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White Paper

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July 2020

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# **SPDR<sup>®</sup> ETFs Throughout the COVID-19 Crisis**

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<b>04</b>	<b>SPDR ETFs: Liquidity Buffers in Volatile Markets</b>
04	ETFs: Born in Crisis and Serving Their Purpose Through Crises
05	Record ETF Trading Volumes
06	Correlation Between ETF Trading Volumes and Volatility
07	ETFs Act as Liquidity Buffers
<hr/>	
<b>09</b>	<b>SPDR ETFs: Liquidity and Price Discovery Tools</b>
09	ETF Spreads Widen Along with Underlying Constituents
11	Price Dislocation of Equity ETFs
12	Market Liquidity Precipitated Discounts on Fixed Income ETFs
13	Price Dislocation: Gold ETFs vs. Gold Futures
<hr/>	
<b>15</b>	<b>The Road Ahead for ETFs After the COVID-19 Crisis</b>
15	ETFs — A Tool for Central Banks to Support the Market
17	Exchange Enhancements and Resiliency
18	Increased ETF Usage in the Aftermath of the COVID-19 Crisis

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**19      Appendix**

19      Timeline of the COVID-19 Crisis Through an  
ETF Lens

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# SPDR ETFs: Liquidity Buffers in Volatile Markets

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In 1993, State Street Global Advisors launched the first US-listed exchange traded fund (ETF) to help stabilize markets and improve liquidity during periods of market turbulence. During recent market volatility, ETF trading volume surged relative to overall market volumes, highlighting that ETFs continue to function as intended — as buffers and sources of liquidity in stressed markets.

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## ETFs: Born in Crisis and Serving Their Purpose Through Crises

In order to understand and evaluate the performance of ETFs during the COVID-19 crisis, it is worth taking a moment to remind ourselves of why and how ETFs first came into being.

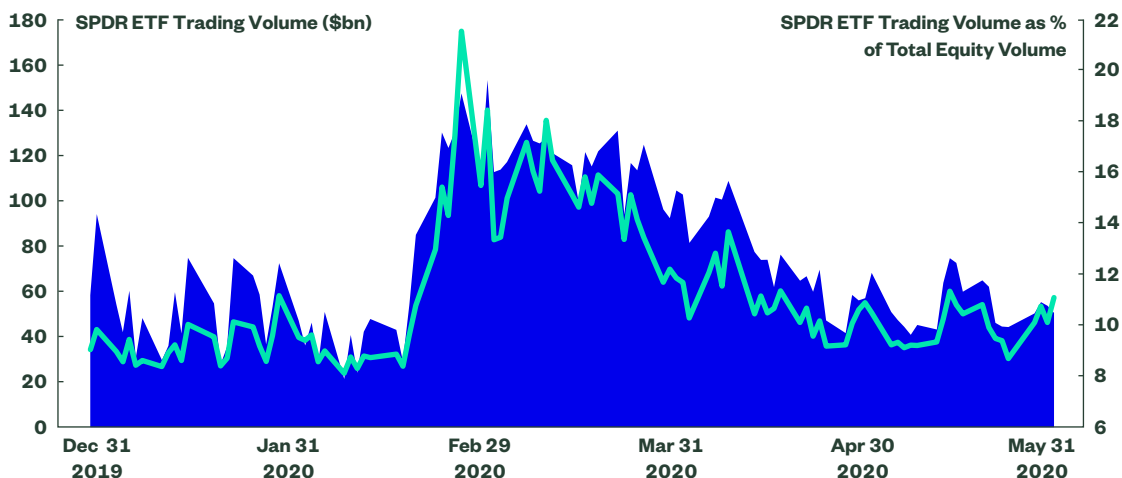
ETFs were created as a response to the US stock market crash on October 19, 1987, commonly referred to as “Black Monday.” The US Securities and Exchange Commission’s (SEC’s) Division of Market Regulation, in its post-mortem report analyzing the market events of October 19, 1987, found that the systematic selling of stock-index futures by institutional investors had exacerbated the market selloff, and suggested examining whether market basket trading could help stabilize markets in the future. Specifically, the report suggested that consolidating stock basket trading to a single post “could provide an additional layer of liquidity to the system and cushion somewhat the individual stocks from the intraday volatility caused by program activity.”<sup>1</sup> In collaboration with State Street Global Advisors, the American Stock Exchange harnessed this idea, which culminated in the launch of the first US-listed ETF in 1993.

More than 27 years later, ETFs have grown into a multitrillion dollar industry, with assets under management (AUM) more than \$5.8 trillion as of May 2020.<sup>2</sup> More than 7,000 ETFs — utilized by retail investors, institutional investors, asset managers, insurance companies, sovereign wealth funds, and private banks — now trade across many exchanges around the globe. Today, investors use ETFs for a variety of purposes including strategic or tactical asset allocation, cash equitization, transition management, and portfolio hedging, to name just a few. One of the most valuable characteristics of the ETF wrapper is its ability to provide transparent exposure and liquidity to the marketplace throughout the trading day.

The market volatility during the COVID-19 crisis tested, yet again, the efficiency of the ETF wrapper and its additive liquidity to the marketplace. In the US, on March 12 and 16, 2020, two of the worst days for the S&P 500® Index since 1987, SPDR ETFs traded more than \$100 billion, accounting for more than 16% of US equity market trading volume, demonstrating their utility during a period of extraordinary market volatility.<sup>3</sup>

Figure 1  
**SPDR ETF Volume and its Percentage of Total Equity Volume**

■ ETF Percentage of Total Trading Volume (%)  
■ Trading Volume (USD)



Source: State Street Global Advisors, Bloomberg Finance Ltd. as of May 31, 2020.

## Record ETF Trading Volumes

Globally, ETFs reached record trading volumes in March 2020. As illustrated in Figure 2, ETF trading volumes were heavily skewed toward US-listed ETFs, whose volumes reached record highs. US-listed ETFs traded more than \$5.3 trillion in March 2020, well above the previous monthly record of \$3.0 trillion set during the stock market selloff in October 2018. In addition, US-listed ETFs traded another \$3.0 trillion in April 2020 and \$2.4 trillion in May 2020. EMEA<sup>4,6</sup>-listed ETFs and APAC<sup>5</sup>-listed ETFs also experienced a surge in trading volumes in March 2020.

Important to note, ETF trading volumes represented more than 39% of US equity market volume in March 2020. In comparison, in 2019, ETFs represented 30% of trading volume, suggesting an increase in ETF usage as clients gravitated towards ETFs for exposure, liquidity, and potentially even price discovery during a period of extraordinary market stress. This increase in ETF usage was not limited to the US, with EMEA<sup>4,6</sup> and APAC<sup>5</sup> regions both seeing an increase in ETF volumes relative to common equities.

Figure 2  
**Trading Volume of ETFs  
and Common Stocks  
by Region**

Average Monthly Trading Volume (USD billion)							
Region	Vehicle	2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020
US	ETFs	1,810	2,034	2,622	5,316	2,998	2,384
	Stocks	4,287	5,055	5,598	8,217	6,086	5,861
	<b>Equities</b>	<b>6,098</b>	<b>7,089</b>	<b>8,220</b>	<b>13,533</b>	<b>9,084</b>	<b>8,245</b>
EMEA**	ETFs	31	36	47	83	41	38
	Stocks	509	551	679	1,107	575	535
	<b>Equities</b>	<b>540</b>	<b>587</b>	<b>726</b>	<b>1,190</b>	<b>616</b>	<b>573</b>
APAC**	ETFs	138	152	237	451	292	213
	Stocks	2,470	2,597	3,932	4,422	3,105	2,831
	<b>Equities</b>	<b>2,608</b>	<b>2,749</b>	<b>4,169</b>	<b>4,873</b>	<b>3,397</b>	<b>3,045</b>

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020. \* EMEA includes listings on the London Stock Exchange, Deutsche Boerse, Euronext Paris, Euronext Amsterdam, SIX Swiss Exchange and Borsa Italiana. \*\* APAC includes listings in Japan, Mainland China, Hong Kong S.A.R., Taiwan, South Korea, Singapore and Australia. ^ A majority of the ETF trading activity happens outside of stock exchanges in EMEA.

Figure 3  
**ETF Trading Volume as  
Percentage of Total Equity  
Volume by Region**

ETF Trading Volume as Percentage of Equities Trading Volume							
Region	2019 (%)	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)	
US	29.7	28.7	31.9	39.3	33.0	28.9	
EMEA**	5.8	6.2	6.5	7.0	6.6	6.6	
APAC**	5.3	5.5	5.7	9.3	8.6	7.0	
<b>Total</b>	<b>21.4</b>	<b>21.3</b>	<b>22.2</b>	<b>29.9</b>	<b>25.4</b>	<b>22.2</b>	

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020. \* EMEA includes listings on the London Stock Exchange, Deutsche Boerse, Euronext Paris, Euronext Amsterdam, SIX Swiss Exchange and Borsa Italiana. \*\* APAC includes listings in Japan, Mainland China, Hong Kong S.A.R., Taiwan, South Korea, Singapore and Australia. ^ A majority of the ETF trading activity happens outside of stock exchanges in EMEA.

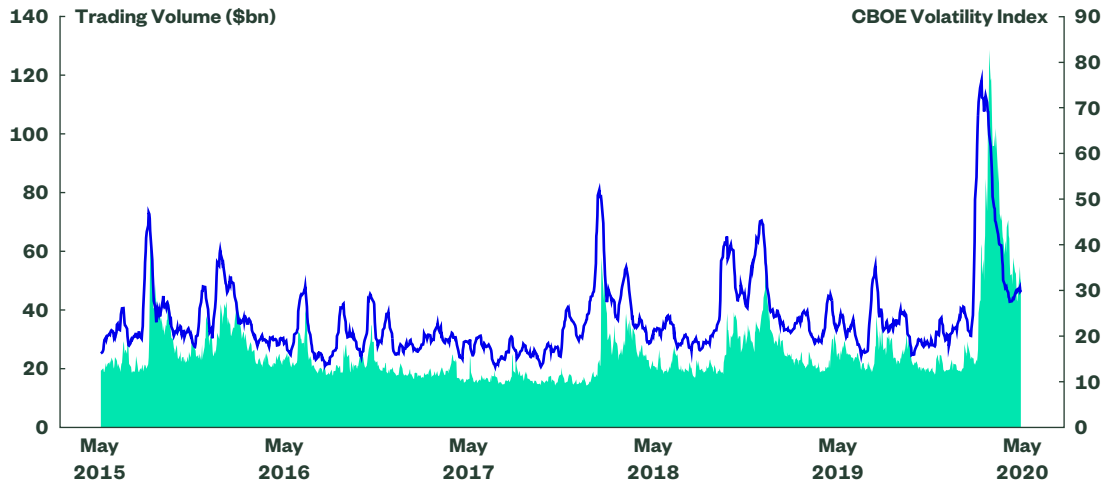
### **Correlation Between ETF Trading Volumes and Volatility**

During the extreme market volatility in March and April 2020, investors turned to ETFs as efficient tools to express market views and implement trading strategies. Unsurprisingly, ETF trading volumes in the US were highly correlated with the heightened volatility.

This underscores the additive liquidity provided by ETFs during periods of market stress, leading to a significant increase in ETF trading volume across several market segments. The SPDR ETF suite traded, on average, more than \$109 billion on days when the CBOE Volatility Index exceeded 60, a level not seen since the Great Financial Crisis of 2008–2009.

Figure 4  
**10-Day Rolling  
 Average Daily  
 Trading Volume of  
 US-listed ETFs vs.  
 CBOE Volatility Index**

■ SPDR ETFs  
 ■ CBOE Volatility Index



Source: State Street Global Advisors, Bloomberg Finance Ltd. as of May 31, 2020.

## ETFs Act as Liquidity Buffers

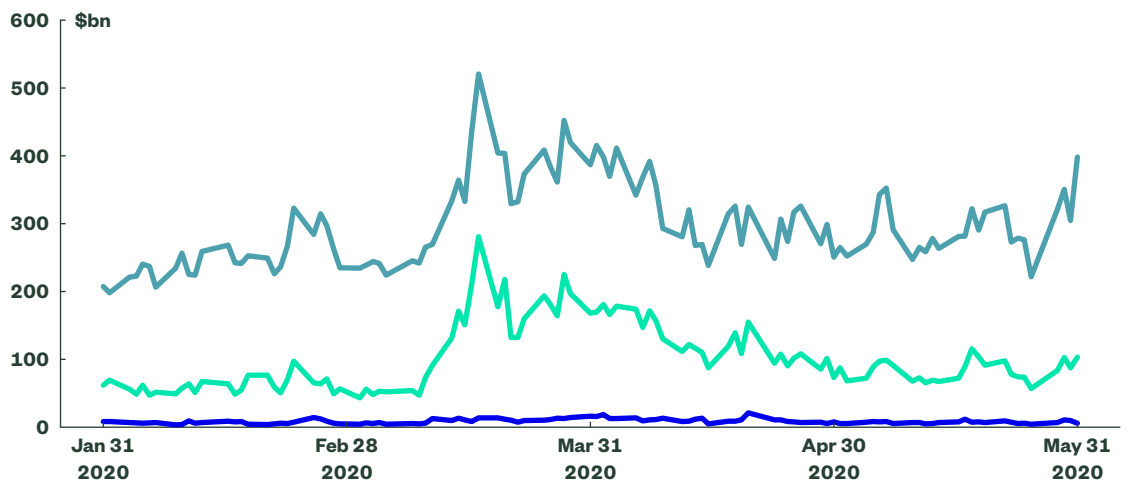
Although ETFs recorded record-high trading volumes in March 2020, only a portion of secondary market volumes resulted in primary market activity. For example, Figure 5 and 6 indicate that:

- Gross primary market flows on these ETFs represented less than 7% of the trading volume of common stocks in the US on every US trading day in the first five months of 2020
- US-listed U.S. Equity ETF trading volumes represented, at times, more than 50% of the trading volume of common stocks in the US

Overall, the data suggests that ETFs trading volumes resulted in very little primary market activity. The secondary market provided market participants with an additive layer of liquidity, potentially resulting in less stress on individual securities.

Figure 5  
**Trading Volume  
 of Common Stocks  
 and ETFs vs. ETF  
 Gross Primary  
 Market Flows<sup>7</sup>**

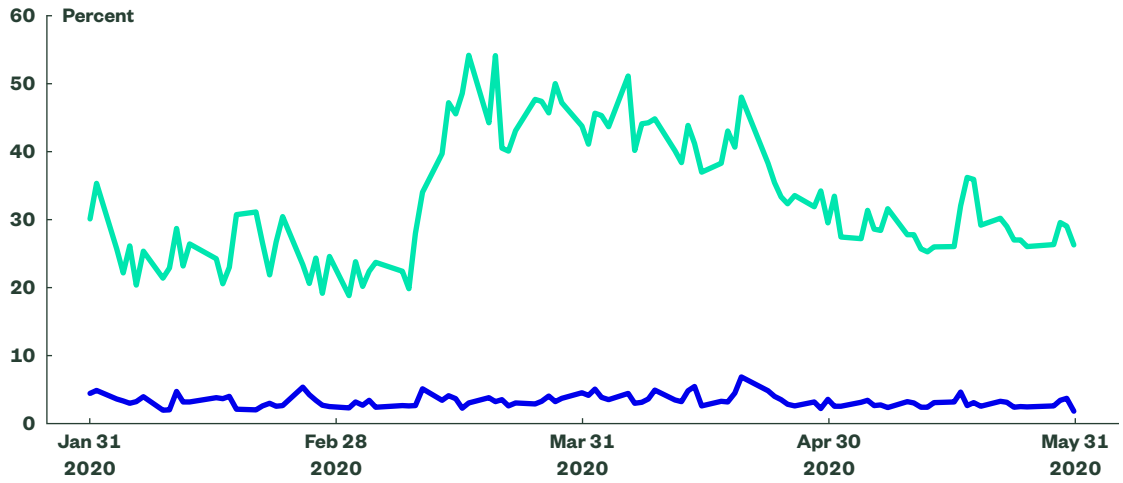
■ ETF Gross Primary  
 Market Flows  
 ■ ETF Trading Volume  
 ■ Common Stock  
 Trading Volume



Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

Figure 6  
**ETF Trading Volume and ETF Gross Primary Market Flows as Percentage of Common Stock Trading Volume**

■ ETF Gross Primary Market Flows  
 ■ ETF Trading Volume

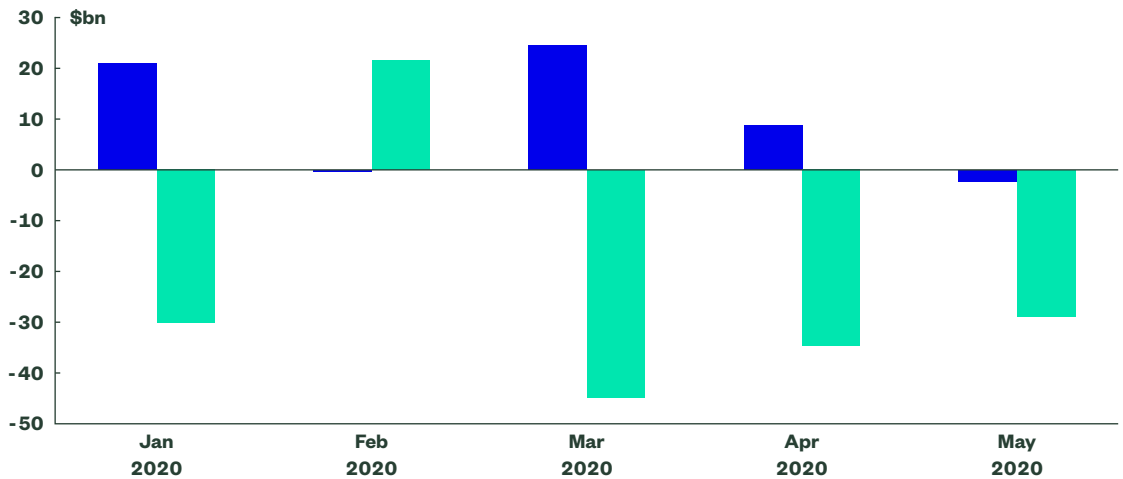


Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020 (7) US-listed US Equity ETFs.

It's also important to take a look at fund flows during the market selloff in March 2020. As you can see in Charts 7 and 8, ETFs flows paled in comparison to those of Mutual Funds in the US, likely resulting in far less trading in the underlying securities.

Figure 7  
**Monthly Fund Flows of Equity ETFs and Mutual Funds in the US**

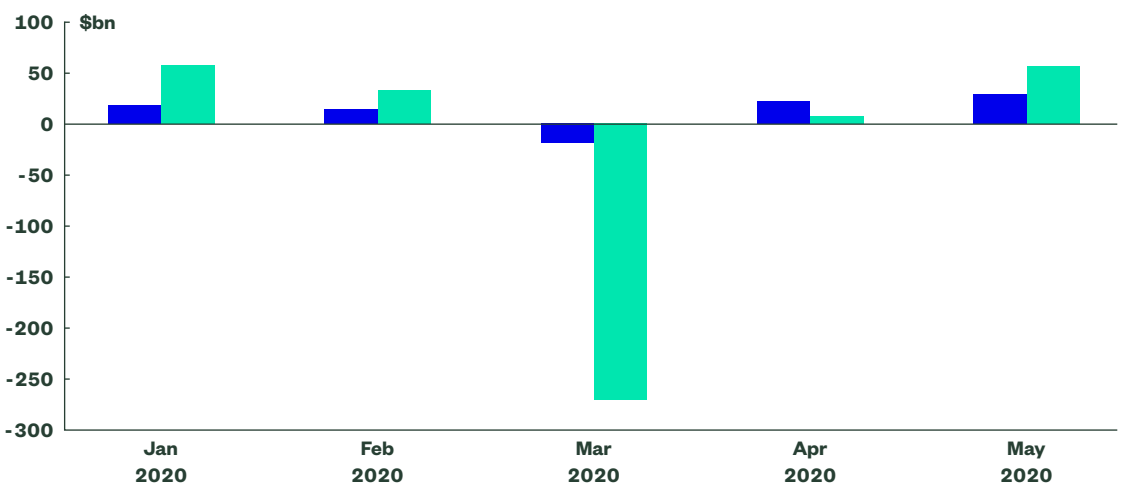
■ ETFs  
 ■ Mutual Funds



Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

Figure 8  
**Monthly Fund Flows of Fixed Income ETFs and Fixed Income Mutual Funds in the US**

■ ETFs  
 ■ Mutual Funds



Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.



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# SPDR ETFs: Liquidity and Price Discovery Tools

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During a period of heightened volatility, SPDR ETFs served as an effective price discovery tool that enabled investors to assess the valuation and liquidity of the overall market.

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## ETF Spreads Widen Along with Underlying Constituents

Along with elevated trading volumes, bid-ask spreads increased globally across all asset classes and financial instruments amid challenging market conditions and liquidity constraints. ETFs around the globe experienced an increase in bid-ask spreads during March 2020 before reverting back toward their previous levels in April and May 2020.

In the US, increased volatility and liquidity constraints across underlying securities led to a temporary deterioration of traditional market quality metrics in ETFs.

- US-listed ETFs saw average bid-ask spreads increase from 0.37% in 2019 to 1.09% in March 2020.
- SPDR ETFs saw their average bid-ask spreads increase from 0.14% in 2019 to 0.37% in March 2020.

Figure 9  
**Average Daily Bid-ask Spreads of ETFs Listed in the US**

	2019 (%)	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)
SPDR ETFs	0.14	0.13	0.14	0.37	0.22	0.17
ETF Industry	0.37	0.35	0.35	1.09	0.91	0.76

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

Bid-ask spreads in ETFs widened, reflecting increased market risk and wider bid-ask spreads in underlying instruments.

For example, average spreads of constituents in the S&P 500 Index increased from 0.05% in January 2020 to 0.19% in March 2020. During that same time period, average spreads of U.S. Equity SPDR ETFs widened from 0.10% in January 2020 to 0.28%, reflecting the increased cost for market makers to transact in the underlying market. In some instances, ETF spreads traded within or less than those of their underlying constituents due to the following:

- **Centralized Trading<sup>8</sup>** Liquidity is centralized on exchange where buyers and sellers can transact on the secondary market.
- **Broader User Base** ETFs tend to have two-way order flow due to their broad user base, as both investors and traders can utilize ETFs for a variety of reasons, including as a liquidity vehicle, hedging vehicle or simply to gain exposure to a specific asset class.

Figure 10  
**Average Daily Bid-ask  
 Spreads of US Equity  
 ETFs and Common  
 Stocks in the US**

	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)
<b>US Equity ETF Industry</b>	0.24	0.26	0.91	0.74	0.69
<b>US Equity SPDR ETFs</b>	0.10	0.10	0.28	0.16	0.12
<b>Constituents of S&amp;P 500</b>	0.05	0.06	0.19	0.12	0.08

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

## Price Dislocation of Equity ETFs

In addition to wider spreads experienced during the COVID-19 volatility, ETFs also traded at wider-than-normal premiums and discounts to Net Asset Value (NAV). Figure 11 indicates that during 2019, on average, U.S. Equity ETFs traded within a 1% premium or discount to their NAVs. However, in March 2020, ETFs experienced larger dislocations, which we can likely attribute to greater liquidity and market risk. That said, we believe the dislocations seen in U.S. Equity ETFs were further impacted by the following factors:

- Timing of the closing auctions of ETFs and stocks** In the US, an ETF's closing auction is conducted by its primary listing exchange at 4:00 p.m. Eastern Standard Time. Given the closing auctions of U.S. stocks don't always take place at 4pm, particularly during March 2020, the official closing prices for stocks might not be available for market participants to use as inputs for ETF pricing. In fast-moving markets with large imbalances at the close, this can lead to larger-than-usual deviations between an ETF's closing price and the NAV calculated with the closing prices of underlying constituents.
- Market volatility may trigger short sale restrictions** Short sale restrictions on various single stocks in the US were triggered in March 2020 by Rule 201 of Regulation SHO. These restrictions can make it difficult for market makers to hedge risk using stock baskets, particularly into the close on those days in which this rule was in effect. This very likely contributed to larger-than-normal premiums/discounts.
- Premiums/discounts may result from large imbalances during closing auctions.** During the month of March 2020, ETFs and single stocks experienced significantly larger volumes and imbalances during closing auctions. These higher volumes at the close could have led to larger premiums/discounts, considering other transparency and hedging factors were also at play.

Figure 11  
**Distribution of Daily Closing Price Premiums/Discounts vs. NAV for ETFs Listed in the US**

Closing Price Premiums/Discounts vs NAV	U.S. Equity ETFs		International Equity ETFs		Fixed Income ETFs	
	Distribution in 2019 (%)	Distribution in Mar 2020 (%)	Distribution in 2019 (%)	Distribution in Mar 2020 (%)	Distribution in 2019 (%)	Distribution in Mar 2020 (%)
[-10% ; -8%[	0	0	0	0	0	10
[-8% ; -6%[	0	0	0	0	0	10
[-6% ; -4%[	0	0	0	10	0	10
[-4% ; -2%[	0	5	0	19	0	14
[-2% ; -1%[	0	5	2	10	0	14
[-1% ; -0.5%[	2	19	6	10	0	0
[-0.5% ; 0%[	42	19	19	0	0	24
[0% ; 0.5%[	54	24	50	0	96	10
[0.5% ; 1%[	2	14	20	19	4	5
[1% ; 2%[	0	0	3	19	0	5
[2% ; 4%[	0	10	0	14	0	0
[4% ; 6%[	0	5	0	0	0	0

Source: State Street Global Advisors, Bloomberg Finance Ltd as of March 31, 2020.

## Market Liquidity Precipitated Discounts on Fixed Income ETFs

Even more so, turmoil in fixed income markets led to significant dislocations between ETFs and their respective NAVs, resulting in larger-than-usual premiums/discounts.

These dislocations may have been attributed to the following factors:

- Stale or delayed NAV pricing** Fixed income liquidity became challenged and pricing more opaque than usual. Fixed income ETFs, however, tend to reflect more real-time sentiment and realistic pricing levels as to where the basket of bonds should trade. As a result, pricing on individual bonds can lag behind the real-time market sentiment and executable pricing levels reflected by the ETF, resulting in the appearance of large discounts to NAV. In some cases, the ETF price may have been a better representation of actionable trade prices of the underlying constituents, when some were not always quoted by dealers, and thus acting as an efficient price discovery venue.
- Discrepancies between NAV strike and ETF closing times** End-of-day NAV prices can be struck at a different time than the ETF's closing auction, resulting in different values. Premium and discount are using only one point in time, thus not capturing intraday evolution, and many bond indices have different closing times, depending on the regions. Heightened intraday volatility in March exacerbated the impact of these timing differences.

While some may question the performance of Fixed Income ETFs during March, we believe the discounts accurately reflected real-time market sentiment and liquidity of their underlying fixed income securities. Bond prices lagged real-time market sentiment and realistic trading levels. The surge in Fixed Income ETF trading volumes in March 2020 suggests that market participants gravitated toward ETFs as liquidity vehicles when individual bond liquidity became difficult. It is illustrated in Figure 13 — trading volumes of investment-grade and high yield corporate bond ETFs increased substantially as a percentage of cash bond trading during March 2020.

Figure 12  
**Average Premium Discount  
of Fixed Income ETFs**

	2019 (%)	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)
<b>NYSE Arca</b>						
ETF Industry	0.07	0.08	0.05	-0.58	0.01	0.04
<b>London Stock Exchange</b>						
ETF Industry	0.09	0.08	0.05	-0.49	0.24	0.15
<b>Australia Stock Exchange</b>						
ETF Industry	0.12	0.11	0.13	-0.96	-0.23	0.06

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

Figure 13

**Trading Volume  
of Corporate Bond  
ETFs in percentage of Cash  
Bond Trading**

ETF Trading Volume in Percentage of Cash Bond Trading Volume						
Category	2019 (%)	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)
Investment Grade	9.1	11.2	11.9	20.5	12.8	9.9
High Yield	22.1	21.5	30.1	32.5	22.1	20.3

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

**Price Dislocation: Gold  
ETFs vs. Gold Futures**

In recent years, institutional investors have more widely adopted the use of ETFs as assets and liquidity have grown leading investors to more often compare structure, cost, and efficiency between ETFs and other investment vehicles.

A common comparison amongst certain institutional investors is ETFs vs futures. This relationship came to the forefront during several days in March, when futures and ETFs that track the spot price of gold diverged.

On March 23, 2020, three major Swiss gold refineries in the world announced that they were suspending production entirely for at least a week due to the outbreak of COVID-19. With flights grounded and gold refineries closing, traders became concerned that it would become challenging to meet futures contract settlement obligations if they were unable to move 100-oz COMEX bars from Europe to New York.

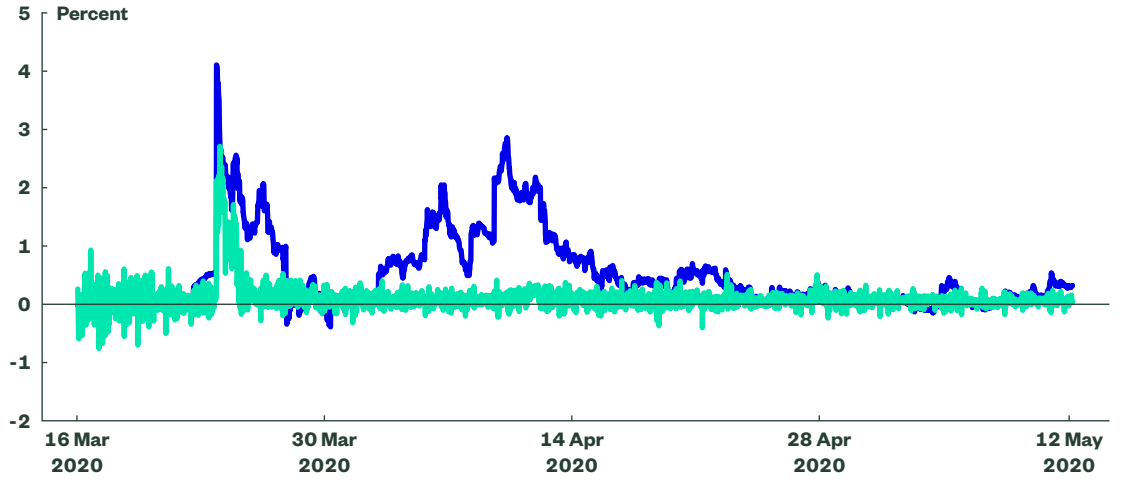
As a result of supply chain concerns, on March 24, 2020, with the demand for gold still apparent due to the COVID-19 crisis, gold futures in New York and gold spot prices in London diverged significantly. The gold futures premium extended over several weeks in March and April 2020.

Figure 14 indicates that this premium rippled through the gold ETF market, with the largest gold ETF listed in the US trading at a premium on March 24, 2020. However, this ETF resumed trading closer to its fair value after only one day, on March 25, 2020. This is because this particular ETF tracks the gold spot market, which operates primarily out of the London gold market hub and continued without any reported issues.

The structure of this ETF played an important differentiating factor for investors seeking to track the gold spot price during this period of market stress.

Figure 14  
**Intraday Premium  
of Gold Futures  
and Gold ETFs  
During US Hours**

- Premium of Gold Futures vs Spot
- Premium of Largest Gold ETF vs INAV



Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 15, 2020.

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# The Road ahead for ETFs After the COVID-19 Crisis

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Despite some of the aforementioned market quality and price dislocations during the COVID-19 pandemic, ETFs provided investors with liquidity when they needed it most. A number of institutions — such as central banks, stock exchanges and regulators — were instrumental in ensuring global markets and their infrastructures performed well. With new policies and users entering the scene, the road ahead for ETFs looks promising.

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## **ETFs — A Tool for Central Banks to Support the Market**

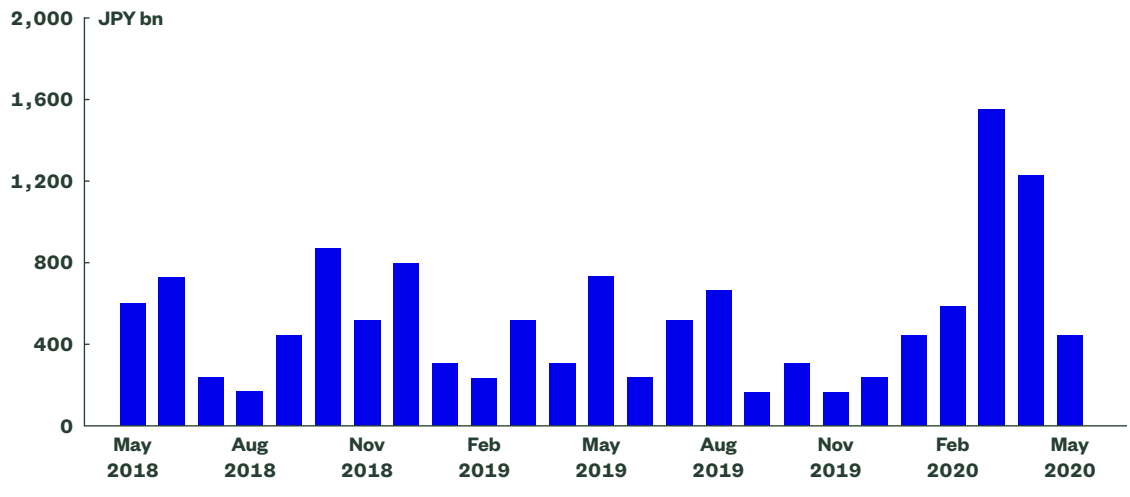
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ETFs have proven to be an effective tool for central banks to tap into liquidity and support the market. Dating back to 2010, the Bank of Japan (BOJ) purchased ETFs to support the equity markets, without having to transact in individual securities.

In response to the market volatility and liquidity constraints during COVID-19, the BOJ increased its ETF purchases to more than 1.5 trillion yen (\$14 billion) in March 2020.

Additionally, on April 30, 2020, the BOJ changed a rule within its program to link its purchases of ETFs to the amount of each stock available in the market. After having announced in 2019 that it would lend their ETF holdings to investors, the BOJ has now taken an additional step to improve liquidity in the market and minimize potential drawbacks to their ETF purchasing program.

Figure 15  
**BOJ's monthly purchase of ETFs in JPY billion**



Source: State Street Global Advisors, Bloomberg Finance Ltd. as of May 31, 2020.

## Fixed Income ETFs Added to the Fed's Policy Toolkit

On March 23, 2020, in an effort to offer stability and improve liquidity in the corporate credit market, the Fed announced that it would purchase corporate debt through a Primary Market Corporate Credit Facility (PMCCF). The Fed also stated that it would support market liquidity for corporate debt through a Secondary Market Corporate Credit Facility (SMCCF) by purchasing individual corporate bonds and ETFs in the secondary market.

The SMCCF began its ETF purchases on May 12, 2020 through a special purpose vehicle (SPV). The SPV initially received a \$25 billion equity investment from the Department of Treasury, which can then be leveraged to a maximum size of \$250 billion.

Eligible ETFs for the SMCCF include US-listed ETFs “whose investment objective is to provide broad exposure to the market for US corporate bonds. The preponderance of ETF holdings will be of ETFs whose primary investment objective is exposure to U.S. investment-grade corporate bonds, and the remainder will be in ETFs whose primary investment objective is exposure to U.S. high-yield corporate bonds.”<sup>9</sup>

### **DID YOU KNOW?** More than 15 years ago, State Street Global Advisors partnered with central banks to help a region in turmoil reinvest in itself

In 1997, the Asian economic success story came to a crashing halt as a liquidity and financial crisis swept through the region. Post crisis, local governments identified the need for an efficient, long-term borrowing mechanism as key to its financial stability. In response, a coalition of 11 central banks in Asia turned to State Street Global Advisors to develop a unique solution aimed at building and facilitating a strong local currency bond market.

The solution — a regional local currency bond ETF — included a custom index methodology that tilted toward factors such as sovereign ratings and liquidity. More than a decade since its launch, it has attracted \$3.7 billion in assets as index providers and global institutions have increased their exposure to Asian debt.

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.



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## Exchange Enhancements and Resiliency

Despite the extraordinary market volatility and liquidity challenges during the COVID-19 crisis, the equity market structure performed well.

In the US, equity market structure enhancements that were implemented following the “flash crash” of May 6, 2010 and refined since the market events of August 24, 2015 helped to ensure that investors were able to trade ETFs with a high degree of confidence during the pandemic. The US equity market-wide circuit breaker mechanism was triggered four times and performed as designed. Additionally, several regulators and stock exchanges around the globe enhanced their processes and implemented new regulations to adapt to the COVID-19 crisis and improve market resilience amid extreme volatility. These changes include:

- **Euronext & Nasdaq revisiting their (re)opening process** In order to allow the market to open normally while providing participants with the opportunity to absorb incoming news, Euronext widened the volatility thresholds in some of its ETF listings on several days during the month of March 2020. Euronext’s regulators were consulted prior to the actions being taken.

Following the marketwide circuit breaker trading halts in the US, on March 13, 2020, Nasdaq filed a proposal with the SEC to enhance the reopening auction process for Nasdaq-listed securities. The purpose of this enhancement was to align with the process currently employed following a Trading Pause initiated pursuant to the Plan to Address Extraordinary Market Volatility (i.e., the LULD Plan).

- **Change in market-making obligations or incentives in London and Frankfurt** On March 13, 2020, both market participants and registered market makers received notice from the LSE that in compliance with Rule 4102 of the Rule of the LSE, and taking into consideration global financial market conditions, the maximum spread requirements would be widened to 5% for all Fixed Income ETFs. These changes took effect at market open on March 13, 2020 and were subsequently extended by the LSE on March 16, 2020 to further include all ETFs.

In order to encourage liquidity providers to continue their quotation activities during March 2020’s volatile markets, Deutsche Boerse rewarded them by doubling the achieved performance score during “High Volatility Quotation Days” (as defined by Deutsche Boerse in an external communication). Violations of Designated Sponsor performance requirements were subsequently not sanctioned in March 2020.

- **SFC issued guidance on the oversight of ETF market maker activities** In Hong Kong, ETF market-making activities by a liquidity provider were temporarily suspended after some traders were forced to undergo mandatory quarantine due to the COVID-19 outbreak. This subsequently raised concerns for the Securities and Futures Commission (SFC) with regard to the secondary market liquidity available to retail investors. The SFC alerted issuers to maintain active dialogue with market makers to gain a better understanding of their setup and make necessary preparations for ensuring business continuity, if and when it had to be activated, with a view to avoiding market disruption.

Overall, the measures implemented by exchanges and regulators were instrumental in promoting fair, orderly and resilient markets during the COVID-19 crisis. In the ETF space in particular, actions taken by exchanges to allow for more flexibility in terms of market-making obligations allowed market makers the ability to continue providing liquidity to investors.

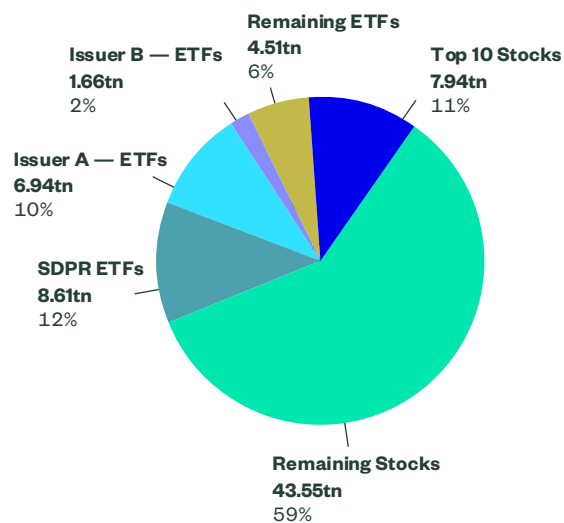
## Increased ETF Usage in the Aftermath of the COVID-19 Crisis

The COVID-19 pandemic brought unprecedented challenges to markets across the globe, impacting liquidity across nearly all investment vehicles and asset classes. Despite these challenges, ETFs functioned as designed, providing market participants with liquidity when they needed it most. The staggering trading volumes during March 2020 illustrate how investors gravitated toward ETFs during periods of stress, with US-listed ETFs trading more than \$15 trillion during the first five months of 2020, or 70% of their trading volumes in 2019.

- In 2019, ETFs represented 30% of all equity trading volume. SPDR ETFs represented 12%.
- In the first five months of 2020, ETFs represented 33% of all equity trading volume. SPDR ETFs represented 13%.

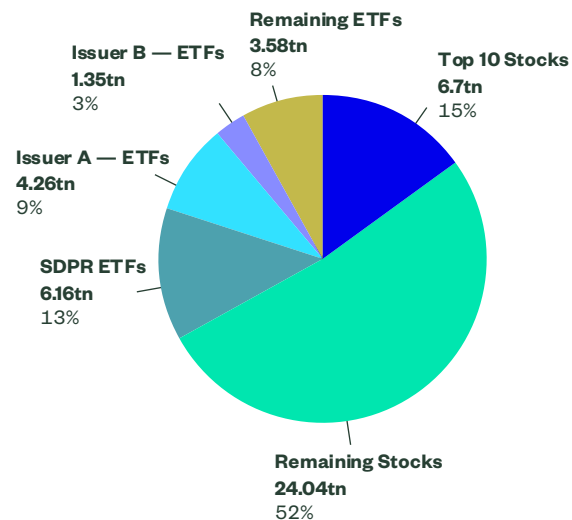
Given the important role that ETFs continue to play in providing liquidity and price transparency to the marketplace, particularly during stressed markets, we would expect to see ETF adoption continue to rise and assets continue to grow.

Figure 16  
US Trading Volume Distribution in 2019



Source: State Street Global Advisors, Bloomberg Finance Ltd as of 31 December 2019.

Figure 17  
US Trading Volume Distribution in 2020\*



Source: (\*)State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

# Appendix

## Timeline of the COVID-19 Crisis through an ETF Lens

<b>December 31, 2019:</b> China reported a cluster of cases of pneumonia in Wuhan, Hubei Province.	—
<b>January 7, 2020:</b> WHO identified COVID-19 virus.	ETFs overseen by State Street Global Advisors traded the most in Hong Kong since August 2019.
<b>January 23, 2020:</b> China locked down Wuhan.	ETFs in Hong Kong traded the most since January 2019.
<b>January 30, 2020:</b> WHO declared virus a global emergency.	—
<b>February 24, 2020:</b> Italy cases surged. Trump administration asked Congress for \$1.25bn for virus response. S&P fell 3.3%.	ETFs in Hong Kong traded the most since February 2018. US-listed ETFs traded more than \$190bn, the most since December 2018.
<b>February 27, 2020:</b> With new cases outside China exceeding those within China, the S&P 500 fell 4.4%.	Price dislocations appeared on US-listed U.S. Equity ETFs.
<b>February 28, 2020:</b> The CBOE Volatility Index breached 40, its highest level since 2015.	The largest SPDR ETF in the US, became the first security to trade more than \$100bn on a single day. The SPDR ETF suite traded more than \$176bn in the US, an all-time record.
<b>March 9, 2020:</b> Stock markets collapsed after the Kingdom of Saudi Arabia announced its plan to operate a major oil output hike.	Discounts emerged on Fixed Income ETFs. Level 1 Market Wide Circuit Breakers (MWCB) triggered for the first time since 2013 in the US.
<b>March 11, 2020:</b> WHO made the assessment that COVID-19 can be characterized as a pandemic.	—
<b>March 12, 2020:</b> The S&P 500 fell 9.5% with the VIX reaching 75.	The SPDR ETF suite traded more than \$100bn in the US.
<b>March 13, 2020:</b> The S&P 500 rebounded 9.3%.	The LSE reviewed its market making obligations rules and NASDAQ reviewed its reopening process. S&P Dow Jones Indices announced that the postponement of quarterly rebalance for S&P and Dow Jones equity indices initiate scheduled for March 2020.
<b>March 16, 2020:</b> The S&P 500 fell 12%, most since 1987.	The SPDR ETF suite traded more than \$100bn in the US ASIC limited trading activity on the ASX.
<b>March 23, 2020:</b> Fed announced unlimited asset purchases.	Fed announced ETF purchases. Price dislocation appeared on Gold Futures and ETFs.
<b>April 30, 2020:</b> BOJ announced new rules for its purchasing program.	BOJ's adopted new rules for its ETF purchases.
<b>May 12, 2020:</b> Fed began its ETF purchase program.	Fed begins purchasing ETFs.
<b>May 15, 2020:</b> The HKSAR government published revised economic figures for the first quarter of the year and announced new measures.	The Stamp Duty Ordinance was amended to lower transaction cost for primary market ETF activities.
<b>May 29, 2020:</b> The S&P 500 closed at 3,044, down -5.6% YTD and up 36.1% since its March 23, 2020.	Fed disclosed ETFs purchased through its SMCOF.

Source: State Street Global Advisors, Bloomberg Finance Ltd as of May 31, 2020.

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## Endnotes

- 1 October 1987 Market Break report by the SEC Division of Market Regulation.
- 2 ETFIGI LLP, as of May 2020.
- 3 ETFs and Common Stocks listed in the US.
- 4 EMEA includes listings on the London Stock Exchange, Deutsche Boerse, Euronext Paris, Euronext Amsterdam, SIX Swiss Exchange and Borsa Italiana.
- 5 APAC includes listings in Japan, Mainland China, Hong Kong S.A.R., Taiwan, South Korea, Singapore and Australia.
- 6 A majority of the ETF trading activity happens outside of stock exchanges in EMEA.
- 7 US-listed U.S. Equity ETFs.
- 8 In some instances, ETF trading is not centralized. For example, in Europe, a majority of the ETF trading activity happens outside of stock exchanges.
- 9 Federal Reserve Bank of New York as June 15, 2020.

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\* This figure is presented as of March 31, 2020 and includes approximately \$51.62 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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### Glossary

**Basel Accord** The three sets of banking regulations – Basel I, Basel II and Basel III – set by the Basel Committee on Bank Supervision (BCBS), which provide recommendations on banking regulations related to capital risk, market risk and operational risk. The purpose of the Basel agreements is to ensure that financial institutions have enough capital on hand to meet obligations and absorb unexpected losses.

**Beta** Measures the volatility of a security or portfolio in relation to the market, with the broad market usually measured by the S&P 500 Index. A beta of 1 indicates the security will move with the market. A beta of 1.3 means the security is expected to be 30% more volatile than the market, while a beta of 0.8 means the security is expected to be 20% less volatile than the market.

**CBOE VIX Index** A measure of market expectations of near-term volatility conveyed by S&P 500 stock index option prices.

**Creation/Redemption Mechanism** The process by which ETF shares are created and redeemed. The creation process involves authorized participants (APs) buying underlying shares and delivering those shares to the fund sponsor in exchange for equally valued ETF shares. The redemption process is the reverse, wherein the AP removes ETF shares from the market and exchanges those ETF shares with the ETF sponsor for an equally valued amount of the ETF's underlying shares.

**Dodd-Frank Act** The Dodd-Frank Wall Street Reform and Consumer Protection Act, enacted on July 21, 2010, places strict regulations on lenders and banks in an effort to protect consumers.

**Equitizing Cash** Equitizing cash is putting cash or equivalent assets to work in the stock market, often temporarily, with relatively liquid vehicles, including ETFs.

**ESG Investing, or Environmental, Social and Governmental Investing** A set of criteria that investors can use to screen investments. Environmental criteria look at how a company performs as a steward of the natural environment; social criteria examine how a company manages relationships relevant to its operations; and governance criteria deal with a company's leadership, executive pay, audits and internal controls, and shareholder rights.

**Transparency** A term that describes the extent to which investors have easy access to objective financial information about companies or funds such as ETFs. Those data include price movements, market depth and audited financial reports.

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