VIEWPOINT

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# A Primer on ETF Primary Trading and the Role of Authorized Participants


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The growth of assets in exchange-traded funds (ETFs) has led to greater focus on their structure and mechanics.[1] In this *ViewPoint*, we explain how shares are created and redeemed in ETFs. This process, known as ETF primary trading, facilitates inflows and outflows from the underlying portfolios of these kinds of mutual funds. We discuss authorized participants (APs), market makers (MMs), and the distinct roles they play in ETF primary trading. We also consider the possibility of an AP stepping back from its role and explain the expected impact on ETFs and markets. We conclude with recommendations for strengthening the ecosystem around ETFs.

## Key Observations

1. Individual investors trade shares in ETFs on an exchange, and do not interact directly with the ETF or its sponsor.
2. ETFs provide additional liquidity to investors as evidenced by the fact that secondary trading in ETFs often significantly exceeds trading volumes in the underlying securities.
3. APs present a basket of securities to create ETF shares (or, conversely, receive a basket of securities to redeem ETF shares).
4. When the ETF share price trades at a premium or a discount to the value of the securities held by the ETF, there is generally an economic incentive for creation or redemption, which is facilitated by an AP on behalf of a market maker.
5. In the event an AP steps back, other active or inactive APs may seize upon the opportunity to interact with that ETF, although there is no obligation to do so.
6. If no APs step in, the ETF may trade like a closed-end fund and at a higher premium or a discount to the net asset value of the fund….until an AP chooses to become active in the ETF shares.
7. A systematic classification scheme that helps investors more readily distinguish the risks inherent in different types of exchange-traded product structures would benefit investors, as well as help regulators focus their efforts.
8. There are several areas where policy makers, regulators and the industry can act to strengthen the ecosystem around ETFs, decrease operational risk, and reduce the cost of trading. In addition to implementing a clear classification system for ETFs, this should include harmonizing order taking protocols for US equity ETFs, as well as standardizing and increasing access to data.

The opinions expressed are as of March 2017 and may change as subsequent conditions vary.

**Exhibit 1: Key Differences in Fund Structures**

| Feature | Traditional Open-End Mutual Funds | Closed-End Funds | ETFs |
|---|---|---|---|
| **Exchange-Traded** | No | Yes | Yes |
| **Visibility into Holdings (Transparency)** | Typically monthly or quarterly | Typically monthly or quarterly | Typically daily |
| **Shares Outstanding** | Number of shares can change at end-of-day based on purchases and redemptions | Supply of shares is fixed | Number of shares can change at end-of-day based on creations and redemptions |
| **Pricing** | All transactions are at the fund's end-of-day NAV | Initial public offering (IPO): IPO price<br><br>After IPO: market determined | Primary market: NAV<br><br>Secondary market: market determined |
| **Liquidity[2]** | End of day only (Primary Processes) | Intraday: subject to market liquidity (Secondary Market ) | Intraday: Secondary Market<br><br>End of day: Primary processes |

Source: BlackRock

## ETF Fund Structure

Traditional open-end mutual funds, ETFs, and closed-end funds (CEFs) are all registered funds, however, they differ in several key ways. Since the features of these funds are often conflated,[3] we begin this discussion with Exhibit 1, which outlines the key differences.

In a traditional open-end mutual fund, demand for shares of the portfolio is satisfied through an end-of-day subscription and redemption process. Individual investors interact with the fund, based on the terms in the fund's prospectus, and buy or sell shares at the end of the day at the fund's net asset value (NAV). As more investors subscribe to the fund, its assets increase as do the number of shares outstanding. Likewise, redemptions reduce the fund's assets and number of shares.

In a CEF, investors buy and sell shares on the exchange intraday. Because the size of the fund is fixed in terms of both assets and shares outstanding, secondary market liquidity alone determines the price at which shares are bought and sold. This is why CEFs may trade at premiums or discounts to the value of the underlying securities held by the CEF.

ETFs combine characteristics of both CEFs and traditional open-end mutual funds. Like a CEF, ETF shares can be bought and sold on the exchange intraday. Like a traditional open-end mutual fund, ETF shares can be created or redeemed at the end of the day (the fund can grow or shrink, based on end-investor demand). There are two key differences between how this process works in an ETF versus a traditional open-end mutual fund. First, in an ETF, these end-of-day primary trades are facilitated by a pre-approved group of institutional firms, known as APs, who have entered into an agreement with the ETF's distributor.

Second, in many ETFs, primary trades happen in-kind and do not require securities purchases or sales by the ETF. APs present a basket of securities to (or receive a basket of securities from) the ETF in exchange for ETF shares.[4]

Most active APs will also act as agents to facilitate creations or redemptions on behalf of their clients. These activities could be on behalf of market makers – broker-dealers who regularly provide two-sided (both buy and sell) quotations to clients – as well as end-investors seeking to access primary market liquidity. The roles of APs and market makers are distinct. An AP does not have to be a market maker in a given ETF, nor does a market maker need to be an AP. That said, some firms are both an AP and a market maker in a given ETF. APs are not individual investors.

APs play an important role in ETFs, yet, with the notable exception of Antoniewicz and Heinrichs (2015),[5] relatively little has been written about this aspect of the operation of ETFs. The AP is a provider of technology that facilitates the creation and redemption process. Market participants (APs and market makers) use this technology (or capability) to balance the supply and demand of the ETF shares.

## The Creation / Redemption Mechanism

Creations of new shares and redemptions of existing shares are generally initiated by market makers who engage an AP when there is an imbalance of orders to buy or sell ETF shares that cannot be met through the secondary market. ETFs offer transparency, which is key to the pricing of the ETF and the creation and redemption of shares. Prior to the opening of each business day, an ETF makes available current fund holdings and the basket of securities that the ETF will accept for creations or deliver for redemptions for such trading day. For ETFs based on physical securities consisting of stocks or bonds ("plain vanilla"[6] ETFs), the

transactions between an ETF and an AP are typically in-kind where the AP delivers or receives a basket of securities identical (or very similar) to the ETF's holdings.

APs can be large financial institutions or more specialized market makers. Exhibit 2 shows examples of common APs. Given the primary role of the AP is to deliver or accept baskets of securities, experience in trading the underlying securities is an important qualification of an AP for a particular ETF. The ETF sponsor determines which APs are authorized to transact with the ETF prior to launching the ETF. Only authorized APs have the ability to utilize the creation / redemption process explained earlier. APs do not receive compensation from the ETF sponsor and have no legal obligation to create or redeem the ETF's shares. Rather, APs are compensated either through their market making activities in the secondary market, or through service fees they collect from clients (such as independent market makers) who may engage them to facilitate primary trades on their behalf).

## Exhibit 2: Examples of Common US APs

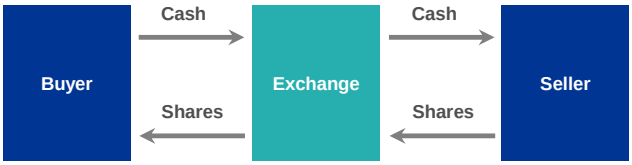
| | |
|---|---|
| Bank of America Merrill Lynch | JP Morgan |
| Citigroup | KCG |
| Credit Suisse | Morgan Stanley |
| Deutsche Bank | UBS Securities |
| Goldman Sachs and Co. | Virtu |
| Jefferies | |

Source: BlackRock, based on trading activity in 2016. These names do not correspond exclusively to the list of anonymized top 10 APs shown in Exhibit 5, but are taken from the list of the top 25 APs by dollar activity in the US. Listed alphabetically.

Exhibits 3 and 4 illustrate the creation / redemption mechanism and the dual nature of liquidity, both primary and secondary. Exhibit 3 illustrates the conventional intraday trading of equities, including CEFs and ETFs, on an exchange (secondary trading). Typically, retail and smaller institutional traders will purchase or sell securities on a trading venue or exchange, either interacting with each other directly or through intermediaries such as market makers or other liquidly providers. As shown in Exhibit 3, a buyer places an order on the exchange for the shares, which is filled by a seller. Sellers who are market makers will ultimately cover their short sale by acting as a buyer in a later transaction.

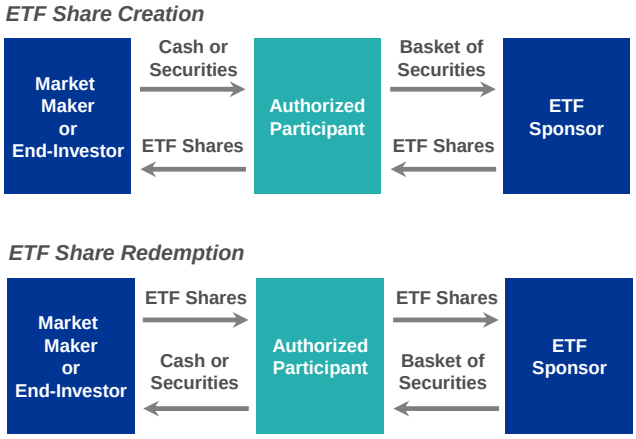
As described earlier, ETFs may create or redeem shares in what is commonly called the ETF primary market.[7] Exhibit 4 illustrates the creation of ETF shares (upper panel) for US domiciled funds where the AP delivers a basket of securities to the ETF in return for ETF shares. Share redemption is just the opposite, as shown in the lower panel of Exhibit 4.

## Exhibit 3: Secondary Market Trading




Source: BlackRock. For illustrative purposes only.

## Exhibit 4: Creation and Redemption of ETF Shares




Source: BlackRock. For illustrative purposes only. The above chart is specific to the US market. Some regional differences exist for ETFs domiciled outside the US.

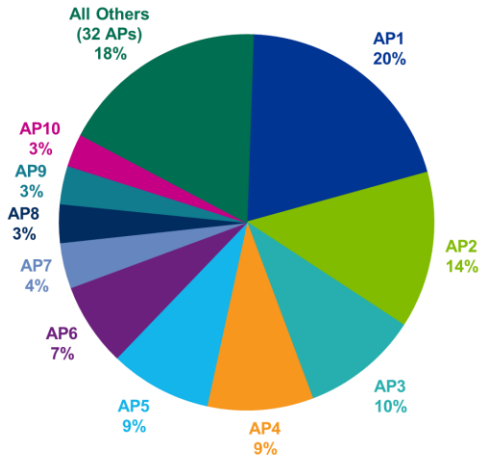
Additionally, Exhibit 4 shows the presence of market makers and end-investors participating in this process.

One way AP activity can be viewed is as a technology for adjusting the shares outstanding of the ETF in response to the demand for the exposure provided, thereby benefiting fund investors through lower costs. For example, if a large institutional investor (i.e., a pension fund) seeks a large block of a particular ETF's shares, it may turn to an AP to facilitate a creation. The buyer delivers either cash or securities or a mixture of the two to the AP, who in turn delivers the basket of securities to the ETF sponsor, who then issues ETF shares to the AP (a creation) to give to the buyer. APs or their market maker clients may also initiate an in-kind creation if the ETF trading price is above the value of the underlying holdings, after adjusting for fees and transaction costs. This arbitrage mechanism of ETFs facilitated by the ability to create / redeem each trading day helps keep the ETF's market prices close to the value of an ETF's underlying holdings. The arbitrage mechanism encourages APs and their clients to provide offsetting liquidity when there is an excess of buying or selling demand for ETF shares. Although market makers will generally take advantage of any possible arbitrage opportunities (net of transaction costs), they are not obligated to enter the market and there is no guarantee they will do so.

## Authorized Participants

Large and broad market ETFs are likely to have a broad set of APs, whereas smaller and more narrowly-defined funds may have a smaller number of APs with specialized trading skills. It is important to appreciate the diversity and number of APs that are actively engaged with ETFs offered by various ETF sponsors. The example of BlackRock, a leading ETF provider, is illustrative. Exhibit 5 represents the largest APs for BlackRock ETFs in the US measured by gross primary market activity for the year ending 2016, where we have anonymized the firms' names. As shown in Exhibit 5, there were 42 APs participating in BlackRock's US ETF business, with the largest AP by gross primary market activity only representing 20% of US primary trading activity in 2016.

### Exhibit 5: Largest BlackRock APs by Primary Market Activity in the US




Source: BlackRock, based on data for year-ending 12/31/2016.

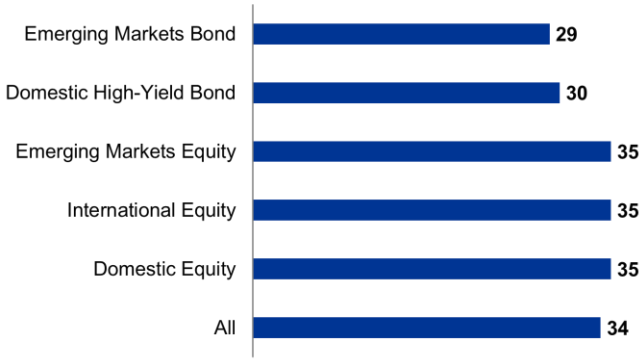
With respect to the broader ETF industry, in 2015, the Investment Company Institute (ICI) conducted a survey of US-domiciled ETFs to better understand the universe of APs associated with ETFs. As shown in Exhibit 6, which is drawn from data on US-domiciled funds produced by ICI, the average number of APs per ETF is 34, with larger numbers of APs for ETFs with greater assets under management (AUM). Exhibit 7 shows the average number of APs for ETFs investing in different asset classes. As Exhibit 7 shows, there are slightly fewer APs in ETFs that are focused on high yield and emerging markets bonds. These asset classes, among others, often require specialized infrastructure and/or expertise. For example, some emerging markets can be accessed only through local brokers, and clearing and settlement may involve processes or requirements that are not present in developed markets. For ETFs traded in the Europe, Middle East, and Africa (EMEA) region, the results are consistent with the discussion above, but keep in mind that the data in Exhibits 6 and 7 reflects only US-domiciled ETFs.

ICI's report explained the fact that not all APs are active at all times. Some APs may request authorization to transact for a family of funds even though they are focused on a subset of the funds within that family. Others may complete the formal paperwork to become an AP so that they are able to participate when they see a profitable opportunity. ICI found that on average five APs are active in most ETFs, and even in the smallest funds, there are on average two active APs. Importantly, the presence of additional APs that may not currently be active in the ETF creates a competitive effect to offer the creation / redemption technology to the client or market maker with the imbalance of ETF shares that cannot be met through the secondary market.[8]

### Exhibit 6: Mean Number of APs by ETF Size


Source: Antoniewicz and Heinrichs (2015), based on ICI survey data.

### Exhibit 7: Mean Number of APs by ETF Type




Source: Antoniewicz and Heinrichs (2015), based on ICI survey data.

## Frequently Asked Questions

**Can a firm be both an AP and a Market Maker?**

Yes, firms that are market makers in a particular ETF may also be APs in that ETF. Market makers acquire long or short positions in ETF shares through secondary market trading, and may seek to manage these inventories by redeeming shares or creating new ETF shares as APs. These are two distinct roles within the ecosystem, however, and there are market makers who are *not* also APs.

**If so many firms have agreements to act as APs, why aren't more APs active in creating / redeeming ETF shares?**

While APs can create or redeem shares of any product, firms have different business models and specific strengths, and not all APs choose to be active in all ETFs. Many APs trade only those ETFs where they have capabilities in that ETF's asset class / underlying securities. For example, some APs can settle complex transfers of hundreds of US stocks but do not have similar capabilities for international stocks or bonds. As one would expect, ETFs with high secondary market trading volume often attract more APs than less liquid products.

Further, some APs create and redeem for multiple client types, including ETF market makers, who are not themselves APs. Although a particular product may have fewer APs versus another, an individual AP may be creating and redeeming on behalf of multiple market makers who are trading the product on the secondary market.

## What Happens If One Or More APs Withdraw?

Policy makers have expressed concerns over the potential impact of the withdrawal of one or more APs from the ETF market. For example, the Financial Stability Board (FSB) noted in their 2017 recommendations regarding asset management that: "APs are not obligated to create or redeem ETF shares, and an AP engages in these transactions only when they are in the AP's best interest given market conditions. This could have potentially negative effects on the ability to trade without accepting significant discounts to the estimated value of the underlying assets if, for example, one or more APs were to pull back from the market in turbulent conditions."

The FSB further states that "this situation could still create a significant discount or premium on ETF shares for an extended period, which could affect hedged positions and pricing of securities closely linked to the ETF."[9] In practice, this scenario is highly unlikely to occur. First, if a single AP were to withdraw, other APs can step in to facilitate creations and redemptions of ETF shares.[10] Importantly, if an economically significant premium or discount (that is in excess of transaction costs) is present, other APs will have a clear economic incentive to step in.

Exhibits 8 and 9 highlight this arbitrage incentive. To illustrate, suppose initially that when the market opens, both the fund and the value of the portfolio of assets it holds were $100. Suppose a sharp dislocation occurred that causes the value of the basket portfolio to fall 10%. If the fund were to trade well below the value of the underlying securities, say at $85, for any period of time, an AP (or a market maker client) could buy the ETF and redeem the shares for securities worth $90 net of transaction costs. That profit of about $5 per share (in reality, this is less transaction costs and fees, which are relatively small) could be locked in as shown in Exhibit 8 through an intraday sale of the underlying securities or through the sale of a highly correlated asset. In the opposite situation, shown in Exhibit 9, where the price of the ETF falls only to $95 while the basket value declines to $90, the AP would do the opposite trade: sell short the ETF and cover the short by simultaneously buying the underlying basket (creation / redemption facilitates the exchange of the basket of securities for shares of the ETF to ultimately cover the short) or an equivalent derivatives position.

In the unlikely scenario where all APs withdraw at once, the creation / redemption mechanism for adjusting ETF shares in response to demand and supply (as shown in Exhibit 4) will be frozen temporarily. This means that the supply of

**Exhibit 8: ETF Arbitrage Illustrative Example: ETF Price Below Basket**

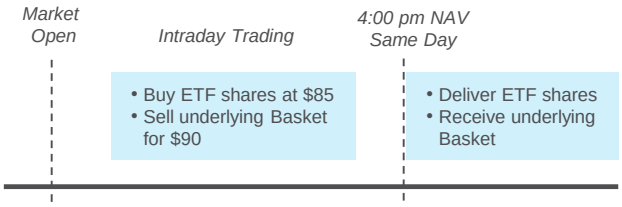
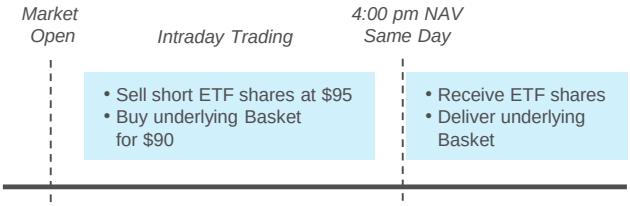



**Exhibit 9: ETF Arbitrage Illustrative Example: ETF Price Above Basket**




Source: BlackRock. For illustrative purposes only. Although market makers will generally take advantage of differences between the NAV and the trading price of ETFs shares through arbitrage opportunities, there is no guarantee that they will do so.

*CASE STUDY*

### What happened when an AP backed away?

On June 20, 2013, a large AP, citing internal thresholds, temporarily ceased acting as an AP for client redemptions in municipal bond ETFs.[11] This example is often cited as an area of concern, however, it is actually a case study in how the system can be self-correcting. During this situation, other APs in these products saw this as a profitable opportunity. These APs continued to take redemption orders, and a senior trader at a competing firm commented: "It was a very robust day." In addition, the impacted AP was able to address their internal issues and resumed primary market activities in municipal bond ETFs on the following day. This case study illustrates the importance of competition from existing, active APs, as well as potential competition from those APs who are eligible to create or redeem shares but do not necessarily do so on a daily basis.

ETF shares may be fixed in the short run, similar to a CEF. In this case, the price of the ETF shares would be determined on the exchange based on supply and demand, as shown in Exhibit 3. However, as with CEFs, the ETF share price could be at a premium or a discount to the NAV of the underlying securities. Given the economic incentive for APs (and their clients) to take advantage of arbitrage opportunities based on differences between the market prices of the ETF share and the fair value of the underlying securities held by the ETF, it is highly unlikely that an economically significant premium or discount would remain for an extended period of time.

## Public Policy Issues

In this section, we examine some current public policy concerns – beyond those of APs stepping away – regarding the process by which ETF shares are created and redeemed. We show how these concerns often rest on misunderstandings of institutional market practices. We then outline our recommendations for strengthening the ecosystem around ETFs.

### ETFs Face Redemption Risk

Some commenters have conflated ETF share exchange trading volume (secondary market) with the amount of ETF shares outstanding. In doing so, they reach the mistaken conclusion that the amount of shares trading equates to the number of shares that could be redeemed (primary market activity). However, shares transacted in ETFs can be large relative to shares outstanding. While this is a simple point, it often arises as a source of confusion. The in-kind mechanism means that most ETFs do not face redemption risk nor do they require cash reserves to handle large redemptions. Rather, the ETF sponsor will – faced with redemptions of securities – typically hand back the underlying basket of securities, in-kind, to the AP.

### There is "Excessive Shorting" of ETFs

A related set of concerns deal with the notion that there may be excessive shorting of ETFs relative to their shares outstanding. This concern stems from misconceptions about the institutional details of ETFs. In particular, the shares of ETFs, like other equities, may be lent to borrowers who then sell the shares short. The short selling of an ETF can result in an increase in the number of shares that trade – the lender of the shares still "owns" the shares beneficially, although the shares have been sold and transferred to another owner who purchased them from the short seller. *This is no different than other equities*, and the securities lending market has rules to make it clear that certain rights are retained by the lender and other rights transfer with the lent security, so that there is no duplication of ownership rights. While short sales may facilitate exchange liquidity and lead to the total number of shares circulating in the marketplace appearing to exceed the number of shares outstanding, only the number of outstanding shares issued by the ETF may be redeemed. This is because ETFs only release redemption proceeds upon confirmation of delivery of actual ETF shares to be redeemed.[12] When an owner of ETF shares loans those shares to a short seller, they no longer have possession of the shares and effectively lose the right to redeem until those shares have been recalled

### ETF Secondary Market Liquidity

Secondary market liquidity is another distinguishing feature of ETFs relative to traditional open-end mutual funds that offer liquidity only at the end of the day. Unlike traditional open-end mutual funds where investors interact directly with the fund when buying or selling shares, ETF shares can be traded intraday by investors on exchanges creating an additional layer of liquidity for buyers and sellers. Secondary market trading in ETF shares does not require transaction activity in the underlying securities. The secondary market (exchange-traded) trading volume for most ETFs is typically a multiple of the volume of creation / redemption activity. According to ICI statistics for 2014, this ratio is about 4:1 over all ETFs.[13] By facilitating demand from buyers and sellers through a transparent, exchange-traded instrument, ETFs may provide incremental exchange liquidity beyond that of the underlying assets. Further, ETFs have functioned well in times of stressed markets, with ETF shares being at least as liquid as underlying portfolio assets and serving as an important vehicle of price discovery. In fact, in many cases, we observe a spike in ETF activity during periods of market stress.[14]

from the borrower. Any redemption by a party that does not have ETF shares to deliver in settlement (because they have lent them to a short seller or otherwise) will be cancelled.

**Failure-to-Deliver Rates are Excessive for ETFs**

Finally, a strand of the growing academic literature on ETFs cites regulatory data showing higher failure-to-deliver rates versus comparable dollar volume equities. The source of this misconception lies in the institutional details of AP activity and settlement. In the US, pursuant to the SEC Exchange Act, Regulation SHO Rule 204, a market maker must deliver the equity security by the third consecutive settlement day following the settlement date, referred to as T+6, this is an additional 3 days from standard US equity settlement for transactions with other types of market participants. However, the SEC report generated from the National Securities Clearing Corporation's (NSCC) Continuous Net Settlement (CNS) system does not properly capture the additional 3 days market makers have before their trades are considered fails under Regulation SHO.[15] So, a legitimate market maker trade in an ETF that settled in 4 days would show up as a "failure" under the conventional reporting scheme where all equity trades settling after 3 days are marked as fails. Supposedly higher failure-to-deliver rates in ETF shares may merely represent greater market making activity in portfolios versus comparable volume single-name equities. In Europe, failure-to-deliver is more often attributed to fragmented market structure and the prevalence of over-the-counter (OTC) trading of ETFs.

## Recommendations for Strengthening the Ecosystem

Looking forward, there are several areas where we believe policy makers, regulators, and the industry can act to strengthen the ecosystem around ETFs, decrease operational risk, and reduce frictions:

1. **Implementing a clear classification system for exchange-traded products (ETPs) – see Exhibit 10 – that specifically incorporates primary process distinctions.**

   Stemming from this classification system is an analysis of how the ecosystem might be improved for various types of US-domiciled ETFs, based on common principles around technology and protocols.

2. **Establish transparent and consistent standards for key aspects of primary trading processes (e.g., order-taking protocols) across APs, MMs, and ETF sponsors.**

   Foster development of a robust transaction processing infrastructure. Working with firms that are part of the financial market infrastructure, such as DTCC, will be an increasingly important objective of creating primary process improvements. The goal is to create efficiency around ETF creation / redemption order-taking. For example, many broker-dealers value the ability to accurately place orders towards the end of the US trading day when the official closing price is determined. However, there are inconsistencies of order placement methodologies varying from phone, fax, semi-automated systems, or Application Programming Interfaces (APIs). This can result in slippage relative to the official close. A standardized and electronic process for similar ETFs offered by various ETF sponsors would greatly improve efficiency.[16]

3. **Standardize and increase access to data.**

   For example, in addition to the portfolio composition files, other ancillary ETF creation and redemption related data would ideally be standardized and located in a central repository, facilitating the actions of APs and market makers.[17]

## Conclusion

Questions raised about ETFs in general, and about APs specifically, highlight the need for more informational materials on these topics. This report underscores the important role played by APs while also explaining the mechanism by which ETF shares are created and redeemed and the incentives for APs to perform their role.

We view the role of the AP as a provider of technology that dynamically adjusts ETF shares outstanding to balance the supply and demand. In doing so, APs increase efficiency and, their actions reduce costs for fund investors. By contrast, market makers and arbitrageurs, who are important parts of the ETF ecosystem, and key liquidity providers, can be viewed as consumers of this technology. APs and market makers are not necessarily the same and there are many profit seeking market makers who have strong economic incentives to utilize the services of an AP in the event of a deviation of ETF price from the underlying portfolio value. While it is possible an AP may step back, another AP is likely to step in, given that there are generally economic incentives in place for any abnormally large premium or discount to be eliminated through self-correcting arbitrage in a short period of time.

There are several areas where policy makers, regulators, and the industry can act to strengthen the ecosystem around ETFs, decrease operational risk, and reduce the cost of trading. These include implementing a clear classification system for ETFs, harmonizing order taking protocols for US equity ETFs, and standardizing and increasing access to data.

## Exhibit 10: BlackRock's Suggested Classifications for Exchange-Traded Products (ETPs)

| | | |
|---|---|---|
| **ETP** | **Exchange-Traded Product** | • Catch-all term for any portfolio exposure product that trades on an exchange.<br>• ETFs, ETCs, ETNs, and ETIs, are all subsets of ETP. |
| **ETF** | **Exchange-Traded Fund** | • ETFs are publicly-offered investment funds that trade on an exchange.<br>• ETFs can be index tracking funds passive or actively managed funds (via a transparent basket) that meet diversification and liquidity thresholds set by regulators and exchanges.<br>• ETFs' underlying securities can include stocks, bonds or other investment instruments.<br>• This category excludes funds with embedded leverage or inverse features or funds that cannot use the in-kind mechanism. |
| **ETN** | **Exchange-Traded Note** | • Debt instruments that provide an index-based return. ETNs may or may not be collateralized, but depend on the issuer's solvency and willingness to buy and sell securities to deliver fully to expectations.<br>• As noted below, this category should exclude notes with embedded leverage, inverse features or options. |
| **ETC** | **Exchange-Traded Commodity** | • A variety of fully-collateralized legal structures that are not ETNs but seek to deliver the unleveraged performance of a commodity, or basket of commodities.<br>• Some ETCs may hold physical commodities, while others invest in commodity futures.<br>• ETCs that invest in commodity futures may raise special issues because futures do not precisely track spot commodity prices. |
| **ETI** | **Exchange-Traded Instrument** | • An ETI is any ETP that has embedded structural features designed to deliver performance that will not track the full unlevered positive return of the underlying index or exposure (that is, products that seek to provide a leveraged or inverse return, a return with caps on upside or downside performance, etc.<br>• An ETP that must redeem in cash exclusively for a variety of reasons. |

The above classification system was developed for the US ETP market. Some regional differences may be needed for classifying ETFs domiciled outside the US.

## Glossary

**Authorized Participants (APs)**

APs are financial institutions capable of managing complex securities settlements that create and redeem ETF shares in the primary market in exchange for 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 frequently create or redeem shares in order to manage inventories of ETF shares sold or bought through trading in the secondary market. APs may act either on their own behalf or on the behalf of market makers or institutional clients.

**Market Makers (MMs)**

A broker-dealer that regularly provides two-sided (both buy and sell) quotations to clients.

**Primary Market**

Refers to activities through which securities, including stocks and bonds, are issued and redeemed. The primary market for ETFs (where ETF shares are typically exchanged for the underlying securities) is available only to APs.

**Secondary Market**

Refers to the market where securities, including ETF shares, are traded and includes trading through regulated exchanges (such as NYSE ARCA, NASDAQ and Bats), trading through Electronic Communications Networks (ECNs), and over-the-counter (OTC) trading among institutions.

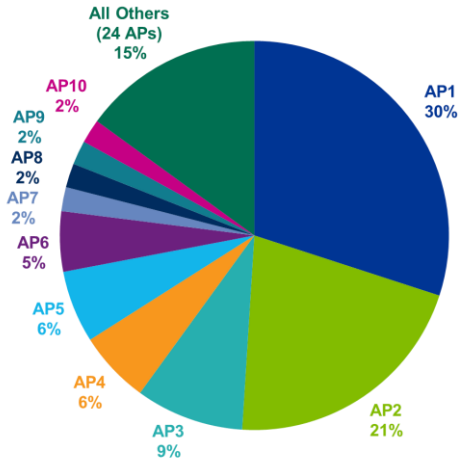
# Addendum: European Authorized Participants

The European ETF industry, while fast growing, does not currently have the same scale as the US industry. This is reflected in the number of APs supporting the funds. As the industry grows in scale, we observe new APs and Market Makers entering the market and providing competition.

APs request authorization to transact with a fund umbrella even though their expertise may lie in a smaller sub set of funds. BlackRock has an average of 30 APs per fund umbrella. The presence of additional (but inactive) APs in the ETF creates a competitive effect to offer the creation / redemption technology.

BlackRock in EMEA has on average 6 active APs per fund. This is in comparison to the US where an ICI study concluded on average 5 APs were active in most ETFs.[18]

### Largest BlackRock APs by Primary Market Activity in EMEA




Source: BlackRock. As of 12/31/2016. Across all asset classes.

### Examples of Common European APs

| | |
|---|---|
| Bank of America Merrill Lynch | Flow Traders |
| Bluefin Europe | Goldman Sachs |
| BNP Paribas | Jane Street |
| Citigroup | Societe Generale |
| Commerzbank | Susquehanna International Securities |
| Deutsche Bank | UBS |

Source: BlackRock, based on trading activity in 2016. These names do not correspond exclusively to the list of anonymized top 10 APs shown on the left, but are taken from the list of the top 25 APs by dollar activity in EMEA. Listed alphabetically.

## Endnotes

1. Joanne M. Hill, Dave Nadig, and Matt Hougan, CFA Research Institute, "A Comprehensive Guide to Exchange Traded Funds" (2015), available at https://www.cfainstitute.org/learning/foundation/research/Documents/exchange_traded_funds.pdf. Rochelle Antoniewicz, and Jane Heinrichs, Investment Company Institute, "Understanding Exchange-Traded Funds: How ETFs Work" (Sep. 2014), available at www.ici.org/pdf/per20-05.pdf.
2. The term "liquidity" has several different meanings, making it important to clarify what we are discussing (e.g., market liquidity, liquidity terms of a fund, liquidity premium, etc.) to define appropriate solutions. In this instance, we are referring to liquidity terms of the fund. *See* BlackRock, *ViewPoint*, Addressing Market Liquidity (Jul. 2015), available at https://www.blackrock.com/corporate/en-us/literature/whitepaper/viewpoint-addressing-market-liquidity-july-2015.pdf.
3. For a detailed discussion of common misconceptions regarding ETFs, see BlackRock, *ViewPoint*, Exchange Traded Products: Overview, Benefits and Myths (Jun. 2013), available at https://www.blackrock.com/corporate/en-us/literature/whitepaper/viewpoint-etps-overview-benefits-myths-062013.pdf (BlackRock ETF Myths *ViewPoint*).
4. In other words, for traditional open-end mutual funds, investor redemptions are guided by the liquidity terms of the fund, whereas in CEFs, investors sell on exchange and receive cash based on secondary market liquidity at that moment in time. In ETFs, investors generally seek secondary market liquidity and it is the APs who are subject to the liquidity terms of the fund. The terms of a traditional open-end mutual fund refer to how the investor interacts with the fund to invest or redeem; the terms of an ETF are how creation and redemption works to adjust the shares of the fund in response to demand and supply.
5. Rochelle Antoniewicz and Jane Heinrichs, Investment Company Institute, The Role and Activities of Authorized Participants of Exchange-Traded Funds (Mar. 2015), available at http://www.ici.org/pdf/ppr_15_aps_etfs.pdf (Antoniewicz and Heinrichs (2015)).
6. Note that in Europe and Asia, funds based on swaps or derivatives are more common than in the US. We distinguish these products from ETFs as they raise a different set of policy issues.
7. Only APs are allowed to purchase and redeem shares directly from the ETF, and only in large blocks (e.g., 50,000 shares) or creation units.
8. Antoniewicz and Heinrichs (2015).
9. FSB, Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (Jan. 12, 2017), available at http://www.fsb.org/wp-content/uploads/FSB-Policy-Recommendations-on-Asset-Management-Structural-Vulnerabilities.pdf.
10. Note that APs are US registered self-clearing broker-dealers and as such can process trade submission, clearance, and settlement trades for themselves and for their own account. This means that, just as with a regular domestic equity trade, creations and redemptions are processed through the National Securities Clearing Corporation (NSCC) with the same safeguards and protections.
11. Christopher Condon and Michelle Kaske, Bloomberg, ETF Tracking Errors in Rout Shows Access Comes With Risks (Jun. 23, 2013), available at: https://www.bloomberg.com/news/articles/2013-06-24/etf-tracking-errors-in-rout-shows-access-comes-with-risks.
12. Fixed income and international equities generally settle broker to broker (free of payment). The ETF manages the risk of non-delivery by not releasing ETF shares (on a creation) or underlying basket securities (on a redemption) until the AP has delivered the required underlying basket securities (on a creation) or ETF shares (redemption) or at its discretion, accepted cash collateral in lieu of such delivery.
13. Antoniewicz and Heinrichs (2015).
14. BlackRock, *ViewPoint*, ETFs Help Improve Market Stability: A Closer Look at Fixed Income ETF Behavior During Recent Bond Market (Oct. 2014); BlackRock ETF Myths *ViewPoint.*
15. Under Rule 204, participants of a registered clearing agency (as defined in section 3(a)(24) of the Exchange Act) must deliver securities to a registered clearing agency for clearance and settlement on a long or short sale transaction in any equity security by settlement date, or must close out a fail to deliver in any equity security for a long or short sale transaction in that equity security generally by the times described as follows: the participant must close out a fail to deliver for a short sale transaction by no later than the beginning of regular trading hours on the settlement day following the settlement date, referred to as T+4; if a participant has a fail to deliver that the participant can demonstrate on its books and records resulted from a long sale, or that is attributable to bona-fide market making activities, the participant must close out the fail to deliver by no later than the beginning of regular trading hours on the third consecutive settlement day following the settlement date, referred to as T+6. In addition, Rule 203(b)(3) of Regulation SHO requires that participants of a registered clearing agency must immediately purchase shares to close out fails to deliver in "threshold securities" if the fails to deliver persist for 13 consecutive settlement days. Threshold securities, as defined by Rule 203(c)(6), are generally equity securities with large and persistent fails to deliver. See SEC, Key Points About Regulation SHO (Apr. 8, 2015), available at https://www.sec.gov/investor/pubs/regsho.htm.
16. For example, Virtu Financial noted in a letter to the SEC: "Transaction processing infrastructure for creation/redemption processes is not straight-through and is susceptible to human error. In many cases, interactions for creations and redemptions are still conducted via email, through dedicated portals, and in some cases, via the phone. It is our view that a robust and automated FIX-protocol based interface to enter, modify or cancel orders for creation or redemption up until the stipulated cut-off will minimize the chance of human error and enhance the AP's ability to manage risk at a very crucial period of the trading day." See Virtu Financial, Letter to the SEC – Use of Derivatives by Registered Investment Companies and Business Development Companies (Nov. 21, 2016), available at https://www.sec.gov/comments/s7-24-15/s72415-265.pdf.
17. The ETF portfolio composition file (PCF) is available daily via the DTCC.
18. Antoniewicz and Heinrichs (2015).

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