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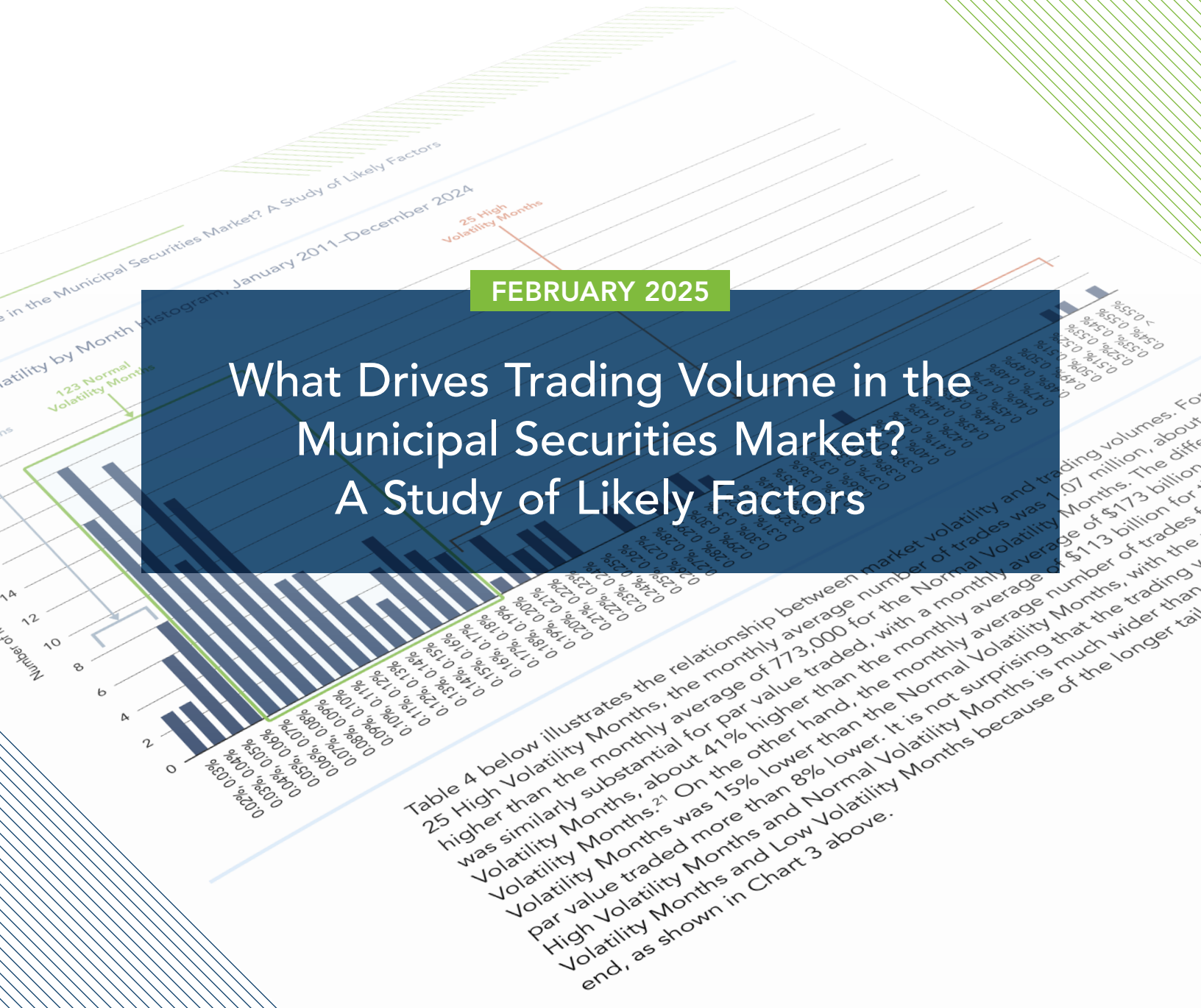

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What Drives Trading Volume in the Municipal Securities Market? A Study of Likely Factors

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Introduction and Background[1]

In 2024, the municipal securities secondary market saw record trade count for the third consecutive year since at least 2005.[2] Par value traded in the secondary market was also higher in the past three years than in any other year since 2010. This surge of trading volume stands in sharp contrast to previous years, when trading volume was generally steady, or significantly lower, as in 2021.[3] The unprecedent level of trading activity raises the question: What really drives secondary market trading volume in the municipal securities market? This paper addresses several likely factors that may impact trading volume, with a particular focus on analyzing the relationship between trading volume and 10-year benchmark yields, as well as the relationship between trading volume and market volatility.[4]

Chart 1 below summarizes secondary market trading volume for the municipal securities market, as measured by the number of trades and par value traded, from January 2011 through December 2024. Starting from March 2022, both the number of trades and par value traded were higher than in previous years, and trading activity continued to climb through the end of 2024, setting records in 2022, 2023 and 2024. This was true for the total number of trades, which in 2024 was 10% greater than in 2023 and 14% greater than in 2022. However, par value traded was lower in 2024

1 The views expressed in this research paper are those of the author(s) and do not necessarily reflect the views and positions of the MSRB Board and other MSRB staff.

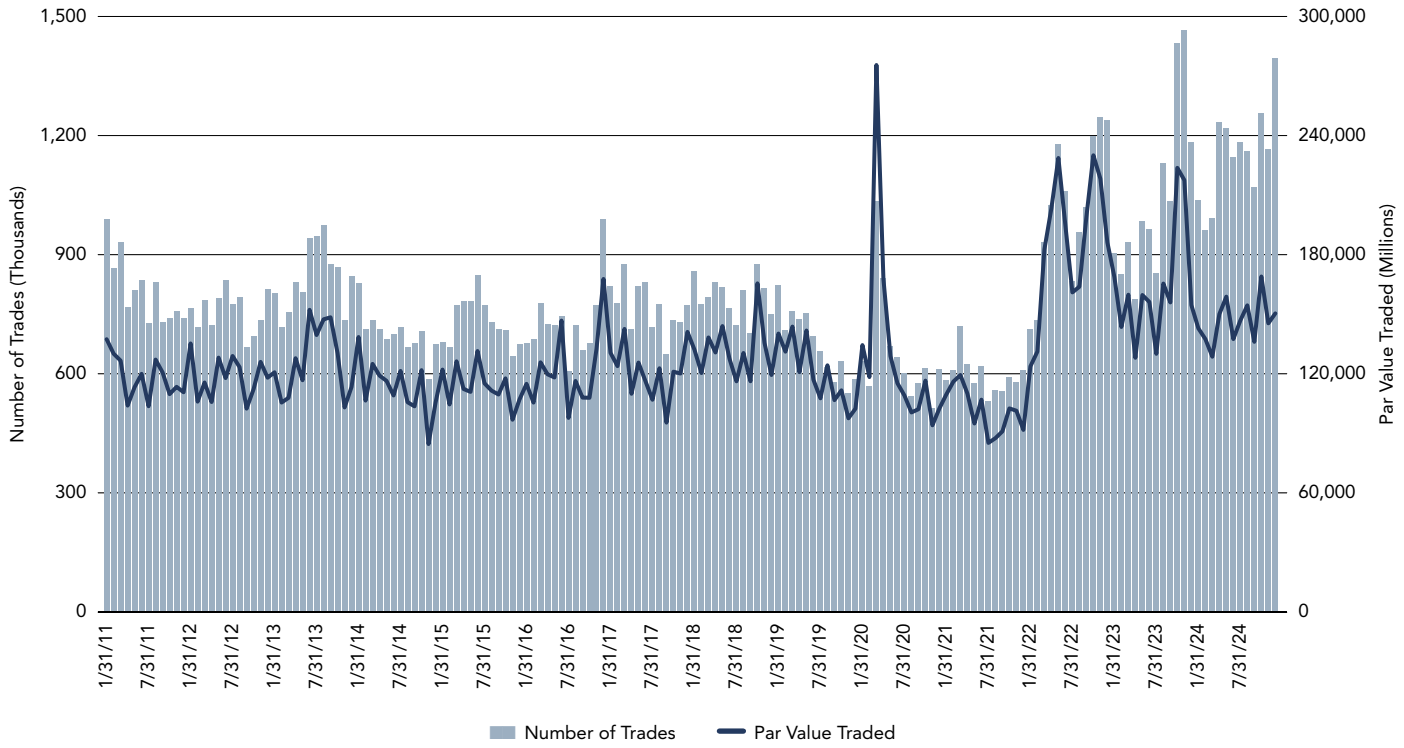
2 In 2005, real-time trades started to be reported to the MSRB.

3 The year 2021 had the lowest count of trades and par value traded since 2005.

4 Other factors, such as technological advancement that facilitates locating available liquidity and executing trades, may also have had an impact on trading volume. In addition, the recent growth in the popularity of exchange-traded funds (ETFs) and separately managed accounts (SMAs) may have affected trading volume in a variety of ways. However, those factors are hard to quantify and therefore are excluded from the analysis.

than in 2023 and in 2022.[5] That said, par value traded in 2024 was still noticeably higher than the average yearly level between 2011 and 2021. In fact, 2021 had the lowest number of trades and par value traded during the relevant period.

Chart 1. Number of Trades and Par Value Traded by Month, January 2011–December 2024

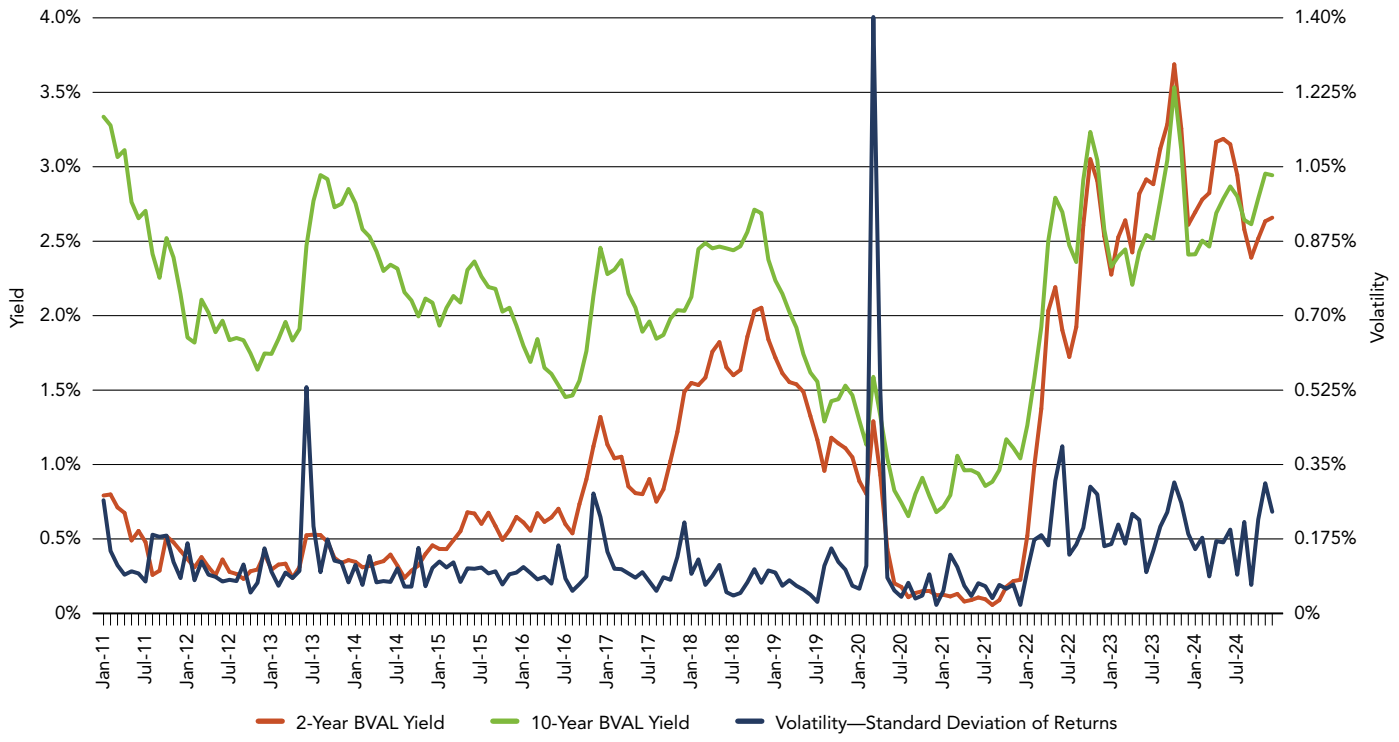


Coinciding with the surging trading volume, tax-exempt benchmark yields and market volatility also increased between 2022 and 2024 when compared to the low levels in late 2020 and 2021, as illustrated in Chart 2. The monthly average 10-Year BVAL Yield increased from a low of about 0.7% in early 2021 to a high of about 3.5% in late 2023, while the monthly average 2-Year BVAL Yield increased even more, from a low of 0.06% in the summer of 2021 to a high of 3.7% by late 2023. Monthly volatility also increased noticeably, with the average monthly volatility between 2022 and

[5] The rising yields in 2022 and 2023 may have prompted more trading from tax-loss swaps than usual. Tax-loss swaps, an investment strategy often implemented in municipal bond portfolios, allows investors to take a tax loss in their portfolios while at the same time adjusting factors such as credit quality, maturity, etc., to better meet the current needs of the portfolio and the outlook for the market. See PIMCO, https://www.pimco.com/us/en/resources/education/easing-the-pain-of-gains.

2024 more than three times as high as the average from late 2020 and early 2021. In contrast to past episodes of increased volatility, such as the June 2013 "Taper Tantrum,"[6] November 2016 presidential election and March 2020 COVID-19 pandemic crisis, where the spikes only lasted for a brief period, the elevated volatility levels since early 2022 have persisted for a substantially longer period. While there may be other factors impacting trading volume, it is plausible that both yields and volatility have substantial influence on trading volume.

Chart 2. Yield and Market Volatility by Month, January 2011–December 2024



[6] The "Taper Tantrum" was the market's reaction to the Board of Governors of the Federal Reserve System indicating future tapering of its quantitative easing policy.

Data and Methodology

In this paper, we examined municipal securities secondary market trading volume reported to MSRB's Real-Time Transaction Reporting System (RTRS) for the period from January 2011 through December 2024. In addition to excluding list offering price (LOP) trades, which represent primary market activity, variable rate securities and commercial paper[7] were also excluded from the analysis, as those securities are expected to behave differently from fixed-rate municipal securities in response to yield movement and market volatility. Furthermore, dormant trading days with negligible volume reported to the RTRS system, such as certain bond market holidays,[8] were eliminated from the daily volume analysis.

Both the number of trades and par value traded were used to measure trading volume. Individual investors typically participate in a significant portion of the smaller-size trades, while institutional investors nearly monopolize the larger-size trades, based on past research. Therefore, relatively speaking, the number of trades is more representative of individual investors' activities,[9] while par value traded is more representative of institutional investors' activities. By using both measures for trading volume, we were able to analyze how both sets of investors may react to yields and volatility. Furthermore, when necessary, we also conducted some analyses for the following trade size groups separately: $100,000 par value or less, commonly known as "odd-lot" trades or small-size trades, more than $100,000 par value but less than $1,000,000 par value ("intermediate" trades or intermediate-size trades) and $1,000,000 par value or over, commonly known as "block" trades or large-size trades.

For the main analysis of this paper, yield is represented by the 10-Year BVAL Callable Curve from Bloomberg. The 10-Year BVAL yield was used primarily because the comparable yield curve for United States Treasury securities, the 10-year Treasury yield, is the most widely used reference rate for financial markets.[10] The 10-year Treasury yield serves as a vital economic benchmark, influencing many other interest rates, particularly interest rates with similar maturity. For volatility, we measured market-wide volatility based on aggregate bond prices, which is represented by the S&P Municipal Bond Index,[11] as bond price changes incorporate all yields. Volatility is calculated as the standard deviation[12] of daily returns for the S&P Municipal Bond Index over a month.

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7 Variable rate securities and commercial paper are nearly exclusively traded by institutional investors.

8 Columbus Day, Veteran's Day and Good Friday.

9 Including investing in SMAs.

10 See Why is the 10-year Treasury so important?, USA Today, October 23, 2023; and What Is The 10-Year Treasury Yield?, Forbes, October 23, 2023.

11 The S&P Municipal Bond Index is a market value-weighted index that tracks fixed-rate tax-free bonds and bonds subject to the alternative minimum tax (AMT). It is the broadest municipal bond index in the S&P Dow Jones Indices family of indices and includes bonds of all qualities—from AAA to non-rated, excluding defaulted bonds—and from all sectors of the municipal bond market. *See* file:///C:/Users/swu/Downloads/fs-sp-municipal-bond-index-1.pdf.

12 Standard deviation, the square root of variance, is commonly used as a statistical measure of market volatility to assess how widely prices are dispersed from the average price.

Summary of Findings

This section first analyzes the relationship between yields and trading volumes, followed by a discussion of the relationship between market volatility and trading volumes. In order to control other likely factors that may impact trading volumes, as well as to account for the potential interaction between volatility and yields, the section presents a regression analysis to investigate all likely factors simultaneously and test each factor's statistical significance.

Yield

To analyze whether the municipal securities market manifests any relationship between daily trading volume and prevailing market yields, each trading day from January 2011 through December 2024 was assigned to one of the seven yield buckets based on the closing value of the 10-Year BVAL Callable Curve from previous trading day: 0%–1%, >1.0%–1.5%, >1.5%–2%, >2.0%–2.5%, >2.5%–3%, >3.0%–3.5% and >3.5%–4%.[13] Table 1 shows the average daily number of trades and par value traded for each yield bucket and reveals what appears to be a positive correlation between yields and trading volume, with both the daily average number of trades and par value traded rising uniformly as yields increase. In addition, the average trade size for each yield bucket was relatively stable, though the average trade size for the two lowest yield buckets (0%–1% and >1.0%–1.5%) was over 13% higher than the average trade size for the other five buckets combined, suggesting a higher proportion of intermediate or block trades when yields were extremely low.[14]

[13] The highest daily 10-Year BVAL yield was 3.63% and the lowest yield was 0.54% during the relevant period. Therefore, no trading days coincided with 0.5% or less of the 10-Year BVAL yield, and the lowest yield bucket thus has the 0%–1% range.

[14] In this publication, odd-lot trades are defined as trades with a par value of $100,000 or less and block trades are trades of $1 million and more.

Table 1. Average Daily Trading Volume for Each Yield Bucket, January 2011–December 2024[15]

Yield Buckets	Number of Trading Days	Daily Average—All Trades		Average Trade Size
		Number of Trades	Par Value Traded	
0–1.0%	318	28,077	5,018,563,980	178,745
>1.0%–1.5%	317	30,683	5,492,644,814	179,011
>1.5%–2.0%	809	35,208	5,801,150,011	164,770
>2.0%–2.5%	1,118	37,966	6,060,135,734	159,621
>2.5%–3.0%	742	47,145	7,161,674,543	151,909
>3.0%–3.5%	178	52,484	8,072,092,063	153,802
>3.5%–4.0%	15	73,180	11,900,583,012	162,621
All Buckets	**3,497**	**38,606**	**6,215,252,360**	**160,992**

Table 2 (Panel A and Panel B) shows the same analysis for three trade size groups independently: $100,000 par value or less (odd-lot trades), more than $100,000 to less than $1,000,000 par value (intermediate trades) and $1,000,000 par value or over (block trades). Yields and trading volume maintained a positive correlation for all three trade size groups. However, as the yield rose, the magnitude of trading volume increases for odd-lot trades, where individual investors make up a significant portion of trading volume, was more pronounced than for block trades, which are conducted predominantly by institutional investors. The cumulative percentage change between the lowest-yield bucket (0–1%) and the highest-yield bucket (>3.5–4%) for odd-lot trades was 165% in term of the number of trades and 181% in terms of the par value traded. By comparison, the cumulative percentage change between the lowest-yield bucket and the highest-yield bucket for block trades was only 99% in terms of the number of trades and 131% in terms of the par value traded.[16] The result is consistent with the variation of the average trade size in Table 1 above, where larger-size trades were relatively concentrated in the lower-yield buckets while smaller-size trades were relatively concentrated in the higher-yield buckets.

[15] When using the median instead of the average, the numbers do not differ much in the table.

[16] This is consistent with a recent analysis conducted by the Municipal Market Analytics (MMA), where it showed that since 2022, higher yields increased retail trades. See MMA Advisors, December 2024.

Table 2. Average Daily Trading Volume for Each Yield Bucket by Trade Size, January 2011–December 2024

Number of Trades - Daily Average						
Yield Buckets	Trade Size at $100,000 or Lower	Percent Change	$100,000 < Trade Size < $1,000,000	Percent Change	Trade Size at $1,000,000 or Over	Percent Change
0–1.0%	23,353		3,734		990	
>1.0%–1.5%	25,572	9.5%	4,097	9.7%	1,014	2.5%
>1.5%–2.0%	29,445	15.1%	4,721	15.2%	1,041	2.7%
>2.0%–2.5%	32,018	8.7%	4,859	2.9%	1,089	4.6%
>2.5%–3.0%	40,166	25.4%	5,726	17.9%	1,252	15.0%
>3.0%–3.5%	44,846	11.7%	6,282	9.7%	1,356	8.2%
>3.5%–4.0%	61,849	37.9%	9,359	49.0%	1,971	45.4%
All Buckets	**32,560**		**4,931**		**1,114**	
Cumulative Percent Change		**164.8%**		**150.7%**		**99.2%**

Par Value Traded - Daily Average						
Yield Buckets	Trade Size at $100,000 or Lower	Percent Change	$100,000 < Trade Size < $1,000,000	Percent Change	Trade Size at $1,000,000 or Over	Percent Change
0–1.0%	713,766,292		1,086,163,170		3,218,634,519	
>1.0%–1.5%	801,171,743	12.2%	1,178,018,233	8.5%	3,513,454,838	9.2%
>1.5%–2.0%	957,301,849	19.5%	1,366,669,958	16.0%	3,477,178,204	-1.0%
>2.0%–2.5%	1,026,981,140	7.3%	1,392,872,661	1.9%	3,640,281,933	4.7%
>2.5%–3.0%	1,262,957,134	23.0%	1,578,347,013	13.3%	4,320,370,396	18.7%
>3.0%–3.5%	1,428,188,638	13.1%	1,707,968,854	8.2%	4,935,934,571	14.2%
>3.5%–4.0%	2,007,165,232	40.5%	2,469,553,682	44.6%	7,423,864,098	50.4%
All Buckets	**1,036,605,800**		**1,399,455,117**		**3,779,191,443**	
Cumulative Percent Change		**181.2%**		**127.4%**		**130.7%**

The same analysis for all secondary market trades was also conducted for two distinct periods separately: January 2011 through February 2022 (Period I) and March 2022 through December 2024 (Period II). Since March 2022, there has been a fundamental shift in monthly trading volume in the municipal securities market. Out of 134 total months in Period I, only a single month, March

2020 during the COVID-19 Pandemic, had the total number of secondary market trades exceeding 1 million. Conversely, between March 2022 and December 2024, 22 out of 34 months had over 1 million trades.[17]

Table 3 compares the correlation results between Period I and Period II. The positive correlation between trading volume and yields still holds for both periods, with both the number of trades and par value traded having higher daily averages for higher-yield buckets than their daily averages for lower-yield buckets. However, for the four yield buckets where both Period I and Period II have qualified trading days, >1.5%–2.0%, >2.0%–2.5%, >2.5%–3.0% and >3.0%–3.5%, both the daily average number of trades and par value traded were universally higher in Period II than in Period I. This suggests that other factors may have had an impact on trading volume, in addition to yield, with volatility being a strong candidate.[18] As shown in Table 3, average monthly volatility was nearly twice as high during Period II (0.2%) as during Period I (0.11%).

Table 3. Average Daily Trading Volume for Each Yield Bucket—Over Two Periods, January 2011–December 2024

Period I: January 2011–February 2022			
		Daily Average	
Yield Buckets	Number of Trading Days	Number of Trades	Par Value Traded
0–1.0%	318	28,077	5,018,563,980
>1.0%–1.5%	317	30,683	5,492,644,814
>1.5%–2.0%	793	35,144	5,771,380,427
>2.0%–2.5%	924	36,508	5,800,781,395
>2.5%–3.0%	341	39,793	6,352,011,769
>3.0%–3.5%	95	43,951	6,382,594,067
>3.5%–4.0%	0		
All Buckets	**2,788**	**35,152**	**5,755,409,214**
Average Monthly Volatility	**0.11%**		

[17] When all trades (primary and secondary trades for all municipal securities) are included, only four months had 1 million or more trades between January 2011 and February 2022, while there have been 27 months with that volume of trades since March 2022.

[18] As previously stated, other factors, such as technological advancement, as well as the recent growth in the popularity of ETFs and SMAs may also affect trading volume in a variety of ways.

Period II: March 2022–December 2024			
		Daily Average	
Yield Buckets	Number of Trading Days	Number of Trades	Par Value Traded
0–1.0%	0		
>1.0%–1.5%	0		
>1.5%–2.0%	16	38,352	7,276,605,012
>2.0%–2.5%	194	44,907	7,295,411,037
>2.5%–3.0%	401	53,396	7,850,190,767
>3.0%–3.5%	83	62,249	10,005,854,830
>3.5%–4.0%	15	73,180	11,900,583,012
All Buckets	**709**	**52,189**	**8,023,493,110**
Average Monthly Volatility	**0.20%**		

Market Volatility

As previously mentioned, in addition to the impact from yields, we hypothesized that volatility would also affect trading volumes independently. It is well known to market participants in many financial markets that there is a positive relationship between volatility and trading volume, and this correlation has also been corroborated by academic research.[19] This section investigates whether the municipal securities market exhibits the same positive relationship between volume and volatility, where, as mentioned earlier, volatility is calculated as the standard deviation of daily returns for the S&P Municipal Bond Index over the course of a month.

Chart 3 illustrates the histogram of monthly volatility for all 168 months from January 2011 through December 2024. Out of the 168 months, 25 months were classified as "High Volatility Months" (months to the right of the shaded area in Chart 3), with a monthly volatility of at least one standard deviation above the average monthly volatility during the relevant period. In addition, 20 months were classified as "Low Volatility Months" (months to the left of the shaded area in Chart 3), with a monthly volatility of at least one standard deviations below the average monthly volatility. The remaining 123 months were classified as "Normal Volatility Months" in the shaded area. It is apparent that the tail for High Volatility Months is much longer than the tail for Low Volatility Months, which is not surprising because volatility cannot be negative on the low end, while on the high end it theoretically can be infinite.

[19] *See* Massaporn Cheuathonghua and Chaiyuth Padungsaksawasdi, "The volume-implied volatility relation in financial markets: A behavioral explanation," The *North American Journal of Economics and Finance*, March 2024, https://www.sciencedirect.com/science/article/abs/pii/S1062940824000238; and Waël Louhichi, "What drives the volume-volatility relationship on Euronext Paris?" Working Paper, 2011, https://efmaefm.org/0efmameetings/efma%20annual%20meetings/2011-Braga/papers/0348.pdf.

Chart 3. Market Volatility by Month Histogram, January 2011–December 2024

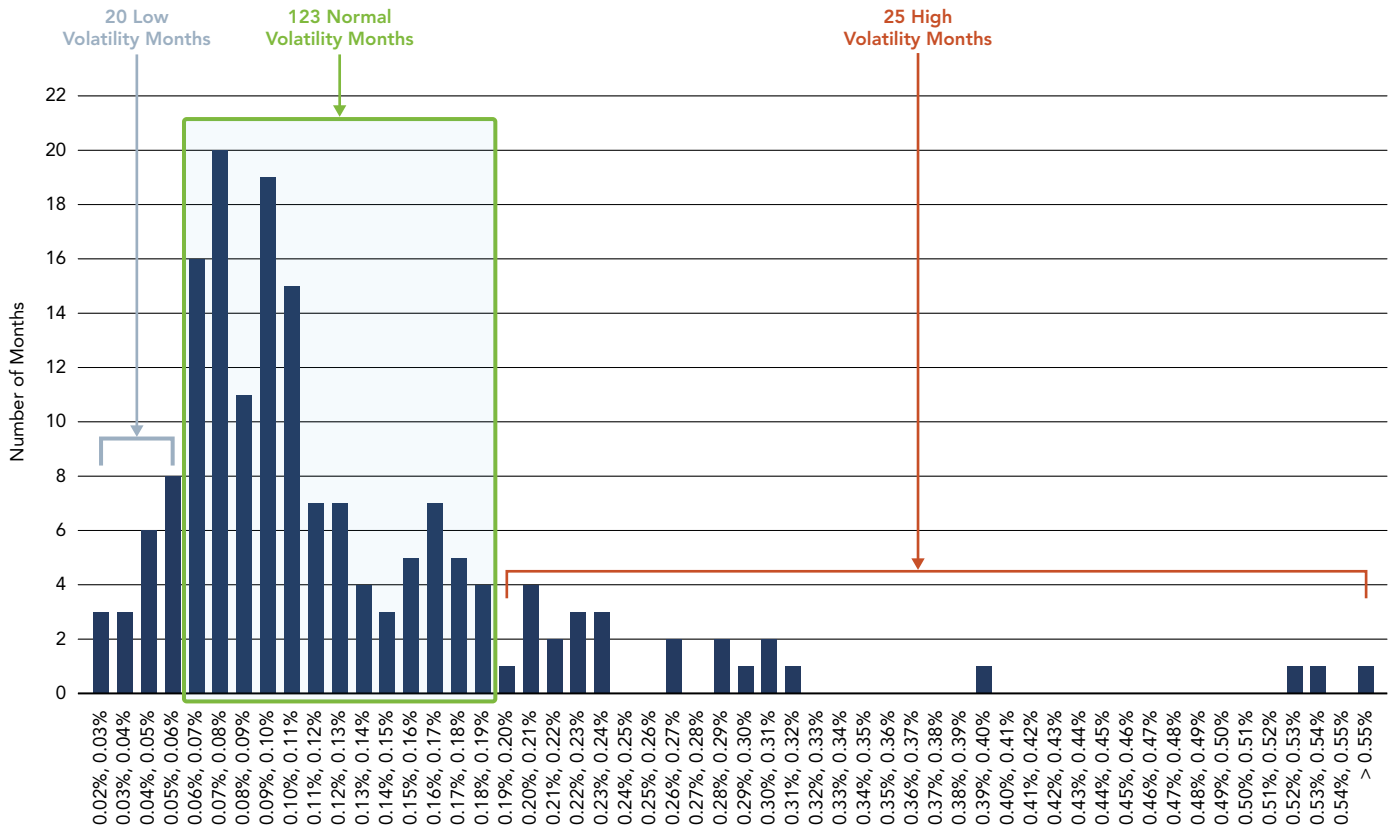

Table 4 below illustrates the relationship between market volatility and trading volumes. For the 25 High Volatility Months, the monthly average number of trades was 1.07 million, about 39% higher than the monthly average of 773,000 for the Normal Volatility Months. The difference was similarly substantial for par value traded, with a monthly average of $173 billion for the High Volatility Months, about 41% higher than the monthly average of $113 billion for the Normal Volatility Months.[20] On the other hand, the monthly average number of trades for the 20 Low Volatility Months was 15% lower than the Normal Volatility Months, with the monthly average par value traded more than 8% lower. It is not surprising that the trading volume gap between High Volatility Months and Normal Volatility Months is much wider than the gap between Normal Volatility Months and Low Volatility Months because of the longer tail on the high end than the low end, as shown in Chart 3 above.

[20] The paper also divided the 25 High Volatility Months into two groups, with one group (17 months) coinciding with rising yields and the other group (eight months) coinciding with declining yields, and found no major difference between the two groups. Both the number of trades and par value traded were within two to three percentage points of each other in the two groups.

Table 4. Market Volatility and Trading Volumes, January 2011–December 2024

Average Monthly Trading Volume	Low Volatility Months (20 Months)	Normal Volatility Months (123 Months)	High Volatility Months (25 Months)
Number of Trades	658,633	773,135	1,071,458
Par Value Traded	112,935,982,808	123,115,401,059	173,417,800,159

The analyses presented so far show that there appears to be a correlation between yields and trading volumes, as well as a correlation between market volatility and trading volumes. However, both correlations are established independently and separately, without controlling for any potential interactions between yields, volatility, and/or any other likely factors. Therefore, the next section intends to address these issues with a regression analysis.

Regression Analysis for All Relevant Factors

To consider the potential drivers of trading volume all together, a regression analysis was used to test each driver's statistical significance. The benefits of performing a regression analysis are diverse. One benefit is to measure the correlation between one variable (dependent variable) and many other variables (independent variables, also known as control variables and/or explanatory variables) simultaneously and statistically test the estimated impact for each independent variable while controlling for all other variables. Essentially, the estimated impact from each independent variable is conditioned on the economic principal of "all else being equal."

In this case, the regression analysis tests the relationship between the dependent variable, Trading Volume, and a set of independent variables: Trading Volume Lag (trading volume from the previous month), Primary Offering Volume, Volatility, Yield, and Yield Lag (yield from the previous month). All variables represent monthly statistics. There may be other factors that could influence trading volume as well, such as technological advancement that facilitates locating available liquidity and executing trades, and shifting investment preferences, such as increased use of SMAs and ETFs by individual investors. However, those factors are impossible to quantify with data and therefore were excluded from the regression analysis. The regression model is specified as follows:

Regression Model

$$Trading\ Volume_t = \alpha + \beta_1 Trading\ Volume\ Lag_{t-1} + \beta_2\ Primary\ Offering\ Volume_t + \beta_3\ Volatility_t + \beta_4\ Yield_t + \beta_5\ Yield\ Lag_{t-1} + \varepsilon_t$$

Subscript *t* corresponds to a particular month. The regression model has two specifications for the dependent variable Trading Volume: Number of Trades and Par Value Traded. Similar to the analyses above, Trading Volume represents the secondary market trading volumes for fixed-rate municipal securities (excluding commercial paper and variable rate securities). In addition, the independent variable Yield represents the average 10-year BVAL municipal bond yield[21] during a month, while the independent variable Volatility is calculated as the standard deviation of daily

[21] Derived from Bloomberg BVAL Municipal AAA curves.

returns for the S&P Municipal Bond Index over a month. Finally, all dependent and independent variables are specified in percentage change, including yield and volatility. For example, if the average monthly yield increases from 4% last month to 4.5% this month, the variable Yield will be calculated as 12.5% for the month.[22] Essentially, this method acknowledges that the effect of a 0.5% increase from 4% would be very different from the effect of a 0.5% increase from, for example, 1%, which would be a 50% increase.

Table 5 below captures the full results of the regression analysis. The parameter estimates for control variables are as expected and generally do not differ significantly whether Trading Volume is specified as Number of Trades or as Par Value Traded. Primary Offering Volume is positively correlated with Trading Volume, which is not surprising since a municipal bond is traded the most frequently during the initial period (e.g., the first 30 days) after its issuance, followed by infrequent or sporadic trading activity throughout the remaining life of the bond. Volatility is also positively correlated with Trading Volume, though Volatility's impact on Par Value Traded is more than twice as large as its impact on Number of Trades.[23] This suggests that, all else being equal, institutional investors' trading activity, more closely represented by Par Value Traded, is more affected by market volatility than individual investors' trading activity, which is more closely represented by Number of Trades.

In addition, both the current and last month's bond yields are found to be positively correlated with Trading Volume, implying that the impact of Yield on Trading Volume lasts longer than other variables. Also, the economic magnitude of the impact from Yield as measured by the parameter estimate in the regression analysis is much larger than the magnitude of the impact from Volatility and Primary Offering Volume. For example, Table 6 shows that a hypothetical 10% increase in Yield (i.e., from 5% to 5.5%) corresponds to a contemporaneous increase of 4.8% in Number of Trades and 4.3% increase in Par Value Traded. By comparison, a hypothetical 10% increase in Primary Offering Volume is associated with only a 0.8% increase in Number of Trades and a 0.9% increase in Par Value Traded; while a 10% increase in Volatility is associated with only a 0.5% increase in Number of Trades but a more substantial 1.2% increase in Par Value Traded. The result agrees with the general perception that when a fixed-income product generates a higher yield during a given month, it will attract more investor interest in the product, and the impact is likely to carry over to the following month.

Finally, there is a "bounce-back" effect on Trading Volume, all else being equal, i.e., if one month's trading volume is 10% higher than the prior month's trading volume, the following month's trading volume would be 3.8% lower for number of trades and 4.4% lower for par value traded.[24] This bounce-back effect exists even after controlling market conditions associated with the municipal bond market during each month.

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[22] (4.5%–4%) / 4% = 0.125, or 12.5%. In addition to the straight percentage change calculation, another way is to use the natural logarithm difference as a proxy for percentage difference for all variables in the equation.

[23] Both are statistically significant at the 95% confidence level.

[24] The inverse would be true as well, i.e., if one month's trading volume was 10% lower than the prior month's trading volume, the following month's trading volume would be 3.8% higher for number of trades and 4.4% higher for par value traded.

Table 5. Regression Analysis, January 2011–December 2024

Number of Trades			
Variable	Parameter Estimate	*t* Value	Statistically Significant at 5%
Intercept	0.0033	0.4662	No
Trades Lag	(0.3808)	(5.4297)	Yes
Primary Offering Volume	0.0801	3.4470	Yes
Volatility	0.0460	3.5037	Yes
Yield	0.4824	6.0603	Yes
Yield Lag	0.2811	3.2384	Yes
Adjusted R-Square	0.44		
Number of Observations	166		

Par Value Traded			
Variable	Parameter Estimate	*t* Value	Statistically Significant at 5%
Intercept	0.0009	0.0964	No
Par Volume Lag	(0.4381)	(7.0748)	Yes
Primary Offering Volume	0.0887	2.9854	Yes
Volatility	0.1174	6.8862	Yes
Yield	0.4313	4.1879	Yes
Yield Lag	0.3621	3.3851	Yes
Adjusted R-Square	0.50		
Number of Observations	166		

Table 6. Impact Illustration Based on the Regression Analysis, January 2011–December 2024

	Impact on Trading Volume	
Hypothetical 10% Increase	Number of Trades	Par Value Traded
Yield	4.8%	4.3%
Prior Month's Yield	2.8%	3.6%
Volatility	0.5%	1.2%
Primary Offering Volume	0.8%	0.9%

The regression analysis statistically confirms that both Volatility and Yield are positively correlated with Trading Volume, even after the model controls for both of those variables as well as other variables. The results likely explain the dramatic increase in trading volume for municipal securities between 2022 and 2024, when volatility and yields were both elevated compared to previous years.

Conclusion

In this paper, we examined the factors that were likely associated with periods of heavy trading volume in the municipal securities market. Both yields and market volatility, the prime focus of this paper, were found to be positively correlated with trading volume, which is not surprising given the rising trade volume, yields and volatility since early 2022 as a result of mounting inflation in the United States. The correlations between yields, volatility and trading volume stand even after controlling for other potential contributing factors, such as primary offering volume, and the positive correlations are statistically significant. It should be noted that there may be other non-measurable factors that could also influence trading volume, for example, technological advancement and shifting investment preferences such as increased use of SMAs and ETFs by individual investors, which this paper cannot validate without the relevant data.

Lastly, there was a notable shift in investor trading patterns when yields were at their lowest. In fact, when tax-exempt 10-year yields were 1.5% or lower, there was less participation from individual investors relative to institutional investors, as evidenced by significantly higher average trade sizes during those periods. Similarly, we found that odd-lot trades were more sensitive to yield movement than block trades, as the trading volume increase was more prominent for odd-lot trades than block trades as the yields moved up. By comparison, institutional investors were likely more sensitive to volatility movement than individual investors, as the regression analysis showed that a hypothetical increase in volatility has more than twice as much impact on par value traded than on number of trades.

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