Fixed Income ETFs

Fact vs. Fiction

Are fixed income ETFs:

1. Distorting the market?
2. Difficult to sell in volatile markets?
3. Causing investors to be overweight to the most indebted companies?
4. More likely to underperform active managers in volatile markets?
5. Only useful when tracking the broadest, simplest bond indices?
6. Fundamentally inefficient because bond indices have too many constituents?
7. Difficult for investors to trade and accurately price?
8. Exaggerating declines in the bond market?

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- Our dedicated Capital Markets teams provide 24-hour coverage across global markets, offering enhanced liquidity and cost-efficient* trading strategies.
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$421 B**
in fixed income assets

24 Years
of bond index investing

100+
individual fixed income index strategies

* Frequent trading of ETFs could significantly increase commissions and other costs such that they may offset any savings from low fees or costs.
** Source: State Street Global Advisors, as of 30 June 2020.

Content

Fiction #1

The fixed income ETF market has become so large that it distorts the bond market.

Relative Market Sizes

Fact

Despite their rapid growth, fixed income ETFs still only represent 2% of the total investable fixed income universe and 4.4% of the US high yield market.

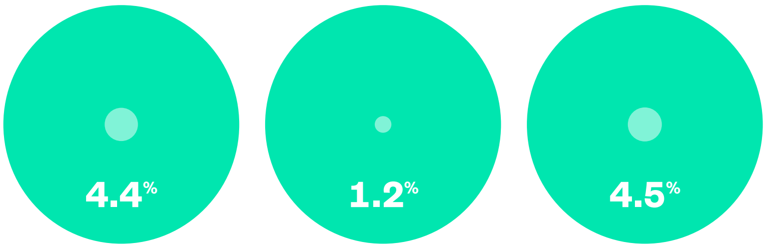
The fixed income ETF market is still relatively young — the first fixed income ETF launched in 2002. Only 10 years ago, assets under management in fixed income ETFs represented $48 billion and circa 1.9% of the global fixed income fund industry, according to Morningstar. Meanwhile, ETFs accounted for a mere 0.2% of the investable global fixed income universe as measured by the Bloomberg Barclays Multiverse Index, which includes investment grade and high yield bonds issued in developed and emerging market currencies.

At 30 April 2020, fixed income ETFs represented 12.4% of the global fund market with $1.2 trillion in assets. While the growth of these instruments has been robust, they still 'only' account for 2.0% of the total investable fixed income universe. Flows have been strong but they have not occurred solely at the expense of other types of existing investment vehicles. They have grown the overall market.

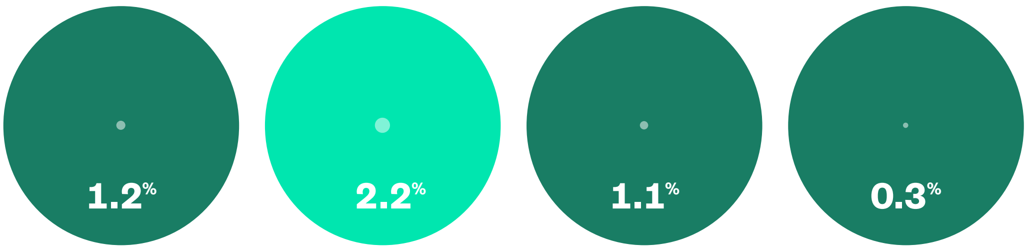
When it comes to their impact on market prices, these instruments still represent a relatively small portion of sub-asset classes within the fixed income market. Figure 1 highlights some examples of the difference between how much ETFs represent of the actual investment universe and Figure 2 shows how much they account for in terms of trading activity.

Figure 1
Relative Sizes of ETF AUM vs. Total Market AUM ($M)

	US High Yield Corporate Bonds	US Investment Grade Corporate Bonds	US Investment Grade Floating Rate Notes
Market Size (M)	$1,278,000	$9,597,800	$470,025
ETFs AUM (M)	$55,715	$110,858	$20,935



	US Municipal Bonds	EM Bonds	US Government Bonds	US MBS
Market Size (M)	$3,854,500	$3,161,000	$16,673,300	$10,333,600
ETFs AUM (M)	$47,667	$69,227	$188,016	$36,071



Market Size Data: SIFMA (as of end 2019; US IG Corporate Bonds, US Government Bonds, US Municipal Bonds), Bloomberg (as of end 2019; US High Yield Corporate Bonds, US IG FRNs, EM Bonds, US MBS), The Loan Syndications & Trading Association (as of end 2019; US Senior Loans), ETF AUM: Bloomberg Finance, L.P., (as of end 2019). Average Daily Volume (3M ADV) Bond Trading: Bloomberg Finance, L.P. (as of end 2019), EMTA (as of end 2019; EM Bonds), SIFMA (as of end 2019; US Government Bonds, US Municipal Bonds, US MBS); BondCliq (US IG FRNs, as of end 2019). Average Daily Volume (3M ADV) ETF Trading: Bloomberg Finance, L.P. (as of end 2019).

Trading Volumes

Fact

In some fixed income segments, ETFs are becoming an important source of additive liquidity to their respective markets.

ETFs generally account for <5% of assets in almost all segments of the broad USD fixed income universe; in many cases, however, these instruments represent a higher proportion of the traded volume.

Thus a fixed income ETF can be a source of additive liquidity to those markets. The stock exchange becomes the venue where a variety of investor types congregate to position their portfolios and express a fixed income beta exposure in either direction.

This two-way flow in shares of an ETF typically results in muted impact on the underlying market (for example, an ETF consisting of senior loans or high yield bonds may see only $1 of net share creation or redemption for every $6-8 of secondary trading value).

In high yield, ETF trading may have begun to supplant volumes in synthetic products such as total return swaps and credit derivative swap indices (CDX); investors often prefer the funded exposure due to its performance profile, which better matches the cash bond market and avoids the multiple basis risks that exist with a synthetic exposure.

Figure 2
3-Month Average Daily Volumes: Bond Trading vs. ETF Trading

	US High Yield Corporate Bonds	US Investment Grade Corporate Bonds
3M ADV: ETF Trading (M)	$3,870	$3,633
3M ADV: Bond Trading (M)	$6,325	$31,066

Market Size Data: SIFMA (as of end 2019; US IG Corporate Bonds), Bloomberg (as of end 2019; US High Yield Corporate Bonds, US IG FRNs), ETF AUM: Bloomberg Finance, L.P., (as of end 2019). Average Daily Volume (3M ADV) Bond Trading: Bloomberg Finance, L.P. (as of end 2019), Average Daily Volume (3M ADV) ETF Trading: Bloomberg Finance, L.P. (as of end 2019).

Fiction #2

Fixed income ETFs are not sufficiently liquid, and investors can run into trouble when many try to redeem at the same time.

Fact

a) A fixed income ETF's liquidity is at least as liquid as the underlying market that it tracks.

b) The ability to invest in an ETF via the primary and/or the secondary market can provide greater liquidity compared with alternative approaches to bond investing, such as index and actively managed mutual funds.

The unique structure of a fixed income ETF — which packages a diversified portfolio of bonds into a single, tradeable equity — provides two sources of liquidity for investors. These two sources — 'primary,' which can be accessed via an authorised participant and 'secondary,' which can be accessed directly — define a fund's overall liquidity profile.

Primary market An ETF is a portfolio of individual securities — i.e. equities or bonds — that form a single fund. The shares of this fund are publicly listed and trade on an exchange (the secondary market). Normally, investors buy or sell ETF shares via the secondary market. However, if their buy or sell order is too large to trade on the exchange, an alternative approach could be for the investor to approach a market maker who in turn could trade via the primary market.

The size of the investor's order and the trading volumes of the ETF will determine whether the secondary market can accommodate the trade. If the investor could only trade via the secondary market, a large order may take time to execute, meaning they would be exposed to market risk for an extended period.

To counter this potential problem, ETF issuers partner with a pool of authorised participants (APs) who, through managing the primary market, ensure that investors can buy or sell shares in the ETF in various market environments. These APs are also known as 'market makers': their role is typically carried out by investment banks or specialist trading firms. APs are able to create new shares for the ETF in the case of a large buy order ('creation') and redeem existing shares in the case of a large sell order ('redemption'). This intraday mechanism is called creation/redemption and means that ETFs are able to accommodate large buy or sell orders beyond the liquidity provided by the secondary market.

This creation/redemption mechanism facilitates instantaneous orders executed in size and at a price level that the underlying bond market supports. For example, if an AP has the ability to buy and sell $1 billion worth of US Treasuries, that AP should be willing to make an equivalently sized market in a US Treasury ETF — even if the fund has a low average daily trading volume and small AUM. The liquidity of a fixed income ETF is therefore at least equal to the liquidity of the underlying bond market.

Secondary market The secondary market is simply the exchange where ETFs are listed and traded. An ETF's secondary market liquidity can be assessed by looking at its average daily trading volume and spread (i.e. the difference between the offer price and bid price, which are the prices at which investors can buy or sell the fund), as well as premiums and discounts to net asset value.

As outlined above, the full scale of an ETF's liquidity can only be accurately measured when the primary market's liquidity is also included.

Case Study
US High Yield

US high yield liquidity is occasionally highlighted as a potential area of concern for ETFs in times of market stress. However, analysis of the market's trading volume reveals that ETFs actually complement the broader market's liquidity profile.

Figure 3 below shows historical high yield market trading volumes and illustrates how both types of ETF liquidity — primary and secondary market volumes — are dwarfed in comparison to the broader high yield cash market.

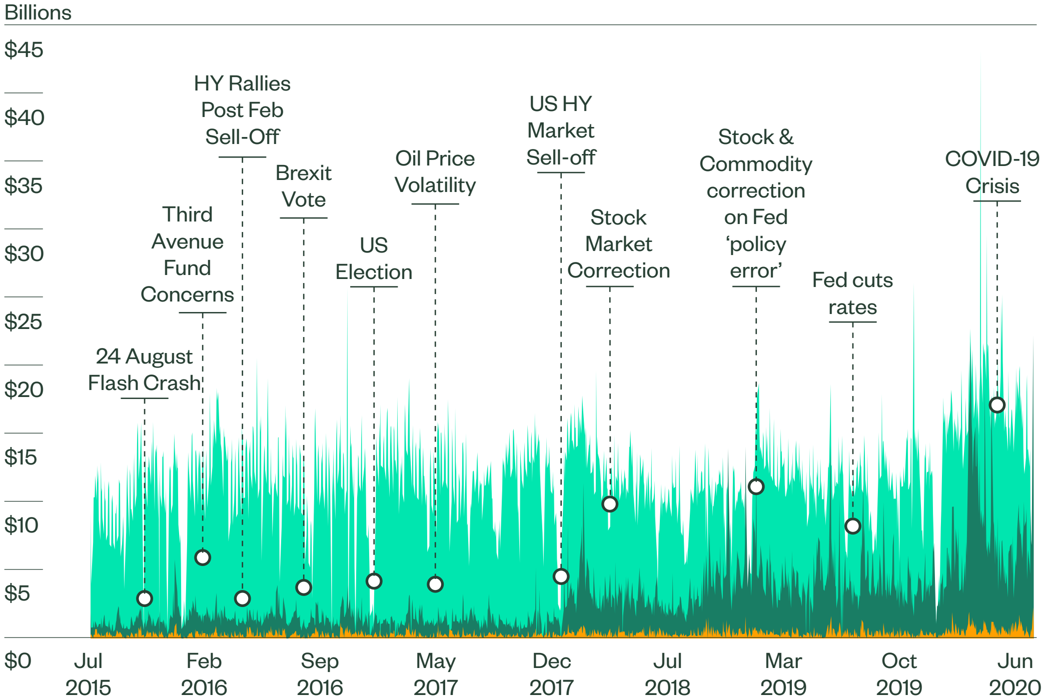
This chart demonstrates how, in periods of market stress, ETF secondary trade volume tends to spike but the primary market volume remains relatively subdued in comparison. This suggests that, even in times of market stress, there is sufficient secondary market ETF liquidity for investors to trade without accessing the primary market and subsequently the broader market. It also highlights that, if investors tried to redeem at the same time, the primary ETF market could be used as a liquidity source, especially given the scale of trading volume in the US high yield cash market.

Figure 3
High Yield Volume vs. High Yield ETF Primary Market Activity

High Yield Cash Volume ($)

High Yield ETFs Secondary ($)

High Yield ETFs Primary ($)



Source: Bloomberg Finance L.P., as of 30 June 2020.

How does the liquidity of a fixed income ETF compare to other approaches to bond investing?

The table below highlights some of the differences between trading ETFs, index funds, active managers and single securities. Fixed income ETFs are the only investment vehicle for the bond market that provides two layers of liquidity and offers transparent, diversified access with intraday pricing.

	Exchange Traded Fund		Index Fund	Actively Managed Fund	Single Bond
Trading venue	On exchange (secondary)	Primary market	Via fund provider, requiring written application	Via fund provider, requiring written application	Over the counter, voice or electronically enabled
How frequently can investors gain access?	Intraday		Typically close of business on trade date	Typically close of business on trade date	Intraday
Trade notification period	None		Typically 1 to 3 days	Typically 1 to 3 days	None
Minimum investment size	1 share		Fund's minimum investment size	Fund's minimum investment size	Bond's minimum price/ minimum increment
Can investors see intraday pricing?	Yes		No	No	Yes
How concentrated is the portfolio?	Diversified		Diversified	Greater concentration	Single security

Fiction #3

When using a fixed income ETF, the investor is overweight the most indebted — and therefore the riskiest — companies.

Fact

a) The ability to issue debt is directly related to a company's overall financial strength.

b) An ETF's index construction inherently provides diversification benefits and often employs constituent capping to mitigate concentration risks.

In addition to the broad diversification afforded by indices, large issuers of debt are also companies with substantial asset bases and revenue profiles. This provides the ability, or the capacity, to pay and service the debt on the firm's balance sheet. Focusing only on the amount of debt an issuer has in an index overlooks a few key variables.

Indices are rules based, focusing on diversification and liquidity for ensuring investability. As a result, not all of an issuer's debt is included in an index, which paints an incomplete picture of the firm's overall indebtedness. For instance, an issuer can have short-term liabilities that do not qualify it for inclusion in an index, or debt financing secured in subordinated form, or financing denominated in a different currency.

As shown in Figure 4, the ranking of the most indebted firms, based on the amount of debt included in the Bloomberg Barclays Euro Corporate Bond Index, is very different to the ranking of the firm's total short and long debt overall.

Figure 4
Top 10 Holdings in the Bloomberg Barclays Euro Corporate Bond Index

	Volkswagen	BNP Paribas	Daimler	Credit Agricole	Banque Federative du Credit Mutuel	Rabobank	Santander Bank	Orange	BMW	JPMorgan Chase
Weight in Index (%)	2.11	1.72	1.30	1.28	1.24	1.17	1.12	1.09	1.05	1.02
Rank by Debt Included in Index	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Rank by Short-Term and Long-Term Debt	56th	38th	66th	32nd	58th	64th	31st	141st	78th	26th
Market Cap EUR	70,614	45,118	39,327	23,972	Co-op	Co-op	36,793	27,850	36,991	270,641
12M Net Sales EUR (Millions)	253	45	173	20	Co-op	Co-op	50	42	104	106

Source: Bloomberg Finance L.P., as of 31 March 2020. The information contained above is for illustrative purposes only. Weights are as of the date indicated, are subject to change, and should not be relied upon as current thereafter. Diversification does not ensure a profit or guarantee against loss.

A high level of debt for an issuer has little to do with the company's capacity to pay or credit worthiness.

Firms with a larger debt load do not pose greater risk for investors than firms with smaller debt loads. If it were the case that large debt loads equated to greater credit risk, the corporate bond market would exhibit a linear relationship between credit ratings and debt outstanding. However, credit rating agencies consider numerous factors besides amount of debt, including capacity to service debt.

Fiction #4

Fixed income ETFs underperform active managers when markets are volatile.

Fact

During seven systemically important volatile markets from the past 20 years, index-based fixed income exposures would actually have outperformed, on average, 73% of active managers.

SPDR ETFs analysed seven significant market events over the last 20 years, representing periods of volatility or turbulence in the bond markets. These events included the Global Financial Crisis, the Greek Debt Crisis and the latest bout of market stress caused by the global COVID-19 pandemic, among others.

The analysis focused on the performance of active managers within the Bloomberg Barclays Euro Agg Bond Total Return index ('the Agg'). The findings contradict the fiction that fixed income index-based exposures underperform active strategies.

As shown in Figure 5, the Agg outperforms the median manager in all periods except the 2013 Taper Tantrum. In fact, during four of the volatile events, including the latest market turmoil, the index ranked in the top quartile. The belief that index-based exposures cannot withstand market volatility is clearly a misconception — the Agg outperformed more active managers than it underperformed.

So why have index-based strategies proven so resilient? During a downturn, spreads widen and default rates increase, while the flight to safety means that Treasuries are in demand. Unfortunately, any active manager with an overweight to credit, and therefore a higher credit beta, may be negatively impacted as default rates spike. Managers who outperform the benchmark during an upmarket tend to be unable to time a market downturn and reduce risk as all investors are leaving the party. These active managers' credit exposure hurts performance during risk-off environments. Another view is that active strategies tend to be more concentrated whereas indexing provides a broader exposure, which potentially lowers idiosyncratic risk during market volatility through diversification.

Lastly, this analysis does not preclude the implementation of both active and index exposures for efficient portfolio construction. Looking through a longer-term lens, there is clearly a place for both: index-based exposures can augment active exposures, thus benefiting long-term performance while lowering fees.

* Source: Morningstar, as of 30 April 2020.

Figure 5
Performance During Market Turbulence: Index vs. Active Managers

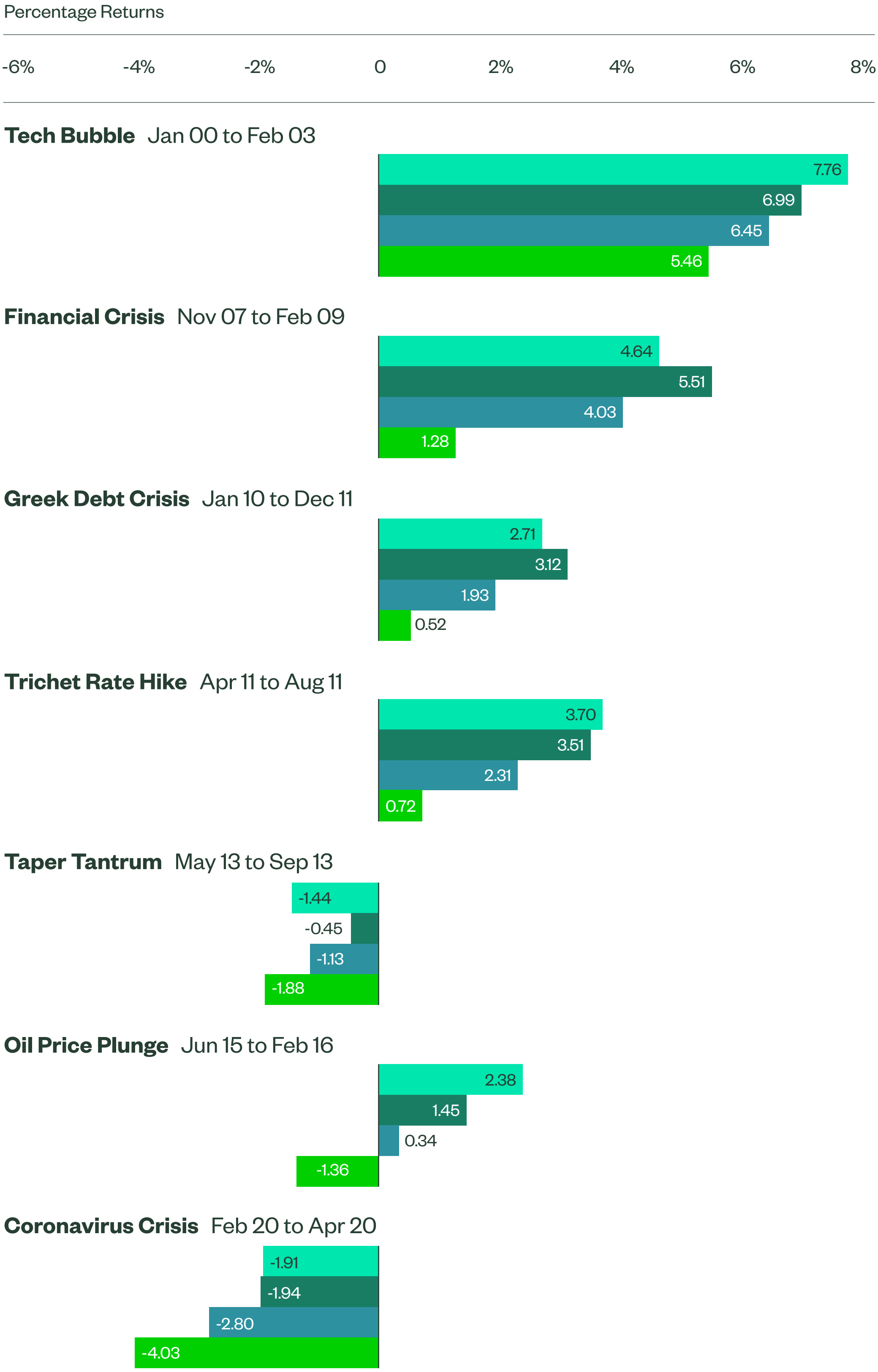
Bloomberg Barclays Euro Agg Bond Total Return

Manager Universe
Morningstar EUR Diversified Bond Category

Top Quartile

Median

Bottom Quartile



Source: Morningstar Direct as of 30 April 2020. The information contained above is for illustrative purposes only. Past performance is not a guarantee of future results. Characteristics are as of the date indicated and are subject to change.

Fiction #5

Fixed income ETFs are only useful for the largest, most straightforward bond exposures. For niche areas, such as emerging market debt, active managers provide a better return.

Fact

A high percentage of active managers in the emerging market debt space have underperformed their benchmark each year since 2013.

In the past, many investors believed an active approach served as the best way to invest in emerging market debt (EMD). That belief has been based on a few assumptions, for example that indexed exposure is too expensive to be effectively implemented in emerging markets. Additionally, many investors view EMD as an inefficient market where active managers are needed to identify and extract value, and to avoid weak segments of the market.

The reality is different. EMD now offers much greater liquidity and diversity, and the majority of active managers fail to outperform their benchmarks over the longer term. While active managers have struggled to consistently deliver excess returns, indexed strategies have evolved and now possess sophisticated techniques capable of delivering the return of the benchmark in a cost-efficient[1] manner.

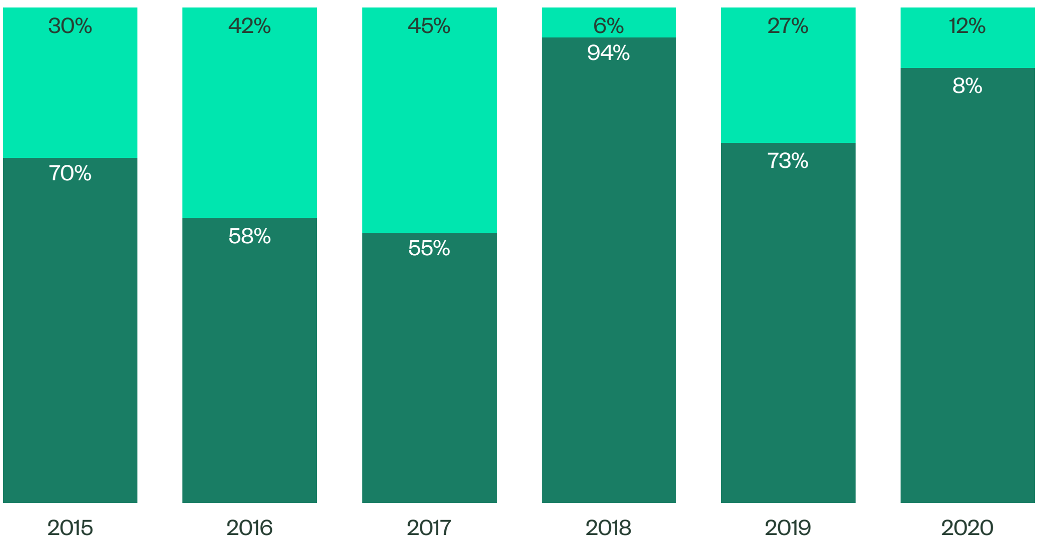
To highlight this performance gap, we analysed the active managers in the Morningstar database that track the JPM GBI-EM Global Diversified Index (GBI-EM). As illustrated below, while some active managers outperform their benchmarks, the majority have failed to do so over the longer term. This pattern of underperformance indicates that many active managers consistently struggle in the EMD space — no single year is to blame.

Figure 6
Active Manager Performance in Emerging Market Debt (%)

Underperforming Managers

Outperforming Managers

Universe
Morningstar JPM GBI-EM Global Diversified Index



Source: Morningstar, as of 30 April 2020. The information contained above is for illustrative purposes only. Past performance is not a guarantee of future results.

[1] Frequent trading of ETFs could significantly increase commissions and other costs such that they may offset any savings from low fees or costs.

Fact

An ETF's diversification can help to mitigate political and sentiment-driven events, which are difficult to predict.

Figure 7 below shows active manager underperformance during periods of heightened country market risk and volatility. There seems to be a correlation between market underperformance and active manager underperformance. The correlation looks most acute in the local currency universe, where the worse the performance of the index, the higher the percentage of active managers that underperformed.

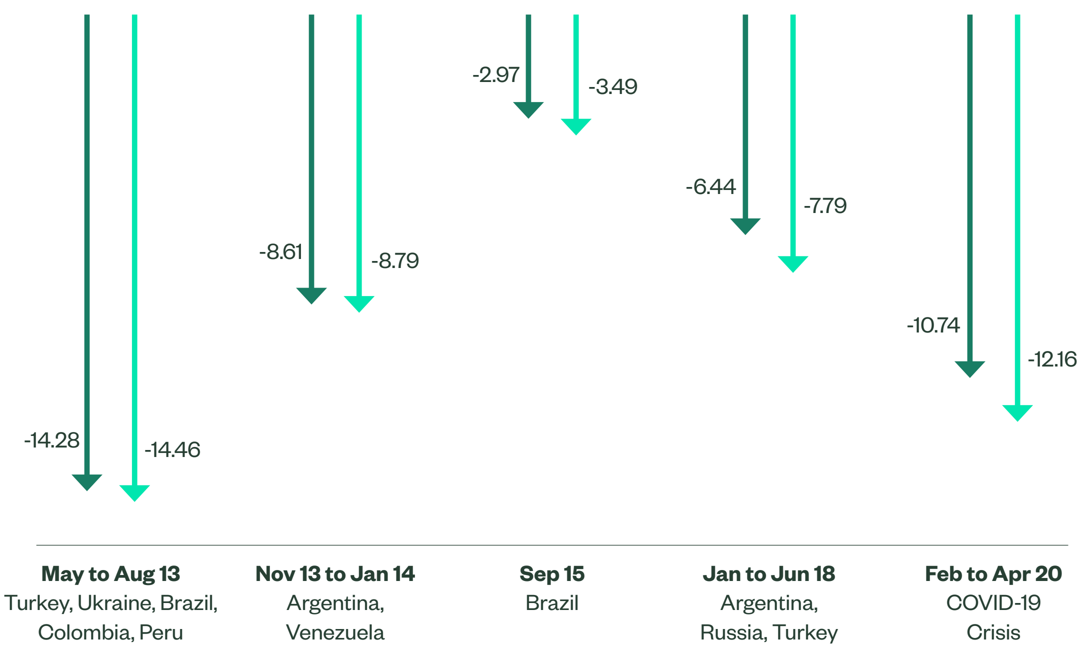
In local currency debt, foreign exchange (FX) is the short-term performance driver, while local rates are a longer-term driver. Emerging market currencies are typically the main adjustment valve to reflect market sentiment, which means that making the right call, especially in times of heightened market volatility, is particularly difficult. EMD is inherently volatile, and returns often do not reflect fundamentals, as they are driven by investor sentiment and political risk, which are difficult for active managers to predict.

An ETF's diversification can help mitigate potential credit events. Additionally, a credit risk premium can be harvested across the overall diversified exposure to compensate for such events. Having broad index exposure appears to potentially offer investors protection from some of the inherent behavioural biases of active managers and can provide an opportunity for higher returns, despite offering exposure to both stronger and weaker parts of the universe.

Figure 7
EMD Performance During Periods of Higher Volatility (Index vs. Active Universe)

JPM GBI-EM Global Diversified TR USD

Asset-Weighted Active Universe



Source: Bloomberg Finance L.P., as of 30 April 2020. The information contained above is for illustrative purposes only. Past performance is not a guarantee of future results.

Fiction #6

Index investing does not work for bonds because there are too many bonds to index efficiently.

Fact

An index investment manager's objective is to seek to track an index's return with minimal tracking error. The objective is not to hold every bond in the index.

It is generally not possible to hold every bond in an index, given the sheer number of bonds. As an example, the Bloomberg Barclays Euro Aggregate Index contains 5,714 different bonds.* That total includes:

- Euro government bonds
- Bonds from supranational bonds such as Kreditanstalt Fuer Wiederaufbau (KFW)
- Bonds from European corporate issuers
- Securitised bonds
- Euro-denominated bonds from foreign issuers

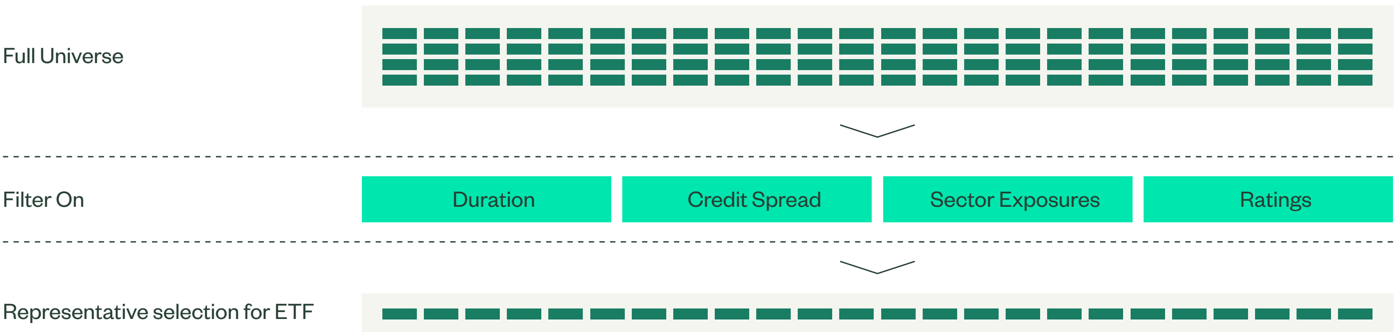
Given the diverse holdings, portfolio managers attempt to replicate the risk characteristics of the index through sampling, rather than by holding every security. This means replicating the duration, curve and issuer credit exposure of the index. Sampling can be the most efficient technique for constructing portfolios, as many broad fixed income indices include a large number of securities, but not all of those securities can be purchased. Coupled with potentially high transaction costs to access illiquid bonds, full replication is not always possible or practical. With a sampling approach, a portfolio manager can seek to build a portfolio with the same characteristics as the index.

At a high level, portfolio managers can generally take two approaches to ensure tracking error remains tight and performance deviations are minimal as a result of exposure differences: top-down or bottom-up.

Approach 1 — Top-down approach

This approach seeks to align the common factors of the ETF to the index, as these are the key variables that drive market beta. The factors include:

- **Duration** Considering how to match on key rate duration exposures.
- **Credit spread** Examining differences between option-adjusted spread, as well as other metrics such as option-adjusted spread duration.
- **Sector exposures** Looking at the sector and industry compositions to manage macro impacts.
- **Ratings** Allocating at the credit rating level.



* Source: Bloomberg Finance L.P., as of 30 April 2020. The above diagram is for illustrative purposes only.

Approach 2 — Bottom-up approach

The bottom-up approach is often used in markets such as high yield or convertible bonds, where portfolio managers typically find more price volatility.

In a bottom-up approach, a portfolio manager tries to identify large or outsized idiosyncratic risks and mitigate them. An example of this is making the decision to purchase one bond instead of another from a company based on its position in the credit curve, a factor that can impact single bond volatility.

As an illustration, we can consider the characteristics of a representative SPDR ETF tracking the Bloomberg Barclays Euro Aggregate Bond Index. As shown below, while the fund may only hold just over 2,000 out of 5,700 securities in the Index, the underlying portfolio matches on other characteristics such as yield, coupon, maturity, option-adjusted spread, spread duration, key rate durations and average credit rating.

Figure 8
Characteristics of a Representative SPDR ETF Tracking the Euro Aggregate Bond Index

	Representative SPDR ETF	**Bloomberg Barclays Euro Aggregate Bond Index**	**Plus/Minus**
Local YTW	0.22	0.22	0.00
Option Adjusted Duration	7.19	7.16	0.03
Option Adjusted Spread	56.96	57.12	-0.16
Coupon	**1.980**	**2.240**	**-0.26**
Bloomberg Composite Rating	A1/A2	A1/A2	–
Key Rate 6M	0.06	0.07	-0.01
Key Rate 2Y	0.65	0.64	0.01
Key Rate 5Y	1.88	1.86	0.02
Key Rate 10Y	2.16	2.15	0.01
Key Rate 20Y	1.45	1.45	0.00
Key Rate 30Y	1.00	1.01	-0.01

Source: State Street Global Advisors, Bloomberg Finance L.P., as of 31 March 2020. The above example is for illustrative purposes only.

Fiction #7

Many investors are not set up to trade fixed income ETFs — the process is difficult, and understanding ETF pricing and liquidity is challenging.

Fact

The complexity can depend on the needs of the investor, but there are a few straightforward ways to access fixed income ETFs.

Investors seeking to trade fixed income ETFs have two primary avenues:

Two main ways to trade Fixed Income ETFs

1	2
Exchange Liquidity	Off-Exchange/ Over-the-Counter (OTC) Liquidity
Requires access to a front-end trading platform and a brokerage or custodial account. The investor would also need a DTC number if self-clearing.	Requires establishing trading relationships with a broker-dealer and/or market maker and account settlement instructions to be able to book and settle individual trades.

Source: State Street Global Advisors, as of 30 June 2020. The above diagram is for illustration purposes only.

When considering whether to trade on exchange or OTC, investors should primarily consider their trade size. As you would expect, similar to single stock equities, larger trade sizes exceeding average daily volume should be handled with greater care and investors should work with a broker-dealer or market maker OTC.

As a guiding principle, if the trade size is typical in the underlying market, it should be acceptable in the ETF. Capital markets teams can serve as a valuable resource for investors to provide guidance on liquidity. These professionals are in tune with the markets and have robust relationships with liquidity providers. Capital markets teams can opine on optimal trading strategies depending on the ETF, the underlying market, the size of the trade and, most importantly, the priorities of the executing trader.

Some investors may wish to understand the components that are used to price an ETF, such as principal, interest, cash and accrued interest/undistributed income. This information is used in NAV construction and is factored into the costs that a broker must bear when creating/redeeming ETF shares, which in turn is embedded in the prices at which they are willing to buy and sell ETF shares.

ETF issuers generally publish daily reports that include all of these components, such that any investor is able to price the ETF. Nonetheless, pricing remains dynamic, as it depends on factors such as time of trade (it is generally better to trade when the underlying market is liquid and the creation/redemption window is open); hedging costs; and dealer balance sheet charges. And of course pricing is also dynamic because bid/offer can vary with trade size.

Fiction #8

During the recent COVID-19 crisis, fixed income ETFs exaggerated the decline in the underlying bond market.

Fact

Market participants gravitated towards ETFs as price discovery and liquidity vehicles.

As fears over the impact of COVID-19 increased in March 2020, market liquidity deteriorated. Initially, risk assets were off-loaded and credit spreads blew out, but panic selling set in as market participants sought safety in cash. Even 'safe assets' such as government bonds and gold were sold as these were some of the few assets that continued to trade. Eventually, even these markets started to become dysfunctional. That was the point at which central banks stepped in, announcing significant asset purchase programmes and calming the market.

ETF prices also corrected lower but there was no evidence of the 'doom loop' of ETF selling (driving underlying assets lower, precipitating more ETF selling) that some in the market had indicated was a risk. There were some significant dislocations between ETFs and their NAVs, resulting in larger than usual premiums/discounts; however, this suggests that the arbitrage band in which ETFs usually trade had widened and shifted to incorporate new information relating to the underlying bonds.

Figure 9
Average Premium/Discount of Fixed Income ETFs

	2019 (%)	Jan 2020 (%)	Feb 2020 (%)	Mar 2020 (%)	Apr 2020 (%)	May 2020 (%)
NYSE Arca						
SPDR ETFs	0.06	0.06	0.01	-0.91	0.05	0.04
ETF Industry	0.07	0.08	0.05	-0.58	0.01	0.04
London Stock Exchange						
SPDR ETFs	0.10	0.07	0.06	-0.37	0.15	0.15
ETF Industry	0.09	0.08	0.05	-0.49	0.24	0.15
Australia Stock Exchange						
SPDR ETFs	0.07	0.08	0.08	-0.75	-0.47	0.02
ETF Industry	0.12	0.11	0.13	-0.96	-0.23	0.06

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

These dislocations have been attributed to the following three factors:

- **Stale or delayed NAV pricing** Fixed income liquidity became challenged and pricing opaque, especially in credit markets. 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 be a better representation of actionable trade prices of the underlying constituents.

- **Less dealer support for corporate bond liquidity** A lack of liquidity in the underlying market meant that the usual process of primary dealers arbitraging ETF price-NAV dislocations was impaired.

- **Discrepancies between NAV strike and ETF closing times** End-of-day NAV prices can be struck at a different time than an ETF's closing auction, resulting in different values — especially in times of high market volatility.

While some may question the price discounts to NAV observed in fixed income ETFs during March 2020, we believe market participants were using ETFs as price discovery tools. The discount in ETFs reflected fair market prices whereby willing buyers and sellers assessed the value of the underlying bonds. Bond prices lagged real-time market sentiment and realistic trading levels. Real-time sentiment, however, was likely reflected in fixed income ETF market prices where the market deemed bonds should trade based on prevailing macro information and the assessment of related risks.

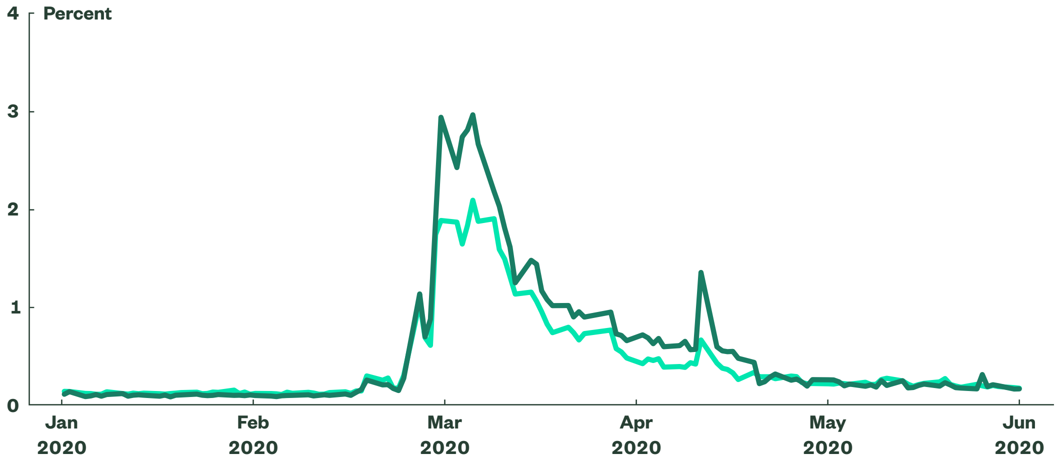
This was also the conclusion of the BIS in its paper, *The recent distress in corporate bond markets: cues from ETFs,*[1] with the suggestion that “ETF prices are more reactive to market developments than the prices of the underlying bonds are, especially at times of market stress.”

Far from driving market weakness, the surge in fixed income ETF trading volumes in March 2020, during a period of steep discounts, suggests that market participants gravitated towards ETFs as price discovery and liquidity vehicles.

Figure 10
Average 5-Day Spread for Physical vs. Synthetic Fixed Income ETFs YTD

Synthetic

Physical



Source: Bloomberg Finance L.P., as of 30 June 2020.

1 BIS Bulletin No 6 The recent distress in corporate bond markets: cues from ETFs, Sirio Aramonte and Fernando Avalos, 14 April 2020: https://bis.org/publ/bisbull06.pdf.

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