some plans, part or all of the employee contribution is matched by an employer contribution. See also *Roth 401(k) plan*.

403(b) plan: A defined contribution, income tax-deferred retirement plan similar to a 401(k) plan for employees of certain not-for-profit organizations.

457 plan: A defined contribution, income tax-deferred retirement plan similar to a 401(k) plan for employees of state and local government and tax-exempt organizations. 457 plans are not subject to ERISA. The funds belong to the employer and are subject to the claims of the employer's general creditors.

¹See Gastineau and Kritzman (1999), plus more recent updates.

A shares: In a multiclass mutual fund structure, this class is usually the front-end load class.

absolute return: A hedge fund return objective and the objective of investors using a market neutral investment strategy. The absolute return objective is sometimes described as being independent of a benchmark. More appropriately, the benchmark might be described as the return on sovereign debt with a relatively short duration, say, 6 to 12 months. Since most absolute return strategies have a higher standard deviation than the return on short-term sovereign debt, a premium over the sovereign debt return is often an appropriate part of the stated objective. Mutual funds and ETFs with what are described as absolute return strategies have also been offered. If these strategies become very popular, portfolios will have to either accept more risk or lower return because the increase in popularity will reduce the opportunities to obtain favorably priced portfolio positions.

account registration: The name(s) that appear on an investor's account statement.

accrued interest: Interest that accumulates on a fund's investments, but has not yet been paid/received.

active extension strategy: Any of a number of hedged portfolio strategies often referred to by the long/short characteristics of their portfolios as 120/20, 130/30 or 200/100. Strategies like 80/20 or 90/10 might also be included in the definition. The common denominator in all these strategies is that a long position is partly offset by a short position. The net long position is calculated by subtracting the second number from the first. The aggregate risk characteristics of these portfolios differ from traditional asset management (outside the hedge fund world) where only long positions in portfolio instruments are taken. The ability to add value with active extension strategies under a variety of circumstances has been well-documented in the academic literature.

active indices: Mutual fund benchmarks devised and published by Lipper for a variety of fund types and styles. These benchmarks are based on the portfolios of all the funds in a category that report their portfolios to Lipper.

active management: An investment process that attempts to outperform the average or benchmark return in an asset class at a specific level of risk through the use of superior information and judgment in portfolio construction. Active management may be based on some combination of traditional security analysis and research, technical analysis, macroeconomic forecasts, and application of various fundamental quantitative tools. *Contrast with passive management.*

active manager: A portfolio manager who takes an active role in any aspect of the investment process—including some or all of asset allocation, style exposures, security selection, and risk management—in an attempt to improve a portfolio's risk-adjusted return.

active share: The fraction of a portfolio that is different from the benchmark index used to evaluate the portfolio manager's performance. Active share is computed as:

$$\text{active share} = \frac{1}{2} \sum_{i=1}^N [w_{fund,i} - w_{index,i}]$$

where $w_{fund,i} - w_{index,i}$ are the weights of each asset, i , in the fund and the index respectively, summed over all applicable assets. The significance of active share is that it measures the extent of active management in a nominally actively managed fund. Cremers and Petajisto (2009) find a positive correlation between active share and relative portfolio performance.

adjustable-rate instrument: Any of a wide variety of fixed principal obligations whose periodic payout is set relative to a reference index rate (such as LIBOR) to create a longer-term fixed principal obligation with a floating-rate interim cost.

advisor/adviser: (1) An organization employed by a mutual fund's board to give professional advice on the fund's investments and asset management practices. Also called a "registered investment advisor." (2) A trained investment counselor who assists investors in the establishment and execution of an investment program. The advisor's firm is compensated by commissions or a fee.

advisory fee: (1) The amount a fund pays to its investment advisor for the investment management associated with overseeing a fund's portfolio. Also called a management fee. (2) The compensation of some investment counselors.

after-hours trading: The buying and selling of financial instruments outside what, until recently, have been considered normal trading hours (e.g., normal trading hours are weekdays, 9:30 to 4:00 P.M. E.T. for stock exchanges in the United States).

aftermarket: The market for a security after an initial public offering. The after-market (or secondary market) may be on or away from an exchange.

after-tax contribution: Investment in a retirement plan from the taxed portion of an employee's pay. These contributions are treated differently from the more common pre-tax contribution when they are distributed. All net contributions to Roth accounts are after-tax contributions.

after-tax return: The return from an investment after all income taxes have been deducted. By comparing after-tax returns an investor can determine which of several investments makes the most sense based on his or her tax bracket.

agency debt: Obligations issued by an agency of the U.S. government and benefiting from government credit quality.

agency transaction: A transaction in which the executing brokerage firm acts as an agent and usually charges a commission for its services. *Contrast with principal transaction.*

aggressive growth fund: A mutual fund that seeks maximum long-term capital gains. Such funds often invest in stocks of small and mid-sized companies, though company size is not always a selection criterion.

algorithm trading: Use of a complex valuation and order management system to handle trading in financial instruments with minimum contemporaneous human attention.

alpha: A measure of the incremental return generated from active portfolio management; sometimes called active management risk.

alternative investment: Any asset category that is not used by a large number of investors or investment managers, usually because it cannot absorb large amounts

of money or requires uncommon analytical or management attention. Examples include hedge funds, managed loan funds, and venture capital.

alternative minimum tax (AMT): A tax calculation made as a supplement to the standard income tax calculation for individuals and corporations in the United States. It was originally designed to ensure that wealthy individuals and successful corporations pay a minimum percentage of their income in taxes in spite of any tax shelters or tax-exempt investments they may have. The AMT, which can make certain standard tax benefits unattractive to taxpayers affected by it, now affects the tax returns of less affluent taxpayers than those it was designed to tax.

American Depositary Receipts (ADRs): Certificates traded in U.S. markets representing an interest in shares of a foreign company. ADRs were created to make it possible for foreign issuers to meet U.S. security registration requirements and to facilitate dividend collection by dollar-based investors. Some ADRs sold in the United States under Section 144a exemptions are not readily resalable to all U.S. investors; but most ADRs are nearly as freely traded in the U.S. as domestic issues.

AMT Bonds: Types of municipal bonds whose income is subject to the alternative minimum tax (AMT). AMT Bonds include those issued to finance such private purpose activities as industrial redevelopment and sports stadium construction.

analyst: Also called a financial analyst or security analyst. Analysts train to use a variety of tools and techniques to evaluate investments. Analysts are employed by brokerage firms and investment advisors to develop, buy, sell, and hold recommendations on securities and to answer questions from their firm's staff and clients on specific investments or proposals. Experienced analysts often hold the CFA designation, which is evidence of systematic study and certification by satisfactory scores on a series of three annual tests.

angels: Venture capital investors or—in some circles—investors in Broadway plays.

annual report: A legally required document that every fund or publicly held corporation sends to its shareholders within a specified period after the end of the fiscal year. The annual report describes the fund's or firm's financial condition and performance and includes an audited financial statement.

annualized return: The rate of return that would occur on average per year given a cumulative multiyear return or a fractional year return and taking into account compounding and discounting. The formula for annualizing a return is:

$$R_a = (1 + R_u)^{(1/n)} - 1$$

where R_a equals the annualized return, R_u equals the unannualized return, and n equals the number of years over which the cumulative return is calculated. When reporting investment performance, it is inappropriate to annualize returns calculated over periods of less than one year.

arbitrage: (1) Technically, the action of purchasing a commodity or security in one market for immediate sale in another market (deterministic arbitrage). (2) Popular usage has expanded the meaning to include any attempt to buy a relatively

underpriced item and sell a similar, relatively overpriced item, expecting to profit when the prices resume a more appropriate theoretical or historical relationship (statistical arbitrage). (3) In trading options, convertible securities, futures, and exchange-traded funds, arbitrage techniques can be applied whenever a strategy involves buying and selling packages of related instruments. (4) Risk arbitrage applies the principles of risk offset to mergers and other major corporate developments. The risk-offsetting position(s) do not insulate the investor from certain event risks (such as termination of a merger agreement or the risk of delay in the completion of a transaction), so the arbitrage is incomplete.

asked price: Price at which an instrument is offered for sale. Often abbreviated as “ask price”; also called offer or offered price.

asset allocation fund: A fund that invests its assets in a wide variety of investments that may include domestic and foreign stocks and bonds, government securities, gold or other precious metals, and real estate. Some asset allocation funds keep the proportions allocated among different investments relatively constant, while others alter the mix as market conditions change.

asset allocation: (1) Dividing investment funds among markets to achieve diversification and/or a combination of expected return and risk consistent with the investor’s objectives. (2) A value-oriented investment strategy that attempts to take long positions in markets or market sectors where prices appear to be low and to reduce positions, or to take short positions in markets or market sectors where prices appear to be high. Tactical (TAA) or strategic (SAA) asset allocation advocates and value-seeking portfolio managers often use similar techniques and policies. In contrast to momentum investors who accentuate market trends, most asset allocators’ trades tend to offset destabilizing market movements and counteract price and rate fluctuations. The asset allocator tends to buy when prices decline and sell when prices rise.

asset class: A grouping of investible assets with the following characteristics: (1) nonzero exposure (positive or negative) has the potential to raise the utility of a portfolio; (2) its risk-return characteristics cannot be duplicated by some combination of other assets; (3) it is relatively homogeneous internally; and (4) it has the capacity (size) to absorb a meaningful fraction of portfolio assets. Recently, there has been a tendency toward asset class pollution—that is, a tendency to divide the world of investments into more alleged asset classes than are warranted or useful.

asset manager: A portfolio manager, corporate treasurer, or other individual responsible for management of the risks and returns associated with a portfolio of securities or other instruments.

asymmetric correlation: A correlation that differs depending on whether a particular state prevails. For example, the correlation between the returns of two financial assets may differ depending on whether the correlation is measured during a bull or bear market or during turbulent or quiet periods. Differences in correlations, however, do not always imply that the observations are generated by different or non-normal distributions. Correlations based on extreme observations will be

higher in absolute value than correlations based on more typical observations, strictly as an artifact of mathematics.

asymmetric information: Information known to some people but not to others that may affect securities prices.

at the bell: Time and/or price at the close of the market.

at the opening: (1) Time and/or price at the market opening. (2) A market or limit-price order to be executed at the opening or not at all; all or part of any order not executed at the opening is treated as canceled.

auction rate preferred stock (ARPS): A floating-rate preferred with the dividend rate reset by Dutch auction, typically every forty-nine days. The interest rate is usually subject to a maximum, and the issue is sometimes puttable at each auction. These instruments have been the subject of recent disputes resulting from allegations of inadequate risk disclosure.

authorized participant (AP): An investment banking firm trading desk, market maker, arbitrageur or, rarely, an institutional investor that has signed an agreement with an exchange-traded fund's (ETF's) distributor setting terms for the creation and redemption of the ETF's shares in creation unit aggregations. As a practical matter, the AP must be a Depository Trust Company participant in the United States, limiting the role largely to broker-dealers and custodial institutions.

automatic reinvestment: A fund service giving shareholders the option to purchase additional shares with cash from dividend and capital gains distributions.

average down or up: An investment strategy to purchase a security at various levels to establish a lower or higher average cost. *See dollar-cost averaging.*

average effective maturity: For a bond fund, the average maturity dates of the fixed-income securities in the fund's holdings. A bond's effective maturity takes into account the possibility that it may be called by the issuer before its stated maturity date. In this case, the bond trades as though it had a shorter maturity than its stated maturity.

average maturity date: The average maturity of all bonds held in a fixed-income fund.

average portfolio maturity: The weighted average maturity of all the bonds in a bond fund's portfolio.

B shares: In a multiclass mutual fund structure, this class is usually the "back-end load" or "contingent deferred sales charge" class.

back office: Brokerage house and investment management firm sales and trading support and record-keeping operations.

back testing: The practice of applying a valuation or forecasting model to historical data to help appraise the model's possible usefulness when current and future data are used. Back tests are not always a reliable basis for evaluating a model or forecasting tool.

back-end load: A mutual fund sales charge imposed when an investor sells fund shares rather than when he purchases them. The back-end load generally decreases the longer the investor holds the shares because an annual fee charged to the account covers the commission paid to the salesman, usually in about five years. *Also called contingent deferred sales charge.*

- backward pricing:** Setting a net asset value for mutual fund share trading using a “stale” price based on portfolio securities values determined before the commitment to trade was firm. This was legal until 1968 when SEC Rule 22c-1 requiring forward pricing became effective. Backward pricing more recently became an issue in the late trading mutual fund scandals that emerged in late 2003.
- balanced fund:** An investment company (mutual fund) that invests in a mix of stocks, bonds, and/or money market instruments to meet some combination of growth, income, and conservation of capital investment objectives.
- basis point (BP, BIP):** 1/100 of a percentage point, also expressed as 0.01 percent. The difference between a yield of 7.90 percent and 8 percent is 10 basis points. When applied to a price rather than a rate, the term is often expressed as annualized basis points.
- basket:** A set of related financial instruments whose prices or rates are used to create a synthetic composite instrument that trades as a unit or serves as the underlying for an exchange-traded fund or a derivative instrument.
- basket trade:** *See portfolio trade.*
- bear market:** A prolonged period of declining stock prices, typically defined as a decline of 20 percent or more from the market high.
- before-tax contribution:** The portion of an employee’s salary contributed to a retirement plan before federal income taxes are deducted. This contribution reduces the taxpayer’s gross income for federal tax purposes. Generally, any withdrawal from an account funded with before-tax contributions will be taxable at the time of withdrawal.
- benchmark index:** A standard, often an unmanaged or rules-based, index used for comparative purposes in assessing an investment’s performance.
- beneficial owner:** The person or firm that will benefit from owning an asset even though they may not be registered as the owner.
- beta:** A measure of the variability of a fund’s share price in relation to a benchmark index, usually the Standard & Poor’s 500 index for U.S. equity portfolios. Securities with betas higher than 1.0 have been and are expected to be more volatile than the index. Securities with betas lower than 1.0 have been and are expected to be less volatile than the index.
- bid:** The price at which a trader is willing to buy a security.
- bid-asked spread:** The difference between the bid and offer price or rate. The most widely used comparative measure of market quality.
- blue-sky laws:** State securities laws that require mutual funds to register their shares and to provide details on each share class so that investors can base their investment judgments on relevant data. The purpose of the laws is to prevent securities fraud—in other words, to protect investors from inadvertently buying a piece of “blue sky.” Exchange-traded funds are not subject to state registration.
- bond anticipation notes:** Short-term debt issued by states and municipalities as interim financing for projects to be funded by anticipated bond issues.
- bond:** A type of IOU issued by corporations, other private organizations, governments, or government agencies. The issuer makes regular interest payments on

- the bond and promises to pay back the face value of the bond at a specified point in the future, called the maturity date. Bonds may be issued for terms of up to 30 years or more.
- bond fund:** A fund that invests in bonds: generally corporate, municipal, or U.S. government debt securities. Bond funds generally emphasize income rather than growth.
- bond insurance:** Insurance as to timely payment of interest and principal of a bond issue.
- bottom-up investing:** Approach to investing that identifies individual securities likely to perform well before considering broad economic trends. *Contrast with top-down investing.*
- breakpoint:** The size of an open-end mutual fund purchase that entitles the buyer to a lower sales charge.
- broad-based index:** An index designed to reflect the movement of the entire market or stocks in a wide capitalization range.
- broker-dealer:** A securities firm that sells funds or other securities to the public.
- bull market:** A prolonged period of rising security prices. While the general trend of prices is positive, prices on any given day will fluctuate and may decline.
- business cycle:** The regular ebb and flow of economic conditions over time, characterized by fluctuating employment levels, industrial production, and interest rates.
- C shares:** In a multiclass mutual fund structure, this class is usually the level load class with a permanent sales charge component of the expense structure.
- call features:** Terms in a bond indenture that give the issuer the right to call the bond for redemption at certain prices and at certain times.
- call protection:** Provisions in a bond indenture or preferred stock that designate a period of time during which the issuer cannot call an issue or during which the issuer must pay a premium over parity to retire the issue.
- call risk:** The possibility that callable bonds held by a fund will be redeemed prior to maturity. The risk to the investor is that if bonds are redeemed early, it may be impossible to reinvest the funds in a similar instrument with a similar yield.
- callable bond:** A bond whose issuer reserves the right to redeem (or “call”) it before it is due. This feature represents a risk to the investor in that bonds are generally called when interest rates fall and, thus, usually cannot be replaced with a similar yielding issue of the same quality.
- capital asset pricing model (CAPM):** An asset valuation model describing the relationship between expected risk and expected return for marketable assets. The CAPM posits that the intercept of a regression equation between an asset’s returns and the returns of systematic factors equals 0 percent in an efficient market, but it does not necessarily assume a single source of systematic risk. This classic model, embodied in the security market line, is not always empirically affirmed, but it is the most widely used approach to relative asset evaluation.
- capital gain/(loss):** The difference between the sale price of a capital asset, such as an exchange-traded fund, mutual fund, stock, or bond, and the cost basis of the asset. If the sale price is higher than the cost basis, there is a capital gain.

If the sale price is lower than the cost basis, there is a capital loss. Short-term capital gain refers to a gain on assets owned for one year or less. Long-term capital gain generally refers to a gain on assets owned for more than one year. Net capital gains generated by a fund from the sale of securities in its portfolio are distributed to shareholders, usually once a year in December.

capital gains distribution: A distribution from a fund of taxable long-term capital gains, usually from the sale of common stocks or other securities held for more than a year. Short-term capital gains are included with the income distributions of a regulated investment company. Capital gains distributions are taxed at long-term capital gains rates no matter how long the shareholder owned shares in the mutual fund. Capital gains distributions are taxable in the year in which they are declared, which is not necessarily the same as the year in which they are paid.

capital gains overhang: A reference to net unrealized capital gains in the securities held by a mutual fund. In general, the greater the unrealized gains as a percent of fund assets, the greater the probability of a significant future capital gains distribution.

capital growth: A rise in the value of a fund's securities, reflected by the appreciation of its net asset value per share.

capitalization: The market value of a company's outstanding securities, excluding current liabilities. Under \$250 million is generally considered small cap; \$250 million to \$2 billion is mid cap; and over \$2 billion is large cap. These ranges rise in bull markets and fall in bear markets.

cash: In discussing financial instruments, generally used to include the value of assets that can be converted to cash immediately without a material price impact.

cash equivalent: A readily marketable financial instrument with a highly stable value.

cash management account (CMA): A consumer account offered by a brokerage firm—initially in cooperation with a bank, but also with a money market mutual fund providing deposit and checking privileges. These accounts have simplified consumers' management of their cash balances and have been a significant factor in disintermediation of retail bank deposits.

cash management bill: Nonstandard bills that the Treasury occasionally sells to help it match its cash inflows and outflows.

cash reserves: Cash deposits as well as short-term bank deposits, money market instruments, and U.S. Treasury bills.

central securities depository (CSD): An institution that holds immobilized or dematerialized securities in book-entry form and is responsible for the centralized transfer against payment by entries on its books. Depositories are responsible for safekeeping the physical certificates that have been issued for equities and bonds. *See, for example, Depository Trust Company (DTC).*

certificate of deposit (CD): An insured, interest-bearing debt instrument issued by a bank, which usually requires the depositor to keep the money invested for a stated period of time.

check writing privilege: A feature of some types of brokerage accounts and mutual funds. The owner of the account receives a checkbook and can write

checks against the account value or balance. *See also cash management account (CMA).*

classes of shares: (1) Mutual funds can have multiple classes of shares with claims on a single portfolio. Each class permits investors to purchase the portfolio in a different way. Class A shares might give investors the option of paying a front-end sales load while Class B shares give investors the option of paying a contingent deferred sales charge. In a few cases, a fund may have both conventional and exchange-traded share classes. No-load funds typically have a single share class without a sales charge. (2) Corporations can have different classes of shares based upon voting rights (Class A shares might have one vote for each share and Class B shares might have one vote for each ten shares) or participate in different components of the company's earnings, as in the case of target stock, which participates only in the results of a specific segment of the corporation's business.

cliff vesting: Full vesting in a benefit after a specified length of service with no vesting prior to that time.

clone fund: An investment company that follows the same policies or is benchmarked to the same index as another fund. The clone may be offered because the cloned fund has been successful, and is closed to new money, or because of restrictions on ownership of funds used by retirement plans.

closed-end fund: An investment company with a fixed number of shares outstanding. After the initial offering of shares is completed, a new investor buys shares from another shareholder rather than from the fund. In contrast to shares in an open-end mutual fund, which can usually be redeemed at net asset value, a closed-end fund's shares can trade in the market at a premium or discount to their net asset value. *Compare to exchange-traded fund.*

closet index fund: A fund described by its advisors as an actively managed fund and that charges active management fees but, without fanfare, is constructed to track a benchmark index very closely.

collective trust: An alternative pooled investment structure to a registered investment company created to accommodate institutional accounts such as defined contribution pension accounts.

commercial paper: Corporate promissory notes issued to provide short-term financing, sold at a discount, and redeemed at face value. A principal component of many money-market fund portfolios.

commission: The fee an investor pays a broker to buy or sell a fund share or other security, typically assessed on a per-trade basis or per share. No commission is charged for no-load, open-end mutual funds, giving them an *apparent* cost advantage over exchange-traded funds for investors who trade frequently.

common stock: A security that represents ownership in a public corporation.

compounding: The growth that comes from investment income and gains on both the original principal and the previously reinvested income and capital gains of an investment over a period of years.

confirmation: A printed record of a transaction sent to an investor when distributions are paid or other business is transacted.

- constructive receipt:** The date that IRS regulations determine a taxpaying entity received an income payment or realized a gain.
- Consumer Price Index (CPI):** The change in consumer prices determined monthly by the U.S. Bureau of Labor Statistics, often cited as a general measure of inflation.
- contingent deferred sales charge (CDSC):** A fee imposed when mutual fund shares are redeemed (sold back to the fund) during the first few years of ownership. The CDSC declines over time and is usually eliminated after, say, five years. *Also called back-end load.*
- continuous net settlement (CNS):** The National Securities Clearing Corporation's (NSCC's) automated accounting system that clears and guarantees settlement of compared security transactions. CNS nets each participant's security obligations into one net position for each issue, and one overall net cash position. NSCC becomes the contraparty to each trade and guarantees settlement. The system plays an important role in reducing each participant's risk and their customers' risk exposure to failure of a trade counterparty to perform.
- convertible security:** A bond, preferred stock, or warrant that is convertible into the common shares of a corporation or into some other security under specific circumstances.
- core/satellite investment strategy:** (1) An exchange-traded fund (ETF) asset allocation program using broad index funds (core) and style and sector funds (satellites) in an attempt to enhance overall portfolio performance or diversification while controlling risks. (2) A simplified ETF-oriented risk budgeting program that uses active equity funds to add alpha.
- corporate action:** An event or resolution approved by a corporation's board of directors that changes the corporate capital structure or financial condition. Examples include full or partial call of securities; declaration and payment of dividends; maturation and repayment of debt or preferred stock; conversion of debt; exchange, tender, or spin-off of securities; split or reverse split of shares; securities offerings; liquidation or name change.
- correction:** A relatively short-term drop in stock prices, usually defined as a decline of 10 percent or more from the market's high.
- correlation:** Correlation (R) is a measure (ranging in value from -1 to 1) of the association between a dependent variable and one or more independent variables. If one variable's values are higher than its average value when another variable's values are higher than its average value, their correlation is positive. By contrast, if one variable's values are lower than its average value when another variable's values are higher than its average value, their correlation is negative. A correlation coefficient is not necessarily a measure of casualty, but it does indicate the strength of a relationship. A correlation coefficient of 1 implies that the variables move perfectly in lockstep; a correlation coefficient of -1 implies that the variables move inversely in lockstep; a correlation coefficient of 0 implies that the variables, as calibrated, are uncorrelated.
- correspondence:** A measurement usually expressed as a percentage of the extent to which two portfolios such as an exchange-traded fund portfolio and its portfolio composition file (PCF) are similar, also called overlap. The complement

- of correspondence is essentially equivalent to active share when an actively managed portfolio is compared with the composition of a benchmark index.
- cost basis:** The adjusted cost of a security or physical asset that is used for tax calculations. Adjustments include depreciation expense and capital gains on which tax payments have been made.
- coupon:** (1) The nominal annual rate of interest on a bond or note, usually expressed as a percentage of the face value. (2) A piece of paper detached from a bearer bond and exchanged for a quarterly, semiannual, or annual interest payment.
- coupon rate:** The interest rate that an issuer promises to pay periodically over the life of a bond or other debt security, expressed as a percentage of notional value.
- creation unit:** The minimum module for issue or redemption of shares in an open exchange-traded fund (ETF), usually between 25,000 and 600,000 fund shares, depending on the fund's policy. ETFs issue their shares in return for portfolio deposits of securities in multiples of the Portfolio Composition File basket specified by the fund's advisor. With some exceptions related primarily to fixed income funds or cash items like accrued dividend payments and cash balancing amounts, ETF creations and redemptions are largely in kind, not in cash. ETF trading on the secondary market on the exchange is in the individual fund shares issued in the creation, not in Creation Units.
- credit rating:** An evaluation of the creditworthiness of a debt security by an independent rating service.
- credit risk:** The potential for default by an issuer on its obligation to pay interest or principal on debt securities.
- current yield:** Annual dividend or interest divided by the current price of a stock or bond, expressed as a percentage.
- CUSIP number:** A nine-digit identifier used to uniquely identify every security publicly traded in the United States. CUSIP stands for Committee on Uniform Securities Identification Procedures.
- custodian:** A financial institution that holds securities in safekeeping for clients.
- cyclical stocks:** Stocks of companies whose main business experiences regular ebbs and flows in activity due to changes in the economy. The auto, chemical, paper, and steel industries, for example, are considered cyclical because their earnings tend to fall when the economy slows. Food and drug stocks are generally considered to be noncyclical, since food and medical care needs continue no matter what economic conditions are.
- deadweight:** (1) In enhanced indexing, the percentage of a portfolio that matches the underlying index and, hence, cannot help the manager outperform the index. For example, if 90 percent of the fund (the deadweight) matches the index composition exactly, only 10 percent of assets are available to provide a return that exceeds the index return. Significant outperformance from this 10 percent is necessary to provide material overall outperformance. *Also called correspondence.* (2) A deadweight loss is a cost that adds no value to the entity incurring it.
- debt security:** *See fixed income security.*

- decimalization:** The process of changing securities pricing from fractions to decimals. Decimalization of equity securities is complete in the United States. Segments of the bond market continue to trade in fractions.
- declaration date:** (1) The date the board of directors of closed-end, exchange-traded, and preferred funds agree upon and announce the amount of the dividend and/or capital gains distribution to be paid to shareholders. (2) The date a corporate board declares a cash or stock dividend.
- default risk:** *See payment default risk.*
- defaulted securities:** Typically fixed income securities (or any fixed dividend-paying securities such as preferred stock) that are unable to make their interest rate or other periodic payments and/or unable to repay their principal.
- defined benefit pension plan:** A pension plan in which the employer commits to specified dollar payments to qualifying employees. The pension obligations are ultimately equivalent to debt obligations of the plan sponsor.
- defined contribution retirement plan:** *See* 401(k) plan; 403(b) plan; 457 plan.
- defined portfolio:** A fixed basket of securities underlying some limited function unit trusts and trust issued receipts. The basket is held for a fixed term set by the requirements of the investment and does not change except as a result of certain corporate actions. Positions will be eliminated from the basket under certain circumstances but new positions will only be added if they arise from mergers or spin-offs involving the original positions.
- deflation:** A decline in the prices of goods and services. The opposite of inflation.
- demutualization:** The process of changing a corporate structure from mutual or “member” ownership to some other form. Examples include mutual insurance companies such as Metropolitan and Prudential which converted from policy holder ownership to publicly owned companies and a number of stock exchanges that have converted from membership organizations to publicly held companies.
- Depository Trust Company (DTC):** A corporation originally owned collectively by broker-dealers and banks responsible for holding securities owned by its shareholders and their clients and for arranging the receipt, delivery, and monetary settlement of securities transactions. Once securities are on deposit, further transfers within the system can be accomplished electronically at low cost. DTC has merged with the National Securities Clearing Corporation (NSCC) to form the Depository Trust and Clearing Corporation (DTCC). DTC is now an operating unit of DTCC, which is owned by a similar group of shareholders.
- derivative:** A financial security or arrangement whose value is based on, or “derived” from, a traditional security, asset, or market index.
- developed nations:** These are countries that have economically mature economies. General characteristics include major industrial production and high political stability.
- developing nations (or developing markets):** Typically, these are countries that are in the early stages of economic development. General characteristics include a high demand for capital investment, a high dependence on export markets, a need to

- develop basic economic infrastructures, and low political stability. Sometimes called emerging nations or emerging markets.
- DIAMONDS:** An exchange-traded fund tracking the Dow Jones Industrial Average.
- direct rollover:** A distribution from a qualified plan or IRA account that is sent directly to the custodian of an IRA account and is reported to the IRS as a rollover.
- discount:** Amount (stated in dollars or as a percent) by which the sale or purchase price of a security is less than its face amount or net asset value.
- discount bond:** (1) A debt instrument, such as a Treasury bill or a coupon or principal payment stripped from sovereign or other debt, that pays no periodic interest but trades at a discount from its ultimate settlement value at maturity. (2) A coupon debt instrument that sells below its value at maturity because market interest rates are higher than its coupon rate.
- discount rate:** The interest rate charged by the Federal Reserve to member banks. Basically, the floor rate for interest rates in the economy.
- disinflation:** A slowing of the rate at which prices are increasing. Not the same as deflation, when prices actually drop.
- distribution:** (1) The payment of dividends and/or capital gains by a fund to its shareholders. (2) The payment of dividends or spinoff of shares in an affiliated company to a corporation's shareholders.
- distribution schedule:** The schedule describing when throughout the year a closed-end, exchange-traded or preferred stock fund makes income, principal, dividend, and/or capital gains distributions.
- distribution-in-kind:** The transfer of underlying securities when redeeming a creation unit of a fund, instead of cash.
- diversifiable risk:** *See nonsystematic risk.*
- diversification:** An approach to investment management analyzed and popularized by Harry Markowitz and encouraged by widespread acceptance of the usefulness of the capital asset pricing model (CAPM). With diversification, asset-specific risk can be reduced relative to the average return of a portfolio by investing in a variety of asset classes, such as stocks, bonds, money market instruments, and physical commodities, as well as by diversifying within these categories and across international boundaries. Diversification usually reduces portfolio risk (measured by return variability) because the returns (both positive and negative) on various asset classes are not perfectly correlated.
- diversified common stock fund:** A mutual fund that invests its assets in a wide range of common stocks. The fund's objectives can be growth, income, or a combination.
- dividend:** A distribution of earnings to shareholders of a corporation or an investment company. Investment company dividends are usually paid out of investment income, but include any realized net short-term capital gains. Investment companies also make distributions of net realized long-term capital gains, typically once a year.
- dividend drag:** Dividend drag is a minor characteristic of several of the older, unit trust-based ETFs (SPDRs, MidCap SPDRs, and DIAMONDS). Because of the passively invested nature of these unit trusts, the SEC has required that cash dividends received by the trust cannot be reinvested in portfolio stocks. Dividends

are accumulated and paid out periodically to investors. During the accumulation period, dividend cash can be invested by the trustee. Any interest earned (at a short-term rate) is applied to the expenses of the trust. During a rising market, a dividend paying portfolio using the unit trust structure will lag behind a comparable fund based on a mutual fund structure, which can equitize dividends (invest in portfolio securities) until the fund is ready to pay the net dividends to shareholders. The value of dividend equitization depends in large part on what the market does. Equitizing dividends will be undesirable during a period of declining markets. The value of dividend equitization ranges from a negative value in a declining market to as much as five or six basis points per year on an S&P 500 portfolio (the 500 SPDR) in better years.

dividend rate: The most recent rate at which a fund is distributing dividend and interest income earned on the fund's investment portfolio, usually expressed in cents per share.

dividend yield: The most recent rate at which a fund is distributing dividend and interest income earned on the fund's investment portfolio, usually expressed as an annualized percentage of the fund's offering price per share.

dollar-cost averaging: An investment strategy of making investments of equal amounts at regular intervals in the same fund. Because the shareholder buys more shares at lower prices and fewer shares at higher prices, the average cost of the shares purchased will generally be lower than the average price over the investment period. However, dollar-cost averaging does not ensure a profit or protect against a loss in a declining market, and an investor may have to pay a commission with every purchase.

domestic company: Refers to a corporation that is headquartered in the United States. Although many domestic corporations conduct a majority of their business and receive a majority of their revenues from operations in the United States, many of these same corporations have significant operations abroad and receive significant revenue from overseas.

Dow Jones Industrial Average ("The Dow"): The most commonly cited indicator of stock market performance, based on the prices of 30 major U.S. companies.

downtick: A transaction executed at a lower price than the preceding transaction in that security, or a new quote registered at a lower price than the preceding quote in that security.

duration: A mathematical measure of the price sensitivity of a bond fund's portfolio to changes in interest rates. Duration is stated in years; the shorter the duration, the less price variability you would expect in the fund's price per share.

Dutch auction: An auction system where the price of the item being auctioned is gradually reduced until it elicits a responsive bid. Dutch auctions are used to sell U.S. Treasury bills and to set rates on some re-marketed floating-rate debt instruments and preferred stocks.

earnings growth rate: Typically, the average annual rate of growth in earnings per share over the past five years.

earnings per share: A measure of a company's financial performance, calculated by dividing a company's earnings by the number of common shares outstanding.

This is an important figure for investors who are looking for stocks they consider to be undervalued.

emerging market fund: A mutual fund investing a majority of its assets in the financial markets of one or more developing countries, typically small markets with a short operating history. Such funds usually take higher risks in exchange for higher potential returns.

employer matching contribution: A company's direct contribution to an employee's retirement account.

enhanced indexing: A modified indexing strategy that attempts to exceed the total return of the benchmark index by limited departures from replication of the index. *See semiactive management.*

equity fund: A mutual fund that invests primarily in stocks.

equity security: A type of security representing ownership or potential ownership in a corporation. Common stock, preferred stock, and convertible securities are all equity securities. Nonconvertible debt securities do not represent ownership.

equity unit investment trust: A portfolio of selected common stocks that are chosen to provide either the potential for above-average capital appreciation or income.

equivalent taxable yield: *See taxable equivalent yield.*

ERISA: The Employee Retirement Income Security Act of 1974 that created rules covering qualified retirement savings plans.

exchange of futures for physicals (EFP): A technique (originated in physical commodity markets) whereby a position in the underlying is traded for a futures position. In financial futures markets, the EFP bypasses any cash settlement mechanism built into the contract and substitutes physical settlement. EFPs are used primarily to adjust underlying cash market positions at a low trading cost. An EFP by itself will not change either party's net risk position materially, but EFPs are often used to set up a subsequent trade that will modify the investor's market risk exposure at low cost. Occasionally called against actuals (AA), cash-futures swap, or ex-pit transaction.

exchange privilege: A mutual fund option permitting shareholders to transfer their investments from one fund to another within the same fund family without paying a sales charge.

exchange-traded fund (ETF): (1) A modified unit trust or investment company characterized by a dual trading process. Fund shares are created or redeemed in large blocks, usually through the deposit of securities to, or delivery of securities from, the fund's portfolio. Secondary market trading, in lots as small as a single fund share, takes place on a stock exchange. The dual trading process permits (and potential arbitrage requires) the fund shares to trade close to net asset value at all times. ETFs trade at prices very close to their current underlying value throughout the trading day and are usually more tax efficient than comparable conventional funds. HOLDRS and Folios, two alternative basket or portfolio products, are sometimes compared to ETFs. In contrast to HOLDRS and Folios, ETFs are subject to investment company regulation and regulated investment company tax treatment and the product structures are quite different. (2) Any exchange-traded investment product or portfolio. *Compare to closed-end fund.*

- ex-dividend:** The status of shares during the time between the dividend record date and the payment date of a corporate or fund dividend or capital gain distribution. When a security is trading ex-dividend, a purchaser is not entitled to the dividend distribution.
- ex-dividend date:** The date on which the buyer of a stock is no longer able to purchase the stock in the “regular way” and still receive a specific dividend payment. A holder of the stock who sells on or after the ex-dividend date is entitled to retain the dividend when it is paid.
- expense ratio:** For an investment company, the charge to fund assets for investment management, marketing, custody, administration, and other related costs, but not for unusual outlays for lawsuits or for trading expenses like brokerage commissions. Usually expressed in basis points or as a percentage of net assets.
- face value:** A bond’s stated redemption value at maturity. Most bonds have a face value, or par value, of \$1,000. *Also called notional value.*
- fair value pricing:** A price that may differ from reported prices is assigned to a portfolio component under rules set by the directors or trustees of the fund. Fair value pricing is used when accurate or up-to-date market prices are not available for some portfolio components.
- family of funds:** A group of funds, usually with different investment objectives, that are managed and distributed by the same company.
- federal funds rate:** The interest rate charged by banks to lend to other banks needing overnight loans; this rate is the most sensitive indicator of the direction of short-term interest rates.
- Federal Reserve System:** The central bank of the United States, which has regulated credit in the economy since its inception in 1913. Includes the Federal Reserve Bank, 14 district banks, and the member banks of the Federal Reserve.
- fee-only advisor:** A financial advisor who charges only a set hourly rate or a percentage of assets under management for a financial plan and other services. The fee-only advisor does not charge transaction-based sales commissions or else credits such commissions against scheduled fees.
- Financial Industry Regulatory Authority (FINRA):** The Financial Industry Regulatory Authority, known as FINRA, is the largest nongovernmental regulator for all securities firms doing business with the United States public—more than 5,000 firms employing more than 660,000 registered representatives. FINRA was created in 2007 through the consolidation of NASD and NYSE Member Regulation.
- financial planning:** Evaluating and selecting investments for individuals and firms to achieve a variety of short- and long-term goals with risk control and possible tax benefits.
- fiscal year:** An accounting period of 365 days (366 in leap years) for which a fund or operating corporation prepares financial statements and performance data. Not necessarily the same as the calendar year.
- fixed-income fund:** A fund whose objective is to provide current income by investing in fixed-income securities.

- fixed-income security:** An investment that provides a return in the form of fixed periodic payments and/or scheduled payment of a preset principal amount at maturity.
- flexible fund:** A mutual fund or exchange-traded fund that can invest in stocks, bonds, or other financial instruments in proportions determined by the fund manager. The manager is responsible for the fund's asset allocation, and its investment policy statement is usually very broad.
- float:** In equity markets, the number of shares of a corporation that are available for trading by the public. Float estimates usually exclude large insider positions and intercorporate control or strategic holdings.
- floating rate securities:** Bonds, bank loans, or other securities with coupon rates that adjust periodically based on a specified reset mechanism.
- flow:** Cash moving into and out of a mutual fund as the result of investor purchases of fund shares and redemptions of fund shares for cash with the fund as counterparty. Flow is measured as the number of shares purchased from the fund plus the number of shares redeemed divided by the average shares outstanding during the period, expressed as a percent. If the period over which flow is measured is a quarter or half year, the percentage should be multiplied by 4 or 2, respectively, to obtain an annual rate for flow.
- folio:** An unstructured basket of common stocks that may represent a stock index, a sector or theme, or even an actively managed portfolio at inception, but which may be modified by an investor or an advisor to meet the tax and spending needs of its owner. The rationale for the folio is to take advantage of diversification and the ability to realize tax losses in a separately managed account. In general, an investor will have to devote a significant amount of time to the folio or engage the services of a specialized advisor.
- forward commitment:** A purchase or sale of a financial instrument at a specified price with delivery and cash settlement at a specified future date.
- forward pricing:** The valuation process for a conventional mutual fund transaction. All orders to buy or sell shares are based on the next net asset value calculation.
- front-end load:** A sales commission charged at the time of purchase of some mutual funds and other investment products.
- full faith and credit:** An unconditional commitment to pay interest and principal on debt securities, usually securities issued or guaranteed by the U.S. Treasury or tax-exempt general obligation bonds of a state or local government.
- full replication:** Every issue in an index is represented in the portfolio of a full replication index fund at approximately the same proportion as in the index. *Compare to representative sampling.*
- fund abbreviation:** An abbreviation of a fund's name, commonly used in newspaper listings. Distinct from the three- to five-character "ticker" symbol.
- fund net assets:** The total value of a fund's securities, cash, and other holdings, minus any outstanding debts.
- fund of funds:** A financial intermediary organized as a corporation, business trust, or partnership that accepts equity investments and buys shares of other funds that, in turn, hold securities or commodities.

Fund/SERV: A service of the National Securities Clearing Corporation (NSCC) that automates and standardizes the processing of mutual fund purchase and redemption orders, settlements, and account registrations. Fund/SERV is integrated with the continuous net settlement (CNS) system in contributing to a daily net money settlement with each firm.

fundamental analysis: The study of a company's business and financial condition to help forecast future movements in its stock price. Analysts consider the company's past record of earnings and sales as well as company assets, management, and markets to predict trends that could affect a company's stock.

fundamental law of active management: The information ratio a portfolio manager achieves is approximately the manager's information coefficient multiplied by the square root of the investment discipline's breadth.

$$IR \approx IC\sqrt{\text{Breadth}}$$

futures: Agreements to buy or sell specific amounts of financial instruments or physical commodities for an agreed-upon price at a certain time in the future.

general obligation (GO) bond: A municipal bond backed by the general credit of the issuing organization. General obligation bonds are typically more secure than revenue bonds and thus trade with a slightly lower yield.

global fund: A mutual fund that invests in stocks of companies based in the United States and in foreign countries. Taxable U.S. investors should usually own domestic securities and foreign securities in separate funds to take advantage of any foreign dividend withholding tax credits.

Global Industry Classification Standards (GICS) (pronounced "gicks"): An industry and sector classification system adopted by Standard and Poor's (S&P) and Morgan Stanley Capital International (MSCI) for their indexes. *Compare to Industry Classification Benchmark (ICB).*

grantor trust: A legal structure that is a security, although it is not issued by a company that has been registered with the SEC under the Investment Company Act of 1940. Holding a grantor trust is substantially similar to holding a basket of securities for tax and ownership purposes. The trust passes along all the voting rights and dividends associated with the underlying securities. HOLDERS use the grantor trust structure.

growth and income fund: A fund that seeks a combination of long-term growth of capital and current dividend income.

growth fund: A fund that holds stocks of companies with above-average prospects for growth and, usually, low-dividend yields.

guaranteed fund: An investment company that offers a minimum performance guarantee. In the most common type of guaranteed fund, the sponsor of the fund promises that the investor will receive at least his original principal back at the end of five or seven years if none of his shares are redeemed over the period. Any positive return belongs to the investor. The guarantee is funded by a higher management fee than a fund without the guarantee would carry. A similar structure is available in equity-linked notes.

harvesting losses: A euphemism for tax-loss-motivated sales of securities to offset gains realized on other positions.

hedge: A strategy used to manage investment risk. In portfolio investing, hedging involves an offsetting position, such as a put option or futures contract, to compensate for a market decline affecting the primary investment strategy.

hedge fund replication: The *pattern* of returns from many hedge fund indexes can be replicated with portfolios composed of benchmark index funds and derivatives. The level of returns may be difficult to match. Replication portfolios attempt to compete with hedge funds-of-funds for investor dollars, but with little success to date.

high-yield bonds: Bonds that are rated below Baa, the lowest investment grade bond rating.

holding period return: Income plus price appreciation or less price depreciation during a specified time period divided by the cost or market value of the investment.

HOLDRS: An acronym for HOLDing Companies Depositary Receipts. Shares in a grantor trust that represent an interest in a specific portfolio of stocks, usually in a particular industry, sector, or group. HOLDRS were developed by Merrill Lynch to allow an investor to own a moderately diversified group of stocks in a single investment that is transparent and liquid. HOLDRS are characterized by low ongoing expenses and a high degree of tax flexibility, which leads to tax efficiency as long as the investor does not sell the HOLDRS' highly appreciated component shares. The holder of HOLDRS can separate the portfolio into its component securities at modest cost to realize losses. The principal disadvantage of HOLDRS is that an investor who breaks them up will find that keeping track of the tax basis and tax consequences associated with subsequent transactions in the component securities may be relatively complex.

income dividend: Payments to fund shareholders consisting of dividends and interest earned by securities held by a fund. Income dividends are paid after deducting operating expenses.

income fund: A fund that invests largely in investment grade bonds and dividend-paying stocks.

income risk: The possibility that the income provided by a fund or a floating rate instrument will fluctuate due to changing interest rates. Money market funds and short-term bond funds are most subject to income risk.

indenture: The formal contract governing a corporate bond that explains the bond's maturity, coupon rate, call privileges, and other terms.

index: Usually, a number calculated by weighting or linking a number of prices or rates according to a set of predetermined rules. A financial market index is a statistical construct that measures relative or absolute price changes and/or returns in stock, fixed income, currencies, or futures markets. The purpose of the index calculation is usually to provide a single number whose behavior is representative of the movements of a variety of prices or rates and indicative of behavior in a market. Indexes serve as the underlyings for a number of products, particularly in equity and fixed-income markets.

index fund: A fund designed to track the performance of a market index.

index hugging: *See closet index fund.*

index shares: A subset of exchange-traded funds (ETFs), index shares are based on an index and implemented by holding an index replication or optimized index portfolio.

indexation: (1) A relatively passive investment strategy that attempts to replicate the return of a benchmark index in a fund. (2) The practice of linking the coupon on a debt security to an index of inflation.

indicated dividend: Total of dividends that would be paid on a share of stock or a fund over the next year if each dividend were equal to the most recent dividend.

indicated yield: Yield of a stock, bond, or fund at its current price if the total of dividends or interest that would be paid over the next year were equal to the most recent dividend or interest payment.

Individual Retirement Account (IRA): An investor's tax-deferred retirement account established and funded by deposits with a financial intermediary. The investments range from insured bank deposits and fund shares to individual stock positions. The investor can roll a 401(k) and similar accounts from a former employer into an IRA without immediate tax effect. *See also Roth IRA.*

Industry Classification Benchmark (ICB): An industry classification system developed and used by Dow Jones Indexes and FTSE Indexes as well as several smaller index providers. *Compare to Global Industry Classification Standards (GICS).*

initial sales charge: A sales charge paid by an investor at the time of purchase of shares from a mutual fund.

in-kind: *See distribution-in-kind.*

institutional investors: Entities such as banks or insurance companies that purchase and sell large blocks of securities for their own and for client accounts.

insurance: (1) An arrangement under which one party to a contract (the insurer) in return for a consideration (the premium) indemnifies another party (the insured) against a specific loss, damage, or liability arising from specified uncertain events. (2) A risk/return pattern characteristic of options that limits (or insures against) price or rate movements through a predetermined (strike) price or rate in exchange for the explicit or implicit payment of an option (insurance) premium. (3) The component of an option or of a more complex instrument that provides this risk limitation feature. In contrast to a straight hedging transaction that eliminates risk symmetrically over all prices ranges, an insurance position creates an asymmetric risk/return pattern.

insured bond: A municipal bond backed by the credit of the issuer and by a commercial insurance policy.

interest: Money paid for the use of borrowed funds.

interest-only obligation: A tranche of mortgage-backed securities whose owner receives only the interest (or a portion of the interest) on the underlying mortgages. During a period of falling interest rates, rapid repayments of principal by mortgage holders reduces the value of interest-only obligations.

interest rate risk: The risk that a security or fund will decline in price because of increases in market interest rates.

international company: Refers to a corporation that is headquartered outside of the United States. Although many international corporations conduct a majority of their business and receive a majority of their revenues from operations outside the United States, many of these same corporations have significant operations in the United States and receive significant revenue from the United States.

international fund: A fund that holds securities of issuers domiciled outside the United States.

investment adviser (advisor): Individual or entity providing investment advice for a fee. Registered Investment Advisers must register with the SEC or state securities commissions and abide by the rules of the Investment Advisers Act.

investment club: A group of investors who pool their money and knowledge to make investments, learn about investing, and diversify their portfolios.

Investment Company Act of 1940 (or '40 Act): Legislation enacted in 1940 (with subsequent amendments and regulations issued by the Securities and Exchange Commission (SEC) under authority granted it in the legislation) that governs the operation of mutual, closed-end, exchange-traded, and preferred funds. This act stipulates the conditions that funds and their advisors have to meet in order to distribute their products to the public.

investment company shares: The formal name for mutual fund, closed-end fund, open exchange-traded fund, and preferred fund shares.

investment company: The technical name for closed-end, exchange-traded, and open-end mutual funds, which are governed by the Investment Company Act of 1940.

investment grade: Bonds whose issuers are judged by an independent rating service such as Standard & Poor's or Moody's Investors Service to be very able to pay interest and repay principal. Standard & Poor's and Moody's Investors Service designate bonds in their top four categories (AAA/Aaa, AA/Aa, A, and BBB/Baa) as investment grade.

investment horizon: The length of time an investor expects to keep a sum of money invested.

investment manager: Individual or entity responsible for the selection and allocation of securities for a portfolio.

investment objective: (1) The goal that a mutual fund pursues on behalf of its shareholders. (2) Less formally, the goal of an individual investor.

investment policy: A formal statement outlining broad investment objectives.

investment style: A broad indicator of a fund's, or manager's investment emphasis. In a stock fund, for example, the investment style indicates whether a fund emphasizes stocks of large-, medium, or small-capitalization companies and whether it emphasizes stocks with growth or value characteristics or a blend of these characteristics.

ISIN (International Securities Identification Number): A code that uniquely identifies a specific securities issue. The organization that allocates ISINs in any particular country is the National Numbering Agency (NNA). CUSIP numbers are the principal securities identifiers in the United States.

joint account: An account registered to two or more adult shareholders.

Joint Tenants with Right of Survivorship (JTWROS): A form of account registration in which two or more individuals share an undivided interest in an account. In the event of one tenant's death, the surviving tenant(s) automatically inherit(s) the property without the necessity of court proceedings. A minor may not be a joint tenant.

jumbo CD: A certificate of deposit issued by a bank in amounts of \$1 million to \$5 million and paying a higher rate of interest than smaller-denomination certificates. The ability to participate in jumbo CD purchases can be one of the advantages of investing in a money market fund.

junk bonds: Lower-rated, higher-yielding bonds with a credit rating of BB/Ba or lower.

Keogh plan: A retirement plan for self-employed individuals and their employees.

large cap stock: Usually a reference to the shares of a company with an equity market capitalization of more than \$2 billion.

letter of intent (LOI): A way for a shareholder to qualify for a reduced mutual fund sales charge by promising to invest a certain amount within a specified time.

level load: *See load fund.*

leverage: An investment or operating position subject to a multiplied effect on profit or position value from a small change in sales quantity or price. Leverage can come from high fixed costs relative to revenues in an operating situation, or from debt or an option structure in a financial context.

leveraged fund: (1) A mutual fund or ETF that attempts to multiply the daily long or short return of an index or financial instrument through leverage from futures or swap positions rather than from borrowing money. The return for any period longer than one day may be reduced by high volatility of returns and expenses. (2) A closed-end fund may borrow in an attempt to generate a higher level of return for shareholders. The fund may issue preferred stock that pays short-term rates to investors seeking short-term liquidity. The proceeds are used to buy additional investments that leverage the return of the fund portfolio. Common shareholders may earn extra income from the difference between the rates earned on the fund's long-term portfolio and the short-term rates paid to preferred shareholders. As long as short-term yields are lower than those for long-term positions in the portfolio, the income received by common shareholders of leveraged funds will be higher than it would be if the funds were unleveraged. The net asset value per common share will be more volatile than the NAV of a comparable unleveraged fund since the increases or decreases in the total portfolio value are all attributed to the common shares.

leveraged loan: A bank loan to a below-investment-grade-borrower that is traded in a secondary loan market. A collateral deposit may enhance the quality of the loan.

limited partnership: Entity that enables large numbers of investors to become limited partners of a partnership, owning an economic interest in the entity's assets, but sharing in its liabilities only to the extent of their initial investment. This

- structure is widely used for investments that cannot be held efficiently by '40 Act funds.
- liquidation price:** The bid price of a unit investment trust or the net asset value of a fund minus any deferred sales charge or redemption fee.
- liquidity:** The ability to turn assets into cash easily. An investor should be able to sell a liquid asset quickly with little effect on the price. Liquidity is a central objective of money market funds and an important objective of all open-end funds.
- load:** An amount charged for the sale of some fund shares.
- load fund:** A fund that levies a sales charge when shares are bought (a front-end load) or sold (a back-end load). A level-load fund charges a sales fee each year, possibly with an eventual cutoff.
- London InterBank Offered Rate (LIBOR):** The most frequently cited type of fixed-income index reference rate in the Euromarkets. Most international floating rates are quoted as LIBOR plus or minus a spread. In addition to the traditional Eurodollar and sterling LIBOR rates, yen LIBOR, euro LIBOR, Swiss franc LIBOR, and so forth, are also available and widely used.
- long-term capital gain (LTCG):** A profit on the sale of a security that has been held for more than one year. LTCGs are taxed at a preferential rate in the United States.
- long-term investment strategy:** A strategy that looks past the day-to-day fluctuations of the stock and bond markets and responds to fundamental changes in the financial markets or the economy.
- lump-sum distribution:** A single payment that terminates an employee's interest in a retirement plan account.
- management company:** The firm that organizes, manages, and administers a fund.
- management expense ratio (MER):** *See expense ratio.* MER is the equivalent term commonly used outside the United States.
- management fee:** *See advisory fee.*
- management investment company:** Usually a reference to a mutual fund or an exchange-traded fund regulated by the '40 Act.
- market maker:** A trader who may enjoy certain trading privileges in exchange for accepting an obligation to help maintain a fair and orderly market.
- market-on-close (MOC) order:** A type of order too frequently used in ETF trading that instructs the broker to execute the order at the closing price for the day. Investors using market-on-close orders should be aware of the probable effect a large order will have on the closing price.
- market risk:** The possibility that prices of stocks, bonds, or other assets will fluctuate adversely to an investor's interest.
- market timing:** (1) An investment strategy based on predicting market trends. The goal is to anticipate trends, buying before the market goes up and selling before the market goes down. (2) Last-minute purchases of mutual fund shares to profit from stale prices used to value the shares.
- maturity:** The date on which the life of a financial instrument is scheduled to end through cash or physical settlement or expiration with no value.

- median market cap:** The middle stock in a stock fund portfolio list ranked in terms of market capitalization.
- micro-cap stock:** Microcap stocks are issued by companies with very small or “micro” capitalizations, usually less than \$100 million.
- mid-cap stock:** Usually a reference to the shares of a company with a market capitalization of between \$500 million and \$2 billion.
- minimum investment:** The smallest investment permitted when opening a new fund account or making an additional purchase. For an ETF the minimum investment is nominally a single share, but fractional shares may be available to investors who make small periodic investments in defined contribution retirement accounts.
- momentum fund:** A fund that attempts to achieve above-average results by following what its manager discerns as an established trend in securities prices.
- money market fund:** A fund designed to provide safety of principal and current income by investing in securities that mature in one year or less, such as bank certificates of deposit, commercial paper, and U.S. Treasury bills. The price per share is usually fixed at \$1.00. Some changes in the operation and share pricing of these funds have been proposed in the aftermath of their experiences in 2008.
- mortgage-backed security:** Debt instruments that are guaranteed (or collateralized) by residential, commercial, or industrial real-estate mortgages.
- municipal bond fund:** A fund that seeks to provide income exempt from federal income tax, consistent with preservation of capital and the fund’s risk characteristics, by investing in a portfolio of municipal bonds.
- municipal bond:** An IOU issued by a state, city, or other subsovereign government unit to finance public works such as the construction of roads or schools. The interest is usually free from federal income tax and may be free from certain state and local taxes as well. *Also called tax-exempt bond.*
- mutual fund:** An open-end diversified, managed portfolio of securities that pools the assets of individuals and organizations to invest toward a common objective such as current income or long-term growth. *See Investment Company Act of 1940.*
- NASDAQ OMX:** NASDAQ OMX Group, Inc., is the world’s largest exchange company with over 3,700 listed companies. NASDAQ OMX operates more than 70 exchanges, clearing organizations, and central securities depositories in more than 50 countries.
- net asset value (NAV) per share for a fund:** The total assets (securities, cash, and accrued earnings) of an open-end, closed-end, exchange-traded, or preferred stock fund, minus the fund’s liabilities, divided by the number of shares outstanding. The formal daily NAV calculation is usually based on each day’s closing prices, bids, or the mean of bids and offers, depending on the fund portfolio.
- New York Stock Exchange (NYSE):** The oldest (since 1792) stock exchange in the United States; now part of NYSE Euronext.
- no-load fund:** A mutual fund whose shares are sold without a sales commission and without a 12b-1 fee of more than 0.25 percent per year.

- non-investment grade bond:** Bonds whose issuers are judged by an independent rating service such as Standard & Poor's or Moody's Investors Service as unable to pay interest and repay principal reliably. Standard & Poor's and Moody's Investors Service designate bonds rated below BBB/Baa as noninvestment grade. *Also called high yield bond; junk bond.*
- nonsystematic risk:** An element of price risk that can be largely eliminated by diversification within an asset class. In factor models estimated by regression analysis, it is equal to the standard error.
- North American Industry Classification System (NAICS) (pronounced "nakes"):** An industry classification system developed by business statistics collection organizations in Canada, the United States, and Mexico. NAICS organizes the standard breakdown of data collected by all government agencies in these countries and can serve as an industry or sector classification system for securities indexes.
- offered price:** *See asked price.*
- offshore fund:** A mutual fund or, more commonly, a hedge fund domiciled outside the United States.
- open-end investment company:** Technically, a fund that continually offers new shares for sale and undertakes to redeem outstanding shares on any business day at their NAV. Participants can buy and sell shares on any business day and the size of the fund is not limited. Open-end exchange-traded funds are a variant of the traditional open-end company, but their shares are not individually redeemable.
- optimized index portfolio:** *See representative sampling.*
- option:** The right to buy or sell a given asset within a particular time at a specified price. The right to buy is a call; the right to sell is a put. Unlike a futures contract, owning an option does not obligate the investor to perform the transaction; the obligation to perform is only on the seller of the option.
- over-the-counter (OTC) market:** A market for securities that are not traded on an organized exchange as well as listed securities traded off those exchanges. Most government, municipal, and corporate bonds are traded over the counter. The trades take place by telephone or over a computer network. Since NASDAQ became an exchange, most significant common stocks are listed on an exchange, leaving bulletin board stocks and other companies small enough to avoid full SEC reporting requirements as the only stocks trading exclusively in the over-the-counter market in the United States.
- par value:** The face value or notional value of a bond or preferred stock as printed on the certificate. Bonds generally have a par value of \$1,000.
- part B prospectus:** *See statement of additional information (SAI).*
- passive management:** Most commonly, indexation of a portfolio, giving up the opportunity for superior performance within an asset class in return for protection from inferior performance. Some passive managers, who made little or no effort to outperform an index in the past, now try to improve upon index returns with derivatives, return enhancement strategies, and smart (passive) trading, blurring the line between passive and active managers.

- passive structured portfolio management:** Use of quantitative tools to track an index closely while maximizing the tax efficiency of a fund. If a trade-off is necessary, the choice usually will be to stress tax efficiency.
- payable date:** The day on which a fund or corporation pays its distributions to shareholders.
- payment default risk:** Although bond issuers promise to make regular interest payments on the bond and promise to pay back, or redeem, the face value of the bond at the maturity date, some issuers may fail to meet these obligations. Payment default risk refers to the risk that a specific issuer may not be able to meet these obligations.
- performance:** Return on investment (usually total return) stated either as an absolute return or in comparison to a benchmark that is comparable in risk and has a return that is generally correlated with the return on the investment for which performance is being measured.
- physical assets:** Agricultural, industrial, or natural resource products that underlie commodity futures contracts.
- plan administrator:** Organization responsible for administration (record keeping) of a pension or profit-sharing plan.
- portfolio allocation:** The proportion of a fund's assets invested in each of stocks, bonds, cash equivalents, and, perhaps, other asset classes.
- portfolio composition file (PCF):** An electronic listing of the securities in an exchange-traded fund (ETF) creation unit.
- portfolio insurance:** Any of several techniques used to change a portfolio's market exposure systematically in reaction to prior market movements, with the objective of avoiding large losses and securing as much participation as possible in any favorable market move. The most popular forms of portfolio insurance have attempted to create synthetic options with portfolio trades or their equivalents in the cash or futures markets.
- portfolio manager:** An investment manager responsible for institutional funds or manager of accounts for multiple individuals.
- portfolio trade:** The purchase or sale of a basket of stocks. By generally accepted definition, a portfolio trade (or program trade) includes more than fifteen different stocks with a total value of \$1 million or more entered as a coordinated transaction. Portfolio trades may be undertaken to increase or reduce market exposure in a portfolio or as one side of an EFP or index arbitrage trade. *Also called basket trade.*
- portfolio:** A collection of securities and/or other financial instruments under common ownership and management.
- portfolio turnover:** In a mutual fund this is calculated by taking either the total value of new securities purchased or the value of securities sold—whichever is less—over a 12-month time period and dividing by the average of the beginning and ending net asset value (NAV) of the fund. This SEC mandated calculation is often misleading because it systematically understates the amount of trading activity in the fund. *Also called turnover.*
- pre-announced trading:** *See sunshine trading.*

- preferred stock (or preferred shares):** A class of stock usually with a fixed or floating rate linked dividend that has preference over a company's common stock in the payment of dividends and the liquidation of assets.
- premature distribution:** A distribution from an IRA or other defined contribution retirement account made before the owner reaches age 59 $\frac{1}{2}$. Such distributions are generally subject to a 10 percent penalty tax.
- premium:** Amount (stated in dollars or percent) by which the market price of a security is more than its face amount or net asset value.
- pre-refunding:** A procedure used by state and local governments to refinance municipal bonds to lower interest expenses. The issuer sells new bonds with a lower yield and uses the proceeds to buy U.S. Treasury securities, the interest from which is used to make payments on the higher-yielding bonds. Because of this collateral, pre-refunding generally raises a bond's credit rating and, thus, its value.
- primary market:** The primary market is the market where new issues of securities including newly issued fund shares are sold or repurchased by the issuer. The primary market is distinct from the secondary market where previously issued securities are bought and sold with investors and market makers participating on both sides of trades. The issuer of the securities is not a party to any secondary market transaction and secondary market transactions do not change the issuer's securities outstanding.
- prime rate:** (1) Historically, the interest rate a bank charged on loans to its most creditworthy customers. Frequently cited as a standard for general interest-rate levels in the economy. (2) Today, a lending rate offered to a bank's better retail customers.
- principal transaction:** A transaction between a retail or an institutional customer and a financial intermediary in which the financial firm acts as a principal, that is, trades for its own account. *Compare to agency transaction.*
- prospectus:** Formal seller's disclosure document for offerings of mutual funds, corporate securities, and most other primary market securities transactions.
- proxy:** A written authorization that allows one person to act for another. For example, shareholders who are unable to attend an annual meeting may mail in their ballots and vote by proxy.
- proxy statement:** Document providing shareholders with background information on management, the identities and affiliations of large shareholders, and matters to be voted on by shareholders.
- public offering price (POP):** The purchase price of one share on the primary market, including any up-front sales charge.
- Qs, QQQQ, or qubes:** Nicknames for the NASDAQ 100 Index Tracking Stock shares. Their trading symbol is QQQQ.
- qualified default investment alternative (QDIA):** One of a small number of investment options that can be used as a default investment for allocation of an individual's contributions in a 401(k) or a similar defined contribution plan. Under U.S. Department of Labor (DOL) regulations, the permissible default investment options include life cycle funds that take into account an individual's

age or retirement date; professionally managed accounts that allocate an individual's contributions among existing plan options, based on his or her age or retirement date; or a product that has a mix of investments and takes into account characteristics of a group of employees as a whole, such as a balanced fund. Stable value funds may also be used in the short term as a capital preservation option for up to 220 days while the employee's opportunity to opt out of the retirement plan is still effective.

qualified dividend income (QDI): Under the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003, most corporations' cash dividends (but not payments in lieu of dividends) distributed after May 5, 2003, are subject to a maximum regular tax rate of 15 percent.

qualified retirement plan: A retirement plan established by employers for their employees meeting the requirements of Internal Revenue Code Sections 401(a) or 403(a). Plan assets and earnings are not taxed until they are paid out as benefits.

real rate of return: The return on an investment after adjustment for the effect of inflation.

rebalancing: Periodic revisions to a portfolio's composition necessitated by the effect of the passage of time on asset and liability duration, changes in the constitution of an index, portfolio cash flows, or market-driven departures from a target allocation.

record date: The date that determines which shareholders will be shareholders of record to be paid a dividend or other distribution or will be entitled to vote at a shareholder meeting.

red herring: A preliminary prospectus for a securities offering in the United States. The red herring usually has full details of the offering except price and, perhaps, size. It has comprehensive financial data on the issuer. The name comes from a required note, usually printed in red ink, stating that the issue cannot yet be sold because the registration statement is not yet effective.

redeem: To cash in or exchange fund shares for liquid assets.

redemption: The process of turning in fund shares for cash or a basket of the fund's securities.

redemption price: The price at which a holder can sell (redeem) a fund's shares, determined by deducting any applicable redemption fee from the net asset value (NAV) per unit/share.

registered investment company: A fund company that is registered with the SEC. Not the same as a regulated investment company (RIC).

regulated investment company (RIC) (pronounced "rick"): A reference to income pass-through provisions for investment companies in the Internal Revenue Code. In addition to SEC registration, an investment company must meet IRS diversification requirements to avoid taxation at the fund level. Not the same as a registered investment company.

Regulation NMS: A complex set of rules for electronic order entry and execution on United States securities markets that requires a market receiving an order to trade at the best price available in any linked market before any part of the order is executed at an inferior price. The regulation also revised

the allocation system for securities market data revenue among participating markets.

reinvestment privilege: The right of shareholders to use income and/or capital gain distributions to purchase additional shares of their fund, usually without paying a fee.

replicating portfolio: A portfolio constructed to match the performance of an index or benchmark as closely as practicable. An exchange-traded fund with a replicating portfolio will usually track its index more closely and trade at a tighter bid-asked spread than a fund with a representative sampling portfolio. *Contrast with representative sampling.*

representative sampling: A technique used to create a benchmark tracking portfolio when the benchmark is not naturally compliant with rules governing portfolio structure, such as the Regulated Investment Company diversification requirements for a U.S.-based investment company. Representative sampling is also used when certain securities are not readily available or actively traded. *Also called optimized index portfolios. See also full replication.*

repurchase agreement (repo): A purchase, most commonly of U.S. government securities from a bank or broker, made under the stipulation that the seller agrees to buy back or repurchase the securities at a fixed price on a future date. Repos are used to finance securities inventories and they usually mature in a week or less.

retail investor: An individual investor who typically purchases and sells securities in smaller quantities than institutional investors.

revenue bond: A municipal bond that is backed by revenue from the project being financed. Revenue bonds are usually less securely backed than general obligation bonds, and thus may trade at higher yields.

revenue sharing: Usually a reference to payments by mutual fund sponsors to defined contribution plan administrators to cover the plan's costs of using the fund shares in its accounts or marketing expenses.

reverse-repurchase agreement (reverse-repo): A sale of U.S. government securities to a bank or broker made under the stipulation that the buyer agrees to sell back the securities at a fixed price on a future date. Reverse-repos usually mature in a week or less.

rollover: A tax-free transfer of cash or other assets from another retirement plan to an IRA. An IRA holder may also rollover assets from his or her present IRA to another IRA. Distributions from a qualified retirement plan may also be rolled over to an IRA or to another employer's plan under certain circumstances.

Roth 401(k) plan: A type of defined contribution retirement plan under which employees of a corporation may elect to make after-tax contributions to an employer-sponsored plan in lieu of receiving current income. The value of the after-tax contributions compound untaxed and the Roth account's distributions are not taxable income. In some plans, part or all of the employee contribution is matched by an employer contribution. The employer contribution goes into a conventional 401(k) account with taxable distributions.

Roth IRA: A retirement plan created by the Taxpayer Relief Act of 1997. Contributions to a Roth IRA are made from after-tax income. Distributions from the Roth IRA are tax-free if they meet certain requirements (income, time since the Roth IRA was established, age of the owner, and so forth).

sales charge: A marketing fee that investors pay when purchasing funds on the primary market, that is, from the fund itself. Fund management companies typically use this fee to cover their selling and distribution costs. Closed-end funds, exchange-traded funds, and preferred funds do not have a sales charge for shares purchased on the secondary market, although investors pay normal brokerage fees associated with the purchase and sale of these shares.

SEC yield: A standardized measure of the current net market yield on a bond fund's investment portfolio. The SEC yield calculation is made in an unusual way, based on a 30-day (or one month) period ending on the most recent balance sheet date:

$$\text{Yield} = 2(((a - b)/cd + 1)^6 - 1)$$

where: a = dividends and interest earned during the period.

b = expenses accrued for the period (net of reimbursement).

c = the average daily number of shares outstanding during the period that were entitled to receive distributions.

d = the maximum offering price per share on the last day of the period.

secondary market: In contrast to the primary market, where new security issues are sold to investors by the issuer, the secondary market is the exchange or over-the-counter market where previously issued securities, including fund shares, are bought and sold by individual and institutional holders with brokers and dealers as intermediaries.

sector fund: A specialized fund that invests exclusively in a related group of industries. Sector portfolios/funds are often more volatile than those that invest in a more diversified range of industries, but they can be used effectively to diversify the risks of concentrated low-cost holdings.

Securities and Exchange Commission (SEC): The federal agency created by the Securities and Exchange Act of 1934 that administers the laws governing the securities markets. The SEC also regulates the registration and distribution of unit investment trusts, exchange-traded fund shares, and mutual fund shares.

securities lending: A carefully collateralized process of loaning portfolio positions in securities to custodians, dealers, and short sellers, who must make "physical" delivery of fungible positions. Securities lending can reduce custodial costs or enhance annual returns by a full percentage point or more in some markets at some times, although revenue from this source is much smaller than 1 percent for most portfolios. Improvements in securities settlement procedures and systems to facilitate securities lending have tended to reduce lending premiums over time.

- semi-active management:** A variant of active management wherein the manager attempts to outperform a benchmark with controlled risk exposures relative to the benchmark. Also called enhanced indexing and risk controlled active management.
- series 7 license:** A general securities registered representative license, entitling the holder to sell all types of securities products.
- series fund:** A group or family of funds, each a “series” with its own investment objective and policies, structured as a single corporation or business trust.
- settlement date:** The date on which the exchange of cash, securities, and paperwork involved in a transaction is completed. Usually one day after the trade date ($T + 1$) in conventional funds and fixed-income markets, and three days after the trade date ($T + 3$) in exchange-traded funds and equity markets.
- short interest rebate:** Interest paid by a securities lender to the borrower. Usually it is equal to the federal funds rate less the borrowing fee on the security.
- short sale:** The sale of a security or other financial instrument not owned by the seller in the expectation that it will be possible to repurchase that instrument at a lower price sometime in the future. The term “short sale” is ordinarily applied only to the sale of securities, but an equivalent synthetic short position can be attained through the sale of an uncovered call option and the purchase of a put, by selling a forward or futures contract or entering into a swap.
- short sale rule:** For U.S. equity securities, if the price of the security falls 10 percent or more from the prior day’s closing price, short selling is restricted for the rest of that day and the following day. During the restriction period, a short sale would be permitted only at a price above the current national best bid.
- short-term capital gain:** A profit on the sale of a security or fund share held for one year or less.
- short-term tax-free income:** An investment objective that seeks capital preservation while obtaining tax-free income. Short-term tax-free funds invest in diversified portfolios of quality municipal bonds or notes with a weighted-average maturity between one and seven years.
- signature guarantee:** A stamp or seal by a bank or member of a domestic stock exchange (or other acceptable guarantor) on correspondence that authenticates a signature. A notary public cannot provide a signature guarantee.
- small-capitalization stocks:** The stocks of companies whose market value is less than \$250 million. Small-cap companies tend to grow faster than large-cap companies and typically use any profits for expansion rather than for paying dividends. They also are more volatile than large-cap companies and have a higher failure rate.
- SPDRs (or Spiders):** (1) Standard & Poor’s 500 Depositary Receipts. A warehouse receipt unit investment trust structure that provides the investor with an interest in the holdings of a trust designed to track the return of the S&P 500 index. The American Stock Exchange introduced SPDRs in 1993. They became one of the fastest growing “fund” products in history and launched the open exchange-traded fund (ETF) market. (2) The acronym is also part of the branding of other

ETFs, including the MidCap SPDRs, nine Sector SPDRs, and a variety of other funds managed or distributed by State Street Bank.

special: A reference to a security that is difficult to borrow and may command a premium in the securities lending market. An easy to borrow security is described as general collateral.

specialist: Historically, a floor member of an exchange who accepted primary responsibility for making a fair market in securities at all times that the exchange was open for business. For practical purposes, today's designated market makers (DMM) have very limited market stabilization responsibilities. While many market making firms retain the word specialist in their name, the business of the firms has changed significantly.

specie, in specie: (1) in coin as opposed to paper money. (2) in-kind, as in the "in-kind" exchange of securities for fund shares in the creation and redemption of exchange-traded funds. The archaic usage of the second meaning was more common in the medieval church and courts than in commerce, but it has been revived in connection with creation and redemption of ETFs in Europe and in other ETF markets influenced by European ETF procedures.

Standard & Poor's 500 Index: A measure of U.S. stock market performance based on the performance of 500 major domestic companies. Though it does not directly include transaction or management costs, the S&P 500 is often used as a yardstick for equity fund performance.

standard deviation: A measure of the degree to which specific observations varied from an average over a certain period. The smaller the difference, the lower the standard deviation and the greater the degree of stability one might expect over a similar period.

state municipal bond fund: A municipal bond fund whose objective is to provide current income that is exempt from regular federal, state and, in some cases, local income taxes by investing in a portfolio of municipal bonds from a single state.

statement of additional information (SAI): A supplementary document to a fund prospectus that contains more detailed information about the fund. *Also known as a part B prospectus.*

street name: A reference to securities registered in the name of a broker or a nominee, such as a clearinghouse, instead of in the name of the beneficial owner. Street name registration facilitates securities transfers and has grown in popularity as trading volumes have increased.

STRIPS: An acronym for separately traded registered interest and principal securities. These zero-coupon notes and bonds are created by trading note and bond coupon and principal payments "stripped" from Treasury securities or other bonds.

sunshine trading: A technique originated in connection with portfolio insurance (and to a lesser extent with portfolio trading) in the mid-1980s to announce a specific basket or index trading plan before any orders were entered. The order would then be entered between the bid and offer at the announced time, and any untraded portion of the order would be withdrawn and re-entered according to

a preannounced schedule until the order was completed. The rationale for this process was that other market participants would be less concerned about the market impact of such an order than about an undisclosed order because the initiator of the sunshine trade was stating that there was no specific fundamental information behind the order. A formulaic risk management or asset allocation model motivated the order. The technique is rarely used today because the basic information that someone wants to trade is known to have value to other traders. *Also called preannounced trading.*

synthetic financial instrument: A financial instrument that is composed of other financial instruments and is designed to replicate the characteristics of yet another financial instrument. A synthetic instrument may be composed of a single security and a cash equivalent or a variety of instruments whose combined features are comparable to the instrument it replicates.

systematic investment plan: An arrangement which permits regular investments in a fund through payroll deductions, automatic transfers from a checking account, or automatic exchanges from another fund.

target date fund: An asset allocation fund that is usually offered for use in defined contribution pension plans. A target date fund adopts a more conservative asset allocation (e.g., more debt, less equity) at a predetermined date, usually a date associated with an investor's expected retirement. *Also called life strategy fund.*

tax aware portfolio management: A commitment to exercise a reasonable effort to achieve tax efficiency by a portfolio's advisor. Less commitment to tax efficiency than an investor would expect in a tax-managed fund.

tax efficiency: A characteristic of a financial instrument that permits a dealer or an end-user to establish or modify a position in a way that requires lower tax payments than an alternative similar position or instrument. Funds are frequently evaluated for tax efficiency on the basis of their ability to defer capital gains taxes for their shareholders.

tax loss carry-forward: A tax benefit that allows an individual, a corporation, or a fund to offset past losses against future profits.

tax year: The 12-month period used by an entity to report income for tax purposes. For most individuals, their tax year is the calendar year.

taxable equivalent yield: The yield on a taxable bond that would produce the same after-tax return for a taxpayer as a specific tax-exempt issue. It is always a good idea to ask about the tax rate assumptions in the calculation. *Also called equivalent taxable yield.*

taxable fixed-income fund: A portfolio of corporate or U.S. Treasury debt that provides monthly, quarterly, or semiannual income.

tax-deferred: Income on which taxes can be postponed until a later date. Contributions to a 401(k) plan, for example, are not taxed until they are withdrawn from the account, but when withdrawn, they are taxed at the applicable tax rate.

tax-exempt bond: *See municipal bond.*

tax-free fixed-income fund: A portfolio of federally tax-exempt (and for some specific portfolios, state and local tax-exempt) municipal bonds that provide monthly, quarterly, or semiannual income.

- tax-lot accounting:** A record-keeping technique that traces dates of purchase and sale, cost basis, and transaction size for each lot of each security in a portfolio. Tax-lot accounting is important in achieving tax efficiency in an exchange-traded fund.
- tax-managed fund:** An open-end mutual fund managed with the objective of minimizing taxes at the expense of benchmark tracking, diversification or even pre-tax return. More tax-focused than a fund operating under tax aware portfolio management.
- technical analysis:** Analysis of the supply and demand for securities using charts, graphs, and various trading data to identify patterns that may forecast future price movements.
- top-down investing:** A top-down investor looks first at trends in the general economy, and then selects industries and finally companies that should benefit from those trends. *Contrast with bottom-up investing.*
- total return:** Usually expressed as income plus any principal gain or minus any principal loss during a measurement period divided by initial principal (investment) and expressed as a percent.
- trade date:** The date on which all the terms and methods for resolving any remaining contingencies in a trade are determined.
- trailer:** *See 12b-1 fees.*
- transfer agent:** An institution, usually a bank, used by an issuer of shares to maintain its shareholder records and perform account transactions.
- Treasury bill, note, bond:** Negotiable debt obligations issued by the U.S. government and backed by its full faith and credit. Treasury bills are discounted short-term securities with maturities of one year or less. Treasury notes are intermediate-term coupon securities with maturities of 1 to 10 years. Treasury bonds are long-term coupon securities with maturities of 10 years or longer.
- Treasury Inflation-Indexed Securities (TIIS):** Inflation-protected debt of the U.S. government. These notes feature a twice-yearly increase in principal by the percentage increase in the CPI-U and an interest rate set to provide a predetermined real return. The scheduled interest rate is paid on the adjusted principal. Redemption at maturity is for the adjusted principal amount. The schedule and quantity of these securities issued has been subject to change. Popularly called Treasury Inflation-Protected Securities (TIPS).
- Treasury Inflation-Protected Securities (TIPS):** The formal name for these notes is Treasury Inflation-Indexed Securities (TIIS).
- Treasury interest STRIPS (TINTS):** STRIPS based only on interest coupons stripped from Treasury notes or bonds, not on principal payments. These payments would be exempt from state income taxes.
- triple tax-exempt fund:** A municipal bond fund whose dividends and interest are exempt from regular federal, state, and local income taxes, benefiting an investor resident in the designated locality.
- turnover:** *See portfolio turnover.*
- umbrella fund:** The top-level fund in a fund-of-funds structure.

- underwriter:** (1) An investment bank that purchases securities for its own account with the express intention of reselling them in the open market. (2) An insurer that undertakes to furnish an insurance contract in exchange for a premium. (3) The organization that distributes a mutual fund's shares to broker/dealers, but that usually does not sell the shares as a principal.
- undistributed net investment income (UNII):** Represents the life-to-date balance of a fund's net investment income less distributions of net investment income. UNII appears as a line item on a fund's statement of changes in net assets.
- Uniform Gift to Minors Act (UGMA):** A state law that allows any adult to contribute to a custodian account in a minor child's name without having to name a legal guardian or establish a trust.
- unit investment trust (UIT):** An investment company that usually buys and holds a fixed portfolio until the trust's termination date. When the trust is dissolved, proceeds are paid to shareholders. Like a mutual fund, shares of a UIT can be redeemed on any business day. UITs with some portfolio component flexibility serve as the structure for some early exchange-traded funds (ETFs).
- unrated securities:** Typically, fixed income securities are rated for creditworthiness and repayment risk by independent rating services such as Standard & Poor's or Moody's Investor Services. However, not all securities are rated by these services, perhaps due to the size of the security issue, or perhaps because the issuing company does not choose to provide the prerequisite information to the ratings services and pay a rating fee.
- value stocks:** Stocks that typically have relatively high dividend yields and that sell at relatively low prices in relation to their earnings or book value.
- volatility:** The fluctuations in market value of a fund or other security. Usually measured by annualized standard deviation of stock price or return.
- warrant:** An option to purchase or sell the underlying security at a given price and time or at a series of prices and times outlined in the warrant agreement. A warrant differs from a put or call option in that it is ordinarily issued for a period in excess of one year. Ordinarily, exercise of a common stock warrant sold by the issuer of the underlying increases the number of shares of stock outstanding, whereas an exchanged-traded call or a covered warrant issued by a financial intermediary is an option on shares already outstanding.
- wash sale:** The sale and repurchase of the same asset within 30 days. The IRS does not allow an investor to claim a tax loss if a wash sale has occurred.
- when-issued securities:** Refers to a transaction made conditionally because a security, although authorized, has not yet been issued. New issues of stocks and bonds, stocks that have split, and Treasury securities are traded on a when-issued basis.
- x:** Appears next to a fund's listing in the newspaper to indicate that the fund recently paid a capital gain dividend. The amount of the dividend was previously included in the fund's net asset value and is deducted from the net asset value when it is paid out. The "x" stands for "ex-dividend."
- yield:** See *dividend yield and SEC yield*.
- yield curve:** A graph or "curve" that depicts the relationship between short- and long-term interest rates on otherwise comparable Treasury or credit instruments.

- yield spread:** The variation between yields on different types of debt securities. This variation is generally a function of supply and demand, credit quality, maturity, and expected interest-rate fluctuations. Treasury bonds, for example, because they are safe in terms of credit risk, will normally yield less than corporate bonds at the same maturity. Yields may also differ on similar securities with different maturities. Long-term debt, for example, carries more risk of market changes and issuer defaults than shorter-term debt and thus usually yields more.
- yield to maturity:** The annual return on a bond, assuming the bond is held until its maturity date. Unlike current yield, this calculation takes into consideration the purchase price, redemption value, time to maturity, coupon yield, and time between interest payments.
- z:** Appears after a fund's name in the daily newspaper if the price wasn't available in time to meet the NASDAQ reporting deadline, usually due to an extremely tight reporting schedule.
- zero coupon bond:** A security that pays no interest but is instead sold at a discount from face value. The holder receives a rate of return through gradual appreciation of the security, which is redeemed at maturity for the full face value.

About the Author

Gary Gastineau is a recognized expert on exchange-traded funds. He is the Principal of ETF Consultants, a firm providing specialized exchange-traded fund consulting services to ETF issuers, exchanges, and other markets, market makers, research organizations, and investors. He is also a Managing Member and co-founder of Managed ETFs, a firm that has developed a new ETF trading mechanism and systems for operating actively managed ETFs. Previously, Mr. Gastineau was Managing Director of ETF Advisors and Managing Director for ETF Product Development at Nuveen Investments. Preceding his tenure at Nuveen, Mr. Gastineau was Senior Vice President for New Product Development at the American Stock Exchange for five years where he was instrumental in the introduction of many derivative contracts and ETF products. Earlier, Mr. Gastineau held senior positions in research, product development, and portfolio management at major investment banking firms.

The first edition of *The Exchange-Traded Funds Manual* was published in February 2002 by John Wiley & Sons. Gary is also the author of *Someone Will Make Money On Your Funds—Why Not You?* published by Wiley in 2005, and *The Options Manual* (Third Edition, McGraw-Hill, 1988), and co-author of the *Dictionary of Financial Risk Management* (Fabozzi, 1999) and *Equity Flex Options* (Fabozzi, 1999), as well as numerous journal articles. He received the Bernstein Fabozzi/Jacobs Levy Award for an Outstanding Article for “Equity Index Funds Have Lost Their Way,” which appeared in the Winter 2002 issue of *The Journal of Portfolio Management*.

Gary serves on the editorial boards of *The Journal of Portfolio Management*, *The Journal of Derivatives*, and *The Journal of Indexes*. Gary is a member of the Review Board for the Research Foundation of the CFA Institute. He is an honors graduate of both Harvard College and Harvard Business School.

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