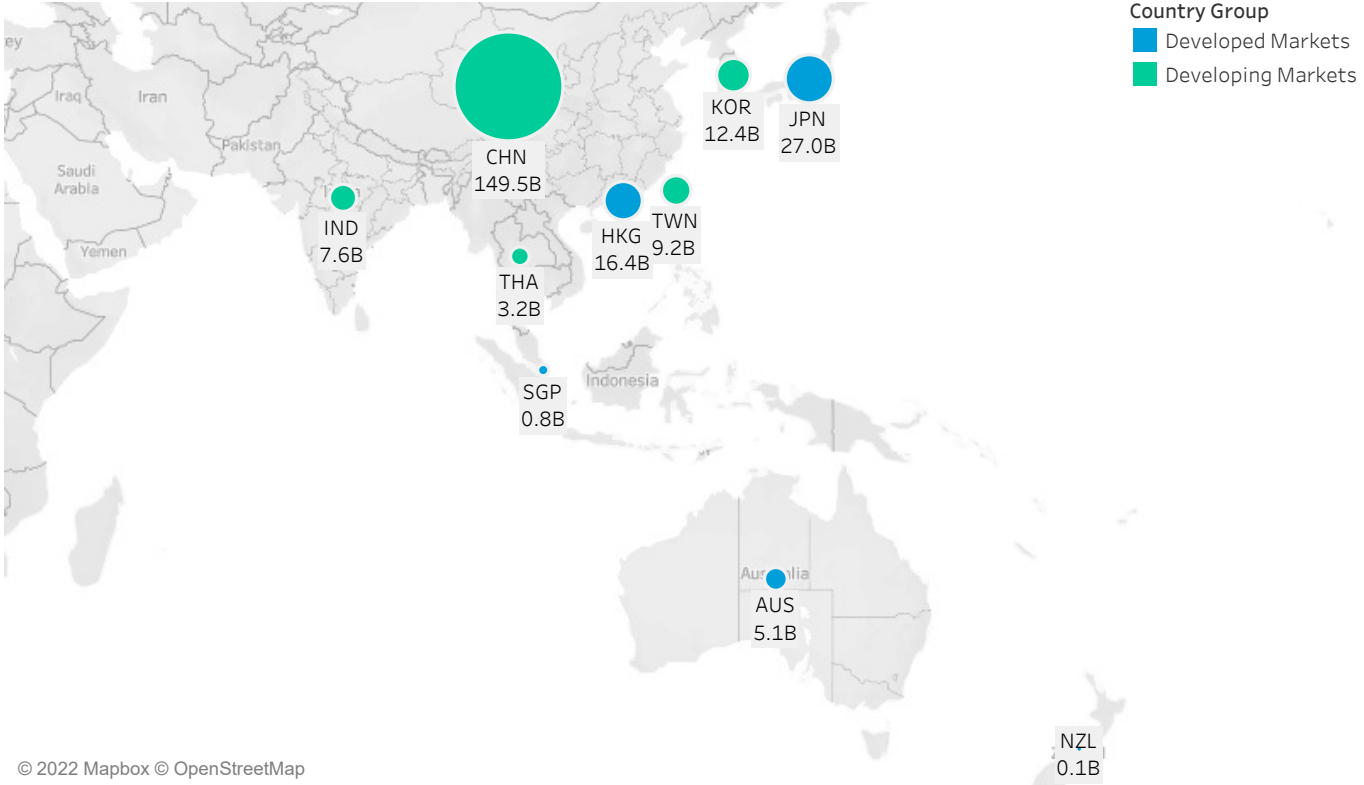


November 2022

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

Nov 2022

AP Market Structure Monthly

EQUITIES MICROSTRUCTURE OBSERVATIONS

- Average Daily Value Traded (ADT) picked up across the APAC universe in November 2022, after a relatively quiet Q3 2022. Most countries saw double digit % increases in ADT in November compared to the average for 3Q 2022. Hong Kong led the ADT MoM increase at +46%, followed by CHN and TWN at +35% and +27%, respectively.
- Intraday spreads and volatility remained at similar levels in November 2022 compared to October 2022.

AP MARKET STRUCTURE NEWS

Hong Kong Stock Market Trading Fee Amendments Received Regulatory Approval

On 14 November 2022, Hong Kong Exchanges and Clearing Limited (HKEX) announced that it had received the approval from the Securities and Futures Commission (SFC) for the amendments to the Trading Fees of its stock market, which include (a) removing the trading tariff of HKD 0.5 per trade and (b) increasing the ad valorem trading fee rate from 0.005% to 0.00565%. The new trading fee rate will take effect from 1 January 2023.

https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/086_22_SEHK_OP_Trading-Fee_e.pdf

<https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/CT14122E.pdf>

Korea Exchange To Enhance Quotation Price Units in January 2023

On 4 November 2022, Korea Exchange (KRX) announced changes to quotation price units (tick size) in the securities and derivative markets, and has begun to collect opinions of market participants. The implementation of the tick size changes is scheduled to occur when KRX launches its next-generation system in January 2023.

<https://global.krx.co.kr/contents/GLB/02/0203/0203000000/GLB0203000000.jsp#ab8758eced0475769e200e7e309baf77=1&view=20687>

Korea Exchange Consult Market Participants on High-Speed Algorithmic Trading

On 4 November 2022, KRX published a notice to collect opinions of market participants on the revision of regulations related to the registration of high-speed algorithmic traders and the introduction of risk management system for their trading.

<https://global.krx.co.kr/contents/GLB/02/0203/0203000000/GLB0203000000.jsp#ab8758eced0475769e200e7e309baf77=1&view=20686>

Korea Exchange Launched KOSDAQ Global Segment with 51 Blue Chip Corporations

On 23 November 2022, KRX announced that it had selected 51 KOSDAQ-listed blue chip corporations to be designated as KOSDAQ Global segment corporations.

<https://global.krx.co.kr/contents/GLB/02/0203/0203000000/GLB0203000000.jsp#ab8758eced0475769e200e7e309baf77=1&view=20691>

India Stock Exchanges Published the List of Futures and Options Stocks Transitioning to T+1 Settlement on 27 January 2022

On 28 November 2022, The National Stock Exchange of India (NSE) published the list of Futures and Options securities that will transition to the T+1 settlement cycle. The T+1 settlement cycle will take effect from 27 January 2022.

https://www.business-standard.com/article/markets/t-1-settlement-of-f-o-stocks-pushed-to-jan-fpis-get-a-month-s-breather-122112301057_1.html

<https://www.nseindia.com/resources/exchange-communication-circulars>

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

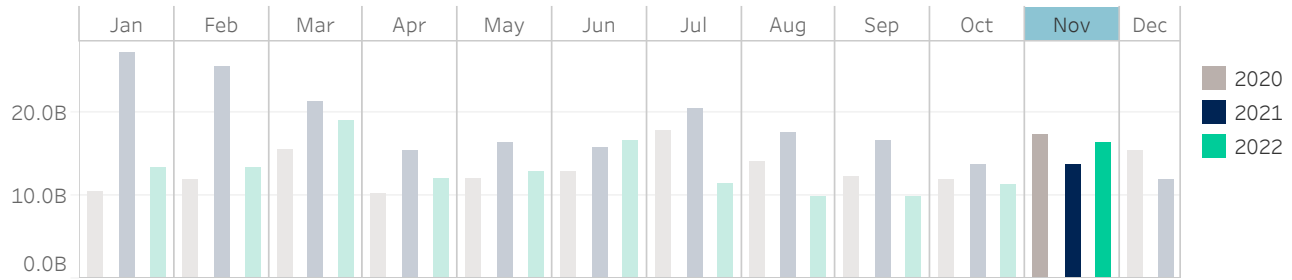
APAC +852.2846.3592 | CAN +1.416.874.0800 | EMEA +44.20.7670.4066 | US +1.646.682.6199
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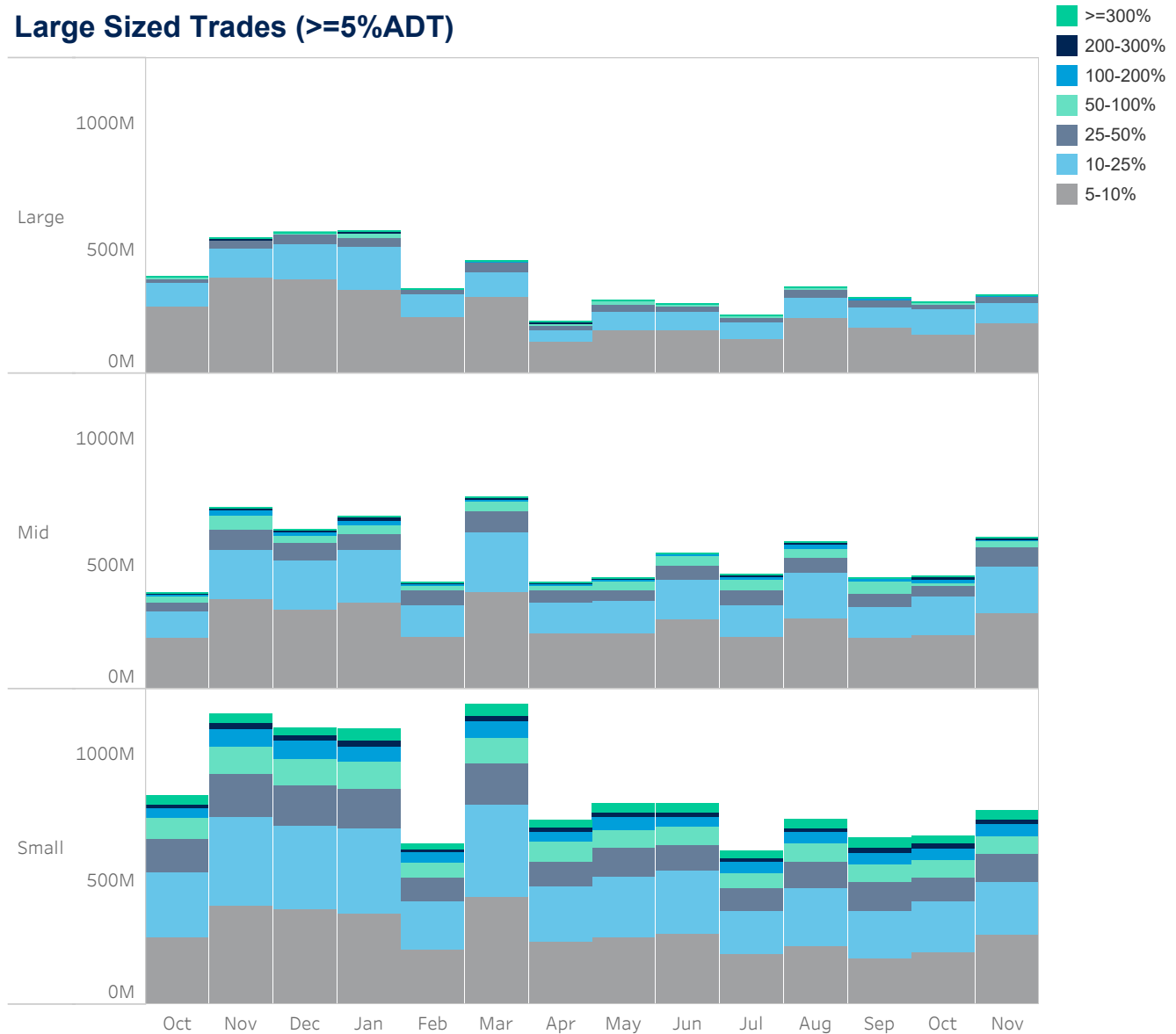
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Hong Kong

Average Daily Turnover (Notional USD)



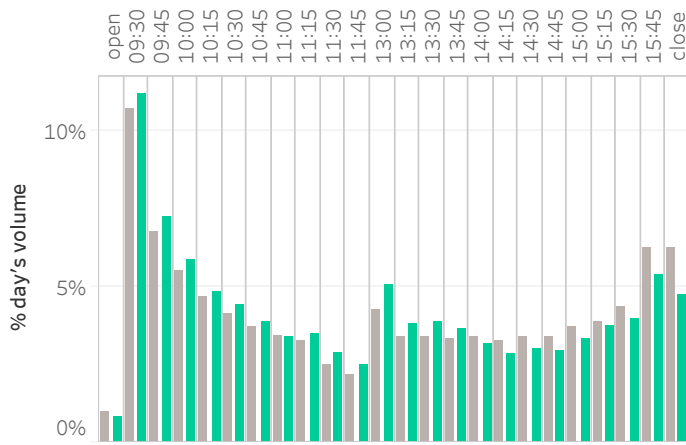
Large Sized Trades (>=5%ADT)



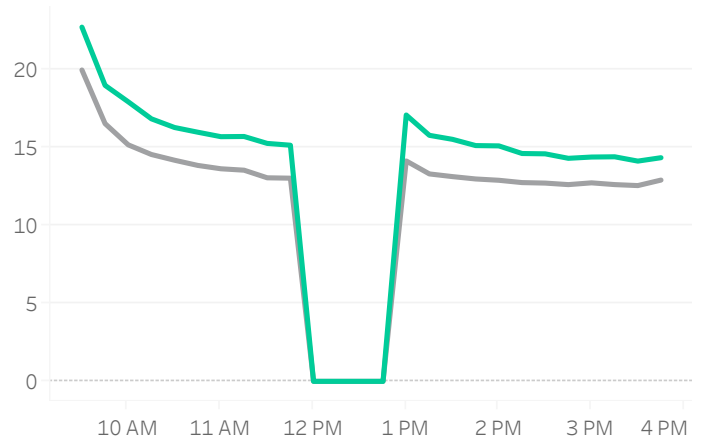
Source data: Virtu Financial

Hong Kong

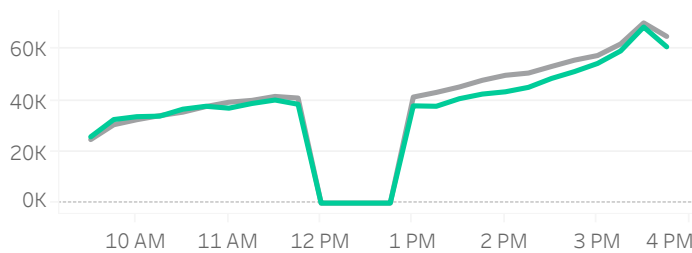
Volume Curve



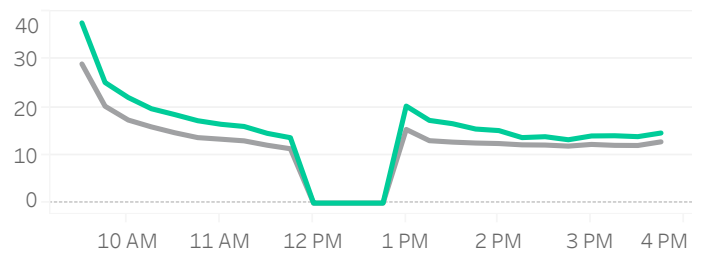
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22
firstHalfHour	17.6	17.3	17.2	17.1	17.0	18.0	18.7	20.4
midday	13.3	13.5	13.6	13.1	13.0	13.9	14.8	15.9
lastHalfHour	12.3	13.1	13.2	12.4	12.5	13.5	14.0	14.1

One Minute Volatility Bps

firstHalfHour	17.7	18.0	19.0	16.8	17.0	16.6	23.5	27.9
midday	8.4	7.3	7.7	7.3	7.1	7.4	10.2	12.4
lastHalfHour	6.5	6.2	6.5	6.0	6.4	7.1	8.8	10.1

Quotesize in Shares

firstHalfHour	28,977	27,325	28,776	26,961	27,359	28,423	28,826	30,757
midday	40,059	40,646	42,935	42,223	42,963	50,516	44,101	40,471
lastHalfHour	62,184	60,328	71,107	68,053	67,865	78,846	72,138	69,665

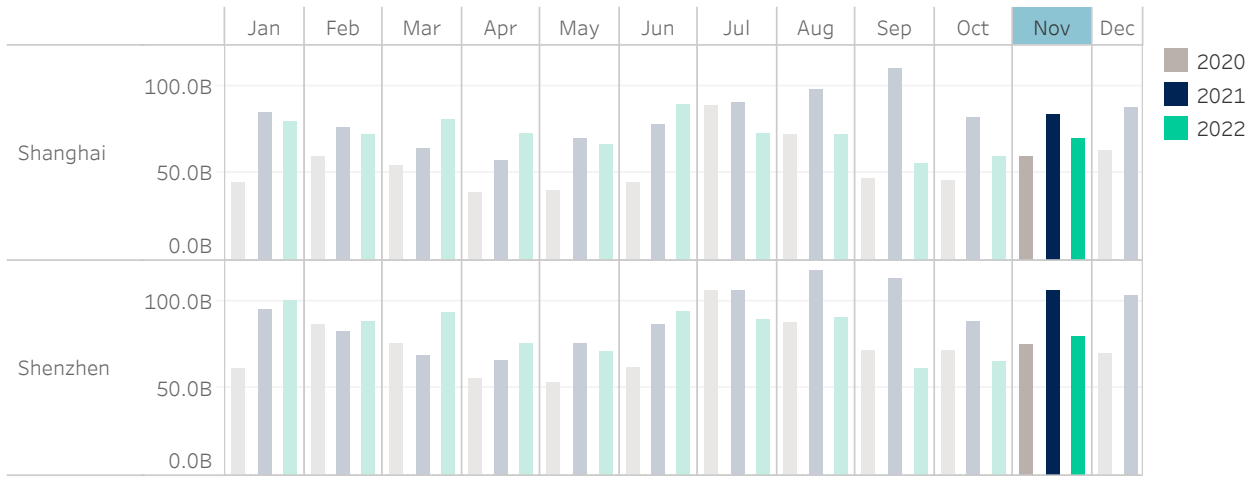
Median used for all metrics

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

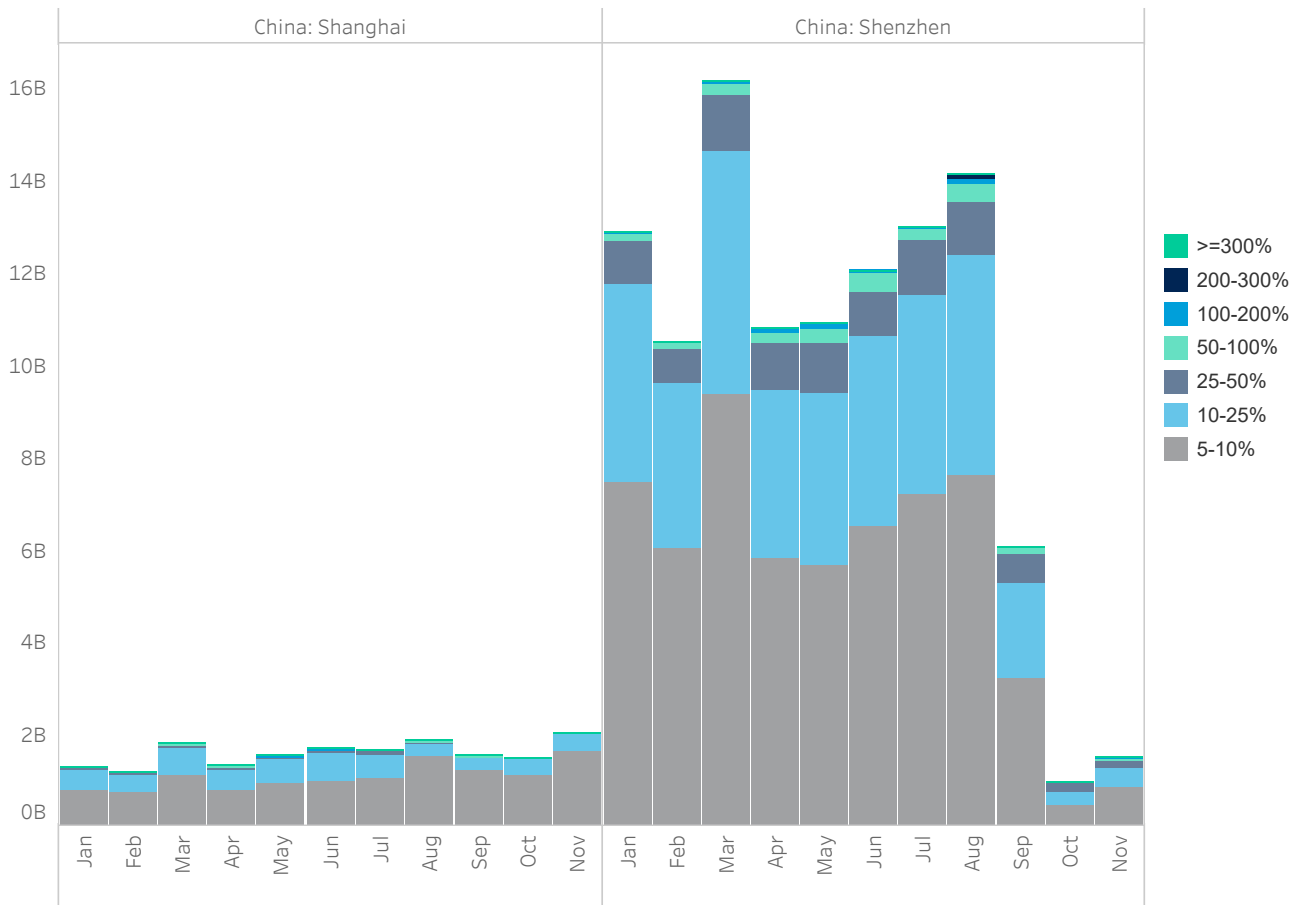
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



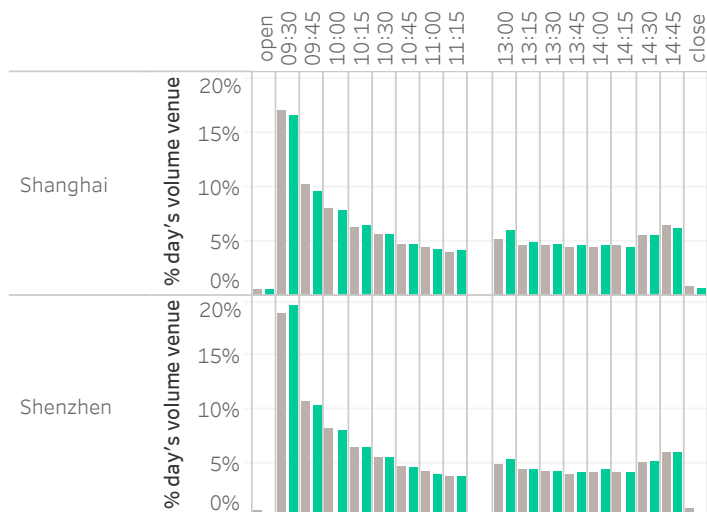
Large Sized Trades (>=5%ADT)



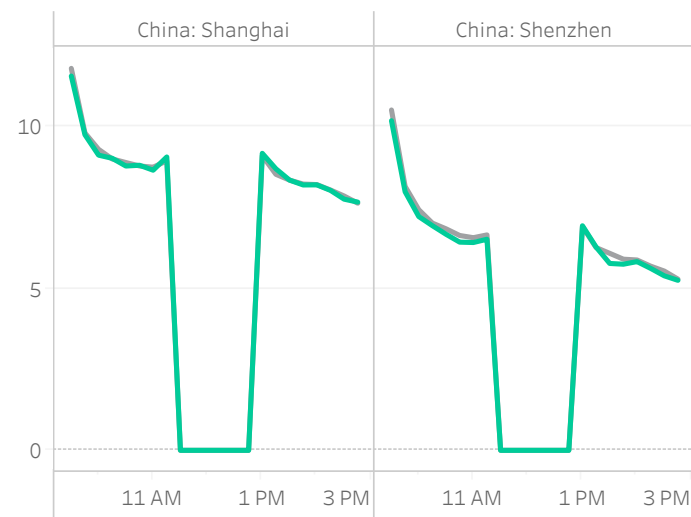
Source data: Virtu Financial

China

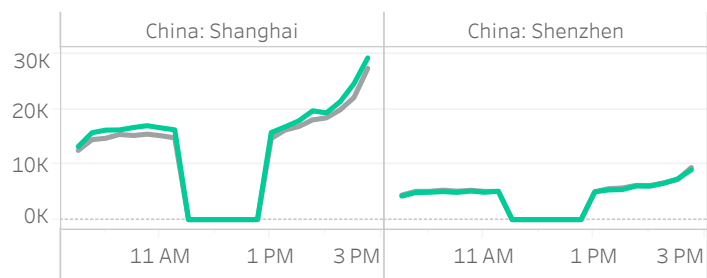
Volume Curve



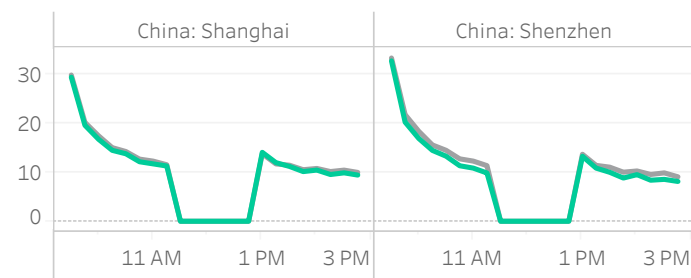
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg November 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	Nov	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
firstHalfHour	11.1	10.9	10.3	9.9	9.7	10.2	10.6	10.3	9.9	9.0	8.5	8.6	8.3	8.6	9.3	8.9	
midday	9.7	9.5	8.6	7.9	7.9	8.4	8.8	8.7	7.4	7.0	6.4	6.0	5.8	6.1	6.7	6.3	
lastHalfHour	8.4	8.2	7.4	7.3	7.2	7.6	8.0	7.7	6.2	5.9	5.3	5.0	4.9	5.2	5.5	5.2	

One Minute Volatility Bps

firstHalfHour	23.8	19.6	20.1	17.2	16.5	18.3	20.0	20.3	27.8	23.3	23.4	23.2	22.1	22.5	26.4	24.5
midday	11.6	9.1	10.1	7.1	6.3	7.0	8.2	8.2	13.1	10.6	11.3	9.8	8.8	8.9	10.8	10.1
lastHalfHour	9.3	6.6	7.3	6.0	5.0	6.2	6.4	6.5	9.8	7.4	8.0	7.5	6.5	7.3	8.0	7.1

Quotesize in Shares

firstHalfHour	11K	14K	14K	14K	14K	12K	13K	15K	4K	5K	4K	4K	4K	4K	4K	5K
midday	12K	15K	16K	17K	18K	15K	16K	18K	5K	6K	5K	5K	5K	5K	5K	6K
lastHalfHour	19K	24K	25K	25K	28K	23K	24K	29K	7K	8K	7K	8K	7K	7K	7K	9K

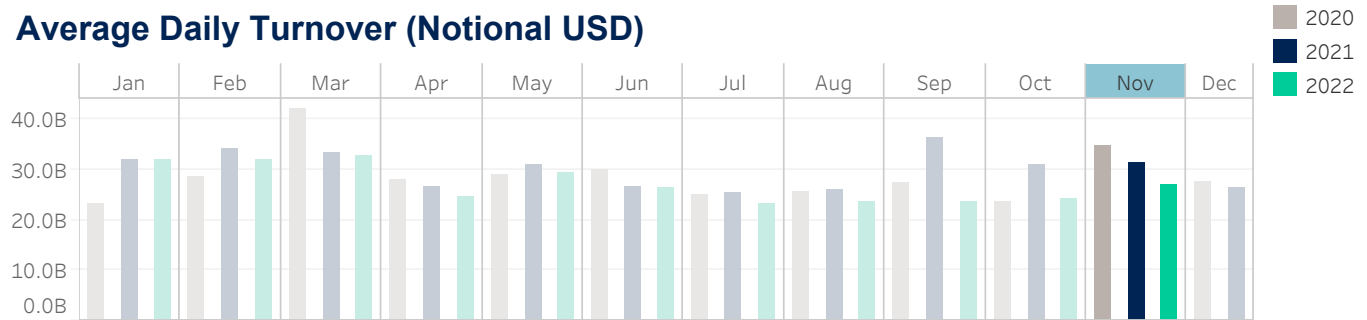
Median used for all metrics

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

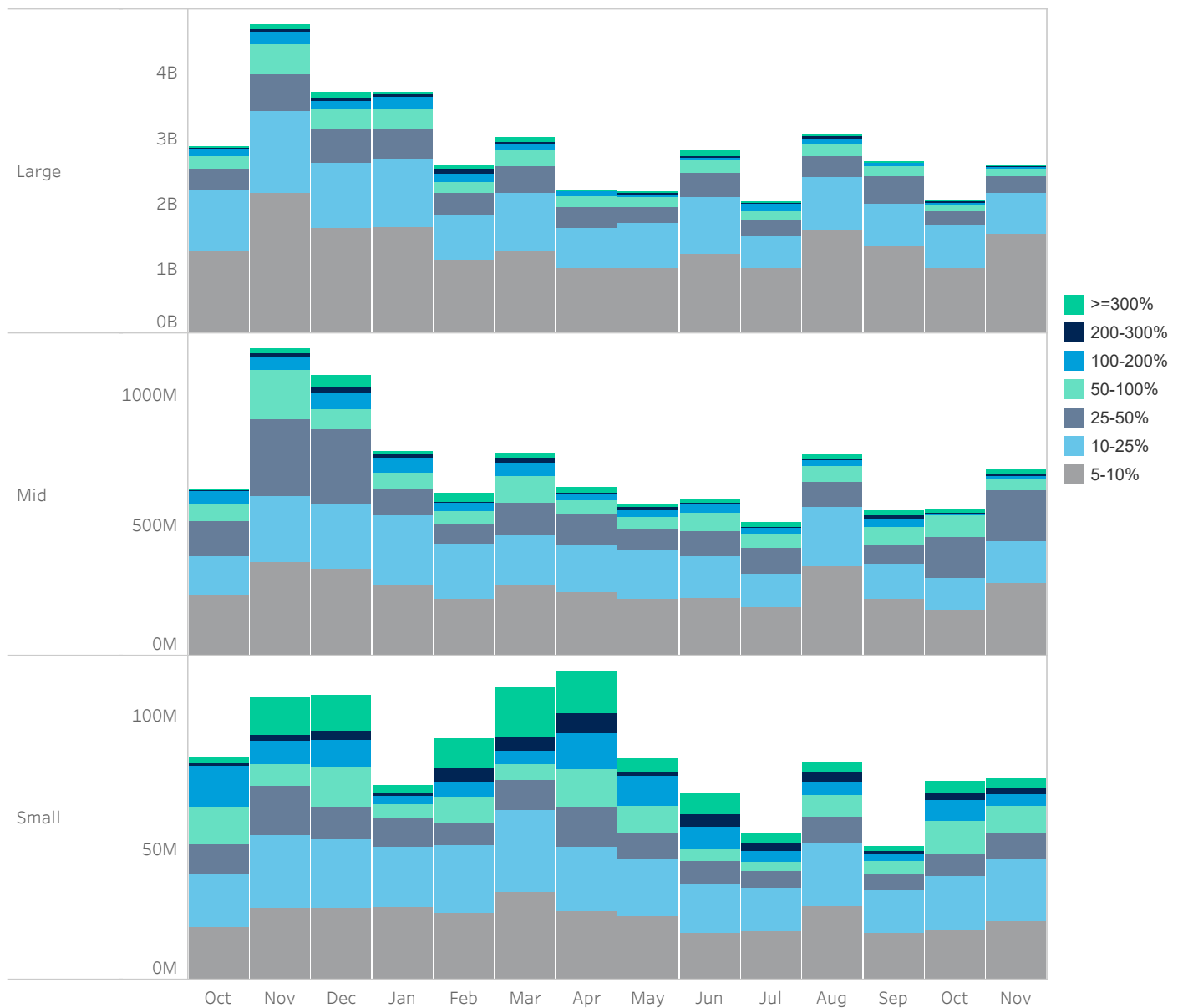
Source data: Virtu Financial

Japan

Average Daily Turnover (Notional USD)



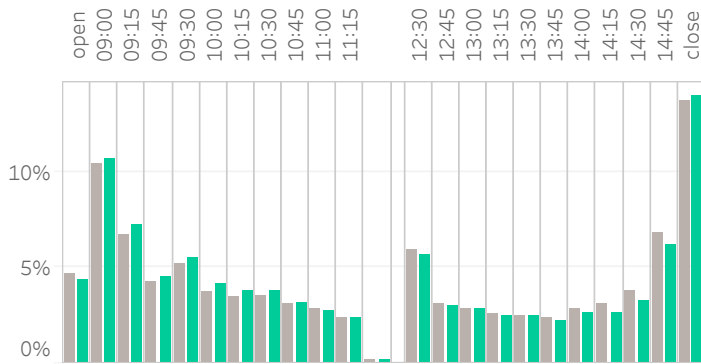
Large Sized Trades (>=5%ADT)



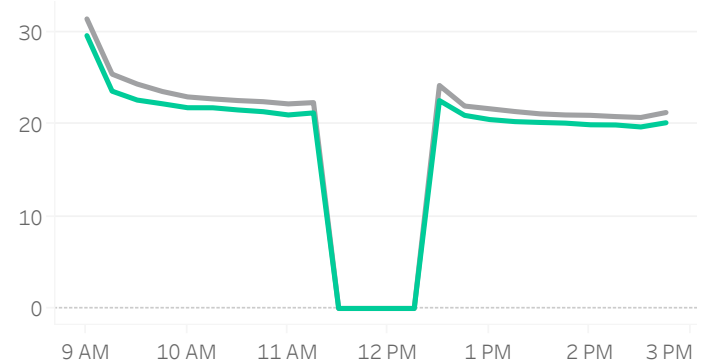
Source data: Virtu Financial

Japan

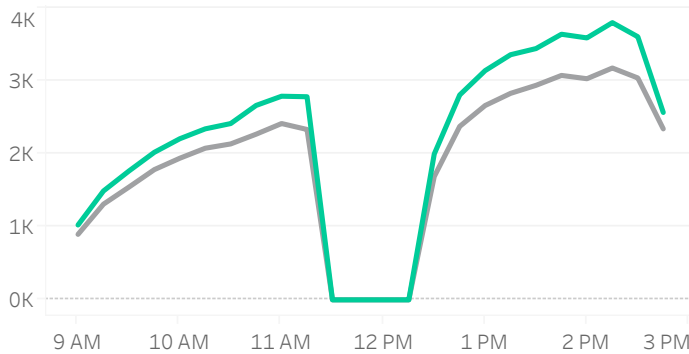
Volume Curve



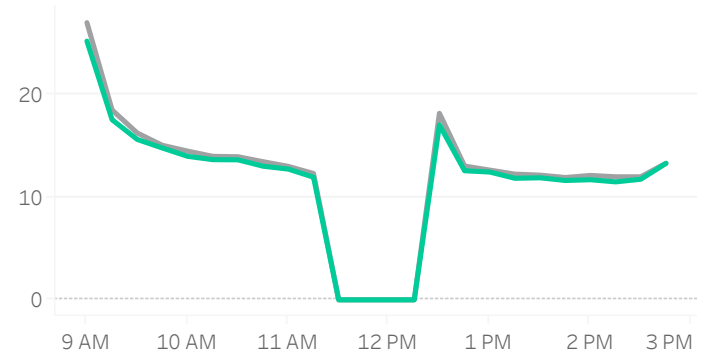
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22
firstHalfHour	27.0	27.4	26.8	26.6	25.0	25.2	26.1	25.3
midday	22.2	22.1	21.9	22.1	21.1	21.1	21.7	21.4
lastHalfHour	20.7	20.5	20.9	20.7	20.1	20.0	20.6	19.8

One Minute Volatility Bps

firstHalfHour	15.3	16.7	15.4	13.3	12.4	12.4	13.6	13.0
midday	7.0	7.0	6.6	6.3	5.8	6.0	6.5	5.8
lastHalfHour	6.3	6.2	6.0	6.0	10.8	6.8	7.1	13.2

Quotesize in Shares

firstHalfHour	1,149	1,078	1,114	1,251	1,353	1,377	1,276	1,274
midday	2,350	2,304	2,398	2,557	2,999	2,865	2,693	2,823
lastHalfHour	2,831	2,685	2,613	2,858	3,377	3,196	3,086	3,116

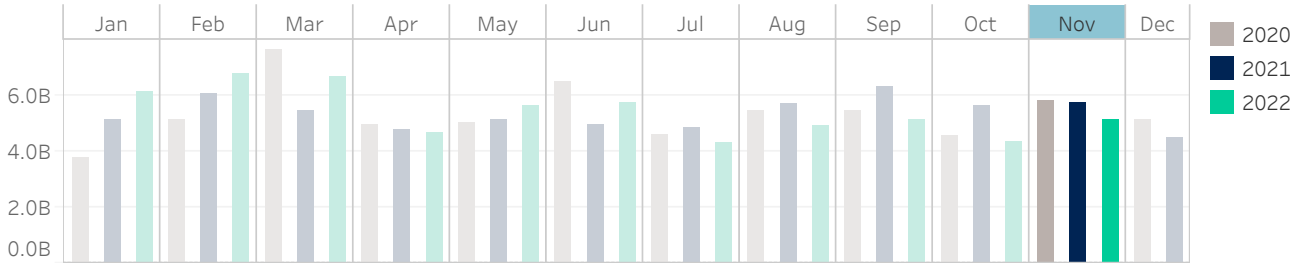
Median used for all metrics

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

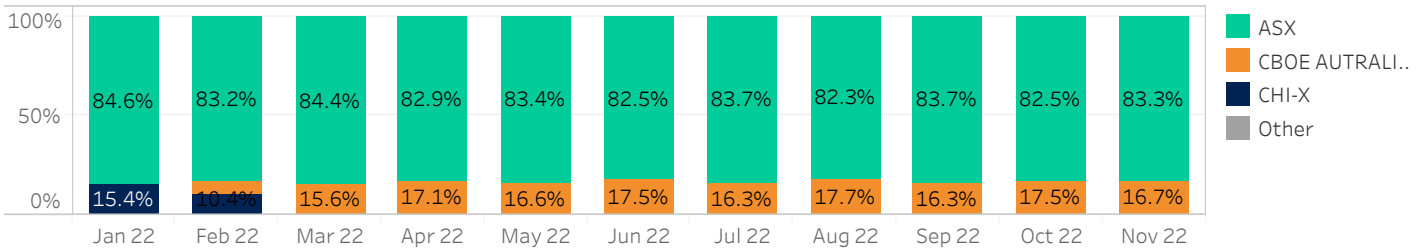
Source data: Virtu Financial

Australia

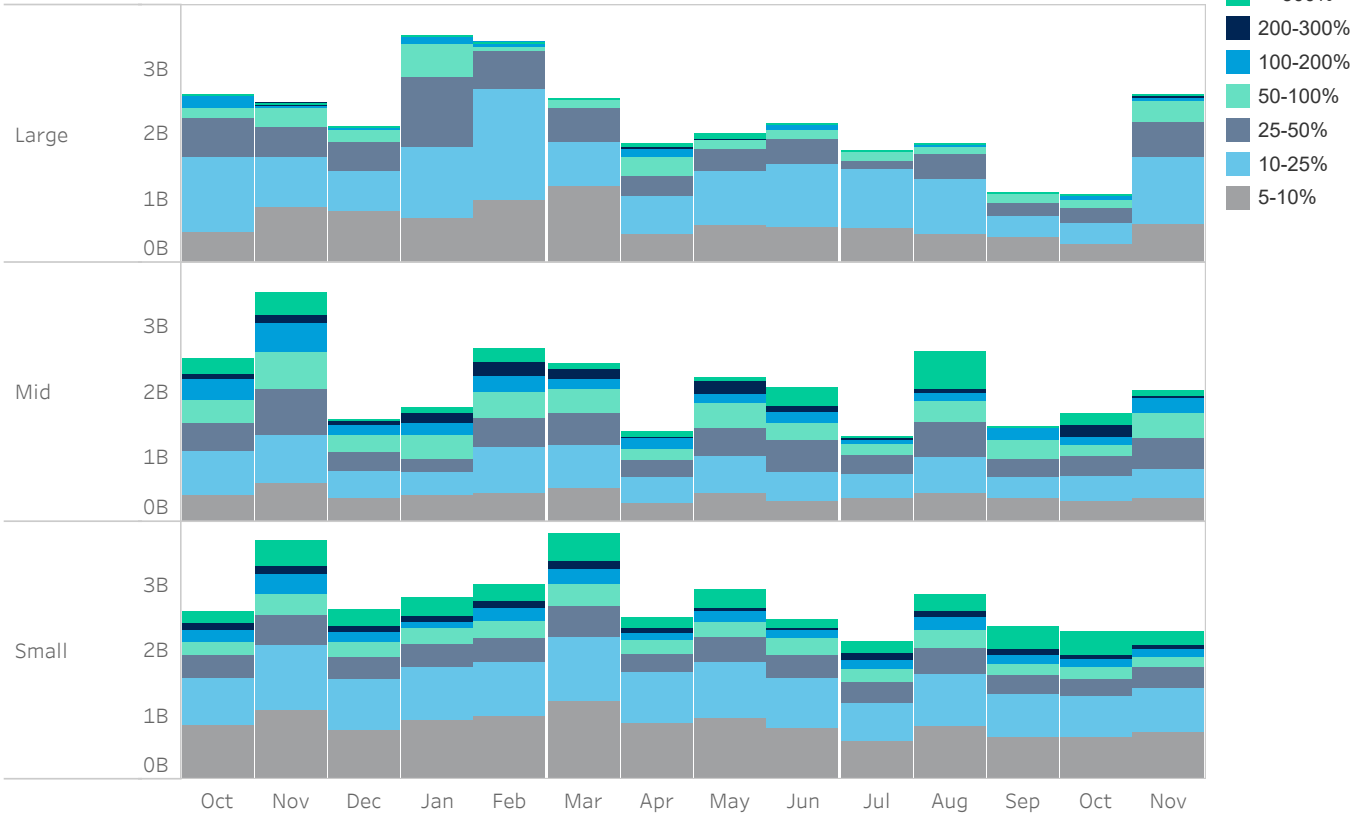
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



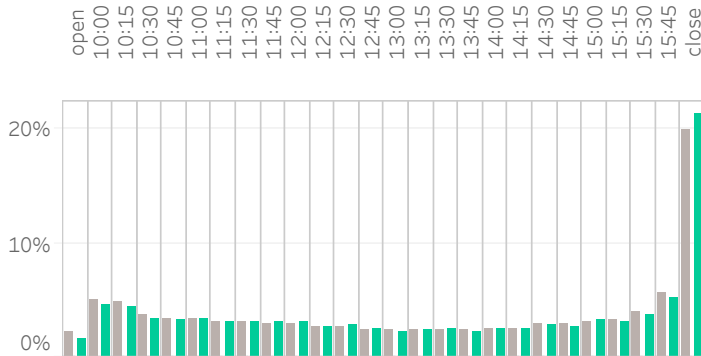
Large Sized Trades (>=5%ADT)



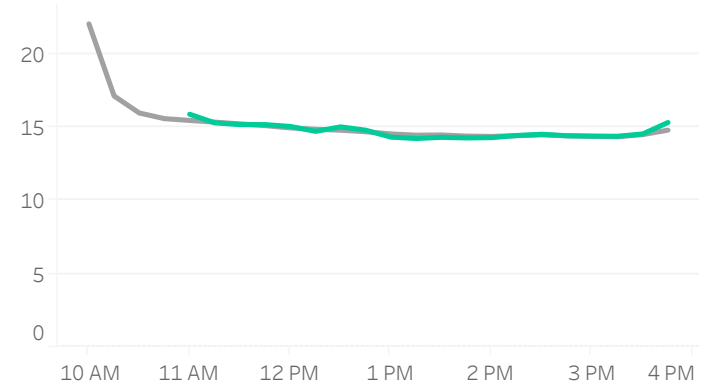
Source data: Virtu Financial

Australia

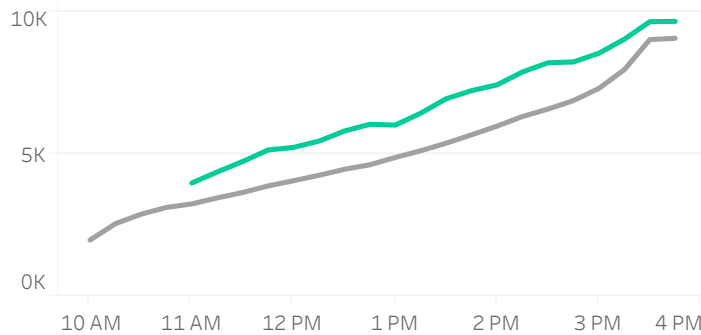
Volume Curve



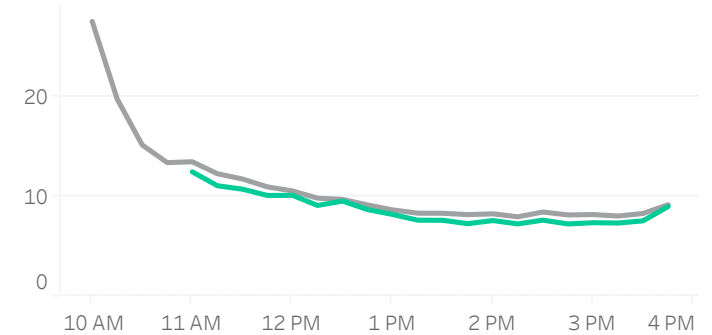
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 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	15.4
lastHalfHour	14.3	14.7	16.4	16.0	14.9	15.7	15.9	15.4

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	3.5
lastHalfHour	3.1	3.6	4.0	4.0	4.2	4.1	4.1	4.5

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	6,695
lastHalfHour	9,457	9,953	9,528	9,648	9,498	10,762	10,484	10,114

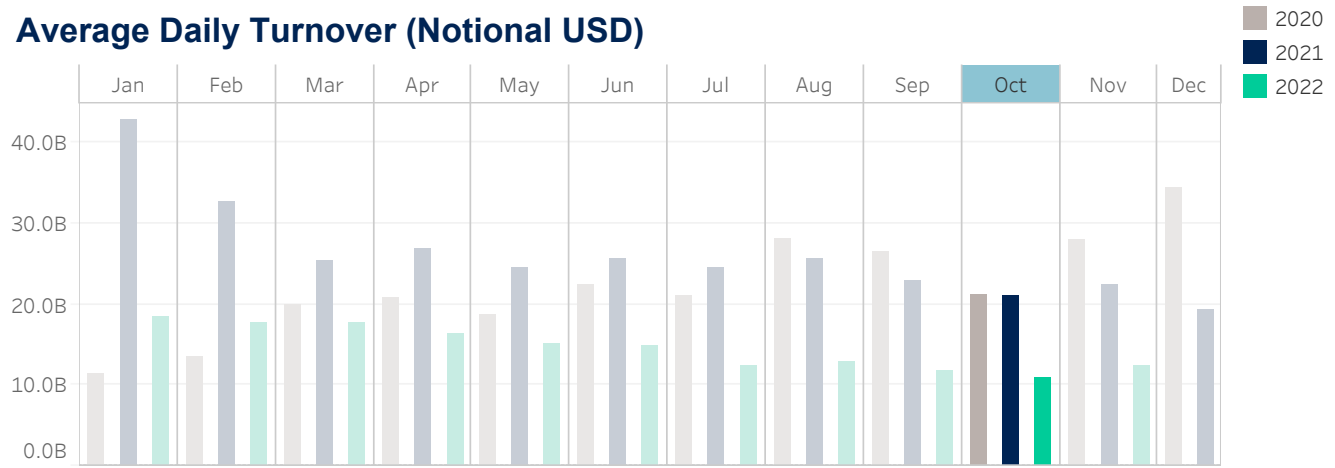
Median used for all metrics

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

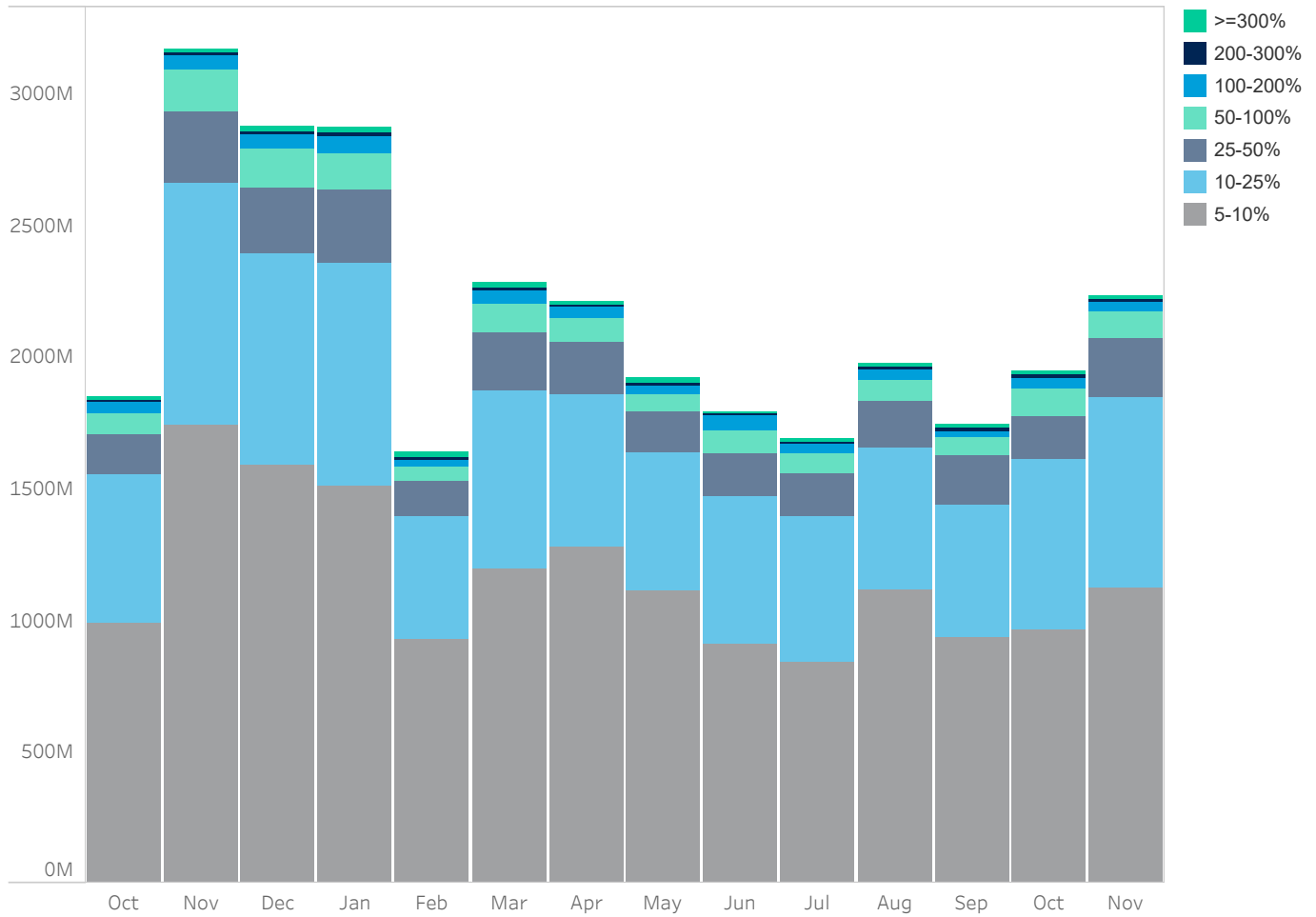
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



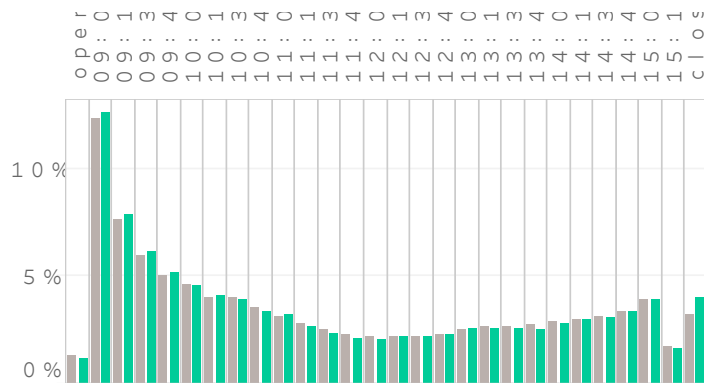
Large Sized Trades (>=5%ADT)



Source data: Virtu Financial

South Korea

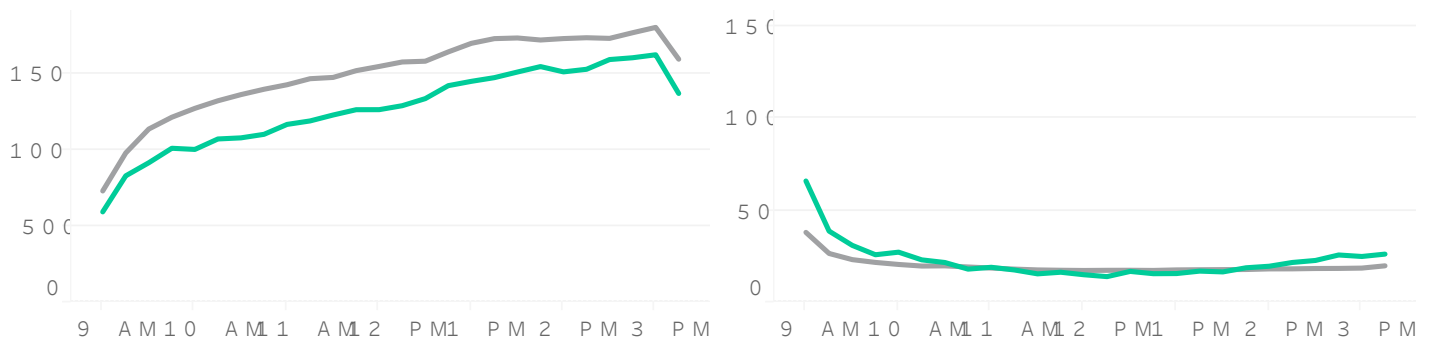
Volume Curve



Intraday Spread (bps)



Intraday Quotesize (Share) and Intraday Volatility (%)



Rolling 12 Months (grey) Month to Date 2022 (green)

Spread Bps

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

One Minute Volatility Bps

midday	10.2	10.8	11.6	11.2	13.6	12.3	12.4
firstHalfHour	13.1	14.4	18.0	17.1	25.5	27.8	27.6
lastHalfHour	23.1	25.3	13.8	12.7	11.8	13.6	12.1

Quotesize in Shares

first Half	945	898	743	731	721	661	721
midday	1,600	1,600	1,300	1,200	1,600	1,200	1,100
last Half	1,900	1,900	1,400	1,300	1,900	1,400	1,400

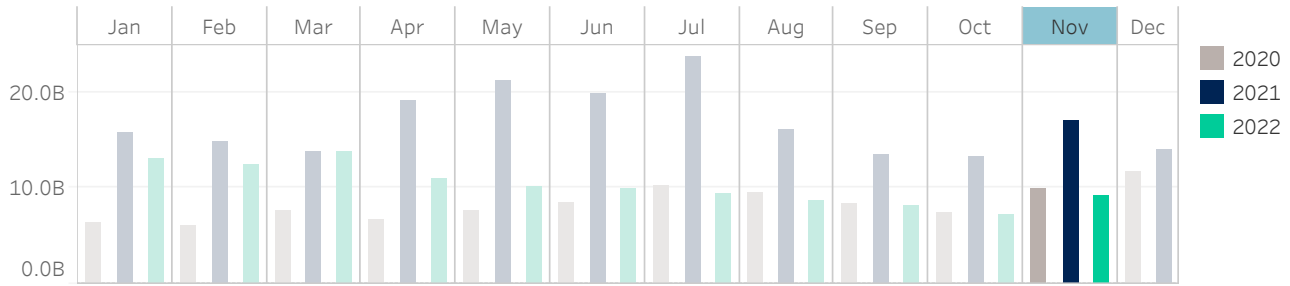
Median used for all metrics

One minute volatility is calculated using the difference between the high and low prices.

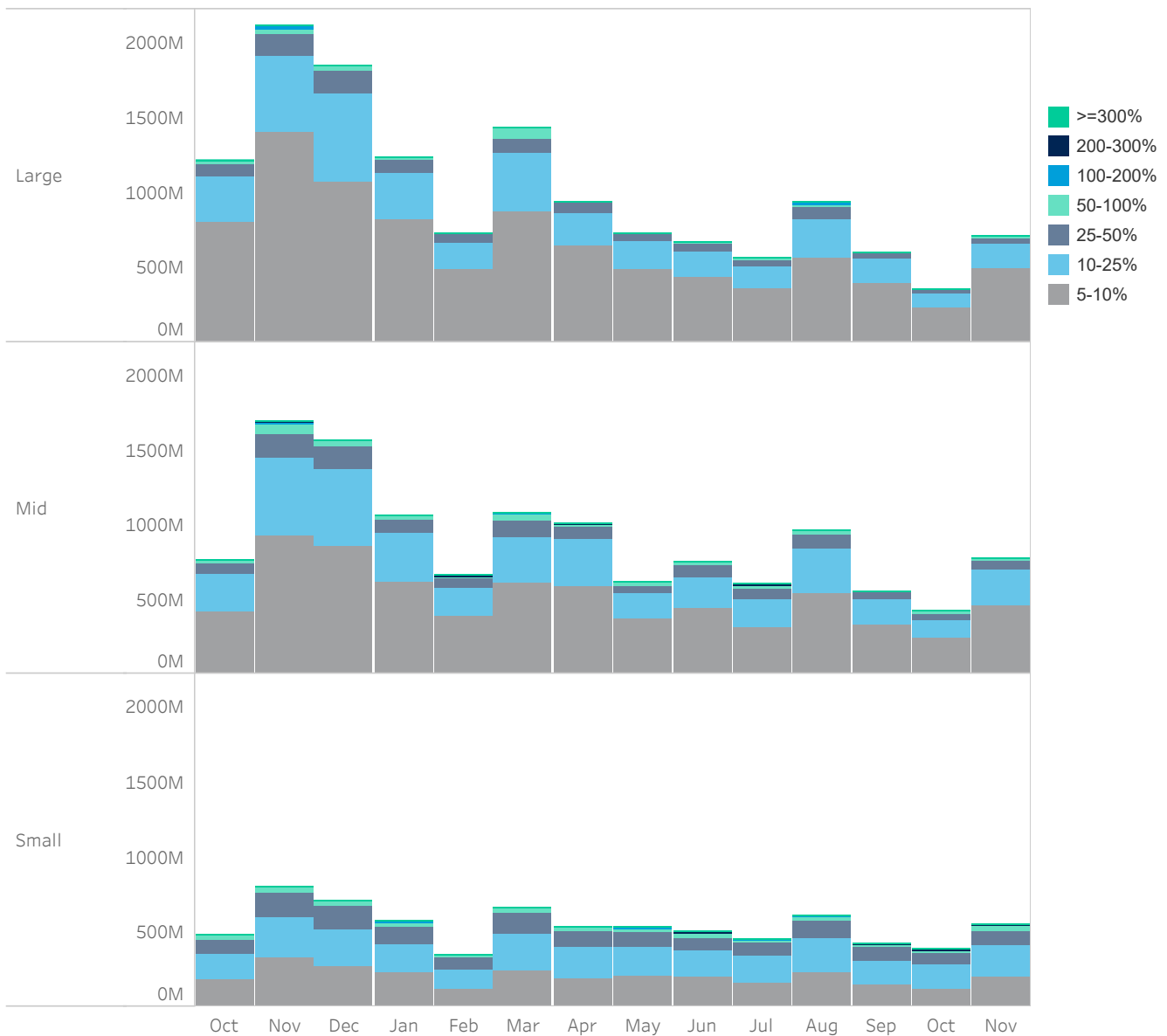
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



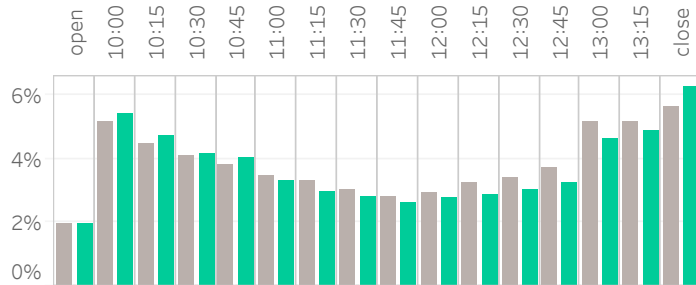
Large Sized Trades (>=5%ADT)



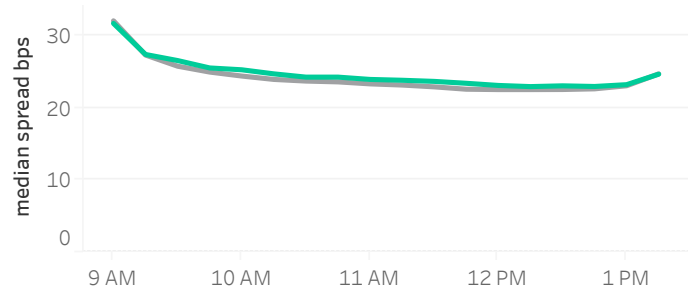
Source data: Virtu Financial

Taiwan

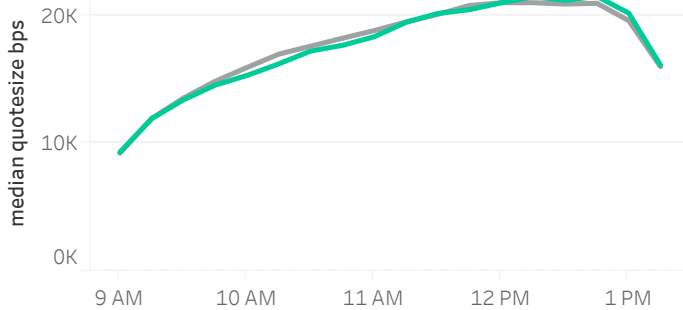
Volume Curve



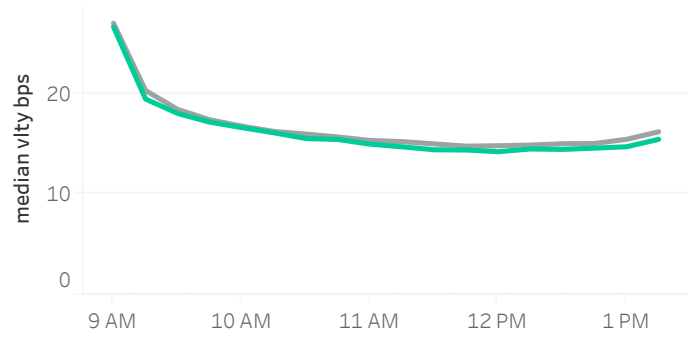
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22
firstHalfHour	26.8	27.3	28.1	29.6	27.8	30.2	32.5	28.9
midday	22.4	22.9	23.4	24.5	23.0	24.6	26.5	24.3
lastHalfHour	23.0	24.0	24.8	25.5	23.2	25.9	27.2	24.1

One Minute Volatility Bps

firstHalfHour	13.2	13.1	14.5	16.9	14.3	15.2	17.3	14.2
midday	6.8	6.8	7.6	8.6	7.0	7.4	8.3	7.0
lastHalfHour	8.1	8.7	9.9	8.9	8.9	8.5	9.9	8.6

Quotesize in Shares

firstHalfHour	11,310	10,719	10,126	9,514	10,698	9,327	8,725	10,160
midday	20,329	18,947	17,181	14,545	18,826	15,514	13,646	17,187
lastHalfHour	18,389	16,685	14,454	14,115	18,926	14,114	13,319	16,675

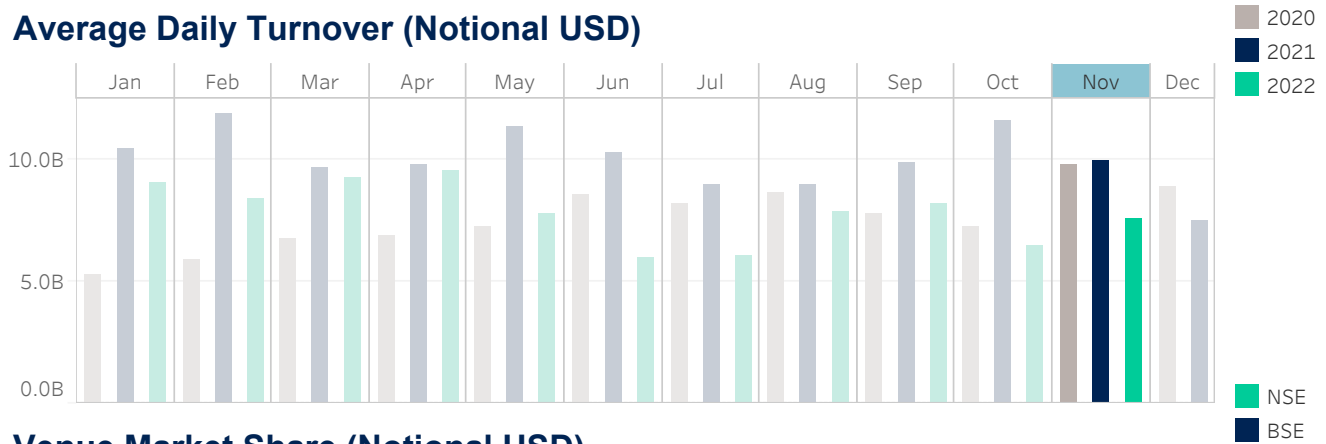
Median used for all metrics

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

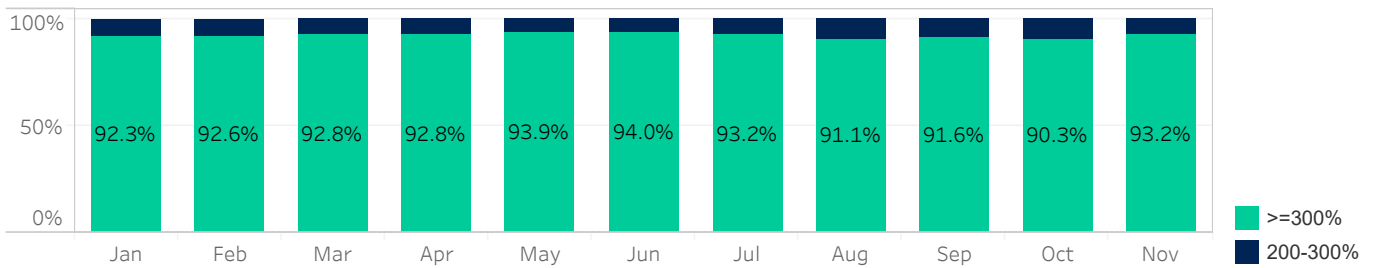
Source data: Virtu Financial

India

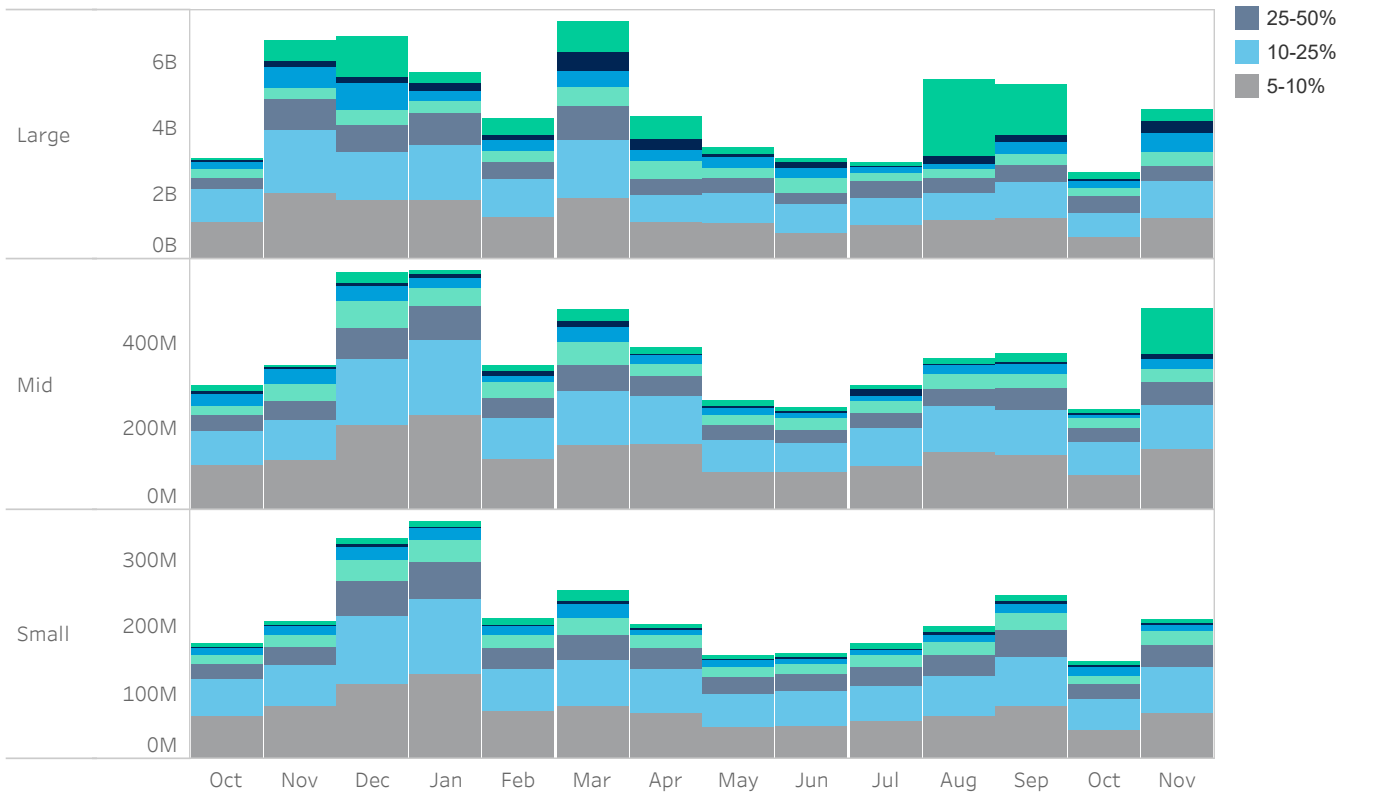
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



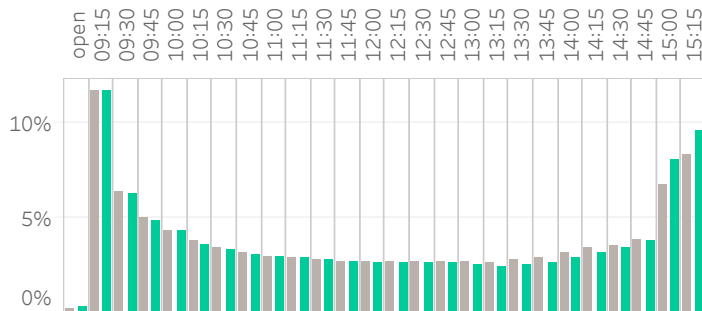
Large Sized Trades (>=5%ADT)



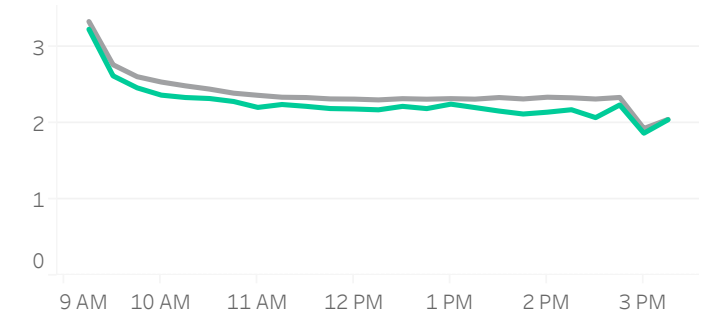
Source data: Virtu Financial

India

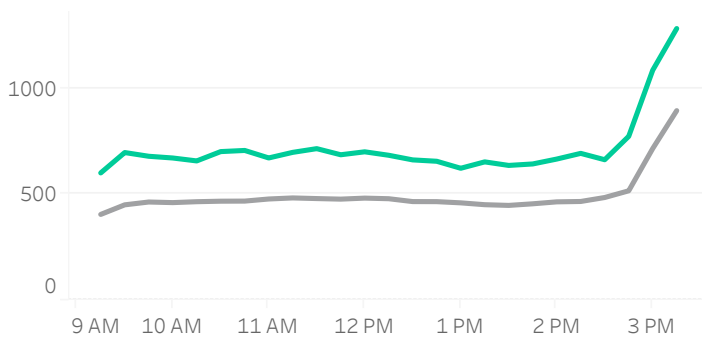
Volume Curve



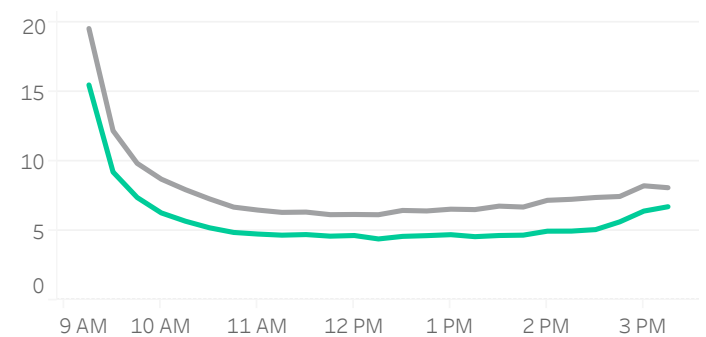
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg November 2022

Spread Bps

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

One Minute Volatility Bps

firstHalfHour	13.4	16.7	14.8	12.0	12.2	12.8	12.2	11.9
midday	6.1	8.6	7.1	5.5	5.3	6.0	5.3	5.0
lastHalfHour	7.8	9.7	8.1	7.0	6.5	7.0	6.3	5.7

Quotesize in Shares

firstHalfHour	415	345	364	411	557	525	535	665
midday	455	373	393	458	590	550	560	673
lastHalfHour	725	586	672	703	879	934	1,000	1,262

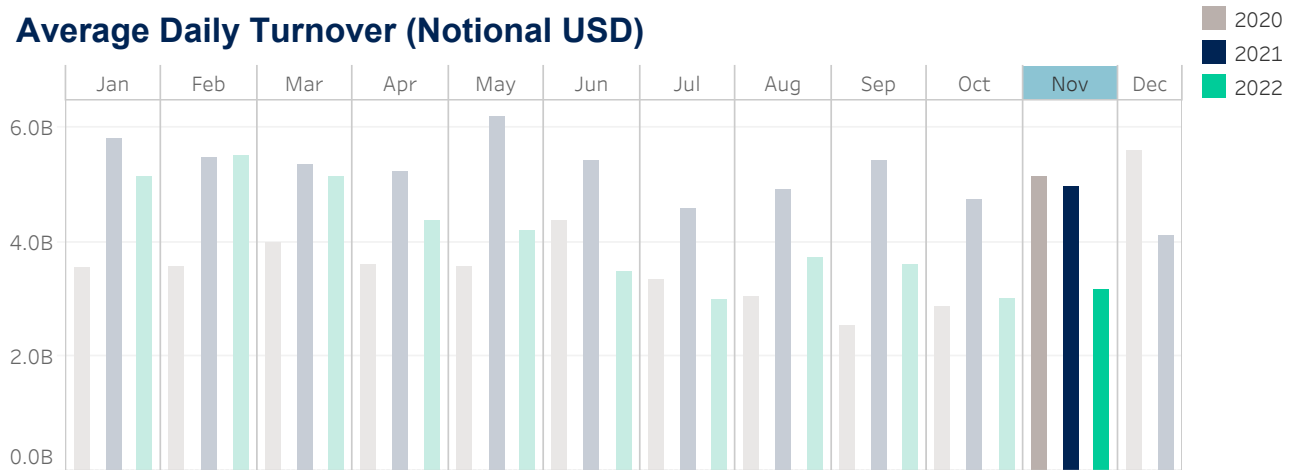
Median used for all metrics

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

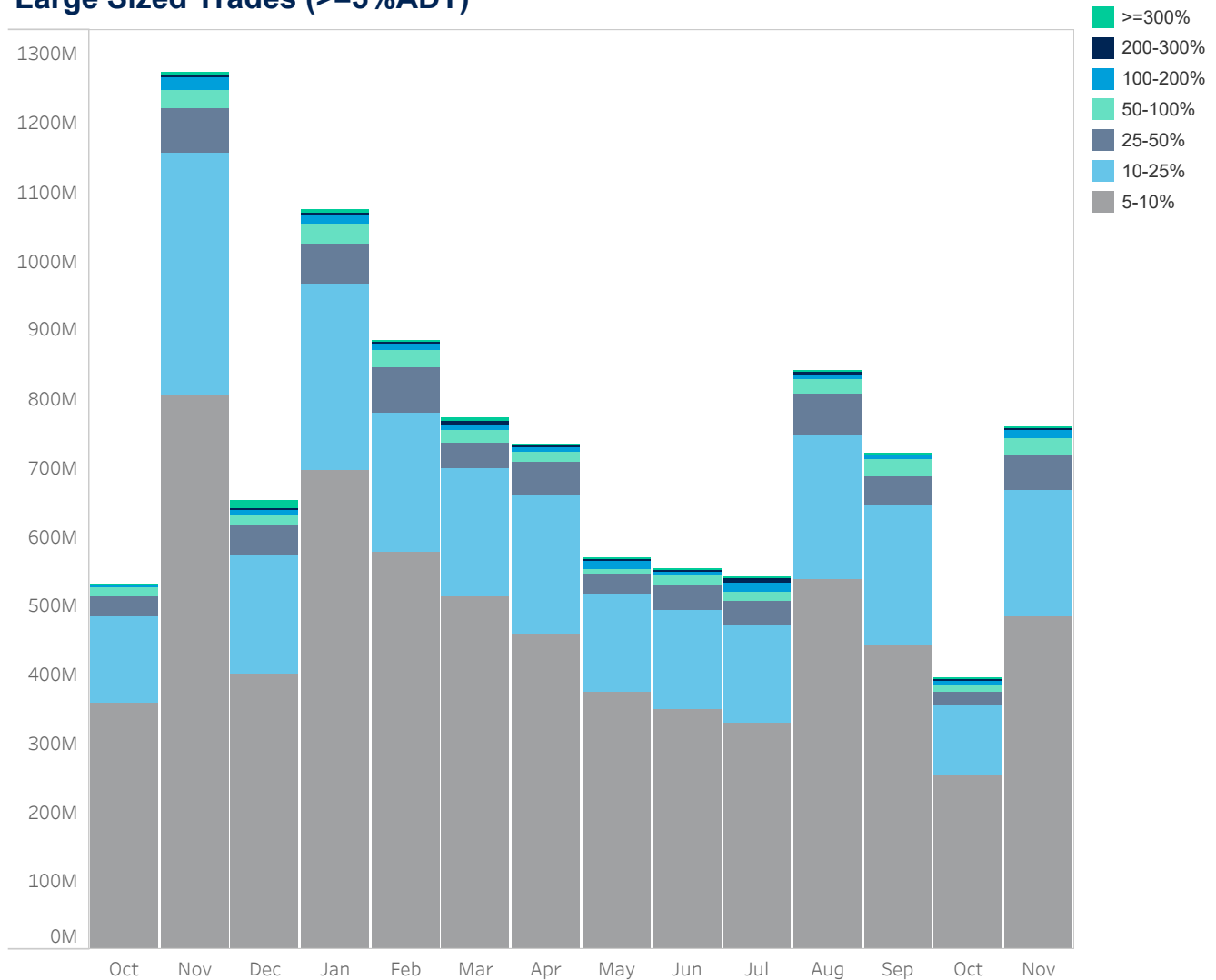
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



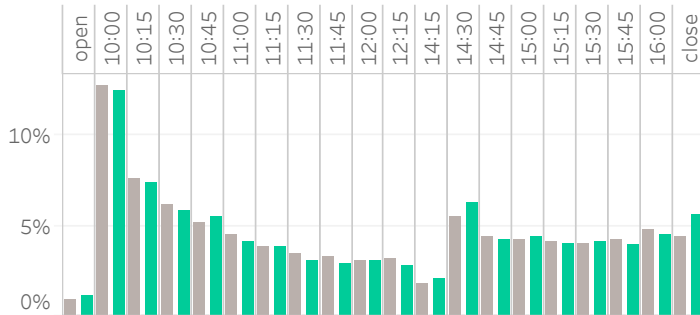
Large Sized Trades (>=5%ADT)



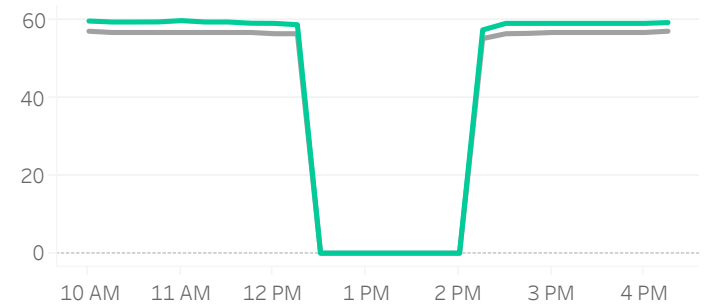
Source data: Virtu Financial

Thailand

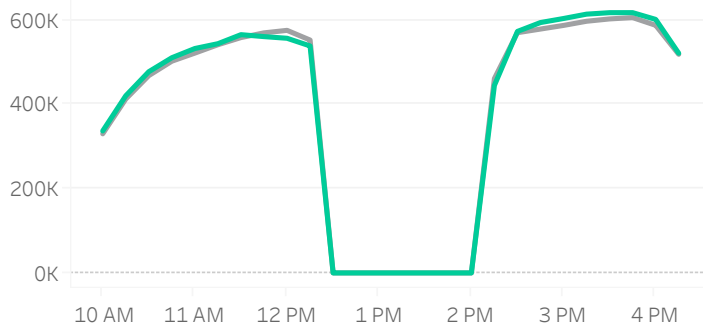
Volume Curve



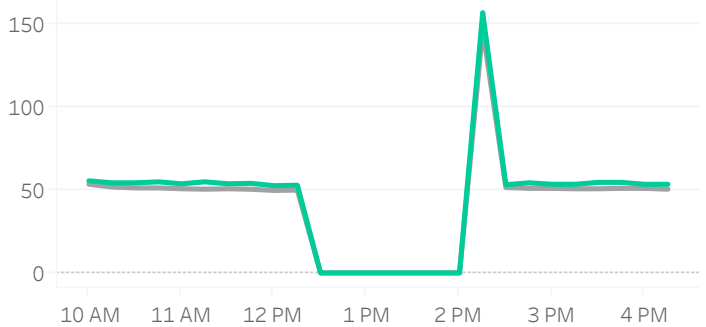
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (Grey line) November 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	Nov 22
firstHalfHour	55.8	56.5	57.5	60.1	58.1	58.8	60.6	60.1
midday	55.4	55.9	57.1	59.9	57.9	58.8	60.6	59.9
lastHalfHour	55.9	56.2	57.5	60.0	58.1	58.8	60.8	59.9

One Minute Volatility Bps

firstHalfHour	158.6	54.3	144.1	148.5	152.5	143.2	151.5	160.4
midday	157.2	155.2	173.0	142.6	155.7	149.6	151.0	158.9
lastHalfHour								

Quotesize in Shares

firstHalfHour	350,199	296,888	309,227	249,174	356,306	398,349	337,182	353,288
midday	568,254	472,504	481,812	401,100	577,313	581,460	503,717	556,575
lastHalfHour	562,618	479,643	473,218	415,479	587,211	561,127	486,136	551,853

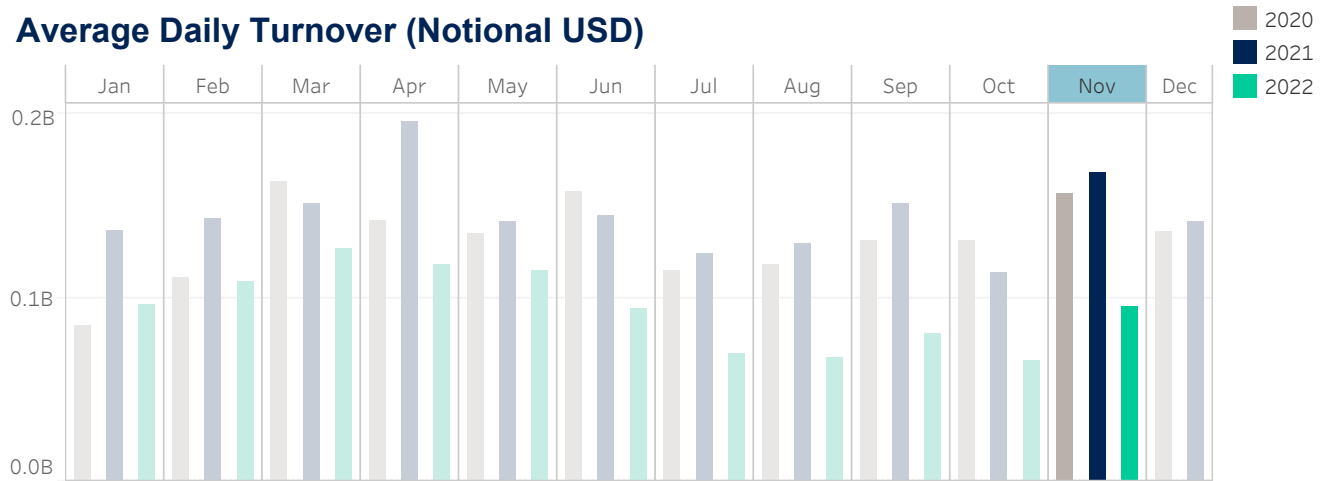
Median used for all metrics

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

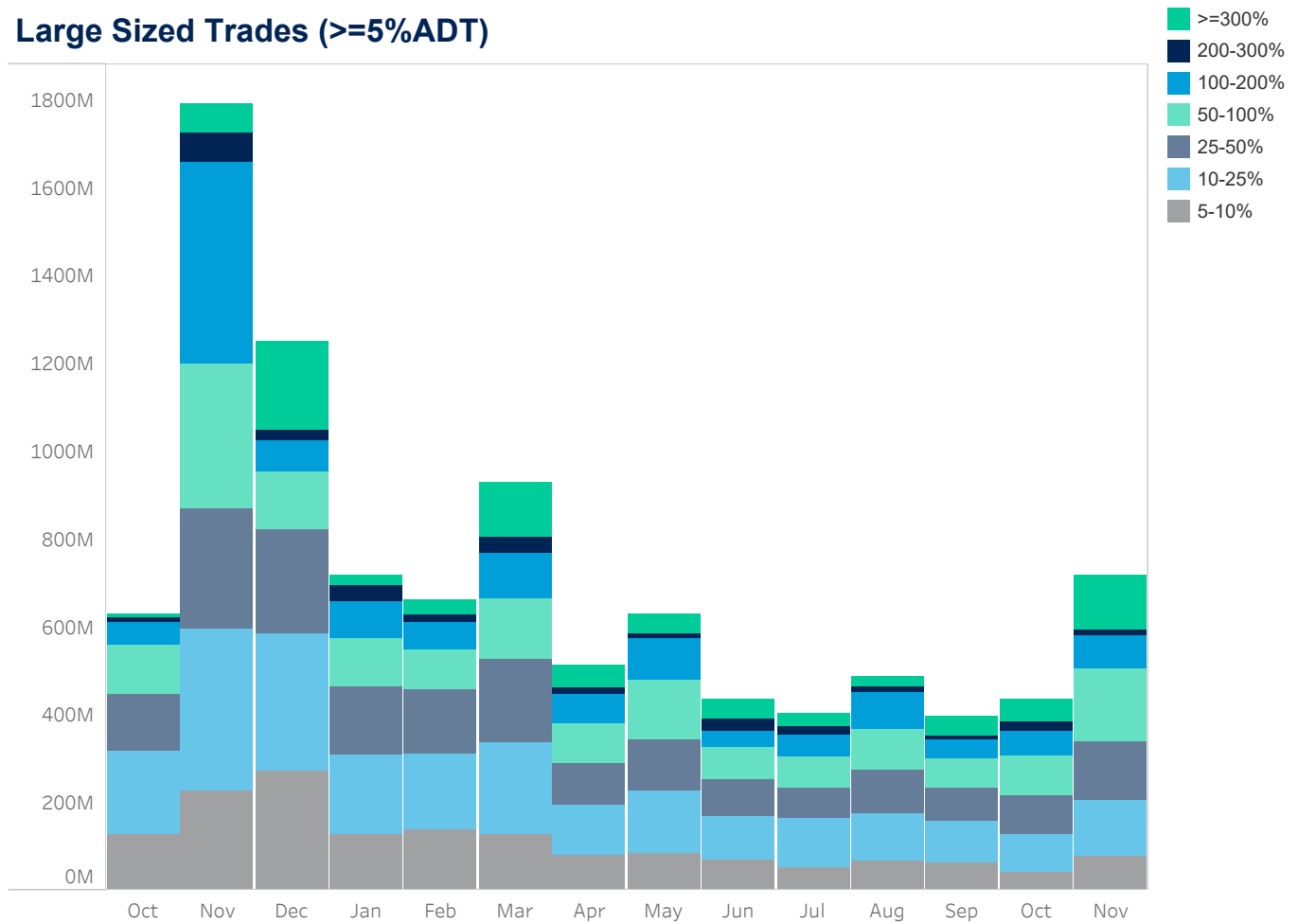
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



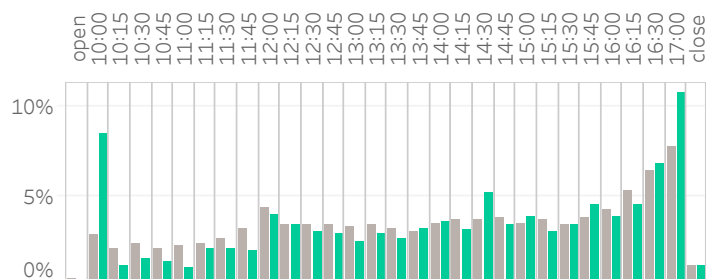
Large Sized Trades (>=5%ADT)



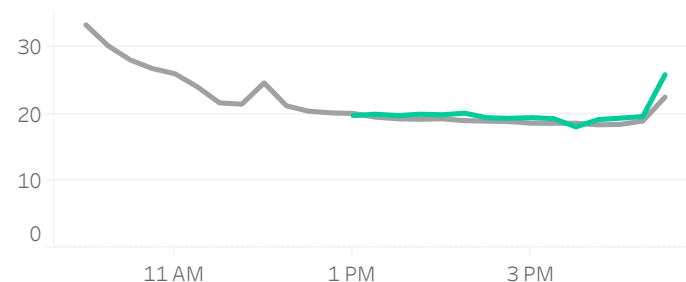
Source data: Virtu Financial

New Zealand

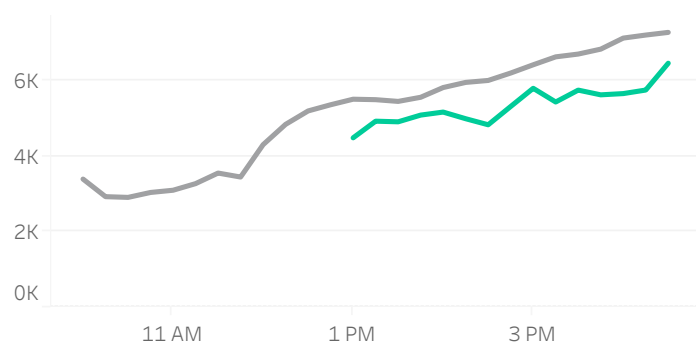
Volume Curve



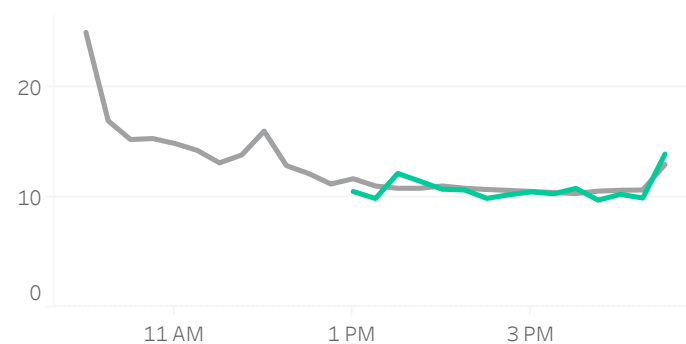
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22
firstHalfHour	34.0	38.6				31.4		
midday	17.7	19.6	22.2	20.0	18.4	18.3	19.5	19.7
lastHalfHour	18.0	20.7	24.8	20.4	19.0	18.6	20.3	24.2

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	4.1
lastHalfHour	3.7	5.3	5.6	4.7	4.7	4.2	5.0	6.2

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	5,238
lastHalfHour	7,811	7,376	7,341	7,577	7,166	6,968	6,369	5,898

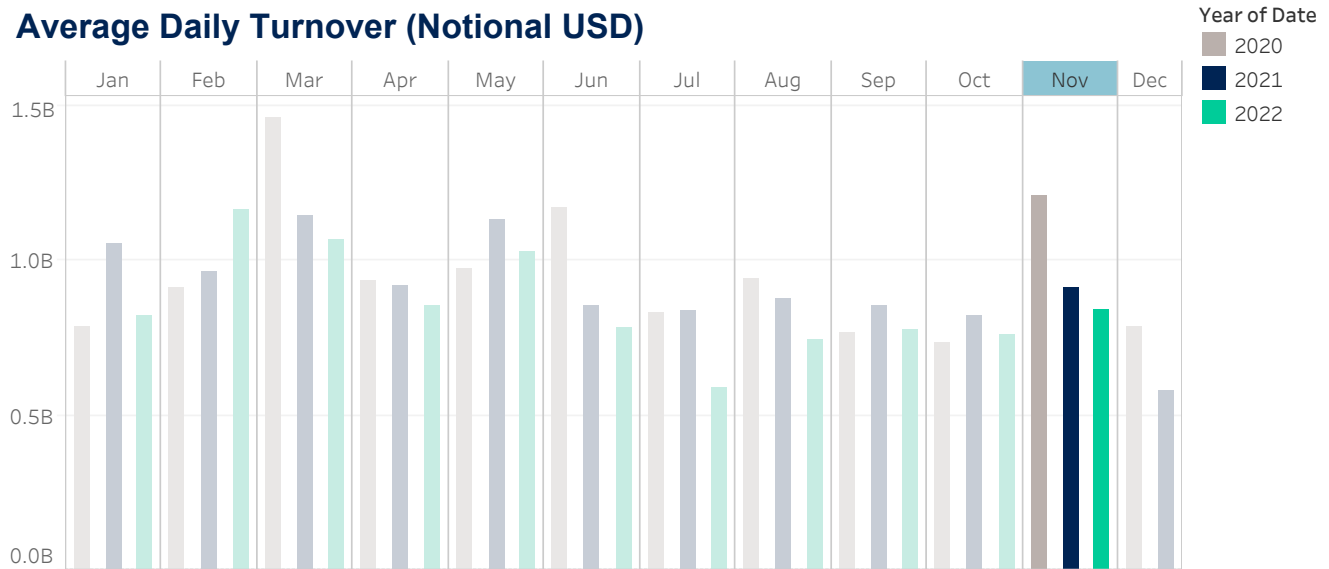
Median used for all metrics

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

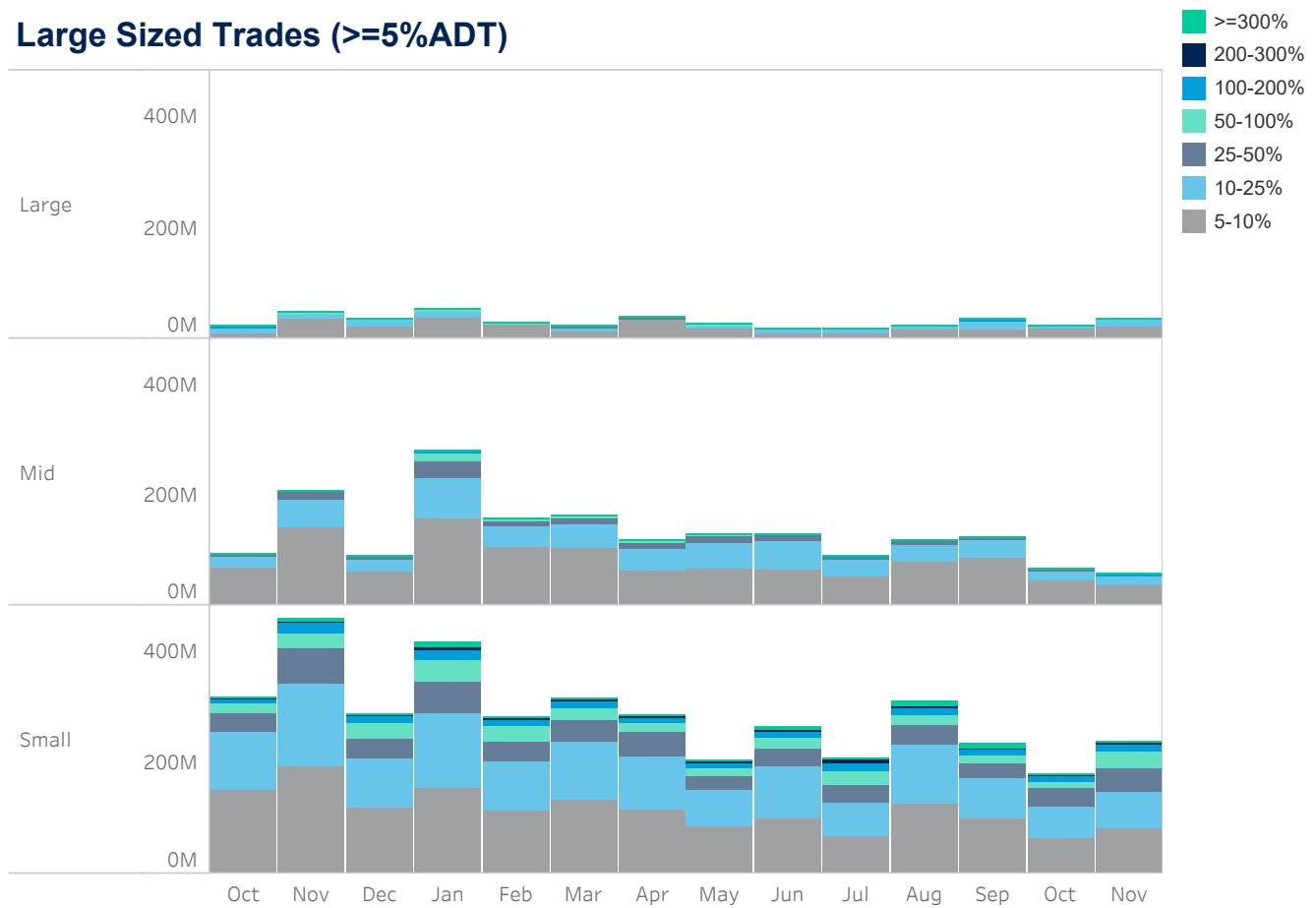
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



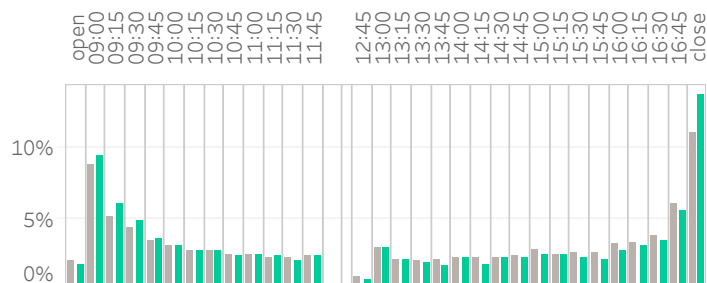
Large Sized Trades (>=5%ADT)



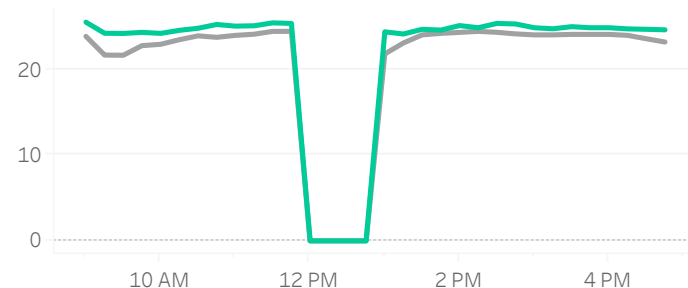
Source data: Virtu Financial

Singapore

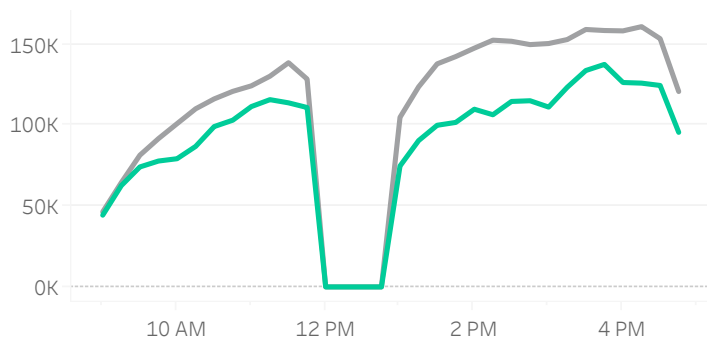
Volume Curve



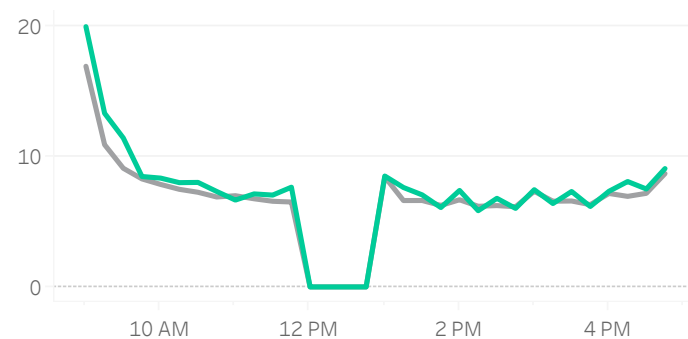
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ November 2022

Spread Bps

	22 Q2			22 Q3			22 Q4	
	Apr 22	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22
firstHalfHour	20.5	22.2	22.8	23.0	19.6	22.9	24.7	24.3
midday	21.8	23.9	24.0	24.4	23.8	25.2	27.3	25.3
lastHalfHour	21.1	23.9	22.8	22.0	21.6	22.9	27.3	22.3

One Minute Volatility Bps

firstHalfHour	5.7	8.1	5.9	6.2	5.5	5.5	6.7	7.9
midday	4.5	5.8	3.9	5.1	5.4	4.5	4.3	4.8
lastHalfHour	4.9	5.7	3.6	4.4	3.9	3.1	2.2	1.8

Quotesize in Shares

firstHalfHour	48,491	66,272	58,725	49,988	61,757	71,222	44,097	49,771
midday	116,792	159,349	136,036	111,790	155,222	200,856	106,714	123,019
lastHalfHour	122,775	163,525	129,298	102,873	148,883	165,031	121,942	121,228

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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