

PDV *OBSERVATIONS*

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Exchange-Traded Funds

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Exchange-Traded Funds (ETFs) have become increasingly popular over the past fifteen years. The total net assets of ETFs in the U.S. market grew roughly 21% per year from \$228 billion at the end of 2004 to \$3.37 trillion at the end of 2018. As investor demand exploded, ETF sponsors vastly expanded their ETF offerings. The number of ETFs in the U.S. market grew from 152 at the end of 2004 to 1,988 at the end of 2018.^{1, 2} Trading in ETFs accounts for about 25% of the daily trading volume in U.S. stock markets and has on some days surged to nearly 40%.³

In this article, we explain ETFs, their pros and cons relative to mutual funds, and how they can be dangerous to your financial health.

What is an ETF?

An ETF is a pooled investment vehicle that invests in a basket of securities. ETF shares, each representing an undivided interest in the underlying securities, can be bought and sold intraday on the stock exchanges, like common stocks. Most ETFs are designed to track the performance of a target index. An index-based ETF tracks its target index in one of two ways: 1) replicate the target index by investing in all the same securities and in the same weightings as those in the target index, or 2) hold a representative sample of securities that are in the target index. The full replication method is most commonly employed by ETFs that track indices made up of highly liquid securities, while the representative sampling method is more commonly used by ETFs that track indices with more illiquid securities and/or foreign securities with ownership or transferability restrictions.⁴

Most ETFs are index-based, targeting indices that range from broad-based domestic equity to emerging market bonds to industry-specific sectors. There are also specialized ETFs that are designed to track a multiple of the target indices (leveraged ETFs), an inverse of the target indices (inverse ETFs), or a multiple inverse of the target indices (leveraged and inverse ETFs). While vastly outnumbered by index-based ETFs, actively managed ETFs have been available since 2008. Such ETFs are required to disclose the identities and weightings of their holdings at the end of each business day on the funds' publicly available websites. As of the end of 2017, there were 194 actively managed ETFs in the U.S., with \$45 billion total net assets.⁵

Most ETFs are registered and regulated by the SEC. Those that invest in commodity or currency futures are regulated by the Commodity Futures Trading Commission and accounted for about 2% of total net assets held in ETFs at the end of 2017.⁶

Key Differences from Mutual Funds

Like the vast majority of mutual funds, ETFs are mostly structured as open-end funds that are required to post the marked-to-market net asset value (NAV) of their portfolios at the end of each trading day. However, unlike

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mutual funds which are bought and sold at the NAV, ETFs are traded at market prices determined by investor supply and demand throughout the trading day. This means the ETF's market trading price can deviate from its NAV, although an arbitrage pricing mechanism is supposed to keep the ETF's market price closely in line with its NAV during the trading day (further explained below).

Unlike open-end mutual funds for which the fund companies create new shares for sale to investors, ETF shares are created by entities called "authorized participants," which typically are large financial institutions. Each trading day, ETFs are required to publish specific lists of names and quantities of securities, cash and/or other assets that are designed to track the ETFs' portfolios ("creation and redemption baskets") for the next trading day. To create ETF shares, an authorized participant provides the specified creation basket or cash to the ETF in exchange for a "creation unit," which is a large block of ETF shares usually ranging from 25,000 to 200,000 shares.⁷ The authorized participant can subsequently sell the ETF shares in the secondary market to investors in exchange for cash. To redeem ETF shares, an authorized participant transfers the creation unit to the ETF in exchange for the specified redemption basket of securities. The creation/redemption occurs at prices based on the ETF's end-of-day NAV as of the day of the transaction.⁸

Arbitrage Pricing Mechanism

Authorized participants' ability to create/redeem shares at NAV and the transparency of an ETF's holdings are the keys to keeping the ETF's market price closely in line with its NAV during the trading day. Transparency of an ETF's holdings is achieved through either full disclosure of the portfolio (in the case of an actively managed ETF) or the transparency of the target index (in the case of an index-based ETF). In addition, a real-time estimate of an ETF's current NAV based on the prior day's portfolio holdings (called the Intraday Indicative Value) is calculated and distributed via quote services roughly every 15 seconds throughout the trading day.⁹

When an ETF's estimated NAV per share deviates from its market trading price, an authorized participant can arbitrage the difference (and make a profit) before the ETF's market price moves back in line with its NAV per share. For instance, when an ETF is trading at a discount to its estimated NAV per share, authorized participants may buy the undervalued ETF shares (at creation unit increments) and sell short the underlying securities. The authorized participants then redeem the ETF shares for the underlying securities, which they use to cover the short sales. When an ETF is trading at a premium to its estimated NAV per share, authorized participants may sell short the ETF shares (at creation unit increments) and buy the underlying securities. The authorized participants then provide the underlying securities to the fund company in exchange for ETF shares, which they use to cover the short sales. These actions normally will drive the ETF's market price back in line with the ETF's NAV.

ETFs vs. Mutual Funds (Pros and Cons)

Investors can conveniently gain exposure to various markets or sectors through ETFs, just like with mutual funds. Compared to mutual funds with similar investment objectives, ETFs offer both advantages and disadvantages.

ETF advantages over mutual funds:

- Save taxes – ETFs generally generate lower taxable capital gains distributions to shareholders.¹⁰
- Lower costs – Most ETFs have lower management fees than comparable mutual funds.
- Greater transparency – Information on ETF holdings is available daily through either the fund's full disclosure or the transparency of the underlying index. In contrast, mutual funds are required to disclose their holdings only quarterly.¹¹
- Flexible trading – ETFs can be bought/sold throughout the trading day at market price, while mutual funds can be bought/sold only at the end of each trading day at the NAV.

- No redemption fees – Unlike some mutual funds, ETFs do not charge redemption fees that are designed to discourage short-term trading.
- Lower investment minimum – You can purchase as little as one share of an ETF, while mutual funds often require an initial investment of \$500 or more.

ETF disadvantages compared to mutual funds:

- Brokerage commissions – You can buy/sell many mutual funds without brokerage commissions, but trading ETFs require paying brokerage commissions.
- Other trading costs – Investors may incur an indirect cost when trading ETF shares at market prices that deviate from the NAV. Further, investors have to pay the spread (difference between the bid and ask prices) when they do round-trip trades on ETFs. Mutual funds investors are not subject to such indirect costs, since mutual funds are traded (bought and sold) at the NAV.
- Delay in trade settlement – ETF trades take 2 business days to settle, while most mutual fund trades take only 1 business day to settle.

How Can ETFs Hurt You?

When you buy an ETF, you own a fractional interest in the underlying basket of securities held inside the ETF. *Under normal market conditions*, the ETF poses the same amount of fundamental investment risk as that presented by the underlying basket of securities. If the underlying securities are poor investments, holding them via an ETF (as a form of conduit) does not mitigate your risk, though you may find it easier to sell an ETF than a basket of different securities.

But there are some circumstances under which you could be hurt more owning an ETF than directly holding the underlying basket of securities. What are these circumstances?

First, you could be hurt more if you hold leveraged ETFs, inverse ETFs, or leveraged and inverse ETFs for more than one trading day. Such specialized ETFs are designed to achieve their investment objectives on only a daily basis. If you hold the ETF longer than one trading day, you are likely to experience cumulative results that deviate (perhaps significantly) from the ETF's objective. Such difference in cumulative results between the leveraged/inverse ETF and the target index will be magnified over longer periods and during volatile markets, delivering a very nasty surprise to the ETF investor who expects results based on the target index.

Second, you could be hurt more when 1) highly volatile markets cause the market price of the ETFs to deviate (perhaps substantially) from the market price of the underlying basket of securities, and 2) the arbitrage pricing mechanism breaks down, allowing the difference between the market price and NAV of the ETF to persist for longer than normal periods. When that happens, you are not only assuming the investment risk of the underlying basket of securities, but the *additional* risk that you are paying too high a price to buy (when the ETF market price is higher than its NAV) or receiving too low a price to sell (when the ETF market price is lower than its NAV).

Why would the arbitrage pricing mechanism break down? This mechanism relies on the comparison of an ETF's market price and its estimated NAV during the day, both of which prices are readily accessible during normal market conditions. However, during periods of extreme market volatility there may be trading halts affecting the ETF as well as one or more of its underlying securities. The lack of information and the fear over potential trade cancellations break down the arbitrage mechanism. Market makers may widen their bid/ask spreads substantially for ETFs and the underlying securities, increasing the odds that the market price will deviate from NAV.

On August 24, 2015, the ETF market suffered severely from this very type of arbitrage pricing mechanism breakdown. Consequently, many investors incurred significant losses after selling their ETF shares at unduly low prices bearing no relation to the NAV when the market opened. On that morning, after U.S. stock futures plummeted in pre-market, the NYSE permitted the market to open without requiring that stock prices be announced first.¹² Not knowing the price at which some stocks were going to open caused market makers to widen bid-ask spreads for both stocks and ETFs that they owned to deal with the lack of information.¹³ Orders to sell at market prices were then executed at unduly low bids, which repeatedly triggered circuit breakers that were designed to pause trading when a security's price moves a specific percentage beyond an average of the security's prices in the preceding 5 minutes. 327 ETFs were hit with 5-minute trading halts on the morning of August 24, 2015, with 11 ETFs halted 10 or more times.¹⁴ Nearly 80% of the 1,279 trading halts on that day related to ETFs.¹⁵

Repeated trading halts in hundreds of ETFs and stocks prevented the authorized participants from engaging in the arbitrage that would have kept ETFs' market prices in line with those of their underlying securities. Prices of many ETFs ended up falling much more sharply than their underlying securities. **For instance, when the \$12.7 billion iShares Select Dividend ETF dropped 35% to \$48 shortly after market opened, the combined weighted value of the ETF's underlying securities was only down by 2.7% to \$72.42.**¹⁶ Investors who sold their ETFs at the market price suffered from drastically low bids that were not representative of the underlying securities' prices. Investors who had put in stop-loss sell orders for their ETF shares saw their orders executed at prices that were severely lower than the trigger price because prices were falling so rapidly.¹⁷

Clearly, what used to be a low-cost, convenient and liquid investment option to gain diverse market/sector exposure has morphed into something that can pose serious risks above and beyond those associated with directly owning the underlying securities. In particular, leveraged and inverse ETFs represent a specialized area of pitfalls. Before investing in ETFs, you should be aware of the issues discussed in this article.

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