

May 2023 US Market Structure Monthly

MICROSTRUCTURE OBSERVATIONS

- The average daily share volume in US equities was 10.6B shares in May 2023, up 3% month over month (MoM) but down 20% year over year (YoY).
- Trade reporting facility (TRF) share volume as a percent of total consolidated share volume declined 1.8% MoM to 43.0% in May 2023.
- Spreads in S&P 500 and Russell 2000 stocks widened in May 2023 relative to the prior month. Excluding the first and last half hour of the trading day, the median S&P 500 stock's spread increased 14% to 5.0bps in May 2023 from 4.4bps in April 2023, while the median Russell 2000 stock's spread increased 9% to 19.6bps in May 2023 from 18.0bps the prior month.

US MARKET STRUCTURE NEWS

U.S. Chamber of Commerce Sues SEC on New Share Buyback Rules

The U.S. Chamber of Commerce, along with the Texas Association of Business and the Longview Chamber of Commerce, filed a lawsuit against the U.S. Securities and Exchange Commission (SEC) to block new rules on share buybacks that were adopted by the SEC in an open meeting on May 3rd. In a statement, the U.S. Chamber said it "seeks to protect returns for investors as well as the ability of companies to make decisions free from government micromanagement." The new buyback rules would provide more granular information on company share buyback programs, including disclosure on shares purchased daily rather than monthly aggregates and company director transactions. https://www.wsj.com/articles/business-groups-sue-sec-over-stock-buyback-rules-

https://www.wsj.com/articles/business-groups-sue-sec-over-stock-buyback-rules-6297ba6e?mod=hp_listb_pos2

https://www.sec.gov/news/press-release/2023-85

SEC Proposes New Rules to Improve Clearing House Resilience

The SEC voted to propose new rules that would improve the resiliency of clearing houses during times of market stress. Specifically, the proposal would amend existing rules to require clearing houses to have policies and procedures to establish a risk-based margin system that monitors intraday exposure and includes the authority and operational capacity to make intraday margin calls. The proposal also includes a new rule that would require clearing houses to have recovery and wind-down plans, including details on how the plans would be regularly reviewed and tested.

https://finance.yahoo.com/news/1-us-sec-proposes-plan-175913202.html https://www.sec.gov/news/press-release/2023-95

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Cboe Launches Global Listing Offering for Companies

Cboe Global Markets announced the launch of a new intralisting service to allow companies to list on its U.S. exchange, as well as on its global venues. Currently, only ETFs and Cboe's own stock are listed on Cboe's U.S. exchange. The exchange said that all Cboe-listed stocks and ETFs in the U.S. and Canada will also be made available for trading on its Netherlands and United Kingdom venues, with Australia soon to follow. Additionally, Cboe plans to offer corporate listing capabilities for its Netherlands, UK, and Australia markets in 2024. Abaxx Technologies, which went public in December 2020 on Cboe Canada, will be the first intralisted stock on Cboe's new global platform.

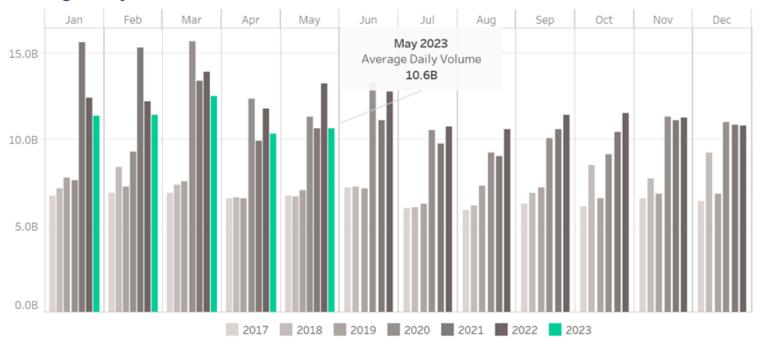
https://www.prnewswire.com/news-releases/cboe-launches-new-global-listing-offering-for-companies-and-etfs-of-the-purpose-driven-innovation-economy-301840925.html https://finance.yahoo.com/news/exchange-operator-cboe-launches-global-162154619.html

SEC Chair Not Considering Short Sale Ban on Regional Banks

SEC Chair Gary Gensler said at the Atlanta Federal Reserve Financial Market Conference in mid-May that the SEC is not considering enacting a temporary ban on the short selling of regional banks, citing that past bans have not helped to prevent panic selling. The Chair's comments were in response to calls from certain market participants to ban short selling in regional banks due to the recent failures of several financial institutions, including Silicon Valley Bank, and the sale of First Republic Bank to JPMorgan Chase. https://www.marketwatch.com/story/sec-not-considering-short-sale-ban-for-banks-gensler-says-7b4197c

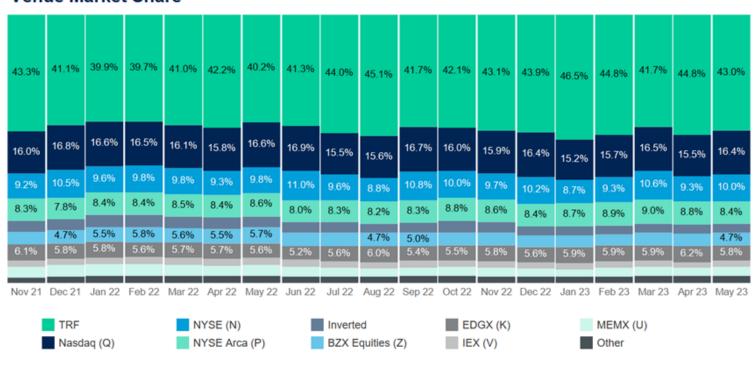


Average Daily Market Volume



Source data: Cboe Global Markets

Venue Market Share



Source data: Cboe Global Markets



TRF Volume Breakdown

ATS OTC Non ATS

UBS

Intelligent Cross

Goldman Sachs Morgan Stanley

JP Morgan Credit Suisse

Level

25.1%	25.4%	25.9%	23.0%	23.0%	25.4%	23.8%	23.3%	22.6%	23.8%	24.9%	24.9%	22.5%	22.8%	24.1%	25.4%	23.7%
74.9%	74.6%	74.1%	77.0%	77.0%	74.6%	76.2%	76.7%	77.4%	76.2%	75.1%	75.1%	77.5%	77.2%	75.9%	74.6%	76.3%

Dec 21 Jan 22 Feb 22 Mar 22 Apr 22 May 22 Jun 22 Jul 22 Aug 22 Sep 22 Oct 22 Nov 22 Dec 22 Jan 23 Feb 23 Mar 23 Apr 23

Tier1 and Tier2 only; Excludes Dealerweb, Source data: FINRA

ATS Market Share



Dec 21 Jan 22 Feb 22 Mar 22 Apr 22 May 22 Jun 22 Jul 22 Aug 22 Sep 22 Oct 22 Nov 22 Dec 22 Jan 23 Feb 23 Mar 23 Apr 23

Excludes Dealerweb, OTC; Venues rolled up to firm level; Source data: FINRA

OTC Non-ATS Market Share



Dec 21 Jan 22 Feb 22 Mar 22 Apr 22 May 22 Jun 22 Jul 22 Aug 22 Sep 22 Oct 22 Nov 22 Dec 22 Jan 23 Feb 23 Mar 23 Apr 23

Source: FINRA, NMS Tier 1 & 2 Securities



OTC Block Quantity ATS Block Quantity

BIDS

Instinet BlockCross

Virtu Posit

Citadel

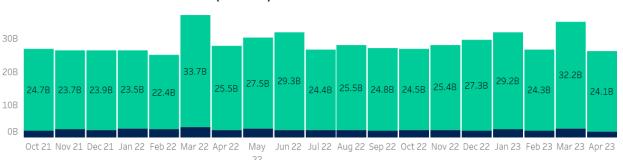
Goldman Sachs

Two Sigma

Jane Street Other

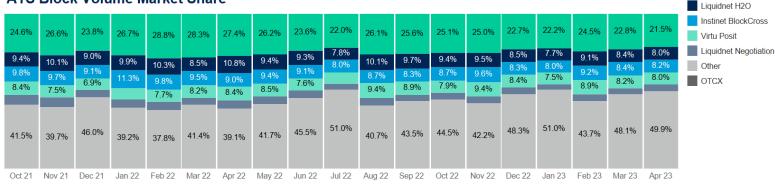
Virtu Morgan Stanley G1

TRF Block Volume Breakdown (Shares)



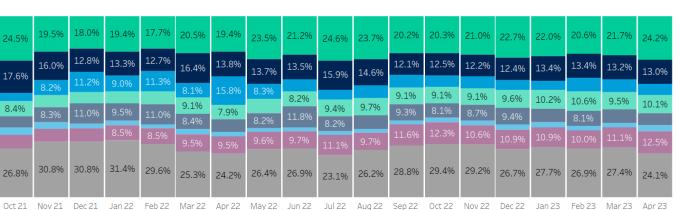
Source: FINRA

ATS Block Volume Market Share



Excludes Dealerweb; Blocks defined as >10K shares; Source data: FINRA

OTC (Non-ATS) Block Volume Market Share



Blocks defined as >10K shares; Source data: FINRA



Quotesize in Shares

		2Q 22				3Q 22			4Q 22			1Q 23		2Q 23	
		Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23
First 30 Min	SP500	180	196	195	188	185	183	187	186	189	194	218	235	229	227
	RUS2000	236	250	243	232	228	225	232	226	231	250	271	300	300	298
Mid Day	SP500	176	186	190	181	179	184	189	192	194	199	214	228	224	217
	RUS2000	232	234	246	237	234	235	245	248	250	257	262	279	283	280
Last 30 Min	SP500	190	190	198	197	201	201	212	210	210	216	222	230	231	222
	RUS2000	255	259	276	267	265	263	274	279	291	289	283	300	309	300

Spread Bps

First 30 Min	SP500	13.4	15.1	13.5	13.2	11.8	10.7	12.5	12.9	12.3	11.7	11.4	10.7	9.6	10.7
	RUS2000	51.3	57.0	50.4	48.1	45.3	43.2	49.2	51.1	49.8	47.8	47.1	48.9	44.7	47.7
Mid Day	SP500	5.5	6.5	5.7	5.2	4.7	4.9	5.4	5.5	5.1	4.9	5.0	5.1	4.4	5.0
	RUS2000	22.5	25.0	21.6	20.4	19.1	18.7	19.9	21.2	18.6	18.1	18.3	19.6	18.0	19.6
Last 30 Min	SP500	3.6	3.9	3.5	3.2	2.9	3.2	3.4	3.2	3.2	3.1	3.2	3.2	3.0	3.3
	RUS2000	16.6	18.1	16.2	15.4	14.1	14.1	14.7	15.5	14.2	13.6	14.1	14.7	14.2	15.2

One Minute Volatility Bps

SP500	20.2	24.0	21.4	20.7	15.6	17.5	20.4	17.7	14.4	14.5	13.9	14.9	12.9	13.8
RUS2000	21.7	26.9	24.1	26.6	21.0	20.8	23.1	21.4	16.2	16.2	17.0	17.2	14.6	15.9
SP500	8.2	9.9	8.3	7.5	6.2	8.6	8.1	6.8	5.8	5.7	5.9	6.7	4.9	5.4
RUS2000	6.8	9.0	6.8	6.1	5.5	7.4	6.7	5.4	4.1	3.8	4.5	5.5	2.9	3.6
SP500	9.1	10.8	9.0	7.9	6.2	9.3	8.8	7.1	6.5	6.3	6.9	7.4	5.9	6.0
RUS2000	8.8	9.8	8.1	6.9	6.2	8.9	7.2	6.8	5.7	5.4	6.9	7.9	5.4	5.9
	RUS2000 SP500 RUS2000 SP500	RUS2000 21.7 SP500 8.2 RUS2000 6.8 SP500 9.1	RUS2000 21.7 26.9 SP500 8.2 9.9 RUS2000 6.8 9.0 SP500 9.1 10.8	RUS2000 21.7 26.9 24.1 SP500 8.2 9.9 8.3 RUS2000 6.8 9.0 6.8 SP500 9.1 10.8 9.0	RUS2000 21.7 26.9 24.1 26.6 SP500 8.2 9.9 8.3 7.5 RUS2000 6.8 9.0 6.8 6.1 SP500 9.1 10.8 9.0 7.9	RUS2000 21.7 26.9 24.1 26.6 21.0 SP500 8.2 9.9 8.3 7.5 6.2 RUS2000 6.8 9.0 6.8 6.1 5.5 SP500 9.1 10.8 9.0 7.9 6.2	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 SP500 8.2 9.9 8.3 7.5 6.2 8.6 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 SP500 9.1 10.8 9.0 7.9 6.2 9.3	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 16.2 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 5.8 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 4.1 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1 6.5	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 16.2 16.2 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 5.8 5.7 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 4.1 3.8 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1 6.5 6.3	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 16.2 16.2 17.0 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 5.8 5.7 5.9 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 4.1 3.8 4.5 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1 6.5 6.3 6.9	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 16.2 16.2 17.0 17.2 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 5.8 5.7 5.9 6.7 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 4.1 3.8 4.5 5.5 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1 6.5 6.3 6.9 7.4	RUS2000 21.7 26.9 24.1 26.6 21.0 20.8 23.1 21.4 16.2 16.2 17.0 17.2 14.6 SP500 8.2 9.9 8.3 7.5 6.2 8.6 8.1 6.8 5.8 5.7 5.9 6.7 4.9 RUS2000 6.8 9.0 6.8 6.1 5.5 7.4 6.7 5.4 4.1 3.8 4.5 5.5 2.9 SP500 9.1 10.8 9.0 7.9 6.2 9.3 8.8 7.1 6.5 6.3 6.9 7.4 5.9

Percent ADV by Time of Day

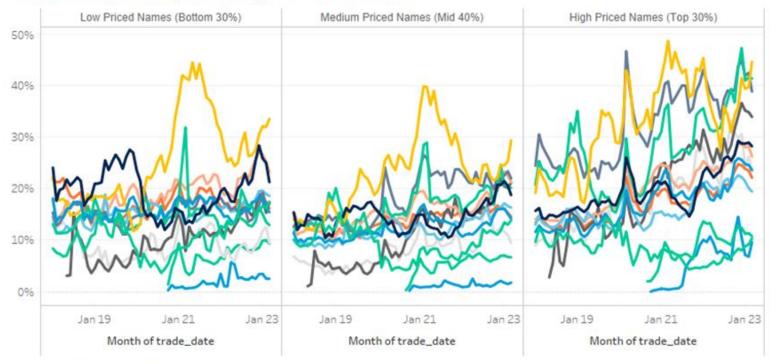
Open	SP500	1,170	T.030	1.020	1,170	7.050	0.970	0.970	0.330	1,170	0.370	7.020	0.9%	1.170	7.030
	RUS2000	0.7%	0.796	0.7%	0.7%	0.8%	0.796	0.7%	0.7%	0,7%	0.7%	0.7%	0.7%	0.8%	0.7%
First 30 Min	SP500	9.3%	9.3%	9.4%	9.8%	9.6%	9.0%	9.0%	9.2%	8.6%	8.7%	8.6%	8.5%	8.7%	8.8%
	RUS2000	7.6%	8.2%	7.6%	8.1%	8.2%	7.4%	7,6%	7.5%	7.2%	7.5%	7.5%	7.2%	7.3%	7.5%
Last 30 Min	SP500	19.0%	18.6%	19.2%	18.6%	18.8%	18.7%	18.8%	18.7%	19.0%	19.3%	19.3%	18.7%	19,4%	18.9%
	RUS2000	19.6%	19.796	19.8%	20.3%	20.4%	20.1%	20.0%	21.0%	20.0%	20.3%	20.6%	19.9%	20.4%	19.9%
Close	SP500	11.8%	10.9%	13.196	12.5%	11.9%	12.3%	11.9%	11.6%	14.7%	12.9%	12.2%	13.4%	13.6%	12.9%
	RUS2000	10.6%	9.1%	10.8%	11.8%	10.4%	11.4%	11.6%	10.4%	11.9%	10.7%	11.0%	11.4%	11.8%	11.0%

Median used for all metrics

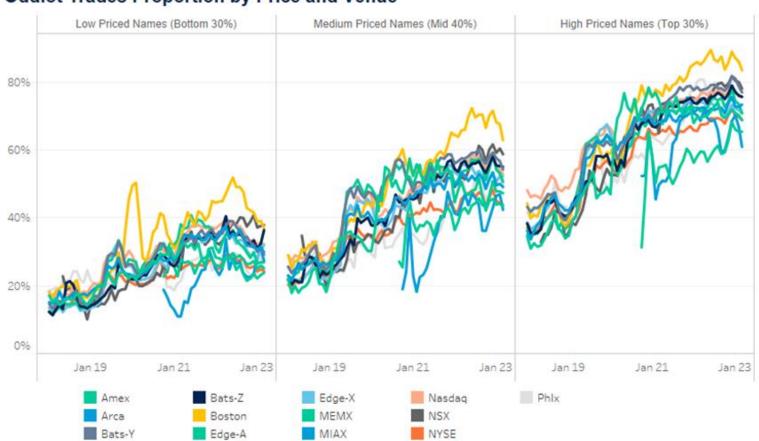
One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP Source data: Virtu Financial



Hidden Trades Proportion by Price and Venue



Oddlot Trades Proportion by Price and Venue



Source data: SEC



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