Record breaking totals of volume traded, issuance and notional outstanding suggest that the US corporate bond market is thriving. Notwithstanding a precipitous drop in net dealer positions since the financial crisis, bid/ask spreads are as narrow today as they were in pre-crisis years. But despite the litany of statistical data points and regulatory commentaries that suggest a healthy bond market, industry participants are unconvinced – and rightly so. According to TABB Group research, liquidity has dissipated in many over-the-counter markets, particularly in corporate bonds.

Empirical data available to the trading community today suggests an abundance of liquidity. The story one gets from reading between the lines is far less encouraging, however. Dealer business models have shifted, and the established procedures of trade reporting and post-trade data are unable to capture the evolving dynamic, which in turn misleads regulators and market participants. The tools that participants have relied on in the past to assess liquidity risk and move capital – dealer relationships, real-time and post-trade data, and traditional execution models – may no longer be enough to get the job done. As dealers step back from their role as dependable facilitators of liquidity and providers of pre-trade information, innovative liquidity measurement solutions may step in to fill the gap.
Introduction

"Statistics: The only science that enables different experts using the same figures to draw different conclusions.\) – Evan Esar

The perennial question about whether liquidity in OTC fixed income markets is waning is certain to be hotly contested in 2016. The stakes have never been higher for market participants. The untested waters of the first rising interest rate environment coupled with the unabated growth of the US corporate bond markets has set the stage for an unprecedented evolution in the trading landscape.

As of year-end 2015, the US corporate bond market was 100% larger in terms of notional outstanding than it was in 2002. Record issuance and daily par volume for 2015 across both high yield and investment grade bonds was nearly double compared with crisis levels in 2008. By all traditional statistical measures, the US corporate bond market is healthy, if not thriving.

Recent reports from the Federal Reserve Bank of New York (NY Fed) and the Financial Industry Regulatory Authority (FINRA) corroborate this view, arguing that traditional liquidity metrics indicate liquidity in today’s market is abundant. This analysis is correct to the extent that an incomplete data model is accurate. In other words, the variables may be correct, but without the missing X, Y, and Z, the result may be incorrect.

During the fourth quarter of 2015, TABB Group surveyed 93 participants in the US corporate bond trading community on their use and outlook for liquidity, liquidity risk and the best means to measure that risk in today’s market. One interesting result central to the theme of this research note was that the overwhelming majority of respondents said they primarily relied on either investment team expertise or post-trade Trade Reporting and Compliance Engine (TRACE)/dealer quote data to assess liquidity risk in the marketplace. At a time of significant market transformation, such as retuning volatility coupled with a new reliance on the secondary market, a dependency on traditional measures of liquidity will be a soft spot for institutional investors. The empirical data available to the US corporate bond trade community is diluted by unincorporated factors.

Bid/ask spreads have recently been a chief point of contention. At face value, bid/ask spreads are narrower than ever and paint an encouraging picture. These figures, however, are not authentic. At best, this post-trade data tells a misleading story; at worst, it tells the wrong story. TRACE data simply does not include important market dynamics in its aggregate, after-the-fact picture of the market. The bottom line is that traditional tools available today benefit market participants to some degree but are not enough to continue moving capital across the market efficiently.

Risk management and investor accountability will be front of mind for market participants looking to navigate the new US corporate bond trading landscape in 2016. For many, the ability to accurately assess liquidity risk will be at the top of the list of problems to solve. Tasked with this goal, participants may need to look past decreasingly reliable dealer quotes and TRACE data to find a new market variable to assess liquidity accurately in today’s corporate bond marketplace.
Steady Growth, Shaky Foundation

Since 2002, notional outstanding in US corporate bonds has more than doubled to over $8 trillion from $4 trillion. Similarly, by 2015, annual notional volume had jumped to $7.2 trillion from $3.6 trillion in 2008. US corporate bond issuance has also broken records each year, totaling over $1.6 trillion as of December 2015 (Exhibit 1). Invariably, high-level statistics suggest that the notion of a liquidity crisis affecting the marketplace is unfounded.

Exhibit 1

Source: TABB Group, SIFMA

Historical bid/ask spread figures also suggest a liquid market. The MarketAxess high-grade bid/ask spread index (BASI) reflects that since 2008, bid/ask spreads on odd-lot ($100k-$1m) trades have narrowed by more than 80%, while for micro (<$100k), round ($1m-$5m) and block (> $5m) size trades, spreads have similarly narrowed by over 70% over the same period (Exhibit 2).

Exhibit 2
Investment Grade Bid/Ask Spread Index (BASI) by Trade Size

Source: TABB Group, MarketAxess
For investment grade bonds, turnover has been declining since 2009. The 12-month rolling turnover ratio for high yield bonds shows a similar trend. Since 2014, however, there has been an abrupt uptick in turnover in high yield corporate bond trades (Exhibit 3). The decline in overall turnover is not surprising considering the sharp jump in issuance in relation to a constant, albeit less dramatic, rise in notional volume traded since 2009.

Exhibit 3
Investment Grade & High Yield 12-Month Rolling Turnover Ratios

Source: TABB Group, MarketAxess, TRACE

Same Data, Different Conclusions

In terms of nebulous capital market terminology, ‘liquidity’ tops the list. Authors of a 2002 working paper published by the International Monetary Fund list five dimensions as the standard for a liquid market (Exhibit 4). Based on this traditional criteria, two major regulatory bodies have published recent reports downplaying the seriousness of the liquidity crisis facing the US corporate bond marketplace.

Since 2002, the IMF has expanded upon these basic liquidity principals. In its October 2015 Global Financial Stability Report (GFSR), the IMF provided a comprehensive table of modern liquidity measures available to market participants today (Exhibit 5, next page).

Exhibit 4
Five Traditional Dimensions of Liquid Markets

<table>
<thead>
<tr>
<th>Liquidity Dimension</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction Cost</td>
<td>Bid-ask spread</td>
</tr>
<tr>
<td>Immediacy</td>
<td>The speed at which orders can be executed, settled</td>
</tr>
<tr>
<td>Depth</td>
<td>Abundance of orders within range of market price</td>
</tr>
<tr>
<td>Breadth</td>
<td>The number of orders of varying size</td>
</tr>
<tr>
<td>Resiliency</td>
<td>The flow at which new orders arrive to correct market imbalance</td>
</tr>
</tbody>
</table>

Source: TABB Group, IMF
Note: TABB has replaced the term “Tightness” with the term “Transaction Cost”, which we feel more accurately describes the role of the bid/ask in the discussion on liquidity.
Exhibit 5
Modern Liquidity Measures

<table>
<thead>
<tr>
<th>Liquidity Measure</th>
<th>Aspect of Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bid-ask Spread</td>
<td>A measure of transaction costs. It shows how much a trader pays by buying and then immediately selling a given security</td>
</tr>
<tr>
<td>Turnover</td>
<td>Trading activity</td>
</tr>
<tr>
<td>Roll’s (1984) Price Reversal</td>
<td>A measure of bid-ask spreads. It exploits the fact that buy and sell orders arrive randomly and force prices to bounce between ask and bid quotes. This generates a negative autocovariance of returns, under restrictive assumptions.</td>
</tr>
<tr>
<td>Corwin and Schultz’s (2012) High-low Spread</td>
<td>Measures transaction costs by estimating a bid-ask spread when quote data are not available or unreliable. It uses information on intraday high and low prices.</td>
</tr>
<tr>
<td>Effective Spread</td>
<td>The actual, round-trip-equivalent, cost of trading to the liquidity demander. It captures how far away from the mid price trades are actually taking place.</td>
</tr>
<tr>
<td>Imputed Round-trip Cost</td>
<td>An indirect measure of the round-trip cost. Captures transaction costs in fixed-income markets by calculating how much it costs if a trader buys and sells the same security at the same day in the same amount. It is useful when there are no quoted prices available.</td>
</tr>
<tr>
<td>Price Impact</td>
<td>A measure of market depth. It estimates the change in price for a given trading volume. In other words, it represents the marginal cost of trading an additional unit of quantity (Holden, Jacobsen, and Subrahmanyam, forthcoming).</td>
</tr>
<tr>
<td>Amihud’s (2002) Measure</td>
<td>A measure of market depth. It shows the daily price change associated with one dollar of trading. Market depth captures the quantity dimension of market liquidity, that is, the ease with which one can trade securities in large amounts</td>
</tr>
<tr>
<td>Quote Depth</td>
<td>A direct measure of market depth. It documents the depth of the order book and captures the quantity of securities for which dealers are willing to supply liquidity services.</td>
</tr>
<tr>
<td>Dealer Count</td>
<td>An indirect measure of market depth that documents the number of dealer quotes we have on a given security. It also roughly captures the availability of market making.</td>
</tr>
<tr>
<td>Markit’s Liquidity Score</td>
<td>A composite measure of market liquidity. It provides an ordinal approximation of the many dimensions of liquidity based on observable bond and trade characteristics, with special emphasis on trade costs and data quality. According to Markit, it estimates market breadth—the number of participants in a market—and implied liquidity (useful when data are incomplete or securities do not trade often). A smaller value implies higher liquidity.</td>
</tr>
</tbody>
</table>

Source: TABB Group, IMF October 2015 Global Financial Stability Report

In a research note published by FINRA’s office of the chief economist last December, *Corporate Bond Liquidity Healthy by Most Measures: FINRA Research*, one of the author’s principal conclusions was that, despite market-wide pessimism, the current US corporate bond market is, by most measures, “healthy.” In addition, a position paper published in October
2015 by the NY Fed entitled Has U.S. Corporate Bond Market Liquidity Deteriorated? came to a similar conclusion – all vital signs indicate an abundance of liquidity.

One important caveat emphasized in both reports was that while price-based liquidity measures suggest the market has ample liquidity, significant changes to the overall market structure of US corporate debt have taken place. The FINRA report cited decreased trade sizes (approximately 35% for the top 1,000 most traded issues since between 2007 and 2013) and a decrease of 15% for trades of $5 million or more as a percentage of total volume. For trades outside the top 1,000 most active issues, these trends are also present, although less pronounced. That is, buy-side and sell-side market participants require more trades to transact a given volume today than ever before. The New York Fed research suggested that in lieu of traditional liquidity provisioning provided by dealers, hedge funds and high-frequency trading (HFT) firms are playing a larger role in providing liquidity to the marketplace.

Can these data points be taken at face value? TABB Group research suggests that while the overall statistical picture of the marketplace today indicates a liquid, healthy market, evidence of an increasing structural imbalance can be found by looking between the lines.

Exhibit 6
Primary Dealer Net Positions, $millions

Source: TABB Group, New York Fed

**Dealer Model Shifts**

After a precipitous drop in primary dealer inventories in the wake of the financial crisis, net position levels continue to hover at record lows (Exhibit 6). TABB Group estimates that since 2007, the aggregate corporate bond balance sheet capacity among the top 10 primary dealers within the US dropped 21% between 2007 and 2015 – a reduction to $95 billion from $120 billion (Exhibit 7 & 8, next page). As the size of the market grows, the impact of this aggregate figure’s decreasing total will greatly affect the secondary market-making ability of major dealers, which already is a challenged segment of the US corporate bond market.
Bond Liquidity Metrics: Reading Between the Lines | February 2016

Exhibit 7 & 8
Top-10 Dealer Corporate Bond Aggregate Balance Sheet Capacity/TABB Liquidity Impact Ratio

<table>
<thead>
<tr>
<th>Aggregate Balance Sheet Capacity</th>
<th>Liquidity Impact Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>$130</td>
<td>3.0%</td>
</tr>
<tr>
<td>$120</td>
<td>2.5%</td>
</tr>
<tr>
<td>$110</td>
<td>2.0%</td>
</tr>
<tr>
<td>$100</td>
<td>1.5%</td>
</tr>
<tr>
<td>$90</td>
<td>1.0%</td>
</tr>
<tr>
<td>$80</td>
<td>0.5%</td>
</tr>
<tr>
<td>$70</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Source: TABB Group, SIFMA

TABB Group calculates this metric through the “TABB Liquidity Impact Ratio:” the ratio of aggregate balance sheet capacity against total size of the market. Between 2007 and today, this ratio has dropped nearly 60%, to 1-1.4% from 2.4-3.5% (Exhibit 7 & 8).

These changes to the dealer landscape, in step with such significant growth of the US corporate bond market as measured by record-breaking volumes traded and issuance, suggest a significant market structure shift. While dealers are still the predominant intermediary for OTC bond trades, the manner in which dealers are providing liquidity today has changed.

The continued reduction in aggregate balance sheet capacity for the top broker/dealers active in US corporate bonds is directly responsible for the marked loss of immediacy, or on-demand liquidity available to participants.

Exhibit 9
The Shifting Dealer Business Model

Source: TABB Group

Due to regulations that are increasing capital adequacy requirements for dealers, the cost of running a bond trading business is beginning to outweigh the profitability of running a bond
trading business. The traditional model of principal risk-based intermediation is no longer an economic option for banks seeking to maintain acceptable levels of return on capital (Exhibit 9, previous page).

Ongoing TABB Group research on corporate bond trading trends indicates that banks are combating the increasing costs of running their bond businesses by opting for a riskless-principal, or order-driven, trading model. Exhibit 10 demonstrates the dramatic increase in the percentage of riskless-principal trading among major US dealers since 2006 for larger trade sizes. As of 2015, 70% of high yield trades over $2 million among dealers was made up by riskless-principal, order-driven trading, up from a mere 20% in 2006. Similarly, riskless-principal business for trade sizes over $2 million reached 30% last year, up from ~5% in 2006.

Exhibit 10
Corporate Bond Riskless-Principal, Order-Driven Business (Trades >$2MM)

In addition to the effect of driving down the level of immediacy available to marketplace participants, the increase in riskless-principal, order-driven business may very well have the ancillary effect of deteriorating the value of dealer quotes as a method of assessing liquidity for any particular issue. The logic is that dealers use quotes as a means of attracting business, or starting conversations, but if the level of immediacy is decreasing, these quotes are less likely to be truly actionable. Therefore, these “quotes” would be more accurately described as indicative rather than real-time measures of liquidity.
The Bid/Ask Assumption

Bid/ask spreads today are consistent with those before the financial crisis, when market participants enjoyed significant liquidity. These figures are repeatedly pointed to by illiquidity naysayers as evidence of a healthy, liquid market. While the numbers may be the same today as they were in the pre-crisis glory days, the underlying conditions driving these figures today are a stark contrast to previous years.

The issue comes down to the fact that these bid/ask spreads are calculated based on post-trade data. Taken at face value, the bid/ask actually represents the bid and ask that participants were exposed to during trading. This assumption, however, is a mistake since the liquidity premium in the quoted market is not reflected in post-trade bid/ask calculations. Exhibit 11 demonstrates how the liquidity premium is factored into the quoted market today. While dealers are still willing to provide immediacy for on-the-run and odd-lot trades, under the new paradigm, larger, less popular issues are subject to a dealer liquidity premium.

Exhibit 11
Quoted Market Liquidity Premium

Take a hypothetical transaction as an example in which an investor asks a dealer for a bid on $10MM XYZ bond that is quoted +185/180 bps over the US10Y, and the dealer is willing to provide immediacy for $2MM and requests an order on the balance. After hours of working the order, the dealer is then able to find another investor who provides a bid of +189 bps for the $8MM balance. If the first investor accepts the new terms, the dealer acts as riskless-principal in the transaction, working for a basis point. When these trades are plugged into the TRACE database, the post-trade reporting will reflect a buy at +190 bps and a sell at +189 bps. As a result, a narrow 1 bps spread is reflected in the statistical data, rather than the liquidity premium of 5 bps for the trade (Exhibit 12, next page).
Exhibit 12
The Bid/Ask Spread Workflow

Source: TABB Group
The Tools Used Today

In 2015, TABB Group surveyed 93 participants across the buy and sell side who were active in the US corporate bond market on their views of the liquidity risk in the market, best practices in liquidity measurement, and regulatory initiatives. The results varied, but taken as a litmus test for market outlook, the study showed that participants are not optimistic heading into 2016.

Methodology

During the fourth quarter of 2015, TABB Group interviewed 93 US corporate bond market participants. Sixty-eight percent of the participants identified with the buy side, 22% with the sell side and the balance were primarily specialized trade service providers. More than half (58%) of the respondents were bond traders, 15% risk management professionals, 14% portfolio managers, 8% identified as other, and 5% were part of compliance teams (Exhibit 13).

Exhibit 13
Survey Participant Demographics: Trade Side & Title Breakdown

The Results

Across all segments covered within the survey, participants’ responses reflected dim expectations for liquidity available in the US corporate bond market for 2016. Participants were asked to rank each of eight threats to fixed income market liquidity on a scale of 1-5 (Exhibit 14, next page). When the totals were taken in the aggregate, apart from the threat of a ‘large scale macro crisis,’ the most serious threat that participants identified was the ongoing decline in immediacy (balance sheet) provided by dealers. It is important to note that the baseline of Exhibit 14 leans heavily toward the high danger spectrum across all eight options. This outcome is concerning given the fact that of all the potential threats, the decline in immediacy provided by dealers is one of the foremost factors currently driving market conditions.
Exhibit 14
Rank the following in terms of risk they pose to fixed income market liquidity

1. Large scale macro crisis
2. Decline in immediacy (balance sheet) provided by dealers
3. Contraction of repo market
4. Large scale central bank bond purchases
5. Lack of price transparency
6. Fixed Income ETFs
7. Algorithmic trading
8. Asset/investment philosophy asymmetry

Source: TABB Group

Over 70% of participants surveyed said they relied on “investment team expertise” alone or in tandem with another metric to measure liquidity risk for their trading. The use of TRACE pricing and dealer quote data was the second most common measure, with just under half of participants using this method, and third-party evaluated pricing data was the third most common method of measuring liquidity risk. While TRACE pricing and dealer quote data was popular, TRACE corporate bond data was elected as the most useful of all liquidity metrics by a significant margin (Exhibit 15).

Exhibit 15
How do you measure liquidity risk?

Rank the following list of liquidity metrics:

Source: TABB Group
Bloomberg and Markit were the standout favorites among participants in terms of liquidity metric tool providers. Just under 90% of respondents indicated that they had assessed Bloomberg’s and 50% of respondents had assessed Markit’s.

Given Bloomberg’s vast terminal network, 80% of respondents indicated that they use a Bloomberg during the normal conduct of their daily business. It is important to note respondents may not differentiate between using a Bloomberg terminal and utilizing specific liquidity metrics functionality offered through the terminal.

Individuals selected Markit as their most favored provider over 30% of the time and indicated they were specifically using Markit’s liquidity metric tools, leading us to the conclusion that their product offering was currently garnering the most interest from market participants. (Exhibit 16).

We proposed five hypothetical regulatory agendas to participants as solutions to the liquidity issues facing the market:

- Delayed reporting of price/volume/time data
- Reduction of central bank bond holdings
- Additional safeguards for fixed income ETFs
- More timely reporting of price/volume/time data
- Reduction of bank capital adequacy requirements

Just under 75% of participants indicated that a reduction of bank capital adequacy requirements was the only standout option for success. That’s not surprising since increased capital adequacy requirements for US dealers were viewed unanimously as a detriment to corporate bond liquidity. Delayed reporting of price/volume/time data was the least likely regulatory initiative to improve liquidity (Exhibit 17, next page).
Exhibit 17
Do You Believe the Following Regulatory Issues Will Improve Liquidity?

- **Delayed reporting of price/volume/time data**
  - Yes, 36%
  - No, 64%

- **Reduction of central bank bond holdings**
  - Yes, 48%
  - No, 53%

- **Additional safeguards for fixed income ETFs**
  - Yes, 55%
  - No, 45%

- **More timely reporting of price/volume/time data**
  - Yes, 57%
  - No, 43%

- **Reduction of bank capital adequacy requirements**
  - Yes, 74%
  - No, 26%

*Source: TABB Group*
No Bond is an Island

Liquidity in OTC markets is multi-dimensional partly because the nature of the principal-risk model ensures that almost every transaction – or negotiation of trade terms – is a unique situation. In many ways, measuring the inherent or “moment in time” liquidity of individual bond issues is an enormously difficult task.

TABB Group research has determined that the traditional manner of measuring bond liquidity was once a reflection of a dealer’s ability and willingness to provide immediacy, or on-demand risk transfer. The initial step in the process of moving toward a transaction was extracting or establishing a dealer quote.

Changes to the regulatory regime, particularly due to the Basel III Accord and new capital adequacy requirements for global systemically important banking institutions (GSIBs), are eroding the dealer quoting system. Quotes that were once a fairly high predictor of where a bond would trade, are now more an indication of where a bond might trade.

In the absence of significant market structure change and the development of an order-driven marketplace, investors are caught between a rock and a hard place, needing tools to supplement the decaying quoted market.

Our discussions with a wide range of institutional investors led to the surprising conclusion that when making critical portfolio construction decisions, institutional investors expend very little effort in assessing the liquidity of an issue. They rely most heavily on internal models; others utilize third party providers, while some turn to dealer services.

Several large banks now offer liquidity-scoring services that incorporate a variety of factors to arrive at a liquidity score for a particular bond issue. These factors include:

- Number of trades
- Trading concentration or clustering
- Quality of trading activity
- Diversity of trading activity
- Volatility

Most surprisingly, many investors informed TABB Group that traditionally, when initiating a trade, the liquidity of an issue is not incorporated into their investment decision-making process. Instead, they rely on the other two components that comprise the risk equation: default risk (net of recovery) and the possibility that actual returns will differ from the expected returns. Liquidity is playing a greater role in asset valuation. As the dynamic of risk transfer and intermediation becomes more fluid, the focus on liquidity premiums will play an increasingly important role in the investment return equation.
Conclusion

Some observers of the US corporate bond market seem to be looking down a hall of mirrors, mistaking a multitude of reflections for a single source. They’re seeing liquidity in the market in every direction when it is in fact retreating.

At face value, traditional evidence suggests that liquidity is anything but waning in today’s US corporate bond market. Bid/ask spreads have narrowed significantly while notional outstanding and issuance continue to break records. But the old standards have broken down. The statistics available today – time-tested measurements of liquidity – are telling two very different stories. For participants entrenched in this evolving market the truth is readily apparent. Underneath the layers of data that suggest a healthy corporate bond ecosystem, a market is in turmoil. A renewed focus on measuring and assessing liquidity risk is a key element of strategies for institutional investors looking to safely navigate the new corporate bond trading waters in 2016.

The current standard for measuring liquidity and assessing liquidity risk is built upon a market structure model that is rapidly changing. The suite of evaluation products available today is highly valuable, but it will be increasingly challenged for a growing range of bonds as dealer quotes emerge as more of an indication of where risk may be transferred and not where immediate liquidity resides. Tools will need to be expanded and enhanced to incorporate new datasets in order to accurately interpret liquidity within an evolving corporate bond market structure. The market cannot ignore dealer quote or TRACE data, however, when measuring corporate bond liquidity, as both represent two of the most widely available and consistent inputs utilized today. A robust liquidity metrics model will still require the inclusion of both datasets, despite some potential shortcomings, given they provide an extensive and historical record of bond prices through various liquidity environments.

Some interesting potential solutions have already emerged. A select few corporate bond electronic trading platforms are in nascent stages of breaking through with unique execution protocols for addressing liquidity for both odd-lot and block markets. But that’s only part of the answer.

In tandem with these innovations, there needs to be an increased reliance on third-party pricing and data services. New means of measuring liquidity and liquidity risk from an entire portfolio down to the individual CUSIP level will be paramount for success. Innovative liquidity scoring metrics provided by vendors such as Markit, Bloomberg, Interactive Data Corp. as well as some dealers will likely be a key tool in the toolbox for investors seeking to navigate tomorrow’s corporate bond market. Just as nature abhors a vacuum, liquidity metrics will fill the void as *immediacy* becomes a word of the past.
About

TABB Group

TABB Group is a financial markets research and strategic advisory firm focused exclusively on capital markets. Founded in 2003 and based on the methodology of first-person knowledge, TABB Group analyzes and quantifies the investing value chain from the fiduciary, investment manager, broker, exchange, and custodian. Our goal is to help senior business leaders gain a truer understanding of financial markets issues and trends so they can grow their business. TABB Group members are regularly cited in the press and speak at industry conferences. For more information about TABB Group, go to www.tabbgroup.com.

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A financial markets industry veteran, Anthony Perrotta is a partner at TABB Group, responsible for directing the Global Research Alliance and Consulting practices, which serve institutional investors in the capital markets. The practices focus on the areas of market structure, regulatory affairs, compliance, trading, clearing, technology, and data issues affecting equities, fixed income, listed, and OTC derivatives, and Technology. Mr. Perrotta presents at a wide range of industry conferences and his thought leadership regularly appears in such financial publications such as the Wall Street Journal, Financial Times et al.

Mr. Perrotta joined TABB Group in 2014. He is considered a leading authority on fixed income trading, distribution, market structure, and technology across rates, credit, and OTC derivatives markets. His career includes roles as the Head of Credit and OTC Derivatives Trading for both Tradeweb Markets LLC and MarketAxess Corp., in addition to trading and sales management positions with Barclays, Lehman Brothers and Morgan Stanley in the US and Asia. Since 2013, he has been an advisory board member for SenaHill Partners, a merchant bank serving the financial services technology sector. He attended Georgetown University.

Colby Jenkins

Colby Jenkins joined TABB Group in August 2012. Before joining TABB, he was a Global Academic Fellow at New York University Abu Dhabi in the UAE, serving as a faculty member in its physics and mathematics departments. He graduated from New York University, earning a BS in physics with an additional focus on mathematics. As an analyst, Colby works within the fixed income research group.