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THE

# ETF

# HANDBOOK

*How to Value and Trade Exchange Traded Funds*

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DAVID J. ABNER



# The ETF Handbook

*How to Value and Trade  
Exchange-Traded Funds*

DAVID J. ABNER



WILEY

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*For Sophie, Sam, and Lucy Abner, my future ETF traders*



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# Preface

**T**he number of available exchange-traded funds (ETFs) and the quantity of assets underlying them has been growing exponentially in recent years. An important element for the future growth of the industry is the need for new users of these products to understand how to execute trades in the broad range of ETFs. Educating a new and expanding client base has become a universal endeavor among ETF issuers. Even the largest ETF providers in the industry have products that do not trade the high volumes of the few most popular products. Yet in order for the client base to utilize the broader range of available products, it needs to understand how to achieve an efficient execution. Understanding the proper methods of valuing and trading ETFs will enable investors to expand their product usage and will enable the trading community to provide the services necessary to nurture the future growth of this young industry. *The ETF Handbook* presents the tools necessary for valuing these funds and the concepts required for trading and executing ETF order flow. This information will be important for both traders and the investor base to gain a true understanding of how these products function in the markets.

## **ETFs IN THE REAL WORLD**

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Just recently I encountered two examples that clearly demonstrate the need for this information. In the first, I received a call from a client seeking help in executing ETF order flow. The adoption of the ETF product by an expanding user base has created a flood of such client calls to product issuers. The client's initial comments were: "I've been trying to buy two of your ETFs and the intraday volume is very light. I have been bidding for the shares for about a week and I haven't been getting any executions. Can you help me?" This was not the first time I had heard this request. I have been dealing with similar inquiries for the past 10 years in the ETF industry. In the early years, the questions involved helping the new product adopters, primarily institutions and hedge funds, in achieving desired liquidity.

Over the last several years, I have found myself in the role of champion of the smaller investor, helping advisors and our broader client base achieve their desired executions in a broad suite of ETFs. The first thing I do in this situation is attempt to understand what the clients have been doing so far and what their investment goals are. In this case, the client was an advisor trying to buy 50,000 shares each of two of our ETFs that each trade approximately 15,000 shares daily. The typical market that would be quoted on the ETFs is roughly 10 cents wide with approximately 500 shares on either side of the market. Without a solid understanding of how the ETF market works, one might think this would be a multiday trading adventure or, worse, a hopeless situation. It is far from that, however, and I was able to help the client achieve a very satisfactory execution. I learned that the client was placing very small limit orders on the bid side of the market. Then, every time the market starting moving down, he would lower his order price. By doing this, he never let liquidity providers see any real size to buy in the ETFs, and he never let his order get near the value of the ETF where opposing liquidity would be provided. This is the same as setting out in a boat to go fishing but never actually dropping a line in the water with a hook and some bait. You may be out fishing, but you will not catch any fish!

The client and I then had a conversation about his investment goals. I explained to him how the valuation of an ETF is determined. I explained that in a low-volume ETF, most of the trading will take place against a liquidity provider and that it is important to let the provider know you are out there and willing to trade at a price close to the ETF value for the provider to be willing to offer the desired liquidity. With that understanding in mind, we calculated that the fair value for each of the ETFs was approximately 3 cents inside the offer side of the market at the time. So we did something that seemed very radical to the client: We decided to show our whole hand to the world electronically. Instead of bidding for just 500 shares at a time, the client put a bid in each ETF in the system for all 50,000 shares at the price he was willing to pay that was in line with the valuation of the ETF.

The ETF marketplace has grown so broad that you sometimes need to do something to trigger the alerts on trading systems in order to trade. This is analogous to a bell being attached to the door of a store so the proprietor can hear clients coming in and out. When the large bid showed up in ETFs that did not trade very much daily volume, the liquidity providers were alerted via their systems. Sometimes, if I see a large bid or offer show up in one of my products, I will call the liquidity providers myself to make sure they are aware of this trading opportunity. We did not adjust our price based on small market movements, interpreting them as noise within our strategy. This client's intention was to place a longer-term trade with a significant

upside goal. He was indifferent as to whether he paid \$30.10 or \$30.07, but he had been adjusting his pricing as the market moved around. This kept him constantly under the fair value level that would enable his order to be satisfied. The upshot of this situation was that both of his large orders were filled almost immediately.

His executions make sense for several reasons. First, he was bidding a level in the ETF that was considered to be fair value by the liquidity-providing community, and he showed enough size to attract some attention. The client was very satisfied with the executions. He had achieved the exposure he was looking for in the ETFs at a price that he was comfortable paying. He had not initially understood where the liquidity came from but was now comfortable with a method that he could use to get in and out of his positions in an acceptable manner. There are many intricate details surrounding the circumstances of achieving executions in your ETF orders. What is even more important to understand, however, are the concepts of what is happening in the marketplace. All of those details are available in this *ETF Handbook*.

The second example shows the client achieving exposure via an alternate solution. I received a call from a very large institution indicating that it liked the methodology behind our ETFs and wanted to make some purchases. It had heard about the potential liquidity available in ETFs and wanted to learn more about the ways of executing orders to achieve institutional goals. The caller did have some concerns because the ETFs the organization were interested in traded with very low average daily volume. Since this was a large institution, it wanted to buy several hundred thousand shares of several ETFs that tended to trade fewer than 50,000 shares per day. Its investment horizon was longer term, and it was indifferent as to whether it traded today, the following day, or even over a few days if required.

This type of order flow utilizes one of the most important facets of the ETF structure: the creation and redemption mechanism. This client had a trading relationship with a large broker-dealer who happened to be an Authorized Participant (AP). Being an AP enables the broker-dealer to interact directly with the ETF issuer in the creation of new ETF shares. To achieve the desired execution, the client gave the AP the order to buy the ETFs at a price based on the net asset value (NAV). The AP went into the markets, purchased the shares underlying the ETF, and delivered them to the issuer. In turn, the issuer delivered new ETF shares to the AP who then delivered them on to the client. The client was able to achieve an execution in line with the net asset value of the funds without having an impact on the ETF price in the marketplace. In this scenario, the average daily volume of the ETF was irrelevant because the client never actually traded the shares in the secondary market. Executions of very large size can be accommodated in the

ETF structure utilizing this method; this ability has helped to facilitate their growth. However, executions of smaller size can also be executed using this methodology by accessing the liquidity aggregators and understanding how that business works. The details of creations and redemptions and utilizing liquidity providers are found throughout this handbook because they are critical functions of the entire ETF structure.

## **WHAT YOU WILL FIND IN THIS BOOK**

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This book has three main parts that will appeal to different sections of the ETF universe in various ways. Part One introduces the various different structures of exchange-traded products, the myriad methodologies underlying those products, and the ways of bringing them to the marketplace. Part One is written from the perspective of my role within an ETF issuer. I have been working at an issuer for two years at the time of the writing of this book. I had been trading ETFs for more than 10 years prior to deciding to move to the other side of the fence. A brief history of my interaction with the ETF product is helpful before moving forward with the description of the book.

Throughout the mid- to late 1990s, I was running the closed end fund business at Bear Stearns in midtown Manhattan. I was facilitating customer order flow and running a proprietary trading strategy pursuing discount arbitrage opportunities. I was also a frequent user of the Country Webs products available at the time. Those products later became the basis for the iShares single-country ETF product set. One day a salesman on the desk stood up and said to me, “I’ve got an order in a strange fund I’ve never heard of, can you make a market?” Since that was my role at the time, I agreed. I was not well versed in the product but made a market in the QQQ’s (Nasdaq 100 Index Tracker) to satisfy the client’s request. Almost immediately I lost a very large amount of money in my trading portfolio. In researching what went wrong and how I lost the money, I learned much more about the product and became enthusiastic about this newer and unique investment vehicle. It was then that I began to realize the potential of this product for the trading community and started to build an ETF business at Bear Stearns. Even then I did not expect the volume and asset explosion we have experienced in the last few years.

At that time I had my entire career leveraged to the markets and to my trading performance. I had always been a basket or fund trader and was never very comfortable buying single-company stocks. To manage my personal portfolio, I invested in mutual funds, mostly plain vanilla ones. I was diligently dollar cost averaging a small amount every month and watching it grow. When I got married in 2000 and my wife and I proceeded

to buy a house, I sold all of my mutual fund positions to provide a significant down payment on the property. Two years later, when I had more money to invest and the ETF trading business had really taken off, I realized I would never buy a mutual fund again but would utilize only ETFs for investing. That was when I realized that this product makes great sense for the average investor. I wanted to be involved in helping bring these products to market and helping investors utilize them for their investing goals. That is what planted the seed for my move to a seat at a young and innovative ETF issuer several years later.

Part One of this book presents many of the concepts related to bringing ETFs to market and how they fit into the investing landscape. I have avoided presenting a history of the ETF or presenting every detail of the product mechanics since those topics are well covered by other books. Several of those books are referenced throughout this text. I focus on topics and concepts that have not been previously discussed in detail and may not have been fully understood unless the reader worked for a product issuer or had been a liquidity provider in the products themselves. I bring the insider's perspective to the investor with the hopes of creating a broader understanding for all interested parties.

Part Two goes through the mechanics of calculating the fair value for the products. I will discuss why an international ETF might be trading away from its intraday indicative value (IIV) during the trading day. Part Two also details the types of products available in the commodities category and the varying structures of the currency ETFs. The main styles of ETFs are the focus of Part Two, which presents a framework for understanding how to value those products that will build the foundation for effectively executing ETF order flow. The broader ETF trading community will also find value in this part. I often speak with people who are interested in getting into the ETF business; they need an understanding of how the valuation process works. When an exchange-traded product moves to a premium, for instance, if you understand its underlying mechanism, you will know why this may have occurred and what may happen in the future.

We are living through a revolution in the way people invest as demonstrated by the growth of the exchange-traded products. Never before have so many different investment products been available to investors at the click of a mouse via an electronic brokerage account. There is a leveling of the investing landscape taking place that is bringing the tools of the institutional universe to the masses. As with any material shift in mind-set or new product adoption, there are learning curves involved. The techniques for executing order flow in this investment vehicle are still not widely known and understood. Yet they are crucial because a main feature of the product is its availability on an exchange like an ordinary stock. In Part Three I review many of the trading techniques being used today. I also look at some

concepts for trading ETFs that might develop in the future as the industry matures. Additionally I take a look at the current market participants and the roles they play in the industry. It is important to know who is doing what so you can interact properly with all the market participants. If you are managing money for clients utilizing ETFs, I would recommend reading Part Three first, and committing it to memory, before moving on to the rest of this book.

Incredible growth and change is occurring in the universe of exchange-traded products every day. In the final part of the book, I provide some appendices that will lead you to the most current information available. The industry is well covered by a very knowledgeable media force. Journalists utilizing many different media chronicle the daily happenings in the ETF world. I provide a list of Web sites with information on the products. I also provide a list of issuers and their Web page addresses. In addition, I provide a list of products in registration that will give you a taste of what the future could bring to bear and also exposes the holes that could someday be filled with burgeoning products. In an effort to tie this book to the age of technology in which we live, I have provided several of the spreadsheets that I use for demonstrating the models, specifically calculating NAV and IIV and evaluating currency funds. In addition, Wiley has organized a link to my webinar, which is focused exclusively on valuing and trading ETFs. The webinar gives a brief summary of the concepts detailed throughout this book.

### **TRADING TIP**

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Throughout the book you will see highlighted sections to bring attention to specific points regarding trading ETFs in the market.

### **WHAT YOU WILL FIND ON THE COMPANION WEB SITE**

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The companion Web site for this book (located at [www.wiley.com/go/abner](http://www.wiley.com/go/abner)—the password is `abneretf`) contains five spreadsheets:

1. The Creation Unit Seed Example
2. The Domestic ETF NAV\_IIV Model
3. The International ETF NAV\_IIV Model
4. ETF Currency Product
5. Grantor Trust Currency Product



## EXCEL EXAMPLE

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The Excel spreadsheets on the companion Web site include the actual formulas used for specific calculations. Throughout the book you will see this sidebar indicating that there is an accompanying spreadsheet on the Web site ([www.wiley.com/go/abner](http://www.wiley.com/go/abner)).



The Web site also contains my webinar, The ETF Handbook Webinar: How to value and trade Exchange-Traded Funds. Throughout the text you will also see an icon that indicates the concepts in the text are presented in the webinar. There I verbally go over the point and describe it with an accompanying slide.

## AS YOU BEGIN

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This book is not the first book on ETFs. I bring to the reader, however, an insider's view of what is behind the curtain. The book is unique both in its content and in its perspective. It will help as a guide to the proper utilization of ETFs. The investing public deserves to know and understand the details of how products work. The trading community will need to build an infrastructure capable of handling the avalanche of ETF order flow to come. It is my hope that readers will take advantage of the features of ETFs and enjoy many years of profitable investing and trading.

## DISCLAIMER

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The concepts and ideas in this book are my own. I am in no way representing WisdomTree Asset Management with anything represented in this book. There are risks involved with investing, including possible loss of principal. In addition to the normal risks of investing, foreign investing involves currency, political, and economic risk. Funds focusing on a single country or sector and/or funds that emphasize investments in smaller companies may experience greater price volatility. Investors should consider the investment objectives, risks, charges, and expenses of the fund(s) carefully before investing. Please seek the counsel of your accountant for any tax-related matters as there is no tax guidance presented in this book.



# Acknowledgments

**O**ver the last decade, I have made and lost more money in exchange-traded funds than many people. I am grateful for the many nights I have been allowed to remain on the trading desk long past the market close, puzzling over the results of my most recent trades. While my friends were out enjoying life and my family ate dinner without me, I sought the counsel of the nighttime cleaning crew. The mice, feasting on lunch crumbs and wires in the metal floors beneath my feet, joined me in my late hours on the desk and attempted to answer my queries. I thank my bosses for their diligence in not giving me enough risk capital to trap myself and the firm in one of my market-induced trading endeavors. And I especially thank my clients for continuing to believe in me and trust my intentions. My search for the answers has led to this ETF handbook. I hope it enables you time outside the office to view many sunsets with your family and friends.

For certain parts of the book, I was able to tap people with particular specialties. Ben Slavin was extremely instrumental in ensuring I had correctly presented the structural issues. His universal knowledge of product structure and development was invaluable. Rick Harper was the guiding hand in the section regarding his specialties of fixed income and currencies as well as a frequent late-night office companion. Although this book is a completely separate and distinct endeavor from my WisdomTree employment, daily interaction with the most knowledgeable and aggressive ETF team in the world was extremely helpful in bringing this book to fruition. I have never met a more dedicated and hardworking group than the team at WisdomTree.

Three people read every word of the unedited text: Doug Loveland, Anita Rausch, and Lynne Cohen. Doug, during his several hours a day on the train, was able to read, cross out, and rewrite large swaths of the text. Anita, an incredibly talented and experienced ETF trader, helped to clarify many of the concepts and edit the original text. Once they were done, Lynne helped to turn the text into words that would actually make sense to readers.

Various other bits and pieces of the book were reviewed and edited by Rick Rosenthal, James Chen, Evan Cohen, Andy McOrmond, and Imseok Yang. These individuals have been involved with me, or the ETF world, for many years, and their collective pool of knowledge is unmatched. Beyond our various business relationships, we are all truly friends.

I have recently learned that a Wiley book does not get printed without the close guidance of editors and others. Pamela van Giessen had the foresight to see that this book would bring something to the market that is very different from every other ETF book Wiley has published; I cannot thank her enough. Emilie Herman suffered through my many changes, corrections, and writing inexperience to help make this book worthy of the great Wiley name. None of this would have been possible without James Altucher introducing me to Pamela in the first place.

Most important, nothing in my life happens without the love and support of my beautiful wife, Denise. I check to make sure she is sleeping next to me every day when I awake, fearful that my wife and family are all just an incredibly detailed and wonderful dream. Luckily, as I write this, my children are still young enough to go to bed early and start every day as if the world is new, so I hope they have not missed me too much.

# Introduction to the ETF Marketplace

**T**he process of dividing the current exchange-traded funds (ETFs) into categories of assets is not simple. Often ETFs fit reasonably well in multiple categories. If you were to separate all the characteristics that could possibly be categorized, you would have almost as many categories as funds and would not have made an unwieldy group easier to manage. For instance, an ETF that provides country access to a single non-U.S. country but does not use the atypical market capitalization weighting structure might be placed into either the international category or the fundamentally weighted category depending on the particular bias of the writer.

I tried to use an agnostic method of categorizing the available types of asset categories currently covered by the U.S.-listed ETF market, shown in Exhibit I.1. I tried to find the group of categories that present a clear overarching view of what types of products are available in the ETF wrapper without becoming too granular into the various different strategies. There is no firm standard because of the diversity of available products. I have seen various renditions of this type of chart with both more and fewer categories delineated. Exhibit I.1 shows the categories and their current respective assets and number of funds.

In terms of current assets, the equity funds as a unit far outweigh any of the other categories. Overall, equity-based products make up approximately 70% of ETF assets in the United States. This makes sense if you consider that the equity products came to market much earlier than the other categories, and the products are designed and listed within the realm of equity securities.

**EXHIBIT I.1** ETF Categories and Assets (as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Asset Allocation Strategies	\$ 591,383,255	30	0.1
Commodity	\$ 69,209,918,140	29	8.7
Currency	\$ 6,783,055,150	20	0.8
Domestic Equity	\$ 287,183,458,553	168	36.0
Domestic Sector	\$ 67,786,010,878	138	8.5
Fixed Income	\$ 109,486,445,610	92	13.7
Global/International Equity	\$ 198,369,097,044	139	24.8
Global/International Sector	\$ 18,210,216,508	74	2.3
Leveraged/Inverse	\$ 29,010,808,888	129	3.6
REITs	\$ 12,092,811,140	23	1.5
Totals	\$ 798,723,205,166	842	

Source: Bloomberg.

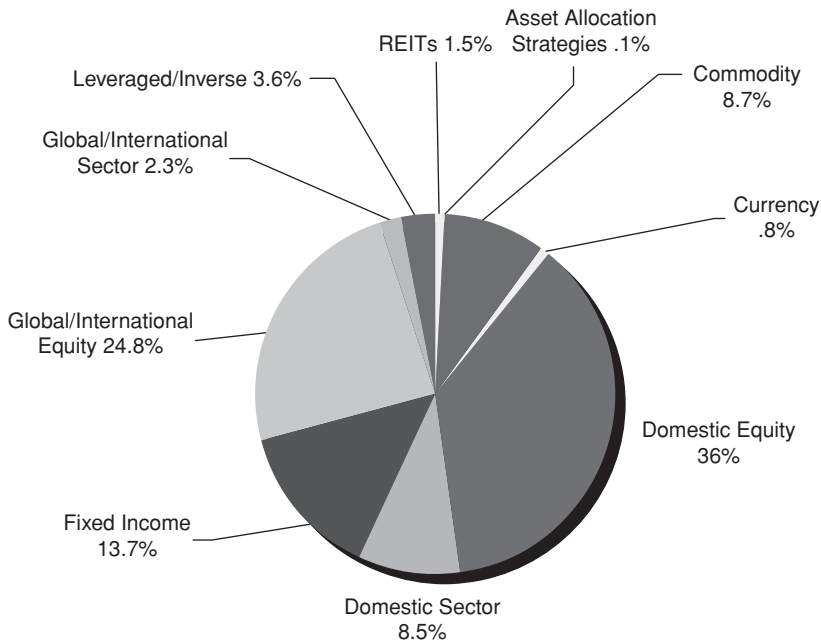
As the acceptance of the ETF wrapper has grown, there has been growth in the other asset classes, such as fixed income, commodities, currency, and leveraged groups. By notional value traded, the fixed income and currency markets are much bigger than the global equities markets. Therefore, it would not be surprising to see relative growth in those product lines as their use continues to evolve.

Exhibit I.2 shows the breakdown of assets by category.

The discussion of trading and valuing ETFs must begin with a look into the genesis of the products. I aim to make this very brief since other books offer encyclopedic information regarding the specifics of product structure and initial product development. This text focuses on understanding how the products work, how to value them, good trading practices, who are the market participants, and how they are using the products. As Sun Tzu wrote in *The Art of War*, “It is said that if you know your enemies and know yourself, you will not be imperiled in a hundred battles.” The financial markets are like a battleground: Success comes from anticipating the moves of others. This book will help you understand the motives of the other market participants in the ETF arena.

Part One focuses on how ETFs are brought to the market.

- **Chapter 1** maps out the process of building an ETF, including: developing the underlying basket of assets, screening those underlying constituents for proper liquidity to make a viable product, and



**EXHIBIT I.2** ETF Categories by Percentage of Assets (as of 1/14/10)

Source: Bloomberg.

developing relationships with partners who will provide liquidity in the listed ETF.

- **Chapter 2** investigates the legal requirements for listing funds, the various structures that are available, and why they are utilized. I also highlight where some structures have had difficulties.
- **Chapter 3** discusses the intricacies of bringing products to market. It is interesting to note that the ETF providers abide by the theory of “If you build it, they will come.”<sup>1</sup> They bear the initial expense of building products and bringing them to market without any commitment that assets will be attracted to those funds.
- **Chapter 4** compares three types of funds in the market: ETFs, closed-end funds (CEFs), and mutual funds. These products make up the cornerstone of investing for a large swath of the investing population. It is critical to understand the nuances among the product types to utilize any of them in an efficient manner.

Part One concludes with a look at some of the expectations I have for the ETF marketplace over the next decade. Much of the future growth of

the industry will be based around a solid understanding of effective product development. That is not simply the wrapping up of assets and calling them ETFs but understanding the best methods of making products that truly serve the needs of investors. Part One provides the foundation that is necessary for the trading and investing community to understand why products trade in certain ways and how they can be properly valued. Throughout the rest of the book, we build on these concepts to uncover the details of valuation and to learn more about the market. An entirely new trading and development mechanism is growing around the ETF structure. Any firm involved in the financial markets should now be working to assess the marketplace and gain an understanding of how to get involved in this rapidly expanding business.



# Development of an ETF

**L**aunching an exchange-traded fund (ETF) involves numerous decisions for a fund company. One of the first things that will need to be decided is what type of market exposure will be offered by this new ETF. Once the underlying exposure is determined, decisions can be made that involve choosing the best methods to provide that exposure to clients. This is when fund companies determine which of the various structures will be used to bring the product to market. (This book focuses on the ETF structure as separate and distinct from other exchange-traded products in the marketplace, but Chapter 2 discusses the unique characteristics of these structures.)

Once the decision has been made as to what the underlying product set will be and in what structure the fund will be brought to market, there are the details of building the actual ETF. The formation of the creation unit, the basket of shares that comprises the funds underlying constituents, is probably one of the most critical decisions in ETF development. Ensuring that the basket underlying the ETF is transparent, liquid, and reasonably easy to trade has proven to be a consistent measure of product success in the marketplace. ETFs are listed products that trade during the day on an exchange. One of the main concepts that you will read about throughout this book is the mechanism that keeps the ETF trading near its underlying net asset value (NAV). The process of being able to create and redeem shares in an ETF on a daily basis, and thus the fungibility between the ETF and its underlying basket, is a critical and distinguishing feature of the product's design.

Throughout this chapter we tour the basic steps involved in bringing an ETF to the marketplace. We look at decisions regarding whether a product will be providing access or performance, whether it will become a passively or actively managed fund and what will be the universe of its underlying constituents. Then we get into the actual development of the ETF itself. I discuss the development of the basket for the creation unit, the creation and redemption process, and the Authorized Participant.

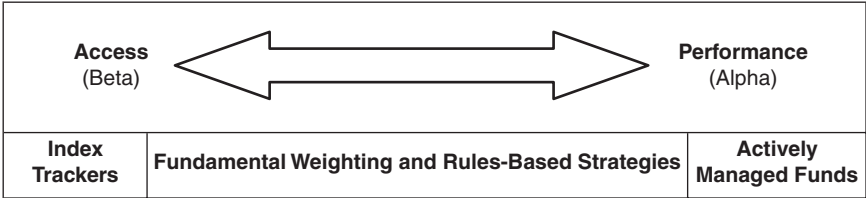
The creation and redemption process is discussed at the end of this first chapter. It is presented early in the book because, when speaking about trading ETFs and understanding their value, almost nothing is as critical as understanding what is going on in the creation basket and the relationship that basket has to the ETF price and its liquidity. The creation and redemption mechanism of the ETF product line is the differentiating factor that has been most responsible for its success.

**MARKET ACCESS OR OUTPERFORMANCE?**

The entire universe of ETFs can be boiled down to two essentially different product goals: those that provide access and those that offer some form of added performance metric. Although there are some black-and-white distinctions, there are also products that fit at different points along the product spectrum. In the product spectrum presented in Exhibit 1.1, you can see the pure products providing access or those providing active management and then the products in the middle utilizing enhanced indexing and other methods for achieving exposures.

An access product is a tool that provides passive exposure to the ETF user. The investor can attain exposure to a particular index, region, country, or sector by using an access product that typically tracks and tries to replicate a benchmark of some kind. The ETF market has made available a broad range of investment products that enable investors to access types of exposures only dreamed of previously. Never before was it practical to have an equity-based position in actual gold bullion in your investment account. Countries such as Vietnam, groups of global stocks representing specific sectors, and currencies from countries around the world are all available now within the ETF wrapper.

An ETF providing access to any form of defined exposure, such as tracking an index, is considered to be a beta-type product. A fund that is trying to outperform a specific benchmark would be considered an alpha-type product.



**EXHIBIT 1.1** Product Spectrum: Index Tracking to Actively Managed ETFs

If an ETF is trying to provide something beyond pure tracking of a traditional benchmark index, it is considered to be a performance product. This type of product has become available only over the last few years. In the earlier days of ETF growth, the products were all designed as access vehicles competing against various other structures as tools for providing exposure. More recently ETFs have been moving across the spectrum attempting to outperform the traditional benchmarks, thereby offering a trading strategy within listed ETFs and providing new strategies for money managers to use in their portfolios.

Performance-type products are attempting to provide more than a basic index tracking tool. They are bringing to the market investment products that can be utilized to complete core or satellite portfolios and other strategies. Performance products that track new indexes are providing a form of passive alpha. They are not traded like actively managed funds but according to rules-based mechanisms. The funds track the newly created index rules, but within those rules are goals of outperformance, alpha. The new actively managed portfolios are attempting to provide an even purer level of alpha, not tracking an index at all, while attempting to generate returns that outperform specified benchmarks.

## **INDEX TRACKING OR ACTIVELY MANAGED?**

When initiating the process of creating a new ETF, one of the primary considerations is to fully conceptualize what value you are trying to provide to the investing public. There are many different types of indexes, and they pursue many different methods of producing their desired results. Some take the entire available community of a specified group in order to produce a tracking mechanism. Others take a sampling of that same group and, by using weighting optimizations and other screens, they create a reasonable tracking mechanism within most constraints.

When creating an index on which to base an ETF, it is important to define the actual goal of the index. Is it being designed to provide a unique measurement of certain securities that have not historically been monitored in this way? Is the index being designed to track a benchmark or outperform it? The index could be created with the goal of improving on indexes that already exist. An example of this would be the creation of an index using fundamental screens in an attempt to outperform indexes based on market capitalization over time.

Typically the firm creating an index is separate from the firm that issues ETFs. There are a few firms that have both an index creation and an ETF issuance group within the same infrastructure. This is interesting because

a typical index provider has different concerns from an ETF issuer. Part of the determination in the construction of the index will inevitably be the ability to invest in the underlying products; however, it is not always the first concern of an index provider. The product development teams in the ETF world have been extremely creative in utilizing product structures to attain various exotic exposures. And in the places where they have determined that the exposure cannot be achieved via the typical route of index tracking, they have moved further toward actively managed vehicles.

According to a white paper entitled “Exchange-Traded Funds: A Passive Past and an Active Future”: “Without argument, the most interesting event in the world of ETFs is the emergence of ‘actively managed’ product.”<sup>1</sup> While this might be the slightly aggressive tone of an actively managed ETF provider, it sums up the feelings of many people, both inside and outside the ETF community, who eagerly anticipate the arrival of these new products in the marketplace. Actively managed ETFs free the products from their traditional tethers of replicating underlying indexes. In their simplest form, they enable ETF providers to produce products that aspire to outperform traditional benchmarks without the need for strict adherence to an index and its rules. Among the first products utilizing the active management exemption were currency ETFs designed to achieve their exposures via actively managed portfolios of nondeliverable forwards and other instruments.

Recently the market has begun to see the launch of products that are composed of baskets of securities actively managed by portfolio managers who previously would have not been able to run their portfolios within the ETF structure. These products are still in their infancy, and the directions that the active management exemption will take the ETF world are as yet still unknown.

## **UNDERLYING ASSETS**

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For an ETF to be effective and representative, it should consist of a group of securities that are, in all reasonable circumstances, adhering to the overall goal of the index or strategy and are diverse. There is usually going to be several constituent cuts when developing the ETF basket. If you are considering an ETF composed of large-capitalization stocks, for instance, the following steps might occur:

1. Cut the stocks with a defined minimal capitalization from the universe of all stocks to create the index.

2. Then cut the stocks with a minimal float or liquidity or any of a variety of variables. You might use any number of variables to screen and cut constituents.
3. Now you might have your index universe, and you proceed to create an index and then an ETF.
4. The ETF might be a perfect replication of the index or just an optimized cut, depending on underlying trading volumes and other potential constraints on creation basket constituents.

The decision to optimize your ETF basket, further reducing its constituents, or to provide perfect replication is not something taken lightly. There are various benefits and detractions to each methodology. Two of the largest ETF providers compete in many categories with similar funds that can be differentiated only on a basis of basket optimization versus perfect replication. These decisions can lead to significant performance differences over time.

Notional value of the assets underlying both an index and its tracking ETF is a very important consideration. If the universe is too small, it might not draw a broad enough investor audience or have enough underlying liquidity to bring the product success. There have been several examples throughout the short history of ETFs where products have been listed and failed to attract enough assets to continue growth. One reason for some of those failures might have been an extremely narrow goal that led to a highly specialized and small investment universe. This can lead to two distinct problems: a limited number of investors will have the desire or need to utilize the fund, and liquidity is unattainable because trading the underlying constituents of the funds can be very difficult.

Throughout this book I discuss the activity of accessing liquidity of ETFs via their underlying baskets. The notional assets of the underlying universe are an important factor that is closely related to actual ETF trading volumes.

## **REBALANCING AND INDEX CHANGES**

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Another important consideration that comes into play during the development stages of both the indexes and the ETFs is the frequency of corporate activity in the universe of constituents. Frequent changes to the baskets result in high trading costs and sometimes an inaccurate representation of the goal of the index. Various analyses will be done on the chosen constituents to determine the frequency of corporate actions, price volatility, weighting movements, and dividend yields to create guidelines for the management of the index. Tracking an index with a limited number of constituents whose

names change on a weekly basis can become challenging and cost prohibitive. Constituent weighting needs to have a reasonable distribution to be representative of the universe as well. If the basket skews too heavily to a few top stocks, then you will lose representation to the rest of the universe. This can lead to tracking issues and to a small number of names having an overly strong influence on the product.

A perfectly replicated basket will have the least tracking error as compared to the underlying index. Any existing error would result primarily from friction costs of executing the basket in a real life-example and management fees. Additionally, similar to the index, there will inevitably be some form of rebalance mechanism to account for underlying changes in the components for a variety of reasons. There are mergers and acquisitions, substantial changes to market capitalization, dividend size and frequency, as well as other changes to underlying equities that could create the need for some form of rebalancing of both the index and the ETF basket.

Some of the main considerations for creating the rules for rebalancing and tracking contradict each other. Although you may consider the underlying notional of an index for breadth, the fact that an index is not initially intended as a trading vehicle limits the concerns regarding the trading of its components. In creating the ETF basket, however, trading is an extremely important consideration. This is because in many ways the growth of the ETF itself is dependent on the ability of that basket to be traded and delivered to the issuer. Additionally, although you may desire perfect index replication to limit tracking (the spread between index and basket returns), at some point there must be a trade-off between the complexity and limited marginal added value of having too many names in the basket versus how much you are willing to diverge from tracking perfection.

## **ETF BASKET**

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The exchange-traded fund basket is really the central character in the entire production. It is called the creation unit, and it is used to facilitate the advanced features of the product wrapper. The creation unit is the basket that is published by the ETF issuer that is utilized for the in-kind, or cash, transfer of constituent shares and ETF shares. The ETF basket aims to satisfy the important characteristics of transparency, liquidity, and tracking, and these must all be considered within the constraints of basket development.

Whereas an index may utilize the entire available universe within its constraints, in order for an ETF to have a viable basket, it is important to examine further elements about the underlying components. Specifically, analysis should focus on the liquidity of those products and whether an

investor would be better off utilizing a smaller sampling of that universe in order to satisfy the trade-off between correlation and accessibility. In addition to liquidity, analysis should also focus on the individual weights of the index constituents. The ETF structure does not really benefit from weightings that are too large. And ETFs do not benefit from weightings that are too small because that can increase the trading costs without relative performance value. In the case where there are a large number of constituents at extremely small weights, to make the basket reasonable in terms of its ability to be traded using current methods of basket trading, it would be advantageous to reduce the number of constituents in the basket.

### **Creation Unit Determination**

Let us look at some more particular points involved in the determination of the creation unit. Price point of the ETF is very important for product positioning. Typically it starts with a notional amount determination. At this point an analysis of the basket will be done at differing price points to assess the efficiency of trading the basket's constituents.

The average trading volumes of the underlying constituents of an ETF basket will be determinants in the potential future volumes of the ETF. At each step of determining the underlying universe and whittling it down to the ETF creation basket will be some form of analysis of its underlying constituents. If the ETF structure is not being used, there is potentially some greater leeway in the liquidity of the underlying baskets. Closed-end funds (CEFs) gained some of their popularity from their ability to invest in less liquid assets because they do not have a daily issuance component. The ETF wrapper allows for the daily issuance and redemption of shares; liquidity in the underlying basket is important to facilitate these transactions.

One of the main factors in determining the underlying basket will be the volume analysis of the components. This is also done during rebalances and at other times during the life of an ETF, not only during its initial development. I discuss the liquidity underlying an ETF via its basket in depth in Chapter 9, but let us take a look at some assessments of basket liquidity at this stage. Exhibit 1.2 shows several things that would be potential problems in an ETF creation unit basket.

The first thing to highlight would be ticker BBB, the second name in the basket, sorted alphabetically by ticker. This is an exceptional stock in the basket because its daily average trading volume is very small compared to the other constituents. Whereas the creation unit shares required for the other constituents are all less than 1% of their average daily trading volume (ADV), in order to trade the required shares for BBB, you would have to trade fully 20% of its daily average volume. This is an outlier that could

**EXHIBIT 1.2** Potential Liquidity Constraints of the Underlying Basket

#	Ticker	Last Price	Average Daily Volume	Creation Unit Shares as Percent of ADV	Shares per Creation Unit	Percent Weight in Basket	Implied Potential ETF Shares at 50% ADV	Implied Potential ETF Units at 50% ADV
1	AAA	10	100,000	0.02%	21	0.07%	119,047,619	2,381
2	BBB	11	5,000	20.00%	1,000	3.75%	125,000	3
3	CCC	12	300,000	0.13%	386	1.58%	19,430,052	389
4	DDD	13	400,000	0.02%	80	0.35%	125,000,000	2,500
5	EEE	14	500,000	0.01%	49	0.23%	255,102,041	5,102
6	FFF	15	100,000	0.13%	131	0.67%	19,083,969	382
7	GGG	16	200,000	0.62%	1,242	6.78%	4,025,765	81
8	HHH	17	300,000	0.05%	139	0.81%	53,956,835	1,079
9	III	18	400,000	0.00%	13	0.08%	769,230,769	15,385
10	JJJ	19	500,000	0.17%	857	5.55%	14,585,764	292
11	KKK	20	100,000	0.11%	113	0.77%	22,123,894	442
12	LLL	21	200,000	0.59%	1,177	8.43%	4,248,088	85
13	MMM	22	300,000	0.29%	880	6.60%	8,522,727	170
14	NNN	23	400,000	0.22%	894	7.01%	11,185,682	224
15	OOO	24	500,000	0.01%	56	0.46%	223,214,286	4,464
16	PPP	25	100,000	2.80%	2,800	23.87%	892,857	18
17	QQQ	26	200,000	0.66%	1,311	11.62%	3,813,883	76
18	RRR	27	300,000	0.11%	331	3.05%	22,658,610	453
19	SSS	28	400,000	0.14%	571	5.45%	17,513,135	350
20	TTT	29	500,000	0.26%	1,300	12.86%	9,615,385	192
			Assets per CU					
			Shares per CU					
			NAV					
			\$ 293,239.00					
			50,000					
			\$ 5.86					

Source: Bloomberg.



cause terrible potential liquidity issues for the ETF. If you look over to the right of the grid, you can see that the Implied Potential ETF Shares at 50% of ADV is only 125,000 shares. That number is a function of how many shares are required for a creation unit that can be delivered during the creation process. In the case of ticker BBB, because the required amount of shares is so high compared to its ADV, it becomes a serious constraint on the amount of ETF shares that potentially can be traded and created during a day.

In comparison, if you look at ticker III, you can see that the shares required for a creation unit are very small compared to the stock's ADV. The implied ETF column shows that if it were the only stock in the basket and just 13 shares of it had to be traded to complete a creation unit, and if you restricted yourself to only 50% of the average daily volume of the stock, you still could trade enough in a day to create 769 million shares of the ETF. It is important to notice that the number really is 15,385 creation units at 50,000 ETF shares per unit. Or to say it in another way, you could trade enough versions of the underlying basket to generate 15,385 creation units yielding 769 million ETF shares. At a current NAV value of \$5.86, this implies that the ETF could potentially trade roughly \$4.5 billion of ETF shares in a day (769 million  $\times$  5.86). However, because there are other stocks in the basket, ticker symbol BBB would restrict the daily trading notional in the ETF to approximately \$733,000. This is a significant restriction to the trading of the underlying basket in this ETF; it shows how you typically calculate the potential liquidity of the ETF by its least liquid component. It would be better for the ETF if BBB had been screened out of the underlying basket.

Something else that stands out in this ETF basket is the weight of ticker PPP in the overall portfolio. Ticker PPP is showing a weight of 23.87% of the basket. This one stock comprises almost 24% of the basket, leaving it significantly overweighted compared to the other names in the basket. Typically an ETF has some form of regular rebalance that counteracts the effects of large weights due to price moves, which can potentially cause significant weighting imbalances in a fund. Some products on the market, however, do not rebalance their portfolios and end up with highly concentrated weights in a select number of names, which can become a constraint on the performance of the basket as a whole.

Beyond having an effect on the performance of the underlying ETF, weighting and liquidity determine the viability of the creation unit. This is the lifeline of an ETF that enables it to grow its assets under management (AUM). This makes the product viable and valuable for investors and profitable for the issuers. Those are the two mutually dependent goals of any good investment product.

## Creation and Redemption Process



The creation and redemption process sometimes is misunderstood by the newer client base involved in the ETF product line. It is important to understand that the creation and redemption process is a function of the primary market and that this process facilitates the accessing of underlying liquidity in an ETF.

When ETFs are traded on an exchange, they are considered to be trading in the secondary market. The primary market is one of issuance. In an initial public offering (IPO), shares initially are issued in the primary market, and they begin trading in the secondary market. That is the case with an ETF as well, except that an ETF via the daily creation and redemption process has what is called continuous issuance. When an Authorized Participant (AP) does a creation, the requisite shares matching the creation unit are delivered to the issuer, along with the required cash component, and the issuer delivers the AP shares of the ETF. The issuer does not maintain an inventory of shares that it delivers to the AP, but as part of the creation process, the issuer “issues” new ETF shares. These new shares are reflected in the shares outstanding number of the ETF that is published daily. In an opposite situation, when the AP processes a redemption order, shares of

### TRADING TIP

The in-kind transfer of stocks that is utilized in the creation and redemption process is the delivery of the stocks in the creation basket one way and the delivery of ETF shares in the opposite direction. Cash is not delivered to the ETF issuer except under certain circumstances. The in-kind process enables the fund to take in the stocks it needs for new investments without having to go into the market and purchase those shares. And the redemption process enables the fund to disburse the basket of stocks it no longer needs because there are fewer assets in the fund. This process is not considered to be a trade and has very important repercussions for management of the fund portfolio. One important feature is that it enables the portfolio manager to manage the cost basis of assets in the portfolio. Throughout the book we discuss various other benefits of this unique facility.

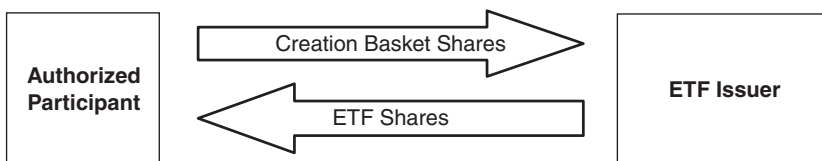
the ETF are delivered to the issuer, and the issuer delivers the underlying basket to the AP. Again these deliveries would also include the stipulated cash component amount. In this case, however, the issuer does not hold onto those shares or put them in some inventory; rather, those shares are theoretically “destroyed.” This means that they are no longer outstanding in the marketplace, and the assets under management (AUM) of the ETF would decrease.

Exhibit 1.3 shows a very basic diagram of the creation process. In its simplest form, the AP is delivering a basket of shares to the issuer and the issuer is delivering shares of the ETF. These transactions are not considered official trades, and they do not report to the consolidated tape. They are in-kind transactions, an exchange of one for the other. The ETF issuer in this basic example is not trading any shares in the markets but is receiving them from the AP.

I have deliberately made this diagram extremely simple because I want market participants to understand the basic nature of the transaction first and then its ramifications later. This seemingly simple process enables the trading of millions of shares of ETFs at price levels right around NAV, and it is changing the underlying nature of the financial markets. It also enables ETF portfolio managers to manage their portfolios in a tax-efficient manner with which many other product wrappers cannot compete.

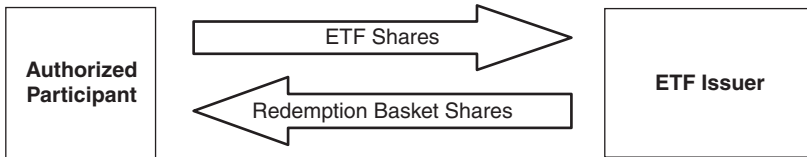
Exhibit 1.4 shows the process in reverse. In this case the ETF issuer is delivering the stocks in the underlying basket to the AP. This in-kind delivery of stocks from the ETF portfolio is the key to letting ETF portfolio managers manage gains and losses. It enables them to reduce any potential capital gains in the portfolio that might have occurred from rebalance trading or other corporate actions. Unlike reportable portfolio transactions these exchanges are not considered taxable events for the ETF.

**The Authorized Participant Delivers a Basket of Stocks to the Issuer.  
The Issuer Delivers the Shares of the ETF to the AP.  
These Are In-Kind Transactions.**



**EXHIBIT 1.3** Simplified Creation Process

**The Authorized Participant Receives a Basket of Stocks from the Issuer.  
The Issuer Receives the Shares of the ETF from the AP.  
These Are In-Kind Transactions.**



**EXHIBIT 1.4** Simplified Redemption Process

Delivering and receiving in-kind shares is a process whereby the AP acts as the execution-and-trading agent of the underlying shares. It is the responsibility of the AP to either purchase the shares in the market or borrow those shares to deliver to the issuer. The in-kind shares exchange is the issuer either receiving or delivering shares in exchange for doing the reverse in the ETF shares. This is acceptable because the shares are fungible vehicles, interchangeable for each other. This process removes the expense of trading from the ETF when there is a growth or decrease in assets. It also enables the ETF to attain a high level of tax efficiency because it is able to divest its portfolio of shares without trading them in the marketplace and generating a taxable event. Because of this ability, capital gains distributions are typically very low or nonexistent in many ETFs. By contrast, a mutual fund that is facing the redemption of a large seller of assets will be required to go out and sell assets from the fund so that it can deliver cash to the redeemer. This can generate trading expenses to the fund and also generate taxable events in the form of gains from stocks that have been bought and must now be sold in the marketplace. In the ETF structure, most trading expenses due to asset growth and shrinkage are the responsibility of each individual investor and are not borne by all shareholders.

I have presented the pictures of the simple creations and redemptions because I am going to expand on the important specific features of the processes throughout this chapter and the rest of the book. Many of the graphical versions of this process bring in surrounding aspects that hide the effect of what is actually happening. At various points throughout the book, we will see additions to these basic charts to account for surrounding events, such as client involvement on one side and market trading on the other.

Almost every facet of the success of the ETF wrapper can be traced back to the process of the creation and redemption of shares. The two main competing products, closed-end funds and mutual funds, have very different methods of issuing and redeeming shares. The CEF issues shares via an IPO, and once it is listed, it is perpetual. Unless there is some form of activist

event or other event that causes the CEF to liquidate, its shares will remain listed on the exchange. A mutual fund never lists its shares on the exchange. It takes in cash directly from customers and issues shares directly to those customers. In the case of a redemption order, a mutual fund cancels shares outstanding and delivers cash to the customer. In both, the case of a CEF listing via an IPO and a mutual fund issuing new shares, the funds' portfolio managers put the cash that they have received to work in the markets via trading. ETF portfolio managers do not trade into their baskets of securities; they are delivered to them via their registered counterparts, the Authorized Participants.

Creations and redemptions take place at the official net asset value of the ETF. Since the NAV of the fund is calculated from the basket of stocks called the creation unit and a specified cash adjustment amount, both the basket and the ETF at that price are of equal value. If there were no charges for balance sheet usage and the positioning of stocks, one should be indifferent as to whether to hold the ETF shares or the creation unit of the ETF and its requisite cash piece. This essentially describes the arbitrage relationship between the separate and distinct pieces. The ETF trades as a security listed on the exchange at prices determined by the supply and demand of the marketplace. The basket of securities making up the creation unit also trades as listed securities independent of each other and independent of the ETF. However, an arbitrage relationship has been created by the creation and redemption mechanism that enables traders to tie the relationships of the various different prices together to an NAV value. This topic is looked at in further detail in the trading strategies discussion in Chapter 12.

**Client-Driven Creation and Redemption** Even if the creation or redemption is based on a client order, the AP is actually deciding to use the creation and redemption process. When I speak with clients who are seeking to move shares in large size into or out of an ETF, they are always asking if they can just do a creation or redemption. It would be beneficial if clients moved away from thinking that they are doing an actual creation or redemption to the view that someone will be facilitating their access or exit into or out of an ETF via the creation and redemption mechanism. There are several reasons for this:

- Clients should not feel constrained by the creation unit size.
- The creation and redemption process delineates basket pricing on the closing price, while an AP can access intraday liquidity for tailored executions. There are a multitude of execution methods around basket execution that do not require only on-the-close execution.

- The creation and redemption process is really a back-office end-of-day function utilized to transfer and flatten positions. It gives the AP, however, the ability to provide either liquidity or the underlying exchange of securities for ETFs to the customer throughout the day.

Let us talk about these points in further detail. The client base should not feel constrained by the creation unit size. Creation unit size is typically a minimum amount of shares that can be submitted by an AP for either a creation or a redemption order. The size minimum was created as a function of the regulation process that allowed ETF issuers to interact with an institutional client base. The process allows for the APs to aggregate smaller trades into a larger lot size and then process a creation to flatten their position. The ETF clients, and the advisor businesses that are handling their order flow, need to realize that if they contact either an AP desk or a portfolio trading desk (typically these two are either the same or related), the trading desk can go out and transact in the underlying ETF basket and give them an implied ETF price execution. If the creation unit size is 100,000 shares, the trading desk still can go out into the underlying market and trade a smaller basket on the behalf of the client. This is actually what is being done when the liquidity providers are making markets in the ETF. They are taking on the risk of providing an ETF price and will go out and hedge with the basket after the ETF trade has been completed. This process can also be utilized in a risk-free fashion, however, via an agency type of order from the client. This order effectively instructs the trading desk to transact in the underlying basket first, then calculate the implied ETF price from the basket executions and give the client an ETF report. If the size that is being facilitated is smaller than the creation unit size then it will lead to residual shares on the trading desk books. This will lead to a slightly higher facilitation fee to cover financing until the ETF desk can piece together an entire creation unit and collapse the position.

The next point to discuss revolves around pricing. Because an ETF releases a creation basket every day, then any time you trade that exact basket of stocks, you are trading the ETF at its relative NAV price. If you are benchmarked to the official NAV price for some reason and you want to be able to compare your price to the published NAV of the ETF, trading at the close is optimal. The official ETF NAV is based off the closing prices in the underlying stocks (see Chapter 5), and by trading at those closing prices your price should match the ETF NAV. However, if you trade the exact basket of the ETF one hour before the close, you are also trading at the implied NAV of the fund, however in this circumstance it is called the ETF's intraday indicative value. The creation and redemption process lets the liquidity providers pursue any arbitrage slippage between the basket and

the ETF price. Pursuing strategies utilizing the underlying basket as your trading vehicle can give you executions in your desired ETF without actually trading the ETF on the exchange, at prices that are at or very close to the intraday NAV. An example would be to instruct an AP to buy the underlying basket of a very illiquid U.S.-listed ETF with domestic underlying constituents at the volume weighted average price (VWAP) during the day. The AP would then work orders in all the underlying stocks in the basket and come to an overall VWAP price on the basket, which can then be interpolated into an ETF price. This is transacting in the ETF while not actually trading it, and is another way to pursue liquidity.

### **TRADING TIP**

The volume weighted average price (VWAP) is a measure of the notional amount of a stock traded divided by the amount of shares traded over a specified time period. If you are trading at the VWAP price, you are trading where the majority of stock has traded during that same time period. The VWAP algorithm is used by money managers to ensure that they are buying and selling stocks at prices in line with the rest of the market.

At that point, the AP would have a position in which it sells the client the ETF shares and has bought the basket replicating that ETF. A creation order would then be submitted to flatten the trading book positions. Let us take a closer look at who this critical player is in facilitating the in-kind delivery of shares leading to the creation and redemption of the ETF.

### **Authorized Participant**

The creation and redemption mechanism that enables the ETF to accept and disburse assets also functions as a necessary position management system for the facilitators of ETF secondary market trading: the Authorized Participants. The mechanism is essentially designed to enable share delivery back and forth between the issuer and the street, without the issuer actually having to execute baskets.

Becoming an AP requires an agreement with the ETF issuer and puts the AP in a position to consolidate baskets of stocks and deliver them in exchange for shares of the ETF. It also enables the AP to receive those baskets from the ETF and disburse them into the market when a redemption order occurs. It is probably one of the most crucial aspects of the entire process

because, without the APs consolidating basket trades into large blocks and then delivering them, assets would not grow and fees would not be earned. The ultimate goal relies on the partnership between the AP and the issuer and their delivery of baskets of stocks to that issuer. It is this process that enables an ETF to grow and increase in assets.

There is no initial fee to become an AP, and, in fact, it has become a very good business for participants. Almost every major investment bank and clearing firm has become an AP to facilitate the ETF creation and redemption process. There is a fee charged for creating and redeeming ETFs, but it is typically rated as a processing fee. This fee is typically a single flat fee irrespective of how many units are required in the transaction. This creates a great economy of scale benefit to a large client market-making business. Because it is unknown how many shares of an ETF an AP will trade in the future, the creation and redemption fees are built into the standard spreads in an ETF market. This creates the situation where APs can build the fee spread into every trade they do; upon consolidating order flow, they can, over time, reap that differential between one unit and multiple units. If the trade is an agency-type creation or redemption, the client will pay the fee. If a market is being made, the ETF spread will include the fee on a per-share basis. A by-product of making markets in ETFs will enable an AP to collect creation and redemption fees in market spreads, particularly in lower-volume ETFs. If the volume coming in the future is unknown, market makers include in their spread the cost of flattening their books via the creation and redemption process. If the ETF has a very high volume, there is a higher chance of unwinding any facilitation position in the market, and spreads can include a probability adjustment to the creation fee, enabling slightly tighter markets. This helps to partially explain why ETF spreads narrow as volume increases as products develop.

**Trading Example of an AP Facilitating Order Flow** An AP facilitating multiple clients could produce results in this manner: If a client enters an order to buy 100,000 shares of ETF-A, the AP acting as a liquidity provider could sell the client the ETF and buy the creation unit basket of shares to hedge the short ETF exposure. The creation unit size in ETF-A is 100,000 shares, and the fee is \$2,000 to do a creation or redemption, regardless of the number of units. When the client order comes to the trading desk, the AP has no clear idea of what the future will bring in terms of additional orders, so embedded in the price that the AP offers the shares for ETF-A to the client would be the cost per share to process the creation, or 2 cents per share ( $2,000/100,000 = .02$ ). Then, later that day, another client may come in to buy an additional 100,000 shares of ETF-A. At this point the AP still does not know if future client orders will go in the opposite direction and cancel out the position,



so the AP again embeds the creation costs in the asking price, or another 2 cents per share.

For this example, we are speaking about an ETF that has low intraday volume. The AP is hedging with the basket instead of unwinding the ETF position in the secondary market. At this point the AP has now collected \$4,000 in creation fees embedded in the spread, but because it pays a flat fee to create units, it will have to pay \$2,000 only. Let us add a seller to this concept. A new client comes in with 200,000 shares of ETF-A to sell. At this point the AP would calculate the price it is willing to pay, including a redemption fee of 1 cent per share ( $200,000/\$2,000 = \$0.01$ ). The client trades and sells the ETF-A shares, and the AP sells basket shares underlying 200,000 shares of the ETF. The AP has now completely flattened its positions in both the ETF and the basket component shares, leaving it with no balance sheet usage. Additionally, the AP has collected three sets of fees for creation and redemption orders that are not processed versus the issuer. This highlights the importance to issuers of working diligently to keep creation/redemption costs down to the lowest minimum charge they can negotiate with processing agents. These costs, which can be considered an implicit cost of trading ETFs, can have a direct impact on the costs of trading. Although the cost is present in every ETF, it is more relevant in ETFs with low intraday trading volume because typically there are not as many offsetting trades that work to enable market participants to narrow the spread. This point is discussed in further detail in Chapter 11 regarding execution.

## **CONCLUSION**

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This chapter has covered a lot of ground, much of which will be expanded on later in the book. We have started with the initial development procedures of the ETF because that is where the decisions are made regarding the ETF's underlying exposures. A solid foundation in the mechanics of ETF development is beneficial for the proper utilization of the products. The growth of the ETF and its facilitation by the Authorized Participants using the creation and redemption mechanism was presented because it is such a primary advantage of the ETF wrapper.

The exchange-traded fund is a very pure product and is the one that bestows a variety of benefits to the user. Chapter 2 takes a closer look at the various structures of exchange-traded products. The listed funds industry has expanded to include products that look similar to ETFs but have some important differentiating characteristics. It is important to understand those features when determining which product is right for each investment opportunity.



## Structure of an ETF

**T**he landscape of listed investment products has become populated with a variety of different structures that often get lumped under the term “exchange-traded funds” (ETFs). The term “ETF” traditionally refers to an investment company with redeemable shares that trade on an exchange. There are a variety of newer products that offer similar exposure and tradability but are not “investment companies” or “funds.” Nonetheless, many people lump these products together with traditional ETFs. This can be confusing to investors because of the various different structural qualities that many of these products possess. Because these products can have very different tax treatment and risk profiles, this confusion can have significant negative consequences for investors. Many articles have been written by some of the best minds in the industry decrying the confusion created by both the media and sometimes even industry participants. The main focus of this book is on the largest group of products by assets within the exchange-listed product universe, exchange-traded funds. It would be remiss, however, to ignore the different types of structures available in the marketplace or to lump them all under the ETF moniker. This chapter delineates the different structures available and their identifying properties. It then discusses some of the consequences of the varying structures with regard to trading, taxes, and other advantages and disadvantages.

There are opportunities to use all of the different structures profitably in an investment portfolio. This chapter does not make any determination as to which vehicle is right for your portfolio or is the best vehicle to use. Understanding the differences will enable you to make the appropriate decisions regarding use and positioning within each unique portfolio. Much more could be written about the various structures and their particular nuances. This chapter is meant as a broad overview of what is available in the marketplace to enable you to identify the various structures and their main characteristics.

What is important to realize going forward is that, now more than ever, structure matters. When exchange-listed products were in their infancy, there was not much choice in what product type to use with regard to a specific exposure. As the industry has matured, there are now similar exposures available in different product structures. Each structure has a different effect on the portfolio in which it is utilized. Product development teams are focusing new products on investment categories where they can compete with a better structure for investment assets. There have been many reports over the last several years about products not providing their expected exposures, whether they were leveraged, futures-based, or some other type of product. Many times it is not the product acting improperly, but the user base making incorrect assumptions due to inadequate knowledge about how the various structures will react under differing circumstances. Understanding the various structures, how they achieve their exposures, and how they will react under particular market circumstances will go a long way toward enabling you to utilize them for a profitable investment strategy. The information provided is meant as a guide and should not be utilized as investment advice or tax guidance. Any decisions you make regarding tax consequences or structure should be discussed with your accountants and attorneys.

## **CATEGORIZING EXCHANGE-TRADED PRODUCTS**

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There are now a lot of different product structures that people refer to as ETFs but that do not meet the definition of a traditional ETF. It is important to distinguish between the four main product categories and what products should be included in each. Without a standard convention, the public, the media, and even issuers sometimes blur the lines between the product types and create unnecessary confusion. It would be helpful for everyone to utilize the same naming conventions so that the investing public can easily identify the various product types. The New York Stock Exchange (NYSE) uses some baseline definitions that make sense for classifying products. The definitions are:

**Exchange-traded product (ETP):** The term for the overriding product category. This includes funds, index-linked notes, limited partnerships (LPs), and trusts listed and traded in the secondary market on exchanges.

The common characteristics are:

- Issuers do not sell shares directly to investors. They issue shares to Authorized Participants (APs) in large blocks (typically 50,000 shares or more) that are known as creation units.

- Those creation units are not purchased with cash. Instead, a basket of specified securities is exchanged for ETF shares utilizing an in-kind exchange mechanism. This leads to advantages in taxes and portfolio management. This also includes some funds and notes that are cash-create-and-redeem vehicles.
- The shares of the ETP are traded throughout the day on a public exchange.
- Market liquidity is provided in many ETPs by market makers who utilize the creation and redemption features to exchange underlying baskets for ETP shares.

**Exchange-traded fund (ETF):** What most people think of as “ETFs.” The most widely used product in the category. Similar to mutual funds in that they offer public investors an undivided interest in a pool of securities and other assets, but shares can be bought and sold like stocks on an exchange through a broker-dealer. ETFs have several distinguishing characteristics:

- The portfolio is managed by an investment advisor with a mandate to track the index or portfolio benchmark. ETFs may be actively managed or index based. If it is index based, the portfolio manager has discretion on the way to track the index (e.g., full replication versus sampling of the index). The structure permits management of cash inside the fund (e.g., reinvestment of dividend income), tax-loss harvesting, securities lending, and some other items.
- ETFs are registered under the Investment Company Act of 1940, which provides investors with certain regulatory protections.
- Like traditional mutual funds, they generally have an independent board of trustees that has oversight over the fund. There are, however, unit investment trusts (UITs), such as the SPDR S&P 500 ETF, that do not have a board.

**Exchange-traded note (ETN):** A debt security issued by an underwriting bank to track the return of a specific underlying benchmark. The debt is typically senior, unsecured, and unsubordinated. ETNs have a maturity date like most other debt securities. The main identifying characteristic is that an ETN is backed only by the credit of the issuer. The ETN is also subject to specific tax treatment discussed later in the chapter.

**Exchange-traded vehicle (ETV):** This term is not as widely utilized as ETF and ETN. Many of the products in this category are also sometimes called broadly ETPs, which is correct but does not help in distinguishing them from the ETF and ETN structures. The

**EXHIBIT 2.1** Understanding the Different Product Structures

1940 Act	1933 Act
ETF	Exchange-traded notes (ETNs)
Open-end funds	Grantor trusts
Unit investment trusts	Limited partnerships
	Exchange-traded commodities (ETCs)

exchange-traded commodity (ETC) name is also sometimes used interchangeably in this category but does not sufficiently mark the structures as unique. “An ETV is a trust or partnership unit that is registered under the Securities Act of 1933 and traded by investors on a national securities exchange. This includes commodity and currency trusts.” [NYSE Euronext] Unlike an ETF, shareholders have direct ownership of the assets underlying the ETV and do not have the protections associated with ownership of shares in an investment company registered under the 1940 Act. The tax implications may vary.

It is helpful to have a view of the products in terms of how they relate to the 1940 Act. Exhibit 2.1 shows that products either fit into the ETF structure because they clearly satisfy the requirements or they do not. Although it makes sense to refer to all listed funds as ETPs, that product delineation can include closed-end funds as well, and some providers have been using that ETP as well as ETF for those products for many years. This blurring of the lines makes products more difficult for the investing public to understand.

**ETF REGULATION**

ETFs are regulated by multiple divisions of the Securities and Exchange Commission (SEC). The SEC Division of Investment Management regulates the “fund” aspect of the ETF. In parallel, the SEC Division of Trading and Markets regulates the “exchange traded” aspect of the ETF. Both of these divisions require ETFs to comply with certain rules. The U.S. Commodity Futures Trading Commission (CFTC) also regulates certain ETPs that hold commodities; the Division of Investment management does not have jurisdiction over these types of products. The CFTC does not have any regulatory oversight over ETFs or ETNs; it regulates only those ETPs that operate as commodity pools. ETVs and ETNs file a registration statement with the SEC’s Division of Corporation Finance.

The Division of Investment Management (IM) regulates all investment companies (such as mutual funds, closed-end funds, UITs, ETFs, and interval funds), including variable insurance products and federally registered investment advisors. ETF sponsors typically are also registered investment advisors. Therefore, they are required to interact with the Division of Investment Management on two levels: at the ETF level and as a registered investment advisor.

Because ETFs do not fit neatly into the regulations governing mutual funds and closed-end funds, ETF sponsors are required to obtain “exemptive relief” from the Investment Company Act of 1940 to operate an ETF. In order to obtain this relief from the 1940 Act, sponsors submit a detailed application with the SEC. The exemptive relief usually covers a broad spectrum of products (e.g., equities, fixed income) and is a requirement before a sponsor can launch its first product. The SEC approved the first index-based ETF in 1993 but did not approve the first actively managed ETF until 2008.

### **Exemptive Relief**

ETFs are launched under the provisions of the Investment Company Act of 1940. Because ETFs operate in a manner not contemplated by the 1940 Act, ETFs need exemptions from that act to operate. Doing this typically is referred to as “exemptive relief.” Having exemptive relief enables ETF issuers to bring products to market under their specific exemptions. A sponsor cannot operate an ETF without exemptive relief. Applying for such relief can take several months or even years, and may cost a tremendous amount of money in legal bills and other requirements.

Here are some of the typical exemptions that the product issuers apply for:

- They need to be enabled to issue shares redeemable only in large blocks called creation units. [Sections 2(a)(32) & 5(a)(1)]
- They seek the permission for the in-kind purchase and redemption of creation units with the ETF by APs. [Sections 17(a)(1)&(2)]
- They want an exemption for other investment companies to be able to purchase shares of the funds in excess of the act’s fund of fund regulations. [Section 12(d)(1)]

The growth of the ETF business created a large increase in requests for very similar exemptions by the various ETF issuers. In 2008, the SEC announced a proposal for Rule 6c-11. The rule would provide several exemptions from the Investment Company Act to permit ETFs to form and operate without the need to obtain individual exemptive relief from the SEC.

It would codify most of the exemptions previously granted by the SEC to index-based ETFs and, pursuant to several recently issued exemption orders, to fully transparent, actively managed ETFs. The proposed rule has not yet been adopted by the SEC.

Each ETF is required to file a prospectus (similar to traditional mutual fund) pursuant to Registration Statement Form N-1A. This regulatory filing contains the fund prospectus and statement of additional information (SAI).

## **SEC Division of Trading and Markets**

The SEC Division of Trading and Markets, known as the Division of Market Regulation until November 2007, regulates all the major stock exchanges in the United States. There are currently 11 securities exchanges registered with the SEC under Section 6(a) of the Securities Exchange Act of 1934 and subject to oversight by the SEC including the NYSE, Nasdaq, and other regional and electronic exchanges.

The Division of Trading and Markets' oversight includes the exchange listing rules for all securities, including ETFs. A "generic" listing standard for domestic equity ETFs was adopted in the early 2000s. The international equity and others followed in 2006 and thereafter. The generic standard substantially sped up the time to market for new ETF listings. As long as the sponsor had its "exemptive relief" and the product met the generic listing standard, the ETF could be listed once the prospectus was declared effective.

## **Requirements for Listing Products**

Exchange listing rules spell out a lengthy list of requirements for ETF sponsors, including minimum shares outstanding and index calculation rules. The stock exchanges require a minimum of 100,000 shares to be outstanding at commencement of trading, but there is no specific notional dollar amount or minimum share price. The minimum price variation for quoting is \$0.01.

The listing rules also spell out constraints for the ETF portfolio. The five key rules for domestic equity index ETF portfolios at the time of launch are presented next.<sup>1</sup>

1. Component stocks that in the aggregate account for at least 90% of the weight of the index or portfolio each shall have a minimum market value of at least \$75 million;
2. Component stocks that in the aggregate account for at least 90% of the weight of the index or portfolio each shall have a minimum monthly



trading volume during each of the last six months of at least 250,000 shares;

3. The most heavily weighted component stock shall not exceed 30% of the weight of the index or portfolio, and, to the extent applicable, the five most heavily weighted component stocks shall not exceed 65% of the weight of the index or portfolio;
4. The index or portfolio shall include a minimum of 13 component stocks; provided, however, that there shall be no minimum number of component stocks if (a) one or more series of Units or Portfolio Depositary Receipts constitute, at least in part, components underlying a series of Units, or (b) one or more series of Derivative Securities Products account for 100% of the weight of the index or portfolio; and
5. All securities in the index or portfolio shall be US Component Stocks listed on a national securities exchange and shall be NMS Stocks as defined in Rule 600 of Regulation NMS under the Securities Exchange Act of 1934.

Key requirements for international or Global Equity Index ETFs are slightly different from the rules for domestic equity ETFs, with more stringent liquidity requirements on the underlying basket of securities. Five key rules include:<sup>2</sup>

1. Component stocks (excluding Derivative Securities Products) that in the aggregate account for at least 90% of the weight of the index or portfolio (excluding such Derivative Securities Products) each shall have a minimum market value of at least \$100 million;
2. Component stocks (excluding Derivative Securities Products) that in the aggregate account for at least 90% of the weight of the index or portfolio (excluding such Derivative Securities Products) each shall have a minimum worldwide monthly trading volume during each of the last six months of at least 250,000 shares;
3. The most heavily weighted component stock (excluding Derivative Securities Products) shall not exceed 25% of the weight of the index or portfolio, and, to the extent applicable, the five most heavily weighted component stocks (excluding Derivative Securities Products) shall not exceed 60% of the weight of the index or portfolio;
4. The index or portfolio shall include a minimum of 20 component stocks; provided, however, that there shall be no minimum number of component stocks if (a) one or more series of Units or Portfolio Depositary Receipts constitute, at least in part, components underlying a series of Units, or (b) one or more series of Derivative Securities Products account for 100% of the weight of the index or portfolio; and

5. Each US Component Stock shall be listed on a national securities exchange and shall be an NMS Stock as defined in Rule 600 of Regulation NMS under the Securities Exchange Act of 1934, and each Non-US Component Stock shall be listed and traded on an exchange that has last-sale reporting.

Six key requirements for listing: fixed income index ETFs include:<sup>3</sup>

1. The index or portfolio must consist of Fixed-Income Securities;
2. Components that in aggregate account for at least 75% of the weight of the index or portfolio each shall have a minimum original principal amount outstanding of \$100 million or more;
3. A component may be a convertible security, however, once the convertible security component converts to the underlying equity security, the component is removed from the index or portfolio;
4. No component fixed-income security (excluding Treasury Securities and Government Sponsored Enterprise Securities) shall represent more than 30% of the weight of the index or portfolio, and the five most heavily weighted component fixed-income securities in the index or portfolio shall not in the aggregate account for more than 65% of the weight of the index or portfolio;
5. An underlying index or portfolio (excluding one consisting entirely of exempted securities) must include a minimum of 13 non-affiliated issuers; and
6. Component securities that in aggregate account for at least 90% of the weight of the index or portfolio must be either a) from issuers that are required to file reports pursuant to Sections 13 and 15(d) of the Securities Exchange Act of 1934; b) from issuers that have a worldwide market value of its outstanding common equity held by non-affiliates of \$700 million or more; c) from issuers that have outstanding securities that are notes, bonds, debentures, or evidence of indebtedness having a total remaining principal amount of at least \$1 billion; d) exempted securities as defined in Section 3(a)(12) of the Securities Exchange Act of 1934; or e) from issuers that are a government of a foreign country or a political subdivision of a foreign country.

ETFs that do not meet the generic listing standards must receive specific permission from the SEC before listing on the stock exchange. Typically, the ETF sponsor will collaborate with the exchange on the specific rules regarding the fund, and the exchange files a 19b-4 filing with the SEC Division of Trading and Markets to amend the exchange rules.<sup>4</sup>

**Funds Holding Funds: The 12 d-1 Exemption** One particular item that has helped to enable the growth of the ETF industry is ETF use by the institutional community. ETFs can be utilized for cash management and employed during transitions or other times, for easily accessing sometimes hard-to-achieve exposures, and for other institutional portfolio management needs. However, Section 12(d)(1) of the Investment Company Act limits the ability of an investment company (or a portfolio that would be an investment company) but for a specific exemption from the “1940 Act.” In order to enable use by mutual funds and funds that would be registered investment companies but have a specific exemption, the ETF issuers had to obtain relief from Section 12(d)(1) of the Investment Company Act of 1940. This section restricts the ability of an investment company to invest in another. The section reads:

1. A. It shall be unlawful for any registered investment company (the “acquiring company”) and any company or companies controlled by such acquiring company to purchase or otherwise acquire any security issued by any other investment company (the “acquired company”), and for any investment company (the “acquiring company”) and any company or companies controlled by such acquiring company to purchase or otherwise acquire any security issued by any registered investment company (the “acquired company”), if the acquiring company and any company or companies controlled by it immediately after such purchase or acquisition own in the aggregate—
  - i. More than 3 per centum of the total outstanding voting stock of the acquired company;
  - ii. Securities issued by the acquired company having an aggregate value in excess of 5 per centum of the value of the total assets of the acquiring company; or
  - iii. Securities issued by the acquired company and all other investment companies (other than treasury stock of the acquiring company) having an aggregate value in excess of 10 per centum of the value of the total assets of the acquiring company.<sup>5</sup>

In the middle of 2003, Barclays Global Investors received an exemption from Section 12 (d)(1) for the iShares product set. This exemption enabled mutual funds to hold substantially larger positions than those dictated by the rule. Approximately one year later, the large trusts SPDR S&P 500 ETF (SPY), Diamonds Trust (DIA), and S&P Mid-cap Depository Receipt (MDY) received similar exemptions. Today, most ETFs have received exemption from the restrictions in Section 12(d)(1). It is up to individual issuers to each

obtain this exemption to enable larger holdings by mutual funds. Then it is up to each institutional investor to sign an agreement with the issuer so that it can achieve its desired position sizes in the ETFs.

## **EXCHANGE-TRADED NOTES**

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Exchange-traded notes are senior, unsecured, unsubordinated debt securities registered under the Securities Act of 1933. ETNs are designed to provide investors with exposure to the return of an index or specific investment strategy after fees. These notes are issued by a bank or specialty finance company; the shares are listed on a stock exchange. Like equities, ETNs trade on an exchange and can be shorted. Like an index fund, they are linked to the return of a benchmark index and provide investors with convenient exposure to the returns of market benchmarks, less investor fees. The ETN structure allows investors to gain exposure to difficult-to-reach market sectors or strategies due to regulatory constraints on other types of structures. ETNs also have different tax implications from other ETPs that certain investors may find attractive. However this tax treatment is uncertain.

ETNs convey no ownership or assets, just a promise from the issuer that the return of the benchmark index (net of fees) will be paid upon redemption or maturity. The value of the note is determined by the total return of the index it tracks and by the creditworthiness of the issuer. ETNs are not ETFs, equities, or index mutual funds, but they share some similarities in providing exposure to end investors via a listed equity-type security.

They do, however, have some risks that can be similar or go beyond the risks of traditional ETFs:

- Principal is not protected, and you may lose all of your investment in the securities if the issuer declares bankruptcy.
- The index sponsor may adjust the index in a way that affects its level, and the index sponsor has no obligation to consider your interests.
- There may not be an active trading market in the securities; liquidity of the market for the ETN shares may vary materially over time.
- ETNs are debt securities and have no voting rights, since the investor owns a debt instrument, not the underlying security.
- Individual ETNs are not rated but generally rely on the ratings of the issuer. Changes in the issuer's creditworthiness may have a significant effect on the value of the exchange-traded price of the ETN.
- Most ETNs contain a call feature that allows the issuer to repurchase the notes at its option, which may result in the principal repayment being earlier than anticipated.

- ETNs are debt securities issued by a bank and are not regulated by CFTC. However, if ETNs hold futures contracts on the underlying relevant market index, those contracts may be regulated by the CFTC and may restrict the ability for the bank to access those markets. This could cause a disruption in access to the ETN shares.
- ETNs are not registered under the Investment Company Act of 1940.

The concept of index-linked notes and similar types of structured products has existed on Wall Street for decades. The ability to list notes on the stock exchange in the form of ETNs provided banks the opportunity to capitalize on the popularity of ETFs, albeit in a different structure. In the middle of 2006, Barclays Bank listed the first exchange-based products utilizing the ETN structure. The initial issuance was driven by: (1) the assertions on favorable tax treatment relative to other exchange-traded products; (2) access to strategies and asset classes that were not available in the traditional ETF structure registered under the 1940 Act; and (3) issuers could bring the products to market very quickly as compared to the more traditional structures that needed review by the SEC's Division of Investment Management. The only practical limitation, from an ETN sponsor's point of view, is the ability and desire of the issuer to offer a specific investment strategy. The structural features of ETNs as debt instruments have driven some innovation in the ETF space—specifically in the hard-to-access asset categories such as commodities, alternative strategies, and volatility. A list of key participants in an ETN offering follows.

- **Platform:** This is the sponsor of the ETN products. Platforms can be open architecture (e.g., The Elements Group of products) that offer a variety of third-party indexes or a closed architecture (e.g., UBS) that only offer proprietary index strategies.<sup>6</sup>
- **Index providers:** The role of the index provider is to calculate, maintain, and publish the necessary information on the index benchmark. The index provider is usually a third party.
- **Issuers:** The ETNs are senior unsecured obligations of investment-grade issuers.
- **Distributors:** The distributor is responsible for the marketing and promotion for the ETN. The distributor generally receives a fee based on assets under management. The ETN often carries the brand name of the distributor, but this is not a requirement.
- **Stock exchanges:** The listing venues for the ETNs that require the indexes and notes to follow certain rules in order to gain approval for listing.

## TAXATION

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### ETF Tax Benefits

The tax benefits of the ETF structure are a key feature that sets it apart from other competing products. Most ETFs are considered extremely tax efficient as compared to traditional mutual funds. Funds registered under the Investment Company Act of 1940, which include mutual funds and ETFs, are required to distribute capital gains to shareholders on an annual basis, in addition to any income (e.g., dividends). Capital gains are generated inside a portfolio when the portfolio manager buys, and consequently sells, securities. Portfolio managers sell stocks to raise cash to meet shareholder redemptions or due to a reallocation of assets. Mutual fund shareholders may receive capital gains from a mutual fund, even if they have not sold their shares and/or have an unrealized loss on their position. Index mutual funds tend to be more tax efficient than actively managed mutual funds simply because the turnover in the portfolio tends to be lower on average; hence there are less frequent buys/sells at the portfolio level. Portfolio managers can take advantage of capital loss carry forwards from prior fiscal years, tax-loss harvesting, and other tax mitigation strategies to diminish the impact of trading. Investors ultimately control the decision of when to sell ETF shares and how to calculate the applicable taxes on any resulting capital gain/loss.

The main characteristics of the tax advantages for ETFs are listed next.

- Investors buy and sell the ETFs in the secondary market. This enables much of the daily flow of ETFs to be offset against each other away from the ETF portfolio. The ETF Portfolio Manager is then able to trade less frequently and to create fewer taxable events within the portfolio. Additionally some of the trading and execution expenses are passed down to the individual investor level rather than having all investors pick up the fees for each individual's movements in and out of a fund.
- The ETF creation and redemption mechanism utilizes an in-kind exchange of the underlying basket for the shares of the ETF. When a mutual fund receives share creations or redemptions, the portfolio manager has to buy and sell shares of the underlying stocks. When an ETF has share creations or redemptions, the portfolio delivers or receives the required underlying basket of securities without creating taxable events, trading expenses, or portfolio slippage.
- By executing portfolio rebalances and other event-driven (e.g., corporate actions) portfolio trades, ETF managers can manage any other

tax consequences that might not have been eliminated by the in-kind procedures.

- Many ETFs are index-tracking funds that exhibit very low portfolio turnover as compared to actively managed funds.

The creation and redemption process gives the ETF structure a taxable advantage compared to many other pooled and structured investments available in the market. Because standard creations are done where the ETF receives in stock and redemptions are where the ETF delivers out stock via an in-kind transaction, the portfolio manager is able to manage the gains within the ETF basket efficiently. During the redemption process, the ETF manager can choose to deliver low-cost stock from an accounting perspective, clearing the balance sheet of potential gains. It is very rare for an index-based ETF to pay out a capital gain; when it does occur, it is usually dictated by some special, unforeseen circumstance.

The general tax treatment for ETFs is like that of stocks and mutual funds. Any capital gains or dividend income are treated similarly. ETFs offer investors the ability to hold positions for longer than one year for long-term holding treatment. And they offer the ability to move between different but somewhat similar market exposures. This potentially enables investors to maintain similar exposure to an asset category without violating wash-sale regulations.

It is important to note that the tax treatments and related implications for investors may be significantly different for certain international stock/bond ETFs, leverage/inverse ETFs, currency-linked ETPs, and commodity-linked ETPs.

Certain international ETFs, specifically with exposure to the emerging markets, have the potential to be less tax efficient than domestic and developed market ETFs. Many emerging markets have restrictions on the ability to perform in-kind deliveries of securities. Therefore, an emerging-market ETF may have to sell securities to raise cash for redemptions instead of delivering stock. Lack of in-kind delivery gives emerging-market ETFs one less weapon to mitigate tax liability, but all of the other features apply. History has shown that capital gains in these funds have been minimal to nonexistent.

Leveraged/inverse ETFs have proven to be relatively tax-inefficient vehicles. Many of the funds have had significant capital gain distributions—on both the long and the short funds. These funds generally use derivatives, specifically swaps and futures, to gain exposure to the index. Derivatives cannot be delivered in kind and must be bought or sold. Gains from these derivatives generally receive 60/40 treatment by the Internal Revenue

Service (IRS), which means that 60% are considered long-term gains and 40% are considered short-term gains regardless of the contract's holding period. Historically, flows in these products have been volatile, and the daily repositioning of the portfolio in order to achieve daily index tracking triggers significant potential tax consequences for these funds.

Commodity ETPs have a similar tax treatment to leverage/inverse ETFs due to the use of derivatives and the 60/40 tax treatment. However, commodity ETPs do not have the daily index tracking requirement, use leverage/short strategies, and have less volatile cash flows simply due to the nature of the funds. Commodity ETPs typically are given a Schedule K-1 for tax purposes. There are some further details about funds holding physical commodities in Chapter 8.

### **ETN Tax Treatment**

The potentially favorable tax treatment of ETNs has been a major aspect of their popularity since the first notes were launched in June 2006. Issuers have made the argument, supported by their tax counsels, that ETNs should receive similar tax treatment to index-linked structured products. This tax treatment puts the notes at an advantage compared with open-end mutual funds and traditional ETFs. The Internal Revenue Service is questioning this tax treatment. Investors using these products should carefully consider potential tax issues and their possible tax liability.

U.S. tax consequences for ETN investments are uncertain. On December 7, 2007, the IRS and the Treasury Department issued Notice 2008-2, stating that they are considering issuing new regulations or other guidance on the products. The notice indicated the IRS and Treasury Department were considering whether investors should be required to accrue income and expenses during the term of the ETN. Without firm guidance, the current practice for ETN tax treatment as put forth by ETN sponsors is that equity- and commodity-linked ETNs generally are treated as prepaid forward contracts for tax purposes. Investors recognize a gain or loss upon the sale, redemption, or maturity of the ETN in an amount equal to the difference between the amount of the proceeds and the cost basis in the securities. If this tax treatment is respected, equity- and commodity-linked ETNs should not be treated as debt for U.S. federal income tax purposes, and investors should not recognize taxable income due to interest inclusions or original issue discount during the holding period of these ETNs. Therefore, under this treatment, investors only recognize a capital gain or loss upon the sale, maturity, or repurchase by the issuer of their Equity- and commodity-linked ETNs.

Some market participants believe that the IRS may be concerned that ETNs could become a significant tax shelter. It might be difficult to change



the tax treatment of ETNs while preserving the tax treatment for other structured products. The major risk to investors is that the IRS would require ETN holders to accrue interest over the term of the ETN even though investors may not receive any payments with respect to the security until maturity. In a worst-case, but relatively unlikely scenario for investors, the IRS could apply this test retroactively.

**Currency-Linked ETN Tax Treatment** The IRS has ruled that currency-linked ETNs are to be treated as foreign-currency debt instruments for federal income tax purposes. Investors are required to include the coupon payments in their annual tax return as ordinary income at the time such coupon payments are accrued or received by such holders. This is true if investors do not receive any payments until maturity. Gains or losses recognized in connection with the sale, maturity, or repurchase by the issuer of these currency-linked ETNs generally will be treated as ordinary income or loss to the extent attributable to fluctuations in exchange rates.

### **Other Tax Consequences**

The holders of most ETVs not registered under the Investment Company Act of 1940 are subject to taxation as a partnership. As a result, they will receive a Schedule K-1 tax form. Whether these ETVs are held for one day or the whole year, investors still receive a K-1 reflecting their prorated share of the gains, losses, income, and deductions.

The grantor trust products investing in non-U.S. currencies are taxed at ordinary income rates. There will be no distributed realized capital gains and no interest income. When investors are positioning the funds with holdings in actual underlying precious metals, there is a potential tax liability applicable to collectibles. Under current law, gains recognized by individuals from the sale of “collectibles,” such as gold and silver bullion, held for more than one year are taxed at a maximum rate of 28%, rather than the 15% rate applicable to most other long-term capital gains.

With the diversity of product structures, investors need to consider a minefield of potential tax consequences. This book does not offer any tax advice, and any comments regarding the way certain products are taxed may be different, depending on your personal tax situation.

### **WHEN STRUCTURAL ISSUES ARISE**

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There can be problems with various structures that may not have been expected when the product was initially launched. For example, some

products have been temporarily unable to issue new shares or even have been liquidated due to issues with underlying investments.

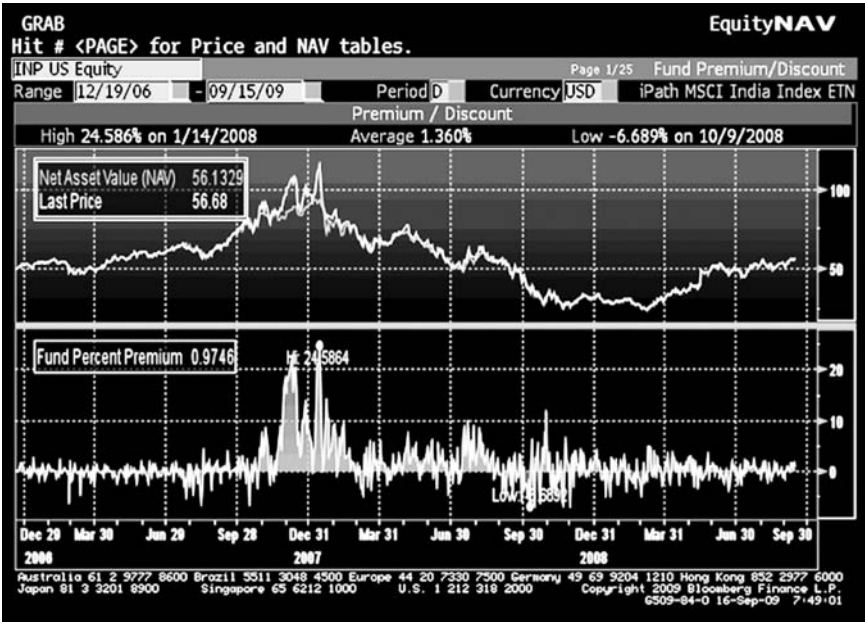
### **Credit Risk of an ETN**

One of the most significant characteristics of the ETN structure is the credit risk embedded in the product. In ordinary times, this credit risk was treated with skepticism because the ETN issuers were historically large and stable financial institutions. The financial crisis that began in 2008 proved that even the most unexpected events can occur and that risk in general was mispriced in the markets and particularly with regard to the Lehman Opta series of ETNs.

In the ETN structure, there are not any specific assets underlying the note. You have a promise from the underwriting bank to pay a stated rate, like an exchange-listed swap. When Lehman Brothers declared bankruptcy, holders of its Opta ETNs were completely exposed. Now they are in line with other creditors to see what remains of the firm's assets. Although ETN products may appear preferable to their competitors for investors who are looking to potentially minimize taxable income, the risk of issuer default is something that should certainly be taken into consideration.

### **Discounts and Premiums from Issuance Restrictions**

Restricted market access has also taken its toll on the ETN market in recent years. The iPath MSCI India ETN (INP), which is linked to the iPath MSCI India Total Return Index, ran into difficulties in issuing shares in late 2007. At that time, the Securities Exchange Board of India (SEBI) implemented restrictions with respect to derivative instruments linked to Indian equity securities. The iPath MSCI India ETN was accessing the Indian equities market through over-the-counter derivatives. When SEBI restricted access, the iPath ETN lost its ability to create new shares. When an open-ended product loses its ability to issue new shares, it begins to act like a closed-end fund. It loses the connection between the price of the underlying assets and the price of the ETN. When a product is no longer able to issue new shares, the price of the ETN should move to a premium to net asset value. This would be the result of less liquidity providers willing to sell the ETN shares and buy the underlying pursuing the typical arbitrage available between those assets. If the trader cannot create shares, being short the ETN and long the underlying basket would leave it with a perpetual up and down position that cannot be collapsed using the creation mechanism. As you can see in Exhibit 2.2, when INP halted creations in late 2007, the premium



**EXHIBIT 2.2** INP Discount/Premium Chart

Source: Bloomberg.

on the fund spiked for an extended time period. This is just one example of what can happen when the arbitrage mechanism is interrupted by some event. When the fund was later able to issue new shares the large premium disappeared.

Both of the problems just mentioned are not necessarily problems in the structure of ETFs as much as potential issues that can arise by using ETNs as an investment vehicle. Problems like this do not occur when the ETF structure is used with a basket of securities that is representative of the fund's underlying assets. As I write this, the ETVs providing commodities exposure are undergoing some problems with new share issuance and growth. I discuss those issues in more detail in Chapter 8.

## CONCLUSION

There is clearly confusion in the marketplace about the differences between all of the available products and their structural characteristics. I have tried to highlight some of the most important things to be aware of when making

investment decisions. As the industry expands and exposures in varying types of structures begin to be replicated, it will become much more important to understand the different characteristics.

The currency funds are an interesting category. There are products with similar exposure in differing structures. It remains to be seen how investors will migrate as performance track records evolve. What is certain is that structure is important and can be critical to your portfolio returns.

## Bringing an ETF to the Market

**A**s with most things in life, there are upsides and downsides to bringing an exchange-traded fund (ETF) to market. For many ETFs, the exchange listing has facilitated their growth. The listing enables investors to utilize the unique benefit of the intraday trading ability of an open-ended wrapper. It provides investors with the flexibility to take advantage of intraday volatility, as compared to other products that might offer only end-of-day liquidity. For certain types of ETFs, however, being listed on the exchange has led to confusion.

One of the most confusing issues concerns ETF trading volumes. As ETFs move further along the evolutionary path from index replication tools and hedging products toward investment vehicles, different parts of their structure become more valuable. Trading volume is one of the statistics that sometimes breeds confusion. Because some ETFs have high intraday trading volumes, it is sometimes assumed that the higher the volume, the more useful the ETF. That assumption does not take into account the variety of offerings of the ETF marketplace. Many of the newer products that have been issued are investment products. They compete with mutual fund- or hedge fund-style investments. While the intraday trading feature is important for a high-frequency trading vehicle, daily trading volume is less important for an investment vehicle. What is important is the ability to utilize the underlying basket to reduce execution impact to get in and out of a fund, which is made possible by the creation and redemption mechanism.

The ideal situation for ETFs is when liquidity providers stand as intermediaries between customers and the underlying baskets via the ETF. If the ETF structure is working, a customer can get into or out of an ETF with minimal impact on the ETF on the exchange. The largest U.S. ETF exchange, The New York Stock Exchange (NYSE) Arca, tries to help facilitate this activity by having a lead market maker (LMM) in almost every product. The LMM is an important player in bringing new ETFs to the market. In this

chapter we look closely at the LMM, at the seeding of new products and other processes related to the incubation of ETFs.

This chapter focuses on seeding ETFs because it is a critical part of the process in bringing an ETF from concept to listed product. We discuss incubation as it relates to helping ETFs grow and the deluge of new products coming to market. The chapter closes with a brief discussion about marketing because it can make or break many products and is often overlooked by both clients and newer issuers.

## **PARTNERING WITH AN EXCHANGE**

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ETFs, as the *e* in the name implies, are listed on an exchange but may trade on multiple exchanges and ECNs. Exchanges currently charge a listing fee and provide a list of services to ETF issuers that choose to list on them. Listing has taken a follow-the-herd mentality whereby the NYSE Arca controls more than 90% of the ETF listings in the United States. For the majority of investors, beyond high-frequency and other highly technical trading firms, electronic trading has in many ways diluted the personal value offered by a specific exchange. For example, in many cases, when I trade in my electronic account, I do not even know which exchange my order went to for processing. When I worked as a trader at Bear Stearns, we used to see order flow that specifically dictated the exchange where it should be traded. Smart order routers and best execution regulations, however, have diminished the value of any specific exchange in favor of clients getting fair pricing wherever their order flow is routed.

The exchanges act as the intermediary between the ETF issuer and the investing world, as the mechanism for the ETF's secondary distribution. Most new ETFs need incubation periods during which the products recruit market participants, assets, and interest. There are always exceptions, such as the three-times-leveraged ETFs that launched into a market sweet spot in late 2008. In several of these funds, both volumes and assets grew very quickly without an introductory phase. The first ETF to be listed, however—the SPY in 1993—did not pick up a large amount of assets and volumes until three or four years after its initial launch. Exchanges have an opportunity to step forward to help issuers and investors by providing for product incubation needs that would create further investor interest and help to attract assets. This would add real value to issuers as well as to the investing community.

## **LEAD MARKET MAKER**

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There are no more specialists in the ETF world; with the move of primary listings to the NYSE Arca platform, they are now called lead market makers

(LMMs). One of the most profound differences between an LMM and a specialist is that there is no longer a time and place advantage. Being an LMM is essentially committing to provide electronic liquidity in an ETF with no more information than the rest of the market. In exchange for satisfying the requirements of the program, there is a small additional rebate in each particular product for which you are the registered LMM.

LMMs typically have the opportunity to make money in several ways when facilitating flow in the ETF marketplace. They can make money by traditional market making, that is, by buying on the bid and selling on the ask side, by arbitrage between the ETF and its underlying basket, and by receiving stock loan fees on inventory and rebates for trading as the LMM. The ability to provide liquidity and hedge via an arbitrage mechanism has enabled the provision of larger amounts of liquidity with lower risk, leaving the liquidity provider with only a small financing position most of the time. ETF arbitrage in this scenario is the spread between where an LMM can provide liquidity in the ETF and the price at which it can position its hedge. Chapter 12 presents an in-depth discussion on ETF arbitrage; here I introduce a concept that is prevalent throughout the book: ETFs are different from and trade differently from stocks. The differences create more sources of liquidity for an ETF than is available in a traditional single-stock equity.

A common example is IBM. When a market maker/specialist/LMM provides liquidity in IBM, either by publicly quoting or by taking the other side of large order flow, there are not many direct ways to hedge or offset the position. If the LMM has just sold 100,000 shares of IBM to a customer, it can buy another company that it thinks correlates well to IBM and hope its price will move in tandem with IBM's until the LMM can unwind the positions. Or it can potentially purchase an offsetting derivative position. But both of these options leave the liquidity provider with a position that has to be monitored and takes up balance sheet. With an ETF, however, particularly one in which the basket is trading while the ETF is trading, you have an arbitrage trading functionality. You can sell as much of the ETF as liquidity is provided by buying the exact underlying basket. The two separate pieces will move in tandem; thus you have neutralized your market exposure. This is a significantly different risk from what traditionally is taken to provide liquidity in the single-stock world of equities.

One of the underlying themes in all of the methods that an LMM can undertake to make money in an ETF is that they are all tied to the number of shares that trade in an ETF. Even their fee structure, which works as a rebate on trading payments, is based on how frequently an ETF trades. This type of system has been very good for the growth of the exchanges because it aligns the goals of the exchange with the goals of its contractual market makers. What would also be helpful in the LMM model, however, is a special system designed to provide enhanced liquidity in the newer ETF

products that do not have high trading volumes. This is where a system of new product incubation becomes critical.

Let us take a look at the requirements of the LMM system. The LMM is a contracted liquidity provider of the exchange. The most basic requirements of being an LMM are laid out by the NYSE in this way:

- LMMs must maintain continuous, two-sided Q orders (a market maker quote) for each security in which the firm is registered.
- LMMs must meet minimum performance requirements, which include the percent of time at the National Best Bid and Offer, average displayed size, and average quoted spread.
- Performance requirements will be determined by NYSE Arca.<sup>1</sup>

In order to satisfy the demands of having an LMM in each of several thousand listed products, the requirements are reasonably generic. However, the ETF product line is unique to the exchange system, and its growth has surprised even some of the most astute market watchers. Let us examine some of the needs and procedures within a potential ETF incubation system.

## **ETF INCUBATION**

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ETF incubation consists of seeding (initial investment) and providing initial liquidity and marketing to create an investor comfort level with a new and sometimes complicated structure. An ETF incubation system would enable investors to develop an understanding and a sense of security in a new structure that could lead to even greater, widespread adoption of the product wrapper. Seeding is the first creation unit needed by an ETF to list on an exchange. There should be a standardized system of seeding new ETFs so that investors are not misled by big seed numbers versus small ones. The amount of seed capital an ETF begins with is, in essence, a financing trade held by the seeder. It is not necessarily an accurate representation of actual interest in the ETF.

During the incubation phase, liquidity providers need to be set up to attract initial real investments. Investors want enough liquidity so that they can trade the ETFs with minimal impact and at prices closely related to the value of the underlying securities. Independent trading firms and liquidity providers as a unit are willing to provide liquidity through the underlying basket or other respective hedges if they can collect small spreads. An entire subindustry of trading firms participates without being paid directly because of the arbitrage opportunity inherent in the ETF structure. If an ETF is new and unique, however, it will not necessarily attract a widespread user base quickly. Even though liquidity can be organically created, there



are still relatively few liquidity providers compared to the number of available ETFs. It is not economically viable, nor is there a coordinated effort, to cover every new ETF or low-volume product that needs additional liquidity assistance. This fact demonstrates the overwhelming need for an LMM during the incubation phase and perhaps a standardized method of greater participation to help newer ETFs get established. It has been statistically proven that the percent of trading volume of an LMM in an ETF moves in an inversely correlated manner to the trading volume of an ETF. In fact, there has been discussion in the marketplace about removing the LMM completely in some of the most liquid ETFs. This fact demonstrates the need to find a way to structure the LMM functionality to be utilized primarily to provide liquidity where it is most needed in the new and lower-volume ETFs.

Let's use a very basic ETF as an example of what can potentially be done to provide liquidity for the investor base. If you are providing liquidity in a plain vanilla domestic ETF where the basket is reasonably easy to borrow, such as a Standard & Poor's 500 basket, then there could be tight requirements for a minimum size, depth, and electronic trading ability for the LMM. This can be a function of the cost to hedge the ETF trade, based on the trading of the underlying creation basket. In high-volume ETFs, where competition drives prices to levels in which the spreads sometimes actually are tighter than the spread of the actual basket, LMM requirements can be relaxed and put into play only during periods of extraordinary duress. If the ETF and its basket are trading together in real time, then facilitating liquidity in one from the other is merely a function of applying advanced computing and can be provided in all ETFs equally. There is a cost for borrowing the underlying stock, and there is a calculation of the execution costs of the basket in relation to the size traded or the depth of the market being provided. The market width and depth would shift progressively wider and smaller, respectively, as the difficulty to hedge increases.

There also needs to be a marketing effort that introduces the new ETF not only to the investing public but also to the liquidity providers. Sometimes the structures and their creation and redemption process can get complicated. The processes and risks need to be clearly detailed and explained. The institutions maintaining positions and hedges in these products need to be able to quantify all the risks so they can be properly hedged. The more comprehensive the hedge, the less risky the position is for the liquidity provider and thus the smaller the spread will be for investors. Investors need to understand all the facets of this new ETF to be able to judge the appropriateness of the products as well as predict their potential portfolio performance. All of this work is currently a function of the ETF issuer but could be achieved more efficiently as a function of an ETF incubation program. After achieving an investor comfort level, the issuer will be in

a position to attract the maximum potential assets as defined by demand. ETF incubation helps in the period of introduction and establishment of the newer products.

## Seeding ETFs

The initial seed of an ETF is commonly misunderstood except by those involved in the process from the very beginning. In order for an ETF to launch on an exchange, it normally needs to have one creation unit outstanding, referred to as the seed unit. In the beginning, specialists wanted to be in ETFs because they would make revenues from wide spreads and the rebate; thus, they were interested in attaining as many ETF listings as they could. When there were not a lot of ETFs, and the vast majority of those listed were beginning to trade at reasonable volumes, the specialists were an open faucet of seed capital. This was a great situation for the ETF issuers: They had a ready market of people willing to put seed capital into their funds to help them launch. The growth of the ETF product lineup is partly attributable to the fact that seed capital was once very plentiful for the issuance of new products. The use of balance sheet to seed ETFs was extremely inexpensive before the downturn of late 2008.

Let's look at the positions behind an initial creation unit, which is what I call the seed of an ETF. In the example, ETF-X is a plain vanilla U.S. domestic-based ETF. It is new to the market and needs a seeder to do an initial creation. In a typical ETF creation order, the Authorized Participant (AP) has to buy the basket of stocks underlying the ETF and deliver those to the issuer. The ETF issuer will then utilize the continuous issuance function to deliver new ETF shares to the AP, creating an increase in shares outstanding. In the initial creation unit, the process is exactly the same: An AP would deliver the shares to the issuer and the issuer would issue new shares of the ETF. Once the ETF has shares outstanding or assets under management (AUM), it can be listed on the exchange. These processes are coordinated so they can happen together.

An ordinary creation order typically is dictated by some position that was entered into by the AP. Perhaps the AP has sold shares of an ETF and bought the underlying basket, or has entered into some other trade involving the ETF. The seeder of an ETF does not, however, have to take a directional view of the ETF to provide the initial creation unit. Seeders and liquidity providers leave the business of determining market direction to the money managers, hedge funds, and various other clients. Seeders are financiers. They are looking to utilize their balance sheet for some form of remuneration. The LMM seeding model was predicated on the use of balance sheets in exchange for LMM designation that theoretically resulted in profits.

To this end, instead of buying the basket to deliver to the issuer, seeders borrow it. Then they deliver to the issuer the basket of stocks that then become short positions on the seeders' books. These shorts are covered with the borrowed stocks, and then the issuer delivers seeders their ETF shares. This has created a position of being long the ETF and short the corresponding basket of underlying stocks. In certain circumstances, a long position in an ETF and a short position in the underlying basket can be very profitable from a financing perspective. I discuss this type of trade in Chapter 12, which explains stock loan trading strategies. At other times, this can become an expensive position for seeders for a variety of reasons, primarily because the costs typically are offset by the fees received for lending. But in a new ETF there is little demand from shorts to borrow shares. It is, however, perfectly hedged with no market exposure and has a cost structure that can be calculated in real time with no risk of slippage. Here is what the position looks like economically:

#### **Economics of a Seed Position**

- **Long ETF**

- Paying financing charges on the money used to buy the ETF

- Paying the management fees

- Receiving the dividends paid on the stocks in the basket of the ETF

- **Short Basket of Stocks**

- Receiving financing rates on the money received for selling the underlying stock in the creation unit

- Paying fees to borrow the basket of stocks

- Paying dividends on the basket of short stocks

These two positions create an arbitrage position because of the fungibility between the ETF and its underlying basket. In a typical 1940 Act ETF, there is a basket of stocks underlying the ETF. Via the creation and redemption process, those two separate and distinct units can be exchanged for each other in kind. In seeding, however, seeders need to sit with the position until other assets are accumulated by the ETF or to sell out the position in the secondary market. The underlying basket shares are borrowed and delivered to the issuer; the issuer then delivers shares of the ETF. The ETF is then listed on the exchange.

Once the ETF is listed on the exchange, people inevitably (in successful issues) buy the ETF. Only two market participants can possibly be selling the ETF shares at this early stage in its listed lifetime: either the entity that performed the initial creation or the person(s) to whom it decided to lend those shares to facilitate a short position. In the case of the LMM being the seed entity, this is a very clean process because it already has a position on

its books that is long ETF and short basket. This means it can be out on the exchange as an LMM and offer shares for sale to the public without having to borrow them from someone else. Then every time it makes a sale of the ETF shares, it unwinds a corresponding piece of its short basket position by buying the shares back and returning its borrowed stock. This is a great process because the LMM eventually sells its entire ETF position and buys back its underlying hedge of the short basket, thereby flattening its exposures and freeing up the balance sheet consumed by the position. If there is good volume, the LMM will sell more than its initial creation position and have to do further creations. This is how an ETF will grow its assets and shares outstanding.

The ETF shares are then disbursed throughout the marketplace. Typically the ETF is sold to investors or traders who want the ETF shares for various reasons and are willing to take the directional risks associated with a long or short position in the ETF.

**Seeding away from the LMM** A slightly more complicated format beginning to unfold in the market environment is seeding being undertaken by a party other than the LMM. This concept is important to understand: Either the LMM seeds the ETF and it has shares to sell, or someone else seeds the ETF and then lends those shares to the LMM for it to start trading. This is significant; the LMM must have shares to sell in the early days of trading, because typical initial interest in an ETF is from the buy side. If the LMM had decided not to seed and did not borrow the shares, but then decided to start trading the ETF, it could be out on the exchange but hesitant to sell any shares and would be bidding without offering at a valuable level for investors. If a fund was seeded by a party that is not the LMM but that refused to lend out the created ETF shares, it is effectively forcing the LMM into an early creation.

In practice, by assuming the LMM position in an ETF, you are either going to seed or at least secure a stock borrow on the shares for the first settlement following the first trading day so you have some shares to sell. Doing this will allow you to make a market which will help to get the wheels moving. Lately the seeding process is moving away from the LMMs, not necessarily by choice, but because their ability and desire to provide balance sheet space to any fund that comes along has been greatly reduced. This situation is understandable and purely economic. The number of ETFs has exploded, and many of them need a longer incubation period, which can become an expensive drain on the balance sheet.

The fact is that seeding is really just balance sheet rental; it was originally paid for by trading revenues received by the LMMs. Now they have decided they can pay to borrow those shares from an unrelated seeder and still

make enough profit to justify being in the LMM business. This has led to the sudden creation of a new revenue stream for non-LMM seeders. If you seed a fund and are not the LMM, you have an immediate client in need of borrowing shares from you to cover potential shorts. This will not be a long-term revenue stream, however, because the LMM will not want to pay borrowing fees for an extended amount of time on a small short position, and eventually it will be forced to create the ETF shares. New entrants coming into the ETF market are willing to seed funds in an attempt to extract a piece of that revenue stream.

Eventually a method for getting compensated for seeding new ETFs will develop. Typically LMMs seeded funds because they wanted listings. This also facilitated the procedure of having shares to sell when the fund initially launched. More recently, LMMs have become much more selective about seeding, resulting in a dearth of seed capital and a long pipeline of funds in queue for listing. The difficulty of acquiring seed capital has a potentially positive effect on listing quality. As the costs to seed products increases, more thought will be put into the process of deciding which products to list. Better and more effective products will be listed, with the ones failing the vetting process destined for an eternity in registration.

From an issuance standpoint, this is a bad situation. Issuers never want the expenses for trading or launching their fund to increase. To combat this, the process of cutting creation unit sizes down has begun. Cutting the creation unit size will decrease the amount of residual positions sitting on books around the Street. These positions are not large enough to process a creation and simply generate finance charges for the involved parties. Smaller creation units also make it less expensive to seed a fund.

When a LMM sells an amount of the ETF that is less than a whole creation unit, it must decide when to create shares to cover its short position. If the creation unit is 100,000 shares, and the LMM has sold 25,000 in the market, it may not be inclined to process a creation, and therefore have a long position of 75,000 shares that remains unsold. It may be willing to sit short the 25,000 shares and pay stock borrow fees to the seeder. The decision is whether to pay borrowing fees on the short or finance fees on the long. This is the cost to carry the position and is built into ETF pricing spreads. Remember that all of these positions are hedged with baskets and are therefore not exposed to market movement risks.

Typically because of the creation/redemption feature of ETFs, the act of growing your positions big enough will allow you to unwind them versus the issuer; thus, you will have no, or very low, carrying costs. However, in a new ETF, there is not always enough volume, and you will incur the costs one way or the other. This fact explains why issuers are moving toward reducing the size of the creation units in an attempt to lessen costs to clients. We

discuss this topic again later when speaking more about executing hedging baskets.

**Risks to Seeding** Executed properly, the risk associated with maintaining an initial creation unit is minimal. The main risk to seeding a new ETF is carelessness in maintaining your hedged position. Many observers over the past decade have erroneously assumed that the LMMs were seeding funds by taking an outright long position in the fund. They believed that the LMM was buying the underlying basket of the ETF, delivering that to the issuer, and receiving shares via the in-kind creation feature. This would be leaving the LMM with an outright long position in the ETF at the risk of the markets. This belief highlights a misunderstanding of what LMMs do and how ETFs work. LMMs, or any liquidity providers, are not in the business of taking large directional bets. Most of the time they pursue arbitrage opportunities, profiting from spreads either between the bid price and ask price or between one product and another. In the case of ETFs, the arbitrage occurs between the ETF and its underlying basket.

The risks to doing an initial seed creation can be summarized in this way:

1. Borrow costs increasing dramatically.
2. The short basket gets called back.
3. ETF AUM do not grow, leaving the seeder in the position for a longer than expected time period.
4. The ETF exhibits tracking error versus the underlying basket.
5. Missing a corporate action in the underlying basket causes tracking losses.

In Exhibit 3.1 you can see an example of what a hedged position in an ETF would look like in market value terms. When you do an initial seed creation, you are delivering the exact basket of shares at the closing prices and receiving the ETF shares at the net asset value (NAV).

### **EXCEL EXAMPLE**

The spreadsheet entitled Creation Unit Seed Example shows the basket and value calculations that represent a fully hedged seed position. You can see how the basket and the required cash are interpolated into an NAV for the fund.

**EXHIBIT 3.1** Demonstration of an Initial Seed Creation Position

Description	Value
NAV of Long ETF Position (1 Creation Unit)	\$1,533,246.08
Calculated NAV of ETF $((A + C) / B)$	\$30.66
Estimated Residual Cash (C)	\$4,734.32
Shares in a Creation Unit (B)	\$50,000
Total Market Value of the Creation Unit (A)	\$(1,528,511.76)

*Note:* The short market value of the basket equals the value of a creation unit less the cash amount.

The total market value of the creation unit (A) is the sum of each stock in the basket multiplied by its closing price. This is the short market value of the basket position at a specific time. You can see from the table that the market value of your short basket positions and your long ETF position less any cash will be equivalent. You will have no market exposure because as the basket moves, the value of your ETF will move as well. The price of the ETF in the market will potentially be trading at prices slightly away from NAV. But if you enter and exit the ETF position via the creation and redemption mechanism, you remove any secondary market risk from the position.

**Seed Pipeline** Seeding new funds is important because new fund launches are the lifeline of the ETF issuer. When valuable new funds are brought to market, investors will benefit from various increases in potential exposures. It is important here to consider how ETF issuers get paid. Many people do not understand the general flow of assets into ETFs and how management fees are extracted from those assets. It is also critical to understand that ETFs are bringing professional-quality investing tools and all of their benefits to a broad range of investors.

We have discussed how during the creation process an Authorized Participant delivers the basket of shares to issuers in return for shares of the ETF. Issuers have an inherent position (in a 1940 Act fund) in which they are essentially long the basket of stocks underlying the ETF and theoretically “short” the ETF shares. In this case, however, issuers’ ETF position is considered to be shares outstanding and not an actual short position. The NAV of the ETF is the sum of the value of the stocks in the basket and any residual cash in the fund. In a typical equity ETF, the basket of stocks replicating the ETF held by the issuer functions like any other group of stocks. It pays dividends and experiences corporate actions. The issuer maintains the basket to account for all the changes that occur. That is why there is always a small

residual cash position. Sometimes stocks exit the basket, and the money has to be reallocated. At other times, a dividend is paid on a stock in the basket and will have to be paid out to ETF shareholders at the specified dividend payment period for the ETF. The issuer typically accrues the fees daily and receives those fees from the cash portion of the fund on a specified basis.

The issuer is the last in line to receive payment through the whole process of issuing an ETF. It hires staff, builds a business, licenses or creates an index, and then pays legal fees, creates setup procedures, and writes prospectuses. Finally, after all of that expensive work, it may issue an ETF. The ETF must grow before it begins to generate any fees. The fee for the fund is based on a percentage of the assets under management. In the case of ETFs, the fees typically are less than many fund competitors of different types, specifically closed-end funds (CEFs), mutual funds, and hedge funds. ETF issuers do not have upfront sales charges to incent brokers to sell the funds. There is not typically an initial public offering (IPO) process whereby brokers generate fees from steering clients into the funds. Even the salespeople at a typical ETF issuer do not get paid transactional-based commissions for selling ETFs. The ETF wholesaler is selling the concept of the ETFs in its product suite and developing client utilization plans. This is much more of an educational role than a transactional commission-based sales role. In the early years of ETFs, wholesalers would spend a lot of time and energy with clients educating them about the ETFs they are representing. Then when clients were ready to buy, wholesalers would tell clients to call their trading desks. ETF issuers typically were detached from the execution process of their clients. These are not transaction-based positions and the issuers do not actually process trades for clients directly.

## TRADING TIP

Now issuers have adopted much more of an educational stance on trading. Because of the introduction of products that are more sophisticated and trade less intraday volume, issuers have become more involved in the trading process. Many issuers now have professionals dedicated to the trading process, helping clients to understand it and, at times, helping to facilitate trades. Many traders at the Authorized Participants can explain the various trading options and help customers execute efficiently. Additionally, *The ETF Handbook* is a great tool for wholesalers to help explain the processes and for the client base to gain a greater understanding of the entire ETF mechanism.



Issuers start to generate revenues from ETFs when customer trades start to funnel through the system. First, the customer has to have a trading system and brokerage account. Then the customer has to send the order to the exchange, and when they trade, they generate a trading commission. The exchange generates fees for executing the trades. Clearing firms charge fees for processing the tickets. Finally, after enough shares of the ETF are bought, an AP does a creation, driving assets into the ETF. Then issuers can start generating fees to cover all those upstream expenses they have already paid to get the fund into the hands of their clients.

## **COMPARING FEES BY STRUCTURE**

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A look at the two main competitors to ETFs, mutual and closed-end funds, reveals how they generate their fees and their differences. Like ETFs, both competing products charge management fees as a percentage of the assets under management of the fund. A CEF launches via an IPO. The sales team gets paid in the form of a sales commission based on how many shares of the offering it sells. This diminishes the risk that the CEF is going to launch and will not have enough shares outstanding to generate the requisite fees. Once sold, those shares are not redeemable except under special circumstances (activists and other types of open endings). Management fees are generated on a large amount of assets from the first day of trading. Before the fund has generated anything in terms of performance or even traded a single share, there are enough assets locked in indefinitely to pay the fees.

CEFs have an interesting place in the investing world. After they issue their fixed amount of shares via the IPO, the markets take over the pricing relationship between the fund and its NAV. There are really only two things that can happen next:

1. The fund can be well received, causing many people to want to buy it and causing it to move to a premium. At that point, the CEF issuer can either institute a rights issue to get more shares out to the marketplace to satisfy demand or can launch a similar fund and have its sales team sell it to clients for another IPO.
2. Alternatively the CEF can move to a discount. Many of those investors who paid NAV plus a small percentage commission to get shares on the IPO will instantly underperform the NAV performance by the selling concession and the discount move.

The process by which investors utilize mutual funds is interesting as well. Investors deliver the fund company cash. The fund company then

issues new shares to account for the investor's position in the fund. In many cases, mutual funds know a lot about the client base. By knowing exactly who your clients are at all times, you can market directly to your customer base. You can pay your sales force based on clearly delineated asset flows. In some cases, customers are paying a front-end load just to get into the fund. The reporting of underlying holdings is different from ETFs as well. Mutual funds and CEFs typically report holdings on a quarterly or semiannual basis. The transparency required of an ETF ensures that investors will know what the fund is holding every day.

The ETF wrapper is proving to be a very strong competitor in the investment company landscape. Demand continues to grow for more products and expanded exposures. A large amount of issuance is needed and forthcoming to bring out products that are less expensive and can perform better than the more traditional products. A lot of assets can and probably will be moved over to the structure over time. Throughout the history of products, there are many examples that ended up not enriching to investors as compared to their issuers, the ETF wrapper is unique in its approach and is proving beneficial to both. You typically do get transparency, liquidity, and tax efficiency when you use these products properly. As the universe grows through the new issuance process, investors will reap the rewards of an inexpensive, liquid, and diverse set of investment products that bring many of the qualities of institutional investing to the individual investor level.

## **MARKETING AND LAUNCH**

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Once the mechanics of the fund have been put in place, the issuer is ready to launch the ETF. Currently in the United States, listing takes place on either the NYSE Arca or the Nasdaq. The NYSE Arca now lists more than 90% of the available ETFs in the United States. Several new trading venues are gearing up to attempt to break this stronghold by the main listing exchanges.

The last thing done in the process of listing the ETF is the selection of an LMM and the initial seed creation. Finally it is simply a matter of picking a day when everything will be in order for the exchange to alert members and turn on trading. At this point the ETF begins a life of its own. Unlike a stock or a closed-end fund with a limited amount of shares outstanding, this is a vehicle with assets and shares outstanding that will grow and shrink with demand and interest. ETFs can grow extremely quickly or more slowly, depending on circumstances.

ETFs sometimes are thought to be bought by clients and not necessarily sold by salespeople. This makes the marketing process critical to the entire launch of a new product. Utilizing the various outlets available for developing a message enables investors to understand ETFs on a more subliminal level. Because there are so many products, investors seem to approach the product suites in two main ways. Some go for a particular fund family, similar to what they might do in any other fund investment scenario. And others consider use of the ETF product line segmentation enough. They pursue the variety of products available to them regardless of the issuing company.

In recent years, funds have launched and closed that have presented compelling products from an investing standpoint but were not able to achieve the critical mass necessary for survival. Some of these closures can be attributed to inefficient marketing tactics. The marketing of products for investment is a delicate balance of branding and product positioning.

## **CONCLUSION**

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Launching an ETF is an extremely complicated and involved process. There are major expenses involved in resolving potential legal issues and developing a full investment mechanism around a product. Because of the size of the market, a firm launching one or two niche products will have a difficult fight for survival against the behemoths with their marketing machines.

The changes in the financial markets over the last several years and the growth of the product set has made it more difficult both to secure an LMM and to get seed capital for launching new funds. Once those obstacles are overcome, it is still a difficult battle to get people to focus attention on new products amid a rising cacophony of new product announcements. There are approximately 500 ETFs in registration; even if just a small percentage of those are brought to market, there will be a significant population of products, in addition to the more than 700 already listed. The number will grow even further as more products migrate over from competing structures. And there is the incessant demand from the investing community throughout the world for new funds and products that offer ever more arcane exposures.

It is imperative for the growth of the ETF wrapper that the incubation process is advanced. It would be fruitless to discuss the merits of selecting liquid baskets that provide valuable investments if it were impossible to bring new products to market. Key to the various structural qualities that were discussed previously in Chapter 2 is that they are all exchange-listed

products. It is this exchange listing that brings benefits to the investor, and it is the listing process that should continue to advance with the growth in assets.

In Chapter 4 I will discuss several of the different nuances of the various types of investment companies. I will then wrap up that chapter with some expectations for the growth of the ETF industry. Then we will move to Part Two, discussing product valuation.

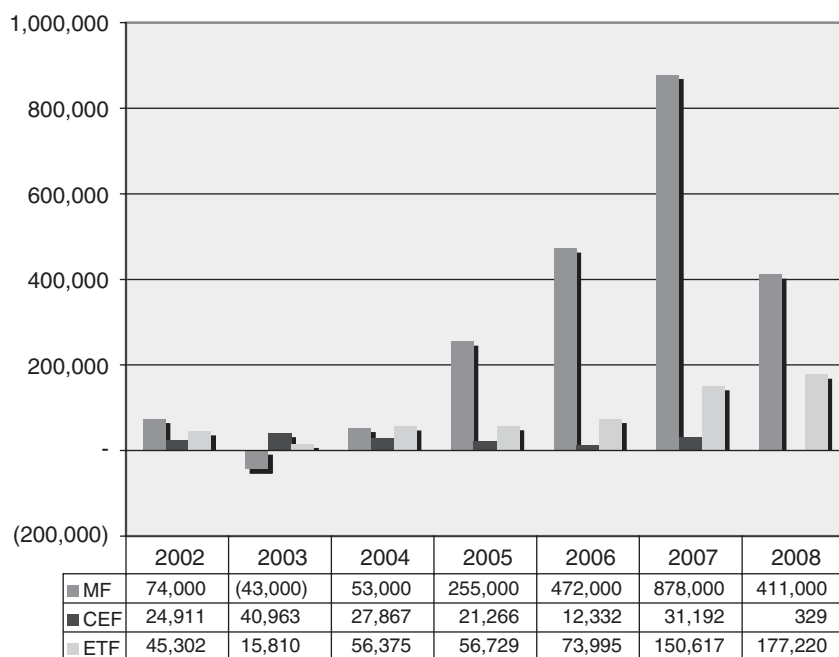
## Investment Companies, Now and in the Future

**T**his chapter looks at the main similarities and differences among mutual funds, closed-end funds, and exchange-traded funds (ETFs). It examines why the different features that ETFs possess have enabled them to experience such rapid growth over the last several years.

At the end of 2008, U.S.-registered investment companies managed approximately \$10.3 trillion in assets. The three largest categories were mutual funds (\$9.6 trillion), ETFs (\$531 billion, including non-1940 Act funds), and closed-end funds (CEFs; \$188 billion).<sup>1</sup> Every investor—from small households to large institutions—utilizes funds. In the year 2000, mutual funds accounted for more than 95% of assets invested in funds, with almost \$7 trillion in assets. At that time, CEFs managed approximately \$140 billion, more than double the assets of the nascent ETF industry, which was managing just \$66 billion in assets. If you fast-forward to the end of 2008, ETFs were managing roughly 5% of all fund assets and had eclipsed the assets of their CEF cousins.

A look at asset growth in terms of new issuance and assets under management (AUM) among ETFs, CEFs, and mutual funds over the last seven years suggests that mutual funds may be losing their stranglehold on the industry. Exhibit 4.1 displays the new issuance in asset terms of the three competing products.

There are currently more than 10,000 mutual funds available to U.S. investors. By contrast, there are just over 700 ETFs available to those same investors. Every different niche within each investing category offers the possibility of being represented by an ETF. Many new products coming in the future have not yet even been imagined. The recent announcements by several major money management firms entering the ETF market suggest that there are broad expectations for substantial future growth. I expect to see tremendous growth in the fixed income and currency product categories



**EXHIBIT 4.1** New Issuance by Investment Companies (Millions of dollars)

Source: *Investment Company Fact Book* (2009).

to bring them in line with their relative sizes in the global markets. And I expect to see the uptake of ETFs in 401(k)s changing the dynamics of how the products are used and what types of strategies they bring to investing.

Throughout this chapter we examine current investment products and future actively managed ETFs. We take a brief look at the multitude of needs that ETFs can satisfy within a portfolio. Toward the end of the chapter we briefly discuss some ETF closings and what the future will look like in the young product structure.

In the first few chapters I have delineated how ETFs are initially developed, their various structures, and the ways they are brought to market. Now you will see them in relation to their main competitors in the investment fund space. Part Two explains the more technical aspects of how to value the ETFs, and Part Three presents strategies for how to position them within your portfolio through efficient trading and understanding the market.

## **IN THE BEGINNING, THERE WERE CLOSED-END FUNDS**

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The Boston Personal Property Trust, formed in 1893, was the first CEF in the United States. Since then people have been discussing the reasons for their most notable characteristic: They have a tendency to trade at sometimes significant premiums or discounts to their net asset value (NAV). As discussed in detail throughout this book, if an ETF is trading away from its NAV, you can buy or sell the ETF and the underlying basket and exchange the two via the creation and redemption mechanism. This ability does not exist in the CEF world. CEFs issue a fixed number of shares at NAV during an initial public offering (IPO) process, and that outstanding share number stays relatively stable throughout the life of the fund. Rights offerings and buybacks can change shares outstanding. Although you cannot pursue a pure arbitrage like that available in a domestic ETF, you can trade discount dislocations over time.

There are, however, many similarities between ETFs and CEFs worth noting:

- They both are listed and traded on an exchange.
- Because they are listed, they both can be bought and sold at any time during market hours, and they enjoy all the same order types available to standard equities.
- They generally have low and similar levels of portfolio turnover.
- They can be purchased on margin.
- They can be sold short.

There are also some significant differences:

- CEFs have a fixed number of outstanding shares, whereas ETFs can create and redeem outstanding shares daily.
- CEFs are launched via an IPO process while ETFs are seeded with an initial investment amount and begin trading with listing.
- CEFs can and generally do trade at premiums and discounts to NAV; most ETFs trade in a tight band immediately around NAV.
- CEFs cannot source liquidity from the underlying basket as ETFs can.

Many retail investors have grown comfortable with the CEF product type over the years, drawn into the products by high yields and deep discounts. A deep discount, however, does not help performance unless there

is some form of discount narrowing event. And many investors have come into the CEF product type in an IPO at a price slightly above NAV only to see those products move to a discount to NAV and remain there.

People typically pursue three types of trades in the CEF arena when they are trying to achieve outsized market returns:

1. Discount trading and investing
2. Following activist investors
3. CEF/ETF conversion trades

Many users of CEFs were early adopters of the ETF structure. This is important because there are many opportunities to trade ETFs and CEFs in conjunction with each other. For those CEF specialists who were pursuing strategies in which they tried to capture discount moves, the ETF was a great initial hedging tool. An educated investor or advisor was able to build portfolios combining both wrappers in the early days of ETFs, while the product offerings were still limited. This is true even today. You can pursue arbitrage opportunities between the two asset classes or rotate positions between the two for investment purposes.

Given the similarities, it makes sense that recent developments in technology and changes in mind-set that have driven growth in ETFs have helped the CEF marketplace to grow as well. This trend, however, is beginning to reverse. The explosion of ETF types pursuing active management, leverage, and hard-to-reach asset classes are now pursuing a full frontal attack on the CEF market and the issuance numbers, as displayed in Exhibit 4.1, tell a clear story about the future.

Due to the growth and expansion of the ETF market, many new opportunities have arisen to trade the two asset classes against each other. Several examples of CEFs converting to the ETF structure exist, and likely many more are forthcoming. In 1996 Morgan Stanley and Barclays teamed up and listed 17 products called World Equity Benchmark Shares (WEBS) on the American Stock Exchange (Amex). The June 1996 issue of *Derivatives Strategy* magazine wrote: “WEBS’ exchange-traded index funds represent a clear assault on offshore single-country funds (closed or open).”<sup>2</sup> Those products still exist but have been rebranded as a part of the iShares suite of ETFs and have experienced great asset growth. One of the notable funds in the beginning of this convergence trade was the Claymore Raymond James SB-1 Fund (RYJ). This was a CEF issued by Claymore Advisors (one of the few issuers of both ETFs and CEFs) with a statement in its prospectus that mandated a conversion vote to an ETF if the fund traded at a discount greater than 10% over a specific time period. This fund has since converted to the ETF structure and has become a case study for how the same fund works



in both structures. That fund conversion helped to significantly and permanently reduce the persistent discount of the CEF and was closely watched as a model for potential future conversions.

I think a very large convergence trade will play out over the next decade as the two products become even more closely intermingled. I would expect many assets to shift from the CEF structure into that of the ETF. The recently announced purchase of iShares by Blackrock will potentially bring many more conversion-type trades in the future as two large and distinct asset management businesses are merged.

## Comparing Liquidity and Trading

In the comparison of underlying liquidity available between a CEF and an ETF, there is one extremely important difference: open-ended issuance via creations and redemptions. Exhibit 4.2 shows liquidity calculations between two products providing similar exposures. I take the underlying basket and apply the calculations for the implied daily tradable shares (IDTS) number. You can see that ETF A is implying 112 million shares while CEF A is implying a respectable 27 million shares available to be traded during the day. These numbers are much larger than the current average daily volumes in both funds. They represent the number of shares that *could be* traded in the fund by trading the requisite stocks in the underlying basket. This

**ETF A**                      **AUM = \$48,000,000**  
**Implied Daily Tradable Shares @ 50% DAV = 112 Million**  
**Average Daily Volume = 27,834 Shares**

	Bid Side Notional	Bid	Last	Ask	Ask Side Notional
Market View	\$ 6,400	32.00	31.94	32.07	\$ 38,484
Basket Implied	\$ 12,007,169	32.00	32.01	32.02	\$ 12,506,244
Discount/Premium		0.00%	-0.22%	0.16%	

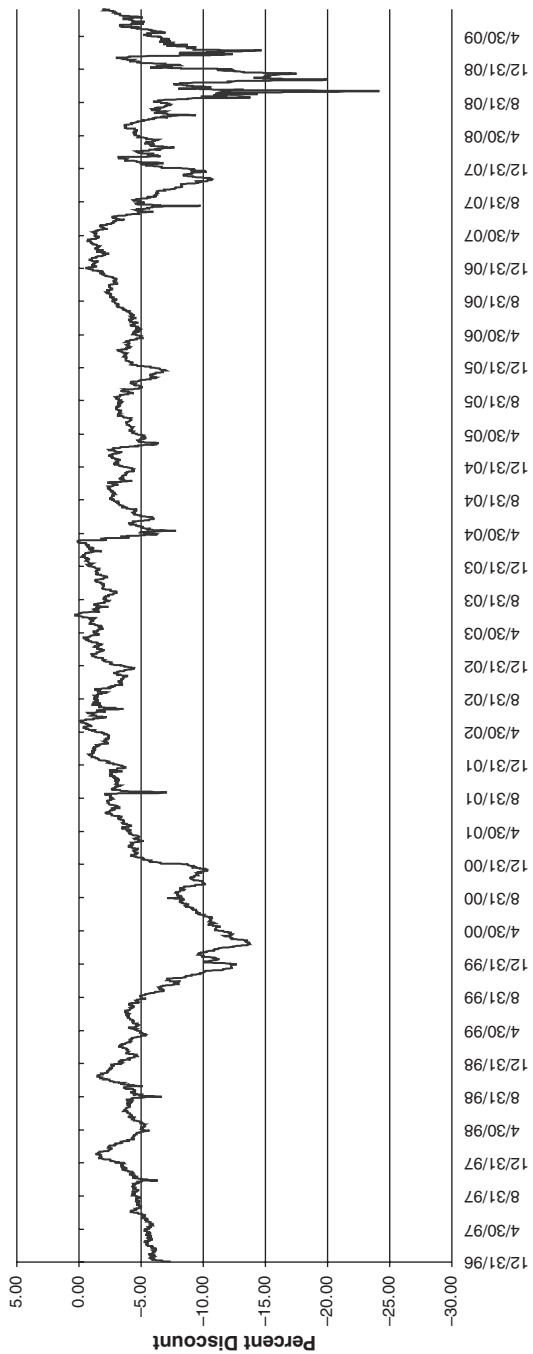
**CEF A**                      **AUM = \$1,648,000,000**  
**Implied Daily Tradable Shares @ 50% DAV = 27 Million\***  
**Average Daily Volume = 452,609 Shares**

	Bid Side Notional	Bid	Last	Ask	Ask Side Notional
Market View	\$ 7,693	10.99	11.01	11.01	\$ 11,010
Basket Implied	\$ 6,472,861	11.88	11.89	11.89	\$ 6,202,172
Discount/Premium		-7.49%	-7.39%	-7.42%	

### EXHIBIT 4.2 Comparison of ETF and CEF Liquidity

Source: Data from Bloomberg snapshot, 5/27/09, 10:15 am.

Closed-end funds cannot be created/redeemed, making the implied tradable shares number irrelevant for that product.



**EXHIBIT 4.3** Average Discounts of All U.S. Closed-End Funds  
*Data source: Morningstar.*

would be a valid comparison if the CEF had a similar functionality to the creation and redemption mechanism of an ETF. Instead, even though this ETF trades only 27,000 shares per day on average, an investor who wanted to position a much larger block of the ETF could do so via trading in the underlying basket.

In the CEF, however, there is no conversion between the underlying basket and the CEF shares. So even though the basket underlying the CEF is implying a reasonable amount of liquidity, the volume that can be traded is constrained to liquidity present in the marketplace. It would be reasonable to assume, therefore, that if you try to buy or sell more than 50% of the typical average daily volume of the CEF, you will have an impact on the price of that product. With an ETF, while trading the basket you are afforded much more potential liquidity. As I mentioned, the ETF will trade around NAV as constrained by the arbitrage mechanism. The lack of that mechanism will release the CEF to trade at any level that the market determines appropriate.

### **Comparing Discounts**

At the end of 2008 and into early 2009, the discounts on CEFs widened to levels that had not been seen for many years. This can be seen clearly in Exhibit 4.3 showing the average closed end fund discount over time for all funds. Looking backward from September 2009, there was an incredible opportunity to trade broad swaths of the asset class, either from an outright investment perspective or on a hedged basis attempting to isolate just the discount move, at very cheap discounts to NAV.

Discounts are a direct result of an important difference between ETFs and CEFs that takes place in the beginning of their life cycle. An ETF gets its first assets via the initial creation unit (as described in detail in Chapter 3). This initial creation unit occurs at NAV, and then shares are offered to the public in the secondary market on the exchange. Assets in the fund and shares outstanding can grow and shrink on a daily basis, reflecting changes in demand for the fund. Because of this creation and redemption process and therefore the ability to arbitrage away valuation differentials between the underlying basket and the ETF price, ETF prices tend to trade at or close to NAV. Discounts are not persistent in ETFs. If they exist at all, they are a function of the liquidity of the underlying basket. Special events, such as restrictions of trading in the underlying basket, will drive ETFs to a premium or discount until those restrictions are removed. The discounts that may be observed in an ETF with international constituents are a price discovery function and are discussed in detail in Chapter 6.

By contrast, a CEF is launched via the IPO process with a fixed amount of shares issued. There is a general tendency for CEFs to move to a discount

within one year after launch. But they can also move to a premium if there is high demand for the fixed amount of shares. The fixed share amount is one of the main factors in the tendency of CEFs to trade at large premiums and discounts for extended time periods. This fixed share quantity leaves prices to move based on supply and demand of the fund shares. In essence, this is a function of the fact that liquidity providers cannot do creations and redemptions to satisfy and balance demand. If you cannot adjust outstanding shares (or assets) to account for demand, then concerns regarding fund management and performance expectations should, and do, have an impact on price in the market in relation to NAV.

**Estimating CEF NAVs** There is an interesting aspect to trading closed-end funds that actually ties in well to the ETF world. When CEFs are traded during the trading day, larger institutional investors use an estimated NAV (eNAV) to approximate the CEFs' fair value. This process of estimating the NAV or the value of the underlying assets in the fund is the same as what needs to be done with an ETF with an underlying basket that is not trading at the same time as the ETF. While an ETF publishes an intraday indicative value (IIV) that gives an approximate value of the fund based on the last price, this value is really valuable only for a fund with a basket of underlying securities trading at the same time. I first learned the main techniques of estimating NAVs as a CEF trader in the mid-1990s when I was running portfolios of CEFs, providing liquidity and trading discounts. In certain respects, an ETF trading during the U.S. hours with an underlying basket of international stocks is very similar to a CEF. However, because of the creation and redemption mechanism, ETFs and CEFs have different discount or premium time frames. The discount or premium of a CEF moves over longer time frames and is reasonably stable on a day-to-day basis. Since there is no mechanism actually to contract that discount spread, it can be perpetual. The price of an ETF with underlying stocks trading in a different time zone will drift away from underlying value during the trading day, reflecting future value expectations, and then will adjust for overnight trading near the open of the next day's trading. Intraday, the ETF is trading as a price discovery vehicle for the next market open. The CEF price, by contrast, is reflecting sentiment of investors over a longer term.

## **MUTUAL FUNDS**

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Five years ago, a comparison between ETFs and CEFs might have been most appropriate because of their relative market sizes. Now, given the growth trajectory of ETFs, it is appropriate to compare them to the much larger mutual fund category. The growth of the ETF marketplace has highlighted a

potential that is being compared very closely to the mutual fund industry. One of the comments I hear often about the proliferation of ETFs is how many products the investing world needs within the ETF wrapper. If you compare the ETF industry with just over 700 products listed in the United States compared to the roughly 10,000 mutual funds, you can extrapolate a much steeper growth curve. Even within the landscape of index-tracking funds, there are dozens of mutual funds tracking the same 500 stocks in the Standard & Poor's 500 and trying to replicate or outperform its returns. Since in the ETF world there are only 2 major and fewer than 10 competing funds providing exposure similar to the S&P 500, there is much growth potential.

This potential for future growth has been highlighted by the entrance of some of the largest players in the mutual fund industry into the ETF landscape. Vanguard entered the ETF business in 2004 by creating a separate share class of its existing mutual funds. The firm helped feed assets into its ETFs via the creation of a one-way gate permitting index fund holders to roll positions into the ETFs. Vanguard is now the third-largest ETF provider with almost \$50 billion in assets, as of September 2009. Bond fund manager Pacific Investment Management Co. (PIMCO) entered the ETF market in May 2009. And on January 30, 2009, Charles Schwab & Co. filed to create and list ETFs, which they began listing in November 2009. The first fund that they proposed listing is intended to track the Dow Jones U.S. total stock market index. This fund will be very similar to already existing funds by both iShares and State Street.

This will also be a test of the strength of first-mover advantage in the ETF space. It will be difficult for late entrants into the category to gain a foothold unless they bring something unique to the table. Vanguard brought its lower-fee method of providing index exposure, and PIMCO is planning on bringing its fixed-income investing prowess. It will be interesting to see what other new entrants bring to the competition for assets.

## **Trading ETFs and Mutual Funds**

The broad ETF marketing machine has been preparing for an epic battle for assets between the structures. For years ETF issuers have touted the benefits of the structures: intraday trading and liquidity, transparency of holdings, tax efficiency, and cost effectiveness. The mutual fund machine has been firing back about the lack of liquidity in many ETFs. Although many of the newer ETFs do exhibit low intraday trading volume, it may not be correct to judge them using that as a negative characteristic.

Let's take a look at the trading and execution of mutual funds first. When you are a buyer of a mutual fund, either directly from the fund family

or via a mutual fund supermarket, you essentially send in a check for the notional amount that you wish to purchase. The fund issues you new shares outstanding at the NAV of the fund. This has become an easily understood and popular system for investors. For the most part, you can request to buy or sell whatever your notional amount is in the product on any given day. There are two potential drawbacks, however, to this system.

1. If there is major news out in the middle of any trading day, you are unable to adjust your exposure to your particular mutual fund investment.
2. If at the end of the same day you and many other investors have all chosen to exit, there will be an extraordinarily large amount of stock selling pressure into the market closing.

These two circumstances are addressed effectively within the ETF structure. The first one is addressed via the listing of an ETF on the exchange. This listing enables a person to buy or sell shares of the ETF during the trading day. This trading can be done to initiate or unwind existing positions or to adjust positions that might have been attained via the primary market using the creation or redemption process. Let's see how this addresses the chance that your position in a low-volume ETF might seem to restrict your notional trading ability.

If the ETF has a basket of domestic underlying stocks and the ETF itself typically does not trade a lot of volume, then you will need to use the services of a liquidity provider or Authorized Participant (AP) in the ETF. The AP will provide a link between the investor and the basket in order to execute larger notional sizes than might be easily traded in the market. In an ETF with domestic underlying stocks, typically the liquidity providers have electronic market making systems to facilitate order flow in these names automatically in the market. This can also be done by giving a portfolio trading desk an order to execute the underlying basket on your behalf and give you the implied execution in the ETF. The ETF basket is transparent and published daily making it possible to enhance liquidity by utilizing the underlying basket. So while one-sided pressure will affect the price of an ETF too, a few avenues of liquidity can be tapped to dampen the effect. In addition, all sellers (or buyers) of an ETF are not pigeonholed to the close. They can spread out their activity so it creates less price impact. In Exhibit 4.2 I describe the IDTS as the function of how much liquidity can be created in the ETF by utilizing the basket.

Let's take a look at the difference with an ETF that has underlying shares trading at times when the ETF typically is not trading. The ETF with international constituents gives you two different times to trade the product: Large investors can trade the ETF in the marketplace, either utilizing what liquidity exists or asking a participant to provide some liquidity, or

you can go into the underlying local markets and have someone trade the underlying basket on your behalf, then give you the ETF price as implied by the basket executions. Because you can attain executions on your ETF order flow throughout the trading day, via either the ETF or the underlying basket, you are not subject to potentially erratic closing prices due to large market pressures.

So while it may seem that an ETF trading with a low intraday volume might not offer the same liquidity as a similar mutual fund, that is not necessarily the case. The liquidity for both will be based on the underlying basket, but with an ETF you will have the ability to access that basket in different ways potentially throughout the trading day. With a mutual fund, you are leaving that execution discretion to the portfolio management team. It is this secondary source of liquidity, the intraday trading, that essentially provides an extra layer of risk to your ETF position if it is needed. In many cases of invest-and-hold behavior, this extra source of liquidity may not be a tremendous perceived benefit. As with other insurance, it is best not to have to use it but nice to know it exists if necessary.

Although the early ETF products have been mostly index based and have some different characteristics from traditional actively managed mutual funds, as ETFs evolve they are expected to present a full frontal attack on the mutual fund industry. The growth in the actively managed ETF space is just beginning; fewer than a dozen products exist in the market that are designed as actively managed portfolios for competing against traditional-style mutual funds.

## **ACTIVELY MANAGED ETFs**

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If you are an index fund, it is easy to develop a level of comfort from producing a daily file of your investment holdings. Typically, an index fund is rules based, and investors understand those rules; the passive manager aims to replicate those rules to track the benchmark. Although there is some variability in how they are devised, the indexes usually announce their changes in advance. Additionally, they have clear rules for how they handle corporate actions and other index events. An ETF tracking an index will pursue the same strategy; pending changes can be anticipated prior to them being made. This feature has helped in the growth of the ETF industry because it facilitates the maintenance and trading of positions in the ETFs. As is explained in detail throughout the book, a liquidity provider in an ETF typically uses the underlying basket of securities to hedge its position. Enabling them to maintain their positions in conjunction with the funds allowing them to facilitate liquidity and other demands, like stock loans.

The most frequently listed advantages of ETFs—their underlying liquidity and their portfolio transparency—have been the biggest detractors in the evolution of actively managed ETF strategies. The underlying concept behind an actively managed ETF is that the portfolio manager will be able to adjust the portfolio as needed or desired while not being subject to the set rules of an index. The active manager aims to beat a benchmark and has to devise trading models and strategies to do so. Because very few portfolio managers are willing to divulge their next portfolio move for fear of front-running by other investors, ETFs with active portfolio managers have been slow to gain a foothold.

Although the problem seems two-pronged, liquidity and transparency, one problem stems from the other. It is very difficult for an ETF to exhibit intraday trading liquidity without transparency of holdings. Yet intraday liquidity, while a significant potential benefit of ETFs, is not a prerequisite for listing or even for success. Many of the more recently listed ETFs are designed as investment vehicles. They are not replicating indexes and are not intended to be for day trading or short-term position allocations. They are intended, instead, as investment vehicles for long-term positions within a portfolio and can easily be utilized as such. Although intraday liquidity is constantly referred to as a major benefit of the ETF structure, its creation and redemption feature and its state of continuous issuance is what truly facilitates asset growth. These benefits can drive utilization of an ETF with even the lowest daily trading volume.

Two other attributes are driving a move toward actively managed ETFs:

1. Portfolio managers may be able to take advantage of the tax efficiency of the structure for better portfolio management.
2. The investor base sees the potential for lower costs consistent with the current funds in the ETF structure.

It will be interesting to see how these funds develop and grow over the next few years.

## **ETFs WITHIN THE PORTFOLIO**

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There are three main uses for ETFs within the scope of portfolio construction:

1. Asset allocation
2. Risk management
3. Cash management



Almost every portfolio use for the products will satisfy a test allocating them to one of those groups.

### **Asset Allocation**

I use the broad category of asset allocation to cover all directional positioning with the intention of achieving the broad investment goals of the portfolio. You can use the ETF structure for a core or satellite approach to your exposures. You can fill buckets that satisfy needs for currency exposure and commodities weightings. Additionally, you can now achieve diversified and efficient fixed-income exposures through the use of the ETF wrapper.

**Performance** With the proliferation of ETFs covering an immense number of strategies, there has arisen the ability to trade various strategies against each other while staying within the ETF structure. Dozens of asset management firms run portfolios limited to the use of the ETF's structure. A search on Google for "ETF portfolios" will reap more than 8 million results. These portfolios are offering less risk because of the diversification of the underlying assets and the diversification among various ETFs. They are attempting to take advantage of momentum strategies or generating alpha within the portfolios by their sector selection techniques.

There are significant opportunities to take advantage of long-term market trends by playing embedded ETF strategies against each other. For example, there are viable strategies where you may be long a fundamentally weighted ETF and short a market capitalization – weighted ETF, attempting to capture outperformance of one strategy versus another over a given time period. Investors can take advantage of the different strategies by attempting to isolate investment climates, determining when each strategy should perform better than the other and positioning both sides. These strategies did not exist before the proliferation of readily traded basket products in the form of ETFs.

**Financing** The growth in the number of ETFs and the ability to have several different ETFs covering a similar exposure or strategy has created opportunities for taking advantage of financing differentials. If you are holding a long position in a specific ETF and the management fee of another correlating product is less expensive, you can easily roll from one product to its competitor. One of the largest product sponsors in the marketplace developed much of its strategy around offering ETFs at a cheaper management fee than its already established competitor. Additionally, this company offers some differences in how the portfolios are managed and optimized. There are also opportunities to reposition yourself if you discover that you can gain a better rebate on loaning one ETF versus another one in which you may

already have a position. This is typically a case where you would roll from a more popular ETF, where the market for stock loan is heavily monitored, to a newer ETF, where the market might be less developed but there is still some demand for the shares.

**Structure** There are also differences in structure that have become more important as the product lines have developed. If there is only one product covering the particular sector or currency that you are seeking to position, choice is not available. However, the recent market dislocation in the end of 2008 into 2009 has established the importance of choosing your investment structure carefully. If you can achieve a similar exposure by using a product in the ETF structure with a segregated underlying basket versus a structure in which you accept the credit risk of an issuer or third party, there are important decisions to be made. A main advantage of the ETF structure is its inherent simplicity. ETFs have transparency of underlying constituents and lack embedded credit risks. It is important to utilize products that achieve these goals or provide something of comparable value in exchange.

**Strategy Isolation** Another strategy in which ETFs are very useful is isolating exposures for specific trades. Those strategies that highlight ways to generate an absolute return are always favorable in a high-volatility environment. ETFs can be used to isolate market exposure either by a specific sector or market bucket or to remove exposure entirely. If you are isolating a specific stock for investment but want to try to eliminate a large portion of the market risk embedded in the position, you can use a short position in an ETF for protection. Now your performance will be based on stock-specific news and not news affecting the sector or broad market as a whole. There are more opportunities than ever before to locate a tailored hedge for your desired exposure.

An example would be a long position in a large multinational bank based in the United Kingdom versus a short position in an ETF that tracks the international financial sector as a hedge. Before the launch of international sector funds, you would have to position in either a domestic sector ETF or create your own basket of shorts. The growth of products enables you to achieve extremely tactical positions. If you are positioning the long because you expect some type of event to cause an outsized move in the stock but do not want to be broadly exposed to the sector overall, you can now set up a spread trade to achieve this goal.

## **Risk Management**

This brings us to the topic of the risk management utility of ETFs. In the sector example just given, you are able to better manage the risk of the

position because of alpha isolation from your sector hedge. Understanding the techniques in achieving executions via using the underlying baskets or utilizing risk markets or algorithms can help you achieve exposures in these newer products that are designed for tactical use and have lower intraday trading volumes.

The ability to short ETFs on the downtick has always been a valuable feature of the ETF wrapper. This feature helped create an important role for the product: hedging portfolio risk. The fact that ETFs were trading smoothly without a tick test has helped bring the rest of the U.S. markets up to speed in that respect in recent years.

In comparison to a traditional hedging product, a future, an ETF position can result in several benefits for the position. The most obvious is the fact that futures expire. In order to maintain a position for an extended time frame, you must roll your position from one contract to the next. There is no rolling necessary when maintaining a short hedge, or a long position, in an ETF. Since ETFs are considered equities, there is also no need for additional accounts to trade them. With the recent market discussions regarding leveraged products, however, there eventually may be a requirement similar to the standard options/futures agreement needed to trade them in customer accounts.

The inherent nature of a basket product aids in risk management within a portfolio. Eliminating single-stock risks for all but specific instances has been shown to potentially reduce portfolio risks. There are instances, however, where even basket diversity will not completely shield portfolios from losses. The Financial Select Sector SPDR (XLF) was an ETF that underwent a substantial stress test in its underlying constituents but still managed to provide comparably safe diversity. During the period September 15 through September 30, 2008, 7 of XLF's 10 largest holdings were involved in major financial transactions, including mergers, recapitalizations, or direct investments.<sup>3</sup> The performance of the ETF served to cushion the blow in that sector as compared to having positions in any of those particular stocks directly.

## **Cash Management**

There are several different features of cash management. One is the act of managing cash positions using the short- and extremely short-term fixed-income products. The growth in the fixed-income product sector in ETFs has led to the development of several different ways to manage cash positions with extremely short-duration products.

And there is cash equitization for managing cash inflows and redemptions to reduce portfolio drag. Transition management has become an extremely large business for the ETF market. Because of the liquidity

and open-ended issuance of the ETF structure, it is now possible to find ETFs that track very closely to the intended goals of the portfolio and roll positions into those ETFs at times of change. Instead of managing an entire portfolio of stocks, it is possible to manage one simple position designed to track very closely to your benchmark. Additionally, the lack of time frame requirements for this process of rolling into the ETF and then rolling out either in pieces or all at once has simplified the process of managing transitions.

## **CLOSING OF ETFs**

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I once asked a journalist friend why newspaper articles always seem to have a negative slant. He told me about the statistics of readership and how positive stories do not sell newspapers. Judging from the tendency of financial writers to be preternaturally attracted to negative stories on the ETF industry, I am going to assume the same statistics apply when discussing financial products. There have been many fund closures in the ETF world over the last several years, and they have received extraordinary press coverage. There is even an ETF “death watch” that ranks ETFs and tries to project which funds might not survive.

It is a fact of life that ETFs close. Although this is certainly a negative for investors, it should not be viewed as a stain on the ETF industry as a whole. It makes no sense to maintain ETFs that have not attracted sufficient assets. They become a drag on the entire product line. Culling the herd is important for the cash flow of the products and the health of the overall product structure. This is common in most fund structures. As Lisa Smith wrote, “Several hundred [mutual] funds closed nearly every year during the late 1990’s and the early 2000’s. Niche funds are particularly vulnerable.”<sup>4</sup> According to Investment Company Institute data, more than 500 mutual funds either merged or liquidated in 2008. This is a natural process for any type of fund business.

It is important to note that one of the main benefits of ETFs also turns out to be a benefit when ETFs close. Because of the creation and redemption mechanism of ETFs and the in-kind transfer of assets (both processes are detailed in later chapters), closing an ETF and unwinding the assets generally does not create a taxable event for the ETF. Because funds that close are typically very small, sometimes the closing entails a return of the underlying shares to the initial seeder, with that party returning the ETF shares. This would be an in-kind transaction between the ETF provider and the AP and would not generate any potential trading gains or losses. This is very different from the procedure for a mutual fund, which would

either have to merge or sell the basket of securities underlying the assets of the fund.

There are many reasons why a fund might close, mostly economic. The fund-issuing company assumes all the expenses related to development and production of an ETF before it is launched. Additionally it pays the expenses required for listing and launch and to keep the funds running. Most of this is done before the fund has even started to collect assets that will generate revenue. Issuers of ETFs are in the business to make money. They are offering products that are valuable for investors, but their underlying goal is a profit at the end of the day. Why keep funds listed in perpetuity if they have not generated a stable asset base? Until recently it was cheaper to launch ETFs because seed capital was readily available, which made listing and maintaining some funds less expensive. The issuers listed as much as possible in the race to reach critical mass.

The process has changed; seed capital and initial capital infusions into funds are not as easy to secure. This fact is leading the issuers to proceed much more carefully in fund listings, which will lead to fewer closures down the road with a much higher success rate on listed products. Also it will lead to a rise in the average assets gained in the initial and early years of listing. The market has already moved from launches of 20 funds at a time to typical launches of 1 or 2 funds at a time.

## **CONCLUSION: THE FUTURE OF ETFs**

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There are currently over 500 ETFs in registration for listing (a recent list is available in Appendix D). They cover almost every imaginable corner of the investing spectrum, from new leveraged products, to fixed income to state-based funds. Many of these products in registration probably will never be listed on a U.S. exchange. There are possibly several thousand more yet to be conceived or developed that will be listed over the next few years.

When I first encountered ETFs in the late 1990s, I felt that I was onto something unique and different. That has proven to be a keen insight and one that has benefited me well during my career. Only time will tell what the future looks like, but here is a list of some ETF-related items that would be beneficial to have or could potentially develop as the industry continues to evolve:

**ETF incubation.** With the structural changes in the market over the last several years and the decrease in participation of the lead market makers in seeding and providing adequate start-up liquidity, new

ETFs will need an incubator program. This might come from the exchanges or from a third party but will be based around financing launches and providing liquidity in new products.

**Trading efficiencies.** In order to continue the growth pattern that has developed over the last decade, better education of trading for new users is required. The development of an NAV crossing methodology to facilitate trading will be a major advance in helping smaller players get efficient execution in the products. Automating the stock loan process and centralizing pricing and availability would enable larger users to streamline their financing activities and utilize the products in a more cost-effective manner.

**New entrants.** The ramifications of the Barclays Global Investors/Blackrock deal have yet to be seen but will be monumental. PIMCO is just starting to get involved in launching product, and Charles Schwab & Co. has listed products toward the end of 2009. These are three of the largest market participants in the world, and their actions will have repercussions throughout the entire fund industry for years to come. There are also the smaller, more nimble, and typically more creative new entrants beginning to launch active funds and other strategies. Although the barriers to entry and success are formidable, I have no doubt that some of them will produce very valuable products.

**Product listing efficiencies.** In ETFs where the underlying basket is trading at the same time as the ETF, automated systems will provide liquidity based on both pieces automatically. So, in a traditionally low-volume ETF that has a basket replicating the S&P 500, a market participant will be able to access that underlying liquidity in a seamless manner. This access will probably be a component of smaller creation unit sizes throughout the product structure. It will serve to even the playing field between high-volume and low-volume products with similar underlying. Consider two products that are both designed to track the S&P 500. One trades more volume because it has been around for a long time and has gained use as a proxy. If electronic systems provide ample liquidity in the ETFs based on the underlying basket, then theoretically both ETFs could trade the same amount of liquidity at the same market width. The high-volume product would have an advantage over the other product only if the volume proved to narrow the market spread to a level that is tighter than the basket itself. There are already firms bringing real-time basket values to clients and modeling their order flow prices around that data.

**Closed-end fund market.** I see the recent eclipse of assets in CEFs by the ETF marketplace as an extremely notable event. The way discounts widened out to previously unseen levels in the market dislocations of late 2008–2009 could have signaled one of the final gasps of the CEF product type. I expect there to be a large conversion from CEFs over to the ETF structure over the next 5 to 10 years as people become frustrated with persistent discounts in the face of a comparable product with broad access and no discount issue. In a market with thousands of listed fund products with duplicate exposures, structure matters!

**Fixed income and actively managed funds.** These will be the growth segments for the next decade. ETFs have migrated rapidly from being a hedging and trading vehicle to an all-purpose investment vehicle. Active strategies and fixed-income products are a major part of how people invest, and they will be utilized in droves. Every list of predictions about ETFs over the last several years has included actively managed ETFs. Their time has finally come! There are actively managed currency products and multimanager portfolios in the marketplace. I am confident that now that the levee has been broken, the flood will soon arrive.

**Alternative space.** Surely a multitrillion-dollar industry that is both opaque and expensive cannot be safe from the ETF onslaught. One of the most brilliant and legendary hedge fund managers in the world is the current chairman of an ETF provider. The ETF marketplace has its sights set on acquiring some of the assets in this arena via hedge fund replication strategies and an assortment of absolute return and quantitative strategies. These will be products that offer similar returns with potentially lower volatility and lower fees than standard hedge funds.

**401(k)s.** I remember calling the human resources department at Bear Stearns in 2001 and asking to put SPY (the S&P 500 Depository Receipts) on the list of fund choices for our 401(k) assets. The people there simply could not understand what I was requesting. Almost a decade later, it has become only slightly easier to combat the mutual fund juggernaut on the retirement fund industry. Many firms are working on new platforms to bring ETFs to the 401(k) plans of the investing public. It is only a matter of time until there is a large shift of assets in the retirement arena.

Much can be written about this broad and rapidly expanding industry. I am distilling the necessary information down to concepts that are critical to

know and understand. What you will read in the following chapters will be details about the various nuances of the ETFs and closely related exchange-traded products. The information presented regarding valuing and trading ETFs will enable you to extrapolate what is necessary to understand related topics not discussed in detail. It would be too broad, for example, to discuss the global industry in this book, but once you understand the U.S. ETF market, you can take that knowledge on a global tour. These insights will, I believe, help product users invest in ETFs listed in the United Kingdom, Europe, or Asia because, as Led Zeppelin revealed many years ago, the song remains the same!



# Exchange-Traded Fund Valuation

**O**ne of the most important facets to understand about exchange-traded funds (ETFs) is how the market prices and underlying values are determined. Understanding the true valuation of the ETF you are trading helps in determining effective execution strategies to both minimize costs and avoid market disruptions. Understanding the price at which an ETF should be trading in relation to its underlying value will be crucial in moving down the curve of available ETFs to where interesting and unique products exist but where valuation and execution become a more important part of the trading equation. This will also help in determining whether the price in the market place is attractive or unattractive based on what is happening in related instruments available to be traded simultaneously. I have encountered many client questions over the years as to why an ETF was trading at a certain price or spread. A frequent situation revolves around clients calling to inquire about an ETF buy order that is not getting filled by the liquidity providers. Typically, it is roughly 10 cents below the intraday indicative value (IIV) of the fund. Many times solving these issues is just a matter of clearing up misperceptions about intraday values and pricing relationships.

A main factor in valuing an ETF is having an understanding of the difference between the indicative optimized portfolio value (IOPV), alternatively called the intraday indicative value, and the net asset value (NAV). In many of the U.S. domestic ETFs, that understanding will be enough to trade them efficiently. When you get further down the curve of products, it is important to understand the relationship between the actual trading prices

and the published IOPV and NAV information and whatever estimates are to be used for determining a real-time value.

There are many different types of exchange-traded products in the marketplace, and their variety and structure is changing almost daily. Chapter 5 focuses on the valuation of basic domestic ETFs, followed by ETFs with international stocks in the baskets in Chapter 6. You can apply this information to almost every other type of product. In the final two chapters of Part Two (Chapters 7 and 8), I review some other types of ETPs, leveraged products, fixed income and currency, with a discussion of the critical features and nuances of their structures.

Understanding these valuation techniques will provide the base information for determining proper pricing levels for ETF order flow. There are two parts to executing ETF order flow successfully: understanding proper pricing and valuation and understanding the various execution techniques available. Part Two discusses the proper valuation techniques and what market pricing is indicating to investors. In Part Three, we examine the various market participants and how to utilize order flow techniques to interact with the market for efficient execution.

## ETFs with Domestic Constituents

**T**he most pure form of the exchange-traded fund (ETF) structure is demonstrated in a product that trades at the same time as an underlying basket of domestic securities. This is where we start the discussion of valuation. We begin with the calculation of the net asset value (NAV) of the funds and then explore discounts and premiums and cash amounts, ending at the calculation of the intraday indicative value (IIV).

The ETFs with domestic constituents are the largest category of funds. They make up approximately 45% of all U.S.-listed ETF assets. A high-level breakdown of the ETFs available with domestic underlying constituents can be seen in the grid in Exhibit 5.1.

The structure of the ETF is based on holdings transparency. One of the keys to being transparent is publishing all of the numbers required to calculate the fair value of an ETF every day. Six elements involved in the valuation of an ETF are published every day:

1. Net asset value
2. Intraday indicative value
3. Total cash
4. Estimated cash
5. Shares outstanding
6. Accrued dividends (certain funds only)

The NAV shows the most recent official value of the ETF based on the most recent market close. The IIV is the calculation of the most recent value of the fund based on market prices of the underlying securities. The total and estimated cash amounts are the amount of excess cash in the fund. These numbers are used to calculate how much balancing cash will be required when doing a creation or redemption. The shares outstanding of the fund is how many shares have been issued and can change daily with creations and redemptions.

**EXHIBIT 5.1** Domestic ETF Categories and Assets (as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Domestic Equity	\$ 287,183,458,553	168	36.0%
Domestic Sector	\$ 67,786,010,878	138	8.5%
Totals	\$ 354,969,469,431	306	

Source: Bloomberg.

**TRADING TIP**

You can access any of the relevant data about ETFs by using this ticker methodology. Change “ETF” to the ticker of the fund you are monitoring.

ETF Ticker Conventions	Moniker	Bloomberg	Google Finance, Yahoo Finance, Reuters, Others
Net asset value	NV	ETFNV	ETF.NV
Intraday indicative value	IV	ETFIV	ETF.IV
Total cash	TC	ETFTC	ETF.TC
Estimated cash	EU	ETFEU	ETF.EU
Shares outstanding	SO	ETFSO	ETF.SO
Accrued interest	DV	ETFDV	ETF.DV

**CALCULATING THE NET ASSET VALUE**

The NAV of an ETF is a daily calculation that is based off the most recent closing prices of the assets in the fund and an actual accounting of the total cash in the fund at the time of calculation. This gives the fund a standardized value that can be compared to other funds for performance statistics and accounting. The fund world is based on comparative statistics, so uniform reporting was critical in the development of ETFs.

The NAV of the ETF is calculated by taking the sum of the assets in the fund, including any securities and cash, subtracting out any liabilities, and dividing that by the number of shares outstanding.

$$\text{NAV} = (\text{Assets} - \text{Liabilities}) / \text{Shares Outstanding}$$

All of these data points are provided on a daily basis, including exactly what the fund is holding. This transparency frequently is touted as a major benefit of an ETF. Mutual and closed-end funds are not required to provide portfolio holdings on a daily basis. A mutual fund provides a daily NAV but holdings are released quarterly. A closed-end fund provides an NAV either daily or weekly with holdings released usually quarterly. In an ETF, you are able to see the exact assets and aggregate liabilities of the fund at any time. This is also a factor which has worked to prevent against style drift in the products.

The easiest way to calculate the NAV of an ETF is to use the creation unit (CU) and total cash published daily.

$$\text{NAV} = \frac{\sum (\text{Shares per each component stock} \times \text{Last Price})}{\text{CU Shares} + \text{Total Cash/CU Shares}}$$

The NAV of an ETF is represented in share price terms. This is why you would be dividing the asset totals by shares outstanding and the creation unit calculations by the creation unit share amount.

### Daily Creation Basket

Every day files are made available containing all of the constituents of all available ETFs. There are several ways to access ETF daily creation files. Data providers sell a file download of all the ETFs and their underlying baskets (see Appendix B). This is a consolidated file of all holdings of all ETFs. When you subscribe to the service, you can receive the file daily. Many fund families also offer information available for download right from their Web site or via a related File Transfer Protocol (FTP) site.

#### TRADING TIP

If you are a Bloomberg user, you can see the daily creation file by typing the fund ticker {Equity}& MHD {Go}. Then you would type 97 {Go}. For example, type EEZ {Equity} MHD {Go}, then 97 {Go} on a Bloomberg terminal, and you will see the most recent creation unit file for the fund.

Exhibit 5.2 shows what the first page of a creation unit looks like on a Bloomberg screen.

GRAB		EquityMHD		
ENTER # <GO> FOR SELECTION				
ETF CREATION UNIT		Page	1 / 6	
WISDOMTREE EARNINGS TOP 100		Cash (x00)	912.27	
Creation Unit Size 50000				
<MENU> to return to portfolio				
Name and Ticker	Position	Value	% Net	
1) Freeport-McMoRan Coppe	FCX UN	1277	88891.971	4.913
2) Corning Inc	GLW UN	3947	61178.500	3.381
3) Goldman Sachs Group In	GS UN	271	50671.579	2.800
4) Prudential Financial I	PRU UN	789	39473.669	2.182
5) News Corp	NWSA UN	2597	30203.110	1.669
6) DISH Network Corp	DISH UN	1527	29990.279	1.657
7) Southern Copper Corp	PCU UN	905	28163.601	1.557
8) Mosaic Co/The	MOS UN	587	28111.430	1.554
9) Cummins Inc	CMI UN	610	27370.699	1.513
10) Alcoa Inc	AA UN	1884	26168.761	1.446
11) International Paper Co	IP UN	1154	25572.640	1.413
12) Murphy Oil Corp	MUR UN	428	25247.721	1.395
13) Chesapeake Energy Corp	CHK UN	908	25187.920	1.392
14) Marathon Oil Corp	MRO UN	776	24769.920	1.369
15) National Oilwell Varco	NOV UN	569	24723.050	1.366
16) Viacom Inc	VIA/B UN	817	23300.840	1.288
17) AES Corp/The	AES UN	1525	22539.500	1.246
18) El Paso Corp	EP UN	2213	22240.650	1.229
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 3204 1210 Hong Kong 852 2377 6000				
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2009 Bloomberg Finance L.P. 6538-84-1 06-Oct-09 18:54:09				

## EXHIBIT 5.2 ETF Creation Unit

Source: Bloomberg.

In the exhibit you can see the name of the fund, the amount of shares per creation unit, the market value of those shares calculated using the most recent closing price of the stock, and its calculated weight in the portfolio. At the top you can see the creation unit size of the fund as 50,000. And you can see that this is page one of six pages representing a basket of approximately 100 stocks. The various share amounts of the stocks are showing what is required in each name to make up one full basket equaling 50,000 shares of the ETF. As an example, there are 1,277 shares of FCX required for every 50,000 shares of the ETF EEZ.

In order to calculate the actual value of the ETF at any time during the day, you would utilize the available creation unit. The creation unit is utilized for building any model around ETF pricing. It shows the exact basket that must be delivered to the issuer in order to receive ETF shares during a creation. It is also the exact basket that will be received by an Authorized Participant (AP) when it has processed a redemption order.

## Cash and Estimated Cash

For the standard equity ETFs, there are two cash numbers published daily, the total cash and the estimated cash. The quoting ticker conventions are

TC and EU respectively. These are published as actual amounts in dollars per creation unit. For a fund showing a total cash number of \$1,000 and having 250,000 shares outstanding with a 50,000 share creation unit size, the total amount of cash in the fund is \$5,000. This would be calculated with the equation:

$$\text{Cash in Fund} = \text{Shares Outstanding} / \text{CU Shares} \times \text{Total Cash}$$

Since the NAV of an ETF is reflected as a price per share, you will use the total cash number converted to a per-share amount. This is arrived at by dividing the total cash amount by the creation unit shares amount:

$$\text{Cash per ETF Share} = \text{Total Cash} / \text{CU Shares}$$

The total cash number is backward looking to ensure that creations and redemptions occur at NAV. When the fund is being traded throughout the day, the estimated cash amount is used to give the AP an idea of how much cash the fund will require for the creation or redemptions. When calculating the IIV or an estimated NAV (eNAV) of an ETF, the estimated cash number should be used. This number takes into account potential dividends, management fees, and other potential cash and portfolio changes in the basket. Then the following day, when determining the exact requirements of cash movement between the issuer and the AP, the total cash number is utilized.

## **DISCOUNTS AND PREMIUMS**

A common misperception that arises around the NAV is the discount and premium calculations for a fund. The importance that investors place on this number is a holdover habit from looking at the prevalence of premiums and discounts in closed-end funds (CEFs). The two types of funds are listed, and the fund prices trade independently of NAV; however, the premium and discount numbers are completely different in meaning. There are occasions where persistent premiums and discounts arise in ETFs, but that is due to a structural inconsistency. Typically any discount or premium pattern for an ETF will be very short-lived as the arbitrage function enables its collapse in the near term.

A premium and discount reported on a CEF will typically be long term and reflect investor sentiment regarding performance expectations or other structural anomalies, whereas ETF discounts and premiums are temporary. I consider the reported discount and premium numbers based on NAV and the market close price of ETFs to be marketplace noise. If you are executing an NAV-based trade on the underlying basket, then you will get the NAV

price plus expenses regardless of whether the closing price of the ETF was in line with that NAV.

Under normal circumstances, the premium and discount that arises between an ETF NAV and its trading price at the end of the day is the result of late market activity and will narrow on the following open. This is true of ETFs with constituents that trade in the same time frame. We thoroughly discuss the details of international constituents in Chapter 6. But here it is relevant to understand that those ETFs with international stocks in the underlying basket are essentially trading on expected valuations and can and generally do trade away from NAV. A premium or discount in those funds would be a normal part of the price discovery process.

Many circumstances can and will push an ETF away from its NAV at the very end of the day, causing it to trade at either a premium or a discount compared to the basket. It could be that a large order came into the ETF at the very end of the trading day too late, or too large, for the arbitrage functionality. Additionally, as the trading day ends, spreads typically widen to prevent the occurrence of exposures that will have to be held overnight. This can cause late prints in ETFs to be somewhat erratic and can create the impression of a premium or discount versus the NAV.

### **Avoiding Discount or Premium Anomalies**

Most discounts or premiums in U.S.-listed ETFs with domestic constituents occur because of order flow that is less concerned with actual ETF value. When trading, you should try to avoid trading the ETF too close to the market open, before the underlying constituents have all opened. While it is intuitive to wait until the domestic underlying constituents are open before trading the ETFs, it is also valuable to wait until the correlated hedge of international ETFs start trading with full liquidity before trading those as well. This should explain why you see spreads in many names tighten a few minutes after the open. Also, as the trading day draws to a close, ETF liquidity providers have the risk that they will not get completely filled in a basket and would have to carry overnight positions that are not perfectly hedged. This is why spreads widen near the close. There is more risk to providing liquidity at that time.

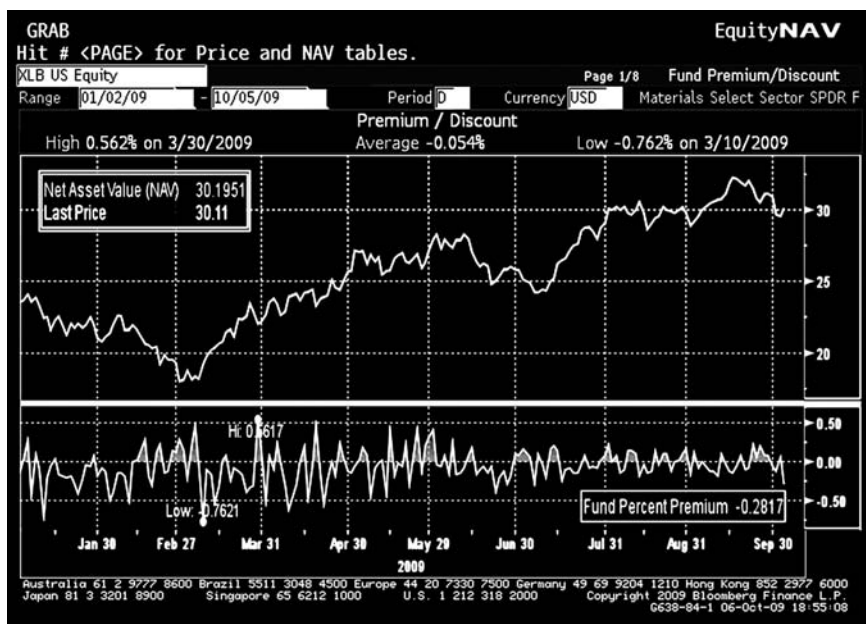
If there are extraordinary circumstances in one of the constituents of the ETF, then the fund can certainly trade out to a premium or discount. Perhaps a stock in the basket is halted at 1:00 p.m. This would not stop the ETF or the rest of the basket from continuing trading. When the NAV would be calculated at the end of the trading day, however, it probably would include the last traded price of the halted stock. In this circumstance, it would make sense for the ETF to be trading at a price away from NAV because it should



be trading with an expectation of where that stock will be trading when it next reopens, as opposed to the price it was at when halted. There also have been circumstances in exchange-traded products where access to the underlying has been restricted for some reason. In one recent incident, an ETP was forced to halt the creation function on the product because of holdings limitations of the underlying securities. This would naturally cause the fund to move to a premium. This is easy to understand if you think about the liquidity provider typically prevalent in selling ETFs to buyers, pursuing an arbitrage against the underlying constituents. At the end of that trade, the liquidity provider typically would go about the process of creating ETF shares to cover its short, flattening its position. If that process is unavailable, it loses the ability to unwind its short ETF versus long underlying position and therefore would continue to tie up its balance sheet. Another caveat to this example is that if there are holding limitations of the underlying, the liquidity provider would most likely need a proxy hedge as it too would be prohibited from increasing holdings, even to hedge. That becomes a more expensive and riskier trade, and therefore it would want a higher price before making a sale of the ETF. That higher price is not in absolute terms of the ETF but in relative terms between the ETF and its underlying assets. Hence the premium would develop unless large sell pressure developed in the ETF itself.

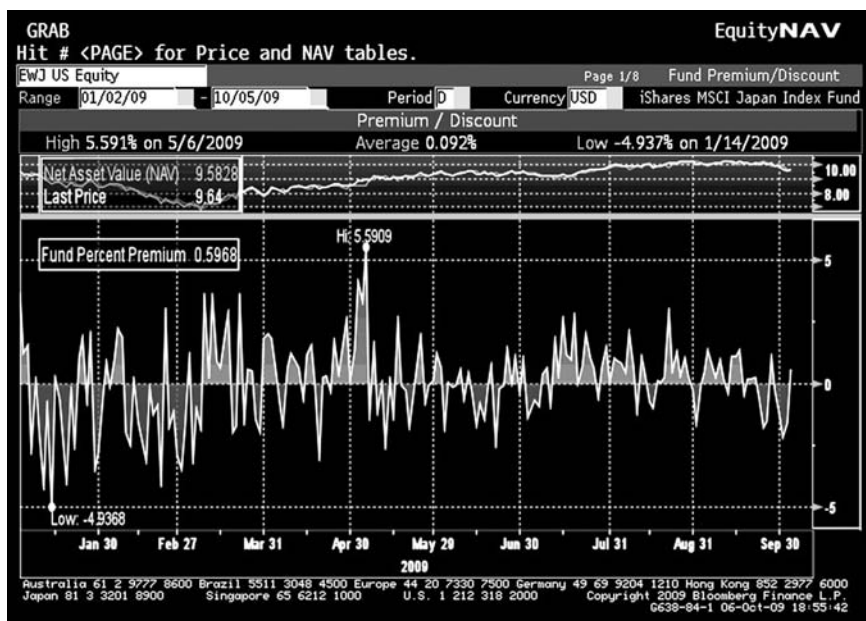
The characteristics of discounts and premiums are clear when you look at them over time. Exhibits 5.3 to 5.5 show three examples of discount and premium charts. Exhibit 5.3 represents the discount on a U.S. domestic sector ETF. Because of the reasons just discussed and the inability to trade an ETF and the basket at exactly the same time at exactly the close, ETF prices generally close right around their implied value but not always on NAV exactly. The typical discount or premium will revert toward zero every day when the fund and the basket start trading simultaneously again. You can see in Exhibit 5.3 that the discount and premium are almost always under  $\pm .5\%$  and are somewhat evenly distributed between premiums and discounts. This is the discount noise I mentioned that is the result of late-day trading.

Exhibit 5.4 shows the discount and premium chart for an ETF that has international underlying stocks that do not trade while the ETF is trading. In this case, the ETF is trading as a price discovery vehicle. The NAV of the fund is struck based on the closing price of the basket and a spot foreign exchange (FX) rate, which adjusts throughout the U.S. trading day. The closing price of the ETF at the end of the business day is then used as a comparison versus the stock basket close some 14 hours previously. And again, just to clarify, that closing price of the ETF includes the day's events and expectations for where the international market will open locally the next day. The pricing lag makes this discount premium chart relatively useless because it is not comparing apples to apples.



**EXHIBIT 5.3** U.S. Domestic Sector ETF—Discount and Premium Chart

Source: Bloomberg.



**EXHIBIT 5.4** U.S. Listed International ETF—Discount and Premium Chart

Source: Bloomberg.



**EXHIBIT 5.5** U.S.-Listed Closed End Fund—Discount and Premium Chart  
Source: Bloomberg.

Exhibit 5.5 shows the discount chart for a closed-end fund. The discount in the fund is large and fairly consistent, although the fund is composed of a basket of S&P 500 underlying stocks. Very few events will cause that discount to narrow dramatically. The ETF price is tied to the NAV on a daily basis via the creation and redemption process, and this keeps the price vacillating around NAV. There is no such tie to NAV for the CEF, leading to a more persistent discount or premium.

The CEF discounts are not always large discounts without any movement. In Exhibit 5.6 you can see the discount swings for a U.S.-listed CEF with a basket of international underlying stocks from India. You can see drastic swings in the discount from deep discounts to large premiums and back again. Rather than being short term, however, they tend to last for weeks and months as opposed to closing daily. With the introduction of ETFs that track similar baskets of international underlying components, the opportunities to trade the CEF and the ETF as a pair attempting capture discount and premium moves have increased.

The discounts and premiums just described offer some slight insights into the respective funds. If you are looking at a CEF, for example, with a large discount, it is not necessarily cheap, as that discount may be a



**EXHIBIT 5.6** U.S.-Listed Closed-End Fund with International Underlying Stocks—Discount and Premium Chart

Source: Bloomberg.

persistent characteristic. An ETF with international constituents trading at a 2% premium to its IIV may be considered rich by some but could also be considered cheap if it is late in the U.S. trading day and the market is up 5%. If an order to buy 100,000 shares of a U.S. ETF with domestic constituents came into the market at 3:58 pm and was filled at slightly above the basket value of the fund, you would potentially see a small premium number in the fund. This does not necessarily mean there is more buy pressure for the following day or that the fund is not working properly. It merely reflects some last-minute activity in the fund that had an effect on price without a correlating effect on the underlying basket. All of these discounts and premiums are related to the fair value of the fund. Let's take a look at how to calculate that value.

## **CALCULATING THE INTRADAY INDICATIVE VALUE**

Although the NAV is important for the calculation of prior end-of-day valuation statistics, the IOPV is critical for bringing you a step closer to the

actual trading value of an ETF during the trading day. It is important to distinguish what this number actually is for two reasons:

1. It goes by several different names.
2. At certain times during the day, it loses its relevancy because of trading anomalies as discussed previously.

The IOPV is also sometimes known as the intraday indicative value (IIV) or the indicative net asset value (iNAV). IIV is actually becoming the mainstream name because this is the one used for quoting conventions. The ticker quoting convention is IV appended to the ticker: for example, ETFIV or ETF.IV or ETF IV, depending on the system.

I have also seen this number referred to as the underlying trading value, a term that attempts to clarify what the number represents. What is important, no matter how you choose to refer to it, is that it is the number representing the most recent trading value of the assets of a creation unit. This number is designed to give investors and traders an almost real-time indication of the value of the assets underlying the ETF throughout the trading day. It is a tremendous idea that is unique to the structure of ETFs and is useful for ETFs with underlying baskets of stocks that trade at the same time as the ETF in the market. This number is typically published at a frequency of every 15 seconds, which is why I call it almost real time. (Some firms are starting to make the number available to clients in real-time form.) A lot can happen in 15 seconds that makes the number more relevant as a guide than a mandate. If the funds price has moved slightly away, it probably would be a function of delayed quoting frequency of the IV rather than an erratic movement in the ETF price itself. This number is calculated from the creation unit that is published daily by the ETF issuers using the estimated cash in the portfolio on a per-share basis and the last price of the underlying holdings.

The five steps for calculating the IIV are:

1. Use the CU to get the proper share quantities for each stock in the basket.
2. Multiply the last price of each stock by its representative share amount in the CU.
3. Sum the products to calculate total assets of the fund.
4. Divide this by the amount of shares per CU of the ETF.
5. Add to that the estimated cash value divided by the amount of shares per CU of the ETF.

$$\text{IIV} = \frac{\sum (\text{Shares per each component stock} \times \text{Last Price})}{\text{CU Shares}} + \frac{\text{Estimated Cash}}{\text{CU Shares}}$$

The IIV is the implied value of the ETF as calculated by the most recent trading prices of all the stocks in the basket. This value is calculated completely independently of the actual trading price of the ETF in the secondary marketplace. However, in a U.S.-listed ETF with a basket of domestic stocks underlying, those two independently generated values should trade in parity with one another because of the open conversion between the basket and the ETF. This is one of the core functionalities of the creation and redemption mechanism of the product wrapper and the one responsible for eliminating discounts and premiums. In many high-volume ETFs, a quote for the IIV and a quote for the ETF should be at parity with each other. Differences could be because of the time lag and other occasional structural nuances. Since stock (and therefore ETF) trading now takes place in microseconds, a lot can happen in between two separate 15-second quotes. Professional traders are not using published IIVs as a basis for trading. Most, if not all, desks that are trading ETFs are calculating their own IIVs based on real-time quotes in the underlying baskets that they are generating within their systems. They will see their own IIV calculation in real time so they can act on pricing at the same frequency as their competitors. I can only imagine what would happen if I were a liquidity provider and I asked a client who wanted a risk market in an ETF to wait 15 seconds for the quotes to refresh. Most likely I would hear the click of them hanging up the phone.

### Latency in the Published IIV



This brings up another point to understand about the IIV that is published on ETFs. It is strictly a last-price-based quote. The standardized published calculation of IIV is based on the most recent traded price of every stock in the underlying basket. However, this assumes that every stock in the basket is extremely liquid and has traded within its most recently quoted market spread. Every stock has a bid and an ask price, the bid being the price that someone is willing to pay for the stock and the ask price being the price at which someone is offering to sell. If a stock trades at 2:00 pm at \$10 and the market in general rallies over the next 15 minutes, but the stock does not trade, the new spread or the new levels where people are bidding and offering the stock could be \$10.10 bid and offered at \$10.20. But the IIV will be publishing a quote based on the last traded price of \$10. Because the trading community is using advanced systems to price and trade ETFs, the market for the ETF probably will be showing a level higher than the IIV quote. It is not a real premium; it is just a function of latency in the IIV quoting structure. If you calculated a bid/ask market for the IIV, you would see that the market for the ETF is based around where the market for the basket is now, not where it was trading at

some time in the past. This also serves well to highlight the occurrence of ultra-fast-moving quotes in the ETFs, which seems incongruous compared to the slower-moving quotes in the published IIV. Most ETF spreads are generated by automated systems that are calculating the underlying basket's values in real time and are keeping their liquidity quotes around the basket at all times. If a basket has 500 stocks, probably the bid or ask of one of the stocks in that basket is changing, creating a constantly moving underlying value. The change of the underlying value causes an adjustment to where the liquidity provider would buy or sell the ETF, so ETF quotes are constantly being adjusted regardless of whether the actual ETF has traded. This is discussed further in the section regarding high-frequency trading in Chapter 12.

I am confident that as the popularity of ETFs continues to rise and broadens beyond its initial institutionally dominated client base, the frequency of IIV quoting will increase to keep pace with the underlying marketplace. Third-party providers are developing more real-time versions of the IIV and beginning to distribute those numbers to users in various forms. This is not a technically difficult issue as much as it is a bandwidth expense problem.

When I was actively trading, I sometimes was surprised that many of my large institutional clients used actual ETF price quotes as a proxy for fund values. This led clients to question why liquidity provider prices seemed different from what the consolidated tape was showing at the time. They did not understand that the trading desk systems were working faster than the quotes on the exchanges at the time and had a better determination of real value than what was trading on the screens. I would be quoting prices based on where the basket was trading, representing the true ETF value; the quote screens had not caught up with those prices yet. With the increases in algorithmic trading, this situation has somewhat reversed in the most liquid of ETFs. Because of their frequency of trading, they can now serve as valuable proxies of value. This was not always the case.

### **EXCEL EXAMPLE**

The spreadsheet entitled Domestic ETF NAV\_IIV Model shows the calculated NAV and IIV for a domestic equity ETF. You can see how the basket and the required cash are interpolated into a basket market and an ETF price.

## TRADING TIP

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Sometimes it is more appropriate to use the IIV quote or the ETF market price for understanding true value. Here is a generic set of guidelines for looking at ETF price versus IIVs.

- For very liquid ETFs, ETF market spread (bid/ask) and last traded price is a good market value determination point because of the frequency of trading and the advanced systems of the participants.
- Low-volume U.S.-listed domestic ETFs. IIV is the best indicator available for pricing with the understanding that it is based on the 15-second lag. Typically the markets are very wide in these ETFs. You can piece together a decent valuation by looking at the IIV showing your last traded price of the basket and where the current spread is to get an idea of a proper valuation price. The last traded price in a low-volume fund is not a good reference point for a new order.
- Low-volume U.S.-listed international ETFs. For these funds you would be best off using the market spread and an estimated IIV (eNAV), which I discuss in detail in Chapter 6.

## CONCLUSION

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It is important to understand the different types of valuation mechanisms for ETFs, the nuances of each, and how to use them to get the best execution on your ETF order. For U.S.-listed ETFs with underlying constituents that are trading at the same time as the fund, the IIV should be on or close to the ETF price, and under normal circumstances premiums and discounts will be arbitrated away. The IIV is a base of almost real-time valuation for the ETF, which is unique to the ETF wrapper, as mutual funds and closed-end funds are priced either once a day or periodically throughout the month.

In the next chapter we turn our attention to U.S.-listed funds with international constituents. The information, however, will be relevant for any ETF with an underlying that is difficult to trade or is not trading at the same time as the fund itself.



## ETFs with International Constituents

**M**any of the same valuation concepts of exchange-traded funds (ETFs) with domestic constituents apply to ETFs with international underlying stocks as well. The main differences are functions of the timing and the currencies. If the underlying constituents trade in a time zone different from the ETF, the intraday indicative value (IIV) will remain constant for the equity portion but will change based on a relative spot foreign exchange (FX) rate. In this chapter I cover the concepts of calculating net asset value (NAV) and IIV of international equity funds. I look at ETFs with international constituents in terms of what their prices mean to the markets and the effect they may have on global exposures within investor portfolios.

ETFs available with international underlying products are seen in the grid in Exhibit 6.1. These products represent approximately 27% of the ETF universe by AUM in the United States as of September 10, 2009.

This chapter will go over the calculation of NAV, IIV, and the estimated NAV (eNAV) for ETFs with international constituents. For U.S. investors seeking to diversify their portfolios by investing abroad, these funds are incredibly important. U.S. investors can now access investments that cover broad regions, such as emerging market small-cap stocks or specific countries, such as India or Japan. However, because of their diverse underlying components the funds present an additional valuation challenge to the ETF: understanding what the price in the market is saying. They also bring the additional risks of timing differences and currency exposure. By the end of this chapter you will be able to interpret whether the market price of an ETF with international constituents is rich or cheap and what that might mean for trading the funds.

**EXHIBIT 6.1** International ETF Categories and Assets (as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Global/International Equity	\$ 198,369,097,044	139	24.8%
Global/International Sector	\$ 18,210,216,508	74	2.3%
Totals	\$ 216,579,313,552	213	

Source: Bloomberg.

## INTERNATIONAL ETFs

### Calculating the Net Asset Value



The method of calculating the NAV for a U.S.-listed ETF with international constituents is very similar to the method used to calculate that of domestic ETFs. The calculation is done using the creation unit and the total cash and the amount of shares of the ETF represented by the creation unit. In addition, there is a currency conversion to bring the price back to U.S. dollars (USD) because the ETF is listed and quoted in dollars.

$$\text{NAV} = \left( \sum (\text{Shares per each component stock} \times \text{Last Price}) / \text{Currency Rate} \right) / \text{CU Shares} + \text{Total Cash} / \text{CU Shares}$$

Note: This is for currency rates in divisible form (e.g., at the time this chapter was written, the number of yen per U.S. dollar equals 95.30, so when you sum up the products of shares multiplied by price in yen, you then need to divide that number by the currency rate to convert it to a USD figure). Also, the currency rate for the NAV is struck at a specified and standard time every day. This is different from the spot rate that is used for the calculation of IIV, which is discussed later in the chapter.

### Currency Considerations

When calculating the NAV of an ETF with international constituents, there is a currency conversion to bring the NAV price into dollars. Because the ETF is

listed in U.S. dollars on a U.S. exchange, here and in the calculation of IIV the pricing of the assets is converted to dollars. The assets themselves, however, are held in local currency, and there is no actual currency trading done by the fund for the purpose of valuing the assets. The exception is trades done by the fund to account for corporate action changes, the conversion to dollars of dividends and other cash payments potentially received or paid by the fund. But in general, since the funds take in and disburse assets via the creation redemption process, which in most cases involves the in-kind delivery and receipt of shares, no currency transactions are necessary. The shares are received in and delivered out in their local currency and the ETF shares are delivered and received in USD. The issuers provide the timing of the standard rate used for currency conversions when calculating NAV. Although the issuers are not doing currency transactions in relation to asset changes, the brokerage community does have to transact in foreign currencies.

**International ETF Execution Example** Let's look at the case of a U.S. customer wishing to receive an NAV execution in a U.S. ETF with Japanese constituents. These are the steps for the facilitation:

1. The customer gives an Authorized Participant (AP) an order to buy \$2 million notional of ETF-INTL (a U.S.-listed ETF with Japanese constituents) at the official NAV.
2. The AP buys the basket of Japanese constituents at or as closely as possible to the close of trading the following day in Japan.
3. In order for the AP to buy the basket of Japanese shares, it has to borrow yen to pay for the stocks.
4. The AP then delivers that basket of stocks to the issuers' agent and receives the ETF.
5. The AP then delivers the ETF to the client, receiving U.S. dollars as payment.
6. The AP is now flat in equity/ETF positions but has an up-and-down position in currencies. It is long U.S. dollars, having received them from the customer, and short yen, having borrowed yen to cover its purchases of Japanese stocks. It will buy yen with the U.S. dollars to repay the loan and flatten its currency position.

The FX transaction of the AP is important because it will determine the price of the ETF to the customer. The customer will receive the USD ETF based on executions of Japanese underlying constituents, USD/YEN execution, and cash per creation unit. The official NAV of the ETF uses a standard accounting practice to determine the FX rate while a customer transacting through the underlying will receive a value based on an actual

FX execution. The AP will want to do its currency transaction at the same time as the fund so there is minimal price differential in the pricing between the customer and the ETF.

### **Timing of Creations and Redemptions**

An important difference between funds with domestic or international underlying constituents is the timing of NAV-based trades. If you are looking for an NAV-based price on a fund with domestic constituents, you will be able to place an order during the ETF's market hours and receive a fill on that order during the same trading day. If it is an order benchmarked to the official NAV of the fund, you will receive an ETF price that is equal to the closing price of the stocks in the basket plus the cash in the fund, all priced as of the same day. This is impossible in an ETF with constituents trading in a different time zone. In this case your pricing will probably be based on next-day execution. Let's use Japan again as an example to describe this process and compare it to a domestic ETF.

**Comparing a Domestic and International Execution** Starting with the U.S. fund, the time frame of order placement and execution would be as follows:

1. During the U.S. trading day (subject to various timing restrictions), place order with an AP to buy \$10 million notional of ETF-US at NAV.
2. Before the close on the same day, the AP will send a market on close (MOC) order in each of the constituent stocks.
3. Just after the market close, a report will be issued based on the closing price of the stocks in the basket and the estimated cash in the ETF. The following day an adjustment will be made to account for the small difference between total cash in the fund and the estimated cash number published previously.

Now let's look at an example of the timing of a similar purchase of \$10 million notional of ETF-INTL at NAV, which has a basket of Japanese constituents:

1. In theory, anytime before the close of trading in Japan, a customer can place an order with an AP to buy \$10 million notional of US listed ETF-INTL at NAV. Note that if you are interested in an NAV-based price of the ETF with Japanese constituents, you should not be limited to U.S. trading hours for placement of that order, since because of the timing you are not actually trading during the U.S. market session. If you make the decision to buy today at 1:00 pm, for example, the order will not be executed until the market on close in Japan on the next Japanese trading

day. It is beyond the scope of this book to go into specific global market regulations on closing price calculation methodologies; you must discuss that with your broker in advance.

2. The AP will place the order to buy in Japan based on local MOC regulations.
3. On the U.S trading day that follows the close in Japan, you will receive the execution price based on the closing stock prices in Japan and the total cash in the fund.

### **TRADING TIP**

Fund issuers place restrictions on creation and redemption times on APs to facilitate processing of those orders. These timing restrictions are essentially for the APs and are actually less relevant for the client in terms of executing flow. If you can contact an AP's international trading desk and give an order in an ETF for it to execute using the international basket, in many cases it will be able to handle it regardless of what the times were for creations and redemptions. On the back end, to facilitate the flow, it will end up with a long or short ETF position and the corresponding basket position; the desk will then use the creation and redemption process to clean it off their books.

When trading a fund with international constituents from multiple countries in an NAV-based transaction, you will be subject to the various closing times on the following trading day. The fund's prospectus will list the timing convention of the pricing of the currency. Remember that a U.S.-listed ETF based on international underlyings has inherent FX exposure. This means that even if the prices on all the stocks in the underlying basket do not move, and the currency moves between your purchase and sale dates, then the USD price of the ETF will move. You will have either a profit or loss on the position.

Transacting in various international underlyings will expose you to local regulations and potentially added costs. In some of the more regulated international markets, the ETF may have certain restrictions on timing of creations and redemptions and the ability to source local liquidity. Also, within the NAV-related price of the international ETF, there might be embedded fees, such as stamp taxes and additional broker costs, which the AP must recoup for transacting in those local markets. Be aware that these extra fees will also show up in the ETF spread while it trades during U.S. hours. All of these expenses and nuances are built into the ETF spreads that liquidity

providers make. For instance, liquidity providers that are using the creation and redemption mechanism to do types of arbitrage or source liquidity in the underlying basket will have to pay these fees. They will then reflect them in the pricing of their spreads. It is important when pursuing executions based on NAV in international-based ETFs to speak in detail with the executing broker to understand all the various charges that will be involved and the timing of the transactions.

### TRADING TIP

If you want to hedge the FX exposure and just isolate your performance to the stock moves, you can either do an opposing FX transaction or use the currency ETFs for hedging or better tailoring your position. That is a benefit of the existence of currency ETFs. They give you the ability to potentially hedge out your currency exposures in an international-based ETF by isolating the stock price moves. This would be done from the long side with a long position in the ETF with international constituents and short the respective currency ETF in the notional amount of the exposure. Alternatively, you can isolate your international exposure to the currency itself by just positioning in the currency ETF without any exposure to actual underlying equities. For example, if you are long an ETF with Japanese local constituents, you are inherently long yen exposure versus the USD. If the dollar strengthens against the yen, the U.S.-listed ETF will lose value in dollar terms even when the underlying equity prices do not move. To hedge against such FX exposure and thereby isolate the equity (or currency) exposure, a long holder of the ETF would either sell yen in the spot FX market or sell one of the available currency ETFs. If, however, you are just buying the fund to achieve some expected performance in the currency, you can just purchase the currency ETF directly, isolating your position away from any equity exposure. There will be different concerns and advantages to using each method.

### Intraday Indicative Value and the Estimated NAV



Understanding the intraday value of a U.S.-listed ETF with international constituents is somewhat more complicated than its U.S.-based counterparts. The timing of when the basket is trading and the fact that it is not trading at the same time as the

ETF is makes it far more complicated to value. It is critical to understand that a U.S.-listed ETF with international constituents is trading in the market as a price discovery vehicle. It is acting as a mechanism that estimates where the underlying basket will be trading when it begins trading at the local market open. This is quite different from a U.S.-based ETF, which is almost always trading in line with its underlying basket. Thus international ETFs will usually trade at a premium or discount to their IIV because there is no arbitrage mechanism available if the underlying markets are closed. The price is trading independently from that of the underlying constituents.

Based on the timing, the published NAV of an international fund in the United States will be seen on a one-day lag on most systems. Keeping with Japan as our example, last night's trading in Japan is not reflected in the NAV for a Japanese ETF that is published today. The NAV for the ETF will be officially published at the end of the U.S. trading day with the U.S.-listed ETFs. The IIV for that same fund, however, will be based on the most recent trading activity in the market. So the IIV on a fund with Japanese constituents in the U.S. morning will be based on trading activity in Japan that occurred during the trading day. This information is valuable for pricing the ETF only before the trading in the United States begins and as a basis for pricing the ETF during the U.S. trading day. It shows where the basket traded at the close of business in Japan, but significant events since then may now be influencing the price of the ETF. There is no real-time arbitrage available between the ETF and its underlying basket during the hours the ETF trades, so the two prices will move independently of each other and most likely during different time zones. One will be representing the most recent close while one will be representing expectations for the next morning's open.

## TRADING TIP

What causes the IIV of an ETF with international constituents to move during the U.S. trading day?

Unlike the NAV, which has a fixed currency rate for the conversion, the IIV does not. The currency rates are moving constantly, and the IIV is reflecting changes in those rates as they apply to the underlying basket. During the U.S. trading day, the IIV calculation is showing where the basket of international stocks most recently traded/closed converted to dollars at the currency spot rate.

The best way to determine what would be a proper valuation for an ETF with international constituents that is trading in the U.S. market would be to make an estimation of sentiment and market movements at the time of trading based on some proxy assets. I call this the calculation of estimated net asset value (eNAV). Estimated NAVs have been used to value closed-end funds (CEFs) for many years prior to the invention of the ETF. Estimated NAVs attempt to estimate what factors would have an effect on the value of the underlying basket and build those factors into a new price estimation of the basket itself. This used to be important in the CEF world because only weekly or even less frequent NAVs were published. If you knew where the basket was on Friday and it was Wednesday, in order to have an idea of where the right value for the CEF was, you would want to create an estimated change value to apply to the last known NAV. That would be the generation of an eNAV value. It is interesting that you can purchase eNAV values for CEFs, but currently no providers are selling them on ETFs for consumption by the investment community. This limits eNAV availability to the players with the resources to build the systems to calculate those estimating factors. At the moment the client base is mostly using market pricing to evaluate ETF prices, which is dependent on other participants' valuations.

There is currently an arms race in the process of calculating eNAV because it enables traders to price larger blocks of ETFs on risk into the marketplace, capturing order flow, commissions, and spreads in the process. This causes trading volumes to expand because there are so many different variables and combinations of events that can affect any one set of international constituents. There is no standard valuation for the eNAV; the process is subjective, and those differences of opinion are what make international ETFs valuable as estimates of future pricing.

A basic formula for calculating an eNAV:

$$\text{eNAV} = \left( \sum (\text{Shares per each component stock} \times \text{Last Local Price}) / \text{FX rate} \right) \times (1 + x) / \text{Creation Unit Shares} + (\text{Estimated Cash} / \text{Creation Unit Shares})$$

where  $x$  = the expected percentage change in the underlying constituents.

In this formula, the variable  $x$  will be generated based on some set of correlating proxy assets. Also note that this formula is using estimated cash because it is attempting to formulate the real-time approximation of the value of the ETF. There is rarely a need to estimate actual NAV because it will be published on a backward-looking basis using the closing prices



of the constituents and the total cash. When creating an eNAV for the approximation of fund value, you would use the estimated cash in the fund, which would approximate what would be required in doing a creation or redemption at the next available time.

**EXCEL EXAMPLE**

The spreadsheet entitled International ETF NAV\_IIV Model shows the calculated NAV and IIV for a U.S.-listed ETF with Indian local constituents. You can see how the basket and the required cash are converted and interpolated into a basket market and an ETF price.

**PROVIDING LIQUIDITY**

The process of making markets, or providing liquidity, in an ETF in which the underlying is not trading at the same time as the ETF is very different from doing so for the domestic version. In the example where the customer is a large buyer of the Japanese ETF, the liquidity provider will then sell the ETF to the customer. At that point, the liquidity provider (LP) will be pursuing one of two goals: either purchasing shares of the ETF back in the markets at a cheaper price, or purchasing some predesignated hedge for its position. In a situation where the ETF and the basket trade simultaneously, the LP would buy the basket to be perfectly hedged. This situation is represented in Exhibit 6.2.

At a later point, the LP would potentially create the shares in the ETF, flattening its position and clearing its balance sheet.

In this case, the basket is not trading simultaneously with the ETF, and the LP is going to rely on the eNAV and the correlated hedge to reduce its exposure. Even with a great hedge, however, the process of unwinding the



**EXHIBIT 6.2** ETF with Domestic Constituents—Hedged Position

The ETF and basket position can be collapsed via the creation/redemption mechanism.



**EXHIBIT 6.3** International ETF—Correlating Hedged Position  
The ETF and correlated hedge cannot be collapsed.

position is not as simple as creating the ETF at the next opportunity. In this example the LP has sold the ETF to the customer and put on a position that correlates to the ETF and trades during the same trading hours as the ETF. This can be seen in Exhibit 6.3.

Unlike in the domestic position, this position cannot be flattened via the creation and redemption mechanism. If the LP decided to do a creation of the ETF to try to unwind its short position, it would just end up with a short position in the creation unit, as can be seen in Exhibit 6.4.

Since the creation and redemption mechanisms are based on the in-kind transfer of one asset for a basket of other assets, they represent the same exposures. Since the correlating hedge is not the creation basket, the position is not flattened via the creation and redemption mechanism. This process can be utilized to gain access or switch positions between the ETF and the underlying basket if that is a more advantageous position.

There are some exceptions to these situations with the most prevalent being the cash creation and redemption of certain ETFs. In certain circumstances the AP is able to deliver or receive cash in exchange for receiving or delivering the ETF. This can be the case if the country of origin underlying the ETF has restricted trading privileges. In this situation, the LP could be selling the ETF and buying a correlating hedge during the day, and then at the end of the trading day it could potentially unwind its hedge and take the risk between our market close and the close of market in the respective country. At that point, the LP would do a creation in the ETF, delivering cash and receiving ETF shares to cover its short position. This can be done in a variety of ways and is really a function of trading in the various markets. It is no longer pure arbitrage between an ETF and its underlying basket.



**EXHIBIT 6.4** International ETF—After the Creation  
After doing a creation of the ETF, you are left short the basket versus the hedge.

The combination of the variability of an eNAV calculation, the confluence of many different users, and the arbitrage mechanism of the ETF structure have combined to help make some of the international-based ETFs very popular products within the trading and investment community. Compared to the arbitrage mechanism in ETFs with domestic constituents where the main drivers are speed and financing, ETFs with international constituents require global systems and a sense for trading. A firm will be willing to go only so far on the faith in its automated correlation hedge before it is no longer willing to take risk. In the market dislocation of late 2008–2009, there were tremendous opportunities in ETFs that traders were able to pursue and benefit from. All the while they were providing liquidity in the ETF wrapper and bringing the discounts and premiums back into line when possible.

### **Note about Premiums and Discounts**

Premiums and discounts in relation to IIV of an international ETF are a very valuable tool for understanding what might be happening in the markets. They generally are the result of the underlying basket being closed, so the pricing includes speculation on where that basket will be at the open of the next trading session. Thus, in relation to CEF premiums and discounts, which typically are longer term and involve more than short-term market perceptions, international ETF premiums and discounts can represent a potential additional opportunity or even an added cost to trading. If you want to buy ETF-INTL based on Japanese underlying stocks and that ETF is trading at a 4% premium to its IIV because of some positive news event, you can either pay that premium during the U.S. trading hours or wait until the Japanese markets open and have a LP source the ETF liquidity from the underlying constituents. If the underlying stocks only open 2% higher than where they closed and you can buy your basket, you were able to save 2% versus the estimate of where those stocks were expected to open. When you are executing via the local underlying shares, you are trading at the implied NAV price of the ETF, avoiding any movements based on sentiment and news. In a sense there is no correct price for ETFs with closed constituents; they are trading without a true fair value reference point. The spreads that are present in the market include the risk that LPs are taking in terms of their correlation hedge breaking down before they are unable to unwind the position. As an investor, in order to avoid paying for that risk and also to avoid paying for possibly faulty market expectations, it is best to try to execute order flow utilizing the baskets when possible. Building your own price and valuation model and trading at your calculated limits is also a good method for achieving execution.

## CONCLUSION

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International ETFs are moving swiftly along the volume and asset growth curves. They have been in the markets for a long time but there is still an opportunity for further evolution. Although many different types of investors have become more comfortable with this product and find more uses for it, more issuers are finding ways to launch products based on niche underlyings that are continually opening up the world to ETF investors.

International ETFs are giving investors the ability to achieve exposures in different countries, regions, and sectors prior to their markets' opening, in a more efficient and liquid environment than any previously listed investment products. These ETFs are giving investors easy exposure to areas that previously could not be accessed, such as some emerging market countries that typically require investor identification and local registration, along with prefunded trading and advanced clearing agreements. This has opened a whole new world up to both international asset managers and retail investors alike.

Another added benefit of these listed international ETFs is their unique and transparent structure, which allows liquidity providers to define risks, giving them the ability to hedge, even if with a proxy vehicle. Just as options pricing mechanisms added a quantifiable dimension to option trading, ETFs have similarly changed international trading. Their structure allows LPs to commit more capital and make larger risk markets on international exposures during the U.S. trading day, which is being supported by an explosion of volumes and investor assets. Volumes have become so expansive in some products that spreads and size available surpass that typically available in the underlying market.

The equity-based ETFs are far and away the largest category of ETF assets. Every player in the investing world is now utilizing these products where applicable in their portfolio. And the ideas for new coverage areas and new ways to use the products are expanding daily. Throughout the remaining chapters in Part Two we explore the many other types of products that are becoming available in the world of exchange-traded products. It was important to focus on valuing the equity products first because they are the basis for many of the products we will encounter, whether they are currency or fixed income or commodity based. And the basic tenets of calculating the values of the ETFs for trading and execution purposes are consistent with what we have discussed in this chapter.

## Fixed-Income and Currency ETFs

**E**xchange-traded funds (ETFs) were firmly entrenched in the investing landscape by the early 2000s. They developed a strong following in the hedge fund and institutional communities as a cost-efficient way to access a broad range of exposures and to hedge portfolios and manage cash.

Regulatory delays held back the launch of the first fixed-income ETFs in the United States until 2002. The initial fixed-income products met with reasonable success in the marketplace. As SEC restrictions have eased, the array of products has grown dramatically. There had already been strong demand for fixed-income products in the closed-end fund wrapper. Fixed-income ETFs are growing rapidly to compete against those products and create another alternative to mutual funds.

The growth of the currency ETF market has followed a similar path in that regulatory hurdles have had a significant impact on the products available. The first U.S.-listed currency ETPs did not reach the market until 2005. In fact, because of regulatory hurdles, the initial currency products were grantor trusts and partnerships. These products are not investment companies and therefore avoided the lengthy SEC review. ETFs covering currencies did not make their debut on U.S. exchanges until 2008. The success of some of those products will be a test of structure over first-mover advantage. As I mention at other points in the book, first-mover advantage has always proven to be very strong in the exchange-traded product (ETP) market. Typically there has to be some true differentiating factor for a fund to succeed where another fund is already present offering a similar exposure. It could be a different fee range or diversity of underlying or some other differentiating factor. In the case of the currency ETFs focused on developed market countries, structure (ETF, Grantor Trust, and Note) is the differentiating factor. Only time will tell if the investing public deems one structure to be better than the others. Currency ETFs offering exposure to emerging market currencies were launched within months of comparable alternatives and also offer distinct structural differences.

While fixed-income and currency products came late to the ETF party, their growth has been notable in the milestones achieved in so short a time frame. The rapid growth in the fixed-income funds has attracted the attention of some major liquidity providers and institutional investors, which currently are developing trading strategies and technologies to get more involved in this asset class. Exhibit 7.1 lists the important developments in fixed-income and currency ETFs.

The fixed-income and currency funds as a group make up only about 15% of the overall assets in the ETF universe as of January 2010. That 15% is overwhelmingly dominated by fixed-income funds. The currency funds as a group currently compose only a small fraction of overall ETP assets. I would attribute this to their late entrance to the ETF world and to the somewhat heavier educational requirements of the product suites. Currencies in particular do not traditionally have the heavy retail-dominated client base that has been driving a lot of the growth of the ETF industry recently. Continuing to educate investors about the benefits of noncorrelating asset classes and the uses of currency products alongside or instead of foreign equities will help those product sets to grow over time. The initial currency products focused on the most widely traded currencies outside the U.S. dollar, typically referred to as G10 currencies. The newer products are helping investors access a broader universe of currencies, including emerging markets, and achieve more of an investment theme in their currency exposures. Exhibit 7.2 shows the number of funds and assets currently available in the fixed-income and currency categories.

**EXHIBIT 7.1** Timeline for Developments in Fixed-Income and Currency Exchange-Traded Products

Date	Event
26-Jul-02	Launch of the first U.S. fixed-income ETFs
26-Sep-03	Launch of the first broad-based fixed-income ETFs
5-Dec-03	Launch of the first TIPs ETF
12-Dec-05	First currency ETP (grantor trust)
18-Sep-06	First strategy and multicurrency ETP (partnership)
16-Mar-07	Launch of the first mortgage-backed securities ETF
10-Sep-07	Launch of the first municipal bond ETFs
5-Oct-07	Launch of the first international bond ETF
1-May-08	Launch of the first leveraged bond ETFs
14-May-08	First currency ETFs—single currency
6-May-09	First multicurrency ETFs

*Source:* Bloomberg, sponsor press releases.

**EXHIBIT 7.2** Fixed-Income and Currency ETF Categories and Assets  
(as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Currency	\$ 6,783,055,150	20	0.8%
Fixed Income	\$ 109,486,445,610	92	13.7%
Leveraged/Inverse (FI & CCY)	\$ 5,395,958,504	10	0.7%
Totals	\$ 121,665,459,264	122	

Source: Bloomberg.

In this chapter we explore the various nuances in the fixed-income and currency products. We take a look at the difficulties of calculating the intra-day indicative value (IIV) in the fixed-income funds and the unique requirements of wrapping a fixed-income product into an equity-style wrapper. We then switch over to the currency products and look at the characteristics of the various structures available. We look at how those exposures are achieved and how they trade.

As two of the largest asset classes in the global investing arena, there is a tremendous amount of potential growth for fixed-income and currency ETFs. They are very new to the ETF wrapper and have only just begun to develop their potential. A long list of products is scheduled to launch in these categories over the next year, and I expect that the assets will continue to grow significantly.

## **FIXED INCOME**

The fixed-income market had been in the sights of ETF issuers for many years before they were launched. The race to launch the first fixed-income ETF pitted Barclays Global Investors against a small start-up, ETF Advisors. After years of development, the initial launch of four ETFs under the iShares brand included three Treasury ETFs and one ETF comprised of investment-grade corporate bonds. ETF Advisors followed a few months later with four Treasury products focusing on key Treasury benchmark securities. As has been mentioned, the first mover is always in an advantageous position in the ETF world, and eventually ETF Advisors succumbed to its late arrival in the market and liquidated its ETFs in 2003.

When a generic listing standard for ETFs was passed, the time frame to launch new funds shrank dramatically. Many of the fund filings had been

with the SEC for years. Sponsors adapted the traditional in-kind creation and redemption process to address the unique needs of various fixed-income sectors.

With the exception of the corporate fund, the initial fixed-income ETFs all incorporated representative sampling and optimization in tracking their benchmark with duration being the leading consideration. There were only six fixed-income ETF listings from 2003 to 2007. But more than 70 fixed-income ETFs have been launched in the two years that followed.

Let's take a look at some key differences in the ways that the fixed-income and currency markets function in comparison to the equity markets. They embody many of the obstacles that these funds have to overcome when listing in an equity-style wrapper.

### **Key Differences in the Fixed-Income Markets**

**Pricing Is Different** Fixed-income markets are over-the-counter markets. There is no official open or close and no exchange-based official pricing center. Trading desks price their own portfolios of bonds at the close by polling multiple sources to determine a fair valuation. Mutual funds often rely on several sources for final valuation. If you ask multiple market participants for the closing price on a particular 10-year Fannie Mae note, for example, you can potentially get several different yet close answers. The variability of marked prices for a given bond as well as the spread between bid and ask prices is inversely related to the liquidity of the bond. On-the-run Treasuries are some of the most liquid securities in the world. They will show limited variability in closing prices between vendors and feature minuscule bid-ask spreads. A high-yield corporate bond, however, that trades infrequently will have estimated values that could differ greatly between pricing venues.

This over-the-counter structure and lack of official pricing initially made it difficult to build ETFs around. ETFs typically require final closing prices to generate the net asset value (NAV), similar to a mutual fund, but also need an intraday estimate on the value of the fund (IIV). Product designers were forced to adapt to a dramatically different world without exchange pricing.

**Bonds Are Not like Stocks** Common stocks represent a percent of ownership of a public company, and the value fluctuates with the supply and demand on the transparent exchanges. Bonds are debt instruments with an interest rate component, set stated maturity, and unique payout structure. One issuer can have several different types of bonds with varying components and varying values. The prices are set by the pricing source the trader



chooses, and the trader does not have the benefit of the consolidated tape the equity market provides.

Unlike shares of common stocks, no boilerplate structure or valuation method applies across the wide variety of bond sectors. Treasuries, corporate, mortgage-backed, and municipals and other fixed-income sectors all face unique risk factors. Interest rate risk is a common factor to all fixed-income securities, but sensitivity levels differ wildly. Specialization among the fixed-income sector is common and almost essential in the trading and investing arena.

**Market Sizes Are Different** One of the starkest differences between the fixed-income and the equity markets is the typical size of a trade. The fixed-income markets are dominated by the institutional trading community whose sizes are generally large and in round lots. The market participants are not used to or set up to facilitate the small-lot trading sizes that might be required in an ETF creation or redemption.

The beauty of the ETF structure is its ability to bring this mostly institutional trading arena to the smaller institutions and individual investors. The creation units of fixed-income and currency funds try to bridge the gap between the large players in the underlying markets and the smaller players in the ETF markets by shrinking the balance needed to provide liquidity. There is a delicate balancing act among issuers trying to keep the creation unit size small, investors wanting a broad-based exposure to a sector, and the fixed-income and currency markets not being extremely accommodating to small-size trades. Creation unit size is very important in ETFs for helping clients to achieve liquidity in the products. If the size of a creation unit is very large in a fund, it is hard for liquidity providers (LPs) because they will have potentially large residual positions on their balance sheet. Keeping the creation unit size small enables LPs to clean up residual positions via the creation and redemption mechanism. The odd-lot trades within a typical equity basket are not an issue because of the traditional small-lot size prevalent in that marketplace. The odd-lot bond and currency positions that can be generated from the creation and redemption mechanism are a completely new animal in the fixed-income and currency worlds. Beyond simple market differences are those of the traders and other market participants.

**Building a Trading Bridge** Fixed-income arbitrage has been described as hedge fund and fixed-income proprietary desks picking up nickels in front of steamrollers. The larger bid and ask spreads and the occasional noticeable premiums and discounts that occur on many of the fixed-income ETFs would

suggest that currently many of those nickels are getting flattened. This is because of the fundamental differences between stocks and bonds and fitting one asset class into the wrapper of another.

Fixed-income and currency ETFs are basically equitized derivatives of the underlying alternate asset class. The final product fits nicely into the platform of investors, but trading and hedging the individual components has created a steep learning curve for the community of ETF LPs. Several of the differences between the asset class trading communities act to highlight why these ETFs trade so differently in the marketplace:

- **ETF trading desks are typically equity traders.** The ETF trading community largely grew out of the equity derivatives desks of Authorized Participants (APs) and specialist communities. Only a few of the trading professionals have a strong fixed-income background.
- **ETF traders are from Mars, fixed-income and currency traders are from Venus.** The rapid growth in product variability offered in the ETF marketplace has presented an interesting situation for the standard APs. The ETF desks primarily have equity backbones, and they are now involved with products that ordinarily trade in very separate and distinct areas of their firms. It was not uncommon just a few years ago at the large investment banks to have minimal or no interaction between the ETF/equity traders and their counterparts in fixed-income and foreign exchange (FX). Now client demands make collaboration a necessity. Divisions had to come together to coordinate hedging and means of providing liquidity across asset classes. If arrangements within a firm could not be made, LPs have sourced the functionality from competing firms in order to facilitate flow in the products.
- **Equity systems do not typically handle bonds.** Many ETF trading desks operate using systems designed for equities. Many fixed-income portfolios and currency positions are tracked and hedged using applications specifically designed to handle their nuances. Robust systems reduce operational risk and foster greater conviction in trading and thus liquidity. The growth of the products is driving a ramp-up in technology needed on the ETF desks to handle multiple asset classes and an enormous amount of underlying products for hedging and risk management purposes. Additionally, many of the available fixed-income ETFs utilize in-kind creation and redemption baskets. Properly trading fixed-income ETFs starts not only with building a model to estimate the IIV but also securing reliable pricing sources to feed that model. So while investor demand continues to develop in the ETF wrapper of this asset class, so does the LPs' ability to handle its nuances.

**TRADING TIP**

It is interesting that ETF traders have branched into the fixed-income and currency worlds and are utilizing their new access to make money between the ETFs and the underlying market. However, I have not seen a lot of crossover where currency traders and fixed-income market participants are watching the ETFs that cover their respective products and attempting to arbitrage away any spread that might appear. As the industry matures I would expect more multiproduct trading to happen and there to be a merging of the typically diverse systems used to trade the multiple products. It would only be natural, as volumes and sizes pick up, for fixed-income and currency traders to trade and manage risk in the ETF markets. This would bring further liquidity into the markets and tighten spreads, benefiting end investors. Currently, however, there are still sometimes opportunities for traders in these funds because of potential market inefficiencies.

**IIV and NAV Pricing Sources** There can be a high degree of variability in the trading frequency for certain bonds. Some bonds, such as Treasuries, trade frequently while other bonds, such as corporates, may trade only occasionally. This is an understandable attribute in the fixed-income world but somewhat unacceptable in the ETF world. In order to account for the fact that an ETF has to publish a daily NAV, matrix pricing has become the common method in ETF bond pricing. Matrix pricing is a method of valuing bonds using historical relationships and prices to estimate a current value for similar bonds. Matrix pricing groups bonds that have similar risk characteristics and prices them in a similar fashion.

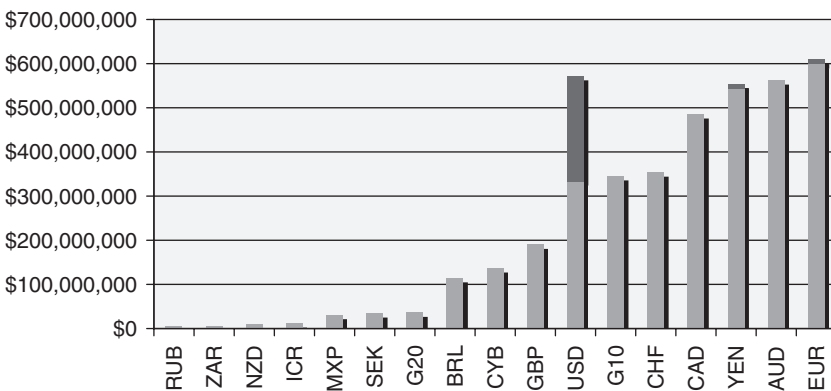
A variant of matrix pricing is also incorporated into the intraday pricing of the IIV for many fixed-income categories. For municipals and corporate bonds, spread relationships to London Interbank Offered Rate (LIBOR) often drive the algorithms until fresh market data can be incorporated.

In times of high market volatility, the level at which investors and traders would consider transacting in the underlying bond of an ETF can deviate significantly from the last trade data, indicative levels, or the matrix pricing approximation that is incorporated into the IIV. During the fall of 2008, complications with estimations of LIBOR, the basis for intraday pricing of many credit-specific ETFs, created an unforeseen level of uncertainty. While there was some short-term deviation from the underlying

values in the fixed-income ETFs, the return to more normal volatility levels has dampened these divergences. This is not a function of the arbitrage mechanism failing but a function of a lack of true liquidity and pricing transparency in the underlying baskets. Assembling in-kind fixed-income baskets, particularly more sensitive credit investments, often involves higher costs for ETF trading desks. In the over-the-counter market of fixed-income and FX, the ETFs based on less liquid underlying constituents are actually taking on the role of price discovery for their underlying assets. The pricing of the ETF as it is trading in the market can be used as a combination of the most recent valuation and sentiment of the underlying products that do not have a real-time price. This is somewhat similar to the function of ETFs with international constituents, which convey the market sentiment of markets that are closed. In this case, however, the ETF price will be discovering valuations of an underlying basket of less liquid securities.

## CURRENCY ETFs

Overall, currency products make up a very small portion of the ETF universe. As opposed to the commodity products, where there is currently one outstanding favorite product with a concentration of assets and many smaller periphery issues, the currency product assets are more evenly distributed. Out of the available 20 products in 16 categories, 55% have assets greater than \$100 million in the various funds offering exposures in that category. You can see the details of where the assets are in Exhibit 7.3.



**EXHIBIT 7.3** Currency ETF Assets: Combining Assets of Various Structures with Similar Exposures

Source: Bloomberg. As of 9/10/09.

## **Structure of Currency Products**

The first currency products came to the market in 2005 in the grantor trust structure, and the ETF structure was not launched into the marketplace until 2008. The currency ETFs are issued as registered investment companies (RICs) and are registered under the Investment Company Act of 1940. As registered investment companies, these funds have added flexibility in managing their underlying investments to shape their risk-return profiles. These funds have the protections characteristic of funds structured as registered investment companies, including:

- Diversified credit risk
- Limitations on leverage and lending
- Oversight of a board of directors
- Assets that are segregated and maintained with a qualified custodian

It is interesting to note that the currency ETFs came to the market under the actively managed fund exemption because they are not tracking indexes even though they are attempting to provide reasonably passive exposure to currency movements and non-U.S. money market rates. The benefits to this active management exemption are mostly in operational efficiency within the structure. Given their flexibility, the funds can alter their investment approach in delivering the desired exposure to shareholders. The FX markets are among the most liquid in the world, but access to locally denominated money market instruments and spot exchange rates differs between various regions. In a few developed markets, the currency ETFs take a direct approach, as they invest directly into locally denominated money market investments. As can be seen in Exhibit 7.4, this is a distinctive structural feature available for taxable investors in ETFs versus the earlier grantor trust products.

Only a few countries have local money markets with the combination of issuer breadth, development, and accessibility necessary for this direct approach to structuring funds. The currency ETFs providing exposure to less accessible markets utilize currency forward contracts combined with U.S. cash-type investments to manage and achieve their exposures. This combination produces a risk-return profile that is economically similar to that of a locally denominated money market instrument. In nearly all of the markets for which the ETFs use this approach, trading volume in FX is high enough to support product growth. Because of the liquidity of the underlying portfolios, which combine emerging market currencies with U.S. cash-type products, these ETFs typically feature bid-ask spreads narrower than many credit-specific fixed-income ETFs. Similar to the fixed-income

**EXHIBIT 7.4** Characteristics of Currency Fund Structures

	Currency Exchange-Traded Fund	Currency Grantor Trust	Currency Exchange-Traded Note
<b>Structure</b>	Actively managed registered investment company (RIC)	Unmanaged trust	Unsecured debt instrument issued by bank
<b>Underlying Investments</b>	Investments in money market securities; some use forward currency contracts	Foreign bank deposits	No underlying holdings
<b>Distribution Policy</b>	Variable	Variable	Variable
<b>Income Distribution</b>	If distributed, taxed at ordinary income tax rates	Taxed at ordinary income tax rates, even if no distribution	If distributed, taxed at ordinary tax rates
<b>Year-End Gain Distributions</b>	Realized gains on security sales (minimal expectations); realized and unrealized gains on derivatives (taxable in part as ordinary income)	Limited, potential foreign exchange (FX) gains	None
<b>Sales</b>	Gains taxed as capital gains; long-term capital gains tax rates if held for more than a year. Ordinary income tax rates if held for less than a year	Gains taxed at ordinary income tax rates	Gains attributable to currency fluctuations and accrued interest built into note likely to be taxed at ordinary income tax rates

*Source:* WisdomTree Asset Management.

markets, however, the currency markets are not accustomed to trading in the small size typical of newly launched ETFs.

Currently there are three main types of currency products available: ETFs, grantor trusts, and exchange-traded notes (ETNs). I mention several times that structure is going to be the new battleground where products compete with similar exposures. Nowhere is this more apparent than in the

currency products landscape. A look at some of the characteristics of the various currency structures available is shown in Exhibit 7.4.

**Nuances of the Currency Markets** Currencies trade 24 hours a day, but the volume in particular currencies is typically concentrated around the local market hours and trading times at the nearest of the three main trading hubs: Asia (Tokyo, Singapore, and Hong Kong), Europe (London), and the Americas (New York). Although futures exist on many currencies, the bulk of FX transactions occur in the over-the-counter interbank markets through spot transactions, forward transactions, and swaps. Tullett Prebon Group Inc., ICAP, and the WM Company provide commonly followed fixing times, but nearly every broker-dealer also provides fixing prices at other designated times. Real-time quotes are becoming increasingly available via Bloomberg and Reuters data services. For example, Bloomberg produces real-time composite quotes, while Tullett Prebon Group and others have real-time feeds for contracts on currencies available via Reuters and Bloomberg. The less liquid and less accessible the currency, the greater will be the variability in pricing. The general point is the fact that the currency market is an over-the-counter marketplace with varying times of liquidity and accessibility. The ETP issuer has the challenge of defining an IIV and creating an investment strategy using the currency and money market instruments to best serve the end investor.

### **IIV and NAV Pricing**

The main aspect of calculating the value in the currency funds is converting the assets in the fund into U.S. dollars because they are traded on a U.S. exchange in dollars. For a fund that holds either foreign currencies or money market contracts denominated in local currencies, you would calculate their value in dollars, add to that the value of any U.S. cash products, subtract other fees and expenses, and divide that by the shares outstanding to get to a value for the fund.

The main difference between the IIV and the NAV is going to be the time of the exchange rate conversion. Since there are no underlying equities, there are no closing prices that need to be converted. The NAV will use a standardized time and provider for the exchange rate conversion. When calculating the IIV, you would utilize the most recent spot rate or market in the underlying derivatives.

If you are looking at the funds in the grantor trust (ETV) structure, you would:

1. Convert the underlying currency holdings into U.S. dollars.
2. Add and subtract the relative accruals and fees.
3. Divide by the number of shares outstanding.

If you are looking at the currency ETFs, which invest directly into locally denominated money market instruments, you would:

1. Calculate the value of the underlying holdings in local currency contracts.
2. Add the current profit and loss on the underlying derivatives.
3. Convert this value into U.S. dollars at the current spot rate.
4. Add or subtract the value of any relative accruals or other expenses and fees.
5. Divide by the number of shares outstanding.

### **EXCEL EXAMPLE**

The spreadsheets entitled ETF Currency Products and Grantor Trust Currency Products show the calculated NAV and IIV for currency products. They also show the calculations necessary for interpolating the ETF prices into the currency rates.

If you are looking at the currency ETFs that utilize forward contracts, you would:

1. Calculate the value of the underlying investments in U.S. money market instruments, primarily government securities.
2. Calculate the value of the currency contracts.
3. Add the current profit and loss on the derivatives.
4. Add or subtract the value of any accruals or other expenses and fees.
5. Divide by the number of shares outstanding.

Some practitioners opt to focus primarily on the spot exchange rates in valuing the funds investing in local money markets, or the currency forward contracts in monitoring the funds that follow less accessible currencies.

**Structural Arbitrage** There are euro and Japanese yen currency products in both the ETF and ETV structure. This creates potential arbitrage opportunities between the two if there is a mispricing in one or both products. There are also differing tax treatments and slightly different management fees that open up some other potential trading opportunities. Trading desks around the Street are still trying to develop cross-asset class systems and



alliances to better take advantage of these opportunities as well as provide more liquidity.

### **TRADING TIP**

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If possible, align trading of the currency ETP with peaks in trading volume for particular currencies. This is when bid-ask spreads will be at their tightest. Trading in developed market currencies is active throughout any 24-hour period. The volume in Asian currencies (except for Japan) is more based around Asian trading hours, but relatively tight bid-ask spreads on the underlying components are still available in the U.S. morning. European and Asian currency trading in general slows dramatically after the London close in the late morning, New York time. Latin American currencies remain active through much of U.S. equity trading hours.

### **CONCLUSION**

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It is difficult to log a detailed view of fixed-income and currency ETFs into book form because the product set is evolving very rapidly at the moment. Several new entrants are gearing up to become competitors in the fixed-income space. I would expect that we will see a tremendous amount of asset growth in those products over the next decade. This will benefit the newer advisory and retail-based client base converting portfolios over to the ETF structure. As the use of these products expands in personal accounts and 401(k) plans, the fixed-income and currency categories will enter a stage of very high demand.

In the currency world, there is a whole new asset class for investing that has previously been hard to access for individual investors and advisors managing assets. Several new methods of accessing global currencies are converting to formats that are available to the investing public. Along with currency ETPs, there are ways to access some global currency markets via foreign bank accounts and electronic brokerage accounts. But for the investing public, I think currencies wrapped into the ETF structure will sit nicely within the broader portfolios and provide convenience as well as low-maintenance exposure.

The ETF structure, initially on equity products only, has taken a giant leap into alternate asset classes. It is trying to provide investors with easy

access to fixed income and currencies with the convenience of an equity wrapper that can be traded simply in a brokerage account. This leap of innovation is challenging the market participants to connect the equity divisions to all other trading divisions and share market knowledge, trading systems, and risk management systems. This challenge is being met with enthusiasm and gusto, but it will take time for these products to trade as efficiently as their equity brethren.

This is definitely the area I will be watching for expansion as investor appetite and familiarity, as well as liquidity provider coordination, catch up to what these products bring to the table. In Chapter 8 we explore some products that are even farther from the realm of traditional portfolio holdings. The leveraged and commodity product sets are changing the way investors look at portfolio management. We delve into the details of the products looking at many of their various nuances.

## Leveraged, Inverse, and Commodity Products

**T**he leveraged, inverse, and commodity groups of funds have recently been received tremendous media attention. The reason for this is that they have quickly become very popular products for use in the statistical arbitrage and investing communities. The products are very attractive for short-term tactical strategies and for use as short-term hedges without the need to roll futures. According to a recent report on leveraged products, “Leveraged ETFs represent only 5.1% of the ETF market by market cap, yet they have accounted for roughly 15%–25% of the dollar volume and 30%–45% of the share volume of the ETF market over the past several months.”<sup>1</sup>

The commodity funds have brought the individual investor access to both hard and soft commodities. Many of these products were never previously available for portfolio allocations on such a broad scale and are leading to changes in the way they are applied in the development of both large and small investment portfolios.

As of early January 2010, the combined assets of the commodity and leveraged products made up about 12% of overall U.S.-listed exchange-traded fund (ETF) assets. Exhibit 8.1 shows the breakdown of the funds in these categories, in terms of assets and number of available funds.

The basic mechanisms for calculating net asset value (NAV) and intra-day indicative value (IIV) and valuing these funds on a daily basis are similar to what was described in Chapters 5 and 6. In this chapter we discuss significant differences between these ETFs and examine performance and other distinguishing characteristics of these exciting asset categories.

### **INTRODUCTION TO LEVERAGED PRODUCTS**

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For advisors and independent investors, the ability to obtain leverage via equity products without using margin is very enticing. The question to be

**EXHIBIT 8.1** Leveraged, Inverse, and Commodity ETF Categories and Assets  
(as of 1/14/10)

Category	Assets Under Management	# of Funds	% of Assets
Commodity	\$ 69,209,918,140	29	8.7%
Leveraged/Inverse	\$ 29,010,808,888	129	3.6%
Totals	\$ 98,220,727,028	158	

*Source:* Bloomberg.

asked is whether the leverage being sought is for a short- or a long-term position. In the ETF marketplace, products available today are structured more to satisfy the former, by providing daily leverage on a wide variety of underlying categories.

Understanding what the term “daily leverage” means will help you use the products correctly to achieve your goals. The products are structured with the aim of providing two times, or even three times, leveraged daily performance, as compared to their underlying index. If the index is up 10% today, your performance in the ETF should be up 20% today. It is not easy to build leverage into a structure that trades on an intraday basis. In order for the product to achieve the desired multiple of performance versus the underlying on a daily basis, the products have to be reset to 100% exposure on the close of every trading day. What that means is that the leverage performance applies only to day-over-day price movements, not to the basis at which you entered into the trade. You are not guaranteed that multiple of performance versus the benchmark over a longer period of time. In this unique product design, the portfolio is essentially marked to market every night. It starts with a clean slate the next day, almost as if the previous day had not existed. This process produces daily leverage results. However, over time, the compounding of this reset can potentially vary the performance of the fund versus its underlying benchmark. This can result in either greater or lesser degrees of final leverage over individual holding periods.

All major research providers produce a tremendous amount of research on the ETF marketplace. They have all written detailed pieces on how these products work and the various effects of the leverage factors. I present a simplistic view of the subject in the hopes of making it more easily understood by the broad market. Leveraged products can play a very valuable part in a portfolio if they are approached with a proper understanding of the potential return results. Those results are a function of closely examining the product structure to understand what the potential holding performance can be and how that compares to your investment intentions.

I focus specifically on two important attributes of these products: the daily compounding and how it results in performance variation, and the potential ramifications of the rebalancing activity pursued by fund providers to maintain their leverage factors.

### **Compounding of Returns**

Daily compounding of leveraged long ETFs can result in increasing percentage gains in rising markets and decreasing percentage drops as markets are trending lower. If an index is rising for several days in a row, the trending movement is very important, as that will translate into ETF growth at a faster pace as the value of the index is increasing. For a long leveraged product, it will outperform its expected goals in a rising market and will underperform its expected goals in a falling market.

In Exhibit 8.2 we can see the data grid for a market that is rising at 10% each day for 10 days in a row. The index and the double-leveraged ETF tracking that index both started out at 100. As the market rose 10% on day 1, the index also rose 10% to 110, and the ETF rose two times 10% to 120. On the second day, from this new higher base the index rises another 10%, resulting in a gain of 10% of 110 to 121. At the same time, the two-times leveraged ETF will produce a gain of 20% on its new base of 120 to 144. The ETF is producing returns from a higher base after the first day's gain. You can see that every day the ETF is producing its anticipated return of

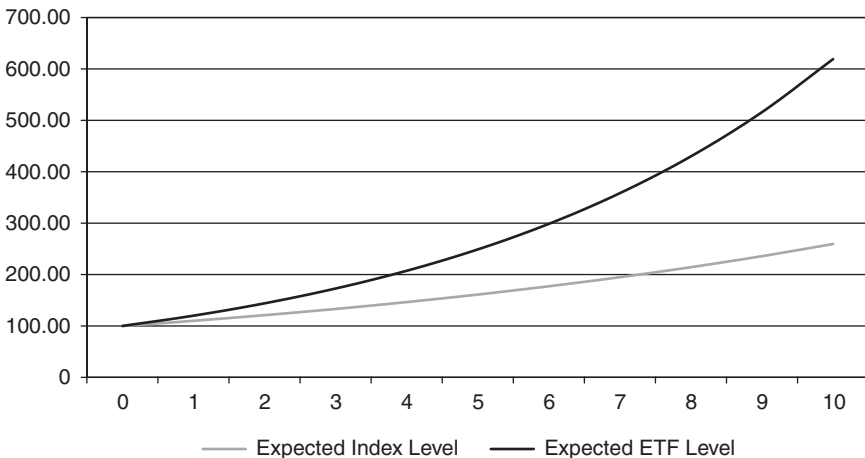
**EXHIBIT 8.2** Rising Market Data Grid—Market up 10% Daily for 10 Days

Days Elapsed	Daily Market Performance	Expected Index Level	Expected 2x Leveraged Long ETF Level	Daily ETF Performance
0	0.00%	100.00	100.00	
1	10.00%	110.00	120.00	20.00%
2	10.00%	121.00	144.00	20.00%
3	10.00%	133.10	172.80	20.00%
4	10.00%	146.41	207.36	20.00%
5	10.00%	161.05	248.83	20.00%
6	10.00%	177.16	298.60	20.00%
7	10.00%	194.87	358.32	20.00%
8	10.00%	214.36	429.98	20.00%
9	10.00%	235.79	515.98	20.00%
10	10.00%	259.37	619.17	20.00%
10-Day Cumulative Change		159%	519%	

20% as compared to the 10% gain of the index. In essence, the ETF is doing what it is supposed to do: produce results that equal two times the daily performance of the index. However, because of an increasing price, those gains are driving the value higher at a faster pace. On the bottom of the grid, I show the 10-day percentage returns on both the index and the ETF. It would be incorrect to expect the 10-day return of the ETF to be twice that of the underlying index because of the compounding as just described. In a market that is trending up because of daily compounding, you achieved a return of much greater than twice the index return.

Exhibit 8.3 shows the returns over the period graphically to present a visual understanding of what that performance will look like. You can clearly see the performance spread widening between the two benchmarks.

In Exhibits 8.4 and 8.5 you can see the grid and graphic depicting the opposite event. In this situation the market is declining at 10% per day for 10 days straight. (At certain points in late 2008 and early 2009, it felt as if that might actually be occurring!) In this example, as the index drops from 100 to 90, producing a 10% move of 10 points, on day 2 the down move will be 10% and only 9 points. The daily compounding of the leveraged ETFs will magnify this effect. While the ETF will be achieving a negative 20% move on a daily basis over the longer-term horizon, the compounding will result in a much less significant move downward than two times the index drop. In this example, with the index down 65% over the 10-day period, the ETF is down only 89% percent because it was losing progressively less in notional points every day. This highlights an important facet of returns on the leveraged products: the price of the product cannot move below zero.



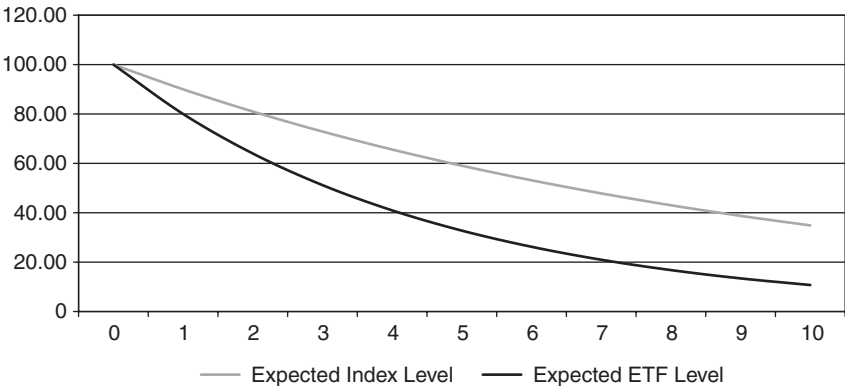
**EXHIBIT 8.3** Rising Market Chart—Market Up 10% Daily for 10 Days

**EXHIBIT 8.4** Falling Market Data Grid—Market Down 10% Daily for 10 Days

Days Elapsed	Daily Market Performance	Expected Index Level	Expected 2x Leveraged Long ETF Level	Daily ETF Performance
0	0.00%	100.00	100.00	
1	−10.00%	90.00	80.00	−20.00%
2	−10.00%	81.00	64.00	−20.00%
3	−10.00%	72.90	51.20	−20.00%
4	−10.00%	65.61	40.96	−20.00%
5	−10.00%	59.05	32.77	−20.00%
6	−10.00%	53.14	26.21	−20.00%
7	−10.00%	47.83	20.97	−20.00%
8	−10.00%	43.05	16.78	−20.00%
9	−10.00%	38.74	13.42	−20.00%
10	−10.00%	34.87	10.74	−20.00%
10-Day Cumulative Change		−65%	−89%	

As you can start to see in the graph in Exhibit 8.5, the value of the ETF will get closer to zero but will not reach it, and will not go negative. In this form of leverage you can only lose what you invested.

In Exhibits 8.6 and 8.7, you can see the results from a market that is range bound, although in a high volatility drift. The market is up 10% and down 10% alternatively for 10 days straight. This gut-wrenching movement would exacerbate the drag on a leveraged long ETF position. Although the movements are of equal size daily and the ETF is still achieving its daily two times return goal, it endures significant drag on its long-term performance.

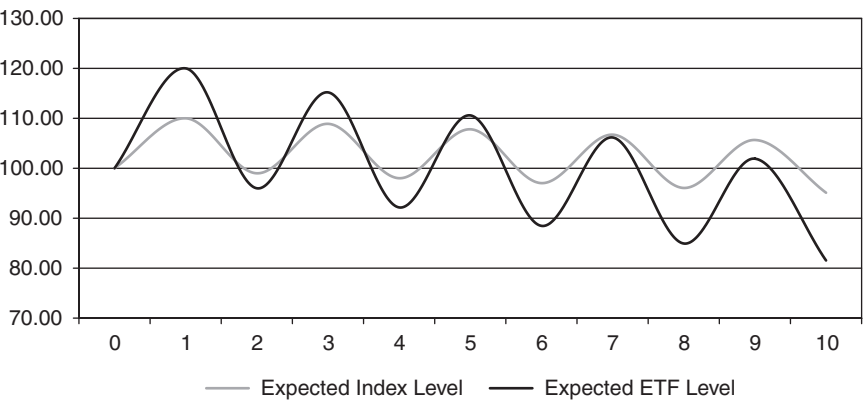


**EXHIBIT 8.5** Falling Market Chart—Market Down 10% Daily for 10 Days

**EXHIBIT 8.6** Flat and Volatile Grid—Market Up 10% and Then Down 10% for 10 Days

Days Elapsed	Daily Market Performance	Expected Index Level	Expected 2x Leveraged Long ETF Level	Daily ETF Performance
0	0.00%	100.00	100.00	
1	10.00%	110.00	120.00	20.00%
2	−10.00%	99.00	96.00	−20.00%
3	10.00%	108.90	115.20	20.00%
4	−10.00%	98.01	92.16	−20.00%
5	10.00%	107.81	110.59	20.00%
6	−10.00%	97.03	88.47	−20.00%
7	10.00%	106.73	106.17	20.00%
8	−10.00%	96.06	84.93	−20.00%
9	10.00%	105.67	101.92	20.00%
10	−10.00%	95.10	81.54	−20.00%
10- Day Cumulative Change		−4.90%	−18.46%	

These are the types of results that you can expect to receive if you hold a leveraged ETF position for more than a day. They demonstrate how there is a path-dependent function of leveraged ETF returns that will have a direct effect on their long-term return results. If your timing and positioning are correct, then this effect can be a benefit to your positioning, and if it’s not, they can be a drag on your portfolio. So an important risk to consider with



**EXHIBIT 8.7** Flat and Volatile Chart—Market Up 10% and Then Down 10% for 10 Days



these products is that you have to be correct on your market direction and your timing. You will need both to be correct to help position you when trends begin. These examples do not include slippage of the ETF versus its daily performance goal because of the use of derivatives beyond the use of the swaps, taxes, and other expenses.

**Performance Flip** Something else that can occur when a market is experiencing high volatility is referred to as a “flip.” A flip occurs when the returns in a leveraged ETF are the opposite of what they should be based on the returns of the underlying index. As an example, the investor has a position in a two-times-leveraged long ETF tracking the Standard & Poor’s (S&P) 500 index. If the index at the end of the measured time period has achieved a gain, the investor might expect the leveraged long ETF to report results that are close to two times that gain. However, it must be remembered that because of compounding, the results over time respond in a path-dependent fashion and results are a function of market volatility. At the end of the measured time period, if the ETF is reporting a net loss in terms of performance, that would be considered a flip with regard to return results.

### **Daily Reset to Provide Constant Leverage**

In order for the leveraged funds to achieve appropriate levels of assets so they can provide their implied leverage, they have to rebalance daily. They leverage up their exposure to assets to provide the desired returns. In the case of an ETF providing long two-times leveraged exposure, they would typically attain exposure to a notional of assets of two times their NAV. An example would be an ETF that takes in 100 units in assets that does a swap with a counterparty to provide exposure to 200 units in performing assets. The rebalancing activity of these funds will almost always be in the same direction as the market.

Let’s walk through an example of the required hedging activity for a long leveraged ETF. The initial index level in our example is 100 on day 0, as can be seen in Exhibit 8.2. In order for the ETF to achieve the two-times move versus the index, it would need exposure to assets equal to 200. If the index falls from 100 to 90 on day 1 (a 10% drop), the ETF’s NAV should drop to 80, while the exposure of the underlying assets also drops 10%, to 180. At this point, however, with the NAV at 80, the ETF only needs exposure to assets worth 160 to provide its required two-times exposure on the following day. This will facilitate the need for the fund manager to sell 20 units of assets to bring the underlying exposure to 160.

The result would be the same in an ETF providing leveraged short exposure. In Exhibit 8.8 you can see the results from a one-day move in

**EXHIBIT 8.8** One-Day Asset Change Results for Leveraged Long and Short ETFs

**Leveraged Long ETF—10% Market Drop**

Day	Index	2x Leveraged Long ETF	Assets Producing Returns
0	100	100	200
1	90	80	180

**Leveraged Short ETF—10% Market Drop**

Day	Index	2x Leveraged Short ETF	Assets Producing Returns
0	100	100	–200
1	90	120	–220

both a leveraged long and leveraged short ETF. The leveraged short ETF, in order to bring the levels of assets to the required short 240 to generate two-times returns for the 120 level, would have to short an additional 20 units of assets within the exposure vehicle.

There is a transaction cost to this daily rebalancing. There are potential negative tax implications, and there are the physical costs of trading the underlying notional amounts on a daily basis. Because much of the exposure is achieved via swaps, and the funds hold Treasury-like investment vehicles, some of those costs will be offset by the interest income generated.

## **UNDERSTANDING INVERSE ETFs**

The leveraged and inverse categories typically are combined primarily because like leveraged products, inverse ETFs use gearing to provide their expected returns. In the case of a normal inverse ETF, the gearing ratio will be –1, whereas with a leveraged short fund the gearing might be –2 or even –3 times. There are many more leveraged short products than products that provide inverse exposure. The inverse funds exhibit the same traits as the leveraged funds in terms of compounding and rebalancing, but those effects are muted because of the low gearing in the products. The effects are also dependent on volatility and will increase and decrease proportionally.

Essentially, like leveraged products, these funds hold swaps to achieve their exposure. A short S&P 500 fund would hold a swap, paying the returns of the index to the counterparty. If the index trades up on any given

day, the ETF would have to pay returns on the index to the counterparty, causing the value of the ETF to decrease. If the index trades down, the ETF would be receiving the return of the index, thus driving its NAV higher on the day.

In order to achieve the daily return of the index on a rolling basis, the funds will reset their holdings daily in the same manner as the leveraged products. This procedure was discussed in the previous section in this chapter. Inverse funds bring an important tool to the investing community in the form of long negative exposure. The next section discusses the implications this type of exposure brings to product trading and liquidity.

### **Trading and Liquidity**

You can trade and access liquidity using inverse ETFs in the same manner as any other ETF. If you are a buyer of the inverse S&P fund, for example, you can buy it in the market electronically or you can go to a liquidity provider for an NAV-based execution or for them to provide you with a large-block market. In this scenario, the liquidity provider (LP) would be shorting the inverse S&P fund to you, so they effectively would have long exposure to the S&P 500. In order to hedge itself, the LP would have to sell some form of correlating exposure, either the basket, futures, or another derivative to offset the long exposure. This is opposite the scenario of the LP selling a long-based ETF to a client.

Some important factors about the inverse ETF should be understood when trading them. They are a great way to achieve downside market protection in accounts that typically cannot achieve that type of access, such as Individual Retirement Accounts. You can buy a product that will increase in value as the market declines. This opens up an entirely new way to position your portfolio. Formerly, long-only-type investors had the opportunity to have long market exposure or cash; now they can take advantage of, or protect against, expected down moves in the market. This could have a profound effect on the way people manage their investment portfolios in the future.

Another characteristic of inverse products is the changes in their exposure. For those who were able to short listed products previously, these products offer a way to short the market without the risk of unlimited losses. When you short a stock or ETF in the market, you are exposed to that position going potentially infinitely higher. Your portfolio could suffer devastating losses. When using an inverse ETF, the losses are limited to the amount that you invested into the position. When you are correct in your positioning, however—when you are using an inverse ETF and your underlying exposure is going down—your exposure to that position is also increasing. As the market is moving lower, your ETF NAV should be moving

higher, increasing your notional exposure to the position, if the cumulative direction is correct. This is the opposite effect of a typical short position in which your notional exposure decreases as the market moves lower.

## **COMMODITY ETVs**

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Over the last few years, growth in the commodity ETVs has been astounding. Various structures are providing exposure to an asset class that had been difficult to access for many investors. Within the category you can obtain broad or narrow exposures to single commodities or baskets of commodities. Some products are even attempting to actively manage baskets of various commodities based on different strategic trading models and various factors.

The products fall into three main categories of commodities:

1. Agriculture
2. Energy
3. Metals

But within these categories are many variations of products offering different combinations of exposures. ETVs use several methods for providing exposure to commodities. These include holding:

- The physical commodity
- Futures tracking a single commodity
- Futures tracking baskets of commodities
- Equities with exposures to commodities in various forms

The funds holding various baskets of equities will be exactly like any other Investment Company Act of 1940 ETF with either domestic or international holdings. They utilize various weighting schemes to provide exposures via equities to companies that have commodity-related activities.

## **Futures-Based Funds**

Beyond the equity-based funds are funds that utilize futures, swaps, or other derivatives to attain their desired exposures. There are two effects to consider when using commodity funds with futures as the underlying:

1. The potential effects of position limits due to either the notional size of fund holdings or regulatory concerns
2. The potential effects of rolling those futures' positions

The expanding size of futures-based funds and their size relative to the underlying markets that they track led to a market review, in the summer of

2009, by the Commodity Futures Trading Commission (CFTC) about their potential influences within the commodities markets.

**Example of What Can Happen in a Future-Based ETF** During the summer of 2009, the natural gas ETF temporarily halted creations, which limited the issuance of new shares. This happened initially not because of any concerns regarding the fund's size but because of its need to increase its number of shares available to be sold. Because the fund has holdings of futures or other derivatives, it acts like a commodities pool rather than a typical 1940 Act ETF. A vehicle in which many investor assets are combined and trade futures contracts as a single entity in order to gain leverage is considered a commodity pool. This type of fund registers a specific amount of shares to be issued and then has to formally request an increase if it needs to expand further. In many cases this is a problem of being overly successful. Although new share issuance was approved, the fund did not immediately restart the creation process because of the fund management companies' concerns regarding potential future position limit rulings from the CFTC. At the time of this writing, the management has adopted a wait-and-see perspective on any regulatory changes before restarting the issuance of new fund shares. This has caused the fund's price to rise relative to its NAV. When an ETF halts, even temporarily, creating or redeeming shares, it assumes the premium and discount trading characteristics of a closed-end fund. The share price will diverge from the underlying NAV based on forces of supply and demand. In the case of an ETF limiting creations, the fund price should theoretically move out to a premium. That is exactly what occurred.

Several potential demand factors are driving this premium. Natural demand for the fund shares could drive fund prices higher relative to the NAV. Market makers would build in the costs of financing a position that could not be collapsed via the normal creation process while providing liquidity to the market. Additionally, there would be added demand from liquidity providers to borrow shares to cover the short positions occurring because of the lack of new share issuance. On top of these two related drivers is the new entrance of arbitrage players attempting to make money on the spread between the fund and its NAV. Arbitrage players could potentially pursue two actions. If they view that this will end quickly with new position limits, arbitrage players would want to short the ETF (because of its premium) and buy the underlying futures contracts. Shorting the ETF becomes difficult because the stock borrow gets used up quickly, and even the sell pressure from the shorts does not drive the price to NAV. The contrary view is that the CFTC will limit the amount of contracts available to the funds, causing them to have to reduce the amount of shares outstanding. This can potentially drive the premium much higher than its current level. If the fund decides to restart creations, the real arbitrage between the ETF shares and

the underlying futures positions will cause the premium to narrow quickly. Right now, with a premium reflecting demand for ETF shares, there is a benefit to owning shares of the ETF; this benefit would be reflected in a high rate of stock loan rebate paid to long holders for loaning out the ETF shares. Although this seems like a short-term trade while awaiting a decision, if the CFTC decides to permanently limit fund holdings, the shares could trade at a premium for an extended time.<sup>2</sup>

A commodities futures contract is a standardized contract to buy or sell a commodity at a specific date in the future based on a price agreed to today. Important to note is that futures have an expiration date at which point the contracts expire; then you have to deliver either the underlying asset or cash, depending on the specific futures contract you have positioned. A fund holding futures will have to roll those positions at every expiration date. This is necessary so that the fund does not lose its exposure to its underlying asset class. In order to roll your futures position, you would have to sell the contract you hold (called the near-month contract) that is about to expire and buy the next-period contract that is available (the far-month contract). Because of this periodic selling of the near contracts and buying of the far contracts, futures-based funds sometimes can be subject to the effects of backwardation or contango.

Backwardation is a condition in the futures market where the future contract price is lower than the spot price, which is essentially the value of the expiring near contract. The opposite condition is contango, where the futures contract price is higher than the spot price. These two conditions of the marketplace can cause performance variations in the ETF NAV relative to its benchmark. It is important to look closely at what the funds are doing and read each prospectus. It is important to know how funds handle these conditions in the futures markets and what effects they possibly can have on the fund's performance.

## **Physical Commodities**

The biggest fund in the commodities realm is the SPDR Gold Trust. At the end of August 2009, this fund held more than \$30 billion in assets reflected as a holding of approximately 35 million ounces of gold. This represented more than 60% of all assets in commodity ETFs at the time.

Storage costs are probably the most important consideration of the ETFs that hold physical commodities. It is relatively easy to hold gold bullion as compared to similar notional amounts of natural gas, which is why certain funds are based around derivatives and others are not.

The physical commodity funds in general are reasonably easy to value. On the Web page of the Gold Trust, for example, you can see the actual

holdings of ounces of gold and the number of shares outstanding on a daily basis. When calculating the value of the fund, you would calculate a real-time value for the gold held by multiplying the number of ounces by the most recent mid-price of gold bullion. Then you would divide that number by the number of shares outstanding. This would give you a value before expenses of the gold in the trust in share terms.

An important facet to understand when investing in the commodity funds is taxation. In the case of the Gold Trust, gold is treated as a collectible for long-term capital gains purposes. If held for more than a year, individuals will be subject to a capital gains rate of 28%. According to the Gold Trust Web site, it also received a private letter ruling permitting investment by retirement plans. This is not tax advice; it is important to determine your own situation regarding taxes through discussions with your accountant.

## **CONCLUSION**

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There is a need to understand any product in which you invest and its potential investment risks. Although leveraged and inverse ETFs do provide a very important and functional tool, how they are utilized is critical to your end investment performance. Distinguishing your investment goals and time horizons and understanding what potential market activity can do to the performance of your portfolio is extremely important.

Commodity and leveraged products, in many cases, are far from having the transparent and easy-to-understand structure of a 1940 Act ETF. However, these products can be very valuable in an investment portfolio when properly understood. There is a wealth of information available on the Web sites of the various issuers and a tremendous amount of research and analysis provided by the industry for investors.

A lot of what we have discussed in terms of valuation of funds throughout Part Two of this book can be interpolated into the valuation of these funds. However, depending on whether they hold futures, physical commodities, or swaps will add additional twists that will need to be considered. The concepts remain the same. Products with underlying assets that trade at the same time as the fund are subject to immediate arbitrage trading. Products with baskets that are difficult to trade or are domiciled in a different time zone will lead to price discovery valuation during the U.S. trading day. In Part Three we look at the trading volumes of ETFs, how they are traded, and best methods for execution, and we discuss the various market participants and several of their trading strategies.





# Three

## ETF Trading and Execution

**O**ne of the most touted benefits of the exchange-traded fund (ETF) structure is the fact that the funds are listed on exchanges and can be traded throughout the day. This is a huge benefit for those making intraday trading decisions. For a longer-term investor, however, the fact that you can trade into and out of an ETF at net asset value (NAV) becomes its most important characteristic and puts it on equal footing with competing products. The additional benefit of being able to exit the position midday, without waiting for a closing NAV, adds an amount of liquidity and potential risk reduction to every portfolio. Having both avenues available in one product is proving to be a game-changing technology as is evidenced by asset growth over the last decade. Part Three discusses the details of how and when participants can take advantage of the underlying liquidity of ETFs.

Part Two of *The ETF Handbook* revealed the internal mechanics and the valuation techniques of the ETF structure. You now know how to interpret the price of a fund when you are getting ready to trade. You can assess whether it is trading in line with its valuation. Understanding the underlying value of the fund you are planning on positioning means you are able to make important decisions about execution times and strategies. Once that valuation is determined, you need to understand the people with whom you will be interacting when trading ETFs and some strategies for executing ETF order flow.

Part Three explains:

- What ETF volumes mean (Chapter 9)
- What the money flows look like in an ETF trade (Chapter 9)
- The ETF trading model (Chapter 10)
- Practices for best execution in ETFs (Chapter 11)
- Examples of large and small ETF trades being executed in the marketplace, including discussion on the interaction of the different players and how the liquidity was achieved (Chapter 11)
- Who are the most frequent traders of ETFs and what businesses they are engaged in (Chapter 12)
- Who provides liquidity and who typically takes it (Chapter 12)

It is quite simple to take a small order in one of the most popular ETFs and get it executed. It is much more valuable to attain a good execution in an ETF in which not many people are participating in order to be able to utilize that ETF to build a better portfolio, outperforming your competitor and the market. A tremendous amount of research and product development is being put into the creation of new ETFs. Although the end goal from an issuance side is always to acquire assets and fees, issuers also try to bring valuable tools to the marketplace that will enable investors to achieve their own end goals in an efficient manner.

With the knowledge you attain here regarding the players and their business models, you will be able to utilize the full battery of resources available to you for executing your order flow in the best manner possible. This will be a benefit for your portfolio, your client base, and your business as a whole.

# Trading Volumes and ETF Liquidity

## Keys to Unlocking Value from the ETF Structure

**T**he exchange-traded fund (ETF) market has changed stock trading. By watching ETF quotes representing baskets, you can clearly see groups of stocks trade and how they are moving in relation to similar groups of their peers. This is changing the way stocks are valued in the marketplace. It used to take advanced systems to see the performance of various different sectors in the markets. Now, for example, you can watch an ETF covering a U.S. sector and see how it is trading versus one covering a similar but international sector. You can use this trading comparison to judge how news is being interpreted on a global basis.

ETFs and stocks are very similar in that they are both treated as equity products by stock exchanges. As such, both are subject to many of the same trading rules regarding equities trading. One of the main distinguishing characteristics of ETFs was their exemption from the up-tick rule for shorting stocks. Their success with this structural nuance paved the way for all U.S. stocks to enjoy the same benefits in the last few years.

In actual product structure, however, ETFs have some internal mechanics that make them very different from a typical equity product. The most glaring is the fact that ETFs have what is called continuous issuance of shares via the creation and redemption mechanism. This feature enables rapid expansion or redemption of shares outstanding in an ETF and is the main facilitating feature that has enabled ETF volumes and assets to grow. It is this creation and redemption functionality that unlocks all of the underlying liquidity in an ETF, making it accessible to every investor.

In this chapter we discuss:

- The main similarities and differences between stocks and ETFs
- How the liquidity of an ETF is based on both trading volume and underlying basket volume
- The landscape of current ETF volumes

In this chapter and throughout Part Three, we go into the details of who the participants are in the marketplace and how participants can take advantage of available liquidity in ETFs via the exchanges or underlying baskets. Volume and liquidity are the keys to the ETF world. Understanding that you can utilize an ETF that trades infrequently in the market by accessing its underlying basket enables you to expand your personal product universe. This will give you tools to expand portfolio access and manage risk that were previously unavailable.

## HOW IS AN ETF DIFFERENT FROM A STOCK?



One of the main differences that I like to highlight between how ETFs and stocks trade is the typical counterparty. I consider the typical stock trade as two opposing viewpoints meeting in the marketplace. A bullish viewpoint and a bearish viewpoint come together at a similar price point, enabling a trade to occur.

An ETF trade is different. A large proportion of ETF trades take place between a bullish or bearish viewpoint and a liquidity provider. An investor wants to buy or sell. Instead of buying from another investor with an opposing viewpoint, the investor typically is trading versus a liquidity provider. An ETF acts like a derivative whereby its value is derived by an underlying basket of securities. A position in the ETF can then be hedged by utilizing the underlying, thereby reducing the potential risk to a liquidity provider. This trading versus a liquidity provider is especially true of many of the lower-volume ETFs.

This is where the lead market maker (LMM) and other liquidity providers can add the most value. In the very-high-volume ETFs, there are so many arbitrage participants continually competing with ever-tightening spreads to squeeze out any potential margins that actual LMMs are not critical to the daily order flow, so they become a smaller percentage of the volume in the market. You can see the inverse correlation between LMM participation rates and ETF volume by looking at the statistics available on the New York Stock Exchange (NYSE) Arcavision data service. Alternatively, in the newer, typically lower-volume ETFs, the LMM is important,

playing the role of product caretaker, helping these products to grow by providing opposing liquidity against client order flow. In many cases, there is an opportunity for a liquidity provider to take the other side of an ETF trade, achieving two simultaneous goals:

1. Satisfying customer demand to buy or sell the ETF
2. Taking advantage of a spread between the price at which the ETF trade takes place and the price at which the basket or hedge can be executed

This has been beneficial for the ETF business because issuers are able to launch products and liquidity providers and LMMs are able to take the other side of the ETF order flow to facilitate initial trading, achieving both goals simultaneously. This is primarily achieved via the creation and redemption mechanism embedded in the ETF structure, which has proven to be most important compared to traditional equity and competing structures.

The beauty of the arbitrage mechanism in the ETF is that it has created an entirely new ecosystem for trading in the markets. Whereas in the past there were only about five equity indexes on which you could pursue arbitrage opportunities between baskets and the futures, now there are hundreds of arbitrage opportunities between baskets and ETFs. The ability to trade baskets of stocks as separate individual equities or as a unit has created arbitrage revenue streams previously available only to the index arbitrage trading desks in a limited fashion. As more and more indexes are created and ETFs are issued on those indexes as replication vehicles, the opportunities to take advantage of arbitrage spreads has grown as well.

## **A BRIEF LOOK AT EQUITY TRADING VOLUMES**

Exhibit 9.1 presents a grid showing stock listings by volume trading buckets. The universe is composed of products trading on NYSE Arca but not including ETFs and closed-end funds (CEFs). There is a reasonably normal distribution of volumes in relation to listed equities. A full 78% of listed products traded between 100,000 and 10,000,000 shares per day on average over the last three months. The listing of stocks on exchanges is an established business and is considered to be mature. The ETF market is still in its infancy. There have been many products issued recently that are attempting to take advantage of this new structure. You will see this difference in Exhibit 9.4, which takes the same view of ETF volumes.

**EXHIBIT 9.1** NYSE Arca Equity Trading Volumes (as of 9/10/09)

		50 k	100 k				
	< 50 k	<= x < 100 k	<= x < 500 k	500 k <= x < 1 M	1 M <= x < 10 M	= > 10 M	Totals
Number of Stocks per Volume Bucket	320	244	1035	438	841	112	2990
% of Stocks per Volume Bucket	11%	8%	35%	15%	28%	4%	

Source: Arcavision/Bloomberg. 3 Months Average Daily Trading Volume.

**A DETAILED LOOK AT ETF TRADING VOLUMES**

There is always a lot of heated debate about the average daily trading volumes of ETFs. I have heard arguments saying that the extremely high volumes generated by people pursuing arbitrage opportunities in ETFs are bad for the investing community. And I have heard arguments saying that the low trading volumes in ETFs are an indication of faulty product development. I do not agree with either of those arguments. I believe that higher trading volumes are beneficial for everyone because of the increased liquidity that all participants can take advantage of for their own purposes. And, since low-volume ETFs are still in a structure that can handle rapid swings in volume and rapid changes in fund size, their average daily trading volumes do not indicate either fund success or product development problems. As I explained earlier in the book, there is a long history of some ETFs existing in the market for an extended period before attaining a notable amount of

**EXHIBIT 9.2** Top Four ETFs by Average Daily Trading Volume (as of 1/14/10)

	Average Daily Volume (3 Mo.)	AUM
SPY US	162,159,584	\$ 80,391,480,000
XLF US	86,049,144	\$ 7,173,530,000
QQQQ US	85,658,336	\$ 18,537,440,000
EEM US	71,461,760	\$ 40,697,840,000

Source: Bloomberg.

assets. With the added expenses of listing funds now as compared to several years ago, fund companies may no longer have the luxury of extended wait times for smaller products.

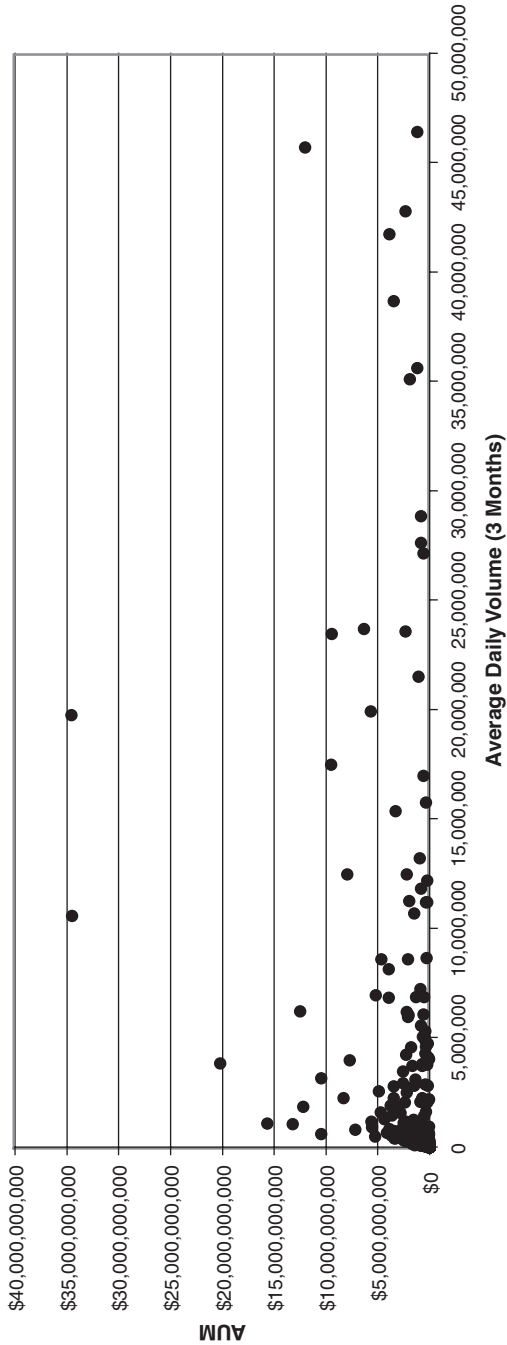
In part, the debate arises from the fact that many of the initial ETFs were tracking indexes with long histories and massive amounts of money already using them as a benchmark. This has led to a belief that all ETFs need to have huge trading volumes as a testament to their success. This is actually an incorrect way to view the product structure. The newer ETFs utilize their more advanced structure to compete in a different arena. Many of the fundamentally weighted ETFs, for example, are investment vehicles meant to compete with the CEF and mutual fund families. They are not designed as trading vehicles, and while they can be used for shorting, they usually would not work well as a hedging vehicle. They are attempting to go beyond pure beta exposure. Instead of offering index-replicating exposures, they are attempting via a compendium of methods to outperform those indexes and everything else that may be using them as a benchmark.

In many ways, these newer products have created a class of listed mutual funds, which offer the benefits of the new structure while also embodying the benefits of the old. In this context, using their trading volume to judge them is inconclusive because the idea is for them to be used by the investment community. The beauty of the ETF structure is that, with its many different types and uses, it can be attractive to all sorts of investors, from fast-money accounts thriving on high volumes to the buy-and-hold accounts that do not trade frequently. The target audience should be taken into account when discussing viability, along with other analyses into the liquidity of underlying and assets under management (AUM).

Let's take a look at the average daily trading volumes of ETFs listed in the United States shown in Exhibit 9.4. For this series of views, I use the three-month average daily trading volume (ADTV) in a series of buckets to delineate where the products are currently trading and where, in volume terms, are the funds with the most assets.

Exhibit 9.3 presents a scatter-graph view of ETF assets and volumes. While the picture presented is dramatic on its own, it is even more dramatic if all U.S.-listed ETFs are included. The top four volume leaders in the ETF space trade so much more volume than the rest of the ETF universe that they would make this chart virtually useless if they were included. Those funds are presented in Exhibit 9.2. All except the top four ETFs trade less than 25% on average of the most frequently traded ETF, SPY. And the assets in the Standard & Poor's (S&P) 500 Depository Receipts (SPY) are almost twice the amount of the next highest asset leaders, as of September 2009.

You can see in Exhibit 9.3 that many ETFs are still below \$5 billion in assets and trade less than 10 million shares per day. It would seem



**EXHIBIT 9.3** ETF Volume and Asset Scatter Graph (Excluding Top Four Volume Products)



unproductive to exclude most of a universe of products in your portfolio because they do not stack up well versus the extremes in the product category.

Let's take a more detailed look at where the ETFs are trading on a volume bucket basis. I use volume buckets because they give you a range that makes sense in terms of actual trading liquidity by product, not including underlying liquidity from baskets. I think that there is little difference in exchange-based liquidity between a product in the less-than-50,000-shares bucket and one in the 50,000-to-100,000-shares-per-day bucket. Any of these ETFs would require care when trading by most participants; I have broken them out to highlight the large group of ETFs that reside in that lowest-volume bucket.

In Exhibit 9.4, you can see that more than 50% of the ETFs listed in the United States currently trade less than 50,000 shares per day. You can also see in the box directly underneath that those ETFs control a mere 3% of the assets in the market. On the opposite end of the spectrum, a mere 5% of the ETFs listed in the United States control approximately 42% of the assets, and those ETFs trade more than 10 million shares per day each. This product line is clearly undergoing a rapid growth spurt and will likely experience a smoothing out of the assets and volume curves over time.

I view the bucket containing ETFs with an average daily volume in the 500,000-to-1-million range as the transition zone. This may explain why there are very few funds in this range. Typically the goals for volume from an issuer standpoint start with the first stage to get volume above 100,000 shares per day. Then stage 2 would be to get the volume above the 500,000-shares-per-day range. Once a product starts trading comfortably over that range, additional trading firms and investors come in, taking the product to over 1 million shares daily in a short time span. This is reasonably easy to test as a theory, and I will be sure to include time frames of that range in the second edition of this handbook. It is important to remember here that I do not consider daily trading volume to be a valid consideration for positioning unless you are pursuing a high-frequency or trading strategy. The further out your investment horizons extend, the less value trading volume should have in your investment decisions. With a longer-term horizon, you are better off executing via some form of NAV-type execution, which we discuss in detail in Chapter 11. And this will make any trading volume number largely irrelevant because you will be having an AP utilize the creation and redemption procedure for your execution.

Exhibit 9.5 offers expanded views of the same data, showing the number of funds separated out by issuer in each volume bucket. The percentages of each issuer's product suite in each volume bucket are provided in Exhibit 9.6.

You can see from Exhibit 9.4 that approximately 83% of the assets in the ETF market are controlled by the 20% of ETFs that trade greater than

**EXHIBIT 9.4** Totals of Funds and Assets in U.S.-Listed ETFs (as of 1/14/10)

Volume Buckets →	< 50 k	50 k <= x < 100 k	100 k <= x < 500 k	500 k <= x < 1 M	1 M <= x < 10 M	= > 10 M	Totals
Number of Funds per Volume Bucket	425	78	143	34	74	30	784
% of Funds per Volume Bucket	54%	10%	18%	4%	9%	4%	
AUM per Volume Bucket (Millions)	\$24,724	\$21,574	\$118,744	\$95,424	\$208,044	\$327,730	\$796,240
% of AUM per Volume Bucket	3%	3%	15%	12%	26%	41%	

Source: Bloomberg. 3 Months Average Daily Trading Volume.

**EXHIBIT 9.5** Number of Funds by Issuer (as of 1/14/10)

	< 50k	50k <= x < 100k	100k <= x < 500k	500k <= x < 1M	1M <= x < 10M	= > 10M	Totals
AdvisorShares	1						1
ALPS	2						2
BONY	3						4
BGI/Blackrock (iShares)	70	19	1	15	25	9	186
Claymore	21	2	48				30
CurrencyShares	3	1	7				8
Direxion	5	2	4				8
Emerging Global Shares	4		2	3	7	3	22
ETFS Securities			2				4
Fidelity	1						2
First Trust	31	7		1			2
Global X Mgmt	2						39
Grail	5						2
GreenHaven							5
Index IQ	2		1				1
Invesco PowerShares	75	13	19	1	3	1	2
Jefferies	1						112
JETS	1						1
Merrill Lynch (Holdrs)	10	2		2	2	1	1
PIMCO	4		1				17
Proshares	44	4	15	2	18	7	5
RevenueShares	6						90
Rydex	24	4	2	1			6
SSGA (SPDR)	45	7	15	2	15	1	31
U.S. Commodities	2	2					85
Van Eck	10	4	2	3	1	2	6
Vanguard	4	7	21	4	2	1	21
WisdomTree	43	4	3		1		39
World Gold Trust							51
Xshares	5					1	1
							5
Totals per Volume Bucket	424	78	143	34	74	27	780
% of Funds per Volume Bucket	54%	10%	18%	4%	9%	3%	

Source: Bloomberg. 3 Months Average Daily Trading Volume.

**EXHIBIT 9.6** Percent of Funds by Issuer Assets per Volume Bucket (as of 1/14/10)

	< 50k	50 k <= x < 100 k	100 k <= x < 500 k	500 k <= x < 1 M	1 M <= x < 10 M	= > 10 M
AdvisorShares	100%					
ALPS	100%					
BONY	19%					
BGI/Blackrock (iShares)	2%	2%	81%	17%	31%	33%
Claymore	13%	7%	15%			
CurrencyShares	16%	4%	80%			
Direxion	2%	1%	80%	12%	25%	54%
Emerging Global Shares	100%		7%			
ETFS Securities			100%			
Fidelity	100%					
First Trust	49%	27%		24%		
Global X Mgmt	100%					
Grail	100%					
GreenHaven			100%			
Index IQ	100%					
Invesco PowerShares	7%	6%	21%	3%	21%	41%
Jefferies	100%					
JETS	100%					
Merrill Lynch (Holdrs)	8%	9%		16%	50%	16%
PIMCO	59%		41%			
Proshares	3%	1%	9%	1%	46%	39%
RevenueShares	100%					
Rydex	17%	17%	6%	59%		
SSGA (SPDR)	2%	1%	7%	1%	29%	60%
U.S. Commodities		3%				96%
Van Eck	5%	6%	4%	27%	13%	45%
Vanguard	1%	3%	34%	21%	20%	22%
WisdomTree	53%	19%	17%		11%	
World Gold Trust						100%
Xshares	100%					

Source: Bloomberg. 3 Months Average Daily Trading Volume.

500,000 shares per day. This is the cold hard data on trading volumes. It does not take into account potential liquidity available from the baskets, and it does not show growth trends. It is a static moment depicting the previous three months of trading volumes and a point-in-time asset number. Some important conclusions can be gleaned from all the data:

- Looking at the percentages of each issuer's suite by volume buckets shows that low-volume funds are present in every suite of products in varying degrees.
- There are a lot of products in the market that do not have high trading volumes.
- There is room on the trading side to grow the facilitation business in low-volume funds to aid in utilization in a large group of available products. These products have been brought into the marketplace and in most cases have a sufficient amount of underlying liquidity that is not easily accessible by the investing client base.
- Although there is a large increase in new users of the ETF structure, they are not pushing large amounts of assets yet into the more esoteric structures, as shown by the asset concentration in a very small group of funds. This can change with increased trading abilities and increased education about using ETFs.

## **ETF MONEY FLOWS**

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The assets under management of an ETF are the representation of how much money is in a fund. This number can change rapidly. The market movement of the underlying basket and the creation and redemption activity change the AUM of the fund on a daily basis.

The actual trading volume of an ETF does not have a direct effect on the AUM. An ETF can trade a tremendous amount of shares in a given day, but if that trading does not lead to net creations or redemptions, then the AUM can remain constant. Take the example of an ETF arbitrage firm selling a particular ETF all day and buying baskets against it to hedge. In this example, the buyer of the ETF shares was another ETF arbitrage firm that was buying the ETF and selling the basket. At the end of the day, the firm that had been selling the ETF puts in a creation order of 10 units to flatten its position. The firm that had been buying the ETF submits a redemption order of the same size to flatten its own position. In this scenario, the ETF exhibited a very high trading volume on the day but its net assets (AUM) will not change.

Now let's look at a scenario where a sovereign wealth fund is buying large blocks of a particular ETF from a liquidity provider that is selling the

ETF to the client and buying the underlying basket to hedge its position. At the end of the day, the liquidity provider submits a creation order in the ETF. This will show up as an increase in AUM and an increase in shares outstanding of the ETF.

Another client is interested in making a large investment in a new ETF that currently only has \$50 million in assets. The client wants to make a \$50 million investment and is concerned about owning the entire fund and all of its assets. It agrees to go ahead with the trade and has an Authorized Participant (AP) process an NAV-based transaction for the desired investment size. The AP buys the underlying basket of stocks at the closing price and submits a creation order for \$50 million of the fund (in creation unit form). When the transaction is finalized, the client does not own 100% of the fund, since the creation causes the assets of the fund to double; the client will own only 50% of the AUM and 50% of the shares outstanding.

These short stories highlight some important points:

- When you buy shares in the secondary market, you are not necessarily having an effect on the number of outstanding shares in a fund or its AUM. If you are buying from someone who is just selling a long position that they had or is going to turn around and buy the shares back in the market, then the activity may not cause a creation to be done. Without a creation or redemption, the fund AUM and shares outstanding do not change. This highlights the difference between activity in the secondary market (on the exchange) and in the primary market (via the creation and redemption process).
- When creations or redemptions are done, they directly affect the shares outstanding and the AUM of an ETF, but they do not have any effect on trading volume. If you have an AP process an agency creation that does not run through its principal trading books and you receive the shares of the ETF at the price as delineated by the transfer agent, then the ETF trade will not be printed to the consolidated tape and will not have an effect on trading volume. If, however, a creation is done on behalf of a client order and the price to the client is different from that of the NAV, then the order will be printed to the tape.
- Trading volume is not always an indicator of an ETF gaining assets. For many of the ETFs considered trading vehicles, they can be traded back and forth in the secondary market without any change in the primary issuance.
- The AUM and shares outstanding can change dramatically on a daily basis. This is most apparent in newer ETFs, where they are usually seeded with one creation unit. If the launch is successful, within a few days there can be another creation doubling the AUM and shares

outstanding of the fund. This can also happen at any point in the life of the fund and is merely a function of the underlying liquidity of the ETF. A fund with \$1 billion in AUM can take in \$1 billion creation order if the underlying basket has that kind of liquidity available. And the same can happen in the reverse direction via the redemption process.

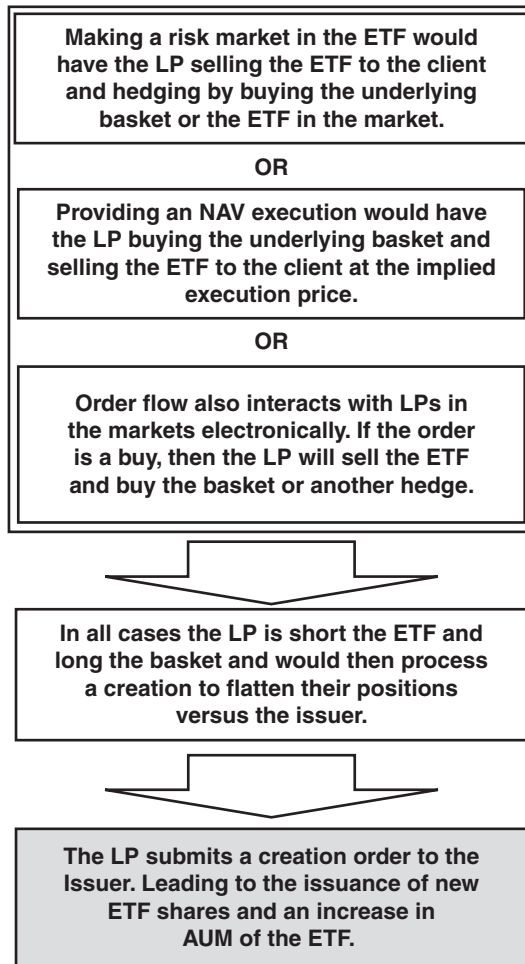
- ETFs have no lockup on assets. The structure is essentially a bet that transparency and flexibility will lead to higher assets over time without the need for a fixed amount of shares outstanding or the need to have gates on asset redemptions. It is as easy to exit from an ETF position via a redemption order as it is to do an initial purchase. I cannot recall any ETF that has halted redemptions for any extended amount of time similar to what was experienced by hedge fund investors in 2008–2009.

In Exhibit 9.7, you can see some examples of client order flow facilitation and how assets get into funds via the creation process. All the client business in the example is done on the secondary market, and then the AP utilizes the creation process to manage the positions on its books.

The AUM and the shares outstanding number need to be examined together to determine whether an ETF that is growing in assets is doing so because of market moves or share purchases. Looking at just the AUM provides a valid snapshot of assets at any one moment in time, but it does not tell a complete story. Sometimes the AUM can lead people to believe that an ETF is too small for the size of an intended investment. Because of the open-ended issuance available in the ETF wrapper, however, the liquidity of the underlying basket is a much better way to determine how much can be invested in any fund. If there is a lot of liquidity in the underlying basket, an ETF can grow its assets very quickly as baskets are bought and creation orders are submitted. The AUM should be combined with the shares outstanding and sometimes even the volume numbers to present a complete picture of the money flows in the ETF.

### **Where Money Flows Can Steer You Wrong**

Shares outstanding alone do not present clear indicators of money flows, investor demand, or rising prices in an ETF. In Exhibit 9.8, you can see the shares outstanding (dark line) charted against the closing price (light line) of XLF (a financial sector ETF) during the financial meltdown of 2008–2009. Domestic and international sector ETFs typically are used as access and hedging vehicles. In this case, many people were using the XLF as a hedging tool or as a vehicle to achieve short exposure, and that short activity was driving shares outstanding. You can see in the oval on the left that shares outstanding leapt upward as the market started to downdraft toward the

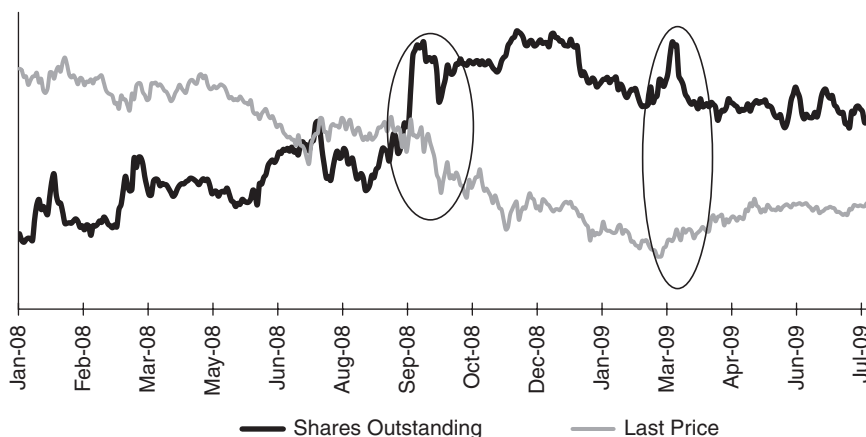


**EXHIBIT 9.7** Flowchart of Client Order Flow

October 2008 lows. Then, in the oval on the right, you can see the spike near the March 2009 lows when people started to fear that there would be a further downdraft in the markets.

I mention that shares outstanding are not a valid indicator of investor demand on their own. Let's take a look at that in relation to Exhibit 9.8 and the shares outstanding spike in XLF as its value dropped. In order to short an ETF as a hedge against your position, you first need to borrow the shares. In a stock, when you borrow shares, they are typically lent through a clearing broker utilizing long positions on the books. This is the same in many ETFs; however, if there are not a lot of outright long holders of an





**EXHIBIT 9.8** Shares Outstanding and Price of XLF

Source: Bloomberg.

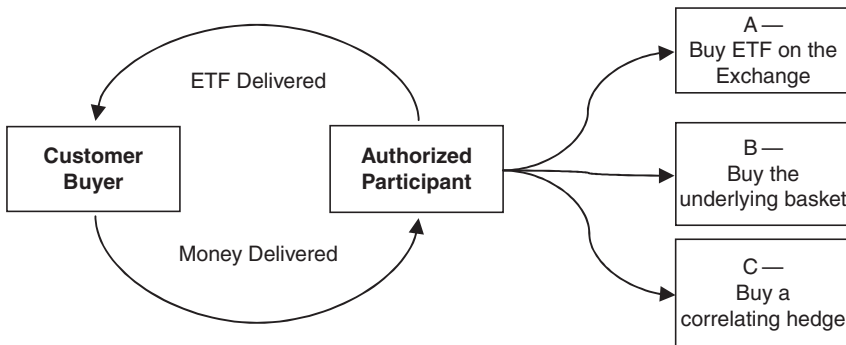
ETF with shares to lend, then the large trading desks will create the shares to lend them out. This would entail being short the underlying basket and long the ETF—a market-neutral position—and various financing costs on your books that can result in either a profit or loss. In the case of XLF, it was possible to be long the ETF and short the basket and lend the ETF shares out while generating a net positive return on the financing costs. This strategy is discussed in further detail in Chapter 12.

If you had been tracking AUM in the fund or shares outstanding, and were not aware of the financial meltdown, you might buy into XLF. You might have thought from the shares outstanding increases that that is where the money was flowing. This would have been a fateful mistake. It is also one that, surprisingly, is still made quite often in analysis of ETFs. It is important to note that assets rising in ETFs could be from buyers or sellers and should not be the only criteria in determining trading trends. Let's further examine money flows into and out of the ETFs and why.

## Money Flows of the Buyers



As discussed in Part One, an ETF is born when a basket of stocks is delivered to the issuer's custodian and, in turn, that issuer delivers shares of the ETF to the initial creator. This is referred to as the initial creation unit. One way that an ETF grows is when the Authorized Participants who have contracted with the issuer to provide their services begin the process of consolidating chunks of baskets and ETFs and exchanging them with the issuers.



**EXHIBIT 9.9** Methods of Hedging when Providing Liquidity

Exhibit 9.9 shows a very basic picture of the beginning steps of interactions between the customer and the AP. In this example, the customer is a buyer. The customer has transacted with the AP either electronically or manually, buying the ETF from the AP. Only three scenarios can then place. In scenario A, the AP, acting as an agent, went out and bought the ETF on the exchange for the client. In scenarios B and C, the AP was providing liquidity and acted in a principal capacity. The AP sold the ETF shares to the client. APs have two choices with regard to hedging the position. They can either buy the exact basket of the ETF, if it is trading at the same time as the ETF trade, or they can buy some other correlating asset that they use to hedge their short position in the ETF.

In case A, the AP ends up buying the ETF on the exchange, on the client's behalf. In this case, an AP is not required to do anything further because it is merely acting as a middleman between the market and the customer. What is happening, however, is that the AP probably is buying the ETF shares from a liquidity provider (LP) somewhere along the order flow chain. At some point, that order flow gets into a scenario like that of case B.

In case B, the AP sells the ETF to the customer and is able to buy the underlying basket that replicates the ETF. The position on the books of the AP will be short the ETF and long the basket. Then the AP would process a creation with the issuer. This would require the AP to deliver the shares that it is long of the underlying basket to the issuer and it would, in turn, receive the shares of the ETF. The AP's position would be flat, and the issuer would have increased the shares outstanding in the fund, simultaneously increasing the AUM. This is always the ideal scenario for the issuer.

In case C, the AP buys some correlating hedge that tracks the ETF well. Since doing so implies that there will be financing charges in maintaining

the long hedge and short ETF position, this is ideally a short-term solution. At some point in the future, the AP either intends to unwind the short ETF position and the hedge or will want to exchange the hedge for the basket of underlying stocks and then proceed to do a creation.

In summary, if there are many buyers of the ETF, then LPs who are selling the ETF could be buying the underlying basket to hedge their exposure. They would then process a creation, delivering the basket to the issuer and receiving in return ETF shares. This would flatten out the position on the LP's books, leaving the LP with no exposure and no balance sheet position. It would leave the customer with the long position in the ETF. And it would leave the ETF issuer with a basket of stocks and a theoretical "short" position in the ETF, which is referred to as the shares outstanding. The shares that the issuer has delivered in exchange for those baskets of stocks are the new shares outstanding of the fund.

Because the shares outstanding number can fluctuate wildly depending on supply and demand of ETF shares, it becomes a very important indicator of interest in a specific product, but it is not indicative of market direction. If potential clients are looking at a fund with only 100,000 shares outstanding, and they had the intention of buying 100,000 shares, they should not be concerned about owning 100% of the fund. Because of the structure, they will buy the shares from an LP who will in turn receive the shares from the issuer. So whereas the client might have been wary of buying 100% of the shares outstanding, a short time after the transaction is completed, the client's holding of 100,000 shares will represent only 50% of the shares outstanding. Also at this point, assuming no drastic market price moves, the AUM of the fund will have doubled as well.

## TRADING TIP

It is important to realize that when you make an actual investment in an ETF, at some point down the order flow chain it will lead to a creation—unless it happens to be offset by someone unwinding an investment at the same time. The LP is not unwinding an investment but acting as the middleman between the customer and the issuer. When you are putting a large amount of assets into a small fund, the fund's AUM will increase by your investment. You are most likely not buying a piece of the assets already in the fund, but receiving liquidity from someone that will pursue a creation to increase the fund shares outstanding and the AUM.

This activity also serves to highlight why the ETF almost always will be trading at a price near the value of its underlying basket. If the basket starts trading away from the ETF price, the LP always can sell the ETF and buy the basket of shares to create more available units of the ETF. It works like a pressure release valve on the pricing of the ETF. Arbitrage traders will be in the marketplace looking for any pricing differences. They are, by default, keeping the ETF price in line with the value of its underlying assets.

### **Money Flows of the Sellers**

Short activity in ETFs is often misunderstood. As a representative of an ETF provider, many times I have explained to clients how I would really love to have them put on a huge short position in our products. Clients responded with confusion. They did not understand why I, as an asset manager, would want them to short my products. I would explain that an ETF issuer is actually providing a tool that can be used for tailoring portfolio exposures. There are many places where using that tool to achieve short exposures is applicable. Clients would ask: If everyone wanted to use that tool for short exposure, what would that do to assets? At this point I would describe what I have just presented with regard to share spikes when markets drop. Shorting the ETF can drive assets into the fund because someone needs to facilitate that short by providing a loan of the ETF shares.

A very profitable trade on the brokerage side of the ETF industry is creating ETFs to facilitate stock loan. Because the market in stock loans is so fractured and is still mostly an over-the-counter marketplace, there are still profits to be reaped providing ETF borrows to clients. In the case of someone shorting an ETF, typically an AP will go out and do a short creation of the ETF to facilitate the stock loan. This means the AP will borrow the underlying basket and deliver it to the issuer who will in turn deliver out the ETF shares (increasing the shares outstanding), which can then be lent to the end client.

### **Comparisons to CEFs and Mutual Funds**

The process of creation and redemption is very different from what happens in a closed-end fund. A CEF has a fixed amount of shares outstanding. If you are buying shares in the secondary market, there is no way for your counterparty to access the primary market for the issuer to create more shares, so you actually will create pressure on the fund price. If you want to buy 100,000 shares of a CEF with 100,000 shares outstanding, you could have a significant effect on the price of the fund as you vacuum up all of the available shares in the marketplace.

A similarity between ETFs and mutual funds is their open-ended issuance function. In the case of a mutual fund, investors are delivering cash and a portfolio management team is going out and buying the basket of shares for the portfolio and then issuing you shares of the fund. In contrast, with the ETF, the LP is buying the basket of shares for the portfolio and delivering them to the ETF issuer in the proper format. This is what leads to the tax advantages of the ETF structure; a fund manager buying and selling stock will create taxable events within the fund. Since an ETF is receiving and delivering its stock holdings as part of an in-kind transaction, the portfolio can be managed in a more efficient manner.

## **CONCLUSION**

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Trading volumes of the ETFs themselves tell a very interesting story. They do not, however, tell the whole story. Currently the market for ETFs is expanding quickly in terms of various products offered, but the assets flowing into those new products are moving slowly. Part of the problem is that techniques in facilitating trading flows have not advanced as quickly as demand to use this new ETF structure. Hopefully after reading this chapter you have gained an understanding of the concepts explained regarding how assets grow and what effects the various types of trading and money flows have on ETFs. I expect the trading side of ETFs to expand rapidly over the next few years to provide the required facilitation for the increasing demand of the client base. Once the problems of ETF incubation are solved, as delineated in Chapter 3, then the broadening investor base and their desire to use the many different types of products available will force growth of trading capabilities at the LPs.

An ETF that is trading with a very small daily average volume can still be accessed via its underlying basket. This is discussed in detail in Chapter 10. Making this underlying liquidity available to the broader client base in a cost-effective manner has proven to be a bottleneck in the ETF growth curve. In Chapter 10 we assess the underlying basket liquidity and the trading model used to facilitate ETF flow based on that underlying liquidity.



# ETF Trading Business

## Assessing and Providing Liquidity

I mention frequently that the liquidity of an exchange-traded fund (ETF) is based on the underlying basket. Assessing that liquidity and being able to provide ETF trading liquidity based upon it are incredibly important for the future growth of the product structure. There are high barriers to entry for providing liquidity in ETFs. The ability to trade globally in multiple asset classes and manage position risks in thousands of securities simultaneously are the basic requirements.

This chapter discusses the trading model that is at the heart of that system. The primary function is to take the universe of ETFs and calculate a fair value for each product and assess the liquidity available via the basket and other derivatives. Then I discuss liquidity assessments of the basket and what constraints can affect the liquidity of the ETF.

At the end of this chapter I present the requirements for building an ETF customer facilitation business. I could probably package this one piece and sell it as a consultant, but it makes more sense for it to be out in the public domain so that more businesses can be built. Besides, knowing what to do is only one piece of the puzzle, being able to implement it is a completely different story. This should give users of ETFs an idea of the backbone they are leveraging when they place a simple ETF order.

The knowledge of valuation and trading brings us to a very important part of the process for the broad investor base. In Chapter 11 I discuss the various methods and techniques available for executing order flow. Utilizing the variety of ways available for executing order flow and understanding how it will be evolving in the future is invaluable for the continued expansion of the ETF product lines.

Let's see what the liquidity providers are looking at when they see our orders come into the system first. Then we can decide how to place those orders.

TRADING MODEL

The structure of the ETF enables the trading of either the underlying basket or the ETF itself to attain the same exposures. Since there are two separate and distinct vehicles trading in the marketplace, there are opportunities for arbitrage, or an interchange of liquidity, between the two. In order to do this, you would have to be watching, either physically or via an algorithm, the spread between the basket and the ETF. Understanding the available liquidity of the underlying basket is also important.

Liquidity providers (LPs) will have different needs depending on their position within the ETF ecosystem. If you are satisfying institutional demand and facilitating large-block order flow, you will need to know more about market depth to estimate potential available supply against your larger markets. If you are providing liquidity versus the retail order flow, your position in an ETF might be very small and changing dramatically throughout the day, as customer buyers and sellers interact with your trading book. Additionally, if you are facilitating flow for a customer base and do not make markets in all ETFs directly, you will need to know where to go to source liquidity when necessary.

Let’s take a look at a trading model for an ETF and what the pieces contribute in terms of information for providing and determining liquidity.

The trading model displayed in Exhibit 10.1 is a version of what traders are looking at when determining what trading opportunities exist in the marketplace. Although the automated systems are not physically looking at a screen like this, it includes all of the embedded calculations necessary to make an immediate trading decision for an electronic arbitrage system.

The ETF quote line shows a real-time market view of what is seen when looking at a level 1 quote. The level 1 quote shows just the top of the order book, the inside market bid and ask quotes. It does not show any depth of book statistics. The size in shares is also included, shown on each side of the

EXHIBIT 10.1    ETF Basic Trading Model

	Bid Size	Bid	Last	Ask	Ask Size
ETF Quote	500	27.64	27.77	27.77	1,000
Notional	\$ 13,820				\$ 27,770
Calculated IIV	168,161	27.70	27.71	27.72	171,137
Notional	\$4,658,182				\$4,743,434
Discount/ Premium		−0.22%	0.21%	0.19%	



order book. The way to read that quote line would be “There is a 27.64 bid for 500 shares, and there are 1,000 shares offered at 27.77.”

### TRADING TIP

Terminology note: Shares are always “bid for” and “offered at.” When customers are buyers and are curious at what price they might be able to buy an ETF, they might ask, “What is the offer?” The reply would be “The shares are offered at  $\times$  price.” If customers are sellers, they might hear, “There is a \$10 bid for  $\times$  amount of shares.” A standard quote in a stock or ETF would be phrased “\$10 bid for 10,000 shares and 10,000 shares offered at 10.25.” This would represent a market that is  $10.00 \times 10.25$ ,  $10,000 \times 10,000$ . These terms are dying out as floor trading and quoting goes away but still can be important in the ETF market, because, when asking a LP for a market, proper terminology ensures that the proper transaction takes place.

In Exhibit 10.1, the ETF last traded at 27.77. The screen does not show the amount of shares that last traded at that price. Just below that line is a conversion to show the notional size available on each side of the market. You can see that there is approximately \$28,000 worth of the ETF available at the offer, 27.77, or 1,000 shares.

The most important line is the calculated intraday indicative value (IIV) line. This shows what the calculated value of the underlying basket of the ETF is worth. It also shows an implied size of the ETF available by sending an order in the basket for each stock. This line is read in a similar manner to the quote line: “There is a 27.70 bid for 168,000 shares and there are 171,000 shares offered at 27.72.” This line is quoted in ETF terms even though it is being calculated from the basket underlying the ETF. You can buy the actual ETF in the market, or you can buy the exact basket underlying the ETF and convert it into ETF shares via the creation redemption mechanism. This is probably one of the most important concepts in the understanding of how an ETF works.

Liquidity is assessed, therefore, not by looking at ETF volume or basket volume alone but by consolidating those numbers to determine what potentially could be traded. Because the market for the actual ETF in this example is so small—only 1,000 shares offered—it does not have much impact on the overall market of the ETF. The 171,000 shares offered in basket terms is really the true top of book liquidity underlying the ETF.

Calculating Market Depth for Trading



It is also important to note here that both quotes just discussed are based strictly on what is being shown on the inside market. The ETF quote line is a picture of the inside market in the ETF. The calculated IIV line shows what is being implied by the inside markets in each stock in the basket. Although calculating the IIV implied prices of the ETF is straightforward, calculating the implied size is more complicated because each stock is required in a different amount to satisfy the ETF basket. The ETF basket requirements are published daily. In order to calculate the implied IIV line, the system has to understand how many shares of each stock are required to formulate the proper basket. It can then calculate the implied price and the amount of ETF shares available. The amount of shares of the ETF available as implied by the basket is restricted by the lowest factor of shares required per creation unit multiplied by the shares available on the market.

Exhibit 10.2 utilizes several columns in calculating IIV and the implied liquidity. The exhibit shows just part of an ETF basket comprised of several hundred stocks. The creation unit (CU) shares column shows how many shares of each stock are needed to compose one unit of the ETF. In this case, one unit of the ETF equals 50,000 shares of the ETF. As displayed, 248 shares of NKE are required to make each unit of the ETF. The bid and ask CU factor (outlined) is the amount of shares shown on the market divided by the amount of shares required for each CU. In this case there are 37 shares of NHP required for each creation unit, and there are only 200 shares of NHP offered at 25.42. This implies that, at most, you can take the offer in NHP and translate that into 5.41 units of the ETF. Since the creation/redemption mechanism works only in full-unit sizes, the Authorized Participant would be able to create only five units of the ETF, or 250,000 shares.

The models displayed show only level 1 price and volume calculations. A more sophisticated system would look deeper into the book and calculate

**EXHIBIT 10.2** Sample of Basket as Used for Calculating IIV and Implied Liquidity

Ticker	CU Shares	Bid CU Factor	Bid Size	Bid	Last	Ask	Ask Size	Ask CU Factor
NKE	248	22.58	5,600	\$49.99	\$50.00	\$50.03	4,340	17.50
NFLX	16	37.50	600	\$32.74	\$32.75	\$32.75	200	12.50
NHP	37	8.11	300	\$25.39	\$25.42	\$25.42	200	5.41
NOV	214	14.49	3,100	\$27.02	\$27.02	\$27.04	3,450	16.12

how much liquidity is available at different price points. If you are an electronic LP and you are posting small bids and offers, the depth of book is important as a forecasting tool. You might use it to estimate important price points. If you are on an institutional trading desk and are attempting to facilitate large-block flow in ETFs, a true depth finder calculation is extremely important. If you are bidding for or offering 1 million shares in an ETF and there are only 200,000 shares offered on the screen and only maybe another 200,000 shares offered in implied basket terms, it is important to understand what is available further into the markets. It is possible that there are only 200,000 shares offered in implied basket terms, but 1 cent away (higher on the offer side), there are another 800,000 implied shares offered in basket terms. Assuming you had a fast and dependable basket trading system, you might be very comfortable offering 1 million shares based on that implied price and depth.

Unfortunately, because of fragmentation that has led to the decrease in displayed share size in the markets, it has become very tough for anyone to truly determine where liquidity resides in the markets. It has thus become very technologically intensive to develop a system for determining ETF underlying liquidity via the baskets of constituents. But the ETF and the basket, in funds with domestic constituents, can be traded on an interchangeable basis. Only recently has this functionality become more widely available to the broader ETF customer base as it expands and demands more services. Typically this was the domain of large institutional investors who had access to the portfolio trading desks at the large broker-dealers.

Now, however, there are agency-only style brokers entering the business of creating and redeeming ETF shares using the underlying baskets for customers. This is not strictly limited to ETFs that trade during the same hours that the basket is traded because, in many cases, shares of the ETF are not traded in the market at all (i.e., U.S.-listed ETFs with international constituents). The broker will go into the marketplace and strictly use the underlying basket to give the client an execution in ETF shares at the implied price of the basket trade. This is big business for basket-trading businesses globally.

## **MEASURING POTENTIAL AVAILABLE ETF LIQUIDITY**



**WEBINAR**

The volume tables in Chapter 9 tell a story about an investor base that is not getting sufficient education and access to products available via the underlying baskets. In my past life, I was on trading desks and personally steered customers to more liquid ETFs because either my system was not advanced enough to be pricing

all ETFs (a technology constraint) or I did not want to trade the underlying basket because it was unfamiliar to me and would lead to a lot more work than other products. The separation between trading and issuance in the ETF structure is fantastic in many ways; the one main detraction is that the issuer does not control the execution process, and there are a lot of places where that process can go wrong while trying to get a customer trade on the tape.

The liquidity of an ETF is one of the most misunderstood pieces of the entire structure. It is a hotly debated concept primarily because many people do not fully comprehend that ETF valuations are derived as a function of their underlying constituents and that there are alternative ways to create liquidity beyond use of the ETF itself. Because of the open-ended issuance mechanism of the ETF structure, the true available liquidity in an ETF is a function of its underlying basket. The LPs are acting as intermediaries between clients and the underlying liquidity of the basket of stocks. Next we turn to some details regarding how to measure that potential liquidity.

A great way to look at the implied liquidity in an ETF is based on trading a specified percentage of the volume in its underlying basket. You can take a measure of the daily average volume of each of the stocks in the underlying basket and calculate that you could trade some percent of that volume for each name in the basket. Then, via the creation and redemption process, you can convert from the basket to the ETF or from the ETF to the basket. In this example we start with the assumption that you can trade 50% of the daily average volume of a stock without having an impact on its price.

The creation unit equates to a specified amount of shares of the ETF, typically between 50,000 and 200,000 shares. We look at the average daily volume (ADV) for the last month to make an assessment on viability based on how much of each underlying stock we would need to trade to equate to our ETF shares. We then have the number of shares that we can comfortably trade on a given day without causing a disruption in the underlying stock prices. It could be, as in the example, 50% of the ADV, but a portfolio analytics group could run an analysis on the basket and give you a different percentage based on the actual stocks in the basket or any number of other constraints. If the underlying basket is the Dow Jones Industrial Average and you have 30 stocks with a tremendous amount of volume, you may be able to trade a higher percentage of their ADV without affecting their pricing action throughout the day. When you take the proper percentage of the ADV of each stock in the basket, you can divide that number of shares possible to trade by the amount of shares required of each stock for a creation unit. This gives you a multiplier of how many units of the ETF can be created or redeemed. When you multiply this by the number of shares in the creation unit, your result is an implied number of ETF shares that you can trade in a day. This does not take into consideration the ability

to trade the actual ETF in the market at the same time or to trade other derivatives.

### **TRADING TIP**

The implied daily tradable shares (IDTS) number for an ETF is a much better indication of the ETF's available liquidity than the ADV. However, the IDTS is not readily available to end investors. It requires the computing power of portfolio trading and analytics systems. It does not include related derivatives available and how much additional volume can be implied by interactions with those products.

It is important to understand the base case, using assumptions of a domestic equity basket with no derivatives. From there you can calculate changes to the base IDTS accounting for other available correlating vehicles or other external factors. Understanding this calculation will enable you to make judgments about potential ETFs that trade less daily average volume than you normally would consider but offer other exposures that potentially will be more valuable for your portfolio.

In Exhibit 10.3, you can see the calculation implied by the stocks of two very similar ETFs in the U.S. marketplace. It shows only the bottom 10 names of each basket, in terms of implied liquidity, which serves to highlight where the volume restrictions are for each ETF. In the ETF-B basket, you can see that BSX serves as a block to trading extremely large volume of the ETF. In this example, BSX trades an average of 915,000 shares per day. The ETF requires 857 shares of BSX to create one unit of the ETF, equaling 50,000 shares. If you were able to trade 50% of the ADV of BSX, and if you traded the rest of the basket as stipulated, you could potentially create 26 million shares of the ETF via the creation mechanism. If BSX were not in the basket, then the next smallest available stock would be TSS. It generates a larger size restriction of 240 million shares, signifying there is much more liquidity available. This example highlights the importance of screening baskets for underlying liquidity when developing new ETF products.

If the issuer were to remove BSX from the basket of ETF-B, then the overall implied liquidity of that ETF would rise dramatically. Since that liquidity is always restrained by the most restrictive constituent, it would create a situation where ETF-B theoretically would be more liquid than ETF-A. The situation is currently presented where ETF-A has more theoretical liquidity because of the higher minimum implied amount of shares able to be created.

**EXHIBIT 10.3** ETF Liquidity as Implied by the Basket**Lowest Implied Volume of ETF-A Basket**

	Ticker	Shares per Creation Unit	30-Day Avg. Volume	Implied ETF Shares @ 50% of ADV
1	BRK/B	9	55,879	155,219,444
2	TRH	21	139,133	165,634,524
3	CNA	101	733,820	181,638,614
4	AMTD	386	4,023,844	260,611,658
5	TSS	80	1,084,886	339,026,875
6	NFS	49	676,065	344,931,122
7	TWC	131	1,891,955	361,060,115
8	Q	1242	21,340,176	429,552,657
9	L	139	3,112,231	559,753,777
10	SATS	13	294,800	566,923,077

**Lowest Implied Volume of ETF-B Basket**

	Ticker	Shares per Creation Unit	30-Day Avg. Volume	Implied ETF Shares @ 50% of ADV
1	BSX	857	915,443	26,704,872
2	TSS	113	1,084,886	240,019,027
3	PM	1177	11,947,816	253,776,890
4	ABT	880	9,408,438	267,285,170
5	PEP	894	9,683,251	270,784,424
6	BF/B	56	632,792	282,496,429
7	T	3365	39,218,024	291,367,192
8	NWS/A	1311	15,564,262	296,801,335
9	D	331	4,011,427	302,977,870
10	LLY	571	6,989,714	306,029,510

The calculation for the IDTS is:

$$\text{Implied Daily Tradable Shares} = ((30 \text{ Day ADV} \times x) / \text{Shares per CU}) * \text{CU Size}$$

where  $x$  = the percentage of volume that is appropriate to trade without having an impact on the price of the underlying constituents (In our example, we used 50%.)

CU Size = the number of ETF shares represented by one unit, typically between 50,000 and 200,000 shares

The calculation is done for each constituent in the basket to determine the lowest liquidity constraints.

This type of liquidity assessment is very valuable in the U.S. domestic ETFs, when you are trying to assess what type of liquidity you potentially can generate by executing via the basket. It is also extremely valuable in making an assessment of an ETF that has an equity basket trading during a different time frame. I use the United States as an example because with the basket and the ETF trading simultaneously, an LP can provide a market to a client and hedge its exposure immediately. This fits into the parameters of running a market-making business. You may be, however, transitioning a portfolio of assets from a mutual fund environment, where you are accustomed to once-a-day liquidity based on delivery and receipt of cash, and you want to use ETFs for their transparency and relative cheapness. In that case, the actual trading volume of an ETF is completely irrelevant to you. In this scenario, you should be much more interested in what the IDTS of the ETF is; this figure shows you what type of size can be achieved by having someone trade the basket for you to provide a net asset value (NAV) or implied NAV execution in the ETF.

## **REQUIREMENTS FOR AN ETF TRADING BUSINESS**

In order to provide the investor client base access to this underlying basket liquidity, the brokerage community has to continue developing the businesses that provide ETF liquidity. Over the last several years, many trading firms have developed desks that provide liquidity in ETFs utilizing the arbitrage mechanism.

There seems to be room in the industry for further participants who are considering developing broad businesses to satisfy a growing client base in ETF order flow. I present the following ETF business strategic requirements plan as a basis for some of the development that will be necessary to build that business.

Many of the ETF businesses on the Street have many, if not all, of the parts of this business plan.

### **Database Requirements**

- A broad data warehouse comprised of ETFs and linkages to underlying baskets of stocks and futures where applicable.
- ETF data file storage and parsing abilities for both domestic and international ETFs.
- Monitoring and processing of corporate actions and dividends for the universe.

- Monitor funding rates and stock availability with a stock loan.
- Track ETF cash balances.
- Export baskets for creations and redemptions.

### **Theoretical NAV Model**

- This should be able to take underlying baskets of equities and calculate an IIV spread for each ETF. Secondary iterations would be able to calculate the theoretical depth of baskets.
- It should be able to display the lists of ETFs in multiple filtered arrangements.
- It must have fast quoting abilities in active markets in a universe of several thousand ETFs and underlyings.
- It should be able to display/flag halted stocks and those not open for trading within each basket by ETF.
- This will be developed with click-to-trade abilities versus customer flow running through the book.
- This will get all its information from the data warehouse described earlier.

### **ETF Trading System**

- The system should provide the ability to trade the futures, the ETF in all venues, or the basket of underlying stocks.
- The key to this system is the ability to trade multiple ETFs or corresponding hedges in concert, with a good order management system for tracking and monitoring executions and making adjustments based on market dynamics.
- A basket-monitoring function must be able to show completion percentages and single-stock delta that exists from incomplete orders.
- The ability to send a combination of baskets, futures, and spray the Electronic Communications Networks (ECNs) would be optimal based on a target quantity of the underlying ETF (i.e., market spray functionality).

### **Risk Management and Profit and Loss (PnL) Monitoring System**

- This system handles all positions, showing a delta in single-stock terms based on decomposing the ETFs and futures down to stock level.
- It also shows calculations on daily funding, stock loan, dividends, and fair value.
- It should be able to separate positions into multiple risk books, such as index funds, sector funds, and the like.
- It should be able to show a PnL breakdown between the ETFs and baskets/futures for analysis.



- The system must be able to handle the manual input of trades done outside the system, either versus customers or with brokers.
- It should show a real-time delta and PnL for all positions.

### **Client Order OMS**

- This system receives orders from the sales force in ETFs and sends back fills.
- It maintains the required electronic time stamp on customer order flow.
- It enables both agency execution of order flow or principal facilitation via the crossing facilities.
- It should be able to electronically feed principal positions to the risk management system for delta management.
- It also performs the functions of commission tracking and electronic transfer of trades to the middle office for processing.

## **CONCLUSION**

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The models for providing liquidity in ETFs can be complicated to build and maintain. And the requirements to build a full-service liquidity business in the products also are capital intensive. However, we are at the very beginning of what can potentially be a very long cycle of product use and development that will make all of those investments worthwhile.

The markets in the United States are suffering from severe fragmentation. Intelligent systems that scour markets for mispriced securities are leading to the deterioration of displayed depth in the markets. Dark pools and aggregators and ways to trade around the exchanges have made any published size vulnerable to aggressive trading strategies. It is unfortunate for the financial infrastructure that the very machines designed to aid in securities trading efficiency have combined with poor regulations to diminish some of that efficiency. For the past several years I have inaccurately predicted the demise of high-touch order brokerage because of its inefficiency compared to the machines, only to see that business continue to flourish because market fragmentation actually creates a greater need for human intervention.

In this volume, I look at execution as an exercise in capital preservation and efficiency. I examine the optimum methods for accessing the true hidden liquidity of ETFs. I do not dispute that there are spreads, but I do question the notion that they are more egregious than the opportunity costs of not utilizing these products. There are hurdles to overcome to achieve this liquidity, but the markets are continually evolving. It is becoming ever

easier for the average investor, money manager, or trader to take advantage of the gains that await.

There are three parts to achieving many ETF investment goals, as presented in this ETF handbook: understanding the products (Part One), learning how the prices are derived (Part Two), and understanding who your likely counterparts are in the marketplace, their intentions, and how to execute your order flow (Part Three). In Chapter 11 we examine the strategies available for efficient execution of ETF order flow.

## Execution

### Handling Client Order Flow and Achieving Execution in ETFs

**T**his book was conceived around my work educating people on the exchange-traded fund (ETF) mechanism and the best ways to execute ETF order flow. Many fantastic products available in the ETF marketplace are not yet being utilized effectively by the investing public.

An interesting aspect of the ETF structure is that it removes most trading and execution from the asset management side of the business. This is a complete divergence from the mutual fund business that controls the buying and selling of assets and uses that order flow to pay commissions to Wall Street. At the core of the ETF business, the investor controls the buying and selling of assets, and this is causing a shift in the balance of power. There is clearly a dramatic rise in self-directed and advisor-guided assets in ETFs that are leading to changes in the way brokerage firms do business. In addition, the fact that making markets in ETFs typically requires the use of firm capital is going to necessitate a rethinking of order flow at the large firms that steer discretionary order flow away from the proprietary businesses where the ETF desk resides. It makes no sense for the wealth management business at a large brokerage firm to steer client ETF business away from the in-house ETF liquidity desk. Over time, as it becomes clear that ETFs are becoming a huge part of the wealth management business and that a tremendous amount of commissions are being paid away to the Street for executions that can be facilitated more efficiently in-house, this order flow process will change.

Another important point is that the ETF issuer has no ability to control the width and depth of markets in their products. The liquidity-providing function of ETFs is completely separate and distinct from the business of managing those assets. The backstop liquidity providers are the lead market

makers (LMMs) that are under basic requirements by the exchange. Beyond them, liquidity providers (LPs) in ETFs are in business to make money. They are not there as a service provided by ETF issuers, and they are not always looking out for the best interests of the client base.

As I considered the issues that arise throughout my client meetings, I began to realize that the execution of ETFs is a stumbling block for many clients and products. The early adopters of any product are willing to get their hands dirty and figure it out. They are willing to work through kinks. They typically come to a product as seekers, looking to understand its mysteries. The second group consists of more general users; they have determined that the product will satisfy a need. They want to use the product but may have expectations for how the product should work as opposed to how it actually does work. Many of the newer adopters of the ETF product line think the product works just like a stock since it is listed like other equity products. Looking at an ETF simply like a stock is not utilizing many of its features, which are unavailable in an ordinary stock investment. It is the equivalent of buying an iPhone to merely make phone calls, without acknowledging any of its other features.

Taking this one step further, many of the newer users of the ETF product line are migrating over from portfolios of mutual funds. They are used to net asset value (NAV) executions once a day. They are not accustomed to looking at markets during an execution process. With a mutual fund, the execution is ignored as a back-office procedure of delivering cash and seeing a journal entry in your portfolio the next day. In the world of an ETF, execution is incredibly important. In this chapter, we discuss many of the important ways of handling order flow in ETFs. The information in this chapter alone should make owning this book mandatory for every trader and execution flow staff member who handles orders in exchange-listed funds.

## TIME FRAMES AND ORDER TYPES

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The New York Stock Exchange (NYSE) Arca makes roughly 30 different order types available for people to utilize when sending orders down to the exchange.<sup>1</sup> The program trading desks and the electronic trading firms use most of the various order types. By contrast, most customer flow utilizes only a few different types of orders, overwhelmingly market or limit orders.

When trading in an ETF, there are several different methods and specific times for placing and executing orders.

## Execution Time Frames

There are two time frames in which you can execute an ETF order in a U.S.-listed ETF:

1. During the U.S. trading day, while the U.S.-listed ETF is trading
2. During the hours when the underlying basket is trading

If it is during the U.S. trading hours and the ETF has a basket of domestic constituents, you can execute an order for the ETF in either the actual shares of that ETF or by trading the underlying basket of stocks and converting those executions into an ETF price. If the constituents of the basket are not U.S.-listed stocks, you can either execute order flow in the ETF shares on the exchange, or you can utilize the basket of constituents during their local trading hours and have the traded price implied back into an ETF price and execution. This is what I refer to as an NAV-based execution.

### TRADING TIP

Let's take an example of an ETF with Japanese underlying stocks that trades in the United States. You can trade the ETF during the U.S. trading day while the markets are open, and even on either side of market open and close because of after-hours and premarket trading. Additionally, you could theoretically trade the ETF during the hours that the Japanese markets are open because someone can execute the entire basket making up the creation unit (CU) of the ETF and generate an implied price for the ETF. If the ETF is trading at a time when the underlying basket of stocks is closed, the ETF is acting like a price discovery vehicle for where that basket will be when it next starts trading. This was discussed in Chapter 7 when we covered the calculation of intraday indicative value (IIV) and the need for an estimated NAV (eNAV) calculation.

## Types of Execution

During the two times frames, you can use these types of executions to achieve your desired exposure:

- Market orders
- Limit orders

- Algorithms
- Risk markets
- NAV-/IIV-based executions

Throughout this chapter we go through these types of executions in detail. We end with several different examples of executions in the various types.

## MARKET ORDERS

The main order type used by noninstitutional investors is the market order. This is an order type that sends an order to the marketplace and gives the systems and other market participants the opportunity to trade against it with no specific limitations regarding at what price the order will get filled. It sweeps the order book and does not stop until it is complete. In our current world of multiple exchanges, dark pools, and electronically hidden liquidity, market orders are not a cost-effective way to trade ETFs. The speed and abilities of systems to determine that orders are open to market pricing, and the ability to game those types of orders, has established the market order as impractical in any ETF beyond those with the utmost liquidity. When trading an ETF that has a relatively low intraday trading volume, sending market orders can be devastating.

Let's take a look at what can happen in a worst-case scenario with a market order in a low-volume ETF. In this example, an ETF trades fewer than 25,000 shares daily. The typical market for this ETF is about 10 cents wide, and the typical depth provided by an LMM is about 300 shares on two levels. In Exhibit 11.1 you can see the 25.01 bid for 300

**EXHIBIT 11.1** Simulated Order Book—Market Order

	Bid Size	Bid	Ask	Ask Size
1	300	25.01	25.11	300
2	200	24.99	25.12	100
3	300	24.98	25.13	300
4	100	24.95	25.15	100
5	100	24.89	25.21	100
6	500	24.01	25.75	400
7	500	23.89	26.01	500
8	100	23.57	26.50	500
9	100	23.50	26.80	500
10	100	23.48	26.85	300

shares and the 24.98 bid for 300 shares. And you can see 300 shares offered at 25.11 and another 300 offered at 25.13, as the second level of liquidity.

Now let's say a buy order comes in to buy 2,000 shares of the ETF at the market. If the order book was as displayed in Exhibit 11.1 and had no hidden size, the order would make these purchases:

25.11	300
25.12	100
25.13	300
25.15	100
25.21	100
25.75	400
26.01	500
26.50	200

This would give an execution of an order to buy 2,000 shares at the market at an average price of 25.6125. (Again, this is based on the assumption of no hidden liquidity in the system and no one simultaneously coming in to sell the same ETF.)

This order has actually missed on two fronts. The first is that the market order probably took out the two levels of liquidity provided by the LMM and did not give the systems a chance to refresh before the order continued taking all other liquidity it could find. Additionally, it did not give a LP a chance to execute against the underlying basket to satisfy the order. If this was an ETF with domestic underlying stocks, an LP might have been willing to sell the ETF at a slight profit to the basket to accommodate the trade. Let's say that the basket was priced at 25.03 to 25.08, with an implied liquidity of several hundred thousand shares on each side. If the LP could sell the ETF balance of 2,000 shares at 25.10, cover its trading expenses, and make a profit, the order could potentially have been filled much more efficiently. In an extremely liquid ETF, part of that liquidity is coming from electronic systems monitoring and competing in the markets for arbitrage opportunities. This protects the outcome from being terribly expensive in a product in which a lot of people are trading. But in a less liquid ETF, those systems are not necessarily set up, as there are fewer participants or opportunities. There is little chance a market order can be efficient in any ETF that is not in that highest-volume bucket: above 10 million average daily shares traded, that is, based on investment order flow. If you are an electronic trading business, then market orders may work within the parameters of your strategy.

## LIMIT ORDERS

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The limit order is at the opposite end of the spectrum from the market order. While a market order leaves you dependent on the environment of the marketplace to determine an execution price for your order, a limit order is established with a fixed price limit in mind. A problem with this order type is that you have a much lower probability of getting a fill unless you are close to the market. The information in this book will help you place limit orders within a reasonable tolerance level of ETF valuation. This will enable you to drive up your execution probabilities while saving yourself money with good executions.

You would use a limit order primarily in two circumstances:

1. You have a set price that you are looking to trade at based on a model or other expectation.
2. You are looking to transact at close to current market levels and will place your limit accordingly.

A limit order removes any spread from a trade. If you place an order at a specified price and get filled, regardless of whether you chose to place your order in the middle of a bid and ask or in the middle of any other two hypothetical prices, you are not cutting a spread. You are trading at a price that was predetermined. If you place a limit order and the market moves toward and through your order and you receive an execution, you also should not suffer buyer's remorse. Limit orders set below or at the bid side typically get filled when the market moves toward and across your limits. You have to expect some price movement through your limit for execution. In ETFs, limit orders getting filled are the result of either the underlying value of the ETF moving through your limit range or sellers coming into the marketplace and moving the prices into your limit range. In a low-volume ETF, you will frequently be dealing with either an LP or a market maker watching the underlying value for an arbitrage opportunity. In order for either to want to interact with your order, it will have to be able to position its hedge at an advantageous price.

It is important to understand the nature of your trading counterpart when trading in low-volume ETFs because then you can place your limit order properly to entice the arbitrageurs or wait for them, depending on your own desires.

Let's use the same market picture for a quick example of two markets in which execution probability rises with the improved limit placement. In Exhibit 11.2, you can see that the market in the ETF is 25.01 to 25.11 300 shares up (bid and offered). Let's continue with the understanding that the



**EXHIBIT 11.2** Simulated Order Book—Limit Order

	Bid Size	Bid	Ask	Ask Size
1	300	25.01	25.11	300
2	200	24.99	25.12	100
3	300	24.98	25.13	300
4	100	24.95	25.15	100
5	100	24.89	25.21	100

IIV for this ETF with domestic underlying constituents is showing as 25.03 to 25.08.

If you place a limit order at 25.01 for 1,000 shares, what might happen? Probably nothing will happen until another customer seller of the ETF enters the marketplace. An LP is not going to sell you the ETF at 25.01 because it would have to pay 25.08 to buy the basket equivalent or 25.11 to buy the ETF. So in a low-volume ETF, nothing might happen for a long while, perhaps the entire trading day. In actuality, if you place your order at a similar discount to IIV in a very liquid ETF, there is a high probability you will not get filled either because it is very rare that a liquid ETF with domestic constituents will be trading at a discount to IIV.

If you place a limit order at 25.08 for 1,000 shares, what might happen? The odds of your getting filled have risen dramatically. If an LP sold the shares to you, it might be able to buy the basket at some point in the middle of the implied spread, 25.03 to 25.08, and lock in a profit versus its ETF sale.

Both of these orders were based on the premise that the market was not moving around. A limit order placed at 25.01 might get filled if the market moves down, placing it in the range of either the offer side of the market or the range of the underlying basket equivalent.

Limit orders typically require market moves and interaction to get filled, but they also need to be within trading range in terms of price. There are many occasions where a client has been bidding 5 cents below a market for an ETF, or even bid side, and not getting filled. In trading ETFs in the marketplace, it seems as if your bid price will be “wrong” in order to be executed. But this is a distinction of time frame and nothing more. The arbitrageur is attempting to take advantage of pricing spreads between the ETF and its underlying basket or proxy hedge. This is typically a business of pennies and extremely short time periods. Your order should be placed in the context of a longer-term investment horizon. So the “wrong” price actually may be the perfect price for you because, while you may be looking for a 10% gain, others may be looking to lock in a gain of 0.1% on this trade before moving on to the next.

In a domestic ETF trading during the U.S. day, the proper trading level is a function of where the basket is priced. If the basket is 2 cents wide and you are on the bid side of a market that is 2 cents below the basket bid, you will have an extremely low probability of getting filled. Why would an LP sell an ETF below the bid side of the basket? Typically, it would hit a bid that is above the offer side of the basket so it can concurrently buy the underlying basket to lock in its profit spread. But, again, this requires an understanding of the volatility of ETF prices. When you have a basket of stocks that is moving in a market and that is directly affecting the price movements of the ETF, there will be higher volatility in the ETF price. Every tick in one of the underlying stocks causes a tick in the ETF price. This causes the prices to move around within the basket band and even causes the basket band to shift, causing even more tick volatility. It is possible to see through general observations that ETF tick volatility and quote frequency are much higher than in single stocks. This is market noise and should be ignored by the average ETF investor. Decide on a price based on your valuation of the underlying basket of the ETF and your desired outcome and place your limit order. Let patience and the markets do the rest.

## **ALGORITHMS**

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The financial markets are composed of many layers of people answering to many other layers of people. There is the portfolio manager who answers to investors and the trader who answers to the PM and the floor broker who answers to the trader client. None of these people wants to be the one to pay the wrong price for a security. So a PM, instead of giving a limit order to the trader, would say, "Buy me X" at the market, letting the trader with his or her expertise in the marketplace determine the correct price. The trader, not wanting to have an effect on the market, would give the broker instructions to be in the crowd going along with what other people are doing. If someone asks why a certain price was paid for a security, someone in the chain can always fall back on the support that other people were also paying that price at that time. It is this psychology of market participants not wanting to pay the wrong price that helped lead to volume weighted average price (VWAP) and other algorithms.

A great method to determine if your trading and execution are stacking up as compared to the rest of the Street is to trade based on how the rest of the Street is trading. In a VWAP order, you are basically willing to buy/sell in volume and prices proportional to those at which the security is trading in the marketplace. You make no decisions as to how much to buy at each

price level but leave it up to the wisdom of the crowd. If others are trading, then your order should be trading in the market as well. It is tough to be held accountable if you are only a small percentage of the volume trading at your levels. The VWAP has become a major metric in the pricing of order flow. An entire subindustry has been based around building models for trading to achieve this price.

Other algorithms utilize different metrics to place orders systematically into the marketplace. All of these systems attempt to get an execution based on specific parameters with the intention of having a minimum effect on the market price of the security. And all of these order types can be used when trading ETFs. The beauty of algorithms with exchange-traded funds is that you can use them either on the actual ETF or on the underlying basket of securities. In an ETF in which there is high average daily trading volume (ADV), it might make sense to use an algorithm on the ETF shares to participate at levels where the market is trading or to use other methods. In an ETF in which there is low ADV, an algorithm on the underlying basket enables you to participate with the actual volumes of the constituent shares. This is a great way to achieve the hidden liquidity because you are trading the components, and the execution desk can give you the interpolated shares and price for the ETF. This is a critical use of the underlying basket to eliminate large spreads due to low trading volumes and the other costs associated with risk markets or using brokerage balance sheets to create volume in an ETF at suboptimal times.

As with market or limit orders, algorithms can always be used going both ways in either the ETF or the basket. Many times people do not seem as worried about getting into an ETF position as they are about getting out. If a market event prohibits trading in equities, then everything will be affected universally. But if the equity markets are trading, you can exit your ETF position via a market or limit order or via use of an algorithm; all these methods can be used for either the ETF or its underlying basket.

The fact that ETFs trade on an exchange like an equity security is really an added bonus to their liquidity structure. Every day APs can create or redeem shares in the ETF, achieving NAV pricing and liquidity. If you do not want to wait for that closing print, you can trade in the market. If it is an emergency and you want to sell ETF shares regardless of the price, then some LP will be willing to buy the shares at some level in relation to the underlying basket. In extreme situations, all markets get irrational and many market correlations move toward one. It would be irrational to think that spreads would stay the same in those situations. A base expectation for ETFs is that there will still be LPs in the products pursuing arbitrage and keeping discounts reasonable. That expectation was satisfied during the market dislocation of late 2008–2009.

## **RISK MARKETS (UTILIZING BROKER-DEALER CAPITAL)**

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Some of the largest facilitators of the ETF order flow over the last decade have been the broker-dealer desks. They have been facilitating order flow for the institutional client base since the beginning of ETF issuance in the mid-1990s. I built the ETF trading business at Bear Stearns in 2000 as an offshoot of the index arbitrage trading desk within the equity derivatives department. The main feature of our business at the time was utilizing firm capital to provide risk markets to our clients in the ETFs. Our sales pitch was extremely simple. If you asked us for a market in an ETF, regardless of what the screens were showing, we would provide prices at which you can trade in real time. Once the client had traded, it was our problem to hedge our risk and exposures. This was a clear outgrowth of the typical business of equity block facilitation that the large institutional clients were used to and that broker-dealers were accustomed to providing. The difference in this case was that the trading desk actually was able to hedge itself using a fully fungible product. In a typical block facilitation, a broker-dealer might sell a large amount of shares to a client and then work itself out of the short position over a number of weeks with a rough hedge. The desks would call all their other clients to find a seller and therefore offset their risk and make some money in the process.

In ETFs, the market-making process is different. As a trader making risk markets to clients, the minimum goal should be to close out the risk with a flat profit/loss and keep the commissions that the client pays. Since an ETF has a fungible underlying basket, if you made a sale to a client, in many cases you are able to buy the underlying basket at either flat or slightly cheaper, closing out your risk. It took a long time for clients, who are used to trading against natural order flow on the other side, to realize the new realities of the ETF marketplace. They were no longer as important in providing offsetting liquidity. They could call in almost any name at any time and the desk would be willing to make a market regardless of whether it had been trading the ETF with other clients.

ETFs actually leveled the playing field for clients in many ways because the broker-dealer desks had no information advantage by trading versus the order flow. Everyone started trading to flat risk positions, and volumes grew steadily. This also drove spreads lower because the business became commoditized very quickly. If I were a client and I typically traded with Bear Stearns because I knew it handled a lot of flow in the stock I was interested in, with the ETF, it did not matter. Lehman would have the same basket

trading system as Bear, and I could take my trades there if Lehman would make a tighter market.

The mechanics of a risk market are reasonably simple. It now boils down to speaking to the desks with the most capabilities. Order flow rarely crosses between two natural clients. Here is an example: You are a buyer of 100,000 shares of the financials ETF. You call the ETF trading desk and ask for a market or an offer in 100,000 shares. The difference is that you can ask for a market, which does not let the desk know whether you will be buying or selling. Or you can ask for an offer, which lets the desk know that you will be buying. By asking for a market, the desk stands ready to buy or sell at its prices, whereas by making an offer, it is only willing to sell. Say the desk offers 100,000 shares at \$20, and you agree to buy those shares. It will then print the ETF trade on the consolidated ticker tape. Then it needs to hedge its position. Since you have bought, the trading desk has sold you the shares. It could have been selling you a piece of a long position in the ETF and therefore have nothing to do, but most likely it is selling you the ETF short and will go and hedge its position. In order to hedge the exposure, it will make a decision as to whether the most profit is via the basket or from actually buying the ETF in the marketplace or some other hedge. It has taken the risk that the market could move in the interim between the time you agreed to the trade and when it is able to secure a hedge for its new position. You have transferred the risk of market impact to the trading desk for which you will pay commissions and usually a slight premium to the ETF value.

### **Costs of Risk Markets**

Typically, desks charge clients for offering risk in two ways: either via the spread embedded into the price or via the commission. If the charge is built into the spread, it means that they are making your market at a price at which they can hedge the position while locking in some amount of profit versus the price at which they sold the ETF shares. If they are charging a commission, the basic assumption should be that the spread they are making versus the hedge should be smaller because they will be compensated for some of their risk. The commission for a trade where a firm commits risk capital will be higher than for an agency transaction.

The price of a risk market will always include the implied costs to doing the trade. Thus, it will include a piece of the risk of slippage in the market during the interim until the hedge is secured, and it will include the other basic costs of facilitating the ETF trade: the financing costs of partial CUs and creation or redemption (C/R) fees.

A simple look at where the spread would come from in an ETF market is presented next. All pricing is based on the basket price.

$$\begin{aligned}\text{Bid Side of an ETF Market} &= \text{Bid Side of Basket} - (\text{C/R Fee}/\text{CU}) \\ &\quad - \text{Slippage margin} - \text{Expected Financing}\end{aligned}$$

$$\begin{aligned}\text{Offer side of an ETF Market} &= \text{Offer Side of Basket} + (\text{C/R Fee}/\text{CU}) \\ &\quad + \text{Slippage Margin} + \text{Expected Financing}\end{aligned}$$

If the basket is closed, and therefore not relevant to pricing at the time of the ETF trade, the value of the correlating hedge will be substituted in place of the basket price in the equation. The expected financing is a function of how long the position potentially could be on the books of the firm making the market. This is dependent on the ADV of the ETF and the size of the CU. Once that estimate of time is made, financing would be determined by the costs of maintaining the position, inclusive of management fees, borrowing fees, and trading fees of the hedge.

Typically, the main broker-dealer ETF desks dealt with the institutional client base of the firm. The main equity or equity derivatives sales force handled order flow from their client base. In order to have access to those risk markets that were predicated upon using the firms' balance sheet to apply capital, you had to be a covered account. But again, the world is a different place from just a few years ago, and the change has been drastic. Partially as a result of the rapid growth in the number of ETFs, it became impractical for many trading desks to be able to cover and make markets in all the products. They did not want to turn client business away, however, and it is impractical, in the heat of the trading day, to expect clients to know which ETFs they could call the desk for and which they could not.

The ETF trading desks also started interacting with the LPs and the ETF flow aggregators to be able to offer access to all the various products. The barrier to entry in that market was the fact that they had to be participants, sometimes providing markets as well as taking liquidity out. Now it is possible to access the risk markets of the main broker-dealers via the aggregators or other intermediary trading desks. The old specialist firms are now also running upstairs proprietary market-making desks that not only trade and make markets electronically but also are willing to provide large-block markets to clients that they can access either directly or via the aggregators. Just a few years ago, it might have been impossible for clients in the wealth management division of a broker-dealer to access large-block-size liquidity. Now, if they follow the proper path, they can get large-block markets in all of their ETF order flow.

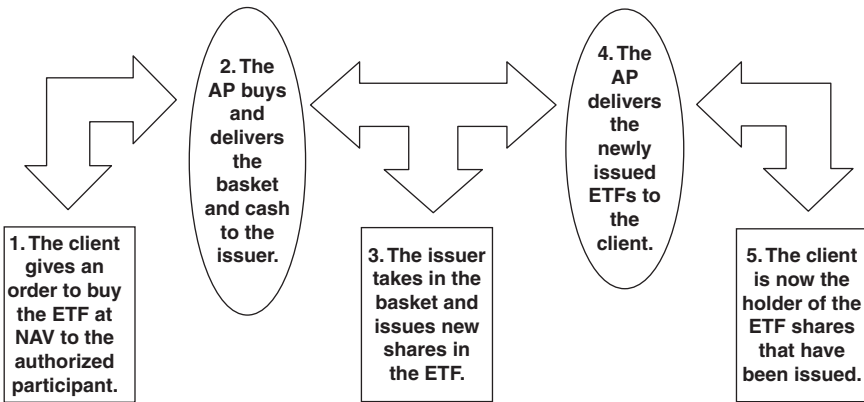
## CREATIONS AND REDEMPTIONS

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The creation and redemption process is at the heart of the ETF product wrapper. Open-ended issuance, as the process of daily creations is called, enables ETFs to grow to accommodate demand. Then, when demand reverses and the underlying are no longer in demand, Authorized Participants (APs) are able to redeem positions. This is one of the reasons that ETFs tend to trade within a tight band around their NAV. The forces of supply and demand are manageable with this just-in-time inventory process.

There is a massive amount of confusion among the ETF client base about the creation and redemption process. For many years, the C/R process has been advertised as the way to access the hidden underlying liquidity in the ETFs. While it is true that the liquidity is from the underlying basket, it is a mistake for clients to think they are actually doing creations and redemptions. The C/R process is basically just the back-office functionality that enables APs to manage their positions on the trading books. It allows trading desks to be more aggressive in making markets and providing liquidity. The APs have registered with the issuers to deal on the primary market on a daily basis. They are providing the liquidity, either via executing a basket for the client or trading in the ETF, and cleaning up their positions with either a creation or redemption. Clients are able to achieve an NAV execution plus or minus small fees. But clients are not doing the creation/redemption; they are having it done on their behalf. What makes this distinction so important? The semantics are important because many clients think the creation process restricts them to certain sizes that they must do in order to gain access to a specific ETF. Although that may have been true several years ago, in the current world, there are plenty of providers who are willing to aggregate the order flow, so clients can get NAV executions in almost any size they desire.

You can see from Exhibit 11.3 that the client and the issuer will always have the AP between their transactions. Because of this, it is not actually the client who is restricted by the amount of shares in the CU. The restriction to CU size was imposed on clients over the years from APs. APs did not want residual pieces of ETFs and baskets sitting on their books, accruing financing costs. If a client wants to get into 80,000 shares of an ETF at NAV and the ETF creation unit size is 100,000 shares, then somewhere the 20,000 extra shares will have to be accounted for, positioned, and financed. APs can buy the underlying basket equivalent to 80,000 shares of the ETF and sell the ETF to the client. In order to flatten the position on the trading books, they would then process a creation order, delivering the basket to the issuer and receiving ETF shares. But this has to be in 100,000-ETF-share equivalents, so in order to remain hedged, they would have to buy more baskets first or sell out the extra ETF shares in the marketplace.



**EXHIBIT 11.3** Steps of an Agency-Based Creation Order

We must remember that the goal of LPs or APs is to effect the transfer of assets between the issuer and the client without using up balance sheet or taking directional market risk. Everything they do in this regard must be perfectly hedged. The financing cost is what many people miss in the positioning, and it is important to understand when attempting to judge the costs of the transaction. Where the AP is short the ETF to the client and long the basket to facilitate an 80,000 share order, it is financing both sides of a potentially large notional amount. In the other scenario where the AP does the creation, it is financing a much smaller position of the residuals, 20,000 ETFs, and the corresponding baskets.

The cost of financing is embedded in every ETF trade. In very liquid ETFs, where the LP would be able to unwind the residual positions in the marketplace, the financing costs would be very small. In lower-volume ETFs, the financing costs of residual positions, either from processing partial creations and redemptions, or providing liquidity into the marketplace, can be quite high because the positions consume precious amounts of balance sheet.

In addition to the costs of financing residual pieces of C/R trades, there is also a fee for doing a creation or redemption. Issuers charge management fees already. This additional fee is a processing fee levied by operations management companies for moving stocks and ETFs around and moving money on the other side. Essentially it is a ticket charge. The size of this fee is typically a function of the number of stocks in the underlying basket and the complications involved in trading/positioning those stocks. A stock basket comprised of Indian local securities typically will have a higher C/R fee than a U.S. domestic fund, along with higher local brokerage commissions.



This fee is also translated into the spread of every ETF trade. The potential financing costs for maintaining residual positions of ETFs and baskets will also be factored into spreads.

It is important to understand these fees because they will drive the pricing of your NAV-based transaction (my preferred name for a client-driven creation or redemption). You can expect to receive the ETF at NAV plus small additional fees that will drive the cost slightly higher. Last, there will be commissions on the transaction by the AP. There is no standardized fee setup for an NAV-based transaction. Some are calculated around basis points of notional, others are a per-share charge, and still others consider it to be a mechanical operational procedure and levy a flat fee.

Three main costs are embedded in the pricing of an NAV transaction and are built into spreads:

1. Financing/stamp taxes on positions
2. Local brokerage commissions
3. Creation/redemption fees

Since there is no systematic NAV crossing network for ETFs, the end investor pays all the fees all the time. There has been some early-stage discussion about creating a once-a-day NAV cross for ETFs. Then the end user would not pay the financing costs of residuals because they could potentially be eliminated. This would also be done outside the processing firms, thus eliminating the payment of the C/R fees. It would be useful for cleaning up share sizes that are smaller than actual creation units.

## **NAV Crossing Mechanism**

A big step in the direction of solving the dilemma of potentially low trading volumes in new ETFs and in those products that are not intended as trading vehicles would be the establishment of some form of ETF NAV crossing facility. The brokerage community is attempting to devise ways to execute baskets of underlying constituents on an agency basis for clients facilitating the use of the ETF regardless of its intraday trading volume. The next logical step would be to devise a crossing mechanism to cut down on unnecessary excess trading. Gary Gastineau, a legendary force in the world of ETFs, has referred to this concept in a recent article.<sup>2</sup> Gastineau writes about trading and the trading costs of ETFs, many details of which are covered throughout this book. He refers to an NAV cross as a way to reduce the costs of trading. When he mentions an NAV-type cross, Gastineau's consideration is the reduction of fees, while I think it becomes even more valuable in facilitating volume in low-volume ETFs in general. Also, if you have an ETF with an

extremely difficult basket of underlying constituents, an NAV cross can potentially reduce the need for an LP to act as an intermediary. Although there might be no initial guarantee of an execution in a basic cross structure, there is always the potential that the mechanism will develop in ways that will enable LPs to facilitate on the opposite side of imbalances to provide a higher hit rate of executions.

This NAV cross is already happening in the mutual fund world because the process is based around buying and selling fund shares for cash at NAV. It is a certainty that a mutual fund manager faced with the delivery of \$100 and the payment of \$100 from two opposing clients is doing nothing in the portfolio. In the ETF structure, those two orders are most likely being facilitated at different points in the exchange mechanism. An article on Index Universe recently announced that “db x-trackers is offering clients the ability to trade at the official net asset value (NAV) for all 59 of its exchange traded funds listed on the London Stock Exchange.”<sup>3</sup> The article goes on to explain:

*Its most important impact, however, may be as a way to level the playing field between smaller, less-established ETFs and large, more liquid alternatives. Often, investors hesitate to buy ETFs with relatively low assets and trading volumes for fear of illiquidity. They are concerned that they will pay too high a spread, or that a large order will impact the price of the ETF, or that they will be unable to exit an ETF during a down market. With NAV-based trading, they will at least be assured a certain level of price accuracy.*

This can and should be done in the U.S. markets. When a process like this is rolled out into the entire universe of ETFs, the game will most certainly change drastically for everyone involved.

## **NAV Trading**

The market is evolving to a synthetic NAV trading model. In this model, portfolio desks will use ETF baskets and apply their algorithms with the creation/redemption process in the background to flatten positions. In this model, international-based ETFs are utilized to provide liquidity to the client base without the additional costs of risk-based liquidity spreads and premiums and discounts related to sentiment as opposed to actual market behavior. The ETF IIV is valuable when attempting to determine a price to place an order in a domestic U.S. ETF that is not time sensitive. If you are using a 15-second lag on pricing for a position anticipated to be in a portfolio for an extended time period (use one day minimum as a base), it becomes irrelevant

if you get filled at an IIV level from 15 seconds ago. If you are not trading news, intraday market activity should not affect your trading. Additionally, beyond the realm of domestic U.S. ETFs, into the international underlying baskets, the IIV is almost a useless number for trading. It should be disregarded by investors as stale no matter how frequently it updates during the day. I expect that the major data providers will be calculating and selling “estimated NAV” numbers that will incorporate a correlation indicator to estimate the moves expected of the underlying basket and produce a number that indicates where the ETF should be trading (eNAV).

Many of the major trading firms are already calculating an eNAV in order to provide liquidity in the various ETFs. Eventually it should be provided to clients to aid in their execution. As of the final editing of this book, one of the largest ETF providers is in the process of teaming up with an execution-only broker-dealer who will provide real-time IIV data for the U.S.-listed funds and utilize algorithms to define ETF pricing levels for the placement of limit orders. This is just the beginning.

Estimating IIV is necessary for a fund in which the underlying basket is not trading during the same hours as the ETF. Typically, this is done with a correlation proxy used to adjust the IIV to account for recent market movements.

The basic calculation for the estimated net asset value was presented in Chapter 6 and is:

$$\begin{aligned} \text{eNAV} = & \left( \sum (\text{Shares per each component stock} \right. \\ & \times \text{Last Local Price}) / \text{Foreign Exchange Rate} \Big) \\ & \times (1 + x) / \text{Creation Unit Shares} \\ & + (\text{Estimated Cash} / \text{Creation Unit Shares}) \end{aligned}$$

where  $x$  = the expected percentage change in the underlying constituents.

A great way to ease liquidity concerns is to shift the execution of many ETFs to the underlying baskets in the appropriate time frames and interpolate that trading back to the ETFs for a client portfolio. I expect the program trading desks to expand on that in coming years to handle the growing onslaught of ETF business. Although many of the ETF products were access based and valuable only with a tremendous amount of intraday volume originally, many products are now investment based. Those products provide performance versus a specific benchmark and are not intended to be used as intraday trading tools, so the ability to trade the underlying basket and interpolate that into the ETF is critical for their development.

## Spreads

The cost to trade ETFs has been a hotly debated topic in the industry since their inception. It would be remiss of this handbook to completely ignore spreads. I will spend only a small amount of space, however, on them. Matt Hougan discusses several of the costs of trading ETFs and some of their potential causes in the *Guide to Exchange Traded Funds*.<sup>4</sup> He highlights several studies demonstrating a high inverse correlation between size of fund in AUM and the spread and depth of market. He ends by saying: “Spreads should be incorporated into every ETF trading decision, much the way that brokerage commissions are. Their impact will be felt most by the short-term traders, but even long-term investors should consider their planned holding period and incorporate spreads into their trading decisions.”

I agree with Hougan that spreads are a cost of trading ETFs. We are, however, discussing methods of trading that dramatically reduce the spread issue. If you are trading a high-frequency or other type of statistical arbitrage strategy, spreads are incredibly important. But if you are moving outside that realm and using ETFs as an investor, you can eliminate many of the negative characteristics associated with wide spreads by proper order-type use and utilizing the open-ending issuance function to achieve NAV-style executions. Proper execution of ETFs can bring the costs of spreads down to a root problem that now affects all stock trading. Stock spreads in general have widened and depth of book has decreased in the current market regulatory regime. The problem with spreads is not actually in the ETF but in the underlying basket from which their price is derived.

To take that argument one step further, I would point out that the structural component of in-kind stock transactions of the ETF do even more to diminish the negative impact of spreads. In an ETF, if you have given an order to buy the basket with the purpose of achieving an implied NAV execution, you will bear the costs of the spreads of the underlying stocks. The AP will then deliver the underlying stocks to the issuer at the closing price. The ETF will not pay any spread. This is an example of how the ETF structure pushes execution costs down to the individual investor for the investment. In a mutual fund, when there is a large creation or redemption and a basket is traded, that pricing goes into the fund and is funneled to the entire population of fund holders.

In one of his concluding lines, Hougan states: “Especially for newer ETFs with low assets under management, investors would do well to pay attention to spreads when they trade to avoid paying too much above fair value.” This is absolutely true for the plain vanilla domestic equity ETFs. If you go beyond those products, on many occasions, fair value is based on price estimations of where the underlying instruments might be accessible.

In many cases, what is considered to be a spread is actually an estimate of actual value, including the costs of execution. You might look at the ETF as a pass-through vehicle to the underlying assets: You should be looking at the costs of trading those underlying assets instead of the ETF. The important piece often missed is how the liquidity in the underlying baskets is accessed. When a LP is making a risk market in an ETF that has a basket that is not trading at the same time, the customer is paying for potential risk associated with tracking error of the hedge. The customer is buying the ETF at a price based on the LP's estimated value of the ETF. If the customer considers the ETF to be trading at a cheap price compared to his or her own estimated value of the ETF, then the spread can be working in the customer's favor, no matter how wide it is.

## EXAMPLES OF EXECUTIONS IN THE MARKET



In this section, we go through several examples of executing ETF order flow. There are millions of examples of what not to do and great examples of when executions work out perfectly.

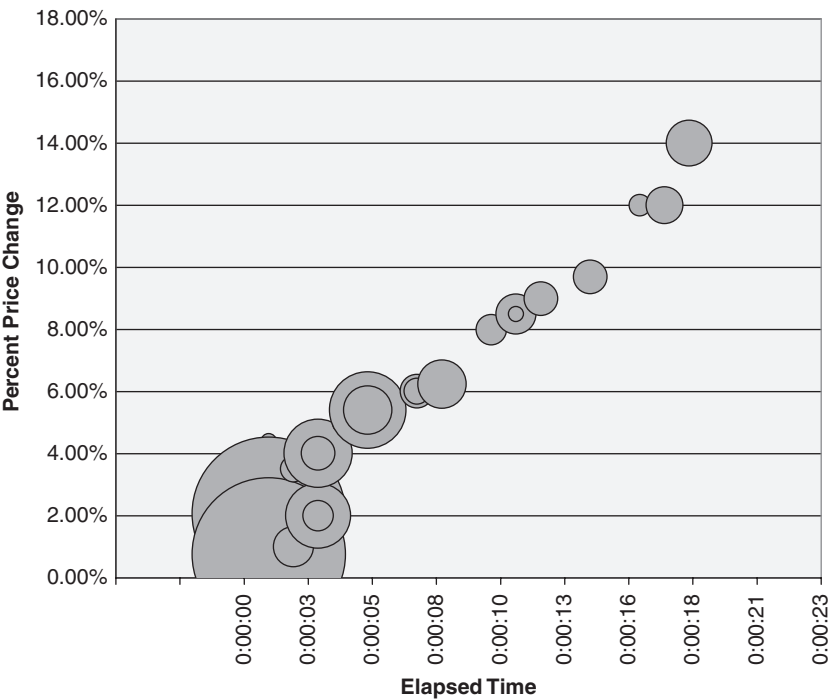
I have tried to utilize examples that demonstrate what happens in a particular situation and how it might have gone better or worse.

### Example 1: A Market Order Sent Electronically in a Low-Volume ETF

A market order sent in a very liquid security in small size will most likely be executed at the National Best Bid or Offer. In an extremely liquid security, a market order can do well to satisfy execution needs.

In a low-volume ETF, however, the results can be extremely costly in relation to where a trade may have occurred if liquidity had been sourced correctly. Exhibit 11.4 shows the results for a market order that is sent in a low-volume ETF. The ETF typically trades approximately 4,000 shares per day and the market order was to buy 43,000 shares. It is a unique situation that a market order was sent at 10 times the daily average volume. It is typical, and a testament to the structure, that on any given day, an order for 10 times the daily average volume can take place in a low-volume ETF.

In this case, the market order took approximately 18 seconds to get filled and moved the price almost 15% from its initial on-screen market prices. The bubble graph in Exhibit 11.4 shows the amount of shares bought at each level represented by the size of the bubble. The order was almost 50% filled up to approximately 5% from the initial market price. Then



**EXHIBIT 11.4** Percentage Price Movement during Market Order

it continually took offers all the way up the market until it was finally completed. A representation of the execution as it appeared on the tape is shown in Exhibit 11.5.

As mentioned, the time for the whole execution was about 18 seconds. The market order kept plowing ahead and buying whatever shares of the ETF it could at whatever level became available. At no point does it stop to wait and see if any more shares will come in to fill in the order book. Market orders are based on speed of execution regardless of price. They have a valuable place in the order-type spectrum but can be a very dangerous weapon if not utilized properly by investors.

**Example 2: A Large Risk Market and Agency Creation**

In Exhibit 11.6, you can see a two-minute picture of the tape on a day in August 2008. The highlighted line displays a trade of 642,342 shares at a price of 25.59 that occurred near the end of the trading day in an emerging

**EXHIBIT 11.5** Tape Display of Large Market Order

Time	Trade Price	Size Executed	Percent from Initial Price	Bid Price	Ask Price
13:05:01	35.92	2,500	0.00%	35.91	35.92
13:05:01	35.92	1,000	0.00%	35.91	35.92
13:05:01	35.92	100	0.00%	35.91	35.92
13:05:01	35.92	200	0.00%	35.91	35.92
13:05:02	36.28	200	1.00%	35.54	36.28
13:05:02	36.28	200	1.00%	35.54	36.28
13:05:02	36.64	200	2.00%	35.54	36.64
13:05:02	36.64	200	2.00%	35.54	36.64
13:05:02	36.44	2,500	1.45%	35.54	36.44
13:05:02	37.50	100	4.40%	35.51	37.50
13:05:02	36.66	10,000	2.06%	35.50	36.55
13:05:02	36.19	10,000	0.75%	35.50	36.19
13:05:03	36.28	500	1.00%	35.55	36.28
13:05:03	37.18	300	3.51%	35.55	37.18
13:05:03	36.28	700	1.00%	35.54	36.28
13:05:04	36.64	1,800	2.00%	35.57	36.64
13:05:04	36.64	300	2.00%	35.56	36.64
13:05:04	36.64	400	2.00%	35.74	36.64
13:05:04	37.36	2,000	4.01%	35.55	37.36
13:05:04	37.36	400	4.01%	35.55	37.36
13:05:04	37.36	500	4.01%	35.55	37.36
13:05:05	37.72	200	5.01%	35.65	37.72
13:05:06	37.86	2,500	5.40%	35.69	37.86
13:05:06	37.86	1,000	5.40%	35.69	37.86
13:05:08	38.08	500	6.01%	35.55	38.08
13:05:08	38.08	300	6.01%	35.55	38.08
13:05:09	38.16	1,000	6.24%	35.55	38.16
13:05:11	38.79	400	7.99%	35.55	38.79
13:05:12	38.97	700	8.49%	35.56	38.97
13:05:12	38.97	100	8.49%	35.56	38.97
13:05:13	39.15	500	8.99%	35.57	39.15
13:05:15	39.40	500	9.69%	35.58	39.40
13:05:17	40.23	200	12.00%	35.72	40.23
13:05:18	40.23	600	12.00%	35.72	40.23
13:05:19	40.95	310	14.00%	36.11	40.95
13:05:19	40.95	900	14.00%	36.11	40.95
13:05:27	36.26	200	0.95%	36.26	40.92

**EXHIBIT 11.6** Display of Large Risk Market

Time	Trade Price	Size Executed	Bid Price	Ask Price
15:58:12			25.51	25.56
15:58:12	25.52	500		
15:58:14			25.51	25.56
15:58:16			25.51	25.57
15:58:16			25.51	25.58
15:58:16	25.56	100		
15:58:16			25.51	25.56
15:58:17			25.51	25.57
15:58:28			25.51	25.57
15:58:59			25.51	25.57
15:58:59	25.59	642,342		
15:59:00			25.51	25.57
15:59:00			25.51	25.58
16:00:24	25.59	900		
16:00:24	25.57	100		
16:00:24			25.51	25.59

market currency ETF. The price of the trade is merely 8 basis points above the most recent offer price of 25.57. Although it cannot be seen from the illustration, the size of the offer at that time was 100 shares, and the ETF had a daily average volume of less than 50,000 shares at the time. In this scenario, a customer called up an LP and asked for a risk offer in the ETF. Upon agreeing on the price, the trade was printed to the consolidated tape. This trade was 12 times more than the daily average volume of the ETF. To facilitate this trade, the market maker achieved exposure via the currency market to hedge the portfolio and then processed a creation to flatten out its short position in the ETF and its hedge.

At the time of this trade, the customer also gave an AP an order to buy an additional \$30 million notional of this same ETF benchmarked to NAV. In order to satisfy this order, the AP would do a creation. This is an agency creation on behalf of the client order underlying it. It is important to understand the distinction between the agency creation and the risk market because it highlights an interesting technique by the client. The customer positioned one-third of his or her desired size immediately by using a risk market. The client paid a slight premium versus the market for the use of that firm capital. Then he or she achieved the rest of the exposure via the creation process, which should equate to a price close to NAV of the fund.

In this scenario, the ETF had AUM of \$50 million when the customer placed the orders. The day after the creations had been processed, the fund



would have AUM of \$100 million because the customer effectively doubled the size of the ETF. At the same time, the customer, who was concerned about potentially owning 100% of the fund's outstanding shares, was comfortable with owning only 50% of those shares once the creations were completed. This is an excellent method for achieving exposure. If you are not sensitive to intraday price movements of the ETF, waiting for an overnight execution via the underlying constituents can give you the exposures you want without an impact on the market. If the customer went to the LP with a request for a market in the whole size, he or she would have had a greater impact because the price offered would have been further away from the market as quoted. In this case, the customer was able to secure one-third of the position immediately, therefore participating somewhat in any price move between the time of trading and close of business in the underlying constituent market.

### Example 3: A Basket Trade Executed Overnight

In this example, the customer wanted to gain exposure to the Japanese markets via an ETF that trades in the United States. Since an international ETF trading during the U.S. trading day is a price discovery vehicle for attempting to determine where prices would be trading when the market next opens, the customer decided to use the underlying basket for achieving the exposure and to receive a report in the ETF the next day. It is important to note that even though the customer is not paying the premium or discount from price discovery, he or she is assuming the risk of market move by waiting for the overnight execution.

The customer places an order with an ETF trading desk, which is also an AP, to buy the basket underlying the ETF at the volume weighted average price in Japan overnight. At the end of trading, the AP will calculate the implied price of the ETF from the basket executions, add in the appropriate charges for creation fees, brokerage costs, and commissions, give the customer an ETF price and share amount, and then print the trade to the tape.

In Exhibit 11.7, a few things should be highlighted. The trade prints to the tape at 9:27:55 am, before the market opens for trading. The trade price

#### EXHIBIT 11.7 Display of an Average Price Block Trade on the Tape

Time	Trade Price	Size Executed	Conditions
9:27:55	38.6163	250,000	Average Price, Form T, Nasdaq Trade Reporting

goes out four digits, indicating an average price. This can also be seen in the conditions printed with the trade. Since this is the first trade on the tape for that trading day, there have not been 250,000 other shares that could have been traded at various prices to make up the average price, further confirming that this was probably a trade done based on the underlying basket traded in the local market.

This trade did not put the trading desk at risk because the customer did not ask for a market. Therefore, there is no risk premium attached to the trade that made it more expensive. By trading the underlying basket of the ETF, the customer was trading the ETF in NAV terms, with just costs attached, removing the variability of the price discovery mechanism of premiums and discounts that can occur during the U.S. trading day.

## CONCLUSION

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In summary, the best practices for executing order flow in the ETF markets are:

- **Place a limit order.** Limit orders are most effective when they are placed in relation to the IIV of the ETF with domestic underlyings or in relation to an eNAV when trading an ETF where the underlyings are not trading at the same time as the basket. When doing so, you should be cognizant of where the ETF should be trading.
- **Ask for a risk market from a liquidity provider.** If you are an institutional investor or an advisor, you have access to the ETF liquidity providers for risk markets. If you are a client of a large broker-dealer, all broker-dealers have ETF trading desks that are in the business of committing capital for block trades or facilitating NAV-based executions. If you are in a wealth management business, you probably would have to direct your intermediary trading desk to get you a risk market from either its LP relationships or from a liquidity aggregator.
- **Work the order using an algorithm.** You can use any algorithm on either the actual ETF shares or the basket of constituents. See the algorithm section of this chapter for some possible constraints when using these types of orders.
- **Have an Authorized Participant process an NAV-based transaction.** If you are happy to be based on the closing prices, this will produce a price at NAV. If you have the AP utilize an algorithm of some sort to trade the basket throughout the day, this will provide an execution at an implied NAV price. This does not have to be in creation unit size but will involve trading the underlying basket and interpolating those executions into ETF shares.

Having trading desks and liquidity providers utilize the creation and redemption feature (and other functionality) of the ETFs is very important in the efficient execution of ETF order flow. Customers can take advantage of this unique ability to grow and reduce shares outstanding. They benefit from it once they understand how it works. Although ETF providers have made tremendous efforts get this information to their client base, the rapid adoption by new users means that the education process must be continued and advanced. Many issuers have been building up their sales forces on the educational side to teach clients best practices on execution for their ETF order flow. This saves clients money and enables them to move further down the curve of available products. Utilizing ETFs that may be showing less average daily trading volumes but offering different exposures is changing the way that investors manage their portfolios.

With the advances in electronic trading, the growth in the businesses of providing liquidity, and the education and adoption by the investing world, use of the broader range of ETFs is growing. There is room in the business for additional LPs to handle the growing number of available products. And there is room for ETF execution to evolve in ways to further reduce costs and improve efficiency of executions.

In Chapter 12, the final chapter, we meet current market participants in the ETF trading world. We examine the roles of the different players and how we can best interact with them in the marketplace. We also look at some of their trading strategies to better understand their goals.



## Market Participants and Their Trading Strategies

In the early days, the specialists were the primary liquidity providers (LPs) in exchange-traded fund (ETF) products. They facilitated order flow that was customer driven, flowing through the broker-dealers heading toward the exchange floors. At some point in the late 1990s, investment banks realized there was money to be made intervening in and facilitating this flow. Many of the positions in ETF trading have been taken up from the realm of index arbitrage, portfolio trading, or equities traders who have migrated into the space over the years. It has been a learning experience for many firms; this upstairs business has developed from almost nothing in the mid- to late 1990s to become a very profitable source of revenue. The primary business of providing block and electronic liquidity has grown the most rapidly. This chapter describes the participants and interprets some of their primary behaviors. Knowing the motivations of your counterpart in the markets will help you to get your ETF orders executed efficiently.

The explosion of ETF block trading and order facilitation occurred when equity block trading revenues were beginning to show signs of decline at major investment banks. The banks developed desks covering the ETF product line and began to find ways to trade the products. In many ways, providing liquidity in ETFs is a combination of two trading methods that the banks already did very well: large block facilitation and basket trading. Take block traders and give them a way to truly hedge their positions by trading a basket of underlying stocks and you create a powerful revenue stream. The institutions became early adopters of the process. Due to natural evolution, banks were able to generate revenue streams from all the corollary businesses around the product as well. Also, this was a very profitable product line for specialists on the exchange floors. Many of those early ETF traders have since migrated to upstairs businesses, continuing to provide liquidity.

When the institutional customer base got involved, it was because customers saw the opportunity to trade a futures-type product that was actually a listed equity. It would enable them to hedge a large portion of their portfolio with relative efficiency. ETFs also provided institutional investors with a way of getting risk markets in the index space. Up until that point, only a handful of futures existed and even fewer allowed block prints, and it was rare to get capital commitment risk on index swaps. Hedge funds could now employ their trading strategies in the index space, and ETFs quickly amassed a fan base with large amounts of capital. Customers were used to executing large blocks of stocks via institutional desks at investment banks so they naturally started sending ETF flow through those desks. The desks realized that if they traded the underlying basket they could hedge themselves efficiently, providing markets to their client base, and the business of being a liquidity provider (LP) grew.

I refer to the term “liquidity provider” rather than “market maker” because I consider the ability to hedge yourself with a real-time basket, essentially locking in a price differential at the time of trading, to be different from making a market when hedging is more difficult. Depending on how the domestic ETF is priced, there may be a small amount of risk in obtaining the basket hedge, but essentially it is just balance sheet usage to facilitate a client trade—hence the name “liquidity provider.” It is also here where a lot of clients get confused about available liquidity. Taking only the ETF volume and not the underlying basket-interpolated volume does not give you a valuable picture of the true liquidity of the product, as was discussed in Chapter 10. LPs are accessing this additional volume so that they can facilitate order flow. This has created massive liquidity in some of the products.

I consider there to be five unique forms of LPs, each interacting with ETF order flow in a distinct manner in the market. There is some overlap, but I distinguish between them because they play different roles. The five types are:

1. Broker-dealer facilitation desks
2. Proprietary market-making firms
3. Lead market makers (LMMs)
4. High-frequency trading firms
5. Liquidity aggregators

Reviewing the typical goals and roles of each of the participants will help you understand the ETF order flow food chain. We are going in no particular order because many of the players act in different roles depending on market circumstances. Knowing the players enables investors to price orders more efficiently and understand what might be happening when questions arise.

## **BROKER-DEALER FACILITATION DESKS**

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The biggest investment banks, which also have clearing departments and wealth management arms, typically have two areas that handle the facilitation of ETF order flow: the institutional ETF trading desk and the intermediary trading desk. Some of the order flow can be handled by both desks, although not all can. Typically, discretionary-based order flow from the wealth management businesses cannot be facilitated with firm capital and needs to be segregated out from the proprietary trading desks. This is discussed in further detail later in the section on intermediary trading desks.

### **Institutional ETF Trading Desk**

The institutional ETF trading desk is typically a feature of the equities or equity derivatives departments. It works in conjunction with the equity derivatives group, portfolio trading, and institutional sales. This desk typically handles all of the institutional customer businesses revolving around ETFs. The main functions are:

- Committing firm capital to facilitate block trades in the secondary market
- Dealing in the primary market doing creations and redemptions as Authorized Participants (APs)
- Trading baskets for customers accessing the underlying ETF liquidity
- Facilitating stock loan inventory
- Trading custom basket and index swaps
- Trading and making block markets in options

The primary clientele of these desks traditionally has been the institutional community. This recently has been changing, however, as larger advisors use the products and change the nature of order flow.

The desks have been growing over the last few years as the requirements of being a full-service ETF desk have also evolved. In the late 1990s, when building the desk at Bear Stearns, we were able to cover most trades with an international and a domestic trader. Now traders with knowledge of the different businesses of commodities and fixed income are also valuable because of all the different types of ETFs in the marketplace. The continuing emergence of new types of ETFs with a variety of underlying securities has forced ETF desks to deal with many different areas throughout the firm to facilitate customer business. Some of these desks also are adding their own

ETF-specific sales forces, a position that did not exist just a few years ago. This is a by-product of a changing clientele; some are focusing only on the ETF product structure and are large enough to sustain an ETF-dedicated sales team.

Chapter 10 presented suggested requirements for building a full-service ETF trading business. The systems required are extensive. Beyond the typical client order management systems, there needs to be advanced real-time pricing systems and a group tasked with building and maintaining the models for ETF pricing. There are currently more than 700 U.S.-listed ETFs. Sophisticated systems are needed to bring in all the underlying securities and weights for each ETF and price them in real time so that markets can be priced effectively. Staff members are needed to monitor corporate actions, index changes, and dividends. Then smart order routers and basket trading systems are needed to handle the hedging. Since the hedging is no longer just equities and future based, but can be bonds or commodities of wide variety, there also needs to be advanced risk management and position monitoring systems that can handle all asset classes in multiple currencies and break down each ETF into its constituent parts. One of the most attractive features of being a trader on the institutional ETF trading desk is the diversity of potential experience. ETFs are a melting pot of asset classes and require traders to bring together many parts of the firm that did not previously need to interact or coordinate. The desk can be trading baskets of global securities, commodities, and bonds and interacting with a wide variety of players throughout the firm. The downside is the same; many of the main trading desks have been unable to handle making markets in many new types of ETFs, leaving open the doors for product specialists to enter the markets.

Since the ETF marketplace has exploded from next to nothing over the past 10 years, so has the client base of the desk. Over the same time period, the institutional community has expanded rapidly as hedge funds have proliferated. Some of the biggest businesses of the department focus on servicing the needs of these firms and facilitating large blocks of ETFs. Other big customers, passive accounts using ETFs for transitions, cash equitizations, and money management have also become significant clients of ETF desks. In the future, we will continue to see the client base grow and evolve to include more sovereign wealth funds, 401(k) and Individual Retirement Account platforms, financial advisors, and retail investors.

Another feature of large broker-dealer ETF trading desks is facilitating stock loan inventory. The current inefficiencies of the stock loan business are astounding. The stock loan desk is typically part of the clearing business. Stock loan desks are not traditionally the firm's risk-taking desks, and they do not typically maintain risk positions. The stock loan department would take the inventory of the firm positions and lend them to the Street,



attempting to optimize the balance sheet. In the ETF business, you can create inventory in order to lend it to the Street. These creations typically are done on the ETF trading desk, and the positions are maintained on that desk. This situation enables ETF traders to better monitor the risk embedded in maintaining an ETF position versus its underlying basket, such as rebalances, corporate actions, and tracking error. The stock loan desk takes those positions and lends them to the Street at a better rate than the costs to maintain the positions, and the profits are split between the stock loan and trading desks. The clearing clients who are forced to trade away from the firm's proprietary ETF market-making desk because of regulations regarding discretionary order flow and capital commitment are having their borrow requirements satisfied by similar competing trading desks. This creates an interesting conundrum for the future growth of those businesses.

The desks at the broker/dealers typically facilitate client flow on a proprietary basis. They make markets (provide liquidity) with firm capital for clients and handle agency flow, creations, and redemptions. As the client base grows to understand the benefits of using ETFs in the form of net asset value (NAV)-type transactions, either via algorithms on the basket or benchmarking to the close, it is doing more business with large firms on an agency basis. This is also bringing the user base down the curve of available ETFs into the domain of those that show less average daily trading volume but have plenty of underlying liquidity available via the underlying basket.

Another major feature of broker-dealer institutional ETF trading desks is their ability as APs. ETF providers have entered into agreements with all the main ETF desks to enable them to transact in the primary issuance market utilizing the creation and redemption mechanism to maintain positions. Because the creation and redemption of ETFs is one of their most important features, I consider this functionality of the desks primary to their importance in maintaining positions balanced both on the Street and on the broker-dealer balance sheets. The main business of making large block markets in the ETFs would be riskier and costlier if they were unable to adjust their positions with the issuer at the end of each trading day. They can clean up their balance sheet usage and move large assets onto the books of the ETF issuers, or vice versa. This keeps the ETF trading around NAV and enables the LPs to start each day with a clean sheet. Additionally, they are able to utilize this feature for the wide variety of financing trades surrounding the ETF business.

While the institutional ETF trading desk is handling most of the flow from the hedge fund and asset management client base in ETFs, providing them with large-size risk markets on demand, clients of a firm's wealth management businesses are steering almost all of their order flow toward an intermediary: an agency-only internal trading desk.

### **Intermediary Trading Desk**

The clientele of the intermediary trading desk has evolved with the adoption of the ETF product line. As recently as a few years ago, if you were situated in a wealth management or private client services department of a large broker-dealer, you would not speak to the institutional ETF trading desk. Even now, some large ETF trading desks cannot speak to intermediary trading desks that handle order flow from the brokerage and advisory businesses. But the adoption of ETFs and the generation of large block ETF order flow are changing the nature of the order flow from wealth management businesses. Access to the desk typically is determined by whether the customer business is discretionary or nondiscretionary. Most order flow from the advisory businesses is kept segregated within the prime brokerage business and runs through the intermediary trading desk. Typically the advisory businesses do not have a relationship with the in-house ETF trading desk. In a multi-faceted firm with a wealth management platform and with a large ETF trading desk that facilitates a tremendous amount of ETF flow for the institutional client base, a large advisory group transacting in ETFs cannot always access the liquidity of the ETF desk. In many cases the advisory group speaks to the intermediary desk, and that desk goes outside the firm to source ETF liquidity.

The intermediary desk has had to learn how to access liquidity in the ETF product line. Historically intermediary desks handled agency-based order flow, which they would take directly to the floors or, more recently, to dark pools and internal crossing engines. Now the advisory businesses have embraced the ETF product, and are pushing farther down the product curve. They do not want to be restricted to using the top 20% of available ETFs because they are not only using ETFs for basic beta exposure. They want to be able to access the product that can fit into the alternative alpha categories as well. The volumes in these products are lower, but the underlying baskets still provide liquidity if they can be accessed, and the client base is pushing to use more of those products.

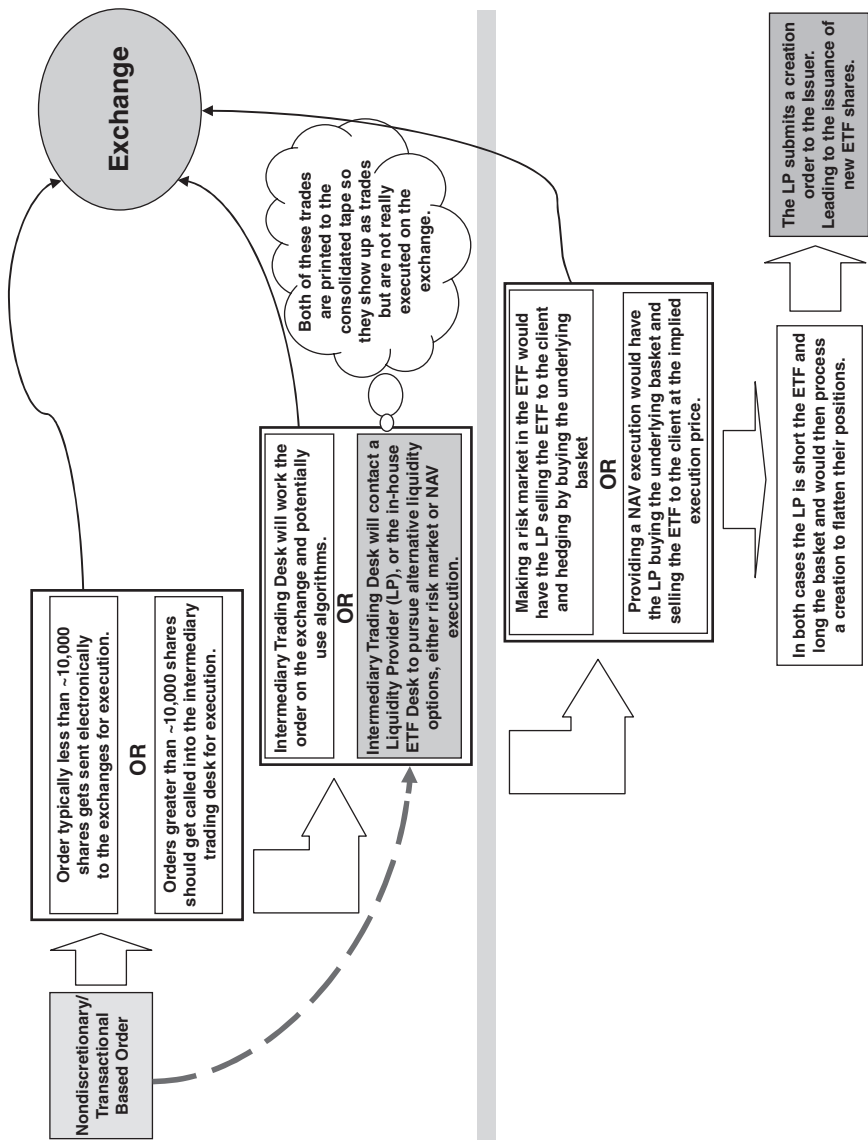
The accessing of the liquidity takes place primarily through the use of external LPs and market makers or liquidity aggregators. In many cases, the situation arises where an intermediary trading desk sourcing liquidity through an LP is transacting against its own broker-dealer for the other side of the trade. The regulations have unwittingly created a situation where a middle player needs to intermediate between an ETF trading desk and the firm's own client base, which inevitably adds fees that are borne by the end client. I consider the regulations regarding discretionary order flow not receiving firm capital to be outdated because of the advances in risk management now available via technology.

**Advisor-Based Order Flow** In a situation where a large advisor on one of the major platforms wants to transact a large order in an ETF, some of the next situations can arise. The advisor typically is restricted to calling the intermediary trading desk with the order. Since this type of large ETF business is new to traders on intermediary desks, there may be uneven results and nonstandardized practices, depending on who picks up the phone. The most unfortunate result is when a large ETF order comes to the desk in an ETF that does not trade a lot of intraday daily volume. The trader on the desk may reject the order back to the advisor who generated it, saying there is no way to transact in that large size in this illiquid ETF. That is perhaps the worst answer that can be provided and displays the need to further educate the trading desks regarding the underlying liquidity of ETFs. The fact that, unlike a stock, there is always a LP ready to provide a market in an ETF based on estimated net asset value (eNAV) needs to be universally understood.

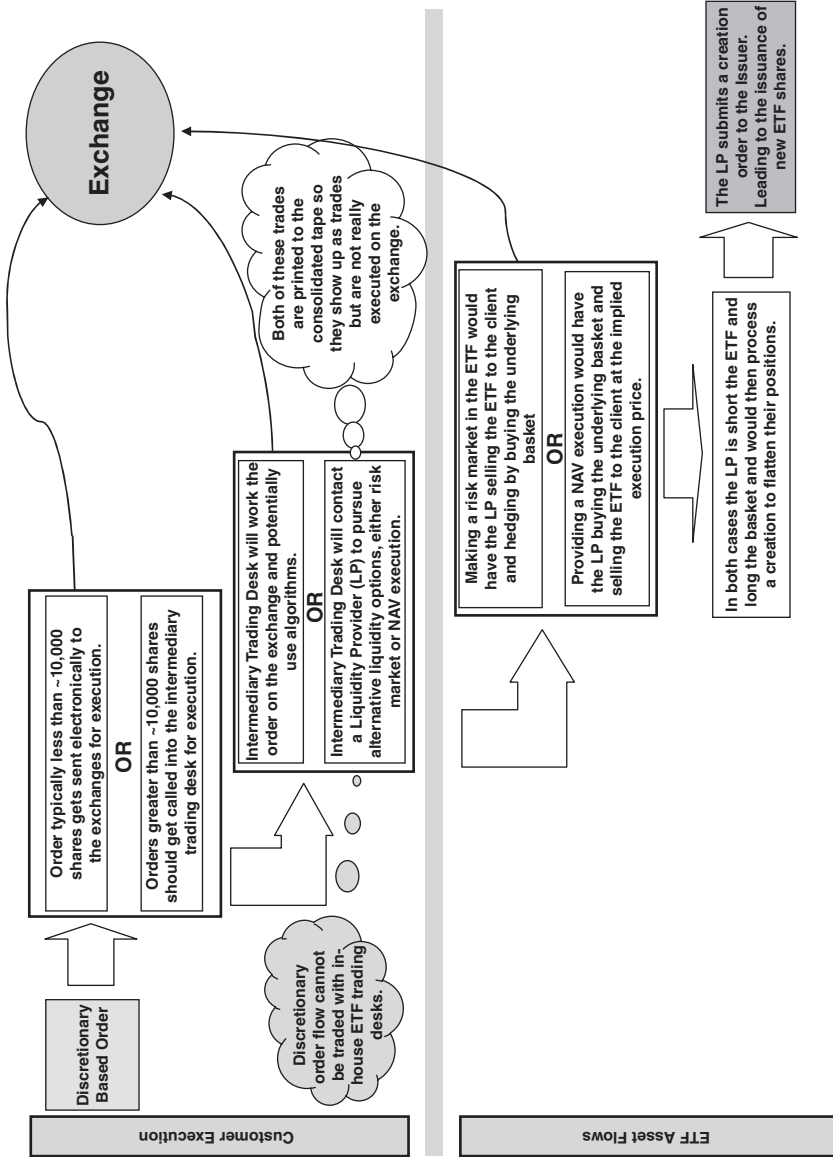
The best scenario is when intermediary trading desks have relationships with many of the LPs and aggregators in the marketplace and take all their ETF volume to those service providers. Because of the large number of available ETFs, LPs often develop specialties in certain products, international funds, and commodities. The savvy desks will have a roster of LPs to use depending on what type of fund is being traded. Additionally, the liquidity aggregator will be able to call up several LPs at once, speaking directly with the specialty traders to get pricing in the requested names. Typically, LPs and liquidity aggregators who are called can provide immediate pricing in blocks of ETFs. This does not, however, solve the issues of clients who would prefer to have their order flow worked in the underlying market via the basket and receive an NAV-based execution. In order to do this, intermediary trading desks need a relationship with a portfolio trading or full-service ETF desk that can provide creation and redemption style or NAV-based services as well.

I have compiled two order flow diagrams to display how the flow is working for the advisor community. Exhibit 12.1 focuses on nondiscretionary or transaction-based order flow. Because of the nondiscretionary nature of this order flow, some is allowed to go directly to the institutional ETF trading desks at the large firms. This is highlighted by the dotted line shown from the order box to the fourth box down detailing sourcing liquidity from the ETF desk or outside liquidity sources. There are generally different firm-specific internal rules about order flow that advisors must understand in order to process their orders.

In Exhibit 12.2, we can see the flowchart for order flow based on discretionary account business. This type of order flow usually cannot interact with the in-house institutional desk because of compliance reasons.



**EXHIBIT 12.1** Trade Flow Demonstration—Nondiscretionary/Transactional



**EXHIBIT 12.2** Trade Flow Demonstration—Discretionary

Therefore, if the order flow is large enough, it should be taken outside the firm to the liquidity providers and aggregator community.

## **ELECTRONIC MARKET MAKING**

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A variety of different players provide liquidity in ETFs primarily electronically. They can be proprietary arbitrage desks, market makers and LMMs, statistical arbitrage, and high-frequency trading firms. According to some accounts, electronic trading firms provide more than 60% of the average daily volume in U.S. equities. Because of the unique structure of ETFs in particular, these firms provide a tremendous amount of liquidity in the products, with some trading exclusively in the ETFs.

### **Proprietary Arbitrage Desks**

Businesses that focus on capturing spreads between the ETF and the respective underlying baskets are performing a trading strategy called “proprietary arbitrage.” These businesses can be either stand-alone trading firms that have raised money from a client base or desks within large investment banks trading firm capital. The businesses are focused on pricing out the underlying basket of the ETF and trading it versus the actual ETF shares. They are not facilitating customer order flow; they only are getting involved in trades that will reward them with a profit between the ETF and their respective hedge. I consider this to be an expansion of the index arbitrage businesses that used to focus only on the difference between futures and baskets of stock. Over the last several years, there has been great growth in the number of indexes available and the ETFs issued that track those indexes, creating tremendous opportunities to arbitrage the spread between the two fungible parts. It is difficult to determine what has caused the tremendous growth in the business of statistical arbitrage trading: the availability of these new arbitrage pricing spreads or the availability of technology fast enough to trade baskets of stocks at incredible speeds. Most likely, it is a combination of the two. Volume has exploded in recent years in many ETFs as the result of the growth of the ETF arbitrage and statistical arbitrage trading businesses.

A proprietary trading group is an LP but without an underlying sales and commission structure. While the group is servicing a client base by providing liquidity, it is not dealing directly with those clients. LMMs sometimes might interact with order flow at a less advantageous price to satisfy the minimum requirements of the position; however, this occurs only because of the advantageous pricing scheme for LMMs. There are no fees being paid to a proprietary trading group by the market center beyond standard trading

volume rebates. The group makes its money in profits. A LP in the form of a proprietary trading group will be making markets electronically, hoping to interact with order flow as it comes into the system. It typically is pricing at different levels of profit depending on how much it wants to interact and how much it wants to profit per trade. I consider proprietary trading groups to be LPs because they are typically not hitting bids and taking offers but are being taken and hit by order flow that is coming into the marketplace. Because of order types with hidden size and the ability to do high-speed order refresh and flashing, there is almost no way for liquidity-seeking order flow to determine how much liquidity is available at the different pricing levels without testing each level with an actionable order.

Current market structure has made minimal movements toward consolidating order flow onto one exchange to aid in available depth. This situation has led to the proliferation of dark pools that further fragment the market. A LP is waiting for orders that typically have already screened against all other natural customer order flow and are now flowing into the markets because of a favorable price limit or are market orders. Interaction can and should be profitable; this is why many firms have entered into the ETF marketplace over the last several years.

Hedging is of primary importance in this methodology. Although trading at the right price will be important for initiating the position, being able to hedge yourself effectively and lock in your expected profit is what sets the different participants apart. Much of this comes down to advanced systems and some good analysis on correlation trading. In the domestic ETFs, profits are a function of getting great execution in the basket or futures in real time. When moving into the international realm, profits are a function of having a good hedge that correlates with your position and being able to unwind that up and down position before financing eats away at your spread.

Today's proprietary ETF market-making firms are some of the largest participants, in terms of number of traders and abilities. Broker-dealer trading desks have fewer traders covering a very broad number of ETFs. At the proprietary arbitrage shops, you will see more specialized traders covering increasingly smaller segments of the ETF market. These proprietary shops are responding to order flow and therefore are focusing where the order flow is. These shops do better in names where there are fewer participants, wider spreads, and more opportunities for arbitrage. There is a delicate balance between a name having enough volume and wide enough spreads versus some of the names with incredible volume that are trading at spreads less than a tenth of a cent and, last, some names with wide spreads that do not trade enough volume to be worthwhile. The arbitrage shops will be monitoring most, if not all, of the ETF market to respond to order flow in the markets and requests for bids and offers.

## Lead Market Makers

I consider LMMs (formerly known as specialists) to be a subset of proprietary trading firms. In many respects, they are pursuing the same businesses: arbitrage between the ETF and its respective basket. However, LMMs are registered with the stock exchange in a partnership through which they agree to meet minimum liquidity requirements for which they enjoy a modified fee structure. LMMs are there to provide basic levels of liquidity. This is a very different job from what specialists were doing before ETF trading went electronic. As exchanges have evolved, there are no longer definitive closes where all orders must get filled. The opening and closing prints were a big part of specialist fulfillment roles in the past.

As previously discussed, in ETFs, specialists on the floor of the American Stock Exchange were the early profiteers in spreads between the ETF and its underlying, or the hedge. Much of the trading in the first several years of the ETFs was done on the floor of the exchange and facilitated by the specialists. This was before Unlisted Trading Privileges made the actual listing venue somewhat irrelevant. They had a time and place advantage that enabled them to see all order flow and participate when appropriate. As that business changed and moved to electronic venues, those businesses moved upstairs and became entwined with the proprietary arbitrage and customer facilitation desks. It is both less expensive and more flexible to have traders on a trading desk than on a floor. In many cases there are advantages to placing liquidity on multiple markets at once, eliminating the need to be on one exchange.

The most basic requirements of being an LMM are discussed in Chapter 3. LMMs typically are providing liquidity to the retail order flow that makes its way down to the exchanges via a variety of different order entry systems. One of the main tasks of LMMs is to be the LP of last resort for order flow. LMMs are not obligated to completely fill all orders that come into the systems, but they do have minimum requirements in terms of facilitation and market width and depth that must be met.

The key to this role is that by satisfying the minimum requirements of being an LMM, you inject some form of minimal liquidity for interaction with the order flow coming through the pipes in exchange for a slightly modified fee structure for trading. Recently, it has been debated in the marketplace whether the remuneration makes it worth being an LMM with even the most minimal of requirements. In the ETF landscape, there is not enough in the requirements to help the neediest section of the ETF market, new issues. Additionally, in the case of many U.S.-listed ETFs with domestic constituents, the LMM requirements do not tie the ETF price to the IIV of the fund, which would potentially aid in the expansion of usage of the domestic product set.



Since we already understand that available liquidity is based around the underlying basket of the ETF, in any ETF with domestic constituents, the investor base should be able to achieve liquidity via the basket at all times in a simple manner. This liquidity could be achieved by the exchanges in terms of requirements and remuneration for the LMMs or other LPs but most likely will be provided by entrepreneurial trading houses seeking to expand their ETF order flow. Currently, the LMM markets, both size and price, are based around the low volume and wide spread of the new ETFs. This makes little sense. A system that makes it valuable for LMMs to be providing deeper and tighter markets in those ETFs that have available underlying constituents would help to incubate an expansion of the ETF market. This would make it cheaper for investors to trade the newer ETFs and would aid in ETF growth and development. It would also increase the value of these ETFs to LMMs. The role of LMM has been transformed from the old specialist system, but more can be done to rethink the role as a potential incubator of new products. Those products that grow quickly and attract a large following will not need to be attended by an LMM. However, sometimes they can be the most profitable products for an LMM. Product issuers and the exchanges have made several proposals to address some of these concerns. Only time will tell how the system evolves.

### **High-Frequency Trading**

In an ideal world, the price and liquidity of an ETF and its underlying constituents would match all the time. In practice, because of all the different types of participants, the two separate assets hardly match in extremely short time spans. The high-frequency trading systems are trying to take advantage of that opportunity for profits.

They are using models looking at volatility and expectations for future moves in order to scalp small amounts in incredibly small time periods, even down to microseconds. However, because of the fungibility of the underlying basket and options and other derivatives on many ETFs, the products present a wide variety of different opportunities for trading strategies. High-frequency players have become another liquidity source creating even more volume in many ETFs. Their existence and growth highlights the diversity of product uses resulting in the greater development of the ETF business.

The converging of many different trading styles into the same products enables higher volumes and satisfies many different needs simultaneously. The presence of high-frequency players enables other players to utilize the volumes they create to facilitate their own strategies, creating even more volumes. The strategy works well in ETFs because some players trade the ETF versus the underlying baskets or other available derivatives; others are just

trading available volumes utilizing tick anticipation strategies; and still other players are somewhat price insensitive, such as the investment community. Still others are trading to position for either hedging or performance. The coming together of all these players in the ETF enables them to feed off of each other's differing strategies to create the perfect ecosystem for massive volume growth. This situation is driving some of the growth we are seeing in the high-volume ETF products.

## **LIQUIDITY AGGREGATORS**

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Because of the wide variety of ETFs in the marketplace, it has become very difficult for trading desks to provide competitive markets in many of the products against customer order flow. However, they have a customer base that is ever hungrier for the newer ETFs with the more arcane exposures as sources of alpha for their portfolios. Many of the smaller orders flow to the exchange floors and can be satisfied by the electronic market makers, but there are still larger investors who need to be able to trade in sizes greater than 10,000 shares. A newer liquidity ecosystem is developing to satisfy this need for markets in the more arcane instruments. There have always been interdealer brokers (IDBs) to facilitate flow between large brokerage houses to balance out exposures. They have now migrated to the ETF space and expanded beyond just speaking to brokers to facilitating clients directly as well. They typically facilitate the interchange of liquidity between a customer-facing trading desk and a proprietary market-making firm or LMM. However, many have agreed with one or two LPs to make markets on request for their customer base. A firm with extensive relationships throughout the trading community has been very beneficial for the ETF investor base. They work similar to a lending tree organization. By calling several LPs simultaneously for markets, aggregators cause them to compete for access to the customer flow, thereby leading to tighter market spreads with deeper size for ETFs. LPs have subscribed to the concept; they are happy to trade for slightly less spread in bigger size rather than not participate at all. From a customer perspective, you can get access to several LPs at once and get specifically to the LPs that might specialize in the product type you are interested in trading. The matching up of client demand with available potential liquidity is a win-win situation.

We have seen this form of evolution in ETF pricing and liquidity from early days. It leads inevitably to tighter available pricing in more size for the client base. The ETF issuance stream and the customer base have recently eclipsed the growth of LPs, which has led to a smaller than desirable number of trading firms providing liquidity in ETFs. More room for growth exists,

especially as the product investor base continues to expand in its desire to move farther down the product curve to use less frequently traded and newer products. If the product pipeline continues unabated, there will be further demand for bigger LPs or those that focus on industry niches.

## **TRADING STRATEGIES**

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The growth of assets in ETFs would not have been possible or nearly as successful without the creation and redemption (C/R) mechanism. In the introduction to this book, I discussed features that distinguish ETFs from their predecessor products, the mutual and closed-end funds (CEFs). The C/R mechanism is the feature most responsible for ETF success. It is important to remember that ETFs did not have first-mover advantage in the grand scheme of investment funds. Nor did they have first-mover advantage in the listed funds world. CEFs offered certain similar exposures listed on U.S. exchanges long before ETFs. When a product comes into the marketplace offering similar exposures in a different and more efficient structure, it is the structure that truly makes a difference. It is the unique structure of ETFs that have enabled the product line to compete well against existing product leaders.

I have seen this firsthand in my evolution from a CEF specialist into the ETF trading arena and then even more closely from my perch inside a leading ETF issuer. A prime example of a niche where the ETF structure was the late and last entrant to the marketplace but has become dominant is U.S.-listed Indian exposure. In the particular example of India investment products, you can see the entrance of two Investment Company Act of 1940 ETF products enter the market and successfully compete with long-established CEFs and exchange-traded note products. You can also observe how the first ETF entrant has grown faster and larger than the second entrant even though they entered the space only weeks apart. The first mover is a strong determinant of success. A newer, more efficient structure can certainly overtake older, less efficient vehicles.

The C/R mechanism has broadened the arbitrage trade between indexes and funds that previously existed in the marketplace in a very limited way. For many years, index arbitrage desks have monitored the spreads between the main index derivative products, futures, and their underlying indexes. Limiting that business was the relatively small number of indexes that were tracked by futures, which reduced the number of potential arbitrage opportunities. The ETF, a product that acts like a listed future in a structure similar to an equity product, has brought an entirely new universe of tradable indexes to the marketplace. Now there is the potential to track every

ETF versus its underlying index and monitor those two separate yet fungible trading products for arbitrage opportunities. Add to this the growth in the corollary derivatives markets for options and single-stock futures, and you see that the opportunities for arbitrage trading have increased exponentially.

A long list of variables determines arbitrage success in ETFs. Differences in financing rates, trading speeds, hedging techniques, and even pricing estimation enable a large number of different practitioners to coexist in the same space. In the example of a straightforward U.S. domestic ETF, the competition to arbitrage between the basket and the ETF is dominated by speed. The basket is trading in real time with the ETF, so you are able to price and trade both products simultaneously. Since they are completely fungible via the creation and redemption feature, it is a pure arbitrage trade. There is typically minimum financing embedded in the trade because you can trade during the day and unwind after the bell on the same settlement cycle. You have the ability to trade the perfect creation unit so you have no market exposure if you get complete execution on your order flow. The main differentiating factor between two different pursuers of this strategy is speed of processing and execution. It must be understood that, although a number of trading firms monitor these arbitrage trades, the barriers to entry of capital-intensive infrastructure keep the number of APs limited to those firms willing and capable of investing in the required operations.

Typically, the arbitrage opportunity appears when you can take advantage of a dislocation between the basket and the ETF because another market participant executing some strategy either in the ETF or in one or all of the underlying stocks is not concerned about the relationship of these two products. In many cases, the market participant could even be depending on the efficiency of the arbitrage market to keep pricing in line. An example would be if there was a large outright buyer of a U.S. domestic ETF with typically high intraday trading volume and a known presence of arbitrage traders; the buyer could leverage the presence of the arbitrage players by buying what liquidity becomes available in the ETF, assuming it is coming to market at prices relative to the underlying basket. I emphasize the word “relative” because the buyer is probably paying a small premium in the marketplace for the ETF, enabling the arbitrage players to profit. The buyer is in some ways unconcerned about that small spread because it is utilizing the ETF for a different strategy or is unable to access an LP directly. This is almost always the result of less sophisticated order flow coming into the marketplace.

I have coached execution firms in the past on developing business strategies in ETFs. They were sending ETF order flow to the exchanges in large enough size to push prices far away from the underlying value. This process was feeding the participating arbitrage community. While they recognized

that they were feeding profits to the arbitrage community, they did not have the capabilities in house to capture those spreads. Upon acquiring the required trading operations, they could trade their order flow more efficiently and funnel those benefits to their client base in terms of better pricing. When dealing with plain vanilla ETFs, speed of execution is the differentiating factor; more complex ETFs require more sophisticated systems to capture arbitrage opportunities.

### **International ETF Arbitrage**

When you look to do arbitrage between an ETF and its underlying basket of international stocks, there are many more factors to consider. First and foremost, an ETF trading during the U.S. market hours with a basket that is closed during this time frame is acting as a price discovery vehicle for the future trading levels of the underlying basket. Since it is no longer really arbitrage if you are trading the ETF versus the value of a closed basket, the technique is to find a correlating asset or basket that has some relationship to the ETF. Ideally you would be able to run a 24-hour trading book in which you could trade the ETF versus the correlating hedge during U.S. hours and the correlating hedge versus the underlying basket during local market hours. This way you will be left with ETF versus the basket that you can flatten through the C/R mechanism. The difficult-to-find link is the correlating hedge that trades during both time frames. Financing also will be involved, because you will not be unwinding your positions via the C/R mechanism every night. Then there are the additional complications of trading in international markets, including currency exposures, taxation, and potential additional fees. And there is the slippage embedded in trading two assets that are highly correlated but do not perfectly replicate each other. Speed also will come into play if there are many players in the names you are monitoring. What can drive higher volumes in these trades are the differences in estimation of the IIV or eNAV. This was explained in detail in Chapter 6. The underlying basis of this trade is an estimation of what you think the fund eNAV will be at the time of trading, even though the underlying basket is not trading. The ability to speculate on a closed basket makes these ETFs so useful. Prior to their existence, such exposures were nearly impossible to achieve during U.S. trading hours. Those that were available had greater risks owing to less efficient structures.

It is important to understand the embedded risk between trading price and basket value in an ETF with international underlying components. And it is equally important to understand the real price implication of the premium or discount. If an ETF with a basket of Japanese stocks is trading at a discount during the U.S. trading hours, it is not merely a function of

buying the ETF here and selling the basket in Japan using the redemption process to capture the spread. If an ETF with Japanese underlying stocks is trading at a discount to IIV or eNAV during the U.S. trading day, it is not necessarily showing an arbitrage opportunity. It is showing that traders of the ETF expect the Japanese market to open at a point lower than it closed the previous night. The magnitude of the expected market move is where an arbitrage opportunity can arise in this situation.

Let's take a simplified example to demonstrate this concept. In the example, you have developed a model, from back-testing and correlation studies, that shows a certain group of U.S.-listed stocks that predict almost exact movements in the Japanese basket of stocks that is replicated by ETF INTL. By watching the movement of that group of stocks, you can estimate where the market will be trading upon opening in the morning in Japan. Now during the U.S. trading day, that group of stocks is trading 4% lower, showing that the constituents of the ETF will open approximately 4% lower in Japan in the morning. In actuality, ETF INTL is trading 6% lower in the U.S. market at the same time. This probably would be showing up as a 6% discount to IIV since it is based on the close of trading in Japan.

This is a potential trading opportunity where you can buy the ETF down 6% with the potential to sell the underlying basket in Japan down the expected 4% on the open. There is a problem, however, in that if you just buy the ETF down 6% during the U.S. trading day, the pricing variables may change between your purchase time and the time of the Japanese market open. During this span the perceived discount can be completely erased, leaving your portfolio at risk. You can attempt to lock in your arbitrage spread by selling the group of stocks short to lock in the price differential, but this will leave you with an up-and-down position. You are now long ETF INTL and short the group of stocks. In theory, in this example, you are hedged and have locked in a spread. The only way to actually capture that spread would be to unwind both sides simultaneously after the price differential has narrowed. This is not pure arbitrage. It is quite different from the arbitrage available in a domestic ETF trading at the same time as its basket. In this scenario, the ideal situation would be that the discount narrows between your estimation of where the fund should be trading and where it actually is in the market. Then you would be able to sell ETF INTL in the market and buy back the group of stocks, closing out your positions and locking in the spread differential. But since you are speculating on an overnight movement, you probably are holding the position for at least one day. Also, in this simplified example, we are assuming that the correlating hedge has an equal amount of offsetting foreign exchange exposure so as to isolate the bet on the equity piece. If the hedge is, for example, a group of American companies and not American Depositary Receipts, you would

have to put on a yen currency trade to hedge out exposure inherent in the U.S.-listed ETF with yen underlying constituents (ETF INTL). This is the type of trading going on in ETFs all the time. These international ETFs trade at a price that represents an estimation of a basket of stocks. They are trading independently from each other. The trading community has models that it uses to estimate fair value (eNAV) at all times during the trading day. Members are trading those ETFs versus their correlated hedges based on their eNAV estimations.

You can interpolate the trading in the alternative ETF asset classes of commodities, currencies, and fixed income along the same lines. Sometimes the basket and the underlying asset will be trading at the same time, and you can enter into a more pure arbitrage-style trade. At other times they will be trading separately, and you can trade spreads between the ETF and an estimation of the value of its underlying assets utilizing a proxy hedge. In all cases the C/R mechanism can be used for establishing positions on either side or for unwinding those same positions. But it cannot be used to collapse your proxy hedge positions and free up your balance sheet because the vehicles being traded are not perfect replications of both the ETF and the underlying basket. They are therefore not acceptable to the ETF issuer via the in-kind C/R process.

### **Stock Loan Facilitation**

A type of arbitrage that utilizes the C/R process but is not looking at discounts and premiums versus the underlying baskets is the financing trades. The main model in this arena is the facilitation of stock borrows. The stock loan market has been a good source of profits for the clearing firms providing stock borrows in ETFs. It is surprising that there is not a central clearing-house with published rates and available quantities of stock that investors can access and utilize as needed. The lack of a centralized system has created an opaque market where two investors can pay vastly different prices to borrow the same stock. This has led to a proliferation of financing arbitrage trades in the ETF arena between the funds and their underlying baskets. In a trade where financing is the most important function, high-speed trading capabilities are rendered irrelevant.

The most basic trade is to facilitate the borrow demand on an ETF by creating shares to lend them out to the market. The procedure for this type of facilitation would be to do what is known as a short creation. In a typical creation, the AP buys the basket of underlying stocks and delivers those to the issuer. In a short creation, instead of buying the underlying constituents, the AP would borrow the underlying basket shares and deliver those borrowed shares to the issuer. The AP would receive in turn newly issued shares of

the ETF. The process of delivering the shares of the underlying basket to the issuer creates a short position on the books of the AP, which is hedged by a long position created from the ETF issuance. The AP now has a market-neutral position. If the ETF rallies, creating a profit, the underlying basket short will rally equally, creating an offsetting loss.

This position, however, has an element of cost to finance it while on the books. Exhibit 12.3 presents the various costs of maintaining a position that is long an ETF and short the underlying basket.

The long cash rate is determined by the interest charged on money used to buy the long asset, plus management fee depreciation, minus any benefit from the ability to loan out long positions. The short cash rate is calculated by the interest rate received on cash raised from the asset sale minus the cost of borrowing shares from the lender. The dividends are typically offsetting because the ETF is a pass-through vehicle; any dividends owed on the short side are also paid through to the ETF holder on the long side (except in various international markets). Your intent is to receive more in loan fees than you are paying in the financing spread and management and borrow fees.

Since this is not a trade done in the market, and you are perfectly hedged, the prices at which the ETF trades in the marketplace are irrelevant. If the ETF happens to move to a premium in the market, you may be able to unwind your position at a price favorable to its initiation parity; however, that is separate from successful operation of the stock loan facilitation. The typical method of entry to this type of trade would be through the C/R process. It can also be entered, however, via the electronic trading of the ETF and the basket; however, the costs of that type of entry can vary, depending on the fund. If you plan to sell baskets and buy ETFs in large quantities and there is no demand for lending the ETF, then it will be more expensive to position the trade because the loan value of the long ETF shares will be lower. Additionally, it would be expensive for a market participant to do a creation

### **EXHIBIT 12.3** Cash Flows of a Long ETF and Short Basket Position

Long	Short
ETF	Underlying Basket
Pay financing on purchase money used	Receive financing on cash received
Pay management fees	
Receive dividends	Pay dividends
Receive loan fee	Pay borrow rate

This is a summary of the cash flows when maintaining a long ETF position hedged by a short position in the basket.



to lend without demand for the ETF. Every day there is a cost to maintaining the position because of the expenses as accounted earlier. And there is the additional expense of opportunity cost by tying up the balance sheet, which has become quite expensive as market participants seek optimization of profits resulting from decreased availability of leveraged capital.

There are two ways to approach entry into this type of trade. You can seek out the demand from the stock loan markets and then do short creations to facilitate this demand. A difficulty with this method is that there are a lot of market participants pursuing this same low-risk strategy. The second approach is more proactive, creating newer ETFs to spark demand. This involves taking calculated risks that there is short interest waiting for shares to become available for borrowing. Your reward for those calculated risks will be a higher spread in a less crowded trade, enabling the loan of a higher percentage of your shares. Since much of the borrow market is based on overnight availability, this type of trading requires frequent monitoring and positioning of trades. Because of the C/R features of the ETFs, the demand market for ETFs can change dramatically very quickly. But as market participants are using ETFs for longer-term long investments, they are adding some stability to the loan markets because they are able to provide borrows for long time frames at stable rates.

The swap market is also able to lock in financing rates for set time periods and helps to stabilize overnight fluctuations in interest rates that threaten to change the costs of positions and hedges. If you can match up the durations on both sides of the trade, you can add stability away from the overnight-style market of the stock loan arena.

Facilitating ETF borrows has been a great profit engine for clearing businesses. If you are able to successfully track any changes in the basket, you will have negligible market risk. When the position becomes crowded and no longer profitable, you can easily unwind by using the redemption process. Because the ETF market publishes daily baskets, tracking is a very manageable risk, and daily C/R eliminates potential long-term exposures. At the point of unwind, you can deliver your ETF shares to the issuer; it will deliver you shares of the basket, which you can then use to close out your borrowed positions. ETFs are a great tool for shorting to hedge risk or offset other long exposures. The resultant demand to borrow ETFs is satisfied via the C/R mechanism and a firm willing to house that position on its balance sheet.

## **Statistical Arbitrage and High-Frequency Trading**

ETF quotes seem to change at a far more rapid pace than do quotes for equities. This is understandable when you look at the calculation of the IIV

**EXHIBIT 12.4** Basket Price Changes Causing Movement in IIV**Scenario 1—Beginning ETF IIV**

Stock	Shares	Bid	Last	Ask
1	10,000	\$25.00	\$26.00	\$27.00
2	10,000	\$30.00	\$31.00	\$32.00
3	10,000	\$35.00	\$36.00	\$37.00
4	10,000	\$40.00	\$41.00	\$42.00
		\$1,300,000.00	\$1,340,000.00	\$1,380,000.00
ETF IIV	100,000	\$13.00	\$13.40	\$13.80

**Scenario 2—Bid Change Stock 1, Bid Change ETF IIV**

Stock	Shares	Bid	Last	Ask
1	10,000	\$26.00	\$26.00	\$27.00
2	10,000	\$30.00	\$31.00	\$32.00
3	10,000	\$35.00	\$36.00	\$37.00
4	10,000	\$40.00	\$41.00	\$42.00
		\$1,310,000.00	\$1,340,000.00	\$1,380,000.00
ETF IIV	100,000	\$13.10	\$13.40	\$13.80

**Scenario 3—Last Trade Change Stock 2, Last Change ETF IIV**

Stock	Shares	Bid	Last	Ask
1	10,000	\$26.00	\$26.00	\$27.00
2	10,000	\$30.00	\$32.00	\$32.00
3	10,000	\$35.00	\$36.00	\$37.00
4	10,000	\$40.00	\$41.00	\$42.00
		\$1,310,000.00	\$1,350,000.00	\$1,380,000.00
ETF IIV	100,000	\$13.10	\$13.50	\$13.80

and the movement of stocks in the underlying basket. When there is any change in the valuation of any of the underlying components, the implied value of an ETF changes. The change can be small and almost imperceptible but could potentially create an opportunity for trading and would require a change in your market. Exhibit 12.4 shows a very basic demonstration of how a change in the basket can change the valuation of the ETF.

Exhibit 12.4 depicts a very simple ETF with four component stocks. It takes 10,000 shares of each stock to create one unit of the ETF that equals 100,000 shares. You can see the current bid, ask, and last prices for each stock in the basket. Then, below those, is the implied ETF IIV from the basket. Scenario 1 depicts the ETF and its components in the first moment of monitoring the basket. In scenario 2, the bid price of stock 1 has changed, and this has caused an increase in the bid side valuation of the ETF IIV (both are shaded in gray). Because of this bid-side move in the component, the ETF buyer should, in theory, be willing to pay a higher price for the ETF. An arbitrage firm watching that valuation would believe that it can sell the basket for a slightly higher price than a moment ago (scenario 1) and would be willing to pay a slightly higher price as well. While I do not show the market prices of the ETF, they would presumably move, in this case, because the valuation they are based on has changed. In scenario 3, the last price of stock 2 has changed. I am using “last price” to indicate trade price, so a change in the last price indicates that stock 2 has just traded at a higher price than it had a moment ago. The last price of the ETF IIV number is showing you the last trading price of the basket of securities underlying the ETF. While the bid and ask will show you the value that you can potentially trade at any given time, the last-price IIV is always a slightly backward-looking number in that it indicates the most recently known activity. All of these numbers will be used in the formation of algorithms for electronic trading.

### TRADING TIP

A change in the last-price valuation of the ETF will cause a revaluation of expectations for where the ETF will trade next. To be clear, the ETF did not actually trade at that price; the basket underlying the ETF did. Since the two vehicles are completely fungible, and the ETF is a derivative of the basket, you can interpret that as an ETF trade.

If it was a basket-trading algorithm and it bought 10,000 shares of all four stocks in the basket at the last price in scenario 3 (\$13.50) and then sold 100,000 shares of the ETF simultaneously at 13.60, it would have locked in a \$0.10 gross gain on the trade. The size of this trade is not restricted to creation unit (CU) size. If the algorithm was able to buy only 1,000 shares of each stock, then it would sell only 10,000 shares of the ETF. In this case, it would have to continue trading to either unwind the positions or build up enough size for a full CU so that it can submit a redemption order to flatten

the books. It would make sense to assume than an algorithm will continue trading until the opportunity for profit has disappeared.

To do a basic back-of-the-envelope calculation on the amount of arbitrage opportunities potentially occurring every moment, let's look at the number of ETFs available. Let's say there are 750 U.S.-listed ETFs with an average of 100 components in each. If you are monitoring the bid, ask, and last prices of every component for all the ETFs, you are monitoring almost 225,000 quotes per moment. This does not even include monitoring price changes in the actual ETF market. The true numbers are most assuredly much larger! I use the term "moment" in this discussion because the concept of the length of time in that moment is decreasing almost constantly. The trading and calculation times for the statistical arbitrage trading business are down to milliseconds, or thousandths of a second. Timing and financing differences based on calculations similar to those described are what is driving the increases in volume in certain ETFs. And there is the set of decision calculations that is determining the probabilities of getting executions before other competing machines.

Some argue against growth in high-frequency trading businesses as a detriment to ordinary investors. I have, however, not seen a compelling or statistically documented argument persuading me that that is the case. For an ordinary investor, whose typical size is very small, the high-frequency systems have narrowed spreads on many trading vehicles. They have also pursued efficiency between multiple products, driving away costly inefficiencies.

In the diverse world of ETF trading, I consider the electronic trading businesses to be acting in a beneficial manner. They are responsible for narrowing the spreads between ETFs and their underlying baskets, and they are providing liquidity to the investment community. When you move beyond the most liquid ETFs, as I describe earlier in the book, a typical transaction takes place between a customer and a liquidity provider. As we have learned from several sections in this book, LPs are typically providing liquidity based on some arbitrage strategy, between the ETF and the basket, in some underlying derivative, or in some other correlating hedge vehicle. If these LPs were not pursuing these strategies, then ETF pricing would depend on matching natural customer buyers and sellers and would be less related to the price of the underlying basket. This would lead to less volume and wider spread in the products.

## **CONCLUSION**

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The trading community is both benefiting from and driving the growth of the ETF industry. There is high demand for traders and salespeople

experienced in analyzing and trading exchange-listed products of all types. Even during the recent consolidation and repositioning of the major trading firms, there has been consistent positioning of market participants in the ETF space. Much of this is driven by the continued growth of the customer base adopting the ETF structure. The increase in volumes of ETFs has been good for both investors and industry professionals. Disconnecting the execution mechanism from the portfolio and asset management aspect of an investment vehicle will lead to increased efficiencies for investors in the future.

New avenues for investing, whether they are previously unavailable exposures or new strategies for outperforming a benchmark, are expanding the dialogue on how best to invest. Many in the industry are focusing on the looming battle between ETFs and mutual funds for trillions of dollars of actively managed assets. They realize the potential growth impact this can have on the ETF trading and investing communities. Both systems and people will have to continue to advance and evolve to satisfy the coming explosion in liquidity demands as trading shifts from portfolio managers and traders at mutual funds firms to trading desks of ETF liquidity providers.

The true consequences of the growth in the ETF marketplace will not be fully understood for many years. However, we know now that the mechanisms embedded in open-ended issuance and creation and redemption are truly having an impact on the nature of investing.



## List of U.S. ETF Issuers

Issuer	URL
AdvisorShares	<a href="http://www.advisorshares.com">www.advisorshares.com</a>
ALPS ETF Trust	<a href="http://www.alpsetfs.com">www.alpsetfs.com</a>
Bank of New York	<a href="http://www.etfservices.bankofny.com">www.etfservices.bankofny.com</a>
Capital West Securities / Ook Advisors	<a href="http://www.capitalwest.com/ooketf.html">www.capitalwest.com/ooketf.html</a>
Charles Schwab Investment Management	<a href="http://www.schwab.com">www.schwab.com</a>
Claymore Securities	<a href="http://www.claymore.com/etfs">www.claymore.com/etfs</a>
Direxion Shares	<a href="http://www.direxionfunds.com">www.direxionfunds.com</a>
Emerging Global Advisors	<a href="http://www.egshares.com">www.egshares.com</a>
Exchange Traded Spreads Trust	
FaithShares	<a href="http://www.faithshares.com">www.faithshares.com</a>
Fidelity Management & Research	<a href="http://www.fidelity.com/goto/oneq">www.fidelity.com/goto/oneq</a>
First Trust Advisors	<a href="http://www.ftadvisors.com">www.ftadvisors.com</a>
Firsthand Capital	
FocusShares	<a href="http://www.focussshares.com">www.focussshares.com</a>
Global X Funds	<a href="http://www.globalxfunds.com">www.globalxfunds.com</a>
Grail Advisors	<a href="http://www.grailadvisors.com">www.grailadvisors.com</a>
Index IQ	<a href="http://www.indexiq.com/etfs.html">www.indexiq.com/etfs.html</a>
iShares	<a href="http://www.ishares.com">www.ishares.com</a>
Javelin Investment Management	
Macro Securities	<a href="http://www.macromarkets.com">www.macromarkets.com</a>
Next Investments	<a href="http://www.nextinvestments.com">www.nextinvestments.com</a>
Old Mutual Global Shares	<a href="http://www.oldmutual.com">www.oldmutual.com</a>
Pax World Funds	<a href="http://www.paxworld.com">www.paxworld.com</a>
PIMCO	<a href="http://www.pimcoetfs.com">www.pimcoetfs.com</a>
Powershares	<a href="http://www.invescopowershares.com">www.invescopowershares.com</a>

ProShares	<a href="http://www.proshares.com">www.proshares.com</a>
Revenueshares	<a href="http://www.revenuesharetfs.com">www.revenuesharetfs.com</a>
Rydex	<a href="http://www.rydexfunds.com/etf">www.rydexfunds.com/etf</a>
SPA ETF International	<a href="http://www.spa-etf.com">www.spa-etf.com</a>
State Street Global Advisors	<a href="http://www.spdretfs.com">www.spdretfs.com</a>
United States Commodity Funds	<a href="http://www.unitedstatescommodityfunds.com">www.unitedstatescommodityfunds.com</a>
Van Eck Associates Corp	<a href="http://www.vaneck.com">www.vaneck.com</a>
Vanguard	<a href="http://www.vanguard">www.vanguard</a>
WisdomTree Investments	<a href="http://www.wisdomtree.com">www.wisdomtree.com</a>
Xshares Advisors	<a href="http://www.xsharesadvisors.com">www.xsharesadvisors.com</a>

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*Source:* ETF Landscape, Barclays Global Investors.



## Research and Data Providers

### ETF RESEARCH

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There are research reports about exchange-traded funds (ETFs) produced by many of the largest investment banks. I have recently seen research from these companies providing in-depth analysis on specific products or categories and other topics within the ETF landscape.

Bank of America/Merrill Lynch  
Barclays Global Investors  
Citigroup Investment Research  
Credit Suisse  
ETFR—ETF Report  
Goldman Sachs  
Morgan Stanley  
Raymond James  
RBC Wealth Management  
Wells Fargo Advisors

### ETF DATA PROVIDERS

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Some data providers produce files of ETF components in various formats. These can be purchased for electronic delivery and imported into systems for modeling real-time net asset values (NAVs). Additionally, in the case of the exchanges, they produce analytical data on the ETF industry as a whole and trading statistics from their venues.

Provider	URL
DTCC	<a href="http://www.dtcc.com/products/cs/equities_clearance/dispatch.php">www.dtcc.com/products/cs/equities_clearance/dispatch.php</a>
Markit	<a href="http://www.markit.com/en/products/data/equities/exchange-traded-fund-etf.page">www.markit.com/en/products/data/equities/exchange-traded-fund-etf.page</a>
Master Data	<a href="http://www.masterdata.com/">www.masterdata.com/</a>
Morningstar	<a href="http://www.morningstar.com/Cover/ETFs.aspx">www.morningstar.com/Cover/ETFs.aspx</a>
Nasdaq	<a href="http://www.nasdaq.com/investing/etfs/">www.nasdaq.com/investing/etfs/</a>
NYSE Arca	<a href="http://www.nysearca.com/issuers/etfs.aspx">www.nysearca.com/issuers/etfs.aspx</a>
National Stock Exchange	<a href="http://www.nsx.com/content/market-data">www.nsx.com/content/market-data</a>

## ETF-Related Web Sites and Blogs

**T**he exchange-traded fund (ETF) world is well covered by reporters and investors who watch growth and special situations and development with an acute analytical eye. There is a wealth of information regarding the products available on the Web. I have compiled a list of those sites that frequently bubble up to the top of my searches. It is by no means exhaustive; a basic search for ETF on Google presents more than 16 million results.

Site	URL
Altavista Research	<a href="http://www.altavista-research.com/">www.altavista-research.com/</a>
Bespoke Premium	<a href="http://www.bespokepremium.com/">www.bespokepremium.com/</a>
EuroMoney	<a href="http://www.emii.com/ETF.aspx">www.emii.com/ETF.aspx</a>
Institutional Investor	
ETF.Com	<a href="http://etf.com/">http://etf.com/</a>
ETF Connect	<a href="http://www.etfconnect.com/">www.etfconnect.com/</a>
ETF Desk	<a href="http://www.etfdesk.com/">www.etfdesk.com/</a>
ETF Digest	<a href="http://www.etfdigest.com/index.php">www.etfdigest.com/index.php</a>
ETF Expert	<a href="http://www.etfexpert.com/">www.etfexpert.com/</a>
ETF Folio	<a href="http://www.etffolio.com/">www.etffolio.com/</a>
ETF Guide	<a href="http://www.etfguide.com/">www.etfguide.com/</a>
ETF Investment Outlook	<a href="http://www.etfinvestmentoutlook.com/">www.etfinvestmentoutlook.com/</a>
ETF Stock-Encyclopedia	<a href="http://etf.stock-encyclopedia.com/">http://etf.stock-encyclopedia.com/</a>
ETF Trends	<a href="http://www.etftrends.com/">www.etftrends.com/</a>
ETF Zone	<a href="http://www.etfzone.com/?template=splash">www.etfzone.com/?template=splash</a>
Green Faucet	<a href="http://www.greenfaucet.com/">www.greenfaucet.com/</a>
Index Universe	<a href="http://www.indexuniverse.com/index.php">www.indexuniverse.com/index.php</a>
Marketwatch ETF center	<a href="http://www.marketwatch.com/investing/etf">www.marketwatch.com/investing/etf</a>

Morningstar	<a href="http://www.morningstar.com/">www.morningstar.com/</a>
Motley Fool	<a href="http://www.fool.com/etf/etf.htm">www.fool.com/etf/etf.htm</a>
MSN Moneycentral	<a href="http://moneycentral.msn.com/investor/research/etfs.aspx">http://moneycentral.msn.com/investor/research/etfs.aspx</a>
Must Feed	<a href="http://www.mustfeed.com/">www.mustfeed.com/</a>
Nasdaq	<a href="http://screening.nasdaq.com/heatmaps/heatmap ETF.asp">http://screening.nasdaq.com/heatmaps/heatmap ETF.asp</a>
New York Stock Exchange	<a href="http://www.nyse.com/about/listed/funds.html">www.nyse.com/about/listed/funds.html</a>
Seeking Alpha	<a href="http://seekingalpha.com/">http://seekingalpha.com/</a>
Stock Twits	<a href="http://stocktwits.com/">http://stocktwits.com/</a>
Yahoo! Finance	<a href="http://finance.yahoo.com/etf">http://finance.yahoo.com/etf</a>

## List of ETFs in Registration

**T**here are more than 500 exchange-traded funds (ETFs) in registration currently. Many of these ETFs will never be born as listed products, and many more listed products will come to market that have not yet hit this list. The list, as of August 2009, is in alphabetical order by provider but in no order in terms of products. An updated list is available on Index Universe ([www.indexuniverse.com](http://www.indexuniverse.com)) weekly.

### ALPS

- Agricultural Producers ETF
- Energy Producers ETF
- Industrial Metals Producers ETF
- Precious Metals Producers ETF
- Commodity Producers Commodity ETF

### Barclays Global Investors

- BGI S&P India Nifty 50 Index
- iShares GS Commodity Energy Trust
- iShares GS Commodity Industrial Metals Indexed Trust
- iShares GS Commodity Light Energy Indexed Trust
- iShares GS Commodity Livestock Indexed Trust
- iShares GS Commodity Natural Gas Indexed Trust
- iShares GS Commodity Non-Energy Indexed Trust
- iShares S&P Global Listed Private Equity Fund
- iShares MSCI Emerging Markets Small Cap Fund
- iShares MSCI Emerging Markets Eastern Europe Index Fund
- iShares MSCI ACWI ex US Consumer Discretionary Index Fund

iShares MSCI ACWI ex US Consumer Staples Index Fund  
iShares MSCI ACWI ex US Energy Index Fund  
iShares MSCI ACWI ex US Financials Index Fund  
iShares MSCI ACWI ex US Health Care Index Fund  
iShares MSCI ACWI ex US Industrials Index Fund  
iShares MSCI ACWI ex US Information Technology Index Fund  
iShares MSCI ACWI ex US Materials Index Fund  
iShares MSCI ACWI ex US Telecom Services Index Fund  
iShares MSCI ACWI ex US Utilities Index Fund  
iShares Diversified Alternatives Trust

### **Claymore Advisors**

Claymore/Dorchester: The Capital Markets Equities ETF  
Claymore/Clear Canadian Royalty Trust ETF  
Claymore/S&P Commodity Trends Strategy ETF  
Claymore Active National Municipal ETF  
Claymore Laffer Macroeconomic Global Equity ETF

### **Direxion**

Nasdaq-100<sup>®</sup> Bull 3X Shares  
Nasdaq-100<sup>®</sup> Bear 3X Shares  
Japan Bear 3X Shares  
Japan Bull 3X Shares  
Commodity Bull 3X Shares  
Commodity Bear 3X Shares  
Total Market Bull 3X Shares  
Total Market Bull 3X Shares  
Dow 30 Bull 3X Shares  
Dow 30 Bear 3X Shares  
China Bull 3X Shares  
China Bear 3X Shares  
BRIC Bull 3X Shares  
BRIC Bear 3X Shares  
India Bull 3X Shares

India Bear 3X Shares  
Latin America Bull 3X Shares  
Latin America Bear 3X Shares  
Real Estate Bull 3X Shares  
Real Estate Bear 3X Shares  
Homebuilders Bull 3X Shares  
Homebuilders Bear 3X Shares  
Clean Energy Bull 3X Shares  
Clean Energy Bear 3X Shares  
2-Year Treasury Bull 3X Shares  
2-Year Treasury Bear 3X Shares  
5-Year Treasury Bull 3X Shares  
5-Year Treasury Bear 3X Shares

**EGA Emerging Global Shares Trust**

Emerging Global Shares Dow Jones Emerging Markets Titans  
Composite  
Emerging Global Shares Dow Jones Emerging Markets Titans Basic  
Materials  
Emerging Global Shares Dow Jones Emerging Markets Titans Basic  
Resources  
Emerging Global Shares Dow Jones Emerging Markets Titans Consumer  
Goods  
Emerging Global Shares Dow Jones Emerging Markets Titans Consumer  
Services  
Emerging Global Shares Dow Jones Emerging Markets Titans Financials  
Emerging Global Shares Dow Jones Emerging Markets Titans Health  
Care  
Emerging Global Shares Dow Jones Emerging Markets Titans  
Industrials  
Emerging Global Shares Dow Jones Emerging Markets Titans  
Technology  
Emerging Global Shares Dow Jones Emerging Markets Titans Telecom-  
munications  
Emerging Global Shares Dow Jones Emerging Markets Titans Utilities

**ETF Securities**

ETFS Silver Trust  
ETFS Gold Trust  
ETFS Platinum Trust  
ETFS Palladium Trust

**ETSpreads**

ETSpreads High Yield CDS Tighten Fund  
ETSpreads High Yield CDS Widen Fund  
ETSpreads Investment Grade CDS Tighten Fund  
ETSpreads Investment Grade CDS Widen Fund

**First Trust**

First Trust Europe Select AlphaDEX  
First Trust Japan Select AlphaDEX  
First Trust Global IPO Index Fund

**FocusShares**

FocusShares Progressive Principal Protection 2015 Target Date Fund  
FocusShares Progressive Principal Protection 2020 Target Date Fund  
FocusShares Progressive Principal Protection 2025 Target Date Fund  
FocusShares Progressive Principal Protection 2030 Target Date Fund  
FocusShares Progressive Principal Protection 2035 Target Date Fund  
FocusShares Progressive Principal Protection 2040 Target Date Fund

**Global X**

Global X FTSE Nordic 30 ETF  
Global X Argentina ETF  
Global X Egypt ETF  
Global X Peru ETF  
Global X Philippines

**Grail Advisors**

Grail American Beacon International Equity ETF  
RP Growth ETF



RP Focused Large-Cap Growth ETF  
RP Financials ETF  
RP Technology ETF

**INDEXIQ**

IQ Hedge Long/Short Equity  
IQ Hedge Event-Driven  
IQ Hedge Market Neutral  
IQ CPI Inflation Tracker ETF  
IQ Hedge Equal Weight Multi-Strategy Tracker ETF  
IQ Hedge Asset Weight Multi-Strategy Tracker ETF  
IQ Hedge Inverse Multi-Strategy Tracker ETF  
IQ Hedge Distressed Tracker ETF  
IQ Hedge Convertible Arbitrage Tracker ETF  
IQ Hedge Dedicated Short Bias Tracker ETF  
IQ Hedge Managed Futures Tracker ETF  
IQ Hedge Market Directional Tracker ETF  
IQ Hedge Absolute Return Tracker ETF  
IQ Hedge Relative Value Tracker ETF  
IQ ARB Merger Arbitrage ETF  
IQ ARB Global Natural Resources ETF  
IQ ARB Global Real Estate ETF  
IQ ARB Global Infrastructure ETF

**MacroShares**

MacroShares Medical Inflation Trust Up  
MacroShares Medical Inflation Trust Down

**Old Mutual**

Old Mutual FTSE All-World Fund  
Old Mutual FTSE Emerging Markets Fund  
Old Mutual FTSE All-Cap Asia Pacific ex Japan Fund  
Old Mutual FTSE All-World ex US Fund  
Old Mutual FTSE Developed Markets ex US Fund

**OOK Advisors**

TXF Large Companies ETF  
OOK Inc. (Oklahoma fund)

**PAX World**

sShares KLD North America Sustainability Index ETF  
sShares KLD Europe Asia Pacific Sustainability Index ETF  
sShares FTSE Environmental Technologies (ET50) Index ETF

**Pimco**

Pimco 3–7 Year U.S. Treasury Index Fund  
Pimco 7–15 Year U.S. Treasury Index Fund  
Pimco 15+ Year U.S. Treasury Index Fund  
Pimco Broad U.S. TIPS Index Fund  
Pimco Short Maturity U.S. TIPS Index Fund  
Pimco Long Maturity U.S. TIPS Index Fund

**PowerShares**

PowerShares Developed Markets Infrastructure ETF  
PowerShares Emerging Markets Infrastructure ETF  
PowerShares DJIA BuyWrite Portfolio  
PowerShares Cohen & Steers Global Realty Majors Portfolio  
PowerShares Zacks Rank Large Cap Portfolio  
PowerShares Dynamic Internet Software and Services  
PowerShares Dynamic Developed Int'l Growth Portfolio  
PowerShares Dynamic Developed Int'l Value Portfolio  
PowerShares Dynamic Australia  
PowerShares Dynamic Canada  
PowerShares Dynamic Germany  
PowerShares Dynamic France  
PowerShares Dynamic Japan  
PowerShares Dynamic UK  
PowerShares FTSE RAFI Latin America Portfolio  
PowerShares FTSE RAFI Australia  
PowerShares FTSE RAFI Brazil

PowerShares FTSE RAFI Canada  
PowerShares FTSE RAFI China  
PowerShares FTSE RAFI France  
PowerShares FTSE RAFI Germany  
PowerShares FTSE RAFI Hong Kong  
PowerShares FTSE RAFI Mexico  
PowerShares FTSE RAFI South Africa  
PowerShares FTSE RAFI South Korea  
PowerShares FTSE RAFI Taiwan  
PowerShares FTSE RAFI UK  
PowerShares 1–5 Laddered Treasury  
PowerShares 1–10 Laddered Treasury  
PowerShares 1–20 Laddered Treasury  
PowerShares Aggregate Bond  
PowerShares Investment Grade Corporate Bond  
PowerShares Aggregate Preferred  
PowerShares Ireland Portfolio  
PowerShares Prime Non-Agency RMBS Opportunity Fund  
PowerShares Alt-A Non-Agency RMBS Opportunity Fund

**ProShares**

ProShares 130/30 Fund  
ProShares Barron's 400  
ProShares Ultra S&P 500 Growth  
ProShares Short S&P 500 Growth  
ProShares UltraShort S&P 500 Growth  
ProShares Ultra S&P 500 Value  
ProShares Short S&P 500 Value  
ProShares UltraShort S&P 500 Value  
ProShares Ultra S&P MidCap 400 Growth  
ProShares Short S&P MidCap 400 Growth  
ProShares UltraShort S&P MidCap 400 Growth  
ProShares Ultra S&P Small Cap 600 Growth  
ProShares Short S&P Small Cap 600 Growth

ProShares UltraShort S&P Small Cap 600 Growth  
ProShares Ultra S&P Small Cap 600 Value  
ProShares Short S&P Small Cap 600 Value  
ProShares UltraShort S&P Small Cap 600 Value  
ProShares Ultra U.S. Biotechnology  
ProShares UltraShort U.S. Biotechnology  
ProShares Ultra U.S. Precious Metals  
ProShares UltraShort U.S. Precious Metals  
ProShares Short Basic Materials  
ProShares Short Biotechnology  
ProShares Short Consumer Goods  
ProShares Short Consumer Services  
ProShares Short Healthcare  
ProShares Short Industrial  
ProShares Short Precious Metals  
ProShares Short Real Estate  
ProShares Short Semiconductors  
ProShares Short Technology  
ProShares Short Telecommunications  
ProShares Short Utilities  
ProShares Ultra NASDAQ Biotechnology  
ProShares Short NASDAQ Biotechnology  
ProShares Ultra Short NASDAQ Biotechnology  
ProShares Ultra Dow Jones Select Biotechnology  
ProShares Short Dow Jones Select Biotechnology  
ProShares Ultra Short Dow Jones Select Biotechnology  
ProShares Ultra Dow Jones Select Telecommunications  
ProShares Short Dow Jones Select Telecommunications  
ProShares Ultra Short Dow Jones Select Telecommunications  
ProShares Short Japan  
ProShares Short FTSE/Xinhua China 25  
ProShares Short Lehman Brothers 7–10 Year U.S. Treasury  
ProShares Short Lehman Brothers 20+ Year U.S. Treasury  
ProShares Short iBoxx \$ Liquid Investment Grade

ProShares Ultra Short iBoxx \$ Liquid Investment Grade  
ProShares Short iBoxx \$ Liquid High Yield  
ProShares Ultra Short iBoxx \$ Liquid High Yield  
ProShares Ultra NASDAQ-100 Equal Weighted  
ProShares Short NASDAQ-100 Equal Weighted  
ProShares UltraShort NASDAQ-100 Equal Weighted  
ProShares Ultra NASDAQ Composite  
ProShares Short NASDAQ Composite  
ProShares UltraShort NASDAQ Composite  
ProShares Ultra NASDAQ Biotechnology Equal-Weighted  
ProShares Short NASDAQ Biotechnology Equal-Weighted  
ProShares UltraShort NASDAQ Biotechnology Equal-Weighted  
ProShares Ultra NASDAQ Clean Edge US Liquid Series  
ProShares Ultra DJ Wilshire Total Market  
ProShares UltraShort DJ Wilshire Total Market  
ProShares UltraShort MSCI Australia  
ProShares UltraShort MSCI BRIC  
ProShares UltraShort MSCI Latin America  
ProShares UltraShort MSCI South Korea  
ProShares UltraShort MSCI Taiwan  
ProShares UltraShort S&P Europe 350  
ProShares Short Dow Jones—AIG Commodity Index  
ProShares Ultra Dow Jones—AIG Commodity Agriculture  
ProShares Short Dow Jones—AIG Commodity Agriculture  
ProShares UltraShort Dow Jones—AIG Commodity Agriculture  
ProShares Ultra Dow Jones—AIG Commodity Industrial Metals  
ProShares Short Dow Jones—AIG Commodity Industrial Metals  
ProShares UltraShort Dow Jones—AIG Commodity Industrial Metals  
ProShares Ultra Dow Jones—AIG Commodity Precious Metals  
ProShares Short Dow Jones—AIG Commodity Precious Metals  
ProShares UltraShort Dow Jones—AIG Commodity Precious Metals  
ProShares Short Gold  
ProShares Short Silver  
ProShares Short Crude Oil

ProShares Ultra Natural Gas  
ProShares Short Natural Gas  
ProShares UltraShort Natural Gas  
ProShares Short Euro  
ProShares Ultra Australian Dollar  
ProShares Short Australian Dollar  
ProShares UltraShort Australian Dollar  
ProShares Ultra Canadian Dollar  
ProShares Short Canadian Dollar  
ProShares UltraShort Canadian Dollar  
ProShares Ultra British Pound  
ProShares Short British Pound  
ProShares UltraShort British Pound  
ProShares Short Japanese Yen  
ProShares Ultra Mexican Peso  
ProShares Short Mexican Peso  
ProShares UltraShort Mexican Peso  
ProShares Ultra Swedish Krona  
ProShares Short Swedish Krona  
ProShares UltraShort Swedish Krona  
ProShares Ultra Swiss Franc  
ProShares Short Swiss Franc  
ProShares CDX North America High Yield  
ProShares CDX North America Investment Grade  
Pro Shares Short CDX North America High Yield  
Pro Shares Short CDX North America Investment Grade  
Pro Shares UltraShort CDX North America High Yield  
Pro Shares UltraShort CDX North America Investment Grade  
ProShares Ultra CDX North America High Yield  
ProShares Ultra CDX North America Investment Grade

**RevenueShares**

RevenueShares S&P 500 Consumer Discretionary Sector Fund  
RevenueShares S&P 500 Consumer Staples Sector Fund

RevenueShares S&P 500 Energy Sector Fund  
RevenueShares S&P 500 Health Care Sector Fund  
RevenueShares S&P 500 Industrials Sector Fund  
RevenueShares S&P 500 Information Technology Sector Fund  
RevenueShares S&P 500 Materials Sector Fund  
RevenueShares S&P 500 Utilities Sector Fund

**Rydex Funds**

Rydex Inverse S&P 500  
Rydex Dynamic S&P 500 Growth  
Rydex Inverse S&P 500 Growth  
Rydex Dynamic Inverse S&P 500 Growth  
Rydex Dynamic S&P 500 Value  
Rydex Inverse S&P 500 Value  
Rydex Dynamic Inverse S&P 500 Value  
Rydex Inverse S&P MidCap 400  
Rydex Dynamic S&P MidCap 400 Growth  
Rydex Inverse S&P MidCap 400 Growth  
Rydex Dynamic Inverse S&P MidCap 400 Growth  
Rydex Dynamic S&P MidCap 400 Value  
Rydex Inverse S&P MidCap 400 Value  
Rydex Dynamic Inverse S&P MidCap 400 Value  
Rydex Dynamic S&P SmallCap 600  
Rydex Inverse S&P SmallCap 600  
Rydex Dynamic Inverse S&P SmallCap 600  
Rydex Dynamic S&P SmallCap 600 Growth  
Rydex Inverse S&P SmallCap 600 Growth  
Rydex Dynamic Inverse S&P SmallCap 600 Growth  
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Rydex Inverse S&P SmallCap 600 Value  
Rydex Dynamic Inverse S&P SmallCap 600 Value  
Rydex Dynamic Russell 1000  
Rydex Inverse Russell 1000  
Rydex Dynamic Inverse Russell 1000

Rydex Dynamic Russell 1000 Growth  
Rydex Inverse Russell 1000 Growth  
Rydex Dynamic Inverse Russell 1000 Growth  
Rydex Dynamic Russell 1000 Value  
Rydex Inverse Russell 1000 Value  
Rydex Dynamic Inverse Russell 1000 Value  
Rydex Inverse Russell 2000  
Rydex Dynamic Russell 2000 Growth  
Rydex Inverse Russell 2000 Growth  
Rydex Dynamic Inverse Russell 2000 Growth  
Rydex Dynamic Russell 2000 Value  
Rydex Inverse Russell 2000 Value  
Rydex Dynamic Inverse Russell 2000 Value  
Rydex Dynamic Russell MidCap  
Rydex Inverse Russell MidCap  
Rydex Dynamic Inverse Russell MidCap  
Rydex Dynamic Russell MidCap Growth  
Rydex Inverse Russell MidCap Growth  
Rydex Dynamic Inverse Russell MidCap Growth  
Rydex Dynamic Russell MidCap Value  
Rydex Inverse Russell MidCap Value  
Rydex Dynamic Inverse Russell MidCap Value  
Rydex Dynamic Russell 3000  
Rydex Inverse Russell 3000  
Rydex Dynamic Inverse Russell 3000  
Rydex Dynamic Russell 3000 Growth  
Rydex Inverse Russell 3000 Growth  
Rydex Dynamic Inverse Russell 3000 Growth  
Rydex Dynamic Russell 3000 Value  
Rydex Inverse Russell 3000 Value  
Rydex Dynamic Inverse Russell 3000 Value  
Rydex Dynamic Nasdaq-100  
Rydex Inverse Nasdaq-100



Rydex Dynamic Inverse Nasdaq-100  
Rydex Dynamic Nasdaq Biotechnology  
Rydex Inverse Nasdaq Biotechnology  
Rydex Dynamic Inverse Nasdaq Biotechnology  
Rydex Dynamic Consumer Discretionary  
Rydex Inverse Consumer Discretionary  
Rydex Dynamic Inverse Consumer Discretionary  
Rydex Dynamic Consumer Staples  
Rydex Inverse Consumer Staples  
Rydex Dynamic Inverse Consumer Staples  
Rydex Inverse Energy  
Rydex Inverse Financials  
Rydex Inverse Healthcare  
Rydex Dynamic Materials  
Rydex Inverse Materials  
Rydex Dynamic Inverse Materials  
Rydex Dynamic Utilities  
Rydex Inverse Utilities  
Rydex Dynamic Inverse Utilities  
Rydex Inverse Energy  
Rydex 2x Commodities Investing Fund  
Rydex 2x Energy Investing Fund  
Rydex 2x Precious Metals Investing Fund  
Rydex 2x Industrial Metals Investing Fund  
Rydex 2x Agricultural Investing Fund  
Rydex Inverse 2x Commodities Investing Fund  
Rydex 2x Inverse Energy Investing Fund  
Rydex Inverse 2x Precious Metals Investing Fund  
Rydex Inverse 2x Industrial Metals Investing Fund  
Rydex Inverse 2x Agricultural Investing Fund  
CurrencyShares Hong Kong Dollar Trust  
CurrencyShares Singapore Dollar Trust  
CurrencyShares South African Rand Trust

**SPA MarketGrader**

SPA MarketGrader Energy Sector  
SPA MarketGrader Industrials Sector  
SPA MarketGrader Materials Sector  
SPA MarketGrader Technology Sector  
SPA MarketGrader Consumer Discretionary Sector  
SPA MarketGrader Consumer Staples Sector  
SPA MarketGrader Financials Sector

**State Street Global Advisors**

SPDR Barclays Global TIPS ETF  
SPDR Lehman Short Term Corporate Bond  
SPDR Lehman Intermediate Term Corporate Bond  
SPDR Lehman Long Term Corporate Bond  
SPDR Lehman Short Term Treasury  
SPDR S&P Asia Pacific  
SPDR S&P EPAC  
SPDR S&P Europe  
SPDR Aerospace and Defense  
SPDR Building & Construction  
SPDR Computer Hardware  
SPDR Computer Software  
SPDR Health Care Services  
SPDR Leisuretime  
SPDR Outsourcing & IT Consulting  
SPDR Telecom  
SPDR Transportation  
SPDR S&P Emerging Markets South East Asia ETF  
SPDR S&P Emerging GCC-Middle East ETF  
SPDR S&P Emerging Africa ETF  
SPDR Ireland ETF  
SPDR S&P Commercial Paper ETF  
SPDR S&P Brazil ETF  
SPDR S&P Russia ETF

SPDR S&P India ETF  
SPDR Lehman Emerging Markets Government Bond ETF  
SPDR S&P Food & Beverage ETF  
SPDR S&P Municipal VRDO ETF  
SPDR Wells Fargo Preferred Stock ETF

**United States Commodity Funds**

US Short Oil Fund  
US 12-Month Natural Gas Fund

**Van Eck**

Market Vectors—Emerging Europe  
Market Vectors—Vietnam  
Market Vectors—Global Frontier  
Market Vectors—Lehman Brothers California Municipal  
Market Vectors—Lehman Brothers New York Municipal  
Market Vectors—Lehman Brothers AMT-Free Massachusetts  
Market Vectors—Lehman Brothers AMT-Free New Jersey  
Market Vectors—Lehman Brothers AMT-Free Ohio  
Market Vectors—Lehman Brothers AMT-Free Pennsylvania  
Market Vectors—Municipal Index ETF  
Market Vectors—Kuwait  
Market Vectors—Egypt  
Market Vectors Fixed Income I ETF  
Market Vectors Fixed Income II ETF  
Market Vectors Regional Sector ETF  
Market Vectors China A Share ETF  
Market Vectors Metals ETF

**Voskian**

Voskian Citigroup Semiconductor 50 Index

**WSHARES**

Wilder Asian Emerging Markets  
Wilder Brazil

Wilder China  
Wilder Israel  
Wilder Latin America  
Wilder Worldwide Emerging Markets  
Wilder Diversified Healthcare  
Wilder Healthy Lifestyle

**WisdomTree**

WisdomTree Asia Emerging Markets Total Dividend  
WisdomTree Asia Emerging Markets High-Yield  
WisdomTree DIPR Fund  
WisdomTree DIPR High-Yielding Equity Fund  
WisdomTree Emerging Markets Total Dividend  
WisdomTree Emerging Markets Dividend Top 100  
WisdomTree Latin America Total Dividend  
WisdomTree Australia Total Dividend  
WisdomTree Canada Total Dividend  
WisdomTree China Total Dividend  
WisdomTree France Total Dividend  
WisdomTree Germany Total Dividend  
WisdomTree Hong Kong Total Dividend  
WisdomTree India Total Dividend  
WisdomTree Malaysia Total Dividend  
WisdomTree Singapore Total Dividend  
WisdomTree South Africa Total Dividend  
WisdomTree South Korea Total Dividend  
WisdomTree Taiwan Total Dividend  
WisdomTree United Kingdom Total Dividend  
WisdomTree United Kingdom High-Yielding Equity  
WisdomTree Communications Sector  
WisdomTree Financial Sector  
WisdomTree REIT Sector  
WisdomTree U.S. Cash Fund

WisdomTree U.S. Government Cash Fund  
WisdomTree Australian Dollar Fund  
WisdomTree British Pound Sterling Fund  
WisdomTree Canadian Dollar Fund  
WisdomTree South Korean Won Fund  
WisdomTree Developing Markets Fund  
WisdomTree International LargeCap Growth Fund  
WisdomTree Global SmallCap Dividend Fund  
WisdomTree Global Equity Income Fund  
WisdomTree Global Dividend Fund  
WisdomTree Currency Hedged DEFA Fund  
WisdomTree Currency Hedged Emerging Markets Fund  
WisdomTree Dreyfus Chilean Peso Fund  
WisdomTree Dreyfus Czech Koruna Fund  
WisdomTree Dreyfus Hong Kong Dollar Fund  
WisdomTree Dreyfus Hungarian Forint Fund  
WisdomTree Dreyfus Israeli Shekel Fund  
WisdomTree Dreyfus Icelandic Krona Fund  
WisdomTree Dreyfus Indonesian Rupiah Fund  
WisdomTree Dreyfus Malaysian Ringgit Fund  
WisdomTree Dreyfus Mexican Peso Fund  
WisdomTree Dreyfus Norwegian Krone  
WisdomTree Dreyfus Polish Zloty Fund  
WisdomTree Dreyfus Russian Ruble Fund  
WisdomTree Dreyfus Singapore Dollar Fund  
WisdomTree Dreyfus Swedish Krona  
WisdomTree Dreyfus Swiss Franc Fund  
WisdomTree Dreyfus Taiwan Dollar Fund  
WisdomTree Dreyfus Thai Baht Fund  
WisdomTree Dreyfus Turkish Lira Fund  
WisdomTree Dreyfus BRIC Currency Fund  
WisdomTree Dreyfus Developed Currency Fund  
WisdomTree Dreyfus Emerging Asia Currency Fund  
WisdomTree Dreyfus Emerging Europe Currency Fund

WisdomTree Dreyfus Emerging Latin America Currency Fund

WisdomTree Dreyfus Gulf Currency Fund

WisdomTree Dreyfus Oil Exporters Currency Fund

WisdomTree Emerging Markets Hedged Fund

WisdomTree DEFA Hedged Fund

### **XShares**

Haverford Quality 250

Fortress Large Cap Enhanced BuyWrite ETF

XShares/CRB-Research Global Energy Efficiency ETF

## PART ONE Introduction to the ETF Marketplace

1. As cited in the 1989 film *Field of Dreams*.

## CHAPTER 1 Development of an ETF

1. Grail Advisors, “Exchange-Traded Funds: A Passive Past and an Active Future,” [www.grailadvisors.com](http://www.grailadvisors.com).

## CHAPTER 2 Structure of an ETF

1. NYSE Arca Bylaws and Rules: <http://wallstreet.cch.com/PCX/>.
2. Ibid.
3. Ibid.
4. As a registered securities exchange, the New York Stock Exchange is subject to the regulatory oversight of the SEC. Accordingly, all rules and rule amendments proposed by NYSE must be submitted to the SEC via what is known as a 19b-4 filing. A 19b-4 filing contains the proposed rule text, its intended purpose, and its statutory basis. Once a proposed rule change is filed with the SEC, the substance of the change is published in the U.S. *Federal Register* for a prescribed period of time, giving interested parties the opportunity to comment on it. Comment letters are forwarded to NYSE for response. If necessary, and when appropriate, the NYSE will amend the original filing in response to comment letters and re-submit the amended filing to the SEC. When the SEC approves a proposed rule change, it will issue an “Approval Order” for publication in the *Federal Register*. Shortly thereafter, the NYSE typically issues a corresponding Information Memo, alerting membership to the rule change, its history, and its effective date.
5. [www.law.uc.edu/CCL/InvCoAct/sec12.html](http://www.law.uc.edu/CCL/InvCoAct/sec12.html).
6. ELEMENTS are exchange-traded notes designed to track the return of a specific underlying market measure. ELEMENTS provide convenient access to markets and strategies that may not be readily available to individual investors. After their initial offering, ELEMENTS can be bought and sold through a broker or financial advisor on a U.S. securities exchange. <https://www.elementsetn.com/Default.aspx?>

### **CHAPTER 3 Bringing an ETF to the Market**

1. You can see the full requirements at: [www.nyse.com/pdfs/LMM Product Brief.pdf](http://www.nyse.com/pdfs/LMM_Product_Brief.pdf).

### **CHAPTER 4 Investment Companies, Now and in the Future**

1. 2009 *Investment Company Handbook*.
2. *Derivatives Strategy Magazine* archive (June 1996).
3. State Street Global Advisors Strategy and Research, SPDR University (September/October 2008).
4. Lisa Smith, "Liquidation Blues: When Mutual Funds Close," Investopedia.com.

### **CHAPTER 8 Leveraged, Inverse, and Commodity Products**

1. Jon D. Maier and Joseph Zidle, "ETF Research: Leveraged ETFs," Bank of America/Merrill Lynch, June 29, 2009.
2. At the time of this writing, the fund has closed at a 12.9% premium to its NAV (8/18/09, Bloomberg), and I am only projecting some concepts for trading ideas. Concurrently, one of the commodity note products has recently halted creation of fund shares while waiting for a decision from the CFTC. I expect that a similar situation would develop in the shares of that fund.

### **CHAPTER 11 Execution**

1. Here is the list of all available orders types as listed on the NYSE Euronext Web site for NYSE Arca equities:
  1. Market order
  2. Limit order
  3. Inside limit order
  4. Reserve order
  5. Adding liquidity only (ALO) order
  6. Good-till-cancel order
  7. Primary-only (PO) order
  8. PO+ order
  9. Primary sweep order (PSO)
  10. Immediate-or-cancel (IOC)
  11. Fill or kill (FOK)
  12. Post no preference (PNP) order
  13. Post No preference blind (PNP B) order
  14. Tracking limit order
  15. Passive liquidity (PL) order



16. Midpoint passive liquidity (MPL) order
17. Discretionary order
18. Discretion limit order
19. Passive discretionary order
20. Cross order
21. Midpoint cross order
22. IOC cross order
23. Post no preference (PNP) cross and post order
24. Pegged order
25. NOW order
26. Market-on-close (MOC)
27. Limit-on-close (LOC)
28. Auto-Q order
29. Intermarket sweep order (ISO) for IOC
30. Intermarket sweep order (ISO) for PNP
31. Intermarket sweep order (ISO) for IOC cross orders
32. Intermarket sweep order (ISO) for post cross orders
2. Gary Gastineau, *Journal of Indexes* (July/August 2009).
3. IndexUniverse.com, "db x-trackers Offers Facility to Trade at NAV," May 29, 2009.
4. Matt Hougan, "A Guide to Exchange Traded Funds," (Autumn 2008).



## About the Author



**D**avid Abner is a well-known figure in the ETF markets, having spoken at many conferences and been quoted in the *Wall Street Journal*, *Risk Magazine*, and various other media publications. Abner is currently the Director of Institutional ETF Sales and Trading at WisdomTree Asset Management where his primary responsibilities include managing several channels of the institutional client base, focusing on trading firms, broker-dealers, asset managers and hedge funds. He spends much of his time educating traders and investors on best practices for Exchange Traded Funds and implementation of the WisdomTree ETF suite. He has also given several graduate-level seminars and produced a webinar on valuing and trading ETFs.

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Abner holds a Master of Science in Management and Policy Analysis, and a Bachelor of Arts in Economics from the State University of New York at Stony Brook. He is New York State certified in Labor Management Relations and is a member of the ETF committee of STANY (Security Traders Association of New York).

Abner lives in Westchester with his wife and three children. Together they enjoy mountain biking, rock climbing, and family outings.



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