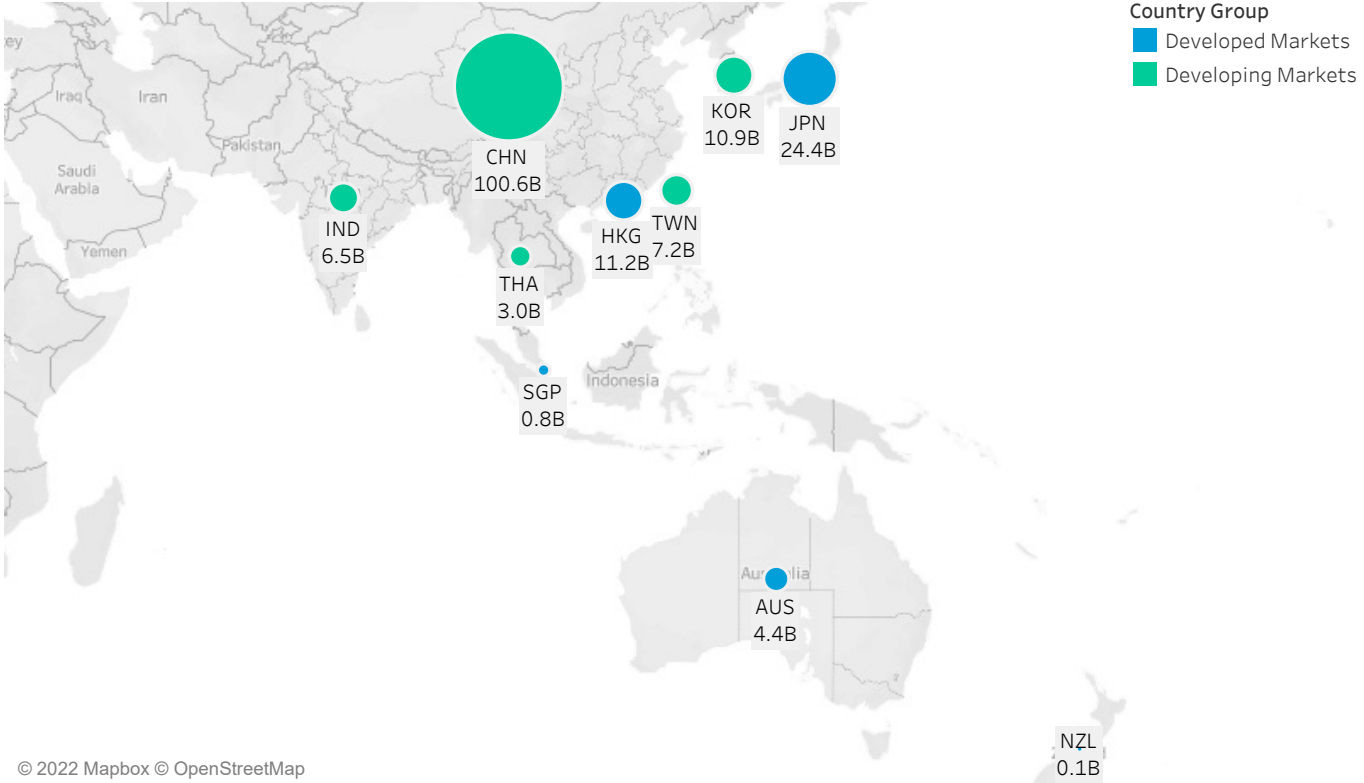


October 2022 APAC Market Structure Monthly

Average Daily Turnover (Notional USD)



© 2022 Mapbox © OpenStreetMap

Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

Oct 2022

AP Market Structure Monthly

EQUITIES MICROSTRUCTURE OBSERVATIONS

- Most countries in the region saw double digit percentage declines MoM in Average Daily Traded (ADT). India, Thailand, and Australia saw the sharpest ADT declines at -21%, -16% and -15% respectively. Hong Kong and Japan were the only exception where ADT grew by +14% and +4% MoM.
- Japan's close auction saw increased activity as it traded 17% of the day's volume, up 3% from the rolling 12 months avg.
- Notable increases in one minute volatility observed in Hong Kong; One minute volatility in the first half hour of day jumped 40% MoM, followed by a 38% increase in midday volatility.

AP MARKET STRUCTURE NEWS

Taiwan Stock Exchange To Limit Order Amendment and Cancellation Ratio Before Market Open

On 12 October 2022, Taiwan Stock Exchange (TWSE) announced that new supporting measures will be launched on 20 March 2023 to enhance the quality of information disclosure before market opening. The new rule stipulates that in the last minute before market open (8:59am-9:00am), if the number of orders amended or canceled accounts for more than 30% of all orders accepted, the market opening of this stock will be postponed for 2 minutes.

<https://www.twse.com.tw/en/news/newsDetail/ff80808183645bda0183cb1977630128>

Hong Kong Exchanges and Clearing Limited Enhances Cash Market Trading Fee Structure

On 1 November 2022, Hong Kong Exchanges and Clearing Limited (HKEX) announced the enhancements to the existing cash market trading fee structure, including 1) the removal of the trading tariff of \$0.50 payable on each transaction; and 2) the adjustment of the ad valorem fee on all trades from the current level of 0.005% to 0.00565%. The new trading fee structure will take effect on 1 January 2023. According to the exchange, "these enhancements will result in a simpler and more predictable cash market trading fee structure, lowering the effective trading fee rate (trading tariff and trading fee in percentage terms) from a historical average of approximately 0.00576% to 0.00565%".

https://www.hkex.com.hk/News/Market-Communications/2022/221101news?sc_lang=en

Korea Exchange Started Strengthened Designation Policy for Overheated Short Selling Issues

On 20 October 2022, Korea Exchange (KRX) announced that it would start the enforcement of strengthened 'Designation Policy for overheated short selling issues' in its markets (KOSPI, KOSDAQ and KONEX) from 24 October 2022.

According to KRX, the number of designations of overheated short selling issues and the number of days on which the designations are conducted will increase by about 15%, which is expected to reduce the volatility of issues caused by a surge in short selling following a market shock.

<https://global.krx.co.kr/contents/GLB/02/0203/0203000000/GLB0203000000.jsp#ab8758eced0475769e200e7e309baf77=1&view=20684>

To learn more, contact your sales representative or call our desk at:

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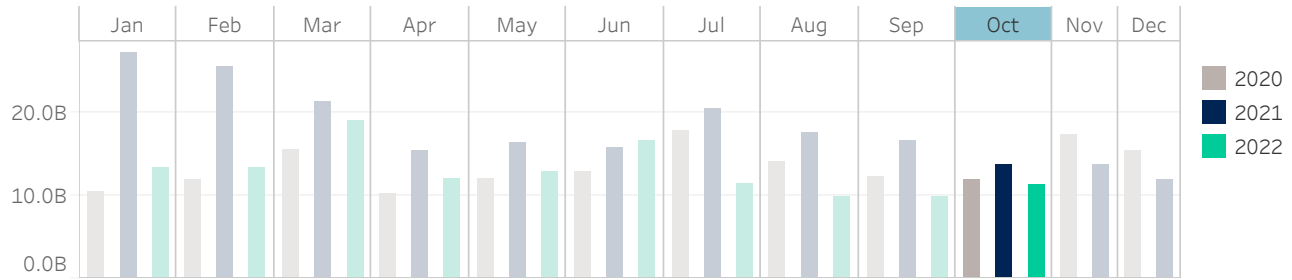
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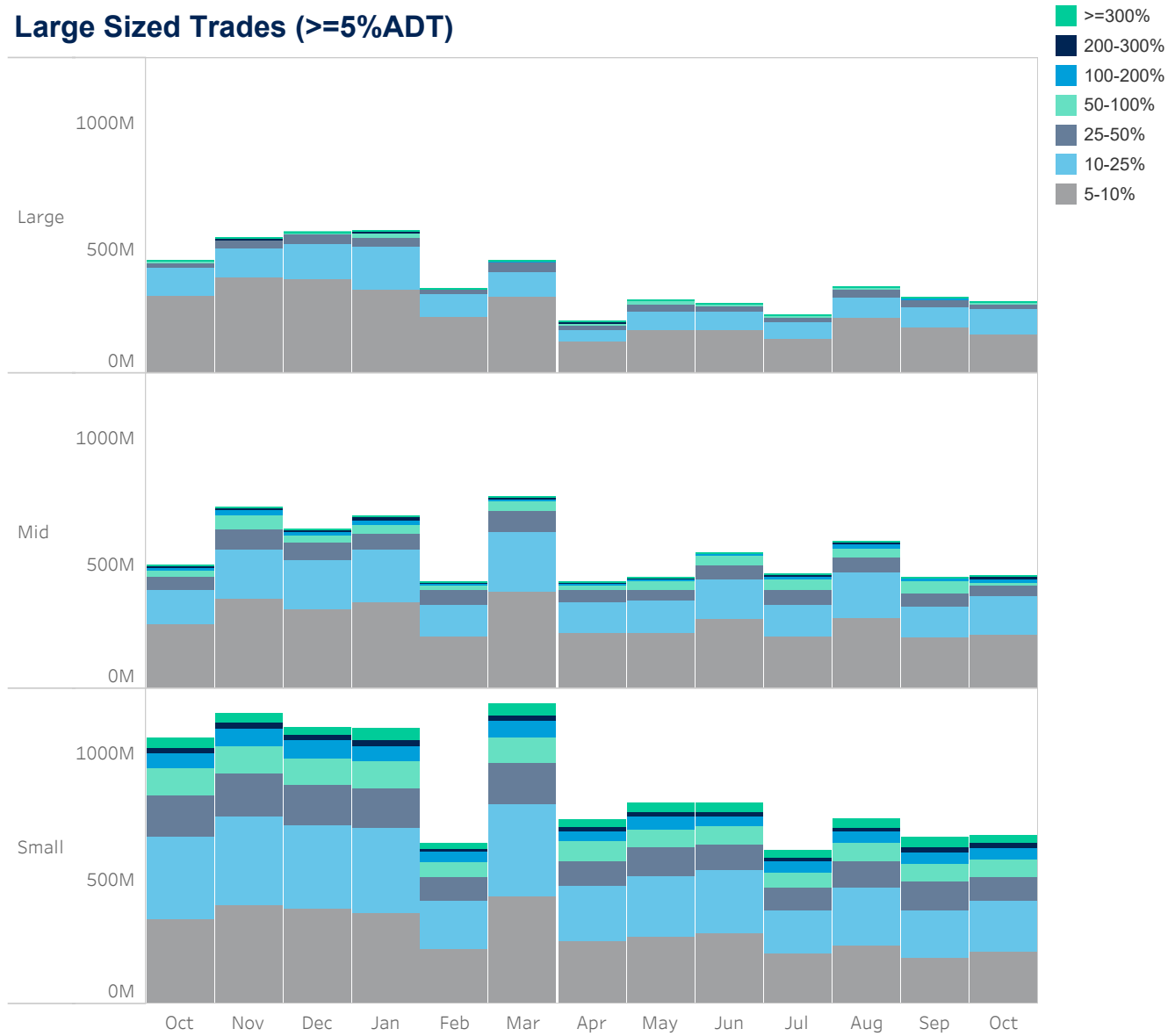
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Hong Kong

Average Daily Turnover (Notional USD)



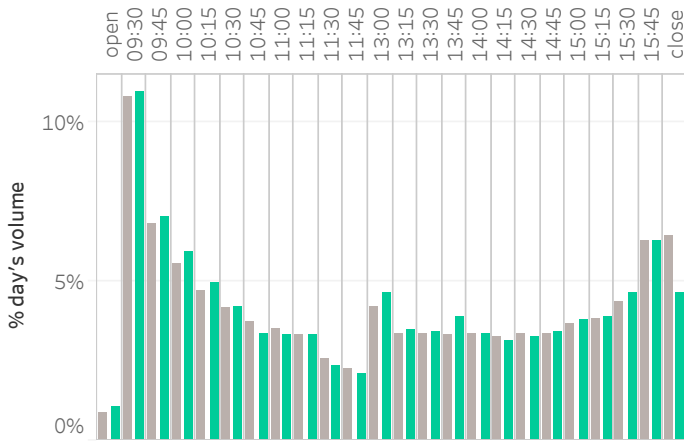
Large Sized Trades (>=5%ADT)



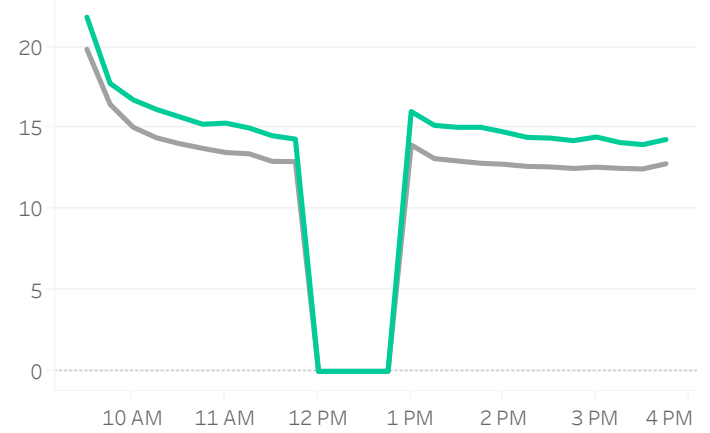
Source data: Virtu Financial

Hong Kong

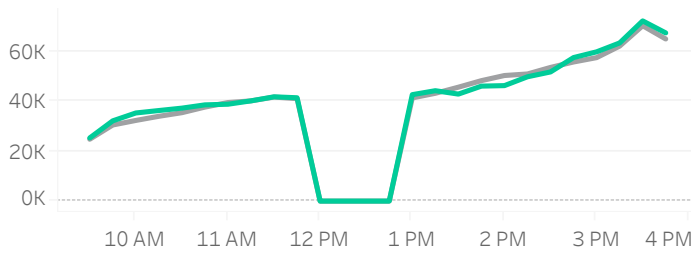
Volume Curve



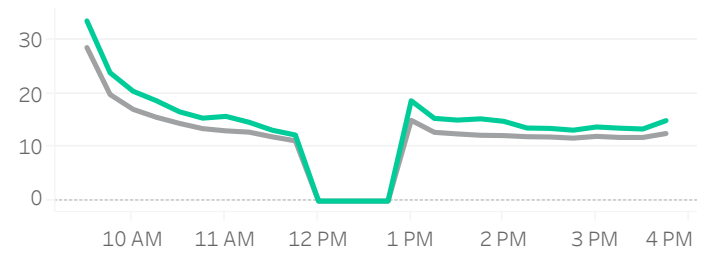
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg October 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	
firstHalfHour	17.6	17.3	17.2	17.1	17.0	18.0	18.7	
midday	13.3	13.5	13.6	13.1	13.0	13.9	14.8	
lastHalfHour	12.3	13.1	13.2	12.4	12.5	13.5	14.0	

One Minute Volatility Bps

firstHalfHour	17.7	18.0	19.0	16.8	17.0	16.6	23.5
midday	8.4	7.3	7.7	7.3	7.1	7.4	10.2
lastHalfHour	6.5	6.2	6.5	6.0	6.4	7.1	8.8

Quotesize in Shares

firstHalfHour	28,977	27,325	28,776	26,961	27,359	28,423	28,826
midday	40,059	40,646	42,935	42,223	42,963	50,516	44,101
lastHalfHour	62,184	60,328	71,107	68,053	67,865	78,846	72,138

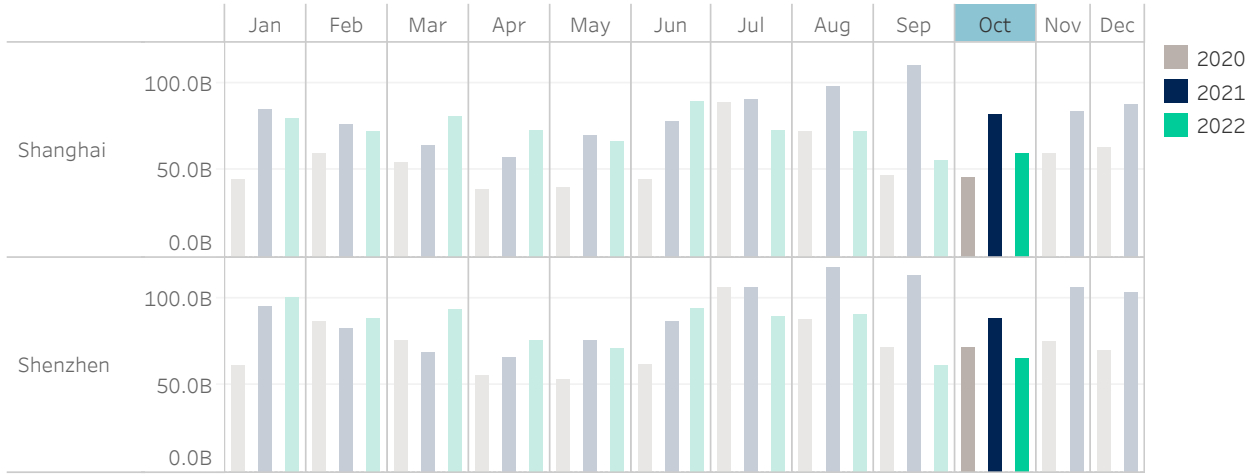
Median used for all metrics

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

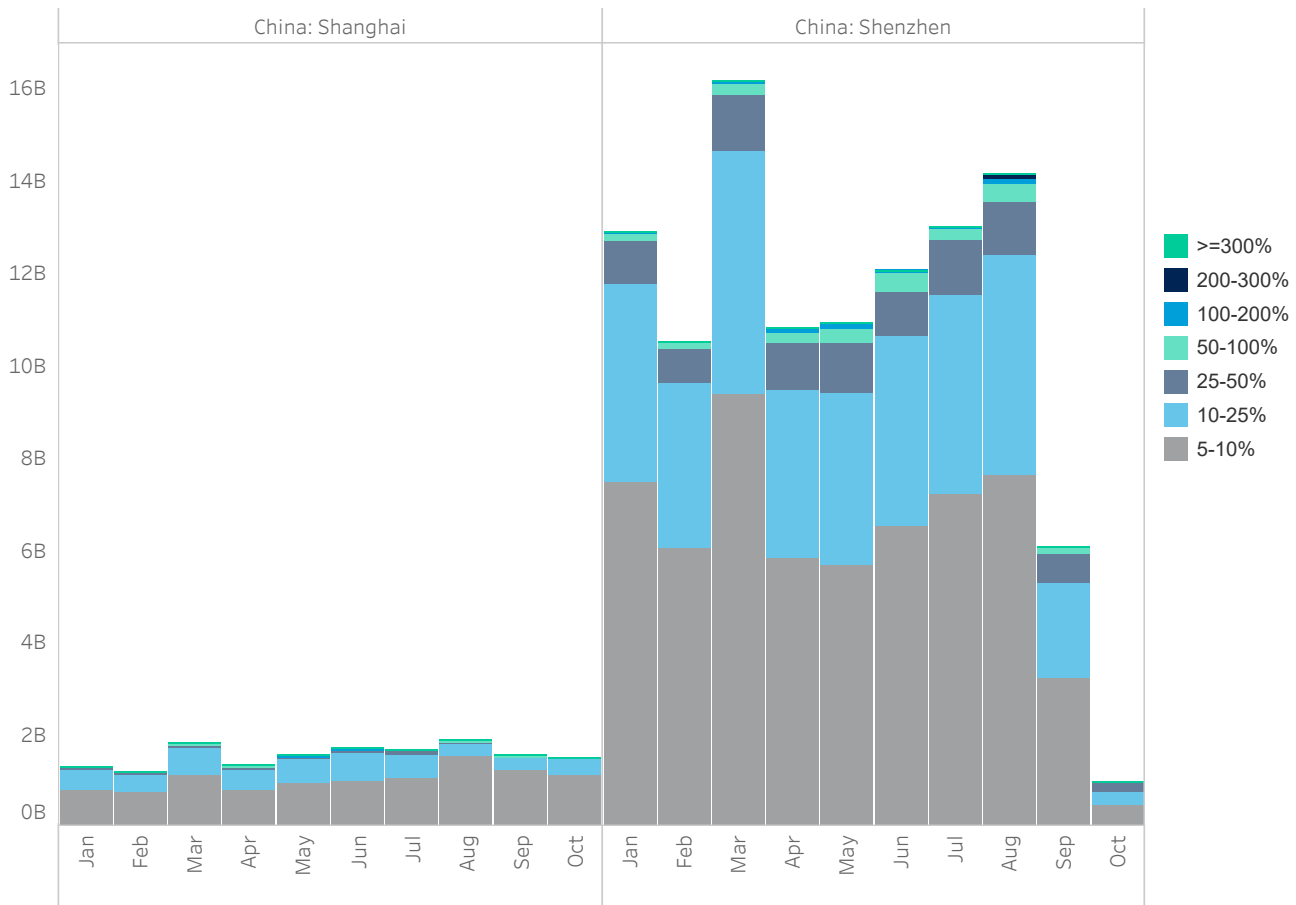
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



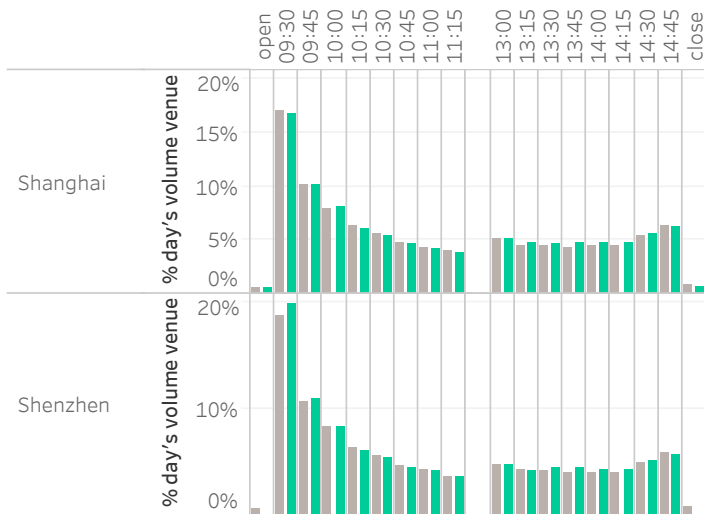
Large Sized Trades (>=5%ADT)



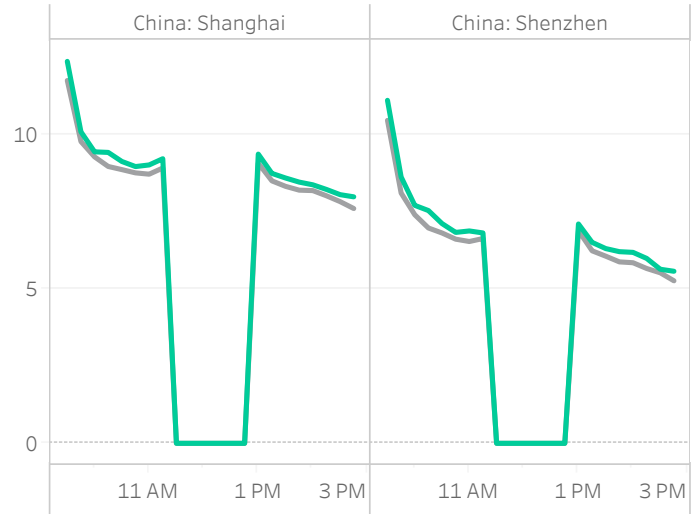
Source data: Virtu Financial

China

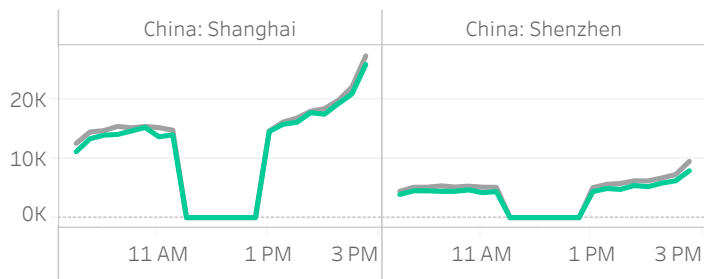
Volume Curve



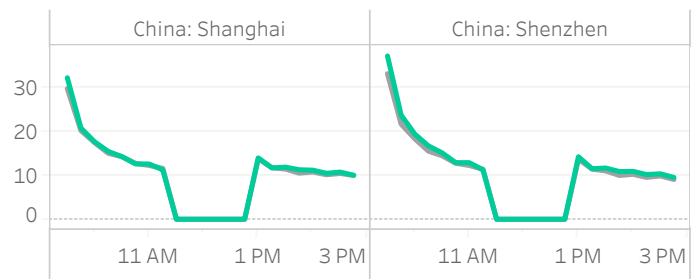
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ October 2022

Spread Bps

	China: Shanghai							China: Shenzhen							
	22 Q2			22 Q3				22 Q4	22 Q2			22 Q3			22 Q4
	Apr	May	Jun	Jul	Aug	Sep	Oct	Apr	May	Jun	Jul	Aug	Sep	Oct	
firstHalfHour	11.1	10.9	10.3	9.9	9.7	10.2	10.6	9.9	9.0	8.5	8.6	8.3	8.6	9.3	
midday	9.7	9.5	8.6	7.9	7.9	8.4	8.8	7.4	7.0	6.4	6.0	5.8	6.1	6.7	
lastHalfHour	8.4	8.2	7.4	7.3	7.2	7.6	8.0	6.2	5.9	5.3	5.0	4.9	5.2	5.5	

One Minute Volatility Bps

firstHalfHour	23.8	19.6	20.1	17.2	16.5	18.3	20.0	27.8	23.3	23.4	23.2	22.1	22.5	26.4
midday	11.6	9.1	10.1	7.1	6.3	7.0	8.2	13.1	10.6	11.3	9.8	8.8	8.9	10.8
lastHalfHour	9.3	6.6	7.3	6.0	5.0	6.2	6.4	9.8	7.4	8.0	7.5	6.5	7.3	8.0

Quotesize in Shares

firstHalfHour	11K	14K	14K	14K	14K	12K	13K	4K	5K	4K	4K	4K	4K	4K
midday	12K	15K	16K	17K	18K	15K	16K	5K	6K	5K	5K	5K	5K	5K
lastHalfHour	19K	24K	25K	25K	28K	23K	24K	7K	8K	7K	8K	7K	7K	7K

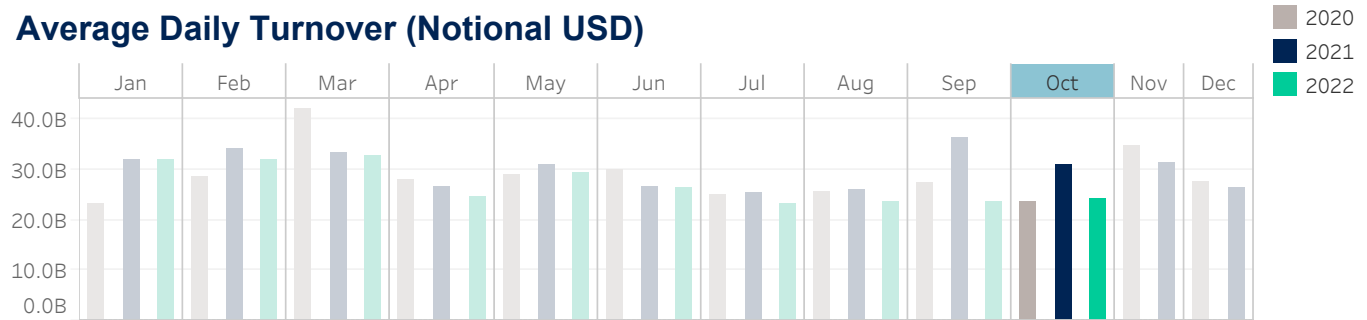
Median used for all metrics

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

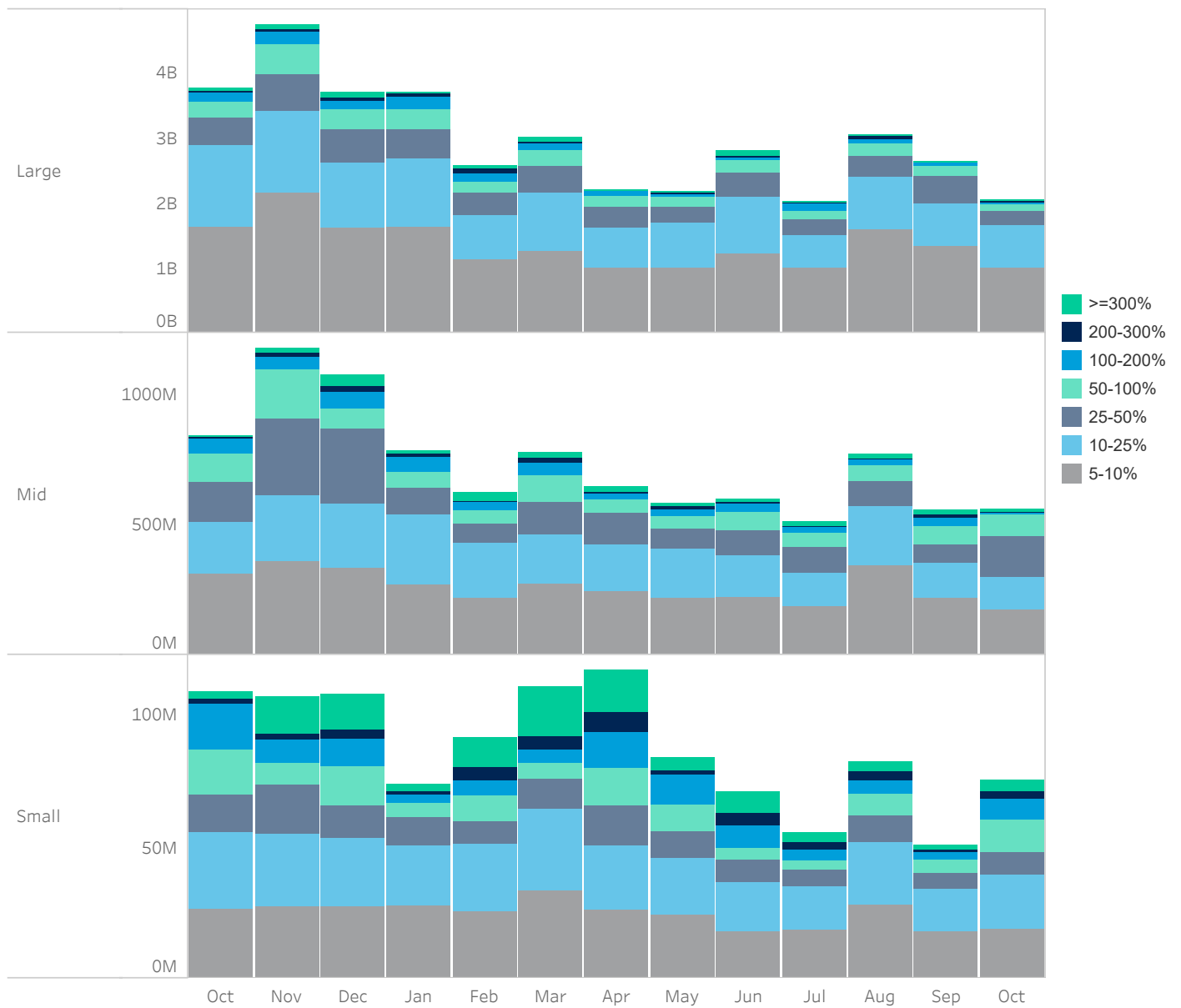
Source data: Virtu Financial

Japan

Average Daily Turnover (Notional USD)



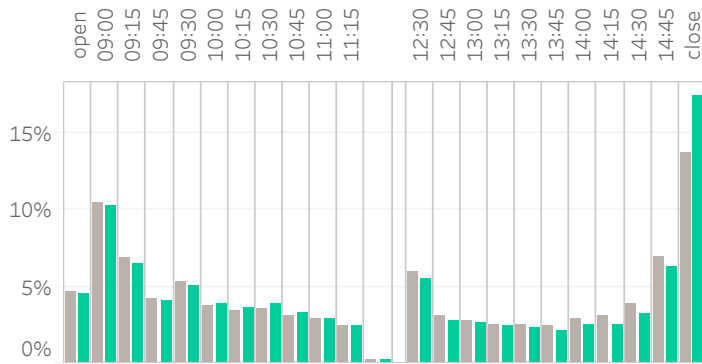
Large Sized Trades (>=5%ADT)



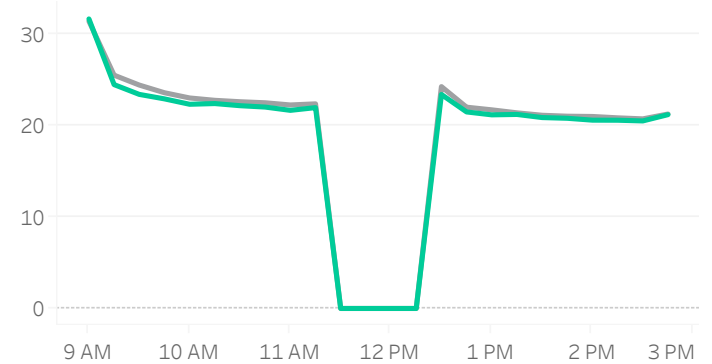
Source data: Virtu Financial

Japan

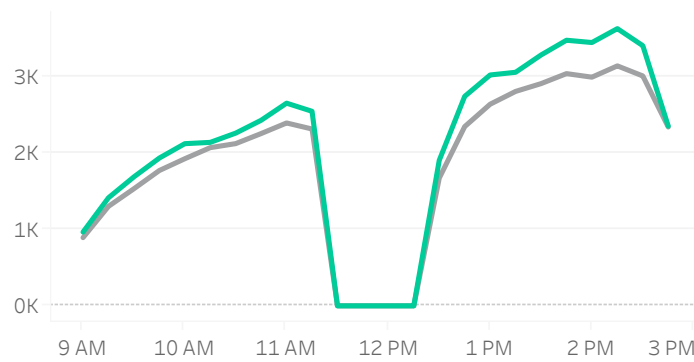
Volume Curve



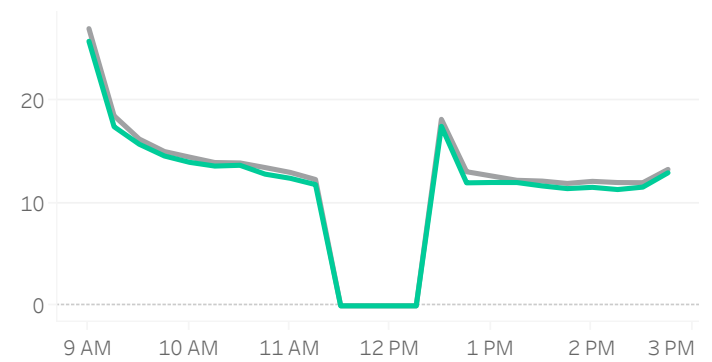
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (Grey line) October 2022 (Green line)

Spread Bps

	22 Q2			22 Q3			22 Q4
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
firstHalfHour	27.0	27.4	26.8	26.6	25.0	25.2	26.1
midday	22.2	22.1	21.9	22.1	21.1	21.1	21.7
lastHalfHour	20.7	20.5	20.9	20.7	20.1	20.0	20.6

One Minute Volatility Bps

firstHalfHour	15.3	16.7	15.4	13.3	12.4	12.4	13.6
midday	7.0	7.0	6.6	6.3	5.8	6.0	6.5
lastHalfHour	6.3	6.2	6.0	6.0	10.8	6.8	7.1

Quotesize in Shares

firstHalfHour	1,149	1,078	1,114	1,251	1,353	1,377	1,276
midday	2,350	2,304	2,398	2,557	2,999	2,865	2,693
lastHalfHour	2,831	2,685	2,613	2,858	3,377	3,196	3,086

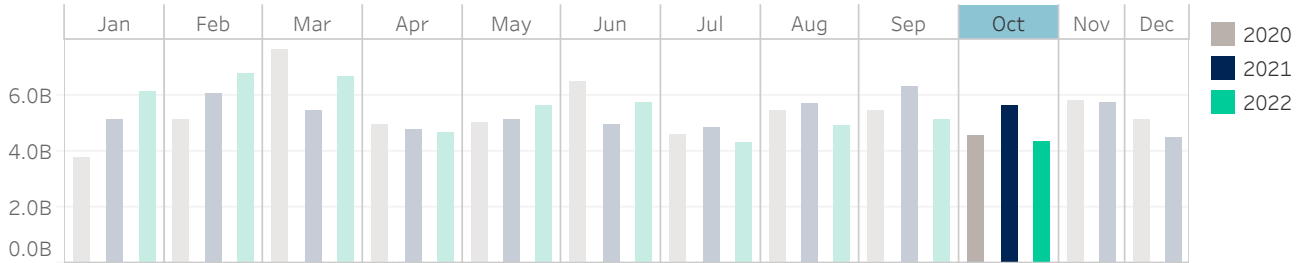
Median used for all metrics

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

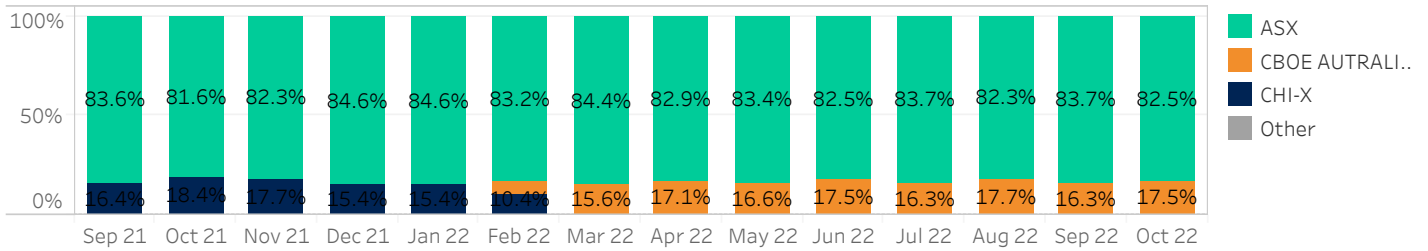
Source data: Virtu Financial

Australia

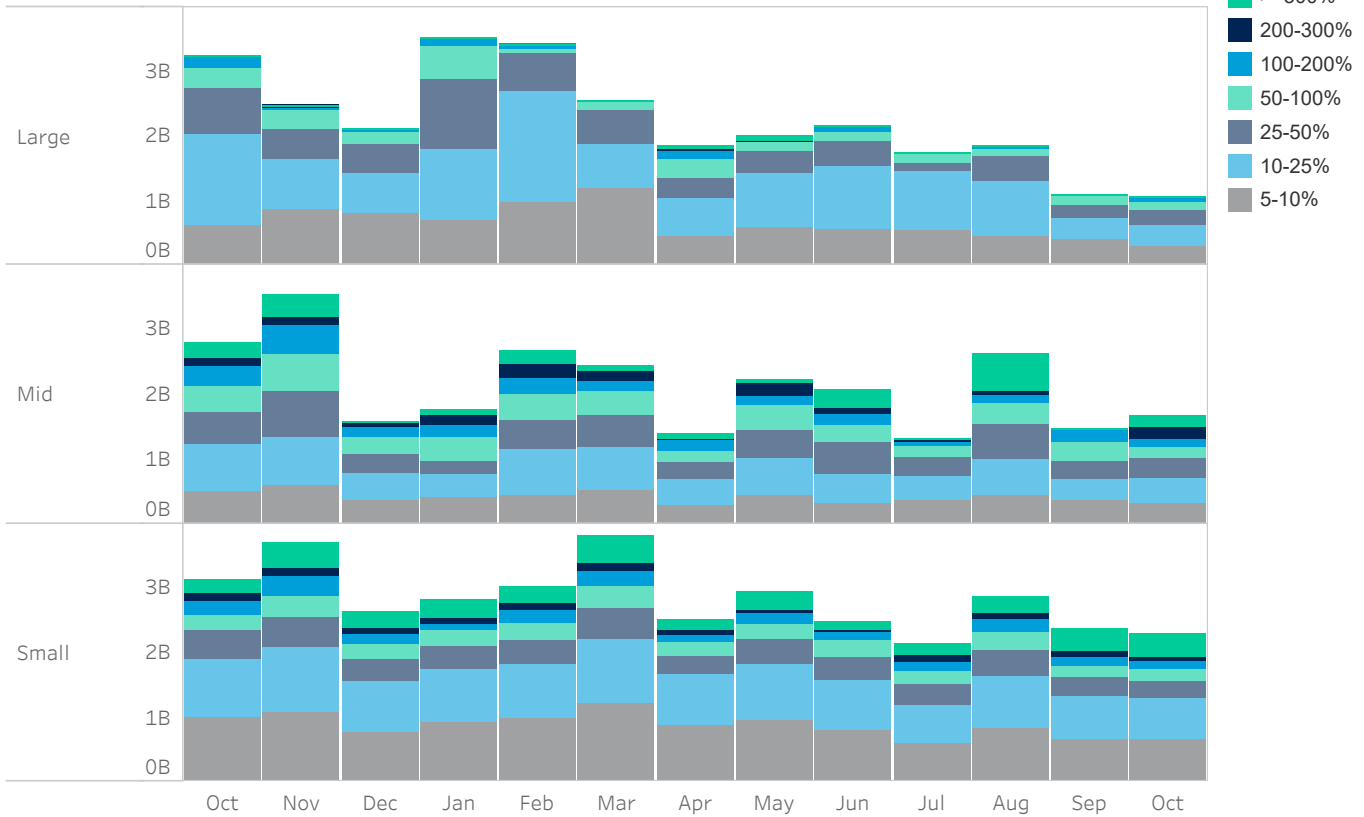
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



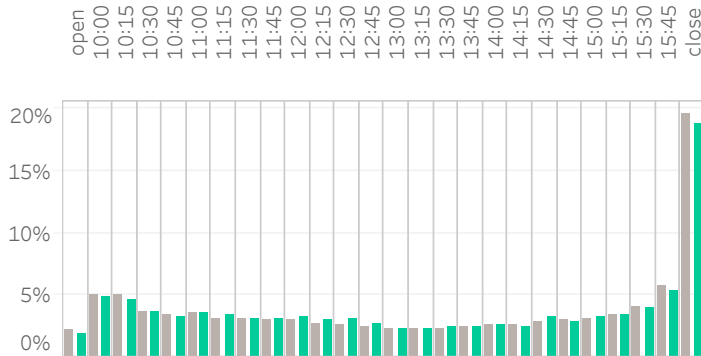
Large Sized Trades (>=5%ADT)



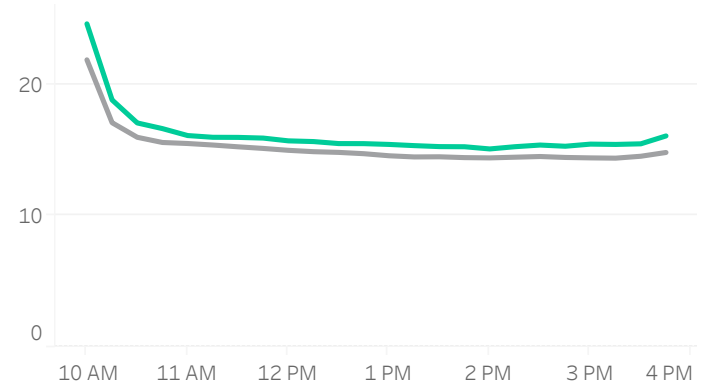
Source data: Virtu Financial

Australia

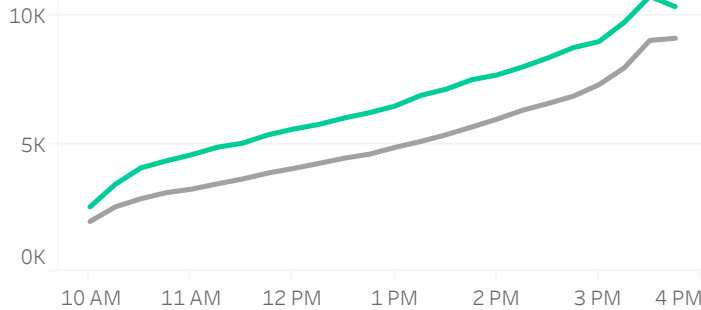
Volume Curve



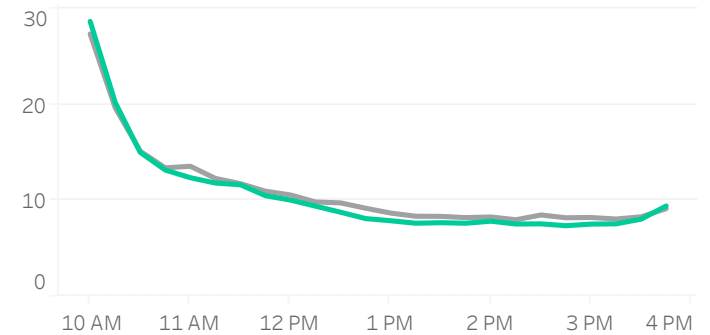
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ October 2022

Spread Bps

	22 Q2			22 Q3			22 Q4
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
firstHalfHour	18.4	19.0	20.5	20.7	19.7	20.4	
midday	14.6	14.6	16.2	15.9	14.7	15.6	15.8
lastHalfHour	14.3	14.7	16.4	16.0	14.9	15.7	15.9

One Minute Volatility Bps

firstHalfHour	15.8	19.3	21.3	18.3	19.1	18.5	
midday	4.2	4.7	5.3	5.0	4.7	4.8	4.4
lastHalfHour	3.1	3.6	4.0	4.0	4.2	4.1	4.1

Quotesize in Shares

firstHalfHour	2,394	2,413	2,340	2,405	2,364	2,978	
midday	5,180	5,148	5,554	5,352	5,316	6,495	6,504
lastHalfHour	9,457	9,953	9,528	9,648	9,498	10,762	10,484

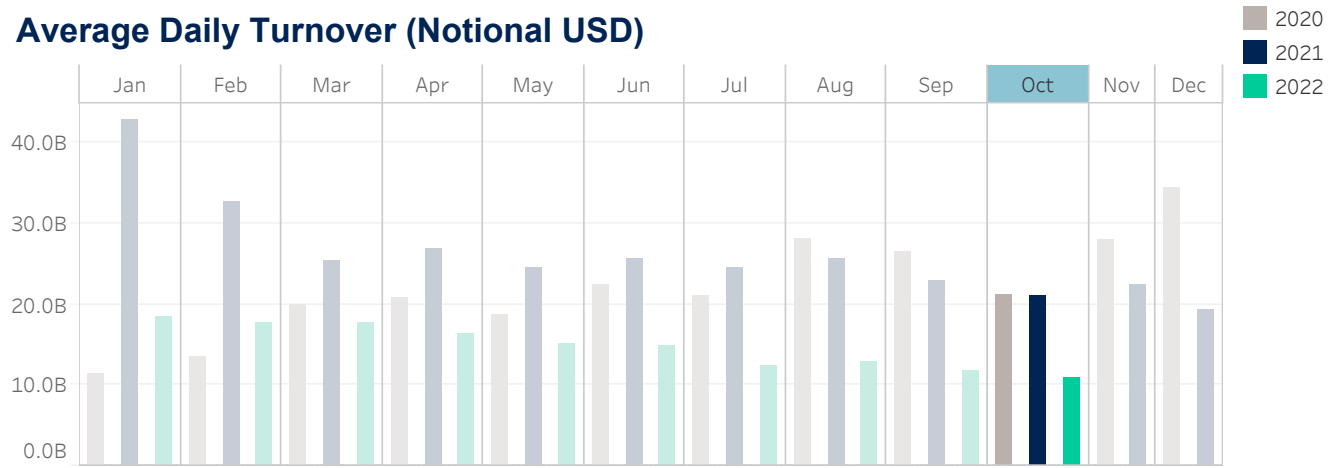
Median used for all metrics

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

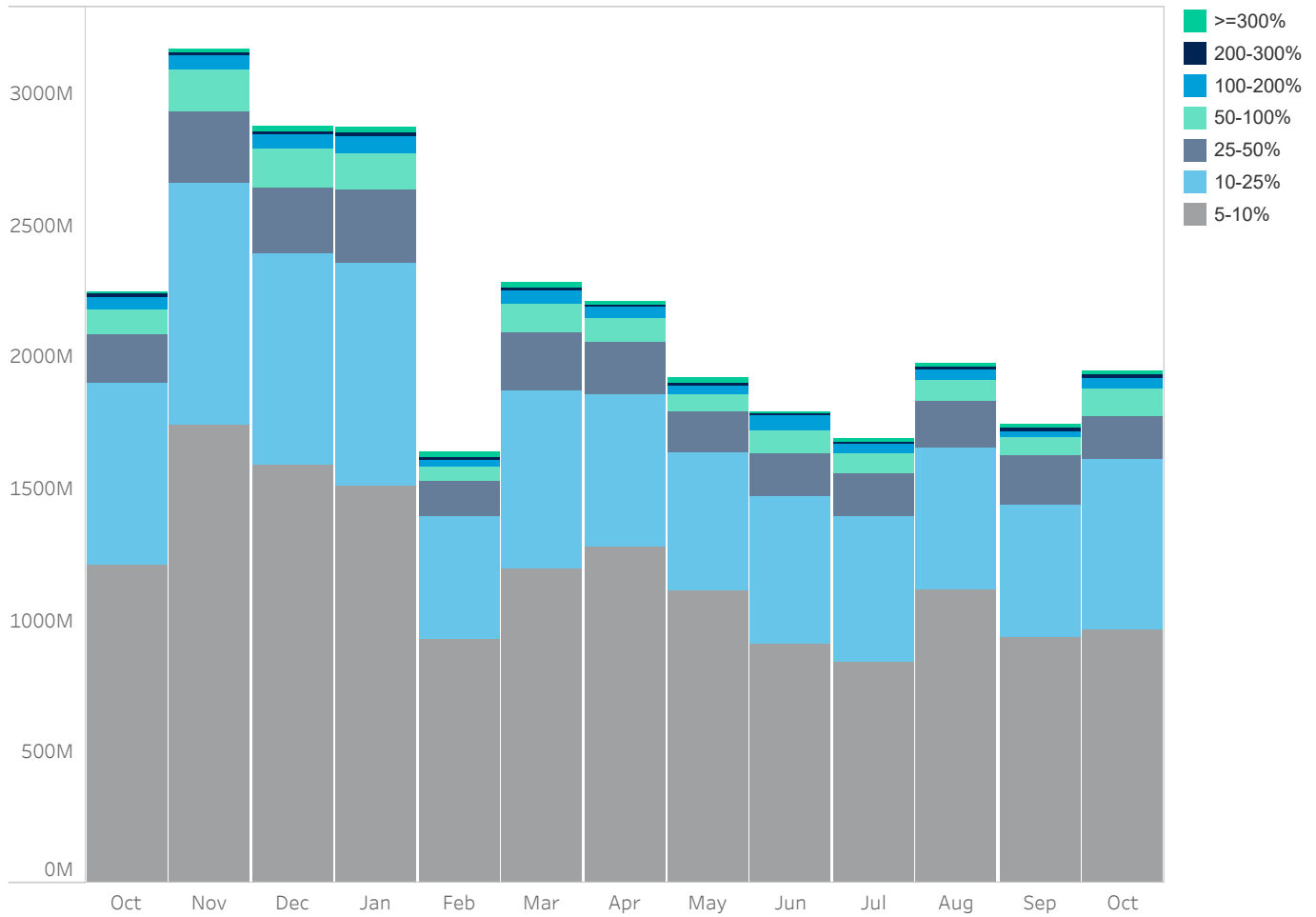
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



Large Sized Trades (>=5%ADT)



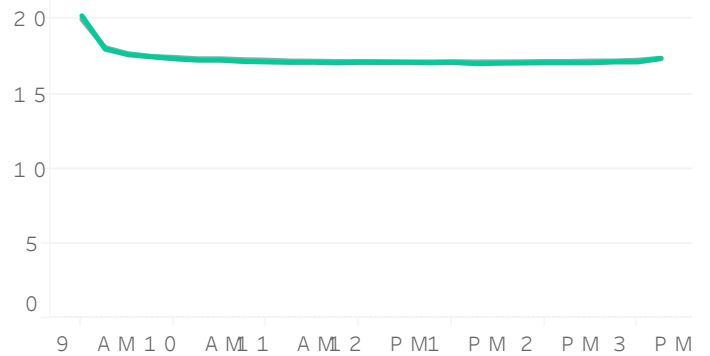
Source data: Virtu Financial

South Korea

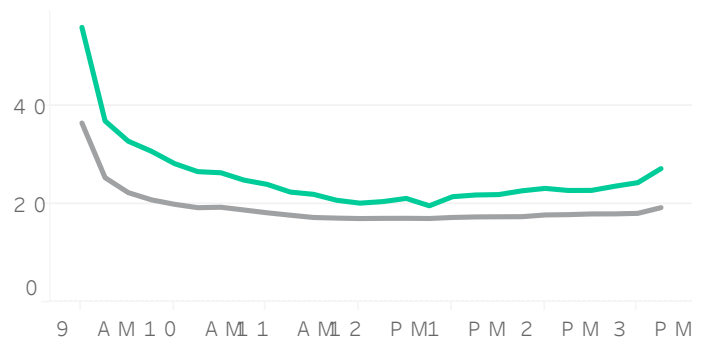
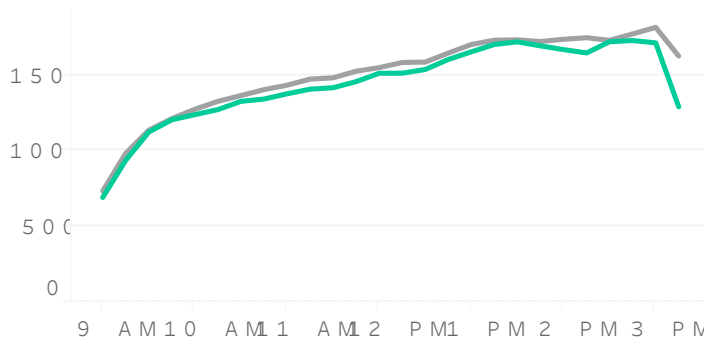
Volume Curve



Intraday Spread (bps)



Intraday Quotesize (Share) and Intraday Volatility (%)



Rolling 12 Months OTC to B Avg 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	
first Half	17.	17.	18.	18.	18.	19.	19.	
mid day	16.	16.	17.	17.	17.	17.	17.	
last Half	16.	16.	17.	17.	17.	17.	17.	

One Minute Volatility Bps

mid day	10.	10.	11.	11.
first Half	13.	14.	18.	17.
last Half	23.	25.	13.	12.

Quotesize in Shares

first Half	945	898	743	731	721	661
mid day	1,601	1,601	1,301	1,201	1,601	1,301
last Half	1,901	1,901	1,401	1,301	1,901	1,501

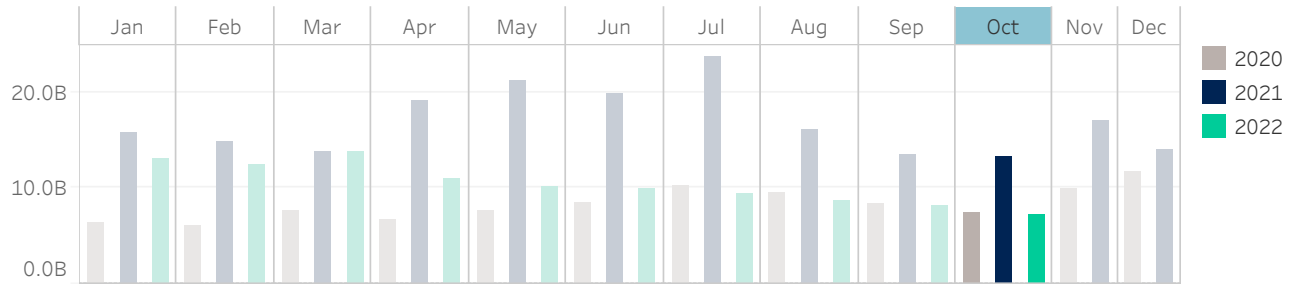
Median used for all metrics

One minute volatility is calculated using the difference between the high and low prices in a one-minute interval.

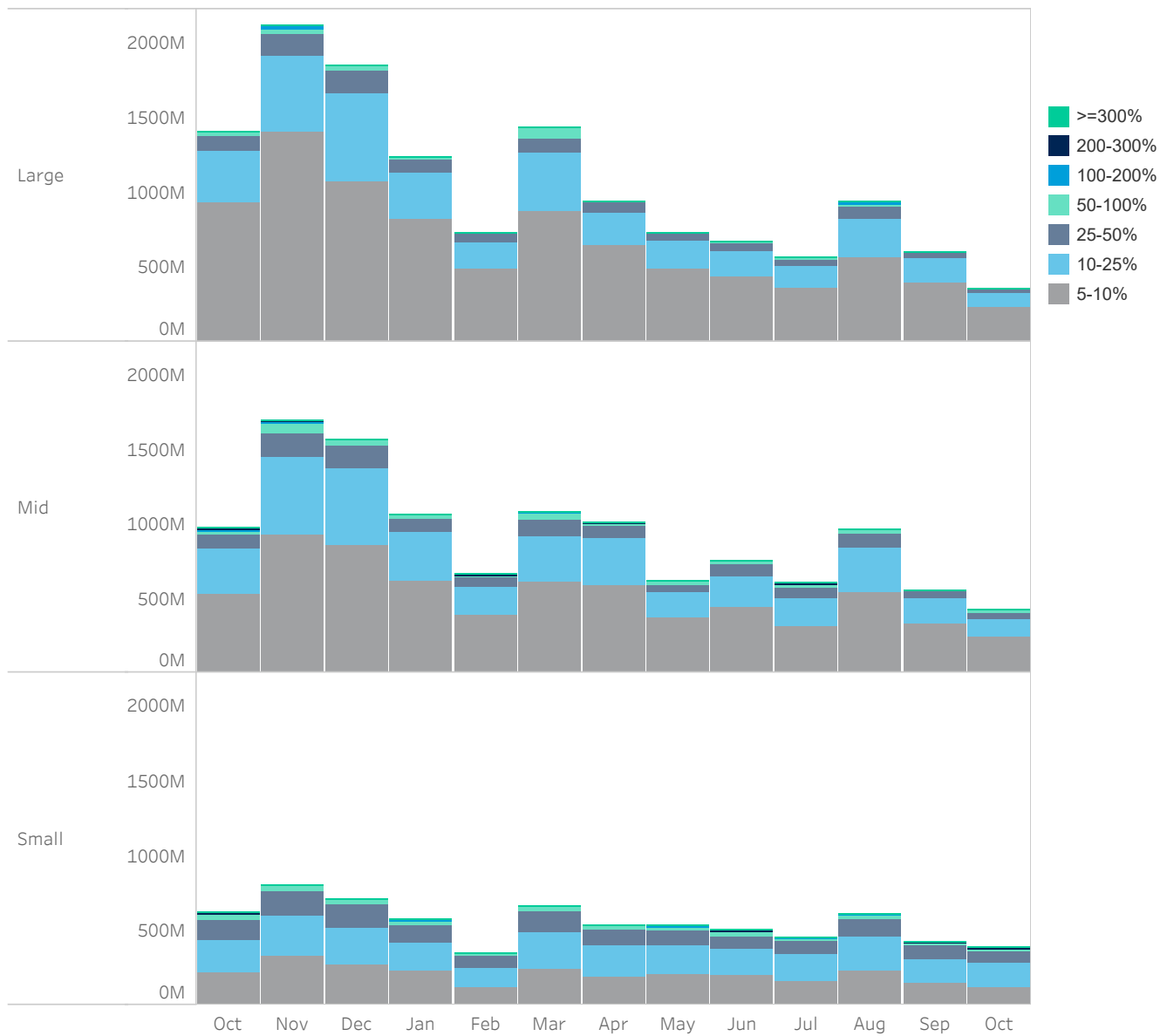
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



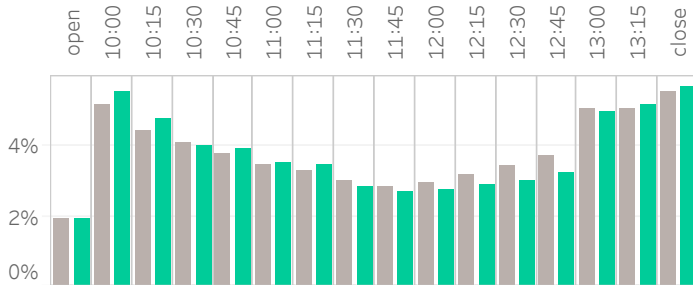
Large Sized Trades (>=5%ADT)



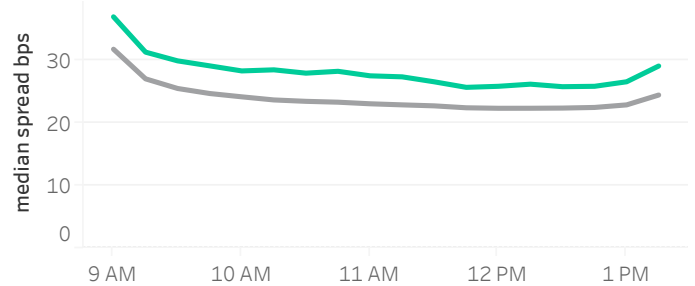
Source data: Virtu Financial

Taiwan

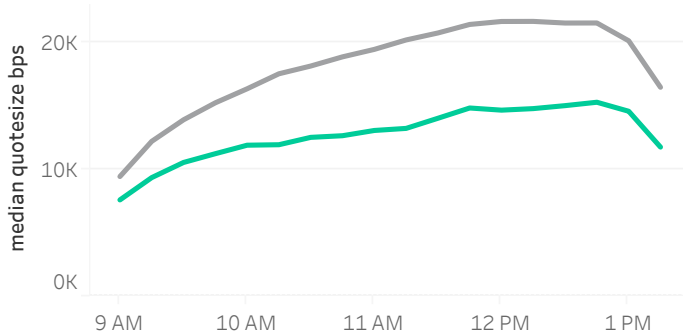
Volume Curve



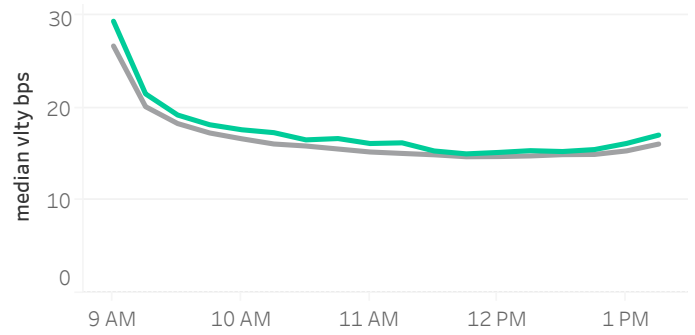
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ October 2022

Spread Bps

	22 Q2			22 Q3			22 Q4
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
firstHalfHour	26.8	27.3	28.1	29.6	27.8	30.2	32.5
midday	22.4	22.9	23.4	24.5	23.0	24.6	26.5
lastHalfHour	23.0	24.0	24.8	25.5	23.2	25.9	27.2

One Minute Volatility Bps

firstHalfHour	13.2	13.1	14.5	16.9	14.3	15.2	17.3
midday	6.8	6.8	7.6	8.6	7.0	7.4	8.3
lastHalfHour	8.1	8.7	9.9	8.9	8.9	8.5	9.9

Quotesize in Shares

firstHalfHour	11,310	10,719	10,126	9,514	10,698	9,327	8,725
midday	20,329	18,947	17,181	14,545	18,826	15,514	13,646
lastHalfHour	18,389	16,685	14,454	14,115	18,926	14,114	13,319

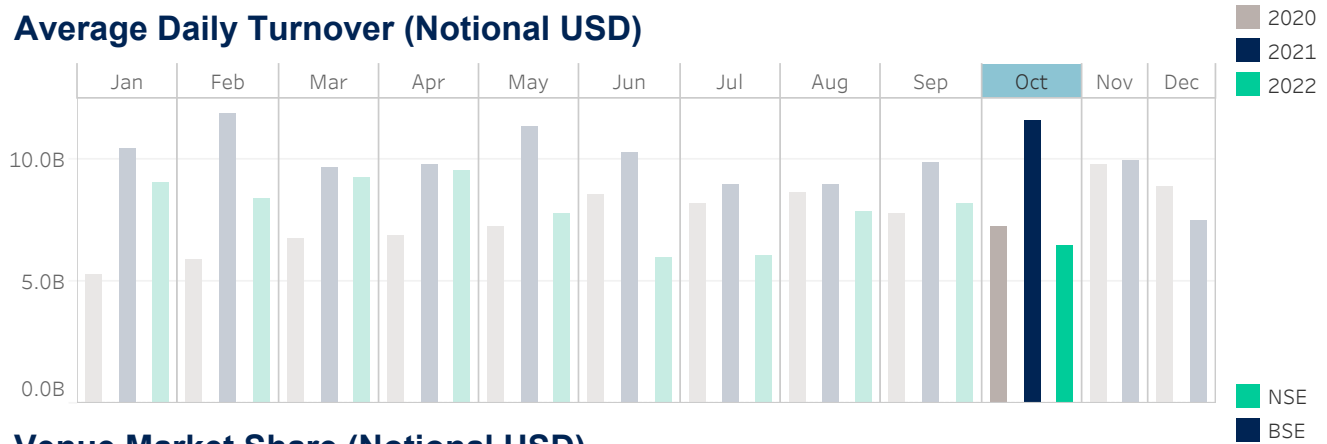
Median used for all metrics

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

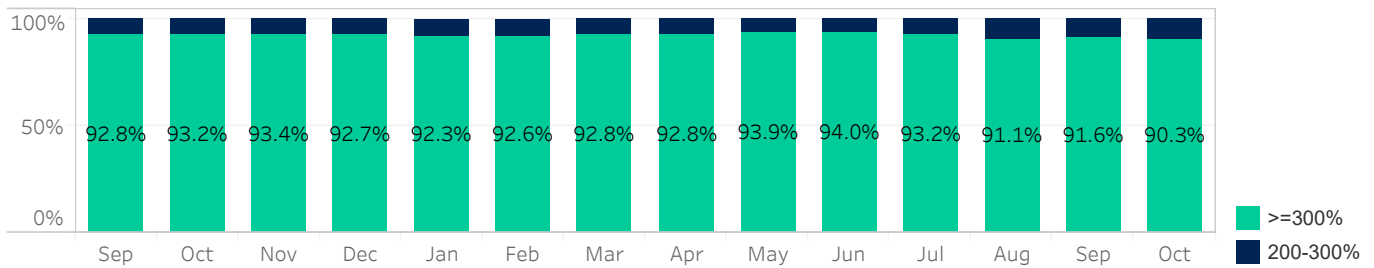
Source data: Virtu Financial

India

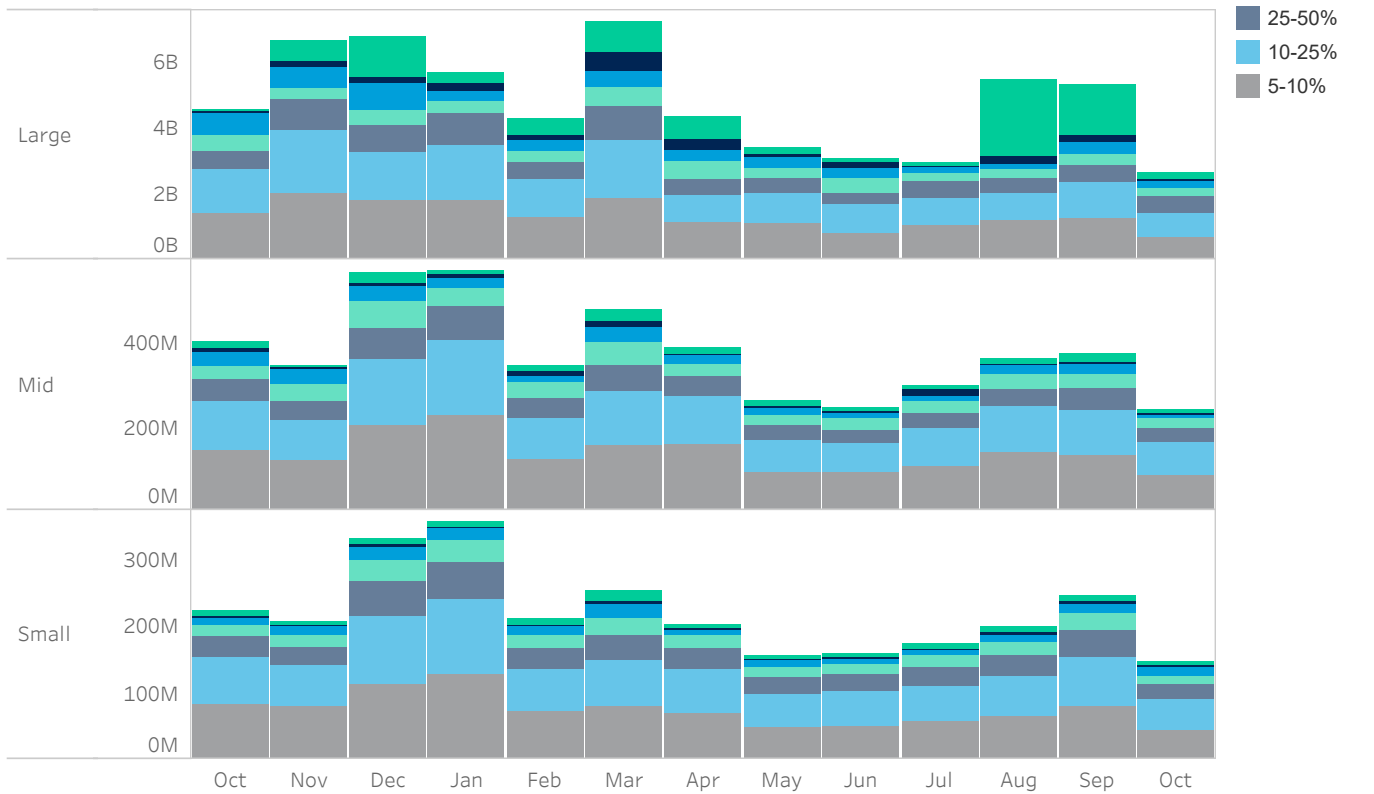
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



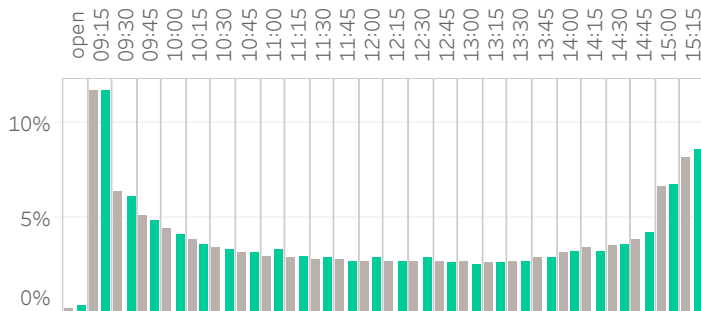
Large Sized Trades (>=5%ADT)



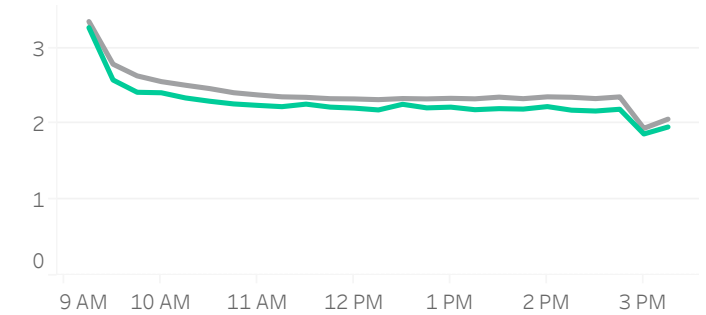
Source data: Virtu Financial

India

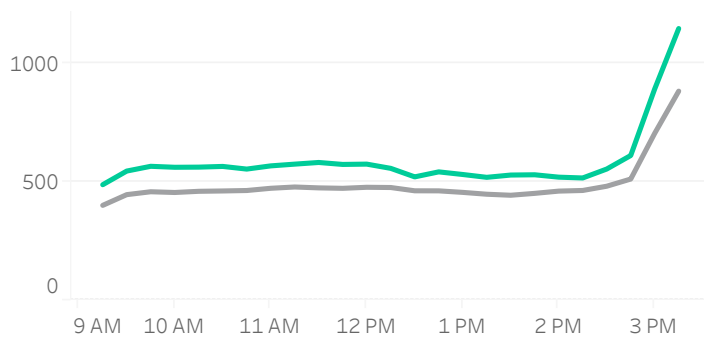
Volume Curve



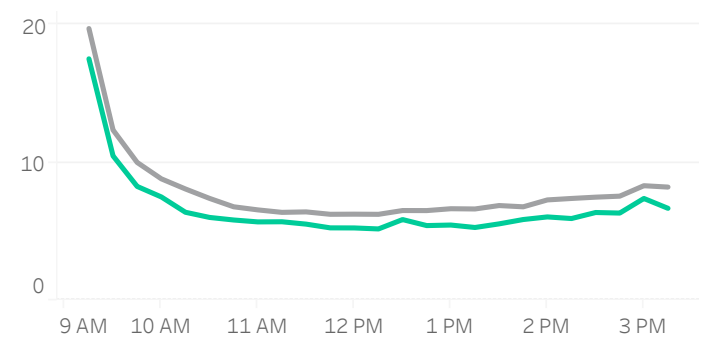
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (grey line) October 2022 (green line)

Spread Bps

	22 Q2			22 Q3			22 Q4
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
firstHalfHour	2.8	3.0	3.0	2.7	2.8	2.8	2.8
midday	2.2	2.4	2.4	2.2	2.2	2.3	2.2
lastHalfHour	1.9	2.0	1.9	1.8	1.8	1.9	1.8

One Minute Volatility Bps

firstHalfHour	13.4	16.7	14.8	12.0	12.2	12.8	12.2
midday	6.1	8.6	7.1	5.5	5.3	6.0	5.3
lastHalfHour	7.8	9.7	8.1	7.0	6.5	7.0	6.3

Quotesize in Shares

firstHalfHour	415	345	364	411	557	525	535
midday	455	373	393	458	590	550	560
lastHalfHour	725	586	672	703	879	934	1,000

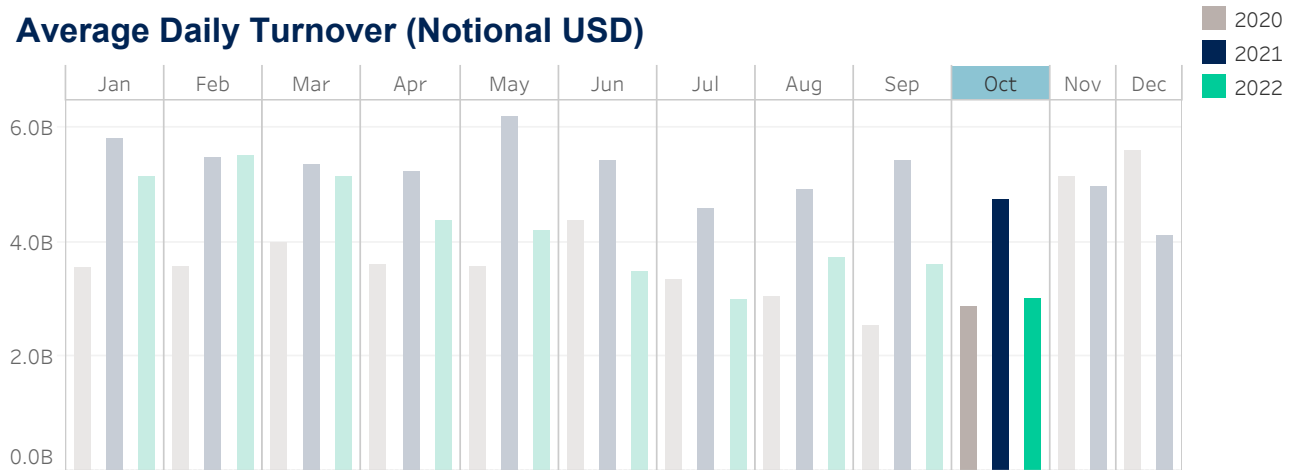
Median used for all metrics

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

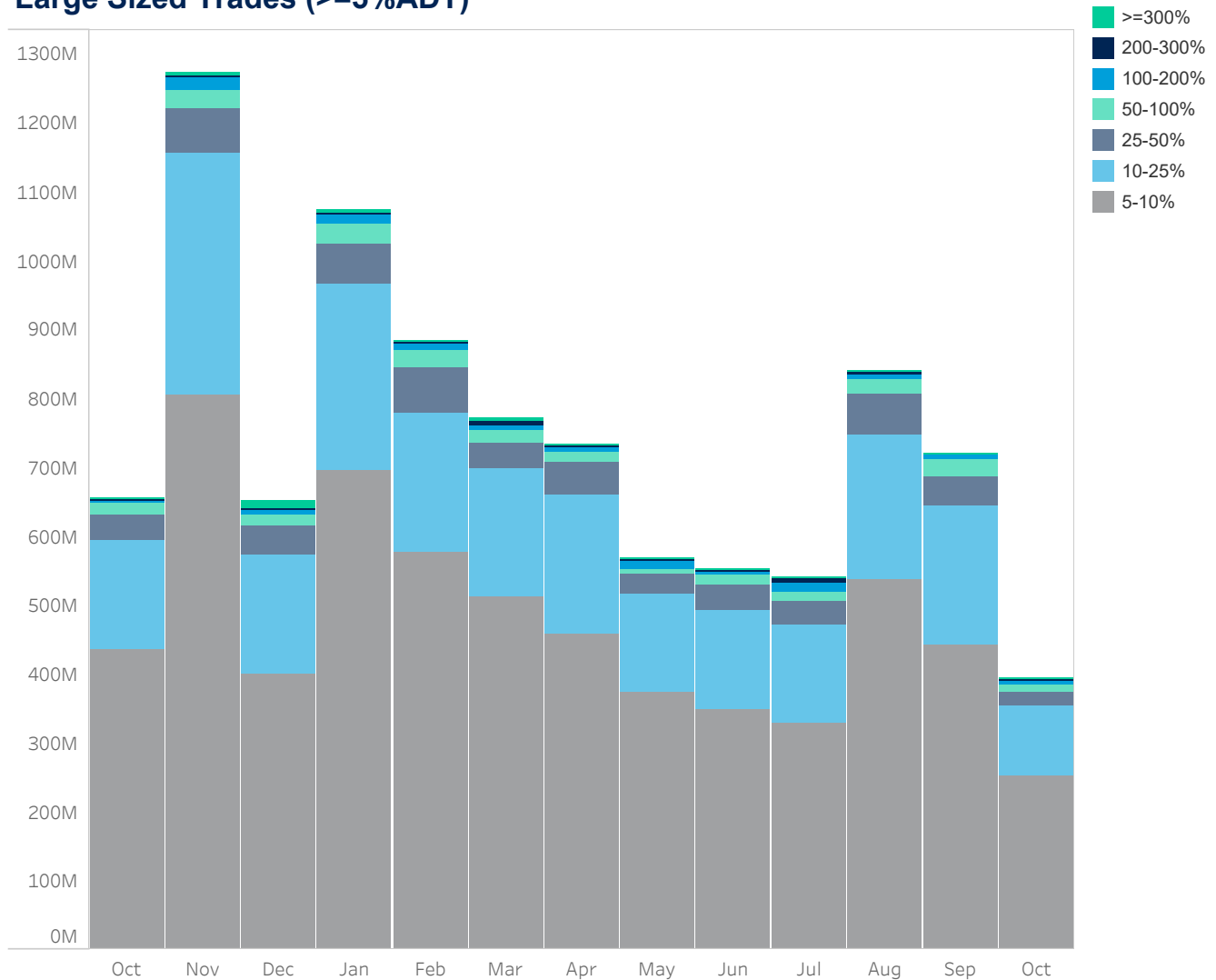
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



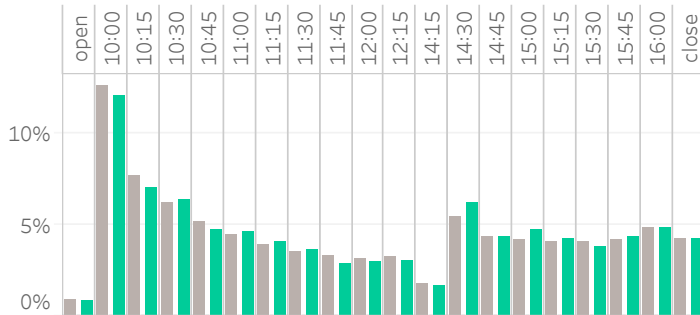
Large Sized Trades (>=5%ADT)



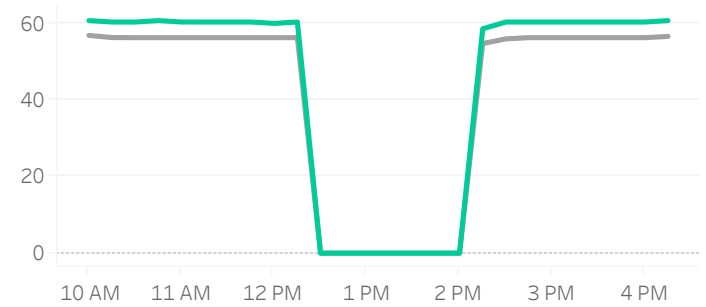
Source data: Virtu Financial

Thailand

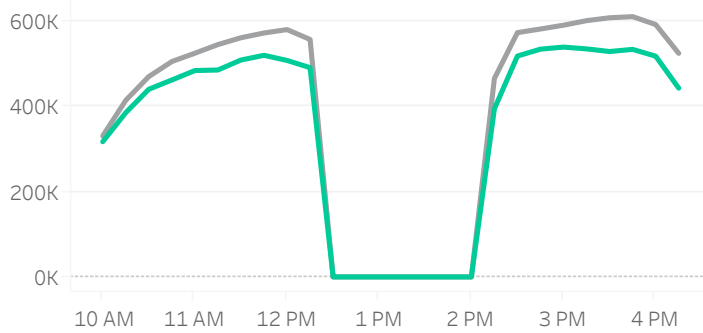
Volume Curve



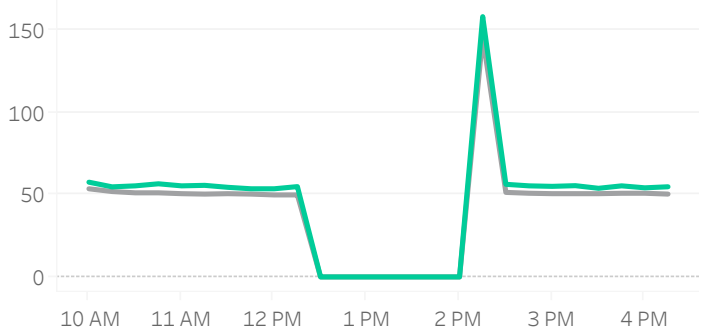
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (Grey line) October 2022 (Green line)

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	
firstHalfHour	55.8	56.5	57.5	60.1	58.1	58.8	60.6	
midday	55.4	55.9	57.1	59.9	57.9	58.8	60.6	
lastHalfHour	55.9	56.2	57.5	60.0	58.1	58.8	60.8	

One Minute Volatility Bps

firstHalfHour	158.6	54.3	144.1	148.5	152.5	143.2	151.5
midday	157.2	155.2	173.0	142.6	155.7	149.6	151.0
lastHalfHour							

Quotesize in Shares

firstHalfHour	350,199	296,888	309,227	249,174	356,306	398,349	337,182
midday	568,254	472,504	481,812	401,100	577,313	581,460	503,717
lastHalfHour	562,618	479,643	473,218	415,479	587,211	561,127	486,136

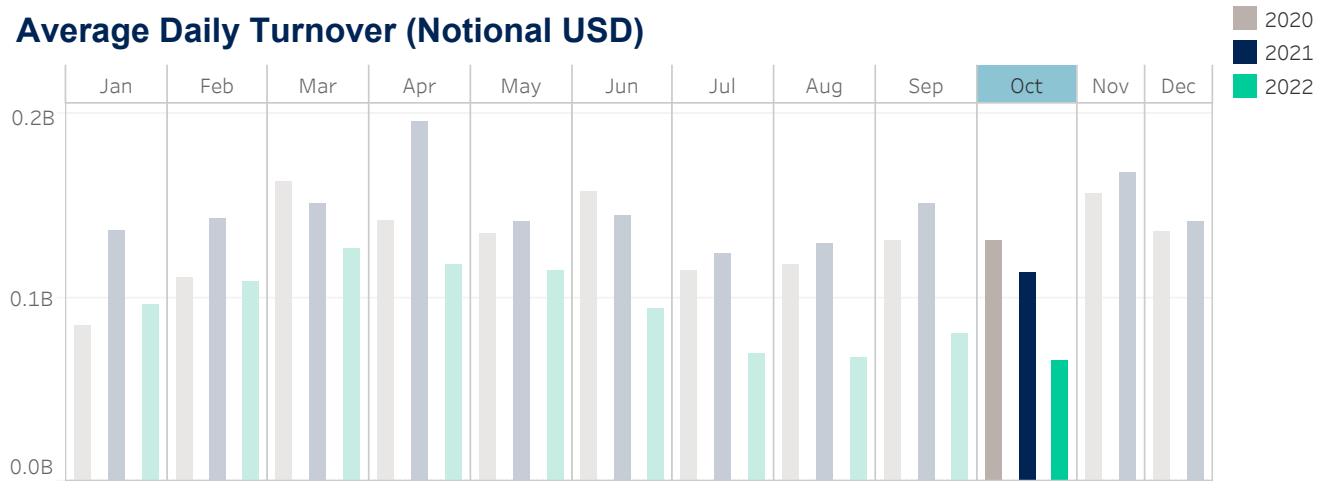
Median used for all metrics

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

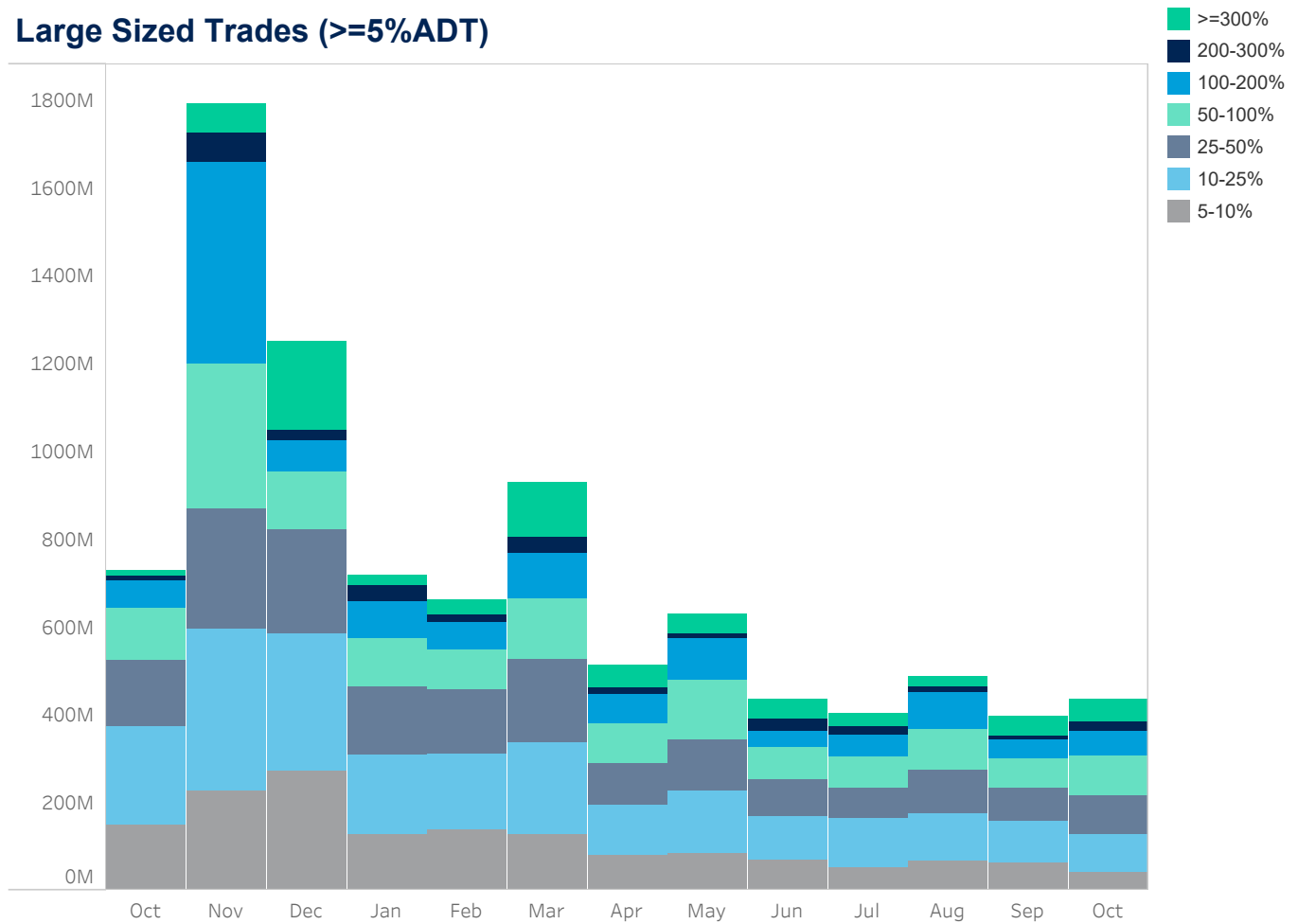
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



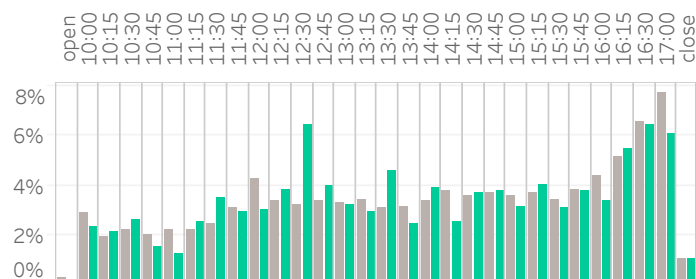
Large Sized Trades (>=5%ADT)



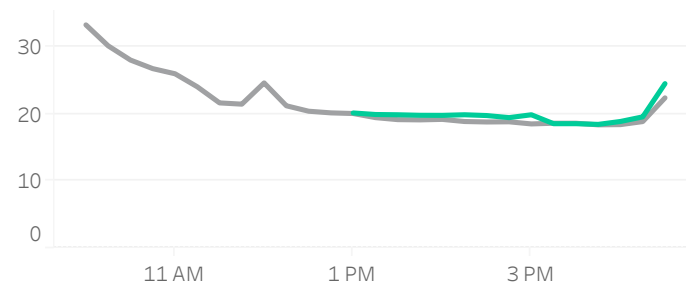
Source data: Virtu Financial

New Zealand

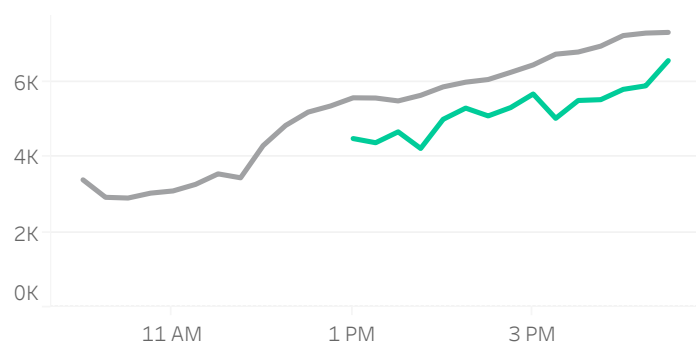
Volume Curve



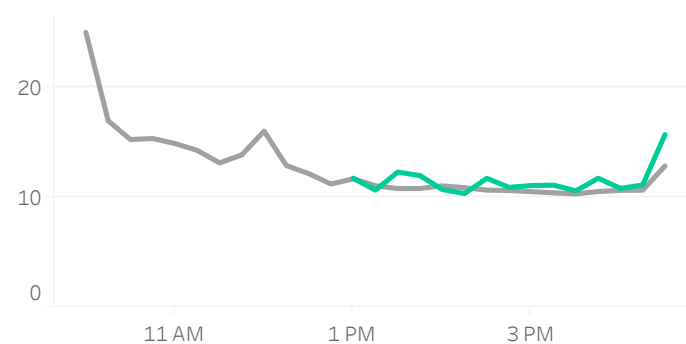
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ October 2022

Spread Bps

	22 Q2			22 Q3			22 Q4
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22
firstHalfHour	34.0	38.6				31.4	
midday	17.7	19.6	22.2	20.0	18.4	18.3	19.5
lastHalfHour	18.0	20.7	24.8	20.4	19.0	18.6	20.3

One Minute Volatility Bps

firstHalfHour	6.3	9.1				7.6	
midday	3.2	3.8	3.7	3.7	3.8	4.1	3.4
lastHalfHour	3.7	5.3	5.6	4.7	4.7	4.2	5.0

Quotesize in Shares

firstHalfHour	3,044	2,841				2,664	
midday	5,456	5,955	6,180	5,959	5,623	5,847	5,222
lastHalfHour	7,811	7,376	7,341	7,577	7,166	6,968	6,369

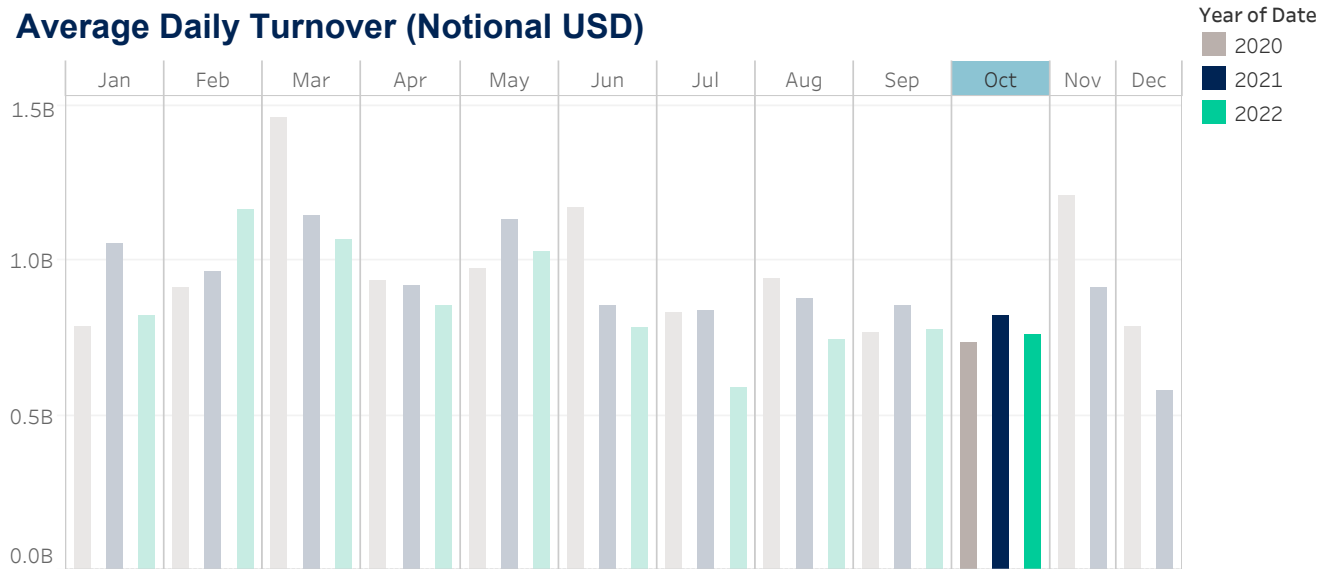
Median used for all metrics

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

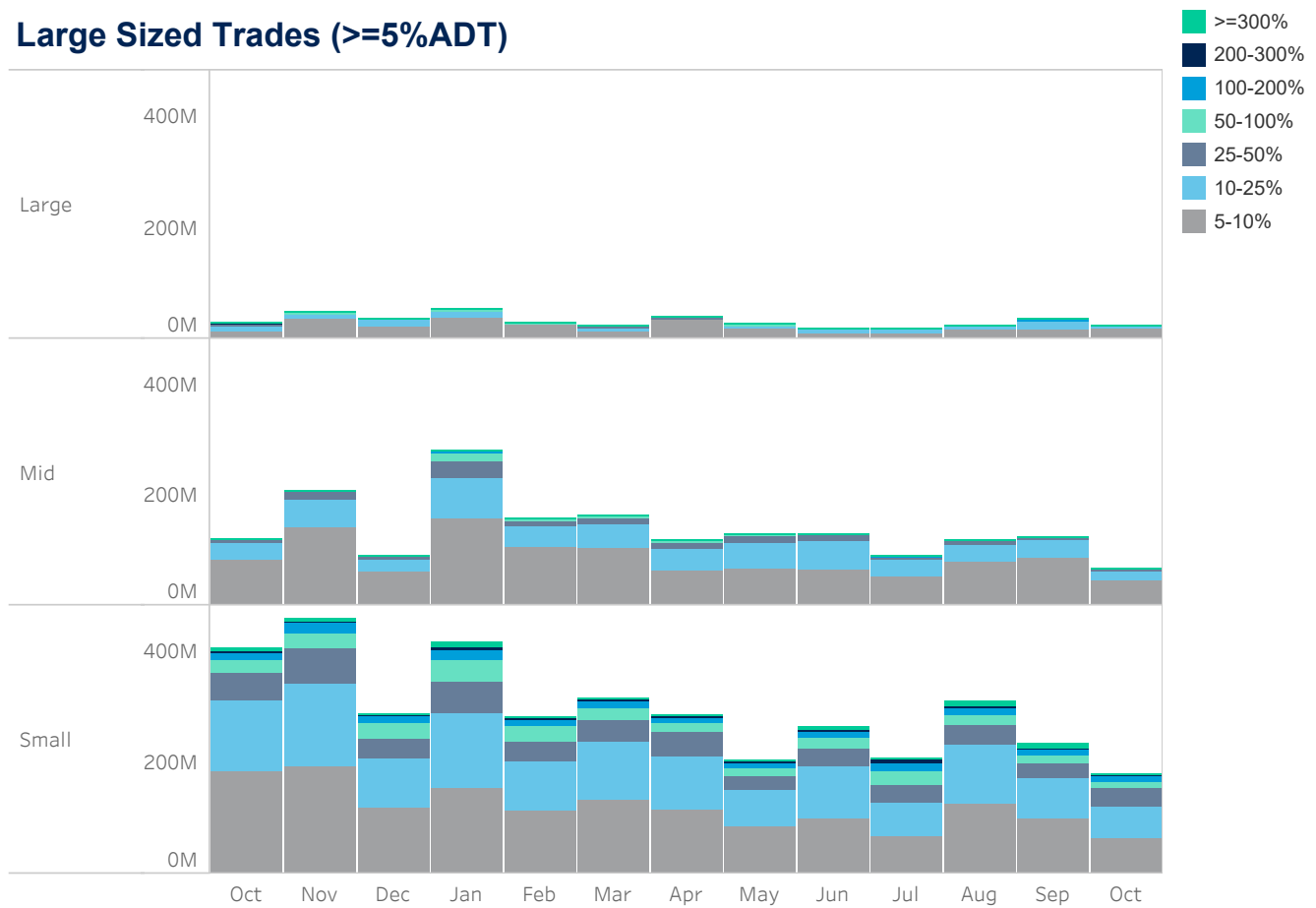
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



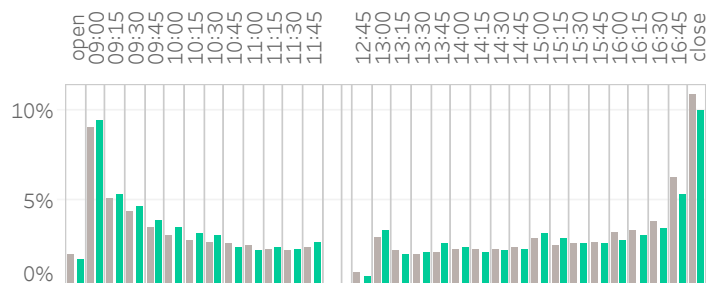
Large Sized Trades (>=5%ADT)



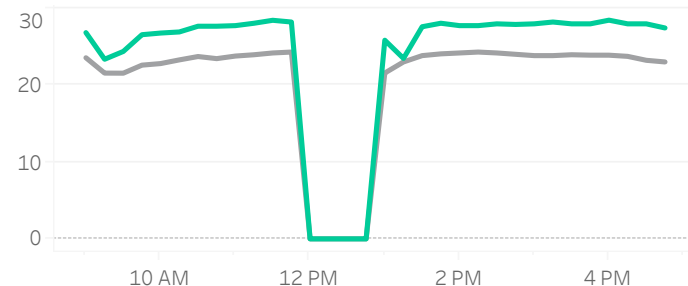
Source data: Virtu Financial

Singapore

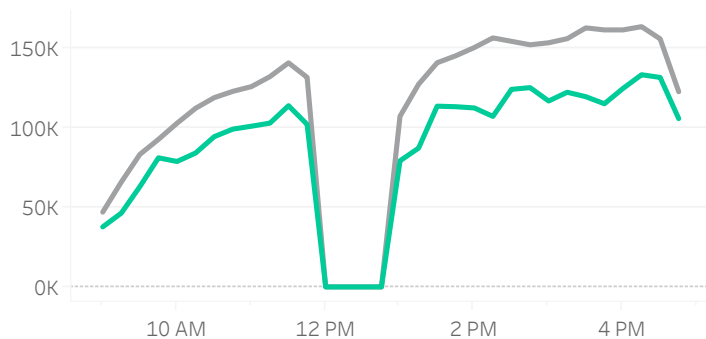
Volume Curve



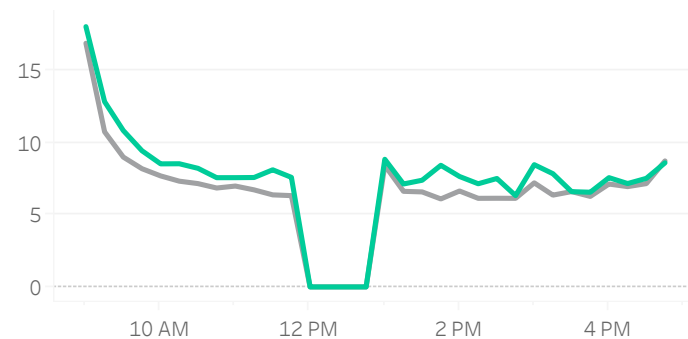
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg October 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	
firstHalfHour	20.5	22.2	22.8	23.0	19.6	22.9	24.7	
midday	21.8	23.9	24.0	24.4	23.8	25.2	27.3	
lastHalfHour	21.1	23.9	22.8	22.0	21.6	22.9	27.3	

One Minute Volatility Bps

firstHalfHour	5.7	8.1	5.9	6.2	5.5	5.5	6.7
midday	4.5	5.8	3.9	5.1	5.4	4.5	4.3
lastHalfHour	4.9	5.7	3.6	4.4	3.9	3.1	2.2

Quotesize in Shares

firstHalfHour	48,491	66,272	58,725	49,988	61,757	71,222	44,097
midday	116,792	159,349	136,036	111,790	155,222	200,856	106,714
lastHalfHour	122,775	163,525	129,298	102,873	148,883	165,031	121,942

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

Glossary

Volume curve - average of value traded during the month, per 15-minute time bin.

Intraday volatility - Median of difference between the high and low price within a one minute time bin, divided by that bin's VWAP

Spread - median of bid-ask spread of the index.

Quotesize - Median bid and ask size of all stocks in the index.

Average daily turnover - average daily value traded in the market.

Indices used:

Australia: ASX 200

Japan: TOPIX

China: CSI 300

Hong Kong: Hang Seng Index

Taiwan: TWSE

India: NIFTY 50

Korea: MSCI Korea 25/50 Index

New Zealand: MSCI New Zealand IMI 25/50 Index

Singapore: MSCI Singapore Index

Thailand: MSCI Thailand IMI 25/50 Index

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