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iShares
by BlackRock

ETF DUE DILIGENCE GUIDE

A guide to ETF selection

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

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KEY QUESTIONS

Selecting an Exchange Traded Fund (ETF) may be an overwhelming process. We believe it all starts with asking the right questions.

What to ask

ETFs enable investors to gain low cost and transparent access to a broad range of asset classes. We believe there are eight key areas for ETF investors to consider as part of the due diligence process.

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SECTION 01

ISSUER

Key considerations when evaluating your product issuer

Not all Exchange Traded Fund (ETF) issuers are created equal. Every issuer offers a different suite of products, and understanding the scope is an important consideration when onboarding any ETF issuer.

The ETF management process is anything but passive. It is important to understand the portfolio management, investment processing and risk control capabilities available to support this. Experience and scale can be an important consideration when it comes to having the resource to navigate large industry-wide changes.

INTRODUCING iSHARES

BlackRock is a global investment manager and we are committed to helping more and more people plan for their financial future. BlackRock offers a range of solutions for institutions, financial professionals and individuals from all walks of life.

The iShares platform provides investors access to index mutual funds and exchange traded funds that offer diversified and low-cost ways to tap into the potential of the markets. This platform encompasses ETFs that are domiciled in Europe, North America, APAC and Latin America. All of BlackRock's EMEA-domiciled iShares ETFs are domiciled in either Ireland, Germany or Switzerland, and are managed by the BlackRock ETF and Index Investment Strategies ('EII') Team.

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Key questions to ask:

1. **Does the ETF provider offer the breadth of products needed?**
2. **What is their experience and track record within the indexing industry, and do they have dedicated index portfolio management and research teams?**
3. **Does the provider have risk management processes in place?**
4. **Does the firm have resources to successfully manage through periods of regulatory change?**
5. **Can they scale as I grow my assets?**

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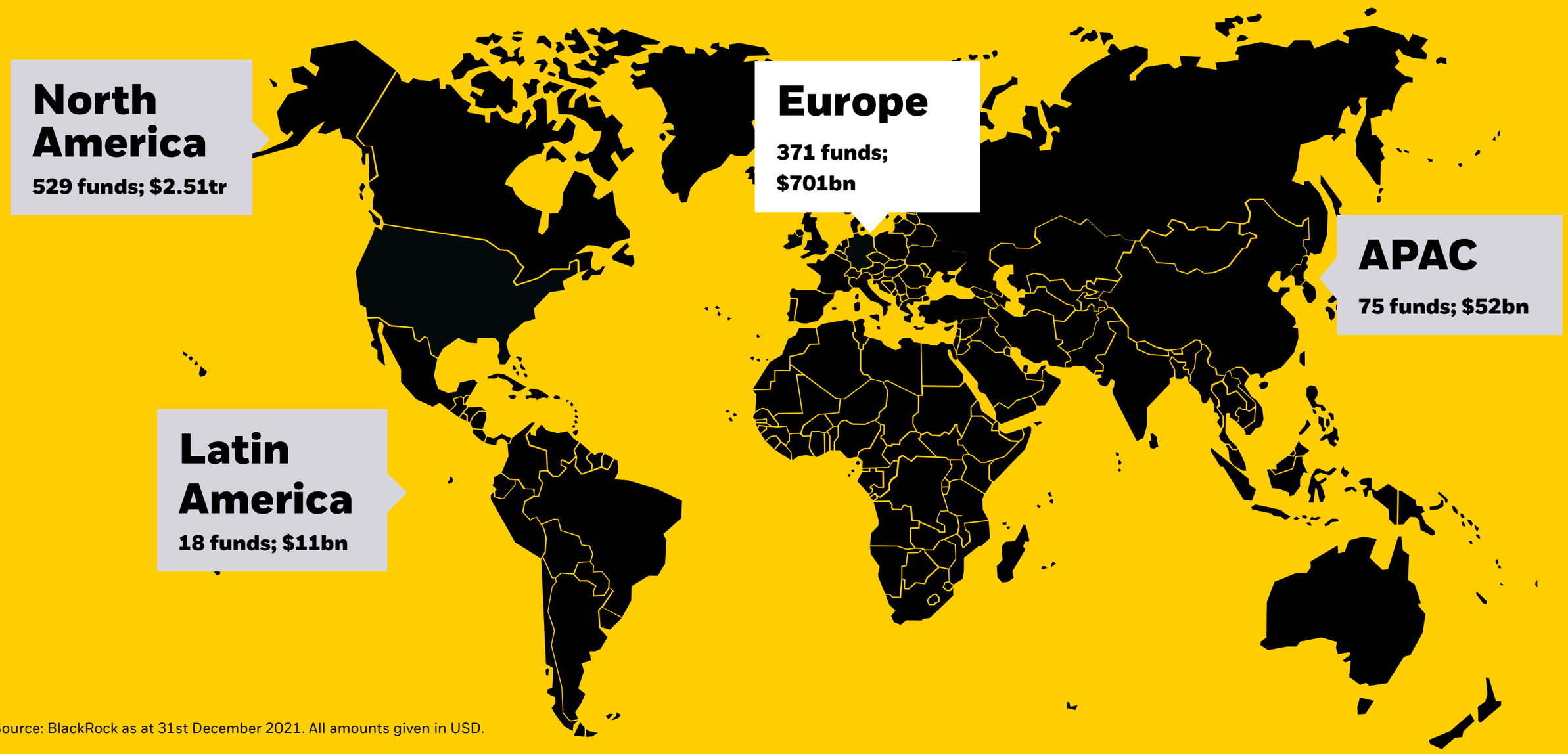
Figure 1: iShares ETF universe by domicile



Source: BlackRock as at 31st December 2021. All amounts given in USD.

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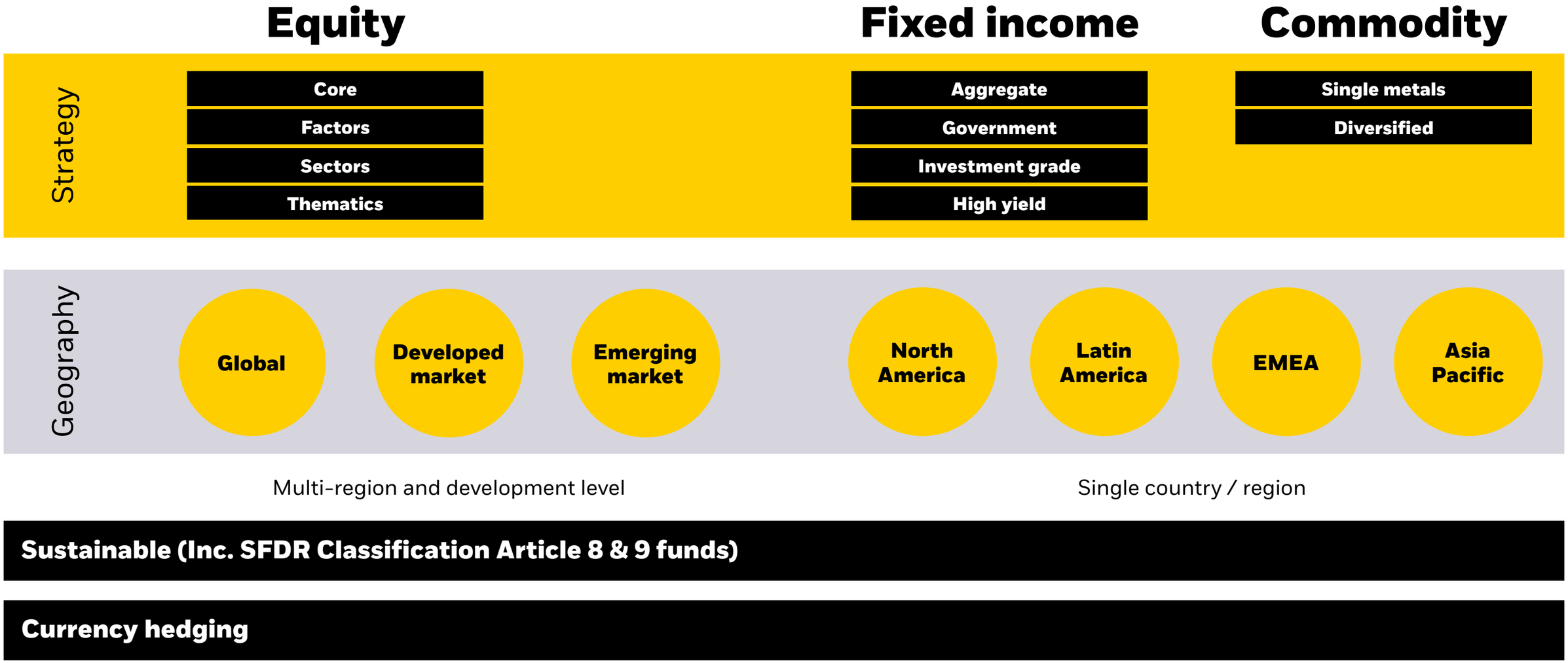
The EMEA iShares platform offers products across a variety of asset classes (equity, fixed income and commodity) and strategies (for example, sectors, factors and thematic). Exposures are available at the multi-region and development level, as well as at the regional and single-country level.

Risk: The return of your investment may increase or decrease as a result of currency fluctuations.

Currency movements may have an impact on investment returns. For investors wishing to reduce this volatility, currency hedging may help to mitigate unintended currency bets. iShares offers currency hedging options across a number of ETFs.

Figure 2: iShares ETF universe by asset class



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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THE INVESTMENT PROCESS

It is important to understand the portfolio management, investment processing and risk control capabilities available to support the ETF investment management process. At BlackRock, our portfolio managers and portfolio engineers sit at an intersection of portfolio construction, index methodology, trading and capital markets, operational & investment risk, and technology.

There are a number of elements that encompass successfully managing an iShares ETF. Portfolio managers and engineers leverage their deep portfolio expertise and investment skill to seek consistent performance. The decision-making process involves deciding on corporate actions such as dividends, stock splits, spinoffs, issuer buybacks, debt restructuring, rights offerings and mergers & acquisitions. The investment team works in conjunction with teams across BlackRock to execute detail-intensive investment decisions in pursuit of performance with precision and reliability.

Key elements of the process include:

- **Benchmark changes:** Within equities, our portfolio engineers combine capital markets knowledge with the insights from our Global Index Research Group to evaluate thousands of index events and corporate actions each year. Within fixed income, our portfolio managers specialise by asset class and use this knowledge to take a pragmatic approach towards monthly index changes.
- **Portfolio construction:** In equities, engineers make decisions around portfolio structure (for example, optimisation vs. full-replication), cash equitisation, trading around index changes and making corporate action elections. In fixed income, portfolio managers replicate the index through stratified sampling, a process of managing tracking errors and returns versus the index. All portfolios are constructed using BlackRock's proprietary tools that provide a platform to manage portfolio construction process with electronic and over-the-counter trading. **Risk:** While proprietary technology platforms may help manage risk, risk cannot be eliminated.
- **Local presence:** BlackRock's global footprint enables specialisation in local markets. The team leverages traders' local market expertise and benefits from real-time execution in respective time zones. Our trading team provide 24 hour a day, 5 day per week coverage.
  Risk: There is no guarantee that research capabilities will contribute to a positive investment outcome.
- **Performance and oversight:** All index portfolios are subject to daily portfolio review. In addition to portfolio-specific oversight, all portfolios and accounts go through a due diligence process during new account setup.

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MANAGING RISK

All iShares ETFs embed risk control at every stage of the investment process. We pursue the risk control objective by minimising all investment (and operational) risks that are not associated with producing reliable returns. Our research, portfolio management portfolio engineering teams have extensive background in the development and use of risk models, their construction, behaviour, limitations, and appropriate uses.

BlackRock uses a proprietary investment platform called Aladdin which integrates and instantly connects all functions needed to manage money. From portfolio management and trading to compliance, operations and risk oversight, Aladdin brings together people, processes and systems to support a seamless investment process.

Risk: While proprietary technology platforms may help manage risk, risk cannot be eliminated.

Aladdin's foundation is one common database that is used throughout the entire organisation. It has comprehensive risk, exposure and attribution reporting capabilities. Portfolios and benchmarks are modeled from the bottom-up and a suite of quality-controlled analyses are created to allow portfolio managers to understand portfolio risk and performance, and make more informed investment decisions.

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NAVIGATING INDUSTRY CHANGE

Several BlackRock affiliates operating in Europe have been subject to the markets in financial instruments directive (MiFID) since its introduction in 2007. The revised version of MiFID came into effect in January 2018. The MiFID revisions were a significant piece of regulatory reform, impacting market structures, trading venues, product manufacturers and product distributors.[1]

BlackRock, like other asset managers, needed to revise and enhance a number of policies and procedures, increased client and regulatory reporting (e.g. cost and transaction reporting), and enhance records held. In 2014, when the legislation was finalised, BlackRock identified nine sub-work streams and engaged representations across the business with the project to ensure appropriate implementation; approximately 150 individuals from across the firm worked on this project. BlackRock delivered an extensive programme of operational and compliance adjustments in order to ensure the firm was compliant with the relevant requirements of MiFID II for 3rd January 2018.

1 Source: BlackRock as at 31st December 2021.

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SCALING BUSINESS PRACTICES

We have a constant desire to innovate, and commitment to define and adopt new market standards. As a result, we continue to drive initiatives to help scale our platforms and processes for both increased AUM and larger order volumes, as well as a commitment to driving increased market standardisation.[2]

Recent work to drive standardisation within the ETF ecosystem includes enhancements to our portfolio reporting. Portfolio composition files (PCF) act as a 'blueprint' for all ETFs, and highlight details related to product composition, such as number and size of holdings and cash allocations. The primary purpose of a PCF is to support primary and secondary market activity; an authorised participant (AP) uses the underlying data to create ETF shares as part of the creation and redemption process and to provide pricing to our clients via stock exchanges and OTC pricing tools. The enhancements we made to the PCF provides even greater detail and transparency around the underlying ETF composition, which has afforded APs more information required for the creation/redemption process and ability to provide best in class spreads to our clients.

Another example is our work focused on the basket creation of corporate bond ETFs within the primary market. Traditionally, corporate bond ETFs are replicated using a stratified sampling approach (see section 3: Structure); this is a result of the underlying liquidity constraints inherent to the market. This means that a selection of bonds is used to replicate similar risk and return characteristics of the index, without the need to hold every bond within the index. With the introduction of 'custom baskets,' APs can agree with iShares on a custom basket of corporate bonds for delivery as part of the creation/redemption process, affording even greater ability to support primary market creation of the ETFs. iShares have been working on improving the scalability, automation and efficiency of our basket negotiation process.

Our dedicated Global Markets team looks to protect and grow trading in iShares funds by actively monitoring and improving the ETF ecosystem, which encompasses investors, broker dealers, market makers, trading venues and technology providers.

2 Source: BlackRock as at Global Business Intelligence, 31st December 2021. For illustrative purposes only.

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SECTION 02

SUSTAINABLE CONSIDERATIONS

Navigating the sustainable investing landscape

Assets in dedicated sustainable investing strategies have grown at a rapid pace and are set to accelerate even further over the next decade.[3] For those looking to implement sustainable strategies, there are a variety of solutions available. ETFs can provide investors with a rules-based and fully transparent way to access sustainability, but not all sustainable ETFs are the same. Due diligence is critical to ensure investors understand underlying index methodologies and ultimately select the right index to pursue their sustainable and financial goals.

3 Source: BlackRock as at 31st March 2022.

GOING MAINSTREAM

Sustainable investing is no longer a niche area. Assets in dedicated sustainable investing strategies have grown at a rapid pace in recent years. This demand looks poised to accelerate — driven by societal and demographic changes, increased regulation and government focus, and greater investment conviction. Assets globally now total $4 trillion across all ESG categories.[4]

4 Source: BlackRock as at February 2022. A framework for our clients: How to invest in the net zero transition.

Risk: This information should not be relied upon as research, investment advice, or a recommendation regarding any products, strategies, or any security in particular. This is for illustrative and informational purposes and is subject to change. It has not been approved by any regulatory authority or securities regulator. The environmental, social and governance ('ESG') considerations discussed herein may affect an investment team's decision to invest in certain companies or industries from time to time. Results may differ from portfolios that do not apply similar ESG considerations to their investment process.

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Key questions to ask:

1. **What is sustainable investing and why is a sustainable lens important?**
2. **What are the different solutions available to those looking to implement a sustainable view?**
3. **What are environmental, social and governance (ESG) scores and how are they used?**
4. **What are the three key pillars within ESG scoring?**
5. **What are the additional considerations when conducting due diligence on sustainable ETFs?**
6. **What is climate risk and why does it matter?**
7. **What are EU sustainable finance regulations?**
8. **What are the key considerations when switching into sustainable ETFs?**

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WHAT IS SUSTAINABLE INVESTING?

Sustainable investing means combining traditional security analysis with Environmental, Social and Governance (ESG) insights. The acronym ESG describes the metrics that drive sustainable security selection.

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AN EXTRA RISK MANAGEMENT TOOL

ESG analysis may help uncover hidden risks and opportunities in portfolios that could go undetected by traditional financial analysis alone.

The below examples showcase several issues that would not feature on a corporate balance sheet but ESG analysis can help quantify.

Figure 3: ESG opportunities and risks

Opportunities	Risks
Water efficiency	Data security
Workforce diversity	Climate risk
Energy use	Product quality
Supply chain management	Fraud
Clean tech	Health and safety

Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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Figure 4: ESG analysis can provide an additional lens when evaluating a company's long-term financial prospects

Different type of issuers:

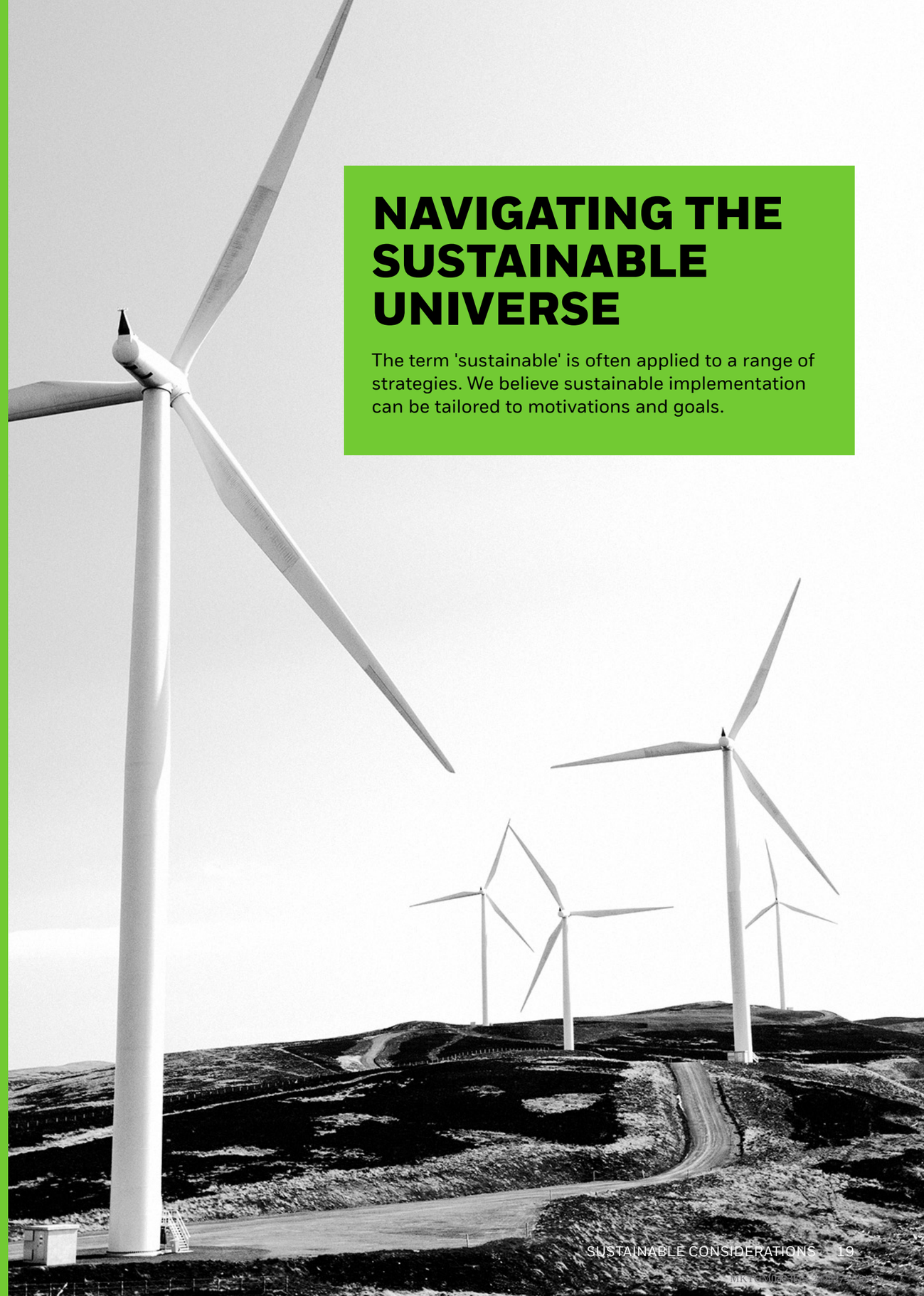
	Company A	Company B
Consider two companies that have similar **financial characteristics** ...		
Consistent profits	✔	✔
Grow dividends	✔	✔
High Market share	✔	✔
... but different **environmental, social, and governance characteristics.**		
Fair CEO Pay	✔	✖
Robust data security	✔	✖
Employee satisfaction	✔	✖

Source: BlackRock as at 31st December 2021. For illustrative purposes only.

Considering just financial characteristics, the companies appear aligned, however, when ESG characteristics are added to the mix, Company A looks potentially a better investment over the longer term based on our ESG analysis.

Historically, ESG strategies can help investors manage broad market downturns, as they tend to fall less than the overall market. Apart from risk mitigation properties, ESG strategies broadly tilt towards companies with high profitability and low levels of leverage; more profitable companies with solid balance sheets may be better positioned to focus on mitigating ethical issues and introducing sustainable practices than their less-profitable peers. This broader, industry-wide recognition that sustainable considerations can influence investment outcomes has made ESG analysis integral for all investments, not just dedicated sustainable strategies.

Source: BlackRock and MSCI as at 31st December 2021.



NAVIGATING THE SUSTAINABLE UNIVERSE

The term 'sustainable' is often applied to a range of strategies. We believe sustainable implementation can be tailored to motivations and goals.

Figure 5: BlackRock Sustainable investing platform

Our sustainable platform provides clients with choice to invest in line with their specific investment goals and objectives.

Across the platform, products use environmental, social and / or governance data as a portfolio construction input and a subset of those products also seek to achieve long-term sustainability outcomes.[1]

	BlackRock Sustainable Investing Platform			
	Screened	**Uplift**	**Thematic**	**Impact**
Investment approach	Constrain investments by **avoiding issuers or business activities** with certain environmental, social and / or governance characteristics.	Commitment to investments with **improved environmental, social and / or governance characteristics** versus a stated universe or benchmark.	Targeted investments in issuers **whose business models** may not only benefit from but also may **drive long-term sustainability outcomes.**	Commitment to **generate positive, measurable, and additional sustainability outcomes.**
Additional details	Includes use of screens and may be enhanced with active engagement with specific issuers.	Environmental, social and / or governance data drives portfolio construction and security selection with some strategies leveraging to target a specific objective.	Strategy construction determined by focused exposure to the specific environmental or social theme.	Investment process must showcase "additionality" and "intentionality" in line with Operating Principles for Impact Management.

1. In line with each product's specific investment objective.As at December 2022.

Investors can implement these styles using alpha-seeking solutions or index-based solutions such as ETFs. There is a broad spectrum of sustainable ETFs that provide investors with rules-based, transparent exposures to traditional broad markets and sustainable.

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THE KEY PILLARS OF ESG SCORING

A core element that underpins the rules-based nature of sustainable ETFs are ESG scores and ratings. These data points can be viewed as a framework to help quantify a company's sustainability-related risks and opportunities and its ability to manage them.

Figure 6: Breaking down ESG - Pillars and key inputs to ESG rating systems:

E S G

1. Environmental

Covers themes such as climate risks and natural resources scarcity.

2. Social

Includes labour issues and product liability risks such as data security.

3. Governance

Encompasses items such as business ethics and executive pay.

Key inputs

- Climate change risk
- Raw materials and water scarcity
- Pollution and waste
- Innovation, clean tech, renewable energy

- Labour policies and relations
- Product liability, including cyber security
- Controversial sourcing
- Social impact reporting

- Shareholder rights, diversity
- Business ethics, transparency

Source: BlackRock as at 31st December 2021. Notes: the figure shows the three key pillars and inputs that underpin the ESG rating process across major providers. For illustrative purposes only.

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ESG ratings providers evaluate companies on the specific issues most relevant to the industries they operate in. For example, companies in the financial sector are rated heavily on social impact, while evaluation of companies in the energy sector will give greater importance to environmental impact. All companies are materially evaluated on their commitment to corporate governance. ESG ratings are thus not just a reflection of the industry a company operates in, but also a measurement of how well a company manages its exposure.

How are ESG scores used?

ESG data providers generally aggregate these inputs to generate individual E, S and G scores, then blend those together to produce a headline ESG score. Aggregate scores are often translated into an overall rating on an AAA to CCC scale, where companies (or countries) are marked relative to their own peers.

Example

The MSCI ESG Quality Score of an ETF is calculated as the weighted average of the fund's underlying holding's ESG scores. The score is provided on a 0-10 scale, with 0 and 10 being the respective lowest and highest possible scores. MSCI scores the underlying holdings according to their exposure to 33 industry specific ESG risks and opportunities and their ability to manage those relative to peers. These issuer-level ESG scores correspond to an issuer-level ESG rating.

Source: MSCI as at 24th April 2023.

What is the Implied Temperature Rise (ITR) metric? How can it be used?

Temperature alignment refers to the "Implied Temperature Rise" of company/portfolio (in degrees Celsius) associated with future greenhouse gas emissions from company/portfolio.

The ITR metric can be used along with other sustainability data and analytics to estimate how portfolios are aligned in the transition phase to a net zero economy.

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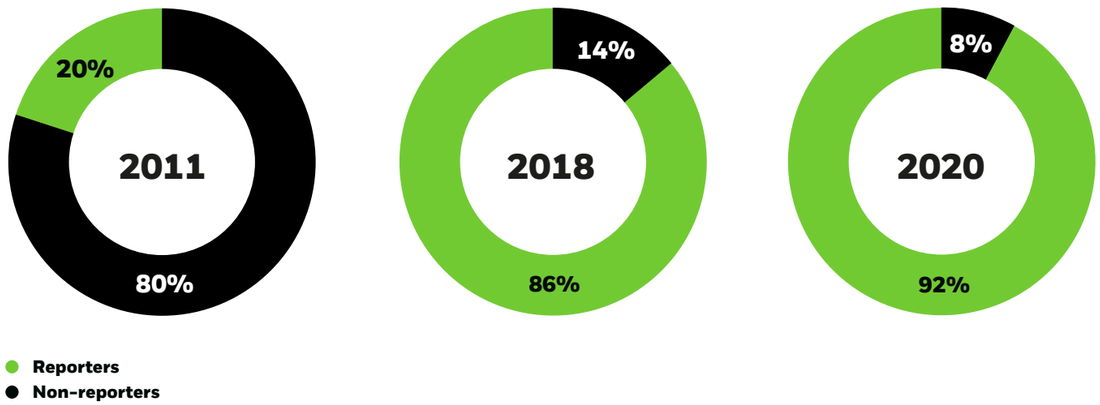
DATA AND REPORTING

The challenge with ESG data is not just an issue of quality and consistency. Different definitions and approaches can lead ESG providers to differing conclusions on the same asset or security. It is important to understand which data sources asset managers are relying on, and how that data is being built into investment strategies.

The early history of ESG data providers has roots in small companies serving a limited investor base. Information was once manually gathered from limited sources. Over time, these small firms have been acquired and resourced to grow beyond their modest origins to cover more companies and markets. The result is a historical database with good coverage of the present but patchy coverage in older periods, making historical analysis challenging.

With growing interest in sustainable investing, data providers have increased their efforts in gathering and reporting varied ESG indicators. For example, MSCI, an ESG data provider, has boosted the number of companies under its coverage more than fourfold over the past decade — and today reports on more than twice as many key performance indicators (KPIs).

Figure 7: More companies are reporting ESG



Source: Governance & Accountability Institute, 2020 S&P 500 Flash Report as at 16th July 2021.

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CLIMATE CONSIDERATIONS

The idea that climate risk represents investment risk has moved from a novelty in the investment world to something approaching mainstream thinking in just a few years.

While the momentum behind sustainability is remarkable, it is still the beginning of a long journey. An estimated $50 to $100 trillion in capital investment is required to rebuild a "net zero" global economy — one that emits no more greenhouse gas than it removes by the atmosphere by 2050.

Climate risk includes:

Physical risk

Increased risk to companies' assets and activities caused by the direct impact of changing weather patterns and natural catastrophes.

Transition risk

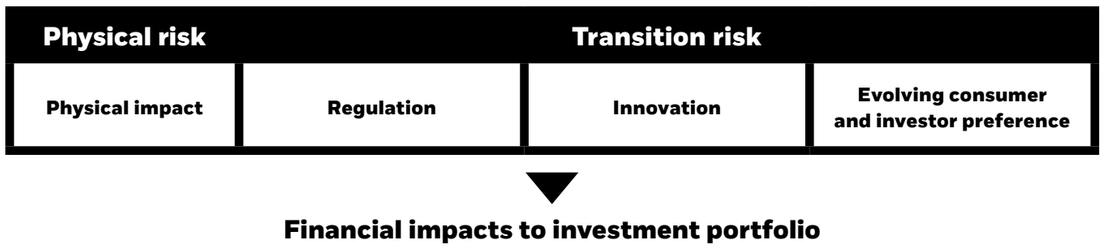
Impact of the transition to a low-carbon economy on a company's long-term profitability.

Investing in the net zero transition

A clear understanding of the transition is vital to achieving better long-term returns. Our research has shown that more sustainable companies are seeing their cost of capital fall. And while short time periods are not determinative, it is striking that in 2021, 70% of a selection of broad-market ESG indices outperformed their non-ESG counterparts, with average outperformance of over 100 basis points.[5]

However, we also believe that markets are only beginning to price in the effects of the climate transition on asset prices, creating a significant opportunity for our clients. Indeed, understanding sustainability characteristics will be even more pivotal to outperformance.

Figure 8: Investors over the coming decades will experience the impact of climate on asset prices in four ways:



Incorporating climate risks and opportunities into every portfolio

The issue, however, is no longer whether the net zero transition will happen but how - and what that means for your portfolio. Recent advancements in data and analytical tools have enabled more sophisticated investment products and methods for building portfolios with an emphasis on climate. Such products can be incorporated in portfolios alongside traditional investments or as replacements for them.

With capital already flowing fast to green technologies, we believe there is also a significant investment opportunity for managers who can identify the carbon-intensive companies with the best strategies for decarbonisation.

Broad building blocks | **Targeted exposures**

Reduce

Exposure to carbon emissions and fossil fuels

Fossil fuel and carbon emission reduction strategies seek to exclude or diminish the presence of securities affiliated with fossil fuel production from portfolios.

These strategies initially focused on simple divestment from specific sectors or industries. Increasingly, reduction approaches consider metrics related to carbon emissions output relative to sector peers, as well as the level of revenues derived from activities with adverse effects on climate.

Prioritise

Companies based on climate opportunities and risks

Advances in data and disclosure about climate-related business activities allow investors to pursue strategies designed to increase exposure to securities that may be better positioned for the transition to a low-carbon economy, and to decrease exposure to securities that may be poorly positioned.

Target

Thematic and impact investments

Targeted investing focuses on specific themes that represent opportunities in the transition economy.

Investors with higher convictions and a higher tolerance for risks and returns that deviate from broad benchmarks may want to consider thematic and impact investments.

5 Source: BlackRock, for the one-year period ending 31st December, 2021. For illustrative purposes only. This is a set of 43 globally-representative, widely analysed sustainable indices and their non-sustainable counterparts. Indices are unmanaged and used for illustrative purposes only and are not intended to be indicative of any fund's performance. It is not possible to invest directly in an index.

For illustrative purposes only. The above list is not exhaustive but represents various ways investors can take specific climate objectives into consideration.

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Spotlight: Sustainable Fixed Income ETFs

We have developed a toolkit of sustainable approaches spanning all asset classes including fixed income, to help investors build a sustainable portfolio foundation that aligns with specific sustainable needs.

In particular, fixed income ETFs allow investors to incorporate sustainability quickly and efficiently into existing portfolios or build new portfolios with specific sustainable objectives. Because of their transparency, access, liquidity and efficiency - as well as rules-based methodologies - sustainable fixed income ETFs can help investors increase their portfolio's sustainability profile whilst seeking to achieve desired portfolio outcomes.

Fixed income ETFs

Transparency
ETFs can offer a daily look through to the fund's holdings

Accessibility
ETFs can allow investors exposure to broad and targeted areas of the fixed income market

Liquidity
ETFs may offer liquidity for portfolios; stressed markets amplify that need

Efficiency
ETFs offer a low-cost, exposure in a single trade to a basket of bonds ETFs can offer a daily look through to the fund's holdings

+

Sustainable investing

Lower volatility in both risk on and risk off periods
Sustainable fixed income indices with higher ESG ratings can have less volatile performance in a range of market conditions

Greater resiliency during risk off periods
Sustainable fixed income indices with higher ESG ratings can deliver more stability during stressed markets

Improved sustainable profile
Sustainable fixed income ETFs may help improve an investor's sustainability profile

EU SUSTAINABLE FINANCE REGULATIONS

The Sustainable Finance Action Plan

The Sustainable Finance Action Plan (SFAP) is a suite of EU policy initiatives that aims to promote sustainable investment. The action plan was initially released in 2018 and outlines ten reforms in three key areas:

1. Reorient capital flows towards sustainable investment, in order to achieve sustainable and inclusive growth.

2. Mainstreaming sustainability into risk management.

3. Foster transparency and long-termism in financial and economic activity.

The implementation of this plan brings several regulatory changes into place, for example a framework to facilitate sustainable investment, increased sustainability-related disclosures and increased regulations regarding suitability assessments.

What is SFDR?

The EU Regulation on sustainability-related disclosures in the financial services sector (known as Sustainable Finance Disclosure Regulation or 'SFDR') was published in December 2019 as part of the EU Sustainable Finance Action Plan. The aim of the regulation is to harmonise disclosure standards, creating a common framework for investors to consider a fund's sustainable credentials and compare funds with respect to their environmental, social and governance (ESG) risks and sustainable investment objectives.

Funds can fall into Article 8 or 9 under SFDR:

Article 8: Products that promote environmental or social characteristics and underlying investments, follow good governance practices.

Article 9: Products that have sustainable investments as an objective and underlying investments, follow good governance practices.

Source: UNPRI, Explaining the EU action plan for financing sustainable growth
Source: Simmons and Simmons, Sustainable Financing and ESG Investment

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What does it mean when investing in iShares?

BlackRock has developed its approach to classification to meet the requirements of the Sustainable Finance Disclosure Regulation (SFDR) and implemented in March 2021. BlackRock classified all funds as Articles 8 or 9 based on our interpretation of the classification. As further EU guidance and legislation is published and implemented — including the Regulatory Technical Standards (RTS) — this approach will evolve.

What's coming next? SFDR Level 2

Level 2 implementation beginning 1 January 2023 will supplement the principles-based Level 1 regulation by introducing changes in two key areas:

- Significantly more granular/prescriptive disclosures for Article 8 and Article 9 products.
- A new methodology for assessing the Principle Adverse Indicators (PAI) of investment decisions.

The industry is awaiting further clarification on the requirements.

MiFID Sustainability Preferences

Amendments to MiFID II will require firms to incorporate sustainability preferences into Product Governance (e.g. target market) frameworks and suitability assessments. These preferences allow investors to exercise a degree of qualitative judgment as part of their investment selection process. The first wave of the regulation, amending organisational requirements will apply from 2 August 2022 and then further product governance obligations will apply from 22 November 2022. This regulation brings together SFDR and EU Taxonomy.

EU Taxonomy

First introduced on 12 July 2020 The Taxonomy regulation provides a framework for firms to determine which activities are considered environmentally sustainable.

It is a technical document that was developed after consultations with over 200 industry specialists and scientists.6 It aims at encouraging companies to become more environmentally sustainable and help investors compare investment opportunities, by providing greater transparency.

The Taxonomy Regulation continues to develop, with additional disclosure requirements coming into effect from January 2022 and continued evolution in coming months.

National Regulations on Sustainable Finance

Some governments across Europe have also devised regulations on sustainable finance at the national level, such as the Autorité des Marchés Financiers (AMF) in France.

Source: European Commission, Taxonomy for sustainable activities technical document as at July 2021.

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EU CLIMATE BENCHMARKS

In 2019, the EU Action Plan on Financing Sustainable Growth led to the creation of two types of climate benchmarks: the 'EU Climate Transition Benchmark (EU CTB) and EU Paris-aligned Benchmark (EU PAB)'. These climate benchmarks aim to:

1 Foster the comparability of climate benchmarks methodologies as well as the flexibility of benchmarks' administrators in designing their methodologies;

2 Provide investors with an appropriate tool that is aligned with their investment strategy;

3 Increase transparency on investors' impact, specifically with regard to climate change and the energy transition; and disincentivise greenwashing.

Source: EU Technical Expert Group on Sustainable Finance, Report on Benchmarks as at September 2019

What is a Climate Benchmark?

A climate benchmark is an investment benchmark that incorporates, alongside financial investment objectives, specific objectives related to greenhouse gas (GHG) emission reductions and the transition to a low-carbon economy (based on the scientific evidence of the Intergovernmental Panel on Climate Change - also known as "IPCC") through the selection and weighting of underlying benchmark constituents.

EU Climate Transition Benchmark (CTB)

EU CTBs set a 30% carbon intensity reduction rate compared to the investable universe. Compared to EU PABs, EU CTBs allow for greater diversification and serve the needs of institutional investors in their core asset allocation.

EU Paris Aligned Benchmark (PAB)

EU PABs are designed for highly ambitious climate-related investment strategies and are characterised by stricter minimum requirements.

Compared to EU CTBs, EU PABs:

- for a higher decarbonisation (50%) of the investment relative to the underlying investable universe;
- additional activity exclusions;
- a stronger focus on opportunities with a significantly enhanced green share / brown share ratio (factor 4).

Source: EU Technical Expert Group report on Climate Benchmarks and Benchmarks' ESG Disclosures as at 2019

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There are 3 main areas to consider when switching into Sustainable ETFs

1

Asset class

The underlying asset class is important to consider as it majorly affects trading costs.

In equity ETFs, the major contributor to the cost of switching is almost entirely driven by the underlying basket constituents and the embedded taxes or stamp duty payable in the basket. In fixed income, the cost of switching between ETFs is driven by the overlap between the underlying baskets as well as the underlying spread.

2

Counterparty

Picking the right broker for the switch is important; The right choice could mean a reduction in costs.

3

Timing

Consider the time of the day relative to the trading periods of the underlying market. In general, we see tighter spreads when the underlying markets are open and trading.

MOVING FORWARD

Today there is a significant degree of uncertainty about the transition. The issue, however, is no longer whether the net zero transition will happen but how - and what that means for your portfolio. We believe that long-term investors must consider the implications on their portfolios of both physical climate risk and the transition to net zero in the real economy, and that by taking these factors into account, they can more effectively manage risk, seize new investment opportunities, and achieve better long-term returns.

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SECTION 03

STRUCTURE

Understanding the ETF replication mechanism

Exchange traded funds (ETFs) can be built using a variety of different replication mechanisms. It is important to understand the differences in these strategies as part of the ETF selection process as replication mechanisms can impact cost, performance and risk profiles.

Key questions to ask:

1 **What is physical replication?**

2 **What are the different strategies that physical ETFs might follow to gain exposure to the underlying markets?**

3 **What is a synthetic approach to ETF construction?**

4 **What is currency hedging?**

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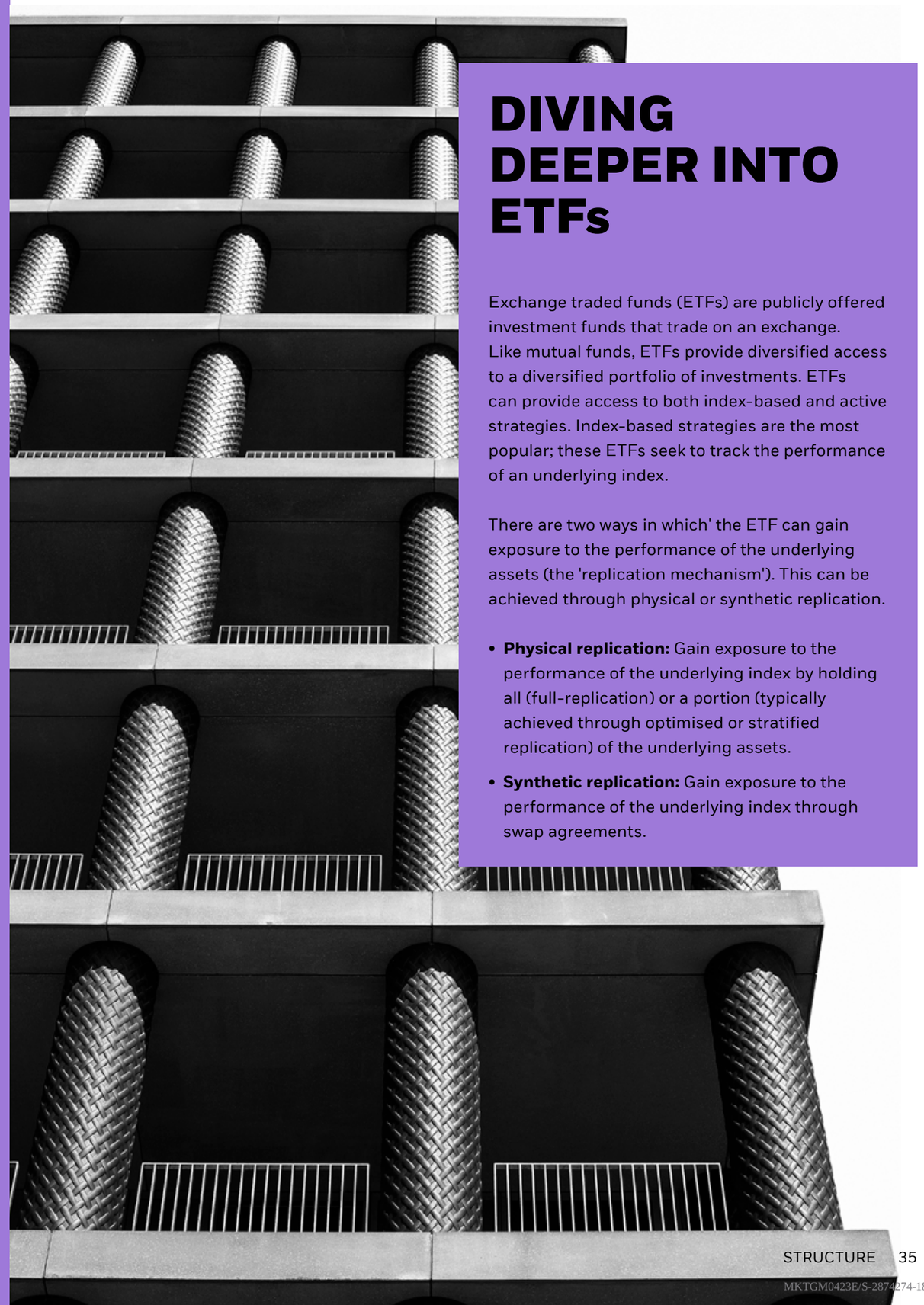

DIVING DEEPER INTO ETFs

Exchange traded funds (ETFs) are publicly offered investment funds that trade on an exchange. Like mutual funds, ETFs provide diversified access to a diversified portfolio of investments. ETFs can provide access to both index-based and active strategies. Index-based strategies are the most popular; these ETFs seek to track the performance of an underlying index.

There are two ways in which' the ETF can gain exposure to the performance of the underlying assets (the 'replication mechanism'). This can be achieved through physical or synthetic replication.

- **Physical replication:** Gain exposure to the performance of the underlying index by holding all (full-replication) or a portion (typically achieved through optimised or stratified replication) of the underlying assets.
- **Synthetic replication:** Gain exposure to the performance of the underlying index through swap agreements.

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PHYSICAL REPLICATION

As noted above, physical replication refers to gaining exposure to the performance of an underlying index by holding the underlying assets. This can be achieved through holding all the underlying constituents in their relative weights (full-replication) or by holding a portion of the index constituents (typically achieved through optimised or stratified replication).

In a full-replication strategy the exposure to each security in the index is in-line with the weight it has in the underlying index. By holding every stock in the index at its market capitalisation weight, trading is only required following index changes or corporate actions. As a result, this approach helps to minimise tracking error.

A partially replicating fund holds only some of the index constituents. This approach is typically used for strategies where full replication is less effective due to illiquid securities, higher transaction costs, unavailable markets, and other legal and regulatory constraints. For example, the cost of acquiring certain stocks or small positions can outweigh the benefit. It should be noted that there may be a higher tracking error and tracking difference versus the index when compared to a fully replicated fund, given the fund does not exactly replicate the exposure of the entire index.

In the instance of partially-replicating funds, an optimisation process is typically used for equity ETFs. This process is based on a risk model, with the goal of creating a portfolio that has risk characteristics similar to that of the benchmark. By evaluating a security's risk characteristics (e.g. volatility, size, industry membership, country of domicile, and other attributes) the optimisation process allows trade-off between the risk of any potential mis-weights, relative to the cost of acquiring that position.

Stratified sampling is a technique typically used for fixed income ETFs and is used when full replication is not possible or appropriate. Within iShares, our stratified sampling approach subdivides the benchmark index according to key risk characteristics to create individual cells, such as by country, maturity, credit rating, sector liquidity, issuer. The exact level and type of stratification depends on the underlying asset class. This approach turns the complex task of matching multi-dimensional risk into more manageable risk buckets. Figure 4 displays how an index is 'sliced and diced' into three-dimensional cells, with each cell defined by currency, maturity and issuer.

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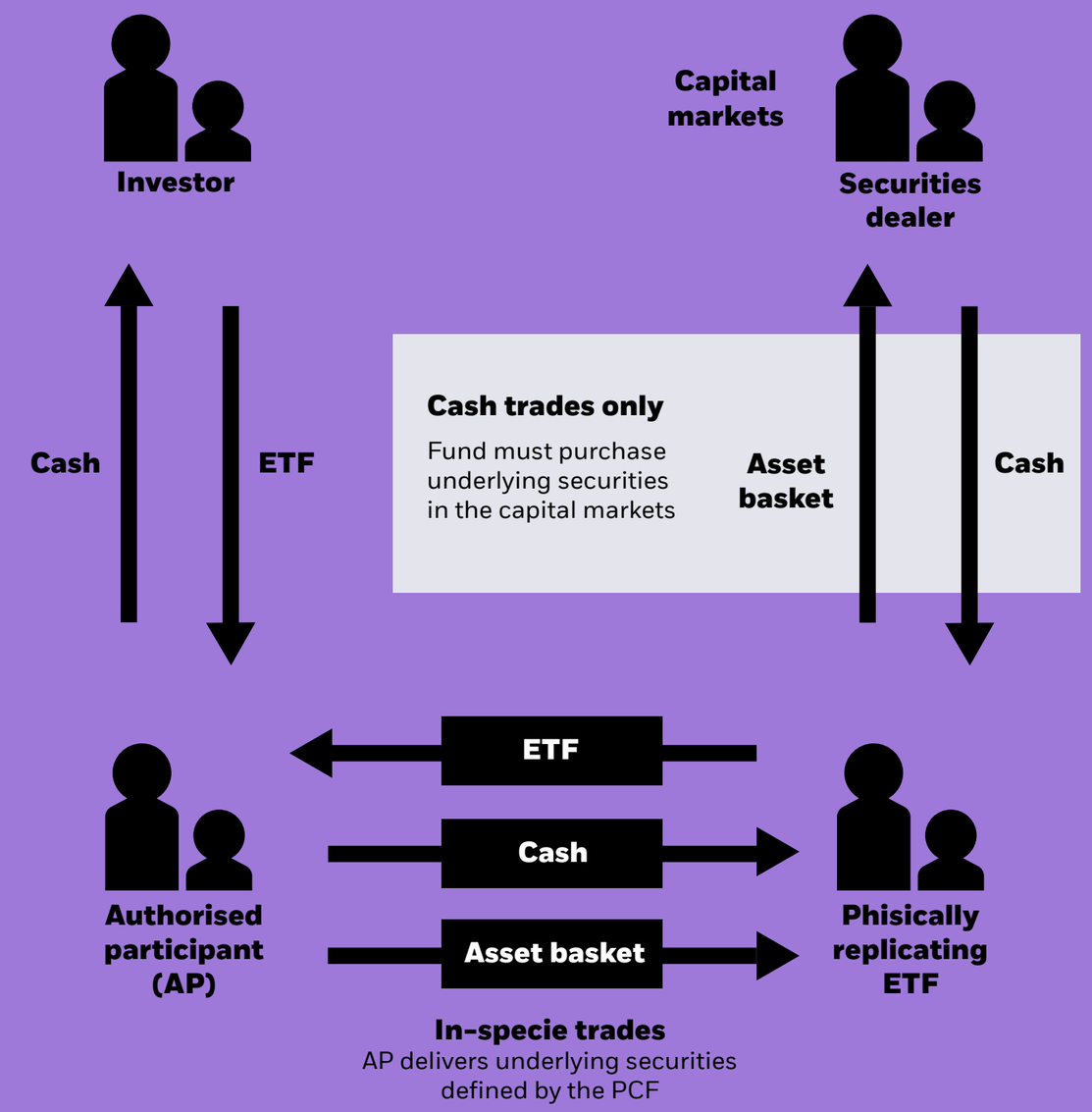
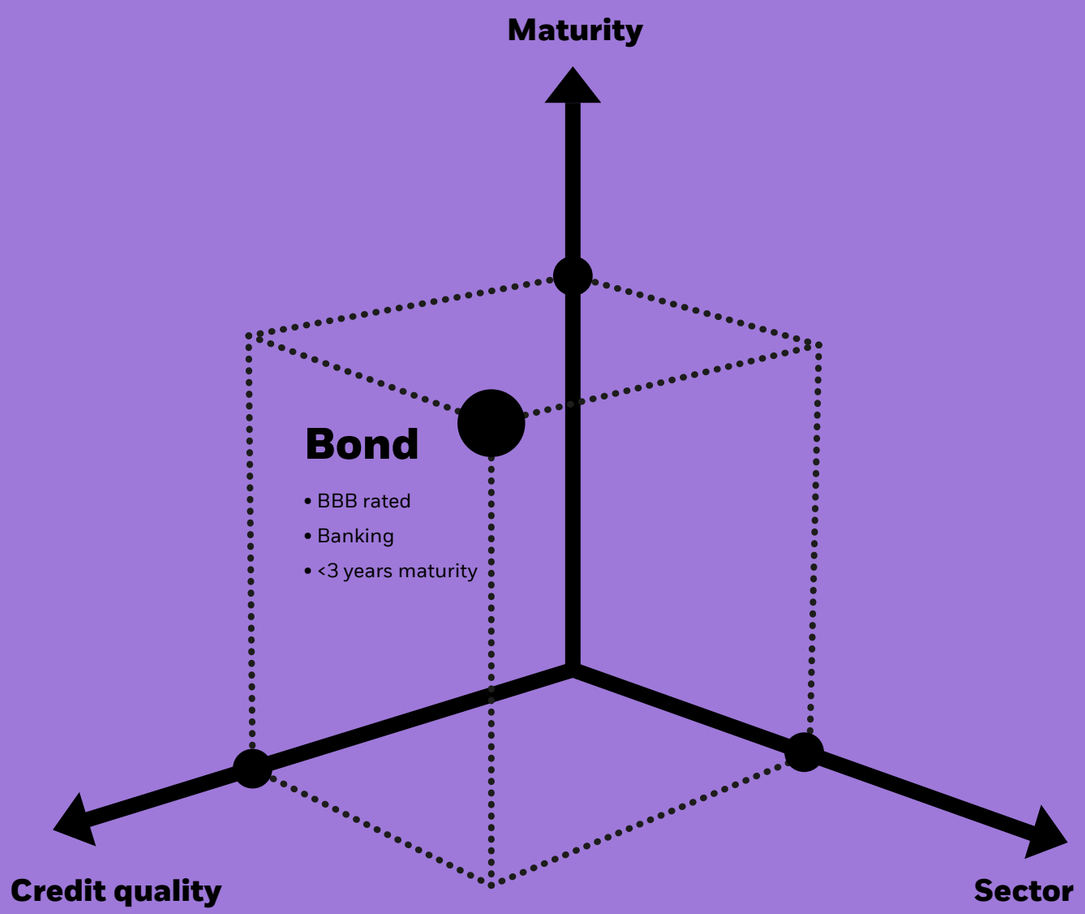
Figure 9: Physically-replicating ETF structure



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

Figure 10: Stratified sampling example



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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SYNTHETIC REPLICATION

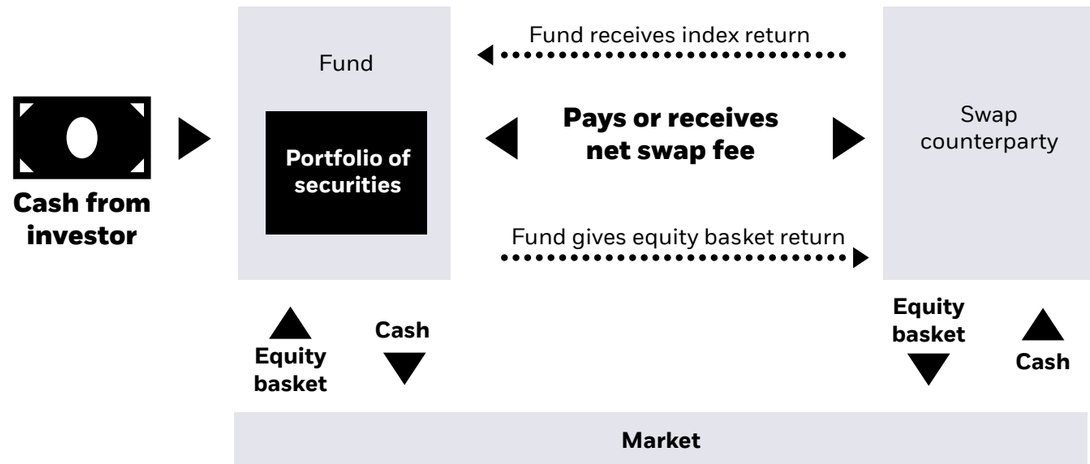
A synthetic replication strategy refers to the use of derivatives as an investment strategy to provide the benchmark index return. Synthetically replicating ETFs may also be referred to as 'derivative-replicating' structures.

All ETFs receive cash as part of the creation process (described in Section 3: Liquidity and Trading). This cash is used to purchase and hold a basket of securities which may or may not be related to the index the ETF is tracking.

How do ETFs replicated synthetically work?

Synthetic ETFs gain exposure to the benchmark by entering into a swap agreement where the swap counterparty (usually a bank or broker dealer) provides the return of an index. In exchange, the fund will purchase a basket of securities and provide the return on the equity basket to the counterparty. The fund will either pay or receive a net swap fee.

Figure 11: Visual representation of synthetic replication



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

There are some additional questions investors can ask as part of selecting a synthetic ETF. Examples of questions to ask as part of the due diligence process, include:

- How does a fund determine the parameters around the portfolio of securities? Investors in synthetic ETFs are owners of the 'substitute basket' that is part of the fund structure. Therefore, it is important to understand the securities that are held within this substitute basket as part of the due diligence process.
- How many counterparties provide swaps to the fund?

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CURRENCY HEDGING

An investor is exposed to currency risk when buying bonds in a currency that is different from their local or home currency. This leads to currency risk; if the foreign currency was devalued compared to the home currency, an investors would have a lower return than if the bond was denominated in their home currency. Currency risk can dominate the risk profile of an investment, having considerable impact on returns.

Example

A UK investor buys EUR 115 denominated bond for GBP 100 (GBP/EUR exchange rate is 1.15). The bond's price goes up 10%, investment is now worth EUR 126.5. However, over the same time period the exchange rate weakens to GBP/EUR 1.30. When the investor sells their bond, they only receive GBP 97.31, making a loss because of the currency exposure.

In unhedged exposures, currency movements can have a positive or negative impact. Currency hedging aims to mitigate the impact (positive OR negative) of currency movements on the underlying investment return, giving exposure to an asset without exposure to the foreign currency of that asset, thus aiming to receive the "local return".

The costs involved in currency hedging

Currency hedging aims to mitigate – but cannot fully eliminate - the impact of currency movements on the underlying investment return. Currency hedging is imperfect due to several uncontrollable factors which lead to a difference between local asset (unhedged) returns and currency hedged returns. These factors include:

- **Carry:** The difference in interest rates between base currency and hedged currency. This is commonly referred to as the "cost of hedging"
- **Hedging imperfections:** Occur because both asset values and FX rates move continuously. Asset price movements impact the "hedge ratio" and FX rate moves impact the "investment ratio".
- **Transaction costs:** FX transaction costs detract from total return because they are an additional expense.

A client buying an FX-hedged share class of a fund may expect 100% exposure to all asset value changes and 0% exposure to currency moves, however, in practise unhedged returns do not equal hedged returns due to these uncontrollable factors.

Unhedged returns = asset return in local currency + currency return

Hedged returns = asset return in local currency + carry + hedging imperfections + transaction costs

iShares approach to currency hedging

iShares ETF share classes are managed in a common pool. All assets within this common pool are managed on an unhedged basis versus an unhedged index. Separately, FX hedges are implemented to offer FX hedged share classes, while they still benefit from the scale advantages in the common pool.

A dynamic hedging (with thresholds) methodology is used to hedge FX risk in currency hedged share classes. This approach monitors daily the hedge and investment ratios, which can be adjusted as and when required. Rather than automatically making daily adjustments (and incurring daily transaction costs), the currency hedge is only adjusted when it breaches a pre-defined threshold. The thresholds are determined by the Risk & Portfolio Management team, considering factors such as historical asset and currency volatility and asset liquidity, among others, and aim to optimise the trade-off between cost efficiency and precision.

This hedging methodology differs from standard currency hedged indices, where typically FX hedging assumes a static monthly hedge. This hedge resets each month end and hedges each underlying currency into the target currency. In this methodology, there is no intra-month monitoring or adjustment of the hedge.

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SECTION 04

LIQUIDITY AND TRADING

How to evaluate liquidity and efficiently trade ETFs

ETFs are an investment product that track an index and trades like a stock on a regulated stock exchange.

They can also be described as a mutual fund that trades on exchange. ETFs take the simplicity and benefits of a listed single stock - such as liquidity, on-exchange trading, and transparency of holdings - and combines this with the benefits of an open-ended index mutual fund – such as instant diversification, cost-efficiency, and ability to create and redeem fund units.

It is important ETF investors understand how to evaluate the liquidity of an ETF and the different strategies available for trade execution.

Key questions to ask:

1

How do ETFs trade?

2

What are the multiple layers of liquidity inherent to the ETF structure and how do you evaluate it?

3

How do ETFs behave in periods of high market volatility?

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THE STRUCTURE OF ETFs

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 trade with each other during market hours. Most ETF trading occurs in this 'secondary' market, where buyers and sellers meet. Market Makers will also provide liquidity and interact with investors in the 'secondary' market.

A separate 'primary' market involves large institutions - so called Authorised Participants (APs) - transacting with ETF issuers to create or redeem ETF shares based on market demand.

Like stocks...

ETFs trade on stock exchanges, such as Euronext, Xetra, LSE.

Like mutual funds

ETFs provide access to a diversified portfolio of investments.

4

What are best practices for trading ETFs?

5

In what ways can ETFs be used as financial instruments?

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LAYERS OF LIQUIDITY

ETFs are easily tradable, even in times of market stress because of liquidity: the ability to buy or sell a security without causing a material change in its price.

The liquidity of an ETF is not limited to its on-screen liquidity (bid/ask spread and average daily trading volume) - but should be viewed as more of an iceberg, with multiple layers of liquidity below the surface that are not always visible at first glance.

Risk: The Fund's investments may have low liquidity which often causes the value of these investments to be less predictable. In extreme cases, the Fund may not be able to realise the investment at the latest market price or at a price considered fair.

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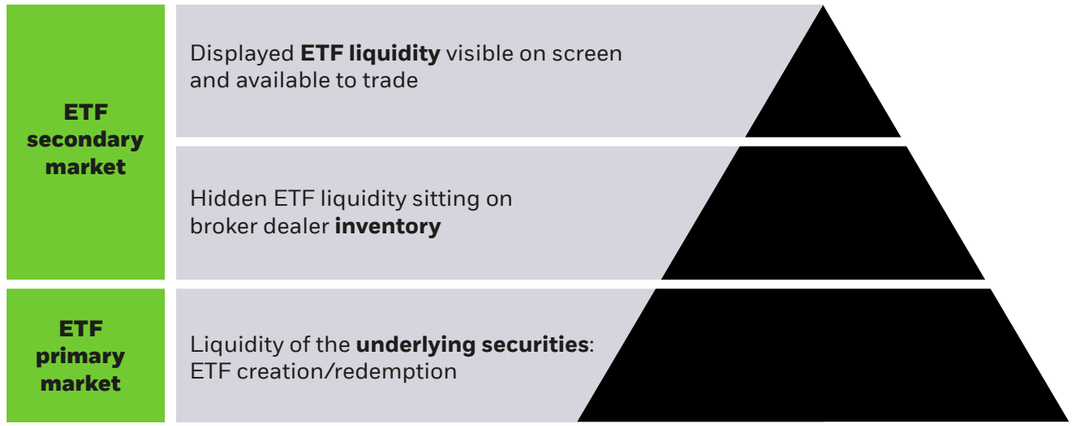
Figure 12: Secondary market liquidity is only the tip of the iceberg.



Source: BlackRock. For illustrative purposes only.

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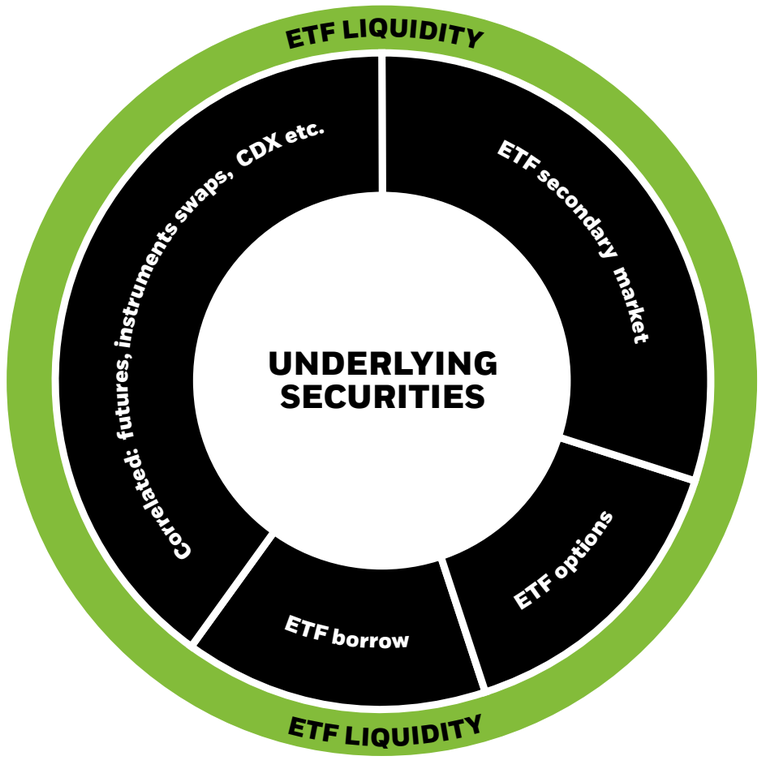
Most ETF trading occurs in the secondary market - no different than a stock. Investors buy and sell ETFs using common order types, and ETFs are quoted with bid and offer prices. Investors typically evaluate ETF liquidity by secondary market liquidity, the average daily volume traded (ADV). However, secondary market liquidity is only the tip of the iceberg.

For example, if there are not enough ETF units in the secondary market - may be referred to as 'ETF inventory' - APs can access the underlying market liquidity by purchasing the underlying securities and exchanging for ETF units a process known as creation. These units can then be sold again in the secondary market.

ETF liquidity is therefore driven by other components, notably, the liquidity of its underlying may be referred to as and correlated instruments (for example, swaps or futures). Brokers utilise the liquidity of all these components to facilitate ETF trading.

Figure 13: ETF liquidity: The full picture



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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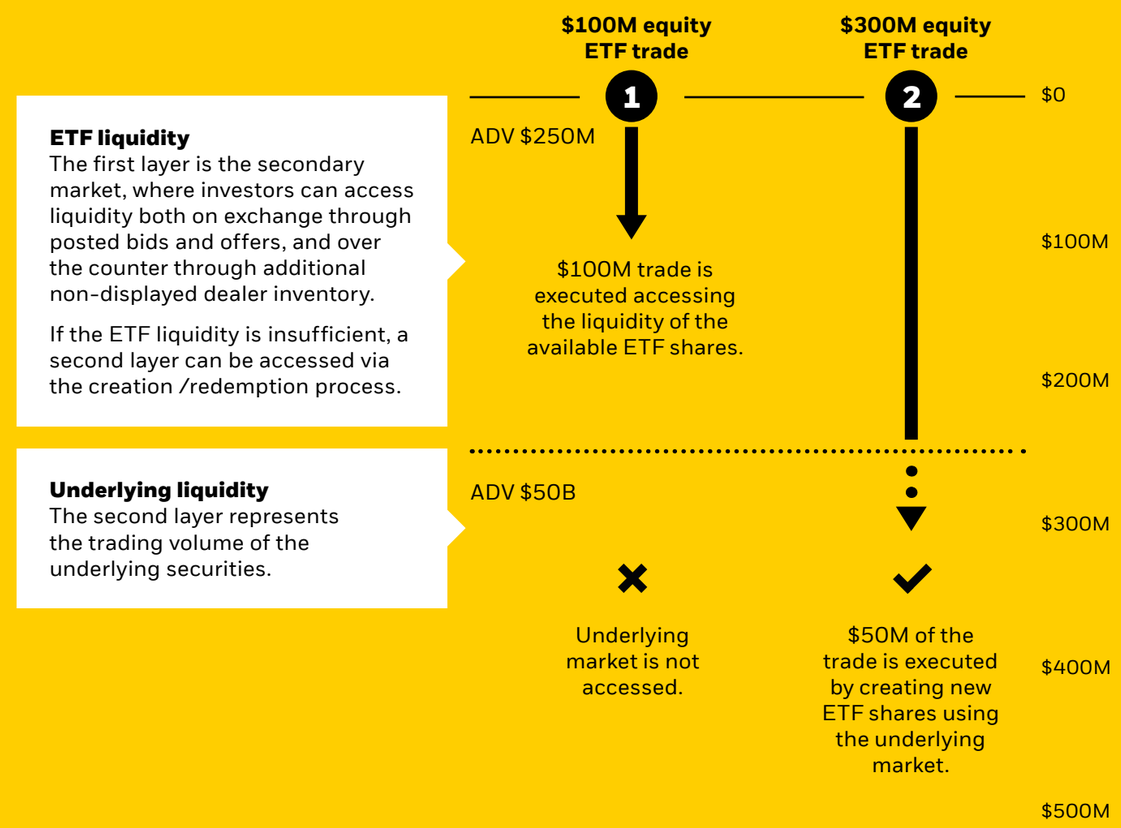
Figure 14: Trades of all sizes could potentially benefit from ETF liquidity
The multiple layers of liquidity are apparent when trading an ETF with relatively low average daily volume (ADV).



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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THE MARKET PARTICIPANTS

There are various participants in the ETF trading ecosystem, including:

ETF issuers: Issue the ETF shares, but also manage the underlying portfolios and distribute the ETF products. They are also responsible for the primary market creation/redemption process leading to the addition/subtraction of ETF units outstanding.

Authorised Participants (APs): Trading firms that can transact directly with ETF issuers to create and redeem ETF units. APs will create more ETF units when there is not enough supply in the market or they will redeem units when there is too much supply.

Market makers: These are specialist houses or investment banks that provide intraday prices on-screen throughout the trading day. In general, ETFs have several market makers policing its fair value. Note: APs and MMs can be the same entity, though this is not always the case.

Trading venues: Such as the exchange on which ETFs are traded, as well as the technology platforms that allow ETFs to be traded off exchange over the counter or OTC.

Figure 15: Participants in the ETF Trading Ecosystem

Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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THE TRUE DEPTH OF ETF LIQUIDITY

ETF liquidity should always be seen in the context of market makers' ability to hedge themselves; ETF trading desks typically leverage several complementary sources to hedge their ETF positions.[6]

They can include existing ETF units trading in the secondary market, borrowing ETF units, using similar ETFs – for example, US-listed ETFs on equivalent exposures – or even derivative instruments.

6 Based on market making activity reported by ETF trading desks.

EMEA ETF TRADING CONSIDERATIONS

The COVID 19 pandemic shook up global economies – the bond market and many areas of the market were severely challenged. This included liquidity, price discovery, and transaction costs across multiple sections of the bond market.

During the market volatility in March 2020, fixed income ETFs became an important tool for market participants to manage liquidity, access real time price discovery, as well as a cost-efficient means of execution. Trading volumes of fixed income ETFs reached $1.3 trillion in March already, half of the $2.6 trillion of traded value for the whole of 2019.[7]

7 Source: Bloomberg, 4 months to 30th April 2020. All amounts given in USD.

As a result, ETFs provided some of the on-exchange pricing which helped investors understand some of the rapidly changing conditions. ETFs offer real time pricing and are a useful tool in valuing underlying securities and managing risk in portfolios.

ETFs as a price discovery tool:

Contrary to the rhetoric, index investing, particularly through ETFs, contributes to price discovery. The trading of ETFs on stock exchanges is an important contributor to price discovery across markets, sectors and individual stocks.

Additionally, ETFs have been tested in numerous stressed markets and have exhibited generally tight bid-ask spreads, heavy volumes and high liquidity under volatile market conditions. During times of market uncertainty, ETFs have acted as 'shock absorbers', allowing market participants to transact in the secondary market at real-time prices.

Role of average daily volumes

The MiFID II regulation that came in in January 2018 required that all ETF trading activity to be reported. This allows investors to make more accurately analysis of the ETF's secondary market liquidity.

Since the implementation of this regulation, we have seen a marked increase in the visible liquidity across our UCITS ETF range. Although long term trends are favouring on-screen liquidity; we estimate over 70% of the overall trading still takes place off-exchange and is therefore not captured when looking at exchange volumes alone.

Visible ETF trading volumes tend to be fragmented across different currency lines, share-classes and exchange listings in multiple geographies within the EMEA region. As such, these volumes only partially reflect the total trading liquidity and capabilities of the ETFs.

Evolution of visible ETF liquidity

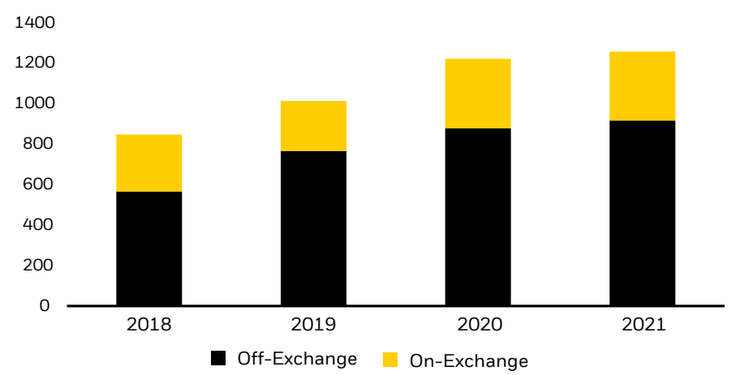
January 2018 - MiFID II

The MiFID regulation requires all ETF trading activity to be reported. This allows investors to more accurately analyse an ETF's **secondary market** liquidity.

Reported Liquidity increased by ~4x

Visible liquidity across the iShares UCITS ETF increased almost 4x in 2018 when compared to that of 2017 as investors have gained transparency into OTC trading.

Figure 16: iShares UCITS ETFs Traded Volume ($ bn)



Source: Bloomberg as at 31st December 2021. All amounts given in USD.

For more guidance

The iShares Markets Coverage team are ETF specialists who can assist in your ETF trading and liquidity journey and help you navigate the ETF ecosystem and offer solutions to suit you. Please reach out to EMEA_MarketsCoverage@Blackrock.com

GETTING THE MOST OUT OF TRADE EXECUTION

Securing quality trade execution is important to 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.

Figure 17: How ETF pricing works

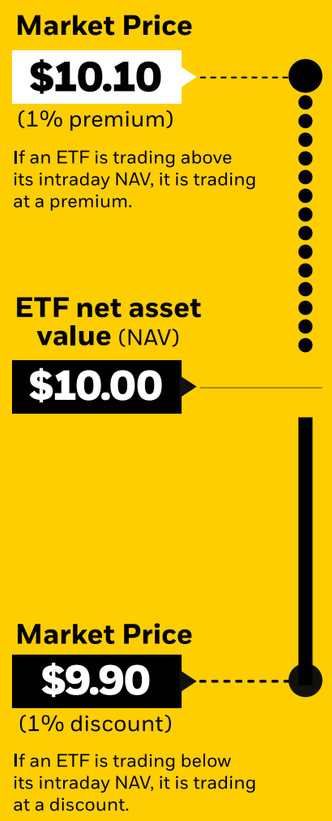
The market price is the price at which investors transact in the secondary market on exchange throughout the trading day.

NAV is the stated value of the fund's underlying holdings from the close of business on the previous trading day.

An intraday fair value of the ETF, or 'iNAV', can be calculated by using the last price of the ETF's constituents. If a constituent's market is closed, proxies can be used to estimate the iNAV.

The ETF's market price is available on exchange just like any other stock. When an ETF's price is above or below the fund's NAV (or iNAV), 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.



Source: BlackRock as at 31st December 2021. For illustrative purposes only. All amounts given in USD.

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The 'fair value band'

Over the long-term, an ETF's price is generally anchored to its NAV due to market makers and authorised participants who act on small arbitrage opportunities between the ETF market price and NAV. This process (creation and redemption) aims to keeps the price of an ETF close to fair value.

- **At point A**, the ETF seems overpriced. Market makers will sell the ETF and buy the underlying securities to create the ETF at a lower price, hence locking in a profit.
- **At point B**, a market-maker would buy the ETF and sell the underlying securities to lock in a profit.

Risk: There can be no guarantee that the investment strategy can be successful and the value of investments may go down as well as up.

Several factors can determine the 'fair value band', including:

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

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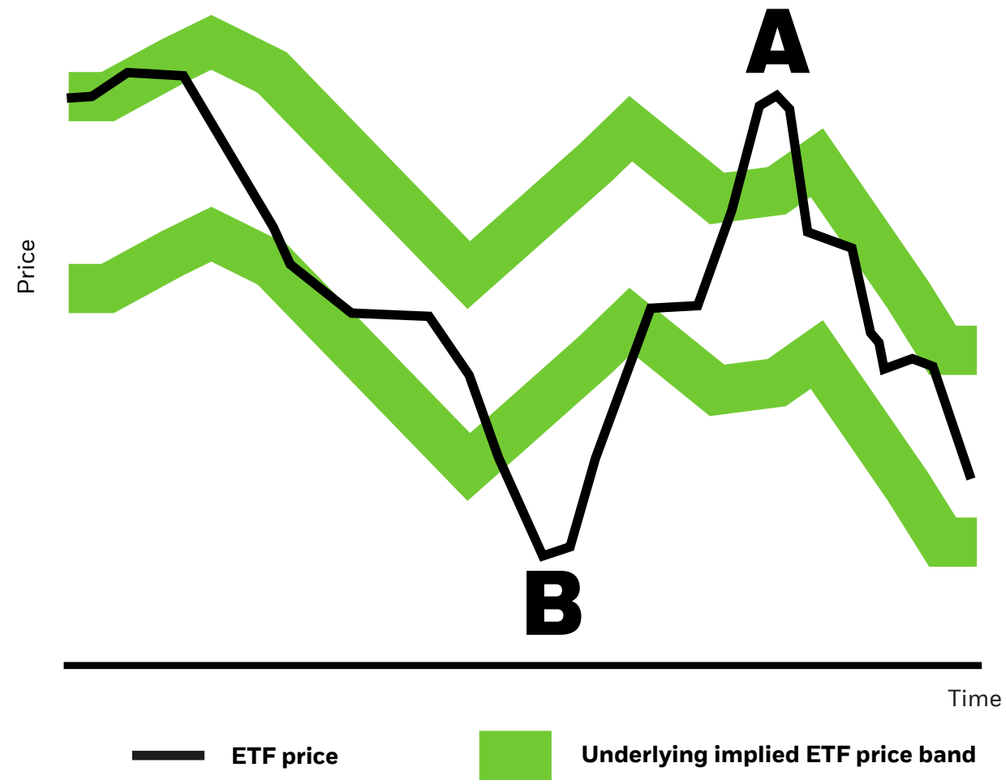
Figure 18: The 'fair value band'



Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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TRADING STRATEGIES FOR ETFs

ETFs are typically traded using one of three executions strategies, consider which one best addresses the objectives of the trade.

Risk trade

Broker commits capital to provide immediate execution for a risk premium.

If an investor has an intraday market view, the risks of delayed implementation may outweigh the benefits of working an order passively.

Relevant for: Orders where immediate execution is the priority. Results in a firm price and eliminates market risk.

Always ask for two-sided markets and selectively put a few brokers in competition to find the best price.

Agency trade

Broker executes on behalf of the client, passing on the pieces they receive for an agreed mark-up or commission.

Prioritising minimises market impact by accessing multiple layers of liquidity, participants and venues.

Relevant for: Trades where delaying the execution is not expected to negatively impact the price by using multiple sources of liquidity.

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

NAV trade

Broker benchmarks execution to the fund's NAV.

Some investors have a strong preference for NAV trades from an operational standpoint for benchmarking and transparency against fund valuations.

Relevant for: Trades where having transparency to the daily valuation point is more important than market timing.

Be cognisant of the potential market impact your trade size may have on the underlying.

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ETF TRADING BEST PRACTICES

While each trade requires consideration, below are some best practices to consider when trading ETFs.

Knowledge of the underlying

ETFs offer exposure to multiple asset classes and regions – be mindful of the underlying's market hours, holiday closures and trading dynamics.

Time of day

Markets can be more volatile near the open and close, and the efficiencies of ETF arbitrage are less prevalent in the Market on open and Market on close auctions. Consider trading after the first, and before the last 20 minutes of the trading day. Consider underlying market opening hours as this could impact the pricing and liquidity of the ETF.

Order type

Make sure your order type is consistent with your goals. To help protect against swings, consider using limit/iceberg orders (especially in volatile markets). Avoid using market or stop-loss orders as these orders seek liquidity at any price, even in stressed markets.

The cost of trading an ETF will be reflective of all three layers of liquidity.

ETFs with large, well developed secondary markets may have a lower cost of trading (relative to the underlying securities) than smaller ETFs with less developed secondary markets. However, ETF trading costs must be considered in context to the size of the trade and the cost relative to trading in the underlying market.

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ETFs AS FINANCIAL INSTRUMENTS

A subset of ETFs has evolved to serve many functions for institutional investors. These utility players—known as financial instruments—are typically large and liquid and are often used interchangeably with derivatives in professional portfolio management.

Financial instrument ETFs share common attributes and large investors use them in three main ways:

Risk transfer

As volatility rises, ETFs typically account for a higher percentage of total trading, underscoring their utility as risk-transfer tools.

Market access

Restricted currency markets, high yield bonds, and physical commodities are examples of markets where financial instrument ETFs frequently serve as proxies for the underlying market.

Multi-directional exposure

Financial instrument ETFs with deep options and securities lending markets can help all types of investors implement many different investment views and generally deepen on-exchange liquidity.

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Three common financial instrument ETF applications

1 **An alternative to delta-one instruments:**
For both rapid risk transfer and longer-term market access, institutional investors often compare the relative merits of ETFs, futures, and total return swaps.

2 **ETF options:**
ETF options allow institutional investors to express multi-directional and non-linear views in an increasingly differentiated set of use cases.

3 **Securities lending:**
A robust securities lending market is needed to support ETF option trading (Section 8).

Like many technologies, ETFs benefit from a network effect: as the number of investors using them increases, their operational utility relative to derivatives increases as well. Recent regulatory and market structure changes have made ETFs more competitive as a replacement for, or complement to, derivatives strategies.[8] ETFs will not always be the most efficient vehicle; a rigorous and consistent process around implementation is necessary to determine the optimal instrument.

8 Recent regulatory changes include Basel III, Dodd Frank, OTC Margining riles. Market structure/ETF tailwinds include fee compression and wide range of benchmarks tacked by ETFs.

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ETFs VS. DELTA ONE INSTRUMENTS

ETF are emerging as an effective alternative to traditional 'Delta One' instruments. For both rapid risk transfer and longer-term market access, institutional investors can compare the relative merits of ETFs, vs. traditional 'Delta One' instruments, including futures and total return swaps.

Table 1: What instruments offer 'Delta One' exposures and what are the main differences?

	Futures unfunded	Swaps unfunded	ETFs funded	Index funds funded
Instrument type	Synthetic	Synthetic	Physical/ Synthetic	Physical/ Synthetic
ISDA required	No	Yes	No	No
Liquidity source	Exchange & OTC	OTC	Exchange & OTC	Primary
Capital invested	Initial & variation margin	Counterparty margin	100%	100%
Expiration cycle	Quarterly or monthly	Variable	None	None
Counterparty risk	None	Counterparty risk	None/limited	None/limited

Source: BlackRock as at 31st December 2021. Investment comparisons are for illustrative purposes only.

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Why are some investors using ETFs instead of derivatives?

Cost:
ETFs may be cheaper than the like-for-like future, providing the opportunity to outperform the comparable future.

Precision and flexibility:
ETFs can offer exposure to the required benchmark not the closest proxy. For example, ETFs are available in a variety of exposures, including offering an ESG-lens and hedged share classes.

Operational ease and risk management:
ETFs can offer a simplified solution compared to a basket of futures (i.e. no rolling of contracts).

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SECTION 05

PERFORMANCE

How to evaluate portfolio management performance

Investors need to understand how well an ETF tracks its underlying index to evaluate the portfolio management performance of an ETF. Although an ETF seeks to track an index, success can vary, and a variety of factors can impact this, including ETF structure, access to the underlying markets, tax considerations and impact of currency. Furthermore, as part of the due diligence process, it is important that investors understand the sources of tracking error, and how to accurately estimate this figure.

Key questions to ask:

1. **What is the fund's tracking error? What is the fund's tracking difference? How can I calculate them?**
2. **What are the differences between tracking error and tracking difference, and when should each metric be used?**
3. **What are the other factors to consider when evaluating tracking error/difference?**
4. **What are some common pitfalls to be aware of when calculating tracking error/difference?**

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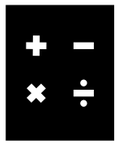
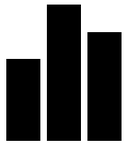
CALCULATING TRACKING ERROR

Tracking error is defined as the volatility of the differences in returns between a fund and its benchmark index. The most widely used definitions of tracking error are based on daily or monthly data.

To calculate tracking error using daily data:



Calculate the standard deviation of daily returns of the total return net asset value (NAV) minus the daily returns of the underlying benchmark index.



Multiply the standard deviation by the square root of 252 (based on the assumption that there are 252 business days per year) to identify an annualised figure for tracking error.

Figure 19: Calculating tracking error using daily data

$$TE^d = std\,(r^d_{TRNAV} - r^d_{Index}) * \sqrt{252}$$

TE^d	is the annualised tracking error calculated from daily data.
r^d_{TRNAV}	are the daily total returns of the NAV of the ETF.
r^d_{Index}	are the daily returns of the benchmark index

For illustrative purposes only.

Tracking error based on daily data often overstates the actual volatility of tracking that an investor might incur due to daily volatility in the markets. As a result, tracking error can also be calculated on a weekly or monthly basis to produce calculations that are often closer to the actual differences an investor may experience over a longer investment horizon.

Figure 20: Calculating tracking error using weekly or monthly data

$$TE^w = std\,(r^w_{TRNAV} - r^w_{Index}) * \sqrt{52}$$

$$TE^m = std\,(r^m_{TRNAV} - r^m_{Index}) * \sqrt{12}$$

For illustrative purposes only.

Superscripts "w" and "m" denote the data being based on a weekly or monthly returns series respectively. A minimum of 30 observation points is normally used as a rule of thumb for a tracking error calculation to be statistically significant. Therefore, a fund history of at least two and a half years is required to calculate tracking error based on monthly data. On average, the tracking error based on daily data is higher than a figure based on weekly or monthly data. The time period under consideration is also a factor. For example, during periods of volatility such as the global financial crisis, other market qualities, such as liquidity, may have resulted in a higher than average tracking error, relative to less volatile periods.

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DEFINING TRACKING DIFFERENCE

Tracking difference is defined as the total return difference between a fund and its benchmark index over a certain period.

For an investor with an investment horizon of more than just a few days or weeks, tracking difference may be a more important factor to look at than the tracking error. Where tracking error will highlight the volatility of return against the benchmark index, tracking difference will show the performance of the ETF in delivering the target return. There are several factors that can impact tracking difference, from portfolio management expertise, to costs (such as total expense ratio, also known as "TER") and additional income (such as income from securities lending).

TRACKING ERROR VS. TRACKING DIFFERENCE

If an investor intends to hold an ETF for a longer period, it is more appropriate to use tracking difference over a longer horizon to assess ETF performance. Figure 21 shows the rolling one year tracking difference between the iShares Core MSCI Europe UCITS ETF and its benchmark index. With a total expense ratio (TER) of 12bps, it would be expected that the fund underperforms its benchmark index by at least 12bps. In practice, the fund outperforms the benchmark by 30bps over one year. The fund receives additional income from securities lending and enjoys favourable tax treatment compared to the benchmark index.

This material is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or financial product or to adopt any investment strategy. The opinions expressed are as at 31st March 2022 and may change as subsequent conditions vary.

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Figure 21: Rolling one year tracking difference of the iShares Core MSCI Europe UCITS ETF

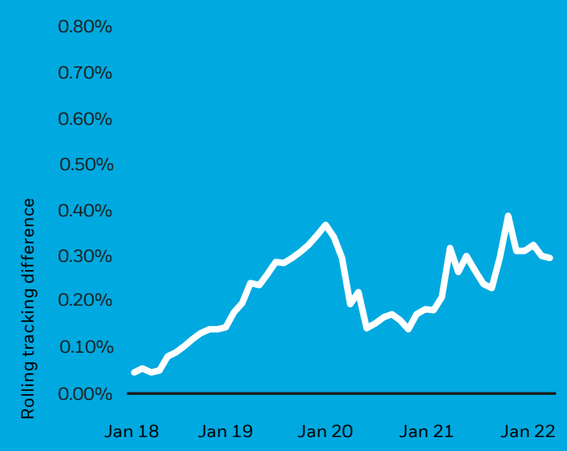

Table 2: Performance Disclosures

	iShares Core MSCI Europe UCITS ETF	MSCI Europe
2012	17.17	17.29
2013	19.66	19.82
2014	6.87	6.83
2015	8.30	8.22
2016	2.58	2.57
2017	10.29	10.24
2018	-10.43	-10.57
2019	26.40	26.04
2020	-3.16	-3.32
2021	25.46	25.12

Source: BlackRock, data as at 31st March 2022.

The figures shown relate to past performance. 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. Fund and benchmark performance displayed in EUR. Performance is shown on a Net Asset Value (NAV) basis, with gross income reinvested where applicable. Performance data is based on the net asset value (NAV) of the ETF which may not be the same as the market price of the ETF. Individual shareholders may realise returns that are different to the NAV performance. The return of your investment may increase or decrease as a result of currency fluctuations if your investment is made in a currency other than that used in the past performance calculation. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.

It is important to look at the tracking differences over different time horizons. The tracking differences in figures 16 and 17 are calculated as the annualised difference in the total returns of the ETF and the benchmark index. The calculation is as follows:

$$TD_n = (1 + (R^n_{TRNAV} - R^n_{Index}))^{1/n} - 1$$

n	is the number of years for which to calculate the tracking difference.
TD_n	is the annualised tracking difference over n years.
R^n_{TRNAV}	is the total return of the ETF over the period of n years.
R^n_{Index}	is the return of the benchmark index over the period of n years.

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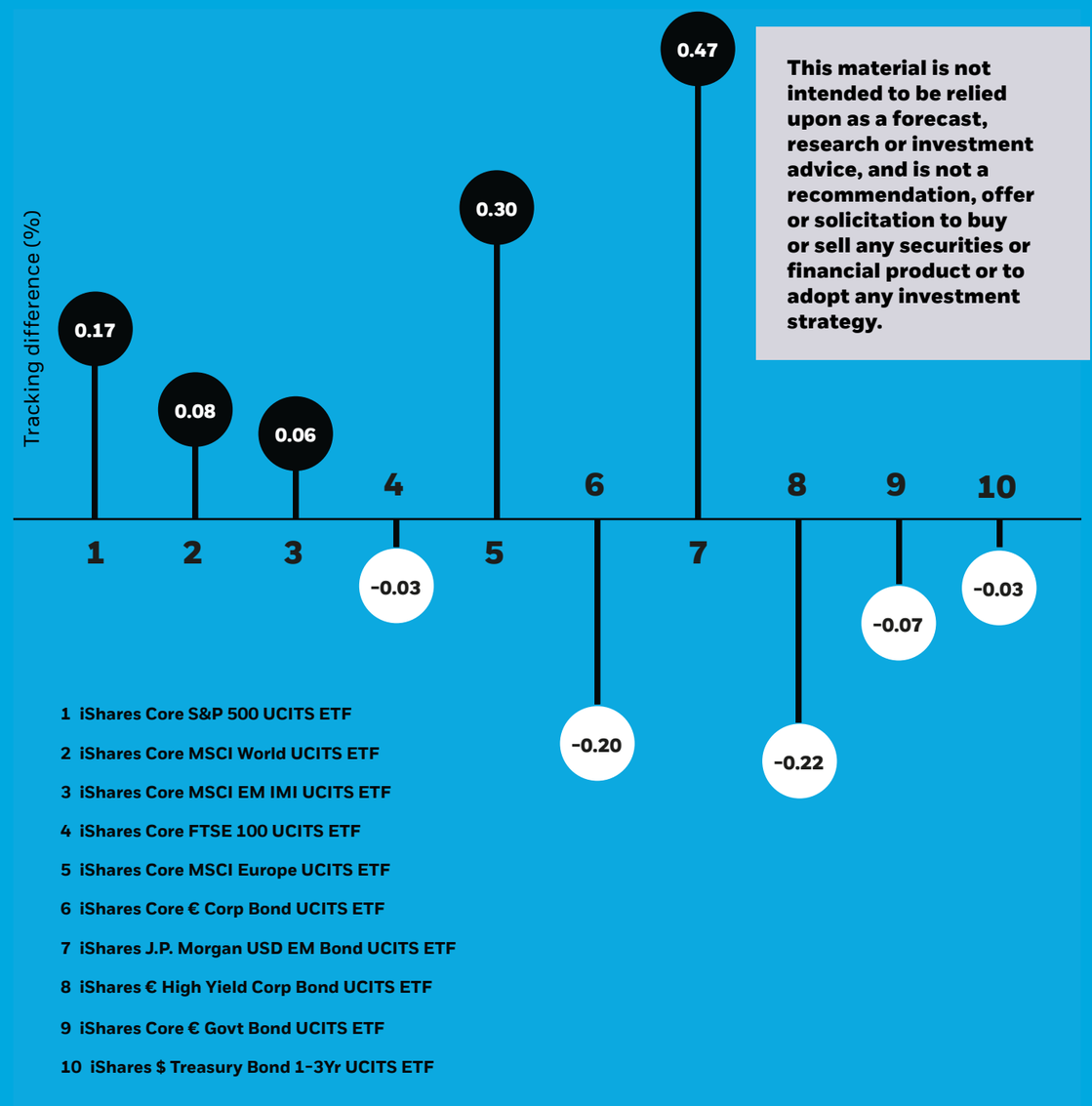
Table 3: Performance Disclosures: Discrete Calendar Performance (%)

	Base currency	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TER
iShares Core S&P 500 UCITS ETF	USD	15.37	31.72	13.24	0.99	11.54	21.40	-4.72	31.02	18.02	28.36	0.07%
S&P 500		15.22	31.55	12.99	0.75	11.23	21.10	-4.94	30.70	17.75	28.16	
iShares Core MSCI World UCITS ETF	USD	15.53	26.68	5.05	-0.77	7.73	22.45	-8.65	27.76	15.95	21.90	0.20%
MSCI World Index		15.83	26.68	4.94	-0.87	7.51	22.40	-8.71	27.67	15.90	21.82	
iShares Core MSCI EM IMI UCITS ETF	USD	N/A	N/A	N/A	-14.38	9.61	36.98	-14.83	17.45	18.35	-0.24	0.18%
MSCI Emerging Markets Investable Market Index		N/A	N/A	N/A	-13.86	9.90	36.83	-15.04	17.64	18.39	-0.28	
iShares Core FTSE 100 UCITS ETF	GBP	9.52	18.20	0.33	-1.45	19.03	11.94	-8.83	17.18	-11.64	18.31	0.07%
FTSE 100 Index™		9.94	18.65	0.72	-1.34	19.04	11.91	-8.77	17.28	-11.58	18.40	
iShares Core MSCI Europe UCITS ETF	EUR	17.17	19.67	6.88	8.31	2.59	10.30	-10.43	26.40	-3.17	25.46	0.12%
MSCI Europe		17.29	19.82	6.84	8.22	2.58	10.24	-10.57	26.05	-3.32	25.13	
iShares Core € Corp Bond UCITS ETF	EUR	13.46	2.18	8.27	-0.69	4.64	2.29	-1.41	6.14	2.53	-1.15	0.20%
Bloomberg Euro Corporate Bond Index		13.59	2.37	8.40	-0.56	4.73	2.41	-1.25	6.24	2.77	-0.97	
iShares € High Yield Corp Bond UCITS ETF	EUR	22.63	7.51	3.79	-0.56	8.05	4.77	-3.52	9.37	0.92	2.97	0.50%
Markit iBoxx Euro Liquid High Yield Index		22.83	7.85	4.03	-0.25	8.15	4.83	-3.39	9.55	1.65	3.18	
iShares Core € Govt Bond UCITS ETF	EUR	10.82	2.07	12.91	1.45	3.05	-0.01	0.80	6.70	4.84	-3.53	0.09%
Bloomberg Barclays Euro Treasury Bond Index		11.00	2.24	13.13	1.65	3.23	0.17	0.98	6.77	4.99	-3.46	
iShares $ Treasury Bond 1-3Yr UCITS ETF	USD	0.20	0.26	0.46	0.37	0.74	0.32	1.45	3.53	3.14	-0.63	0.07%
ICE U.S. Treasury 1-3 Year Bond Index		0.39	0.39	0.58	0.48	0.82	0.42	1.56	3.60	3.17	-0.61	
iShares J.P. Morgan $ EM Bond UCITS ETF	USD	17.22	-3.97	-2.85	-15.34	10.52	36.47	-15.09	17.47	18.00	-2.64	0.45%
J.P. Morgan EMBI Global Core Index		18.22	-2.60	-2.19	-14.92	11.19	37.28	-14.57	18.42	18.31	-2.54	

Source: BlackRock data as at 31st December 2021. Data calculated over ten years between 1st April 2013 and 31st March 2022.

The figures shown relate to past performance. 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. Fund and benchmark performance displayed in base currency of the iShares ETF. Performance is shown on a Net Asset Value (NAV) basis, with gross income reinvested where applicable. Performance data is based on the net asset value (NAV) of the ETF which may not be the same as the market price of the ETF. Individual shareholders may realize returns that are different to the NAV performance. The return of your investment may increase or decrease as a result of currency fluctuations if your investment is made in a currency other than that used in the past performance calculation. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.

Figure 22: One-year average annualised tracking difference for individual ETFs



Source: BlackRock data as at 31st March 2022. Data calculated over one year between 31st March 2021 and 31st March 2022.

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Figure 23: Three-year average annualised tracking difference for individual ETFs

Source: BlackRock data as at 31st March 2022. Data calculated over three years between 31st March 2019 and 31st March 2022.

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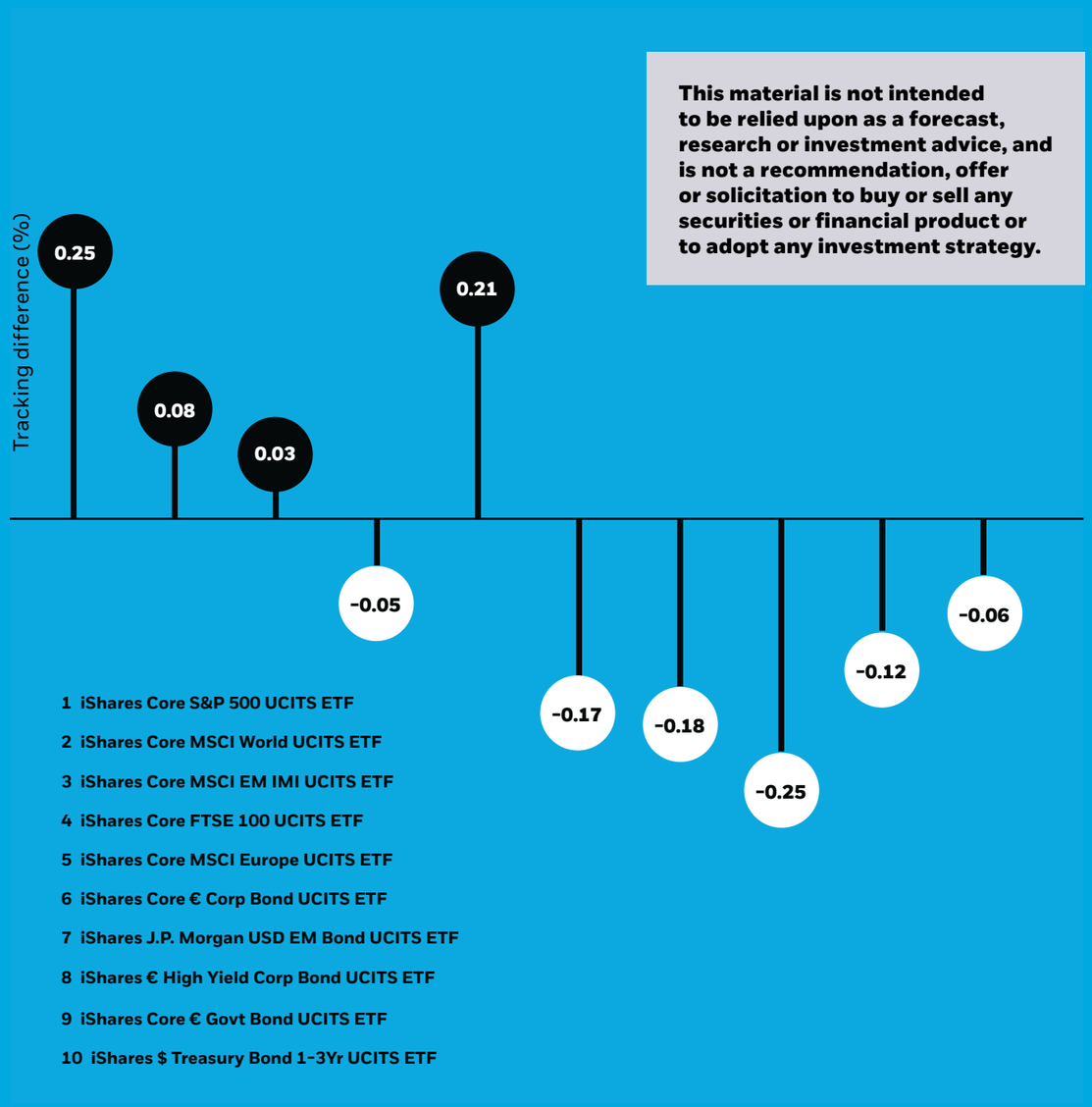
Figure 24: Five-year average annualised tracking difference for individual ETFs



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Source: BlackRock data as at 31st March 2022. Data calculated over five years between 31st March 2017 and 31st March 2022.

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WHAT CAUSES TRACKING ERROR?

Tracking error is defined as the volatility of the differences of returns between a fund and its benchmark index. It can be caused by a wide range of factors: the difference between the holdings in the fund and those in the index, rebalancing and transaction costs, different tax treatments of underlying income in the fund and those in the index, and fund replication method.

It is vital that the appropriate benchmark index is selected for performance analysis. In Europe, many equity ETFs track a net total return index. This consists of the returns of the underlying securities plus their dividend payments, minus withholding tax. ETFs may also track a gross total return index or a price index. Benchmark indices in fixed income are mainly gross total return indices.

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FACTORS TO CONSIDER

Although an ETF aims to track the benchmark index as closely as possible, an index often does not reflect the operational complexities of buying and holding securities in a fund. For example, factors such as ETF structure, tax considerations and ETF replication strategy (full or partial replication) can all impact the ETF performance, and how closely the ETF tracks the relevant index. Even for an index with easily accessible securities, there will be minor differences between the returns of the fund and the index.

Figure 25: Factors to consider

Source: BlackRock as at 31st December 2021. For illustrative purposes only.

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1. Replication strategy

For ETFs that follow a full-replication strategy (See Section 3: Structure) the tracking error is usually quite low because the ETF's holdings match those of the index. The decision on whether to fully replicate an index, or whether to optimise or sample the fund holdings depends on a variety of factors, such as: the number of constituents in the index, whether the securities are easily accessible; the concentration of the index, regulatory constraints and the projected size of the ETF. The main reason for optimising an ETF is to make the fund more investable and reduce the costs of rebalancing, thus increasing liquidity and reducing bid/ask spreads. The optimiser will try to match the different risk factors of the fund but will not exactly match the weights of the constituents of the benchmark index. This may increase tracking error, but it will usually also help drive down the overall trading cost to an investor.

Typically, a fund with a benchmark index of around 50 to 100 constituents of easily accessible securities will be fully replicated. Equity ETFs that track indices with more than 1,000 securities are usually optimised. The portfolio management technique for fixed income ETFs with many bonds or less liquid bonds is called stratified sampling.

2. Cash drag

Cash drag is another important factor for several reasons:

1. Funds retain cash deposits to deal with day-to-day fund management operations without needing to sell any securities.
2. Dividends and coupons may sometimes be kept in cash until enough payments have accumulated to make it worthwhile reinvesting or paying to investors in the case of distributing funds.
3. Most indices assume that dividends are reinvested at the ex-date, however, the fund will typically only receive payment at the pay date, usually some days later.

In all these cases, the fund may try to hedge the exposure with futures. However, this is not always possible; not all funds are permitted to use them and not all indices have a futures contract available that allows very close tracking of the exposure.

3. Index rebalancing

Return differences can arise as a result of trading costs associated with index rebalancing.

4. Corporate actions

Differing treatment of corporate actions and spin-offs between the index and the fund can cause additional tracking differences on some days.

5. Market access

Hard to access markets can be a challenge if the fund is not able to access certain securities. If the fund cannot invest locally, it may have to resort to proxy instruments such as American Depositary Receipts (ADRs), Global Depositary Receipt (GDRs) or Participatory Notes (P-Notes). These can have an additional liquidity premium due to the differing opening times between emerging markets and the developed market that sells the proxy instruments.

6. Tax impact

Many European-listed ETFs incur withholding tax in their portfolio. Equity ETFs mainly track a net total return index that incorporates the tax deductions that the underlying securities will face. Due to different tax treaties across jurisdictions, there can be a difference between tax charges at the fund and the index level and between different ETFs tracking the same index. Many benchmark indices assume a tax treatment for a fund domiciled in Luxembourg, which will incur the highest taxes due to the least favourable double tax treaty. An ETF domiciled in Ireland or Germany will usually have different tax treaties which can result in the fund outperforming the benchmark index. The investor may or may not be able to recoup the taxes that the ETF has paid. ETFs may reclaim the tax pro rata or on a specific day of the year, the latter option increasing the tracking error.

Tax treatment: Tax treatment depends on the individual circumstances of each client and may be subject to change in the future.

7. Asset class

Investors should expect different tracking errors for different asset classes. While a tracking error of 20-50bps is acceptable for a hard to access market like emerging market bonds or high yield bonds, it would usually be perceived as too high for an ETF tracking a manageable number of developed market equities or developed market government bonds. Figures 26 and 27 show the annualised tracking error for a representative European iShares ETF across different exposures.

Figure 26: One-year average annualised tracking error for individual ETFs

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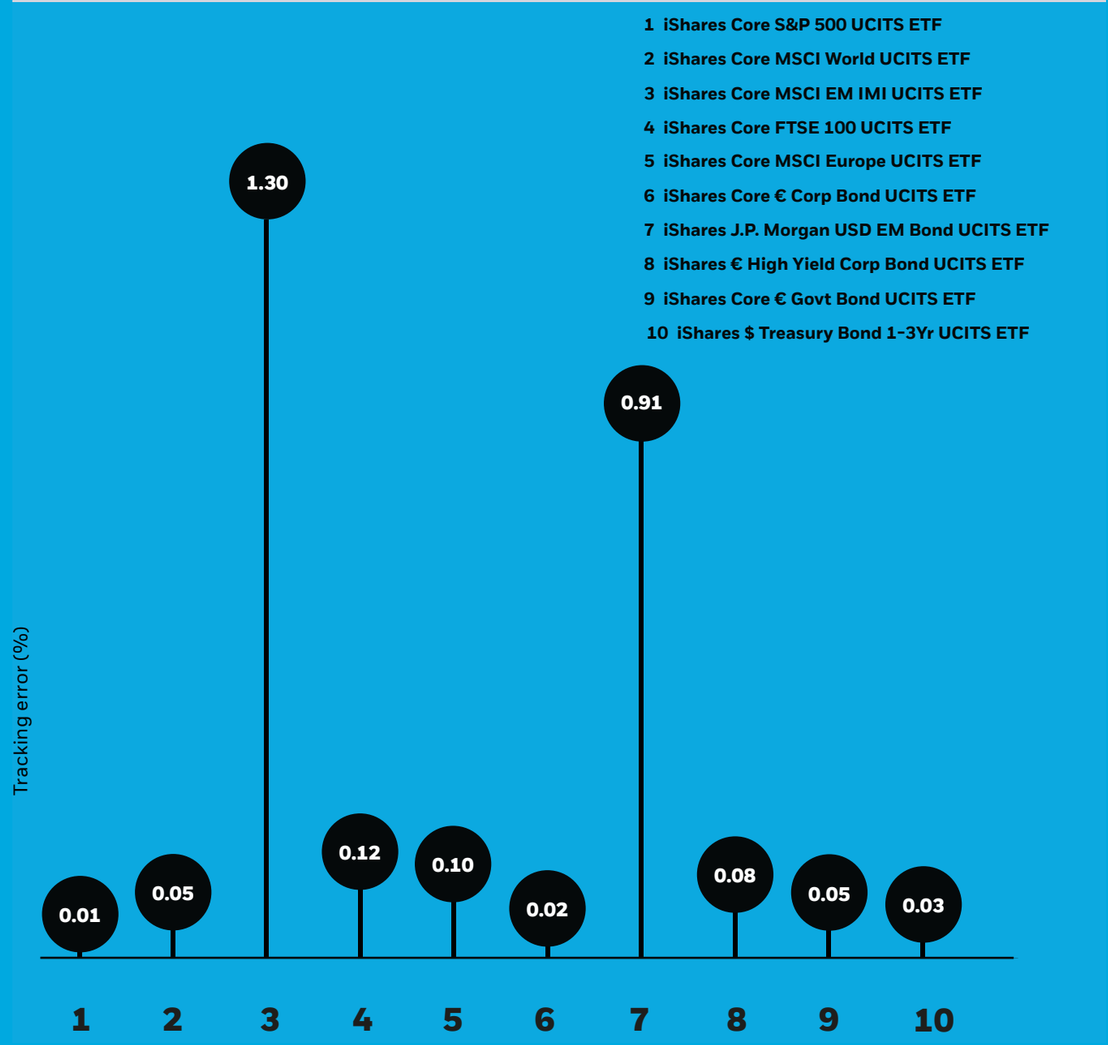

Source: BlackRock data as at 31st March 2022. Data calculated over three years between 31st March 2019 and 31st March 2022.

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Figure 27: Three-year average annualised tracking error for individual ETFs

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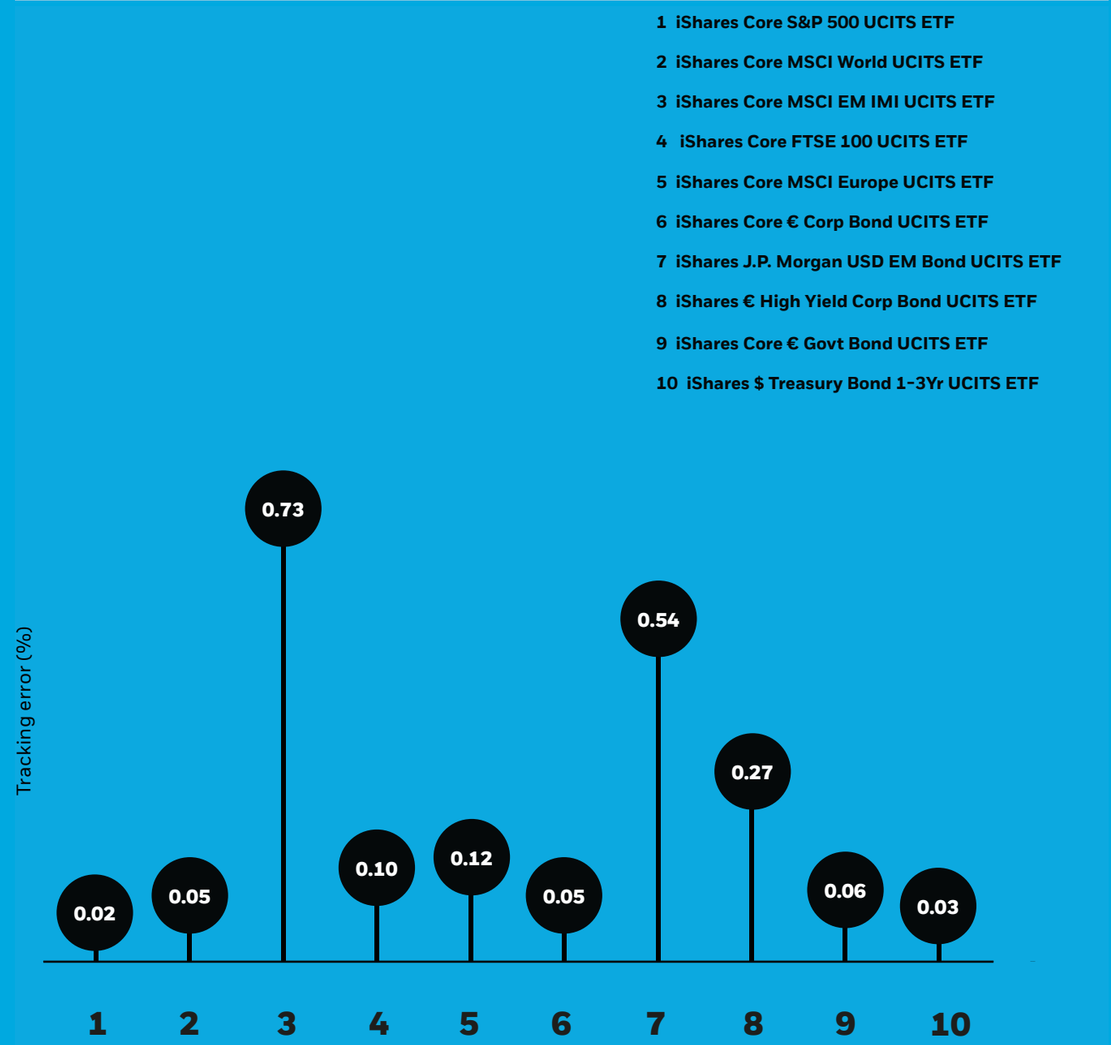

Source: BlackRock data as at 31st March 2022. Data calculated over three years between 31st March 2019 and 31st March 2022.

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Figure 28: Five-year average annualised tracking error for individual ETFs

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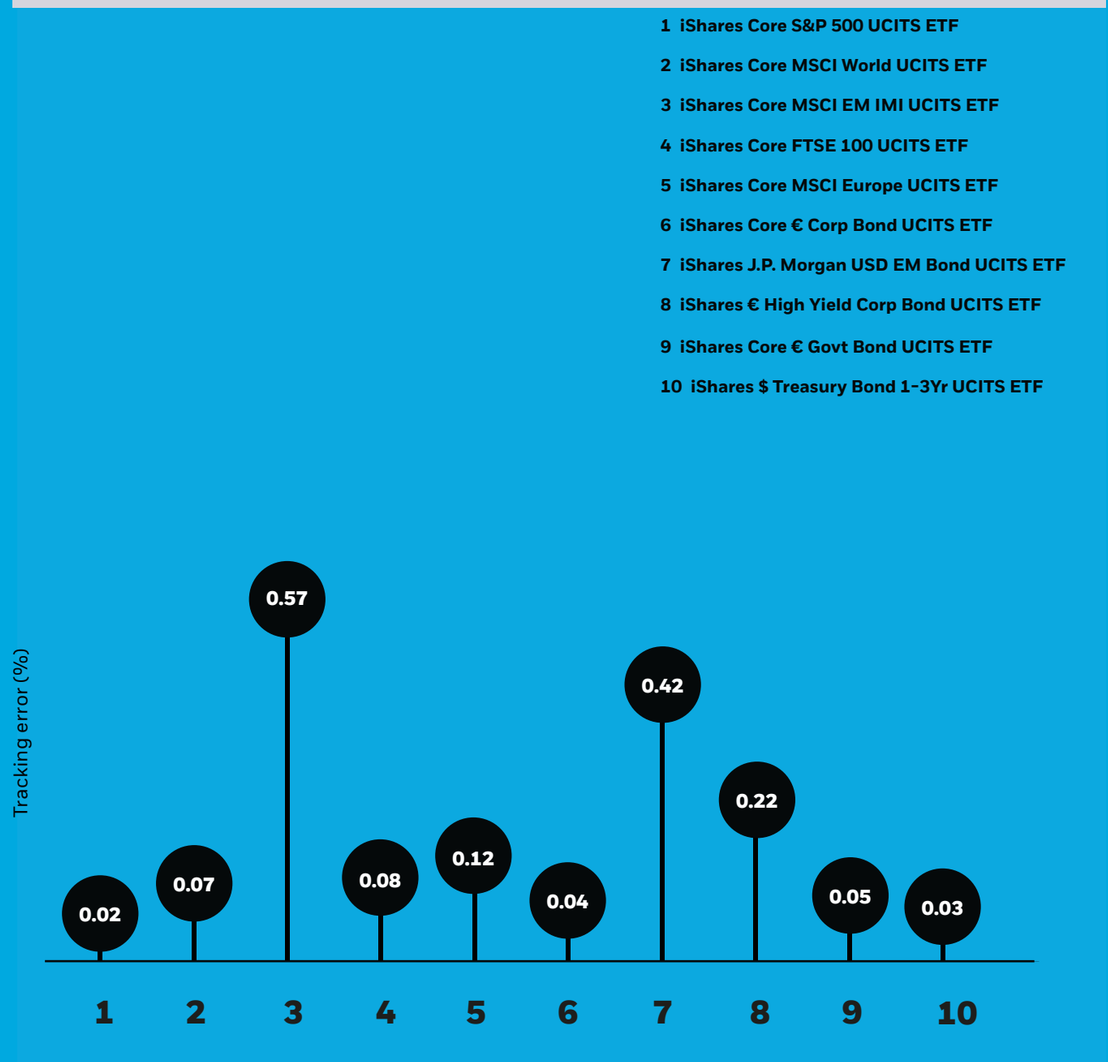

Source: BlackRock data as at 31st March 2022. Data calculated over five years between 31st March 2017 and 31st March 2022.

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8. Currency impact

Tracking error is usually calculated in the base currency of the ETF. An investor with an overall portfolio in euros may be more interested in the tracking error of an ETF denominated in euros, even when the base currency is, for example, the US dollar. Calculating the tracking error in a different currency will result in a marginally different volatility of the period-by-period tracking differences in the base currency. It is important to select the ETF NAV and index data in the same currency and make sure that the same exchange rates are used for converting the NAV and the index data into a different currency.

Exchange rate risk: The return of your investment may increase or decrease as a result of currency fluctuations.

9. Structure

An ETF that follows a synthetic replication strategy will provide a return of the benchmark index (minus the TER and potential additional derivative fees) resulting in a tracking error that can often be lower than physically replicating ETFs. Constant fees (such as TER and swap spread) that are deducted on a daily basis will not increase tracking error, but will reduce the overall performance of the fund and are reflected in the tracking difference. Constant derivative fees will also not increase the tracking error. On the other hand, if the derivative fee is reset over time, this will change the differences in returns between the fund and the index and thus will increase the tracking error.

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COMMON PITFALLS

One of the most common pitfalls when calculating tracking error is attributable to simple data errors. These can increase tracking error quite substantially, but may not always be easy to identify. Here are some potential data errors an investor should watch out for:

Different holiday treatment between the ETF NAV and the index:
If the holiday calendar of the ETF domicile country and the underlying securities in the benchmark index differ, there may be times when the ETF does not have an official NAV published, but the index has a published value. This can skew tracking error calculations as there are gaps in the data set. The solution is to remove any discrepancy between holidays in the fund's domicile and the underlying securities from the tracking error calculation.

Data outliers for NAV or the index:
General data outliers can disturb the tracking error calculations markedly. The results will be very similar to the example of a data error shown above. Data outliers are typically more common during the early days after the fund's launch.

No published total return NAV is available:
Some ETF providers publish the NAV of the fund on their websites, but do not give information on dividend payments. In this case the tracking error will be higher because on days when the fund pays a dividend, the return difference to the benchmark index will be higher. If an ETF provider does not publish the total return NAV, investors need to resort to official data providers like Bloomberg, Reuters, Morningstar or Lipper. At the same time, one still needs to be aware that there could be data outliers from any external data provider.

Misalignment of ETF NAV and the index:
When analysing data from an ETF provider's website or a data vendor, investors also need to be careful that the ETF NAV and the benchmark index data are perfectly aligned. Tracking error calculated for or including this period could be significantly inflated. For example, some data vendors will have a one-day reporting lag for the NAV of ETFs tracking securities in the Asian market.

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SUMMARY

In order to measure the performance of an ETF, tracking error and tracking difference are both important factors to consider. Tracking error can be higher for harder to access markets and for ETFs that track an index with a high number of securities.

While tracking error is a measure of risk, tracking difference measures the actual under- or outperformance of the fund compared to the benchmark index over a certain time horizon. Tracking error is more important to an investor who places frequent trades as tactical allocations to certain markets. For an investor with a longer view, or a buy-and-hold investor, tracking difference is the more important factor to look at.

The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.

SECTION 06

TOTAL COST OF OWNERSHIP

How to analyse 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:

1 **What is the TCO of an investment?**

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

3 **How to calculate the TCO of an ETF investment?**

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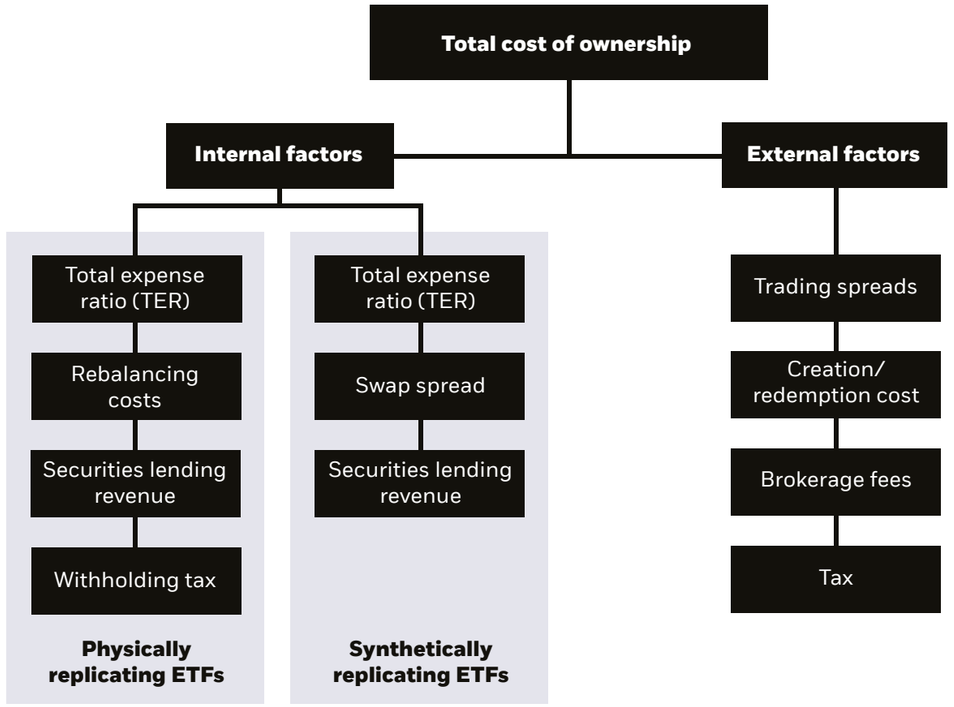
WHAT IS TCO?

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.

Figure 29: Internal and external factors



Source: BlackRock. For illustrative purposes only.

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Defining internal 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 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 ETF's portfolio management style, either fully-replicating, stratified or optimised 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 collateralisation (for fully funded derivative replicating ETFs) and on the agreement between the swap counterparty and the fund provider.

Risk: Tax treatment depends on the individual circumstances of each client and may be subject to change in the future.

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 (see Section 4).

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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.

CALCULATING TCO

Understanding the TER: TER is a figure required to calculate the TCO. TER is accrued daily and is deducted from a fund's daily Net Asset Value (NAV). The ETF total return is based on the NAV and is therefore net of the TER. Any extra revenue from activities such as securities lending is accrued to the NAV of a fund daily.

The total cost of ownership can be calculated by adding all the costs of an ETF, both internal and external, and subtracting all the revenues generated over the same time period. Or simply put, combining the 12 months tracking difference of the ETF and the costs of buying and selling the ETF.

Example 1

The Irish-domiciled iShares Core MSCI Europe UCITS ETF has an annual TER of 12bps. Looking at the TCO of the ETF, we can see the following: over the last year as at the end of March 2022 the 12-month tracking difference of the fund was positive 30bps, inclusive of TER. The fund has outperformed the net benchmark primarily due to the withholding tax differential (difference in tax rates applied by the fund and the net index).

To estimate external factors, in this example we look at the three-month average on-exchange trading spread, which is 6bps. The TCO is then calculated by taking the trading costs (cost of 6bps) and subtracting the outperformance of the fund (benefit of 30bps) which is equal to -24bps. This means that the investor has not suffered any expense owning the ETF and was 'paid' 24bps over the last 12 months. We have ignored other external factors such as brokerage fees in this example as those vary from investor to investor.

Table 4: Performance Disclosures Discrete Calendar Performance (%)

	iShares Core MSCI Europe UCITS ETF	MSCI Europe
2012	17.17	17.29
2013	19.67	19.82
2014	6.88	6.84
2015	8.31	8.22
2016	2.59	2.58
2017	10.30	10.24
2018	-10.43	-10.57
2019	26.40	26.05
2020	-3.17	-3.32
2021	25.46	25.13

Source: BlackRock as of 31st March 2022.
The figures shown relate to past performance. 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. ETF and fund returns are net of costs and in the base currency of the iShares ETFs. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.

This material is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or financial product or to adopt any investment strategy.

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Example 2

The Irish domiciled iShares EUR High Yield Corp Bond UCITS ETF has an annual TER of 50bps. Looking at the TCO of the ETF, we can see the following: over the last year as at the end of March 2022 the 12-month tracking difference of the fund was negative 22bps, inclusive of TER. The fund has underperformed the benchmark by less than the amount of the TER, due to efficient portfolio management techniques such as accessing bonds through the primary market. To estimate external factors, in this example we look at the three-month average on-exchange trading spread, which is 9bps. The TCO is then calculated as 22bps of fund underperformance plus 9bps of trading cost and is equal to positive 31bps. This means that the investor pays 31bps to hold this exposure over 12 months. We have ignored other external factors such as brokerage fees in this example as those vary from investor to investor.

Table 5: Performance Disclosures Discrete Calendar Performance (%)

	iShares EUR High Yield Corp Bond UCITS ETF	Markit iBoxx Euro Liquid High Yield Index
2012	22.63	22.83
2013	7.50	7.85
2014	3.79	4.02
2015	-0.56	-0.25
2016	8.04	8.14
2017	4.76	4.82
2018	-3.51	-3.38
2019	9.37	9.54
2020	0.91	1.65
2021	2.96	3.17

Source: BlackRock as of 31st March 2022.
The figures shown relate to past performance. 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. ETF and fund returns are net of costs and in the base currency of the iShares ETFs. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.

This material is not intended to be relied upon as a forecast, research or investment advice, and is not a recommendation, offer or solicitation to buy or sell any securities or financial product or to adopt any investment strategy.

IN SUMMARY

Evaluating the cost of an ETF solely on TER can be misleading. TCO analysis provides a more holistic view of the total costs incurred by an ETF investment.

The figures shown relate to past performance. Past performance is not a reliable indicator of current or future results.

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SECTION 07

TAX

This section covers the tax treatment of ETFs that invest in equity and debt securities, both in physical form and through derivatives. We focus on iShares ETFs domiciled in the US, Ireland and Germany, though ETFs list in other jurisdictions. Investors should refer to the taxation section set out in an ETF prospectus prior to investing.

Key questions to ask:

1 **How does an ETF handle investment-level taxation?**

2 **How does the ETF domicile affect the investor?**

3 **Does the fund comply with the required tax reporting requirements, and what are the implications of this for investors?**

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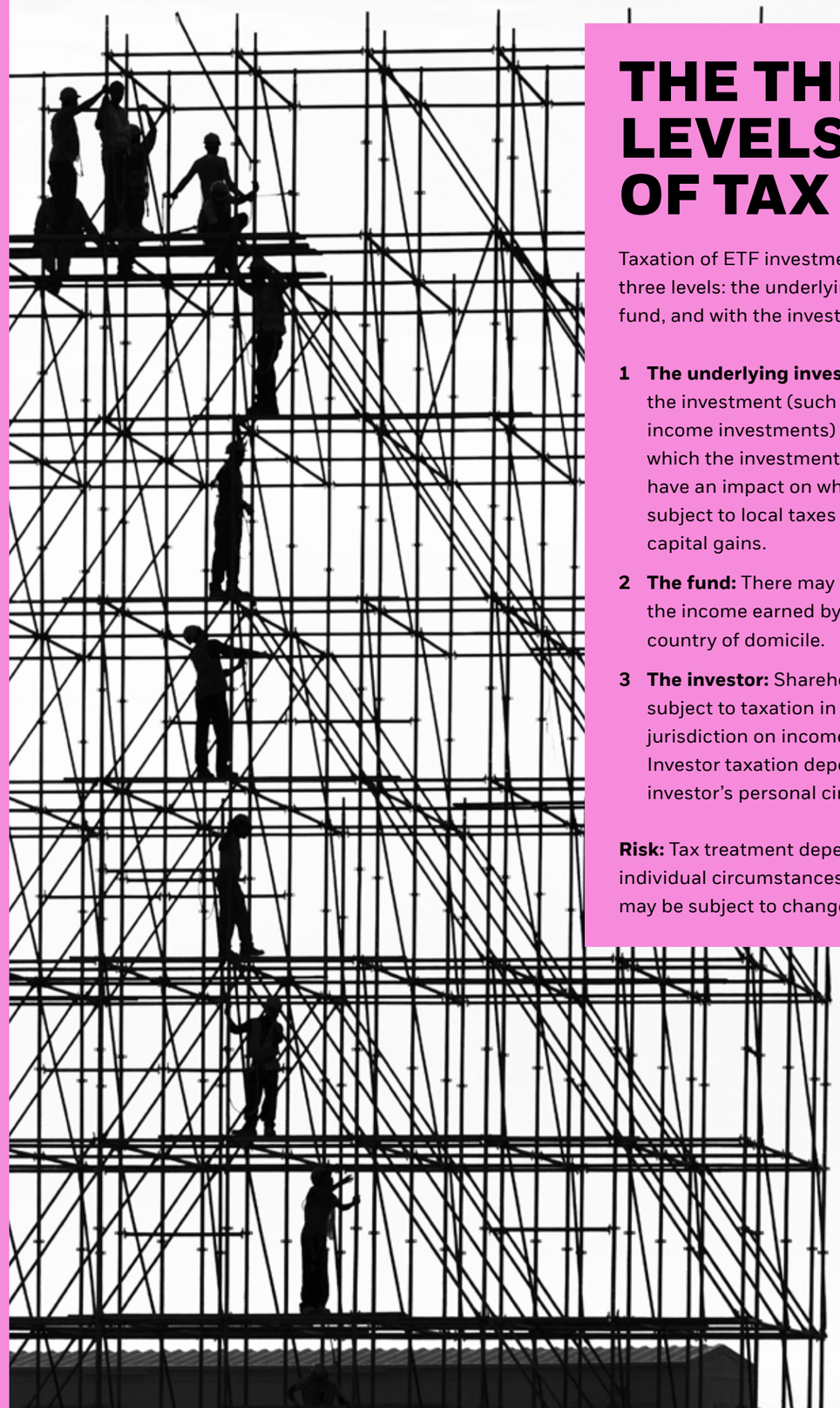

THE THREE LEVELS OF TAX

Taxation of ETF investments may arise at three levels: the underlying holdings, the fund, and with the investor:

1. **The underlying investment:** The type of the investment (such as equity or fixed income investments) and the country in which the investment is situated will have an impact on whether the ETF is subject to local taxes on income or capital gains.
2. **The fund:** There may be a direct tax on the income earned by the fund in its country of domicile.
3. **The investor:** Shareholders may be subject to taxation in their home jurisdiction on income and capital gains. Investor taxation depends on the investor's personal circumstances.

Risk: Tax treatment depends on the individual circumstances of each client and may be subject to change in the future.

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1. Investment-level taxation

Withholding taxes on income or capital gains are dependent on the domicile of underlying securities and are important considerations for fund investors. These taxes are typically paid to countries where a fund's underlying equity or debt securities are situated; the rate partly depends on the treaty between the country where the underlying securities are situated and the country in which the ETF is domiciled.

Example: An Irish ETF investing in US equities may be subject to only 15% US withholding tax on US dividends, unlike an ETF domiciled in Luxembourg that may face 30% US withholding tax on the same dividend. This is because Luxembourg funds are not eligible to access the tax treaty between Ireland and the US.

When an ETF invests in an index comprising equity or fixed income investments located in different jurisdictions, the effective rate of withholding tax must be calculated according to factors such as the tax rate applied by each country, whether it is based on the tax treaty.

Investment-level taxes in a derivative replicating fund may depend on factors such as the terms and conditions of the swap contract, the domicile of the swap-counterparty, and the jurisdiction in which the swap contract is executed. In a derivative-replicating fund, the swap counterparty generally holds the assets to hedge the exposure rather than the fund. The swap counterparty may receive favourable tax treatment in certain markets either though a local presence in that market or on their own tax treaty status. This may make a swap-based construction more efficient from a tax perspective. However, this ultimately depends on whether the swap counterparty passes the tax benefits to the fund under the swap contract or not. In case of a physically replicating fund, any tax advantage that the fund has is realised within the fund.

In addition to withholding taxes and capital gains taxes, an ETF may also face transaction taxes, such as stamp duty in the country of the underlying investment.

2. Fund-level taxation

The domicile of the fund itself is an important tax consideration. It may have implications on access to tax treaties that the country of domicile may have with other jurisdictions. Any taxes on the distributions made by the fund depends on the withholding tax rules prevalent in the country of domicile of the ETF. Offshore mutual funds and ETFs, such as iShares, typically pay no tax at the fund level. Some onshore fund types, such as UK authorised unit trusts, do pay taxes at the fund level (although no ETFs currently use this structure).

3. Investor-level taxation

The tax status of the fund and the investor's personal tax status are important when determining the overall tax cost of ETF investments.

A full study of the tax-efficiency of an investment strategy should consider whether withholding taxes generated at the investment or fund level might be offset against the investor's domestic tax. At the investor level, the following taxes may be considered before making any investment decision:

- Income tax in the home jurisdiction on realised and unrealised income from the ETF.
- Capital gains tax in the home jurisdiction on the transfer or sale of units in the ETF.
- Capital gains tax in the country of underlying investment made by the ETF on transfer or sale of units by the investor.
- Stamp duty in the country of listing on the sale or purchase of units in the ETF.
- Withholding tax in the country of domicile of the ETF on distributed income, undistributed income, realised and unrealised capital gains.
- Withholding tax in the country of listing, where the account is maintained by the investor, or where the paying agent is located, on any actual or deemed distributions or payments from the ETF.

In some countries (such as UK, Germany, Austria), the tax treatment of the investor may depend primarily on whether the fund has privileged tax status that is obtained through providing tax reporting to investors. Such tax reporting may enable investors to determine the income element within the total return. Investors may therefore be subject to income tax only on a part of the total return, where such reporting is provided by the fund.

Whether the investor can reclaim any taxes accrued at the portfolio level depends on if the local tax authority views the respective ETF as an opaque or transparent entity subject to tax in its country of domicile. Investor taxation also depends on whether the country of residence views the investment as a debt instrument or units in a collective investment scheme, or some other financial instrument.

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WITHHOLDING TAXES AT THE INVESTMENT LEVEL

If an ETF tracks a net total return index, withholding taxes may be partly responsible for tracking errors. The net total return index normally assumes the worst-case scenario by using non-treaty rates for determining the possible dividend outcome. On the other hand, the ETF may be able to achieve a better outcome if it can access double tax treaties; the impact of which depends on the ETF's country of domicile and structure (corporate/opaque/transparent). In the context of iShares:

Irish-domiciled iShares funds are structured as corporate vehicles and are therefore able to access most tax treaties between Ireland and other jurisdictions. This means that equity dividends received by an Irish-domiciled iShares ETF may be subject to withholding tax at the lower treaty rate, and interest received on fixed income investments may not be subject to any withholding tax at all. Where no tax treaty exists between Ireland and the jurisdiction where the underlying investment is situated, local withholding tax rate prevalent in the latter jurisdiction may apply, which is usually higher than tax treaty rates.

German-domiciled iShares funds are structured both as transparent vehicles (KAGs) and corporate vehicles (InvAGs). Withholding taxes at investment level may differ substantially according to the legal structure of the fund. ETFs structured as transparent vehicles (such as Luxembourg or French FCPs) are usually not able to access tax treaties.

US-domiciled iShares funds structured as 1940 Act funds can access the whole range of tax treaties between the US and various jurisdictions. They also benefit from nil US withholding on US fixed income or US equity dividends under the local US tax law.

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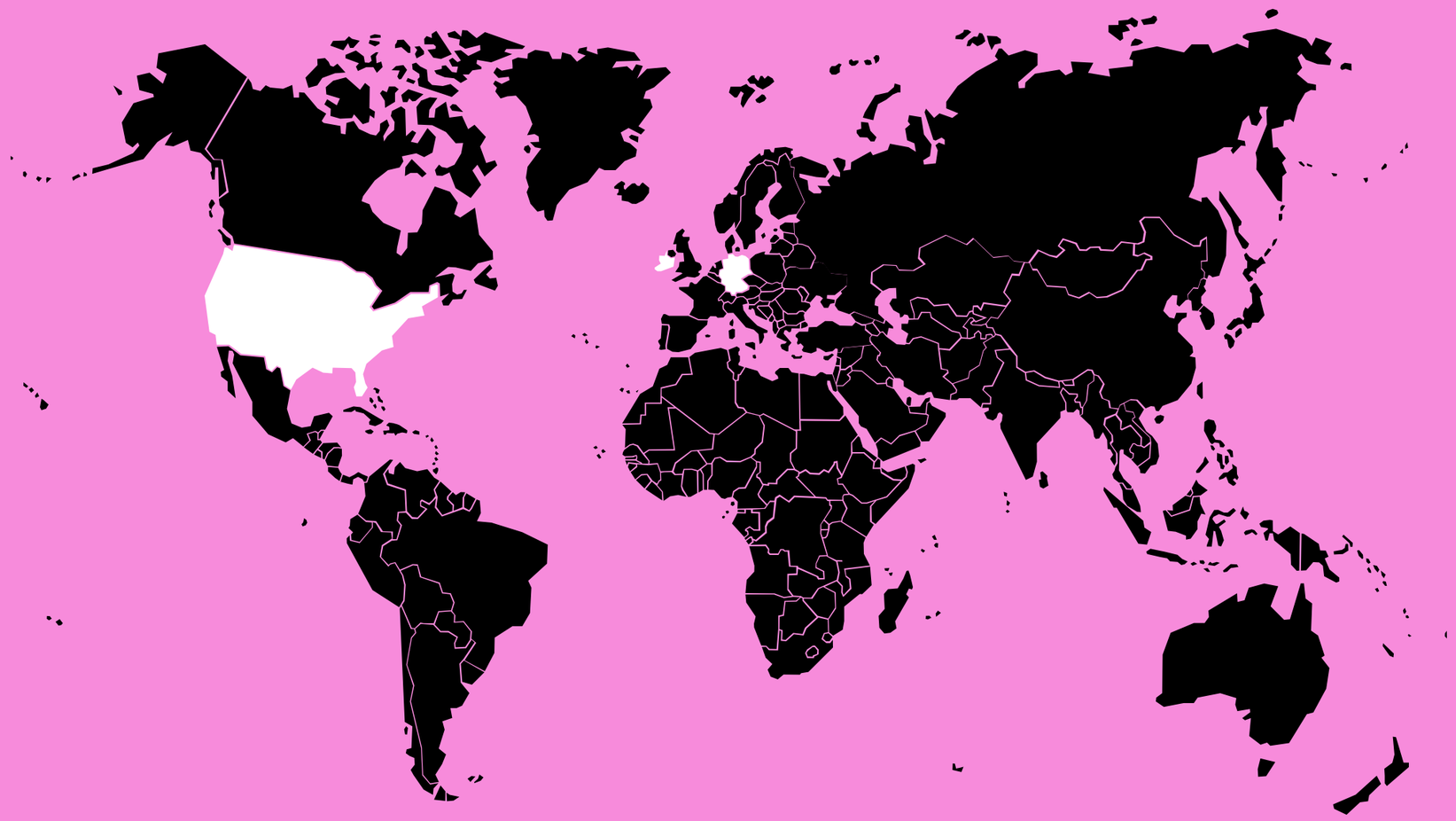

WITHHOLDING TAX AT FUND LEVEL

The ETF's country of domicile may impose a withholding tax on any distributions made to investors based on holdings and the residence of the investor. The fund-level withholding tax for various fund domiciles operates as follows:

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

Germany does not impose any withholding taxes when German funds distribute income or gains to overseas investors.

The US generally imposes 30% withholding taxes when a US-domiciled fund makes a distribution to investors. However, this can be reduced to 15% or nil depending on the tax treaty, provided the investor provides form W8BEN to the US withholding agent.

Source: IRS, Publication 515 (2019), Withholding of Tax on Nonresident Aliens and Foreign Entities.

In addition, US tax legislation currently provides for qualified interest income relief where no US withholding tax is applied when a US-domiciled fund investing in US Treasury or corporate bonds makes a distribution to investors.

Investors should also be mindful of the Foreign Account Tax Compliance Act (FATCA) which came into force via the 'US-Ireland Intergovernmental Agreement' (IGA) from 1 July 2014, and the subsequent Common Reporting Standard which extends the same obligations to most other countries. The Funds will generally constitute non-reporting financial institutions for these purposes as defined in Annex II. Non-reporting financial institutions are treated as exempt beneficial owners and the Funds will not need to report any information to the Irish Revenue Commissioners in respect its underlying shareholders.

It may, however, still need to file a nil return with the Irish Revenue Commissioners. That said, there are many circumstances in which it is, rather, an obligation of the broker or custodian through which the investor holds the Funds to report that holding to the investor's home tax authority.

Ireland and several other jurisdictions have entered into multilateral arrangements modelled on the Common Reporting Standard for Automatic Exchange of Financial Account Information published by the Organisation for Economic Co-operation and Development (OECD). This will require the company to provide certain information to the Irish Revenue Commissioners about Shareholders from the jurisdictions which are party to such arrangements (which information will in turn be provided to the relevant tax authorities).

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Table 6: Withholding taxes on ETFs investing in US equities

Table 7 illustrates an example of withholding taxes at both levels for US-equity ETFs domiciled in the US, Germany and Ireland. The ETF would be subject to US withholding tax at 0% or 15% or 30% depending upon the country of its domicile, its status, and the tax treaty with the US (where relevant). No other withholding tax cost accrues for investments in Irish or German ETFs, whereas US withholding tax can be charged on distributions made by a US-domiciled ETF to the investors.

US Equities

US fund			Irish Fund			German Fund		
€300 0% Withholding			**€300 15% Withholding**			**€300 30% Withholding**		
Exempt	Onshore	Offshore	Exempt	Onshore	Offshore	Exempt	Onshore	Offshore
€100	€85	€70	€85	€85	€85	€70	€70	€70
0% WHT	15%WHT	30% WHT	0% WHT	0% WHT	0% WHT	0% WHT	0% WHT	0% WHT

Source: BlackRock as at 31st December 2021. For illustrative purposes only. Investors should consult their own tax advisors to understand the tax implications on investing in a particular product.

- The chart uses an example of a German ETF structured as a KAG which faces 30% US withholding tax. A German ETF structured as an InvAG may be able to access the benefits of tax treaty between Germany and the US and therefore may pay only 15% US withholding tax.
- For the purposes of the above example, the following investors have been covered: (a) 'Exempt' Investors who qualify for 0% US withholding tax such as sovereign wealth funds and pension funds in some countries. (b) 'Onshore' investors who qualify for the treaty rate (15%) US withholding tax — onshore, taxpaying investors in many European and Asian countries who have provided US 'W8' documentation (c) 'Offshore' investors who pay the full 30% US withholding tax rate, including offshore investors (e.g. Cayman hedge funds), onshore investors from Gulf and other non-treaty countries, and investors not providing 'W8'.
- No account is taken of possible offset (against domestic tax) by onshore investors of US, German withholding tax deducted on fund distributions.
- These are simplified examples. They are designed to broadly reflect iShares' current experience so as to provide a realistic illustration of the issues, but should not be relied on as an accurate prediction of future returns or as a basis for advising end investors.
- The application of withholding taxes is in the hands of custodians and paying agents who are not connected with iShares or any other part of BlackRock. The correct amount to deduct can be subjective and their operating practices differ.

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TAX REPORTING

To recap, the investors may be subject to taxes in their country of residence, such as:

- Income tax on distributed income realised and unrealised from the ETF.
- Capital gains tax on the transfer of units in the ETF.
- Tax on the distributed income from the fund.

Various jurisdictions may require foreign funds to engage in some form of reporting to the tax authorities so that investors may obtain favourable tax treatment on the income and gains received from the fund. For example, in some jurisdictions, investors in reporting funds may be taxed on the income element included in the total return instead of total return itself or simply be taxed at capital gains tax rate in respect of gains instead of income tax rate.

Tax reporting may become quite relevant in the context of accumulating funds where it may be otherwise difficult for the investors to split the total return into income and capital. Such reporting is significant in investor jurisdictions where capital gains included in the total return are exempt from tax. Where a fund complies with the tax reporting requirements in a jurisdiction, it generally reports the income element included in the total return separately. This allows the investors to report and pay the correct level of taxes in their home country on that income element.

There are similar reporting requirements in other EU jurisdictions such as Austria, Germany and Switzerland. Under these regimes, ETFs marketed to Austrian, German and Swiss investors are required to report the income element included in the total returns separately so that investors can pay the relevant taxes accordingly. In the absence of such tax reporting, the tax authorities may subject investors to lump sum taxation.

Similarly, in some jurisdictions, investors may be subject to a lower capital gains tax rate instead of higher income tax rates on gains arising on disposal of units in a reporting fund. For example, most Irish-domiciled iShares ETFs marketed in the UK obtain UK reporting fund status by filing reports with HMRC. Consequently, UK residents are taxed at the local capital gains tax rate on any profits on unit sales rather than the income tax rate as the income element is reported and taxed annually.

Irish-domiciled iShares ETFs currently seek UK, German, Austrian and, in some cases, Swiss tax reporting status. German-domiciled iShares ETFs also seek German and, in some cases, UK, Austrian and Swiss tax reporting status. US-domiciled iShares ETFs do not currently seek any European tax statuses. Investors should therefore consider whether the ETF they are looking to invest in has the appropriate tax status that is required in their own jurisdiction or domicile.

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KEY TAX QUESTIONS

When selecting an ETF it is important to consider the following implications from a tax-perspective:

- How does a fund handle investment-level taxation?
- Where is the ETF domiciled?
- What is the tax status of the fund? What is the tax status of the investor?
- How does the fund handle withholding taxes?
- How does the fund handle tax reporting?

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SECTION 08

SECURITIES LENDING

How to evaluate lending practices

Key questions to ask:

1 **Does a fund participate in securities lending?**

2 **What is the level of securities lending revenue and how is it split between the fund and securities lending agent?**

3 **Are there clear guidelines for collateral selection, rigorous risk management processes?**

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

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

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

1 Lending underlying securities within an ETF

Lending of the fund's underlying securities is conducted by the BlackRock Securities Lending team and seeks to benefit all fund investors.

- Revenue may be accrued via the fee charged for lending securities. This can effectively reduce the total cost of fund ownership.
- Securities lending operates within the highly regulated UCITS framework.

2 ETF unit lending

iShares ETF investors can potentially earn income by lending their ETF units through a Lending Agent.

- Revenue generated from lending ETF units is directly received by the ETF owner.
- ETFs are lent out in the same way as the underlying securities.

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1 LENDING UNDERLYING SECURITIES WITHIN AN ETF

In securities lending transactions, funds make short-term loans of stocks, bonds or ETFs to incrementally increase returns for fund shareholders. Securities lending has evolved into a vital component of the financial markets.

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 on loan has risen.

As of December 2021, more than $36.2 trillion of assets were available for lending globally, with over $2.5 trillion on loan on an average day.

How does it work?

A large financial institution may ask to temporarily borrow a stock or bond. In order to borrow the stock or bond, the financial institution must pay a fee and provide collateral to the ETF. The ETF keeps the collateral to secure repayment in case the borrower fails to return the loaned stock or bond. The value of the collateral must exceed the value of the loaned stock or bond to provide the fund with a 'safety cushion' to prevent loss if the borrower doesn't return the security. The financial institution typically uses the loaned stock or bond to hedge market risks, facilitate a short sale, or use as collateral in another transaction.

Securities lending is a well-established and regulated activity. For EU-based iShares ETFs, rules and guidelines applicable to UCITS set out specific standards as to how securities lending activities shall be carried out, including what types of collateral are acceptable and which disclosures are required. The primary regulator for Irish iShares is the Central Bank of Ireland (CBI).

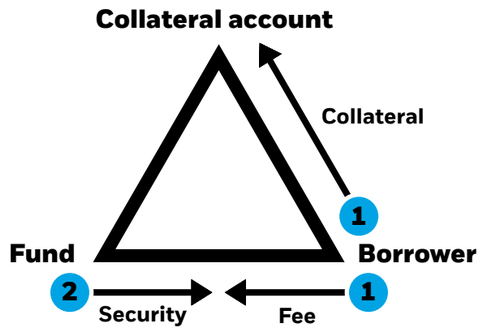
Source: Markit, 1st December 2021 to 31st December 2021. All amounts given in USD.

Figure 30: How securities lending works

Starting the process

1 A large financial institution asks to borrow a security from an ETF. The lending agent asks for collateral to secure the loan, which in the European market is primarily equities and government bonds.

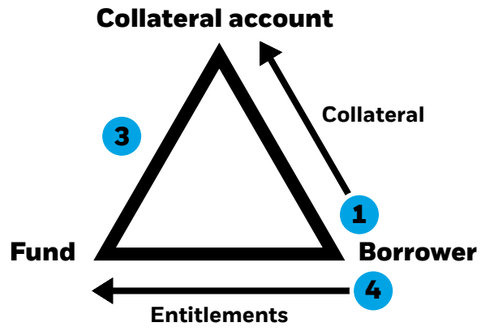
2 Once it receives the collateral, the lending agent lends the securities.



While the security is out on loan

3 The collateral is held for the benefit of the fund, separate from the custodian's and fund manager's assets.

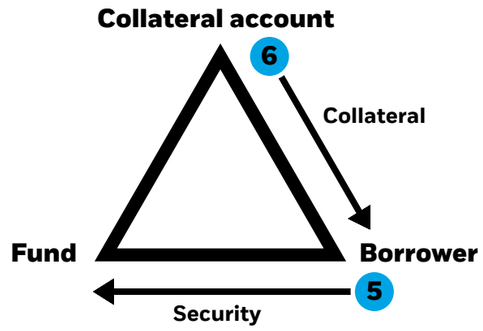
4 If the security pays dividends or coupons while it's out on loan, the financial institution pays the fund amounts equivalent to such income.



To complete the process

5 At the end of the loan (or when the lending agent requests), the financial institution must return the securities back to the fund.

6 The lending agent then releases the collateral back to the financial institution to close out the process.



Throughout the process, the fund generates additional income for fund shareholders.

Source: BlackRock. For illustrative purposes only.

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WHY SECURITIES LENDING?

Securities lending is a way to unlock additional value of a fund and collect higher returns than would otherwise be received. ETF investors may benefit from securities lending in the form of better fund performance. This is because the fund may generate additional income through the fee that it charges for loaning securities. Securities lending returns typically vary by asset class depending on underlying demand for securities.

While every investment bears risk, BlackRock takes a rigorous approach to securities lending. Over three decades of lending securities on behalf of clients we have focused on delivering competitive returns while balancing return, risk and cost.

BlackRock has delivered positive securities lending income for every fund participating in securities lending, since the inception of the lending programme in 1981. Please note, the programme was created in 1981 by our predecessor firm Barclays Global Investors, which was acquired by BlackRock in 2009.

On average, our lending funds domiciled in Europe had around 9% of their aggregate NAV on loan in the year ending 31st December 2021.

For fund specific lending limits, please refer to the fund prospectus.
Source: BlackRock, unaudited figures. 1st January 2021 to 31st December 2021.

Borrower default risk

Since this process involves lending securities, there is a risk that a borrower fails to return a borrowed stock or bond. In this case, the lending agent would use collateral to purchase replacement securities. To minimise risk to investors, it is important that any collateral received be of high quality and liquidity.

First, it is important to assess whether firms can be approved borrowers; then, monitor borrowers over time. An internal risk unit – independent from the securities lending team – performs regular borrower reviews. New transactions are systematically prevented if a borrower reaches its credit limits.

As an additional safeguard, BlackRock provides an indemnity for its ETFs in the event of a borrower default – if a shortfall existed between the collateral and the cost to repurchase a loaned security, BlackRock would reimburse the fund in full.

Transparency into securities lending practices

We encourage all investors to ask their ETF managers about securities lending practices and seek information about the fees managers earn or payments they make to third-party lending agents. For every iShares ETF that engages in securities lending, BlackRock publishes securities lending revenues in the fund's annual report, and includes a separate line item that details BlackRock's share of revenues that are used to administer the program.

The following are published on the EMEA iShares websites on a regular basis:

- **The returns an ETF generated from securities lending.**
- **The counterparties that borrowed securities from iShares ETFs in the previous quarter.**
- **Percentage of an ETF's assets that were lent and the average level of over-collateralisation.**
- **The collateral received on a daily basis and the collateral framework.**

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BLACKROCK'S APPROACH TO SECURITIES LENDING

We believe in managing our securities lending operations on our proprietary platforms rather than outsource this important function to a third party. To that end, we have built a proprietary securities lending infrastructure so that lending activity is executed in our clients' best interests and with prudent risk management.

1 Skilful risk management

BlackRock is hired by some of the largest companies and governments in the world to manage risk. Our approach to securities lending is no different.

We take a conservative, low-risk approach and use our proprietary risk and investment management platform, Aladdin, to integrate the capabilities of our dedicated research, trading and risk management teams. All investment and trading teams, across asset classes and around the globe, work on Aladdin to capture opportunities for our clients in a highly risk-controlled environment. This synergy among securities lending professionals and portfolio and risk management teams enables us to reduce the operational risks of securities lending in a way that a third-party custodian or lending agent may not.

Risk: While proprietary technology platforms may help manage risk, risk cannot be eliminated.

2 Proprietary technology

Our dedicated team works on custom-built reporting, operations and trading systems to help ensure transparency and operational efficiency. Our core trading system enables our traders to extract value for our clients in rapidly changing markets by incorporating proprietary trading research and securities lending supply and demand data in a rapid, consistent and scalable manner. Capturing re-pricing opportunities is a key component in outperforming competitors; with tens of thousands of loans outstanding at any given time, our trading system helps ensure that traders focus on the most significant opportunities.

Our proprietary collateral and loan processing application delivers a seamless exception-based process for loan management. While borrower default is rare the application is designed to manage the default process systematically, and mitigate risk to the investor.

Risk: There is no guarantee that research capabilities will contribute to a positive investment outcome.

3 Robust assessment of borrowers

We select highly creditworthy borrowers based on conservative credit standards defined by our risk team, which operates independently from our securities lending business.

We continuously monitor the financial performance of borrowers and set individual credit limits for every borrower to help minimise default risk. We monitor all trading activity against these limits and systematically prevent new transactions if the limits are reached. We also reserve the right to recall a security or require a borrower to provide additional collateral at any time.

4 Collateral standards

For iShares ETFs domiciled in Europe, equities, government bonds, supranational and agency bonds are the most common form of collateral.

We require borrowers to post excess collateral of at least 102.5% of the loan value and retain the borrower's collateral until the borrower has returned the loaned stock or bond. Collateral is also segregated as client assets separate from the borrower's or BlackRock's balance sheet

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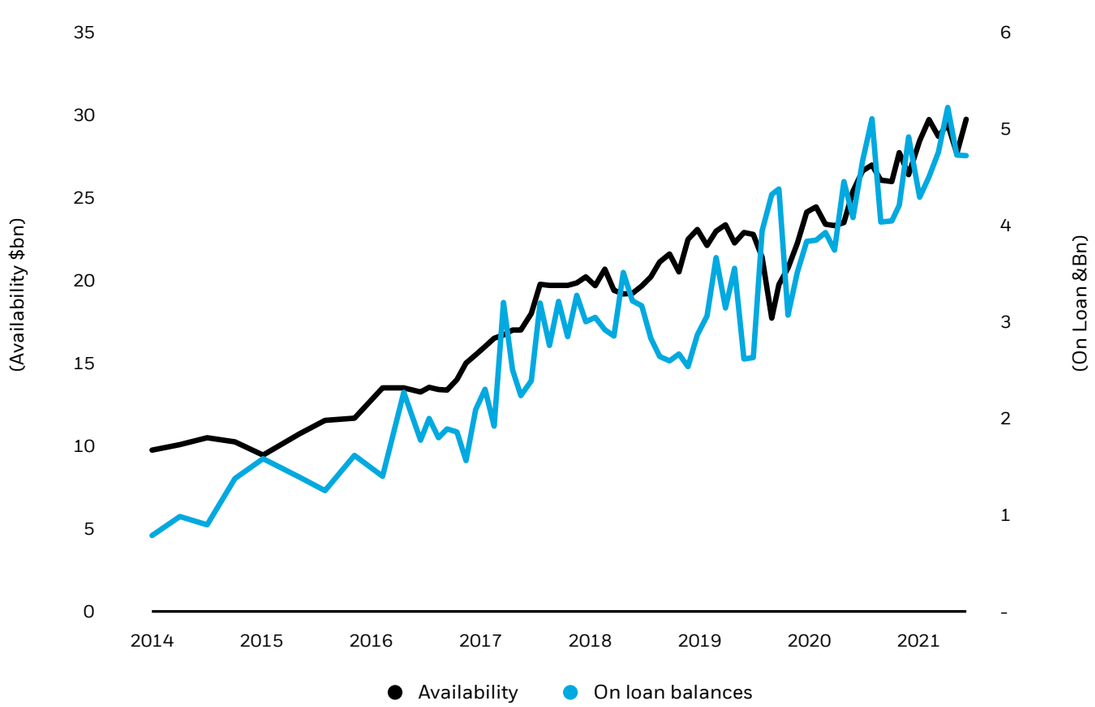
2 UNIT LENDING

Lending ETF units is no different from lending underlying securities (equities or bonds). Whereas the lending of underlying securities is a function of the ETF issuer (or appointed Lending Agent) and benefits all fund investors, iShares ETF investors can potentially earn income by lending their ETF Units through their own appointed Lending Agent. Revenue generated from lending ETF units is directly received by the ETF owner.

In last five years, both lending supply & borrow demand has significantly increased. iShares UCITS lending availability has doubled since June 2017 & demand is higher, hitting an all-time peak of $5.2bn in October 2021.

Figure 31: iShares UCITS ETF unit lending



Source; IHS Markit as at 31st December 2021. Availability is the total USD notional supply of lending inventory. On loan is the USD notional of securities on loan. The EMEA ETF lending market is entering the third stage of evolution in terms of user behaviour.

An evolving market

The market for unit lending has evolved considerably over recent years. Original demand for EMEA ETF borrowing was driven by Market Makers fail coverage and settlement requirements. Over the past 18-24 months, a much deeper lending supply has afforded Market Makers greater flexibility in their primary activity. For example, they can now borrow ETF Units rather than create new ETF units or buy ETF units from another client (the traditional approach).

More recently, ETF unit availability has reached a critical point where there is sufficient depth of supply for market participants to consider ETFs as another instrument to be used for hedging portfolio risk.

With greater borrower demand and lending activity there is increased potential for ETF lending returns:

1. ETFs are lent out in the same fashion as underlying Equities and Bonds
2. Increasing availability and demand for UCITS ETFs
3. Potential lending fees are an efficient & low risk opportunity to lower total cost of ownership (TCO)

Table 7: ETF underlying & unit lending returns

Ticker	Name	Underlying lending returns (bps)	ETF unit return to lendable (bps)
IHYG	iShares € High Yield Corp Bond UCITS ETF	13	120
IEAC	iShares Core € Corp Bond UCITS ETF	3	60
IHYU	iShares $ High Yield Corp Bond UCITS ETF	1	6
EUN2	iShares Core Euro STOXX 50 UCITS ETF EUR Dist	1	28
EIMI	iShares Core MSCI EM IMI UCITS ETF	10	14
ISF	iShares Core FTSE 100 UCITS ETF	0	4
EUNL	iShares Core MSCI World UCITS ETF	2	10
CNYA	iShares MSCI China A UCITS ETF (Acc)	0	277

Source: BlackRock, IHS Markit as at 31st December 2021. Return to lendable is defined as the total lending income generated by all the ETF unit loans, divided by the average market value of all the ETF units available for lending during the 12 months ended 1st December 2019, during the 12 months ended 31st December 2020 & during the 12 months ended 31st December 2021. Figures provided do not include fees paid to lending agents. Additional lending supply may impact ETF Unit return to lendable.
Risk: 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. 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.

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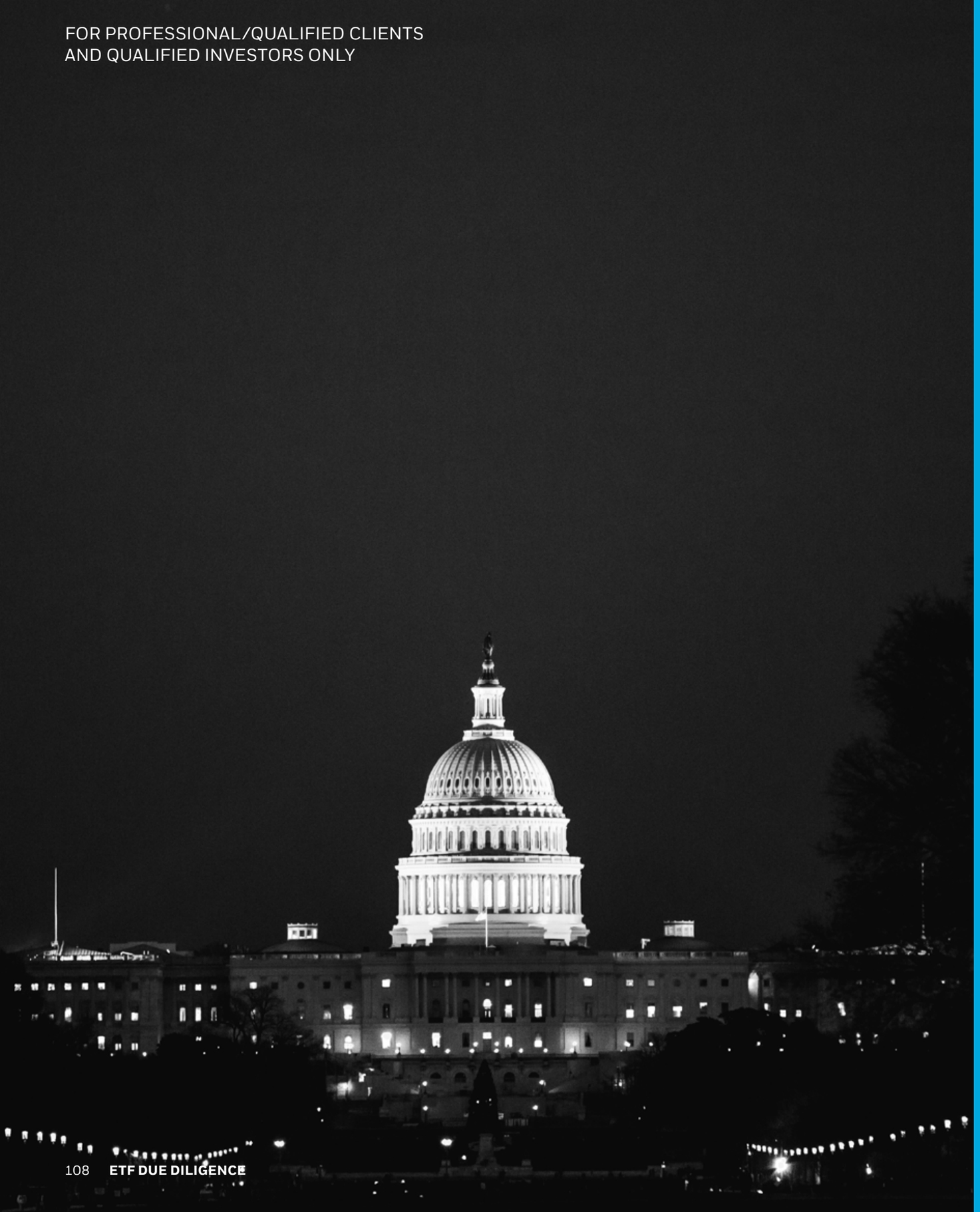
Table 8: Performance Disclosures (%)

	Base currency	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	TER
iShares MSCI China A UCITS ETF	USD	N/A	N/A	N/A	-18.74	-17.88	27.82	-26.06	35.40	42.62	2.84	0.40%
MSCI China A Inclusion Index		N/A	N/A	N/A	-17.09	-17.76	25.63	-28.54	36.17	43.20	3.20	
iShares Core MSCI World UCITS ETF	USD	15.53	26.68	5.05	-0.77	7.73	22.45	-8.65	27.76	15.95	21.90	0.20%
MSCI World Index		15.83	26.68	4.94	-0.87	7.51	22.40	-8.71	27.67	15.90	21.82	
iShares Core MSCI EM IMI UCITS ETF	USD	N/A	N/A	N/A	-14.38	9.61	36.98	-14.83	17.45	18.35	-0.24	0.18%
MSCI Emerging Markets Investable Market Index		N/A	N/A	N/A	-13.86	9.90	36.83	-15.04	17.64	18.39	-0.28	
iShares Core FTSE 100 UCITS ETF	GBP	9.52	18.20	0.33	-1.45	19.03	11.94	-8.83	17.18	-11.64	18.31	0.07%
FTSE 100 Index™		9.94	18.65	0.72	-1.34	19.04	11.91	-8.77	17.28	-11.58	18.40	
iShares Core EURO STOXX 50 UCITS ETF EUR Dist	EUR	18.66	21.62	4.47	6.82	4.73	9.68	-11.54	28.86	-2.89	23.98	0.10%
EURO STOXX® 50		18.06	21.51	4.01	6.42	3.72	9.15	-12.03	28.20	-3.20	23.34	
iShares Core € Corp Bond UCITS ETF	EUR	13.46	2.18	8.27	-0.69	4.64	2.29	-1.41	6.14	2.53	-1.15	0.20%
Bloomberg Euro Corporate Bond Index		13.59	2.37	8.40	-0.56	4.73	2.41	-1.25	6.24	2.77	-0.97	
iShares € High Yield Corp Bond UCITS ETF	EUR	22.63	7.51	3.79	-0.56	8.05	4.77	-3.52	9.37	0.92	2.97	0.50%
Markit iBoxx Euro Liquid High Yield Index		22.83	7.85	4.03	-0.25	8.15	4.83	-3.39	9.55	1.65	3.18	
iShares $ High Yield Corp Bond UCITS ETF	USD	14.33	5.82	1.74	-5.92	14.93	5.72	-1.51	13.09	4.68	4.26	0.50%
Markit iBoxx USD Liquid High Yield Capped Index		13.68	5.79	1.92	-5.70	15.86	6.06	-1.14	13.58	5.13	4.75	

Source: BlackRock data as at 31st December 2021.

The figures shown relate to past performance. 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. Fund and benchmark performance displayed in base currency of the iShares ETF. Performance is shown on a Net Asset Value (NAV) basis, with gross income reinvested where applicable. Performance data is based on the net asset value (NAV) of the ETF which may not be the same as the market price of the ETF. Individual shareholders may realize returns that are different to the NAV performance. The return of your investment may increase or decrease as a result of currency fluctuations if your investment is made in a currency other than that used in the past performance calculation. Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.



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KEY LENDING TAKEAWAYS

Two Types of Lending with ETFs

With an ETF you can lend both the underlying assets and the ETF units.

Lending Your ETF Units

This is no different to lending the underlying equities or bonds.

Total Cost of Ownership

Revenue from lending underlying assets or ETF units can effectively reduce total cost of ownership.

ETF Unit Lending

Revenue generated from lending ETF units is directly received by the ETF owner.

The EMEA ETF Lending Market

Increasing availability and demand for ETFs lead to higher potential lending returns.

SUMMARY

When lending underlying assets and ETF Units under appropriate controls, securities lending is considered a low-risk activity. When assessing the quality of a securities lending programme it is imperative to assess risk and return characteristics holistically. Revenue from lending underlying assets or ETF units can effectively reduce total cost of ownership.

This document is marketing material: Before investing please read the Prospectus and the PRIIPs KID available on www.ishares.com/it, which contain a summary of investors' rights.

Risk Warnings

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

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.

Changes in the rates of exchange between currencies may cause the value of investments to diminish or increase. Fluctuation may be particularly marked in the case of a higher volatility fund and the value of an investment may fall suddenly and substantially. Levels and basis of taxation may change from time to time.

BlackRock has not considered the suitability of this investment against your individual needs and risk tolerance. The data displayed provides summary information. Investment should be made on the basis of the relevant Prospectus which is available from the manager.

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Product Risks

iShares $ High Yield Corp Bond UCITS ETF USD (Dist)

Counterparty Risk, Counterparty and Credit Risk, Liquidity Risk, Combined Credit and Non-investment Grade Risk

iShares $ Treasury Bond 1-3yr UCITS ETF USD (Dist)

Authorised Participant Concentration Risk, Counterparty Risk, Counterparty and Credit Risk, Liquidity Risk

iShares € High Yield Corp Bond UCITS ETF

Combined Credit and Non-investment Grade Risk, Counterparty Risk, Counterparty and Credit Risk, Liquidity Risk

iShares Core € Corp Bond UCITS ETF EUR (Dist)

Counterparty Risk, Credit Bail in Risk, Liquidity Risk

iShares Core € Govt Bond UCITS ETF EUR (Dist)

Counterparty Risk, Credit Bail in Risk, Liquidity Risk

iShares Core EURO STOXX 50 UCITS ETF EUR (Dist)

Authorised Participant Concentration Risk, Counterparty Risk, Equity Risk

iShares Core FTSE 100 UCITS ETF GBP (Dist)

Counterparty Risk, Equity Risk

iShares Core MSCI EM IMI UCITS ETF USD (Acc)

Counterparty Risk, Currency Risk, Emerging Markets Risk, Equity Risk, Liquidity Risk

iShares Core MSCI Europe UCITS ETF EUR (Acc)

Counterparty Risk, Equity Risk

iShares Core MSCI World UCITS ETF (Acc)

Counterparty Risk, Equity Risk

iShares Core S&P 500 UCITS ETF USD (Acc)

Counterparty Risk, Equity Risk

iShares J.P. Morgan $ EM Bond UCITS ETF USD (Dist)

Counterparty Risk, Counterparty and Credit Risk, Currency Risk, Emerging Markets Risk, Liquidity Risk

iShares MSCI China A UCITS ETF USD (Acc)

Authorised Participant Concentration Risk, Counterparty Risk, Currency Risk, Emerging Markets Risk, Equity Risk, iShares MSCI China A UCITS ETF - Renminbi RQFII, iShares MSCI China A UCITS ETF - Tax, Liquidity Risk

Description of Product Risks

Counterparty Risk

The insolvency of any institutions providing services such as safekeeping of assets or acting as counterparty to derivatives or other instruments, may expose the Share Class to financial loss.

Counterparty and Credit Risk

Credit risk is the risk that the counterparty to a financial instrument will fail to discharge an obligation or commitment that it has entered into with the Issuer. The insolvency of any institutions such as the custodian or sub-custodian providing services such as safekeeping of assets may expose the Issuer to financial loss.

Liquidity Risk

The Fund's investments may have low liquidity which often causes the value of these investments to be less predictable. In extreme cases, the Fund may not be able to realise the investment at the latest market price or at a price considered fair.

Combined Credit and Non-investment Grade Risk

Changes to interest rates, credit risk and/or issuer defaults will have a significant impact on the performance of fixed income securities. Non-investment grade fixed income securities can be more sensitive to changes in these risks than higher rated fixed income securities. Potential or actual credit rating downgrades may increase the level of perceived risk.

Authorised Participant Concentration Risk

Only an Authorised Participant may request for a subscription or repurchase of Notes directly with the Issuer. As the Authorised Participants for a Series may be its only CFTA Counterparties, in the event that any CFTA Counterparty withdraws or is no longer willing to act as an Authorised Participant, until such CFTA Counterparty is replaced or a new Authorised Participant is brought on board, the Notes may trade at a discount to the Per Note Entitlement for the relevant Series.

Combined Credit and Non-investment Grade Risk

Changes to interest rates, credit risk and/or issuer defaults will have a significant impact on the performance of fixed income securities. Non-investment grade fixed income securities can be more sensitive to changes in these risks than higher rated fixed income securities. Potential or actual credit rating downgrades may increase the level of perceived risk.

Credit Bail in Risk

The issuer of a financial asset held within the Fund may not pay income or repay capital to the Fund when due.If a financial institution is unable to meet its financial obligations, its financial assets may be subject to a write down in value or converted (i.e. "bail-in") by relevant authorities to rescue the institution.

Equity Risk

The value of equities and equity-related securities can be affected by daily stock market movements. Other influential factors include political, economic news, company earnings and significant corporate events.

Currency Risk

The Fund invests in other currencies. Changes in exchange rates will therefore affect the value of the investment.

Emerging Markets Risk

Emerging markets are generally more sensitive to economic and political conditions than developed markets. Other factors include greater 'Liquidity Risk', restrictions on investment or transfer of assets and failed/delayed delivery of securities or payments to the Fund.

iShares MSCI China A UCITS ETF - Renminbi RQFII

The Fund invests via the Renminbi Qualified Foreign Institutional Investor (RQFII) Investment Manager Program in China A Shares. It may be subject to changes to the policies and regulations of the RQFII program that may adversely

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affect the Fund or the RQFII quota and the ability to hold China A shares. The Fund is subject to the restrictions and requirements applicable to RQFII investments and to the following risks: regulatory, licensing, quota and repatriation risks, PRC, RQFII custodian and brokerage risks of the PRC, and foreign exchange risk and risk of conflict in the PRC RQFII quota allocation.

iShares MSCI China A UCITS ETF - Tax

The PRC/Ireland tax treaty provides for exemption from Chinese capital gains tax on sales of the Fund's investment in China A Shares. Although the Fund is expected to be exempt, there is a risk that the PRC tax authorities could consider the Fund not to be eligible for the PRC/Ireland tax treaty and seek to collect such tax on a retrospective basis, which would affect the value of the investment.

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