White Paper
Fixed Income

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Credit Indices

Closing the Fixed Income Evolutionary Gap

Street Global Advisors SPDR® ETFs and MarketAxess

Contents

Introduction

Fixed income markets are evolving at pace, with smarter electronic trading protocols, more sophisticated, automated investment strategies and a greater availability of useful data.

Fixed income indices, though, have lagged behind to this point, having yet to adopt to some of the newer protocols and advances in data. Enhancements in portfolio management techniques however, along with secondary market trading of listed products have helped to increase investor demand for index products and have improved market access for a range of investors. While fund managers navigate this mismatch, a differential exists between the liquidity of an index and the liquidity of the funds that track those indices. During the market turmoil of March 2020, this differential of liquidity was highlighted when fixed income ETF prices proved to be leading indicators of price movements, as liquidity in some of the underlying bonds dried up, leading to a dislocation in underlying index pricing and that of fixed income ETFs. For those investors prioritizing liquidity, incorporating some of the benefits of electronic trading and increased data capture, these new innovative liquidity-focused indices should prove beneficial by increasing transparency and leading to lower premiums and discounts for the products that track them.

In this paper, we explore this small but important evolutionary gap: how, with the launch of the new MarketAxess US Investment Grade 400 Corporate Bond Index, a more data-driven approach to indexation is paving the way for improved index and portfolio construction, and why greater innovation in indexation will be a catalyst for further market development.

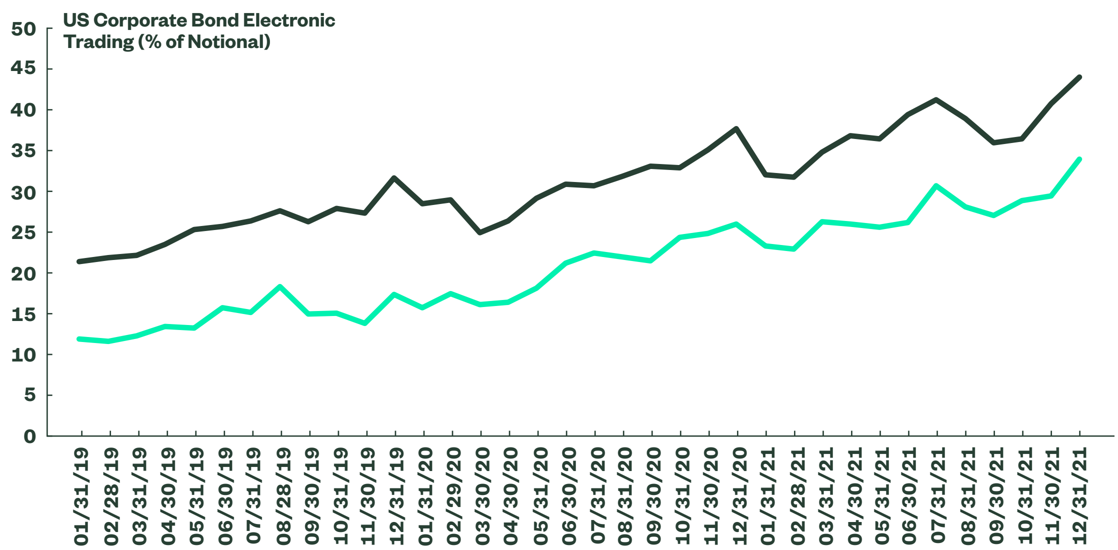
A Changing Fixed Income Market

Total US corporate debt outstanding reached over $12 trillion at the end of 2021. The bulk of that debt is US investment grade (IG), where the market now trades something in the region of 20,000 CUSIPs — nearly double the number traded just ten years ago. In that same period, the percentage share of electronic trading of those CUSIPs has nearly tripled, and according to Coalition Greenwich data is set to surpass 40% in 2022.[1]

> Market structure evolution is never complete: it's a continuum.
>
> —Chris Concannon, President & COO, MarketAxess

Figure 1
Investment Grade Corporate Bonds Percent of Average Daily Volume (ADV) Traded Electronically

US Investment Grade
US High Yield



Source: Coalition Greenwich. As of December 31, 2021.

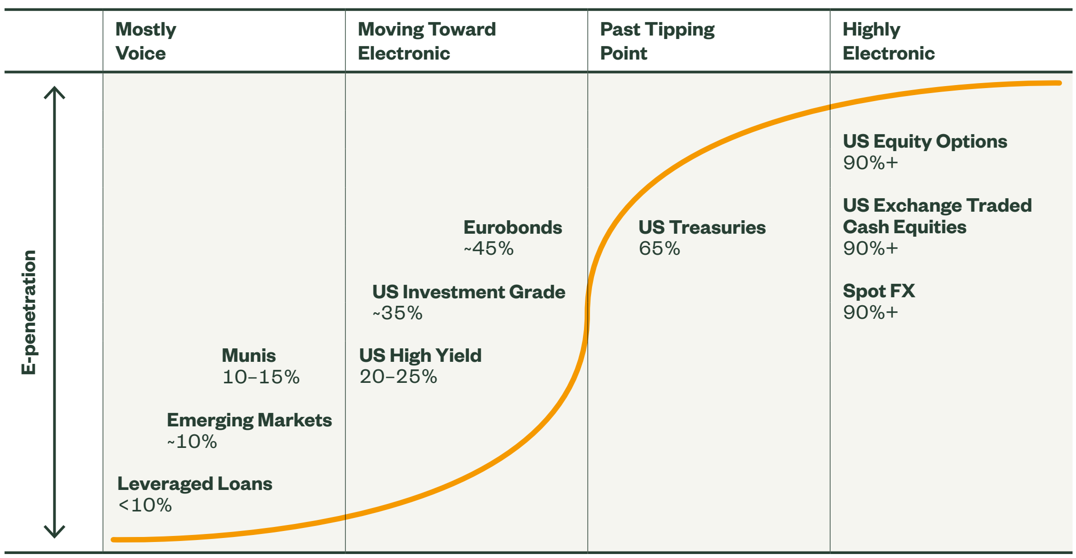
US IG tends to lead the way for electronification in fixed income, but across sectors, instruments and market participants, adoption of smarter, more sophisticated electronic trading platforms and protocols is on the rise. Some examples to illustrate this point:

- Portfolio trading has gone from <1% of electronic US corporate bond trading to around 7–8% at the end of 2021[2]
- Automated execution protocols are gaining in popularity — MarketAxess Auto-X volume increased by 30% year over year 2020 to 2021[3]
- The dynamic of market participants has changed — we see far more trading activity from alternative liquidity providers like ETF market makers and hedge funds than ever before[4]

As debt issuance increases and more players join the trading ecosystem, so does the need to trade fixed income in more intelligent, more efficient ways.

That said, the pace of change has not been uniform. Credit markets are still fragmented and over the counter (OTC). The liquidity dynamics and product complexity of fixed income make it harder to price and trade large swathes of the market. While US IG may be leading the charge for electronification, segments like emerging markets, munis and leveraged loans are still largely voice traded, client to dealer. As Figure 2 shows, compared to other asset classes there is a lot of runway still to go.

Figure 2
Discrepancies in Levels of Sophistication Illustrate Growth Opportunities



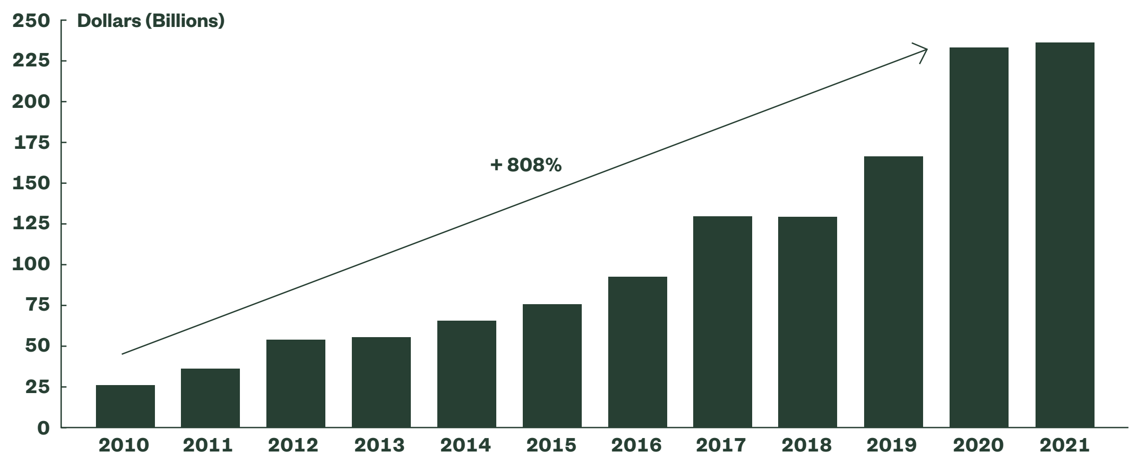
Source: FINRA TRACE, TRAX, Coalition Greenwich, McKinsey & Company, Celent, MarketAxess Estimates, as of December 31, 2021.

Index Investing and ETFs: An Evolutionary Accelerant

The increasing popularity of index investing and fixed income ETFs has the potential to turbo-charge (and indeed, already is turbo-charging to some extent) the next phase of our evolution.

The reach and impact of passive investment strategies over the last few decades is a well-documented story. But once again, the application of index investment strategies in fixed income has had much slower pick up. This is now changing. In June 2021, Pensions & Investments estimated that index fixed income assets under management (AUM) are up by over 90% in the last five years.[5] Similarly, credit ETFs have grown their share of the fixed income market. Figure 3 shows that US investment-grade corporate bond ETFs grew to around $225 billion as of end 2021, up from a mere $25 billion back in 2010.

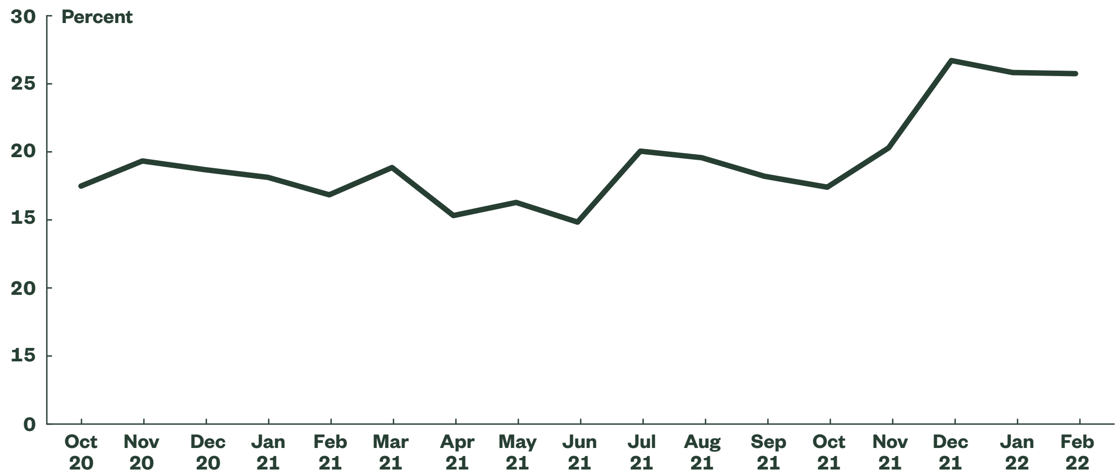
Figure 3
Investment-Grade Corporate ETF AUM Has Risen Steeply



Source: State Street Global Advisors|SPDR as of December 31, 2021.

More importantly, the last few years have highlighted just how important ETFs are in helping to maintain market stability and operational efficiency. Various studies conducted in the aftermath of the COVID-19 crisis concluded that fixed income ETFs had helped to provide reliable indicators of market prices and had thus supported market liquidity in times of stress.[6] Indeed, the importance of credit ETFs as a source of liquidity are evident in the numbers below — trading volume in credit ETFs in the first three months of 2022 equated to over one quarter of the notional volume traded in the underlying bond market.

Figure 4
Corporate Bond ETFs to Cash Ratio



Source: Greenwich MarketView, Activ Financial, as of February 28, 2022.

ETFs act as a tool for price discovery and accessible liquidity. They also act as an entry point into the corporate bond market for many (highly automated) non-bank liquidity providers, as credit ETFs offer a natural market hedge and the ETF creation/redemption process acts as a de facto liquidity source. The entrance of these firms is similarly helping to increase levels of accessible liquidity across electronic trading platforms. So the ETFs, and therefore the indices on which they are based, are acting as an evolutionary accelerant.

Dealing With the Illiquid Tails

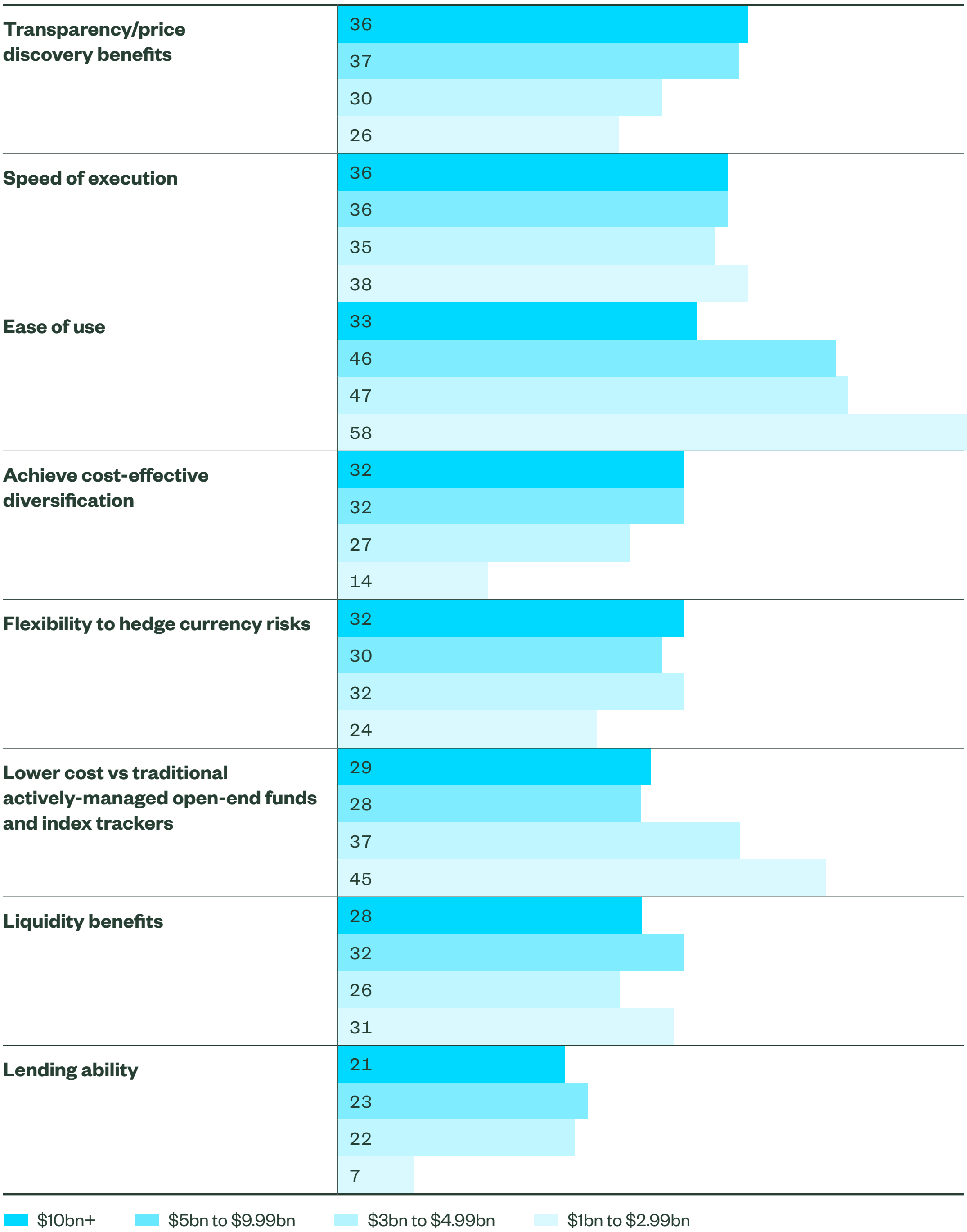
As demand for fixed income ETFs continues to grow, so does the demand for new ETF use cases, greater overall execution efficiency and greater transparency into the liquidity of the indices against which the ETFs are benchmarked.

Credit investors have already experienced improvements in efficiency and liquidity as markets have become more electronic. Credit market structure overall has evolved significantly in the last ten years, with vast improvements in data depth and quality, execution protocol choice, and breadth and depth of liquidity. Up to this point, indices have not kept pace with that evolution.

One of the more widely followed US IG corporate bond indices is comprised of more than 6,500 securities. A popular US high-yield corporate bond index includes almost 2,000 securities.[7] These indices, and many like them, were originally created to provide comprehensive, top-down representation for a long-only audience. The significant issue they present is that, even for those labelled “liquid” (which may still include over 1,000 bonds), they contain illiquid tails of bonds that make pricing, sourcing and hedging more difficult. They also make it much harder to manage the tracking between the credit ETFs — which don’t need to buy every bond in the index — and their indices. ETF asset managers employ techniques to manage tracking, such as using sampling strategies. While this has reduced tracking error, it also adds complexity to the ETF create and redeem process, leading to reduced opportunities for arbitrage and increasing the difference between the net asset value (NAV) and where the ETF is trading.

In the spring of 2021, State Street Global Advisors polled over 300 institutional investors on the factors driving their increase in allocations to fixed income ETFs. Figure 5 outlines the responses.

Figure 5
Factors Driving Increased Allocations to Fixed Income ETFs



Source: State Street Global Advisors. Respondents asked to select up to three choices. Does not include respondents who selected "No appetite to increase use of ETFs." N=348.

For larger funds, transparency and price discovery benefit were a key driver while for smaller funds, "ease of use" held widespread importance. In short, transparency, liquidity, and tradability are critical drivers of ETF adoption.

What this shows is that dealing with these illiquid tails in indices is the key. We must bring greater depth and quality of data — both for individual bond pricing and for real-time, actionable liquidity — into the index construction process. Then we can support the tradability of the index through the use of new and enhanced electronic trading protocols (such as portfolio trading and all-to-all execution) and the development of new liquidity-enhanced, index-linked ETFs.

Making Liquidity the Center of a New Index and ETF Universe

In late 2021, MarketAxess created a new index, the MarketAxess US Investment Grade 400 Corporate Bond Index. It is the first US corporate bond index to use liquidity as the primary index construction criteria. This index was created to eliminate the illiquid tails as well as to ensure that the index constituents are bonds of higher relative liquidity. Its construction allows the portfolio manager to track the underlying market (much like a broader index), while allowing the execution desk to easily hedge with little or no basis risk (much like an index credit default swap). The index, and any product benchmarked to it, can be priced in real time.

Underpinned by intelligent data and analytics, the way the index measures the liquidity of a constituent bond is fairly straightforward:

1 The index checks the liquidity score of the bond, using a proprietary MarketAxess metric called Relative Liquidity Score (RLS, see page 11 for more details). This is essentially a measure of the ease with which a trader can expect to transact the bond. Only bonds that score a seven or higher for this RLS are considered for inclusion in the index.

2 The index further screens the availability of real-time pricing for the bond, using MarketAxess's AI-driven pricing engine Composite+ (CP+, see page 11 for more details). A bond must have a real-time two-sided CP+ price to be included in the index.

The liquidity and price discovery features of the MarketAxess US IG 400 Corporate Bond Index mean that an ETF built to track the index should be able to offer improved price transparency and increased tradability alongside other related fixed income assets. It should also offer enhanced efficiency in the ETF creation/redemption process — delivering benefit to liquidity providers and investors by delivering tighter intraday pricing closely linked to real bond values and achievable real-time NAV. A fund based on this index could be utilized in a number of exciting use cases for investors — ranging from a tactical trading tool to adjust credit and risk, to providing a relative value trading vehicle.

Measuring Realizable Liquidity

Liquidity assessment has traditionally been more art than science. Inefficiencies in fixed income market structure — fragmented end-of-day bond pricing, lack of real-time transactable levels, limited trade reporting data — have led to perceived inefficiencies in fixed income ETFs. But electronic trading has flipped that on its head.

Today, electronic trading platforms offer robust, real-time datasets that, coupled with traditional market data, can be used to quantify liquidity more precisely. Using tools like the ones described below, we can more effectively use liquidity as a criterion for asset allocation frameworks and portfolio construction.

MarketAxess Relative Liquidity Score (RLS) RLS quantifies the liquidity of a bond relative to other securities. The model used is calculated from actual transaction data and covers nearly 32,000 bonds daily, scoring each instrument on a scale of one — least liquid — to ten. The MarketAxess 400 US IG Corporate Bond Index only takes bonds with a score of seven or higher. A higher RLS means not only a higher response and hit rate on request for quotes (RFQs), but also a tighter bid-ask spread, as measured by Composite+.

MarketAxess Composite+ (CP+) Composite+ is an award-winning pre-trade pricing engine that uses machine learning to update bond prices every 15–60 seconds, covering 90–95% of global trading activity in its markets.[8] CP+ provides a two-way and mid-market price for over 32,000 bonds daily.

CP+ employs three distinct sources of bond trading data:

- Earlier Trade Reporting and Compliance Engine (TRACE) prints
- Indicative bond price data streamed by dealers
- RFQ responses sent by liquidity providers via the MarketAxess trading platform. This includes responses sent through our global open trading all-to-all trading network.

Not only does MarketAxess see all executed trades, but it also sees inquiries that never materialize into completed trades. This unique level of transparency into market supply, demand and pricing dynamics allows MarketAxess to provide both actionable bond prices as well as liquidity scores that can help not only traders, but also portfolio managers as they select the right securities to implement their investment strategy.

Relative Liquidity Score
US High Grade, December 2021

Liquidity Score	Avg Daily # of CUSIPs With Scores	Avg Daily Unique CUSIPs on TRACE	% of Total TRACE Volume	Annualized TRACE Turnover (%)	Average Daily # of Block Trades on TRACE	MKTX Hit Rate (%)	MKTX Avg	Respond Rate CP+ Bid Ask Spread (bps)
10	327	290	22.0	99.8	271	89.9	13.9	1.82
9	517	464	17.9	70.4	177	90.3	13.9	2.17
8	824	714	18.0	56.2	157	88.1	13.0	2.39
7	1059	847	15.3	46.7	129	84.5	11.9	2.80
6	1226	863	10.8	38.8	81	79.6	10.5	3.22
5	1053	649	6.3	29.9	47	73.6	9.0	3.68
4	832	403	3.3	23.4	18	67.6	7.7	4.99
3	901	379	2.6	18.5	14	62.8	6.7	4.94
2	1116	358	1.6	12.5	6	54.0	5.6	5.71
1	3535	649	0.7	5.7	1	34.1	4.4	5.63

Closing the Gap

The credit market has made numerous evolutionary leaps forward in the last decade, with electronic trading and index investing being the primary drivers. Advances in technology and data quality, plus the emergence of new market participants, have led investors to expect more liquid markets, more transparent pricing and easier access to both the funds and individual bonds they need to implement their investment strategy.

In addition, while electronification may not yet have fully addressed what is still an imperfect market structure, the increased data and transparency it brings is allowing investors to add more sources of alpha into their portfolio construction, and to spur additional evolution and innovation in fixed income ETFs.

The MarketAxess US IG 400 Corporate Bond Index, the first corporate bond index to use liquidity as a primary index construction criteria. The index is designed to bring improved liquidity, transparency, and pricing accuracy to a part of the credit market that has lacked them to this point. We expect that buy- and sell-side firms will find countless applications for the index, ranging from portfolio construction, risk management and hedging strategies to inventory and balance sheet management, relative trading value and securities lending.

Credit markets are critical to the functioning of the global economy. Ensuring that these markets are liquid for issuers, traders and investors alike will ultimately drive more investment in the sector, reducing borrowing costs and ensuring that all corners of the market can develop, grow and ultimately flourish.

Endnotes

1 Coalition Greenwich, as of December 31, 2021.

2 MarketAxess, Trace. As of December 31, 2021.

3 MarketAxess, Trace. As of December 31, 2021.

4 MarketAxess. As of February 2022.

5 Pensions & Investments: “Passive assets rise 35.9% to $20.87 trillion on strong returns”. As of November 21, 2021.

6 Coalition Greenwich, “ U.S Capital Markets Performance During COVID”. As of December 22, 2020.

7 Bloomberg Finance, L.P., as of February 2022.

8 2019 Winner of Waters Technology Rankings Award for Best Artificial Technology Provider.

About MarketAxess

MarketAxess operates a leading electronic trading platform that delivers greater trading efficiency, a diversified pool of liquidity and significant cost savings to institutional investors and broker-dealers across the global fixed-income markets. Nearly 1,900 firms leverage MarketAxess' patented technology to efficiently trade fixed-income securities. MarketAxess' award-winning Open Trading® marketplace is widely regarded as the preferred all-to-all trading solution in the global credit markets.[8] Founded in 2000, MarketAxess connects a robust network of market participants through the full trading lifecycle, including automated trading solutions, intelligent data products and a range of post-trade services.

About State Street Global Advisors

For four decades, State Street Global Advisors has served the world's governments, institutions and financial advisors. With a rigorous, risk-aware approach built on research, analysis and market-tested experience, we build from a breadth of active and index strategies to create cost-effective solutions. As stewards, we help portfolio companies see that what is fair for people and sustainable for the planet can deliver long-term performance. And, as pioneers in index, ETF, and ESG investing, we are always inventing new ways to invest. As a result, we have become the world's fourth-largest asset manager* with US $4.14 trillion† under our care.

* Pensions & Investments Research Center, as of December 31, 2020.
† This figure is presented as of December 31, 2021 and includes approximately $61.43 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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Glossary

Investment-Grade Credit A fixed income security, such as a corporate por municipal bond, that have a relatively low risk of default. Bond-rating forms, such as Standard & Poor's, use different lettered descriptions to identify a bond's credit quality. In S&P's system, investment grade credits include those with "AAA" or "AA" ratings (high credit quality), as well as "A" and "BBB" (medium credit quality). Anything below this "BBB" rating is considered non-investment grade.
Volatility The tendency of a market or security to jump around in price. Volatility is typically expressed as the annualized standard deviation of returns. In modern portfolio theory, securities with higher volatility are generally seen as a riskier due to higher potential losses.

Important Information

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.
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There can be no assurance that a liquid market will be maintained for ETF shares.
Bonds generally present less short-term risk and volatility than stocks, but contain interest rate risk (as interest rates raise, bond prices usually fall); issuer default risk; issuer credit risk; liquidity risk; and inflation risk. These effects are usually pronounced for longer-term securities. Any fixed income security sold or redeemed prior to maturity may be subject to a substantial gain or loss.
The value of the debt securities may increase or decrease as a result of the following: market fluctuations, increases in interest rates, inability of issuers to repay principal and interest or illiquidity in the debt securities markets; the risk of low rates of return due to reinvestment of securities during periods of falling interest rates or repayment by issuers with higher coupon or interest rates; and/or the risk of low income due to falling interest rates. To the extent that interest rates rise, certain underlying obligations may be paid off substantially slower than originally anticipated and the value of those securities may fall sharply. This may result in a reduction in income from debt securities income.
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