

THE
INVESTMENT
ASSOCIATION

ETF PERFORMANCE DURING CORONAVIRUS

An expanded analysis

November 2020



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Our purpose is to ensure investment managers are in the best possible position to:

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- Help people achieve their financial aspirations
- Enable people to maintain a decent standard of living as they grow older
- Contribute to economic growth through the efficient allocation of capital

The money our members manage is in a wide variety of investment vehicles including authorised investment funds, pension funds and stocks and shares ISAs.

The UK is the second largest investment management centre in the world, after the US and manages over a third (37%) of all assets managed in Europe.

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1. INTRODUCTION

ETFs ARE A TYPE OF INVESTMENT FUND WHICH, UNLIKE MANY OPEN-ENDED FUNDS, ARE LISTED ON ONE OR MULTIPLE GLOBAL STOCK EXCHANGES. THEY HAVE A SECONDARY MARKET TO MATCH BUYERS AND SELLERS COMBINED WITH A PRIMARY MARKET TO MANAGE THE CREATION OR REDEMPTION OF ETF SHARES. IN EUROPE, MOST ETFs ARE GOVERNED UNDER THE UCITS REGULATORY FRAMEWORK. ETFs ARE ONE OF A NUMBER OF EXCHANGE-TRADED PRODUCTS, EACH WITH ITS OWN STRUCTURE, AND MANY OF WHICH WILL HAVE DIFFERING REGULATORY FRAMEWORKS.¹

ETFs have grown in significance in the global fund market since their introduction just over 25 years ago, with ETF AUM growing to over \$6 trillion worldwide by the end of 2019.²

As discussed in the IA's Policy Briefing on ETF performance during the Coronavirus crisis³, the coronavirus outbreak has had a significant impact on capital markets, and like other products ETFs were affected by the significant market volatility.

Nonetheless, analysis of ETF performance during the March/April peak of the crisis showed that ETFs proved resilient despite the initial market shock, and they provided a key source of liquidity and price discovery.

This paper will seek to expand on many of the topics covered in that paper through a more detailed analysis of ETF performance over the period since March, covering such issues as:

- Premiums/discounts to NAV
- Trading volumes and liquidity
- Primary market efficiency, including Authorised Participant (AP) arrangements
- Market stability and central bank intervention

At the IA, we represent members who are both investors in, and providers of, ETFs. Our members represent over 90% of the ETF market share in Europe. European ETFs tend to be heavily weighted towards equity (65% of AUM) and fixed income (24%), though there is also more limited allocation towards commodities and other asset classes.



ETFs are a type of investment fund which, unlike many open-ended funds, are listed on one or multiple global stock exchanges.

¹ Further information on ETFs can be found [here](#)

² ETFGI

³ Investment Association, "[Policy Briefing on ETF Performance During The Coronavirus Crisis](#)"

2. ETF RESILIENCE DURING THE COVID CRISIS

In attempting to demonstrate ETF resilience over the COVID period, this paper will explore ETF performance against a series of key metrics, including:

- Premiums/Discounts to NAV
- Trading volumes and liquidity
- Primary market efficiency

PREMIUMS/DISCOUNTS TO NAV

During the early weeks of the crisis in Europe, concerns were raised about ETFs trading in the secondary markets at a significant discount to their net asset value (NAV). This occurred within ETFs across several asset classes, including US treasury ETFs. However, it was most pronounced in the case of fixed income ETFs, and in particular investment grade corporate bond ETFs – during the week of March 15th investment grade corporate bond ETFs listed in the US were trading at an average discount of 3.36% to NAV. In a few cases, discounts of over 7% were seen.⁴

Questions were raised by regulators and in the press as to whether this represented a breakdown of the ‘arbitrage mechanism’. This is the mechanism by which premiums or discounts to NAV within ETF pricing are usually corrected by APs.

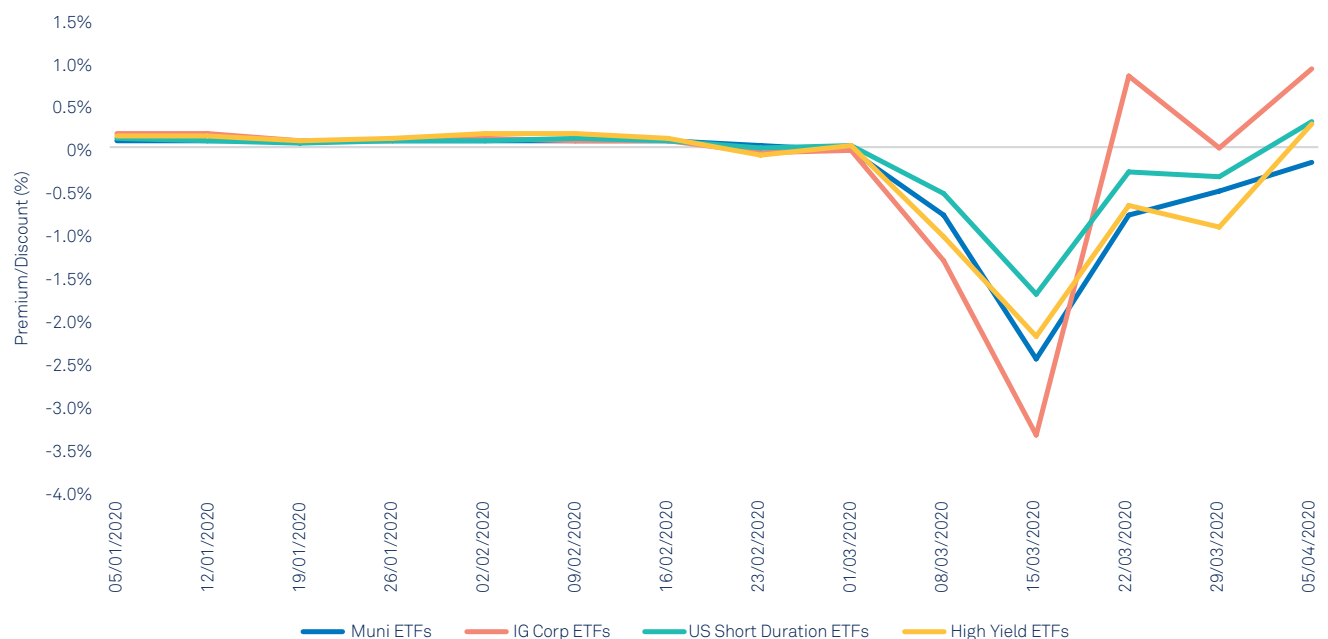
To explain the arbitrage mechanism in more detail, it is important to understand the fundamental factors that inform these discounts/ premiums to NAV.

The most important factor is bond prices used by index providers, which ETF NAVs are benchmarked to. Index providers need to obtain a price for every bond in their respective index and different providers can have their own pricing source and methodology. Prices of bonds need to be obtained at a certain “fixing” time but as bonds are not traded on transparent and widely accessible venues (as is more commonly seen in equities) index providers may ask a panel of broker-dealers at a certain time for indicative (non-firm) prices. Alternatively, algorithms may be used to model the theoretical fair value of a bond.

However, in many cases if the bond has not been traded during the day a stale price reflecting when the bond last traded is the only viable option to use.

FIGURE 1: AVERAGE ETF PREMIUM/DISCOUNT TO NAV BY FIXED INCOME STRATEGY FOR ALL US-LISTED ETFS.

SOURCE: BLOOMBERG



⁴ Invesco

As noted in the IA's previous paper on this subject, it is important to outline that the underlying fixed income market does not currently operate in the same way as the equity market, insofar as:

- it is not standardised;
- it is highly fragmented;
- there is no official market, and
- there is no closing auction period.

This makes price discovery for fixed income securities more challenging than for equity shares.

Ultimately, as with any other traditional fixed income investment fund, the ETF NAV, shows a indicative bond price that is indicative, reasonably estimated and as close as possible to a fair value.

This does mean that bond indices can include many theoretical prices which are not necessarily tradeable prices. Under normal market conditions, this causes fixed income ETFs to trade at small differences to NAV, as ETF brokers will price in any difference they see between the tradeable prices of the underlying bonds versus where the index has priced the bonds.

However, during times of severe market volatility, including the early weeks of the coronavirus outbreak in March 2020, markets may move at dramatic speeds, amplifying these small differences between tradeable and indicative bond prices to a much larger extent, resulting in large differences between the intraday tradeable price of the ETF (which is based on the live tradeable prices of the underlying bonds) and its NAV (which is using indicative or stale prices).

This is a common stress scenario in markets with insufficient liquidity to absorb all of the sell orders in the underlying market. It is important to note that this is not specific to ETFs, but applies to the bond market more widely.

In normal circumstances, we would expect any significant tradable disparity between the ETF price and its NAV or fair value, to imply an arbitrage opportunity for APs. ('APs'), who can create and redeem ETF shares with the ETF provider.

When the price of an ETF exceeds the fair value range that is made up of the total costs of buying and selling the underlying basket of securities the ETF is tracking, there is a commercial incentive for APs to arbitrage the difference. If ETFs are trading at a discount to NAV, APs can buy up ETF shares, redeem them to get

the underlying securities, then sell those securities on the open market to make a profit. Likewise, if ETFs are trading at a premium to NAV, APs will buy the underlying securities, redeem them to create ETF shares, then sell those shares to make a profit. This is frequently referred to as the "arbitrage mechanism".

During the period of market volatility triggered by the COVID-19 crisis however, no significant arbitrage occurred and ETF prices remained discounted over a period of some weeks. At the time there was some speculation that this represented a breakdown of the arbitrage mechanism during a time of significant market stress.

However as stated in the IA's previous paper it is the view of the IA and its members that, far from representing a failure of the arbitrage mechanism, this demonstrates there was no obvious arbitrage opportunity because market participants agreed that the ETF prices were based on the actual tradeable prices of the underlying bonds, whilst conversely, the NAVs represented stale or indicative prices.

This is because investors looking to trade bonds found it easier to do so by trading ETFs, which were far more liquid than their underlying securities, something this paper explores in further detail in the next section, "Liquidity and Trading Volume". Throughout the crisis, market makers and APs were quoting bid prices for ETFs intraday based on the 'real' price at which the underlying bonds could be bought and sold. In other words, the arbitrage mechanism was working all along exactly as it should have been.

This was the dynamic highlighted in the Bank of England's May Financial Stability Report⁵, which noted that, during this period, ETF prices appear to have provided information about future changes in underlying asset markets, offering evidence that ETF prices incorporated new information more rapidly than the NAV of the underlying assets. The ESRB's 2020 Non-Bank Financial Intermediation Risk Monitor also identified this as a key factor, stating that "the relative liquidity of the shares in corporate bond ETFs trading on secondary markets may be an indication that the price discovery pertaining to the underlying assets might have shifted to the ETF."⁶

It should be noted that, as seen in Figure 1, there was a significant reduction in discounts to NAV since the initial volatility spike in March, as bond prices fell towards the level of bond ETFs, particularly as ETF prices responded to central bank intervention. In some instances, in the

⁵ Bank of England, "[Interim May Financial Stability Report](#)"

⁶ European Systemic Risk Board, "[EU Non-bank Financial Intermediary Risk Monitor 2020](#)"

reverse dynamic as was seen during the periods of heavy discounting, ETFs traded at a premium to NAV as their prices rose ahead of those of the underlying bonds.

LIQUIDITY AND TRADING VOLUME

To explore the question of discounting to NAV and ETFs providing a source of price discovery in more detail, we need to look at how ETFs provided additive liquidity beyond that of the underlying securities at the height of the crisis.

The early weeks of the COVID crisis saw unprecedented high trading volumes. During this period, ETF liquidity far exceeded that of the underlying securities. During the three weeks from February 24th, European ETF trading volumes increased to over two times their average 2019 volumes. European equity ETFs accounted for 30% of all equity trading on the busiest days of this period. On March 12th, shares in BlackRock's USD Corporate Bond UCITS ETF changed hands 1,000 times, while the underlying securities traded just 37 times.⁷

While volumes were largely back to normal by the first week of April, high secondary trading volumes

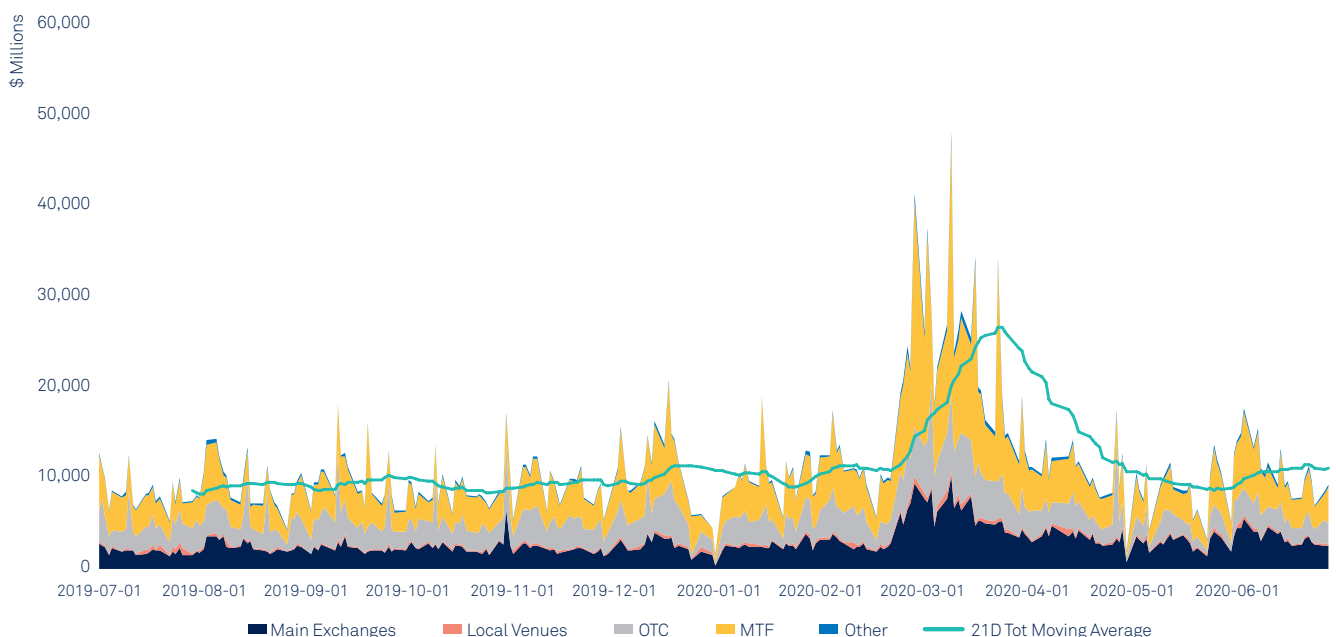
continued intermittently even as markets started to recover, with a significant spike around 9 April, the day the US Federal Reserve (Fed) announced additional stimulus plans and broadened its existing Primary and Secondary Market Corporate Credit Facilities.

This increase in trading volume has happened because ETFs have provided a source of liquidity when underlying market trading was impaired. In so doing, ETFs also proved a vital source of price discovery – while pricing underlying instruments was difficult as a result of their illiquidity, a price could be estimated based on the price of the much more liquid ETFs of which those securities were constituents. This applied to both equity markets – where ETFs provided a price discovery role much as they had during the suspension of Greek stock markets in 2015 – and, even more so, in fixed income markets.

As fixed income ETFs changed hands far more than their underlying holdings, they provided unprecedented and greatly required insight into bond market pricing. During the first weeks of the crisis, with little trading data available to provide a reliable onscreen price, on-screen bid prices (being based on “stale” data) were often far higher than the firm bid prices market participants were in reality willing to accept.

FIGURE 2: EMEA EXCHANGE TRADED PRODUCT VOLUME TRADED/REPORTED

SOURCE: BLOOMBERG



⁷ BlackRock/TRACE

By contrast, as we have seen, ETFs were providing real-time pricing and were far more liquid than the underlying bonds.

This same dynamic can be seen in the increase in the secondary-to-primary trading ratio of fixed income ETFs during this period. For example, some fixed income ETFs saw over a 270% increase in secondary to primary activity during March 2020, compared to 2019 averages.⁸ Again, secondary market trading provided a deeper pool of liquidity even where primary market trading in the underlying securities was less frequent (to be explored further in the next section, “Primary Market Efficiency and AP Arrangements”).

As we can see, market participants and pricing services began to use ETFs to essentially estimate the price of those bonds that were not trading. In this way, fixed income ETFs were able to keep pace with the bonds that were changing hands frequently and previewed the market-clearing prices of those that traded less frequently, signalling relevant and timely information about where market participants valued corporate bonds in the heat of volatile trading.

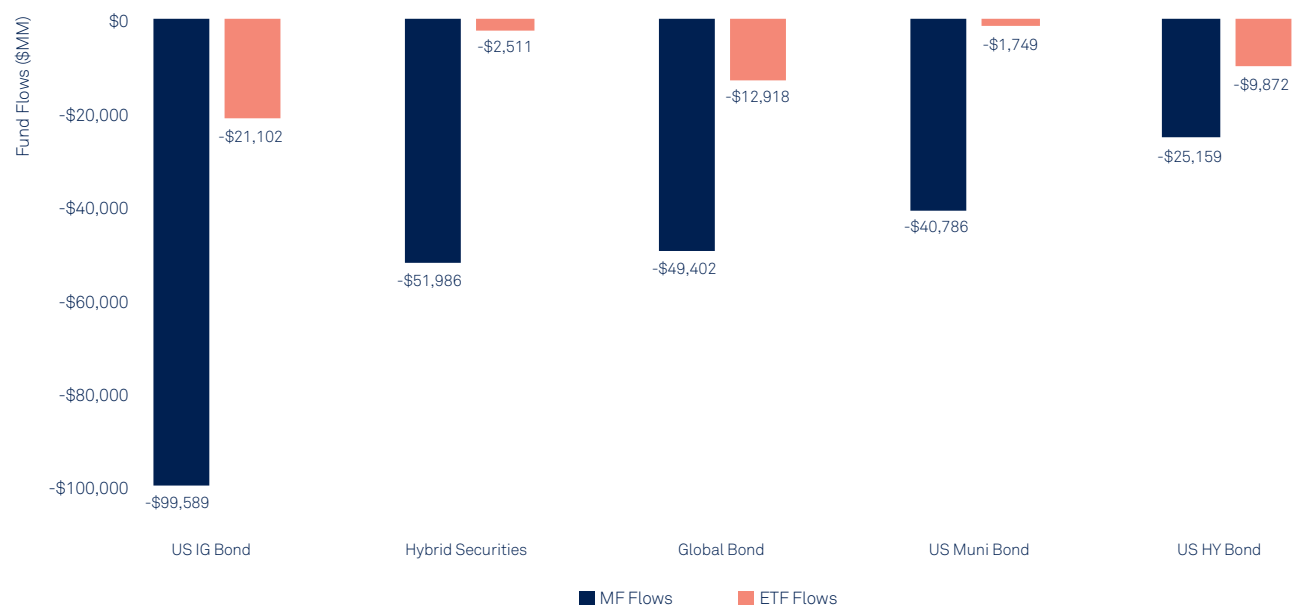
One concern that was raised during this period was that ETFs were having a distortive effect on bond

pricing, essentially dragging bond prices down. As we have noted, ETFs were in fact providing a source of price discovery and so in many cases were simply ahead of pricing in less liquid bond markets. In addition, it should be noted that other factors played a role in pulling bond prices down. Over the weeks of March 19th and 26th, for example, traditional mutual funds were hit hard by redemptions, exacerbating underlying market stress as portfolio managers were forced to liquidate securities in order to meet those redemptions.

While fixed income ETFs were not immune to the selling pressure, outflows totalled just ~2.3% of assets in March – smaller than mutual fund outflows in this space. The ability for fixed income ETFs buyers and sellers to match on exchange helped alleviate some of the underlying market stress. While it may be natural to assume that in this period there would be mainly sellers and few buyers, this proved not to be the case. US listed fixed income ETFs traded a total of \$738.8bn on exchange during March, with only \$19.8bn redeemed in the primary market over that time. This implies that an overwhelming portion of ETF activity saw products change hands without forcing a bond to be sold in the underlying markets.

FIGURE 3: FIXED INCOME FUND FLOWS BY CATEGORY (FEBRUARY 24TH-APRIL 1ST).

SOURCE: INVESCO



⁸ DWS Investment GmbH and Bloomberg Finance LP

PRIMARY MARKET EFFICIENCY AND AP ARRANGEMENTS

As noted, there was an increase in the secondary-to-primary market ratio of fixed income ETFs during the height of the crisis.

Nonetheless, primary market trading did take place, and in fact increased. March saw record levels of primary market trading in both Europe and the US.⁹

This in turn brings to the question of AP arrangements and stepaway risk.

An AP is a market participant which has the right to create and redeem shares in an ETF. Essentially it is their role to manage primary market liquidity. They also help to stabilise ETF share prices through the arbitrage mechanism, as discussed earlier in this paper.

Concerns have previously been raised by regulators that ETF AP arrangements would break down in times of market stress, with APs stepping away from their role as they looked to reduce risk.

However, as the ESRB noted in its 2020 Non-Bank Financial Intermediary Risk Monitor, “past volatility events in ETF shares have generally been short-lived, as APs and other liquidity providers have stepped in” during these periods¹⁰, and despite the extreme volatility experienced through the crisis, AP networks appear to have held up well.

It has always been in the interests of ETF providers, even prior to this crisis, to ensure a well-planned and varied network of APs is in place. In 2019 there were 37 different APs for US-listed ETFs, with an average of 5 APs for each ETF. As of March 2020, the most active AP operating in the US accounted for less than one-quarter of creation and redemption activity, indicating that ETF providers do not appear to be overly reliant on individual APs.¹¹

Despite the crisis these networks do not appear to have degraded – a key indicator of the resiliency of ETF AP arrangements. Members of the IA’s ETF Committee

reported no reduction in the number of active APs across their range from March to today.

Nonetheless it is important to recognise that, even if an AP were to step away, investors have other options. Firstly, it is important for investors, regulators, influencers and policy makers to distinguish between APs and other market participants who provide liquidity. While APs are the only firms that can directly conduct creation and redemption business with ETF providers, they are not the only organisations that can provide liquidity. Market makers and broker dealers also play important roles within the ETF ecosystem.

As discussed above, the structure of the ETF ecosystem allows ETF trading to take place in the secondary market without correlated trading of the underlying securities or the creation/redemption of ETF units in the primary market, thus enhancing overall ETF liquidity and providing investors with a means of trading shares even in the event, however remote, of a breakdown in primary market trading.

Finally, we note that even in the improbable scenario that AP arrangements were to break down, most ETFs do allow investors to redeem directly with ETF providers as a last resort. However it should be noted that the likelihood of the creation/redemption process breaking down is relatively low. There are a variety of reasons for this. Firstly, the likelihood of APs stepping away is reduced by the fact that there is an economic incentive for them to continue to provide primary liquidity.

Secondly, APs also have the ability to act as an agent for clients looking to redeem, even if they were no longer actively making prices and taking risk in ETFs.

Secondly significant operational investments have been made to smoothen and upscale creation/redemption activity across the industry, such as through the use of automated exchanges.

It must also be noted that ETF issuers run significant operational, reputational, legislative and economic risks should they suspend or otherwise discourage redemptions, and have no incentives to do so and, indeed, every incentive to work to prevent this happening.

⁹ BlackRock, “[Lessons from COVID-19: ETFs as a Source of Stability](#)”

¹⁰ European Systemic Risk Board, “[EU Non-bank Financial Intermediary Risk Monitor 2020](#)”

¹¹ BlackRock, “[Lessons from COVID-19: ETFs as a Source of Stability](#)”

3. MARKET STABILITY AND CENTRAL BANK INTERVENTION

Some policymakers have raised concerns that positive ETF performance became overly reliant on central bank intervention, given that discounting to NAV (particularly in fixed income ETFs) decreased significantly after central banks began purchasing bonds in order to provide a source of liquidity and help stimulate fixed income markets.

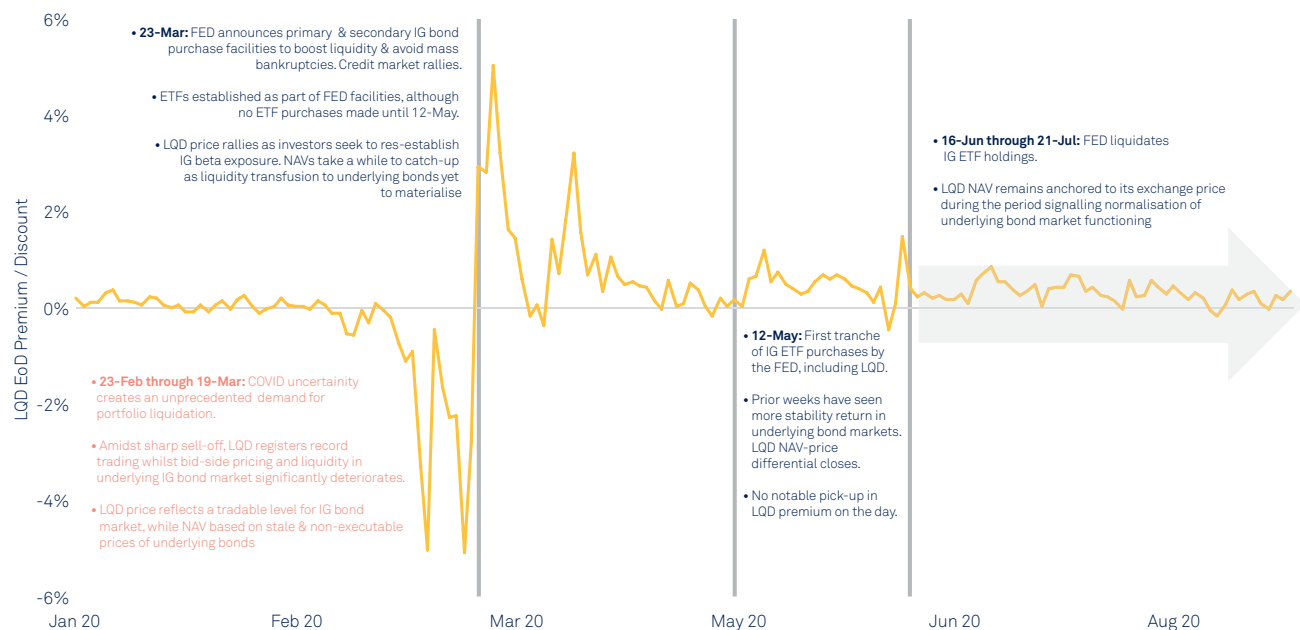
It is difficult to demonstrate what would have occurred in fixed income markets more broadly, and fixed income ETF markets specifically, had central banks not intervened to help stabilise fixed income markets. It is important to note however that ETF discounting to NAV had begun to decrease from 15 March prior to central bank intervention (as seen in Figure 1). By the end of March, discounts had largely closed. When the Fed began purchasing ETFs on 12 May, seven weeks after the initial announcement, there were no substantial premiums, and even when the Fed began winding down their purchase programme towards July, there was no resumption of the significant discounting seen in March.

An illustration of these dynamics can be seen in the evolution of the iShares iBoxx \$ IG Corporate Bond ETF's (LQD) discount between March & June. The ETF was part of Fed's purchases during this period. Notably, ETFs with similar exposure in other domiciles – such as the iShares USD Corp Bond UCITS ETF, listed on the London Stock Exchange – exhibited similar trading dynamics during this period, despite not forming part of Fed's purchases. This is evident that ETFs – irrespective of Fed's actions – merely reflected the changing dynamics of the underlying US credit markets.

Any concerns around the necessity of central bank intervention to provide market stability should not centre around ETFs, which ultimately make up only as small percentage of global AUM. Fixed income ETFs specifically, for example, represent around \$1.4 trillion globally AUM, or about 1% of the size of the underlying market. Instead, discussion should centre around fixed income more broadly, which encountered the most severe impact to market liquidity and confidence.

FIGURE 4: LQD PREMIUM/DISCOUNT TIMELINE

SOURCE: BLOOMBERG, US FEDERAL RESERVE FILINGS, BLACKROCK.



It is also important to note that the Fed intervened in March not to stabilise ETFs or to resolve NAV discounts, but to stabilise fixed income markets more broadly. By early March, as several countries enforced national lockdowns, financial markets started pricing in the prospect of an unprecedented fall in global economic activity. The shock to the real economy was

made evident by the sharpest contraction on record in the US GDP growth during Q2. Market anxiety was also elevated by the uncertainty around the duration of lockdowns and the severity of global infections. Several indicators of financial markets risk registered a synchronised spike to levels not seen since the Global Financial Crisis of 2007-08.

FIGURE 5: US REAL GDP QOQ GROWTH RATE (ANNUALISED)

SOURCE: BLACKROCK, BLOOMBERG. BASED ON QUARTERLY REAL GDP FIGURES FOR THE US ECONOMY.

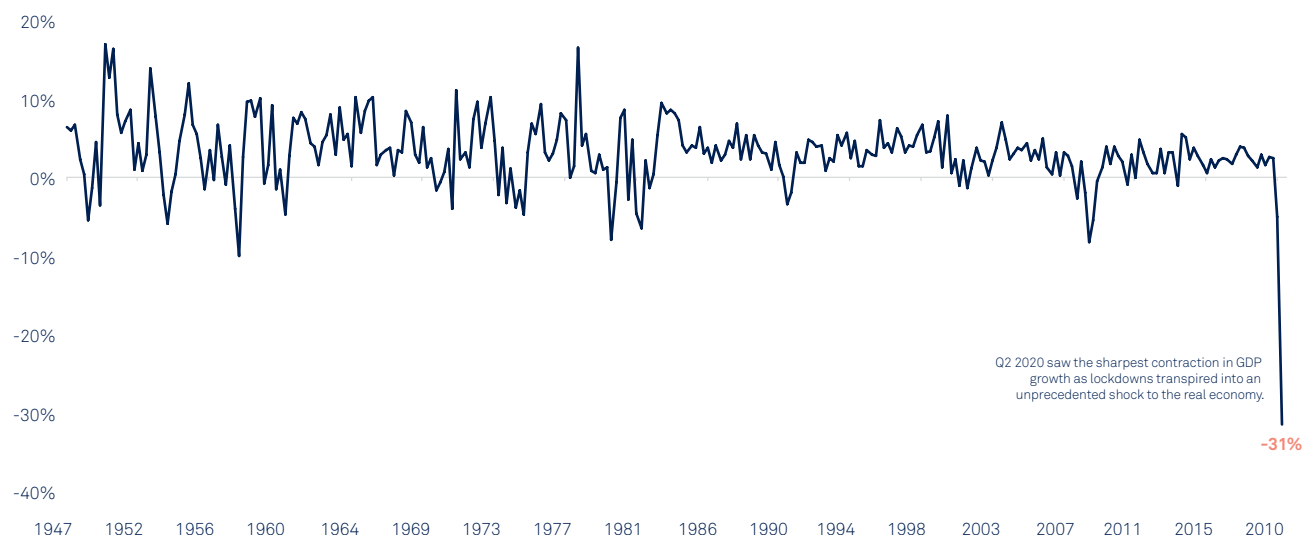
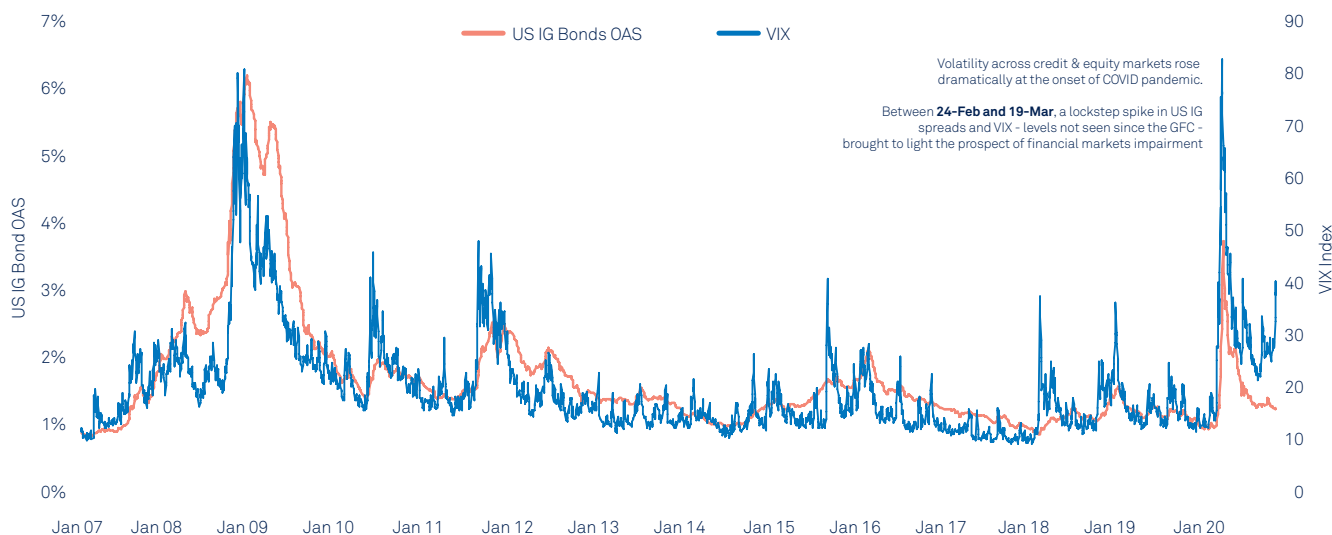


FIGURE 6: US CREDIT & EQUITY RISK INDICATORS

SOURCE: BLOOMBERG, BLACKROCK.



The unusually high level of uncertainty was also reflected in the functioning of credit markets with market liquidity – the conditions under which corporate debt is issued and traded – rapidly deteriorating. A market-wide dash-for-cash severely restricted companies’ ability to issue new debt. Even for investment-grade rated companies, the cost of long-term debt skyrocketed to five times pre-COVID levels.¹² Against this background, the Federal Reserve, with support from the US Department of Treasury established its corporate credit facilities (CCFs). US-listed ETFs formed a part of CCFs alongside direct buying of corporate bonds.

As noted by Fed officials on various occasions¹³, the ultimate goal of these facilities was to restore normal functioning of US credit markets. ETFs in fact played a key role in Fed’s efforts to achieve market stabilisation. Between March 23, when the ETF buy-back programme was announced, and 31 July, the Federal Reserve purchased \$8.735bn in fixed income ETFs. They did so because the more transparent pricing of fixed income

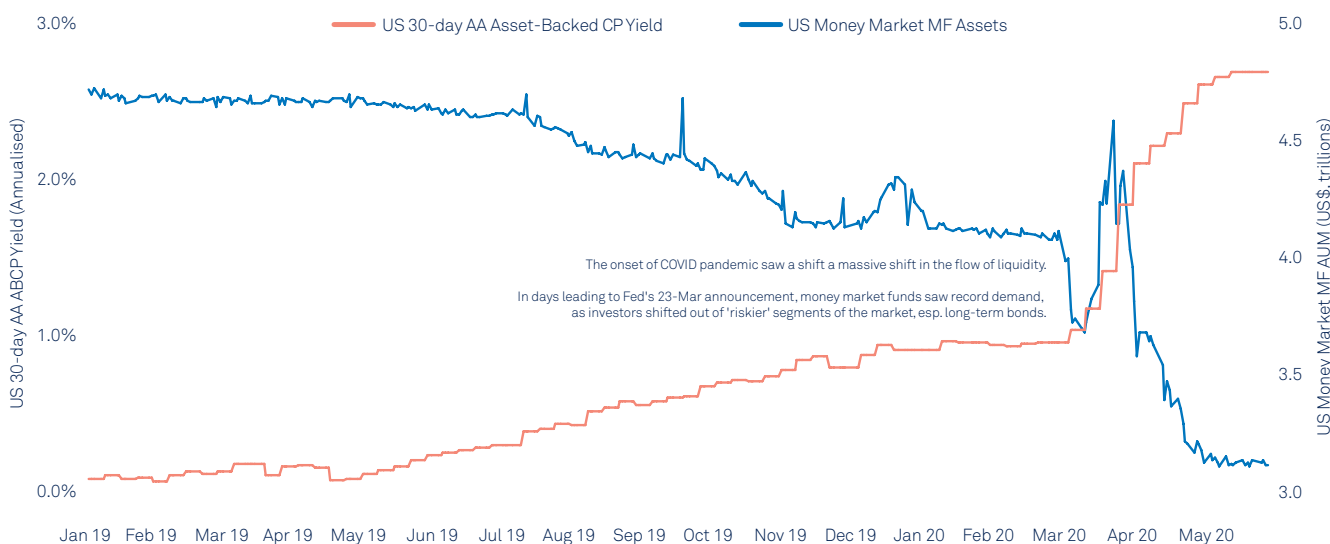
ETFs as well as the ability to cheaply and easily gain access to large baskets of underlying securities made fixed income ETFs a valuable investment tool for the Fed to use in boosting market confidence and liquidity. Even still it should be noted that this figure represents less than 1% of US fixed income ETF assets, and 0.2% of all US ETF assets overall.

One criticism of the Fed’s ETF purchases is that it fuelled record flows into credit ETFs. This should be viewed in the context of the impact on broader FI market. This can be illustrated by comparing the record issuance of new US\$ corporate bonds (~\$2tn 2020 YTD vs \$1.4tn 2019 full-year) with credit ETF flows (+\$85bn 2020 YTD vs +\$97bn 2019 full-year).

Finally, it is worth mentioning that central banks buying ETFs is not unprecedented – the Bank of Japan has been purchasing equity and corporate bond ETFs as part of their quantitative easing programme since 2009.

FIGURE 7: EN MASSE FLIGHT-TO-SAFETY

SOURCE: INVESTMENT COMPANY INSTITUTE, US FEDERAL RESERVE, BLOOMBERG, BLACKROCK.



¹² [The Federal Reserve’s Corporate Credit Facilities: Why, How, and For Whom](#). Speech by Daleep Singh, Executive Vice-President, Federal Reserve Bank of New York, on 20 October 2020.

¹³ Based on official comments on the purpose of CCFs as noted below: [COVID-19 and the Economy](#). Speech by Jerome Powell, on 9 April 2020. [The Fed’s Secondary Market Corporate Credit Facility, explained](#). Analysis by Federal Reserve Bank of Cleveland. [Coronavirus Aid, Relief, and Economic Security Act](#). Testimony by Jerome Powell before the Committee on Financial Services, U.S. House of Representatives, on 22 September 2020.

4. CONCLUSIONS

The crisis demonstrated that ETFs can be a source of stability and price discovery during periods of significant market stress. In the early weeks of the crisis, ETFs saw significant outflows and traded at unusually large discounts to NAV. Concerns were raised that this represented a failure of the arbitrage mechanism that normally keeps ETF prices stable, while representing a downward drag on bond markets, particularly those in the investment grade corporate bond market space.

However as this paper has demonstrated, far from representing a failure of the arbitrage mechanism, the discounts seen in the early weeks of the crisis (and, indeed, the premiums that were witnessed later on), represented the arbitrage mechanism working exactly as intended, as market makers and APs were able to bid ETFs intraday based on the 'real' price at which the underlying bonds could be bought and sold, rather than the out-of-date, 'stale' prices attached to the underlying securities.

This is because in a time of market stress investors turned to ETFs for transparency and liquidity. ETFs saw record primary and secondary trading volumes during the height of the crisis. When trading in the underlying markets was impaired, with a resultant impact on pricing services' abilities to provide intraday pricing, ETFs offered a source of both additional liquidity and price discovery, with traders being able to use ETFs to estimate the prices of the underlying bonds.

Far from dragging down the price of the underlying securities, ETFs were in fact simply providing a forecast of where the price of those underlying securities would ultimately fall to, as would indeed occur as the crisis wore on and discounting was reduced to normal levels. Instead, other factors created far more of an impact on bond prices and liquidity, including large outflows and mass redemptions from bond funds during the height of the crisis.

AP arrangements also proved resilient during the crisis, with [no/little] reduction in the number of active APs operating in the ETF during March and April. This, along with the important roles played by market makers and broker-dealers, as well as the option for investors to create or redeem directly with an ETF provider in the remote event AP arrangements fall away entirely, should help assuage regulator and policy maker concerns as to the strength of AP arrangements and investor protections within the industry.

Finally, we note that ETFs remain a small part of the overall market, and their effect on the market as a whole should not be overexaggerated. Nonetheless, it is clear that ETFs provided a useful tool over the course of the crisis, both to investors seeking liquidity and a source of price discovery, and to central banks as they looked to intervene to stabilise markets.



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November 2020