

Examining Exchange-Traded Funds

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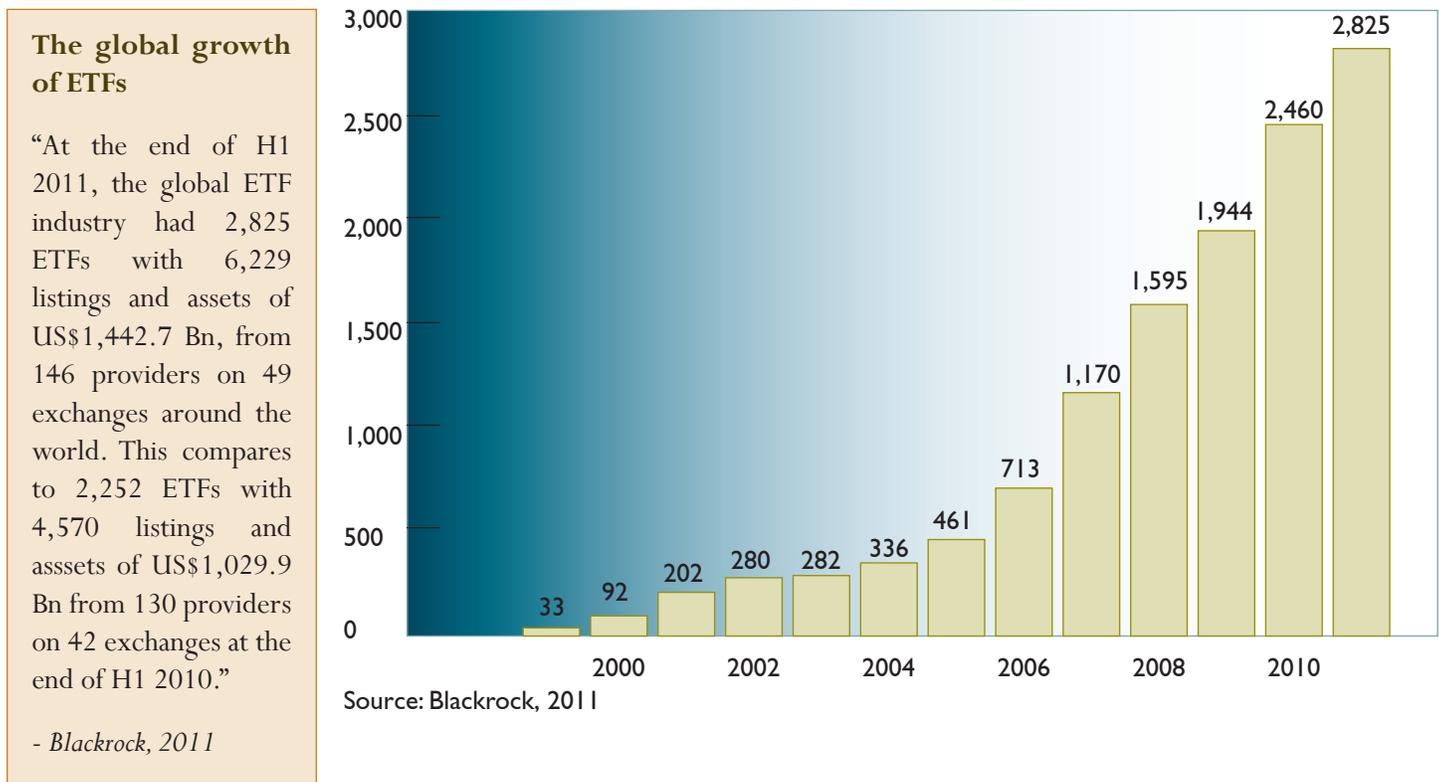


Examining Exchange-Traded Funds

Exchange-traded funds (ETFs) have seen huge growth since their introduction to the U.S. market in 1993. At the start of calendar-year 2000, there were 30 ETFs registered with the U.S. Securities and Exchange Commission. (SEC, 2004) By February 2012, there were more than 1,400 ETFs registered with the SEC, with another 900 applications pending. ETFs currently account for more than \$1.2 trillion in assets in the United States (Goodman, 2012), and ETF assets are growing at a pace greatly exceeding that of traditional mutual funds.

However, ETFs don't work in the same way as mutual funds. What are ETFs really, and how do they work? In this paper, we'll review the history and construction of ETFs which, although hugely popular, are little-understood by most investors. Then we'll explore in greater depth the potential risks and advantages of exchange-traded funds.

Figure 1: Global ETF growth, through the end of first half of 2011



What is an exchange-traded fund?

In a mutual fund, the mutual fund manager selects a particular basket of securities — stocks or bonds — and when you invest in that fund, you own (proportionate to your shares) small amounts of each individual security in that basket. The value of your fund shares is based on the sum of the values of the items in the basket. With a typical open-end mutual fund, an unlimited number of shares are offered to the public on a continuous basis. The value of shares in the basket is calculated daily based on the values of each individual security, resulting in a net asset value (NAV) and allowing you to then buy or redeem shares of that mutual fund.

Investing in an exchange-traded fund (ETF) is different. Unlike mutual funds, ETFs do not sell or redeem their individual shares at NAV. Instead, ETFs sell and redeem shares at NAV only in large blocks (typically 25,000 to 500,000 shares) with selected institutional market makers. The ETF shares are then listed for trading on national securities exchanges, which allows investors to purchase and sell shares at market prices — which may be different than the NAV — throughout the day. The value of your shares is thus not a direct result of the values of the items in the basket (although often closely related), but is based on the market price of shares, which depends on supply and demand.

ETFs possess some characteristics of both traditional mutual funds and individual stocks. These characteristics create both opportunities and risks for investors.

Types of ETFs

The proliferation of ETFs has generated a vast number of product variations. While the earliest ETFs were passive funds designed to replicate well-known indexes such as the S&P 500, ETF sponsors now offer many flavors to choose from, including (but not limited to):

- Index-based ETFs – passively managed to replicate the returns of a traditional index (e.g. the SPDR funds, which track major indexes)
- Rules-based ETFs – passively managed to replicate the returns of a particular basket of individual securities (e.g. select high dividend stocks, etc.)
- Active ETFs – actively managed, much like many traditional mutual funds
- Leveraged ETFs – aim to provide a multiple of returns on a given index

What's the difference from a mutual fund?

The most significant difference for investors between mutual funds and exchange-traded funds is that ETFs are traded on the open market like stocks. The price of a mutual fund is determined by the valuations of its underlying components (the NAV, calculated once daily). The price of an ETF depends upon the market forces of supply and demand.

- Inverse ETFs – attempt to provide the inverse of a given index’s return
- Sector ETFs – provide performance based on specific market sectors, e.g. energy, technology, financials, etc.
- Commodity ETFs – provide performance based on commodity futures prices
- Country-specific ETFs – provide exposure to specific countries
- A combination of the above – e.g. a multiple of the increase or decrease in commodity prices, indexes, or other markets

Exchange-traded products (ETPs)

ETFs are one type of a category of investments dubbed exchange-traded products (ETPs). Other types of exchange-traded products include exchange-traded notes (ETNs) and exchange-traded commodities (ETCs). All ETPs share the characteristic of being traded intra-day on a stock exchange. Alternative types of ETPs are outside the scope of this paper; however, we may discuss them further in later publications.

How are exchange-traded funds created?

An ETF is created by a fund manager, which is referred to as the ETF “sponsor.” The sponsor begins by outlining the plan for the investment and operational parameters of the ETF in a registration statement filed with the Securities & Exchange Commission. ETF shares are created in large blocks (e.g. 50,000 shares) known as “creation units.” Large institutional investors, called “authorized participants” (APs) purchase creation units with a “portfolio deposit” equal in value to the aggregate NAV of the ETF shares in the creation unit. The portfolio deposit generally consists of a basket of securities that mirrors the composition of the ETF’s portfolio. The authorized participants then offer individual shares of the ETF on the open market. (See Figure 1.)

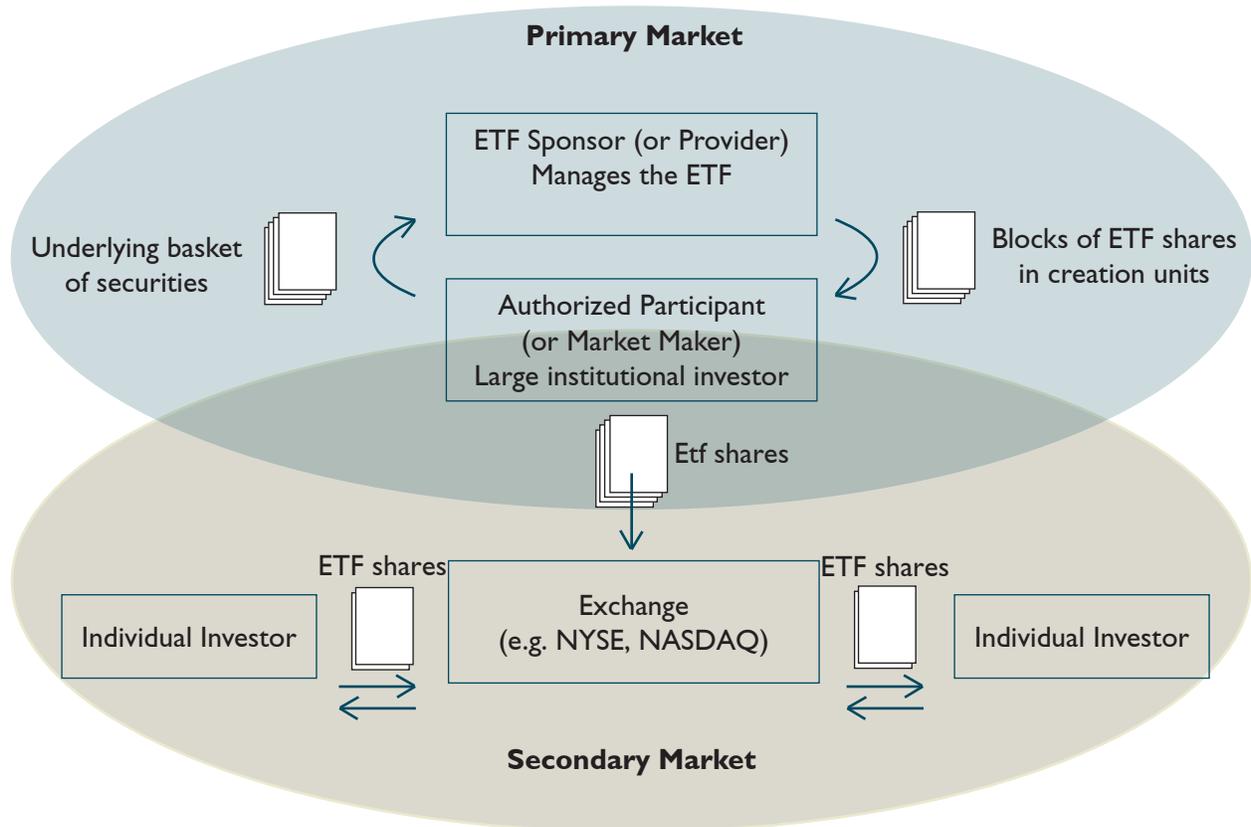
Investors purchase ETF shares in the same way one might purchase a share of stock. The price of the share is based on the current market conditions. Because the shares are bought and sold on an open exchange, a transaction fee, such as a brokerage fee, typically accompanies the purchase of shares. Additionally, there may be a spread between the bid price (selling) and offer (buying) price.

To realize gains or losses, individual investors don’t redeem their ETF shares the way one would with mutual fund shares. Instead, they must be sold on an exchange, as an individual stock would be. Authorized participants may redeem their ETF creation units to the ETF sponsor in exchange for the proportionate basket of assets relative to the value of the shares.

ETFs generally take the form of either physical or synthetic ETFs.



Figure 2: How physical ETF shares are created and traded



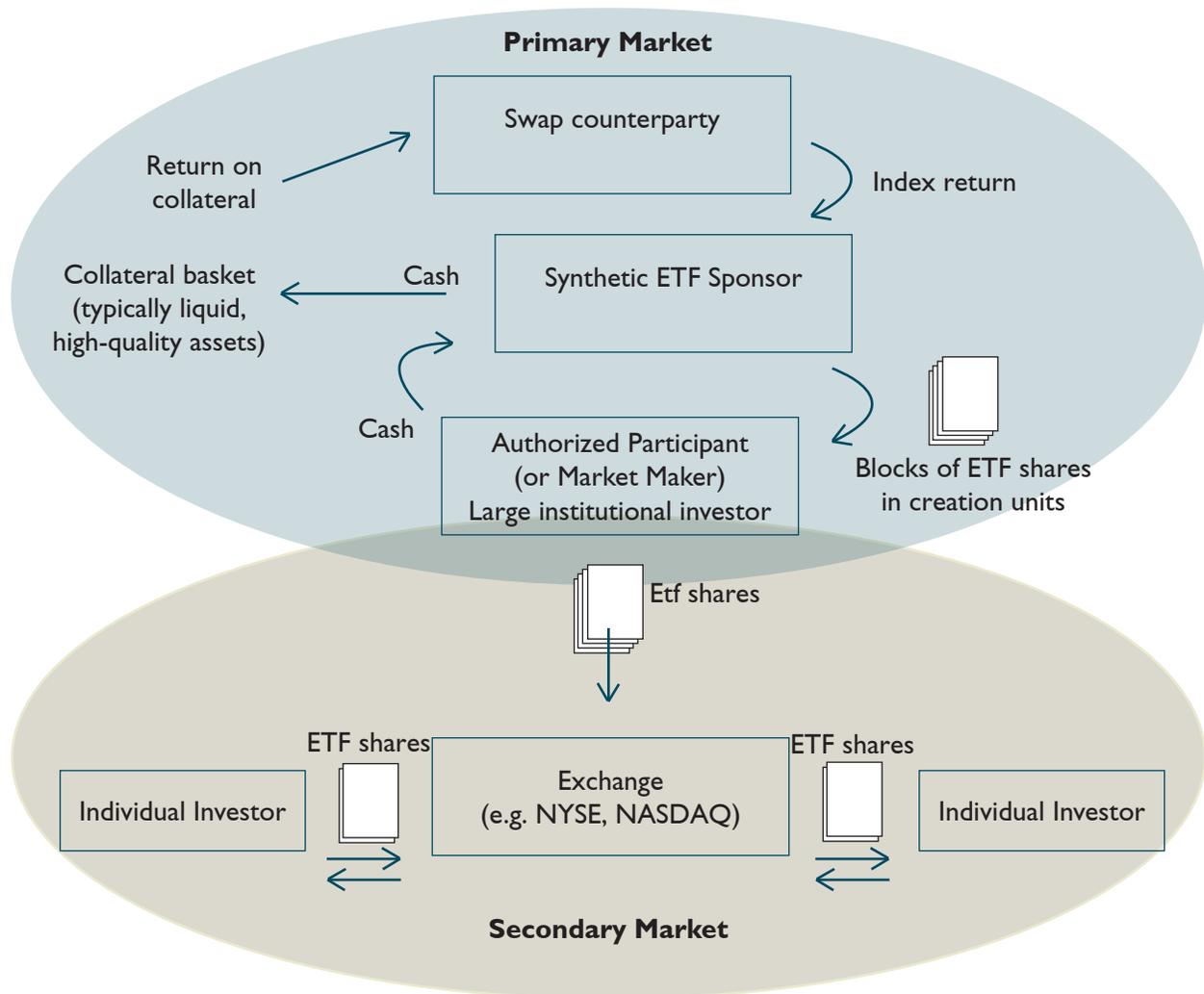
Physical ETFs

Physical ETFs own actual shares of the underlying securities that comprise the ETF mandate. In their creation, the authorized participant trades a basket of physical assets proportionate in value to the ETF shares. A physical ETF may own all the stocks in a particular index, or they may choose to own just a subset of the stocks in order to reduce trading costs. This type of selection process, particularly when combined with the variability of share prices on the open market, may result in a degree of tracking error when compared to a pure index. A physical ETF, like a traditional mutual fund, may also use stock lending as a way to enhance returns. Stock lending programs bring their own set of risks and advantages.

Synthetic ETFs

Synthetic ETFs own derivatives rather than physical assets, such as forwards, futures, options, and swaps, which simulate the return of the index.

Figure 3: Construction of a synthetic ETF



Synthetic ETFs may have certain advantages over physical ETFs, but there are additional risks as well. Synthetic ETFs may reduce tracking error, as the return will more closely match that of the index. They may also provide a method for gaining access to markets in which purchasing physical assets may be costly, such as in commodities. However, synthetic ETFs are often more complicated and less transparent than physical ETFs, may be less liquid, and expose the ETF shareholder to counterparty risk (the risk that the party providing the swap or option will go bankrupt). U.S.-based ETFs are required to hold a minimum of 80% in physical assets, minimizing reliance on derivatives, but synthetic ETFs have proliferated in Europe and some Asian markets. As you can see in Figure 3, the construction of a synthetic ETF can be much more complex than a typical “physical” ETF.

What are the advantages of an ETF?

Exchange-traded funds, as they have surged in popularity, have been aggressively marketed to investors. ETFs are marketed as having a number of advantages compared to traditional open-end mutual funds, including:

- Immediate liquidity and intra-day trading - the ability of the investor to sell ETF shares at any point in time during the trading day
- Shortability - the ability to sell ETF shares “short” in order to benefit from potential decreases in the price of shares
- Tax efficiency - typically few internal trading gains recognized by the fund
- Transparency - many (though not all) ETFs disclose all their holdings on a daily basis
- Fees - fees that may be less than those of a comparable mutual fund

Liquidity and short selling

One of the benefits of ETF funds is that shares can be traded at any time, allowing investors to take advantage of short-term changes in value. This may be of value to those investors who enjoy “playing the market,” but for most long-term investors (and certainly for the average retirement plan participant), intra-day trading may not be particularly advantageous. Like stocks, ETFs have a three-day settlement period, whereas mutual funds have a one-day settlement period.

In addition, the theoretical liquidity of ETFs provided by trading on an open exchange may not always exist. After all, in order to sell ETF shares, there must be a willing buyer at the price a selling shareholder is willing to accept. Market volatility can limit this liquidity, sometimes severely. The “flash crash” of May 6, 2010 illustrated just such a situation. Some experts have suggested that the number of thinly traded ETFs, coupled with the ease of short selling, makes ETFs particularly susceptible to substantial differences between the NAV and market price, especially in times of panic.

ETF liquidity risk

“One risk is a lack of liquidity. On May 6, 2010, trading in the American stock market seemed to go haywire: the Dow Jones Industrial Average fell by almost 1,000 points in the session and some stocks lost almost all their value. This ‘flash crash’ prompted the authorities to cancel a bunch of trades made at unusual prices. Between 60% and 70% of those trades were in ETFs, far above their actual weighting in the market.

Some investors use ETFs as a quick way of expressing their overall view on the market, while high-frequency traders use the funds as part of their complex arbitrage strategies. But such strategies work only as long as there is someone willing to take the other side of the trade. In chaotic conditions, there may be sellers but no buyers. As the IMF points out, ‘While most ETFs are supported by one or two marketmakers, there is no guarantee of active trading under illiquid conditions.’”

(The Economist, 2011)

The structure of ETFs that allows them to trade on the open market also makes possible strategies such as short selling and hedging. These strategies may be difficult to access for most investors, and ETFs make them more accessible. However, such strategies tend to be more complex and less transparent.

The importance of arbitrage

In theory, the market price of an ETF should track relatively closely to the indicative value (NAV) of the underlying portfolio. An ETF investor might ask: what happens if the market price of the ETF differs from the actual value of the underlying holdings? Indeed, it is possible for the market price of ETF shares to be trading at a spread to the net asset value of the shares — either above the NAV value or below it. When this occurs, it creates opportunities for both authorized participants and other institutional investors to engage in arbitrage transactions, by purchasing ETF creation units and selling short the underlying holdings (or vice versa) to take advantage of any dislocations. Theoretically, this arbitrage opportunity would result in a balanced market, where ETF shares trade at or very close to the NAV of the index shares.

Arbitrage explained by Morningstar's Bradley Kay:

“Essentially, the fund must publish, every 15 seconds, an up-to-date version of its portfolio, including the vast majority of securities it holds and the amount of cash necessary to buy the rest. The fund also publishes an estimated cash value of those holdings, known as an Intraday Indicative Value, based upon the most recent prices of the securities in its basket. At any point in the trading day, major banks and trading desks known as authorized participants can come to the fund with a basket of the underlying securities given in the published holdings, which the fund will exchange for a creation unit consisting of a set number of shares in the ETF (typically 50,000).

Similarly, the APs could also buy up shares in the ETF on the market, then exchange them with the fund in return for the published basket of underlying holdings. So if the market price for the ETF starts to rise too far above the price of its underlying stocks or bonds, the APs will buy the underlying holdings, exchange them for shares in the ETF, and sell enough of those shares to drive the price back down to net asset value. Similarly, APs will buy up any shares of the ETF trading at a discount so that they can turn in large blocks of shares for the more expensive underlying securities. This drives prices for the ETFs close to the prices for the underlying stocks and bonds and produces some of the incredible tax benefits of ETFs to boot.”

(Kaminska, 2009)

Figure 4 shows the spread between the NAV and daily trading prices of four exchange-traded funds over the year of 2011. As you can see, some ETFs, like the iShares S&P 500 Index ETF, the iShares BC Aggregate Index ETF, and the iShares Russell 2000 Index ETF didn't deviate substantially from their NAVs during 2011. But the iShares MSCI ACWI ex-U.S. traded at as much as a 3% difference from its net asset value, with the greatest difference in 2011 being more than 3% less than NAV.

Figure 4: 2011 Spreads between NAV and daily trading prices

Fund	Price Difference from NAV			
	2011 Low	2011 High	2011 Average	2011 Standard Deviation
iShares BC Aggregate Index ETF	-0.34%	0.63%	0.12%	0.13%
iShares S&P 500 Index ETF	-0.29%	0.50%	0.00%	0.06%
iShares Russell 2000 Index ETF	-0.67%	0.43%	0.00%	0.11%
iShares MSCI ACWI ex- US Index ETF	-3.09%	2.82%	0.09%	0.86%

Source: Bloomberg

While individual investors can speculate with arbitrage transactions, in most cases, it is the authorized participants or large institutional investors who avail themselves of these arbitrage opportunities.

How do ETFs provide tax efficiency?

In a mutual fund, the fund manager periodically must sell some of the fund's assets, either in the course of managing the investment strategy or in order to raise cash to cover fund redemptions. When this occurs, the mutual fund is required to distribute the gains to shareholders, thus causing the shareholders to incur capital gains taxes.

An ETF operates differently with regard to capital gains taxes. When ETF shares are initially created, the creation units are exchanged for the basket of assets in which the ETF invests. This exchange, considered an "in-kind" or "like-kind" transaction, does not incur any capital gains taxes. And, at least for passive ETFs, there is very little trading activity within the ETF portfolio, so very little gain or loss is considered distributable to shareholders. The ETF also has no need to sell assets to raise liquidity for redemptions because shares are bought and sold on the open market rather than being redeemed by investors. Thus, the price and value of ETFs are largely unaffected by capital gains taxes.

Of course, when the individual shareholder sells ETF shares, capital gain or loss will be recognized. But this gain or loss is at the shareholder level, not the fund level.

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Taxation of dividends and investment earnings on holdings does not differ between traditional mutual funds and ETFs. For example, dividends received by an ETF are typically distributed quarterly or annually and are taxed in the same way as dividend distributions from a mutual fund. Interest on fixed income holdings is usually distributed monthly. ETFs typically do not offer reinvestment programs.

Transparency of holdings

Most ETFs, but not all, disclose their holdings on a daily basis. The stated purpose of this disclosure is to encourage the arbitrage transactions that are designed to assure that the ETF market prices remain relatively close to the indicative value of the underlying investment holdings.

While this information on holdings may be of interest to the average individual investor, these investors typically do not engage in arbitrage trading, so real-time information on portfolio holdings may be of little practical value.

Exchange-traded fund costs

Exchange-traded funds have an expense ratio, similar to mutual funds. While ETFs are often touted as having lower investment management costs and overall expense ratios lower than those of mutual funds, the actual comparison of comparable ETFs and mutual funds may be surprising. The following are a few examples of comparative expense ratios for popular investments: ETFs offered by State Street Global Advisors (SPDRs) and index funds offered by Vanguard. The Vanguard “Admiral” share class expense ratios — not even the lowest-cost share class for institutional investors — are lower in each case than the comparable SPDR fund.

Figure 5: Expense Ratio Comparison

Expense Ratio by Asset Class	SPDR ETF	Vanguard Index Fund (Admiral Class)
S&P 500	0.0945%	0.06%
S&P Midcap 400	0.25%	0.12%
MSCI ACWI ex-US	0.34%	0.18%

Source: Morningstar

In addition, there are other costs associated with ETFs of which investors should be aware. Because ETF shares are bought and sold on the open market, shareholders pay a transaction fee, such as a brokerage fee or commission, both on the buying and selling sides. This will have an effect on the total investment return, particularly for smaller transactions. For instance, suppose there is a \$10 commission for every trade placed. For a \$1,000 purchase,

the commission is only 1% of the total investment. For investors making small purchases, like retirement plan participants who typically contribute small amounts periodically (or retail investors trying to make use of dollar cost averaging), the purchase of \$100 of shares (with the same \$10 commission) now results in a trading expense of 10%. That's a much steeper cost. Rebalancing can also add to the cost of ETF investing, as the number of trades bites into the actual investment.

Investors may find that a spread between the NAV and the actual market price of ETF shares results in an indirect cost. If ETF shares are purchased at a premium to the NAV and sold at a discount to the NAV, the investment returns are reduced by the difference. While arbitrage among market makers theoretically minimizes the spread between an ETF's asset value and market price, it rarely eliminates it completely. Those ETFs trading at high volume typically have a lower spread due to constant or near-constant trading activity, but ETFs with lower trading volumes and many international ETFs have significant differences at any given time between the NAV and market price. Tracking error, which can be created when purchasing ETFs during a volatile market period, can also contribute to the indirect costs of ETFs.

The impact of proliferating ETFs

With soaring popularity, the number of ETFs has increased rapidly, accompanied by a much broader set of ETF objectives. In addition to tracking major indexes, ETFs have been created to appeal to all sorts of niche markets, from inverse indexing to fishing-industry investments. Although the market for ETFs has grown quickly, it has not grown fast enough to fully support all the products that have been created. Brendan Conway of *Money & Investing* coined the term "zombie ETFs" to refer to those funds that have sliced the market so thinly, they have fewer than \$100,000 of shares trading daily. (Conway, 2011) In many cases, these products have insufficient assets to support their cost structure without significant future inflows. Zombie ETFs tend to suffer from both higher operating expenses and greater spreads between offer price and indicative value. Furthermore, if the ETF is withdrawn from the market by the sponsor, it may trigger unplanned tax implications for its investors.

The variety of ETFs

"Within equities, there are ETFs based on small-cap companies, value shares, individual industries and every conceivable combination of countries and regions. In bonds, there are ETFs linked to government, corporate and high-yield debt and paper of varying maturities. Some ETFs are based on commodity indices and property markets, others are designed to appeal to the environmentally conscious or to devout Muslims. There are leveraged ETFs which offer a geared return on a given index, inverse ETFs which aim to go down when a benchmark goes up (and vice versa) and, inevitably, leveraged inverse ETFs."

- *The Economist*, 2011

ETFs and retirement plans

More than one major investment management firm has begun marketing ETFs as a preferred solution for defined contribution retirement plans, such as 401(k)s. We view this with some skepticism, for the following reasons:

- Participants typically do not have the opportunity to trade throughout the day, and even if they do, most experts suggest that encouraging frequent trading is antithetical to participants' long-term savings goals. Additionally, the three-day settlement period may make ETF trades more complex to administer than mutual fund trades.
- The tax advantage of ETFs is not relevant to non-taxable accounts like qualified retirement plans.
- As previously illustrated, operating and investment management costs may not be lower than institutional-caliber mutual funds. Even if they are lower for a particular investment, transaction costs and spreads between NAV and market prices may outweigh the differences in expense ratios.
- Some ETFs also include provisions for revenue-sharing or reimbursement allowances to distributing parties. Like arrangements in which a plan uses traditional mutual funds, plan fiduciaries should understand the magnitude of these payments and identify the recipients of the dollars.

As always, prudent fiduciary process requires a thorough review of the merits and disadvantages of any investment before it is included in a retirement plan.

Conclusion

While the mutual fund industry is still about seven times larger than the ETF industry, exchange-traded funds continue to gain market share. In 2011, ETFs experienced more than \$119 billion of inflows, compared to only about \$59 billion of inflows to mutual funds. (*Hougan, Ludwig, 2012*) Some of this disparity may be not just due to ETF popularity, but to an increasing number of investors leaning toward passive management. For instance, index mutual funds saw \$66 billion in inflows in 2011, while actively managed funds actually experienced overall outflows over the year. (*Hougan, Ludwig, 2012*)

Exchange-traded funds, as they have surged in popularity, have been aggressively marketed to investors. Ease of trading, intra-day trading, low cost, liquidity, and tax advantages are typically the benefits touted by ETF sponsors. While these benefits exist to some extent, there are accompanying risks and complications that investors should be aware of when considering ETF funds for their portfolios.

In our view, exchange-traded funds may have their place in a particular portfolio, but that place is dependent on overall portfolio construction. As a firm, we believe that both institutional and individual investor capital is

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often best deployed in actively managed products. However, ETFs can play important roles:

- As a surrogate for an index fund in that portion of a portfolio that is passively managed, particularly when daily liquidity is important,
- As a short-term place holder during transitional periods, or
- For portions of a portfolio in which a specialized product is not offered by one of our active managers.
- For sector concentration

In each of these cases, we thoroughly vet the advantages and risks associated with the ETF and will generally err on the side of recommending straightforward physical ETFs with significant market float.

The exchange-traded fund universe is growing, and investor appetite for ETFs is continuing to expand. However, as with any investment, we would caution interested investors to look closely at the structure and risks of ETFs before investing.

Glossary of ETF Terms

Authorized participants: Large, institutional investors who purchase creation units from the ETF sponsor by trading the basket of underlying securities, typically also engage in arbitrage strategies that balance the market price of ETFs

Ask price: The price at which investors are willing to sell ETF shares

Bid price: The price at which investors are willing to buy ETF shares

Creation unit: A fixed number of ETF shares, typically about 50,000, which are traded to or from the ETF sponsor for an appropriate proportion of the underlying securities

ETF sponsor: The firm or individual responsible for managing the ETF

Expense ratio: The fee charged by the ETF sponsor to cover administrative and management costs of the fund, expressed as a percentage of invested assets

Market makers: Large, institutional investors who purchase creation units from the ETF sponsor by trading the basket of underlying securities, typically also engage in arbitrage strategies that balance the market price of ETFs

Market specialists: Large, institutional investors who purchase creation units from the ETF sponsor by trading the basket of underlying securities, typically also engage in arbitrage strategies that balance the market price of ETFs

Net asset value: The calculated value of the underlying assets in the ETF (calculated daily)

Synthetic ETF: An ETF in which the underlying investments are mostly derivative instruments

Zombie ETF: An ETF that has been established, but has few to no actual investors — zombie ETFs typically track unusual or obscure securities

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