DWS

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ETF Trading in Volatile Times

The ongoing market volatility caused by the COVID-19 pandemic has resulted in record trading volumes against a backdrop of reduced liquidity in all asset classes. Exchange Traded Funds (ETFs) have so far, and once again, proven their resilience and acted as instant market access tools, as well as providing price discovery and liquidity for investors during stressed market scenario.

We will review the recent behaviour of equity ETFs and particularly fixed income ETFs, in order to understand price action by market participants and respond to different myths and realities that exist regarding fixed income ETFs[1].

Equity ETF trading

Equity ETFs have generally been trading as expected in the secondary market within the creation and redemption cost range either side of the net asset value (NAV), albeit with a wider range than normal. As expected, any ETF trading significantly higher or lower than its primary market creation or redemption cost has experienced the normal arbitrage process to bring the ETF price back in line close to NAV. The transparency of the equity market structure has helped ETF brokers have relative certainty and confidence when pricing intraday or similar versus NAV. This has been further supported by equity indices which use transparent and generally achievable official equity close prices for their index levels which ETF NAVs are referenced to.

While market volatility[2] has increased and ETF spreads have been wider, equity ETFs have been performing in line with expectations[3] and large and persistent premiums or discounts have not been experienced. The increase in ETF spreads can be explained by the widening in spreads of the underlying instruments that are used by brokers to hedge ETFs such as equities, futures or other proxies. For example, it is common for ETF brokers to hedge their ETF exposure with futures. The current volatility in the spot and futures market has made hedging activity more difficult. For instance, S&P 500 E-mini futures which normally trade at less than 1bp wide with significant depth on the bid and offer have recently widened to 4bp[4] and at times with little to no depth, especially on the bid side. This has obviously resulted in wider spreads being quoted by ETF brokers for correlated ETFs as their hedging ability is reduced.

Even when S&P 500 E-mini futures were limit up or down resulting in temporary trading suspension, ETF brokers were still able to quote prices for correlated ETFs by using alternative hedging instruments like Euro Stoxx 50 futures. ETF spreads subsequently widened further to reflect the reduced correlation between the preferred and next best hedging instrument.

[1] Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
[2] Measured by Volatility Index (VIX)
[3] ETF closing price in line with NAV when the exchange and index closing time coincide
[4] Source: DWS Investment GmbH and Bloomberg Finance L.P. As of: 17 March, 2020.

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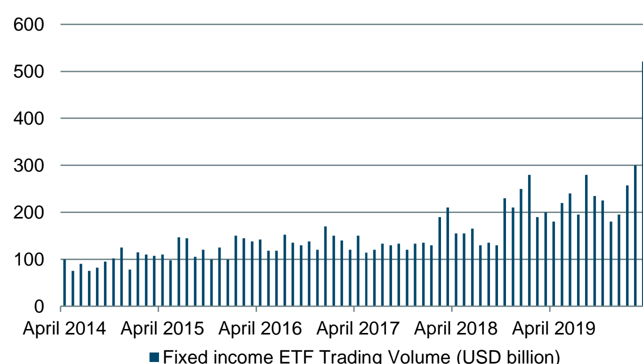
Fixed income ETF trading

In fixed income, the bond market has moved rapidly during the COVID-19 period along with credit spreads to levels not experienced since 2008. At a time when bond liquidity has significantly reduced, fixed income ETFs have performed well.

Firstly, despite the prominent reduction in underlying bond liquidity we have seen unprecedented trading volumes for fixed income ETFs as illustrated in Figure 1. The structure of the ETF ecosystem allows trading to take place in the secondary market without execution of the underlying securities or the creation redemption of ETF units, thus enhancing overall ETF liquidity. Subsequently, during the COVID-19 period, we have seen a material increase in the secondary to primary market ratio of fixed income ETFs. For example, some fixed income ETFs saw over a 270% increase in secondary to primary activity during March 2020 compared to 2019 averages[5]. To put this into perspective, the 2019 average ratio for the same fixed income ETFs was 1.3x. During the virus period this has increased to 3.5x meaning that for every 3.5 EUR traded in the secondary market, only 1 EUR is traded via the primary market mechanism.

These statistics demonstrate the extensive and unique benefits of the ETF ecosystem and how the recycling of already issued ETF shares provides a liquidity buffer which prevents instant one-for-one risk transmission from the secondary market to the primary market[6].

FIGURE 1. FIXED INCOME ETF TRADING VOLUME



As of: March 2020; Source: Bloomberg Finance L.P. Fixed-income ETF trading in the secondary market in the U.S.

Secondly, in addition to the extraordinary reduction in liquidity of the bond market, it has become evident during the COVID-19 crisis that the true tradable prices for bonds may have a certain disconnect from where they have been marked by index providers. Where investors have struggled to execute single cash bonds, ETFs have served as an efficient price discovery tool trading at live executable prices and a reflection of the true fair value of the underlying securities.

It should be noted that the outstanding value of corporate bonds has increased substantially in the last decade and in turn, the inventory of bond dealers has also been significantly reduced since the great financial crisis of 2008[7]. Subsequently, as a result of the far bigger corporate bond universe, when a market sell off occurs, there is arguably less liquidity sleeves in the market to absorb major shocks.

How is the discount to NAV for fixed income ETFs explained?

Structural differences between the market structure of equites and bonds resulted in a temporary dislocation between fixed income ETF prices and their NAV which were not experienced by equity ETFs. The dislocation resulted in the trading prices of fixed income ETFs appearing to be heavily discounted below their NAV.

The main driver of the dislocation can be attributed to the 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 similar to equities, index providers may ask a panel of broker-dealers at a certain time for indicative (non-firm) prices. Alternatively, algorithms can be used to model the theoretical fair value of a bond. 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. The fixed income market does not operate like the equity market, i.e. it is not standardised, very fragmented, there is no official market and there is no closing auction period. Therefore, it does not have the same transparent price visibility as equity shares. In the end, the ETF NAV or any other traditional fixed income investment fund shows a theoretical bond price that is indicative, reasonably estimated and as close as possible to a fair value. Therefore, bond indices can include many theoretical prices which are not necessarily tradeable prices[8].

[5] Source: DWS Investment GmbH and Bloomberg Finance L.P. As of: 17 March 2020.
[6] Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
[7] Source: DWS Investment GmbH. Passive Insights - ETFs: Catalyst or Mirage for Market Liquidity?
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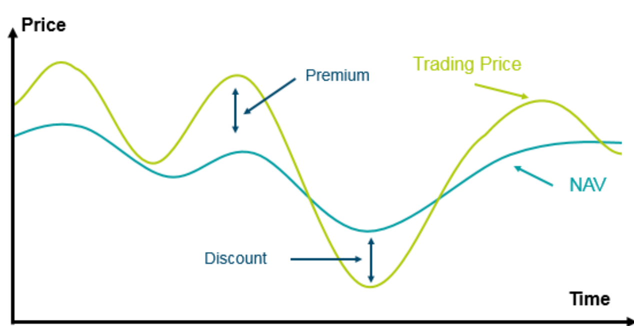
Under normal market conditions, this causes fixed income ETFs to trade at small differences to NAV as ETF brokers will price in any difference they see between the tradeable prices of the underlying bonds versus where the index has priced the bonds. In times of severe market volatility, such as in recent days where markets have moved at dramatic speeds, these small differences are amplified to a much larger extent and will result in dislocations between the intra-day tradeable price of the ETF, which is based on the live tradeable prices of the underlying bonds, and its NAV, which is using theoretical or stale prices. In some cases, depending on the specific ETF exposure, some fixed income ETFs were seen to be trading at heavy discounts between 2% to 7% below the NAV of the ETF.

FIGURE 2. ETFs TRADING AT DISCOUNT OR PREMIUM TO NAV

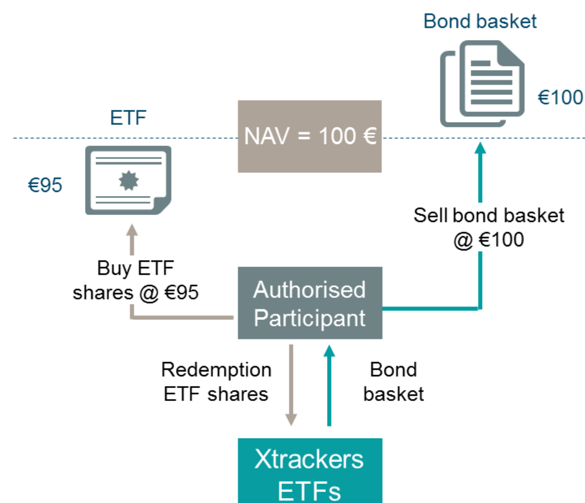


Source: DWS International GmbH. The image is for illustration purposes only. ETF trading at a premium: ETF Price > NAV. ETF trading at a discount: ETF Price < NAV.

Although bond traders know these theoretical bond fair values from pricing services, they have to estimate the value of bonds that are not trading and as a result, the actual bid price at which they can sell the bonds may be at much lower levels. This is a typical stress scenario in markets with insufficient liquidity to absorb the avalanche of sell orders in the underlying bond market. It is important that we acknowledge that this is not specific to ETFs, but to how bond market pricing works in its broadest sense.

As already mentioned in the equity ETF section, any significant tradable disparity between the ETF price and its NAV or fair value, would imply an arbitrage opportunity for Authorised Participants (APs), those who can create and redeem ETF shares with the respective ETF provider[9].

FIGURE 3. ARBITRAGE MECHANISM FOR AUTHORISED PARTICIPANTS



Source: DWS International GmbH. For illustration purposes only.

Therefore, given certain market conditions, Authorised Participants can arbitrage with the following actions:

1. Buy ETF shares at discounted price until there are no more discounted ETF shares
2. Sell the equivalent sized basket of underlying bonds at their normal market price
3. Submit in-kind redemption with the ETF issuer to deliver the ETF shares (at NAV) in exchange for the underlying basket of bonds (NAV equivalent bond prices)
4. The Authorised Participant is now flat on their ETF and underlying bond positions and has locked on the profit between buying the discounted ETF shares and selling the underlying basket of bonds.

[9] Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

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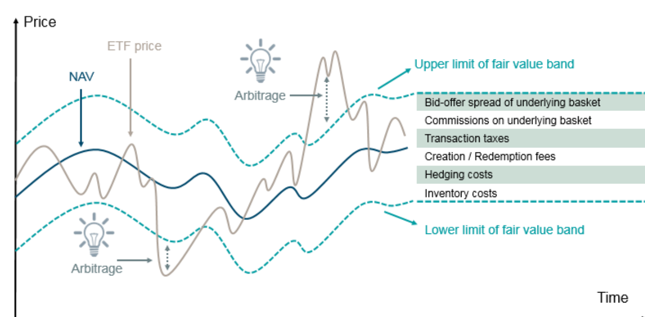
The fact that during the market volatility so far no obvious arbitrage occurred and the discounted ETF prices remained, demonstrated that there was no obvious arbitrage opportunity and that market participants agreed that the ETF prices were based on the actual tradeable prices of the underlying bonds whilst the NAVs were using stale or theoretical prices.

So, when is the arbitrage mechanism applied? Authorised Participants shall promptly arbitrage 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.

FIGURE 4. ARBITRAGE MECHANISM



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All these discounts disappeared after 24th March 2020 when new measures were announced by the U.S. Federal Reserve to purchase ETFs tracking corporate bonds. In fact, we saw how quickly corporate bond ETFs stopped trading at a discount to NAV and started to trade at a premium as the market sentiment turned from selling corporate bonds to buying them. In our opinion, we believe fixed income ETF prices act as a leading indicator of where stale underlying bond prices are heading, both in times of market downturn and recoveries.

Therefore, at a time of severely stressed market and uncertainty, it may be asserted that ETFs and especially fixed income ETFs, have been able to provide continuous liquidity, facilitate in depth trading and provide transparent price discovery for the bond market[10].

Myths and realities regarding fixed income ETFs trading at discounts

Myth 1: Price discounts vs. NAV which fixed income ETFs have recently experienced show that ETFs do not closely track the value of their underlying index through all market conditions.

Observations:

_Fixed income indices often use stale bond prices for NAV valuation
_In 2018 the SEC did a study showing that on average 20% corporate bonds trade every day[11].
_Index providers still need to price the bonds for their indices so resort to using last price if no other price is available (stale price).
_Discounts investors recently experienced between the NAV of a fixed income ETF versus the live ETF trading, was because live ETF price was modelling where the stale underlying bonds were actually trading.

Therefore, while the ETF prices were at a discount to NAV, they could actually be considered as an indication of the fair price (price discovery).

Myth 2: Large fixed income ETF discounts show that ETF brokers and Authorised Participants stepped away from providing liquidity in ETFs to protect themselves[12].

Observations:

_ETF brokers are still very much present in providing liquidity to the market:
  _24 Authorised Participants who can create or redeem directly with DWS,
  _10+ exchange registered market makers, 100+ OTC brokers.
_Discounts in pricing are due to inherent market structure issues with bond transparency.
_In normal market conditions, the creation and redemption mechanism allows market participants to arbitrage away any mispricing of the ETF relative to the underlying securities it is tracking.
_The fact that no arbitrage is taking place shows that ETFs are not being mispriced, but more that the current pricing of ETFs actually reflects where the underlying bonds are likely to be trading.

ETF brokers have been responsible for the price discovery and in providing liquidity for instruments where the underlying liquidity has partially dried up.

[10] Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.
[11] Source: ETF.com March 19th 2020 "Why Many Bond ETFs Now Trading At Discounts"
[12] Forecasts are based on assumptions, estimates, views and hypothetical models or analyses, which might prove inaccurate or incorrect.

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Myth 3: Fixed income ETFs create more volatility with all the trading that is conducted in the underlying bonds.

Observations:

_ETF trading allows for bonds to be traded ensuring they are pricing and not stale which is better for the market and helps to reduce discounts occurring due to stale bond prices.

_Secondary market acts a liquidity buffer:

- _Brokers can net off buyers and sellers (limited hedging required),
- _Investors can have cost effective buying and selling prices (lower than full costs).
- _Existing shares already issued can be used to cover short positions or flatten long positions.
- _Brokers can use own balance sheet to hold inventory (not obligated to redeem with issuer).

_Primary market also very flexible in allowing Authorised Participants to manage risk via cash redemption, in-kind redemptions and custom basket redemptions.

ETF allows for efficient trading and potentially less interaction with the underlying bonds.

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