Product Guide

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A GUIDE TO FIXED INCOME STRATEGIES AND ETFS

STATE STREET GLOBAL ADVISORS.

INVEST IN BONDS. TRADE LIKE EQUITIES.



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C.\$100 TRILLION Size of Global Fixed Income Market* \$500 BILLION Fixed income ETF assets* 0.5% of the total global bond market

THE FIXED INCOME LANDSCAPE HAS CHANGED

2015 saw the greatest increase in fixed income ETF assets on record, and investors continue to seek greater choice and liquidity to combat lower yields from their traditional fixed income portfolios.

Today, investors have a dizzying array of fixed income ETFs to choose from. We believe a clear, targeted range is key. At State Street Global Advisors, our range of SPDR® ETFs includes exposures we know investors need in their portfolios and that cross the spectrum of risk, diversification and yield.

Our comprehensive suite covers all segments of the yield curve across government and corporate bonds, from the three major currencies, and with a single, consistent index methodology.

The wider range also includes a number of innovative fixed income products, including the first and one of Europe's largest local currency emerging market debt ETFs, and the world's first passive global convertible bond fund.

^{*}Source: ETFGI. as of 30 November 2015.

Why Fixed Income ETFs?

ETFs make ideal building blocks for a core fixed income allocation.

COST EFFICIENT

One single, transparent TER for easy implementation.

LIQUID AND TRANSPARENT

ETF fixed income shares trade intraday on an exchange, so investors can buy and sell efficiently with price and holdings transparency.

DIVERSIFIED

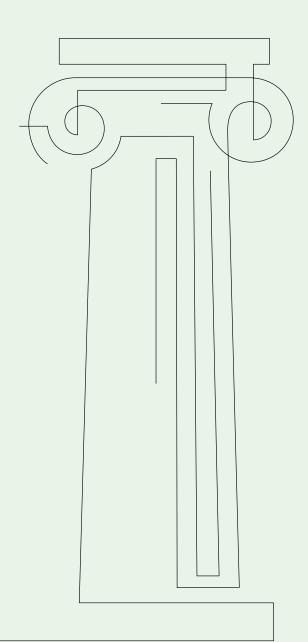
Gain diversified exposure to an entire bond market in a single trade.

FLEXIBLE

Quick exposure to fixed income market factors, such as credit or interest rates.

PRECISE

Focus on specific segments of the yield curve or gain targeted exposure to regions or sub-asset classes.

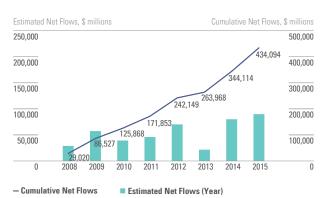


WHO USES FIXED INCOME ETFS?

Institutional and smaller investors alike use fixed income ETFs for strategic long-term core exposures, short-term tactical exposures, access to niche markets, and as a tool for diversification and liquidity management.

The number and range of fixed income ETFs has increased rapidly in recent years, providing institutional investors with a greater set of implementation opportunities. They are able to build broadly diversified, global fixed income portfolios cost-effectively and transparently, rather than needing to employ specialist active bond managers or access the underlying over the counter ('OTC') bond market directly. After all, why trade multiple, illiquid bonds directly OTC when one fixed income ETF holds the same issues in one single share — with one single TER?

Figure 1: Cumulative Flows in Fixed Income ETFs Globally Have Grown by 40% Annually Since 2008



Source: Morningstar, as of 31 December 2015.

The sustained low rate environment of the last several years has contributed to a global search for yield. Institutional investors, with their typically large fixed income portfolios, have been front and centre of this trend and have found that ETFs are an attractive way of gaining exposure to hard to access areas of the market, such as high yield, convertible bonds, or emerging markets bonds, often at a significantly lower cost and with more transparency than actively managed alternatives.¹

Investor Uses of Fixed Income ETFs

Large institutional asset allocators — such as pension funds, insurance companies, mutual funds/investment trusts, private wealth managers and banks — as well as smaller investors, use fixed income ETFs for:



"Growth in fixed income ETFs has been strong in recent years, generating net inflows of 25% during 2014 and 16% during the first nine months of 2015."

EY Global ETF Survey 2015: A Positive Force for Disruption²

State Street Global Advisors: A Leader in Fixed Income Investing

SSGA has been managing fixed income solutions for investors for over 30 years. Our global team of over 60 investment professionals is based in investment centres in London, Boston, Singapore, Sydney and Tokyo, and manages over \$270 billion³ in assets under management.

After pioneering the development of ETFs in 1993, SSGA's SPDR range has become a market leader. We've sustained our position by listening carefully to what investors need. We build ETF exposures that we know are needed in investors' portfolios and that cross the spectrum of risk, diversification and yield.

The SPDR range of European-domiciled fixed income ETFs includes global, government, investment grade corporate, high yield corporate and emerging market bonds, as well as more targeted exposures that have historically only been available through active management.

For example, for investors seeking niche passive exposure to emerging market local debt or convertible bonds that is managed cost efficiently and in the UCITS structure, SPDR ETFs provide one of the few (or only) alternatives to actively managed funds. The range includes the first and one of the largest emerging market local debt funds in Europe (SPDR Barclays Emerging Markets Local Bond UCITS ETF) and the world's first and only passive global convertible bonds fund (SPDR Thomson Reuters Global Convertible Bond UCITS ETF).

Our Investment Process: Pioneering Stratified Sampling Methodology

Our fixed income SPDR ETF portfolios are constructed to reflect the index as closely and as economically as possible. Many broad market indices include a large number of securities, many of which are not available for purchase. Illiquidity or transaction costs can mean that full physical replication of the index is either impossible or not economically attractive. All strategies that cannot be fully replicated are therefore managed by stratified sampling, which is a technique to build a portfolio with the same characteristics as the index using quantitative and fundamental methods.

SSGA has pioneered stratified sampling methods which aim to match the benchmark's defining characteristics in various market environments. Stratified sampling is based on stratifying or dividing an index into manageable risk elements such as curve risk, currency risk and quality risk.

We believe stratified sampling is the most efficient fixed income index management technique for constructing broad fixed income index portfolios where the number of constituents is too high and liquidity is often too great a constraint to permit semi or full replication. Our market experience confirms that sampling techniques produce better results compared to model-based optimisation methodologies.

Global Trading Platform

At SSGA, the breadth and depth of our fixed income capabilities provide deep insight into the markets and helps ensure best execution. Our fixed income portfolio managers work closely with our dedicated trading desk to ensure low transaction costs and identify pools of liquidity.

GLOBAL TRADING DESK IN PLACE FOR OVER 15 YEARS

24-Hour Trading Capabilities, with Traders Located in Boston, London and Hong Kong

30 TRADERS WITH OVER 13 YEARS' AVERAGE EXPERIENCE

2.3 Million Tickets Executed Annually

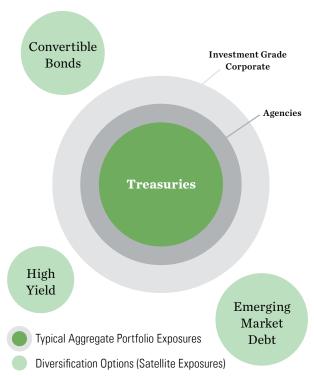
Source: SSGA, as of 31 March 2015.

PORTFOLIO CONSTRUCTION

Core fixed income strategies generally concentrate on investment grade bonds, which carry relatively little risk of issuer default. Developed treasury bonds can be issued by governments and have been considered relatively safe, but in the current low growth and low yield environment they offer low expected returns. Investment grade corporate bonds offer more competitive interest rates, although they carry a higher risk of default than government bonds.

Investors can diversify their core fixed income portfolio by asset type, region, and maturity.

Figure 2: Core Aggregate Portfolio of Investment Grade Securities and Potential Diversification Options



Asset Types

Aggregate Bonds

The aggregate bonds universe includes all investment grade issues ranging from sovereign and regional issuers to corporations. This universe also includes securitised products which makes it the broadest universe of its kind within the fixed income ecosystem.

There are different ways to generate alpha around such a diverse universe, for example, through sector allocation, curve or duration allocation, quality/rating allocation. Selecting individual securities is also possible but given the high number of securities in the universe (more than 9,000 in the US Aggregate and more than 4,000 in the Euro Aggregate) this can be a challenging alpha source.

Treasury Bonds

In recent years the bond landscape has changed significantly in terms of sovereign risk and yield, with core 10 year bond yields falling to historical lows. Moreover, market volatility and events such as the eurozone crisis have highlighted the risks of countries with a high debt burden on a global government bond exposure.

However, while it is true that some corporations have lasted longer than some states, on the whole governments are more stable thanks to their ability to tax and claim assets, rather than going bankrupt like a corporation. For most investors, including exposure to UK, US and European government bonds remains an essential part of core portfolios.

Source: For illustration only. Diversification does not ensure a profit or guarantee against loss.

Investment Grade Corporate Bonds

Investment grade corporate bonds are those with a credit rating above BBB-, which means they have historically had a relatively low risk of default. The thirst for yield and income has pushed investors to seek extra yield from corporate debt. Traditionally less liquid, this universe has witnessed many developments over the past 10 years with the amount of bonds in issue in the US dollar investment grade corporate market increasing to \$4.2 trillion from \$1.7 trillion over the period to 31 December 2015; while the euro investment grade corporate bond market almost doubled to €1.4 trillion from €780 billion. This has led to a significant shift across portfolios as treasury yields collapsed. With the emergence of sovereign credit risk since the financial crisis, and with negative yields now the norm, this market segment should continue to see inflows from investors seeking income and basic portfolio diversification.

Region

To add portfolio diversification to a core fixed income portfolio, investors can start diversifying away from their home market and allocate to global or regional bond universes in order to gain exposure to different interest rates and economic sector developments.

Global Bonds

- · Global Aggregate
- · Global Treasury
- Global Investment Grade Corporate

Global investment grade indices will primarily include developed markets as part of their inclusion rules. The global treasury and global aggregate universes tend to be well-diversified in terms of exposures. However they also include a growing exposure to negative yielding markets that may warrant moving from home biases towards more regional types of exposures.

Meanwhile global investment grade corporate exposure is also often used for diversification, but investors should be aware that three currencies account for more than 90% of this universe (namely, US dollar bonds, euro bonds and sterling-denominated bonds).

Regional/Domestic Currency Bonds

While global allocations are useful for diversification purposes, they may also expose investors to undesirable areas of the market. In this context, looking at regional indices such as those issued in US dollars, sterling or euro can be an additional way to diversify risks while satisfying the search for yield.

It is worth noting that in the fixed income space, indices are grouped by the currency of issuance rather than purely by the country of domicile. This means that a euro corporate bond index typically includes issuers from the US or UK, even if the majority of issuance comes from eurozone country-domiciled corporations. Conversely, the US investment grade corporate bond index typically includes issuance from corporations not domiciled in the US.

Manage the Yield Curve

Duration management — always important in fixed income investing — is now a high priority for many investors. The longer the duration of a portfolio the more sensitive it is to changes in future interest rate expectations. Meanwhile, the front ends of many sovereign curves are exhibiting negative yields, impacting the future of expected returns. For example, Figure 3 illustrates that all bonds issued by the German Treasury with a remaining maturity of less than nine years exhibit negative yields.

This is why many investors are increasingly seeking to manage their duration exposure. In this approach, investors aim to efficiently allocate across the curve in order to manage duration exposure based on their own constraints (such as liability, volatility) and/or specific views about economic cycles and inflation outlooks.

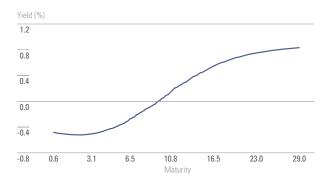
Maintaining a balanced, diversified and flexible portfolio with a range of duration exposures is of increasing importance in investors' portfolios.

What is duration management?

A yield curve is a graphic depiction of yields of similar-quality bonds against all maturities, ranging from shortest to longest, from 0-30 years (for example, the German sovereign bond yield curve shown in Figure 3). The shape of the curve is largely influenced by the policies of central banks, as well as all factors that affect interest rates, such as economic growth, inflation, supply-demand and international events.

Duration management, therefore, is an investment strategy to invest across the entire yield curve or only in certain segments, depending on an investor's view of the factors above.

Figure 3: German Sovereign Bond Yield Curve



Source: SSGA, Barclays as of 24 February 2016. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

Why is managing the yield curve important?

Monetary policy in both the US and Europe remains a source of potential risks. With the Federal Reserve now tightening policy, it has never been more crucial to understand the impact of previous hiking cycles on US bond markets.

Meanwhile in Europe, over the course of 2016 it is likely that eurozone government bonds will not only be influenced by macroeconomic developments, but also by the impact of quantitative easing ('QE') on the supply/demand side of the market.

When markets are turbulent, investors often withdraw assets and keep this in cash or low-duration exposures while waiting for the markets to calm down. Duration risk and credit risk remain vital considerations for any investor; having the flexibility to invest in specific segments of the curve will be crucial in navigating this environment.

How can investors implement duration management in their portfolios?

There are different ways to manage duration. One approach involves using interest rate futures. However, these instruments may not represent the breadth and precise maturities of the yield curves in the way an investor could be seeking. Often only a few maturities are truly liquid, which means investors are less able to express their macroeconomic views in a sufficiently granular way.

ETFs are therefore playing an increasingly important part of the bond portfolio management ecosystem. They offer transparent, liquid and cost-efficient access to specific segments of the yield curve, providing diversification across dozens of bonds in one easy trade. The SPDR Fixed Income ETF range enables investors to target distinct bond maturities across EUR, GBP and USD-denominated currencies.

This balance can be achieved both in a treasury portfolio as well as in a corporate bond portfolio.

Depending on the depth and breadth of the underlying market, i.e. the number of issues available, treasury yield curves tend to be broken down in the following maturity buckets:

1-3 years 3-5 years 5-7 years 7-10 years 10+ or 15+ years (or 10-20 years and 20+years, for increased granularity)

These allow investors to precisely position their portfolios based on their view of factors such as inflation, issuance and market sentiment.

Strategies that take advantage of the shape of the yield curve can also be implemented, such as playing on the flattening or steepening of the curve by avoiding certain parts of the curve in favour of others.

In the credit space, indices can be broken down into broader maturity buckets in order to avoid excessive turnover while targeting a desirable yield and duration profile. For example:

- Short-dated bonds 0-3 years
- Intermediate-dated bonds 3-10 years
- Long-dated bonds 10+ years

These exposures allow investors to position their portfolios according to duration when seeking to benefit from a tightening of credit spreads due to greater interest rate sensitivity. In the current low yield environment, these may also be valuable opportunities for long-term incomeseeking investors to consider.

SPDR is now the only ETF provider in Europe to offer a complete suite that covers all the maturity segments of the yield curve across government and corporate bonds, from the three major currencies, and with a single, consistent index methodology.⁴



MANAGING INTEREST RATE RISK WITH ETFS

'All Maturity' indices maintain an average maturity over time. Investors can under- or overweight their All Maturity exposure to position for changes in the yield curve with short or long duration ETFs. ETFs are an efficient tool that can be used in conjunction with other investments to construct a portfolio with the desired yield and duration characteristics.

Moving a portion of a portfolio's fixed income allocation from longer duration funds to shorter duration funds can shorten overall portfolio duration, decreasing sensitivity to the negative effects of rising long term rates. With rates set to increase in the US and eventually in Europe, many investors have been looking to short-dated bonds as a means of reducing their overall interest rate risk by diversifying their longer term duration bond holdings.

At the same time, in order to avoid negative yields in euro treasury portfolios, some investors are adopting a 'barbell' strategy of investing in long-dated treasuries and adding credit risk with shorter duration bonds.

The chart below plots indices across the SPDR ETF Fixed Income range, highlighting their yield as well

as their interest rate risk. We can observe the following:

- Short maturity treasury indices can exhibit negative yield while exposing investors to interest rate risk should curves normalise post the negative interest rate policies that some central banks are moving towards.
- Long-dated treasury indices offer significant duration with the potential to outperform but only have a thin yield buffer to protect against a rise in rates.
- Investment grade corporate bonds offer a more sensible trade-off despite a recent increase in credit spreads.
- **High yield and emerging market debt** offer the most attractive long term risk-reward profile: yield will prevail against interest rate risk but at a significantly higher potential of default rate risk—this remains the conundrum of diversification assets in general.

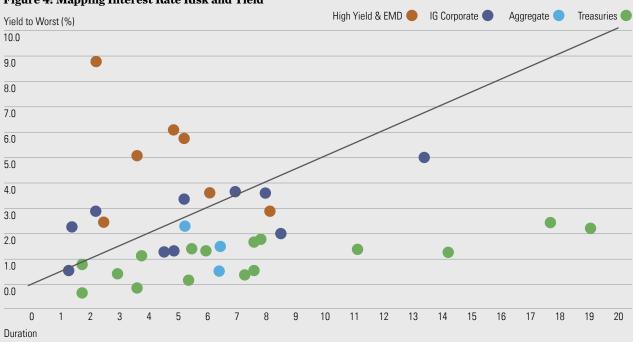


Figure 4: Mapping Interest Rate Risk and Yield

Source: SSGA, Barclays POINT as of 29 February 2016. Characteristics as of the date indicated are subject to change and should not be relied upon as current thereafter.

Why ETFs for your Core Fixed Income Portfolio?

ETFs make ideal building blocks for a core fixed income allocation.

ACCESS

Fixed income ETFs offer investors instant exposure to an asset class that has historically been illiquid and difficult to access.

FLEXIBILITY

Investors have a huge choice of ETF exposures with which to overlay their portfolio. Making subtle moves in duration, credit quality or currency can be done quickly and with ease.

LIQUIDITY

Many investors hold a percentage of their portfolio in ETFs; since they are at least as liquid as their underlying holdings and may also provide additional layers of liquidity, they allow for effective cash management.

PRECISION

The SPDR range of investment grade ETFs tracks a single index family (Barclays) for its government and corporate bond funds, ensuring no overlaps or duplication of bonds between segments.

COST EFFICIENCY

Fixed income ETFs offer competitive spreads on exchange and in the primary market and one simple, transparent TER fee. The SPDR range offers access to investment grade government bonds at 0.15% TER, aggregate bonds at 0.17% and corporate bonds for 0.20% TER or less. 5

0.15%
Investment Grade

Government Bonds

O. J. TER Aggregate

Bonds

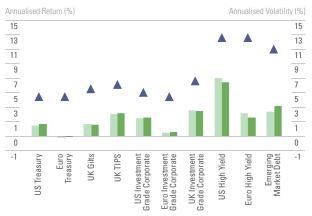
O 20%
Corporate
Bonds

FIXED INCOME DIVERSIFICATION

Fixed income allocations of government bonds used to be considered the easy way to build a portfolio for yield purposes: allocations were adjusted according to the investor's return expectations and risk tolerance. However, this is no longer possible for European investors — low potential returns are the harsh reality of the 'lower for longer' environment.

Indeed, looking at past performance and expected returns, investors face tough decisions in seeking to gain potential positive expected returns. The expected return forecasts of SSGA's Investment Solutions Group point towards low annualised returns for the upcoming five years. This will likely push investors to adapt the risk profile of their portfolios in order to gain positive yield and potentially positive returns.

Figure 5: Medium-Term Forecasts in Local Currency



■ 1 Year ■ 5 Years ▲ Long Term Risk

Source: SSGA Investment Solutions Group, 31 December 2015. Annualised returns and volatility forecasts. Forecasted returns are based upon estimates and reflect subjective judgments and assumptions. These results were achieved by means of a mathematical formula and do not reflect the effect of unforeseen economic and market factors on decision-making. The forecasted returns are not necessarily indicative of future performance, which could differ substantially.

Given the importance of fixed income assets in achieving long-term investment goals, we believe it is an opportune time to apply some different thinking to bond allocations.

Diversification within fixed income can be summarised as diversification across:

- **Geography and currency** (i.e. US, Europe, Emerging Markets)
- Sub-asset classes

 (i.e. corporate, high yield)
- Maturity segments (i.e. short, intermediate and long-dated)

ETFs provide the flexibility to employ a nimble asset allocation style across:

TREASURIES AGGREGATES CORPORATE INVESTMENT GRADE HIGH YIELD AND EMERGING MARKET DEBT CONVERTIBLE BONDS

Asset Types

- · High Yield Bonds
- Emerging Market Local Currency Debt
- Emerging Market Hard Currency Debt
- · Convertible Bonds

High Yield Bonds

In a 'lower for longer' environment, high yield bond ETFs have been growing in acceptance as an additional tool to generate higher returns. As high yield bonds are rated below investment grade, they carry a higher risk of default but yields will typically be high thanks to the higher coupon rates offered to compensate for the additional risk. As ever, investors should take care to fully understand the risks before investing; a focus on the index construction and inclusion rules will be key to any due diligence. These rules model the sector, quality, and maturity breakdown of the index, and impact return expectations in different market environments (e.g. weight of financials, energy, and duration).

Emerging Market Local Currency Debt

Emerging market local currency debt offers additional yield enhancement potential while also providing diversification benefits, and is becoming increasingly popular for inclusion in portfolios alongside core exposures.

Investors usually consider allocations to emerging market local currency debt in their portfolios for the following reasons:

- · Portfolio diversification
- · Currency diversification
- · Return potential

EM local currency debt returns have generally exhibited very low correlations with those of developed bond markets and eurozone bond markets particularly. The importance of diversification was highlighted during the eurozone debt crisis when sovereign creditworthiness and debt sustainability came into sharp focus.

Investors may consider tilting sovereign bond portfolios away from weak growth, and the ultralow yields of European government bonds, towards economies with higher yields, declining inflation and better debt dynamics.

Emerging Market Hard Currency Debt

Issuers from emerging markets, in particular corporations and some less developed sovereigns, tap into issuance in hard currency (such as the US dollar) or non-domestic currency. This is either due to their domestic currency's lack of convertibility or because there is a need for a sovereign or a corporation from these countries to fund projects with a more liquid currency.

These indices are akin to credit indices and tend to include both investment grade as well as high yield issuers. They are often USD-based, as this has been the issuance currency of choice over the past few decades. Some euro issuance does exist as well but overall it tends to remain much smaller.

Default risk exists as issuers are more vulnerable to external shocks such as a rapid devaluation of their currency versus the US dollar, for example.

4,000

3,000

2,000

1,000

0 Dec 2005 2007 2009 2011 2013 Dec 2015

Hard Currency Sovereign
Hard Currency Corporate
Local Currency Inflation Linked

Figure 6: Emerging Market Debt Issuance

Source: Source: Barclays, JPMorgan, SSGA as of 31 December 2015.

Convertible Bonds

Investors of all sizes use global convertible bonds as a strategic and tactical means to seek to enhance the more traditional components of their portfolio returns. Historically, it has been expensive and difficult for all but the most sophisticated investors to access this market directly, but exposure can now be found through more efficient routes, such as mutual funds and ETFs.

Some investors allocate to convertible bonds for the following reasons:

- To seek to increase returns in their fixed income portfolio
- To reduce drawdown risk and volatility in their equity allocation
- Some investors consider convertible bonds to be a hybrid instrument and manage this exposure out of their multi-asset or alternative allocations

This varied approach to the asset class illustrates the diversification benefits that convertible bonds can add to many different asset allocation models.

In a world that is expected to experience increasing economic and policy divergence, volatility may remain higher than in previous periods. Convertible bonds tend to benefit in this environment thanks to the embedded optionality of the instrument.

RISK AND RETURN DIVERSIFICATION

Over the long term, returns will likely come from investors shifting part of their portfolios towards higher risk exposures, as the divergence in terms of expected long-term returns between safer and riskier assets is expected to increase (see Figure 5: Medium-Term Forecasts in Local Currency).

ETFs can allow investors to tactically and strategically allocate to these riskier categories to enhance portfolio returns in a transparent, flexible and cost-efficient manner.

SPDR ETFs offer investors transparent, diversified and cost effective exposure to High Yield, Emerging Market Corporate Debt, Emerging Market Debt (Local Currency and Hard Currency) and Convertible Bonds.

Figure 7: Risk-Return and Diversification — Average monthly risk-return since 31 December 2005



Source: SSGA, Bloomberg, Barclays POINT, Thomson Reuters. Average monthly risk return since 31 December 2005. Past performance is not a guarantee of future results. The index returns are unmanaged and do not reflect the deduction of any fees or expenses. The index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income.

Why ETFs for Portfolio Diversification?

Whether investors are seeking strategic or tactical portfolio diversification, ETFs may be an effective choice for portfolio management.

NICHE EXPOSURES

For investors seeking passive, flexible and cost-efficient exposure to niche markets, ETFs may be the only passive product available. The SPDR range includes a number of ETFs that track markets previously only available through active management, such as global convertible bonds.

NIMBLE ASSET ALLOCATION

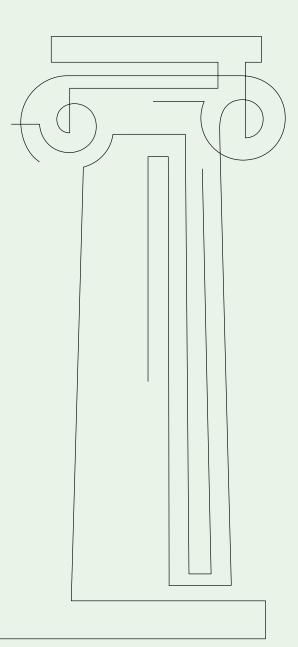
Segments such as emerging markets can be volatile, but the liquidity of ETFs makes them an effective tool for under- or overweighting exposures when the markets turn.

TRANSPARENCY

A passive approach may help lessen the risk of holdings overlap or overexposure to various regions, issuers or durations in your portfolio, thanks to the transparent nature of ETFs. This can be particularly important when portfolio diversification is key.

COST EFFICIENCY

One simple, transparent TER fee, even for niche market exposures.



MANAGEMENT

Many institutions have begun to look for new ways to manage their liquidity requirements, partly due to the strict capital requirements and constraints of today's financial environment. Since fixed income ETFs trade like equities, they can provide an additional layer of liquidity for investors.

The liquidity resulting from the exchange-traded nature of fixed income ETFs allows investors to buy or sell ETF shares on the secondary market without having to access the underlying bond market.

The Liquidity Paradigm of **Fixed Income ETFs**

Since the 2008 financial crisis, institutional use of fixed income ETFs has increased exponentially, elevating ETFs' secondary market liquidity, while individual bond liquidity has declined.

Similarly, bond issuance has surged in the last few years, even while trading and managing fixed income allocations has become more difficult due to the scaled back involvement of investment bank trading desks. As a result, we've seen a shift from single issue to ETF basket trading as a natural by-product.

Figure 8: The ETF Eco-System and Relationship with Liquidity

Retail Investors Institutional Investors **Proprietary Traders ETF Market Makers** APs/ Participating Dealers

Increasing levels of on-screen liquidity

Secondary Market

Primary Market Liquidity depends on the securities' underlying liquidity.

How Do Fixed Income ETFs

Offer Liquidity?

Due to their open-ended structure, fixed income ETFs offer liquidity through both the primary and the secondary markets, which are defined as follows:

- Primary market transactions are those that result in the creation or redemption of new ETF units. These take place off exchange and directly involve the ETF manager. The liquidity in the primary market is derived from the liquidity of the underlying securities, and large transactions can be processed without causing a market impact. The value of impact varies between funds and depends on the liquidity profile of the underlying securities, but in general, the primary market offers a greater depth of liquidity to facilitate larger block transactions.
- **Secondary market transactions** are those involving the purchase and sale of existing ETF units. These typically take place on-exchange - although they also include bilateral OTC block trades — and do not involve the ETF manager. Historical volumes traded in the secondary market provide an indication of recent activity. It does not provide a comprehensive measure of the potential liquidity of the ETF given the availability of larger block liquidity in the primary market.

Liquidity through brokers in secondary market trading.

Sourcing liquidity through authorised participants for creation/redemption (either due to size or investor preference).

Why is a Centralised Secondary Market Important?

The fixed income ETF market is centralised on an exchange, in contrast to the fragmented and inefficient OTC bond market.

This aspect of secondary market liquidity is a driving force behind increased fixed income ETF use. For instance, one benefit is the on-screen liquidity of ETFs that track niche areas of the market, such as high yield, and which trade at tighter spreads than the underlying basket of constituents. This dynamic generally leads to increased volume in the secondary market.

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. For example, the spreads on the SPDR ETFs in Figure 9 all trade tighter than the underlying basket of 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.

Finally, a central exchange order book brings efficiency and less counterparty risk to a complex and fragmented OTC market.



Figure 9: ETFs May Offer the Potential for Price Improvement

Source: SSGA, Bloomberg. Average on exchange spreads as at 9 February 2016.

What are the Liquidity Benefits of the Fixed Income ETF Structure?

The structural characteristics of fixed income ETFs further aid liquidity:

- The liquidity of fixed income ETFs help to provide a framework during volatile markets. We have seen high yield ETF volume and credit spreads move in tandem during periods of volatility, acting as a price discovery tool for market participants when the underlying bond markets might not be reacting as quickly.
- The indices that SPDR ETFs track are usually more diversified than comparable active products, often with explicit security or issuer caps in place.
- The high transparency of SPDR ETFs contrasts with the, at times, opaque processes and disclosure provided by the typical active bond manager.
- The transparency of ETFs also make them an attractive alternative to credit default swaps, which are highly opaque. ETFs are traded on a public exchange, are centrally cleared and are supported by baskets of cash bonds.
- The presence of several dozen market makers, authorised participants, arbitrageurs and other investors helps the ETF to trade in line with the underlying bond portfolio.

Investors should remember, however, that ETFs are simply an efficient vehicle for accessing the bond markets. If the market for US high yield bonds becomes illiquid and market values decline, for example, one should expect a similar fall in the value of the ETF.

The Mechanics of ETF Pricing

ETF sponsors use bid prices of individual bonds to calculate their fixed income ETF NAVs. In contrast, individual bonds and ETFs typically trade closer to the midpoint between the bid and ask (a bid price is lower than a midpoint in the bid/ask relationship). As a result, fixed income ETFs generally trade at premiums to their NAVs.

During times of market stress and/or heavy selling pressure, ETFs may trade at discounts, conveying market sentiment and reflecting the risk market makers face to sell the underlying cash bonds. In periods of stress, ETF shares trading on the exchange reflect the current consensus of the ETF's value, established by many investors. In contrast, many individual bonds do not trade on a given day. This could cause the ETF shares to appear to trade at a discount to the NAV as the NAV may be slower than the market to react to price volatility.

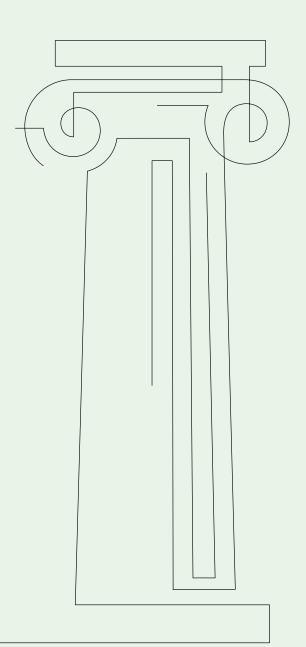
Fixed Income ETFs as a Price Discovery Tool

ETFs can act as a price discovery tool as a result of their transparency, liquidity and efficient trading. For example, some high-yield bonds do not trade regularly on the secondary market. However, ETFs that track those markets do trade regularly. During periods of higher volatility, the on-exchange and more transparent secondary market for ETF shares will display the market's sentiments earlier than the over-the-counter and more fragmented trading of the high yield bond market.

At SSGA, we are continually searching for new ways to help authorised participants and market makers analyse the underlying markets and manage the creation and redemption process more efficiently. Recently, SSGA worked with Bloomberg to establish a new set of analytic tools for fixed income ETF trading. These tools aim to address the lack of standardisation for valuing, quoting and trading fixed income ETFs. The result is the first comprehensive solution for the primary market of fixed income ETFs, and automates the process of creating and redeeming baskets.

Bloomberg subscribers can access more information via BSKT<GO> on the Bloomberg Professional service.

For more information about the Bloomberg Fixed Income ETF Basket Tool contact SPDR's Capital Markets Group at SPDRsEuropeCMG@ssga.com or +44 (0)20 3395 6888.





CHOOSE A GLOBAL LEADER FOR YOUR FIXED INCOME SOLUTIONS

The right exposures

We build exposures we know are needed in investment portfolios and that cross the spectrum of risk, diversification and yield. Our range of fixed income ETFs allows investors to easily build core exposures and diversify across regions, maturity segments, and sub-asset classes.

A focus on liquidity

Flexible dealing models and the development of efficient tools such as BSKT on Bloomberg allow Authorised Participants to offer deeper liquidity at a low cost to ETF investors.

Consistent index methodology

Barclays' index methodology across the government and corporate bond range ensures no duplication or overlap.

Global fixed income specialists

SSGA has over 30 years' experience managing passive fixed income products, with over \$270 billion⁶ in AUM and over 60 fixed income investment professionals.

Precise

Diversified beta exposure across all maturity segments from three major currencies (USD, EUR and GBP).

Fixed Income ETF Tools on Bloomberg

Investors need to understand yield, the underlying constituents and the bid-ask spread of potential fixed income ETFs when constructing portfolios. There are two Bloomberg tools that investors can use for efficient portfolio analysis and construction – the PORT and YAS functions.

PORT Portfolio Analytics and Risk

Provides risk/scenario and performance analysis of an ETF's underlying portfolio.



Source: Bloomberg, 29 February 2016. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

YAS Yield and Spread Analytics

Uses Internal Rate of Return (IRR) methodology for calculating an ETF's metrics such as yield to worst, duration, convexity and spreads in relation to various benchmarks.



Source: Bloomberg, 29 February 2016. Characteristics are as of the date indicated, are subject to change, and should not be relied upon as current thereafter.

GLOSSARY

Authorized Participant (AP)

Financial institutions responsible for the creation and redemption of ETFs that play a key role in ETF liquidity.

Bid-Offer Spread

This is the difference between the best price in which ETF shares are offered up for sale and for purchase. It is often quoted as a percentage.

Credit Rating

The credit rating is an important signal of the ability of the borrower to meet their debt obligations. Credit ratings are issued by ratings agencies such as Standard & Poor's® (S&P®), Moody's and Fitch, and reflect the risk of investing in the issuer. The higher the credit rating, in general, the lower the amount of risk associated with the investment. Using the S&P scale, anything between AAA and BBB- is considered 'investment grade', and anything below BBB- is classified as 'speculative', sometimes referred to as 'junk bonds'.

Interest Rate/Coupon Rate

The coupon rate is the annual interest rate paid to the investor, calculated as a percentage of the face value. In this example, the amount received as a coupon payment would be $5.00\% \times 100$ face value = \$5 per year. The coupon rate can be fixed (usually paid semi-annually) or floating (usually paid quarterly). For floating coupons, the rate is expressed as a margin (in basis points) over a reference rate. If paid quarterly, this is usually the 90 day Bank Bill Swap (BBSW) rate.

Issuer

The issuer of the bond is the borrower of money who is responsible for repaying the investor the amount borrowed (plus interest), at the end of the loan period. The more financially secure the issuer is, the more confident an investor will feel about receiving their expected payments.

Market Maker

Professional traders that buy and sell ETFs and provide liquidity to the fund.

Maturity Date

The date the issuer is required to repay the par value to the investor. Bonds are generally issued with a minimum of one year to maturity, however the date can be as long as required, assuming investors will lend money to the issuer for that period.

Net Asset Value (NAV)

The price of a share determined by the total value of the securities in the underlying portfolio, minus any liabilities.

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.

Par Value/Face Value/Principal

The face value of the bond represents the amount an investor will be paid on maturity of the bond. It is also the principal amount that is used to calculate regular coupon payments.

Premium and Discount

If an ETF is trading above its NAV, the ETF is said to be trading at a premium. If the price of the ETF is trading below its NAV, the ETF is said to be trading at a discount.

Primary Market

The market where APs create and redeem ETF shares in-kind or in cash, known as creation units.

Secondary Market

The market in which ETF shares that currently exist are traded on exchanges between investors.

¹ Source: SSGA, Bloomberg. Based on actively managed funds and ETFs as of 31 January 2016.

² To view the full report, please visit: www.ey.com

³ As of 31 December 2015.

⁴ Source: SSGA, Bloomberg, Morningstar, as of 31 January 2016.

⁵ Source SSGA, as at 31 January 2016.

⁶ Source: SSGA, of 31 December 2015.

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