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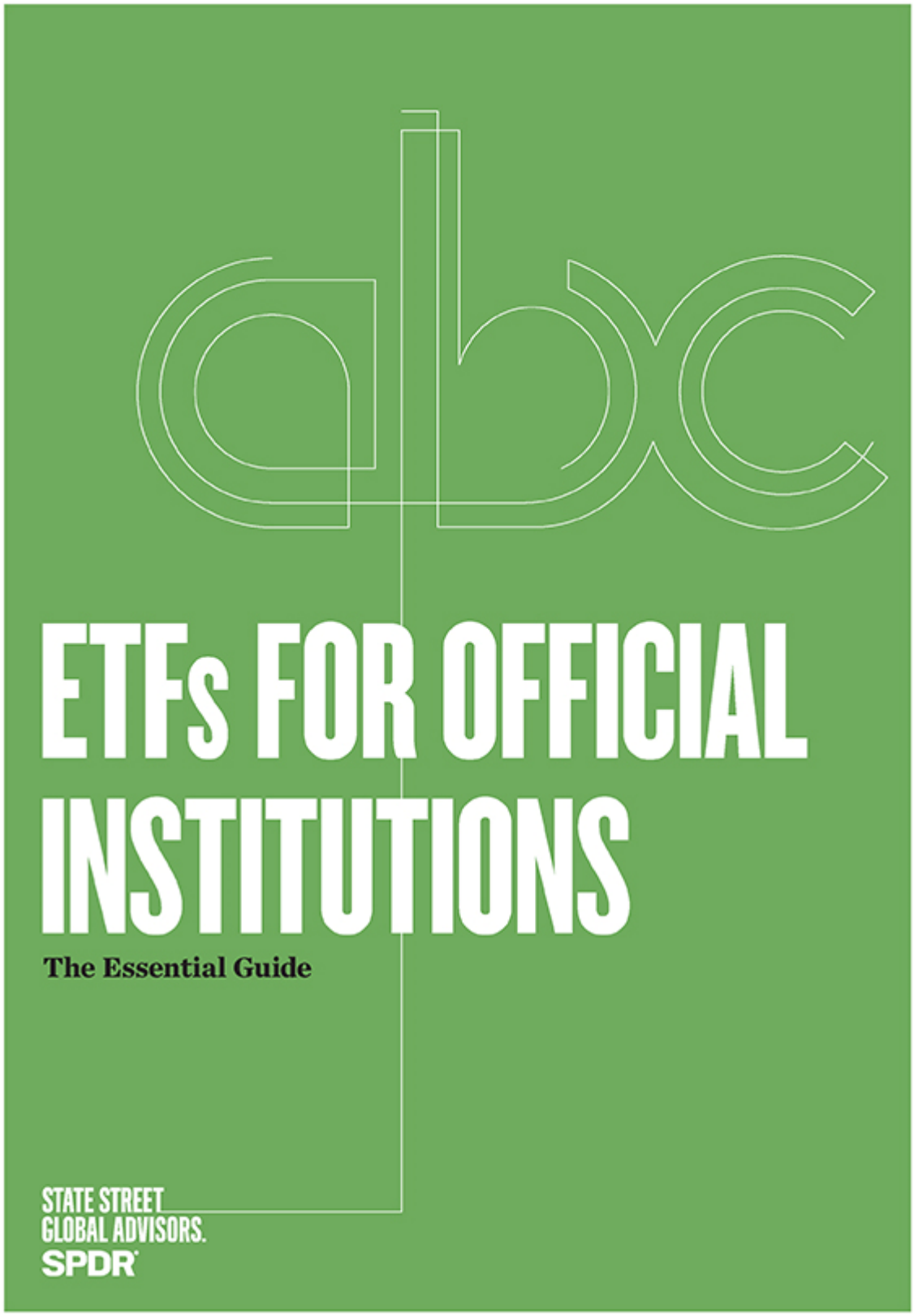

WHY READ THIS?

This guide explains why Official Institutions might consider investing in exchange traded funds (ETFs) and how they work. We also address some of the common misconceptions and concerns surrounding ETFs, based on feedback received from institutional investors around the world.

In summary:

1. ETFs offer a simple and transparent means of gaining exposure to a range of different asset classes and market segments.
2. ETFs are low cost, exchange traded investment vehicles; and due to rapid market growth, costs continue to decline.
3. Investors of all stripes use ETFs today, from the largest most sophisticated hedge funds to 'mom and pop' retail investors.
4. The flexibility, wide range of available exposures, ease of use and anonymity offered by ETFs make them a particularly attractive vehicle for Official Institutions.
5. ETFs have many uses for Official Institutions from managing cash flows to long-term investments, in particular acting as a first stage for investing in equities.

Have a question that isn't covered? Get in touch.

We hope this paper proves to be a useful resource for Official Institutions evaluating if and how to use ETFs. While our aim is to create an exhaustive guide covering all of the most salient points for Official Institutions, please get in touch if you believe anything has been omitted or if you need more information, and we will be happy to discuss further. You will find contact details for your region at the end of this document.

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ETFs — WHAT ARE THEY AND WHO USES THEM?

Exchange traded funds (ETFs) are funds that trade on an exchange and typically offer exposure to an index of underlying securities.

They have been one of the most successful financial innovations of the last 20 years, bringing institutional-quality investment management to every type of investor. In addition to providing investors with broad market beta exposure at low cost, ETFs have opened up a variety of investable asset classes and market segments for index investing, all at a fraction of the cost of a typical actively managed fund.

ETFs are an increasingly integral part of many investors' portfolios and can be used alongside other investment vehicles including active and passive pooled funds, segregated accounts and Delta One products such as index futures and total return swaps.

The history of ETFs

The largest ETF in the world today — the SPDR® S&P 500® ETF[1] — was created by State Street Global Advisors (SSGA) in 1993 to provide institutional investors with an efficient means of 'equitising' their excess cash. Today, ETFs are used for all manner of reasons from transition management to tactical asset allocation.

Like many other 'disruptive technologies', ETFs were initially met with scepticism by some institutional investors and their advisors. However, they have since been widely adopted and costs have fallen. Globally, there are more than 6,000 ETFs with total assets under management of about US$4.2 trillion[2] and the annual growth rate is challenging the traditional actively managed mutual fund industry to deliver true alpha for the fees they charge.

Who uses ETFs and why?

Retail investors across the globe have been attracted to ETFs due to their low costs, high transparency, ease of use and, quite clearly, some disappointment with the results generated by the active fund management community. Institutional investors — from asset managers to pension funds and Official Institutions — have also been attracted to ETFs for the very same reasons.

Globally, there is wide variation in the acceptance of ETFs by institutional investors. Asset managers have used ETFs extensively for many years for both tactical and strategic purposes. Their use of ETFs has continued to grow over time, as costs have come down and the range of funds has increased.

The growth in multi-asset strategies has also been a driver of increased usage, as ETFs have proved to be ideal building blocks for portfolio managers investing across asset classes and regions. Smart beta ETFs have also proved a popular tool for asset managers building 'outcome-oriented' strategies, such as those that focus on generating high levels of current income or aim for positive absolute returns in all market environments.

Pension funds have been slower to adopt ETFs relative to other investors, certainly from a "direct" investment perspective. We believe this is for two reasons: first, most pension funds, save the largest, are not set up to buy ETFs directly, and often do so via their fund managers; second, ETFs represent a new type of investing, which may require changes to long-established investment selection processes. However, with minor adjustments to operating procedures, both these issues can be resolved.

For Official Institutions, there are additional features that have made ETFs popular amongst central banks, sovereign wealth funds and other sovereign investors. Compared to other investment routes such as an active or passive segregated mandate, ETFs provide: simplicity of account set-up and fund administration; ease and quickness of trading and the potential to increase anonymity; and potential to enhance overall governance through fund regulations and independent oversight, leading to reduced reputational concerns. Official Institutions also appreciate the cost efficient and diversified exposure that many ETFs offer.

For central banks, in particular, the use of ETFs has been a more recent phenomenon that has grown rapidly in tandem with the trend towards including equities in central bank reserve portfolios. ETFs have become a convenient first step for central banks investing in equities for the first time, while fixed income ETFs have also been of interest to central banks as a market access tool.

From a best practice perspective, ETFs are now an established investment tool amongst Official Institutions who wish to improve investment efficiency and address administrative, operational and governance concerns.

How effective are ETFs?

In some cases, there might be more cost-efficient means of investing for institutional investors passively tracking a particular benchmark (such as segregated accounts, institutional pooled funds or index futures). However, when total implementation costs are considered, ETFs often represent the more efficient means of gaining exposure to a particular asset class or asset class segment.

For example, in our paper published in 2015, *The Changing Landscape for Beta Replication — Comparing Futures and ETFs for Equity Index Exposure*, we found that, in many cases, SPDR ETFs were more cost effective than equivalent index futures in gaining exposure to a range of equity markets over a 12-month period from 30 September 2013 to 30 September 2014.[3] More recent work that focused on S&P 500 equity index futures versus the US-domiciled, SPDR S&P 500 ETF, arrived at a similar conclusion.[4]

Additionally, due to the widespread appeal of ETFs, much of the development within the passive fund world is taking place in this structure rather than traditional index-tracking pooled mutual funds. As a result, investors looking for passive pooled fund exposure to particular asset classes or market segments may find that ETFs are the only vehicle available to them. Emerging markets local currency bonds, small cap stocks, global convertible bonds and multi-asset infrastructure are examples of asset classes in which a SPDR ETF is one of the few (or only) pooled fund options available.

Globally, there are more than 260 SPDR ETFs providing investors with tailored exposure to most of the important asset classes and market segments.[5]

Historically, the lack of passive pooled funds available has meant some investors have allocated to active managers to get the market beta return associated with the asset class segment, rather than holding out high hopes of generating significant alpha over and above the 'market return' after all costs. This is clearly not desirable, and with the universe of available ETFs ever expanding, this potentially costly approach is no longer necessary.

While ETFs are not always going to be the most suitable option for institutional investors or Official Institutions, when evaluated next to other implementation options, we think their cost efficiency, the wide range of available exposures and ease of use (no need to negotiate investment manager agreements, for example) will be attractive to investors.

How do institutional investors use ETFs?

Cash Equitisation

ETFs were initially created to provide institutional investors with a means to equitise their cash positions using a fund structure backed by physical securities (as opposed to using derivatives like equity index futures and/or total return swaps). That is still a common rationale for ETF use and is arguably more important than ever when cash assets yield almost nothing. Managing excess reserves or periodic cash flows efficiently is an essential element of high quality institutional portfolio management.

As the Passive Core Element of Portfolios

Some institutional investors use ETFs as an alternative to passive pooled funds valuing their ease of use, transparency and the breadth of products available to them. Others may use them alongside other passive fund or segregated account investments. Investors adopting predominantly passive strategies for core exposures often limit their exposure to active management in asset class segments where they believe there is significant potential to add value, or in the absolute return space. This so-called 'core-satellite' approach is increasingly common and ETFs can be an efficient means of implementing this strategy.

As a 'Liquidity Sleeve'

Some investors use ETFs as a 'liquidity sleeve', allocating a small portion of their overall portfolio to ETFs, often mirroring their overall asset allocation. They do this to facilitate rebalancing, tactical asset allocation and to help with efficient management of ongoing cash flows. Tactical asset allocation continues to be a favoured use of ETFs amongst institutional investors. Their ease of use and sheer range of exposures available make them the ideal tool for these purposes.

As 'Building Blocks' for Outcome-Oriented Investment Strategies

So called 'outcome-oriented' investing, where the goal is to produce a portfolio that aligns more closely with a specific investor need rather than one that tracks or outperforms a market cap-weighted benchmark is an increasingly popular form of investing, for both retail and institutional investors. While absolute return, unconstrained, balanced and income-oriented strategies have been around for decades, two severe equity bear markets in the 2000s, record low interest rates and demographic factors (e.g. aging populations and de-risking pension schemes), have led investors in increasing numbers to adopt these needs-based strategies. The vast range of ETFs, combined with their ease of use and typically low costs, means they are ideal building blocks for investors looking to implement an outcome-oriented strategy.

Indeed, they are widely used by asset managers in these approaches today and are also suitable for institutional investors looking to build their own portfolios. For instance, a government-related endowment whose aim is to generate income along with capital growth could build a cost efficient, totally transparent global multi-asset income portfolio using ETFs, covering high dividend equities, developed and emerging market bonds, real estate and infrastructure. Or a sovereign wealth fund establishing a growth portfolio could use ETFs to gain exposure to asset class segments as diverse as emerging markets small cap stocks, high yield corporate bonds and low volatility equities.

Transition Management

Investors use ETFs extensively for transition management purposes. For example, a plan sponsor might terminate one of its bond managers and use an equivalent ETF as a temporary home for the assets until a replacement manager is found. The relative ease in implementing 'in-specie' transactions in many ETFs can make this process particularly cost efficient from an end investor's perspective.

Asset Class Exposure

The ability to quickly take a position in virtually any investable asset class or market segment has proved to be one of the most attractive features of ETFs. Asset class segments like high yield and emerging market bonds, small cap stocks and smart beta are not widely available in pooled index funds and futures contracts are largely non-existent. For investors looking for the efficiency of a pooled fund, ETFs can be the best option available to them. The range of fixed income ETFs also means that investors can overlay their portfolio, making subtle moves in duration, credit quality or currency exposure easily. We expect to see continued rapid growth in the fixed income ETF market and a corresponding uptick in usage by institutional investors.

Why should investors consider ETFs, as opposed to active managers, for anything other than fairly standard exposures such as to US stocks and government bonds?

It is true that the vast majority of assets currently reside in ETFs tracking bellwether, mainly market-cap weighted stock and bond indices such as the S&P 500, MSCI Europe and Bloomberg Barclays Aggregate Bond Index. But they also track a range of other asset classes and market segments, and much of the development within the smart beta world is occurring in the ETF structure.

It is generally accepted that successful active management is difficult in US large-cap equities – as much as 40% of worldwide mutual fund assets are managed passively in this category[6] – but there is still a widely held view that active

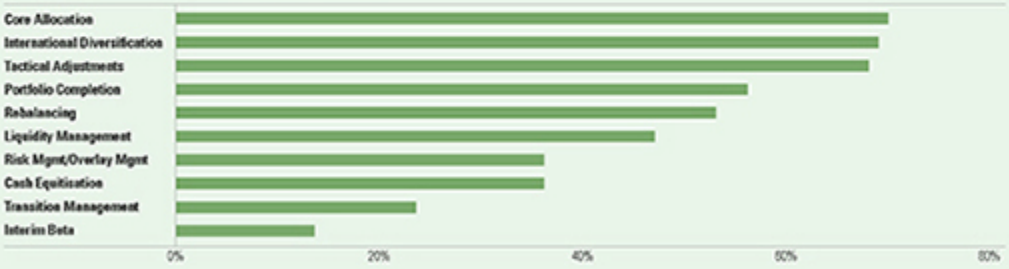
Most Common Uses of ETFs by Institutional Investors

Institutional investors now use ETFs for a wide range of investment purposes, the most common of which are:

1. **Ease of use and ability to trade:** The ability to quickly take a position in virtually any investable asset class or market segment has proved to be an attractive characteristic of ETFs, as has the transparent and cost-effective structure. In addition, once the basics are understood, few products are as easy to use as ETFs.
2. **Longer-term positioning:** Investors also use ETFs for longer-term, strategic positioning, particularly in areas of the market where other implementation options are few and far between and/or where there has been disappointment with the results generated by active managers (e.g. emerging market local currency bonds).[7]

In its annual survey of the ETF market, Greenwich Associates found that global institutional investors were finding more uses for ETFs across a growing range of asset classes. Based on interviews with asset managers, insurers and other institutional investors such pension funds, they found the following were the most popular reasons for using ETFs:

Most Common Institutional ETF Applications



Source: Greenwich Associates, 2016. Global Trends in Institutional ETF Adoption: Drivers for Growth through 2020. Based on 252 global responses, 119 in the US, 67 in Europe, 36 in Canada and 30 in Asia. They concluded that 'flows from institutional investors would be a key source of growth for the global ETF market. Based on broadening use of ETFs, including increased adoption of fixed income ETFs among other things, institutional investors would collectively contribute $300 billion annually to ETFs by 2020. Greenwich Associates interviewed a total of 52 Asia-based institutional investors, 31 of which were exchange-traded fund users and 21 were non-users, in an effort to track and uncover usage trends. The respondent base of ETF users in Hong Kong, Japan, Singapore, South East Asia, South Korea, and Taiwan included 16 institutional funds (corporate pensions, public pensions, foundations and endowments), 21 asset managers (firms managing assets to specific investment strategies/guidelines), and 15 insurance companies.

management 'works' in other categories such as global or emerging markets equities or emerging markets bonds. Yet much of our research refutes this.[8]

Certainly, some active managers have consistently added value over the comparable passive alternative but, in aggregate, we struggle to find any individual investable public markets asset class or segment where the average manager consistently outperforms over time after all fees and costs are taken into consideration. (As an aside, this seems to be in contrast to 'outcome-oriented' multi-asset products where, if flows are anything to go by, investors seem to be happier with the results). In addition, identifying in advance those active funds that do outperform and investing at the right time have proved to be a real challenge for many investors, both large and small. This helps explain the rise of passive management globally.

If we look at emerging market local currency bonds, for instance, where the vast bulk of assets are managed actively, far from outperforming, a significant majority of funds underperform the main benchmark index after costs.[9] The relatively low penetration of passive investing in certain asset-class segments might simply have been due to the scarcity of passive pooled fund vehicles until a few years ago, so the only means of obtaining exposure was through an actively managed fund or strategy.

For some asset classes, such as gold, ETFs have become the preferred method for investors looking for physical, fully funded exposure. The SPDR Gold Shares, the world's largest gold ETF, has assets in excess of US$34 billion and is widely used by investors of all types across the world.[10]

Investors who are comfortable with ETFs for core exposures should evaluate those ETFs that track the more esoteric segments of their portfolios. We think they will like what they find – funds that provide a cost-effective and totally transparent means of investing.

Why should investors consider ETFs for long-term strategic holdings?

As well as being a useful tool for expressing a short-term view on the market, ETFs can be a cost-effective way of investing, even over the medium- to long-term. Once familiarised with the process of buying and selling ETFs, the ease of use is a real competitive advantage of the structure, as is the wide range of asset classes and market segments that can be accessed. Combine that with low costs and a level of transparency that is simply unmatched by other structures, we believe ETFs stack up well relative to other implementation options, even in situations where the goal is to gain long-term exposure to an asset class.

Research from Greenwich Associates noted that institutions are already using ETFs for strategic purposes, with more than 60% of ETF assets being defined as "strategic in nature".[11]

Identifying the 'Right' Benchmark

A key element of the active versus passive debate is benchmarking. In many cases, we think active managers do not compare themselves to truly appropriate benchmarks that are reflective of their style, primarily due to the long-held practice of using broad equity and fixed income indices as benchmarks.

For example, a US equity value manager, who will not invest in growth stocks out of 'principle' ("We only buy stocks with P/Es lower than the market.") should arguably not be compared to an index containing such stocks, but rather to an index that reflects what they actually do, such as the Russell 1000 Value. In most cases, the key tenets of a manager's strategy (e.g. growth, high dividend, value or low volatility) can be replicated efficiently via a passive approach, often in the form of an ETF. The question that investors should ask is whether the active manager is simply delivering expensive value equity beta or adding alpha over and above that.

We clearly see this dynamic in the income equity sector where the penetration of passive is still very low, and where many funds have built solid records versus broad market indices. It doesn't strike us as plausible that equity managers running income strategies are more skilled — in aggregate — than managers running more traditional active equity strategies. Rather, it seems to us to be a case of managers and investors using incorrect benchmarks — partly no doubt as a function of dividend-weighted indices not being widely available a decade ago — to evaluate their performance track records.

Active managers have an incentive to pick benchmarks that are easy to beat. As an investor, your first question should be "What is the true beta of the asset class that I am trying to get access to?" and only then should you ask, "Do active managers beat it?" If the answer is generally no, then it is worth considering a low-cost alternative that captures the beta returns.

The institutional investment in ETFs in markets around the world has followed a consistent pattern: Institutions first experiment using ETFs for short-term tactical applications, such as making temporary adjustments to a portfolio, executing manager transitions or obtaining equity exposure for short-term cash positions. Over time, many institutions begin using ETFs for more complex, long-term and strategic functions. Currently, institutional ETF holdings at the global level are dominated by strategic assets; institutions estimate that 63% of ETF assets are strategic in nature".[12]

So how should investors set about deciding how best to replicate the beta returns of the market in their portfolios? In our view, investors would be well served by adopting a structured framework:

1. **Define the investment objective and time horizon.** e.g. 'We want to invest in European equities for 6-18 months while we conduct a search for an active equity manager'
2. **Select the benchmark that best represents the investment objective.** e.g. 'Our preferred benchmark for Australian equities is the S&P/ASX 200 Index. What are the various implementation options available to us?'
3. **Select the investment tool that most closely captures the desired market exposure, after all costs and expenses are considered.** e.g. 'We can use futures, index funds, ETFs and a segregated account to replicate the return of the S&P 500 Index. Based on our horizon of two weeks, we think futures make the most sense.'
4. **Select a provider that has the capabilities to efficiently replicate the returns of the chosen index.** e.g. 'We would like to invest in emerging markets local currency bonds. We would like to use a provider that has the specialist skills required to invest in this segment of the market.'
5. **Develop a process for monitoring the investment, including ongoing maintenance of positions.** e.g. 'We do not want to commit significant resources to monitoring our passive portfolios. We want something that we can essentially buy and forget.'

A significant benefit of using a structured approach is that it can more accurately incorporate the prevailing market conditions, enabling investors to react to changes in the environment.

Even if an investor's time horizon is long term, the ability to trade easily using the same infrastructure that is used to trade equities is certainly a 'nice to have' element of the ETF structure.

- Just got an unexpected cash flow? Invest it in an ETF.
- Plan beneficiary payments more than expected this month? Sell some of your ETFs to meet the obligations.

OFFICIAL INSTITUTIONS — THE CASE FOR ETFs

Why do Official Institutions, in particular central banks, use ETFs?

Non-central bank Official Institutions, such as sovereign wealth funds and sovereign pension funds, have always been significant users of ETFs similar to other private institutions. A more interesting recent trend has been the adoption of ETFs by central banks. This increasing interest in ETFs has been in tandem with the trend towards including equities in central bank reserve portfolios. In turn, this equities trend can be traced to two key drivers: the low-yield environment and the build-up of foreign reserves.

In respect to the first driver, a traditional central bank reserve portfolio comprises government bonds in US dollars, euros, sterling and Japanese yen. From a yield perspective, this traditional reserve portfolio has created challenges for central banks both in absolute terms (low nominal yields), but also on a relative basis (significant negative spreads relative to a central banks' domestic bond liabilities). Central banks have responded by diversifying within fixed income into more markets, including emerging market bonds and more recently the China interbank bond market. They have also diversified by investing in other asset classes, especially equities.

This decision has been made possible due to the strong growth in foreign reserves beyond levels needed to support a central bank's core foreign reserve liquidity functions. The growing size of central banks' investment tranches have been applied towards equity markets as another way to achieve long-term diversification into markets with higher expected return profiles. Central banks have also recognised that equities can be an important source of liquidity, and that a longer-term horizon within an investment tranche can mitigate the poor capital-preservation characteristics of equities given their higher volatilities. This is particularly so post-2008 when the reduction in the market making capacity of investment banks has resulted in a reduction in the liquidity of fixed income markets, but has not had a major impact on the liquidity of the listed equity markets.

CASE STUDY 1 The Bank of Japan's Use of ETFs to Implement Monetary Policy

The Bank of Japan (BoJ) is probably the world's largest ETF investor. Since 2010, the BoJ has used regular ETF purchases of local equity ETFs to implement its monetary policy. As well as investing in ETFs that track the well-established Japanese equity indices such as the Nikkei 225 and the TOPIX, the BoJ has allocated money to smart beta ETFs that focus on, among other things, companies that use capital efficiently.

As of the end of 2016, the BoJ's ETF holdings totaled about ¥13.8 trillion ($118 billion) accounting for more than 60% of the total Japanese ETF market.[12]

ETFs can also be used to invest in gold.

There are many ways to invest in gold, from buying gold miner shares to holding the physical asset itself, and investors should ultimately select the vehicle(s) that most suits their investment goals. Investment in physical gold bullion may not be suitable due to the high ongoing costs involved, which could include, transport, storage and insurance. Paper gold accounts offer exposure to the gold price, but these accounts are not always 'backed' by physical gold and so investors may be exposed to some counterparty risk. Gold miners provide exposure to the gold price, but they do not obviously exhibit perfect tracking to the gold price. Investors are also exposed to company specific factors such as a miner's production costs, and the operational and financial efficiency of the company. Gold futures are widely used by investors looking for exposure to gold and have the benefit of being traded in standardised contracts on exchanges. Futures do not require full funding up front, which may be preferable to those investors looking for leverage, but the requirement to regularly roll the futures contracts to maintain exposure does mean ongoing management of the gold position is required.

Investing in gold ETFs, such as the SPDR® Gold Shares (GLD®), eliminates many of the issues mentioned above. Gold ETFs are designed to precisely track the spot price of gold, offering investors a relatively cost-efficient and secure way to own gold without having to pay the transportation, storage and insurance costs of holding physical gold. GLD is fully backed by physical gold and is traded on an exchange like a stock (GLD's share price tracks the price of gold minus the Trust's expenses). Shares of GLD give the holder an undivided beneficial ownership in the SPDR Gold Trust, which holds gold in a vault in London. Shares cannot be created without the appropriate amount of gold first being delivered to the trustee to effect the "creation". The initial amount of gold required by the Trust to create a basket of 100,000 shares is 10,000 ounces (1/10 of an ounce of gold per GLD share). The gold that underlies GLD is held in the form of allocated 350 to 430 fine troy oz. London Good Delivery bars in the London vault of HSBC Bank plc. Gold deposited in the SPDR Gold Trust is held in an "allocated account," meaning fractions of individually identified gold bars are owned by GLD shareholders. The account holder has full ownership of the gold bars, and the bullion dealer may not trade, lease or lend the bars.

For investors taking a strategic position in gold, GLD offers investors a modern, cost-efficient and secure way to gain access to the gold market.

How do ETFs compare with the other main investment choices available to an Official Institution?

The table in Figure 1 illustrates how ETFs compare against the other main investment choices across a range of key drivers. Broadly speaking, the pattern that emerges from this features map is that each strategy provides some unique benefits that may be of importance to Official Institutions:

1. Passive ETFs: simple account opening and set-up; variety of usage; multiple entry and exit strategies; potential for higher liquidity; enhanced governance and simplification of proxy voting and administration
2. Passive segregated mandate: potentially lower costs and index customisation
3. Active segregated mandate: potential to add value and mandate customisation

A typical starting point for decision making is whether an investor wants to adopt an active or passive strategy. An Official Institution that will only consider active investment will, by definition, eliminate passive ETFs and passive segregated mandates from further consideration. Most Official Institutions, however, do not start from this narrow premise and are willing to consider either active or passive; many Official Institutions go further and view passive investing as a critical tool in their core allocation to asset classes. This is particularly true of the large Official Institutions where their size creates a market-footprint constraint on what they can invest in actively; essentially, large institutional investors are forced to have core allocations diversified in a passive manner.

Within the passive allocation, the choice between ETFs or a segregated mandate is more nuanced. Figure 1 highlights some points of differentiation. In two respects, a segregated mandate scores favourably:

1. **In terms of costs, a segregated mandate is potentially the most cost-effective option.** But this is subject to the proviso that the investment is large in size and is intended as a fixed buy-and-hold investment with little transactional activity.
2. **Ability to customise the mandate.** ETFs are intended for use by many investors, therefore, it is not possible to change the structure of the ETF to accommodate the needs of one single investor. Segregated mandates are obviously highly customisable.

For small to medium size allocations, ETFs can represent the lowest cost option. Also, for large asset sizes, if the allocation might be subject to transactional activity (e.g. due to rebalancing or asset re-allocation changes), then an ETF can provide a better overall cost trade-off compared to a segregated mandate. This transaction cost trade-off is examined further in later sections. As regards to customisation, one important aspect is taxation: a segregated mandate can be set up with the account administrators to utilise the Official Institutions sovereign tax offset arrangements to minimise security-level withholding taxes, capital gains, taxes on distributions etc.

In general, ETFs cannot customise tax arrangements to such a granular level, but can usually provide underlying tax data to allow Official Institutions to seek tax offsets separately.

Aside from the potential for lower cost and customisation, ETFs score equally or more favourably versus passive segregated mandates in all other dimensions. For example: variety of usage; multiple entry and exit strategies (using the primary market and the secondary markets) and the potential to enhance liquidity that this primary and secondary market trading can provide. For Official Institutions, a number of these favourable factors are of particular relevance: reduced complexity for account openings; governance of assets and simplification of proxy voting and administration.

Figure 1: Comparison of the Key Features of ETFs and Other Investment Choices, with Attractive Characteristics Highlighted

KEY FEATURE	PASSIVE ETF	PASSIVE SEGREGATED MANDATE	ACTIVE SEGREGATED MANDATE
Potential to add value relative to the benchmark	NONE	NONE	POTENTIAL
Complexity of manager selection	SIMPLE	SIMPLE	COMPLEX
Complexity of account openings	SIMPLE	COMPLEX	COMPLEX
Monitoring of performance	SIMPLE	SIMPLE	COMPLEX
Variety of use	HIGH	MEDIUM	LOW
Cost	LOW/ MEDIUM	LOW	HIGH
Multiple entry and exit strategies	HIGH	MEDIUM	LOW
Liquidity of the vehicle	HIGH	MEDIUM	LOW
Governance of assets	HIGH	MEDIUM	MEDIUM
Reputational concerns	LOW	LOW	HIGH
Ability to customise	LOW	HIGH	HIGH
Tax customisation	LOW	HIGH	HIGH
Large range of exposures	HIGH	HIGH	MEDIUM
Simplify proxy voting and administration	HIGH	LOW	LOW

How can ETFs simplify account set-up, governance and voting of assets?

In terms of administration (account opening, trading and settlement), an ETF has the same ease of set-up as any other listed equity security. In terms of governance, ETFs follow similar structures as commingled funds such as mutual funds, unit trusts etc.

These features can be of significant value and have made ETFs the vehicle of choice for many Official Institutions. To start trading an ETF, the Official Institution can use their existing list of active counterparties; most of the investment banks on the list will likely have an ETF trading desk from which the Official Institution can establish a list of ETF trading counterparties. Important account set-up matters will have already been established with the pre-existing counterparty: for example, information required by counterparties for Anti-Money Laundering (AML)/Know Your Client (KYC) purposes, account instructions, counterparty limits etc. Also, at the point of execution, it is the Official Institution's investment bank that is trading in the market. The bank might be trading as agent or principal for the Official Institution, but it is the investment bank that has the market presence – this provides a level of market anonymity to the Official Institution that can help prevent unwarranted speculation over their activities.

In contrast, a segregated mandate will require more work. For a new relationship, the fund manager will require their own AML/ KYC details, account instructions and, of course, an investment management agreement. For certain markets, registration of a foreign investor status may be needed, or in some cases, foreign investor accounts may need to be opened. As the fund manager of the segregated mandate will be using their own counterparties, the fund manager's panel of investment banks may require a separate set of AML/KYC documentation and, in some cases, require details of the Official Institution that is the beneficial owner of the account.

In short, the administrative, operational and trading simplification can make ETFs attractive for Official Institutions, particularly those investing in a new asset class for the first time.

The simplicity that ETFs provide in the administrative dimension is also apparent when considering asset governance. As a fund, an ETF is usually governed under securities regulations that are designed to provide investor protection as well as reporting transparency and consistency. For a segregated mandate, the contractual relationship with the Official Institution is determined through a freely negotiated investment management agreement. In contrast, for a regulated ETF, its structure and governance model usually has to follow a pre-determined set of rules established by a regulatory authority. Furthermore, most ETFs are required to establish a separate trustee or management board whose responsibility is to provide independent oversight over the activities of the ETF manager; Official Institutions find this additional safeguard an attractive feature for an ETF.

Another example of how an ETF can simplify fund governance is in proxy voting. Whilst some investors prefer to direct votes on their equity holdings directly, many investors find the simplification of proxy voting through the ETF manager appealing. Most ETF and fund managers will have an established framework and process for proxy voting to ensure that proxies are voted in the best interests of the fund's beneficiaries. This is discussed in more detail in the "Asset Stewardship" section.

TRADING IN ETFs — WHAT YOU NEED TO KNOW

How do you trade ETFs, and what is the difference between trading at Net Asset Value (NAV) and trading 'at risk'?

Of all the topics we address with potential ETF investors, we probably spend the most time discussing the ins and outs of the trading process. In contrast to standard open-ended mutual funds (and segregated accounts for that matter) where subscriptions and redemptions can usually be processed directly with the transfer agent of the fund provider, ETF trading is intermediated. This means that investors must engage a broker or market maker to execute a trade on their behalf. It is this important difference that allows an investor to access wider forms of liquidity and ensures that they are buying or selling the ETF close to the fair value of the underlying assets in the fund.

ETF trading takes place in what is known as the 'secondary market', either through a stock exchange or via an over-the-counter (OTC) transaction negotiated directly with an ETF market maker. The process described above is akin to trading listed equities, so investors with the infrastructure in place (e.g. existing brokerage relationships) to do that, should also be able to trade ETFs.

The 'creation' and 'redemption' of ETF shares in the primary market works in essentially the same way as any other open-ended fund: shares or units are created as investors buy the fund, and cancelled or redeemed when investors sell it. The difference however, lies in the fact that only 'authorised participants' (APs) may create and redeem units — investors cannot deal direct with the fund. The access the APs have to the fund underpins the activity in the secondary market. APs regulate the supply of ETF shares in the secondary market to meet demand from investors and are therefore key liquidity providers.

When investors need to trade a larger amount of ETF units than is available in the secondary market, the AP can address this by submitting a creation order for a block of new shares in exchange for a basket of the underlying securities or cash. This order is struck at the next available closing net asset value for the ETF. The process works in reverse if there is a large seller or an oversupply of ETF units — APs submit a redemption order and in exchange for ETF shares the provider delivers a basket of securities (or cash).

Existing shareholders in the ETF do not bear any of the costs associated with either creation or redemption trades, meaning their relative performance (using Net Asset Values) should not be impacted by primary market activity (if the ETF is passively rather than actively tracking an index). This existing investor protection in ETFs is analogous to the anti-dilution levy process used in standard mutual funds. Figure 2 depicts the primary and secondary markets for ETF trading.

Dealing with Intermediaries

The next element of the ETF trading process relates to how investors deal with the ETF intermediaries — in this case, market makers and APs — and the three common ways to execute ETF trades with a liquidity provider:

- **Risk trade:** With a risk trade, a liquidity provider will quote a market for a given ETF at a given size. For example, if a client is looking to buy or sell 125,000 shares of ETF XYZ, the liquidity provider will calculate a price at which they are willing to buy or sell the 125,000 shares. If the client finds the price agreeable, then the trade is executed on an over-the-counter (OTC) basis. The price will be driven by either the ability of the liquidity provider to find a buyer or seller of the ETF on the other side or whether they will need to create or redeem units to fill the order.

  The reason this is referred to as a 'risk trade' is because once the trade is executed, the liquidity provider assumes the market risk of the position and will work to hedge their position in order to limit their risk. This is of little concern to the client as their trade will have been executed at a pre-determined price regardless of how the shares are obtained by the market maker. This broker-to-broker network is quite active, and ETF providers can help to facilitate this where appropriate. We encourage investors to 'shop around' — market dynamics change over time as do prices quoted by market makers.

- **NAV+ trade:** Another way that investors can interact with a liquidity provider is through a NAV+ transaction, also known as a creation or redemption trade. The majority of these transactions take place between clients and liquidity providers who are set up as APs in the specific funds they are looking to trade.

  In this scenario, an investor arranges to create or redeem shares with an AP. The end price the client pays or receives for the shares is based on the next available closing NAV of

the ETF. This might not be on the same day — some ETFs, known as dealing day +1 funds, track indices where the markets are closed for much of the trading day.

The investor is charged the costs that the AP incurs in creating or redeeming the shares with the ETF provider, so the transparency level is high. This is similar to a NAV order process for traditional mutual funds. Given the nature of a NAV+ trade, market risk is accepted by the client until an order's NAV is determined.

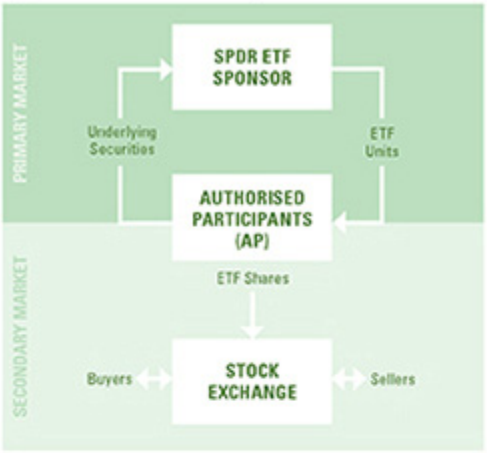
Because any market risk is taken on by the client, this can be the more cost-efficient way of transacting in a fund. It is important to note, however, that any market risk assumed by a client in a NAV+ trade, although difficult to quantify in advance, can translate into significant unintended market movement costs.

This is particularly relevant for ETFs that track benchmarks with securities that are closed for trading at the time an order is received. As such, the market can potentially move significantly (either positively or negatively) between the time a client places an order and when the NAV is confirmed the next day. For clients with a shorter term, more tactical view this market risk is less than ideal given the nature of their strategy.

- **Agency or 'equity-like':** If the ETF under evaluation has a consistently high turnover of units relative to the order size one should feel comfortable dealing in the same way as is typical for ordinary equity trades. The same considerations should apply as with trading equities, with the more liquid 'blue chip' equities being tradable throughout the entire day and the less liquid small cap equities being traded more carefully, perhaps avoiding the open and the close and usually with limit orders.

There are more than 45 official APs for SPDR ETFs[24] and a range of other liquidity providers. We also have a dedicated team — the SPDR ETF Capital Markets Group — that engages with market participants including APs, market-making firms and exchanges in order to ensure liquidity and competitive pricing for SPDR ETFs. The group works directly with both institutional and intermediary clients to provide guidance on best practice for ETF trading and execution.

Figure 2: Creation and Redemption Process



To illustrate the process, let's walk through a specific example. Suppose an AP wants to create shares of the SPDR S&P/ASX 200 Fund. First, the AP would reference a list of the exact securities and their weightings within the fund using the portfolio composition file (PCF) list from the ETF fund provider. The AP would gather those same securities in their appropriate weightings into a creation unit. Next, the AP would transfer the creation unit in kind or in cash to State Street Global Advisors in exchange for shares of the SPDR S&P/ASX 200 Fund. To complete the creation process, the AP would introduce these newly created ETF shares into the secondary market where they would be traded between buyers and sellers through the exchange.

When the AP wants to redeem fund shares of the SPDR S&P/ASX 200 Fund, they would follow the same process in reverse. In the secondary market, the AP would gather increments of fund shares into a redemption unit. Then in the primary market, the AP would deliver the redemption units to State Street Global Advisors in kind in or in cash in exchange for the underlying securities in the appropriate weightings equal to that of the redemption unit. Only APs are able to create or redeem ETF shares in the primary market.

HOW IT WORKS: Primary and Secondary Markets

Primary Market: The primary market is where securities are created. In ETF terms, this is where the contract between the AP and the ETF sponsor to create or redeem ETF shares takes place.

Secondary Market: The "stock market" and other major stock exchanges around the world, and the OTC market where investors deal directly with each other at an agreed price.

The information contained above is for discussion purposes only.

For more information on SPDR ETF liquidity providers and help navigating the nuances of ETF trading, please contact your Relationship Manager. Further information can also be found at spdrs.com.

What is the difference between the ETF price and the official NAV of the ETF? And how is the NAV of bond ETFs calculated, if some of the underlying constituents don't trade regularly?

The ETF share price is determined by trading on the secondary market. This price will reflect all of the buy and sell interest in the market at any given time.

The official NAV for most equity ETFs is calculated using the official closing price of the underlying securities (on the primary listing market for that security) as well as the cash component, which accounts for any income the fund has received minus any expenses the fund has incurred. The NAV is usually calculated or 'struck' at the end of the trading day and is calculated by the fund's custodian. The exception to this would be for funds tracking asset classes where some or all of the underlying markets are closed. In these cases, the official NAV may be struck during, before or after the trading day.

For most bond ETFs, some of which track market segments where the underlying securities do not trade regularly, the NAV is calculated using market data from a third party pricing source based on the evaluated bid for each underlying bond. In some cases the midpoint of the bid/ask spread or the best offer is used to mark each underlying bond in the NAV calculation. The way that an ETF NAV is usually calculated is consistent with the way the index performance is calculated. Any tracking divergence between an ETF and its index are usually a result of the practical realities of managing an ETF rather than differences in calculation methodologies.

Should investors use the official NAV to track performance/tracking error or should they use the closing price?

There are diverging opinions as to the best approach here. It is important to note that from a fund management perspective, the ETF sponsor is responsible for managing the NAV of the portfolio relative to an index. The traded price of the ETF itself is in many ways outside of the sponsor's control. However, we do recognise that the price of an ETF at any given time is a true representation of what the market deems the shares of the fund to be worth at any given time. In most cases, using the traded price to calculate tracking error will result in higher figures than one would get if the official closing NAV is used.

ETF Trading Glossary

Authorised Participant (AP) APs are regulated investment firms that have fully executed legal documentation, which gives them the ability to create new ETF shares or redeem existing ETF shares. Every ETF provider has different document requirements and at times providers may have different requirements depending upon the fund.

Market Maker An all-encompassing term referring to a firm that is willing to provide a price to a buyer or a seller of an ETF. A market maker may or may not be an AP.

On-Exchange Market Maker A firm that provides buy and sell prices for ETFs on a stock exchange. This includes market makers who are providing prices in an official capacity (with signed exchange documentation and certain spread, depth, presence requirements), as well as market makers who are providing prices unofficially without any exchange-imposed requirements.

Primary Market This term refers to the market in which ETF shares are created or redeemed directly with the issuing company. For SPDR ETFs, the primary market is accessed through our APs who have the ability to create and redeem shares in the funds.

Secondary Market This describes a market where investors buy and sell the assets, such as ETFs, to other investors rather than from the issuer of the assets. Large exchanges such as the London or New York Stock Exchanges are secondary markets.

Market Price The price of an asset determined by market forces. While open-ended funds are usually bought and sold at net asset value (NAV), the market price of an ETF may be different from its NAV. However, the ETF creation and redemption process is designed to ensure that ETFs will usually trade at market prices that are close to their NAVs.

iNAV Indicative net asset value is calculated by an independent agent and published throughout the trading day on a minute by minute basis. iNAV is calculated by taking into account the market prices of individual holdings in a fund. This value can be used to provide an up to the minute indication of what an ETF is worth that can be used to check investors own calculations or, by comparing the iNAV with bid-ask spreads, to see whether an ETF is being priced fairly in the market. It is important to note that iNAV is an estimation — when markets are closed or in the case of thinly traded fixed income, it may be a less relevant indicator of the underlying value of securities.

Over-the-counter (OTC) An OTC ETF trade refers to a transaction that is agreed and executed directly between an AP or Market Maker and an investor.

Bid-Offer Spread This is the difference between the best price in which ETF shares are offered for up for sale and for purchase. It is often quoted as a percentage and tends to be narrower for highly liquid ETFs.

Premium and Discounts The amount to which an ETF is trading above or below the net asset value of its underlying securities. The unique creation and redemption mechanism in ETFs generally ensures premiums and discounts to the true current value are minimal.

Broker An ETF broker executes trades on behalf of customers. The broker may or may not be an AP.

Limit Order An order with specified details as to the minimum (or maximum) price to be filled as well volume and time. A limit order is particularly useful for ETF trading.

Market Order An order in which the investor accepts whatever price is currently prevailing in the market, either for buying or selling of ETFs.

Is liquidity an issue for ETFs traded outside of the US?

ETF assets have grown rapidly to more than US$700 billion for Europe, US$270 billion for Asia Pacific (APAC) and US$3 trillion for the US.[15] The US benefits from what is essentially a single trading location and the mandatory trade reporting requirements. Its evolution has also played a part. Whereas in the US there may be only a handful of ETFs tracking a single popular benchmark index, in Europe there are often more than a dozen ETFs tracking the same index. As an example, there are three main S&P 500 ETFs domiciled in the US with total assets of about $400 billion, while there are about a dozen domiciled in Europe with total assets of around US$60 billion. Turning to APAC, there are a handful of very large ETFs that trade millions per day, but like Europe many have relatively modest published average daily volumes.

In Europe, there are two primary factors that muddy the liquidity picture for investors — **market fragmentation and the lack of a standardised approach to ETF trade reporting.** Most ETFs are primary-listed on one exchange and then cross-listed on several other exchanges.

This cross-listing feature has some significant investor benefits, the main one being that most European investors can transact in ETFs on their local exchange (e.g. the London Stock Exchange) in their local currency (e.g. pound sterling) using familiar settlement procedures.

However, this structure means that ETF liquidity is fragmented; trading is split across several locations. ETFs are not subject to the same pre-trade and post-trade requirements as other exchange traded instruments, such as equities, and in most markets there is no obligation for executed trades to be reported.[16] ETF investors currently do not have the benefit of a consolidated European order book, meaning investors are not easily able to see aggregate Average Daily Volume (ADV) for ETFs cross-listed on multiple exchanges. It also means that the onus of on-exchange pre-trade analytical work and finding the best price is borne by the ETF investor.

For example, consider an investor that is looking to purchase shares of an ETF on his or her local exchange. If the ETF is also listed on other exchanges, there is a possibility that shares are being offered on another exchange for a better price. There are many reasons why prices vary between exchanges, but it's important that investors understand that their exchange of choice might not show the full picture of an ETF's on-exchange market from a spread and volume perspective. Bloomberg's quote montage (QM) function allows investors to see a fund's consolidated ADV and relevant bid/ask spreads. This function aggregates each exchange listing of a particular ETF and lists the volume traded on each exchange as well as the relevant bid/ask spreads in each market.

Otherwise, investors can access ETF listing information via most fund providers' websites. However, estimates of European ETF activity occurring on an OTC basis range from 50% up to 90%; this means that using a fund's ADV as a gauge for liquidity is flawed. Moreover, the fact that ETFs trade OTC means that the spreads/depth shown on-exchange may be inferior to that off-screen.

We see similar dynamics in APAC, where only a handful of ETFs exhibit average daily trading volumes in the tens of millions (US dollars). While cross listing on multiple exchanges is not as prevalent in the region, much of the trading

CASE STUDY 2

The Hong Kong Government's Disposal of a Portfolio of Stocks Purchased During the Asian Financial Crisis in the Late 1990s

In August 1998, the Government of the Hong Kong Special Administrative Region (HKSAR government) acquired a substantial portfolio of Hong Kong shares during a market operation. In October 1998, Exchange Fund Investment Limited (EFIL) was established by the HKSAR government to, among other things, advise on the disposal of this portfolio in an orderly manner.

The HKSAR government chose a stock-neutral solution that would create minimal disruption to the market. An exchange traded fund, the Tracker Fund of Hong Kong (TraHK), which met these requirements and added depth to Hong Kong's capital markets, was launched in November 1999 as the first step in the HKSAR government's disposal programme.

State Street Global Advisors Asia Limited was appointed as the Manager and State Street Bank and Trust Company was appointed as the Trustee of TraHK. These appointments provided TraHK with a comprehensive solution to its needs, including portfolio management, custody, fund administration and compliance monitoring functions.

With an issue size of HK$ 33.3 billion (approximately US$ 4.3 billion), TraHK's Initial Public Offering (IPO) was the largest ever in Asia ex-Japan at the time of launch. Through the IPO of TraHK and its Tap Facility, approximately HK$ 140.4 billion (by 15 October 2002) in Hang Seng Index constituent stocks have been returned to the market.

is done OTC; meaning that, as in Europe, it can be difficult to get a true picture of ETF liquidity. At a minimum, an ETF should be as 'liquid' as its underlying securities, as creation and redemption costs should be reflective of the actual costs involved in trading the underlying basket of securities.

How might these factors impact investors wanting to trade in size, say US$100 million and above?

A trade of this size in any European- or APAC-domiciled ETF (and all but the largest US-domiciled ETFs) would likely require the Authorised Participant to execute a primary market transaction (i.e. a creation or redemption directly with the ETF provider). The most important factor, regardless of whether an ETF is European-, APAC- or US-listed, is whether the underlying index constituents can easily absorb the volume needed to trade. In most cases, ETF providers choose highly liquid underlying indices and it is this liquidity that will ultimately be accessed by the AP to create new shares to deliver to the end buyer. The investor would trade this at a risk price or NAV order as detailed earlier, both of which would likely reflect the costs involved in transacting in the underlying securities as well as the liquidity characteristics of the ETF itself.

Figure 3 highlights how this has worked in practice, using the SPDR S&P 500 UCITS ETF as a case study. Over the six months ending June 2015, the average daily volume for the LSE listing of the SPDR S&P 500 UCITS ETF was approximately US$5.2 million. However, on several days the traded volume was many multiples of that. On 12 March 2015, for instance, almost $110 million was traded, approximately 20 times the average daily volume. So while European- and APAC-domiciled ETFs may 'look' significantly less liquid than comparable US ETFs, investors can still transact in a cost effective manner, even for large orders of US$100 million and more, particularly in ETFs that track bellwether indices such as the ASX 200, FTSE All Share or S&P 500.

Should investors avoid European- and APAC-domiciled ETFs if they have no onscreen liquidity or look beyond this?

As already noted, there are several key structural reasons why European- and APAC-domiciled ETFs have lower levels of on-screen liquidity. Market fragmentation, the lack of a trade reporting requirement, lower industry assets under management and ETF provider competition have all contributed to this situation.

We encourage investors to look beyond reported ETF trade volume when assessing the liquidity of an ETF. This analysis should include an evaluation of the liquidity characteristics of the underlying securities that make up the ETF. We recognise that this level of liquidity research may fall outside the skill set of many institutional investors, particularly those new to ETFs. However, most ETF providers (including SPDR ETFs) will be able to quickly provide detailed analysis of the liquidity characteristics of both the ETF and its underlying constituents. They should be able to provide estimates as to trading costs and will be in a position to suggest the best route as investors aim for best execution. Additionally, there should be no shortage of participants (market makers and APs) willing to provide that same information. Your SPDR ETF representative will be able to help you get a full understanding of ETF liquidity.

Figure 3: SPDR S&P 500 UCITS ETFs
(Price and Daily Volume)

Source: Bloomberg. Last traded price and daily volume for SPDR S&P 500 UCITS ETF (SPYS LN), 1 Jan 2015 - 30 June 2015. Past performance is no guarantee of future results.

Reasons Why Institutional Investors Should Evaluate ETFs Domiciled in APAC and Europe:

PRODUCT SET SUITABILITY This is perhaps the most important consideration. While extensively used by non-U.S. investors, US ETFs have been designed largely with the US investor in mind. As an example, an investor looking for a euro-denominated European equity ETF or an ETF tracking the FTSE All Share will not find any ETFs domiciled in the US that fit the bill. Or an Australian investor looking for ASX 200 exposure that they can trade in Australian dollars during their working day, will not find an appropriate ETF in the US. To avail themselves of all the key opportunities in the ETF market, investors must evaluate funds domiciled in Europe and APAC, as well as those domiciled in the U.S.

TAX RATE DIFFERENTIAL Non-U.S. investors in US-domiciled ETFs should be aware that withholding tax may be applied on ETF distributions at a rate which may vary depending on the asset type of the ETF, the investor type and whether appropriate tax forms have been filed. Official Institutions in some countries are eligible for 0% withholding (on ETF dividend payments), in contrast to other types of investors that may be subject to higher rates. There are also differences in withholding tax rates applied to dividends and coupon payments on the underlying securities that make up ETFs, the result of which may make one domicile more attractive than the other. We discuss the thorny issue of tax later in more detail and as always we recommend consultation with your tax advisors and/or SPDR ETFs.

FUND STRUCTURE Most ETFs in Europe are structured as UCITS funds. This is desirable for some investors, while the ability to trade on a local exchange in local currency during European working hours is also an appealing feature of European-domiciled ETFs. APAC ETFs do not have a common structure, but the ability to trade on a local exchange in local currency is a similarly attractive feature.

In short, European- and APAC-domiciled ETFs were set up with the institutional investor in mind. We believe investors would be well served by looking beyond the simple metric of reported daily volume when analysing the investability of ETFs domiciled outside the US.

ADDRESSING SOME OF THE CRITICISMS OF ETFs

Futures-based, leveraged and inverse ETFs have been criticised as "dangerous" and failing to deliver expected returns. Is this true?

This is a valid concern. But before giving the attention that this question warrants, we should stress that these types of ETFs represent a tiny proportion of global ETFs assets, about 1% currently. They are not widely used by institutional investors such as pension schemes and Official Institutions, and are not offered by providers such as SPDR ETFs. Leveraged and inverse ETFs are arguably only appropriate for the most sophisticated short-term traders that are looking to move quickly in and out of markets.

Leveraged and inverse ETFs typically provide magnified and short exposure to the one day price movement of an underlying index only. This daily reset has significant implications for investors. As an example, if the Nikkei 225 advances 20% over two years, you might reasonably assume that a 3x leveraged Nikkei 225 ETF would generate gains of almost 60% over the same period. But you would be wrong. Leveraged and inverse ETFs are usually path-dependent in the sense that it is the 'how the market gets there' rather than the 'where the market gets to' that ultimately determines an investor's end result. Thus their suitability for anything other than very short-term trades is highly questionable at best. We would not disagree with an assessment that they should come with a 'health warning.'

ETFs that invest in futures contracts to track the price of certain asset classes — oil and natural gas are popular examples — may suffer from relatively poor long-term tracking of the underlying asset class due to the process of rolling futures contracts. As with leveraged and inverse ETFs, these are probably only suitable for sophisticated short-term traders, and those that fully understand the potential risks versus reward trade-off.

Our suggestion to most long-term investors such as charities, pension funds and Official Institutions, is to stay well away. These products have little relevance for most, and represent only a small fraction of the ETF industry. While they might provide plenty of ammunition for critics of the ETF industry, they really are little more than a distraction.

Do ETFs present significant counterparty risk, e.g. when investment banks use synthetic ETFs to offload some of their unwanted assets as swap collateral?

The biggest and most relevant risk that an investor accepts when buying an ETF offered by a major provider is the market risk associated with the underlying holdings. ETFs are no silver bullet in this regard — when managed effectively, they simply aim to deliver the return (or very nearly that) and the risks of the asset class or asset class segment they track.

In contrast, counterparty risk is a less significant risk, and one that is often as relevant for mutual funds as it is for ETFs. For those ETFs where it is an issue, most institutional providers have incorporated significant safeguards for end investors in their processes. Most have also increased the transparency of their lending policies as a result of investor feedback over the years. We describe counterparty risk and where it is relevant below:

1. **ETFs managed through synthetic replication:** Rather than buying securities directly, providers offering so called 'synthetic' ETFs enter into total return swap contracts with one or more parties: sometimes investment banks linked to the provider itself, other times with independent investment banks. The ETF return is generated through payments from the investment bank, which agrees to deliver the return of the index (less additional 'swap fees' in some cases) in exchange for receiving the return of a basket of securities purchased by the cash invested in the ETF. This basket of securities is used as collateral in case the swap counterparty defaults, but it may or may not correspond with the constituents of the index that the ETF is tracking. This collateral is usually published daily and there are often additional investor protection policies put in place by the provider such as marking-to-market and over-collateralisation of the swap.

   The main counterparty risk here is with the swap provider or providers. If one or more of them is unable to meet their obligations, then the contract — i.e. the promise to deliver the returns of the index — is in default, at which time the

collateral can be used to make investors whole. In addition to the operational burden that this would entail (likely at a time of market stress), investors run the risk of receiving a portfolio of assets (or the value of the collateral that is liquidated) that is not exactly the same as the underlying index in which the ETF tracks.

While transparency has increased significantly, ETFs managed in this fashion add a layer of complexity when compared to the physical model which is described below. Over time, the percentage of assets in synthetic products has dwindled with many investors simply ruling out synthetic products from their analysis. At State Street Global Advisors, we see nothing inherently wrong with the synthetic structure. As with everything, we encourage analysis and recommend investors think through all the potential risks of any investment product.

2. **Physically managed ETFs that engage in securities lending:** 'Physical' ETFs involve the manager going out and buying the securities — for example equities and bonds — directly, as is common in standard mutual funds. The ETF fund manager may buy all the securities of the index (known as full replication) or a subset of the securities (usually through an optimised approach for equities or a sampled approach for fixed income) with the goal of tracking the benchmark as closely as possible after all fees and costs.

   To offset some of the management costs, the ETF sponsor may put the ETF into a securities lending programme, whereby some of the underlying securities are lent out to borrowers in exchange for a fee which will help offset some of the total expense ratio (TER). There are currently over 125 US-domiciled SPDR ETFs[17], some of which currently participate in a securities lending programme. Of the 99 SPDR UCITS ETFs domiciled in Europe, we currently have 22 that participate in a securities lending programme[18]. The revenue from lending out securities is split between the ETF and the lending agent, and for UCITS and 1940s Act funds, there are explicit guidelines and investor protections that must be adhered to.

   As an example, the European Securities and Market Authority (ESMA) dictate that no revenue may be retained by the lending agent (who may or may not be an affiliate of the ETF provider), and that all revenues generated by the lending programme must be returned to the fund, save for a reasonable amount to cover the cost of running the programme itself.

   The amount of revenue retained by the lending agent/ETF provider is disclosed to the market. For SPDR ETFs, the split is 85% to the fund and 15% to the agent (for the 22 UCITS ETFs currently engaged in securities lending[19], the split is 70% to the fund and 30% to the agent). The credit risk here is that one of the borrowers of the underlying securities defaults on the loan and is unable to return the security they have borrowed from the ETF. In State Street's securities lending programme, there are significant investor protections in place to protect investors in this kind of event.

So, for an investor in the SPDR ETF to realise a loss in this situation, three key events would have to occur simultaneously:

1. the borrower would have to default while the securities are out on loan;
2. the value of the collateral held to secure the loan would have to fall below 100% of the security value when liquidated; and
3. State Street Bank & Trust would have to renege on its indemnification pledge due to it being in default or for some other reason.

The net/net of this is that investors are exposed to counterparty risk at some level, but it is nowhere near the most relevant risk to investors in ETFs.

For more details contact your SPDR Representative.

SSGA Securities Lending Investor Protections

STRONG GOVERNANCE Full oversight of the securities lending programme by SSGA's Global Investment Committee and the fund boards.

APPROVED COUNTERPARTIES State Street monitors the creditworthiness of the borrowers and only enter into transactions with approved counterparties that also meet the requirements for UCITS funds.

COLLATERAL RESTRICTIONS Only government securities issues by G10 countries with long-term ratings above A- or equivalent by one of more internationally recognised and listed global ratings agencies are acceptable.

COLLATERAL MARGIN REQUIREMENTS The collateral is marked-to-market daily. Government securities held as collateral shall not be less than 102% of the value of loaned securities, while equities held as collateral shall not be less than 105% of the value of loaned securities.

MAXIMUM LENDING LIMITS A maximum of 95% of a single security in a fund can be lent out at any one time, while not more than 70% of the total fund can be on loan at any one time. (Note, for US ETFs that utilise securities lending, 40% of the fund can be out on loan at any time.)

STATE STREET INDEMNIFICATION State Street Bank and Trust Company (SSBTC) provides a counterparty default indemnity. If a counterparty fails to return securities lent by an ETF, subject to the terms of the securities lending agreement, SSBTC would either purchase replacement securities for the ETF or would credit to the ETF an amount of cash equal to the market value of the securities.

Do institutional investors regularly lend out their ETFs to offset some of their costs? Is this practice widespread?

This is a relatively common practice, although the ETF lending market in the US is significantly more developed than in Europe and APAC.

An ETF lending transaction works in much the same way as it would for a listed equity. The lender – often an investor such as a pension fund with a stable, long-term ETF position – puts their ETF or ETFs into a lending programme run by an agent (usually their custodian bank), who lends it out to investors such as hedge funds, investment managers, banks and market makers in exchange for a fee. From a lender's perspective, the rationale is to generate a little additional income to offset some of the costs associated such as the Total Expense Ratio with their ETF position. The amount of income generated is highly variable and depends on a range of factors including general market conditions and demand/supply fundamentals. The growth in the lending market is perhaps attributable to the fact that ETFs are particularly attractive from a borrowing perspective.

There is a vast array of available exposures for borrowers enabling precise hedging and/or tactical positioning and they are easy to transact in. In addition, the creation and redemption mechanism means that ETFs closely track the net asset value and provides a means for market participants to create new shares in the ETF to satisfy demand on the borrowing side (in contrast to equities where the supply is always finite). So while this practice is not widespread currently in APAC and Europe, we think it may make sense for some long-term holders of ETFs. We also think development of the ETF lending market in APAC and Europe will bring broader industry benefits, including increased liquidity and tighter spreads.

For more information please contact your SPDR Representative or your custodian.

Do ETFs have a high tracking error? And what does the term 'tracking difference' mean?

This is certainly not true. ETFs managed by reputable providers tracking major indices are typified by very low tracking error, much in line with the results generated by other fund structures managed using physical securities. As one of the world's leading passive providers, efficiently delivering beta returns for every investor is very much part of our DNA. The primary goal of our ETF portfolio managers is to track the benchmark as closely as possible after all costs and expenses.

When considering an ETF and how it tracks its benchmark, several factors need to be considered. First, the replication method is important. Is the ETF managed using a synthetic approach (i.e. returns generated by using total-return swaps) or is it managed using a physical approach (i.e. returns generated by a portfolio of physical securities)? Generally speaking, ETFs using a synthetic approach should be able to track an index slightly better than those using a physical approach. This can be more marked in asset classes where trading costs are high (e.g. emerging market equities), although, as we noted earlier, these ETFs do expose investors to different risks.

Physically replicated ETFs managed using an optimisation or sampling approach (i.e. investing in subset of benchmark securities with similar characteristics), tend to have higher tracking errors than ETFs managed using a full replication approach (where all benchmark securities are held); however, that's not to say they are going to be markedly different from other fund structures. From a portfolio management perspective, the decision about the level of replication is always a balancing act.

On the one hand, there is the need to track the benchmark very closely – the *raison d'être** of a leading passive manager like State Street Global Advisors. On the other, there is the requirement to have a portfolio that is cost effective to trade and manage on an ongoing basis.

New ETFs tracking broad benchmarks, like the MSCI ACWI, invariably hold fewer securities than is optimal (due to the relatively small asset bases that are typical of new launches), which might lead to a slightly higher-than-desirable tracking error. This is not to say that institutional investors should not consider new funds, but they should be aware of the potential for tracking error, which will likely be higher than for fully seasoned funds.

*Purpose

CASE STUDY 3 The Alaska Permanent Fund Corporation's Investment in Smart Beta ETFs

State Street Global Advisors launched a range of smart beta ETFs in response to the Alaska Permanent Fund's desire to move towards a factor-based portfolio construction approach.

The SPDR ETFs track three separate smart beta indices developed by FTSE/Russell in conjunction with the Alaska Permanent Fund. The indices tracked by the SPDR ETFs are: the Russell 1000 Momentum Focus; the Russell 1000 Yield Focus; and, the Russell 1000 Low Volatility Focus. The indices are designed to target three common factors, quality, value and size, while further tilting towards the three 'focus' factors, low volatility, yield and momentum.

The ETF structure proved to be an efficient way for Alaska Permanent Fund to access the unique risk return characteristics of these equity factors and highlights just one of the ways that official institutions are using ETFs today.

'Tracking difference' and 'tracking error' are often mistakenly used interchangeably. Tracking difference refers to the net-of-fee performance difference between an ETF and its benchmark. This figure can be positive (i.e. the ETF outperformed its benchmark) or negative (i.e. the ETF underperformed its benchmark) and will be influenced by the level of fees and taxes, trading costs, portfolio management capabilities and the benchmark tracked (gross, net or price). In contrast, tracking error refers to the annualised standard deviation of excess returns.

It's important to point out that one gets different results for tracking error depending on the frequency of the calculations used. Annualising daily or weekly figures will usually result in much higher numbers than using monthly figures. Most ETF providers quote tracking error figures using monthly net-of-fee returns relative to the benchmark tracked. When comparing two ETFs, make sure that tracking comparisons are made on a like-for-like basis. Figure 4 shows the tracking differences and tracking errors of a range of SPDR ETFs domiciled in the US, Europe and APAC. Investors can achieve returns very close to those of the benchmark with modest tracking error using SPDR ETFs. This highlights that they are an efficient beta replication tool, on a par with other pooled fund structures and implementation vehicles such as index futures and total return swaps.

Do bond ETFs provide an 'illusion of liquidity' in often illiquid asset classes? What are the important elements of fixed income ETF liquidity? Are premiums and discounts relevant?

To answer this question, it is perhaps useful to provide some background information on the issue of fixed income ETF liquidity. The first point to make is that primary risk any investor accepts when investing in a bond ETF (or most other ETFs or funds) is investment risk – the exposure to an underlying asset with its own unique risk-return characteristics that may change over time. So, investors buying high yield or emerging markets bonds, for instance, should expect volatility – even if conditions were relatively benign when they initially purchased the assets.

With the benefit of experience gained during the Global Financial Crisis, several key regulators have flagged the liquidity characteristics of some areas of the bond market as a potential risk on the horizon.

They point to the tremendous growth of the market – up three-fold from the early 2000s to more than US$90 trillion today – combined with lower trading volumes and a significant decrease in corporate bond inventories held by US and European banks (75% and 50% lower, respectively, according to the Institute of International Finance). Regulators also note that the low-rate environment has continued to foster a global search for yield, with investors of all types increasing exposure to higher-risk and potentially less-liquid areas of the global capital markets.

These facts have contributed to fears of a disorderly market environment should investors decide to reduce their exposure to certain segments of the bond market (e.g. high yield corporates) en masse. This has been widely covered in the financial press, with some commentators and market participants (e.g. active fund managers) questioning the role that ETFs have played – from opening up previously hard-to-access areas of the market such as emerging markets bonds, to providing vehicles that offer intraday liquidity on inherently illiquid assets class segments such as high yield bonds and leveraged loans, despite ETFs still representing a comparatively small fraction of assets held in traditional pooled funds.

Figure 4: Tracking Error and Tracking Difference of Several Key SPDR ETFs

							% Tracking Annualized					
							Error			Difference		
SPDR ETF	Domicile	Inception Date	TER (%)	Benchmark	Replication Method	Securities Lending	1 Yr	2 Yrs	3 Yrs	1 Yr	2 Yrs	3 Yrs
SPDR® S&P 500 ETF	United States	Jan-1993	0.0945	S&P 500 (TR)	Physical-Full	No	0.02	0.04	0.03	-0.13	-0.11	-0.11
SPDR® MSCI Europe UCITS ETF	Ireland	Dec-2014	0.25	MSCI Europe (NR)	Physical-Full	Yes	0.12	0.13	0.13	0.13	0.13	0.11
SPDR® MSCI ACWI ETF	Ireland	May-2011	0.40	MSCWI ACWI (NR)	Physical-Sample	No	0.20	0.50	0.51	-0.30	0.52	-0.34
SPDR® S&P/ASX 200 Fund	Australia	Aug-2001	0.19	S&P/ASX 200 (TR)	Physical-Full	No	0.06	0.08	0.07	-0.24	-0.25	-0.29
SPDR® Bloomberg Barclays Aggregate Bond ETF	United States	May-2007	0.08	BBgBarc US Agg Bond (TR)	Physical-Sample	Yes	0.04	0.04	0.04	-0.09	-0.06	-0.07
SPDR® Barclays Emerging Mkts Lcl Bd ETF	Ireland	May-2011	0.55	BBgBarclays EM Local Currency Lqd Gov (TR)	Physical-Sample	No	0.07	0.22	0.20	-0.87	-1.00	-0.87
ABF Pan Asia Bond Index	Singapore	Jul-2005	0.19	Markit iBoxx ABF Pan Asia (TR)	Physical-Sample	No	0.38	0.28	0.24	-0.53	-0.51	-0.54

Source: Morningstar Direct, as of 30 June 2017. Tracking error and tracking difference calculated in base currency using monthly net of fee returns. Past performance is no guarantee of future results. *Please note, on 8 December 2014 SPDR MSCI Europe ETF was absorbed by SPDR MSCI Europe UCITS ETF, which had an equivalent and comparable investment policy and risk profile. Performance reported prior to 8 December 2014 relates to the SPDR MSCI Europe ETF.

The Key Elements of Fixed Income ETFs

- **Underlying Bond Liquidity:** This is the most relevant factor in an ETF. These characteristics change over time and, like other asset classes, depend on the size in which investors wish to transact, the time of day and general market sentiment. While some areas of the fixed income market – US Treasuries for instance – are highly liquid with daily volume in the billions of dollars, other areas of the market are significantly less liquid. The liquidity characteristics of the underlying assets should always be considered by investors before investing in any fund.
- **ETF Liquidity:** Investors in ETFs stand to benefit from the additional liquidity resulting from the exchange-traded nature of ETFs. This allows investors and market makers to buy or sell shares in the ETF on the secondary market without any bonds actually being traded in the portfolio. Comparing the average daily trading volume of an ETF to the change in the number of shares outstanding highlights this dynamic; in some cases, the daily trading volume of an ETF is in the hundreds of millions (or even billions) of dollars and yet ETF flows – either positive or negative – are negligible.

Depending on the size of the ETF and demand for secondary market trading, the spreads on the ETF may actually be tighter than the spreads on the underlying bonds. This attribute, where applicable, enables ETF investors to effectively access asset classes more cheaply than they would be able to if they were to buy the bonds directly.

Some say that the 'superior' liquidity ETFs can offer provides investors with a false sense of security. We would simply say that investors should recognise that liquidity characteristics change over time and that they are still buying a fixed income exposure, with the usual risks attached to it; the equitised nature of the ETF simplifies investing, but it does not change the fundamental characteristics of the securities the ETF holds.

So while at times, and in some ETFs, it may be possible to transact in significant size within the spreads of the underlying bonds, investors should not assume that will always be the case. ETFs, like the underlying bonds themselves, are subject to the usual vagaries of supply and demand. Where there is an excess in either supply or demand, authorised participants can create or redeem ETF shares directly with the provider, following the process described earlier. Ultimately, ETFs are simply an efficient vehicle for investors to access a range of asset classes. Their benefits should not be overblown though – if the market for US high yield bonds becomes illiquid and market values decline 20%, one should expect comparable fall in the value of the ETF.

Structural characteristics of fixed income ETFs that aid liquidity

- **Careful product design and index selection:** Most ETFs are passively managed vehicles tracking indices calculated and maintained by reputable external index providers, such as Bloomberg Barclays, Citibank and Bank of America Merrill Lynch. We partner with experienced index providers who offer high-quality, rigorous methodologies that are rules-based, and who are able to respond to market events quickly and transparently through consultation with market participants. The indices that SPDR ETFs track are usually more diversified than comparable active products, often with explicit security or issuer caps in place. We assess the liquidity of the asset class and how this risk can be managed using a clear, rules-based, transparent methodology. The high level of transparency of SPDR ETFs contrasts with the, at times, opaque processes and disclosure provided by the typical active bond manager, or the concentration of some ETFs tracking very narrow, so-called 'liquid' indices.
- **Multiple market makers and Authorised Participants:** The presence of several dozen market makers, Authorised Participants, arbitrageurs and other investors helps maintain an orderly secondary market in ETF shares. All ETFs have an official market maker who is obliged to quote prices continuously throughout the trading day, while the creation and redemption process described below helps keep the fund trading in line with what the market views as an appropriate net asset value. This is an important point. ETFs may trade while the underlying securities markets are closed or, in the case of some areas of the bond market, are somewhat illiquid. While ETFs have what is known as iNAV (Indicative Net Asset Value), which is calculated by an independent party or exchange, this does, at times, deviate from what market participants view as an appropriate price for the ETF. In this regard, you might say ETFs can act as something of a price discovery tool – they may well be reflecting a closer approximation of the true underlying value of the holdings than the iNAV or the last-reported official NAV.
- **Creation and redemption process:** The creation and redemption of ETF units underpins activity in the secondary market and helps maintain orderly trading of ETF shares. In cases where there is significant selling pressure, APs can initiate redemption orders with the ETF provider, where ETF shares are exchanged for the underlying securities and/or cash. This redemption order is struck at the next available closing net asset value for the ETF and remaining ETF shareholders do not bear any of the costs associated with it. If investors trade at risk with a market maker they are in effect transferring all market risk to the AP, while if they are trading at NAV, they bear the risk between the time of the trade and the time the next NAV is struck. Investors should be aware of the changing nature of ETF spreads. During periods of market stress, it is highly likely that spreads will widen to reflect the increased risks for market makers.

'Gating' of ETF Investors

In our view, concerns that fixed income ETF providers would regularly gate (i.e. restrict exit from funds) large numbers of investors during episodes of market 'dislocation' are unfounded. Since the first bond ETF was launched in 2004, the market has experienced several bouts of what might politely be termed dislocations, including the Global Financial Crisis, the eurozone debt crisis and the 'taper tantrum'. Providers such as SPDR ETFs

have not gated any investors and, in any case, as highly regulated UCITS and 1940s Act funds, the rules governing ETFs limit considerably a fund's ability to gate. While UCITS permits fund directors to delay any redemption request from APs that represents over 10% of the fund's assets - including where multiple trades equal more than 10% in aggregate over the course of the day – in practice this drastic step would likely only be implemented in extreme market conditions at the request of the portfolio management team, where liquidity is severely strained. Much time is spent analysing the liquidity characteristics of the underlying asset classes prior to launching an ETF and, where necessary, modifications are made to the standard indices to ensure reasonable tradability in all but the most extreme market conditions.

Almost all UCITS funds have some form of dilution mechanism to ensure that the costs of entering or exiting the funds are borne by the shareholders doing so, and not by the investors who remain. Investors should make a point of understanding in detail, the dilution mechanisms applied by their UCITS vehicle (be it an ETF or other fund structure) when investing in less liquid segments of the market.

These traits of SPDR fixed income ETFs – particularly in comparison to standard active pooled funds, which may have more opaque processes and potentially stale holdings information – should reassure ETF investors. When market conditions are volatile and risk aversion is on the rise, investors do need to be more careful when trading their positions (and expect potentially higher costs), but the very point of ETFs is that investors can access their money as needed throughout the trading day. This should remain the case going forward.

Premiums and Discounts to Net Asset Value (NAV)

The NAV of an ETF represents the total net assets of the fund expressed as a per share figure. The iNAV is estimated throughout the day, but the NAV is struck officially once a day usually after exchange trading has closed. (The exception to this would be for asset classes that are 'closed' while the ETF is trading. For more details, please consult the question on ETF NAVs.) The price of the ETF shares may fluctuate around the NAV, figure over time. When it is higher than the quoted NAV it is said to be trading at a premium; while when it is lower than the quoted NAV, it is said to be trading at a discount. Some investors are concerned about this element of ETF pricing, but our view is that the ETF may, in fact, be a more accurate reflection of the true value of the underlying assets at any point in time. The creation and redemption mechanism means that these premiums and discounts should not be significantly out of line with this value — arbitrageurs should, in theory, step in and make risk-free profits, bringing the ETF price back into line with the perceived value.

THE COSTS OF ETFs

What are the costs of investing in an ETF? Would it be more cost effective for long-term investors to use institutional pooled funds or segregated accounts?

Broadly speaking, there will be situations where institutional pooled funds or segregated accounts make more sense from an end investor's perspective and cost may well drive that decision. In our view, however, ETFs set the standard for cost transparency. All management, custody and administration costs are clearly expressed as the total expense ratio (TER) and are analogous to the ongoing charges figures (OCF) quoted in other fund structures (an annual management charge (AMC) excludes some, often significant, charges). Trading costs also need to be factored in, but these can be estimated with a high degree of accuracy before any investment, both by ETF providers and the multitude of market makers competing for business.

We recommend clients weigh up the costs and benefits of each competing fund structure. There is value in simplicity. Being able to invest virtually any amount of money at a moment's notice in a range of global asset classes with little or no additional documentation can be valuable to many organisations, even those with a very long-term investment horizon. Additionally, an institutional investor can use products from a range of providers, without having to go through the at times arduous account opening procedures at each and every provider.

Segregated account management fees are certainly likely to be lower than ETF TERs on most exposures, but investors also need to consider the other costs associated with investing via the segregated route. Custody fees, custody account opening, and costs (and time) involved in negotiating investment management agreements are often overlooked when institutional investors evaluate ETFs relative to other means of investing. Initial trading costs — be those anti-dilution levies (ADLs) on some pooled funds or initial spreads on segregated accounts — are also sometimes ignored when investors compare these structures to ETFs.

The costs that ETF investors should consider — some of which are explicitly laid out in advance and some of which are only known at the time of, or end of, the investment— are as follows:

1. **Total Expense Ratio:** this includes all management, custody, legal and administration fees. As noted already, it is analogous to the OCF figure quoted in some European fund structures. (Note: Some synthetic providers also add a 'swap fee', which is over and above the TER and changes over time. This is obviously not a factor for physically managed ETFs, such as SPDR ETFs.)
2. **Withholding and Other Taxes:** As detailed on the following pages, investors should factor in all withholding (and transaction) taxes that apply to the underlying securities in ETFs. Equity ETFs typically track indices where the tax treatment is similar — the difference being that index providers usually quote the returns net of the highest possible tax rates, whereas ETFs may be domiciled in countries that are more efficient from a tax perspective. Fixed income ETFs usually track total return or gross indices.
3. **Tracking Difference:** As noted earlier, tracking difference measures the extent to which the net-of-fee ETF total return (from a net-asset-value perspective) differs from the index return. Tracking difference can be positive or negative and is influenced by a number of variables such as trading costs and withholding taxes (particularly relevant in cases where the index being tracked assumes a different level of taxes than is applied to holdings of the ETF) and whether the manager uses a physical or synthetic approach. If the tracking difference is negative number, it is a cost that investors need to consider. The challenge here is that it will not be known in advance, and historical results can only be considered a guide. As a general rule of thumb, if the fund is fully replicated and tax treatment of the holdings is the same for both the fund and index, it should be minimal but it is a risk that investors still need to factor in.
4. **ETF Trading Costs:** As stated earlier, implementation costs are an important part of an investor's overall costs. While bid-ask spreads can be a useful estimate, we recommend that potential investors contact us to ensure they are getting an accurate picture of current trading costs.
5. **Standard Brokerage Commissions:** Brokerage and custody charges are relatively low on ETF trades, but should be considered before investment.

The above costs may be offset by securities lending within the fund, which would show through in the results over time, and, for those investors that enter ETF lending programmes, income generated from lending their ETF shares.

A few years ago, analysis showed that it was preferable to gain exposure through Delta One products like index futures and Total Return Swaps (TRS). What has changed?

The Delta One landscape has changed significantly over the last several years, and we believe ETFs are an increasingly attractive alternative for the fully funded institutional investor to gain exposure to a range of equity indices. We produced a report on

this very topic *(The Changing Landscape for Beta Replication — Comparing Futures and ETFs for Equity Index Exposure)* so for those interested in a detailed index by index comparison please see this research.

The rapid growth in ETF assets has led to lower costs and increased liquidity, particularly for ETFs tracking bellwether equity indices like the S&P 500 or EURO STOXX 50. In contrast, changes in the regulatory environment combined with a reduction in the amount of capital allocated towards various market-making activities mean that so called 'roll costs' on a range of equity index futures have risen. The long bias of many futures investors in conjunction with the generally strong equity markets, may also have contributed to the uptick in roll costs. The costs ultimately mean that equity index futures are perhaps not as efficient as they once were as a means of long-term equity beta replication. As total return swaps are priced using similar mechanisms, the trends in the futures market seem likely to have filtered through to the swaps market too.

One of the clear advantages of ETFs over futures is the sheer range of exposures available. ETFs can be used to gain broad market or targeted exposure to almost every investable asset class segment, whereas liquid futures contracts are typically only available on a few bellwether equity and fixed income indices (or maturities) and on a range of currencies and commodities.

Investors looking to implement a beta replication strategy via futures are as a result likely to be subject to significant 'basis risk' — or risk that the position does not accurately reflect their desired allocation — particularly in segments of the market where there are not liquid contracts on the commonly-used asset class benchmarks.

As an example, there has been a trend among institutional investors towards the adoption of broad market, all-encompassing indices as benchmarks for their portfolios, such as the Russell 3000 for US equities or the FTSE All Share for UK equities. However, there are not currently liquid futures contracts available on many of these indices, so investors are forced to combine futures contracts in the appropriate proportions to build a position that approximates their desired broad market exposure, or, as is more often the case, simply buy a large cap index futures contract as a proxy for the total market.

In contrast, ETF investors have a much wider choice of exposures, so they are more likely to be able to find an ETF that tracks the specific index they are looking for. And for those looking to target a more niche segment of the market, say, emerging markets small cap stocks, any replication strategy using futures is likely to result in uncomfortably high long-term tracking error. So as well as offering broad exposure, ETFs also offer targeted exposure, a useful tool for investors looking to implement a range of investment strategies from tactical asset allocation to transition management. As an example, in the US equity market, there are less than 30 liquid futures contracts compared to more than 400 different ETF exposures. This issue of investor choice is more pronounced outside of US equities, with fewer liquid futures contracts available and a more limited range of exposures compared to ETFs.

The changing beta replication landscape was reflected in the Greenwich Associates annual survey of institutional users, which noted:

> "Institutions globally are starting to replace existing derivatives positions in their portfolios with ETFs. This trend is expected to continue, with an estimated $28 billion in new ETF assets in 2020 attributed to institutions switching from derivatives. As they gain increasing experience with the funds, institutions are discovering that ETFs represent an effective source of beta. Roughly half the institutions and two-thirds of the asset managers in the study use futures to access beta, with 53% of futures users employing the products for hedging and 28% using them for fully funded long positions. Almost one-third of institutions in the study shifted from derivatives products to ETFs in the past year. About a quarter of institutions made that move to benefit from the operational simplicity of ETFs, and 15% switched due to lower costs.
>
> Looking ahead, 46% of institutions in the study intend to replace existing equity futures positions with ETFs in the coming year. Another 1 in 5 expects to replace a futures position with ETFs in fixed income and 11% plan to do so in commodities. About another quarter of study participants say they will evaluate futures positions for potential replacement with ETFs over the coming year. Of those who expect to replace derivative positions with ETFs in the next year, 44% say they will do so to lower fees and overall costs, and a quarter say they will do so to benefit from ETFs' ease of use, implementation and trading."*
>
> *Source: Greenwich Associates, 2018, Global Trends in Institutional ETFs Adoption: Drivers for Growth through 2020.

Clearly then, an increasing number of institutional investors are evaluating ETFs alongside futures as a means to gain market exposure, and many are finding that ETFs represent the more efficient tool for fully funded exposure.

What are the tax considerations for investors in ETFs?

ETFs are generally fairly tax efficient vehicles for investors, but in some cases there will be alternative fund structures or means of investing that are more tax efficient. Note also, that some fund domiciles may be more tax efficient for certain investors, such as tax-exempt pension schemes or charitable funds. Tax is a complex issue, and as always, we recommend that investors consult their tax advisors for further information. In general, however, investors should consider the following three main taxes when evaluating ETFs (and other fund structures):

1. **The Tax Rates Applied to Underlying Holdings:** This level of tax includes any deductions made by any tax authorities on distributions, such as dividends or coupon payments, made by the underlying holdings in the ETF. Other taxes may also be applicable, such as capital gains or transactions taxes. The rates may vary between ETF domiciles (e.g. the US versus Ireland) and may change over time. For some regions there are no applicable withholding taxes (e.g. UK equities and most sterling denominated bonds). Note that purchase transaction taxes such as stamp duty in the UK are applied when an AP creates new shares in an ETF, and does not impact current shareholders. Current shareholders would only be impacted by these taxes during fund rebalancing and/or trading related to index changes. All ETF sponsors should be able to provide a detailed breakdown of the relevant taxes applied at the individual security level.
2. **The Tax Rates Applied to ETF Distributions:** ETFs domiciled in Ireland, such as SPDR UCITS ETFs, are not required to withhold any tax on the distributions made to end investors. In contrast, withholding tax may be applied to distributions made from US-domiciled ETFs to non-U.S. investors. The starting point for withholding tax on ETF distributions made to non-U.S. investors is 30%, although that can be reduced through the W-8 reporting process. Some investors, such as pension schemes, may be eligible for 0% withholding on US-domiciled ETF distributions via the W-8 process due to tax treaties with the US. Non-US residents may also benefit from an exemption from US withholding tax on the portion of a distribution identified as 'Qualified Interest Income (QII)' where a US-domiciled ETF holds US corporate or treasury bonds. This means that distributions from ETFs holding US corporate and/or treasuries may not be subject to the full 30% dividend withholding tax, depending on the amount of the distribution that can be categorised as QII.

   ETFs domiciled in Asia Pacific are not generally required to withhold tax from ETF distribution made to end investors. Please consult your tax advisor or custodian for more information.
3. **The Tax Rates Applied to Gains or Income at the Individual Investor Level:** This refers to taxes levied by authorities in the investor's country of domicile and may impact both capital gains and income. These taxes are highly variable and depend on the investors specific circumstances. Please consult your advisors for more information.

   For tax-exempt Official Institutions, some ETF domiciles may be more tax efficient than others, most notably for ETFs that hold US-listed equities; US-domiciled ETFs holding US equities will not pay any withholding tax on dividends paid to the ETF. In contrast, ETFs domiciled in Ireland investing in US equities would be subject to a 15% withholding tax on dividends paid to the ETF.[20]

   However, and this is where there is scope for confusion, ETF distributions to non-U.S. holders of US-domiciled ETFs would be subject to a withholding tax of 30%[21] (if treaty rates do not apply), whereas distributions made from ETFs domiciled in Ireland are not typically subject to any withholding tax. Some tax-exempt investors, such as Official Institutions in some countries with tax treaties, should be able to reduce the tax applied to US ETF distributions to 0% through the W-8 reporting process, but others may be subject to 15% or 30% withholding. We recommend discussing this further with your tax advisors and custodians.

   So, in some cases a US-domiciled ETF may make more sense if the desired asset class includes a significant portion of US equities. However, this is very specific to the withholding tax treatment of US equities. In some cases, European- or APAC-domiciled ETFs will make more sense from a tax perspective due to the lack of withholding from ETF distributions and there is a wider and likely more relevant range of exposures available for APAC institutional investors, such as charities.

   In addition, transacting in them may be cheaper and easier due to local listings and multiple trading currencies. Investors should not underestimate the value of simplicity, time to implementation and ease of use. This highlights the need for investors to carry out thorough due diligence before investing and to be open to using ETFs domiciled in different regions.

ASSET STEWARDSHIP

As a fiduciary, we feel it is important that we engage with management teams on issues such as corporate governance and executive compensation. We like to be able to ensure proxies are voted in the best interests of our beneficiaries. Pooled funds such as ETFs make this difficult, so we have implemented stewardship policies to address this.

State Street Global Advisors takes its responsibilities as a fiduciary very seriously. Given the size of our assets under management and the global nature of our business we think our stewardship role extends beyond voting proxies and engaging with companies in which we have an investment. This also includes promoting investor protection for minority shareholders and working with companies to encourage adoption and disclosure of ESG practices.

We have a dedicated team of governance experts based in Boston and London, who are charged with implementing its proxy voting guidelines and engagement activities on a global basis. The activities are overseen by State Street Global Advisors' Investment Committee, which is responsible for approving the stewardship strategy, engagement priorities and proxy voting policies, and monitoring the delivery of objectives.

The governance team is supported by several specialists within the firm in executing their stewardship responsibilities. These include members of the proxy operations team who are responsible for managing fund set ups, vote executions, vote reconciliations, share recalls and class action lawsuits, and members of SSGA's client reporting and compliance teams.

We apply the same voting and engagement process in our ETFs as is applied across other fund structures.[25] So an investor in any fund managed by State Street Global Advisors will have their shares voted in the same way. A full overview of our activities is detailed in our Annual Stewardship Report, including Proxy Voting statistics, company engagements and; voting and engagement priorities. See Figures 5-6 for highlights.

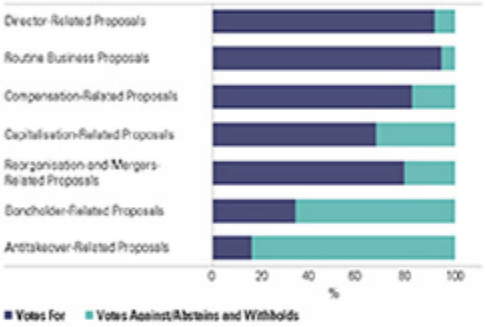
Figure 5: Proxy Voting Statistics

SSGA Voting Trends	2016	2015
Number of Meetings Voted	17,397	15,471
Management Proposals	153,749	140,313
Against Management (%)	13.9	12.1
Shareholder Proposals	4,304	3,227
Against Management (%)	10.3	13.6
Number of Countries	82	81

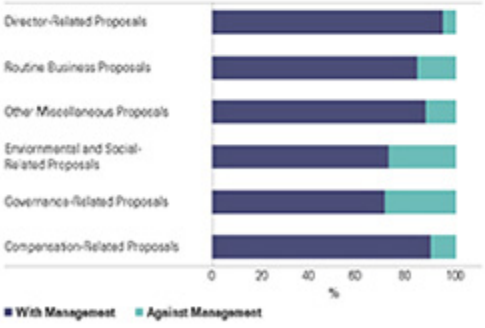
Source: SSGA Asset Stewardship Report 2016

Figure 6: Proxy Vote Breakdown by Issue

Voting Statistics on Management Proposals



Voting Statistics on Shareholder Proposals



Source: SSGA 2016 Asset Stewardship Report

NEXT STEPS

If investors decide to use ETFs in their portfolio, where should they start and how might they select the best ETF?

Give us a call in the first instance. We have a team of specialists focused on the many elements of ETFs, from sales and client service through to research and trading. At their heart, ETFs are very straightforward products both in construction and use. They also offer unrivalled transparency, so once an investor knows what they want it is relatively easy to compare one ETF to another.

It should be noted that in many cases there will be little difference between one ETF and another, except in terms of service levels, where they track major indices. A fully replicated S&P 500 ETF managed by a reputable provider with comparable fees should deliver similar results over time. However, more analysis is required on segments of the market where indices tracked by the major providers are differentiated (e.g. emerging market and, high yield bonds and dividend equities).

In general, ETFs are relatively straightforward to evaluate. All relevant information is readily available, either via the providers' websites or through various platforms such as Bloomberg, FactSet, Lipper and Morningstar, and implementation costs can be accurately estimated too.

For investors who are already set up to buy securities directly for their own account, adding the ability to trade ETFs should be a relatively straightforward process. The infrastructure is essentially the same as is used for trading equities and in most cases they can be traded on an investor's local exchange.

Investors evaluating ETFs should consider the following:

- The appropriate benchmark for a particular exposure (e.g. MSCI EMU or EURO STOXX 50?).
- The ETF sponsor's commitment to the ETF industry (and passive management more generally) and their experience in managing portfolios across a range of asset classes and time zones.
- The most efficient fund domicile from a tax and operational perspective (e.g. Luxembourg, Hong Kong, Japan, Ireland or the US?).
- The desired ETF replication method, either physical or synthetic.
- All the relevant costs, including the TER, taxes, trading costs and tracking difference/error.
- The service level provided by the ETF issuer, from pre-trade analysis through to performance reporting.

[1] Bloomberg Finance L.P., as of 31 December 2016

[2] Morningstar and SSGA, as of 31 July 2017

[3] Read The Changing Landscape for Beta Replication — Comparing Futures and ETFs for Equity Index Exposure at spdrseurope.com

[4] Read Choosing the Right Vehicle- Comparing ETFs and Futures for a Fully Funded Portfolio at spdrs.com

[5] SSGA, as of 31 July 2017

[6] Global mutual fund and ETF assets in Morningstar US Large Cap Blend, Growth and Value universes. As of 30 June 2017.

[7] Read Is Your Emerging Markets Local Currency Bond Manager Underperforming the Market? Revisiting the Active or Passive Debate on spdrseurope.com

[8] Read Emerging Market Debt: Passive Management Is On The Rise, 2016.

[9] Read Is Your Emerging Markets Local Currency Bond Manager Underperforming the Market? Revisiting the Active or Passive Debate on spdrseurope.com

[10] SSGA, as of 30 June 2017

[11] Greenwich Associates, 2016. Global Trends in Institutional ETF Adoption (as of June 14, 2016)

[12] Greenwich Associates, 2016. Global Trends in Institutional ETF Adoption

[13] Nomura, January 2017. Japanese Equities: BOJ's ETF Purchase; Bloomberg, April 2017, What Should the BoJ Do About Its Towering ETF Pile? Nothing.

[14] as of September 30 2017

[15] SSGA, Morningstar as of 31 July 2017

[16] Please note that this is set to change in 2018 when MiFID II comes into force.

[17] As of June 30, 2017

[18] SSGA, as of June 30, 2017

[19] SSGA as of 30 June 2017

[20] State Street Global Advisors, as of 31 December 2015.

[21] State Street Global Advisors, as of 28 February 2017. See Your Questions Answered about Withholding Tax for Non-US Investors in SPDR ETFs on https://uk.spdrs.com

[22] Please note, this does not apply to the SPDR S&P 500 ETF and the SPDR Dow Jones Industrial Average ETF. Due to the legal structure of these funds, the shares held are voted under "mirror voting guidelines."

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Important risk information

Investing involves risk, and you could lose money on an investment in GLD.

ETFs trade like stocks, are subject to investment risk, fluctuate in market value and may trade at prices above or below the ETFs' net asset value. Brokerage commissions and ETF expenses will reduce returns.

Commodities and commodity-index linked securities may be affected by changes in overall market movements, changes in interest rates, and other factors such as weather, disease, embargoes, or political and regulatory developments, as well as trading activity of speculators and arbitrageurs in the underlying commodities.

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

Diversification does not ensure a profit or guarantee against loss.

Investing in commodities entails significant risk and is not appropriate for all investors.

Important Information Relating to SPDR Gold Shares Trust ("GLD®"):

The SPDR Gold Trust ("GLD®") has filed a registration statement (including a prospectus) with the Securities and Exchange Commission ("SEC") for the offering to which this communication relates. Before you invest, you should read the prospectus in that registration statement and other documents GLD has filed with the SEC for more complete information about GLD and this offering. Please see the GLD prospectus for a detailed discussion of the risks of investing in GLD shares. When distibuted electronically, the GLD prospectus is available by clicking here. You may get these documents for free by visiting EDGAR on the SEC website at sec.gov or by visiting spdrgoldshares.com. Alternatively, the Trust or any authorized participant will arrange to send you the prospectus if you request it by calling 866.320.4053.

GLD is not an investment company registered under the Investment Company Act of 1940 (the "1940 Act") and is not subject to regulation under the Commodity Exchange Act of 1936 (the "CEA"). As a result, shareholders of the Trust do not have the protections associated with ownership of shares in an investment company registered under the 1940 Act or the protections afforded by the CEA.

GLD shares trade like stocks, are subject to investment risk and will fluctuate in market value. The value of GLD shares relates directly to the value of the gold held by GLD (less its expenses), and fluctuations in the price of gold could materially and adversely affect an investment in the shares. The price received upon the sale of the shares, which trade at market price, may be more or less than the value of the gold represented by them. GLD does not generate any income, and as GLD regularly sells gold to pay for its ongoing expenses, the amount of gold represented by each Share will decline over time to that extent.

For more information, please contact the Marketing Agent for GLD: State Street Global Advisors Funds Distributors, LLC, One Lincoln Street, Boston, MA, 02111; T: +1 866 320 4053 spdrgoldshares.com

Actively managed funds do not seek to replicate the performance of a specified index. An actively managed fund may underperform its benchmark. An investment in the fund is not appropriate for all investors and is not intended to be a complete investment program. Investing in the fund involves risks, including the risk that investors may receive little or no return on the investment or that investors may lose part or even all of the investment.

The values of debt securities may decrease as a result of many factors, including, by way of example, general market fluctuations, increases in interest rates, actual or perceived inability or unwillingness of issuers, guarantors or liquidity providers to make scheduled principal or interest payments; illiquidity in debt securities markets; and prepayments of principal, which often must be reinvested in obligations paying interest at lower rates.

Foreign (non-U.S.) Securities may be subject to greater political, economic, environmental, credit and information risks. Foreign securities may be subject to higher volatility than U.S. securities, due to varying degrees of regulation and limited liquidity. These risks are magnified in emerging markets.

Equity securities may fluctuate in value in response to the activities of individual companies and general market and economic conditions.

While the shares of ETFs are tradable on secondary markets, they may not readily trade in all market conditions and may trade at significant discounts in periods of **market stress**.

Investments in **Senior Loans** are subject to credit risk and general investment risk. Credit risk refers to the possibility that the borrower of a Senior Loan will be unable and/or unwilling to make timely interest payments and/or repay the principal on its obligation. Default in the payment of interest or principal on a Senior Loan will result in a reduction in the value of the Senior Loan and consequently a reduction in the value of the Portfolio's investments and a potential decrease in the net asset value ("NAV") of the Portfolio.

Investing in high yield fixed income securities, otherwise known as "**junk bonds**", is considered speculative and involves greater risk of loss of principal and interest than investing in investment grade fixed income securities. These lower-quality debt securities involve greater risk of default or price changes due to potential changes in the credit quality of the issuer.

Dividend paying securities can fall out of favor causing securities to underperform companies that do not pay dividends. Changes in dividend policiesof companies may adversely affect fund performance.

Passively managed funds hold a range of securities that, in the aggregate, approximates the full Index in terms of key risk factors and other characteristics. This may cause the fund to experience tracking errors relative to performance of the index.

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* Assets under management were $2.61 trillion as of June 30, 2017. AUM reflects approx. $34.06 billion (as of June 30, 2017) with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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