Income Is Back In Fixed Income

Xtrackers ETF Capital Markets Team
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Executive Summary

This paper explains the fundamentals of fixed income exchange traded funds ("ETFs") and examines the drivers behind swift adoption within investors' portfolios. In recent years unprecedented market shocks such as the COVID-19 pandemic and the Russia-Ukraine invasion have contributed towards rising inflation and macroeconomic challenges. Subsequent market volatility and turbulence have accelerated adoption of the fixed income ETF wrapper leading to record trading volumes. This has been further driven by the complexities experienced when trading underlying bonds. The underlying bond market is typically traded over the counter ("OTC"), with associated transaction costs and large denominations which can create complex hurdles for direct bond investors. Fixed income ETFs provide standardised and cost-effective access to fixed income indices.

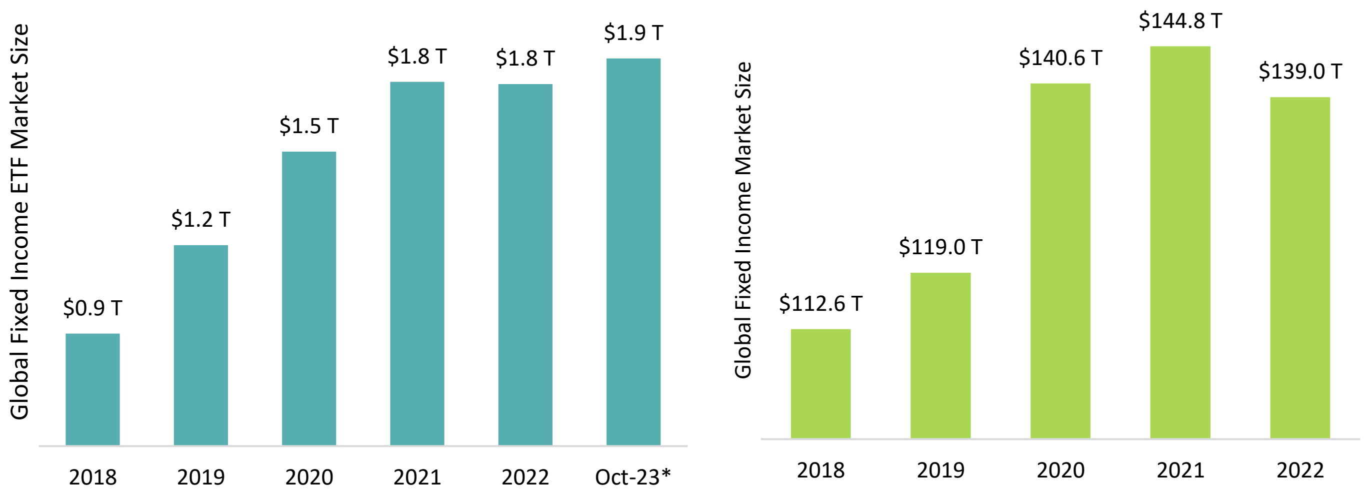
Within this paper, key concepts and trends will be examined including:

- *The Growth of the Global Fixed Income ETF Market*
- *How and why are investors using Fixed Income ETFs*
- *The growth of Fixed Income ETF Trading Volumes*
- *Fixed Income ETF Exchange Spreads and how ETF can trade tighter than the underlying cash bonds*
- *The Primary Market Mechanism*
- *Fixed Income ETFs Premium/Discount: Determining the NAV of Fixed Income ETFs*
- *Fixed Income ETF Secondary Market Liquidity*
- *ETF Execution*

The Growth of the Global Fixed Income ETF Market

As of 2022, global fixed income bond assets stood at $139 trillion[1]. Compared to the previous year, global fixed income ETF assets under management ("AUM") has grown from $1.8 tillion to $1.9 trillion[2] on 3rd October 2023. UCITS fixed income ETFs makes up $384bn[3] of this, growing from $177bn in 2018. Whilst ETFs represent a small portion of the global fixed income market, since 2018 AUM have increased by 117%[4] for the global fixed income ETFs versus 26%[3] for the underlying fixed income market. Whilst the analysis presented in Figure 1 initially seems that fixed income ETF growth decreased during 2022, net new fixed income ETF assets grew by $238bn[5], offset against an approximate average 14%[3] decrease in fixed income cash bond market valuation during the period. Despite the significant growth of fixed income ETFs, they represent just 1.3%[3] of the overall global fixed income market size, growing from 0.8%[3] in 2018.

Figure 1: Historical Growth in Global Fixed Income ETF AUM / Global Fixed Income Market Size

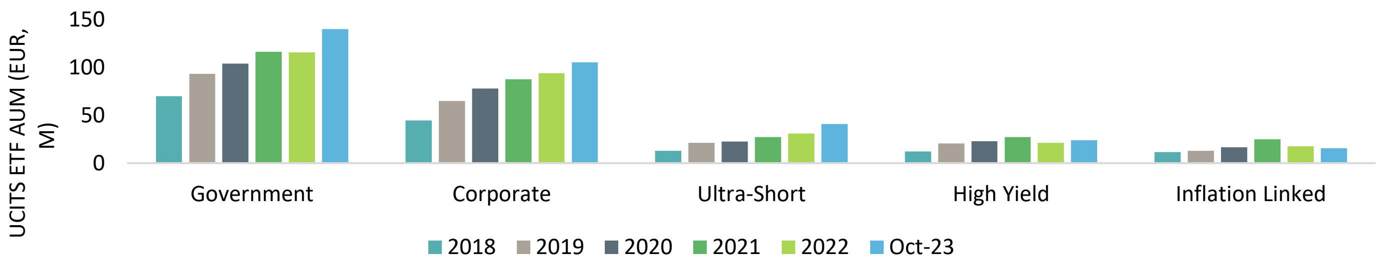


Source: DWS, Bloomberg. As of 3 October 2023. / Bank of International Settlements. As of 25 November 2022.
* AuM calculated as of 3 October 2023. Source: DWS, Bloomberg.

[1] Source: Bank of International Settlements. As of 25 November 2022.
[2] Source: DWS, Bloomberg. As of 3 October 2023.
[3] Source: DWS, ETFBook.com. As of 3 October 2023. Converted from USD to EUR using WMCO 4pm, as of 3 October 2023.
[4] Source: DWS Calculations. As of 3 October 2023.
[5] Source: ETFGI.com. 12 January 2023 "ETFGI reports the global ETF industry gathered US$856 billion in net inflows in 2022"

Figure 2 demonstrates the growth of various fixed income ETF segments in the UCITS ETF universe. Ultra-Short bond ETFs show the largest relative growth rate with an increase of 316%[3] AUM growth from 2018 to 3rd October 2023.

Figure 2: UCITS Fixed Income ETF Growth by Segment



Source: ETFBook.com. As of 3rd October 2023.

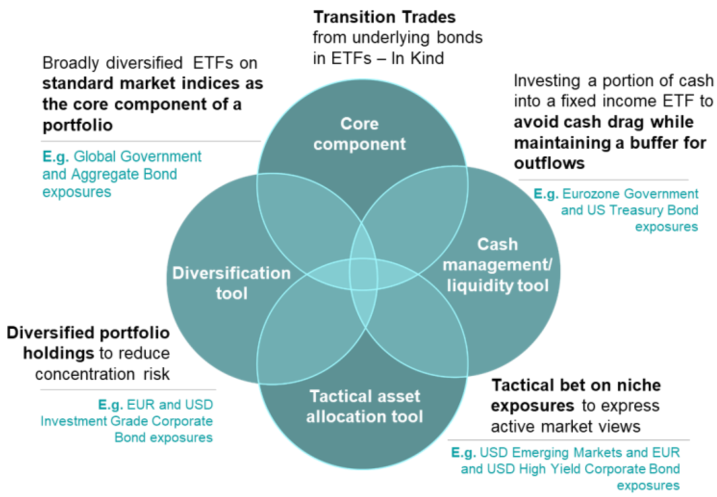
The extensive growth of fixed income ETFs is testament to the wrapper's transparent pricing characteristics, providing investors the opportunity to implement strategies quickly and efficiently, whilst also adding pooled liquidity to an otherwise fragmented market.

How and why are investors using Fixed Income ETFs?

Due to the way in which single bonds trade with a minimum increment restriction, typically 100,000 notional in currency of issuance, trading a portfolio of bonds requires sufficient capital to achieve the minimum increment per bond across the portfolio. Therefore, for non-institutional sizes directly trading bonds is not always possible. By trading an ETF, investors can trade just one share whilst obtaining exposure to diversified underlying's. This allows investors to efficiently use ETFs as a core portfolio component and tactical allocation tool whilst having an extensive choice on indices to achieve diversified exposure. Tradability in the fixed income market has historically been challenging particularly in the corporate bond space where a large portion of the bond universe does not trade frequently in the secondary market. Conversely, fixed Income investors have transitioned towards trading ETFs to benefit from the potential superior liquidity characteristics of the wrapper. Where bonds are traditionally OTC instruments, ETFs are quoted on exchanges daily, providing actionable tradable quotes throughout the trading session and potential for enhanced liquidity compared to the underlying bond market.

For investors that currently hold a portfolio of bonds, a transition trade is a simple solution to switch from a portfolio of single bonds to an ETF. This involves working with an ETF broker to sell an existing long bond portfolio position in exchange for an ETF purchase. By holding a fixed income ETF instead of a basket of bonds, the investor does not have to manage the underlying portfolio daily which is instead managed by the ETF issuer portfolio manager. In addition to this, ETFs have proven to be highly effective as a tool for cash and liquidity management with a collection of execution strategies on offer which can be adopted by investors to suit their investment objectives. Details on various methods for ETF trading and execution are covered in more detail later in the paper. Figure 3 further illustrates how investors are using fixed income ETFs for a variety of investment strategies.

Figure 3: Application of Fixed Income ETFs



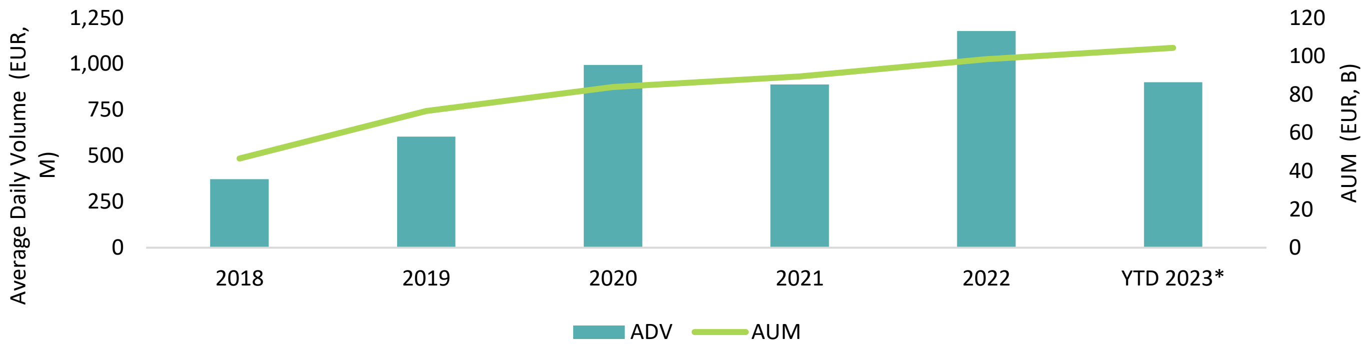
Source: DWS International GmbH. As of 3rd October 2023. The image is for illustration purposes only.

Fixed Income ETF Trading Volumes

Various global macroeconomic challenges have led to an increase in overall market volatility and at times deterioration of liquidity of fixed income securities. Conversely, a recent study of secondary market average daily trading volume ("ADV") for fixed income ETFs across core benchmarks from UCITS ETF issuers demonstrates the continual growth in fixed income ETF trading volumes.

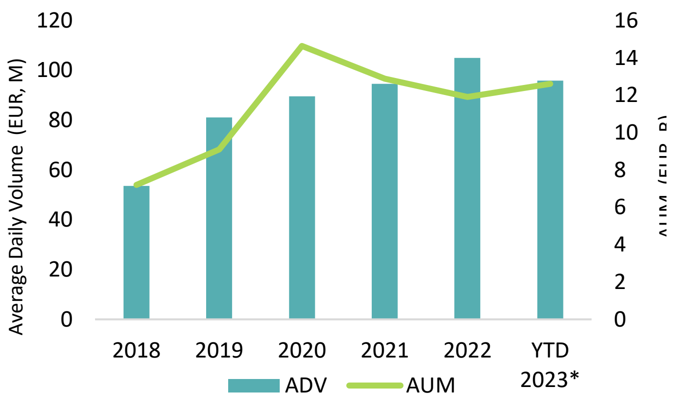
As demonstrated, on both a cumulative basis (Figure 4) and across the respective individual ETF benchmarks, trading volumes have materially increased in most instances year on year and are elevated extensively compared to 2018 volumes. Even where there have been outflows and a reduction in AUM, trading volumes have continued to grow. Despite the slight fall observed in average trading volumes of the selected UCITS ETFs between 1st January – 3rd October 2023, overall fixed income AuM continued to rise, increasing by 6% compared to 2022.

Figure 4: Overall increase in Average Daily Volume and AUM for Fixed Income ETFs

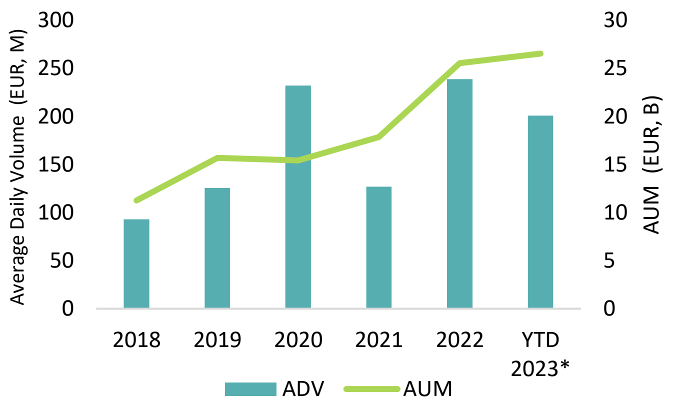


Source: DWS Calculations, Big XYT. As of 3 October 2023 (Data analysed on Fixed Income ETFs from major ETF issuers by AUM).
* ADV data provided for 2023 is calculated across the period 1st January – 3rd October 2023. AuM data as of 3 October 2023.

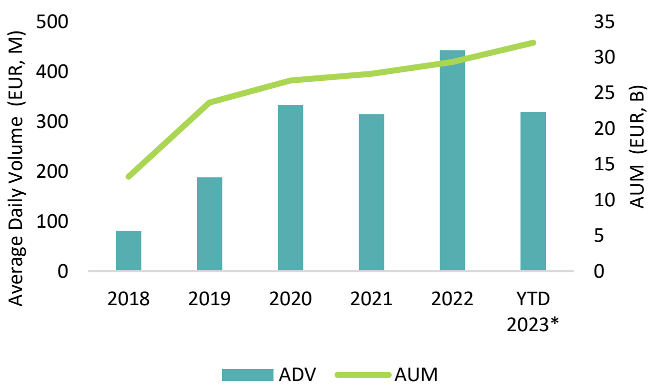
Eurozone Government Bond



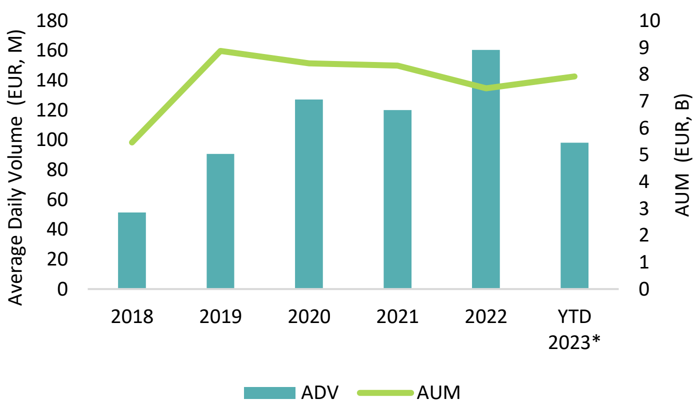
US Treasuries



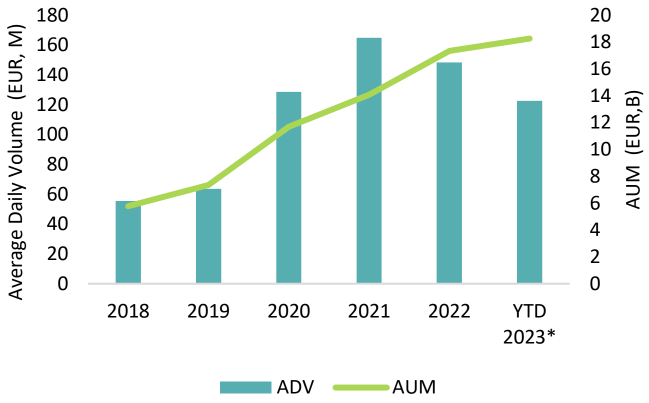
EUR Corporate IG



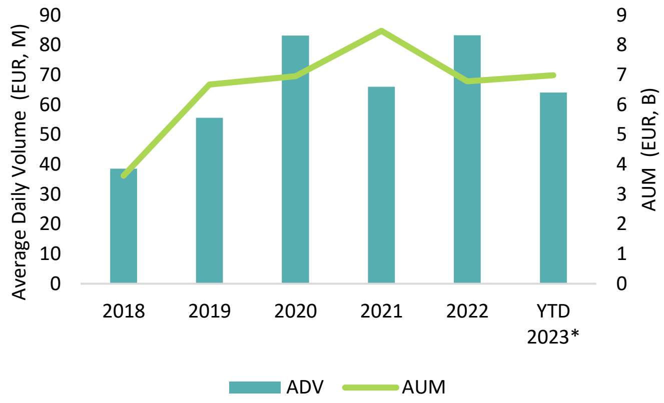
EUR Corporate HY



USD Corporate IG



USD Corporate HY

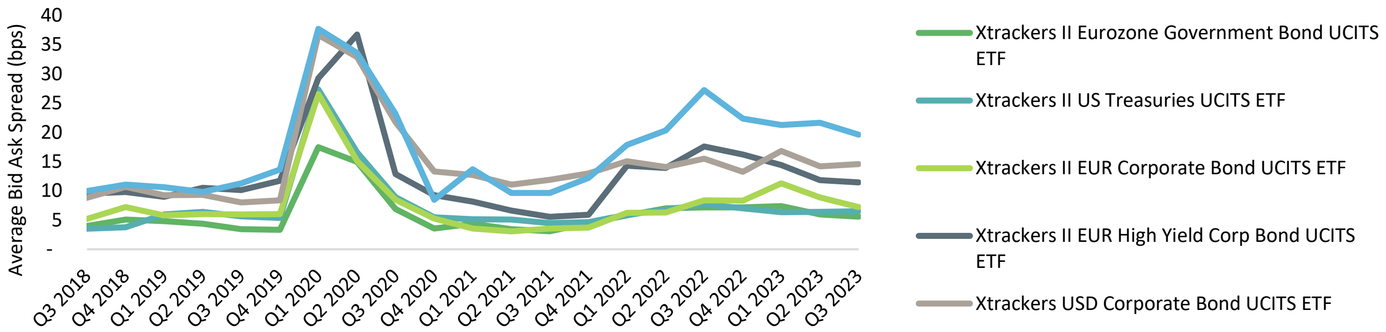


Source: DWS Calculations, Big XYT. As of 3 October 2023.
*ADV data provided for 2023 is calculated across the period 1st January – 3rd October 2023. AuM data as of 3 October 2023.

Fixed Income ETF Exchange Spreads

Figure 5 demonstrates the historical average one year spread data for selected core Xtrackers fixed income ETFs. As shown, spreads widened notably during 2020 predominantly driven by the Covid-19 pandemic, although they were quick to recover reaching pre-pandemic spread levels in Q4 2020[6]. Inflationary pressures and monetary policy changes have since increased volatility in the fixed income space leading to a widening of on-screen secondary market spreads up until Q3 2022 – Q1 2023. This is not unique to the ETF wrapper, but a reflection of behaviour of the underlying bonds the ETFs are tracking. Despite the volatility observed in bond markets, yields have surged and the adoption of fixed income ETFs has continued whilst on-screen secondary market spreads have seen a reduction in average spread levels compared to Q3 2022.

Figure 5: Despite recent widening in spreads, average Yearly Spreads for Range of Xtrackers Fixed Income Products had previously returned to historical levels following the Covid-19 pandemic



Source: Big XYT. As of 29 September 2023.

Analysis of underlying index spreads shows that secondary market spreads, in most instances, trade with a tighter bid offer spread than the corresponding calculated index spread. Figure 6 compares the underlying theoretical index spreads, compared to the actual spread achieved for the ETF for the given timeframe. For example, comparing Xtrackers II Eurozone Government Bond UCITS ETF with its underlying index (IBOXX Euro Eurozone Sovereign Overall Total Return Index) in January 2022, index spreads are 0.11%[7] compared with the ETF average spread of 0.04%[8]. In this example the ETF spread is 64% tighter than underlying index spread. As shown below, spreads widened significantly during June 2022 before gradually tightenening a year later as both the level of volatility and uncertainty from interest rate hikes began to decline.

[6] DWS Calculations. As of 22 March 2022.
[7] IDC. As of 20 January 2023.
[8] Big XYT. As of 12 January 2023.

For Xtrackers II US Treasuries UCITS ETF, ETF spreads were marginally wider than the underlying index (iBoxx USD Treasuries Total Return Index) during 2022 - 2023. This is partly attributable to the differences in European ETF trading hours versus the underlying US bond market. During the European trading session when the ETF is quoted on exchanges prior to the US market open, liquidity providers have fewer hedging capabilities and transparency of the ETF fair value implied from the underlying constituents. Essentially, where investors have optionality to trade the ETF shares outside of US market hours, there is an additional spread applied to the ETF reflecting additional risk warehoused by brokers when providing liquidity.

In summary, although fixed income spreads for both cash bonds and ETFs widened in 2022, the deterioration in underlying bond liquidity has corresponded with further growth to ETF trading in recent years as well as a gradual tightening of spreads later seen in June 2023. As evidenced, the ETF wrapper provides an efficient and cost-effective investment compared to investing in an equivalent basket of single cash bonds.

Figure 6: Index Spreads vs Average Monthly ETF Spreads

	Jan-22			Jun-22			Nov-22			Jun-23		
	AVG 1M Spread	Index Spreads	Differ-ence in bps	AVG 1M Spread	Index Spreads	Differ-ence in bps	AVG 1M Spread	Index Spreads	Differ-ence in bps	AVG 1M Spread	Index Spreads	Difference in bps
Xtrackers II Eurozone Government Bond UCITS ETF	4	11	-7	8	18	-10	6	18	-12	6	14	-8
Xtrackers II EUR Corporate Bond UCITS ETF	5	30	-25	9	41	-32	7	43	-36	9	35	-26
Xtrackers II EUR Corporate Bond SRI PAB	6	29	-23	12	39	-27	8	40	-32	7	33	-26
Xtrackers II EUR High Yield Corporate Bond UCITS ETF	10	58	-48	19	107	-88	16	118	-103	11	85	-74
Xtrackers II US Treasuries UCITS ETF	6	4	2	9	6	3	7	6	1	6	5	1
Xtrackers II US Treasuries 1-3 UCITS ETF	3	2	1	7	4	3	6	3	3	4	3	1
Xtrackers USD Corporate Bond UCITS ETF	13	24	-11	18	30	-12	15	25	-10	14	15	-1
Xtrackers USD High Yield Corporate Bond UCITS ETF	15	26	-11	31	48	-17	21	36	-15	21	39	-18

Source: ETF Spread Data: Big XYT[9]./ Index Spread Data: IDC[10].

The Primary Market Mechanism

An ETF is an open-ended investment vehicle meaning that creation of new ETF shares or the redemption of existing ETF shares can take place when there is demand. Authorised Participants ("APs") will utilize the primary market mechanism to balance supply and demand of ETF shares from the secondary market. Where there is excess demand for ETF shares, APs will create inventory, and where there is excess supply, they will redeem.

The primary market mechanism for fixed income ETFs can be managed in two different ways. The most common approach is via the custom in-kind process which involves APs working with ETF portfolio managers to provide an optimised basket of the underlying bonds in the reference index. For a creation trade, the AP will provide bonds in exchange for ETF units. Conversely, when an AP redeems, they will receive a basket of bonds in exchange for sale of the ETF. The custom in-kind process means that the portfolio manager and liquidity provider do not have to trade all the bonds in the underlying index. This process is beneficial particularly for fixed income indices where only a portion of the underlying bonds trade frequently. Cash execution is the alternative route to the primary for fixed income ETFs. This involves APs placing a primary market order and the portfolio manager subsequently routing a basket of bonds for execution via a dedicated trading desk. The execution costs for the order are passed back in full to the AP. This is commonly known as actual cost of execution.

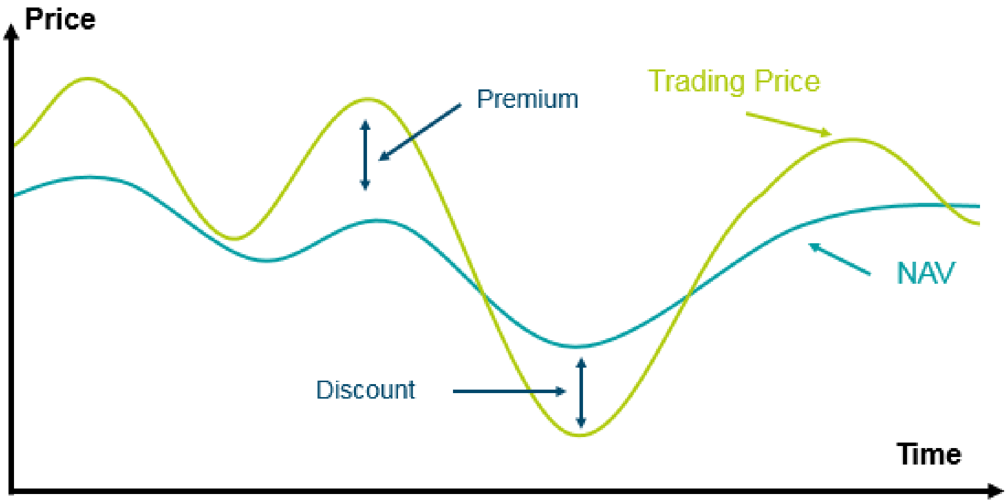
A large portion of primary market transactions are managed using the custom in-kind process. However, irrespective of in-kind or cash execution, the ultimate objective is to keep tracking error to a minimum and the portfolio optimization process allows portfolio managers to target the purchase or sale of bonds where they are respectively under or overweight compared to the underlying benchmark. When comparing the ETF portfolio verses the index benchmark, portfolio managers consider various factors including portfolio duration, credit risk, and issuer exposure to minimize any variance from the optimization process.

[9] BigXYT spread measures are calculated for every single tick, e.g., bid-offer message, and aggregated across the selected date range, e.g., one month, week or day. To aggregate a measure for all ticks of one trading day, the calculation uses a time-weighted average, i.e., the weight is the duration of an order book state with millisecond precision. Furthermore, a simple average is used to measure across multiple trading days. As of January 2022, June 2022, November 2022 and June 2023.
[10] Index spreads are calculated using bid offer spreads from the IDC. As of January 2022, June 2022, November 2022 and June 2023.

Fixed Income ETFs Premium/Discount: Determining the NAV of Fixed Income ETFs

The daily NAV calculation of a fixed income ETF is based on the valuation of the underlying bonds subject to the index valuation methodology, plus any cash component in the fund. In practice, live fair value of an ETF reflects the price at which brokers can source liquidity and tradable prices in the underlying basket of bonds the ETF is tracking. An ETF's market price can range between the upper and lower limits of the ETF fair value band, closely correlated to creation and redemption costs and dependent on the cost of sourcing bonds. Generally, price movements are driven by supply (inventory) and demand (investor interest) of the ETF in the secondary market. As demonstrated in Figure 7, excess supply or demand can cause the ETF to trade at either a discount or premium, respectively.

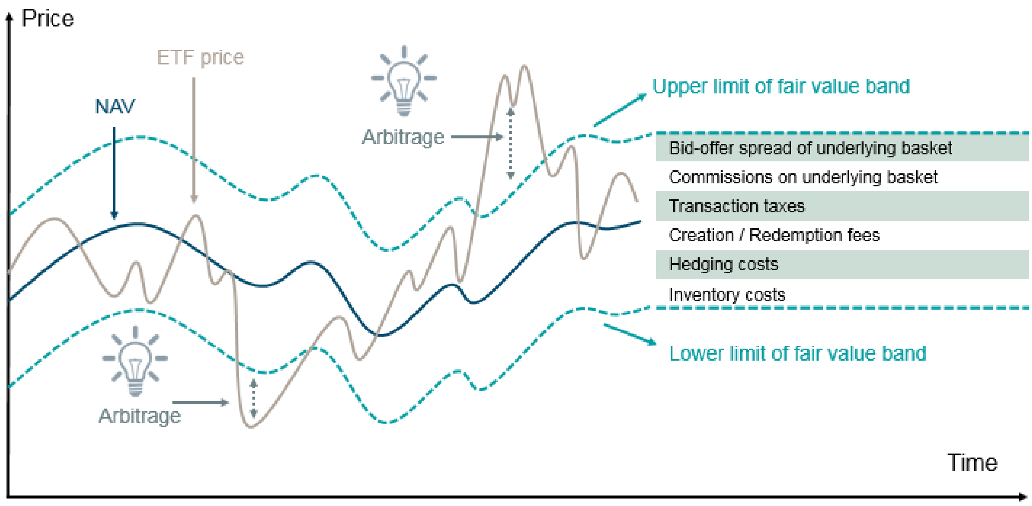
Figure 7: ETF Trading - Premium vs Discount. ETF trading at a premium: ETF Price > NAV. ETF trading at a discount: ETF Price < NAV.



Source: DWS International GmbH. As of 3rd October 2023. The image is for illustration purposes only.

As illustrated in Figure 8, when an ETF price is outside of the fair value band range and trading at a premium or discount, arbitrage opportunities arise for Authorized Participants (APs) who can create and redeem ETF shares accordingly to bring the price back into the fair value range. In practice, any arbitrage opportunity is taken advantage of very quickly supported by the extensive level of market participants and electronification of ETF pricing.

Figure 8: Fair Value and the Arbitrage Mechanism



Source: DWS International GmbH. The image is for illustration purposes only.

However, during times of market volatility and stress, there have been historical dislocations between fixed income ETF tradable prices and the calculated NAV. The main driver of this dislocation can be attributed to bond prices used by index providers which the ETFs are benchmarked to.

Most bond trades do not occur on exchanges which makes bond prices less observable. Index providers must place reliance on multiple bond pricing sources to value each bond in the index at a fixed bond valuation time, often causing nuances within this valuation process. Common practice is to value the bonds at bid or mid prices depending on the index in question and index providers rely on a variety of inputs such as post-trade transaction data, quotes from market makers or panels of bonds dealers providing indicative pricing. One of the major challenges with the valuation of fixed income markets, particularly in the corporate bond space is that certain bonds do not trade regularly.

When markets are stressed and only a reduced fraction of bonds trade the valuations from index providers and bond valuation agents can be misaligned from the true tradable price of the underlying's. This can in instances lead to discrepancies between the value at which ETFs are trading in the market compared to the value at which they are being marked for NAV purposes. The result of this is a dislocation between the ETF valuation and the tradable price of the ETF leading to a perceived premium or discount.

Dispersion between ETF valuations and tradable ETF prices can be accentuated in times of extended market volatility. To put this into context, during the COVID-19 crisis there were material dislocations between official fund NAVs and market prices, especially in the corporate bond and high yield space where ETFs were seen to be trading at heavy discounts between 2% and 7% below NAV. ETFs acted as a tool for price discovery where in some instances a price in the underlying bonds was not obtainable. The DWS paper from April 2020 - 'ETF Trading in Volatile Times (https://www.dws.com/en-fr/insights/investment-insights/etf-trading-in-volatile-times/)' provides a more in dept analysis of this topic, in addition to exploring other key trends seen during the COVID-19 period.

Fixed Income ETF Secondary Market Liquidity

The fundamental driver of ETF liquidity is based upon the liquidity of the underlying securities. The portfolio optimisation mechanism for fixed income ETFs allows portfolio managers to replicate exposure using the most liquid and tradable bonds within the underlying index reducing the weight of less liquid securities whilst maintaining focus on minimising tracking error. A 2021 FCA Research Note[11] demonstrates ETFs with less liquid underlying's have a higher Annual Turnover Ratio ("ATR") with proportionately larger trading activity in the secondary market relative to AUM demonstrating how ETFs create an additional and alternative source of liquidity particularly for those underlying assets that are more difficult to trade directly.

It is important to understand that whilst fixed income ETFs have recently experienced significant growth, ETFs remain a small portion of the overall bond market with global fixed income ETF AUM representing 1.3%[12] of the global fixed income market size. Furthermore, ETFs remain one of the many access tools investors can use to implement investment strategies with the price of ETFs determined by the value of underlying assets.

The global COVID-19 pandemic fuelled a liquidity crunch in fixed Income markets, which was the most severe stress test fixed income ETFs have had to face. As spreads widened to levels not seen since the financial crisis and underlying bond market liquidity dried up, fixed income ETFs emerged as a superior wrapper for liquidity and price discovery.

DWS analysis[13] of the secondary to primary market ratio for fixed Income ETFs found that when the liquidity in underlying bonds dried up, the ratio increased from its 2019 average of 1.3x to 3.5x in March 2020, indicating that for every 1 EUR traded in the primary market, 3.5 EUR traded in the secondary market. It is important to understand that while a primary market trade of an ETF triggers trading in the underlying bonds, a secondary market trade does not necessarily. The increase in the ratio during a period of market stress illustrates how the secondary market liquidity of an ETF was able to reduce the pressure on the underlying bonds as market participants were able to offset buys against sells whilst the primary market remained open allowing APs to access the primary market when required.

ETF Execution

When trading ETFs there are several options, suiting all permutations of investor preferences for speed, price, and efficient execution.

OTC Trading (NAV)

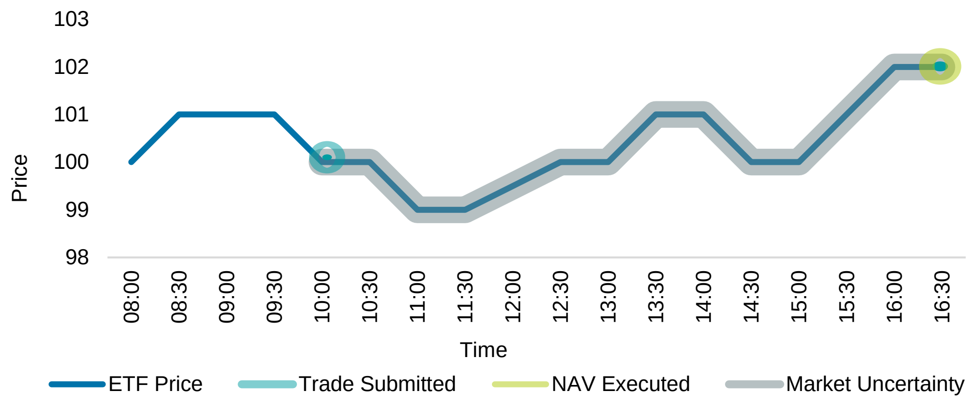
NAV trading is used to target the official NAV of an ETF. NAV trading can bring a cost-effective method of execution without time sensitivity. If investors plan to trade into a long-term position without any intention of intraday trading or execution from trading news, NAV execution may be the most suitable. NAV trading will involve brokers providing investors with fixed prices for execution, which is highly transparent,

[11] Source: Financial Conduct Authority. January 2021. Research Note - Fixed Income ETFs: secondary market participation and resilience during times of stress.
[12] Source: DWS, ETFBook.com. As of 3 October 2023. Converted from USD to EUR using WMCO 4pm, as of 3 October 2023.
[13] Source: DWS Investment GmbH. April 2020. Investment Insights – ETF Trading in Volatile Time.

particularly for investors who are benchmarked to NAV. This will generally be shown in reference to a basis point cost versus the official NAV publication.

Figure 9 demonstrates the execution of a NAV trade. As shown, the ETF will have live prices during the trading day and such prices will move in line with the implied fair value of the ETF. Where an investor wishes to trade versus NAV, they will submit an order to a broker before the fund cut off time. The broker will accept the order and then hedge the order verses the NAV benchmark, i.e. 16:15 in the below diagram. It is important to note, that although the client order was submitted at 10:00 and accepted by the broker, given that the benchmark is the NAV, the actual exposure for the investor to the market will not be until 16:15 when the NAV is. Therefore, the client has an element of time risk that needs to be considered from when the order is placed to when it is executed.

Figure 9: OTC Trading – NAV



Source: DWS International GmbH. As of 3rd October 2023. The image is for illustration purposes only.

NAV Trading in Volatile Markets

Naturally, during times of market volatility, spreads in ETFs will widen reflecting changes in the behaviour of the assets in which they track. The fixed income market does not operate like the equity market. It is not standardized, there is no official exchange market and there is no closing auction period. In addition to this, bonds do not have the same transparent price visibility as equity shares. The fixed income NAV valuation process is somewhat theoretical but not necessarily tradable and thus NAV execution can bring pricing premium during volatile markets.

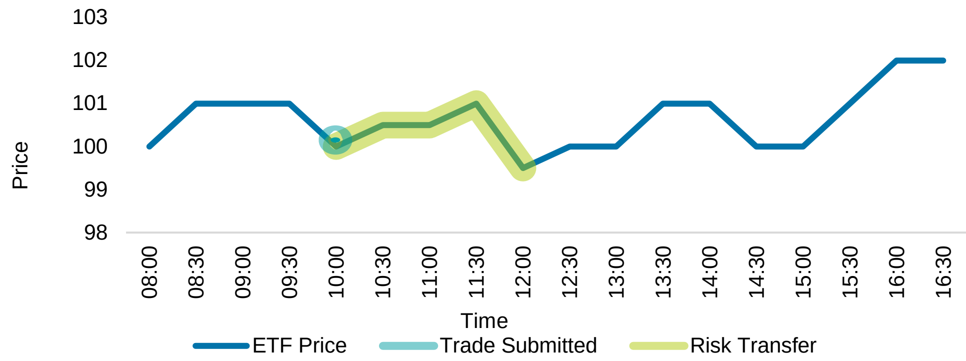
Uncertainty of where index providers will mark underlying bonds and where bonds do not have closing auctions, brokers hedging fixed income ETF NAV trades can only target and not guarantee to achieve execution prices equal or near to underlying bond valuations. This subsequently leads to additional risk for ETF brokers. For example, if a broker is selling a European Credit ETF to an investor with an index valuation time of 16:15 LDN time, the broker will target purchasing the underlying bonds at this time to hedge the trade. However, actual trading prices of the hedge may not be aligned to the valuation of the index provider bringing additional risk for the broker. This slippage risk that does not exist for most equity ETF NAV trades can in turn cause NAV trading to experience wider spreads than risk trading for fixed income ETFs. Therefore, during volatile market conditions OTC risk trading can prove to be more favourable where brokers have more granular transparency on where they can trade a live hedge. Further details on OTC risk trading are explained below.

OTC Trading (Risk)

Trading via risk gives an investor immediate exposure to their chosen ETF through live pricing. OTC risk trading is a simple method of execution and has become the most popular method of trading UCITS ETFs particularly with the rise of request for quote ("RFQ") venues in recent years. The investor asks the broker for a price via their chosen communication medium and the investor has the choice to ask for a bid, offer or both. It is best practice for investors to ask for a two-way price to avoid giving away their directional intention to ensure the quote they receive does not lead to directional bias.

Looking at Figure 10, the investor submits a risk pricing request at 10:00. The broker provides pricing and the point at which the investor executes the trade with the broker, they will have exposure to the ETF. The risk is then transferred to the broker who has committed the capital to the trade and will work on their hedging strategy. During the hedging process the market can move in favour of the broker or unfavourably. The important factor to note here is that due to this risk the broker will price in the risk premium.

Figure 10: OTC Trading – Risk



Source: DWS International GmbH. As of 3rd October 2023. The image is for illustration purposes only.

One of the key benefits of an ETF is the ability to trade at almost any time. The wide range of APs and brokers typically interacting in UCITS ETFs allows extensive liquidity. This method of execution is beneficial for investors who are time sensitive and endeavour to obtain market exposure immediately. Furthermore, the nature of risk trading allows the investor to book the trade immediately without any requirement to wait for the official NAV calculation.

Agency Execution

An agency order involves an investor giving an order to a broker with the agreement that the broker will execute the order and pass the execution fills back to the investor. There are multiple ways in which an agency order can be executed, all of which are appropriate according to the underlying market conditions. One of the main benefits of agency execution is the ability to trade the order over an extended period, reducing immediate market impact and subsequent risk premium. Furthermore, agency execution allows for a tailored approach with the aim to work on an execution strategy best suited to the investor's investment objectives.

Exchange Trading

Investors can also choose to trade ETFs on the global exchanges with the use of algorithms. During the European trading hours, designated market makers provide exchange bid and offer prices to provide liquidity to ETFs. One of the key differences between exchange execution and OTC risk execution is the process of achieving the final fill price. As explained above, when an investor asks a broker for an OTC risk price that is the final price they achieve. In the case of exchange execution, when an investor executes an order, they have various options in which they achieve their execution, but the key distinction is that they will not know their final price at the outset.

Conclusion

Fixed income ETFs continue to grow as a core wrapper within investors asset allocation toolbox. The volatile markets experienced during 2022 have reiterated the benefits of fixed income ETFs and the requirement for investors to have liquid vehicles within portfolios. Their continued popularity is evidenced by the sustained growth of both average daily volume and assets under management. Whether investors are using ETFs as a core portfolio component, cash management tool, diversification or for tactical allocation, as volatility continues along with macroeconomic uncertainty investors should continue to consider the ETF wrapper as an attractive investment vehicle to fulfil their investment objectives and liquidity management requirements.

The Authors

Jamie Hartley

European Head of Capital Markets

jamie.hartley@dws.com

Connor Hodgson

ETP Capital Markets Analyst

connor.hodgson@dws.com

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As of 23.11.23

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