

Going Digital: Evolution and Innovation in Fixed Income Markets

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The arrival of electronic trading systems has transformed fixed income markets over the past few decades. The intersection of technology and data in fixed income trading will change how investment managers uncover value in fixed income and construct portfolios.

The development and adoption of electronic trading systems have substantially transformed fixed income markets over the past few decades. Electronic trading provides greater insight into liquidity data and pricing, in addition to faster and more efficient access to market liquidity.

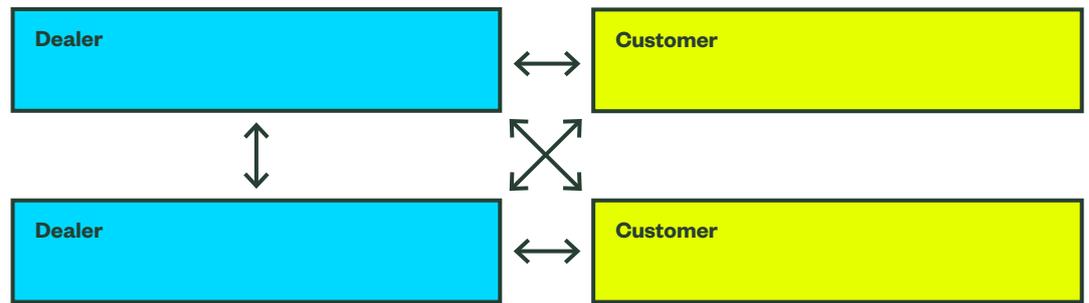
Technology has driven the evolution and innovation within fixed income markets. Information sharing, data analysis, counterparty identification, and order transactions occur today in a highly timely, seamless, and efficient manner. The pandemic accelerated the trend of electronic trading and we expect technology and data advancements to continue to shape the industry.

The implications for investors promise to be very meaningful. Improving efficiency in fixed income markets will increasingly erode the alpha opportunity, which will unleash opportunities for indexing and systematic investing. Ultimately, how fixed income securities trade and the intersection of technology and data have important implications for how investment managers uncover value in fixed income, and how they construct portfolios. In this article, we explore how fixed income markets and trading have evolved, highlighting key features of market efficiency and implications for investors.

**Fixed Income Market:
Historically Opaque,
Ever-Evolving**

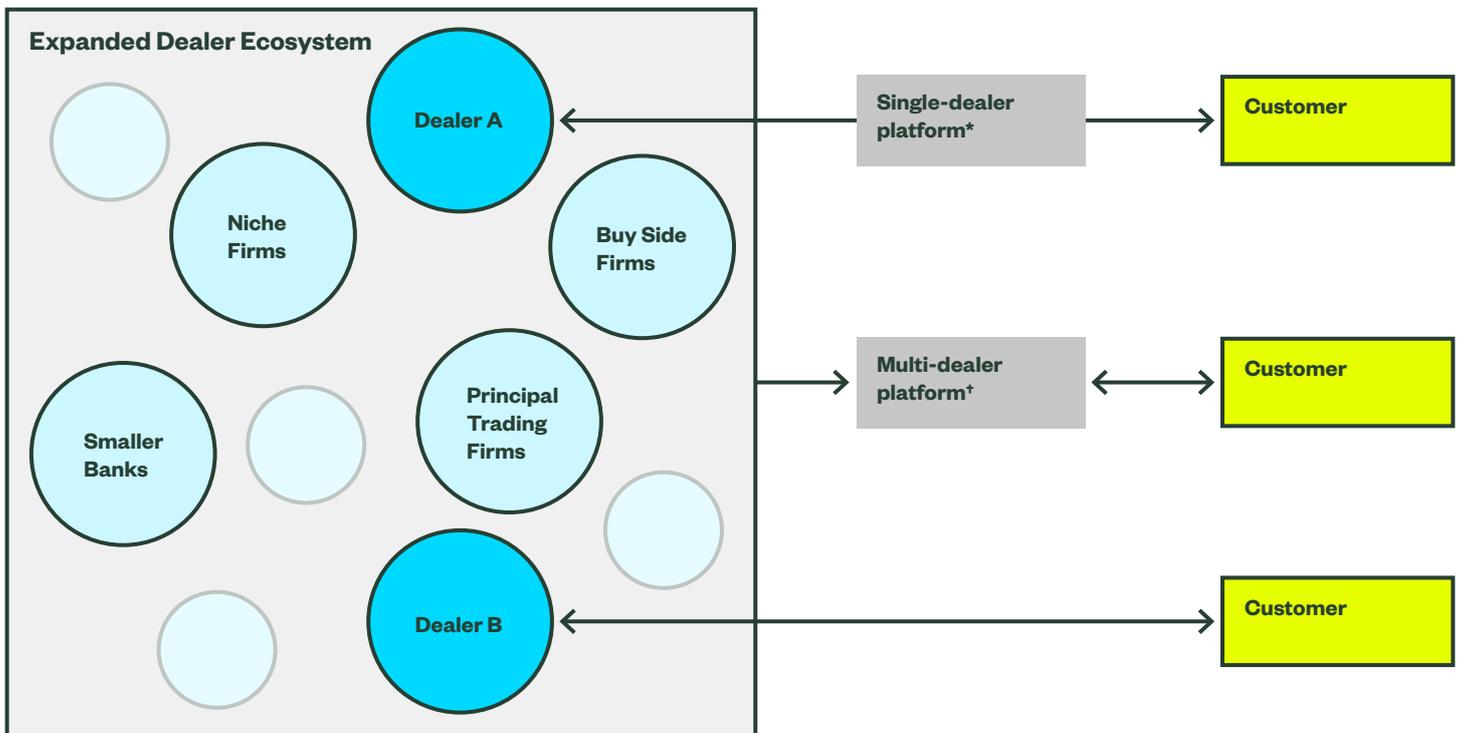
The fixed income market could be characterised historically as an opaque market. Without a centralized, physical market or organized exchange, the over-the-counter fixed income market traditionally centered around dealers (i.e. securities houses, large banks) and their relationship-based network of clients. Buy-side traders reached out to their sell-side counterparts over the phone in search of bonds to buy (or a buyer to sell bonds to). It was a cumbersome, time-consuming process, with its major shortcoming being that it often failed to match those motivated to buy with those motivated to sell (Figure 1a). With the introduction of electronic trading the landscape has shifted dramatically. Customers today can interact with dealers with whom they have relationships over the phone, chat or via dealer portals. Traders can also tap a much larger universe of counterparts at the touch of a button including all the larger dealers, smaller regional and specialty dealers, principal trading firms trading on their own capital, and even other buy-side firms (Figure 1b). By expanding the network, electronic trading creates better matches to both sides of a trade, thus reducing the bid-ask spread.

Figure 1a
**Traditional Fixed Income
Market Structure**



Source: Bank for International Settlements, State Street Global Advisors analysis.

Figure 1b
**Evolution of Fixed Income
Market Structure**



Source: Bank for International Settlements, State Street Global Advisors analysis.

* Single-dealer platforms refer to proprietary trading systems offered by a single dealer to its customers.

† Multi-dealer platforms refer to financial trading venues which enable trade matching between counterparties, offering pricing from a number of dealers simultaneously.

Technology and the Advent of Electronic Trading

Technology proved a critical disruptor in the way fixed income markets operated. In the late 1990s, fixed income markets began to adopt electronic trading networks (ETNs), unleashing a process by which buy and sell orders were processed over a communications network that links thousands of computers in a virtually centralized marketplace.

ETNs surged as a result of balance sheet contraction amid the Global Financial Crisis (2007–08). The Global Financial Crisis (GFC) brought about significant regulatory reform — namely, increased capital and liquidity requirements of banks. Banks could no longer hold as many bonds in their inventory, thereby reducing market liquidity, which ultimately opened the market for ETN platforms. Importantly, ETNs greatly expanded the dealer ecosystem.

As illustrated in Figure 1b, the number of dealers and different entities have grown tremendously, to include not only traditional large banks and dealers, but also smaller, regional players as counterparties, who can now operate on a more level playing field as large players. Some of the early entrants in the fixed income arena were Tradeweb (1998), MarketAxess (2000) and BondVision (2001). Emerging in 2000, MarketAxess soon became the most popular platform with Open Trading in 2012 which allows bond traders to transact directly through the platform rather than using a broker dealer. US Treasuries were the first securities to trade on the new system due to their liquidity and standardized features versus other more complex bonds.

After the early 2000s, electronic trading infrastructure further expanded into many other regions, including emerging market economies such as Brazil and India, for example. By 2017, the number of online bond trading platforms had grown to 128 in total. Today there is a multitude of platforms ranging from single dealer interfaces to multi-party platforms, with Tradeweb and MarketAxess two of the largest and most widely used venues. ETN usage rose during the past two years amid the COVID-19 pandemic, as work-from-home arrangements replaced in-office environments. Figure 2 highlights some key events in the advent of electronic trading in fixed income markets.

Figure 2

Highlights in Fixed Income Market Electronic Trading

1970s	1970	Advent of electronic equity markets
1990s	1998	First fixed income ETNs established: Tradeweb
	1999	Electronic trading of US Treasuries and European government bonds begins
2000s	2000	MarketAxess
	2001	BondVision
	2002	FINRA establishes Trade Reporting and Compliance Engine (TRACE), mandating the dissemination of OTC fixed income trade details and leading to increased market transparency First fixed income ETF launched
	2005	NASDAQ and FINRA disclose transaction and price data for all US corporate bonds
	2007	Global Financial Crisis (GFC) results in a surge of electronic trading given balance sheet contraction
2010s	2012	MarketAxess offers 'Open Trading,' allowing bond traders to transact through the platform rather than having to go through a broker-dealer
2020s	2021	Fixed income electronic trading sees strong growth during COVID-19 pandemic

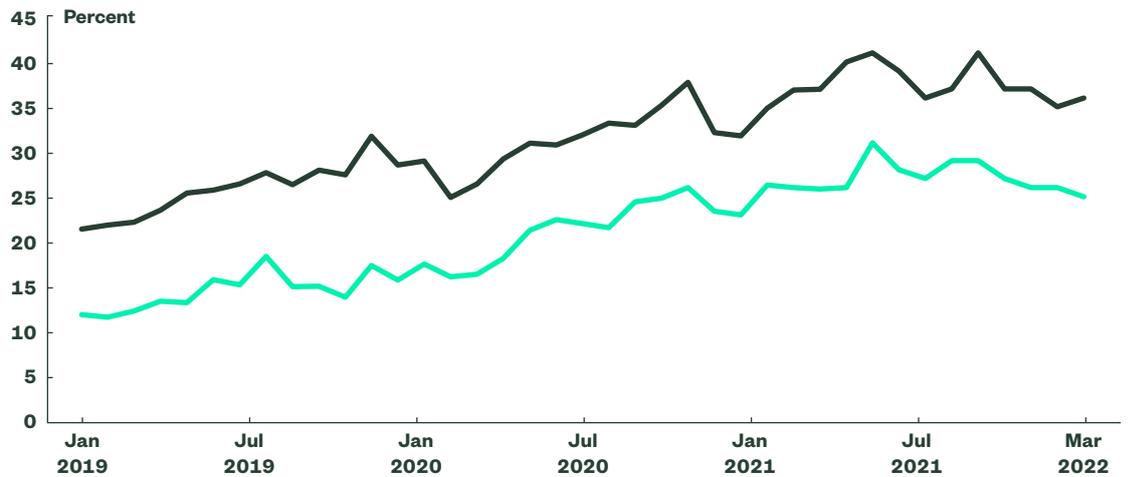
Source: State Street Global Advisors analysis.

How does electronic trading work? For a growing segment of the bond market traders turn to ETNs that are linked to their in-house order management systems to perform trades. These platforms, such as market leaders MarketAxess and TradeWeb, consolidate bids and offers from brokers and other investment managers, thereby expanding the number of potential interested counterparties and contributing to better prices and lower transaction costs. This leaves only the most difficult trades to be navigated through relationships.

Today, traders transact fixed income securities — corporates, government bonds, mortgages, investment grade or high yield — with an enormous amount of information and data points available at the click of a mouse. Electronic trading provides access to thousands of counterparties for any bond traded. Not surprisingly, electronic trading has had a significant effect on trading volumes. Today, nearly 40% of the volume of bonds traded in investment grade corporates and 25% of high yield, as reported through TRACE, flow through electronic platforms (Figure 3). We expect this upward trend to continue as more and more firms weave ETNs into their traditional trading processes.

Figure 3
Growth in Bond Volumes Traded Electronically

■ Investment Grade
■ High Yield

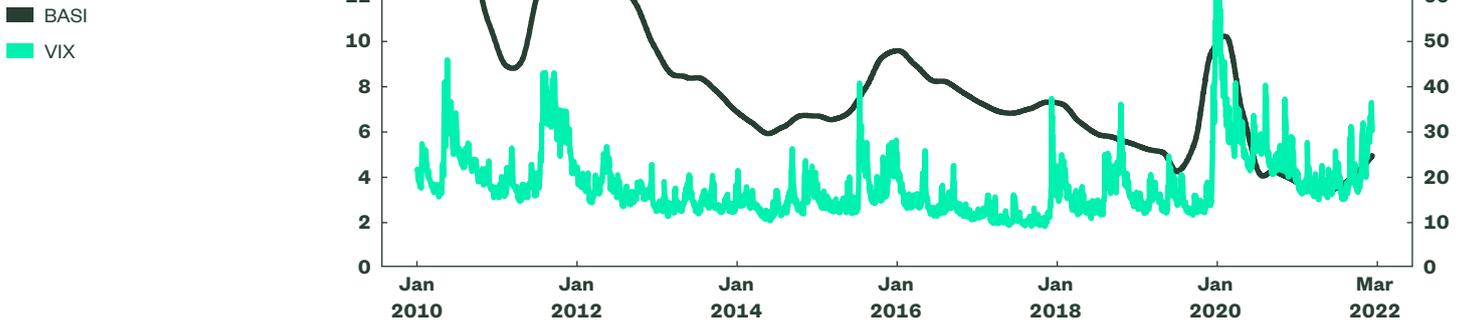


Source: Greenwich MarketView. Calculations include all volume reported by the trading venues as fully electronic. Total volume as reported by TRACE.

Impact of ETNs

Approximately 10 years ago, MarketAxess started publishing its Bid-Ask Spread Index (BASI) as an indicator of market liquidity.¹ A daily calculated index based on TRACE data, BASI tracks the difference between bids and asks on actively-traded corporate bonds over time. As shown in Figure 4, bid-ask spreads are trending downwards as electronic trading gains more traction, with some back-ups in times of increased market volatility (measured by the VIX Index — Chicago Board Options Exchange Volatility Index). (Figure 4) With the onset of COVID-19 in the first quarter of 2020, we see a meaningful uptick in the BASI, but it is far less of a jump than what we saw in 2011.

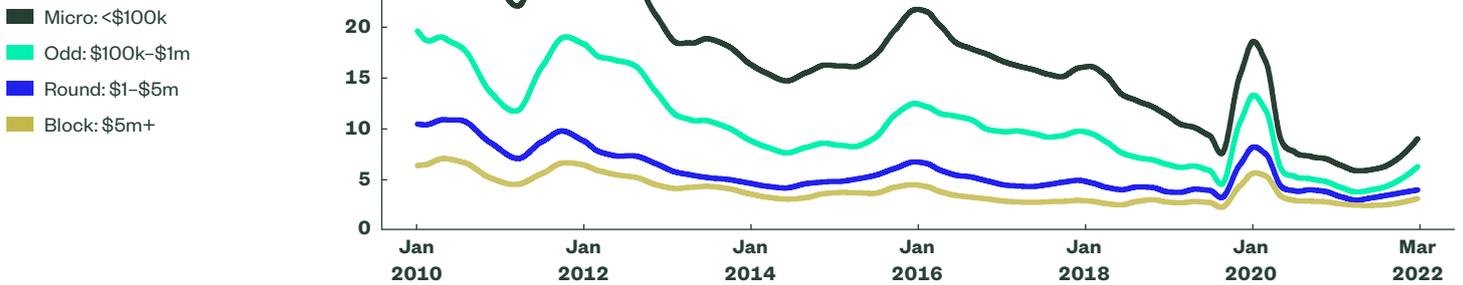
Figure 4
The Decrease of Bid-Ask Spreads



Source: MarketAxess, as of 04/01/2022. Used with permission.

The decrease in bid-ask spreads is an important trend shown across fixed income sectors and is also apparent across trade lots (Figure 5). Bid-ask spreads have decreased over the past decade across the board, from micro lots (< \$100k) to large block trades over \$5 million, impacting all investors. For example, for odd lot trades, or those between \$100k and \$1 million, the average bid-ask spreads were approximately 15 basis points or greater, shrinking today to about 5 basis points, a significant tightening or improvement.

Figure 5
The Decrease of Bid-Ask Spreads Across Trade Size



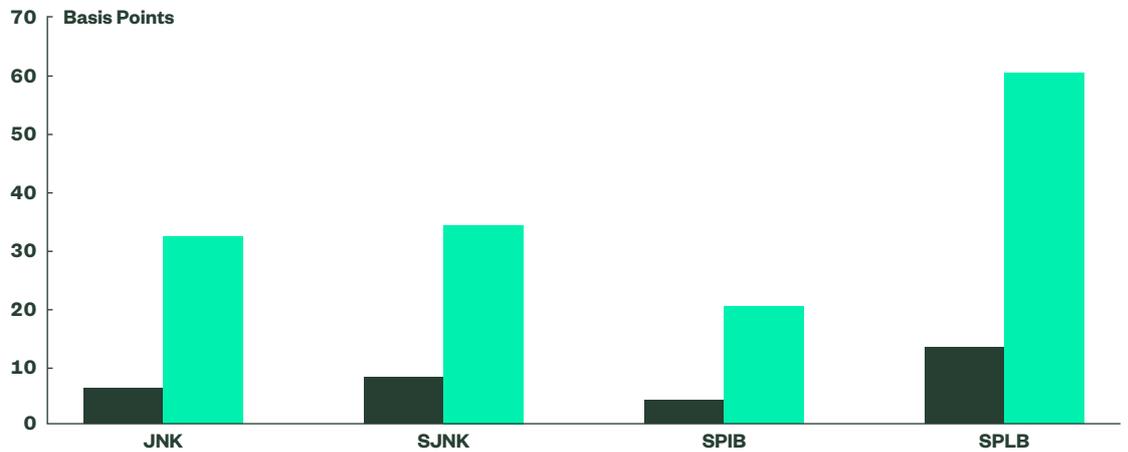
Source: TRACE, MarketAxess, as of 04/01/2022. Used with permission. Spread levels denoted in basis points. Analysis is that of trades within US investment grade corporate markets only. State Street Global Advisors analysis.

Harnessing Efficiencies through Multi-Bond Trading

Since 2002 when the first fixed income exchange-traded fund or ETF was launched, investors have flocked to this innovative vehicle to take advantage of the vehicle's benefits including diversification, trading liquidity, lower fees, dividend reinvestment, and tax advantages. The fixed income ETF market has grown exponentially over the past 10 years, standing at \$1.27 trillion today.² Both institutional and retail investors utilize ETFs to source liquidity and trade efficiently, as well as to reduce trading costs. Bid-ask spreads for institutional size ETF trades have historically been significantly lower than indicated spreads for underlying fixed income securities, especially within the corporate space. Investors in State Street Global Advisors' SPDR Bloomberg High Yield ETF, SPDR Bloomberg Short Term High Yield ETF, SPDR Intermediate Term Corporate Bond ETF, and SPDR Long Term Corporate Bond ETF on average have seen a spread reduction of over 75% as compared to the price to invest in individual underlying securities. (Figure 6)

Figure 6
**Bid-Ask Spreads
 for Institutional
 Sized ETFs**

■ Quoted ETF Spreads*
 ■ Basket Spreads (bps)*



Source: Bloomberg Portfolio Liquidity Analytics, Jane Street Capital, as of 01/11/2022.

* Based on institutional size trades defined as \$50 million for SPDR Bloomberg Short Term High Yield ETF, SPDR Bloomberg High Yield ETF, SPDR Intermediate Term Corporate Bond ETF, and SPDR Long Term Corporate Bond ETF.

† As represented by the basket spread for each respective index. There can be no assurance that a liquid market will be maintained for ETF shares.

Similar to the operating model of an ETF where a basket of securities is traded all at once, many ETNs offer portfolio trading, an innovative tool that involves bundling several bonds into a single package to trade to one or more counterparties. Similar to MarketAxess' Open Trading, portfolio trading can put multiple counterparties in competition with one another, leading to decreased spreads and reduced costs. The tool can also increase liquidity in otherwise less-liquid bonds by packaging them with larger, more in-demand bonds. Portfolio trading is a relatively new concept that took off in 2015 and has been growing in popularity ever since. Notably, the trading innovation has gained significant traction during the coronavirus-linked market challenges. Investors seeking liquidity benefit from basket and portfolio trading as it allows them to trade diversified exposure in a time- and cost-effective manner. Indexed investors will tend to realize the greatest benefits given the highly diversified nature of their portfolios.

Implications for Investors

How do these fixed income market efficiencies impact investors? Some of the tangible benefits for investors:

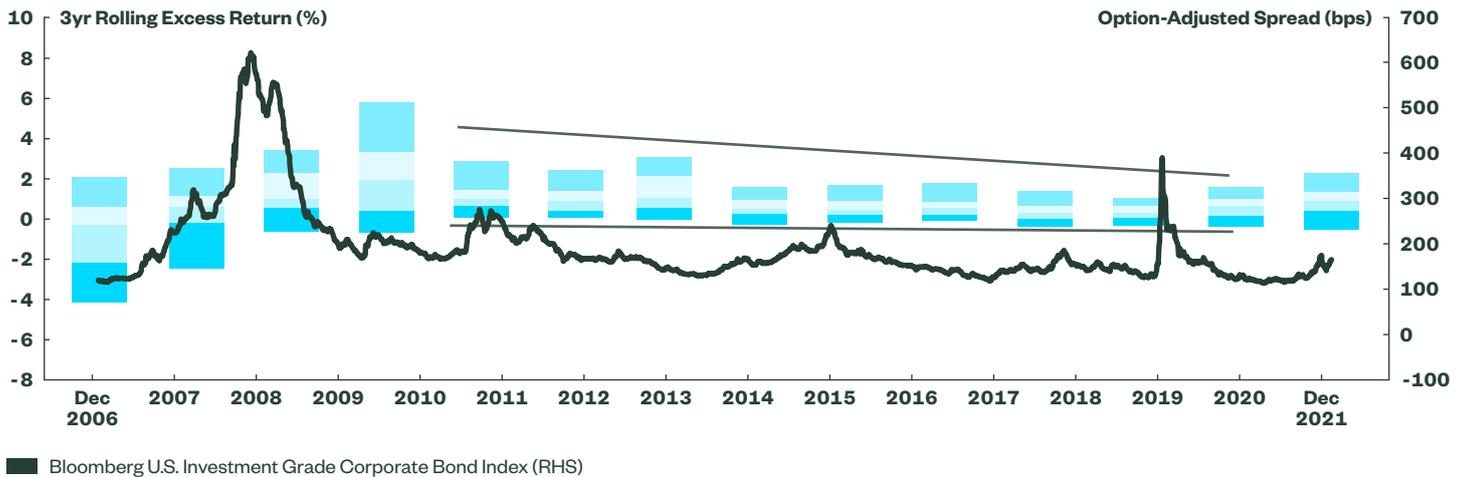
- **Expanded network** access instantaneously creates opportunities for **improved matches** between buyers and sellers
- Improved matches mean **better prices** — for both buys and sellers — which means **lower costs to access liquidity**
- **More data and better liquidity translates** to more opportunities for data-based players to quickly **squeeze out mis-pricings**

Why Pay for Alpha?

Increased adoption of technology and ETNs have effected fewer opportunities to take advantage of single-security mis-pricings, a common strategy for active investors. Broadly, market efficiency squeezes excess return opportunities as new information is quickly incorporated into security prices — and fixed income is no exception. Post GFC and prior to the pandemic, active investment grade credit managers saw both the level and dispersion of their excess returns decline over time (Figure 7), coinciding with the advances in technology and market efficiency that we have discussed. Figure 7 also illustrates how active credit manager performance is correlated with credit spreads.

Figure 7

Correlation of Active Credit Performance and Spreads



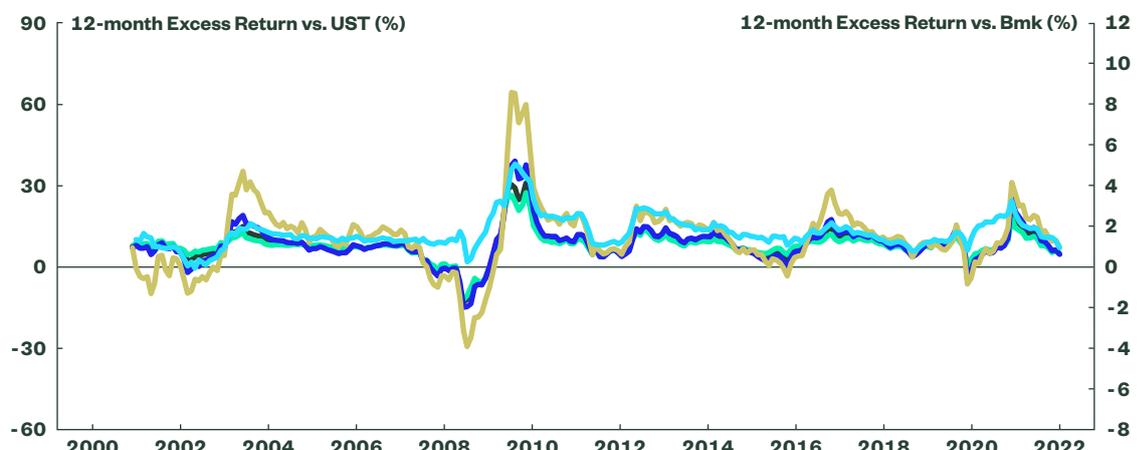
Source: eVestment, Bloomberg Finance, L.P., as of April 30, 2022. All data is as of December 31 for the years shown. From top to bottom, lines on floating bar charts represent the 5th, 25th, median, 75th, and 95th percentiles respectively. Performance data used are gross-of-fee excess returns vs. benchmark. Active credit manager universe is limited to managers benchmarked to the Bloomberg U.S. Investment Grade Corporate Bond Index, the Bloomberg U.S. Credit Index, or other broad-based investment grade corporate or credit indices.

Moreover, there is ample evidence that performance for the median active manager is highly correlated with credit returns, suggesting that a significant proportion of their alpha is actually attributable to credit beta. Figure 8a shows the 12-month excess returns for the median active credit manager (relative to benchmark) and various Bloomberg corporate bond indices (relative to US Treasuries of similar duration). Two noteworthy observations: (1) the median active manager return profile is highly correlated with all four corporate indices and (2) correlations generally increase as the indices move down in credit quality, suggesting active managers are also employing a quality tilt to generate outperformance. In contrast, excess returns among higher-performing first quartile managers (Figure 8b), are less credit beta dependent. First quartile manager performance may be more representative of actual alpha generation rather than a risk-on-friendly beta allocation.

Figure 8a

Median Active Manager Performance Resembles Credit and Quality Betas

Index ER Correlation to Median Manager	
Investment Grade Corporates	0.73
Investment Grade Corporates A+	0.68
Investment Grade Corporates Baa	0.77
High Yield	0.76



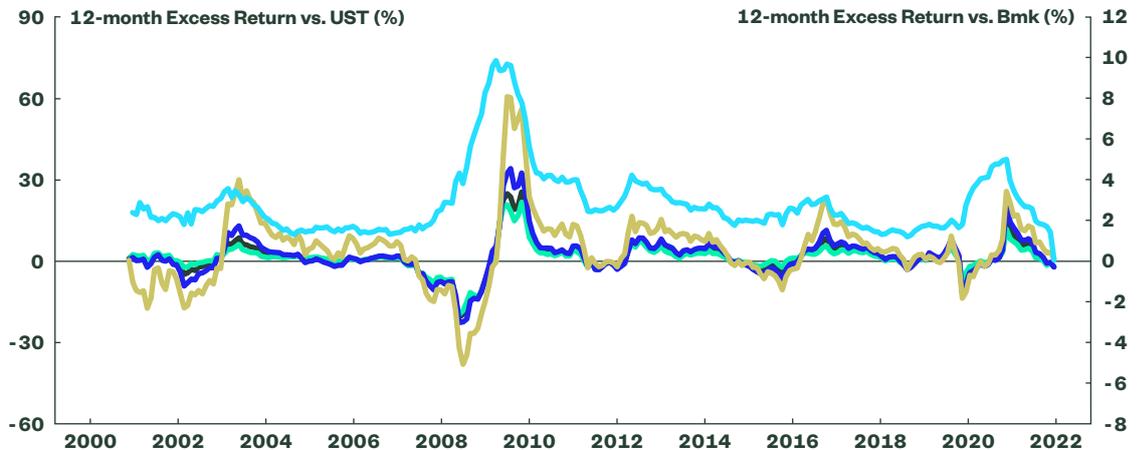
Source: eVestment, Bloomberg Finance, L.P., as of March 31, 2022. Analysis uses monthly data. Active manager excess returns are gross of fee and relative to benchmark. Corporate bond index excess returns are relative to US Treasuries of similar duration.

Figure 8b

First Quartile Manager Performance More Representative of Actual Alpha Generation

Index Excess Return Correlation to 1Q Manager	
Investment Grade Corporates	0.35
Investment Grade Corporates A+	0.32
Investment Grade Corporates Baa	0.40
High Yield	0.32

- Investment Grade Corporates
- Investment Grade Corporates A+
- Investment Grade Corporates Baa
- High Yield
- Active Investment Grade Credit 1Q Manager (RHS)



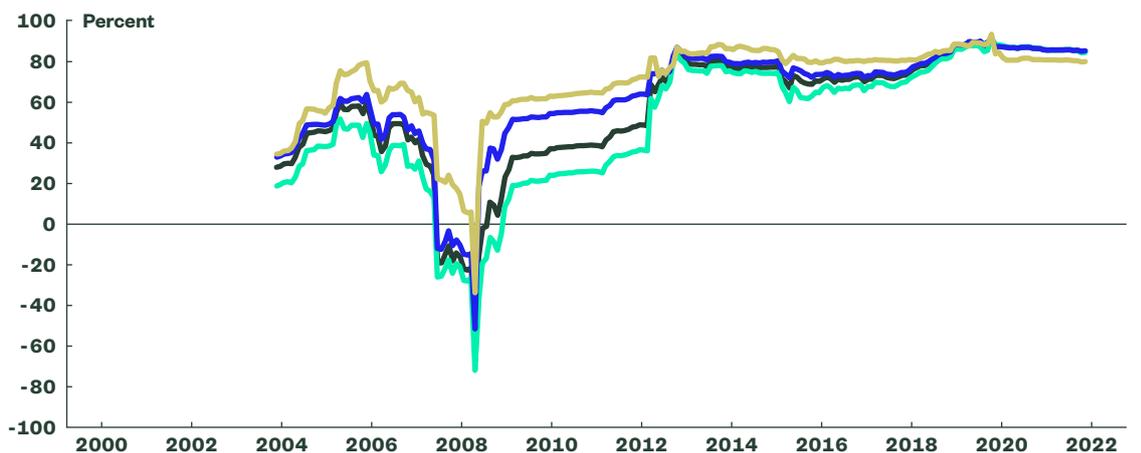
Source: eVestment, Bloomberg Finance, L.P., as of March 31, 2022. Analysis uses monthly data. Active manager excess returns are gross of fee and relative to benchmark. Corporate bond index excess returns are relative to US Treasuries of similar duration.

Finally, active credit managers appear to be leaning more heavily into their credit and quality beta tilts over time to generate performance. Rolling excess return correlations between the median active credit manager and the same four corporate bond indices have clearly increased since the GFC. Figure 9a shows how median manager excess returns have become more correlated with credit excess returns over time. In contrast, first quartile managers (Figure 9b) have tended to differentiate themselves more relative to credit performance, particularly during drawdowns, including during the pandemic. In short, it may make more sense to find that top quartile manager who protects in down markets with a differentiated approach, rather than a beta-correlated investment approach.

Figure 9a

Rolling Excess Return Correlations With Median Active Managers

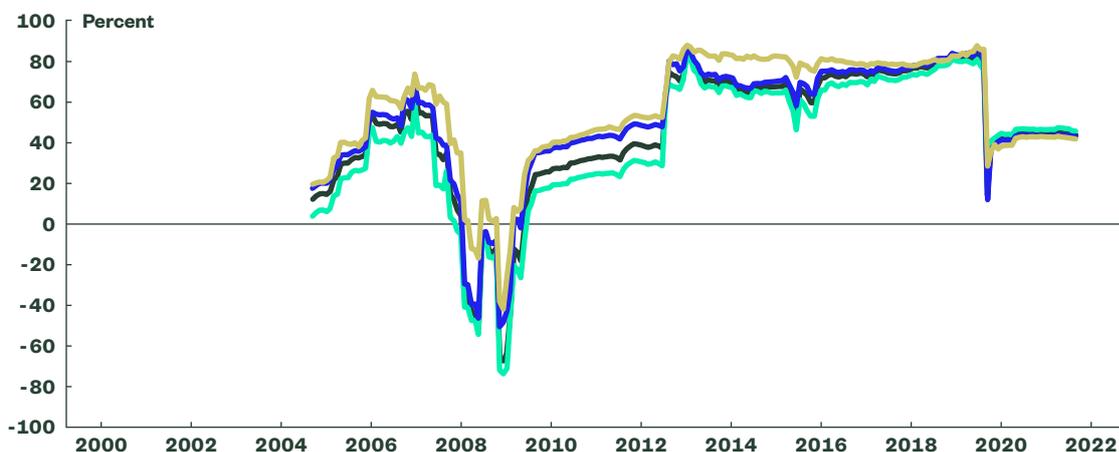
- Investment Grade Corporates
- Investment Grade Corporates A+
- Investment Grade Corporates Baa
- High Yield



Source: eVestment, Bloomberg Finance, L.P., as of March 31, 2022. Analysis uses monthly data. Active manager excess returns are gross of fee and relative to benchmark. Corporate bond index excess returns are relative to US Treasuries of similar duration.

Figure 9b
**Rolling Excess
 Return Correlations
 With First Quartile
 Active Managers**

■ Investment Grade Corporates
 ■ Investment Grade Corporates A+
 ■ Investment Grade Corporates Baa
 ■ High Yield



Source: eVestment, Bloomberg Finance, L.P., as of March 31, 2022. Analysis uses monthly data. Active manager excess returns are gross of fee and relative to benchmark. Corporate bond index excess returns are relative to US Treasuries of similar duration.

With advances in market efficiency making it more difficult for active fixed income managers to generate consistent outperformance that is differentiated from credit returns, investors may ask the question: why pay for alpha? In a more liquid, less costly, and more alpha challenged market, index and systematic strategies are well-positioned options to meet investors' needs.

Conclusion

The technological disruption of the fixed income market has significant implications for the trading of individual securities and for market dynamics. Increased transparency means that more gains are accounted for. Fixed income markets overall are beginning to resemble highly efficient equities exchange-trading platforms. The pandemic has accelerated the trend of electronic trading, and we expect the explosive growth of electronic bond trading to continue. Looking forward, as market efficiencies continue to pressure excess return opportunities, beta decisions, and not security selection, will likely drive fundamentally-based excess returns. Data and technology are creating new opportunities, for both indexing and data-driven, systematic approaches to thrive in an information-rich environment.

Endnotes

1 Bid-Ask Spread Index (BASI) tracks the daily spread between bids and offers in US investment grade and European market segments. It uses BondTicker and MarketAxess' post-trade analytics market data (inventory levels not trades). It is available for overall market, by trade size and by sector for US investment grade and overall for Europe. First, the bid-ask for each security of the universe is computed using volume weighted spreads of TRACE trades. Then the mean spread is used as an input of a locally weighted scatterplot smoothing average. The output is BASI.

2 Source: Bloomberg Finance L.P., as of 12/31/2021.

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* Pensions & Investments Research Center, as of December 31, 2020.

[†] This figure is presented as of March 31, 2022 and includes approximately \$73.35 billion USD 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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