iShares®
by BlackRock

ETF Guide

For institutional investors, asset owners, accredited and wholesale investors

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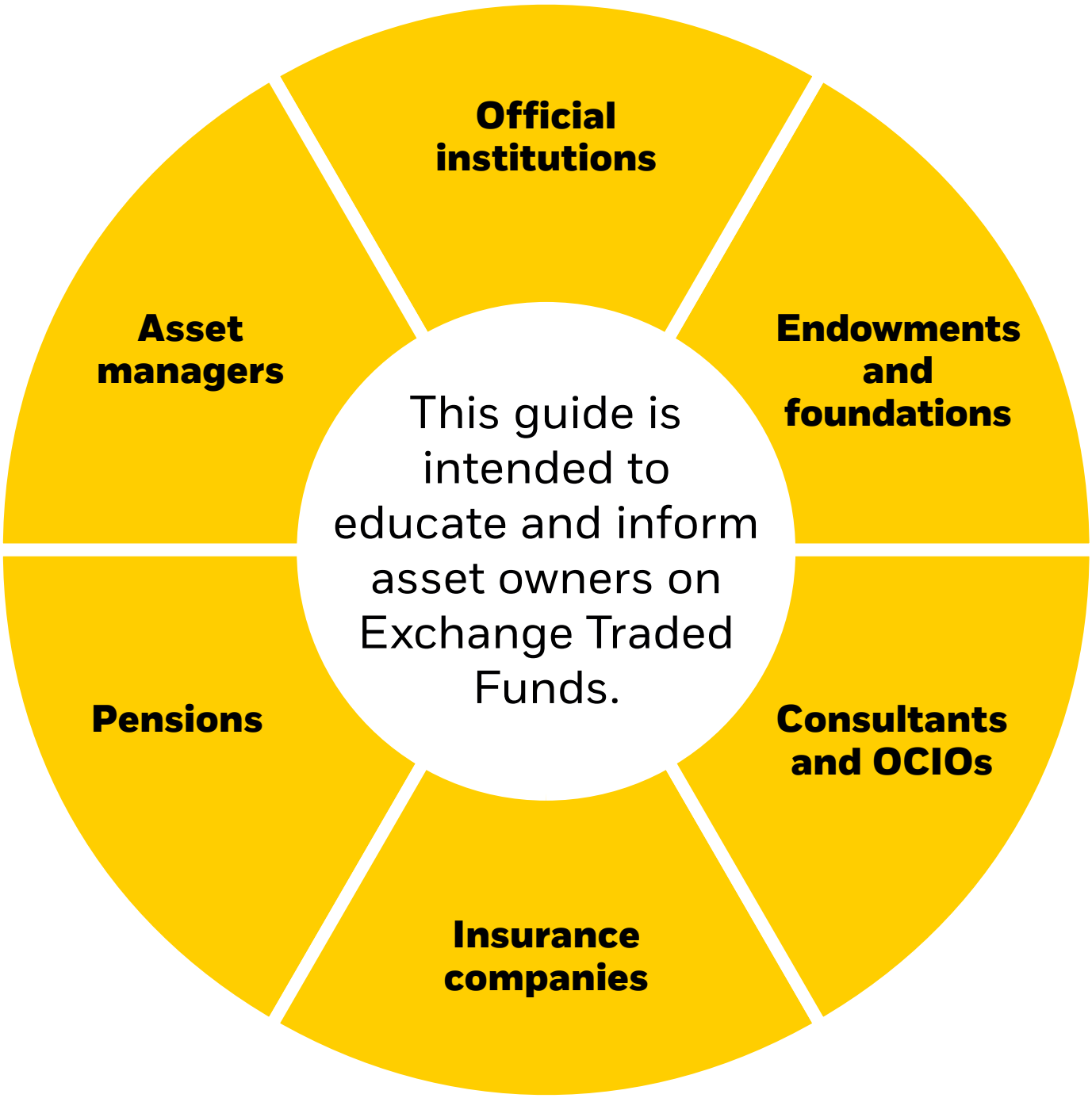
ABOUT THE GUIDE



STEPHEN COHEN
Chief Product Officer for BlackRock

FOREWORD

Exchange traded funds (ETFs) have emerged as one of the most transformative financial innovations of this generation. The advent of ETFs over 30 years ago equipped investors of all types with an efficient way to access a wide range of market exposures, with convenient and efficient execution. Ever since, institutions — including central banks, sovereign wealth funds, pension funds, and many other investor types — have found increasingly innovative ways to integrate ETFs into their investment strategies.

ETFs are revolutionizing how institutional investors, asset managers, asset owners and wealth managers construct their portfolios.

The remarkable thing about ETFs is that they are more than an investment vehicle. Like other technologies, their quality and variety have improved while overall costs to hold ETFs have decreased. Since taking on leadership of our ETF business in EMEA four years ago, and now heading our product teams globally, I've witnessed an acceleration in innovation to meet evolving client needs. In just the past two years alone, our iShares ETF offering has expanded to address more investor challenges than in the previous decade. From iBonds, our fixed-maturity bond ETFs; to launching our first active ETFs and Europe's first actively managed money market regulated ETF, these milestones underscore how ETFs continue to broaden the choice of investment strategies available to investors across index and active.

This growing versatility makes ETFs particularly well-suited for use within customized investment strategies, enabling diverse investment strategies. Whether used for risk management, strategic allocations, or as tools for expressing active views, ETF adoption is still accelerating, particularly among many of the world's largest and most reputable institutions.

Institutions today use ETFs to allocate capital, adjust positions, and manage risk to suit market conditions. Asset owners in particular have discovered that ETFs can help satisfy a wide range of investment objectives by offering diversification, ease of execution, product depth, and liquidity - especially in bond markets. Today, on average 40% of the largest pension funds in each European market use iShares ETFs. And, since the start of 2020, iShares ETF adoption by asset owners in Europe has accelerated with a compound annual growth rate of 29%. A huge part of this growth has been fueled by first time users, representing 25% of growth. [1]

In this guide, BlackRock experts discuss common uses of ETFs and examine the ETF market from the perspective of institutional investors.

Whatever your investment strategy, and whatever your level of ETF usage, this guide will help you better understand how these readily available instruments can be used to achieve your financial objectives.

Diversification may not fully protect you from market risk.

Source: BlackRock, September 2024.

TABLE OF CONTENTS

References to specific ETFs are for illustrative purposes only and included as examples to show how ETFs work. ETFs mentioned may not be registered and therefore not available in your country and/or jurisdiction.

INTRODUCTION TO ETFs

1

1.1 THE BIG SHIFT

With over 30 years of history now in the rearview, ETFs have emerged as one of the most transformative financial innovations of this generation. ETFs offer a wide range of highly precise, transparent exposures with lower costs and intraday liquidity—features that have driven widespread global adoption.

ETFs could be seen as a vehicle for transferring risk, particularly in times of extreme market volatility. This was evidenced by surges in ETF trading volumes during both the global financial crisis and, more recently, the coronavirus pandemic.

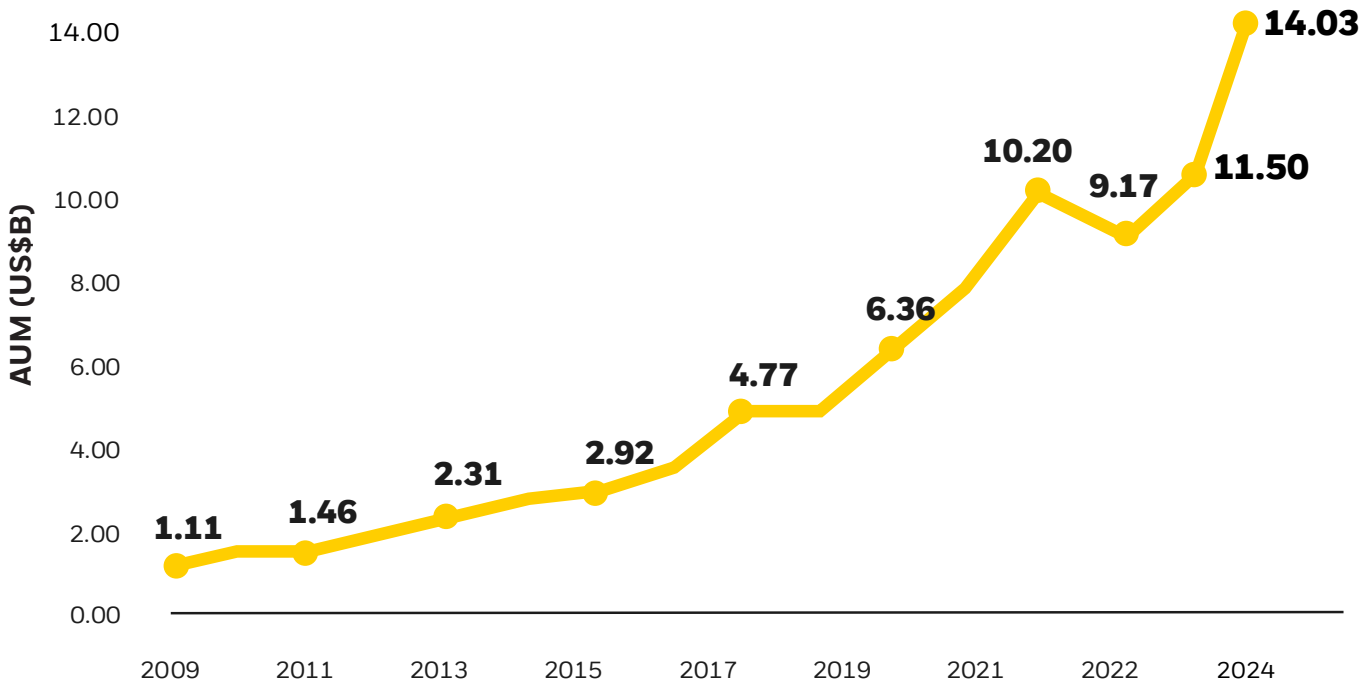
The ETF industry has increased significantly in size over the last decade, growing from $1.1 trillion in 2009 to more than $14 trillion today.[1]

What is an ETF?

ETFs are pooled funds that trade like a stock on a regulated stock exchange. They can provide access to a broad range of index and active investment strategies, in a convenient wrapper.

ETFs take the simplicity and benefits of a listed single stock - such as liquidity, on-exchange trading, and transparency of holdings - and (typically) combines this with the benefits of an open-ended mutual fund –such as instant diversification, cost-efficiency, and the ability to create and redeem fund units.

Global ETF assets under management (2009-2024) [1]



1 Source: BlackRock Global Business Intelligence, 7 January 2025. All $ values are in USD.

1.2 THE BENEFITS OF ETFs

All institutions—including sovereign wealth funds, pension funds, and a broad range of other investor types – share the benefits of ETFs.

Capital at risk. You may get back less than you invested. All tax data is for illustration purposes only and does not represent tax advice. BlackRock does not provide tax advice, the content of the information provided is for information purposes only and is meant to provide investors with an overview as to some of the tax statuses of the iShares funds. This information is not intended to, nor does it, provide specific investment or tax advice, or to make any recommendations about the suitability of iShares for the circumstances of any particular investor. We recommend that clients consult with their own independent tax advisor should they have any further queries about how investing in an iShares fund will affect their tax position.

Liquidity

ETFs trade on-exchange and investors can buy or sell in real time, just like stocks.

Diversification

Many ETFs provide exposure to a variety of underlying individual securities, providing diversification and insulating investors from single security price swings.

Accessibility

ETFs are like passports to numerous asset classes and market exposures (some broad, some specific).

Tax-efficiency

Investors can be insulated from the tax consequences of their fellow shareholders,* particularly when it comes to exploring European UCITS vehicles.
*Tax efficiency may not be available in all jurisdictions.

Transparency

ETFs are straightforward about their investment objectives. They generally disclose holdings daily.

Flexibility

Investors use ETFs for a variety of applications, including long-term core allocations, short-term tactical adjustments, and risk management.

Low cost

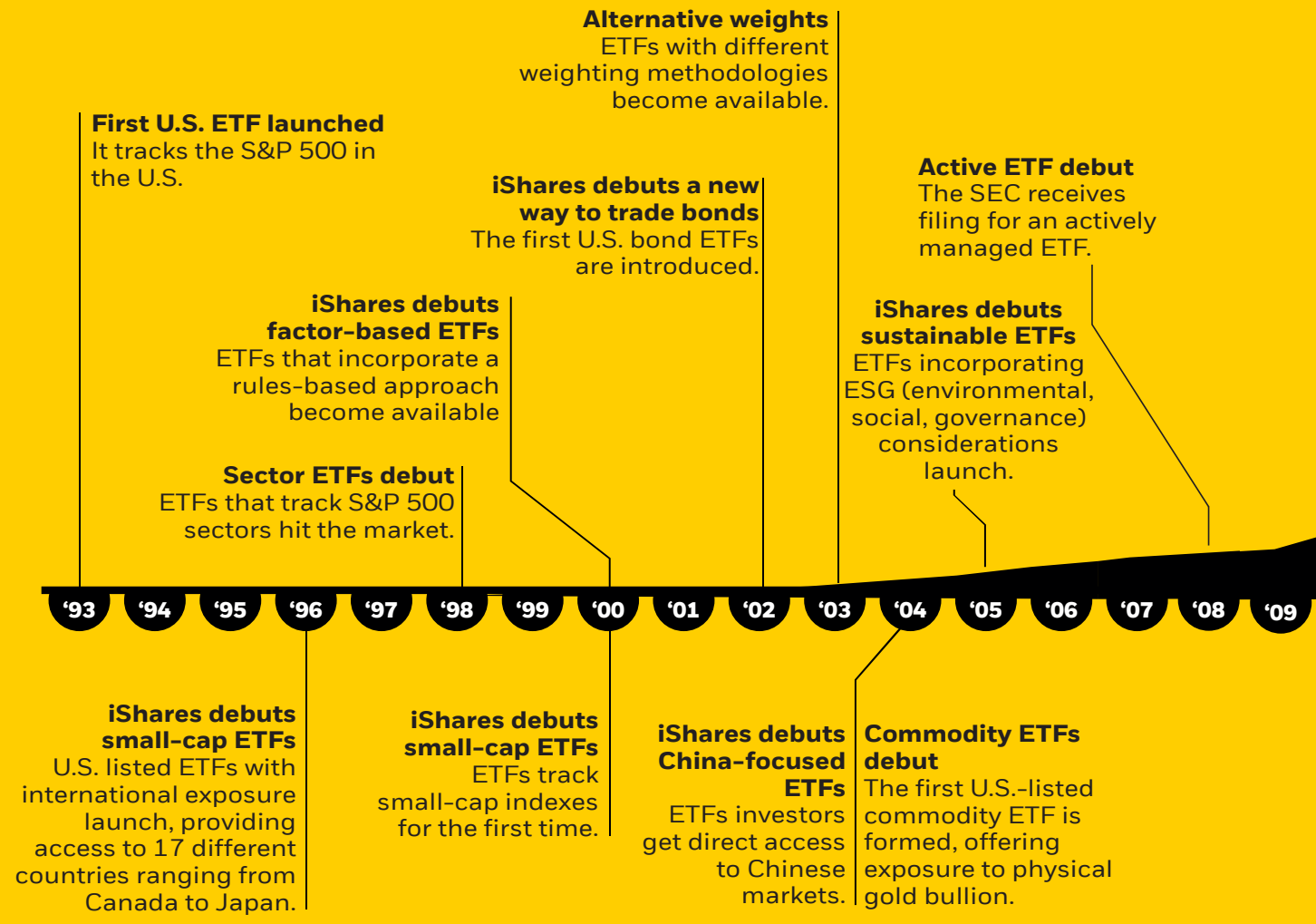
The average ETF management fee is generally lower than an active mutual fund invested in the same asset class. Buying an ETF is often more cost effective than buying the underlying securities individually.

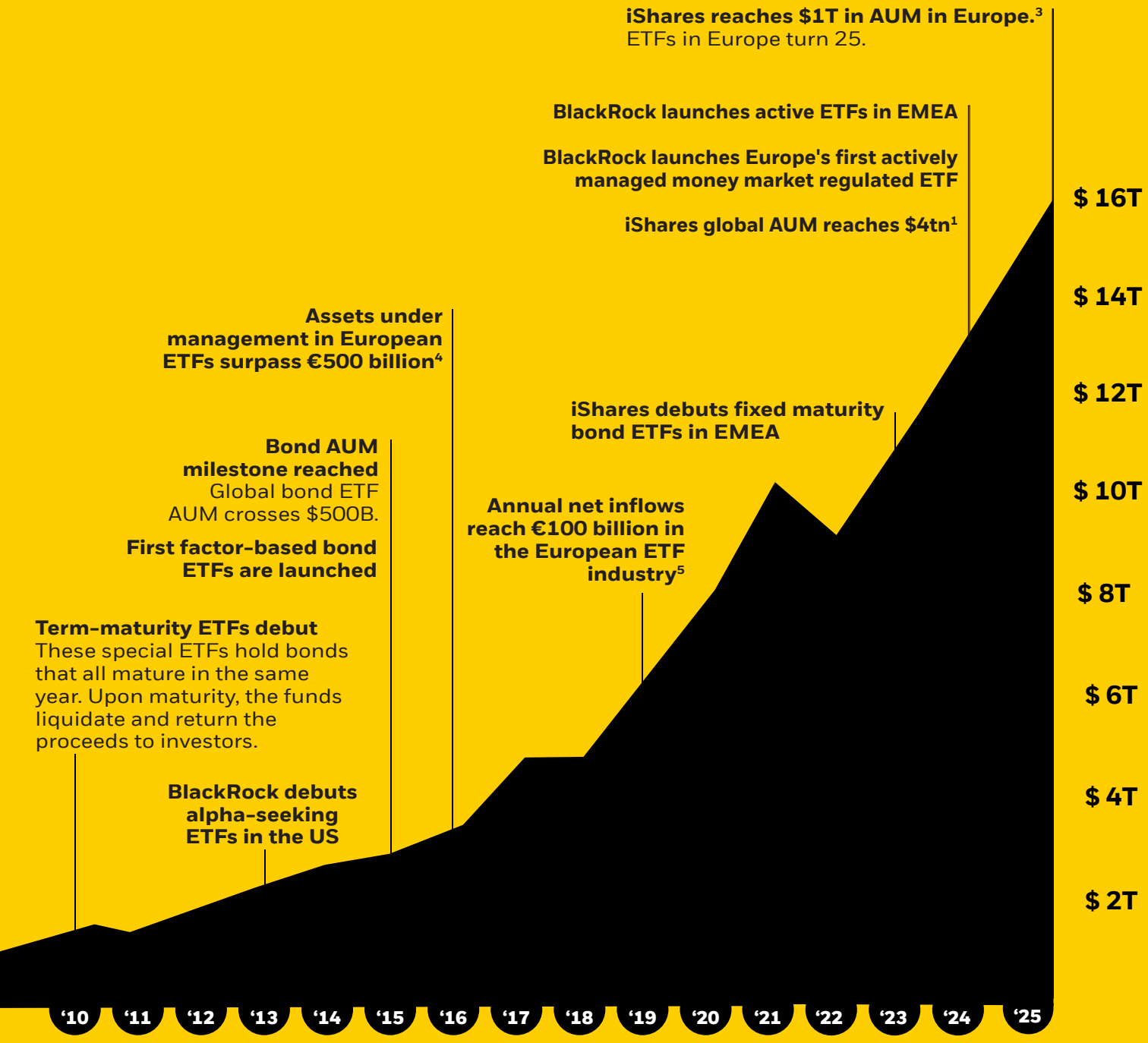
Operational efficiency

ETFs provide immediate exposure to a portfolio of securities in a single line item without the high operational costs and complexities of managing numerous individual securities and derivatives.

1.3 A SHORT HISTORY OF ETFs

Since the introduction of the first ETF, the investment vehicle has grown and evolved to cover almost every aspect of the market.





2025 Snapshot [2]

14,000+
ETFs listed globally

14.67 Trillion USD$
in global ETF AUM

1 Source: BlackRock as at 31 December 2024. All amounts in USD $ trillions.
2 Source: Pre-2009 data from BlackRock and Reserve Bank of Australia, as at March 2011. Post-2009. data from BlackRock Global Business Intelligence, 7 January 2025. All amounts in USD $ trillions.
3 Source: BlackRock as at 31 December 2024. All amounts in USD $ trillions.
4 Source: BlackRock as of 11 April 2024.
5 Source: BlackRock as of 11 April 2024.

1.4 HOW INSTITUTIONAL INVESTORS USE ETFs

Investment managers are using ETFs for a number of reasons, including diversification, ease of execution, product depth, and liquidity.

Tactical adjustments

Over- or underweight certain styles, regions, or countries on the basis of short-term views.

Core allocation

Build a long-term strategic holding in a portfolio.

Rebalancing

Manage portfolio risk in between rebalancing cycles for index ETFs.

Portfolio completion

Fill in gaps in a strategic asset allocation.

Regional diversification

Gain efficient access to foreign markets.

Liquidity management

Maintain exposure in a liquid investment vehicle to meet cash flow needs.

Management transition

Facilitate manager transitions with ETFs.

Risk management/overlay management

Mitigate undesired portfolio risk and hedge asset allocation decisions.

Interim beta

Maintain market exposure while refining a long-term view.

Cash equitization

Put long-term cash positions to work with ETFs to minimize cash drag.

Key terms

Alpha - Excess return of an investment against a market index or benchmark that represents the market

Beta - A measure of how much an investment moves in relation to the market

Cash drag - A performance drag on an investment portfolio as a result of holding too much cash instead of investing in the market

Strategic (SAA) vs Tactical Asset Allocation (TAA)

The vast majority of institutional investors buy and hold broad market exposures (SAA), however we have seen an increasing number of clients that have started using ETFs for Tactical Asset Allocations, especially for more niche exposures like emerging markets and single countries where ETFs can provide additional liquidity and market access benefits.

Key client engagement topics

The three big drivers of Asset Owner specific conversations were: (1) Sustainable and transition investing: we've seen a 30% increase in transition related engagements, (2) Liquidity-related topics: clients looking to replicate a broad index or build a liquidity sleeve for their SAA using ETF and (3) Asset Allocation: driven by clients expressing a change in asset allocation such as high allocation to linkers through ETFs.

1.

Sustainable & transition investing

Institutional investors requiring solutions to address specific sustainable and transition investing objectives.

2.

Building blocks and liquidity

Clients looking to use ETFs for liquidity purposes such as replicating a broad index or an specific exposures including alternative assets which have been critical in the context of past market volatility. Critical in the context of recent market volatility.

3.

Asset allocation evolution

Clients looking to reassess their SAAs in the context of the new market environment. Predominant focus on reallocating to Fixed Income and Alternative assets.

LOOKING UNDER THE ETF HOOD

2

2.1 COMPARING ETFs AND MUTUAL FUNDS

Index ETFs are a type of investment that is designed to track the performance of a specific market index, such as the S&P 500, FTSE 100 or MSCI World Index, while trading on exchanges like a regular stock.

Index mutual funds are pooled investment vehicles managed by professional portfolio managers which are designed to replicate the performance of a specific market index. Mutual funds are bought and sold directly from the fund manager rather than via exchanges.

Active ETFs are investment funds that are managed by professional portfolio managers who actively make decisions about which securities to buy, hold, sell in order to outperform a specific benchmark or achieve a particular investment objective. They trade on stock exchanges, providing investors with the potential combined benefits of active management and exchange-traded funds.

Active mutual funds are a type of investment fund managed by professional portfolio managers who actively make decisions about which securities to buy, hold, or sell in order to outperform a specific benchmark index or achieve a particular investment objective. They are bought and sold directly with the fund manager.

Key characteristics: Mutual Funds & ETFs

	Mutual Fund	ETFs
Buying/selling shares	Once per day via fund company or broker	Intraday on-& off-exchange
Trading fees	Typically none	Yes
Full holdings disclosure	Typically quarterly	Daily
Potential tax advantages	No	Yes*
Minimum investment	May apply depending on share class	None
Liquidity sources	Underlying holdings	ETF secondary market and underlying holdings
Subject to capacity constraints	Yes	No
Suitable holdings	Liquid securities, illiquid securities, derivatives	Liquid securities, derivatives
Security lending possible	Yes	Yes
Unit lending possible	No	Yes
Price valuation	Once a day at valuation point (NAV)	Throughout entire trading day

*30% Withholding tax applied to dividends paid into mutual fund structure by US securities vs. 15% for an Irish-domiciled ETF

2.2 ACTIVE ETFs EXPLAINED

What are they?

Active ETFs are actively managed investment strategies delivered through an ETF wrapper, hence combining the characteristics of traditional active mutual funds, with the access, cost-efficiency and transparency of an ETF.

Active ETFs provide access to investment strategies managed by specialist portfolio managers who utilize their expertise, in an aim to achieve certain investment goals or objectives, such as risk management or regular income, outperforming a benchmark, or providing access to markets that may be hard to access through an index.

Capital at risk. The value of investments and the income from them can fall as well as rise and are not guaranteed. The investor may not get back the amount originally invested.

Why active ETFs? Why now?

The landscape of actively managed ETFs is rapidly transforming, with a marked expansion in capabilities and offerings to meet investors' rising demand. As more innovation has been brought to market through the active ETF wrapper, institutional and individual investors, as well as wealth managers, are increasingly considering ETFs as a viable vehicle for active management, often to complement other fast-growing categories like alternative investing, direct indexing, or traditional mutual funds or ETFs.

Active ETF assets under management reached $900 billion globally through the first half of 2024.[1] Although active ETFs comprise 7% of total ETF assets, they're rising fast, and far outpacing growth for index ETFs.[2]

Investors are increasingly adopting active ETFs for key reasons: the professional investment expertise they offer, their ease of trading, and the transparency they provide.

1. Access to professional investment expertise

Active ETFs provide access to investment strategies actively managed by specialist portfolio managers who use research and data-driven insights and strategies to help investors achieve their goals.

2. Easy to trade

Unlike mutual funds, active ETFs can be traded throughout the day at market prices, offering flexibility in a convenient wrapper, with additional benefits such as ease of trading, and no minimum investment amount.

3. Transparency

ETFs disclose their holdings daily, which allows investors to understand what they're investing in and real-time risk unmanagement while providing exposure to a diversified portfolio tailored to specific goals such as growth, income or exposure.

What can investors use active ETFs for?

Investor needs are evolving as they look to take more dynamic approaches amidst a market regime of greater macroeconomic and market volatility. This requires a broader set of investment strategies across index and active, to enable access to differentiated sources of return. Active ETFs are becoming an increasingly important part of investor toolkits alongside mutual funds and index ETFs as they offer access to differentiated strategies. The active ETF universe can be organized into three distinct categories: alpha-seeking, outcome-oriented and hard-to-index exposures.

Alpha-seeking	**Alpha** strategies seek to outperform a benchmark based on proprietary research and insights. These include both fundamental and systematic strategies, such as: • Core, thematic and rotation strategies • **Active factor** strategies that seek to outperform by tilting toward broad, persistent drivers of return • Multi-sector, credit, securitized, ultra-short bond and loans • Liquid alternatives
Outcome-oriented	**Outcome-oriented** strategies are goal-based, including target income, downside protection, and growth strategies. Some outcome-oriented stragies use options. **Options-based** strategies offer targeted investment objectives combining or modifying market exposures via the use of derivatives or portfolio construction, including: • Income strategies, such as buy-writes, covered calls and risk-managed income strategies • Protection strategies, such as buffered, convexity and tail risk strategies • Growth strategies, such as accelerators, stackers and step-ups
Hard-to-index exposures	**Non-index** strategies feature access to segments of the market that are difficult to index, such as cash or commodities, or derivative-based exposures which include leveraged, inverse and single stock products

1 Source: BlackRock Global Business Intelligence. Data as of 30 June 2024. All $ values are in USD.
2 Source: BlackRock Global Business Intelligence as of 31/12/23. Active ETF AUM had a 31% three-year compound annual organic growth rate globally through 2023 vs 11% for index. Organic asset growth rate calculated by dividing net new business (NNB) over beginning of period AUM and compounding annual growth rates over the 36-month period of 01/01/21 to 31/12/23. Active ETF growth rates exclude the NNB impact of active mutual fund to active ETF conversions over the three-year period. Organic growth excludes the impact of market movement.

2.3 THE MULTIPLE LAYERS OF LIQUIDITY

ETFs trade on open exchanges

ETF investors do not interact directly with fund providers when buying or selling fund shares, like mutual fund investors do. Instead, ETF investors buy and sell ETF shares on-exchange like they would with individual stocks.

A separate 'primary' market involves large institutions transacting with ETF issuers to create or redeem ETFs shares based on market demand. For ETF investors, this entire process is managed behind the scenes by a highly regulated network of financial institutions (often banks) called authorized participants.

Authorized participants dynamically manage the creation and redemption of ETF shares in the primary market. This process adjusts the number of ETF shares outstanding and helps keep an ETF's price aligned with the value of its underlying securities.

Each share of an ETF represents partial ownership in an underlying portfolio of securities, such as stocks and bonds.

While technically funds, ETFs are typically categorized as securities rather than investment funds. As such, all bond, equity, and commodity ETPs are given an equity ticker on Bloomberg - indicating they trade on-exchange.

Learn more in Chapter 5

ETF FAQs

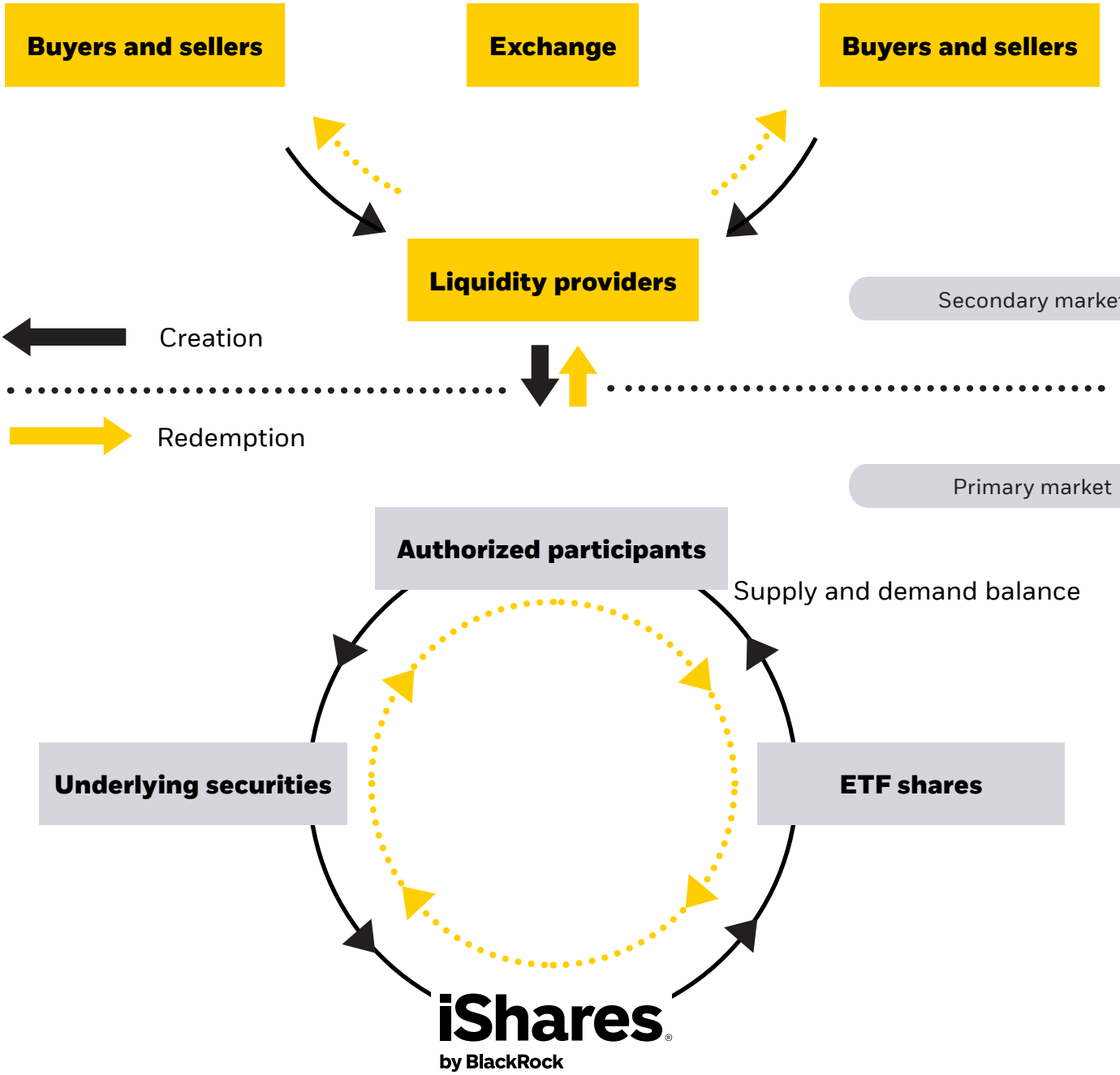
Do ETF investors have credit exposure to the ETF provider?

Most investors are careful when choosing investment vehicles, as they know they can have different ownership implications and levels of investor protection. For example, iShares ETFs are open-ended umbrella investment companies. Legally, they are distinct and separate from BlackRock, which serves as an appointed manager for the funds. The assets of securities held within the iShares funds belong exclusively to the respective funds themselves, and are ring fenced and entrusted to a third party custodian for safe keeping. In the unlikely event BlackRock should cease to exist, iShares funds could continue to operate with another investment manager.

Do ETFs have a credit rating?

The vast majority of ETFs do not have a credit rating at the fund level, but the credit ratings of the ETF's underlying assets should be readily observable. iShares ETFs allow for daily look through, however, not all ETF providers offer this feature.

The ETF creation/redemption process



For illustrative purposes only.

Creation

The authorized participant buys the securities that make up the ETF's underlying basket and transfers them in-kind to the ETF provider, who creates new ETF shares. **The authorized participant then sells those new ETF shares on exchange.**

Redemption

The authorized participant transfers shares of the ETF to the ETF provider, who then exchanges the ETF shares for the underlying securities. **The authorized participant then sells those securities on exchange.**

Learn how creations and redemptions are used to anchor an ETF's price to its net asset value in the appendix.

Layers of liquidity

What makes ETFs easily tradable, even in times of market stress? The simple answer is liquidity, or the ability to buy or sell a security without causing a material change in its price. In fact, ETFs have characteristics that can give them multiple layers of liquidity.

ETF trading between buyers and sellers occurs in the secondary market

ETF trading occurs in the secondary market in much the same way as a normal stock. Investors buy and sell ETFs using common order types, such as market and limit orders and ETFs are quoted with bids and offers.

Only a small portion of ETF trading requires the primary market

The majority of ETF trading occurs without triggering trading activity in the underlying securities. Primary market liquidity refers to the trading volume of a fund's underlying securities. In aggregate, primary market liquidity is often much greater than an ETFs secondary market liquidity and it serves as an additional liquidity source should the secondary market be exhausted. This essentially makes an ETF at least as liquid as its underlying holdings.

Looking under an ETF's hood on Bloomberg
See our Bloomberg analytics section to explore the <BBO> function, where investors can view a bond ETF's orderbook.

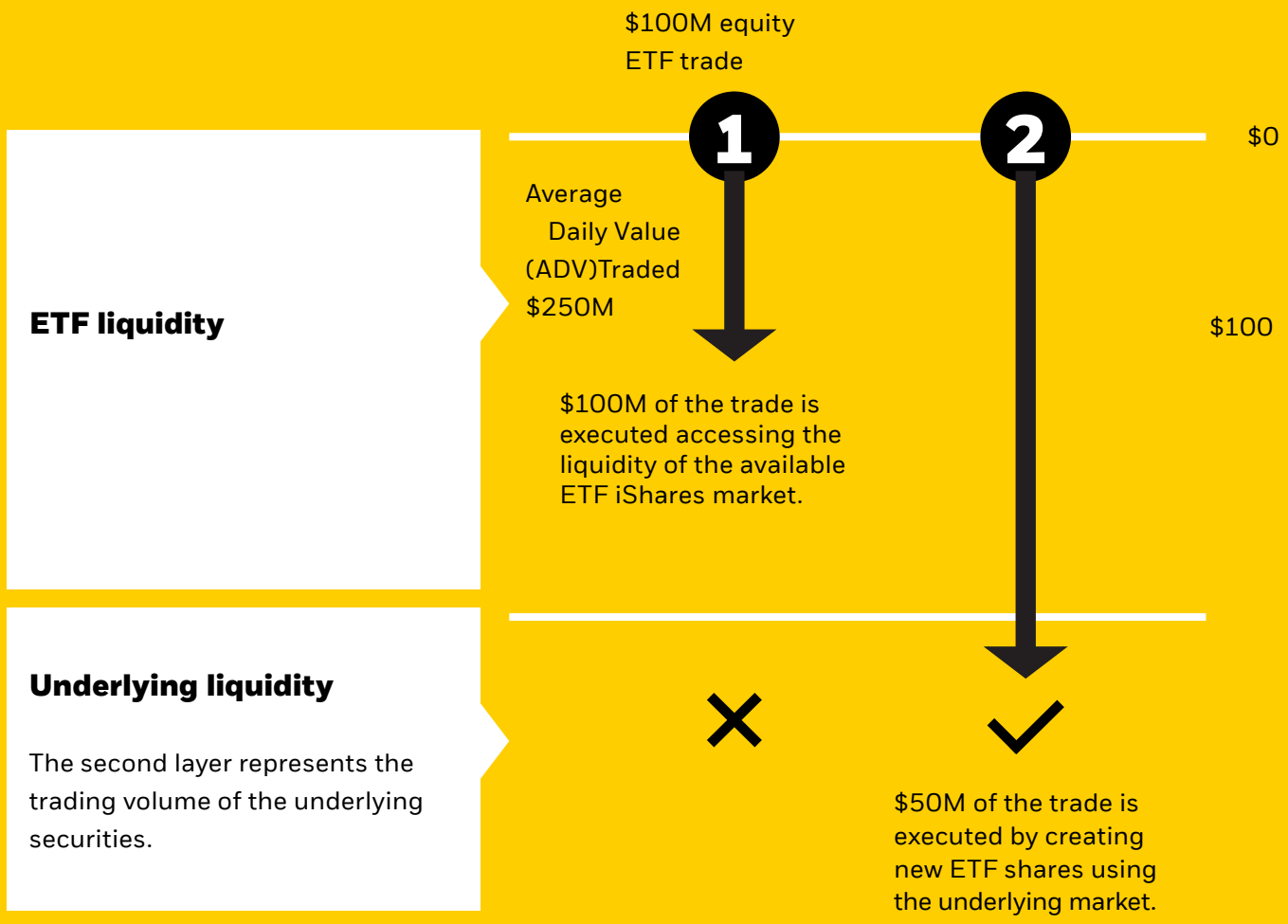
Learn more in Chapter 5

For illustrative purposes only. There can be no assurance that an active trading market for shares of an ETF will develop or be maintained. Shares of iShares ETFs may be bought and sold throughout the day on the exchange through any brokerage account. Shares are not individually redeemable from ETFs; however, shares may be redeemed directly from an ETF by Authorized Participants, in very large creation/redemption units.

Trades of all sizes can benefit from ETF liquidity

The multiple layers of liquidity are apparent when trading an ETF with relatively low average daily volume (ADV).

Illustrative example



For illustrative purposes only. In many cases, investors can fulfill ETF purchases through existing market liquidity on the exchange. Large trades exceeding the exchange liquidity result in the creation of new ETF shares to complete the remainder of the order. All $ values are in USD.

Settlement

ETF trades can be settled through traditional security channels, such as Euroclear and Depository Trust Company (DTC). As ETFs are traded on private exchanges, it is important to note that they cannot be settled on Fed Wire like US Treasuries.

ETF SELECTION 3

3.1 THE FIDUCIARY'S CHECKLIST FOR SELECTING AN ETF

There are several factors to consider when choosing from the increasingly large ETF marketplace. iShares institutional clients frequently ask the following questions as they conduct due diligence:

Exposure

Does the ETF offer the right exposure?

Key considerations

Benchmark quality
High-quality benchmarks are backed by index providers that ensure they are trackable, complete, and accurately represent the investment opportunity.

Targeted exposure
ETFs may target specific countries, sectors, or investment themes, or they may offer broader market exposures.

Investment outcome
Based on their investment objectives, ETFs may provide access to market exposures, be designed to deliver a specific investment outcome or have a goal to outperform the market.

Questions to ask

- What is the ETF's investment objective?
- How often are holdings published?
- Does the ETF use or leverage inverse strategies?
- What is the underlying investment strategy?
- What is the domicile of the ETF?
- Is the ETF physically or synthetically replicating the index?

Index

- What is the underlying index methodology?
- How widely followed is the index and how long has it existed?
- How does the ETF track its benchmark?
- How closely has the ETF tracked its benchmark in the past?
- Does the index implement capping methodologies?

Active

- Is this ETF designed to deliver a specific outcome or generate alpha?
- How diversified is the portfolio?
- How liquid are the underlying securities?

Provider

Know your ETF provider.

Key considerations

Experience

Work with providers who manage and develop ETFs that have track records of delivering on intended investment objectives.

Analytics

The provider should regularly use analytics to evaluate the product's exposures.

Transparency

The provider should offer risk, performance, and factor evaluations on a regular basis to ensure the product is delivering on its investment objectives.

Breadth of product offering

A diverse menu of options allows investors to incorporate a range of investment objectives into their portfolios.

Size

Large ETF providers can create efficiencies of scale that may reduce the costs of their ETFs.

Questions to ask

- What experience and expertise does the provider have in managing ETFs?
- What risk management and performance analytics does the provider use to monitor the product's performance and intended exposure?
- What is the provider's total assets under management (AUM) and ETF product offering?
- What are the provider's risk management processes?
- What other services does the provider offer (e.g. Portfolio Analysis, Model Portfolios, etc.)?

3.2 ETF TRADING BEST PRACTICES

Trade execution

Getting the most out of ETF trade execution

Securing quality trade execution is important for achieving long-term returns. In fact, a systematic process for trade execution is as important as investment vehicle selection.

Identifying the most appropriate trading strategy for ETFs requires an understanding of the multiple sources of ETF liquidity and ETF pricing mechanics.

How ETF pricing works

An ETF has a market price and a net asset value (NAV).

- The market price is the price at which investors transact in the secondary market on-exchange throughout the trading day.
- The net asset value (NAV) is the stated value of the fund's underlying holdings from the close of business on the previous trading day.

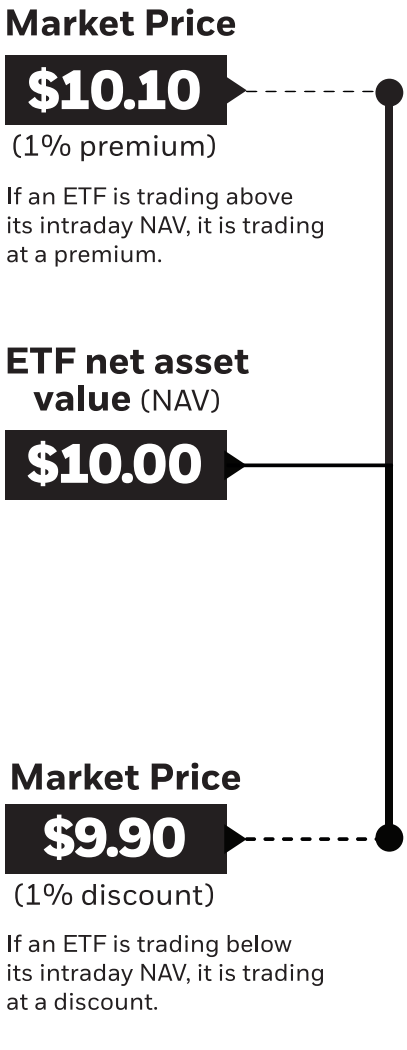
When an ETF's price is above or below the fund's NAV, it is said to be trading at a premium or discount, respectively.

The premium or discount may be the result of timing differences and transaction costs not reflected in NAV or short-term supply and demand imbalances for shares of the ETF on-exchange.

Over the long-term, an ETF's price is generally anchored to its NAV due to market makers and authorized participants who act on small arbitrage opportunities between the ETF market price and NAV.

For illustrative purposes only. All $ values are in USD.

Illustrative example



Three ways to trade ETFs

Given an ETF's multiple layers of liquidity, investors can choose either risk, agency, or NAV trades to meet their specific execution goals.

1 Risk trade

WHAT	Engage a broker-dealer to execute a block trade. The broker - dealer carries the risk by having the trade on their books and prices the risk into their quote.
WHEN	Best suited for large orders with urgency, where immediate execution is the priority. Results in a firm price and eliminates execution risk.
WHY	This strategy is typically deployed when the risks of delayed implementation outweigh the benefits of working an order.

iShares tip: Ask for two-sided markets and selectively put brokers in competition to find the best price.

2 Agency trade

WHAT	Brokers execute on behalf of the client with a strategy such as volume-weighted average price (VWAP) or time-weighted average price (TWAP) and pass on the prices they receive for an agreed mark - up or commission.
WHEN	Best suited for trades in ETFs with robust exchange volume, tight bid/ask spreads or where transparency exists on both costs and the underlying basket.
WHY	Prioritizes minimizing market impact over immediate execution by accessing multiple layers of liquidity, participants, and venues.

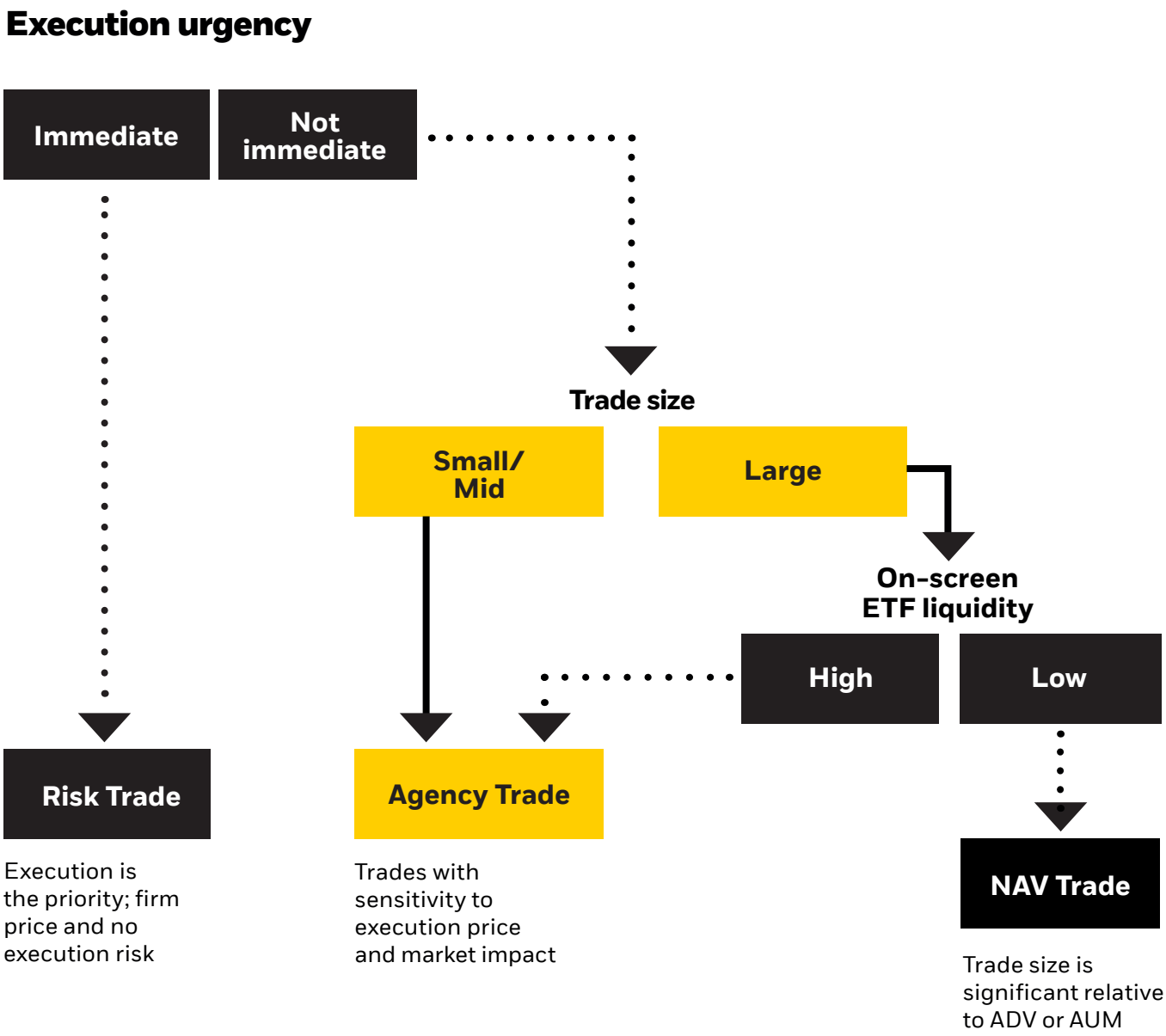
iShares tip: Be mindful of the premium or discount throughout the trade execution window and adapt as necessary.

3 NAV trade

WHAT	Engage an authorized participant to explicitly create or redeem shares with an execution price targeting the ETF's NAV.
WHEN	Best suited for trades where having a certain daily valuation point is more important than market timing.
WHY	Useful when switching out of a mutual fund into an ETF or between similar ETFs. Also provides the potential ability to move securities from an existing manager to an index strategy while maintaining market exposures.

iShares tip: Be cognizant of the capabilities of the liquidity provider – some may have competitive advantages depending on the asset class.

THE MOST APPROPRIATE STRATEGY



For illustrative purposes only. This is general guidance only and does not take specific investor needs into account. You will need to consider your circumstances when deciding on the most appropriate trading strategy.

ETFs IN ACTION

4

ETFs AND THEIR APPLICATIONS

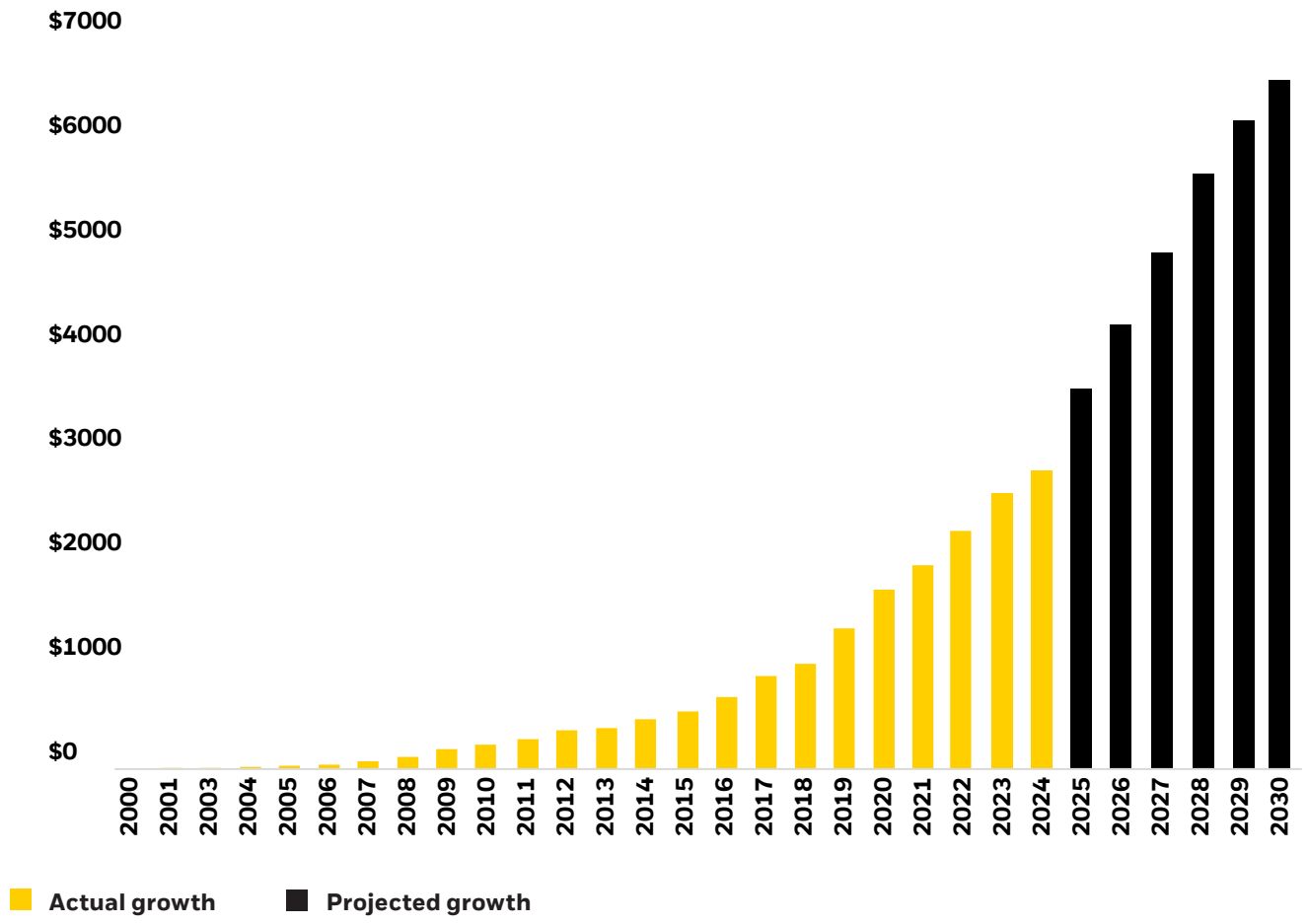
Investors use ETFs for dozens of unique applications. Pliable and multifaceted, ETFs solve for everything from portfolio gaps to complex risk management and alpha-generation.

4.1 BOND ETFs

A bond ETF is a portfolio of individual bonds that trades on an exchange, making bond investing simple and transparent. Bond ETFs offer markets on-demand and provide diversified access to both broad and more precise exposures in a single trade. Simple, fast, and efficient, bond ETFs can act as investment building blocks or be part of highly customized strategies. BlackRock projects that global bond ETF AUM will reach USD 6 trillion by the end of 2030.

Investors are rapidly adopting bond ETFs[1]

Actual and projected growth of global bond ETF AUM (USD)



1 Source: BlackRock projection, 31 December 2024. Subject to change. The figures are for illustrative purposes and there is no guarantee the projections will come to pass.

FOUR POWERFUL BOND ETF GROWTH TRENDS

Building blocks in evolved 60/40 portfolios **1**

Tools for seeking active returns **2**

Catalysts for modernizing bond markets **3**

Increasingly precise sources of potential returns **4**

68% of institutional investors surveyed worldwide say they're likely to expand their use of ETFs.[1]

1 Source: Institutional Investor report as of 30 June 2023, Institutional Investor's Custom Research Lab conducted a study with institutional investment decision makers in North America, Europe, Asia-Pacific, Latin America, and the Middle East and Africa on their portfolio management priorities and preferences in the wake of high inflation, rising interest rates, and geopolitical conflict. Based on 760 respondents. Usage figures come from a global survey of institutional investment decision makers at insurers, endowments, family offices, foundations, pensions, and asset management firms surveyed.

WHY BOND ETFs?

Diversification	**Liquidity**
Transparency	**Flexible access and range**
Cost effectiveness	

BOND ETF CATEGORIES

There are many types of bond ETFs, each of which cater to different investment needs and strategies:

Government Bond ETFs	Issued by governments to fund government spending or pay existing debt. These are attractive to institutional investors because they are considered low-risk investments that offer a reliable source of income, particularly in uncertain economic conditions.
Corporate Bond ETFs	Issued by corporations to raise money for different purposes. Corporate bond yields tend to be higher than government bonds to compensate investors for the increased risk that companies will pay you back. There are two main types of corporate debt: **Investment grade** A bond issued by a company to raise money for various purposes and has been rated by an independent credit rating agency to be high quality (BAA/BBB or higher). **High yield** Bonds rated BB+ or lower, which have higher credit risk: for which investors are typically offered higher yields. These bonds are typically issued by smaller companies with riskier business models or by governments with a lower ability or willingness to repay investors.

Cash Bond ETFs	These are ETFs that focus on short-term, highly liquid assets like Treasury bills, repurchase agreements, and money market securities. They offer investors a low-risk, cash-like option for parking capital while earning a yield, making them ideal for liquidity management or as potential protection during market volatility.
Securitised Bond ETFs	These ETFs hold a portfolio of bonds backed by pools of assets such as mortgages or loans, which provide investors with diversified exposure to these less liquid securities in a tradeable format, typically offering higher yields compared to government or corporate bonds making them attractive to institutional investors seeking income.
Emerging market Bond ETFs	These ETFs hold a portfolio of bonds issued by governments or corporations in emerging markets economies, offering diversified exposure to emerging market debt. While they can provide higher yields compared to developed market bonds, they also carry increased credit, currency, and geopolitical risks. Depending on the ETF's strategy, these bonds can be denominated in local currencies or major global currencies like USD or EUR.
Broad market Bond ETFs	ETFs providing exposure to a wide range of bonds including government, corporate and municipal bonds.

Investors also have a choice of traditional or fixed maturity ETFs:

Traditional bond ETF	Traditional bond ETFs hold a continuous portfolio of bonds, regularly buying new bonds as older ones mature to maintain a target duration. Investors receive ongoing interest payments but do not get their principal back at a set date.
Fixed maturity ETF	Fixed maturity bond ETFs hold a portfolio of bonds that all mature in a specific year, after which the ETF liquidates and returns the principal to investors. This structure provides a more predictable cash flow, similar to holding individual bonds to maturity. Investment into index equity ETFs continues to accelerate.

ACTIVE FIXED INCOME ETFs

The global bond ETF industry is growing faster than expected. While it took 17 years to reach $1 trillion of assets in 2019, it took just another four years to double to $2 trillion, and we believe the global bond ETF industry is poised to eclipse $6 trillion by the end of 2030. A key driver of this growth has been the adoption of fixed income ETFs by institutional investors.

Historically, bond ETF industry growth was driven by traditional, index-based exposures but as the industry has matured, innovation has expanded to "actively managed" ETFs that offer outcome structured exposures (e.g., income, downside protection), access to sub-asset classes that are more difficult to index, or alpha generating strategies.

Active fixed income ETFs, unlike index ETFs, are actively managed by portfolio managers. These managers make decisions on buying, selling, and adjusting the portfolio based on market conditions, interest rate trends, and economic factors, with the goal of outperforming a benchmark or achieving specific investment objectives.

In a recent **PricewaterhouseCooper survey**, nearly a quarter of institutional investors said they are considering investing in active ETFs in the next 12 to 24 months.[1] Increasingly, active ETFs are becoming critical components in fixed income portfolios alongside index and enhanced index strategies.

There is no guarantee that any forecasts made will come to pass.

1 Source: PWC, "ETF 2027: A world of new possibilities"

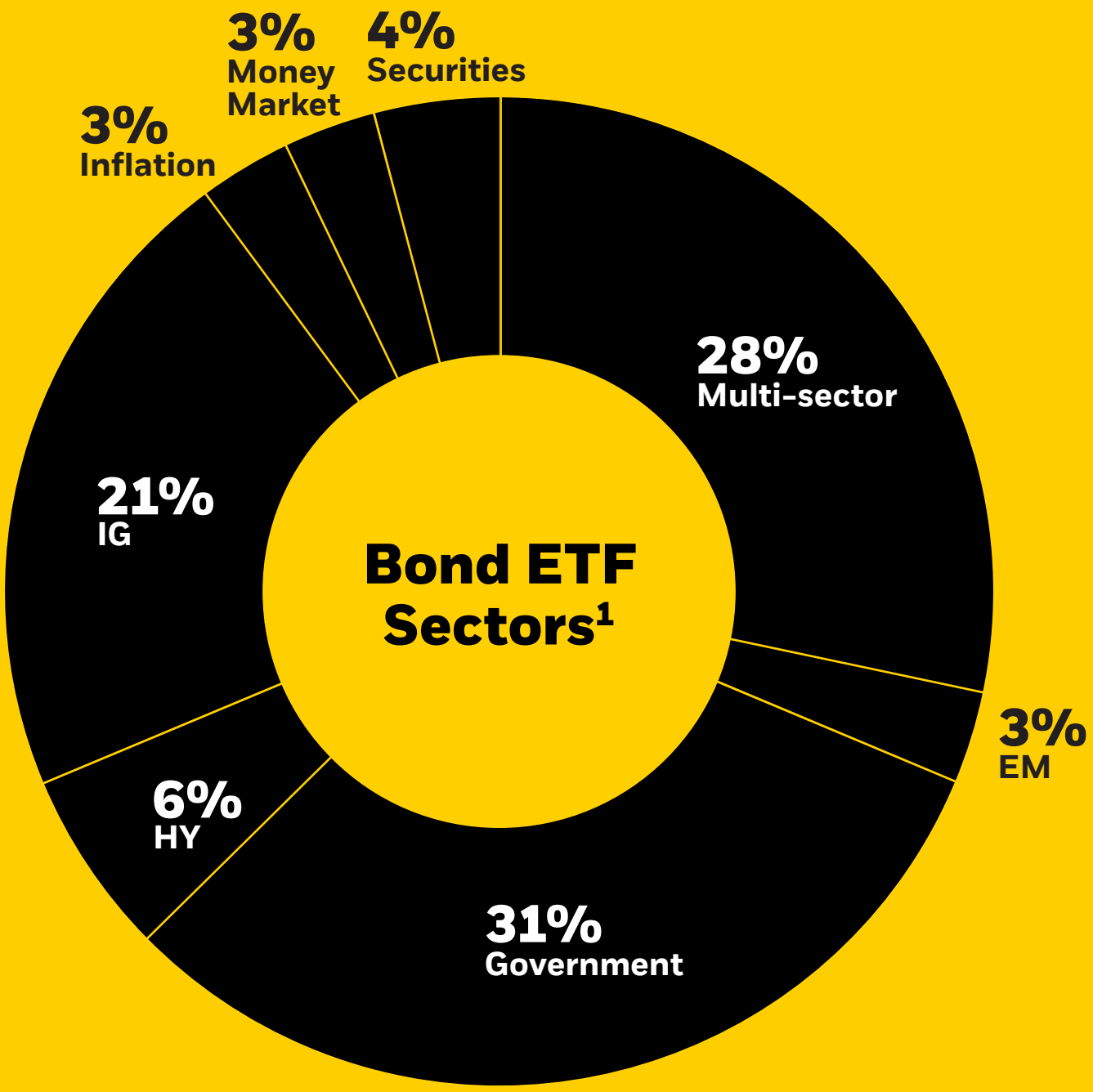
Maximise your bonds income potential with active flexible solutions

For the first time since 2007, over 80% of global fixed income sectors are yielding more than 4%,[2] creating a compelling opportunity for investors to enhance returns while managing risk. In this evolving market environment, broadening exposure beyond traditional core fixed income allocations (such as treasuries or Investment grade 'IG' credit) can help unlock new sources of yield, enhance diversification and strengthen overall portfolio resilience.

We believe that an active, diversified, and flexible approach is essential to effectively capitalise on opportunities within higher-yielding sectors (such as high yield, securitised assets and emerging market debt) in a risk-aware manner.

By dynamically adjusting allocations, investors can optimise portfolio construction and balance income potential with prudent risk management.

2 Source: BlackRock Investment Institute, with data from LSEG Datastream, data as of 31 December 2024. All $ values are in USD.



1 Source: BlackRock, GBI, as of 31 December 2024. The chart represents the % AUM weight of each bond ETF sector.

1 Implementation of strategic asset allocation

Institutions tasked with incorporating strategic allocation changes or rebalancing portfolios often face implementation challenges, whether they involve constructing internal portfolios or evaluating external managers. Such processes can be time-consuming, and any prolonged delay may result in performance setbacks.

ETFs have proven useful to institutions as they provided access to differentiated returns through a broad range of investment strategies and exposures. This breadth of offering comes in a liquid and transparent wrapper, providing flexibility to allocate to almost any exposure whether broad or granular with a liquid and cost-effective vehicle.

To provide a recent example, the increase in yields over 2022 and 2023 created new opportunities in fixed income markets after a decade of low income levels.[1] This surge in yields is calling for a rethink of strategic asset allocations as investors can benefit from higher levels of income while investing in low- risk assets such as government bonds or high-quality corporate bonds.

In this context, bond ETFs are cost effective, efficient ways for investors to gain easy access to a diversified, broad bond market, saving the need and money of sourcing multiple individual bonds.

1 Source: BlackRock and Bloomberg as of 31 December 2023.

“

WE HAVE USED ETFS FOR MANY YEARS FOR STRATEGIC, TACTICAL AND TEMPORARY EXPOSURES TO SELECT ASSET CLASSES. WE RECOGNISE THAT IN SOME ASSET CLASSES THEY CAN AT CERTAIN TIMES BE A FAR MORE EFFICIENT INSTRUMENT TO TRADE AND HOLD THAN EQUIVALENT EXPOSURES IN POOLED FUNDS OR DERIVATIVES, DUE TO THEIR DIVERSIFICATION, EASE OF EXECUTION AND LIQUIDITY.

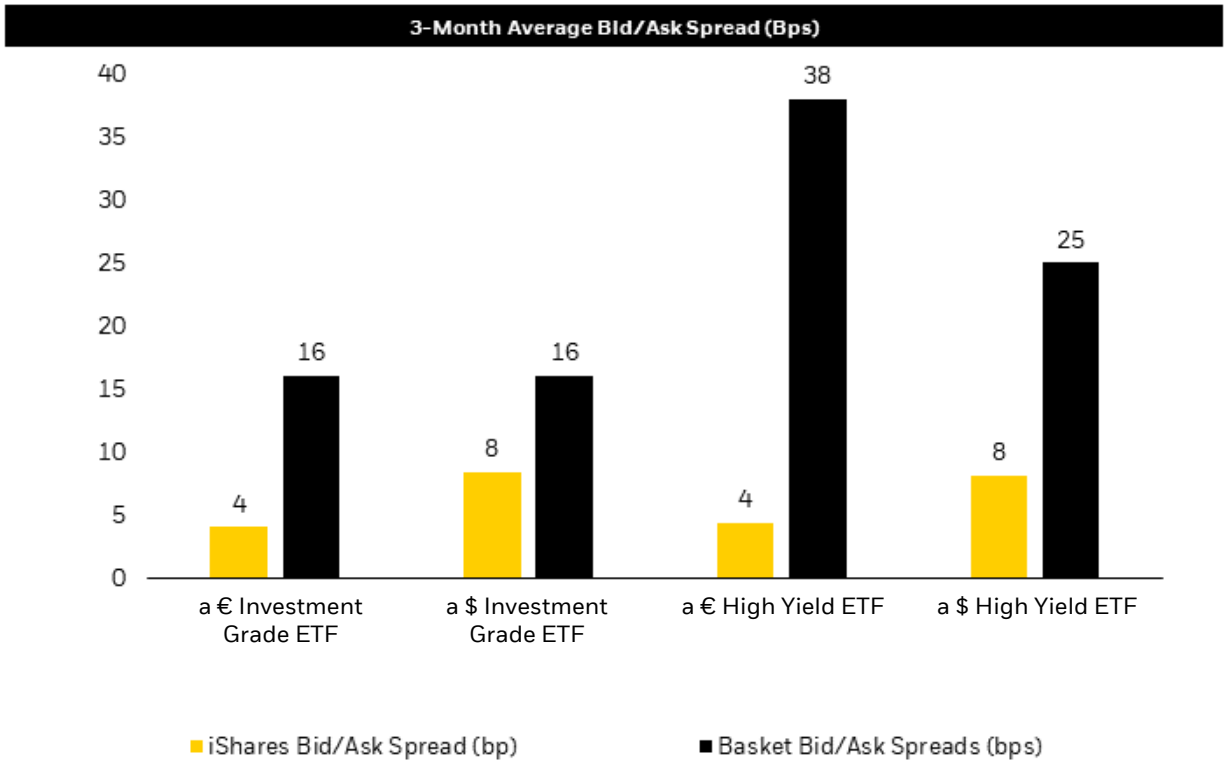
Arif Saad, CFA
Executive Director, Fiduciary Management & Institutional Solutions
- an Lanschot Kempen Investment Management

2 Implementation of tactical views

For managers looking for tactical exposures, an ETF can be an appropriate vehicle for its immediate access, cost effectiveness and efficiency. The increasing granularity enables investors to efficiently access their desired market exposure, allowing them to implement their tactical views effectively.

For example, take institutions looking to expand allocations to investment grade (IG) or high yield (HY) exposures in a timely manner to capture opportunities. It may take several days to invest, particularly if this is a new asset class for the organization or outside the area of expertise, while a similar exposure in an ETF can usually be executed within one or two days, at a significantly lower trading cost as represented by tighter bid/ask spreads.

Average bid/ask spreads of UCITS iShares ETFs vs underlying markets



Source: BlackRock, One Tick, as of 31 July 2024. Average spreads are for the 3-month period ending July 2024. The ETF selection was based on largest UCITS funds with the asset class in terms of assets under management (AUM) within their respective sector

Spotlight

How ETFs can help reduce the total cost of ownership?

Investors evaluating buying a bond ETF versus a portfolio of individual bonds, assuming similar risk characteristics, may want to consider the total cost of ownership. The total cost of ownership considers both the costs of holding an investment over a period and the costs associated with trading into and out of the investment.

ETFs may exhibit a lower cost of ownership relative to replicating a portfolio of bonds due to their secondary market liquidity and potential trading efficiencies. As we show in figure 2, for a hypothetical $50m investment grade portfolio with a one-year holding period, holding an investment grade € ETF could provide a benefit, relative to the hypothetical portfolio. Further revenues can be accrued when incorporating additional operations such as:

Security lending of underlying assets

Like the hypothetical portfolio, within the ETF, BlackRock lends assets underlying the ETF with revenue accrued into the NAV of the fund for the benefit of all ETF investors. This can also help to improve the overall . investment ecosystem by providing liquidity.

ETF unit lending

As an additional benefit, an ETF investor is able to lend their ETF units through a lending agent and receive lending return. The extra revenue generated can be used to effectively reduce the Total Cost of Ownership of an ETF and therefore increase the cost effectiveness of ETF ownership for investors. Risk: With securities lending there is a risk of loss should the borrower default before the securities are returned, and due to market movements, the value of collateral held has fallen and/or the value of the securities loan has risen.

Table: Comparison of a hypothetical €IG portfolio trade vs. an investment grade € ETF

Costs	Cost / revenue item	Hypothetical replicating €IG portfolio	An investment grade € ETF
Enty & exit trade	Bid-ask cost, round trip	21	3
	Total round trip transaction costs	**21**	**3**
Holding cost	ETF management fee	-	20
	Total	**-4**	**16**
Total cost		17	19
Lending	ETF unit lending revenue	-	-9
Net cost (incl.Sec Lending)		**17**	**10**

Past performance does not guarantee future results. The hypothetical bond portfolio referred to in this presentation is intended to provide only an example of the potential of the investment strategy to be employed and do not take into consideration actual trading conditions and transaction costs. The figures are for illustrative purposes only and results cannot be guaranteed.

Source: BlackRock, Bloomberg, as of 31 July 2024. The table shows the cost of trading a hypothetical € IG cash bond portfolio and an investment grade € ETF (ETF selected based on highest AUM). This example shows a $50m investment for a 1-year holding period with no rebalancing during the year for the cash bond portfolio. All costs are round trip and in bps; assumes that any ETF premium or discount at trade inception remains constant over the horizon

3 Liquidity Management

Further to asset allocation decisions, investors consider the liquidity of these allocations. i.e. how readily these allocations can be converted to cash. Holding allocations in liquid funds / wrappers is crucial to managing inflows and outflows. For instance, having a liquid sleeve in portfolios made up of a liquid subset of stock and bonds, avoids cash drag of uninvested assets, while enabling the portfolio to better deal with a sudden drop in liquidity in stressed markets especially bond markets.

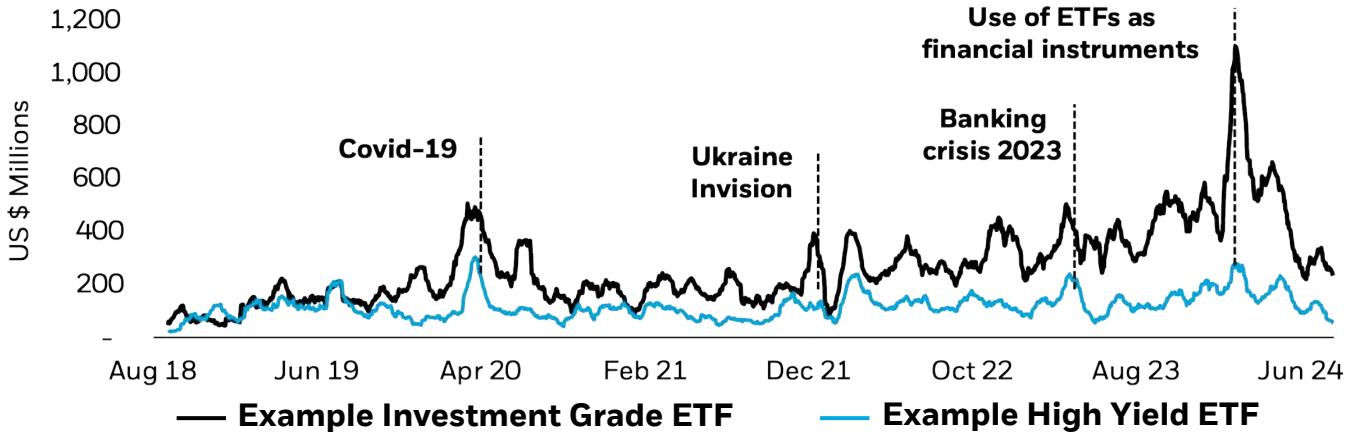
Investors can use ETFs, in both stressed and less volatile market environments, to build a liquidity sleeve to replicate a liquid version of the broader portfolio (whole strategic asset allocation or a subset of the asset allocation) to achieve low-cost exposure without incurring the cash drag of uninvested assets. i.e. more liquid / readily realizable allocations, reduce the amount of cash that the portfolio needs to hold and therefore reduces the cash drag.

62% **of European institutional investors surveyed invest in bond ETFs to manage liquidity.[1]**

Underlying bond market liquidity has been challenged for a number of years, driven in part by the reduction in dealer corporate bond inventory levels since the global financial crisis 'GFC' in 2008.6 Rising interest rates and wider credit spreads have increased the cost of funding for corporates, leading to reductions in new bond issuance volumes in 2022 – often an important source of liquidity for investors.[7] This dynamic creates additional hurdles for institutions looking to quickly adjust bond portfolios, particularly at points in the year when liquidity is challenged, such as holidays or the summer months, or at times of market stress.

This is exactly what we've seen in recent years with volumes of UCITS listed iShares bond ETFs listed globally increasing in general and spiking during periods of elevated market volatility.

Trading volumes in Example Investment Grade ETFs and High Yield ETFs



Source: Bloomberg as of 31 July 2024. Volumes are based on 20 days average daily volumes (ADV). There can be no assurance that an active trading market for shares of an ETF will develop or be maintained.
1 Source: Institutional Investor report as of 30 June 2023, See above for detail of the survey. 6 Source: Federal Reserve Bank of New York. Data as of 31 August 2022. Calculation based on primary dealer inventory for USD IG and USD HY bonds issued in the US. 7 Source: Bloomberg as of 31/12/2022.

4 Cash Management

Investors are likely to hold cash for asset allocation / operational reasons and therefore require management of cash. Not all this cash needs to be accessible same day with same day settlement. For this cash that can accommodate a (short) settlement period, ETFs provide investors with a versatile, cost-effective, and efficient solution for managing cash while maintaining risk and return objectives. Bond ETFs, in particular, have increasingly become a key component of the institutional investor's cash management toolkit.

How do investors manage their cash using ETFs?

The breadth of ETFs available allows for customized and unique investor ETF portfolios to meet defined cash management criteria. These portfolios can consist of a single ETF or multiple ETFs, with objective including:

Capital preservation, yield enhancement, diversification, cash+

Customized ETF basket that can offer capital preservation through low-risk assets, yield enhancement by diversifying into higher yielding options, or a cash+ solution such as short duration ETFs that seek to balance liquidity and returns

Mimic a Strategic Asset Allocation (SAA)

A customized ETF basket designed to align with the Strategic Asset Allocation (SAA) of a broader investment portfolio. This strategy is typically used by investors who require a liquid, asset-matching portfolio that mirrors their SAA. It offers a tailored solution that ensures their cash and liquid assets are optimally aligned with their long-term investment strategy. By closely matching the asset allocation of their overall portfolio, this approach helps maintain consistency in risk and return profiles, while also providing the flexibility and efficiency of ETFs.

Risk: Diversification and asset allocation may not fully protect you from market risk

5 Transition Management Tool

ETFs can be used as an efficient transition management tool, facilitating faster, smoother, and more cost-effective transition of mandates, given the transparency of exposure risk and low trading costs. Employing ETFs during portfolio transitions can provide three key benefits:

1 Quick implementation to manage risk: ETFs expedite market access, minimise the time and market gap that might otherwise arise. Consequently, they serve as risk management tools, enabling investors to align their asset allocation with their long-term objectives right from the outset .

2 Cost-efficient market access: ETFs offer a cost-effective solution for accessing markets. They facilitate trading to gain market exposure and holding the ETF helps maintain exposure in the interim.

3 Efficient transition to a mandate: Efficiently move assets from the ETF to a mandate once it's established, making the process quick, easy, and cost- effective.

ETFs as a complement to private markets is a popular practice worth highlighting. ETFs, especially those focused on short-term bonds or money market instruments, offer enhanced liquidity. This allows investors to manage cash flows efficiently, using ETFs to fund capital calls, whilst at the same time staying closer aligned to the portfolio's strategy by reducing the amount of cash held. The range of potential solutions includes holding:

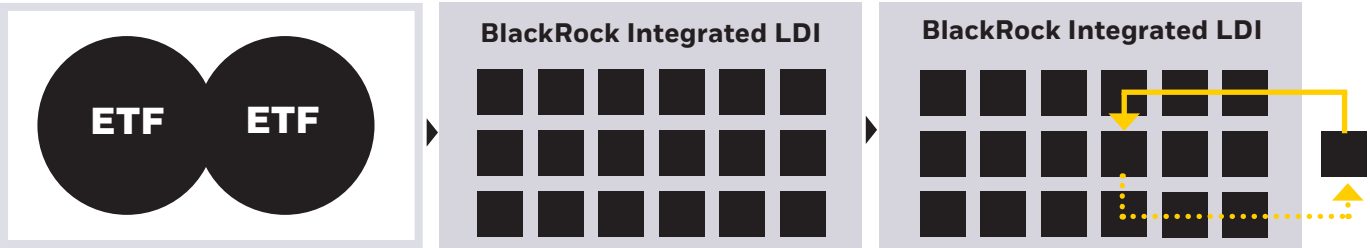
As a proxy to private markets, a combination of ETFs with a high correlation to private markets; and focusing on capital preservation/ yield enhancement by holding short dated fixed income ETFs. Below we provide 2 examples to illustrate the benefits of ETFs as a transition tool

Example 1: Implementing a liability driven investment ("LDI") mandate

The challenge: The client has chosen to adopt an LDI portfolio and prefers a swift implementation to seize attractive yield and market opportunities

The solution: Long-dated euro government bond ETFs can help the client capture the attractive yields and are consistent with client's long-term goals

The outcome: Within days of initiating the purchases, the ETFs cost-effectively seized the market opportunity and helped capture the attractive yields. Once the LDI mandate was established, the desired bonds seamlessly transitioned from the ETF to direct holdings within the mandate



MID AUGUST - SEPTEMBER	END OCTOBER	END NOVEMBER
• Client **opportunistically gradually derisked** from equities, **purchasing Fixed Income ETFs** in multiple tranches to lock in favourable market conditions • **Exposure gained more than 10 weeks ahead of mandate set up**	ETF units transferred into the segregated mandate (no cost)	• 2% of the ETF holdings were ineligible for the mandate • **Ineligible bonds were sold out of the fund and replaced with eligible bonds** with the same risk exposure • **Traded at 0 cost.** No breach of mandate guidelines

Source: Blackrock as of 31 August 2024. For illustrative purposes only.

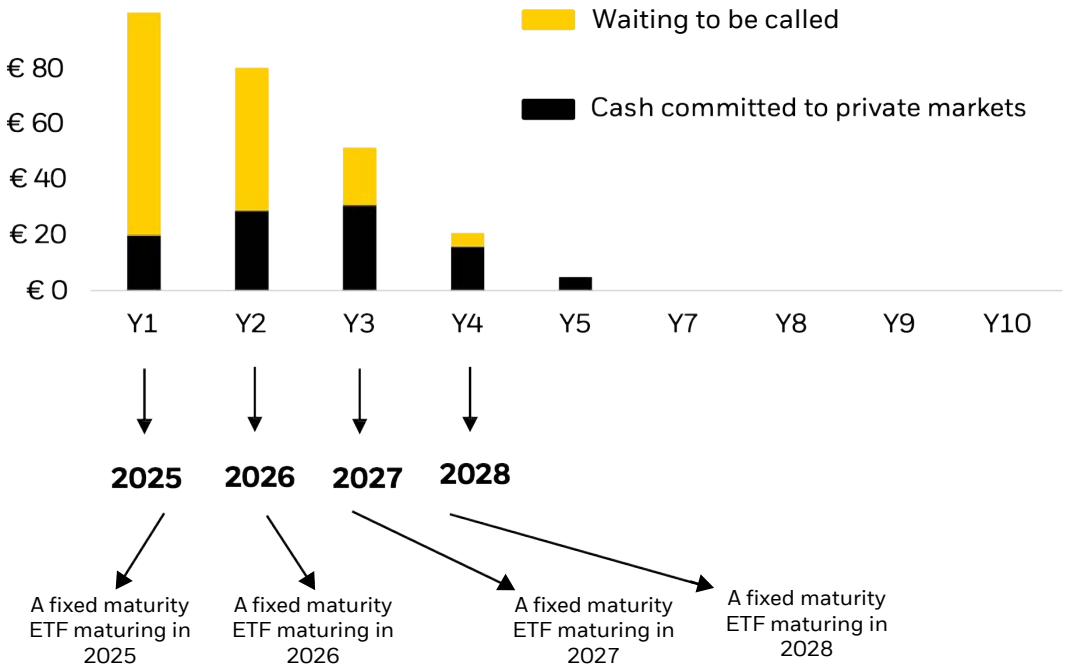
Example 2: Capital calls management within private markets mandate

The challenge: Institutional investors often hold cash in their portfolio as a buffer against market volatility or to meet specific cash flows events such capital calls within private markets mandates. However, prolonged periods of inactivity or excessive cash reserves can have a negative impact on performance, known as cash drag.

The solution: Exposure to fixed maturity ETFs that will mature in line with cash flows dates.

The outcome: As outlined below, ETFs can provide a liquid solution to help asset owners better utilise cash during and following the funding of private market allocations. Fixed maturity ETFs can complement a private mandate. The cash amount can be invested into fixed maturity ETFs that mature in line with expected capital call dates allowing the investor to generate income whilst maintaining the liquidity required to meet regular cash flow commitments.

Fixed maturity ETFs as a tool for capital call management



Source: BlackRock, Aladdin, as of 30 August 2024.

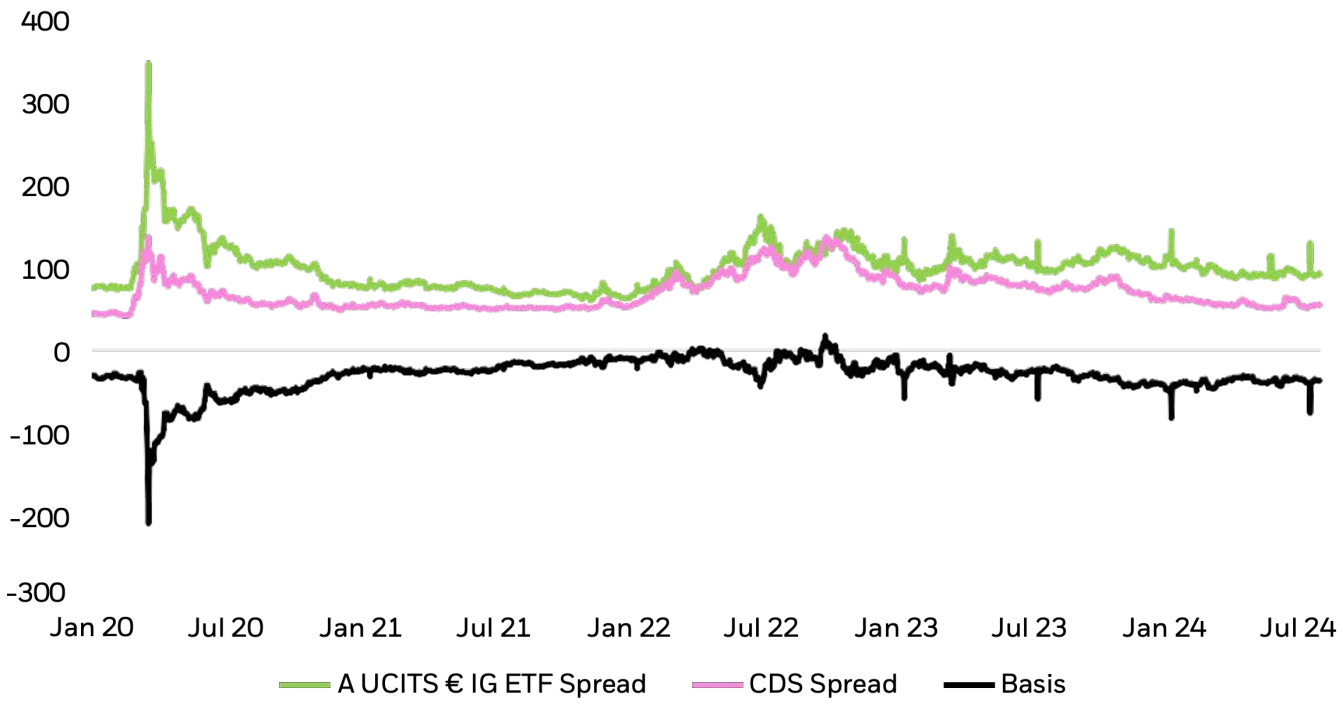
6 An alternative to derivatives

Many institutions adopted ETFs as a replacement for derivatives (including futures and swaps) some time ago. Initially using ETFs to take on beta exposures to broad market indexes, this usage has significantly expanded thanks to the breadth of ETF exposures available (far wider than the availability of standardised derivatives contracts such as futures and credit default swaps), enabling better risk management. The ever-increasing options available on ETFs is also widening the available toolkit enabling institutions to hedge downside risk as well.

With regard to adding or hedging credit risk in portfolios, institutions have many choices available. The choices for investment grade and high yield portfolios include credit default index swaps (CDS), credit index futures, credit index total return swaps, credit ETFs or individual bonds. The relative merits of using one investment versus another are driven by the portfolio objectives and market dynamics. Regarding derivatives instruments, the liquidity provided by CDS allows investors to rapidly add and reduce risk at scale. However, the basis risk (the difference in behaviour between the CDS credit spread and the credit spread of a physical corporate bond) can be substantial during times of volatility, for example in 2020 as outlined in Figure below.

Credit index total return swaps (such as iBoxx total Return Swap 'TRS') typically offer an improvement via reduced basis risk and increased correlation to bond markets, but do not yet enjoy the same liquidity and transaction cost advantages of CDS indices or credit ETFs.[1] Credit index futures (such CBOE $HY and $IG index futures) may also see increased interest over time as additional volumes develop in these contracts.

Spread moves comparison: € IG ETF spread vs CDS spread



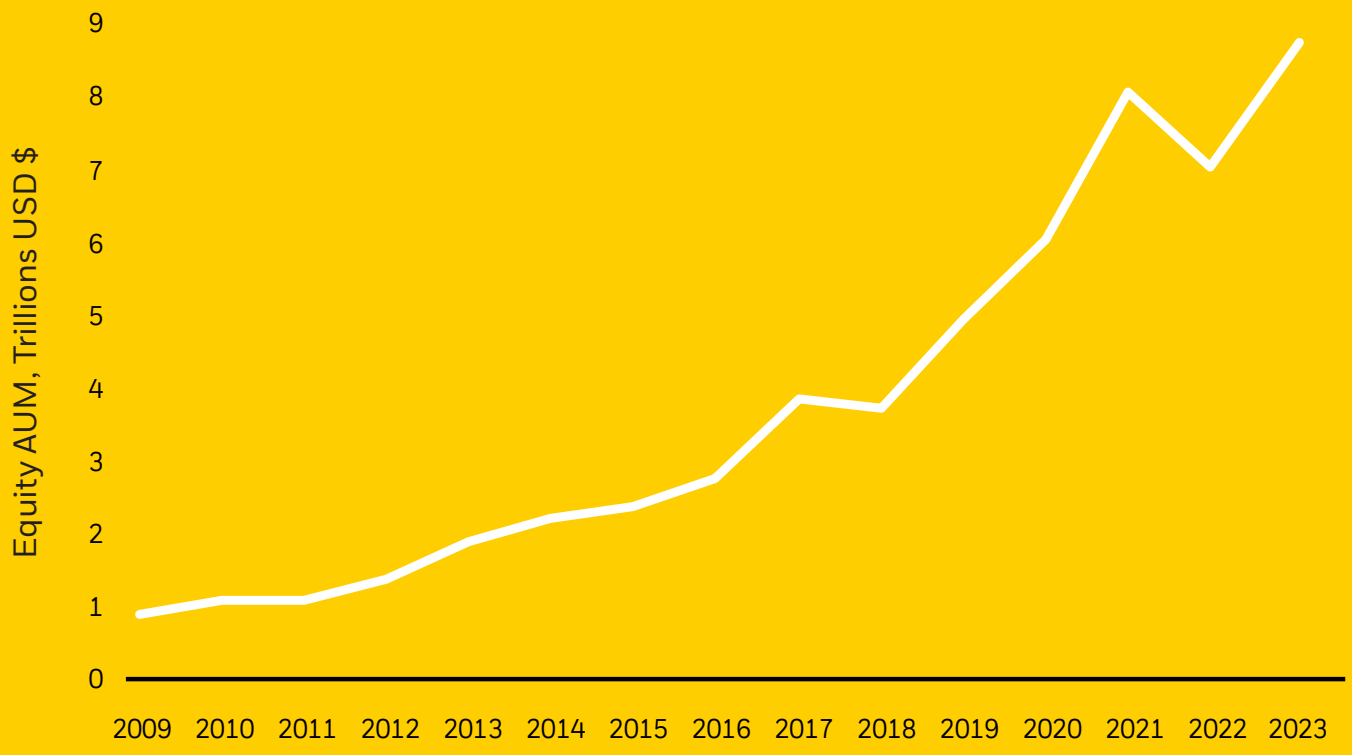
Source: Bloomberg as of 31 July 2024

1 Source: BlackRock, Bloomberg and Morningstar as of 31 December 2023.

4.2 EQUITY ETFs

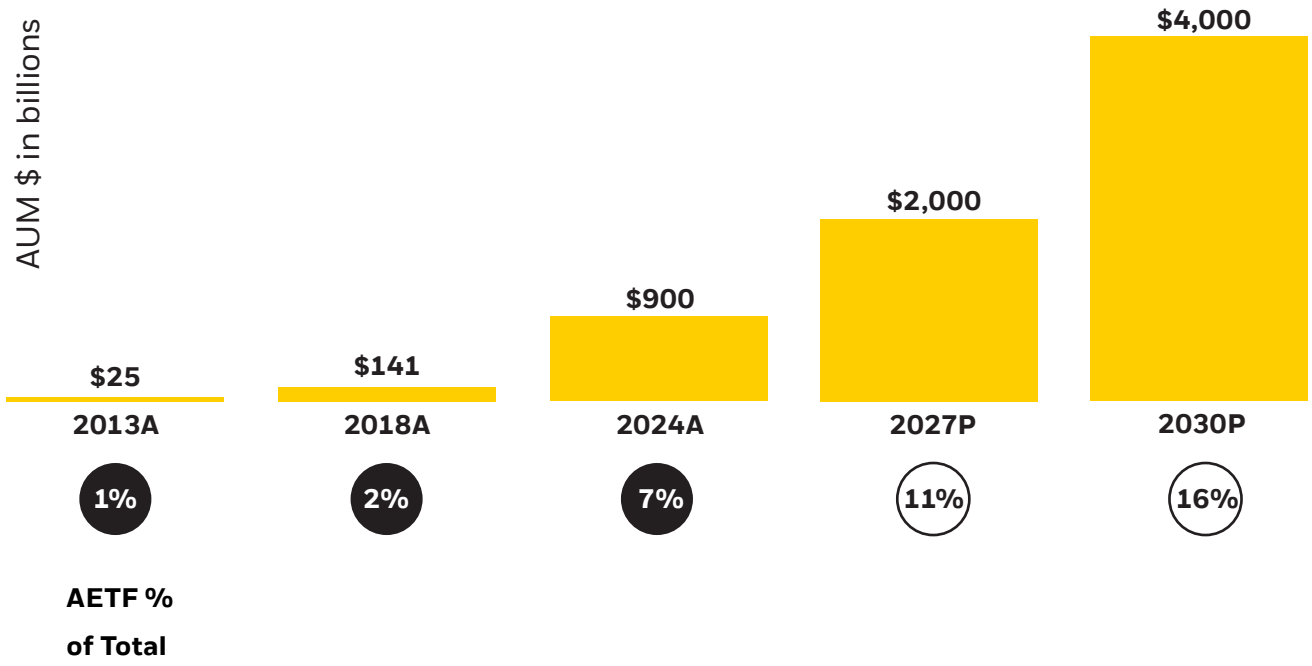
Equity is the largest, most established category of ETFs, with over $8 trillion in assets.[1] The category features ETFs with targeted exposure to specific countries, regions, market capitalization levels, styles, themes, factors, and beyond.

Investors are rapidly adopting Index equity ETFs



1 Source: BlackRock, 7 January 2025. AUM includes the entire exchange traded product category, which encompasses any portfolio exposure that trades intraday on an exchange. AUM excludes Middle East and Africa. All $ values are in USD.

We expect global active ETF assets to reach $4T by 2030



Source: BlackRock, as of June 30, 2024. The 2024 number is actual through the first half of the year. Estimates are for global figures and include 2027 and 2030 scenario calculations based on proprietary research by BlackRock Global Product Solutions. Subject to change. The figures are for illustrative purposes only and there is no guarantee the projections will come to pass. All $ values are in USD.

EQUITY ETF CATEGORIES

There are a number of equity ETF categories that help investors choose ETFs that align with their investment goals and risk tolerance, as well as providing access to different industries and markets.

Core	Core equity ETFs provide extensive stock exposure by tracking well-established, high-quality indexes. These often serve as the foundational building blocks of an investment portfolio due to their broad market exposure, low costs and high liquidity, making them ideal for long-term investors
Precision	Precision ETFs offer investors the ability to make more targeted investments, aligning their portfolios with specific market trends or sectors. An example would be an ETF that is invested in a single country market
Sectors	ETFs that focus on specific industries within the stock market, allowing investors to gain targeted exposure to particular areas of the economy e.g. technology, healthcare and financials
Thematics	These ETFs focus on specific investment themes or trends, allowing investors to target precise areas of the market that are expected to benefit from long-term structural changes. These could also be summarised by **mega forces: digital disruption and AI, geopolitical fragmentation and economic competition, transition to a low-carbon economy, demographic divergence, and future of finance**
Factors	Factor ETFs are those that target five broad and persistent sources of returns that explain the performance of different stocks, bonds and other assets: **quality, value, momentum, low size and minimum volatility**

Equity ETF applications

How equity ETFs can address investor challenges

Example 1

Investor challenge

With the global expansion of AI's contribution to economies and markets, an investor seeks to access this theme in a broad and cost-efficient manner.

How ETFs could help

The investment manager has chosen to express their strategic thematic views by utilizing thematic index and active ETFs to efficiently gain access to a broad range of global companies across industries like technology, healthcare, and industrial automation, all of which benefit from AI innovations.

The investor could invest in an index ETF that tracks benchmarks composed of companies directly involved in AI development, such as the STOXX Global AI Infrastructure Index. This provides the investor with broad, rules-based exposure to companies involved in building and maintaining AI infrastructure at low fees.

Alternatively, an active ETF might enable the investor to capture opportunities in the rapidly evolving AI landscape. Leveraging the expertise of portfolio managers, these funds identify emerging leaders and innovative disruptors, dynamically adjusting to shifts in market trends and technological advancements. This approach offers the potential for enhanced returns with greater flexibility than index strategies, while remaining more cost-effective than traditional mutual funds.

Case study shown for illustrative purposes only. This is not meant as a guarantee of any future result or experience. This information should not be relied upon as research, investment advice or a recommendation regarding the iShares Funds or any security in particular.

Example 2

Investor challenge

An asset owner is looking to gain diversified exposure to the U.S small-cap market in a cost and tax effective way.

How ETFs could help

The institution invests in a swap-based ETF that tracks the Russell 2000 Index, a comprehensive barometer of the small-cap segment of the US equity market.

How swap ETFs work

A swap-based ETF provides market exposure through total return swaps instead of directly holding underlying securities. This approach offers tax efficiency for U.S. small-cap investments.

The ETF establishes swap agreements with multiple counterparties, delivering the total return of the target index in exchange for a swap fee. By avoiding the physical trading of numerous securities, this method can reduce transaction costs.

Furthermore, swap-based ETFs are exempt from U.S. withholding tax on dividends, making them an excellent choice for institutional investors. This structure provides a diversified exposure while minimising costs and tax liabilities.

Case study shown for illustrative purposes only. This is not meant as a guarantee of any future result or experience. This information should not be relied upon as research, investment advice or a recommendation regarding the iShares Funds or any security in particular.

Example 3

Investor challenge

Diversification with a concentrated portfolio

An investor seeks to target the largest stocks driving growth in the U.S. market while maintaining diversification across sectors.

How ETFs could help

The institution allocates to the S&P 500 Top 20 Select 35/20 Capped Index, delivering targeted exposure to the mega- and large-cap companies driving growth in the U.S. market.

This strategy provides a focus on the largest and most influential companies, enabling investors to capitalise on key market trends while preserving a diversified sector allocation.

Precision tools like the S&P 500 Top 20 allow institutional investors to fine-tune the market-cap exposure within their U.S. equity allocation.

Example 4

Investor challenge

Diversifying global equity exposure

An asset owner is looking to diversify its investments with 10% being allocated to Equities. The portfolio manager is wary of incurring high trading costs.

How ETFs could help

A diversified investment in one cost-effective trade

The institution allocates 10% of its investments to an MSCI World ETF. This ETF provides access to the returns of a diversified basket of approximately 1,500 global stocks in one simple, cost-effective trade.

Case study shown for illustrative purposes only. This is not meant as a guarantee of any future result or experience. This information should not be relied upon as research, investment advice or a recommendation regarding the iShares Funds or any security in particular.

Example 5

Investor challenge

Get more granular

An investment manager had a top-down country views on emerging markets.
They were looking to express their convictions in a nimble and cost efficient way.

How ETFs could help

Express tactical views within your portfolio

The investment manager decided to use ETFs to express their single country emerging market tactical views.

They made an overweight allocation to MSCI India versus the MSCI EM index universe.
This allowed for exposure to the equity market in India and an opportunity to quickly increase or decrease the position according to their views.

Case study shown for illustrative purposes only. This is not meant as a guarantee of any future result or experience. This information should not be relied upon as research, investment advice or a recommendation regarding the iShares Funds or any security in particular.

4.3 COMMODITIES ETPs

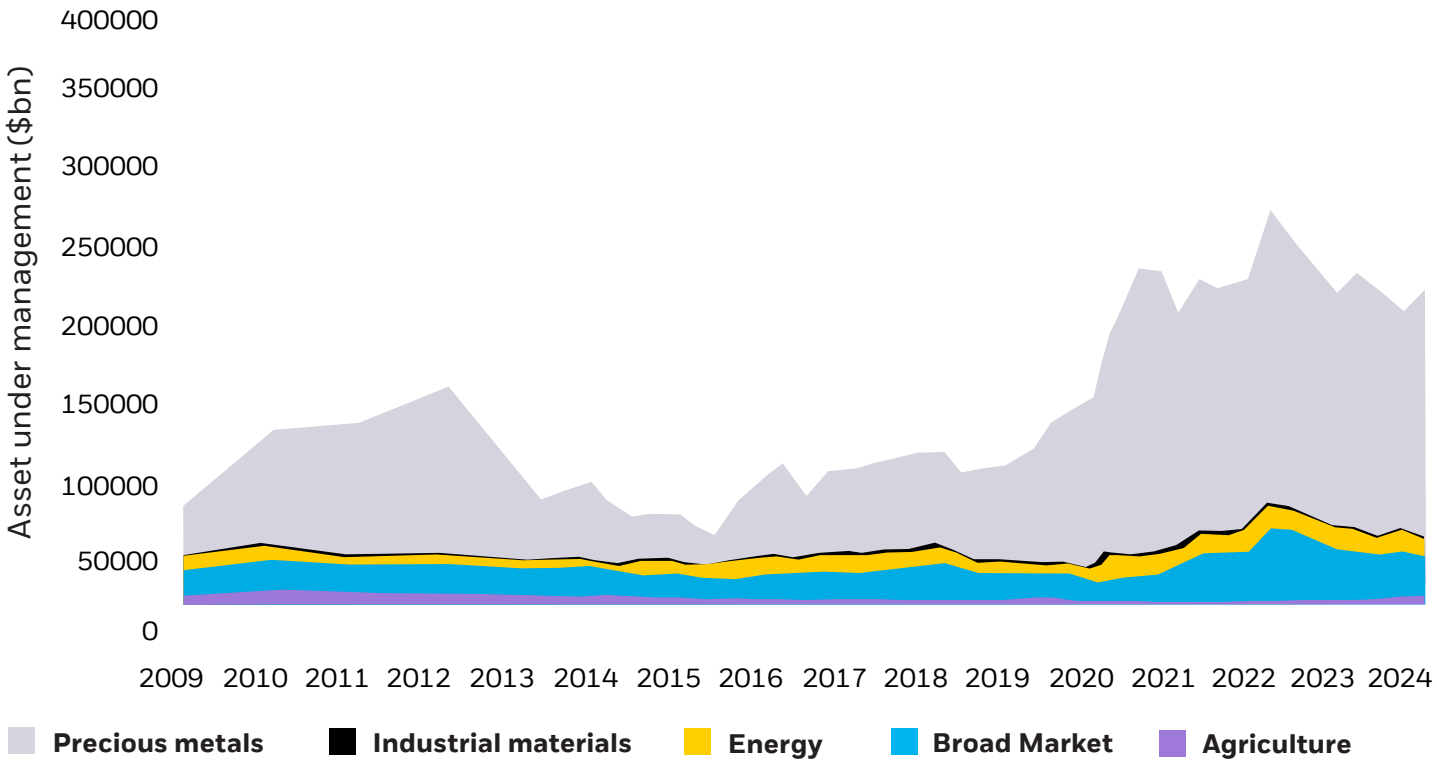
The AUM of commodity exchange traded products have climbed quickly in recent years as investors embrace the benefits of on-exchange trading.

An asset owner might have traditionally held physical gold - ETPs offer an alternative way to gain exposure to gold that may also be worth considering.

Commodity ETPs are exchange traded products used to track the price of physical assets such as gold, oil, and wheat. They are generally not highly correlated with stocks and bonds, and different commodity sectors typically have a low correlation with each other. This makes them useful for portfolio diversification and as a hedge against inflation.

Growth is golden

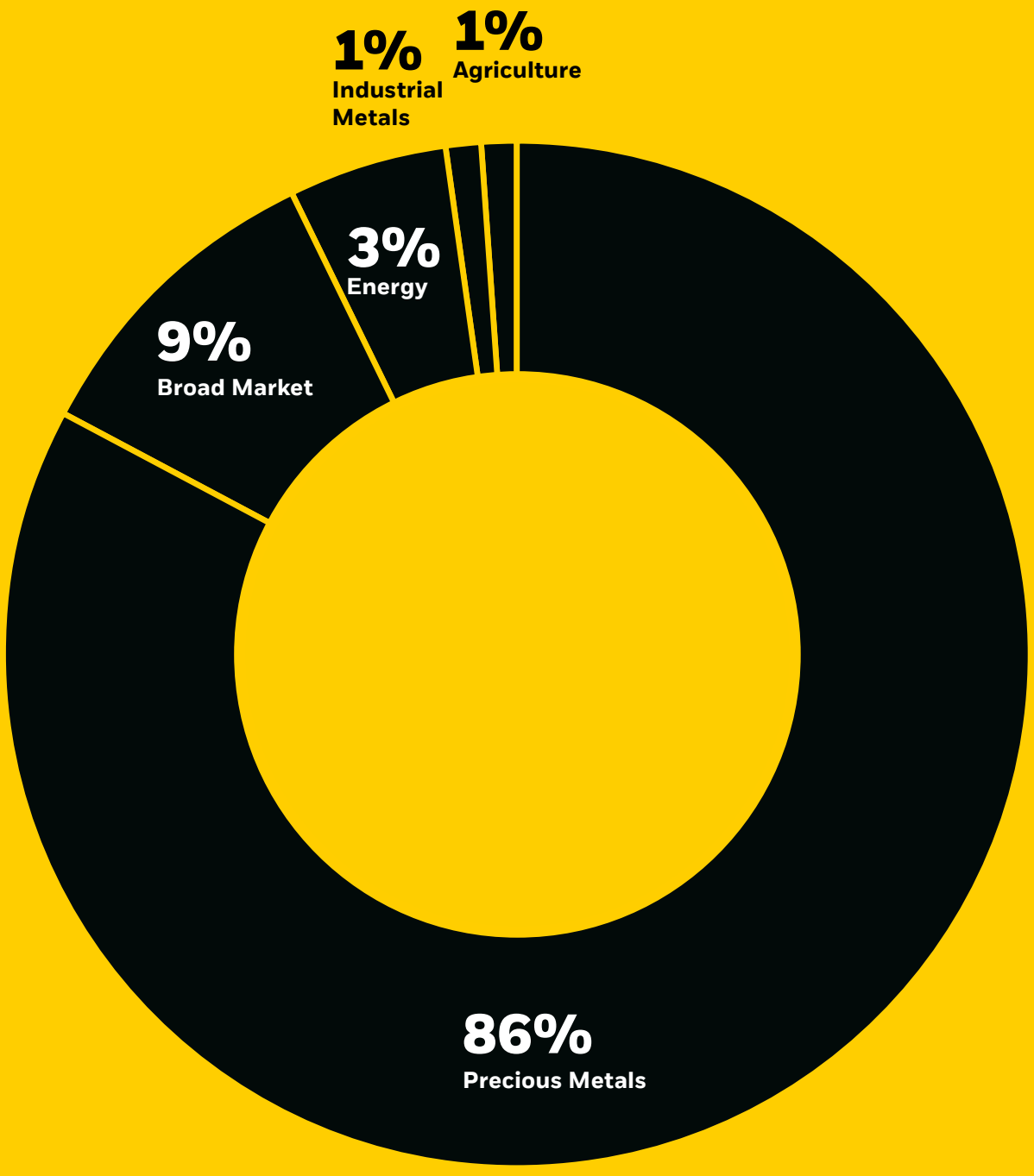
The global universe of commodity ETPs is worth US$271B, with the vast majority of commodity assets made up in precious metals (gold).[1]



1 Source: BlackRock, 7 January 2025. All $ values are in USD.

Global Commodity ETPs, AUM breakdown[1]

Physical gold Exchange Traded Products (ETPs) are by far the most popular commodity strategies with global investors. In fact, the assets under management in gold ETPs exceeds the gold holdings of many individual asset owners (excluding the U.S. Federal Reserve).

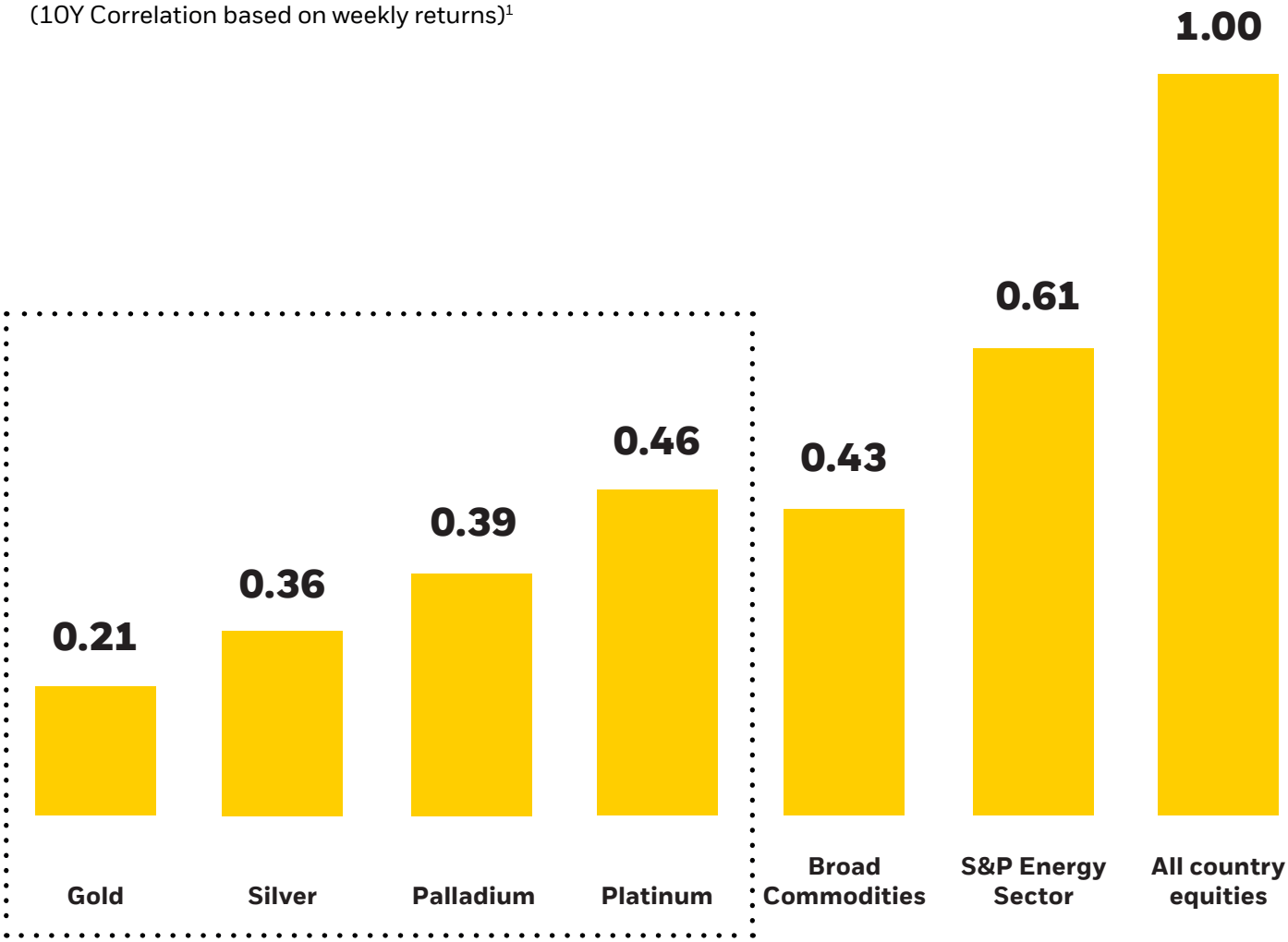


1 Source: BlackRock, 7 January 2025

Individual commodities exhibit a relatively high dispersion of returns due to varying industrial uses, seasonality, and supply/demand dynamics. Precious metals offer a low correlation relative to equities, often sparking demand during periods of volatility.

Commodities correlations with MSCI AWCI

(10Y Correlation based on weekly returns)[1]



1 Source: Bloomberg, BlackRock, chart shows commodities correlations against the MSCI ACWI Index. **The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.** Performance is for illustrative purposes only. Index performance does not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

Distinguishing between commodity ETP structures

ETPs are easier to trade than physical commodities or futures. Since there's no need to transport and store bars of gold or barrels of oil, the total cost of ETP ownership amounts to the bid/ask spread, this is the same as for any common stock.*

However, there are many different commodity ETP structures and prospective investors should familiarize themselves with, for example, whether an ETP holds a **(1)** physical commodity, and/or **(2)** a derivative such as a futures contract or swap. The structure and holdings of an ETP will determine its price sensitivity to spot commodity moves or futures-related supply/demand dynamics known as backwardation (positive roll yield) and contango (negative roll yield).

Commodities with an infinite shelf life, namely precious metals, lend themselves to physically-backed ETPs since storage costs are low and the product does not need to manage decay. Derivatives are chiefly used as the underlying holding in most broad commodity funds and those targeting perishable substances like oil.

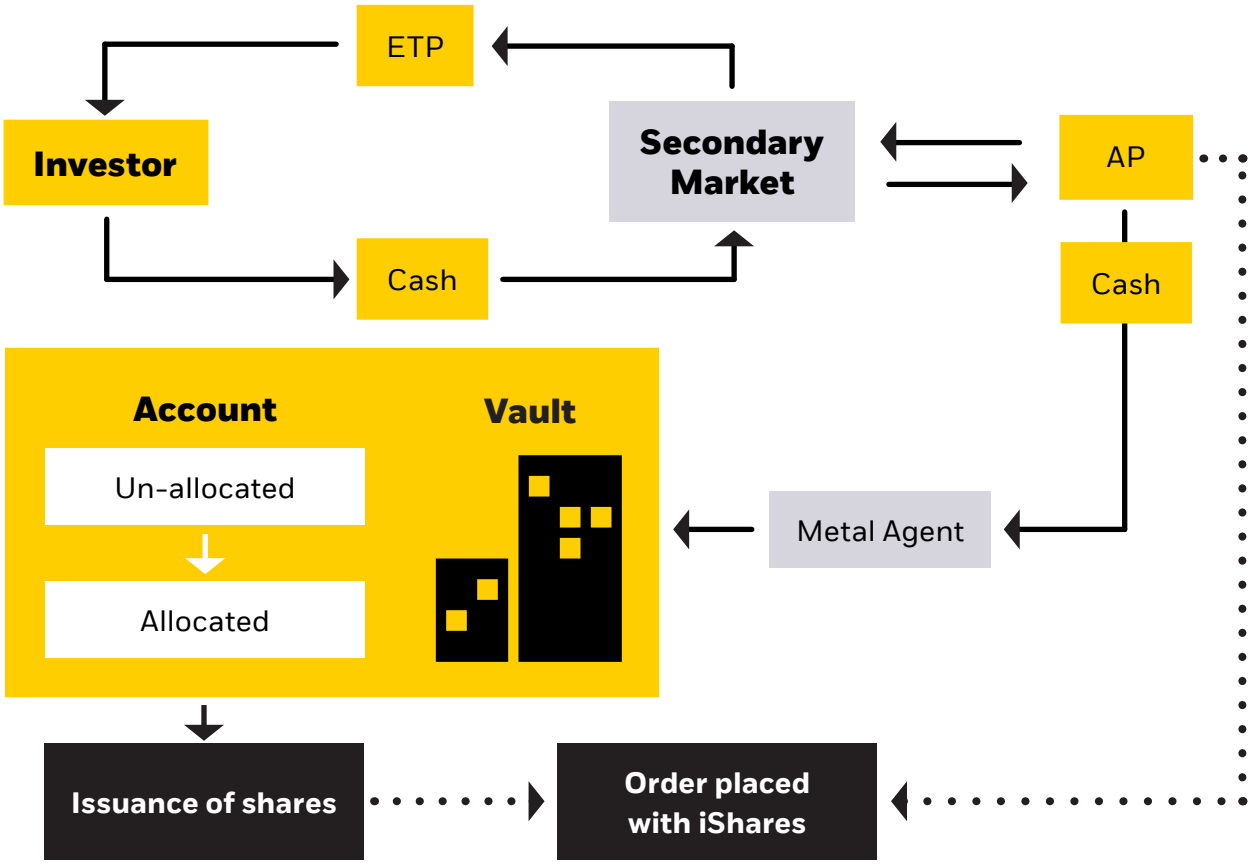
All commodity ETPs are supported by a robust ecosystem that supports creations and redemptions. Indeed, authorized participants will deliver/receive underlying commodities in return for ETP shares, just as with traditional equity and fixed income products. Arbitrage ensures the net asset value of the ETP reflects the price of the underlying, minimizing premiums and discounts, and allowing the ETP to efficiently price in changes in the value of its holdings.

*There is also the annual management or sponsor fee if you use an ETF to invest in gold.

1 Physically-backed precious metals ETPs: A closer look at gold

Historically, gold prices have exhibited lower volatility vs. global equities during periods of market turmoil. This potential to absorb shocks means that incorporating gold into broader equity portfolios can help lower portfolio volatility and enhance the risk-adjusted return profile of the overall portfolio.

Physically-backed gold ETPs offer a low-cost and direct way to participate in the gold market without having to physically own and store the precious metals, or manage future expiry. Like an ETF, Exchange Traded Products (ETPs) are traded on exchange and shares can be created and redeemed by Authorised Participants. The value of the gold ETP securities is directly tied to the price of gold, with each share representing a specific quantity of gold. The underlying gold holdings are usually stored in secure vaults and audited regularly.



For illustrative purposes only.

Important things to consider when thinking about Gold ETPs

Exposure

Gold ETPs can offer investors the exposure to the **day-to-day movement of the price of gold bullion minus fees and expenses.**

Security

There are Gold ETPs which are **100% physically backed ETPs** and hold all metals in secure, segregated, allocated storage including fractional bars. Gold bullion can be held in a custodial bank in their **London** and/or **New York** vaults.

Quality

For extra diligence, an asset owner might want to check that the Gold ETPs they have selected meet The London Bullion Market Association (LBMA) Good Delivery Rules. This ensures bullion bears the stamp of an approved refiner and conforms to required **purity levels.**

Cost efficiency & access

Gold ETPs may be cost efficient alternatives over physical or futures based exposure to precious metals. ETPs are **listed on exchange,** providing intra-day pricing, **liquidity & transparency,** and can be purchased and sold through traditional brokerage accounts.

iShares can have an advantage for precious metals exposure

Allocated & Segregated Account

Metal backing the ETP securities is held in a secured and allocated account. Physical metal in the allocated account is **separately identified to the asset of the custodian**. In the event of a default by the custodian, the gold held in the secured allocated account will be identified separately from the asset of the custodian. Any gold in the unallocated account would be exposed to the credit risk of the custodian (and any sub-custodian).

Over-allocation mechanism

When the creation does not match a whole number of bars, one extra bar is allocated in the allocated account to protect investors and avoid metal in unallocated form.

Creation: amount matching the ETPs

Amount of metal in allocated form

Not all providers have allocated storage for fractional bars, which means that for this fractional bar, the issuer would need to join the list of general creditors who have a claim on the metal in the unallocated storage vault.

Not all structures share the robustness that is built into iShares products. Investors need to be comfortable that their provider has correctly established them through **private contractual arrangements.**

Strong creation & redemption process

To ensure a strong creation process, ETP shares will only be issued when the physical metal is transferred to the allocated account. This ensures that the shares are always physically backed by allocated metal.

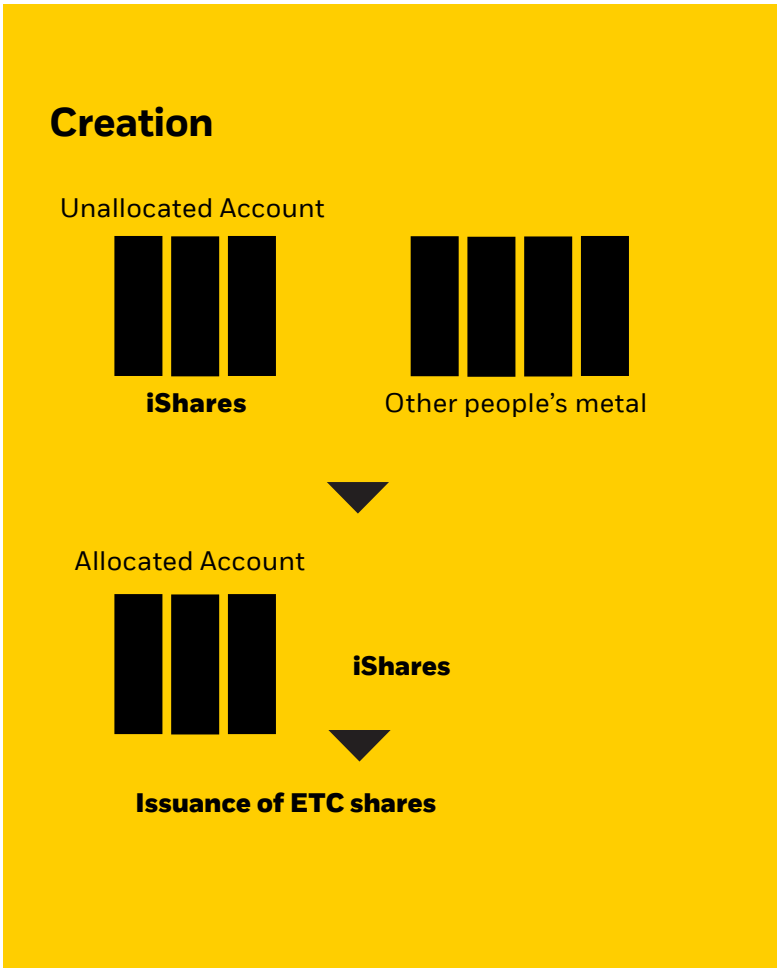
This thorough process cannot be assumed for all products as some issuers can issue the securities on the back of unallocated metal.

Transparency

The list of metal bars in the vault are published daily on iShares.com (serial numbers, purity information, refiner, vault location).

Metal Quality

Only metal that meets the London Bullion Market Association (LBMA) Good Delivery Rules will be accepted.



2 Derivative-based commodity ETPs: Product structure and considerations

Unlike some precious metal funds where asset managers can store the underlying asset in a vault, ETPs tracking industrial commodities can own derivatives contracts to replicate the underlying index.

Spot Return
Gains or losses from "rolling" commodities futures contracts

+

Roll Return
Performance of commodities spot price

+

Collateral Return
Interest earned on investment of cash collateral

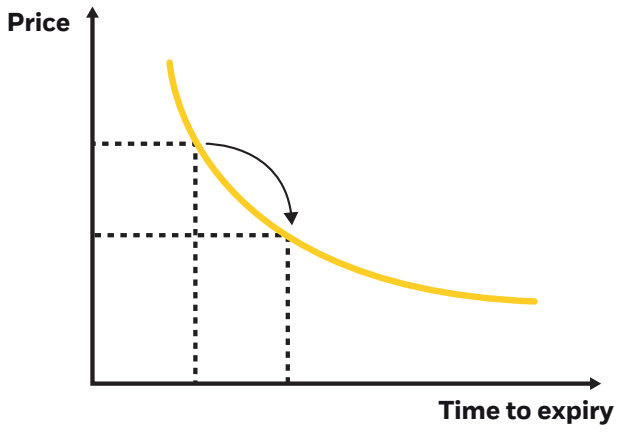
=

Commodity Future Return

Primary challenge to tracking spot prices is the potential gains and losses which occur when rolling expiring commodity contracts into new ones.

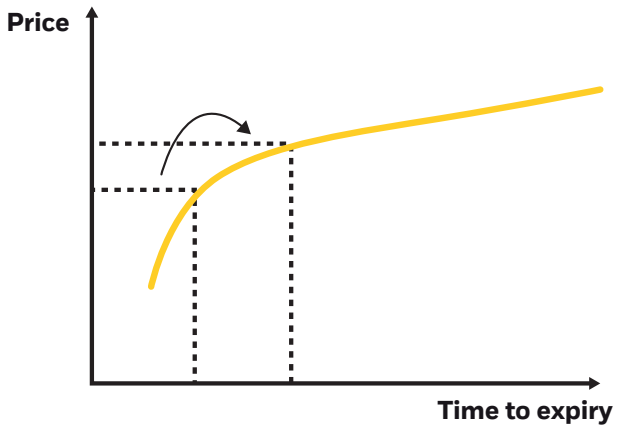
Backwardation

- An expiring contract is sold and longer-term contract is purchased at a lower price
- May positively impact a long position in futures contract



Contango

- An expiring contract is sold and longer-term contract is purchased at a higher price
- May negatively impact a long position in futures contract



For illustrative and educational purposes. Not a recommendation, offer or solicitation to buy or sell any securities or to adopt any investment strategy.

Negative oil prices in 2020

Case study

An oil price shock related to the COVID-19 pandemic carried the futures price of U.S. oil into negative territory, bringing into sharp focus the treatment of index replication and the hedges used to manage ETPs that use futures.

Many derivative-backed ETPs seek to replicate an index by holding the futures contract nearest to expiry, these are known as "front-end contracts". ETP losses can occur when contango is present. (i.e. when spot price for oil is less than the future delivery price of oil). Effectively, this market condition means that the product is effectively buying high and selling low indefinitely.

Ahead of the front-month futures expiry, an ETP manager may have to sell front-month contracts at a lower price to buy next month's contract at a higher price to maintain exposure.

With the glut of oil in May 2020, and no immediate storage capacity, U.S. oil futures contract went negative in price, an unprecedented occurrence. Contango reached over USD50 per barrel between adjacent delivery months. The greater the number of oil ETPs which were predominantly positioned at the front of the futures curve, the more exposed to 'rolling futures losses' would be evident each month. At this point the ETPs' returns might substantially diverge from the underlying commodity index, because the potential investment returns need to be absorbed by the rolling of contracts.

Ironically as the oil price fell, more investors might be attracted to an ETP, and the shares outstanding in the ETP could increase accordingly. Subsequently the amount of futures contracts underlying the ETP needing to be rolled would be larger, resulting in an increasing unstable situation. i.e. Investors wanting to be long the commodity via an ETP, but not ultimately wanting delivery, and the underlying hedge needing changed.

Did you know?

An Oil ETP had a tracking difference of +/- 1.75% between 2015 and 2019 to the Bloomberg WTI Crude Oil Subindex = BCOMCL index.[1]

12%

But in the first 8 months of 2020, the oil ETP suffered a 12% an underperformance to the underlying index because of the expensive rolling costs associated with contango.

1 Source: Bloomberg, 31st July 2020. **Capital at risk.** You may get back less than you invested. Case studies are for illustrative purposes only; they are not meant as a guarantee of any future results or experience, and should not be interpreted as advice or a recommendation.

The COMDTY <go> function

Generic spread between front/first month (black) and next/second month (white) of NYMEX WTI Crude Oil Futures. Negative value shows extent of the lower price differential of the near month relative to the next month contract delivery.

Alternative keystrokes[1]

CL1 comdty CL2 comdty HS + **GO**

Bloomberg function

Enter

1 Source: Bloomberg, as of 31 July 2020.

Overview and potential impact of commodities futures ‘rolls’

Certain ETPs hold commodity futures contracts because most investors do not want, and are not capable, of taking delivery of a few thousand barrels of oil, for example. Instead, ETPs will sell or ‘roll’ their contract each month by liquidating the near-term contract to fund the purchase of a later-term contract.

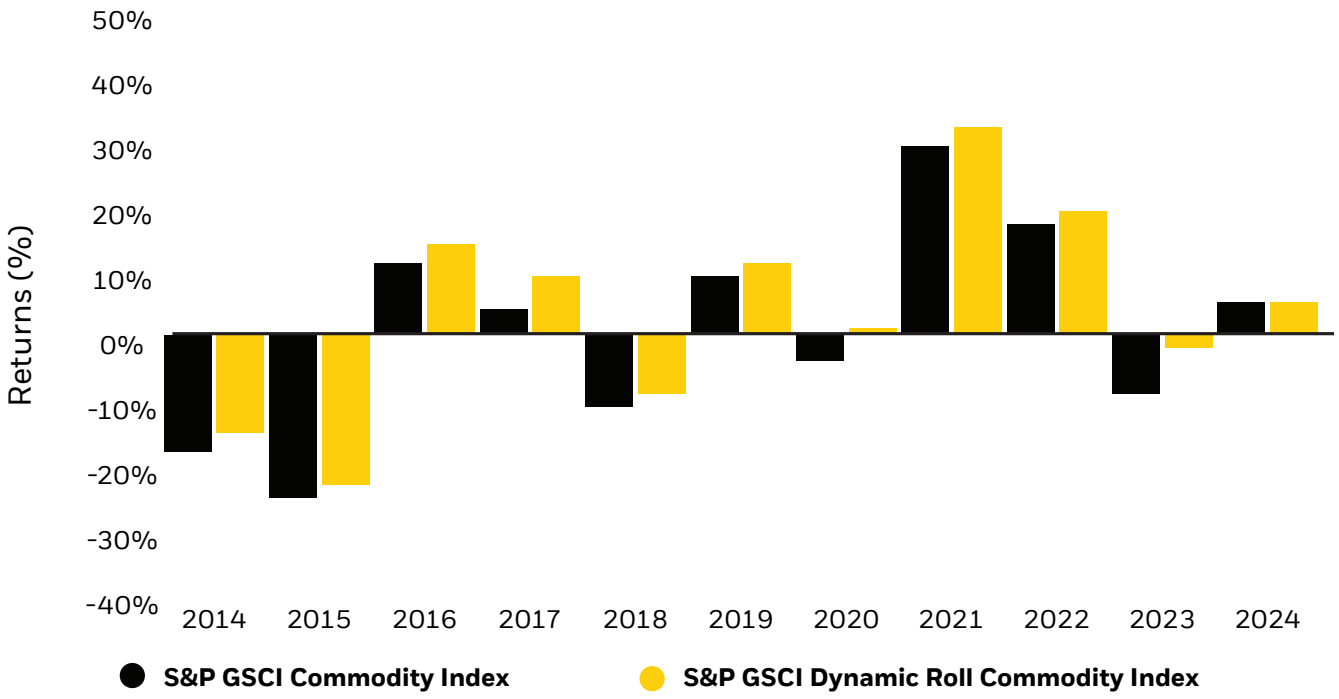
Since the future is exchangeable for the physical commodity when it expires, the price of the future is expected to converge with the spot price. For this reason, certain ETPs, whose objective is track movements in the spot price, will simply buy and sell the contract nearest expiration, this is known as ‘rolling’ to the front month contract.

Roll costs can be higher in the front month, and this cost will degrade the net asset value of the fund over time. To counter this pricing reality, some ETPs offer dynamic hedging where the underlying commodity exposure is replicated using a variety of front and back months to mitigate the front month futures contract roll problem.

Dynamic and selective futures roll strategies have the ability to help reduce roll costs and support performance.

Annual performance of S&P GSCI Commodity index

The chart below shows the annual performance of the spot vs the dynamic roll commodity index. The S&P GSCI index is widely recognised as a leading measure of general price movements and inflation in the world economy. It provides investors with a reliable and publicly available benchmark for investment performance in the commodity markets.[1]



1 Source: Bloomberg, BlackRock, 7 January 2025. **Index performance is for illustrative purposes only. Index performance does not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index. Past performance does not guarantee future results.**

4.4 CRYPTOCURRENCY ETPs

Over the past year, traditional investors have increasingly moved into digital assets, spurred by the ability to gain exposure through regulated financial instruments such as ETPs, which help remove the complexities related to holding digital assets directly.

Cryptocurrency ETPs have expanded access to digital assets, such as bitcoin, for investors who prefer a familiar wrapper offered by trusted providers.

Why investors consider bitcoin

Bitcoin is the world's most recognized digital asset – the largest cryptocurrency by market capitalization and the first to gain widespread global adoption.[1] Built on blockchain technology, bitcoin enables peer-to-peer transactions without the need for central intermediaries like banks.

What makes bitcoin relevant?

Persistent historical challenges around money

1. Prone to **inflation & debasement** given a non-fixed supply
2. **Difficult to transact** accross borders or jurisdictions
3. Vulnerable to forced **seizure or censorship** by a centralised authority in authoritarian regimes

What bitcoin made possible

- Fixed **maximum supply of 21 million units**, with supply growth declining every 4 years[1]
- Digitally-native and borderless, permitting **near-instantaneous, global transfers of value**
- Blockchain technology **removes need of centralised authority**, reducing the risk of potential seizure or censorship

For illustrative purposes only. 1 Source: Bitcoin White Paper "Bitcoin: A Peer-to-Peer Electronic Cash System" (2008), and CoinGecko, as of July 2024. Forward looking estimates may not come to pass. There is no guarantee that the current 2.1 million supply cap for outstanding bitcoin, which is estimated to be reached by approximately the year 2140, will never be changed.

Investors have largely coalesced around two key investment narratives:

- **Global monetary alternative** – Bitcoin is a global, decentralized, and non-sovereign asset that could serve as a hedge against increasing global disorder and declining trust in governments, banks, and fiat currencies
- **Bet on blockchain adoption** – As the world's predominant cryptoasset, bitcoin could be viewed as a bet on the increased usage of blockchain technology and greater digital asset adoption

Source 1: Based on bitcoin's market cap of $1.8T, which accounts for greater than 50% of the total market cap of all cryptoassets (excluding stablecoins and wrapped assets). Source: Coin Metrics, as of Dec. 31, 2024. All $ values are in USD.

WHAT ARE BITCOIN ETPs?

As bitcoin has grown in popularity, so too have the available investment options. Investors may choose to purchase bitcoin directly through a cryptocurrency exchange or gain exposure through the convenience of an exchange-traded product (ETP), which is accessible via a traditional brokerage account.

Bitcoin ETPs help address the challenges of investing directly in bitcoin, such as those related to storage and security. Direct ownership requires investors to decide where to store their bitcoin — whether in a crypto wallet or on an exchange — and to manage the risks of theft or loss of private keys. With a bitcoin ETP, investors simply hold shares of the product, while the ETP's custodian handles storage and security, removing the need to manage the asset directly.

Benefits of the ETP wrapper

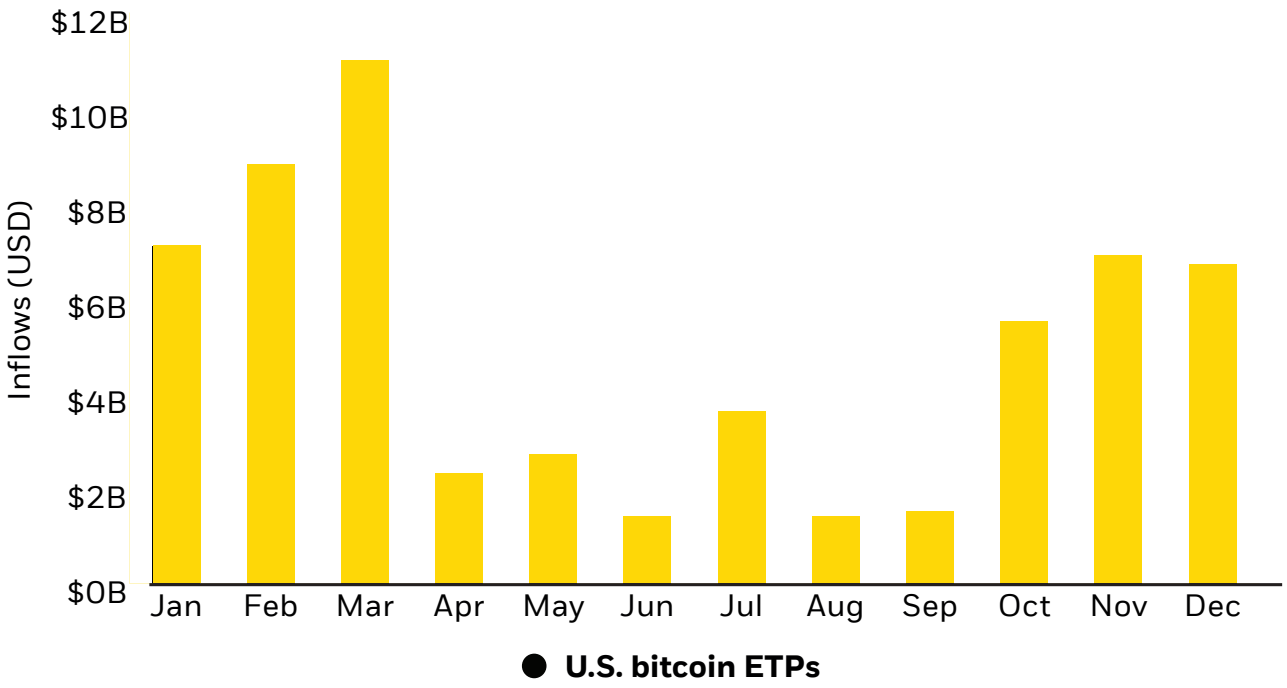
Exchange-traded products address several key questions for investors seeking cryptoasset exposure:

	Direct Cryptoasset Investing	Spot Cryptoasset ETP
Platform availability[1] Can you get exposure to bitcoin or other investments on traditional brokerage platforms?		
Costs[2] Can you benefit from lower trading and custody costs through economies of scale?		
Custody[3] Do you have access to an institutional custody offering?		
Tax management[4] Are you able to file taxes using standard tax forms and reports?		

For illustrative purposes only. 1. Platform availability refers to the process required to evaluate a brokerage or trading platform. Green indicates that the investment may be available on most traditional securities brokerage accounts. Yellow indicates that the investment may be available on select digital asset trading platforms. Pink indicates that support on digital asset trading platforms may be limited and require evaluation of new counterparties. **2.** Costs refers to the trading and custrody fees incurred by investors. Green indicates trading and custody fees estimated to the <100bps annually. Yellow indicates trading and custody fees estimated to be 100-200bps annually. Pink indicates trading and custody fees. **3.** Custody refers to whether the investor has access to a robust custody model with additional security controls such as segregated cold storage and custom user access and permissioning. Green indicates that investors do have access. Pink indicates that investors do not have access. **4.** Tax management refers to the process required to file taxes for the trading and investment of the asset on an annual basis. Green indicates that the asset is in standard brkerage tax forms and reports. Pink indicates that the investment is not available on traditional brokerage platfroms and likely involces manual processes to the file taxes.

Bitcoin ETPs are facilitating greater exposure to digital assets exposure for investors of all types, from individuals to financial advisors and institutions. Spot bitcoin ETPs in the U.S., which began trading in early 2024, has seen unprecedented demand, accumulating over $105 billion in assets under management (AUM) in their first year alone, demonstrating that many investors had been interested in digital assets but preferred a familiar and efficient vehicle through which to gain exposure.

Monthly flows for bitcoin ETPs in the U.S.



Source: ETP groupings determined by BlackRock using Bloomberg data since the inception of spot Bitcoin ETPs on Jan 11 2024 through December 31 2024. Numbers are rounded. All $ values are in USD.

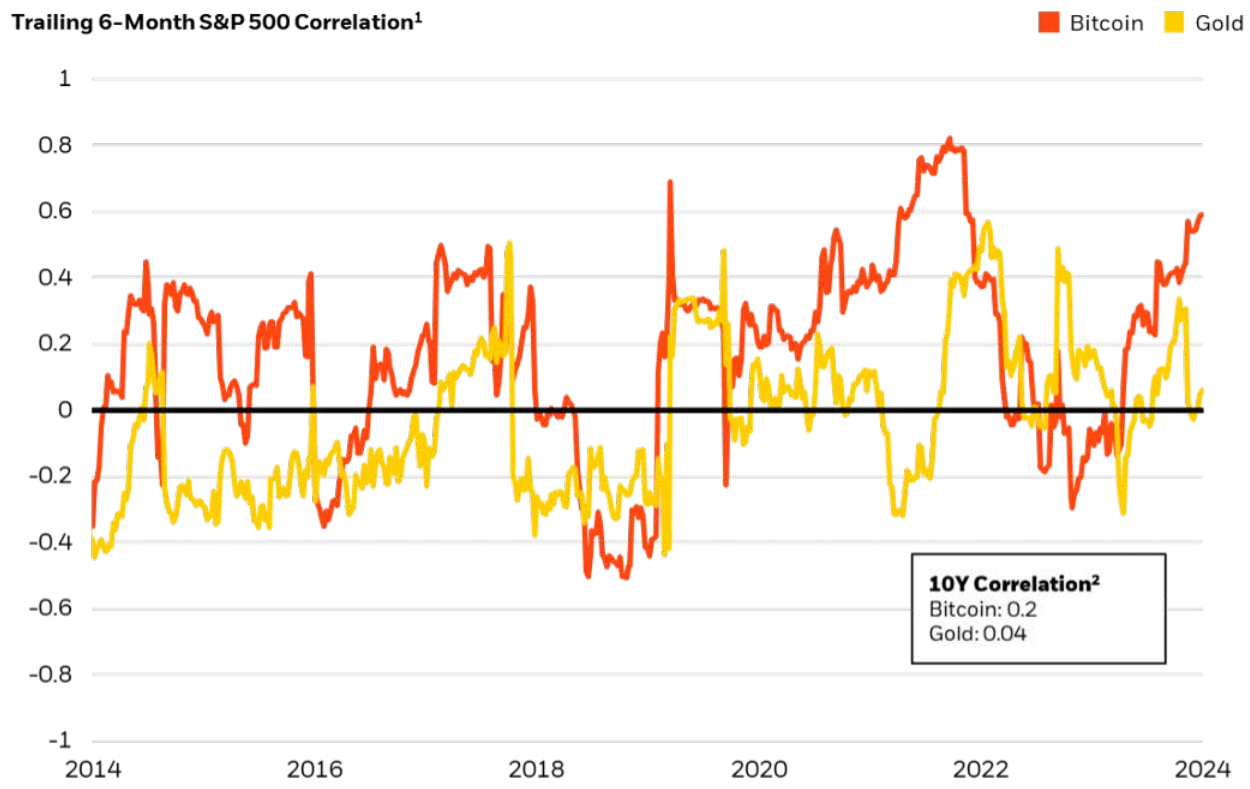
PORTFOLIO CONSIDERATIONS FOR INVESTORS

As ETPs expand investor exposure to bitcoin, the appropriate allocation to bitcoin and its role within portfolios are commonly raised questions among investors.

While bitcoin has been volatile and has seen short episodes of co-movements with equities (particularly during episodes of sharp shifts in U.S. dollar real interest rates or liquidity), bitcoin's long-term correlation to equities and bonds has been low, and its long-term historical returns have been vastly higher than all major asset classes.

Bitcoin, gold correlation to equities

Bitcoin has exhibited low historical correlation with U.S. equities, similar to gold, with periods of dislocation



Past performance does not guarantee future results. Index performance is for illustrative purposes only. Index performance does not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. **1.** 6-month trailing correlation of bitcoin and gold weekly returns to S&P 500 weekly returns from Dec. 2014 to Dec. 2024. Source: Bloomberg Bitcoin Spot Price, Bloomberg Gold Spot Price, S&P Global, and BlackRock calculations, as of Dec. 31, 2024. **2.** 10-year correlation of bitcoin and gold weekly returns with S&P 500 weekly returns from Dec. 2014 to Dec. 2024. Source: Bloomberg Bitcoin Spot Price, Bloomberg Gold Spot Price, S&P Global, and BlackRock calculations, as of Dec. 31, 2024.

From a portfolio perspective, historical analysis shows bitcoin exposure held at modest allocations can have a diversifying effect on portfolios, enhancing returns and Sharpe ratio, in large part due to the historically low correlation bitcoin has exhibited with traditional equities; at larger position sizes, however, bitcoin's elevated standalone volatility starts to have an outsized impact on increasing portfolio risk.[1]

From a risk budgeting perspective, the "Magnificent 7" group of mostly mega cap tech stocks serves as a useful starting point. While bitcoin is generally unlike any traditional assets, it shares some similarities with the Magnificent 7, which represent single portfolio holdings that account for a comparatively large share of portfolio risk as with bitcoin. In a traditional portfolio with a mix of 60% stocks and 40% bonds, each Magnificent 7 stock accounts for, on average, around the same share of portfolio risk as a 1-2% allocation to bitcoin.

1 Source: Historically, the impact of adding bitcoin to a tradition 60/40 portfolio of equities and fixed income, respectively, at low single digit percentages had a material positive impact on the Sharpe Ratio (as well as various other metrics of risk-adjusted return) while at large percentages, it contributed to a significant increase in portfolio volatility. Equities is represented by allocation to MSCI ACWI Investable Market Index (IMI). Fixed income is represented by allocation to Bloomberg US Aggregate Bond Index. Allocations to bitcoin are funded from equities, and portfolios are assumed to be rebalanced on a quarterly basis. Sharpe ratio is a measure of return per unit of risk and is calculated by subtracting the risk-free rate from the total return and dividing the result by the standard deviation; a higher Sharpe ratio implies greater portfolio efficiency. Source: Bloomberg, Morningstar, and BlackRock analysis from 2015-2024, as of Dec. 31, 2024.

4.4 SUSTAINABLE AND TRANSITION INVESTING WITH ETFs

ETFs with sustainability characteristics can help institutional investors align their portfolios to their sustainable investing objectives while benefiting from the advantages of ETFs, such as diversification, ease of trading, product depth and liquidity.

ETFs are commonly used for:

- Tactical shifts: to adjust exposure to certain styles, regions or countries on the basis of short-term views;
- Portfolio completion: to fill gaps in a strategic asset allocation;
- Liquidity management: to meet cash flow needs through a liquid vehicle while putting cash to work and minimising cash drag.

ETFs with a sustainable and transition investing focus can offer institutional investors a flexible solution for sustainable **tactical asset allocations** as well as easy access to strategic ones, like **implementing exclusions** and **aligning to climate commitments**.

Use case

Tactical asset allocation

In a regime of greater macro and market dispersion and volatility, institutional investors may wish to take a more dynamic approach to asset allocation. ETFs can provide easy access to a variety of exposures for tactical overlays, while incorporating sustainability considerations. In this way, investors can use ETFs to express their short-term tactical view on markets.

For example, **the S&P 500 Scored & Screened Index** is a broad-based, market-cap-weighted index that is designed to measure the performance of US equity securities with sustainability criteria, while maintaining similar overall industry group weights as the S&P 500.

Use case

Exclusionary approach

Institutional investors who wish to exclude certain activities from their portfolios can use ETFs to do so. ETFs can track indices that apply different sets of screens to limit exposure to certain areas, without deviating substantially from the parent benchmark.

For example, the MSCI Screened indices can give investors broad equity market exposures and maintain a similar risk and return profile to that of the Parent index, while:

- Applying nine mainstream business involvement screens;
- Removing companies involved in the severest controversies; and
- Targeting a minimum 30% reduction in carbon emission intensity relative to the underlying Parent index.

Environmental	**Fossil Fuel Extraction**	All companies deriving 5% or more aggregate revenue from Thermal Coal mining and Unconventional Oil and Gas extraction: **Thermal Coal Mining** the mining of thermal coal and revenue from coal trading **Unconventional Oil & Gas Extraction** from oil sands, oil shale (kerogen-rich deposits), shale gas, shale oil, coal seam gas and coal bed methane
	Arctic Oil and Gas	All companies deriving 5% or more revenue from the production of Arctic Oil & Gas
	Thermal Coal Power	All companies deriving 5% or more revenue (either reported or estimated) from thermal coal-based power generation
	Palm Oil	All companies deriving 5% or more revenue from the production of Palm Oil
	Biodiversity -related Controversies	All companies having involvement in controversies that are classified as Orange Flags (MSCI ESG Controversies: Environment – Land Use and Biodiversity Score of 1) related to a firm's use or management of natural resources
	Supply Chain Management Controversies	All companies having involvement in controversies that are classified as Orange Flags (MSCI ESG Controversies: Environment – Supply Chain Management Score of 1) related to the environmental impact of a company's supply chain and the sourcing of natural resources
Social	**Controversial Weapons**	All companies with any ties to controversial weapons which includes: cluster munitions, landmines, depleted uranium weapons, biological/chemical weapons, blinding lasers, nondetectable fragments and incendiary weapons
	Nuclear Weapons	All companies that manufacture nuclear warheads, nuclear missile systems, exclusive and dual use components, exclusive and dual use delivery platforms and provide auxiliary services related to nuclear weapons
	Civilian Firearms	All companies classified as a "Producer" of firearms and small arms ammunitions for civilian markets and all others deriving 5% or more revenue from the distribution (wholesale or retail) of firearms or small arms ammunition intended for civilian use
	Tobacco	All companies classified as a "Producer" and all others deriving 5% or more aggregate revenue from the production, distribution, retail and supply of tobacco-related products
Governance	**UN Global Compact Violators**	All companies violating the United Nations Global Compact principles on Environment, Human Rights, Labour Rights and Anti-Corruption
Other	**Very Severe ESG Controversies**	All companies having involvement in ESG controversies that are classified as Red Flags (MSCI ESG Controversy Score of 0)

For illustrative purposes only. Source: MSCI ESG Screened Indexes Methodology as at 1 July 2025.

Spotlight: Unpacking the benefits of a screened approach

The MSCI World Screened Index outperformed its parent index in four out of five past years. This is due to structural sector tilts resulting from the exclusions criteria. The weight from excluded companies is redistributed across remaining constituents, leading to overweights to other sectors, like Information Technology, Financials and Healthcare, which have played a role in the performance of the MSCI Screened Indices over the past 5 years.

Past 5 years of performance difference of MSCI World Screened vs MSCI World Index

	MSCI World Screened Index	MSCI World Index
As of	6/Aug/2025	6/Aug/2025
Performance Currency	USD	USD
2024	20.01%	18.67%
2023	26.23%	23.79%
2022	-19.61%	-18.14%
2021	22.16%	21.82%
2020	17.56%	15.90%

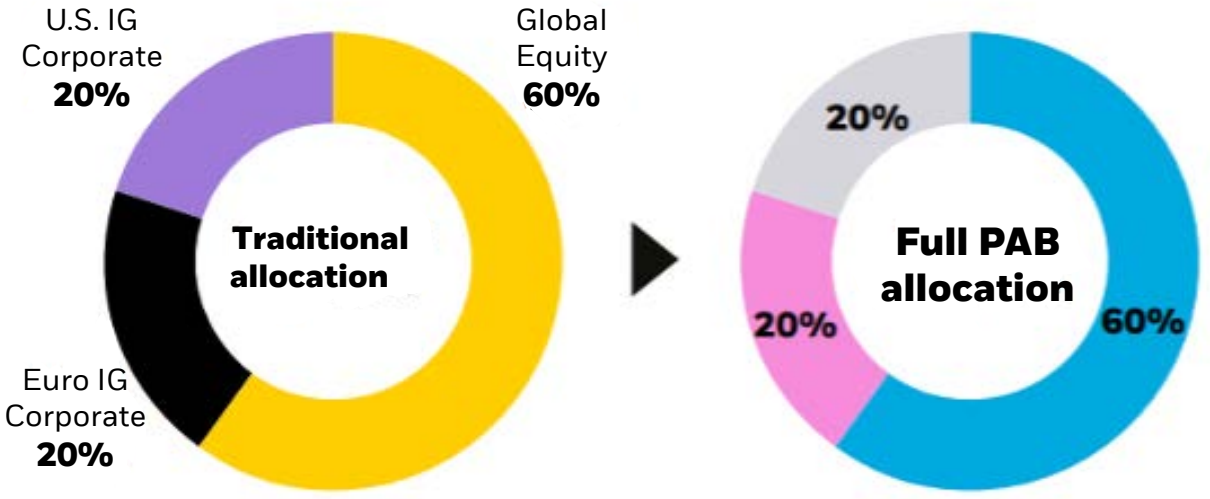
Source: BlackRock as at 8 August 2025. For illustrative purposes only. The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.

Use case

Aligning to a decarbonisation target

ETFs can offer a transparent and easily accessible solution to investors who have set climate or decarbonization targets. For example, the ETFs **that track the Bloomberg MSCI Corporate Paris Aligned ESG Select Indices** take a top down portfolio approach to decarbonization by tracking indices that follow the EU Paris Aligned Benchmark regulation. These strategies are built to reduce the carbon intensity of the portfolio by 50% at inception and then apply a decarbonization target of 7% year on year as well as increase the ESG score of their portfolio and including screens on fossil fuel extraction and power generation. Alternatively, ETFs tracking the MSCI Climate Transition Aware Select Indices take a bottom-up approach to decarbonization by incorporating forward-looking metrics which help investors access companies with science-based targets as well as transition solution providers, all whilst aiming for sector neutrality.

Example of incorporating Paris-Aligned Benchmark UCITS ETF in a portfolio



	Traditional		Paris-aligned (PAB)	
Global Equity Equity		MSCI World Index		MSCI World Climate Paris Aligned Benchmark Select Index
Euro Investment Grade Corporates Fixed income		Bloomberg Euro Corporate Index		Bloomberg MSCI EUR Corporate Climate Paris Aligned ESG Select Index
U.S. Investment Grade Corporates Fixed income		Bloomberg US Aggregate Corporate Bond Index (EUR Hedged)		Bloomberg MSCI US Corporate Climate Paris Aligned ESG Select Index (EUR Hedged)

Source: BlackRock as at 30 June 2025. For illustrative purposes only.
Source: MSCI Bloomberg as at 30 June 2025.

Three changes after applying a full PAB allocation

1 Improvement of MSCI sustainability characteristics. When assessing the change of sustainability characteristics resulting from the transition to Paris-aligned benchmarks, we see a clear reduction in carbon-related metrics, such as: a reduced weighted average carbon intensity, a higher low carbon transition score and an overall lower Implied Temperature Rise.

2 Tracking error. Ex-ante tracking error versus the parent indexes is relatively modest compared to other sustainable methodologies and is higher for equity transition versus fixed income.

3 Fixed income metrics. The optimised methodology employed within the fixed income Paris-aligned indexes results in very comparable fixed income characteristics between the traditional and Paris-Aligned indices.

Source: BlackRock, as at 30 June 2025.

BLOOMBERG ANALYTICS 5

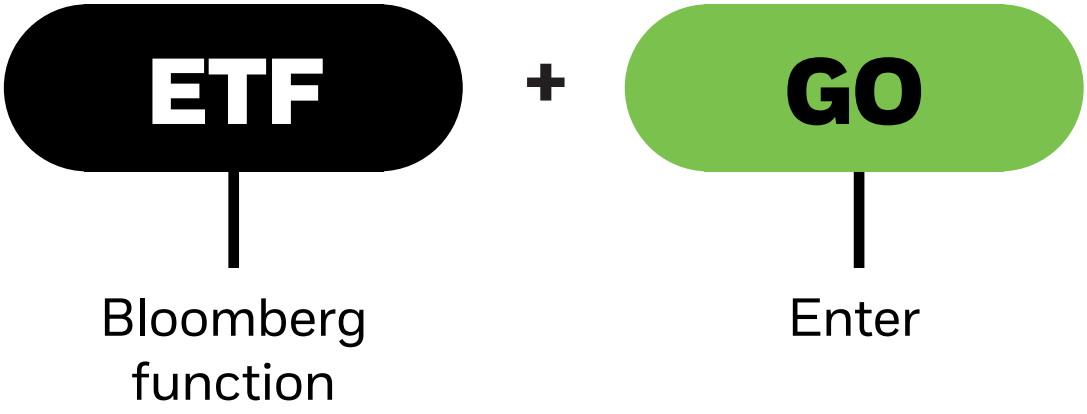
5.1 ETF BASICS ON BLOOMBERG

ETFs typically provide exposure to a diversified basket of securities. This enables investors to achieve beta or alpha objectives, while offering the potential to mitigate headline risks associated with more concentrated exposures.

There are several functions on Bloomberg that allow investors to look under the hood of an ETF for visibility into the fund's composition, characteristics, and risks.

The ETF function

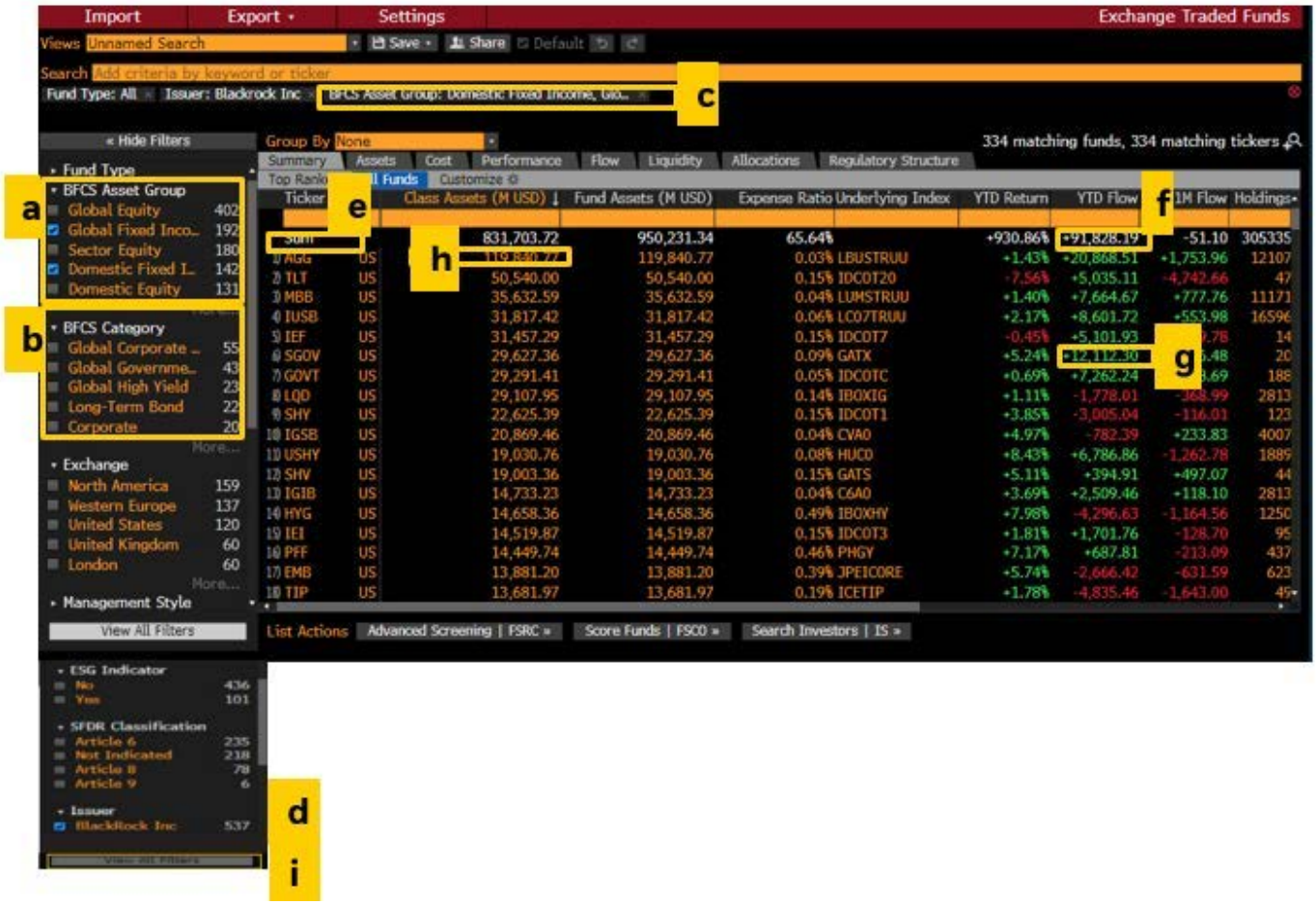
The ETF <go> Bloomberg function provides an overview of ETF details — such as flows and yields — within specified criteria.



For illustrative purposes only.

iShares tip: Be mindful of the premium or discount throughout the trade execution window and adapt as necessary.

ETF



For illustrative purposes only. Represents time period of 1st January 2024 to 31st December 2024. Only iShares ETFs showing in this illustration. Other ETF providers are excluded from this list. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**BFCS asset group**	Allows choice of asset class. 'Global Fixed Income' and 'Domestic Fixed Income' selected. Domestic = US.
b	**BFCS and other categories**	Not selected in this example, but allows for category type.
c	**rating, maturity etc**	Further classifications available in this section are geographical focus, strategy, issuer, SFDR classification, rating, maturity etc.
d	**Issuer**	Allows to search by ETF provider. The illustration shown is currently only showing BlackRock iShares.
e	**Sum**	In this example aggregate figures in 'sum' line only reflect iShares, and not industry flows.
f	**Flows**	Explore flows over periods of time. The 'sum' line above the individual ETF information gives summary also.' Year to date flows' in these fixed income categories USD 91.828 bn (1st January 2024 to 31st December 2024). This column is the sum of the creation and redemptions. The flow tab allows more details.
g	**Noteworthy flows**	**[ETF 6]** a 1-3 month US Treasury Bond ETF has seen $12.112 bn of inflows year to date.
h	**ETF AUM**	**[ETF 1]** a broad category fixed income ETF has $ 119.84 bn in assets
i	**Primary share classes filter**	This function is useful for UCITS funds when searching at fund level and aggregated assets of individual share classes. Alternative search method click on 'all filters' >> Descriptive info >> Share Classes >> Include Secondary Share Classes ? >> No.

The list above is currently ranked by assets under management. Other criteria can be ranked according to user preferences, such as YTD return and fund flows. The ETF <go> search function can include all ETF sponsors but for the purpose of this publication other providers ETFs have been blanked out. However, the aggregate numbers include them. All $ values are in USD.

The FFLO function

The FFLO Bloomberg function provides a high-level overview of ETF fund flows by asset class.

FFLO + **GO**

Bloomberg function | Enter

FFLO

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a -From the dropdown tab chose type of flow to be examined. 'Netflow' selected = changes in investment flow across ETF creations and redemptions

b Select from 'time series' to show bar graphs of flows by asset type. 'details' and 'historical' show more granular information of flow underlying the asset types.

c Set to 'auto-monthly', once can change to other time periods.

For illustrative purposes only. Represents time period of 1st March 2024 to 13 February 2025. Some emerging markets appear under "not declared" category. All $ values are in USD.

The DES function

The DES Bloomberg function provides a view of an ETF's composition and key metrics. All ETFs—even bond funds—are given an equity ticker on Bloomberg.

iShares ETF + **EQUITY** + **DES** + **GO**

iShares ticker | Bloomberg command | Bloomberg function | Enter

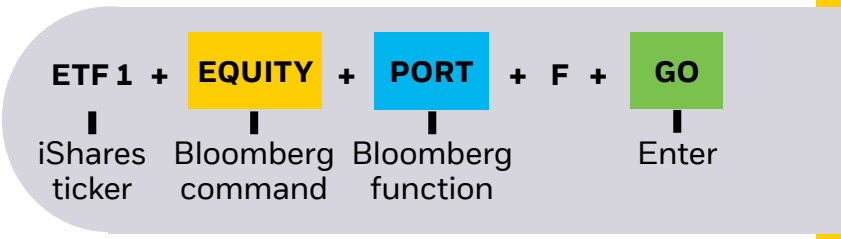
DES

For illustrative purposes only. As at 29th December 2024. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown. All $ values are in USD.

a	**An iShares ETF capitalisation**	$101.5 bn is the total value of all the ETF's outstanding shares, stated in the pricing currency. The market cap is calculated by multiplying the last price of the ticker by the shares outstanding.
b	**Expense ratio**	0.03%, deducted from the NAV on a daily basis. For example, if ETF 1 is held for 120 days, we would expect the NAV to drop by (120/365)*(0.03/100) = 0.009863%
c	**Holdings tab**	Underlying security holdings
d	**NAV**	Published at prior day close
e	**Appropriations**	**Actively managed:** The vast majority of ETFs are index replications although recently there are an increasing number of ETFs with active replication strategies. **Swap based:** If yes, derivatives/swaps are used instead of physical securities to replicate the benchmark. The buyers should consider the underlying swap treatment. **Replication:** Whether the ETF manager uses optimization or full replication strategies to track the index. **Securities lending:** If underlying securities in the ETF are lent, a split of lending revenues accrue to the ETF.
f	**Shares outstanding**	This is the number of ETF shares currently in issuance.
g	**Total assets**	Total assets are provided by the fund company or administrator and represent the total fund size. The total assets may not equal market capitalisation.

The PORT function

The PORT <go> function allows a detailed analysis of the underlying bond portfolio. One useful view it provides is the ratings breakdown of a bond ETF.



Most ETFs do not have a credit rating at fund level, but the ratings of the ETF's underlying assets should be readily observable.

PORT

For illustrative purposes 14th February 2025.

Using the PORT <go> function to view the credit ratings breakdown

a	**Select the iShares fund**	In this example, the investor selects [ETF 1].
b	**Select 'benchmark' index or fund for comparison.**	The default is the ETF's underlying index (if available).
c	**Select Aggregate tab**	-
d	**Classification. Left click arrow to select for fund/benchmark comparisons**	The investor selects Bloomberg Composite ratings. Other providers rating screens are available.
e	**Column set**	Select preferred view. Here showing a customised setting 'PORT rating'.
f	**Position settings**	Left click arrow to show positions. Portfolio = ETF. Benchmark = index All universes = both. All universes = both.
g	**Apply and reload**	To see results.

The NAV function

The NAV Bloomberg function allows investors to view whether an ETF is trading at a premium or discount to its NAV. It also shows fund flows.

[ETF 1]	+	EQUITY	+	DES	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

NAV

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Panel 1

Closing price of the ETF superimposed on the NAV

- The NAV of an ETF is required to be published once a day (typically at the end of trading in the underlying markets) by a 3rd party (typically fund custodian).
- A bond ETF's NAV is based on the underlying bond prices as provided by the underlying index provider.
- These bond prices are derived from actual trades, or estimated based on bonds that have comparable issuers, sectors, or other market metrics.
- The value of the individual bond positions (pricing x notional units held) are then added up along with any net cash holdings.
- The total sum is then divided by the number of ETF units outstanding to get the NAV per unit.
- For corporate bond ETFs, the pricing (index marks) are typically based on the bid-side of the underlying bonds. Equity ETF pricing is based on the closing price of the underlying stocks.

Panel 2

The percentage difference between the ETF price and NAV

iShare's 1 price premium over NAV was higher on the 1st July 2022 than the 1st July 2021. Further in this chapter, we explore how the price return of an ETF in any intervening period can be different from the NAV return.

Most of the time, the price of iShare's 1 trades at a narrow premium to NAV given the bid-side valuation of the ETF. The iShare1 fund premium over NAV from 1st July 2021 - 1st July 2022 averaged 0.0138%.

Panel 3

Fund flow (creation/ redemption activity)

- Green = fund inflow = creations
- Red = fund outflow = redemptions
- Expressed in USD millions.

When an ETF's closing price and NAV are struck at different times

The NAV function compares an ETF's closing price with its underlying closing NAV. If these prices are struck at different times, any market moves can cause discrepancies between the two pricing points.

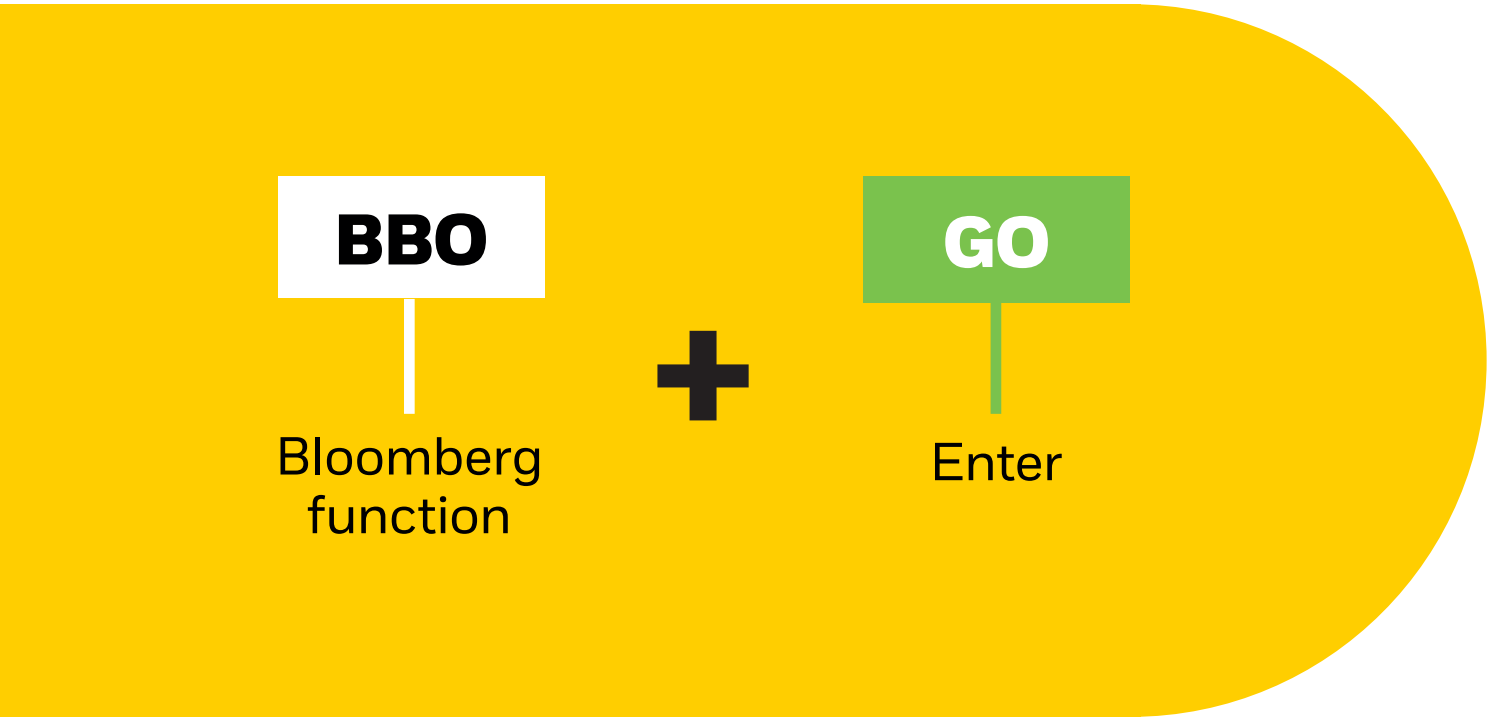
5.2 ETF TRADING ANALYTICS

It is important for ETF investors to develop an understanding of ETF liquidity and how they trade. Bloomberg offers several useful functions for ETF trading analytics.

The best bid or offer (BBO) function

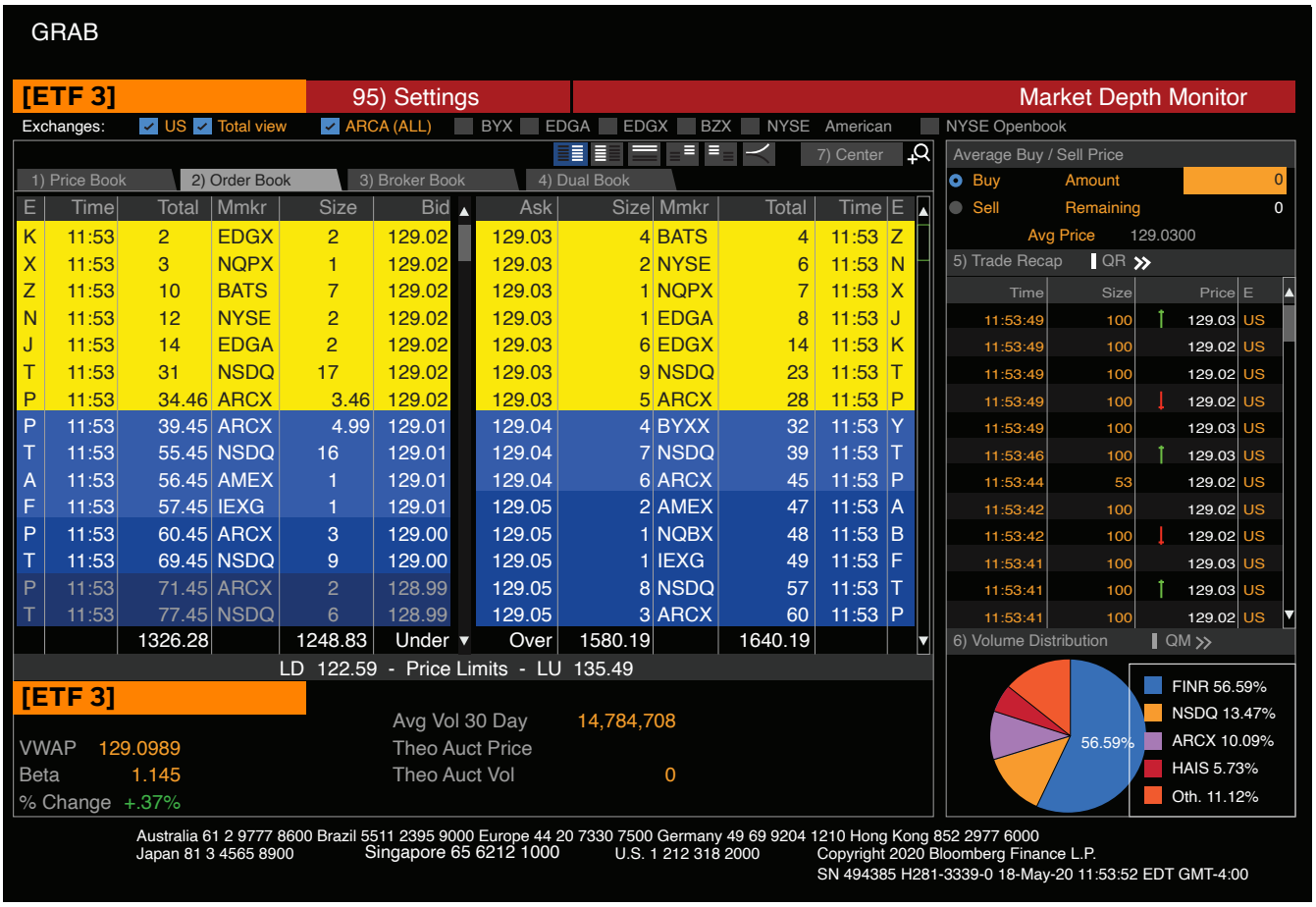
The Bloomberg BBO function is the exchange order book where buyers and sellers meet in the marketplace. There is a different order book for every exchange-traded security.

This provides a useful reference point to see live prices and trading volumes. However, it only gives direct buy and sell access to exchange participants.



For illustrative purposes only.

BBO



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The above example shows the order book for [ETF 3] = an investment grade corporate bond ETF. Size is expressed in hundreds, such that 1=100.

In this example, a buyer on the exchange could buy 2,800 shares on [ETF 3] offer side at a price of $129.03 for a total of $3,612,840.00.

The buyer could move up the price/volume scale accordingly. Sellers, on the other hand, could move down the price/volume scale.

If the order was 4,500, an exchange buyer could buy:

- 2.800 at $129.03
- 1.700 at $129.04

All $ values are in USD.

See next page for
'Request for Quote = RFQE'

Using the bond ETF order book as a guide

When looking to make a bond ETF trade, asset owner can ask a market counterparty for an OTC price and use the BBO exchange prices as a price discovery reference point.

The RFQE function

Bloomberg offers an Request for quote (RFQ) function, which is one of the common ways for institutional investors to put multiple investment banks/brokers in competition for trades on an OTC basis.

With this function, it is possible to trade:

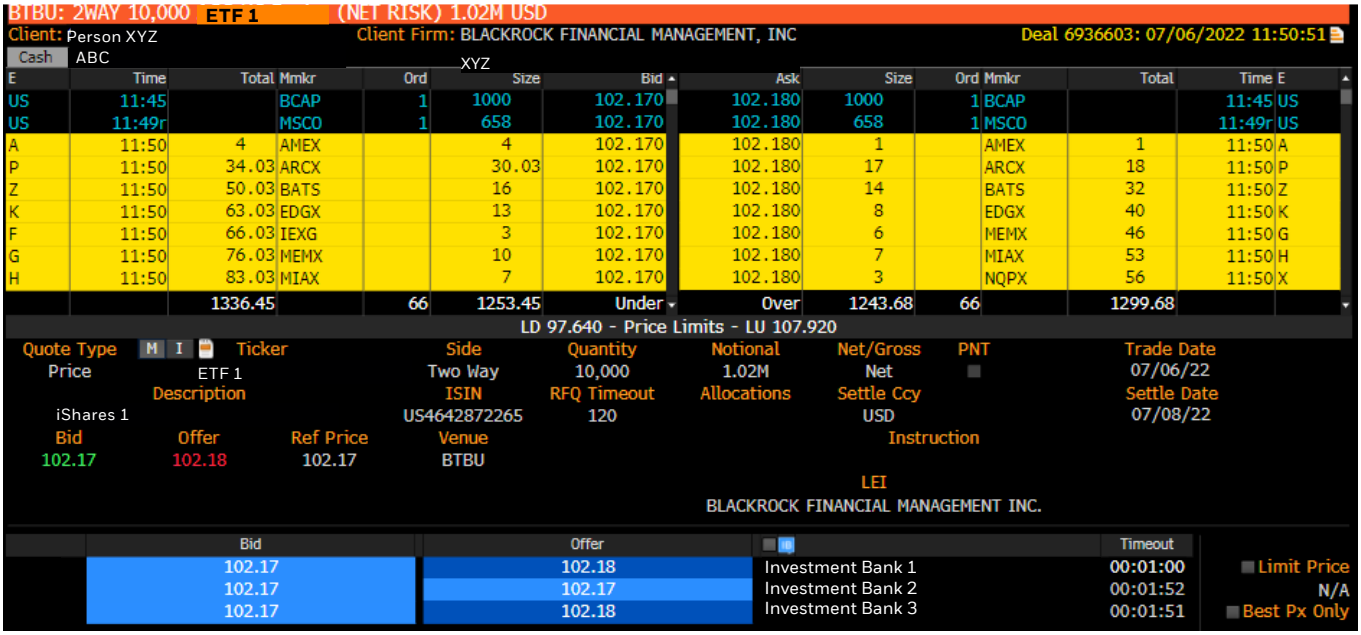
- On risk immediate execution
- Benchmarked to NAV

RFQE + **GO**

RFQE — Bloomberg function

GO — Enter

RFQE



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

For more information on how to access RFQE, contact your **Bloomberg representative.**

The quote montage (QM) function for U.S. ETFs

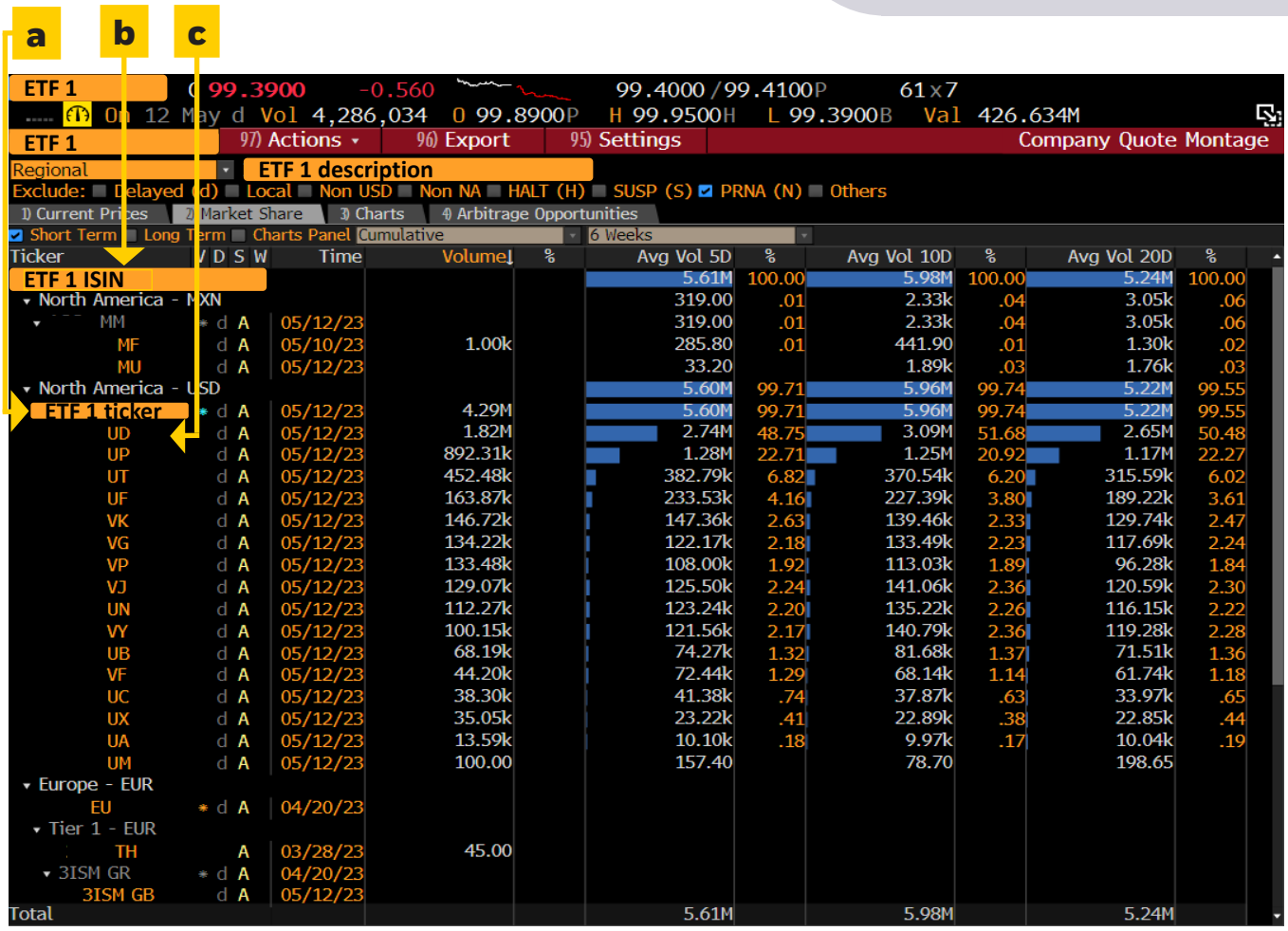
The QM <go> Bloomberg function enables investors to view all the trading venues and platforms where a given ETF trades. U.S. and European ETF trading ecosystems differ materially. The following is an example of the QM function for a U.S.-listed bond ETF.

QM + **GO**

QM — Bloomberg function

GO — Enter

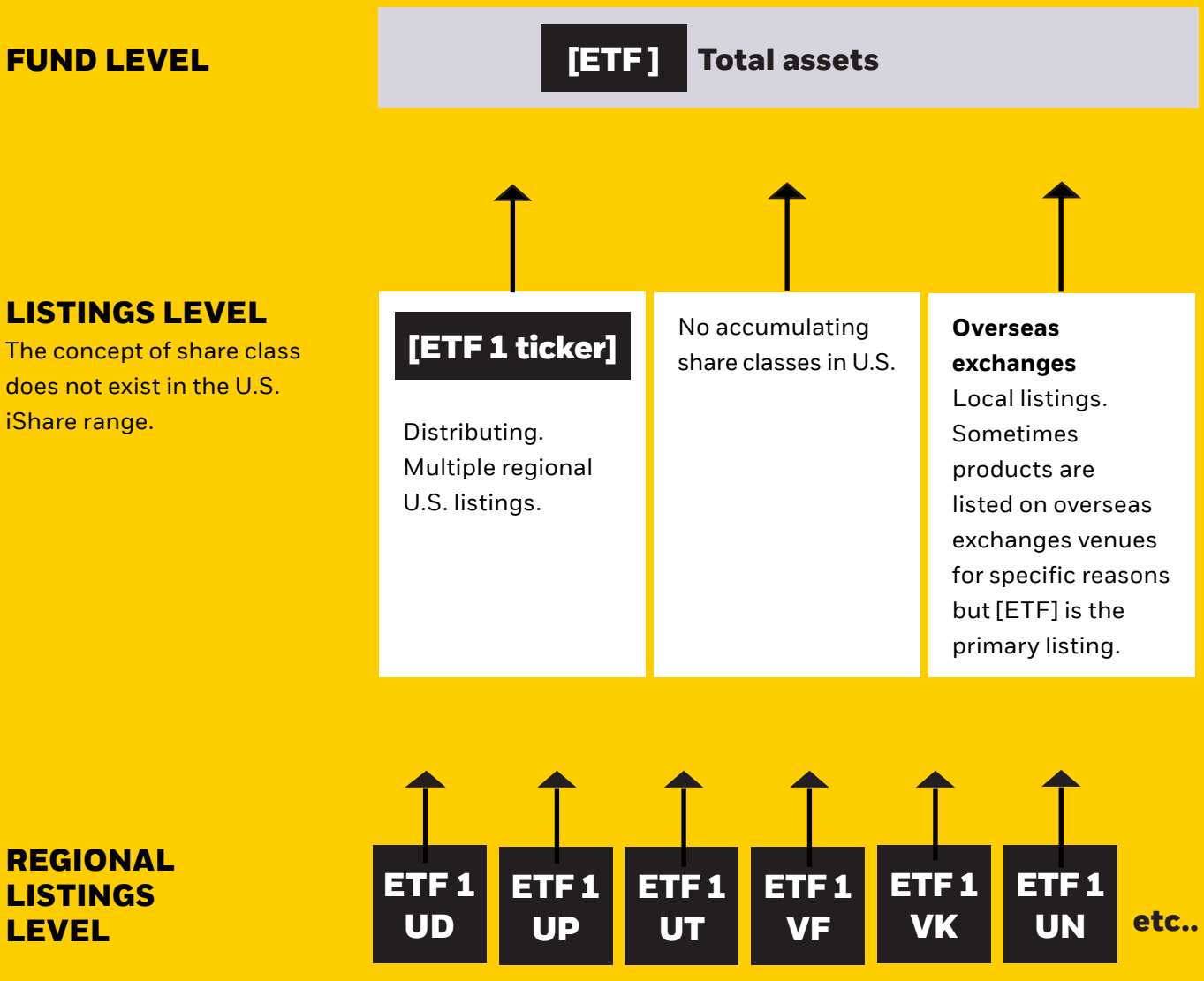
QM



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Parent ticker [ETF 1]**	The default is the ETF's underlying index.
b	**Fund identifier (ISIN)**	Left click on the arrow to the left to expand regional exchanges.
c	**Regional exchanges**	A client order could be executed on any of the regional exchanges. In addition, there are condition codes to inform the nature of the trade (i.e. 'out of sequence', 'derivative' etc.). The U.S. has a 'national best bid/offer' policy which guarantees the best price across all the exchanges in the U.S.

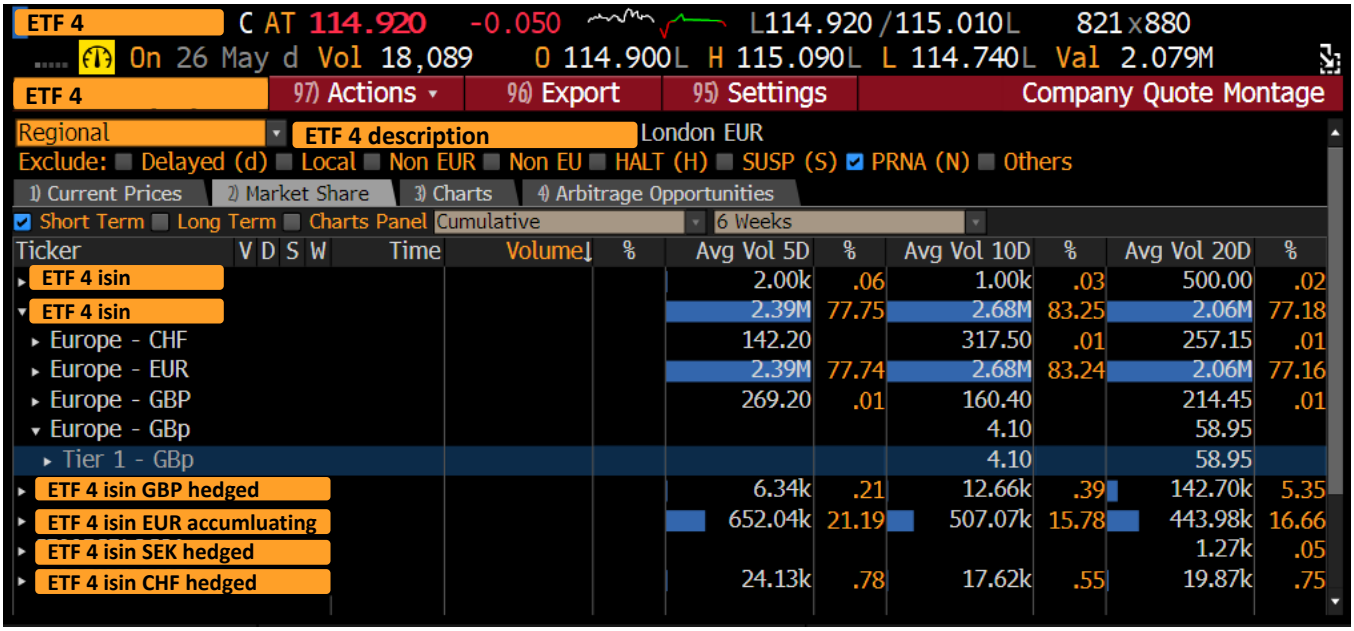
Diversification of trading across exchanges/platforms – U.S. example



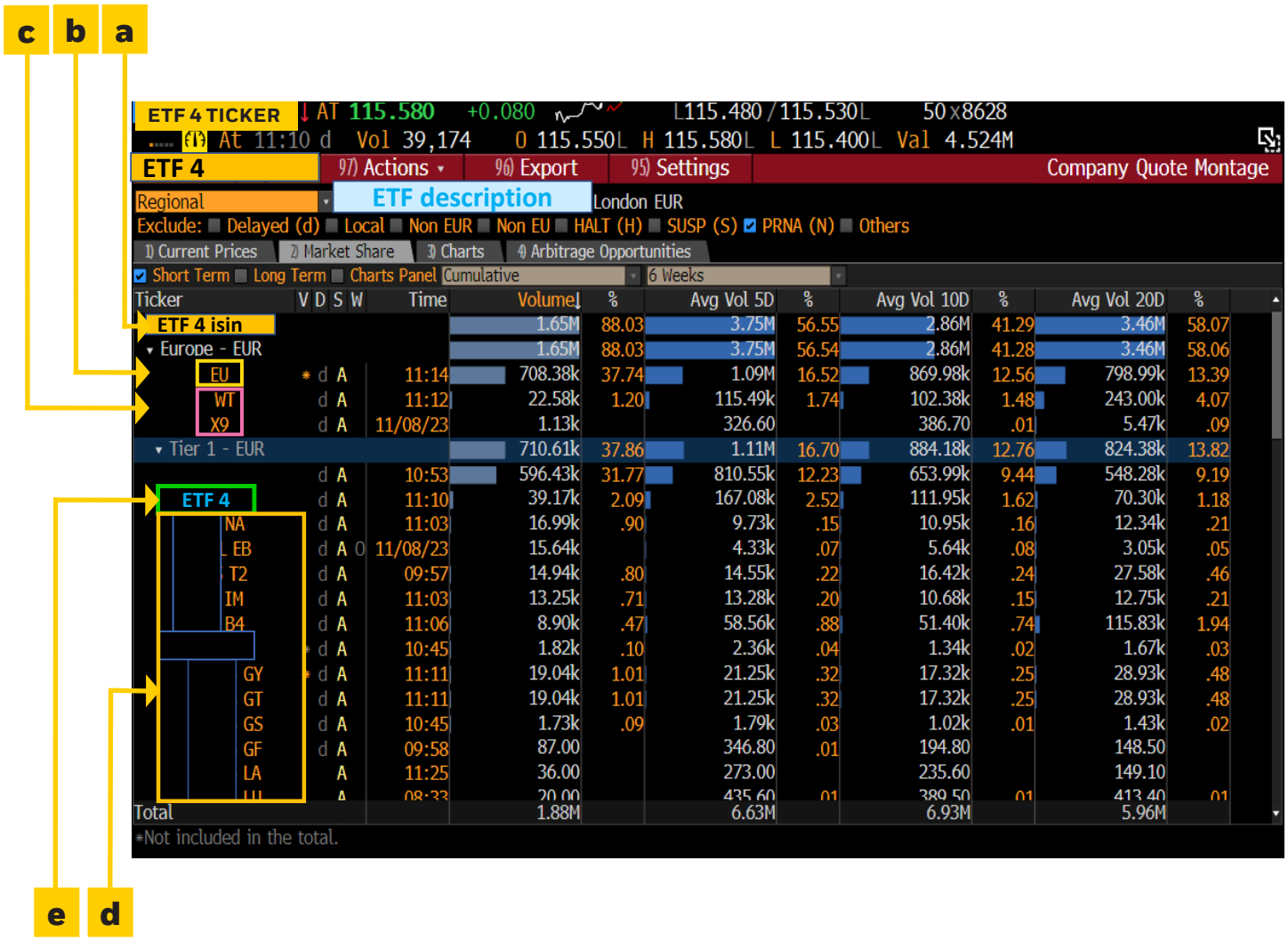
The QM function for European ETFs

European ETFs trade across a broad and diverse ecosystem. In Europe, it is possible to have share classes of the same fund, where each have different ISINs. This concept does not exist in the U.S. As show below, left clicking on any arrow to the left of the ISIN reveals its trading venues.

QM

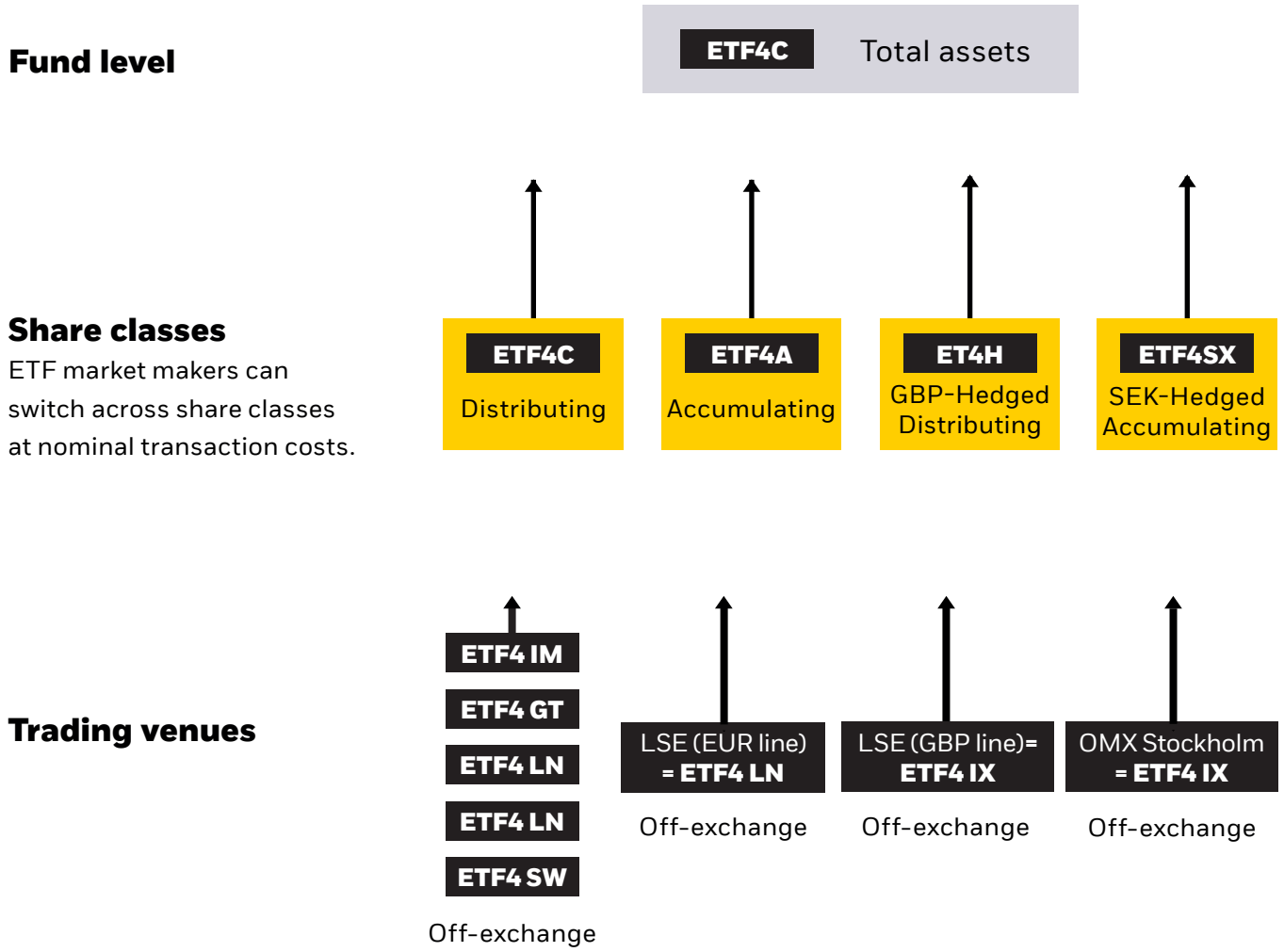


For illustrative purposes only. Represents time period of 1st January 2021 to 26th May 2023.



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Diversification of trading across exchanges/ platforms – European example



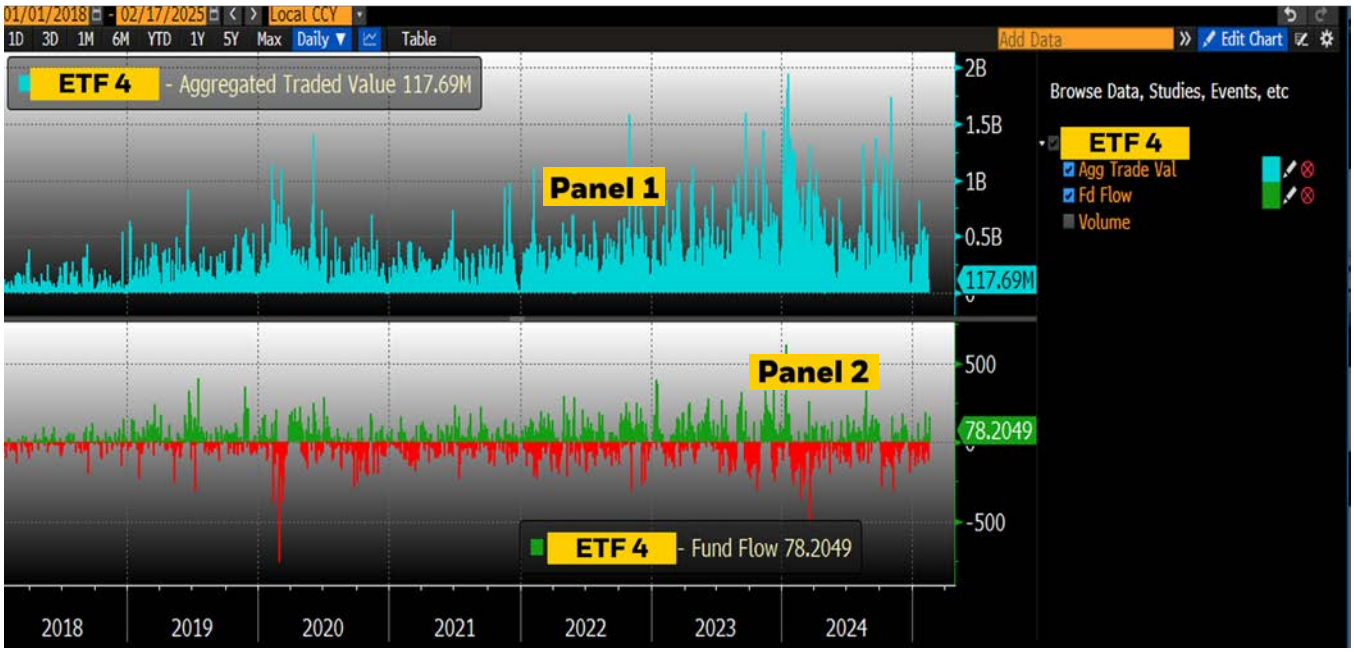
Source: BlackRock as of 13 March 2025. For illustrative purposes only.

a	**ETF4**	The International Securities Identification Number (ISIN) specific to this share class.
b	**ETF4 EU**	This is a Bloomberg construct (not executable) that measures aggregated trading volumes across multiple venues.
c	**ETF4 WT and ETF4 T2**	These are Tradeweb multilateral trading facilities (MTFs), also known as off-exchange trading platforms.
d	**Tier 1 EUR, ETF4 GR etc.**	These are listings on different exchanges. Tiering is based on the first four letters of the fund (page shown is truncated). In this case, the ETF4 LN (under the EUR tier) is the most common ticker and trades in EUR on LSE. It also trades on other exchanges/ in other currencies, where it may be known under a different ticker (e.g. ETF4 GT).
e	**Parent ticker**	Bloomberg may designate a 'parent' ticker in light blue. This a bloomberg designation only.

Shortcut:

Diversification of ETF trading across platforms

Across European and U.S. markets, measuring aggregate share volume/value traded requires different approaches. Below is an example of the European-listed 'EUR iShare 4' through a customized Bloomberg page.



As at 17 February 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Panel 1

Daily gross volumes

- The upper panel is a consolidated tape of [ETF4], showing total value traded in the selected ETF. It aggregates the value traded across all the secondary listings (cross listings) of the share class.
- Brokers will look at an ETF's liquidity across multiple exchanges, the MTF (multi trading facilities), and the underlying bonds' liquidity.
- In this ETF example, over 95% of traded volume (light blue bars) is going through the MTF.

Panel 2

The fund flow

- This shows the fund flow for the ETF share class ([ETF4 LN] in this example), consistent with the NAV <go> Bloomberg function.

European-listed vs. U.S.-listed ETF trading

The European-listed ETF (UCITS) trading landscape has some notable differences relative to U.S.-listed ETFs:

1 A **European ETF** might have **various listings** in different currencies and across **multiple exchanges.**

2 There are often **multiple share classes** with similar diversified trading footprints that each offer slight variations (e.g. accumulating or currency-hedged).

As such, selection of the appropriate ticker listing is key for the right kind of exposure.

3 The **lending rules** in the underlying basket of holdings have a slightly different treatment relative to their U.S. counterparts.

ETF trading strategies

Please see page 28 to learn how to determine the best ETF trading strategy for a variety of objectives.

The graph price (GP) and VAP function

The GP function for plotting various features on ETFs

[ETF1]	+	EQUITY	+	GP	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

GP

a The Left click on the 'last px (price) ' tab type in new function you wish to explore. Use keywords to initiate graph history

example 1
type '**yield**' in highlighted tab and various yield options become available for the user in pop up box
SP 111 = YAS bond yield
SP 112 = YAS spread to benchmark
.... And many other selections

example 2
type '**fund**' in highlighted tab and various flow options are shown in the pop up box FD004 = **Fund** total assets
FD447 = **Fund** flow..... And many other selections

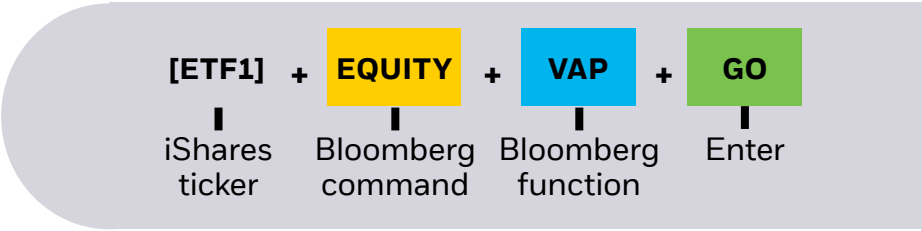
b If a user left clicks the 'last px' tab without suggesting a word function search, a pop up box with a 'find all.....' option appears (not shown) . Left click 'find all' and this window appears with further graph suggestions and categorized fields

c Now showing YAS Bond Yield = SP 111 and historic yield graph

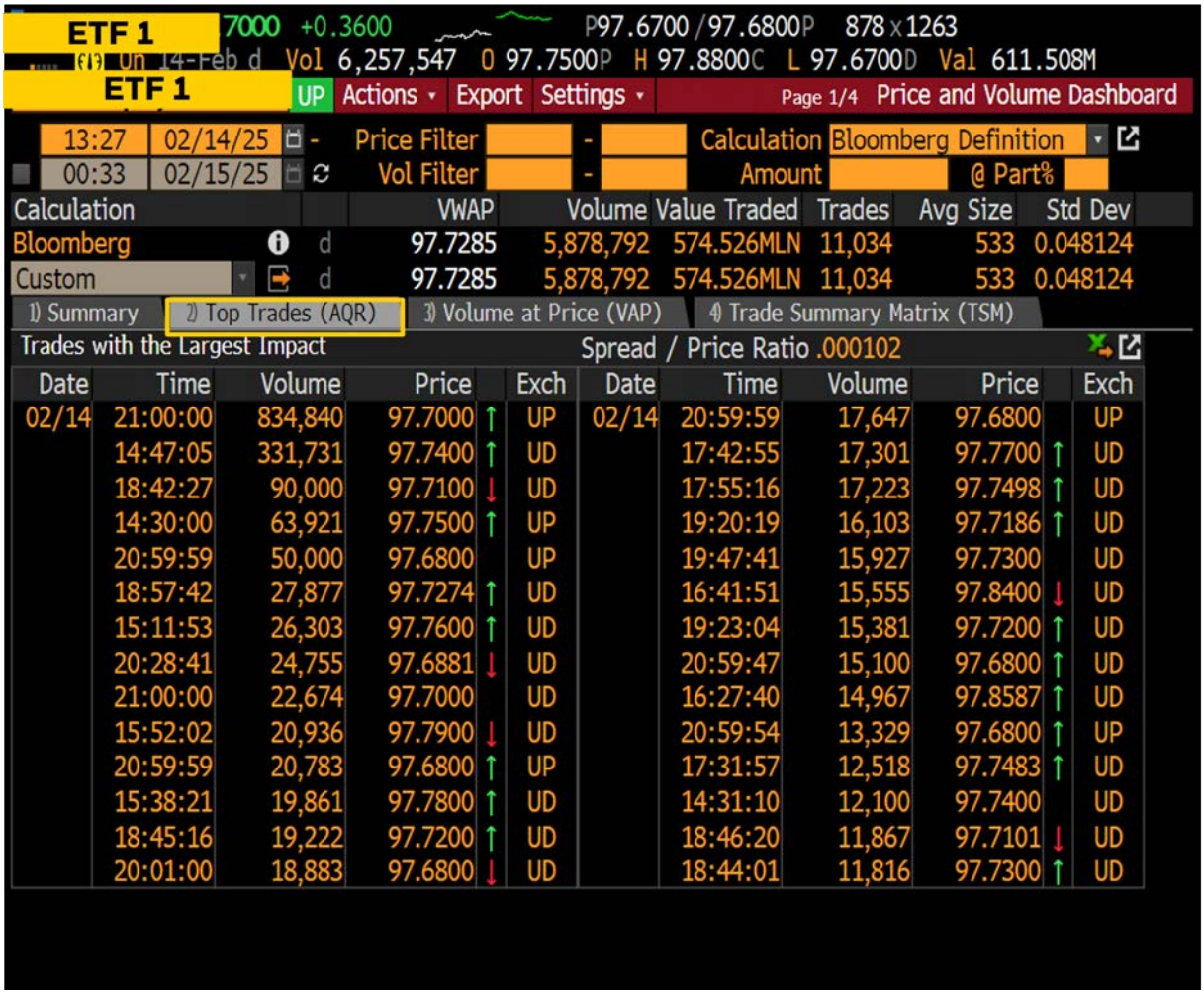
For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The volume at price (VAP) function

The VAP Bloomberg function provides a variety of options to explore historic ETF trades at various prices on-exchange.



VAP



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The MOST function

MOST + **GO**

Bloomberg function — Enter

The MOST Bloomberg function shows a snapshot of intraday turnover across all ETFs. It is a summary screen that shows secondary turnover from all providers.

MOST

For illustrative purposes only. As at 26th February 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown

a	**Security type**	ETFs
b	**Select Value tab**	

Fixed Income ETF trading and liquidity

The growth of fixed income ETF liquidity provides a route for investors to implement sizeable trades anonymously and with minimal market impact. Institutions can use ETFs to quickly manage exposure by cutting, hedging, or rebalancing portfolios efficiently.

$1.78tn

Driven by positive total returns and a record $293 billion of inflows, U.S. FI ETF AUM grew by 17.5% in 2024, reaching $1.78 trillion.[1]

3,7%

Secondary ETF trading volumes saw an uplift in 2024, rising 3.7% YoY after a decline in 2023. Five year annualized trading volumes maintained robust growth, averaging a 7.6% increase.[2]

U.S. Fixed Income ETF AUM vs. trading volumes[3]

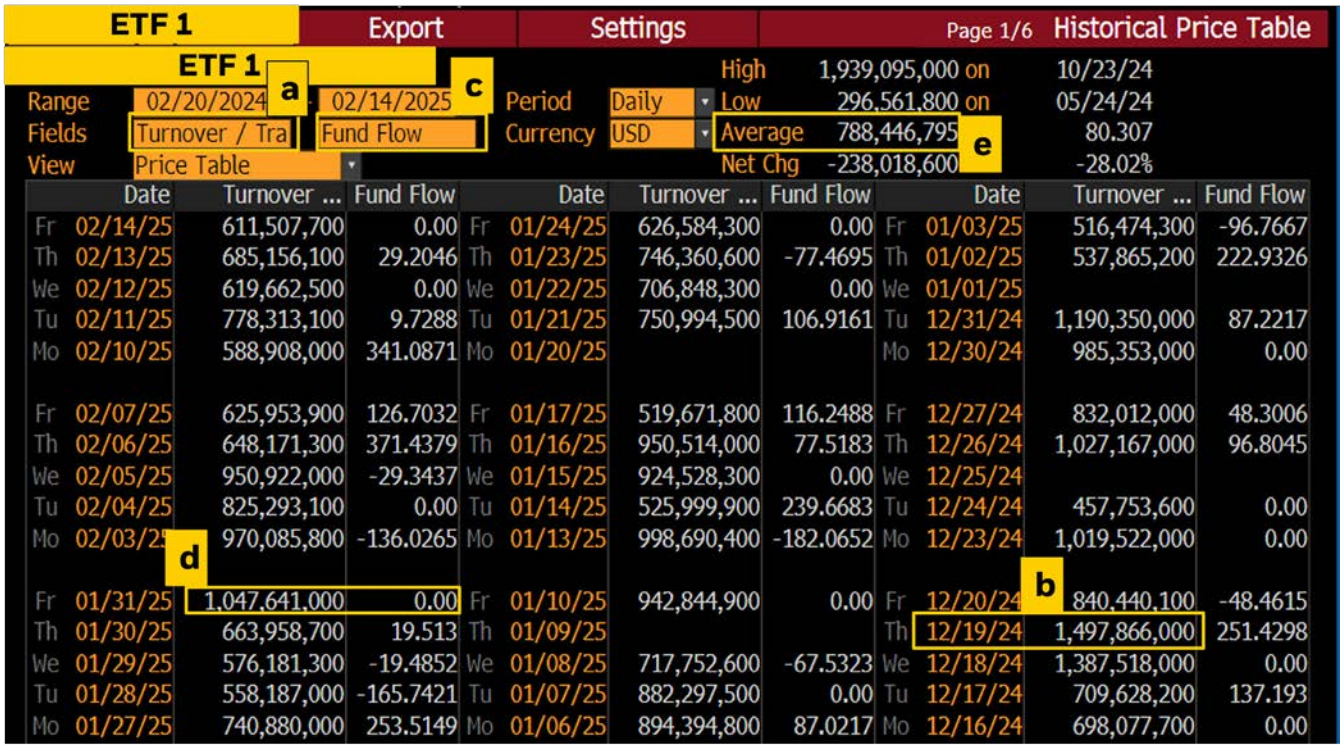
Year	AUM ($bn)	ADV ($bn)
2020	1.063	16.65
2021	1.239	17.27
2022	1.330	24.71
2023	1.513	23.18
2024	1.777	24.04
YoY % Change	17.5%	3.7%
5 year annual growth	10.08%	7.6%

1 Source: US FI ETF AUM figure based on 12/31/2023 AUM of $1,513bn.
2 Source: BlackRock, Bloomberg as of 12/31/2024.
3 source: BlackRock, Bloomberg, as of 12/31/2024

The HP function

HP | Bloomberg function + **GO** | Enter

HP



Date	Turnover ...	Fund Flow	Date	Turnover ...	Fund Flow	Date	Turnover ...	Fund Flow
Fr 02/14/25	611,507,700	0.00	Fr 01/24/25	626,584,300	0.00	Fr 01/03/25	516,474,300	-96.7667
Th 02/13/25	685,156,100	29.2046	Th 01/23/25	746,360,600	-77.4695	Th 01/02/25	537,865,200	222.9326
We 02/12/25	619,662,500	0.00	We 01/22/25	706,848,300	0.00	We 01/01/25		
Tu 02/11/25	778,313,100	9.7288	Tu 01/21/25	750,994,500	106.9161	Tu 12/31/24	1,190,350,000	87.2217
Mo 02/10/25	588,908,000	341.0871	Mo 01/20/25			Mo 12/30/24	985,353,000	0.00
Fr 02/07/25	625,953,900	126.7032	Fr 01/17/25	519,671,800	116.2488	Fr 12/27/24	832,012,000	48.3006
Th 02/06/25	648,171,300	371.4379	Th 01/16/25	950,514,000	77.5183	Th 12/26/24	1,027,167,000	96.8045
We 02/05/25	950,922,000	-29.3437	We 01/15/25	924,528,300	0.00	We 12/25/24		
Tu 02/04/25	825,293,100	0.00	Tu 01/14/25	525,999,900	239.6683	Tu 12/24/24	457,753,600	0.00
Mo 02/03/25	970,085,800	-136.0265	Mo 01/13/25	998,690,400	-182.0652	Mo 12/23/24	1,019,522,000	0.00
Fr 01/31/25	1,047,641,000	0.00	Fr 01/10/25	942,844,900	0.00	Fr 12/20/24	840,440,100	-48.4615
Th 01/30/25	663,958,700	19.513	Th 01/09/25			Th 12/19/24	1,497,866,000	251.4298
We 01/29/25	576,181,300	-19.4852	We 01/08/25	717,752,600	-67.5323	We 12/18/24	1,387,518,000	0.00
Tu 01/28/25	558,187,000	-165.7421	Tu 01/07/25	882,297,500	0.00	Tu 12/17/24	709,628,200	137.193
Mo 01/27/25	740,880,000	253.5149	Mo 01/06/25	894,394,800	87.0217	Mo 12/16/24	698,077,700	0.00

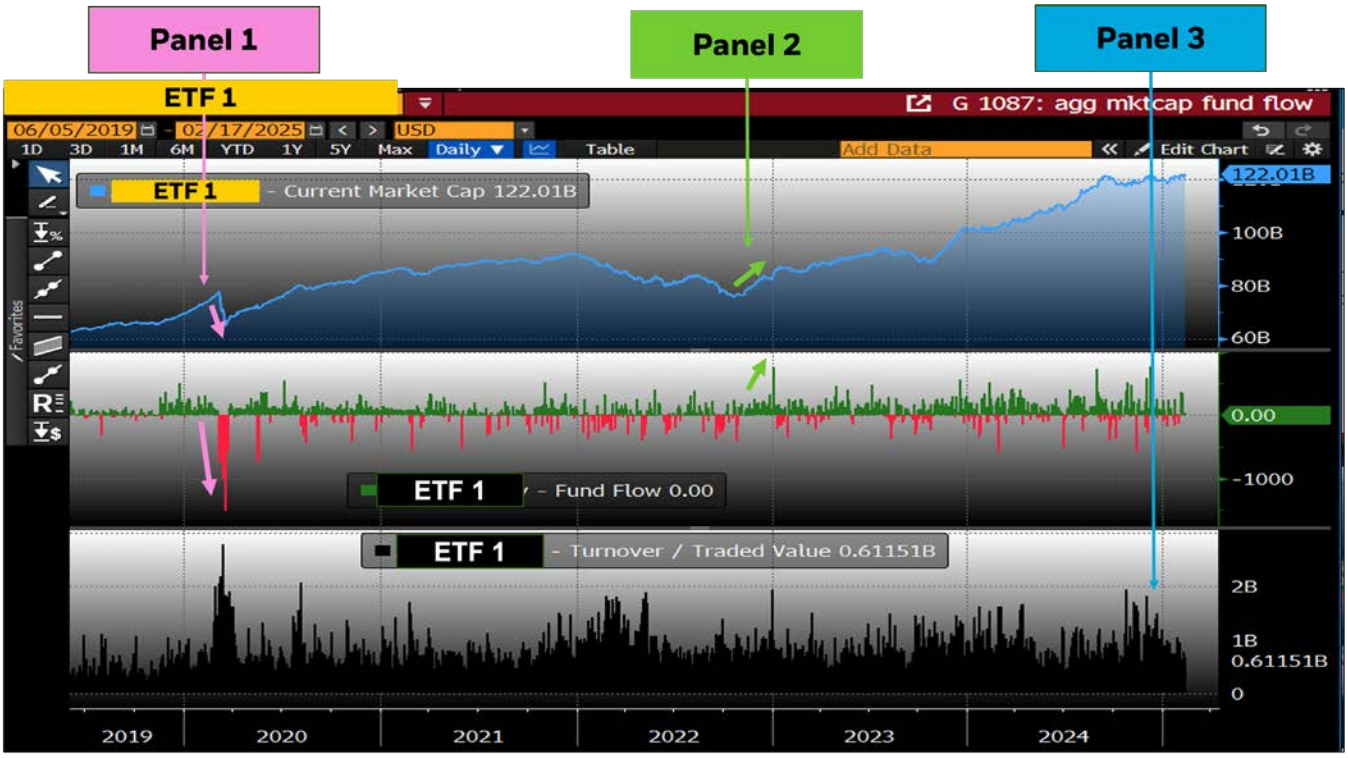
For illustrative purposes only. As at February 14th 2025

This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Traded value**	Secondary trading volume
b	**Noteworthy value traded**	On the 19th December 2024, high volumes of secondary trading took place totaling USD 1,497,866,000. Close to USD 1.5bn
c	**Fund flow**	Creations/redemptions expressed in USD millions.
d	**Noteworthy value traded, and no fund flow**	Expressed in USD in this example. For this example, secondary trading often takes place without the need for creations/ redemptions. Buyers and sellers simply trade in the marketplace. For this reason, value traded is often much higher than fund flow in seasoned ETFs. Most trades are listed on the US exchanges for US listed securities, so this is a real measure of secondary market activity
e	**Average values**	Shown in the middle section, this area relates to period of dates chosen, (not calendar display on the page) . In the above example, it shows the average daily value traded on AGG US between 20th February 2024 and 14th February 2025 was USD 0.788 bn.

ETF fund flow and market capitalization

Increased fund inflow (or outflow) has an immediate impact on the market capitalisation of an ETF. This in turn can provide important information on market sentiment for the changes in market exposure in certain asset segments.



For illustrative purposes only. As at 17th February 2025 This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Panel 1

ETF market capitalization

ETF market capitalisation - ETF 1 market capitalisation is $85.091 billion in this illustration.

Panel 2

ETF daily flows

The green bars represent daily fund inflows (creations) which are seen to increase at the same time as market capitalisation (panel 1) increases.

ETF 1 inflows were evident in Q4 2021, and the market capitalisation of the increased.

The red bars represent daily outflows (redemptions). ETF 1 saw significant outflows between February and March 2020 at the initial onset of the COVID-19 pandemic.

Panel 3

Daily value traded

All $ values are in USD.

Custom ETF fund flow analytics with the compX international Inc (CIX) and G functions

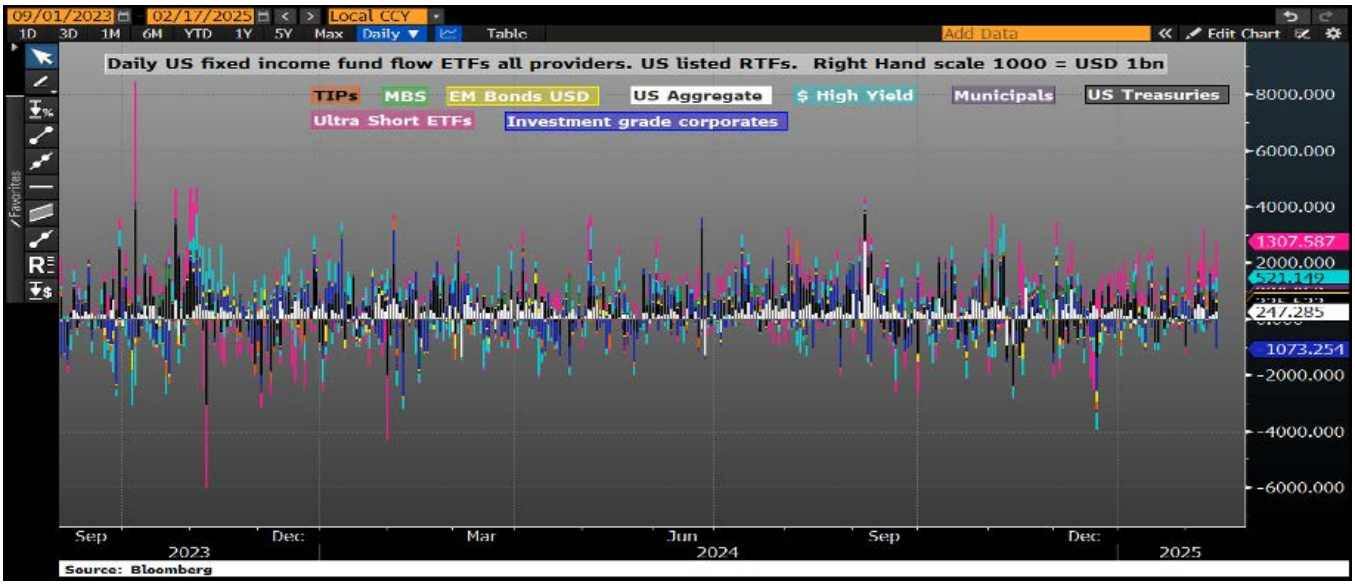
For a deeper dive on ETF fund flow analytics, investors can use the CIX and G Bloomberg functions. These offer a powerful and straightforward approach to building custom ETF fund flow and value traded graphs, where analyses can be conducted by country or asset class.

The example shown on the opposite page illustrates daily USD bond ETF flows and value traded from all providers, for ETFs with total assets greater than $1B. An aggregated CIX graph such as this can provide a useful overview of developing market trends by designated fund category.

All $ values are in USD.

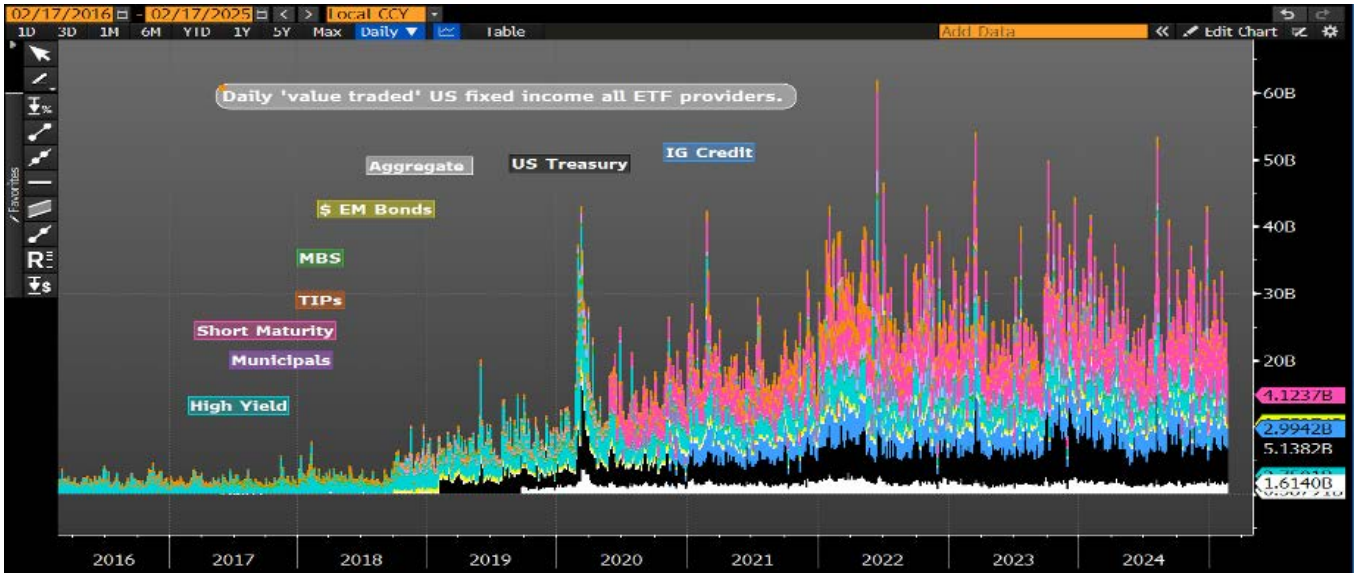
USD bond ETFs fund flow and value traded by category. All providers

Fund flow



For illustrative purposes only. As at February 17th 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown

Value traded



For illustrative purposes only. As at 17th March 2023. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Total cost of ownership

How to analyze the true cost of owning an ETF

Cost is an important consideration when making any kind of investment. The ETF vehicle has become increasingly popular due to cost-efficiency, but it is important for ETF investors to understand how to assess the total cost of buying, holding, and selling an ETF. This requires investors to look beyond the headline Total Expense Ratio (TER) and consider the Total Cost of Ownership (TCO). While the TER is the most often quoted ETF expense, TCO analysis looks deeper and provides a more holistic view of portfolio costs.

Key questions to ask

What is the TCO of an investment? 1

What are the internal and external factors that contribute to the TCO of an ETF? 2

How do you calculate the TCO of an ETF investment? 3

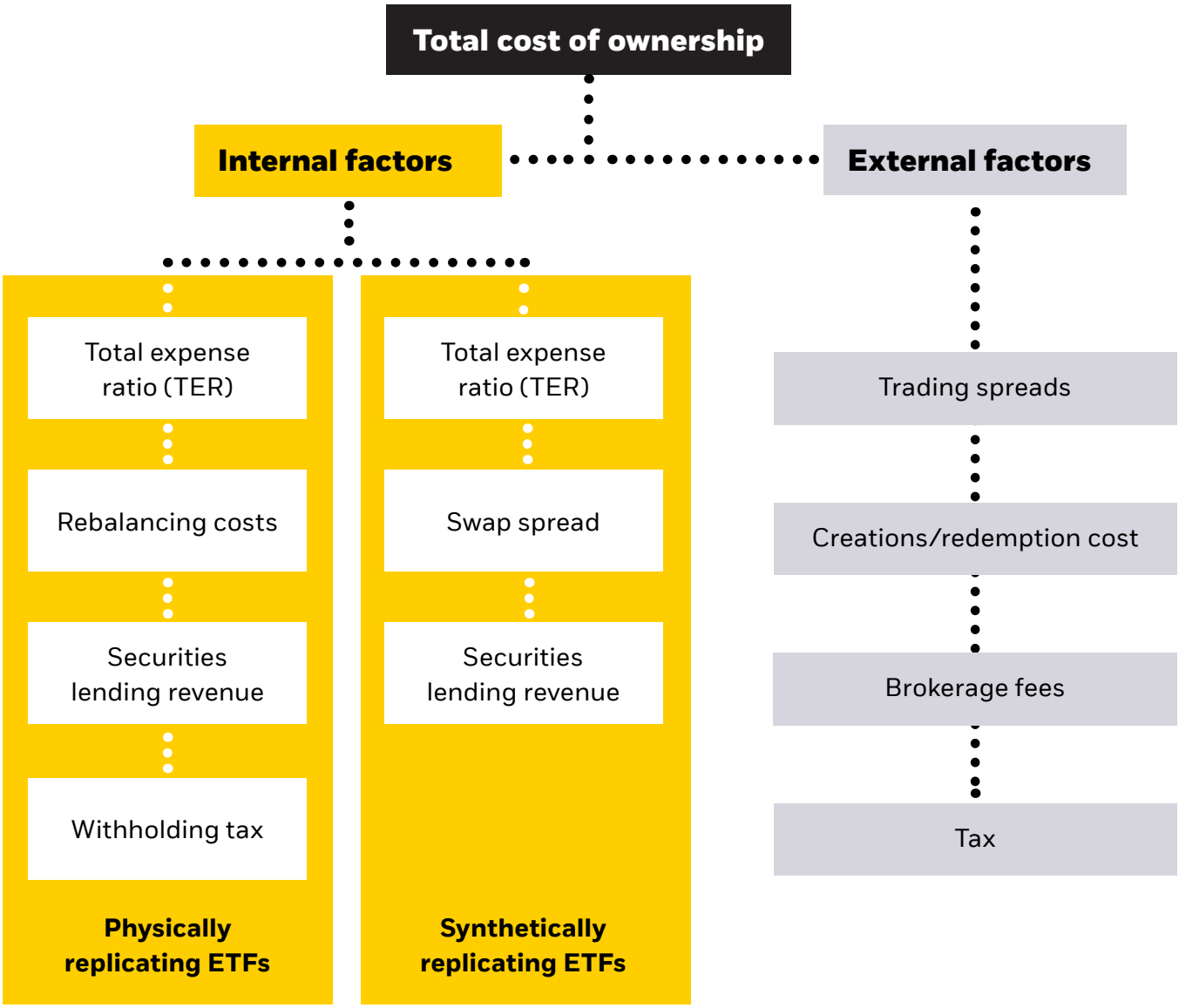
How does TCO differ bewteen index and active ETF investments? 4

1.What is TCO?

The headline cost borne by all ETFs is the Total Expense Ratio (TER). This cost covers the annual expenses incurred to run the fund. It is important to highlight that the annual management fee is only one component of the TER. For European-domiciled funds governed by the UCITS rules, the TER of a fund includes the management fee and a list of other costs carried by the asset manager, including administration costs, custody and audit fees and legal, regulatory and registration expenses. The level of the TER depends on the exposure the fund is providing, the fund structure and the pricing policy of the ETF provider.

It is normally easier to look at the components of an ETF's TCO by separating them into two categories: Internal and external factors.

Internal and external factors



For illustrative purposes only, projected.

2. Defining internal and external factors

Internal factors include both costs to the fund and revenues received by the fund: these need to be added together for the same time period. These internal factors have an impact on the tracking difference of an index ETF versus the benchmark and normally include: TER, rebalancing costs and any securities lending revenue generated.

There may be additional internal factors, depending on the ETF's portfolio management style and its structure. These factors could potentially include: tracking, the cash component in the fund, and tax. An index ETF's portfolio management style, either fully-replicating, stratified, or optimized also influences the tracking of physical ETFs. Funds with liquid, accessible underlying securities are expected to track their benchmarks very closely, whereas funds with less liquid underlying securities will likely have a higher tracking cost.

Another factor which may affect fund performance is the tax liability on dividends (withholding tax). This factor becomes particularly important when the taxation rules of the index are different from the taxation rules of the fund.

For example, some indices are only available as gross total return (implies 0% tax on distributions), while the fund will have to pay withholding tax on the distributions of the securities in the underlying portfolio. There are also often differences in net total return indices and the actual tax suffered by a portfolio depending on the tax treaty between the domiciles of the ETF and the underlying securities.

It is important to contrast rebalancing costs (an internal factor specific to physically replicating ETFs) with swap spread (an expense specific to derivative replicating ETFs). The swap spread is paid by the fund provider to the swap counterparty for the total return swap agreement. The size of

the swap fee depends on the fund exposure, level of over collateralization (for fully funded derivative replicating ETFs) and on the agreement between the swap counterparty and the fund provider.

Sourcing internal factors

While some internal factors are available on some providers' website (i.e. TER, securities lending revenue etc), others might be more difficult to source. To ensure investors understand the impact of all internal factors in the ETF, we recommend evaluating the 12 months tracking difference of the ETF relative to its benchmark.

Defining external factors

External factors are costs to the investor deducted at the time of purchase and sale of an ETF and include trading or creation/redemption costs along with brokerage fees and taxes.

Trading costs are reflected in the bid/ask spread when buying an ETF in the secondary market (i.e. on-exchange or Over-The-Counter [OTC]). Bid/ask prices reflect the value at which an investor can buy or sell shares of an ETF and are driven by many factors including supply and demand forces, the size of the fund, the liquidity of the underlying securities, and the number of market-makers in the fund.

3.How do you calculate the TCO of an ETF investment?

Calculating the Total Cost of Ownership of an ETF investment involved accounting for all direct and indirect costs incurred while holding and trading an ETF.

Management Fees (Expense Ratios)	This is the annual fee charged by the ETF provider as a percentage of assets under management
Trading Costs	This includes the bid-ask spread and any broker fees
Tracking error	This is the deviation between the ETF's performance and its benchmark index
Tax	Taxes on dividend distributions and or capital gains
Bid – ask spread	The difference between the price at which you can buy and sell an ETF on the exchange

Disclaimer: Tax on dividend distribution depends on the ETF's domicile and investor's tax residence (find actual legal note for this)

All tax data is for illustration purposes only and does not represent tax advice. BlackRock does not provide tax advice, the content of the information provided is for information purposes only and is meant to provide investors and intermediaries with an overview as to some of the tax statuses of the iShares funds.

This information is not intended to, nor does it, provide specific investment or tax advice, or to make any recommendations about the suitability of iShares for the circumstances of any particular investor. We recommend that clients consult with their own independent tax advisor should they have any further queries about how investing in an iShares fund will affect their tax position.

4. How does TCO differ between index and active ETF investments?

The total cost of ownership for active ETFs typically includes higher management fees due to active management, while index ETFs generally have lower fees since they track a benchmark index passively.

Management Fees (Expense Ratio)

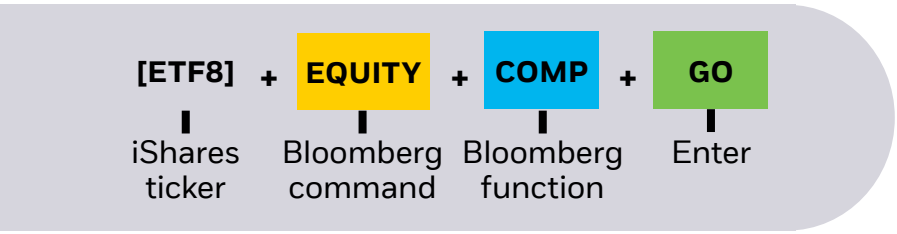
- **Index ETFs:** These typically have lower expense ratios because they passively track an index and do not require active management.
- **Active ETFs:** These usually have higher expense ratios since they are actively managed, with portfolio managers making decisions to outperform the market.

Performance – related Fees

- **Index ETFs:** These do not have performance fees, as they merely track a market index.
- **Active ETFs:** Some active ETFs may charge performance fees if the fund outperforms a specific benchmark or target. This can add to the overall cost.

5.3 COMPARING ETFs

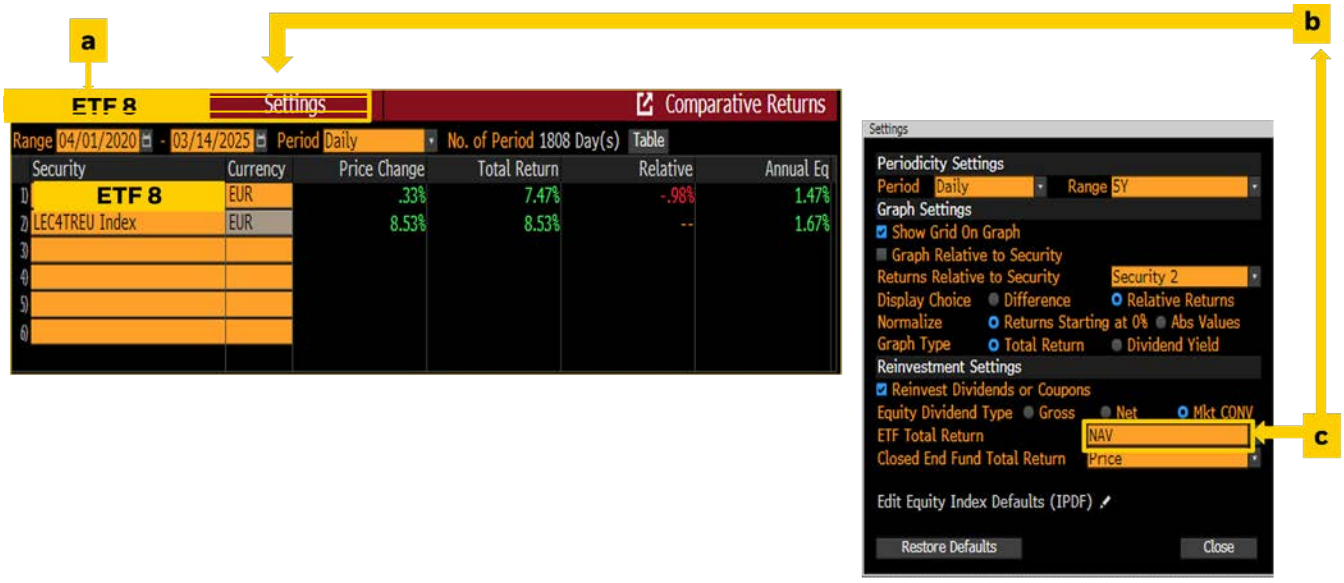
The ability to compare ETFs with other ETFs, indices, or securities can offer valuable investor insights. There are several functions on Bloomberg that allow investors to compare ETF returns, valuations, and other characteristics.



The COMP function

The COMP <go> Bloomberg function enables investors to compare returns of an ETF with indices or other securities.

COMP



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

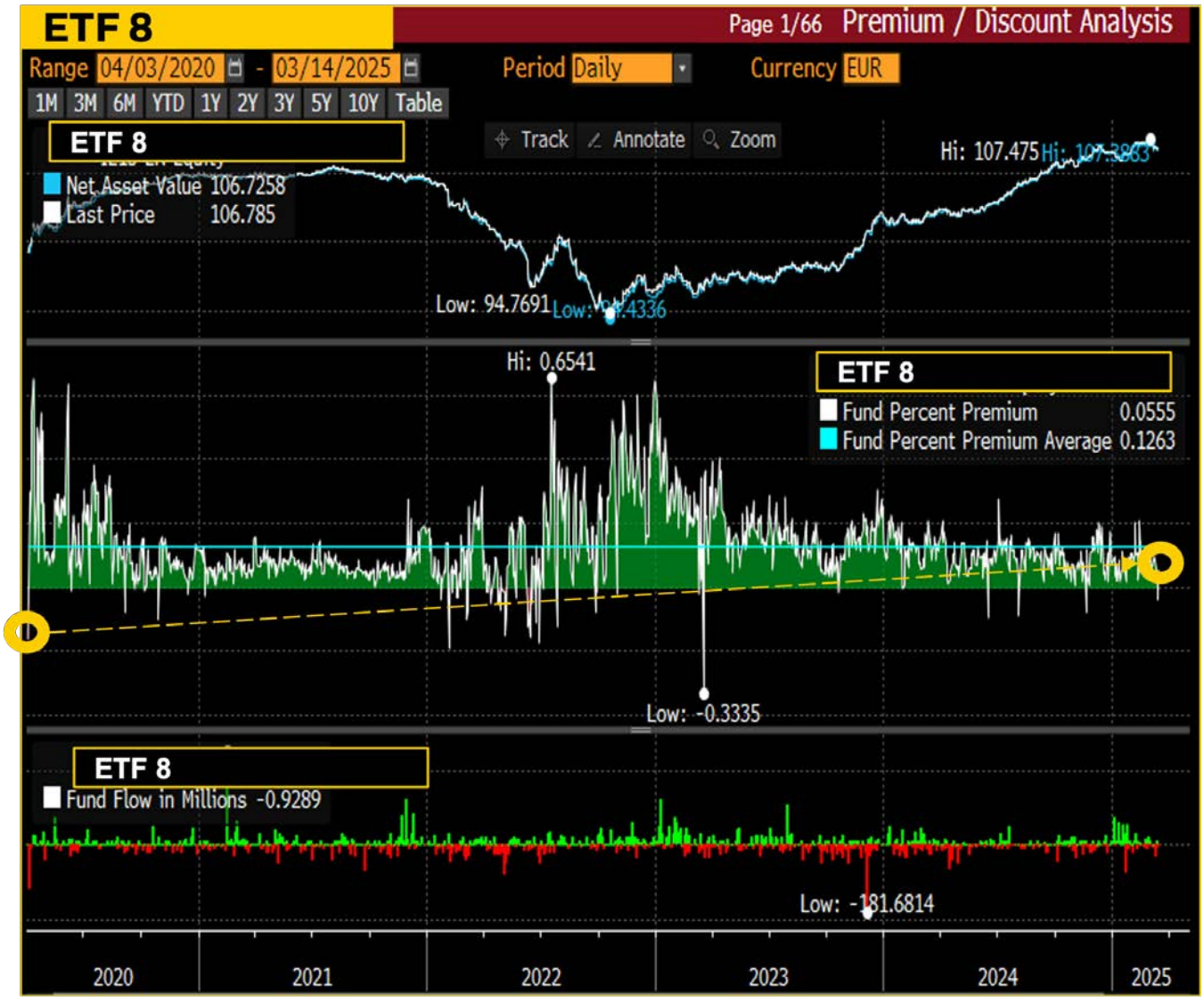
a	**COMP view**	Enter the iShares ticker and chosen index or indices to view a return comparison (default is the underlying index).
b	**Graph relative to security setting**	Adjust the graph to view index and ETF absolute performance (unticked) or relative performance (ticked). The latter is useful for exploring tracking error of the ETF to its underlying index.
c	**ETF total return setting**	"NAV" setting can ensure no jumps in closing price levels to NAV, as the price of the ETF can vary in premium/discount to NAV. "Price" setting displays the total return of the ETF based on closing prices, regardless of the premium/discount to NAV.
d	**HFA view**	Enter the iShares ticker and HFA for one fund view versus underlying benchmark. Uses price return. (not illustrated)

Using the COMP function to compare ETF price and NAV returns

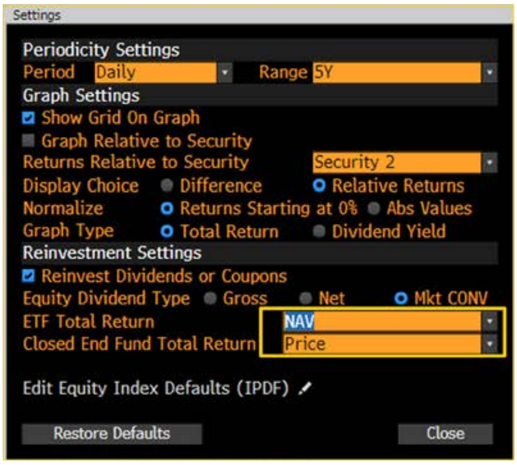
In theory, an index ETF that fully replicates its index should underperform the index by its expense ratio. However, ETFs can often outperform or underperform their underlying indices for various reasons.

Some ETF providers engage in securities lending of the underlying portfolio, which can generate additional revenue, leading to outperformance of the fund. In addition, some index ETFs are optimized to match the characteristics of the index they track — instead of fully replicating it — which can result in deviations from index performance.

In this example, [ETF1] underperformed its underlying index very slightly by measure of its NAV and price return. But over the chosen 5 year period the price return was slightly better than the NAV return. This can be attributed to the ETF PRICE trading at a higher premium to its NAV at the end of the chosen period relative to the start.

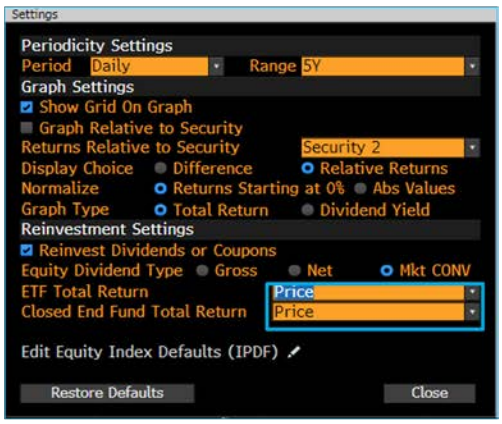


NAV return



For illustrative purposes only. As at 13 March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Price return



For illustrative purposes only. As at 13 March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The G Graph and total return analysis (TRA) function

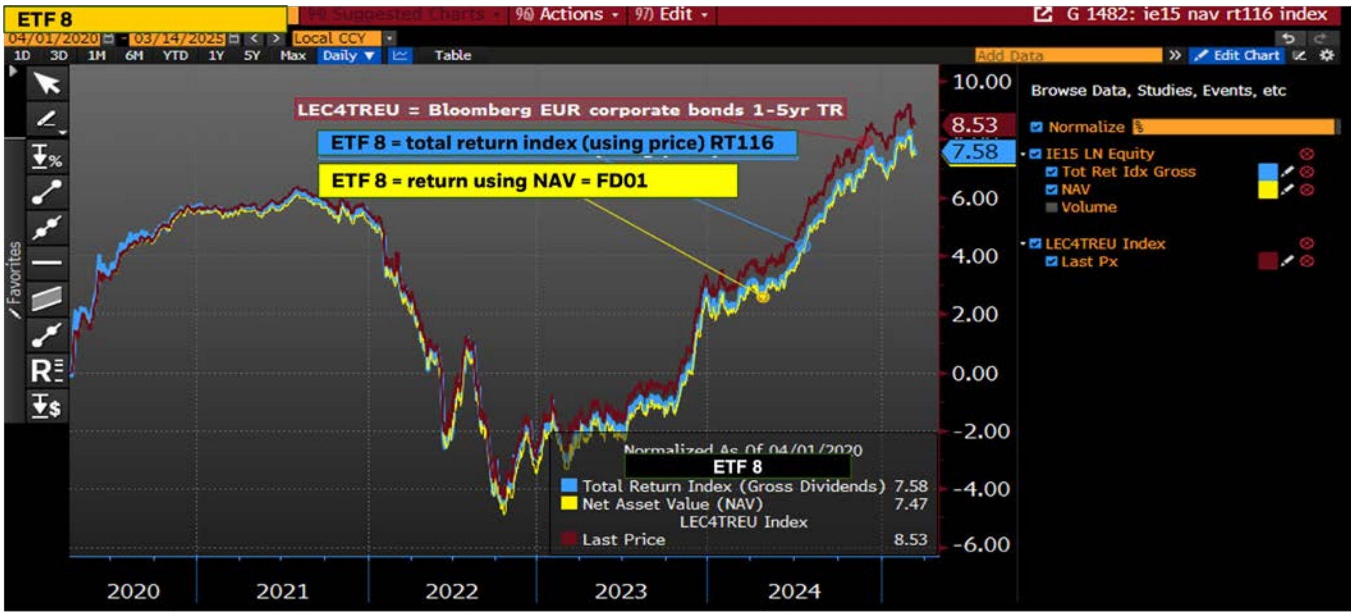
Bloomberg offers a variety of functions specifically designed for bond ETF analytics. The G Graph and TRA Bloomberg functions allow ETF investors to compare total returns.

The G Graph function

[ETF8]	+	EQUITY	+	G GRAPH	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

G Graph

The G Graph function and settings show the returns of the ETF using both price and NAV-based methodologies. These numbers are consistent with those displayed on the compare (COMP) page.

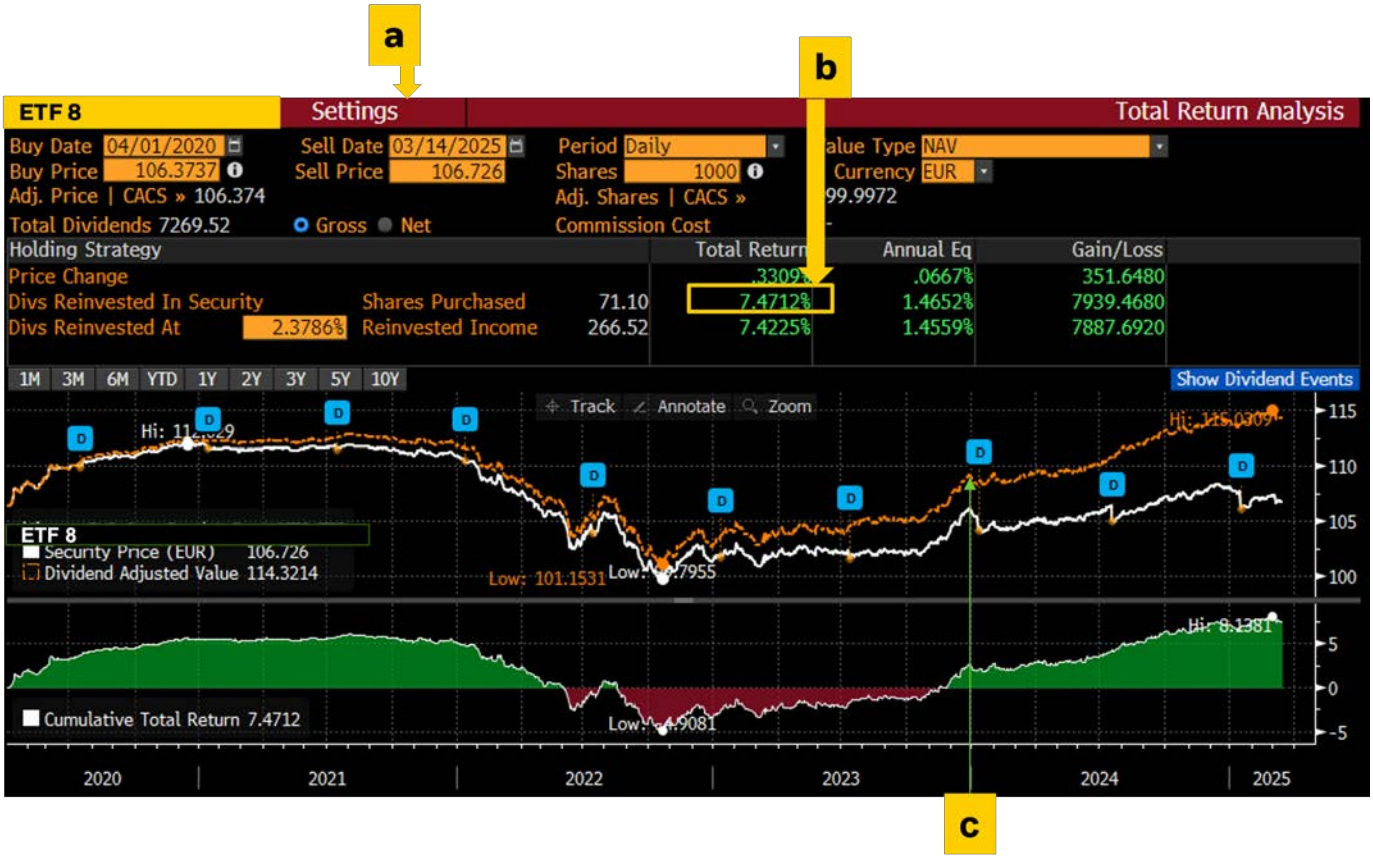


For illustrative purposes only. As at 14 March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The TRA function

[ETF1]	+	EQUITY	+	TRA	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

TRA



For illustrative purposes only. As at 14 March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Settings**	ETF returns are set to NAV in this example.
b	**Total returns**	The ETF total return based on a monthly distribution schedule. This figure is consistent with the COMP page.
c	**Distributions**	Distributions are denoted by a D. In the U.S. markets, ETFs generally have monthly distributions, while semi-annual distributions are more common in Europe.

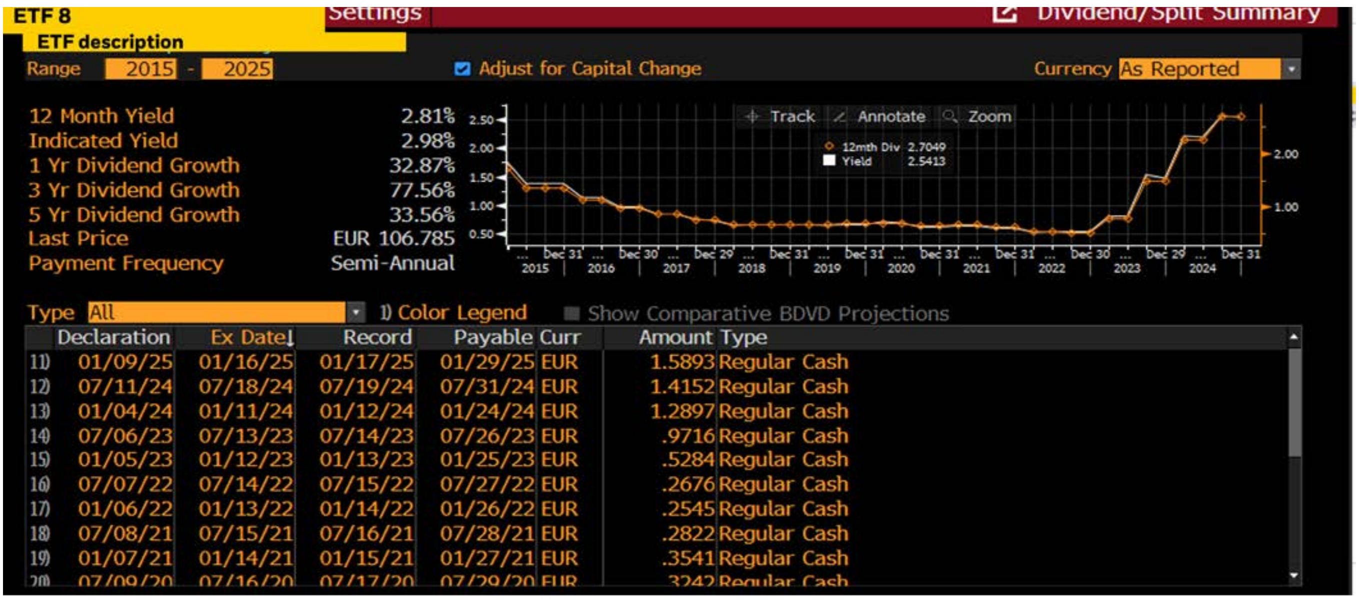
5.4 BOND ETF ANALYTICS

The DVD function

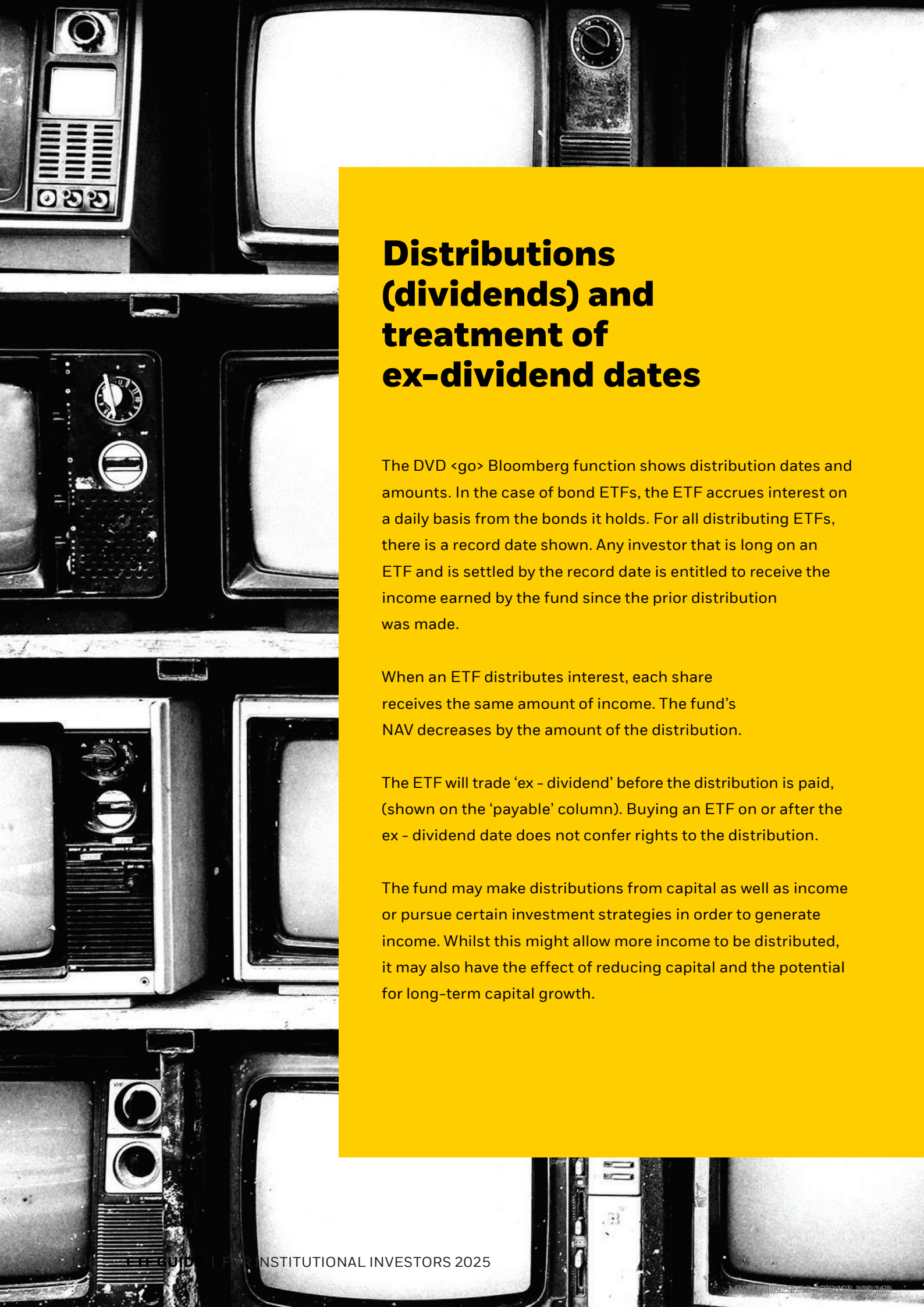
[ETF8] + EQUITY + DVD + GO

- [ETF8] – iShares ticker
- EQUITY – Bloomberg command
- DVD – Bloomberg function
- GO – Enter

Dividends, stock splits (DVD)



For illustrative purposes only. As at 2 February 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.



Distributions (dividends) and treatment of ex-dividend dates

The DVD <go> Bloomberg function shows distribution dates and amounts. In the case of bond ETFs, the ETF accrues interest on a daily basis from the bonds it holds. For all distributing ETFs, there is a record date shown. Any investor that is long on an ETF and is settled by the record date is entitled to receive the income earned by the fund since the prior distribution was made.

When an ETF distributes interest, each share receives the same amount of income. The fund's NAV decreases by the amount of the distribution.

The ETF will trade 'ex - dividend' before the distribution is paid, (shown on the 'payable' column). Buying an ETF on or after the ex - dividend date does not confer rights to the distribution.

The fund may make distributions from capital as well as income or pursue certain investment strategies in order to generate income. Whilst this might allow more income to be distributed, it may also have the effect of reducing capital and the potential for long-term capital growth.

The YAS function

The Yield and Spread Analysis (YAS) tool enables users to analyze yield spread and interest rate sensitivity. Originally developed for individual bonds, YAS has been enhanced for analyzing select iShares ETFs.

[ETF1]	+	EQUITY	+	YAS	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

YAS

For illustrative purposes only. As at 14 March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

YAS

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Modifying YAS for targeted analysis

The YAS function displays the ETF's last-traded price with corresponding yield, spread, and risk characteristics.

Several fields can be modified for further analysis:

- Maturity year, ticker, and coupon of the benchmark bond using the vs. field.
- Curve from which the benchmark bond is selected using the G-Sprd field.
- Swap curve from which the benchmark is selected using the I-Sprd field.
- CDS spread using the Basis field.

With the YAS function, Bloomberg users can now:

- Analyze a bond ETF the same way single bond instruments are analyzed.
- View a last-traded ETF price, converted to yield.
- Perform traditional yield analysis vs. a selected benchmark.
- Input custom parameters to analyze the relationship between price, yield, and spread.
- Measure risk based on custom inputs, to determine whether an ETF meets pre-determined investment criteria.
- Click the red text to view an explanation of the YAS calculation methodology using ACF (Aggregate Cash Flow).

Comparing yields: An ETF vs. its underlying index

When comparing an index bond ETF's yield with that of its underlying index, investors might note these two values are different. This is primarily not attributable to differences in the ETF's composition relative to its index, but rather differing yield calculation methodologies.

Index yields are generally calculated using the weighted average of its constituents' yields, while ETF yields are calculated using internal rate of return (IRR) of cash flows.

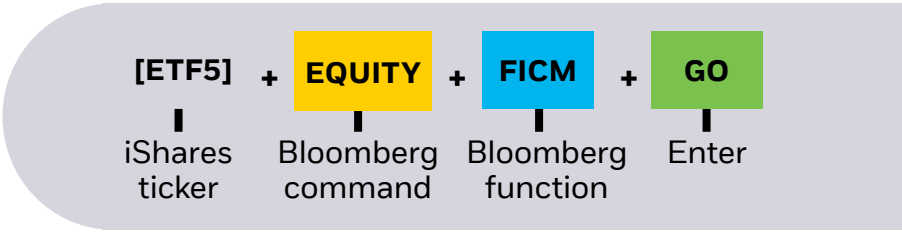
As such, the shape of the yield curve dictates whether the ETF or its index yield is higher. If the yield curve is upward sloping, the IRR will be higher. If the curve is inverted, it will be lower. In the event of a flat yield curve, the ETF and index yields will be identical.

For illustrative purposes only. As at 16th March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

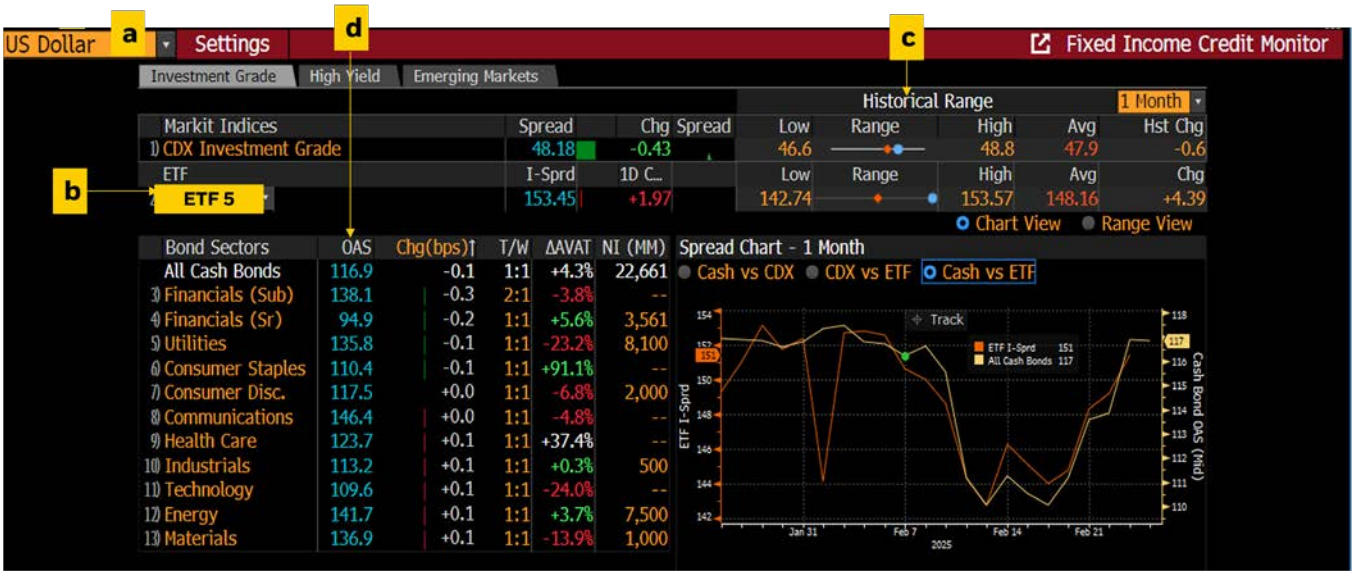
For illustrative purposes only. As at 16th March 2025. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The FICM function

The FICM Bloomberg function allows investors to examine flagship ETFs intraday relative to underlying cash bond and sector components.



FICM



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Select currency**	ETF currency is set to USD in this example.
b	**Select ETF**	[ETF5] is selected in this example.
c	**Select historical range**	A 1-month history is displayed in this example.
d	**OAS**	This is the market weighted OAS of each bond in the FICM "liquid index". This index is tailored to a subset of liquid bonds that Bloomberg prices every 15 minutes. This new price for each bond, updated every 15 minutes, is used to calculate a sector market weighted OAS and then grossed to the "All bonds" OAS. The constituents are rebalanced monthly.

Comparing ETFs, credit default swaps (CDS), Total Return Swaps (TRS), and underlying indices

ETFs, credit default swaps (CDS), and Total Return Swaps (TRS) are all key tools when managing a fixed income portfolio. There are some important underlying differences between the three instruments, and different levels of adoption amongst sovereign portfolios. Bloomberg allows for analysis and correlation studies across all of these vehicles.

CDS typically have a narrower issuer inclusion in their index than credit ETFs, which has implications for tracking broader credit indices.

Some asset owners are unable to short securities. If they are unable to short credit ETFs, they might use derivatives and buy CDS protection to protect a portfolio from spread widening.

MEMC for CDS composition

Company Name	Wgt	ISIN	RED Pair	Corp Tkr	5 Yr CDS Tkr	Spread (bp)
11) Advanced Micro Devices Inc	0.800	US007903BD80	007G93AG7	AMD	CT355268	34
12) Ally Financial Inc	0.800	US02005NBJ81	0C205PAH4	ALLY	CGMAC1U5	123
13) Altria Group Inc	0.800	US02209SAU78	0C4291AG9	MO	CMO1U5	N.A.
14) Amazon.com Inc	0.800	US023135BY17	0C5448AB5	AMZN	CY372412	N.A.
15) American Electric Power Co Inc	0.800	US025537AJ08	027A8AAF3	AEP	CAEP1U5	27
16) American Express Co	0.800	US025816CW76	027D97AH9	AXP	CAXP1U5	N.A.
17) American International Group Inc	0.800	US026874AZ07	028EFBAC1	AIG	CAIG1U5	48
18) Amgen Inc	0.800	US031162DQ06	0D4278AH2	AMGN	CAMG1U5	34
19) Apache Corp	0.800	US037411BE40	03AB52AF6	APA	CAPA1U5	68
20) Arrow Electronics Inc	0.800	US042735AK67	0E69A8AE6	ARW	CARW1U5	64
21) AT&T Inc	0.800	US00206RHW51	0A226XAK9	T	CSBC1U5	N.A.
22) AutoZone Inc	0.800	US053332AT96	0F8665AF5	AZO	CAZO1U5	32
23) Avnet Inc	0.800	US053807AU73	058B87AF0	AVT	CAVT1U5	69
24) Barrick Gold Corp	0.800	US067901AA64	06DG91AF3	ABXCN	CABX1U5	36
25) Baxter International Inc	0.800	US071813BQ15	0H8994AG3	BAX	CBAX1U5	49
26) Berkshire Hathaway Inc	0.800	US084670BS67	08CAD7AI9	BRK	CX357111	N.A.

For illustrative purposes only.
This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Enter CDS**	CDX IG CDSI GEN 5Y corp <go> (Markit CDX North America Investment Grade Index)
b	**View underlying names**	This CDS example has 125 names, equally weighted (partial page shown).
c	**Last trade spread**	In this example, it shows a composite price based on quotes.

PORT for ETF composition

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Enter ETF**	‘iShares ticker’ equity PORT.
b	**View underlying issuers**	This ETF example has 1,600 issuers (partial page shown) and 9.684 fund holdings (not shown).
c	**Parent issuer name custom view**	**See pages 116-117**

Data as of 14 March 2025.

The IDRV function

The IDRV <go> Bloomberg function allows investors to examine current and historic correlations and spreads to CDS and indices.

ETF 5	+	EQUITY	+	IDRV	+	GO
iShares ticker		Bloomberg command		Bloomberg function		Enter

IDRV

For illustrative purposes only.

a	**ETF/Index/ CDX inputs**	Once an ETF is entered, Bloomberg will select the underlying CDS or Bloomberg associated index (not necessarily the index the selected ETF tracks). Likewise, if the user has entered a CDS or Bloomberg Index, associated ETFs will populate.
b	**Adjust for risk**	This field allows for views of the Bloomberg credit spread duration evaluations (currently not selected). For example, ETF 5 might not have the same duration as the CDS shown.
c	**HS graph**	Clicking on this will display analytics between two selected indices (ETF vs. CDS shown). Eventually, the CDS and ETF chosen move at different magnitudes because of index components and credit duration measures.

5.5 CUSTOM ANALYTICS

Bloomberg offers several functions that give users the ability to customize ETF analytics.

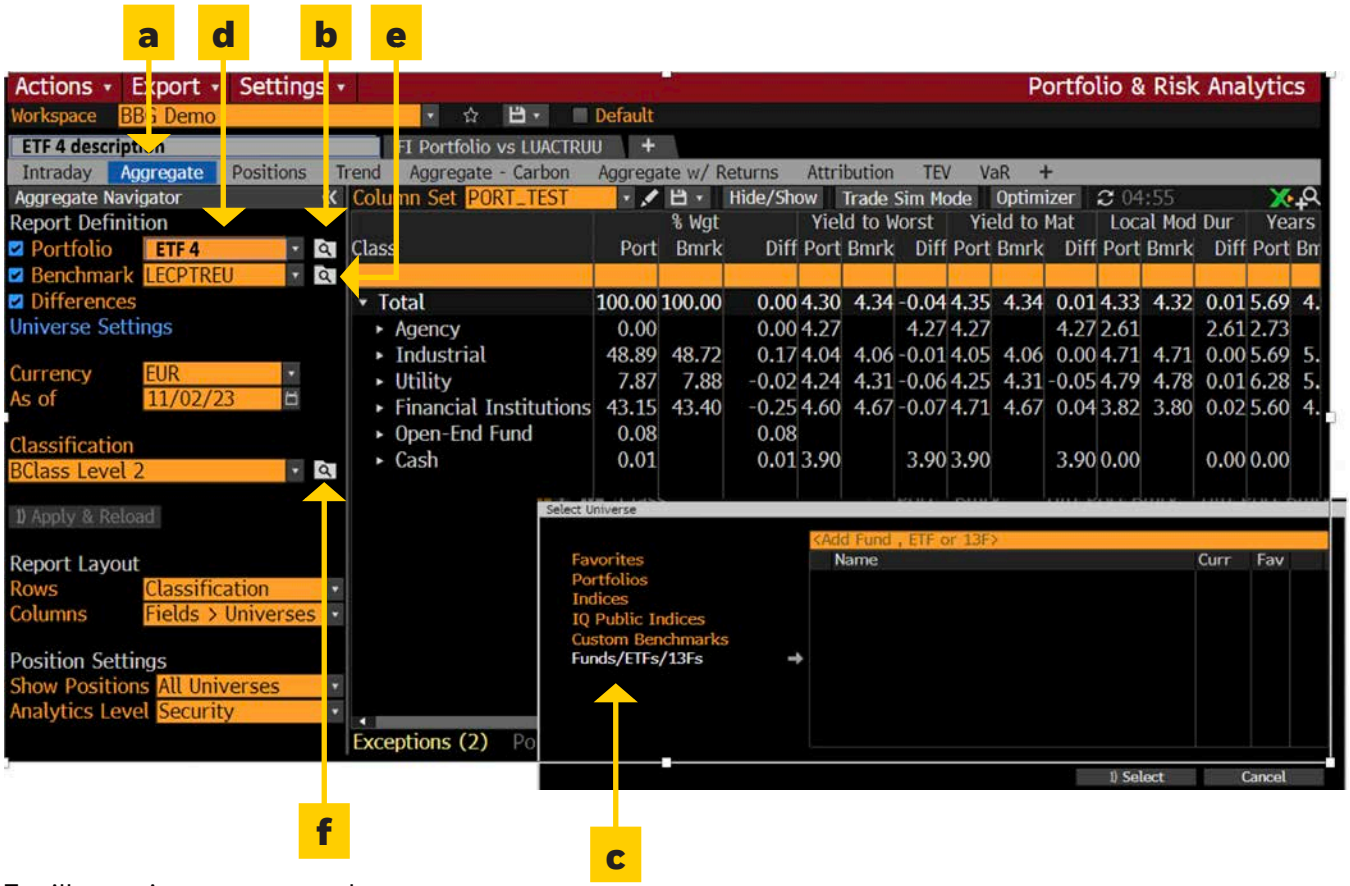
Custom filters with PORT

Investors can create their own custom filters when using the PORT <go> function. The following is an example of a self-created search that shows names excluded from an ETF with an ESG screen, as compared to a traditional ETF.

PORT

[ETF4] + EQUITY + PORT / F + GO

iShares ticker | Bloomberg command | Bloomberg function | Enter

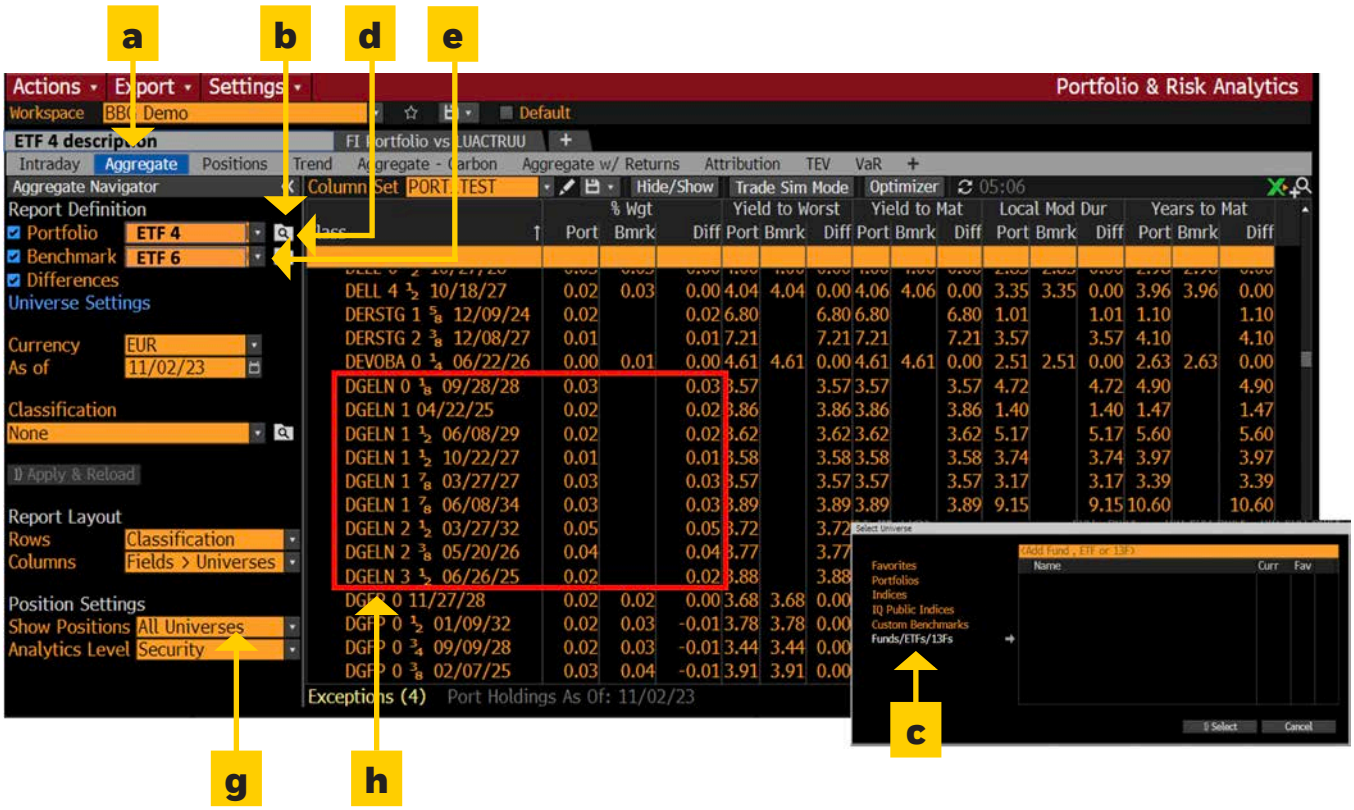


For illustrative purposes only.

a	Select Aggregate tab.
b	Left click on **"portfolio"** arrow tab >**"browse all"** >.
c	Floating window appears. Left click **"Funds/ETFs/13Fs".**
d	Type **"ETF 4"** into **"Add Fund, ETF or 13F tab"** > Press return, this loads **"ETF 4"** into portfolio.
e	Bloomberg will default to underlying benchmark if available as in this example. If another ETF or benchmark needed repeat **"b", "c" + "d"**for **"benchmark tab"** to allow comparison of ETF 4 to another benchmark or ETF.
f	For sector view chose BCLass level 2. Other views available. Or can be left **"none"**.

Using the PORT function to compare ESG-screened funds to their parent funds

In this example, an investor holds an EUR iShares corporate bond and is looking to switch into a EUR iShares ESG corporate bond.



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	Select Aggregate tab
b	Left click on **"portfolio"** arrow tab > **"browse all"** >
c	Floating window appears. Left click **"Funds/ETFs/13Fs".**
d	Type **"ETF 4"** into **"Add Fund, ETF or 13F tab"** > Press return, this loads **"ETF 4"** into portfolio.
e	**BENCHMARK TAB.** Rather than the underlying benchmark we want to compare to **"ETF 6"**. Repeat **"b"**, **"c" + "d"** for **"benchmark tab"** to allow comparison to ETF 4.
f	For sector view chose **"none"**.
g	Show **"positions"** = all universes for security view.
h	The table above shows a section of the portfolios for comparison at security level. Portfolio **"ETF 4"** = non ESG fund. Benchmark **"ETF 6"** = ESG Fund. With selected securities shown, it is clear DGELN is excluded from the '% weighting benchmark column'. An expanded example for these ETFs would show the **"ETF 6 ~ ESG"** fund for example would hold 30% less bonds than the **"ETF 4"** fund.

The outcome

The investor consulted BlackRock to inquire about where the ETF portfolio managers saw the overlap between the funds, and what the estimated switch terms were between the two ETFs. The investor does not trade directly with BlackRock as an index manager, but with this information was able to present a two security switch to the investment banks at very efficient pricing based around the NAV of the funds.

The UNCL function

UNCL + GO

UNCL — Bloomberg function

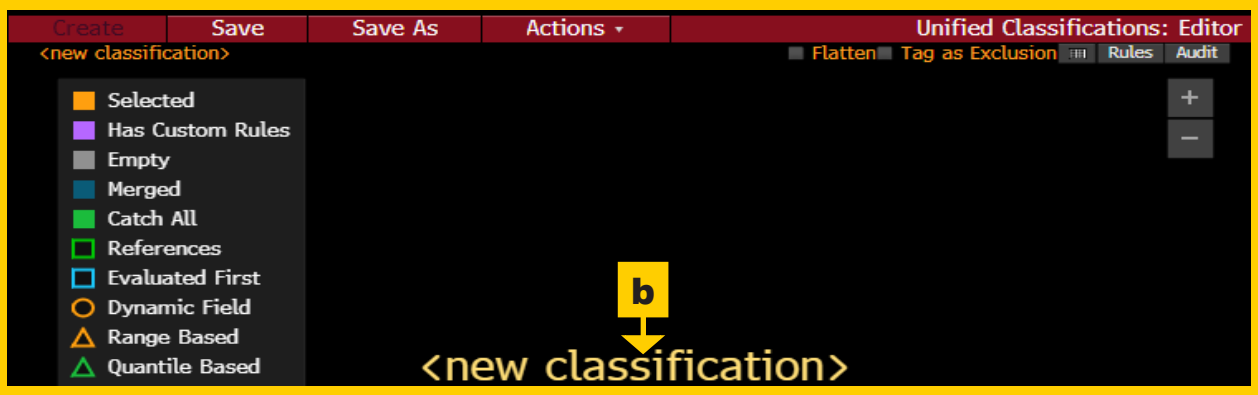
GO — Enter

Investors can create their own custom filters when using the UNCL <go> function, identifying different issuers on a parent name level as opposed to an underlying securities level. As the following example illustrates, the UNCL function can be useful for bespoke filters.

UNCL

The UNCL <go> Bloomberg function allows for custom creation searches.

For illustrative purposes only.

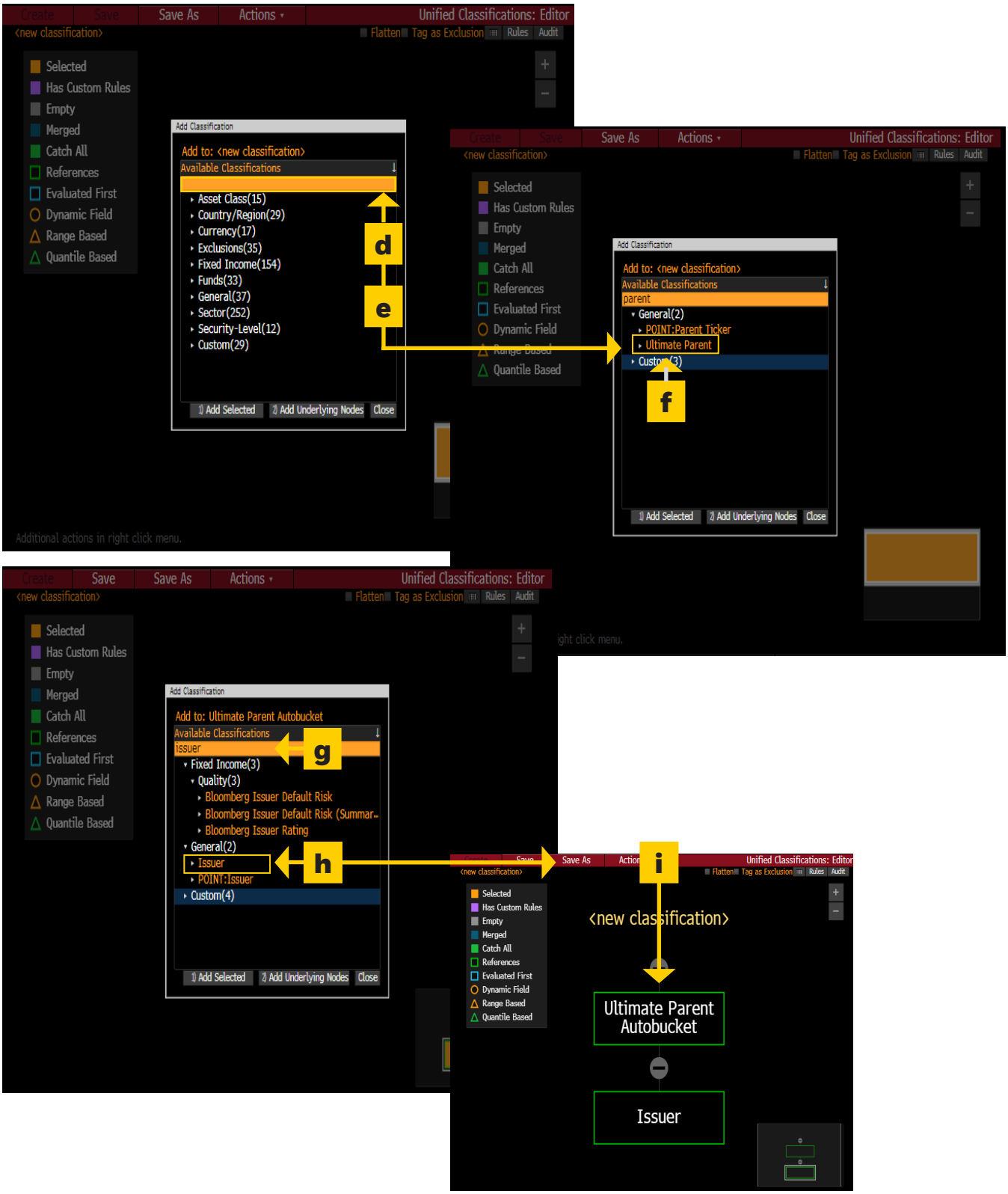


For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a Left click on **"Create"**

b Right click **"New Classification"**

c When pop-up box appears, left click **"Add Classification" (no screenshot)**



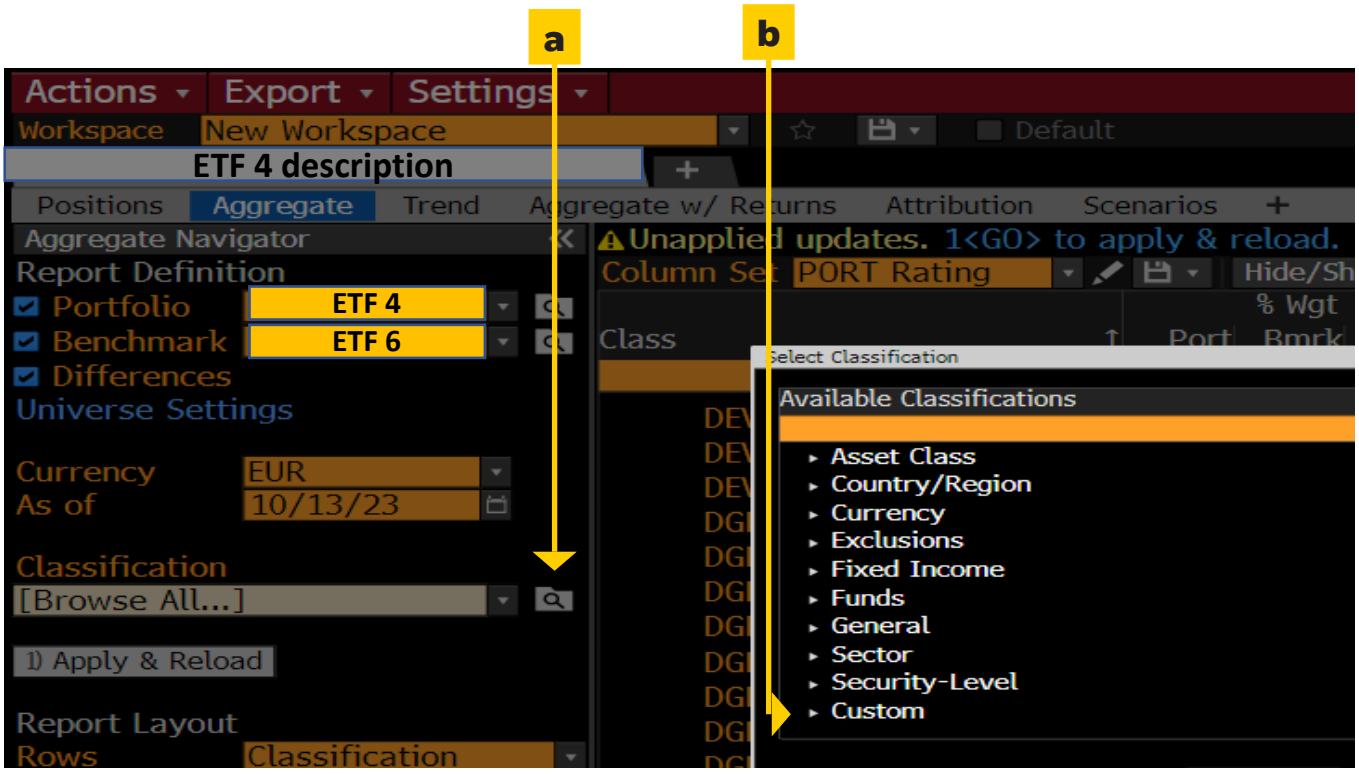
For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

d	Type **"Parent"** (or desired search word) in orange box
e	Select **"Ultimate Parent"**
f	Right click on **"Ultimate Parent"** and select **"Add Classification"**
g	Type **"Issuer"** in the yellow tab and select **"Issuer"**
h	Left click **"Save As"** to save search
j	Enter desired name for custom search

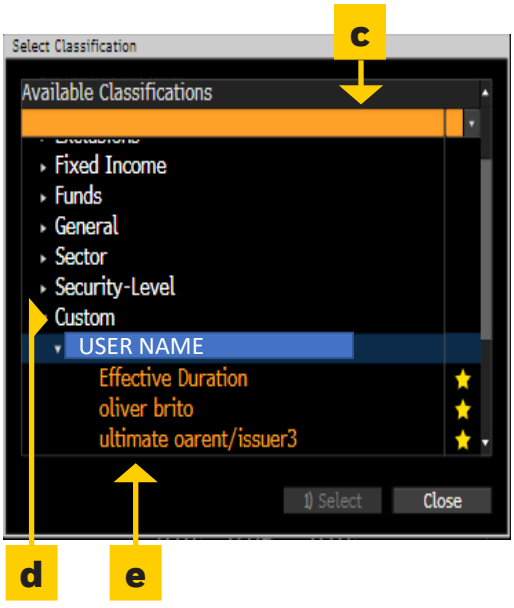
The ultimate parent analytic

As reviewed on the previous pages, the PORT <go> and adapted UNCL <go> functions can be useful for identifying different issuers from the parent name. The below example illustrates how to select **Ultimate Parent** search criteria.Using the template PORT search we used on page 102:

PORT



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.



a	Classification. Left click arrow to 'browse all' drop down. Press return.
b	Left click **"Custom".**
c	Left click on desired search criteria = **"ultimate parent".**
d	Left click **"Custom"**.
e	Left click on desired search criteria = **"ultimate parent".**

Once **Ultimate Parent** is selected as search criteria, investors can compare portfolios. The following is an overview of this functionality, using the previous example of an iShares ETF and its ESG-screened counterpart.

PORT

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Classification.**	= 'ultimate parent'
b		The table shows a section of the ETFs' portfolios at the issuer level. Volkswagen AG has a 2.06% weighting in ETF 4, but no weighting in ETF 6 = the ESG screened fund.

The FSRC function

FSRC + **GO**

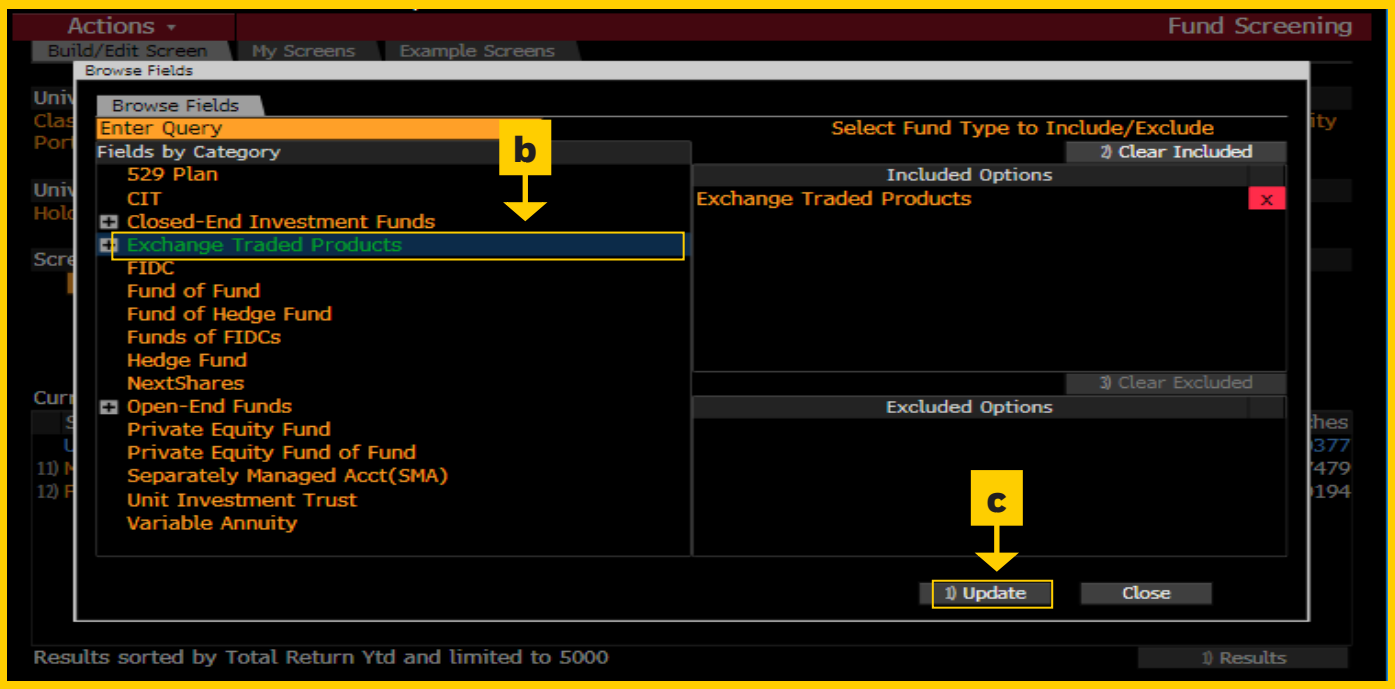
FSRC — Bloomberg function

GO — Enter

The FSRC <go> Bloomberg function gives users the ability to screen funds using custom criteria. In this example we search for 'currency-hedged ETFs'.

Fund screening (FSRC)

For illustrative purposes only.

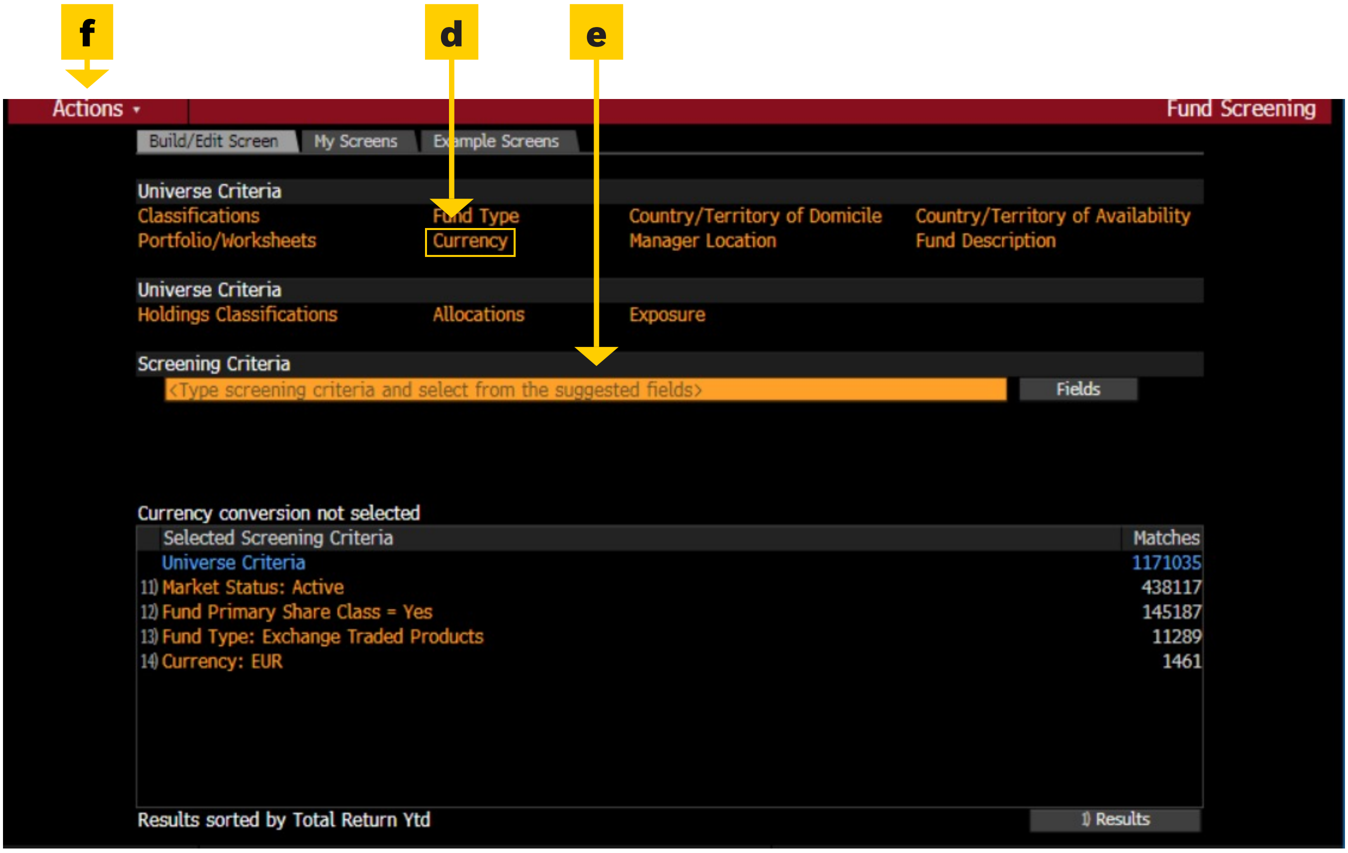


For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a Left click on **"Fund Type"**

b Left click **"Exchange Traded Products"**

c Click **"Update"**



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

d Left click 'currency' and choose from pop up box (not shown) which currency is your chosen hedged base. In this example EUR is chosen.

e Type 'currency hedged indicator' into blank orange bar. Left click arrow on 'no condition, display only.' Then click 'equal to' > 'yes' > 'results'

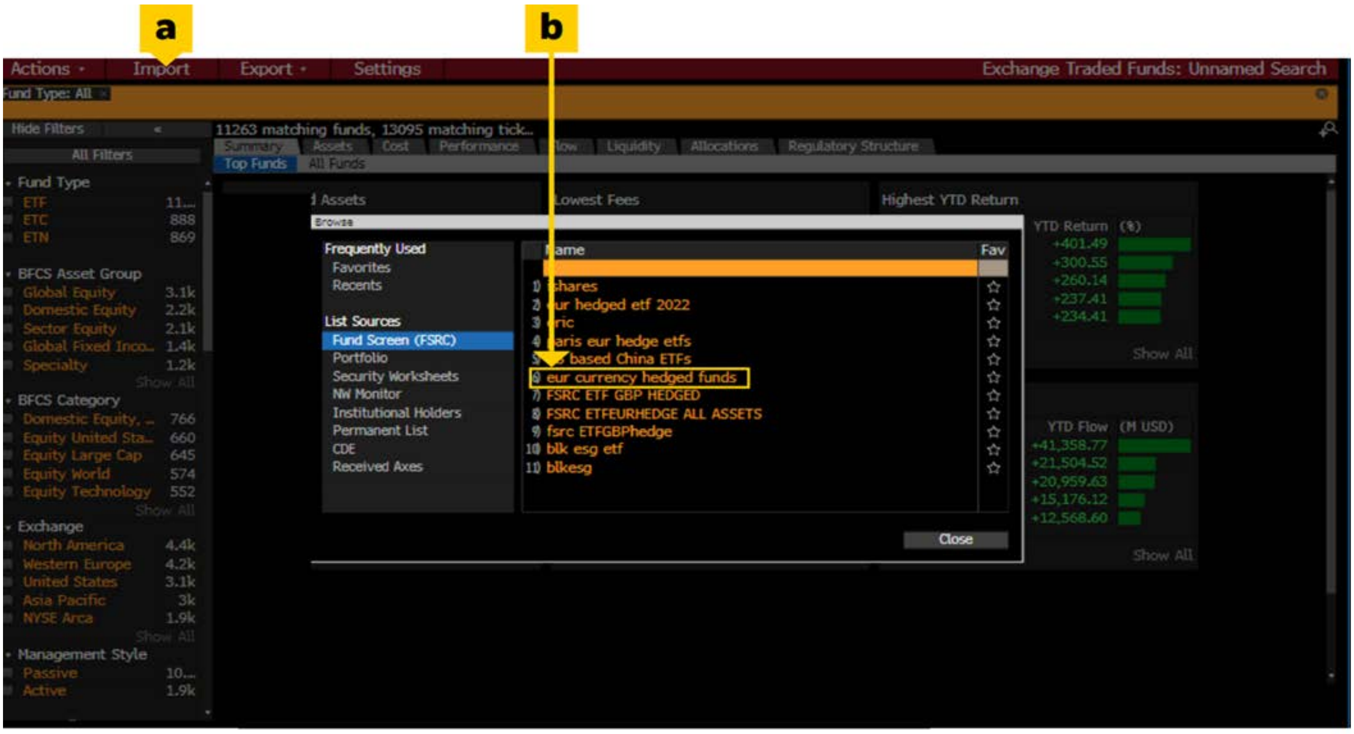
f Click **"Actions"** to save and give shortcut name.

g Click **"My Screens"** tab to view saved custom searches. This shortcut name can be used in the ETF <go> search bar.

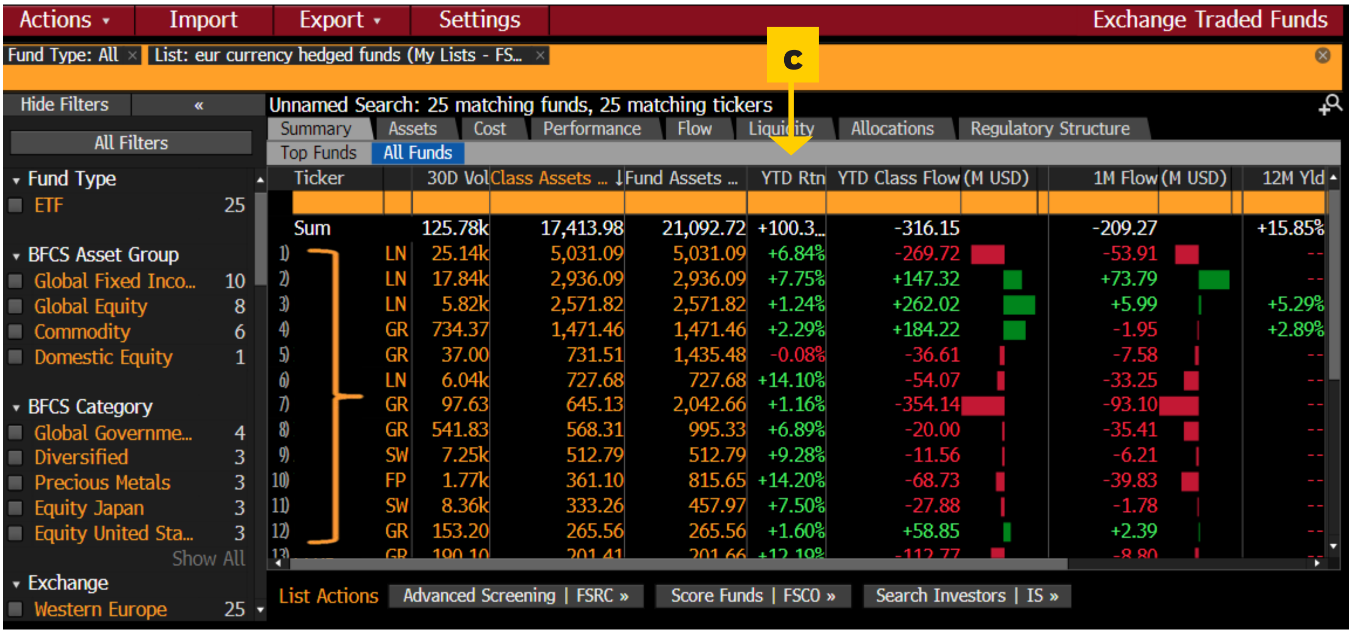
The ETF function for fund search

The ETF <go> function can be used for customized fund searches

ETF



of the ETFs shown.



The illustration has names of funds hidden in this publication.

- **a** Left click **"Import"** tab
- **b** When window appears, left click **"Fund Screen (FSRC)"** (not shown), then left click on desired search
- **c** The ETF search function now only shows GBP currency-hedged funds (list shown is truncated and only displays iShares ETFs)

ETF short interest

The SI function

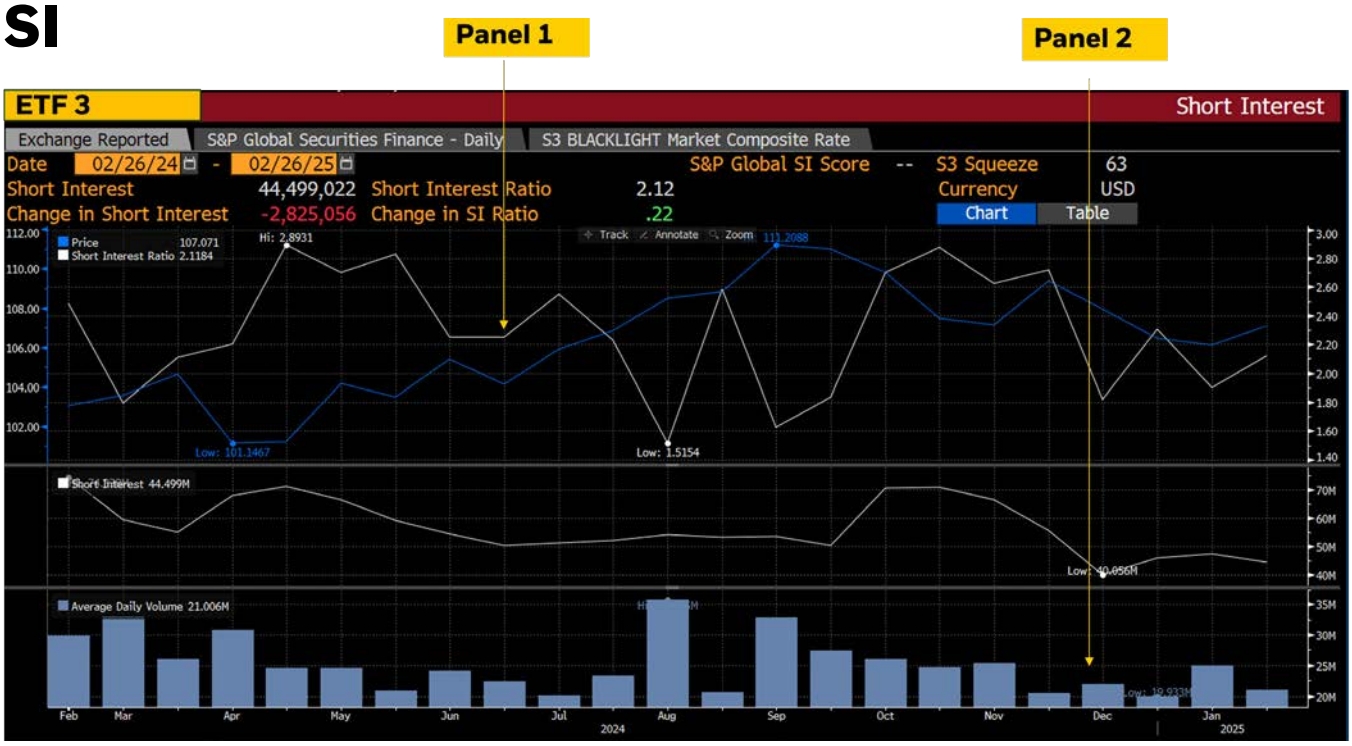
SI + GO

SI — Bloomberg function

GO — Enter

The SI function provides a look into an ETF's level of short interest in a U.S.-listed ETF.

SI



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

Panel 1

Price and short interest ratio

- Short interest ratio (white line) is defined as the number of days it would take to short positions to be covered using the average daily volume of the previous weeks.
- As shown in the example, the [ETF3] has a short interest ratio of 2.12 days.

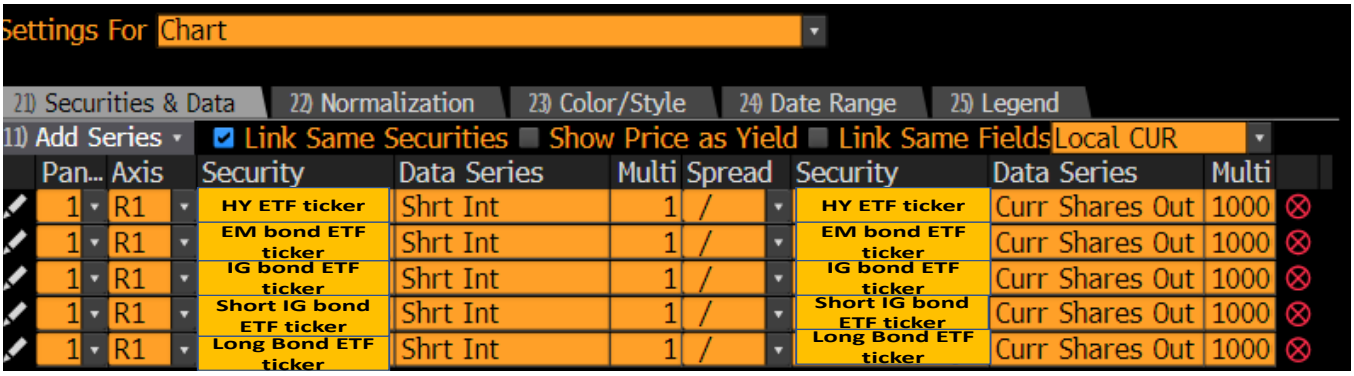
Panel 2

Short interest measured in number of shares

- The short interest for [ETF3] is 44,449,022 shares as of 26th February 2025. Meanwhile the number of shares outstanding during this time was 278.6m. This can be confirmed on any DES page of an ETF.
- The short interest can be calculated as 44,499,022 / 278.6m = 16% of [ETF3] shares are shorted.

Short interest and ETF securities lending

If there is a high short interest outstanding, there will invariably be attractive lending opportunities for the ETF owner. Lending out ETF securities can be done directly in the marketplace, and the lending revenues can effectively reduce the ETF cost of ownership. The picture below shows that, over time, a [ETF 4] short interest (SI) can reach a much higher percentage of its shares outstanding than an [ETF 3] in this example, and also tends to exhibit a higher short interest ratio over time.



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The W and GS functions for creating ETF yield curves

W + GO

W — Bloomberg function

GO — Enter

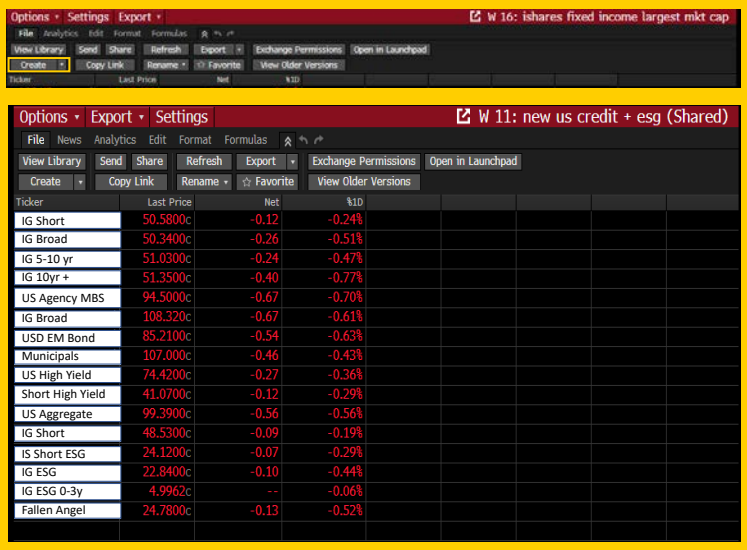
Investors can use the W <go> and GS <go> Bloomberg functions to create credit yield curves.

W <go>

a

b

c



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a Left click on **"Create New Worksheet"**

b Select **"Basic"**

c Select **"Create"**

d Populate orange tab(s) with desired ETF tickers

The GS function

GS + **GO**

GS — Bloomberg function

GO — Enter

GS <go>

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

a	**Source**	Security worksheets
b	**Name**	iShares fixed income largest market cap
c	**Highlight data tab**	
d	**X-Axis**	YAS modified duration
e	**Y-Axis**	YAS bond yield
f	**Market size**	Current market cap
g	**Save graph to become part of G menu**	

APPENDIX

All examples and case studies in the appendix are for illustrative purposes only. They are not an offer or solicitation to engage in investment activity and should not be taken was investment advice.

Case studies are for illustrative purposes only; they are not meant as a guarantee of any future results or experience, and should not be interpreted as advice or a recommendation.

Capital at risk. You may get back less than you invested.

6

6.1 ETFS IN HIGH VELOCITY MARKETS: MARCH 2020 CASE STUDIES

Global market volatility reached historic levels in March 2020 amidst the COVID-19 pandemic. In response, investors turned to the most liquid bond ETFs to help navigate bond market dislocations.

ETFs became the real-time price discovery vehicle for markets at a time when transparent quotations and trading activity in underlying securities deteriorated. It became much more efficient to trade in the ETFs themselves, as market participants adjusted positions and managed risk.

Index ETF market price vs. NAV

The difference between an ETF's market price and net asset value (NAV) is key to understanding ETF price discovery during volatile times.

An index bond ETF's NAV is an official measure of ETF valuation, calculated using bid-level index prices (with a few exceptions) at the end of each day. As such, it is an aggregate of individual bond prices—some of which trade infrequently.

An ETF's market price represents an actionable trade price for that fund at the time the price is quoted. Since ETFs trade intraday on-exchanges, their market prices reflect real-time market information.

An ETF's market price and NAV can differ materially, particularly during times of market stress when the ETF's market price reflects rapidly changing real-time information—a process known as "price discovery." The index price of the underlying benchmark for UCITS bond ETFs is typically calculated at 16.15 GMT for EUR and GBP underlying exposures. NAV uses the same values, but is usually calculated, at a later point in time. For UCITS and 40 Act ETFs, the underlying benchmark is calculated at 15.00 EST for USD bonds. Some closing price discrepancies between a U.S. domiciled ETF with a USD benchmark and its NAV can occur due to ETFs trading on equity exchanges, where prices close at 16.00 EST.

How do ETF premiums/ discounts to NAV resolve?

The fair value band

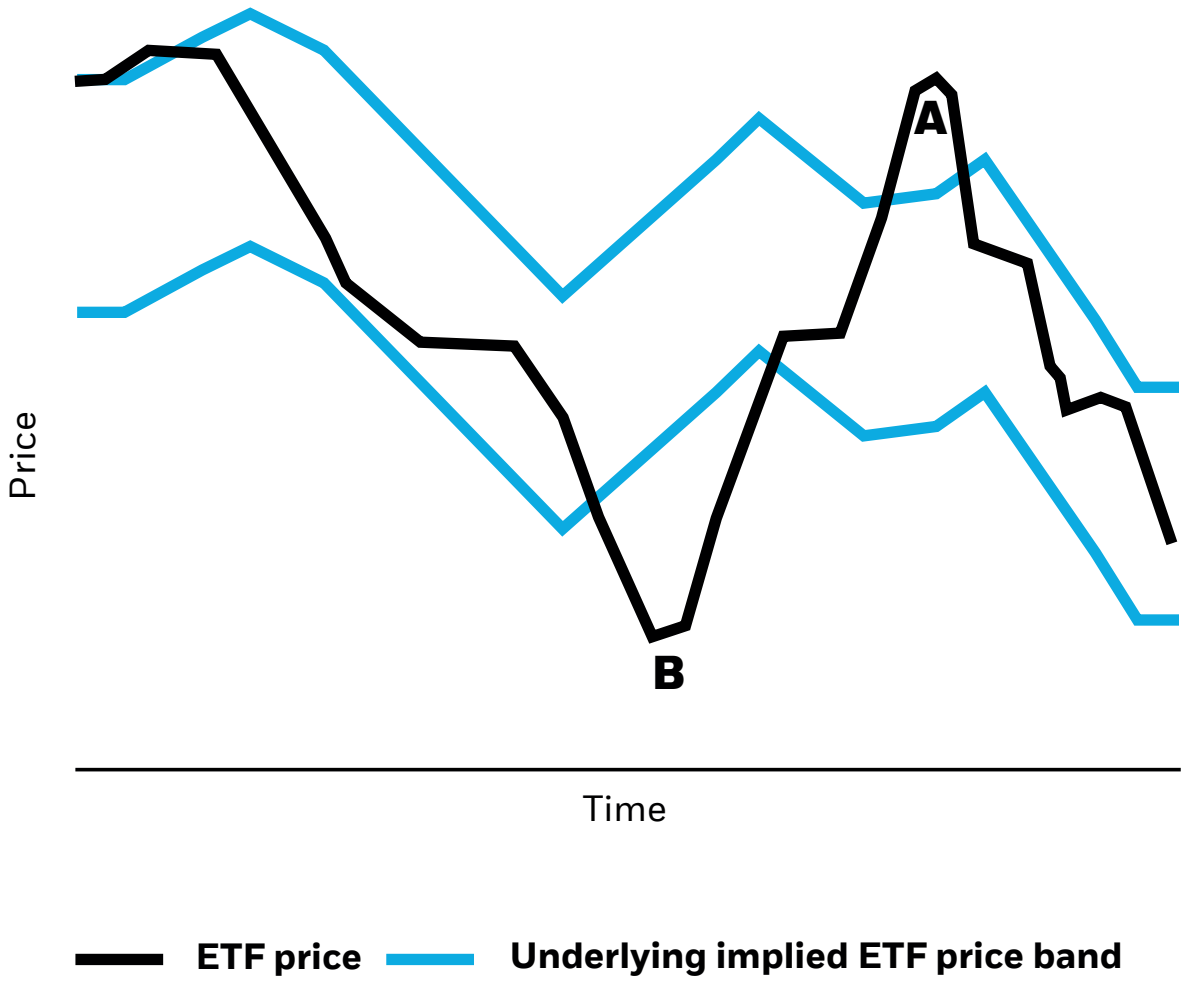
While ETF premiums/discounts to NAV are not uncommon, there is a reason why they don't persist indefinitely. This is because the creation/redemption mechanism unique to ETF structure allows for an arbitrage that effectively brings an ETF's price back in-line with the value of its underlying securities.

When an ETF is trading at a **premium** (above NAV), APs will buy the underlying securities at their tradeable prices and sell the ETF at its higher price, again arbitraging the spread.

When an ETF is trading at a **discount** (below NAV), authorized participants (APs)—broker/dealers authorized to create/redeem ETF shares—will sell the underlying securities at their tradeable prices and buy the ETF at its lower price, thereby arbitraging the difference.

Several factors can determine the ‘fair value band’, including[1]

- Cost of hedging
- Tax
- Supply and demand
- Operational costs



1 Source: BlackRock, as of 31 March 2025. For illustrative purposes only.

Price discovery during market dislocation

March 2020 / Case study 1 – US Investment Grade Corporate Bond ETF

By looking closely at March 2020 trading activity for the USD Investment Grade Corporate Bond ETF ([ETF3]), one can see how the ETF has become a go-to tool for investors and market makers in volatile markets.

Firstly, it is important to note that bond ETFs trade frequently. This implies that their prices can incorporate more real-time information than even the most heavily-traded portfolio bonds. On March 12, 2020, the stock market experienced one of the most volatile days in history. With this particular Investment Grade Corporate ETF [ETF3] trading volumes rose sharply on this day, trading 90,000 times on-exchange. By comparison, its top five underlying holdings traded just 37 times apiece. For similar reasons throughout March 2020, this corporate bond IG [ETF3] 's daily average value traded was $3.548bn, whereas more than half of the underlying bonds in UST Corp Bond ETF's underlying index traded between zero and five times a day on average.

An ETF's NAV represents an aggregate of individual bond prices that might be estimated on relatively few data points. Where a pricing source does not have a traded price for any bond on that day, the price sent to the index provider may have been an estimate based on where other bonds had printed. Selling credit bonds in a market experiencing a significant contraction in bid-side liquidity, compounded by dealers being unable to warehouse the risk on their balance sheet, led to a widening on bid/offers and a dispersion in index marks. As a result, the NAV was not necessarily reflecting where real risk was actually trading. On the other hand, the ETFs had been trading very actively during this period. The ETF effectively became the window in the real clearing price for the market. Accordingly, ETF 3 market price could be seen to reflect high volumes of real-time market information, and the ETF represented an actionable trade for the entire portfolio at any moment.

As shown below, this resulted in this corporate IG bond [ETF3] trading at a discount to NAV in the first half of the month, and a premium to NAV in the second half. Since the announcement of the Fed and ECB's corporate bond market support package, investors have sought to buy IG corporate bond exposures, which has increased ETF prices. At the same time, trading in the underlying bond markets has become more orderly, with a greater degree of two-way interest.

Capital at risk. You may get back less than you invested. For illustrative purposes only.
Source: Bloomberg from 2nd March 2020 to 31st March 2020. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

March 2020 / Case study 2 – [ETF2]

One popular trade in the US Treasury (UST) market has been for leveraged funds to buy Treasuries and sell the interest rate future. The cash bonds always tend to trade slightly cheaper than the future because long positions in cash bonds carry a higher capital charge for banks than the derivative contract.

After the major equity sell off in March, and rally in UST, the futures outperformed the cash bonds significantly, and sufficiently enough that some of these leveraged arbitrage funds were forced to unwind positions. In the resulting sessions, the Long Bond Future, and its cheapest deliverable bond (T4.5% 2/2036) further outperformed near-maturity USTs—as much as 2% in price terms. During this volatility, a UST Long Bond ETF= [ETF2] seemed to enjoy a much tighter bid/offer spread than many of its US Treasury Bond index components.

ETF 2 | 97) Export to Excel | 98) Settings | Cheapest-to-Deliver

US LONG BOND(CBT) Jun20 Price 178-27 | Trade 03/25/20 | Delivery 06/30/20

Sort By | Settle 03/26/20 | Cheapest IRP -0.493

Implied Repo | Decreasing | Prices in Decimals | Days 96 Act / 360

	Cash Security	Price	Source	Conven Yield	Conver Factor	Gro/Bas (32nds)	Implied↓ Repo%	Actual Repo%	Net/Bas (32nds)
	Adjust Value								
1)	T 4 ½ 02/15/36	153-13	BGN	0.8886	0.8500	44.450	-0.493	0.347	11.029
2)	T 4 ¾ 02/15/37	159-19¼	BGN	0.9289	0.8702	127.095	-6.368	0.347	91.749
3)	T 5 05/15/37	164-07+	BGN	0.9348	0.8952	132.270	-6.419	0.347	95.174
4)	T 4 ½ 05/15/38	158-07¼	BGN	0.9861	0.8375	270.237	-17.156	0.347	237.159
5)	T 4 ⅜ 02/15/38	155-29¾	BGN	0.9639	0.8254	265.986	-17.162	0.347	233.694
6)	T 4 ½ 08/15/39	160-07¾	BGN	1.0560	0.8313	370.220	-24.223	0.347	337.002

Capital at risk. You may get back less than you invested. For illustrative purposes only.
Source: Bloomberg, 25th March 2020. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The valuation difference between ETFs and their NAVs was not solely restricted to credit funds: UST Long Bond ETF had a similar experience.

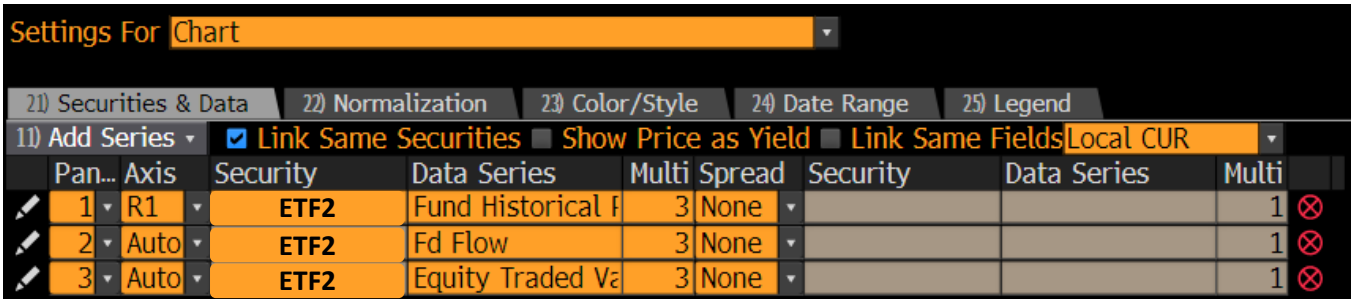
While many credit ETFs can have over 2,000 holdings in their underlying index, UST Long Bond ETF had just 42 holdings. This has typically made for a relatively straightforward calculation of the weighted-average bid price of UST Long Bond ETF's underlying Treasury bonds. As such, UST Long Bond ETF had historically traded very close to its NAV.

In March 2020, the US Treasury market was experiencing severe technical pricing issues and wide bid/ask spreads. Price differences in 'off the run' long maturity Treasuries were as wide as 1 point, with the long bonds moving as much as 9% in price terms over 7 trading days. Whereas the ETFs (and UST Long Bond ETF) were trading in real time on-exchange, the bid price NAVs on the underlying (especially off the run) over-the-counter Treasuries appeared to be stale.

UST Long Bond ETF's trading activity increased rapidly throughout the month, with about $4.26bn of average daily volume. (6th March 2020 UST Long Bond ETF traded $12.672bn in one day).

As shown below, the high levels of UST Long Bond ETF's value traded suggests it was fulfilling an important role as a price discovery vehicle, reflecting real-time market sentiment while coincidentally trading at a discount to its NAV.

'Long Bond iShares' premium/discount to NAV (top panel), value traded (bottom panel)



Capital at risk. You may get back less than you invested. For illustrative purposes only.
Source: Bloomberg from 2 March 2020 to 31 March 2020. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown. All $ values are in USD.

6.2 MORTGAGE BACKED SECURITY (MBS) ETFs

Case study

MBS ETFs

Investor challenge

A reserve manager with a USD denominated portfolio sought to enhance yield, and the reserve manager was willing to consider expanding the credit universe to achieve this goal.

However, the reserve manager's investment policy for its investment portfolio would not permit securities with credit ratings below AA.

Solution

Given their minimum credit rating tolerance, the reserve manager decided to explore the US Agency Mortgage Backed Security (MBS) market. The reserve manager chose an US Mortgage Backed Security ETF, which offered:

- Diversification across sub sectors and tranche types
- Ease of execution
- On-exchange liquidity
- Exposure to a major sector of U.S. bond market: Mortgages represent $7.1T of the U.S. fixed income market and are about 25% of the Bloomberg US Aggregate Bond Index[1]

1 Source: Bloomberg as at 1 March 2025. All $ values are in USD.

Yield differential between Bloomberg US MBS Index and 5-10 year Treasury yield

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

The operational simplicity of MBS ETFs

The management of a U.S. MBS portfolio is notoriously time-intensive. MBS pools can be operationally complex, where the sourcing and taking delivery of specified pools can be expensive and time consuming.

MBS can also be accessed via derivatives (TBA contracts). However, these require the ability to trade derivatives and must be rolled monthly.

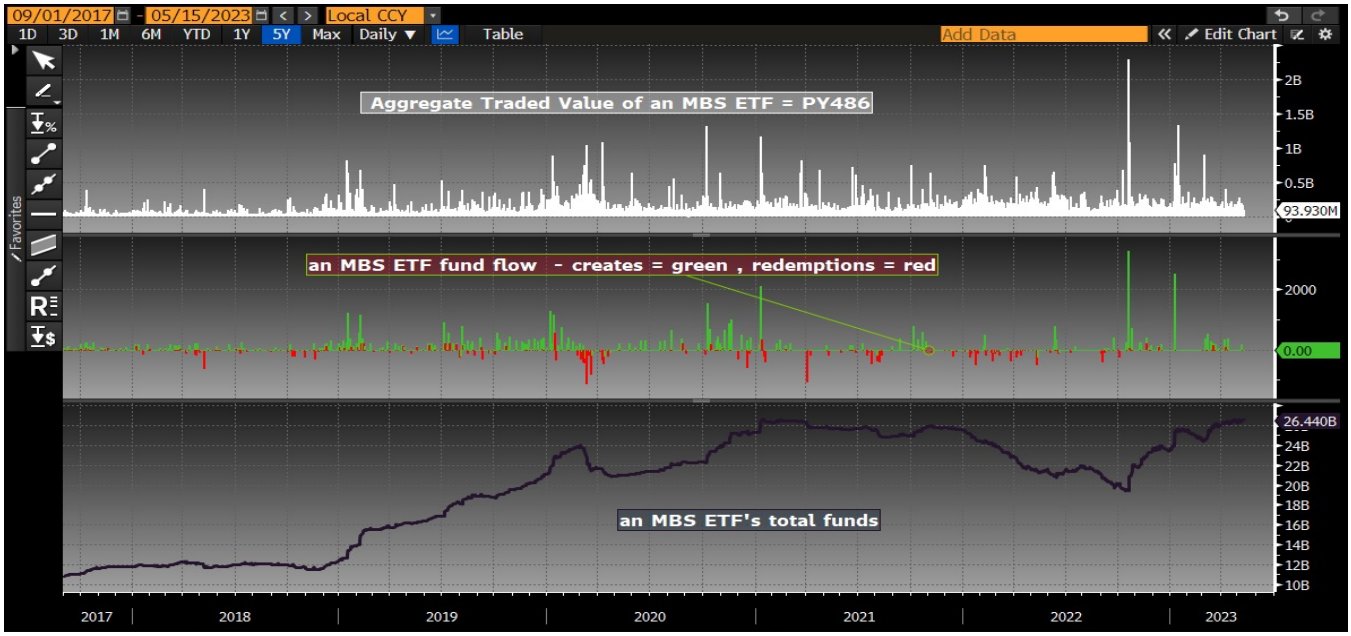
As such, many institutions have turned to MBS ETFs to achieve broad exposure to the asset class through a one-security selection. The ETF itself is diversified across sub sectors and tranche types.

An agency MBS ETF trading volume and fund flows

An Agency MBS ETF has enjoyed a high daily volume of value traded (aggregate share volume). In 2023, an Agency MBS ETF has had days where turnover has exceeded 500mm/day.[1]

As shown on the following page, an Agency MBS ETF's secondary market trading volume has been relatively higher than its fund flow (creation/redemption activity).

A US mortgage backed ETF showing an MBS ETF's traded value, daily fund flow and market capitalisation



For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown.

1 Source: Bloomberg as at 31st December 2023

Comparing MBS returns

The below chart compares the following MBS returns:

An MBS ETF = [ETF7]

The ETF returns are NAV returns and net of fees. Please note ETF7 expense ratio has fallen over time.

Bloomberg US MBS Index (LUMSTRUU)

LUMSTRUU does not reflect transaction costs from monthly rebalancing that results in 20-30% turnover per year.

Bloomberg REMIX portfolio TBA Proxy Total Return (I21254US)

This tracks a TBA strategy, and is rebalanced monthly. It is composed of a portfolio of 12-18 liquid TBA contracts designed to track the performance of the Bloomberg fixed rate U.S. MBS Index.

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown. **The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.** Performance is for illustrative purposes only. Index performance does not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

MBS ETF vs. TBAs

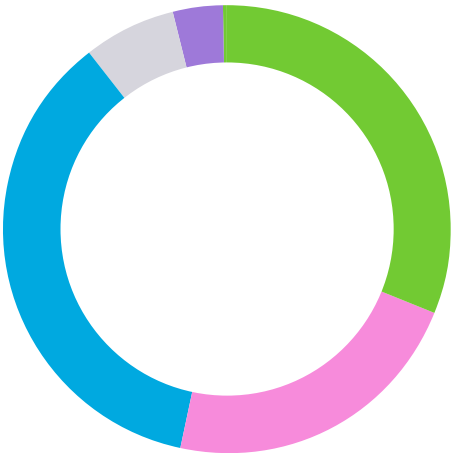
Buying an ETF can give investors access to more seasoned securities in the U.S. Agency Mortgage market, which can be difficult to source in the secondary market. A mortgage backed ETF is comprised of mostly physical securities backed by mortgage pools. Physical pools can have more predictive prepayment and convexity characteristics relative to TBA contracts, which have an embedded "Cheapest To Deliver" option. Newer issued mortgage backed security issues have a higher propensity to prepayment risk. This can cause TBAs to underperform seasoned indices when rates are volatile and fall as evidenced during the October 2018-2019 period.

MBS ETF: A TBA complement

Currently, TBA forward contracts are one of the dominant vehicles used to invest in the U.S. mortgage market. However, MBS ETFs (and other mortgage backed security ETFs) offer a number of potential advantages relative to TBAs, including operational simplicity, a better convexity profile, and competitive holding costs.

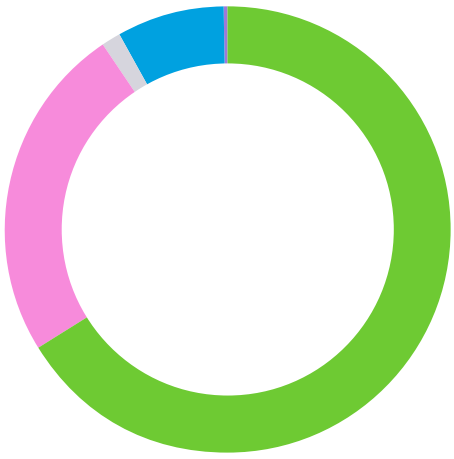
Comparison Analysis

A mortgage backed ETF



30 Yr FNMA	**31.20%**
30 Yr GNMA	**22.40%**
30 Yr FHLMC	**36.00%**
15 Yr FNMA	**6.60%**
15 Yr FHLMC	**3.70%**
15 Yr GNMA	**0.00%**
Other	**0.10%**

TBA Strategy



30 Yr FNMA	**66.34%**
30 Yr GNMA	**24.25%**
30 Yr FHLMC	**1.47%**
15 Yr FNMA	**7.82%**
15 Yr FHLMC	**0.13%**

Source: BlackRock Solutions, Bloomberg as of 12/31/2024. Allocations subject to change. "TBA Strategy" represented by a TBA index replicating portfolio. TBA weights for portfolio derived from a pro rata composition of the 15yr and 30yr maturities, representing 96% of the Bloomberg Barclays US MBS Index. This information should not be relied upon as research, investment advice or a recommendation regarding the Funds or any security in particular. This information is strictly for illustrative and educational purposes and is subject to change. The TBA Strategy does not represent the actual current, past or future holdings or portfolio of any BlackRock client.

A mortgage backed ETF portfolio composition and risk profile

Physical mortgage pools can have more predictable prepayment and convexity characteristics relative to TBA contracts, which have an embedded “Cheapest To Deliver” option.

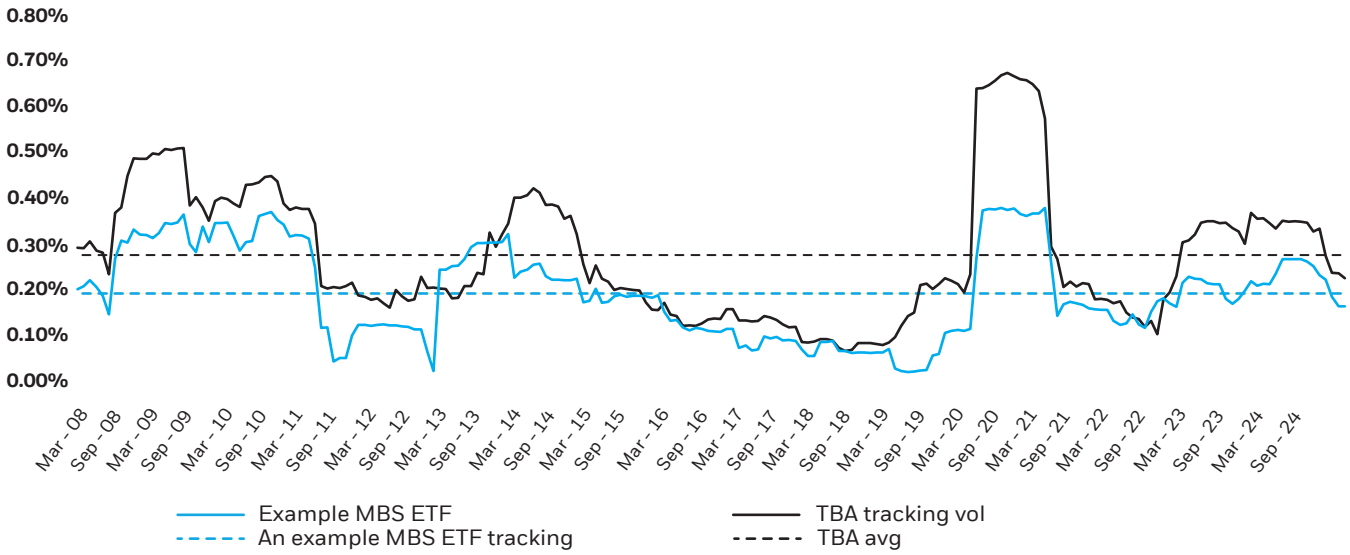
The mortgage backed ETF has exhibited less tracking volatility to the Bloomberg U.S. MBS Index than TBA replication strategies over both short and longer-time periods. The chart below illustrates the mortgage backed ETF's tighter index tracking volatility to the Bloomberg U.S. MBS Index, versus the Bloomberg TBA REMIX Index.

Portfolio characteristics comparison[1]

	An example MBS ETF	TBA Strategy
Convexity	**0.00**	**-0.85**
Duration	**5.66**	**3.38**

1 Source: Source: BlackRock Solutions as of 31 December 2024. 'TBA Strategy' represented by TBA risk slice of a US mortgage backed ETF

Index tracking volatility comparison[2]



2 Source: BlackRock Solutions, Bloomberg. TBA tracking volatility is based on the Bloomberg REMIX Portfolio TBA Proxy Index, as of 12/29/2024. Tracking volatility is the annualized standard deviation of the excess returns of a portfolio versus its benchmark index. Mortgage backed ETF tracking volatility is based on NAV excess total returns.

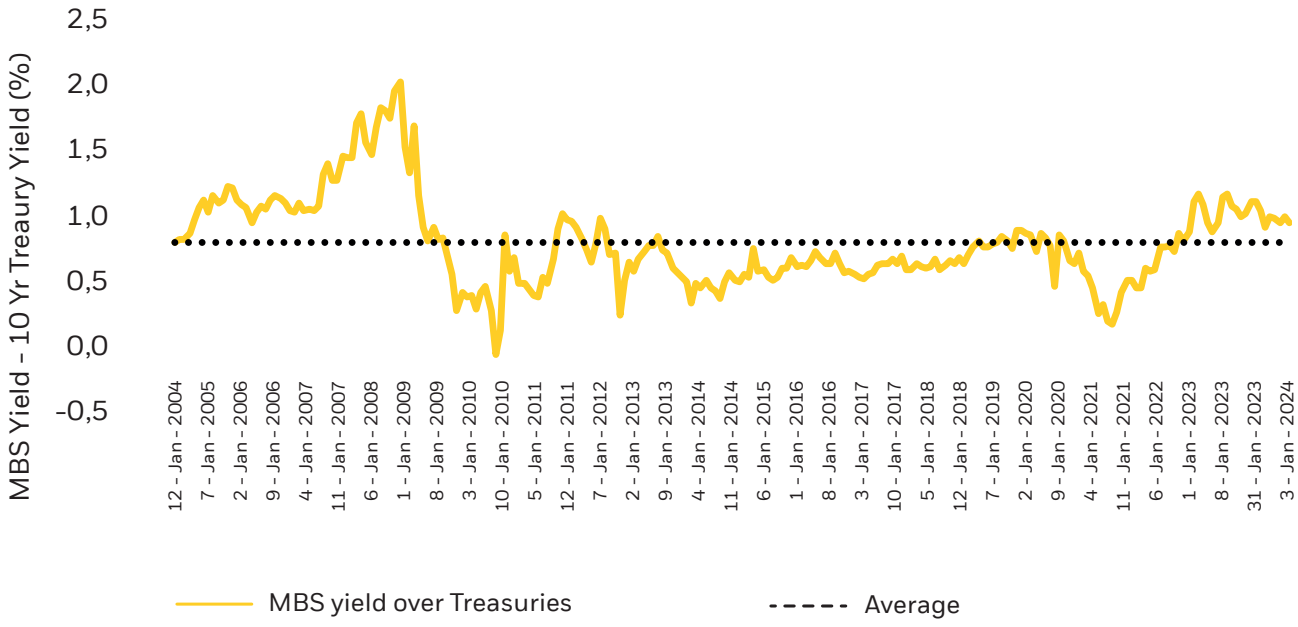
How MBS can fit into fixed income mandates

For those benchmarked to Global Government benchmarks, an investment in U.S. Agency MBS could add diversification of income and a spread pick-up over US Treasuries that could benefit their portfolio.

Over the past 20 years, on average, U.S. Agency MBS has offered an additional spread over U.S. Treasuries of 0.69%[1]. This additional yield pick-up could benefit investors in their portfolio while maintaining minimum credit rating tolerances due to the implicit or explicit government guarantee that comes with U.S. Agency MBS.

U.S. Agency MBS maintains a strong correlation with Global Government benchmarks. Over the past 20 years, U.S Agency MBS has maintained a correlation with the Bloomberg U.S. Treasury index of 0.80[2].

MBS Spread Over 10 Yr Treasuries



Source: Bloomberg as of 12/31/2024. Bloomberg US MBS Index and US 10 Year Yield shown.

1 Source: Bloomberg, as of 12/31/2024. Comparing the index yield to worst of the Bloomberg US MBS Index and the yield of US 10 Yr Treasuries monthly over the period 12/31/2004-12/31/2024.
2 Source: Bloomberg as of 12/31/2024. Weekly correlation between the Bloomberg US MBS Index and the Bloomberg US Treasury Index over the time period 12/31/2004-12/31/2024.

Comparing a mortgage backed ETF and TBA strategies using Bloomberg COMP

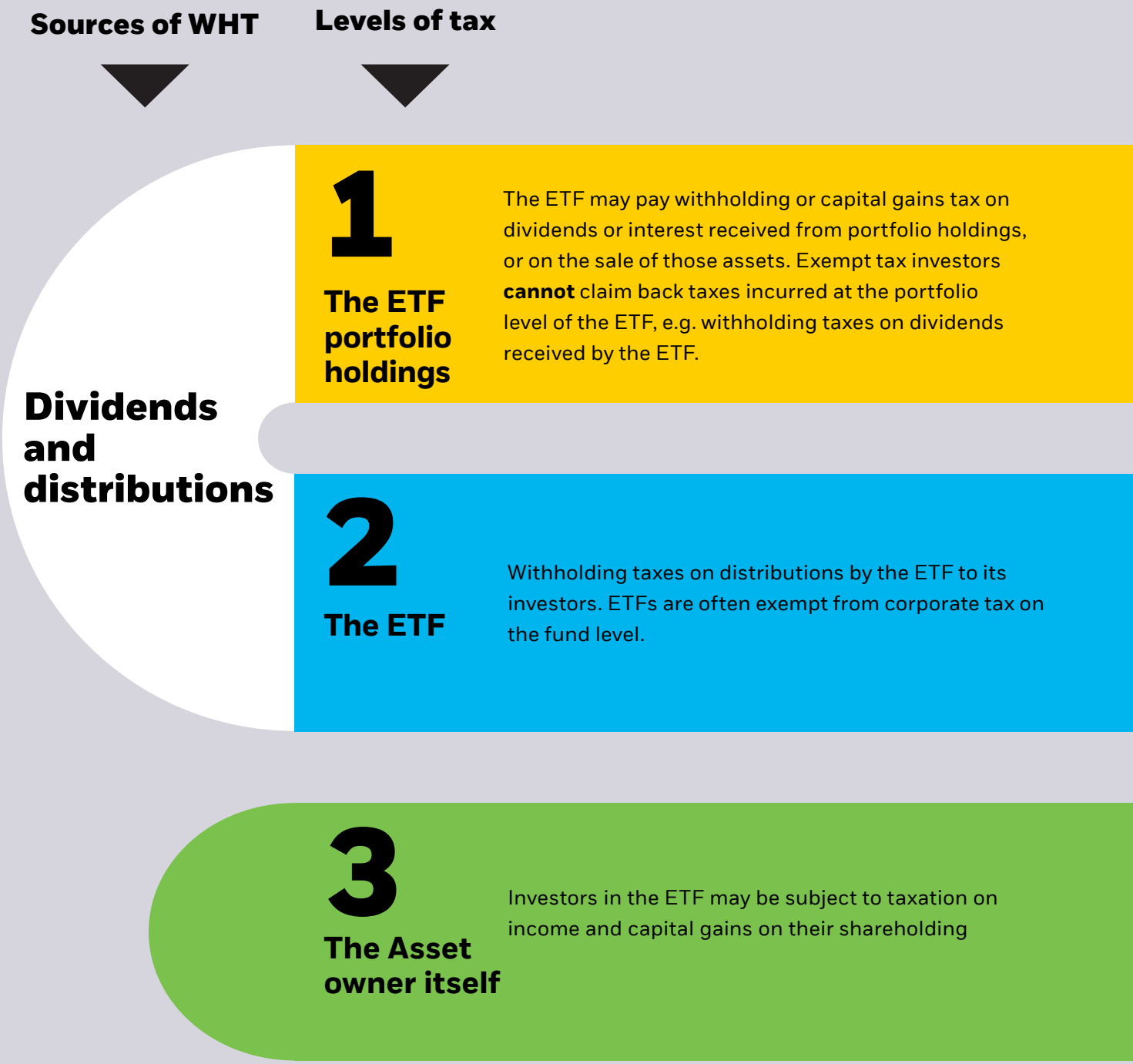
The graph below compares 5-year performance of the 'US Agency MBS ETF' to its underlying index (LUMSTRUU) and the TBA proxy (I21254US). As shown, the TBA proxy significantly underperformed for the specified time period.

Comparing 'ETF = a US agency mortgage back ETF' and TBA strategies using Bloomberg COMP

For illustrative purposes only. This is to illustrate Bloomberg functionality and is not intended as an offer of the ETFs shown. **The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.** Performance is for illustrative purposes only. Index performance does not reflect any management fees, transaction costs or expenses. Indices are unmanaged and one cannot invest directly in an index.

- Asset owners who invest in MBS through TBA roll strategies have suffered quite sharp tracking error to the Bloomberg US MBS Index (LUMSTRUU) over time, as TBAs have exhibited higher prepayment features in the recent rates environment.

6.3 THE TAXATION OF AN ETF MAY ARISE AT 3 LEVELS



Portfolio level of the ETF

The type (such as equities or bonds) and the domicile of the investment will have an impact on whether the ETF is subject to any at source taxes on income or capital gains.

ETF portfolio securities dividends and interest distributed to the ETF

ETF level

ETFs are often exempt from corporate tax. Withholding tax on ETF distributions may apply in certain fund domiciles.

Taxation of the ETF and distributions to the investors

Investor level

An institution might be subject to taxation on income and capital gains derived from its shareholding in the ETF.

Subject to the individual taxation regime applicable to the investing institution

All tax data is for illustration purposes only and does not represent tax advice. The content of the information provided is for information purposes only and is meant to provide investors and intermediaries with an overview. This information is not intended to, nor does it, provide specific investment or tax advice, or to make any recommendations about the suitability of iShares for the circumstances of any particular investor. We recommend that clients consult with their own independent tax advisor should you have any further queries about how investing in an iShares fund will affect their tax position.

MSCI ACWI Withholding tax example

Portfolio level: This is subject to the underlying geographic exposure and ETF domicile

1 Portfolio level of the ETF

Payments from ETF portfolio securities will be subject to either a statutory tax rate or tax treaty rate based on the domicile of the security and ETF.

Benchmarks, such as the MSCI ACWI, include securities in various domiciles with differing tax rates applicable on income and gains.

The net benchmark return is generally based on the statutory tax rates on distributions by the benchmark securities. In comparison, in case of the ETF, the net effective tax rate often differs from the benchmarks' as the ETF tax position also considers applicable tax treaty rates.

Example

U.S. dividend income U.S. Dividends will be subject to **15% WHT** if they are distributed to an **Irish ETF,** and **30%** if distributed to an **index mutual fund** domiciled in **Ireland or Luxembourg.**

French dividends will be subject to **0% WHT** if they are distributed to an Irish ETF, **15%** WHT if distributed to a 40 ACT **US-domiciled ETF,** and **0%** to an Index mutual fund domiciled in **Ireland** or in **Luxembourg.**

Calculation

Country weight x **Country yield** = **Index weighted dividend yield**

Index weighted dividend yield x **Net WHT rate** = **Tax impact**

In the case of an ETF tracking the MSCI World index, with the index components being domiciled in various jurisdictions globally, the total portfolio- level WHT impact is an important consideration. It may have a greater impact than the headline expense ratio on the performance of an ETF.[1]

MSCI All Country World Net total return index				Net return benchmark		Irish ETF		German ETF		US ETF - tax exempt		Irish unit trust		Luxembourg SICAV	
Country of domicile	Country weight	Country yield	Index weighted div yield	Net WHT rate	Tax impact	Net WHT rate	Tax impact	Net WHT rate	Tax impact	Net WHT rate	Tax impact	Net WHT rate	Tax impact	Net WHT rate	Tax impact
USA	61.58%	1.70%	1.05%	30.00%	0.31%	15.00%	0.16%	30.00%	0.31%	0.00%	0.00%	30.00%	0.31%	30.00%	0.31%
Japan	5.22%	2.86%	0.15%	15.32%	0.02%	15.00%	0.02%	15.00%	0.02%	10.00%	0.01%	15.00%	0.02%	15.32%	0.02%
Great Britain	4.01%	3.73%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Canada	3.21%	3.14%	0.10%	25.00%	0.03%	25.00%	0.03%	15.00%	0.02%	15.00%	0.02%	25.00%	0.03%	25.00%	0.03%
Switzerland	2.90%	2.89%	0.08%	35.00%	0.03%	35.00%	0.03%	15.00%	0.01%	15.00%	0.01%	35.00%	0.03%	35.00%	0.03%
France	2.69%	3.18%	0.09%	26.50%	0.02%	0.00%	0.00%	0.00%	0.00%	15.00%	0.01%	0.00%	0.00%	0.00%	0.00%
China	2.57%	2.29%	0.06%	10.00%	0.01%	10.00%	0.01%	10.00%	0.01%	10.00%	0.01%	10.00%	0.01%	10.00%	0.01%
Germany	1.86%	3.77%	0.07%	26.37%	0.02%	15.00%	0.01%	15.00%	0.01%	15.00%	0.01%	15.00%	0.01%	15.00%	0.01%
Australia	1.82%	4.89%	0.09%	30.00%	0.03%	30.00%	0.03%	30.00%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
India	1.65%	1.20%	0.02%	23.92%	0.00%	10.00%	0.00%	10.00%	0.00%	23.92%	0.00%	23.92%	0.00%	23.92%	0.00%
Taiwan	1.37%	5.22%	0.07%	21.00%	0.02%	21.00%	0.02%	21.00%	0.02%	21.00%	0.02%	21.00%	0.02%	15.00%	0.01%
Korea	1.21%	2.40%	0.03%	22.00%	0.01%	15.00%	0.00%	22.00%	0.01%	16.50%	0.00%	15.00%	0.00%	15.00%	0.00%
Netherlands	1.14%	2.48%	0.03%	15.00%	0.00%	15.00%	0.00%	15.00%	0.00%	15.00%	0.00%	15.00%	0.00%	15.00%	0.00%
Sweden	0.76%	3.02%	0.02%	30.00%	0.01%	0.00%	0.00%	0.00%	0.00%	15.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hong Kong	0.75%	4.80%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	0.66%	1.46%	0.01%	25.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Brazil	0.66%	11.32%	0.07%	25.00%	0.02%	25.00%	0.02%	15.00%	0.01%	15.00%	0.01%	25.00%	0.02%	15.00%	0.01%
Denmark	0.65%	2.08%	0.01%	27.00%	0.00%	15.00%	0.00%	27.00%	0.00%	15.00%	0.00%	15.00%	0.00%	15.00%	0.00%
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Total portfolio level WHT impact				**0.56%**		**0.33%**		**0.46%**		**0.14%**		**0.47%**		**0.46%**	

Total portfolio level withholding tax (WHT) impact = The lower the WHT tax impact, the better it is for the institution.

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Taxation of the ETF

This is dependent on ETF domicile

2 ETF Level

The ETF's country of domicile may impose corporate tax on the ETF or withholding tax on any distributions by the ETF to its investors.

The U.S. generally imposes 30% withholding taxes when a U.S.-domiciled ETF makes a distribution to non-U.S. investors. However, this withholding tax rate may be reduced to 15% or 0% depending on the tax treaty in place between the ETF and investor domicile, which may require the investor to furnish certain US tax documentation, such as form W-8BEN, and share it with their custodian. We recommend to confirm with the custodian of the investor what the individual requirements are and if the custodian can support the reduction.

Ireland does not impose any withholding taxes when Irish ETFs or mutual funds distribute income or gains to overseas investors.

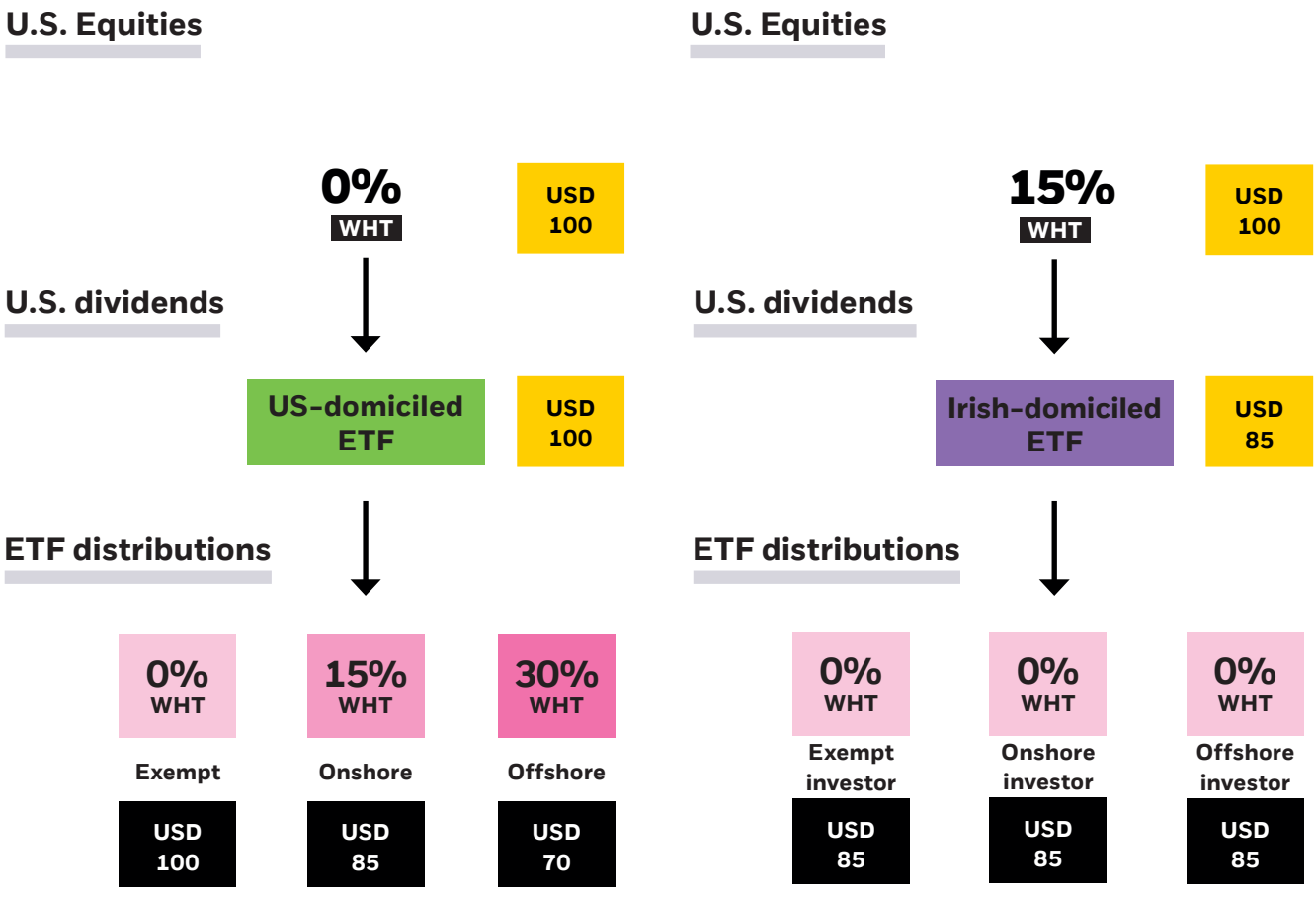
Withholding tax

The country of domicile of the ETF may impose a withholding tax on any distributions made to its investors on the basis of the tax position and the residence of the investor. The withholding tax rates can vary depending on the fund domicile.

As can be seen from the examples provided, an ETF would suffer U.S. withholding tax at 0% or 15% or 30% on U.S.-sourced income from its portfolio holdings depending upon the country of its domicile, its status and the tax treaty with the U.S.

No further withholding tax is levied on the distribution by the Irish ETF to its investors. Withholding taxes may be charged on distributions made by a U.S.-domiciled ETF to its investors depending on the type of investor and whether the investor has access to tax relief.

Tax impact on U.S. exposure[1]



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6.4 TRANSITIONING FROM FUTURES TO ETFs

ETFs can be more cost efficient instruments than the like-for-like funded future. The funded future's inefficiencies (Tracking Difference) can arise from mispricing of the contract or funding gap of collateral compared to the implied funding of the future. Additionally ETFs can offer exposure at a lower volatility of tracking (Tracking Error) compared to futures as there are no estimation used to drive the pricing, such as implied funding or estimated dividends amounts over the period.

ETFs can offer precision implementation by tracking the exact benchmark required and not the closest proxy. This avoids any benchmark mismatch (for example tracking MSCI Europe via Euro Stoxx 50 instruments). ETFs also can offer broader investment choices around the same exposure including ESG consideration, currency hedged exposures, or accumulating vs. distributing instruments.

ETFs can offer implementation with lower operational overhead compared to alternative funded futures as the instrument would require no rolling or collateral management. Furthermore broad benchmarks such as MSCI World or ACWI could require a basket of futures and related collateral management in different currencies with different maturities, compared to a single line ETF implementation.

Transitioning from futures to ETFs

Case study

Some asset owners have implemented their equity exposures through futures contracts. Like ETFs, futures may be easy to execute, liquid, and have transparent pricing. However, extra costs may be associated with futures holdings as they require quarterly rolls between front month contracts to the next expiry. Additionally, futures may have limited liquid offerings around widely used indices and their ESG implementations.

For these reasons, some asset owners have decided futures are not ideal for a reserves portfolio. They have instead opted to transition to an ESG ETF, offering comparable equity exposure.

In these cases, there is typically some overlap between the underlying share holdings of the index which the futures position tracks and the ESG ETF. This could lead to reduced transition costs, as these underlying securities can be used to create units of the ETF rather than presenting to outright trades.

An asset owner was looking to exchange a long Euro Stoxx 50 futures position for the a ‘European EMU ESG equity ETF’. A broker makes a 2-way quote for the switch.

Sell the future (basis quote). Buy the ETF (NAV quote)

For illustration purposes only.

Capital at risk. You may get back less than you invested.

Comparing ETF, futures, and index pricing levels

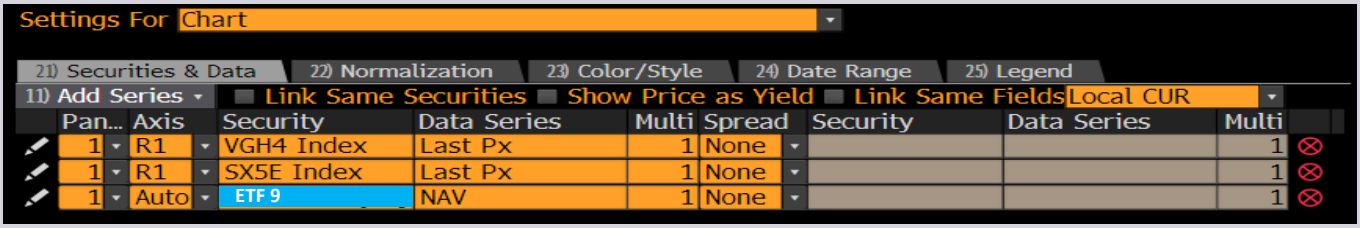
The asset owner gets an exchange for physical (EFP) quote of + 14.45 points (yellow value previous page = basis) to sell the future and a quote of NAV +12 bps to buy the ETF. The broker then uses the EFP market to quote the 'fair value' of the future versus the underlying index at the index closing price. In this example:

The index closes at 4654.55 (green line), and thus the broker bids 4669 for the future (lilac line) = (4654.55 + 14.45 = 4469)

The ETF NAV closes at 7.6454 (blue line), and thus the broker sells the ETF to the asset owner for [(7.6454 + (7.6454 * 0.12%)] = 7.6544

Instead of delivering the underlying securities, the broker rebalances the basket and creates units of the ETF to deliver to the asset owner, incurring only creation costs typically associated with ETF primary market activity.

For illustration purposes only.



Sample only.
For illustration purposes only.

Reviewing the transition trades

Case study

To summarize the example on the previous page:

The asset owner sold the futures at 4669
The asset owner bought the ETF at 7.6544

As shown in the graph on the opposite page, these two pricing levels are in-line, demonstrating that the transition from futures to ETFs was achieved with relative ease and pricing efficiency. Looking at these prices over the previous several weeks, the graph shows that they have historically moved in-line with each other.

Theory behind futures pricing

Future price = index price – dividends + rates
Basis = futures price – index price

Hence, the basis is driven primarily by expected dividends and implied funding rates from the present to the futures' expiry.

"Exchange for physical" (EFP) is a highly liquid trade type where brokers quote prices for exchanging futures for the underlying stock basket (and vice versa). The price will be a reflection of the fair basis and is often benchmarked to the index closing level.

Capital at risk. You may get back less than you invested.

6.5 ETFs AND SECURITIES LENDING

Securities lending is a well-established practice where ETFs can make short-term loans of stocks or bonds to incrementally increase returns to investors. In practice, a large financial institution asks to temporarily borrow a stock or bond. To borrow the stock or bond, the borrower must pay a fee and provide collateral to the ETF kept to secure repayment in case the borrower fails to return the loaned stock or bond. The financial institution typically uses the loaned stock or bond to hedge against market risks, take a directional view on the market, or use as collateral in another transaction.

Key questions to ask:

1. Does the ETF participate in securities lending?

2. What is the potential lending revenue and how is revenue split between the investor and the lending agent?

3. Are there clear guidelines for risk management?

4. Does the lending agent provide an indemnity against borrower default?

5. What is the potential lending revenue return from loaning the ETF unit?

Risk: With securities lending there is a risk of loss should the borrower default before the securities are returned, and due to market movements the value of the collateral held has fallen and/or the value of the securities on loan has risen.

Securities lending and ETFs: two potential streams of revenues

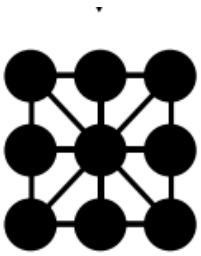
Most large asset managers and major custodians have a platform to lend securities and make the client experience as seamless as possible. The lending agent typically manages the operational aspects of securities lending transactions. Once established in a lending program, the process is very low touch for beneficial owners.

With ETFs, investors have two potential sources of revenue from securities lending activities.

1 Lending the underlying securities

Underlying securities held In the ETF can be lent our and revenues are reflected in the overall performance of the ETF.[1]

2 ETF unit lending



The individual shares of the ETF can be lent out, and may provide additional income to the individual ETF holders.[1]

BLACKROCK'S APPROACH TO SECURITIES LENDING

BlackRock has provided industry leading securities lending services to clients for over 40 years[2]. Our integrated lending program is a core differentiator in our investment platform, designed to help clients generate a return on their assets in a conservative, low-risk manner, leading to better investment performance over time. Today, we are one of the largest lending agents in the world, unique in that we focus solely on lending for our internally managed portfolios. BlackRock's differentiated approach to securities lending includes:

- **Integrated investment management approach** – Our integration with Portfolio Management provides an information advantage over outsourced lenders which allows us to extract additional value for our clients.

- **Leveraging BlackRock's relationships** – As the largest investment manager in the world by assets under management ("AUM")[3], BlackRock is a significant client to all the counterparties to which we also lend securities. BlackRock's holistic relationship management approach is a clear differentiator in our ability to negotiate with our borrowers.

- **Proprietary technology –** BlackRock is a technology pioneer within the lending space, offering an industry-leading, highly automated, and flexible proprietary lending platform. In recent years, we have accelerated investment in the data science space in collaboration with BlackRock's Data Science and Artificial Intelligence teams to further enhance tools and analytics.

- **Prudent risk management –** We take a low-risk approach, focusing on high quality borrowers and conservative collateral management.

- **Robust assessment of borrowers –** We select highly creditworthy borrowers based on conservative credit standards defined by our Risk & Quantitative Analysis ("RQA") team, which operates independently from our securities lending business.

The securities lending on-loan percentage, or utilization, of an ETF can vary over time due to changes in borrowing demand for different securities, sectors, and asset classes. For example, small-cap stocks typically have less liquidity than large-cap stocks. The relative scarcity has resulted in wider lending spreads of the individual securities and of ETFs that hold the underlying securities.

We encourage investors to ask ETFs managers for detail on their securities lending program, and most importantly, the net returns to investors. When some ETF providers may report returning a higher percentage of the income from securities lending, they may not be disclosing the percentage of income paid to the Manager or other third-parties.

1 **Source**: Lending agent may retain a portion of the gross income to cover for direct and indirect costs of operating the platform.
2 **Source**: BlackRock, 31 December 2024. Unaudited figures.
3 **Source**: Morningstar, as of end of September 2024.

BlackRock believes the net returns to investors, combined with appropriate risk and fee disclosure, is the best gauge of investor benefits from securities lending. It is important to remember that some lenders are able to generate higher returns from a given basket of securities due to their scale and skill. We periodically benchmark our performance against peers in the industry using data from independent third-party providers.

Now in our fifth decade of lending securities on behalf of clients, BlackRock has always focused on delivering competitive returns while balancing risk and cost on behalf of our investment fund

Past performance is not a reliable indicator of current or future results and should not be the sole factor of consideration when selecting a product or strategy. While the investment approach described herein seeks to control risk, risk cannot be eliminated. With securities lending there is a risk of loss should the borrower default before the securities are returned, and due to market movements, the value of collateral held has fallen and/or the value of the securities on loan has risen.

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ADGM

Abu Dhabi Global Market (ADGM)

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