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by BlackRock

iSHARES INVESTIGATES: THE ETF ECOSYSTEM

Part 1 | Authorized participants and market makers

Exchange traded funds (ETFs) have grown quickly in both size and scope over the past decade. Globally, assets under management accelerated from $675 billion in 2008 to $5.4 trillion in 2019.[1] Today, over 300 issuers offer more than 6,400 ETFs.[2]

Many players help support the mechanism that enables ETFs to operate efficiently. In our first look at this ETF "ecosystem," we examine two institutions—authorized participants (APs) and market makers—that play central roles in ensuring that ETF prices are accurate, and that trading is smooth, in all market conditions.

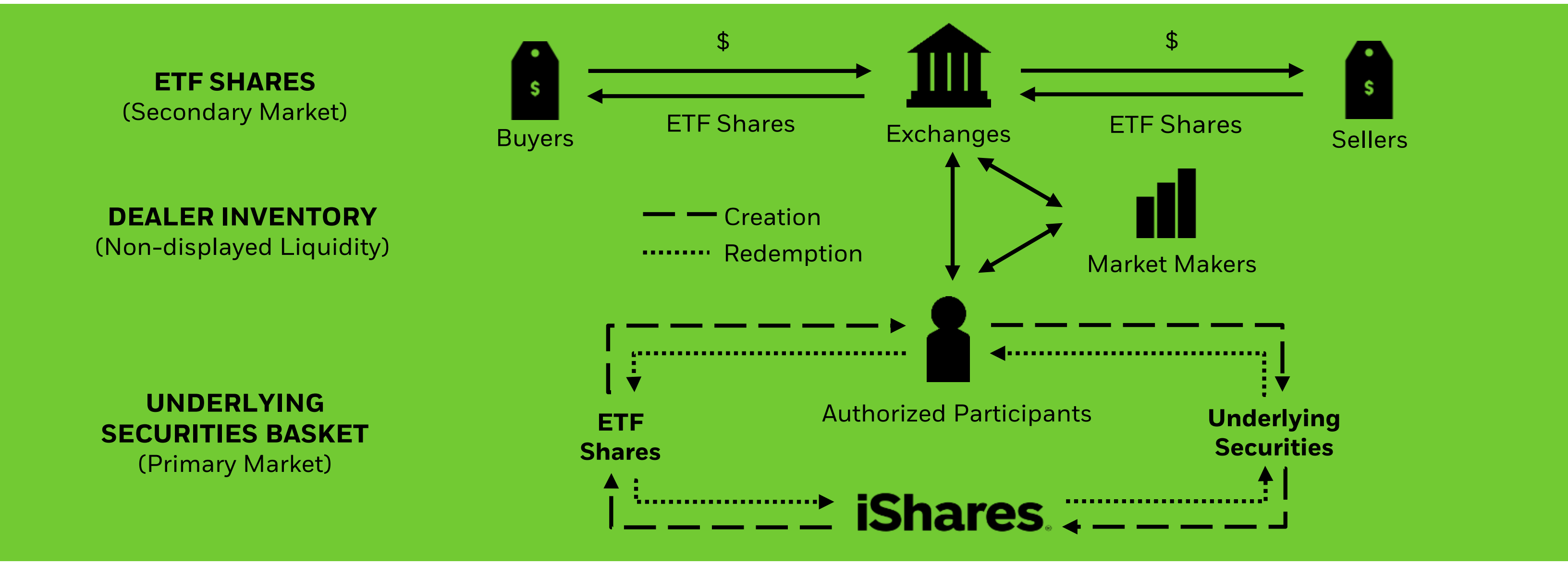
ETFs: A unique fund structure

ETFs combine features of mutual funds and stocks. Like mutual funds, ETFs are pooled investment vehicles that offer access to a broad mix of stocks, bonds or other assets. Unlike mutual funds, ETF investors don't interact directly with the fund provider when buying or selling fund shares. Instead they generally trade existing ETF shares with each other during market hours, on an exchange, just like trading stocks.[3]

Uniquely, ETFs operate in two markets that involve different types of market participants.

Most trading occurs in the "secondary" market, or on-exchange, where investors buy and sell existing ETF shares. The price of the shares is determined in real-time and, as with stocks, transaction costs are affected by the ETF's bid/ask spread (the difference between the buyer and seller prices). Larger, more liquid ETFs generally have tighter spreads, and thus lower transaction costs.[4]

A separate, "primary" market involves large institutions (authorized participants) transacting with ETF issuers to create or redeem ETF shares based on market demand. Individual investors do not participate in the primary market. In terms of volume, ETF trading in the primary market is only a fraction of ETF trading in the secondary market.



1 As of July 31, 2019. Source: Markit, BlackRock. **2** As of July 31, 2019. Source: Markit, BlackRock. **3** For more information about the differences between ETFs and active mutual funds, please see the end of this document. **4** Source: Bloomberg, BlackRock.

Authorized participants: Key players in ETF creations and redemptions

An AP is a financial institution, often a bank, that dynamically manages the creation and redemption of ETF shares in the primary market. This process adjusts the number of ETF shares outstanding and helps keep an ETF's price aligned with the value of its underlying securities.

Each AP has an agreement with an ETF sponsor that gives it the right (but not the obligation) to create and redeem ETF shares. APs may act on their own behalf or on behalf of market participants, and are not compensated by ETF sponsors.

Examples of APs include Goldman Sachs, J.P. Morgan and Citigroup.

Market makers: Matching buyers and sellers

A market maker is a broker-dealer that regularly provides two-sided (buy and sell) quotes to clients.[5] Market makers are key liquidity providers in the ETF ecosystem that ensure continuous and efficient ETF trading in the secondary market.

The role of a market maker is distinct from the role of an AP, though both are necessary for robust ETF trading activity. A market maker does not need to be an AP, nor does an AP need to be a market maker. Still, some firms play both roles in certain ETFs.

Examples of market makers include Susquehanna International Group, Jane Street and Virtu Financial.

ETF trading in action

APs and market makers have an economic incentive to take advantage of arbitrage opportunities in the market. This involves trading the ETF shares or underlying securities when there are small price differences between the two.

A market maker may engage an AP to initiate a creation if the price of an ETF share is greater than the value of the underlying holdings (at a premium) or a redemption if the price of an ETF share falls below the value of the underlying holdings (at a discount).

For example, assume that when the market opens, the price of an ETF and the value of its underlying securities are both $100. If the value of the underlying securities falls to $99 while the price of the ETF remains $100 (i.e., the fund is trading at a premium), an AP could profit by creating new ETF shares. Specifically, the AP could buy the underlying securities for $99, deliver them to the ETF issuer to create shares of the ETF and sell the ETF shares at the market price of $100. This results in a profit of $1 for the AP.

Likewise, if the market price of the ETF falls to $99 while the value of underlying securities remains $100 (i.e., the fund is trading at a discount), an AP could buy shares of the ETF and redeem them with the issuer in exchange for the fund's underlying securities, resulting in a profit of $1 for the AP.[6]

Generally, increased demand for the underlying securities drives prices higher, while increased selling pushes prices lower. As a result of this trading activity, the price of the ETF share and the value of its underlying securities should converge.

In other words, this arbitrage mechanism helps keep the ETF's market price in line with the value of the ETF's underlying holdings.

Exhibit 1: ETF Arbitrage Example – ETF Premium

Buy underlying securities for $99 → **Create ETF shares** Deliver securities to issuer and receive ETF shares → Sell ETF shares for $100

Exhibit 2: ETF Arbitrage Example – ETF Discount

Buy ETF shares for $99 → **Redeem ETF shares** Deliver ETF shares to issuer and receive underlying securities → Sell underlying securities for $100

5 A broker-dealer is a firm that buys and sells securities on behalf of clients (broker), its own account (dealer), or both. **6** These examples ignore transaction costs. The profit to the AP will be smaller once transaction costs and fees are deducted.

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Authorized participants transact in the primary market

APs dynamically adjust the number of ETF shares outstanding, and in doing so, increase efficiency and reduce costs for ETF investors.

When demand for ETF shares exceeds the supply of shares available in the market, APs work with ETF providers to create additional shares.

An AP can initiate a creation in two ways:

1) Deliver a "creation basket," or a pre-specified bundle of securities representing the underlying index, to the ETF issuer

2) Provide cash equal to the full or partial value of the creation basket to the ETF issuer.[7]

In return, the ETF issuer will deliver new shares of the ETF to the AP. The AP can then hold these shares in their inventory or sell them to investors in the secondary market.

Conversely, when there are too many ETF shares outstanding due to more investors selling shares than buying shares in the secondary market (i.e., supply is exceeding demand), an AP will buy ETF shares on the exchange and return them to the ETF issuer.

To initiate a redemption, the AP must deliver ETF shares—either obtained from inventory or purchased on the secondary market—to the ETF issuer. Once ETF shares are delivered, the ETF issuer gives the AP a "redemption basket", or cash, in return.[8]

7 ETF sponsors determine the contents of the creation basket prior to the start of each trading day, modifying throughout the day as needed. Securities delivered may be a full replication or representative sample of the underlying index, as agreed upon by the AP and ETF sponsor. Cash is accepted in-lieu of securities in certain funds or under limited circumstances. **8** Like a creation basket, the "redemption basket" is a pre-specified bundle of securities that represents the underlying index. ETF sponsors determine the contents of the redemption basket prior to the start of each trading day, modifying throughout the day as needed. Securities delivered may be a full replication or representative sample of the underlying index, as agreed upon by the AP and ETF sponsor.

ETFs and mutual funds: Know the differences

- **Strategy:** Fund management styles are typically categorized as "active" or "index". Active funds (most mutual funds) seek to outperform market indexes, while "index" funds (some mutual funds and most ETFs) seek to match the fund's performance to an established market index, such as the S&P 500.
- **Trading:** Mutual funds are bought and sold directly from the mutual fund company at the current day's closing price, or the Net Asset Value (NAV). ETFs are traded throughout the day at the current market price, like a stock, and may cost slightly more or less than NAV. Mutual fund transactions do not include commissions to a brokerage, while some ETF transactions do.
- **Transaction fees:** For mutual funds, transaction fees may include sales charges (sales loads) or redemption fees. These are paid directly by investors. ETF transactions may include brokerage commissions (like stocks), which are paid directly by investors.
- **Tax implications:** Mutual fund shareholders redeem shares directly from the fund, so the fund manager must often sell fund securities to honor redemptions, potentially triggering capital gains for the fund's remaining shareholders. Because ETF investors buy and sell shares with other investors on an exchange, the ETF manager doesn't have to sell holdings—potentially creating capital gains—to meet investor redemptions. ETF shareholders can incur tax consequences when they sell shares on the exchange, but that tax consequence is not passed on to other ETF shareholders.
- **Transparency:** ETFs generally disclose holdings daily. Mutual funds generally disclose holdings quarterly.

	Mutual Funds	**Index Mutual Funds**	**ETFs**	**Stocks**
Diversified	✓	✓	✓	
Traded on exchange			✓	✓
Intraday pricing			✓	✓
Intraday trading			✓	✓
Management fees	✓	✓	✓	
Commission fees			✓	✓
Tax management*			✓	✓
Index-tracking		✓	✓	

* Due to fund structure, mutual fund holders may be subject to taxable capital gains distributions due to other investors' redemptions directly to the mutual fund. Taxable capital gain distributions can occur to ETF investors based on stocks trading within the fund as the ETF creates and redeems shares and rebalances its holdings. ETFs and stocks will also distribute taxable capital gains whenan investor sells their own shares. Certain traditional mutual funds can also be tax efficient.

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Important Information about iShares ETFs

Carefully consider the Funds' investment objectives, risk factors, and charges and expenses before investing. This and other information can be found in the Funds' prospectuses or, if available, the summary prospectuses which may be obtained by visiting www.iShares.com or www.blackrock.com. Read the prospectus carefully before investing.

Investing involves risk, including possible loss of principal.

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Shares of iShares ETFs may be bought and sold throughout the day on the exchange through any brokerage account. Shares are not individually redeemable from the ETF, however, shares may be redeemed directly from an ETF by Authorized Participants, in very large creation/redemption units.

Although market makers will generally take advantage of differences between the NAV and the trading price of iShares ETF shares through arbitrage opportunities, there is no guarantee that they will do so.

Buying and selling shares of ETFs will result in brokerage commissions.

There can be no assurance that an active trading market for shares of an ETF will develop or be maintained.

Investment comparisons are for illustrative purposes only. To better understand the similarities and differences between investments, including investment objectives, risks, fees and expenses, it is important to read the products' prospectuses.

This information should not be relied upon as research, investment advice, or a recommendation regarding any products, strategies, or any security in particular. This material is strictly for illustrative, educational, or informational purposes and is subject to change.

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