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Introduction¹

Trading volume in the municipal market both in terms of par traded and number of trades has declined significantly in the first eight months of the year compared to similar periods over the prior five years. Although the Municipal Securities Rulemaking Board (MSRB) has previously reported on declining trading volumes, there has been another noticeable drop-off in the past four months. This analysis looks at trading trends for fixed-rate municipal bonds over the past five years with a particular focus on the declining trading activity during 2021. Variable rate bonds including Variable Rate Demand Obligations (VRDOs), Auction Rate Securities (ARS) and Commercial Paper (CP) are excluded from this analysis.

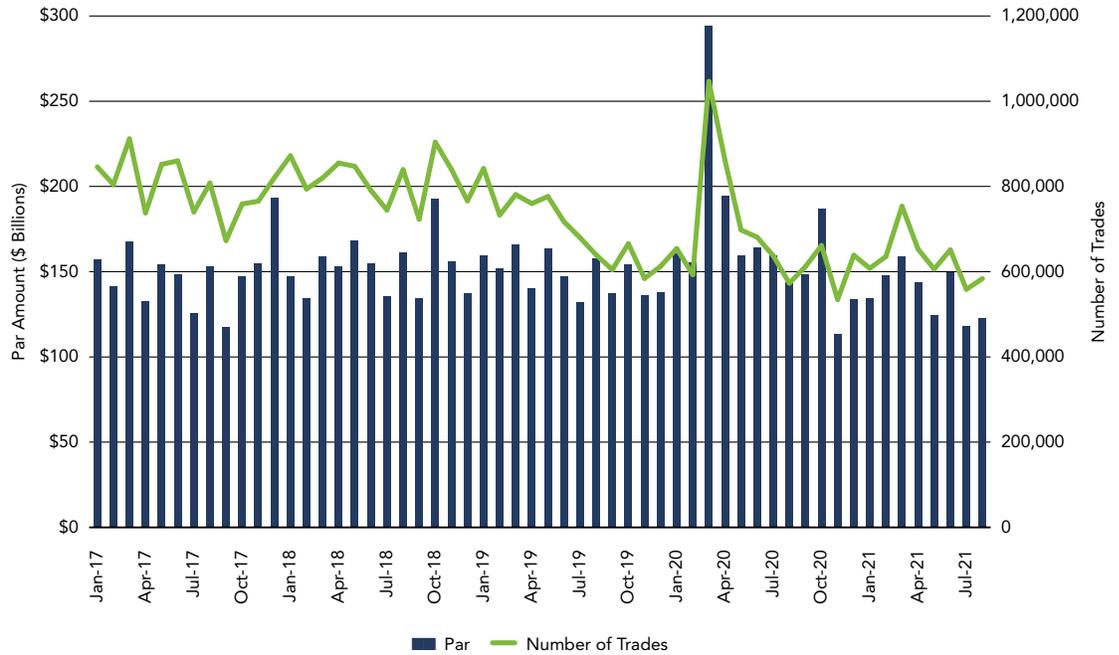
In an effort to compare similar periods of time and account for possible seasonality, most of the analysis in this report compares trade data from January through August of 2017 to the same periods each year through 2021. However, when relevant, trends from May through August during those same years are presented to show a noticeable decline in trading volume from May through August. Given the dislocation in the market and surge in trading during March and April 2020, the analysis and results presented in this report avoid any comparison to 2020 and instead focus on 2021 compared to 2017 through 2019.

Overall, par amount traded and number of trades through August 2021 are lower than the same periods during the previous four years analyzed. The decreases are magnified when comparing trade data from May through August of each year, rather than the full eight months. Trade count began declining well before the drop in par amount traded.

¹ The views expressed in this research paper are those of the authors and do not necessarily reflect the views and positions of the MSRB.

Analysis

Chart 1. Monthly Trades—Excluding Variable Rate Securities



Trade count has been steadily declining since January 2017 with a few exceptions, including the tremendous surge in March 2020 due to the market dislocation. The number of trades has declined by 31%, from 846,000 in January 2017 to 584,000 in August 2021. From January 2017 to June 2019, trade count was over 700,000 every month except for September 2017. Since then, only three months, March 2020, April 2020 and March 2021, have had monthly trade count above 700,000. Trade activity in July and August of 2021 dropped below 600,000, reaching the lowest monthly trading levels apart from August 2020 and November 2020, which can likely be explained by the 2020 U.S. Presidential Election. Trade count in July and August of 2021 was 13% below that of July and August 2019.

Compared to trade count, par amount traded has been relatively steady in the past few years. Since October 2020, par amount traded exceeded \$150 billion only once, in March 2021. Par amount traded in July and August was comparable to the lows seen in November 2020 and September 2017. July and August have the lowest par amount traded in consecutive months, and volume from May through August of 2021 was the lowest four-month period in the last five years.

Chart 2. All Trades—Excluding Variable Rate Securities, January-August

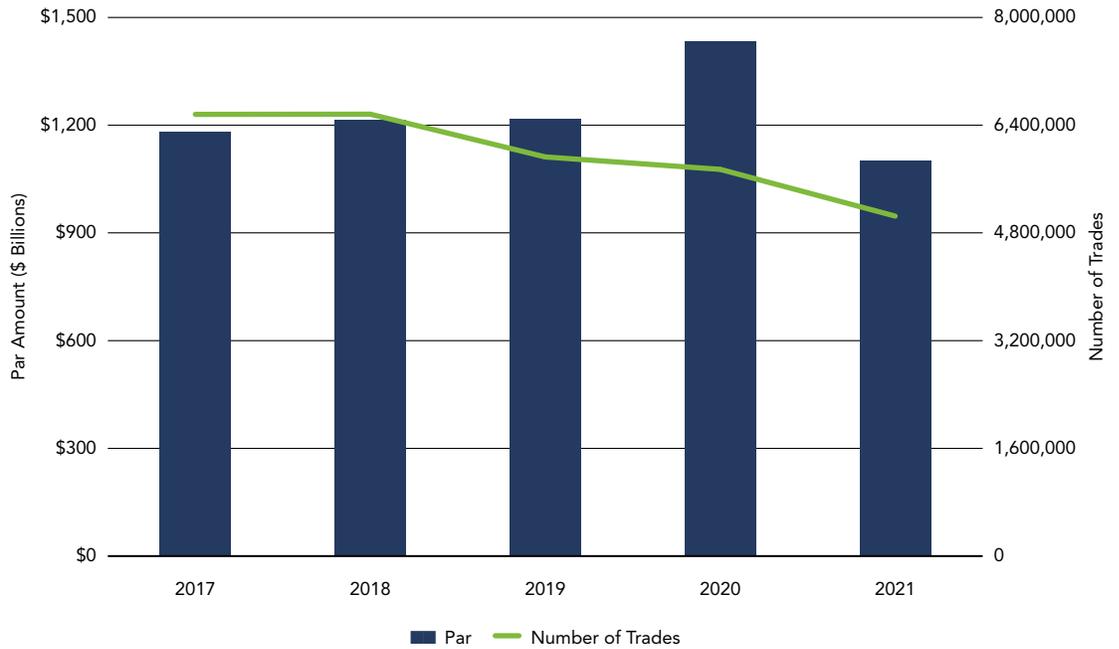
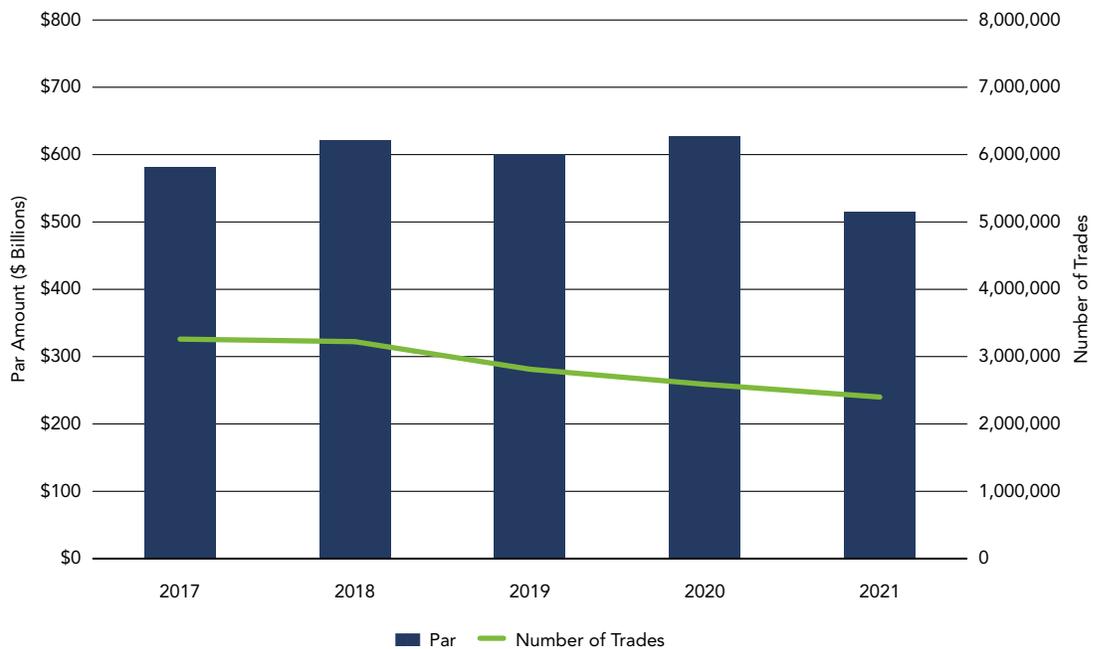


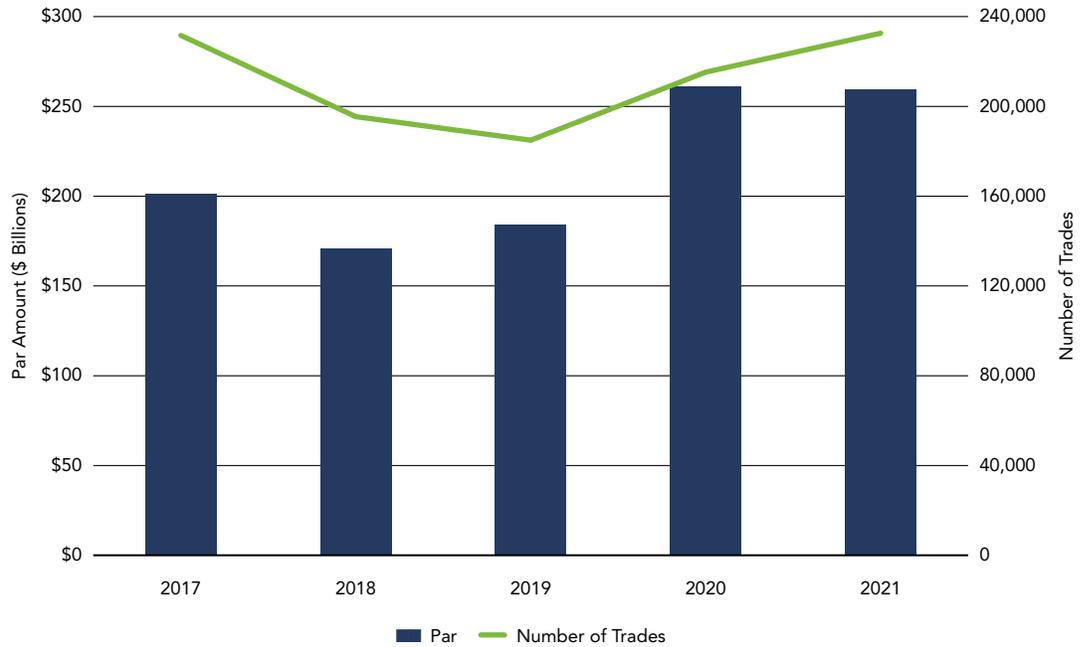
Chart 2 shows trade count and par amount traded from January to August for the past five years. Trade count in 2021 is down 15% from 2019 and 23% from 2018 and 2017. Par amount traded is down 10% from 2019 and 7% from 2017.

Chart 3. All Trades—Excluding Variable Rate Securities, May-August



As mentioned previously, we have seen a significant reduction in trading from May to August. In line with trends observed in the first eight months of the year, trade count decreased 15% in 2021 compared to 2019. The decrease is more pronounced in par amount traded, which is down 14% from 2019. Par amount traded is down 11% from 2017 and 17% from 2018 levels. If we look at just July and August, trading volume declines are even more pronounced. Par amount traded is down 17% compared to 2019 and 19% vs 2018. Number of trades is down 13% vs 2019 and 28% compared to 2018.

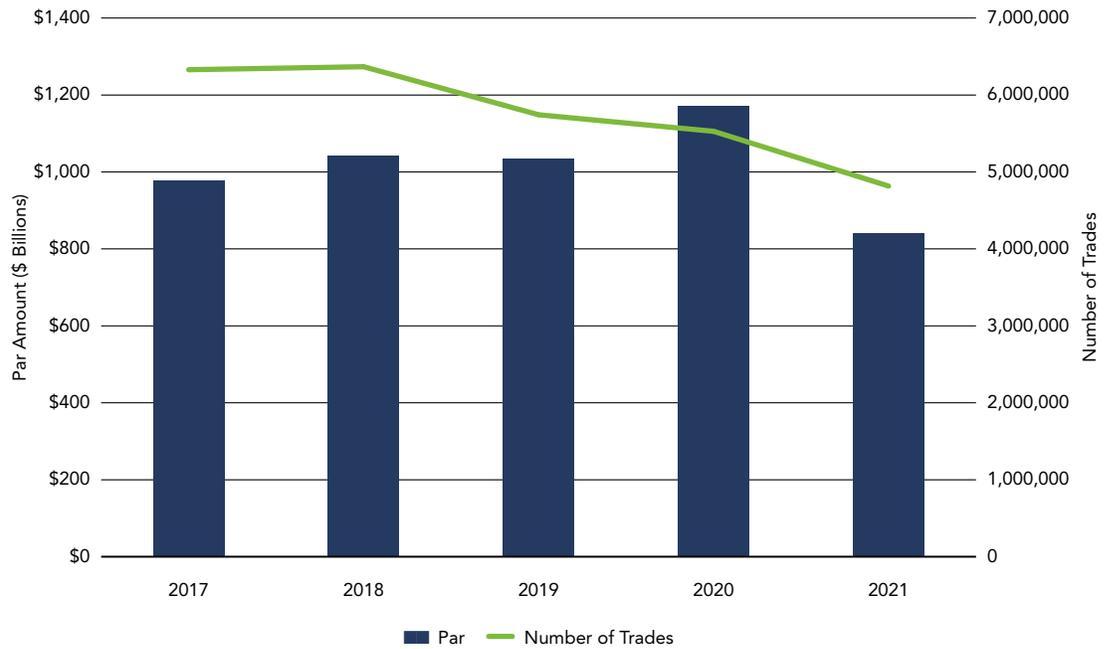
Chart 4. Primary Market (LOP Trades)—Excluding Variable Rate Securities, January-August



Although overall trade count and par amount traded are declining, trading in the primary market has increased substantially along with new issue volume.² Since 2019, the number of primary market trades reported to the MSRB is up 26%. Par amount traded is up 41% from 2019 to 2021, from \$184 billion to \$259 billion.

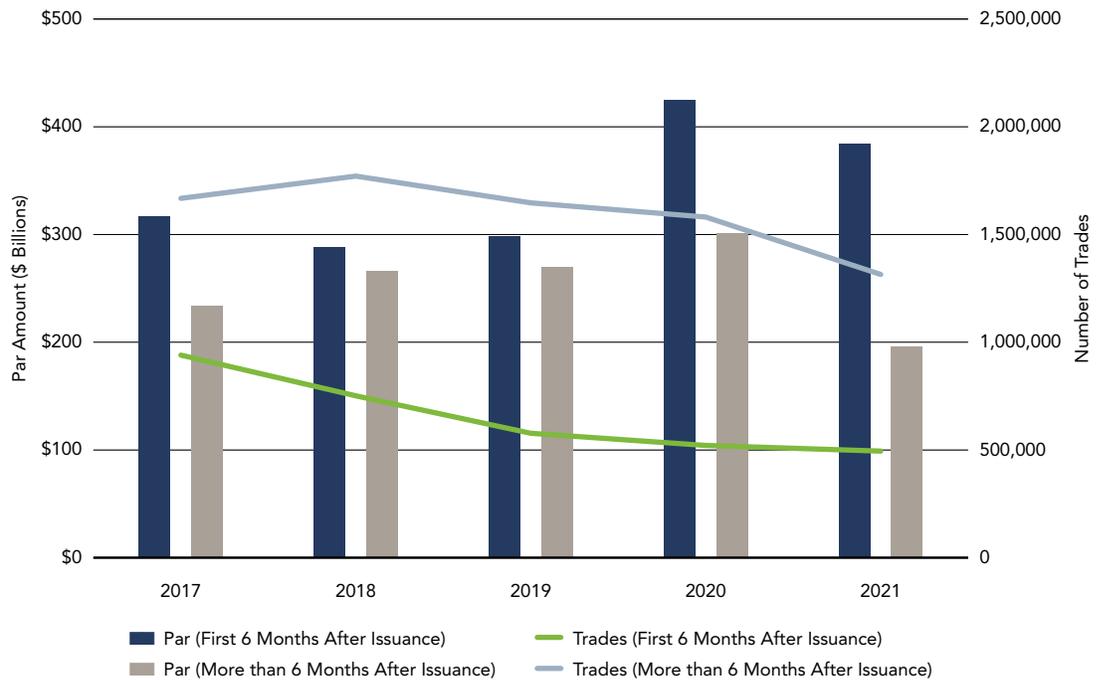
² Primary market and secondary market trades are differentiated using MSRB data on list offering price and takedown transactions (LOP trades), which generally encompass primary market transactions.

Chart 5. Secondary Market (Non-LOP)—Excluding Variable Rate Securities, January-August



While there has been a substantial increase in primary market trading (LOP trades), par volume traded and the number of trades in the secondary market decreased significantly. The number of trades in the secondary market has declined from 5.7 billion in 2019 to 4.8 billion in 2021, down 16%. Secondary market par amount traded has declined from just over \$1 trillion in 2019 to \$841 billion year-to-date, down 19%.

Chart 6. Customer Purchases—Excluding Variable Rate Securities, January-August



Previous MSRB research has shown that a newly issued bond is much more likely to trade than an aged bond. New issue bonds often trade in the primary market and may trade multiple times in the secondary market, especially shortly after issuance. When looking at primary market trades alone, the importance of the new issue market to overall trading volume may be underestimated. Chart 6 shows customer purchases, new issue and secondary for trades executed within 6 months of the dated date (newly issued) and more than 6 months after (aged).

The par amount of customer purchases in newly issued bonds increased by 29% since 2019 despite the number of trades in these bonds declining by 14%. However, the par amount of aged bonds traded decreased by 27% and the number of trades decreased by 20%.

In 2019, 47% of the par amount of customer purchases were in aged bonds. In 2021, that number has decreased to 34%. Customer purchases in newly issued bonds have gone from a little more than half to two-thirds of the par amount purchased.

The chart above also shows the dominance of institutional trading in the primary market. In 2021, there were more than 2.5 trades in aged bonds for every trade in newly issued bonds. However, the par amount traded in newly issued bonds is nearly double the par amount for aged bonds.

Chart 7. Trade Type Par Amount—Excluding Variable Rate Securities, January-August

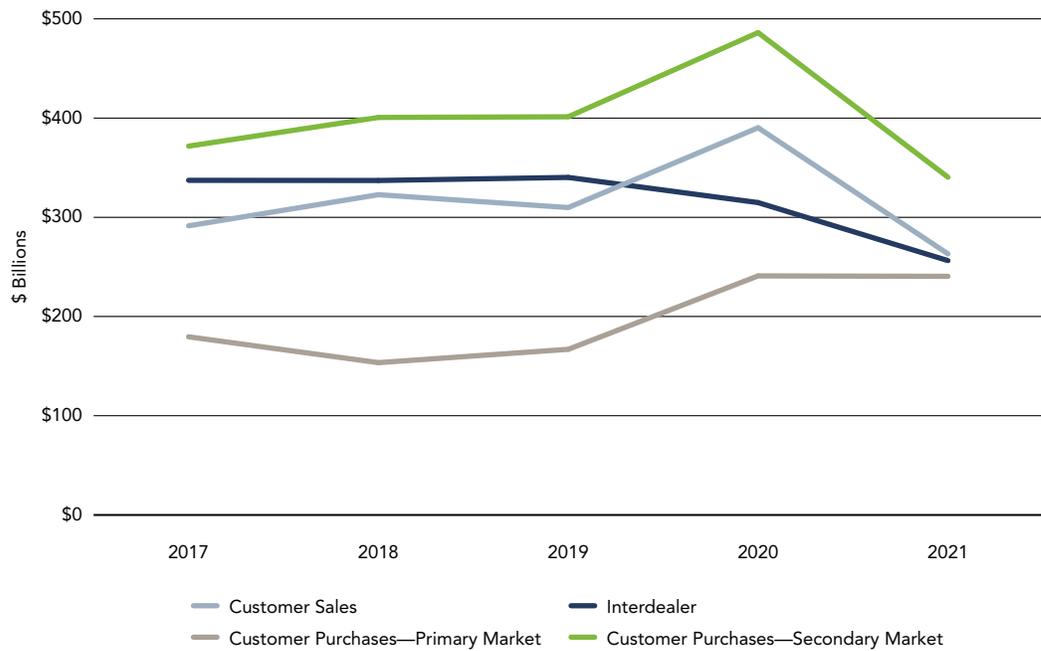


Chart 7 shows that customer purchases in the primary market are increasing substantially, while customer purchases in the secondary market, as well as customer sells and inter-dealer trades, are down between 15% and 25%.

A summary of changes to par amount by trade type is below in Table 1. Note that customer purchases in the primary market are now in line with customer sell and inter-dealer trades. In 2019, they were 54% and 49% respectively of customer sell and inter-dealer trades.

Table 1. Trade Type by Par Amount (January-August), \$ Millions

	2019	2021	Diff	% Diff
Customer Purchase Primary Market	166,944	240,523	73,579	44.1%
Customer Purchase Secondary Market	401,311	340,411	(60,899)	-15.2%
Customer Sell	309,807	263,172	(46,636)	-15.1%
Inter-Dealer	340,189	256,366	(83,823)	-24.6%

Chart 8. Trade Type Par Amount—Excluding Variable Rate Securities, May-August

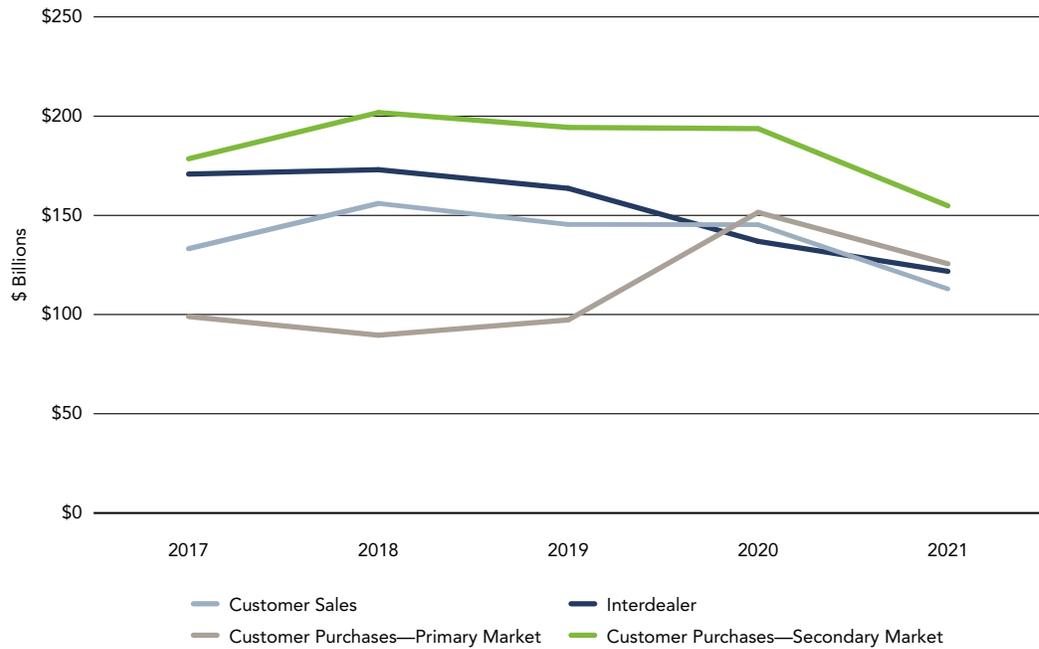


Chart 8 measures the same statistics as Chart 7, but only for May through August. The comparison of 2021 trade statistics to 2019 is even starker when viewed this way.

In the past four months, primary market customer purchases par amount has increased from 29% vs 44% compared to year-to-date 2021. Similarly, secondary customer purchases have decreased from 21% to 15%. Customer sells have decreased from 22% to 15% and inter-dealer trades have decreased from 26% to 25%.

Comparing May 2021 through August 2021 to the same period during 2019, primary market customer purchases par amount is up 29%, while all other types of trades are down between 20% and 26%, as shown in Table 2. Primary market customer purchases par amount traded surpassed par amount for inter-dealer and customer sell trades. From May to August, primary market customer purchase trades have increased from 16% of all trades in 2019 to 24% in 2021. All other trade types have seen their market share decline.

Table 2. Trade Type by Par Amount (May-August), \$ Millions

	2019	2021	Diff	% Diff
Customer Purchase Primary Market	97,326	125,569	28,243	29.0%
Customer Purchase Secondary Market	194,254	154,776	(39,478)	-20.3%
Customer Sell	145,403	112,920	(32,483)	-22.3%
Inter-Dealer	163,610	121,755	(41,855)	-25.6%

Table 3. Customer Purchases Only (January – August), Based on Par

	2017	2018	2019	2020	2021
Primary Market	33%	28%	29%	33%	41%
Secondary Market	67%	72%	71%	67%	59%

Table 4. All Trade Types (January – August), Based on Par

	2017	2018	2019	2020	2021
Primary Market Customer Purchases	15%	13%	14%	17%	22%
Secondary Market Customer Purchases	32%	33%	33%	34%	31%
All Customer Purchases	47%	46%	47%	51%	53%
Customer Sales	25%	27%	25%	27%	24%
Inter-dealer	29%	28%	28%	22%	23%

Tables 3 and 4 show that primary market customer purchases have increased from 15% of all par amount traded in 2017 to 22% in 2021. Similarly, when looking at only customer purchases, primary market trades have gone from 29% in 2019 to 41% in 2021. Note that primary market trades remain a very small percentage of total trades. For 2017 to 2021, primary market trades accounted for 3.7% of all trades, excluding variable rate trades, with an average trade size of \$1 million compared to an overall average trade size of \$208,000. Par amount for customer purchases was 53% of all par amount traded in 2021, compared to 47% for customer sell and inter-dealer trades combined.

Table 5. Customer Purchases Only (May-August), Based on Par

	2017	2018	2019	2020	2021
Primary Market	36%	31%	33%	44%	45%
Secondary Market	64%	69%	67%	56%	55%

Table 6. All Trade Types (May-August), Based on Par

	2017	2018	2019	2020	2021
Primary Market Customer Purchases	17%	14%	16%	24%	24%
Secondary Market Customer Purchases	31%	33%	32%	31%	30%
All Customer Purchases	48%	47%	49%	55%	54%
Customer Sales	23%	25%	24%	23%	22%
Inter-dealer	29%	28%	27%	22%	24%

Looking at May to August trading in Tables 5 and 6, primary market customer purchases have increased from 17% of all par amount traded in 2017 to 24% in 2021. From January through August, primary market customer purchase trades represented 22% of total trades, compared to 24% from May through August, signifying a higher reliance on new issue volume in the past four months.

Similarly, when looking at only customer purchases, primary market trades have gone from 33% in 2019 to 45% in 2021. Par amount for customer purchases was 54% of all par amount traded in 2021, compared to 46% for customer sell and inter-dealer trades combined.

Chart 9. Trade Type Number of Trades—Excluding Variable Rate Securities, January-August

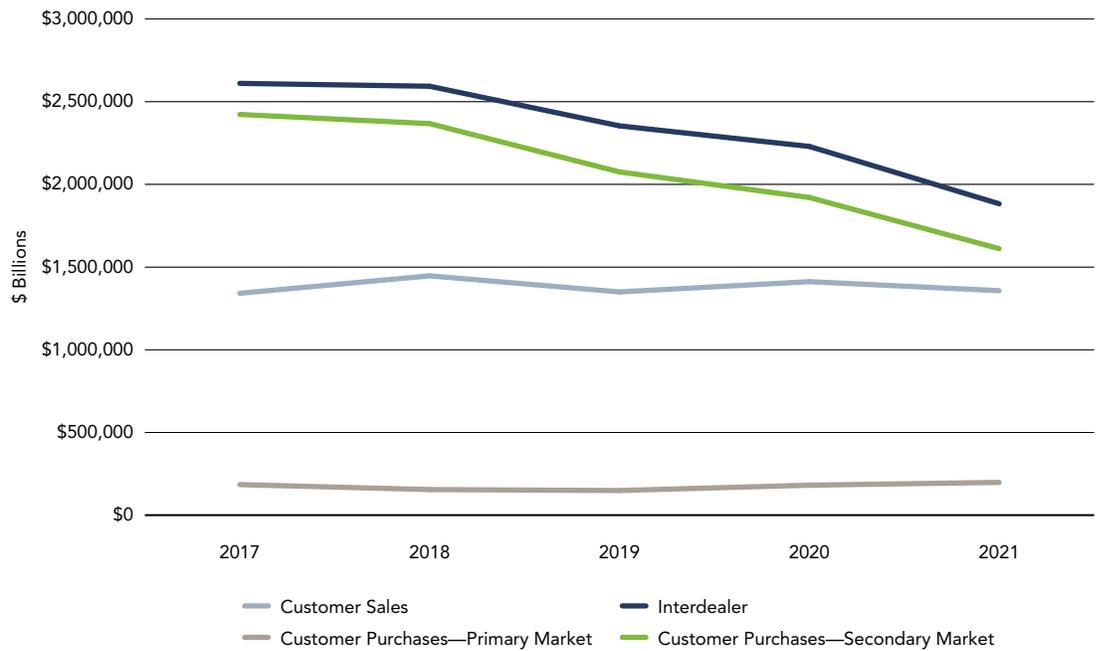
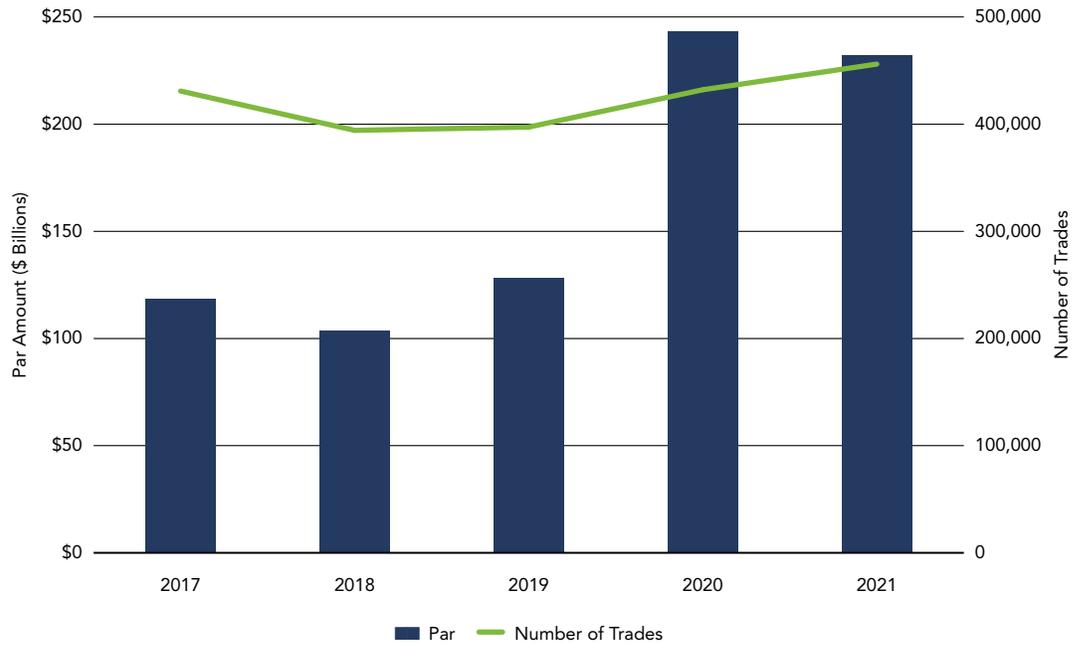


Chart 9 above shows the number of trades from January through August for various trade types. Although the number of primary market trades remains small, it has increased by almost one-third since 2019.

The number of customer sell trades has remained relatively flat since 2019. Inter-dealer and customer purchases in the secondary market are down 20% and 22% respectively since 2019.

This chart shows the importance of alternative trading systems (ATSs). There are more inter-dealer trades than any other type of trade, even when looking at all customer purchases. ATSs are involved in many smaller-size customer buys and sells, so there is always an inter-dealer trade for every customer purchase or sale on an ATS.

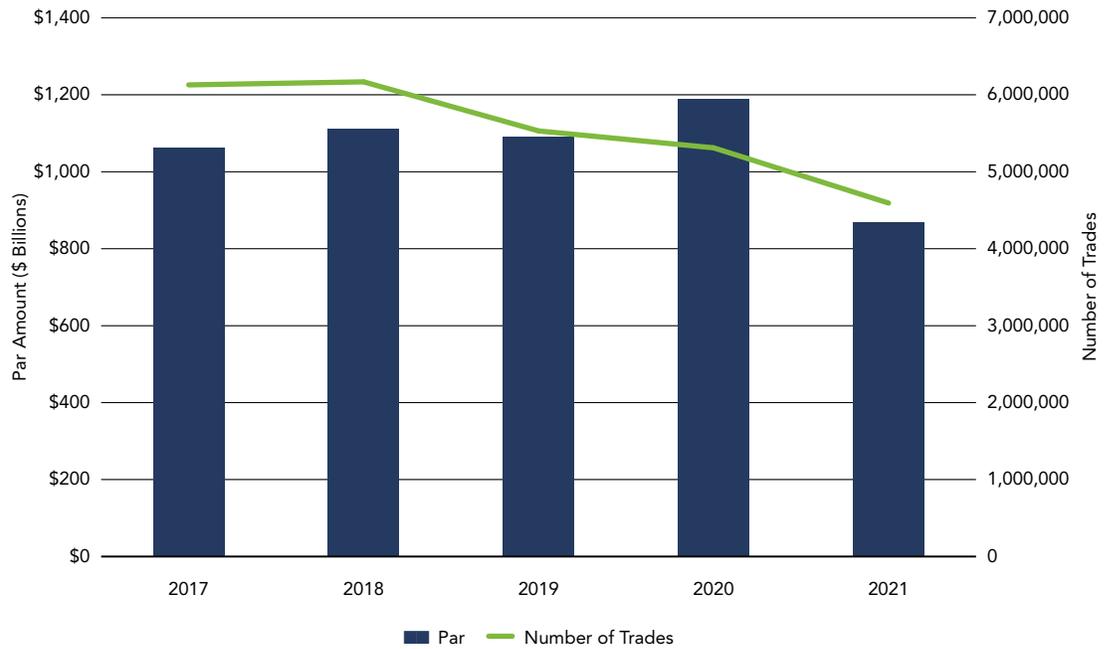
Chart 10. Taxable Par Amount—Excluding Variable Rate Securities, January-August



Although the taxable market is much smaller than the tax-exempt market, we have seen significant growth in taxable trade count and par amount traded in the past two years, led by increases in new issue volume.

The number of taxable trades has only increased by 15% while the par amount traded has increased by 81% since 2019. Please see the MSRB’s recent report, [Overview of the Taxable Municipal Bond Market](#), for a detailed analysis of the taxable municipal bond market. Par amount of taxable trades is slightly lower for January 2021 through August 2021 than the same period in 2020, but the number of trades has increased by 6%.

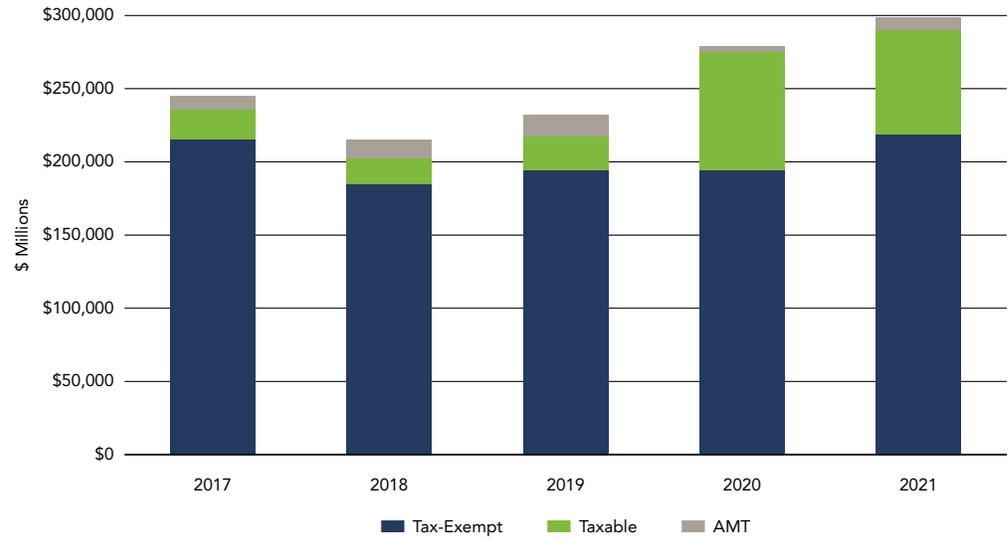
Chart 11. Tax-Exempt Par Amount—Excluding Variable Rate Securities, January-August



When looking at the municipal bond market as a whole, the growth in the taxable market has masked some of the decline in trading in the tax-exempt market. Par amount traded of tax-exempt securities has decreased by 20% since 2019, compared to a 10% decrease for all muni trades (see chart 2). The number of trades in tax exempt bonds has decreased comparably to the overall market, declining by 17% since 2019 compared to 15% for all municipal bonds.

Chart 12 shows new issue volume by tax status. Total new issue volume through August is higher in 2021 than any of the previous four years and is up 29% compared to 2019. Of note, tax exempt issuance has increased from \$194 billion in 2019 to \$218 billion (+13%) in 2021. Taxable issuance has increased from \$24 billion in 2019 to \$71 billion (+203%) in 2021. Finally, taxable issuance in 2021 has increased to 24% of total new issue volume from 10% in 2019.

Chart 12. Municipal Issuance by Tax Status, January-August



Overall Market Summary

Low rates and volatility. Although tax-exempt rates have moved higher over the past month, they are still low from a historical perspective. Bloomberg BVAL AAA callable rates and Treasury yields are listed below. The 10-year BVAL AAA callable closed on 08/31/21 at 0.921% compared to 0.671% on December 31, 2020. This could certainly be driving the record-breaking inflows into tax-exempt mutual funds instead of buying individual bonds at current yield levels. The move to mutual funds would again impact trade count more than par value. According to Municipal Market Analytics (MMA), there have been 67 trading sessions in 2021 where benchmark yields were unchanged and 73% of the trading sessions have reflected a price change of +/- 0.13%. The absence of price volatility could certainly have a negative impact on trading volumes. Any increased volatility could certainly increase trade activity.

Table 7. Municipal and Treasury Yields

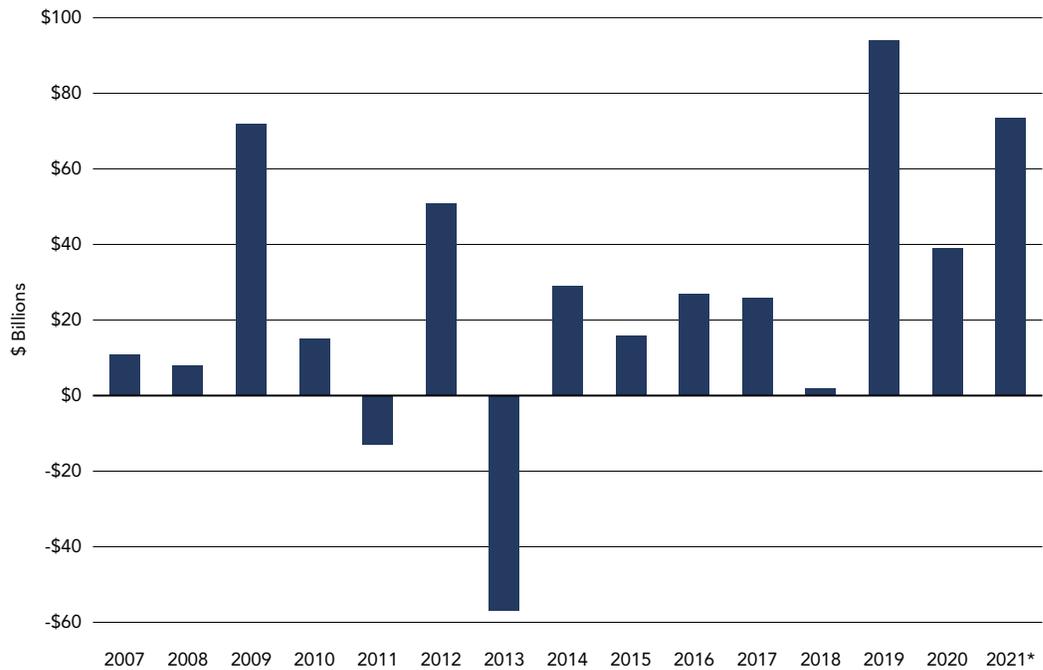
Year	BVAL 8/31/2021	TSY 08/31/2021	Muni/TSY Ratio
1	0.068	0.07	97%
2	0.070	0.20	35%
3	0.143	0.40	36%
5	0.388	0.77	50%
10	0.921	1.30	71%
20	1.305	1.85	71%
30	1.512	1.92	79%

Shift to Separately Managed Accounts (SMAs). Municipal market participants have noted that SMAs continue to increase assets at the expense of non-SMA (traditional brokerage accounts) assets. The movement to SMA accounts should have a negative impact on the total number of trades because they often report a single large trade that is then allocated out instead of many smaller trades. However, par amount could increase over time given that SMAs may be more likely to trade than individual investors. Generally, individual investors only sell when they need to raise cash, the structure of a bond they own changes (i.e., gets pre-refunded) or they seek to take a tax loss when rates have moved higher.

Mutual fund inflows. So far in 2021, mutual funds are on a record pace for inflows into tax-exempt products. Through September 22, total net inflows stand at \$75.3 billion, a record pace of nearly \$2 billion per week. Historical tax-exempt mutual fund flows are shown below. High-yield tax-exempt mutual funds have received a significant portion of these inflows, as investors search for yield away from individual bonds. The inflows into tax-exempt mutual funds have caused demand to far exceed supply and reduced the need for mutual funds to sell. Historically low rates also means that mutual funds have gains in their "aged" bonds and may be less likely to sell them to avoid the realization of capital gains. In fact, according to a FHN analyst, daily bid-wanted volume on Bloomberg has fallen below \$450 million,

from \$640 million in Q1 2021 and \$549 million in Q2 2021.³ This seems consistent with recent observations that more of the recent selling of blocks have been in recently issued securities, rather than “aged” bonds. Recently issued bonds are often actively quoted and are less likely to trade through a bid-wanted process.

Chart 13. Annual Municipal Bond Fund Flows



Source: ICI, September 29, 2021
 *As of September 22, 2021

Potential change in asset allocation. Despite the record flow into mutual funds, it is possible that investors have changed their asset allocation to reduce municipal bonds in favor of other assets, such as equities, which are at or near all-time highs. The Muni to Treasury ratio in Table 5 also shows that tax-exempt municipal bonds are expensive relative to how they’ve historically priced compared to the Treasury market.

It seems that the move to mutual funds, and the allocation away from tax-exempt munis, is likely to reverse if we see higher rates over time. Since mutual funds have no maturity date, individual investors have shown a likelihood to redeem mutual funds when rates rise and the net asset value (NAV) of the fund(s) declines. In just two weeks during the March 2020 crisis, tax-exempt mutual funds saw outflows of \$38 billion. In three weeks, they saw outflows totaling \$41 billion. At the same time, the market experienced record amounts of trading in terms of both par amount traded and number of trades as investors bought bonds when rates moved significantly higher. The dramatic rise in rates in March 2020 was short-lived.

³ “All Eyes on Primary.” *The Bond Buyer* August 31, 202, <https://www.bondbuyer.com/news/all-eyes-on-the-primary>

It is unknown how long the significantly elevated trading levels would have lasted if rates had remained elevated. In other words, was this volume surge pent-up demand and, if so, how long would it have lasted? In general, we have seen trading levels increase when yields increase.

Technical factors in the muni market. One other factor to consider is that some of the technicals in the market will change come September. June, July and August are historically three of the largest months for municipal bond principal and interest (P&I) payments. Significant P&I payments, coupled with record-setting inflows into mutual funds and increased purchases by banks, have caused a dearth of tax-exempt product for investors. The amount of P&I payments per month will decline substantially through the end of the year. Although this change is not unique to 2021, it could help alleviate some of the demand/supply imbalance we are seeing in tax-exempt munis.

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