

A blurred background image of a financial candlestick chart with green and blue bars on a dark blue grid.

AxessPoint



2020 Collection

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The MarketAxess Research team was in a unique position to offer insights into dynamics surrounding this year's financial crisis. Shifts in trading strategies, liquidity provision and market structure prompted investors and dealers to seek market intelligence more than ever before. Our in-depth data resources helped explain the fundamental shifts taking place, leading us to create the AxessPoint series to capture some of the most critical findings.

DAVID KREIN

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Volatility's impact on the Investment Grade Market

HIGHLIGHTS

- Credit spreads and bid/ask spread have quickly and dramatically widened in the last three weeks.
- Both the Spread Index and Bid/Ask Index are far beyond their highs since launch on Jun 1, 2017.

About the Index

We've assembled the charts using the MarketAxess US Investment Grade Corporate Bond Index, which provides insight into credit market pricing, spreads, liquidity and trading costs. More information, including the index history and methodology, are online [here](#).



CREDIT SPREAD MOVEMENTS

Until recently, credit spreads spent several months hovering near their lows. With the Spread Index at +104 bps just six months ago, it bottomed at +78 bps on December 30, before rising modestly to +88 bps on Friday, February 21.

However, by the following Friday, February 28, the Covid-19 news started to hit the markets hard and the Spread Index rose to +114 bps—an increase of +26 bps on the week. Then it rose again the following week to +130 bps on Friday, March 6—an increase of another 26 bps.

Following the Russia-OPEC news over the March 7 – 8 weekend and the accelerating dread around Covid-19, the Spread Index has widened 10 – 30 bps per day, every day since then—closing at +248 bps on Monday, March 16. That is 100 bps wider than the previous Spread Index high of +148 bps on January 3, 2019.



BID/ASK MOVEMENTS

As with credit spreads, bid/ask spreads had been relatively subdued. The Bid/Ask Index has spent most of the last six months between 2 bps and 3 bps, closing on Friday, February 21 at 2.01 bps.

Within a week, the Bid/Ask Index more than doubled to 4.20 bps on Friday, February 28. It subsided a bit that following week, closing at 3.47 bps on Friday, March 6. As with the Spread Index, the Bid/Ask Index exploded beginning Monday, March 9—closing higher every day since then. Monday, March 16 saw a record close for the Bid/Ask Index at 20.92 bps.

Open Trading: Liquidity During Volatility

HIGHLIGHTS

- Open Trading has contributed a record level of liquidity to the global corporate bond market during the past three weeks of market turmoil.
- Participants making use of the widest range of tools are best positioned to improve their trading speed and economics, which is critical during volatile periods.

QUANTIFYING THE IMPROVEMENT

Liquidity Takers participate passively in Open Trading, and yet they have experienced a dramatic jump in Open Trading's ability to source liquidity and improve outcomes in the last three weeks. Specifically, Open Trading Cost Savings per bond has doubled for all major corporate and emerging markets.

Open Trading Cost Savings for Liquidity Takers*

	1/1 to 2/21		2/24 to 3/13		Pct. Chng.
	Avg/Bond	Avg/\$MM	Avg/Bond	Avg/\$MM	
US Invest. Grade	2.29 bps	\$1,200	4.67 bps	\$2,900	104%
US High Yield	\$0.25	\$2,500	\$0.54	\$5,400	120%
Emerg. Mkts. USD	\$0.22	\$2,200	\$0.40	\$4,000	84%
EUR Eurobonds	€0.13	€1,300	€0.28	€2,800	110%

For example, if a US High Yield trader's orders had been filled via Open Trading in the early part of the year, the average price improvement over the best disclosed dealer response was \$0.25 per bond, or \$2,500 per \$1 million. Over the last three weeks, however, that same trader's orders filled via Open Trading would have seen an average improvement of \$0.54 per bond, or \$5,400 per million.

OFFERING DIVERSE LIQUIDITY PROVISION

Liquidity Providers participate proactively in Open Trading by responding anonymously to the inquiries of other clients. In effect, they get to submit a bid for another client's BWIC and "buy on the bid." This means that clients get paid bid/ask

Calculating the Open Trading™ Cost Savings (OTCS)

Measured per bond, Open Trading Cost Savings for Liquidity Takers is the price differential (improvement) between the winning Open Trading response and the best disclosed dealer response. This benefit aggregates directly with Open Trading's average improvement and volume share.

rather than their more traditional RFQ role of taking liquidity and paying bid/ask.

The last three weeks have changed their economics as well. Previously, bid/ask was relatively normal and stable. But as the markets shifted and bid/ask widened, Open Trading Cost Savings for Liquidity Providers has improved along with it.

Open Trading Cost Savings for Liquidity Providers*

	1/1 to 2/21		2/24 to 3/13		Pct. Chng.
	Avg/Bond	Avg/\$MM	Avg/Bond	Avg/\$MM	
US Invest. Grade	2.08 bps	\$1,800	3.63 bps	\$2,600	75%
US High Yield	\$0.29	\$2,900	\$0.43	\$4,300	48%
Emerg. Mkts. USD	\$0.26	\$2,600	\$0.41	\$4,100	58%
EUR Eurobonds	€0.15	€1,500	€0.40	€4,000	167%

For example, if a USD EM trader provided a liquidity bid for another client's BWIC via Open Trading in the earlier part of the year, the average price improvement benchmarked against traditionally lifting an offer in an RFQ was \$0.26, or \$2,600 per \$1 million. Over the last three weeks, however, that same trader filling a BWIC via Open Trading would have seen an average price improvement of \$0.41 per bond, or \$4,100 per million.

A UNIQUE PLACE FOR LIQUIDITY

Uncertain and volatile markets create difficulties for all market participants, yet clients can improve liquidity and price improvement with Open Trading.



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* Activity is for Market List-winning trades in 2020. Estimated liquidity taker cost savings is defined as the difference between the winning price and the best disclosed dealer cover price. Estimated liquidity provider cost savings is defined as the difference between the winning price and then current Composite+ bid or offer level (offer if the provider is buying, bid if provider is selling) at the time of the inquiry.

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Finding US Treasury liquidity in volatile markets

HIGHLIGHTS

- The recent announcement by the Federal Reserve to cut the Fed Funds target range to near zero and expand their QE program, alongside the COVID-19 outbreak and the oil price war, have led to unprecedented levels of US Treasury volatility.
- This volatility has led to liquidity issues as traders try to raise cash to cover margin calls on losses in other asset classes. During these times the search for liquidity can be challenging depending on a dealer's ability to price competitively, and their client's access to alternative liquidity sources.

US TREASURY LIQUIDITY CONCERNS

Concerns within the US Treasury market were first raised by BofA, on March 12, noting that liquidity was worsening (*source: Financial Times*) as traders were selling US Treasuries to raise capital to cover margin calls on heavy equity losses.

In response to the COVID-19 outbreak, on Sunday March 15, the FED cut rates to 0.25 - 0% and launched a \$700 billion QE program. The next day was one of the most volatile trading sessions for financial markets since the 2008 Financial Crisis. The DJIA fell 12.9%, Brent fell 11.2% while the 10Y Treasury yield fell 22.4 basis points to 0.722%, its biggest one-day drop since March 2009.

MarketAxess Rates

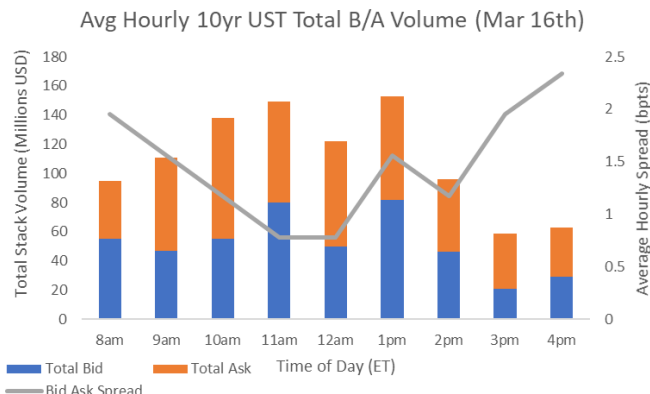
MarketAxess Rates, previously known as LiquidityEdge, offers participants access to the most diverse range of liquidity provision in US Treasuries. The platform offers execution choices via a curated anonymous order book, and/or comingled with directed disclosed or anonymous firm streams. Liquidity provision includes a balanced mix of the top primary dealers and the largest non-bank market makers across a choice of fully integrated protocols. This unique protocol undoubtedly realizing its true value during times of market stress.

On March 16, while spreads widened across the curve, inventory on MarketAxess Rates remained available. Bid/ask spreads in the 10Y, for example, widened out as far as 2.3bps, while stack liquidity in the 10Y persisted on both sides (see chart). In these extreme conditions the order book continued to operate in an orderly manner, while liquidity provision remained competitive.

MarketAxess Rates for US Treasuries makes available pricing increments in 1/16th of a 32nd and 1/8th of a 32nd at the longer end of the curve. On March 16, across the 10Y, 43% of trades were executed on the inside increment only marginally lower from the highs observed in less volatile times.

HELPING CLIENTS FIND LIQUIDITY

As conditions continue to evolve, having access to multiple sources of liquidity increases in importance. This crisis has shown that we cannot take liquidity for granted. Having access to a choice of trading protocols that includes a diverse range of liquidity providers will help ensure clients have the best possible experience in a volatile marketplace.



Open Trading liquidity provision in stressed markets

HIGHLIGHTS

- Open Trading's benefit, or cost savings, is often measured as the price improvement over the best level from the disclosed dealer network.
- However, Open Trading can still source liquidity even when no disclosed dealers are involved in the RFQ.

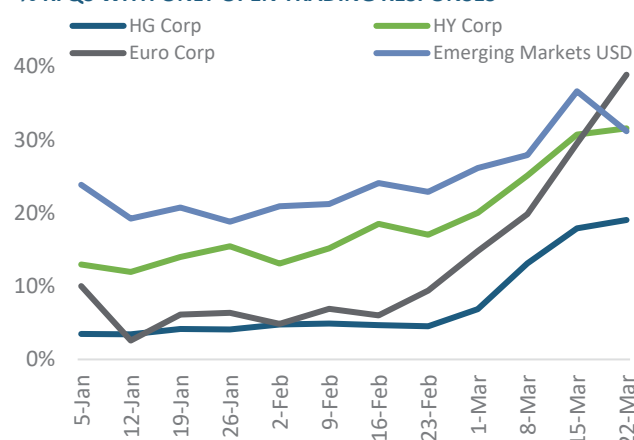
SHIFTING LIQUIDITY PROVISION

Disclosed dealers provide the vast majority of liquidity in global corporate bond markets. Under difficult market conditions, though, a Request-for-Quote (RFQ) might receive few or perhaps no responses from disclosed dealers. There are any number of reasons for this including risk limits, shift to manual trading and/or potentially reduced efficiency as employees and traders are working remotely.

Not surprisingly, we have seen two big changes as a result. First, the number of RFQs with **only** Open Trading responses has grown dramatically.

This change is most pronounced in European corporates. Under more normal market conditions, less than 10% of RFQs had only Open Trading responses. By mid-March, that climbed above 30%.

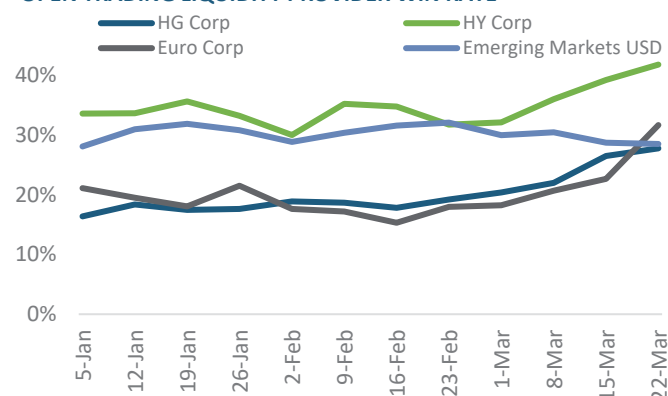
% RFQS WITH ONLY OPEN TRADING RESPONSES



OPEN TRADING RESPONSES

Second, Open Trading responses are winning more often. Although it can be tricky to analyze over time due to shifting hit rates, we can see Open Trading's win rate on traded RFQs are 5-10 percentage points higher than rates prior to recent market volatility (with the exception of Emerging Markets).

OPEN TRADING LIQUIDITY PROVIDER WIN RATE



THE NETWORK EFFECT

Open Trading is helping connect global pools of liquidity through an open architecture. This has thus allowed participants to create liquidity even when it's difficult to source through traditional, disclosed channels. The network effect offered through Open Trading is helping participants to support the functioning of the market.

Measuring the Benefit

Open Trading's benefit, or cost savings, is typically measured as the price improvement over the best level from the disclosed dealer network. The incremental liquidity benefit to clients when receiving **only** Open Trading responses on an RFQ in a difficult market cannot easily be measured. There is no standard "price improvement" as there are no dealer prices in which to establish a baseline level. But there is an incremental liquidity benefit as the trade would have been impossible absent Open Trading.

Diverse participants create liquidity opportunities during credit market stress

HIGHLIGHTS

- Credit market dislocation in March 2020 led trading participants to search for new sources of liquidity.
- The Open Trading™ marketplace saw record volumes and allowed new participants to connect, demonstrating its critical role in the market as a source of liquidity.
- Clients, acting both as liquidity takers and providers, saw significant savings and improved execution quality with Open Trading.

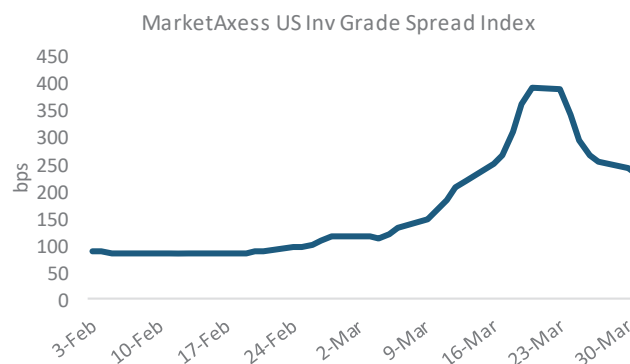
TWO FIGHTS THAT ROILED THE MARKET

Following the economic slowdown in response to the COVID-19 health pandemic, global financial markets saw unprecedented and extreme volatility. Credit markets experienced large dislocations and price swings: US Investment Grade new issue volumes grew by 87% relative to the beginning of 2020, while High Yield new issuance tumbled by 87% in the same period.

Yet, unlike the Credit Crisis of 2008-9, TRACE volumes grew in March 2020 in US Investment Grade and US High Yield—the average daily volume for US Investment Grade increased 39% from 2019 to \$31B, and ADV of US High Yield rose 50% to \$13B. Conversely, TRACE ADV fell in 2008-9 by 33% and 40% for US Investment Grade and US High Yield respectively.

At the end of February 2020, financial markets experienced a rapid flight to quality as rates fell dramatically, but the gains were short lived as fixed income funds saw significant outflows. Fixed income markets witnessed spreads dramatically widening as liquidity and credit-related economic concerns grew. Our Indexes, based on the [MarketAxess Composite+™](#) pricing engine, showed Investment Grade spreads widening nearly 280 bps, while High Yield prices fell over 20 points intra-month.

As fiscal intervention attempted to bolster the economy, markets tightened, lowering the Investment Grade spreads from its widest point of 390 bps down to 230 bps. Meanwhile, High Yield prices rose to \$90.7 from a low of \$81.3. [View the MarketAxess Indexes [here](#)].



OPEN TRADING IN ACTION

During March 2020, Open Trading saw a dramatic increase in trade volume, culminating in an ADV of \$4.4B, a 49% MoM increase. US Investment Grade and Eurobonds lead the growth, with Open Trading volumes growing 72% and 66% respectively. Open Trading saw 912 unique responding firms, ranging from traditional liquidity providers and asset managers to less traditional entities such as corporations and bank portfolios. MarketAxess' estimated overall share of TRACE for US Investment Grade was 20.6% in March, with Open Trading accounting for 10.1% of US Investment Grade TRACE.

Client-to-client liquidity was a significant factor in supporting market liquidity [see ["AxessPoint: Open Trading liquidity provision in stressed markets"](#)]. There were 121 new Open Trading liquidity providers responding during the month, a 25% YoY increase in the number of unique liquidity responders.

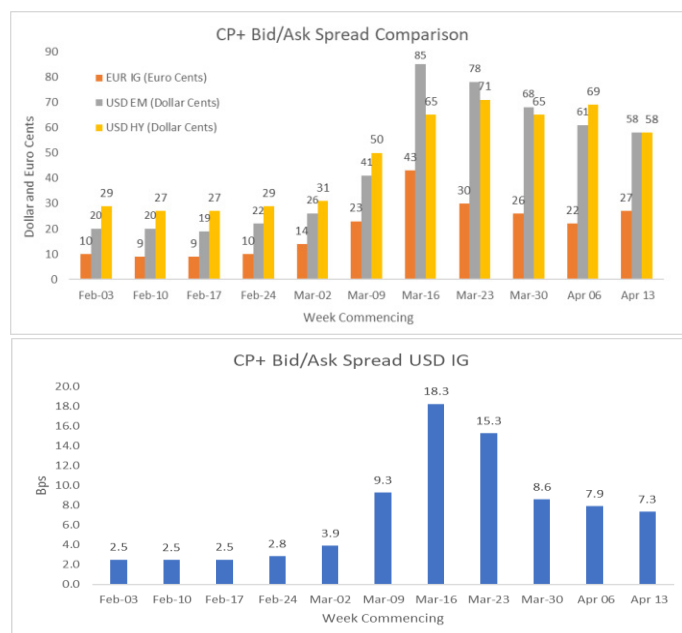
A new normal for global credit market bid/ask spreads

HIGHLIGHTS

- Market wide Bid/Ask Spreads increased significantly throughout February while peaking in March. Throughout April they have started to decrease, and stabilize, yet remain above normal levels.
- The COVID-19 pandemic, alongside the oil price war, led credit spreads across all markets to increase drastically. During the subsequent global lockdown and fiscal and monetary response, bid/ask spreads are now falling.

SPIKES AND FALLS IN BID/ASK SPREADS

Until the end of February, credit spreads spent several months near record lows. For example, at the start of February the Composite+™ spread for USD IG was at 2.5bps, while that for USD HY was 29 cents, USD EM was 20 cents and EUR IG was 10 Euro cents, shown below.



By the end of February, when news of COVID-19 started to impact markets, we observed that Composite+ bid/ask spreads started to widen across regions; this was further

Redefining real-time bond pricing

Composite+ (CP+) is MarketAxess' proprietary AI-powered pricing engine for corporate bonds. It produces an unbiased, two-sided market for more than 25,000 instruments globally. Updated every 15 to 60 seconds, the engine generates nearly 20 million levels per day covering 90-95% of trading activity in its markets.

compounded by the Russian-Saudi price war leading to an overnight drop in oil prices by a third.

Following this, and the resulting fiscal and monetary stimulus programs, bid/ask spreads continued their steep upward trajectory as the ramifications of the COVID-19 pandemic were still unclear.

Between the first week of February and the peak in the 3rd week of March, credit spreads, measured by Composite+, saw increases of:

- + 632% for USD IG (2.5 bps to 18.3 bps);
- + 124% for USD HY (29 cents to 65 cents);
- + 325% for USD EM (20 cents to 85 cents);
- + 330% for EUR IG (10 Euro cents to 43 Euro cents).

A NEW NORMAL

Now, halfway through April and with the global lockdown firmly in place, COVID-19 infections have started to plateau; bid/ask spreads have fallen and stabilized, albeit some have dropped more sharply than others. USD IG is now at 7.3bps, USD EM is at 58 cents and EUR IG at 27 Euro cents; however, USD HY has stabilized and is at 58 cents, slightly below its global peak in March.

Even with these declines, bid/ask spreads remain around three times their pre-crisis levels, leading the market to wonder if this is the new normal and what the path forward looks like. This is particularly the case for the US High Yield market that is still recovering and finding its footing.

Quantifying corporate bond ETF premiums and discounts

HIGHLIGHTS

- Bond ETFs traded at a premium or discount to their “fair” value, measured by the bid/offer levels of their underlying bonds, throughout recent credit market volatility.
- On April 9th, when the Federal Reserve expanded their QE program to include High Yield bonds, ETF share prices traded at a premium to their underlying holdings.
- The Open Trading™ marketplace allowed participants to connect and take advantage of this arbitrage opportunity.

ARBITRAGE OPPORTUNITIES

Under typical market conditions, corporate bond ETF share prices lie in or around the fair value of their underlying bonds, calculated using **Composite+™** bid/offers. However, under recent extreme conditions, ETF share prices have moved outside the NAVs, i.e. fair value, of their underlying securities.

Redefining real-time bond ETF pricing

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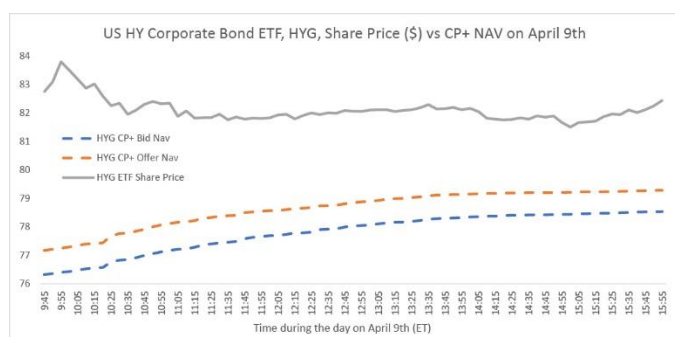
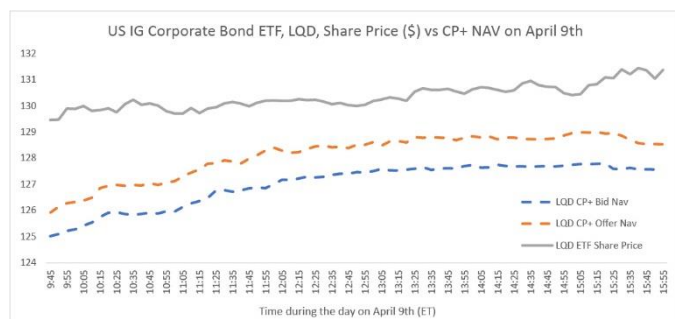
Through MarketAxess’ partnership with Virtu, the upcoming **eNAV** data service will provide real-time NAVs for corporate bond ETF markets, powered by **Composite+**. This will measure ETF “fair” value, in real-time, previously unavailable in the marketplace.

The most pronounced example of this was on April 9th, when the Federal Reserve announced an additional \$2.3 trillion to its QE program, including High Yield bonds and Junk ETFs. A global market rally ensued where arbitrage opportunities emerged in Bond ETFs. The US IG corporate bond index, LQD, traded at a \$1.45-\$3.62 premium to the NAV of the underlying bonds, while the US HY corporate bond index, HYG, traded at a \$2.3-\$6.55 premium throughout the day.

More recently, on April 21st, corporate bond ETFs were trading at a discount to their fair value as oil turned negative for the first time in its history, leading to a global market sell-off. The US IG and HY ETFs, LQD and HYG, traded at discounts of as much as 60 cents and 109 cents, respectively, versus the “fair” value measured by Composite+ bid/offer levels.

CONNECTING PARTICIPANTS TO ENGAGE LIQUIDITY

Arbitrage opportunities remain within ETF markets as volatility persists and underlying credit market spreads remain elevated. During recent volatility, we observed that ETF participants, as well as asset managers and other non-bank institutions, were an active part of the liquidity transfer mechanism [see: [“AxessPoint: Diverse participants create liquidity opportunities during credit market stress”](#)]. The diverse trading connections facilitated by Open Trading allowed participants to take advantage of this arbitrage opportunity and maximize their liquidity options.



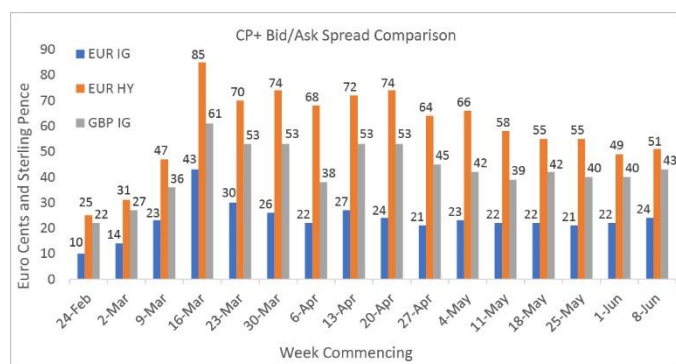
Adjusting to a new normal in European credit markets

HIGHLIGHTS

- Since the market sell off caused by the COVID-19 global pandemic, bid/ask spreads in European credit markets are settling at twice their pre-crisis levels.
- Bid/ask spreads peaked at €0.43 for EUR IG, €0.85 for EUR HY, £0.61 for GBP IG, and have since fallen by approximately 1/3rd. With upcoming fiscal and monetary stimulus in Europe, spreads are settling.

STABILISING BID/ASK SPREADS

Until the end of February, European bid/ask spreads were among the tightest across major markets. For example, at the start of February the [Composite+™](#) spread for EUR IG was at €0.09, while that for EUR HY was €0.20, and GBP IG was £0.21.



At the height of the crisis, European price spreads saw increases of +377% in EUR IG (€0.09 to €0.43), +325% in EUR HY (€0.20 to €0.85), and +190% in GBP IG (£0.21 to £0.61).

Following this, with the number of new COVID-19 cases declining in Europe and a series of newly announced ECB monetary stimulus packages, bid/ask spreads started falling and have now stabilized. European bid/ask spreads remain 2-3x higher than pre-crisis, with EUR IG at €0.22 vs €0.09, EUR HY at €0.49 vs €0.20, and GBP IG £0.40 vs £0.21 pre-crisis.

Redefining real-time bond pricing

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DIVERGENCE IN BID/ASK BY SECTOR AND MATURITY

There has been a divergence between different sectors and maturities, with some recovering slower than others. For example, the bid/ask for short-end maturity EUR-Financials still remains four times higher (€0.16 vs €0.04 pre-crisis), while the short end Sterling Utility sector is only one and a half times higher than that pre-crisis (£0.16 vs £0.11 pre-crisis); see below table.

TOP TRADED INVESTMENT GRADE SECTORS BY CURRENCY

Product	Sector	Maturity	Pre	Peak	Now
EURO IG	Banks/Finance	< 5 yrs	€ 0.04	€ 0.43	€ 0.1623
		> 5 yrs	€ 0.09	€ 0.59	€ 0.28
	Consumer Products	< 5 yrs	€ 0.05	€ 0.23	€ 0.13
		> 5 yrs	€ 0.13	€ 0.37	€ 0.25
	TM	< 5 yrs	€ 0.05	€ 0.30	€ 0.17
		> 5 yrs	€ 0.11	€ 0.47	€ 0.31
GBP IG	Banks/Finance	< 5 yrs	£0.07	£0.43	£0.19
		> 5 yrs	£0.22	£0.68	£0.41
	Insurance	< 5 yrs	£0.10	£0.67	£0.26
		> 5 yrs	£0.23	£0.79	£0.44
	Utility	< 5 yrs	£0.11	£0.34	£0.16
		> 5 yrs	£0.31	£0.75	£0.66

ADJUSTING TO A NEW NORMAL

As the global economy begins to open and people start to adjust to a new working environment, credit markets have likewise adjusted. After March peaks, bid/ask spreads have stabilized at levels roughly twice that pre-crisis, with some sectors tightening quicker than others. With European fiscal and monetary stimulus on the horizon, spreads could remain at these elevated levels for the foreseeable future.

Estimating Pre-Trade Open Trading Cost Savings

HIGHLIGHTS

- Open Trading™ contributes meaningful cost savings for liquidity takers (inquiry submitters), which is most often presented in post-trade reporting.
- Establishing *pre-trade* expectations of Open Trading's cost saving for liquidity takers can be an important factor in determining how to manage an order.

COST SAVINGS EXPECTATIONS

Any post-trade review of [Open Trading](#) cost savings is an important part of understanding its total contribution to trading outcomes.

How can traders incorporate that insight into their pre-trade process, however? Of course, they can always oversimplify and assume that the recent historical cost savings would be a good approximation of what to expect in the near future, which is a common and reasonable starting point.

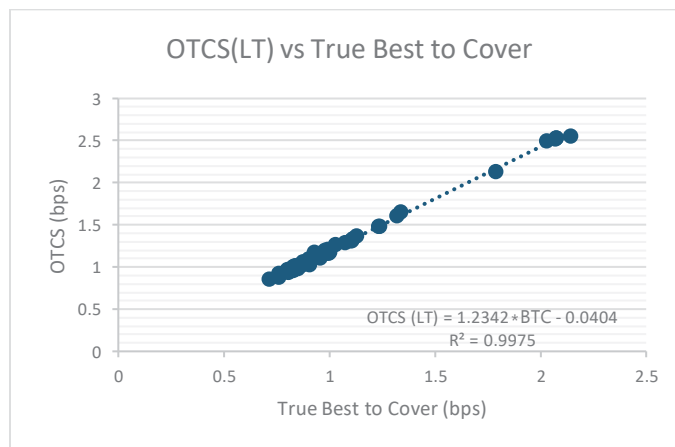
But for any specific order, what should the Open Trading cost savings expectations be? We know, for example, that realized cost savings are highest where liquidity can be more challenging, so the pre-trade effort of being more specific should pay off.

To help traders create a pre-trade expectation, we can link it with something that traders more thoroughly understand and experience.

Since Open Trading cost savings for liquidity takers is structurally similar to the cover level, we've added a chart plotting those two elements – Open Trading cost savings and cover delta – over the last 52 weeks for the US Investment Grade activity on MarketAxess. *Here we can observe a direct linear relationship between them.*

Calculating the Open Trading™ Cost Savings (OTCS)

Measured per bond, Open Trading Cost Savings for Liquidity Takers is the price differential (improvement) between the winning Open Trading response and the best disclosed dealer response; e.g. the disclosed dealer cover, which would have been the best available response absent Open Trading.



In the chart, we see that when a cover is 1.5 bps, the OTCS is 1.8 bps. Similarly, when the cover is 2 bps, the OTCS is 2.5 bps. The correlation is an extremely high at 0.99.

Liquidity Score		
	OTCS (LT)	BTC
8 to 10	1.87	1.55
5 to 7	3.12	2.61
0 to 4	5.35	4.44

Dealer Side		
	OTCS (LT)	BTC
Dealer buy	2.38	1.99
Dealer sell	2.77	2.26

Taking it a step further, the tables highlight that this strong relationship holds when split by Liquidity Score or by side.

By establishing confidence in this linkage, traders can build *pre-trade* Open Trading cost savings expectations, which can then be used to improve trading outcomes especially in circumstances where OTCS is expected to be large and add the most value.

Meaningful Price Improvements with Partial-Size Trades

HIGHLIGHTS

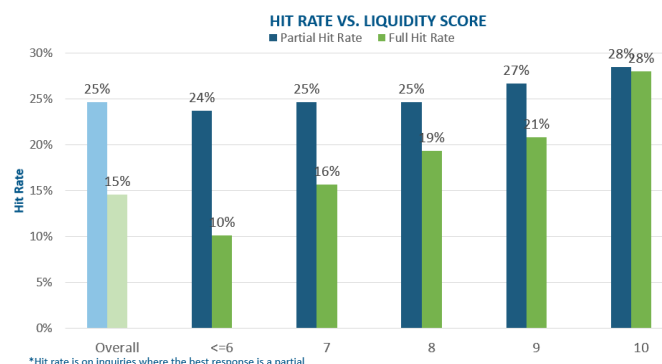
- Partial-size responses can offer significant price improvement over full-sized responses. In 1H20, the median traded premiums for partial responses were 6.7 bps for US Investment Grade and 68 cents for US High Yield.
- When the best level is a partial, participants tend to accept partial size orders that offer price improvement over full-sized orders across all liquidity scores.

A LOOK AT US INVESTMENT GRADE

MarketAxess gives RFQ inquiry submitters the option to allow partial-sized responses from liquidity providers. When the best level is a partial, the liquidity taker can trade the partial or full at their discretion.

In 1H20, 64% of US Investment Grade inquiries allowed partials. Of those, 15% had one or more partial responses and 3% had the partial as the best level. When a partial response is the best level, liquidity takers tend to trade the partial response (25% hit rate, median 6.7 bps premium) over the full-sized response (15%, median 1.8 bps premium). As the premium increases, so does the likelihood to trade the partial response. Inquiries that do not trade (DNTS) are still common (60%, median 6.9 bps premium).

These aggregate results can vary by bond. The chart below looks at the results when the best level is partial, split by liquidity score. Partial-sized responses' hit rates (in blue) increases as relative liquidity scores increase. Additionally, they're much higher than the full-sized responses' hit rates (in green), particularly for lower liquidity scores.



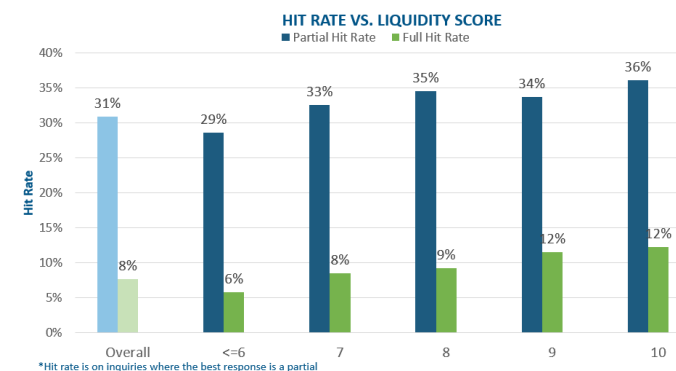
Relative Liquidity Score

The **MarketAxess Relative Liquidity Score** provides a defined measurement of the current liquidity for individual bonds by highlighting the potential ease that a trader can expect to transact in that instrument. Available for Euro, Sterling and Dollar-denominated bond markets, our scoring method covers nearly 26,000 bonds daily, with scores ranging from 10 – meaning the highest level of liquidity – down to 1.

A LOOK AT US HIGH YIELD

In 1H20, 81% of US High Yield inquiries allowed for partials. Of those inquiries, 8% had one or more partial responses and 4% had the partial as the best level. As with US Investment Grade, liquidity takers tend to trade the partial response (31% hit rate, median 68 cents premium) over the full-sized response (8%, median 14 cents premium) when a partial response is the best level. They are also more likely to trade the partial response as the premium increases. DNTS are still common (61%, median 71 cents premium).

Similarly, when the partial is the best level, partial-sized responses' hit rates (in blue) increases as relative liquidity scores increase, and they are consistently higher than the full-sized responses' hit rates (in green) across all liquidity scores.



IMPROVING TRADING OUTCOMES

Partial-enabled inquiries can be an appropriate option for buy-side traders who prioritize execution performance, and partial responses can benefit dealers who provide superior pricing. Ultimately driving better trading outcomes for all participants.

Block Insights Using the TRACE Uncapped Data Set

HIGHLIGHTS

- Uncapped TRACE data brings complete transparency for the largest and most important market segment: block trades.
- Uncapped trade sizes are critical for understanding price context and risk transfer, since trade sizes can range from \$5 million to as high as several hundred million.

CAPPED TRADES OBSCURE BLOCK TRADING PATTERNS

FINRA “caps” the TRACE-disseminated trade quantities over a certain threshold, allowing the participants some reduction in information leakage. For trades over \$5mm in US Investment Grade and \$1mm in US High Yield, FINRA reports only that the trade has met the size threshold. FINRA also reports the average capped volume for that product at end of day.

Historically, FINRA would make the uncapped trade quantities available with a lag of 18 months, but in late 2017, they reduced that lag to two quarters. This change allows for more timely access to valuable market data.

The main value in the data set is the transparency in trading patterns that it provides. Although only 5.5% of all trades by count in 2019 were capped, over 57% of corporate trades by volume were capped over the course of the year. When we dig into the data, it’s clear that the trading patterns vary greatly from the averages of \$11MM (IG) and \$3.5MM (HY).

Uncapped TRACE from MarketAxess

Using an intelligent mapping engine, the uncapped TRACE report has been linked to the original trade records as an add-on to the standard Corporates and 144a feed. This provides accurate trade-level information for transactions that were previously capped, going all the way back to the inception of the feed in July 2002.

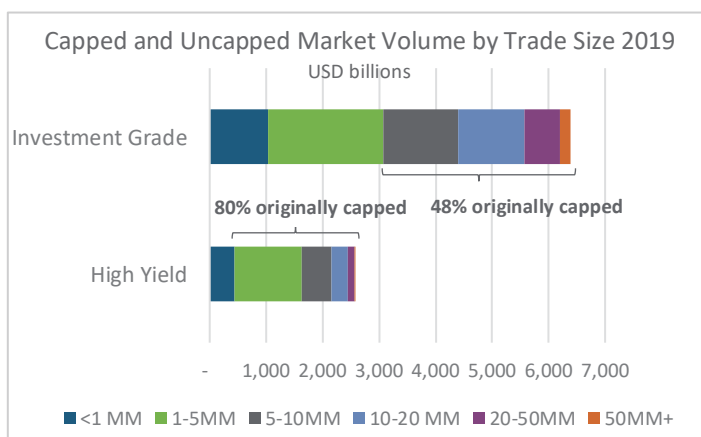
While the average volume of those trades is helpful for a large-scale view, the usefulness diminishes rapidly in constructing detailed analysis across issuers, sectors, and maturities. In 2019, there were nearly 3,000 trades over \$50MM in size, totaling greater than \$200B in volume. Roughly 1/3 of IG capped trades were over \$10MM, and 25% of all IG capped volume were trades of \$20MM or larger.

A LOOK INTO HIGH YIELD CAPPED TRADES

In 2019, 80% of all High Yield volume was originally capped. Additionally, FINRA’s capped set also neglects the trading pattern of bonds that haven’t gone through the grading process. Issuers with solid credit standing occasionally opt to forego the efforts to get an individual bond graded. This can cause a vast discrepancy between available data and true activity. There were 131,000 “High Yield” trades in 2019 that were capped and had true quantities between \$1 and \$5MM, meaning they wouldn’t have been capped if graded differently. This equates to over \$300 billion in volume that could be misinterpreted. In aggregate, this can cause misinformation about the true size of the investment grade and high yield markets.

THE IMPORTANCE OF COMPLETE DATA

Particularly in current market conditions, data is a premium resource. Firms that can take advantage of available information and tools at their disposal are best poised for success. The uncapped data set reveals the full depth of the market and valuable trends that can be leveraged for more accurate forecasting.



Comparing Transaction Costs for Retail vs Institutional Investors

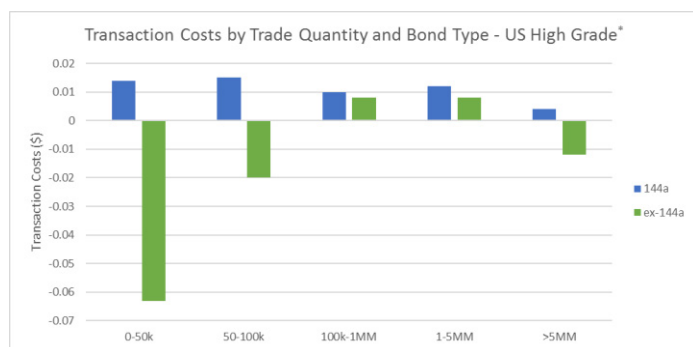
HIGHLIGHTS

- We observe via TRACE that small size trades execute significantly wider than larger trades. For example, trades less than \$50k in notional size execute more than 6 cents wider in US High Grade and more than 30 cents wider in US High Yield.
- However, this small size effect on transaction costs doesn't hold for 144a bonds. Since 144a bonds are only tradeable by qualified investors, and since retail investors trade mostly smaller quantities, we believe that whether an investor is institutional or not is a more determining factor than trade size.

A LOOK AT US HIGH GRADE

Firstly looking at TRACE, we observe that micro lots trade wider than larger trades. Wider means that the trade price is further away from the Composite+™ price (for 'Dealer Buys' trades we compare to Composite+ bid and for 'Dealer Sells' to the Composite+ offer) and therefore less advantageous for the liquidity taker, which is usually the buy-side client.

However, trade size is only a confounding factor and the dimension that matters most is whether the investor is institutional or not. Even though there is no investor type field in the TRACE database, we can control for the investor variable by comparing 144a bonds, which only qualified investors can trade, to other bonds which anybody can trade, including retail investors.



The graph above represents the US High Grade transaction cost (US\$) by size bucket. It is defined as the distance between the TRACE trade price and the Composite+ price on the corresponding side.

Redefining real-time bond pricing

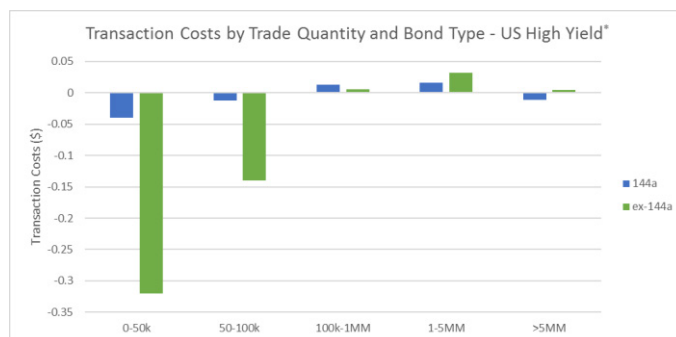
Composite+™ is MarketAxess' proprietary AI-powered pricing engine for corporate bonds. It produces an unbiased, two-sided market for more than 28,000 instruments globally. Updated every 15 to 60 seconds, the engine generates over 30 million levels per day covering 90-95% of trading activity in its markets.

A positive value on the y-axis means that the trade was inside Composite+ (better for the liquidity taker). A negative value means that it was outside Composite+ (worse for the liquidity taker). Each size bucket's value in the chart is the median of all observations.

On the one hand, the graph shows that, for non 144a bonds, trades under \$100k are priced significantly wider than Composite+ while trades above \$100k are in-line with Composite+. On the other hand, for 144a bonds, quantity is hardly a factor at all, and all size buckets are in line with Composite+.

A LOOK AT US HIGH YIELD

In US High Yield, the same trend is confirmed. The size effect is even more pronounced for non-144a bonds and, hardly a factor for 144a bonds.



SIZING THE IMPACT

A final illustration of the relationship between investor type and trade quantities on TRACE is that only 17% of the trades in 144a bonds are micro lots (i.e. the notional is less than or equal to \$100k) vs 68% for non-144a bonds.

*May to July 2020 TRACE data (Client to Dealer trades only, riskless principal trades are excluded)

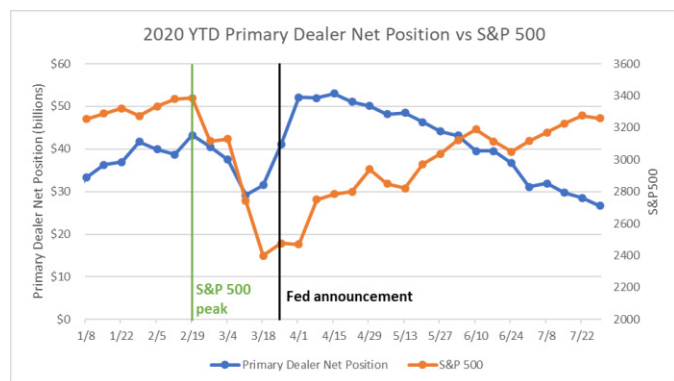
Shifting Primary Dealer Net Positions and Risk Appetite

HIGHLIGHTS

- During the crisis period, primary dealers shrunk their net positions to a low of \$30 billion as they moved to reduce risk. US High Grade **Composite+™** bid-ask spread widened considerably rising from 3 bps to over 30 bps at its widest.
- After the Federal Reserve committed to provide liquidity to corporate bond markets, primary dealer net positions reversed and expanded while bid-ask spread tightened.

DELVING INTO NET DEALER POSITIONS

The COVID crisis caused primary dealers to shrink their net positions from a pre-crisis peak of \$40 billion to a low of \$30 billion. The plot below shows the S&P 500 index and primary dealer net positions in 2020 YTD and highlights the change during the key dates of the crisis (S&P 500 peak and Fed announcement).



Source: [Wall Street Journal](#) and S&P Dow Jones Indices

However, following the Fed's commitment on March 23rd to support liquidity by potentially buying corporate bonds and fixed income ETFs, primary dealer net positions expanded from a low of \$30 billion to \$50 billion as dealers increased market-making activities, signally stronger market support.

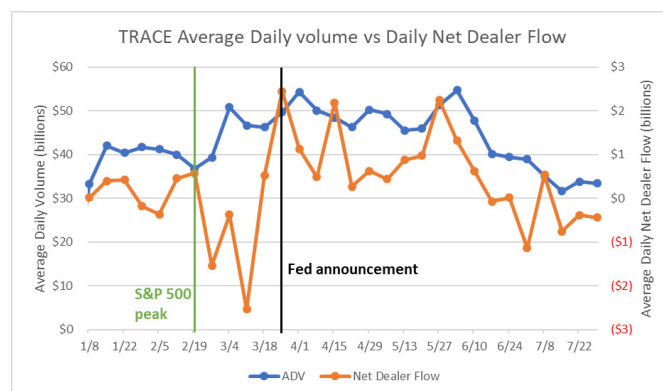
ANALYZING TRACE VOLUME

During the crisis, TRACE volumes grew to record levels with very elevated bid-ask spreads (see "[A new normal for global credit market bid/ask spreads](#)"). After the Fed's March 23rd announcement, volatility decreased while bid-ask spreads and TRACE volume normalized. The plot below shows the

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average daily TRACE volume and the average daily net dealer flow. A negative net dealer flow indicates that dealers were selling more than they were buying. Note that right before the Fed announcement, dealers were selling more than they were buying. Immediately after the announcement, dealers were buying more than they were selling. The average daily TRACE volume spiked during the crisis and gradually came down following the same direction as the average daily primary dealer net position.



Source: MarketAxess and TRACE

INCREASED RISK APPETITE

Dealer activities during the COVID crisis evolved rapidly as the Fed announced new QE policies. The initial stage of the crisis saw a drop in dealer-provided liquidity and an increase in bid-ask spreads, while dealers shrunk their net positions. However, as the Fed made signals of support for the market, dealers expanded their net positions and investors, with renewed risk appetite, provided inflows into corporate bonds. This ultimately drove tighter bid-ask spreads.

Pre-trade Open Trading™ cost savings | Liquidity providers

HIGHLIGHTS

- Open Trading contributes meaningful cost savings for liquidity providers (inquiry responders).
- Establishing *pre-trade* expectations of Open Trading's cost saving for liquidity providers can be an important factor in determining how to manage an order, especially when traders can prioritize price improvement vs. immediacy.
- See our [prior AxessPoint](#) for detail on Open Trading cost savings opportunities for *liquidity takers*.

COST SAVINGS EXPECTATIONS

Traders always have the opportunity to meet their immediate liquidity needs by submitting an RFQ and taking liquidity, either by hitting the bid or lifting the offer. The bid/ask spread is the "price" of such a transaction.

Through Open Trading, traders have the opportunity to instead provide liquidity to another participant's RFQ. For example, they can provide a bid for another participant's BWIC or an offer for another's OWIC.

Of course, buying on the bid-side as a liquidity provider rather than lifting an offer to achieve liquidity has an obvious benefit: the price is improved by the bid/ask spread.

We measure Open Trading Cost Saving for Liquidity Providers exactly that way: the traded level vs. the available level on the opposite side.

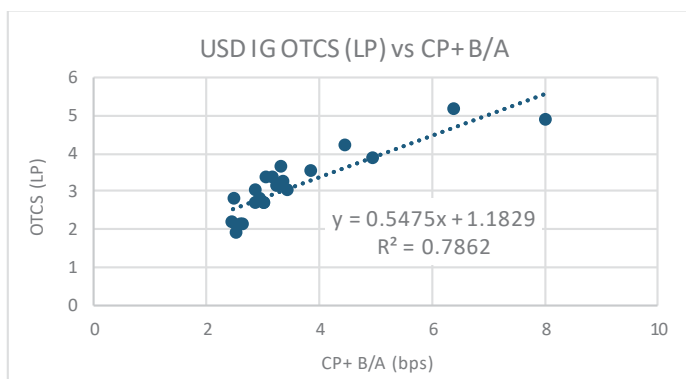
COST SAVINGS VS BID/ASK SPREAD

We've added a chart plotting those two elements – Open Trading cost savings (OTCS) for Liquidity Providers vs. bid/ask spread since January 2019 for US investment grade activity on MarketAxess. Here we can observe a reliably linear relationship between them.

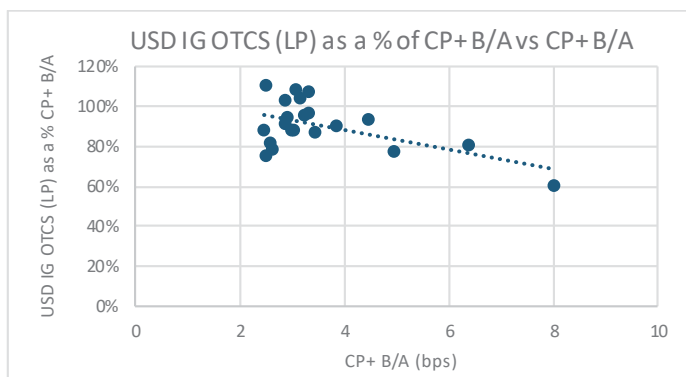
In the chart, for example, we see that when bid/ask is 4 bps, the OTCS is expected to be 3.5 bps. The R-squared is high at 79%.

Calculating the Open Trading Cost Savings (OTCS)

Measured per bond, Open Trading Cost Savings for Liquidity Providers is the price differential (improvement) between the winning Open Trading response and the Composite+™ level on the opposite side; e.g. the expected trade level that the client might have experienced had they instead met their need as Liquidity Taker.



Further, we can plot OTCS as a percentage of bid/ask, which can be used as an effective shorthand on the pre-trade value of OTCS given a bond's bid/ask spread.



We observe OTCS as consistently 80-100% of bid/ask, though the percentage dips lower when bid/ask is elevated.

By establishing confidence in this linkage, traders can build *pre-trade* Open Trading cost savings expectations, which can then be used to improve trading outcomes in circumstances where bid/ask is wide and can add the most value.

Euro Investment Grade Price Dispersion During Volatility

HIGHLIGHTS

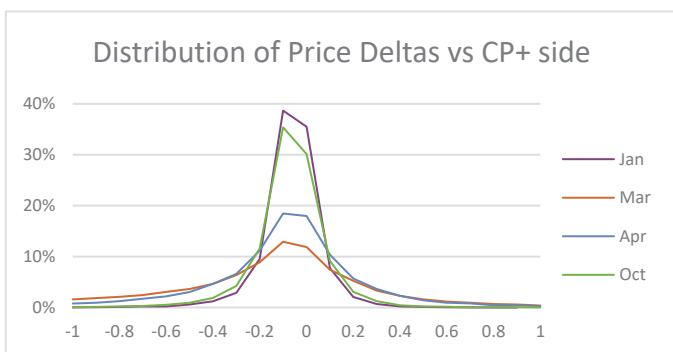
- Price dispersion in EUR IG drastically increased throughout February and peaked in March. Since April, it has started to decrease and has stabilized at nearly the pre-crisis level.
- The distribution of price deltas between trades and the corresponding Composite+™ side flattened during the crisis but stayed centered around zero.
- Win rates – which are driven by client acceptance rates – on levels wider than Composite+ side peaked in April and are now decreasing to pre-crisis levels.

MEASURING PRICE DISPERSION

We measure price dispersion through two indicators: A) The **price delta** between the traded level of RFQs executed on MKTX and the corresponding Composite + side – a positive delta means the level is better than the Composite + bid/offer while a negative delta means the level is worse than Composite+ side and B) The **win rate** of the liquidity provider sending the most competitive level to an inquiry, as a function of the distance to the Composite+ side. Price dispersion can be seen as a secondary risk, with bid/ask the primary pricing risk (read our [prior AxessPoint](#) on the volatility in bid/ask spreads brought on by the COVID-19 pandemic).

EURO INVESTMENT GRADE PRICE DELTAS

Pre-crisis price dispersion was low, with the distribution of price deltas between traded levels and Composite+ side peaking around zero. Trades were tightly distributed around Composite+, demonstrating its accuracy and unbiased nature.



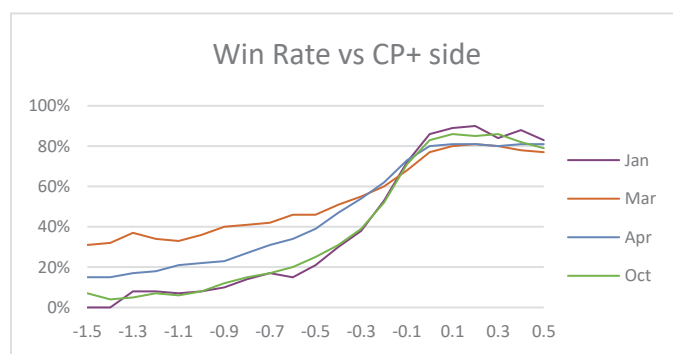
As shown in the above plot, in January, 74% trade levels were within 10 cents of Composite+ side and less than 2% were more than 40 cents wider than Composite+ side.

During the crisis, there was a shift of liquidity demands, and alongside extreme price uncertainty which led to higher price dispersion. This price dispersion drastically increased throughout February and March. The distribution of price deltas quickly flattened – even if still centered around zero. 25% trades were within 10 cents of Composite+ vs 30% were 40 cents wider or worse in March.

Starting in April however, we saw a slow return to normal in price dispersion. The tails of the distribution tightened again, while the peak around Composite+ increased: in October, 65% trades were executed within 10 cents of Composite+ while less than 3% were executed more than 40 cents wider than Composite+.

EURO INVESTMENT GRADE WIN RATES

RFQ responses that are more competitive than the corresponding Composite+ side have a higher chance of execution. During the crisis win rates on levels far from Composite+ reached a peak; best level RFQ responses that were 40 cents wider than Composite+ side had a win rate of 21% in January, compared to over 46% in March and 25% in October. RFQ pricing is becoming increasingly competitive as participants adjust to the new normal.



Dealer RFQ Cost Savings via Open Trading™

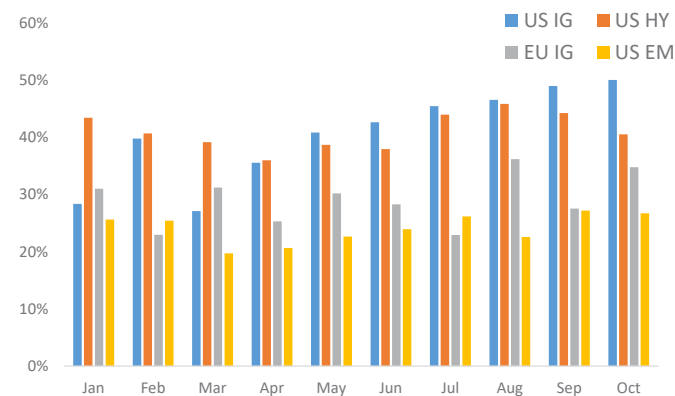
HIGHLIGHTS

- Dealer RFQs on MarketAxess have access to a larger liquidity pool than traditional inter-dealer networks as 43% of trades are with non-dealer counterparties.
- Dealer Open Trading cost savings grew to 7.6bps (US IG), \$0.64 (US HY), \$0.24 (US EM), €0.23 per bond for Q3 2020.

AN EXPANDED LIQUIDITY POOL

Dealer RFQ includes the traditional inter-dealer counterparty network, of course, but simultaneously includes our all-to-all Open Trading network with non-dealer counterparties globally. The liquidity provision from Open Trading is unique and significantly additive to a dealer's outcome.

DEALER RFQS WON BY NON-DEALERS



Source: MarketAxess

The chart above illustrates how often the Open Trading network acts as a liquidity provider. For example, the diversity of participants has helped increase its share from 28% to 50% in 2020 for US IG.

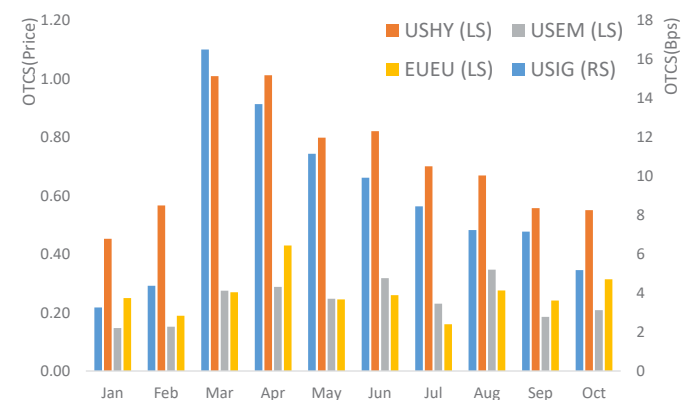
Dealer Open Trading Cost Savings (Dealer OTCS)

Measured per bond, Dealer Open Trading Cost Savings is the price differential (improvement) between the winning Open Trading response with a non-dealer and the best dealer response. This represents the benefit gained by a Dealer through Open Trading versus a traditional inter-dealer broker network.

SAVINGS DURING AND POST-CRISIS

In the previous AxessPoint, '[Estimating pre-trade Open Trading cost savings for liquidity takers](#)', we highlighted the savings investor clients realize through Open Trading, these savings also extend to Dealer RFQs submitted through Open Trading as well.

AVERAGE MONTHLY DEALER OTCS



Source: MarketAxess

Dealer OTCS followed a similar trend as their investor client counterparts, namely as market volatility increased, Dealer OTCS increases in step. US IG grew from 5bps (Feb) to almost 17bps (March), a 260% increase. US HY increased from 58 cents to 102 cents, 75% increase. EM USD and EUR IG also saw significant increases. Additionally, Dealer OTCS remains elevated in every market against the start of the year, with a 38% average increase.

Understanding TCA Outcomes in US Investment Grade

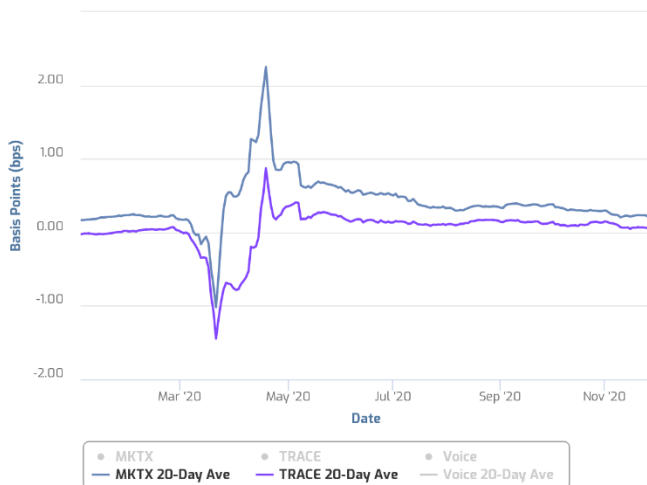
HIGHLIGHTS

- Liquidity takers can achieve better price execution when trading US Investment Grade (IG) on MarketAxess, relative to a market benchmark such as TRACE.
- A key driver in determining price outcomes, when trading electronically, is the number of responses received on an RFQ. More responses equate to improved pricing with more competition among liquidity providers.
- Our analysis shows that every additional response improves TCA by ~0.36 bps on average.

ELECTRONIC & VOICE TRADING TCA IN THE US IG MARKET

Transaction Cost Analysis (TCA) is used by participants in corporate bond markets as a post-trade tool to assess the pricing and execution quality of their trading activity. Looking at TCA in aggregate can give us a unique view into broader trends in the corporate bond market and electronic trading.

Across 2020 we have seen consistent overperformance of pricing quality executed on MarketAxess compared to non-electronic bond trading. In 2020 (Jan-Nov inclusive), the US IG trades executed on MarketAxess saw an average of 1.1 bps price improvement over other traded activity reported to TRACE, as shown in the [performance indices](#) below.



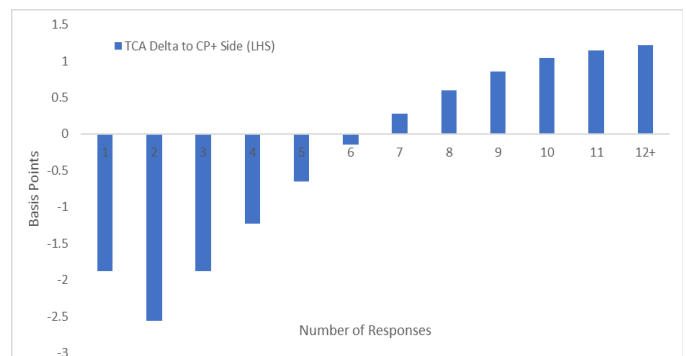
Transaction Cost Analysis (TCA)

TCA is defined relative to Composite+ and is calculated as the distance between the trade price and the Composite+ price on the corresponding side, at inquiry time. A positive value means the trade occurred inside (more competitive than) Composite+ bid or offer, while a negative value means the trade occurred outside (less competitive than) the Composite+ bid or offer.

WHAT'S RESPONSIBLE FOR ELECTRONIC TCA OUTCOMES

One of the primary factors that influences TCA outcomes is the number of firm price quotes received on an order. The more price responses received on an order, the more likely the best quote is to outperform a benchmark.

A clear correlation between responses and pricing outcome emerges (see below plot); a linear regression fit shows correlation (R-squared) at 93%, with each additional response improving TCA by ~0.36 bps. On average, in 2020, RFQs that received seven or more responses outperformed Composite+™ bid/offer, while over 70% of trades received at least seven responses and significantly outperformed Composite+ side.



To help improve pricing outcomes and achieve best execution, clients can aim to maximize the number of responses they receive on their inquiries. Having a pre-trade estimate for the numbers of responses that will be received on an RFQ can help inform best execution mandates.



Now you're in the market™