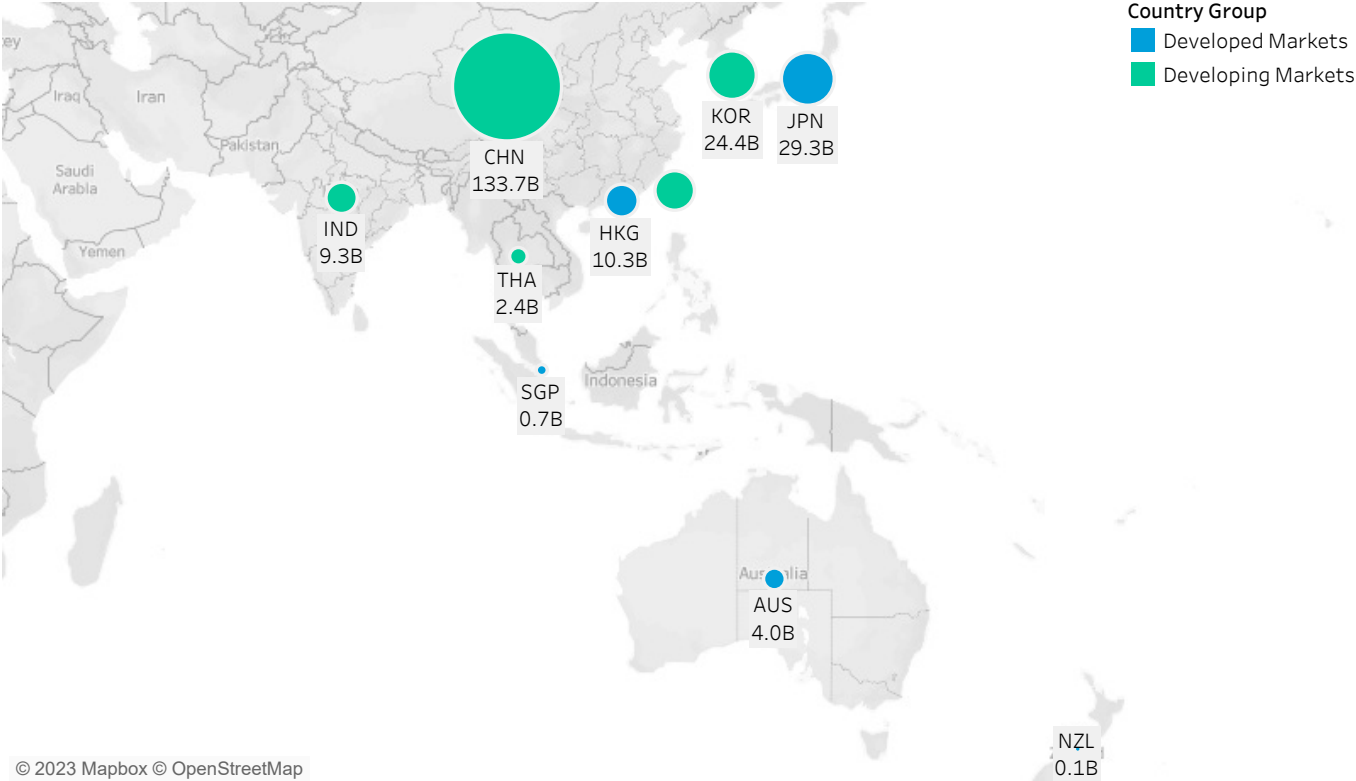


July 2023 APAC Market Structure Monthly

Average Daily Turnover (Notional USD)



© 2023 Mapbox © OpenStreetMap

Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

Jul 2023

AP Market Structure Monthly

MICROSTRUCTURE OBSERVATIONS

- Both Korea and India equity markets recorded YTD high average daily turnover (ADT) in July 2023. Namely, ADT in Korea increased +46% month-on-month (MoM) to US\$24.4B in July, while ADT in India increased +14% MoM to US\$9.3B in July.
- Japan saw tighter intraday spreads in July 2023.
- Intraday volatility and quote-size remained consistent in July 2023 relative to the prior month.

AP MARKET STRUCTURE NEWS

[Shanghai Stock Exchange: China Securities Regulatory Commission to Clarify Short-Swing Trading Standards for Setting Market Expectations](#)

The China Securities Regulatory Commission (CSRC) drafted 'Provisions on Improving the Regulation of Short-Swing Trading by Specific Shareholders' and is now soliciting public feedback.

According to Shanghai Stock Exchange, there have been questions from market participants regarding the applicable scope and calculation for calculating profits from short-swing under Article 44 of the Securities Law. Clarifying short-swing trading standards aims to improve the efficiency and openness of the Chinese capital markets.

[Singapore Exchange Announced the Start of Operations of NSE IX-SGX GIFT Connect](#)

On 3 July 2023, Singapore Exchange (SGX) and NSE International Exchange (NSE IX) announced the start of operations of the NSE IX-SGX GIFT Connect. According to SGX, day one of NSE IX-SGX GIFT Connect saw US\$8 billion open interest in Nifty futures and over US\$1 billion open interest in Nifty options.

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
info@virtu.com | www.virtu.com



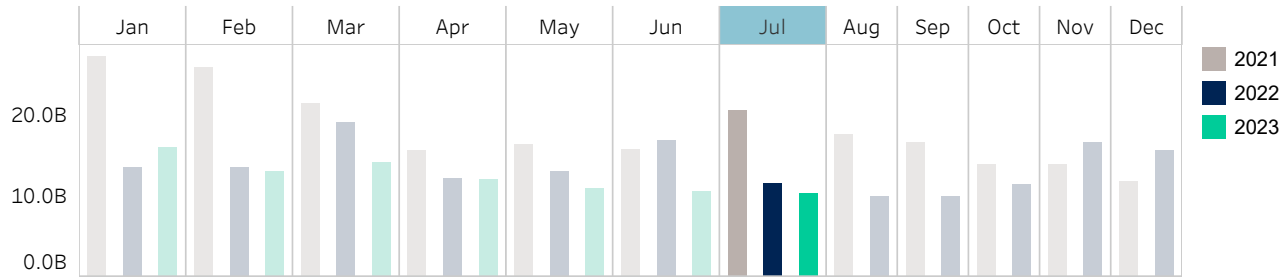
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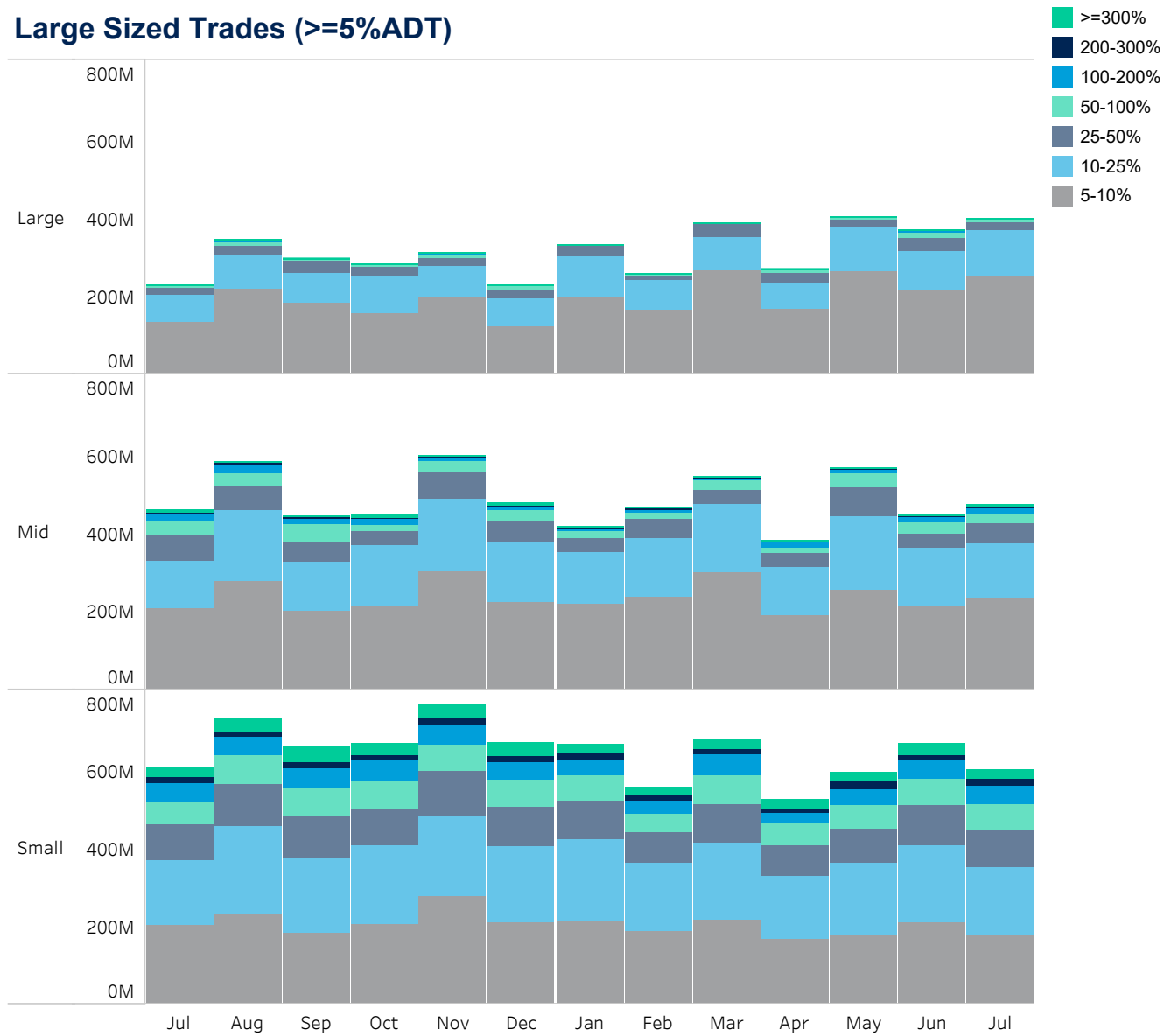
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Hong Kong

Average Daily Turnover (Notional USD)



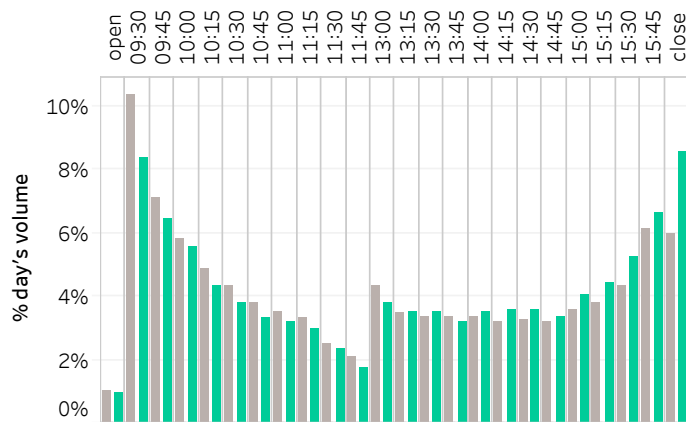
Large Sized Trades (>=5%ADT)



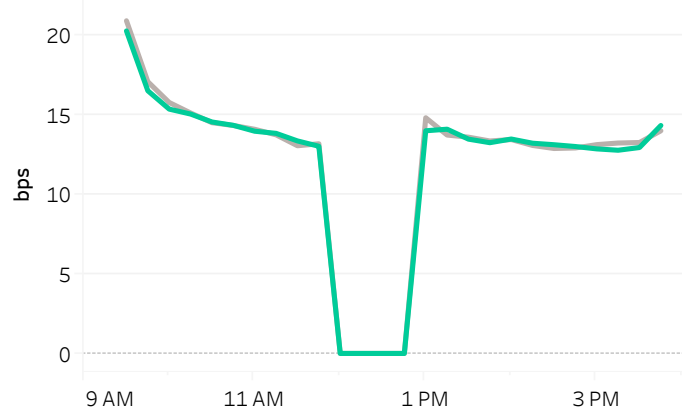
Source data: Virtu Financial

Hong Kong

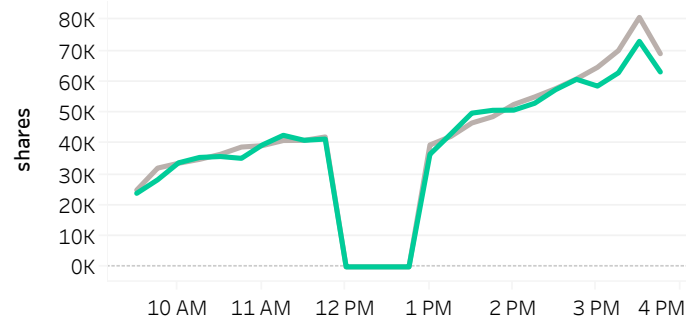
Volume Curve



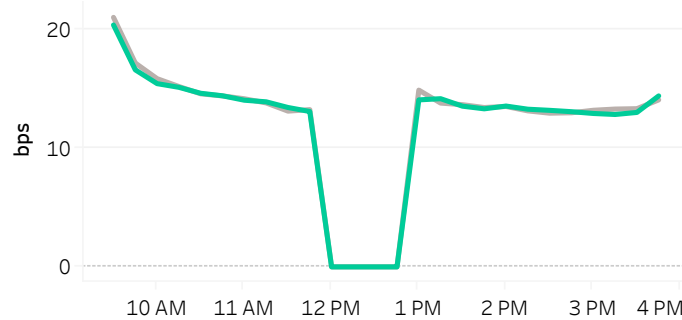
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (Grey line) July 2023 (Green line)

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	19.2	20.4	19.7	18.3	18.0	19.3	19.5	19.5	19.6	18.3
MidDay	14.0	14.6	14.0	13.1	12.8	13.7	14.5	14.0	14.6	13.5
LastHalfHour	13.7	14.0	14.0	13.0	13.2	14.0	14.1	14.1	14.9	13.8

One Minute Volatility Bps

FirstHalfHour	26.4	25.3	28.1	25.8	25.2	24.1	30.5	33.8	29.1	23.6
MidDay	17.0	15.9	16.2	16.1	15.7	16.2	18.5	20.1	18.3	15.4
LastHalfHour	16.5	16.7	17.3	16.4	16.3	17.2	18.0	19.1	18.6	15.7

Quotesize (shares)

FirstHalfHour	27,135	28,857	29,077	29,622	27,296	30,646	31,145	29,974	26,818	25,478
MidDay	39,201	38,664	40,980	46,105	44,622	43,572	50,780	47,975	41,143	42,053
LastHalfHour	71,053	67,304	66,542	78,406	74,936	77,473	76,329	74,417	64,333	69,285

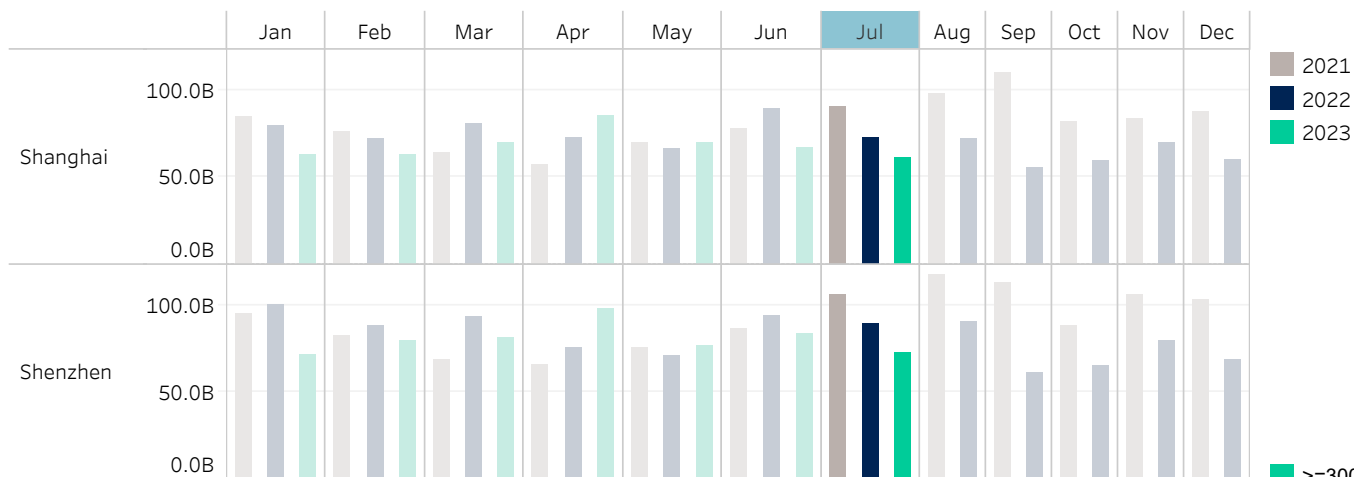
Median used for all metrics

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

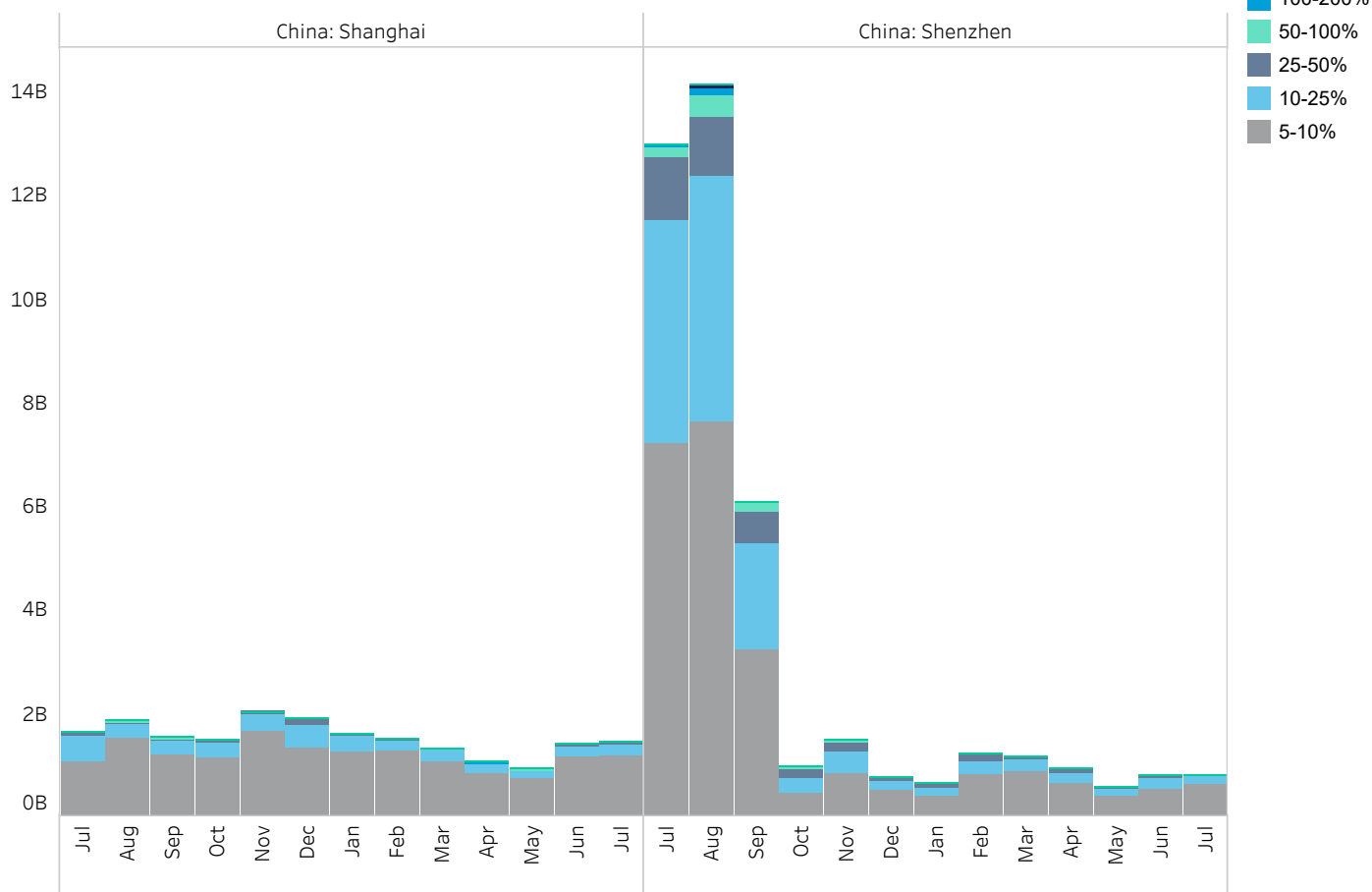
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



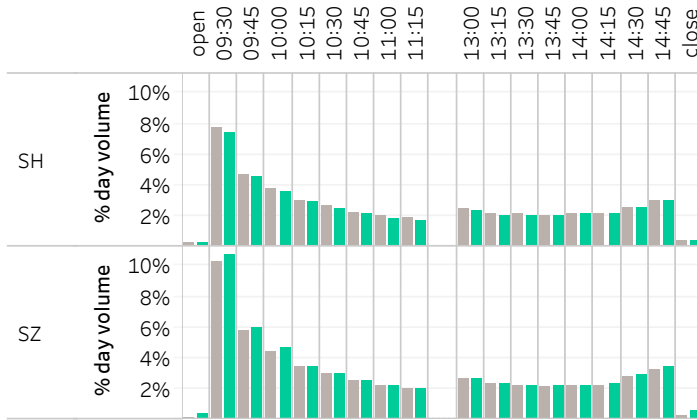
Large Sized Trades (>=5%ADT)



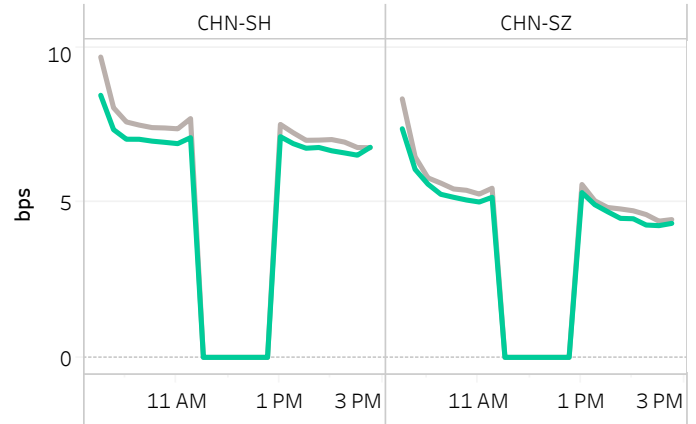
Source data: Virtu Financial

China

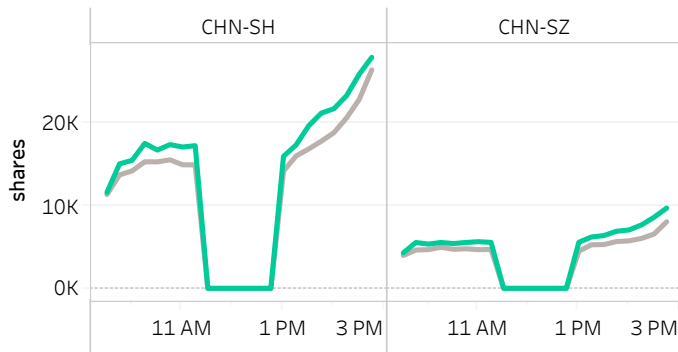
Volume Curve



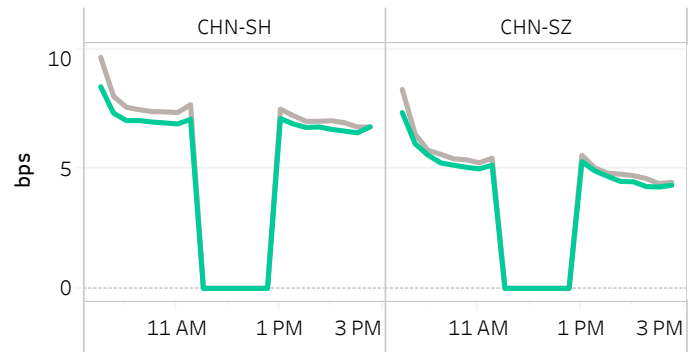
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2023

Spread Bps

	CHN-SH							CHN-SZ						
	Jan	Feb	Mar	Apr	May	Jun	Jul	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHo..	8.9	8.1	8.2	8.1	8.2	8.3	8.0	7.4	6.6	6.7	7.0	7.0	7.1	6.8
MidDay	7.4	7.2	7.2	7.1	7.2	7.3	7.0	5.2	4.9	5.2	5.3	5.3	5.5	5.1
LastHalfHo..	6.7	6.6	6.6	6.5	6.7	6.7	6.6	4.4	4.3	4.4	4.3	4.4	4.3	4.3

One Minute Volatility Bps

FirstHalfHo..	26.9	22.9	26.2	29.2	29.5	27.0	24.0	27.9	24.9	25.5	30.3	27.5	28.3	24.8
MidDay	15.1	14.3	15.1	15.8	15.5	14.7	13.8	14.0	12.2	13.0	14.5	13.2	13.6	11.7
LastHalfHo..	13.9	13.7	14.0	14.2	14.1	13.8	13.1	11.1	11.1	11.1	11.8	11.3	11.3	10.4

Quotesize (shares)

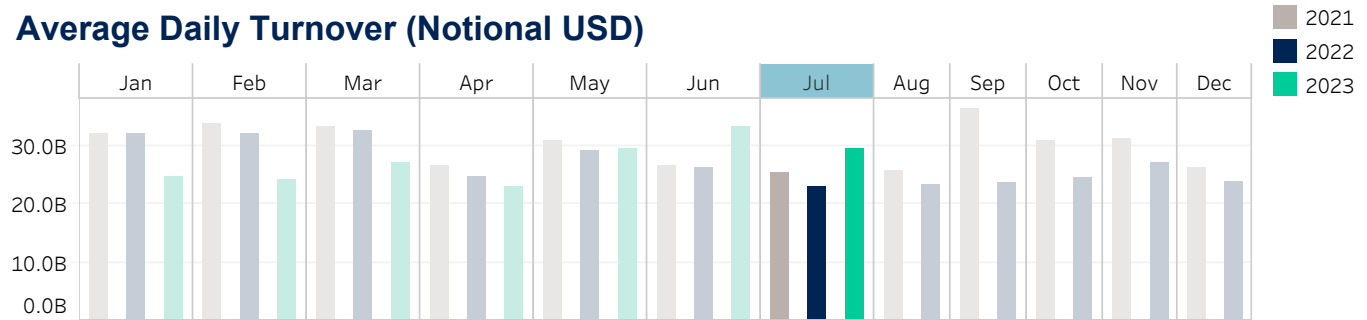
FirstHalfHo..	11,776	13,865	13,413	13,565	11,717	11,880	13,213	4,051	4,423	4,390	4,663	4,290	4,454	4,893
MidDay	15,847	17,474	15,741	15,771	13,954	14,210	17,111	5,045	5,182	4,883	5,174	4,869	5,189	5,637
LastHalfHo..	26,563	26,960	25,234	26,364	22,269	25,362	27,475	7,804	7,344	7,267	7,784	7,398	8,597	9,319

Median used for all metrics

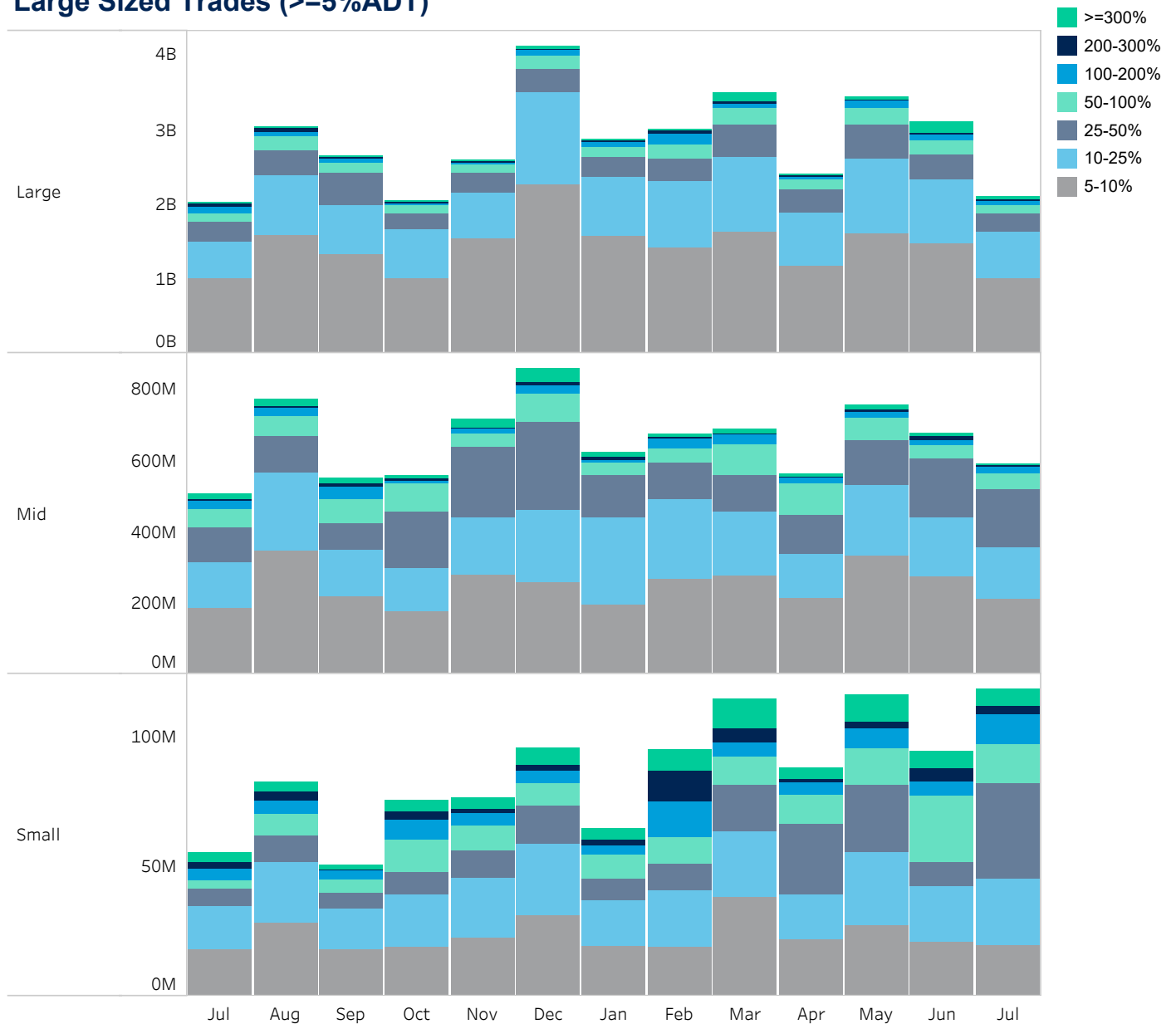
One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP..

Japan

Average Daily Turnover (Notional USD)



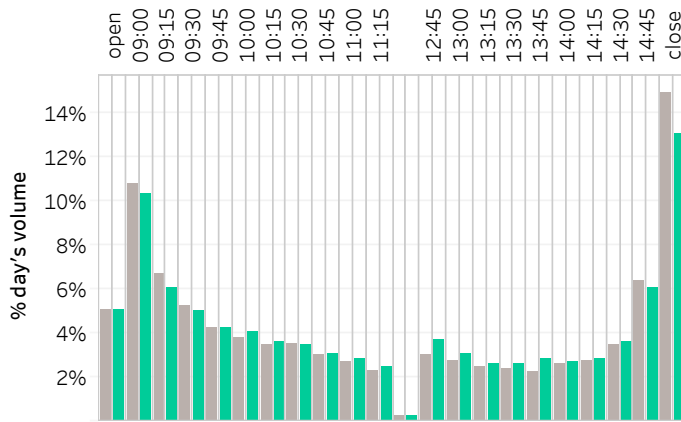
Large Sized Trades (>=5%ADT)



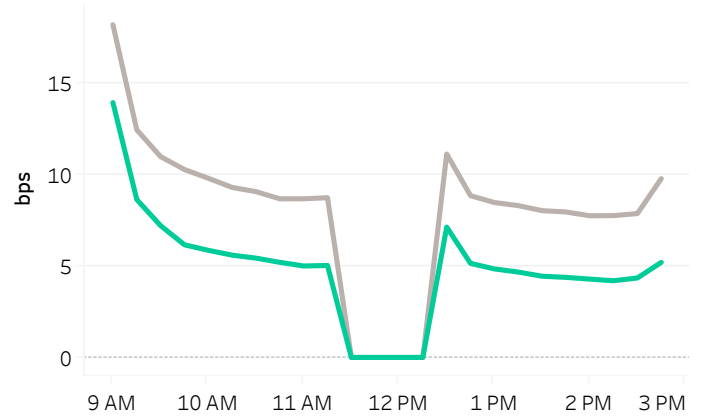
Source data: Virtu Financial

Japan

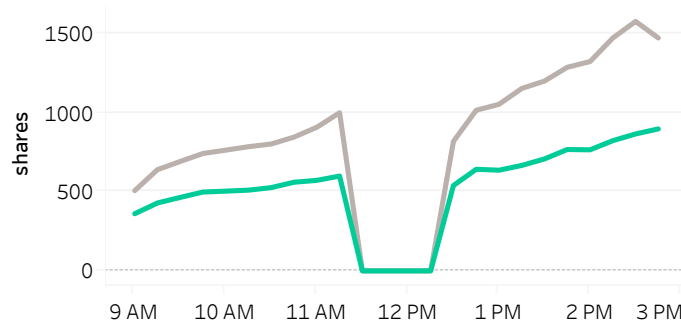
Volume Curve



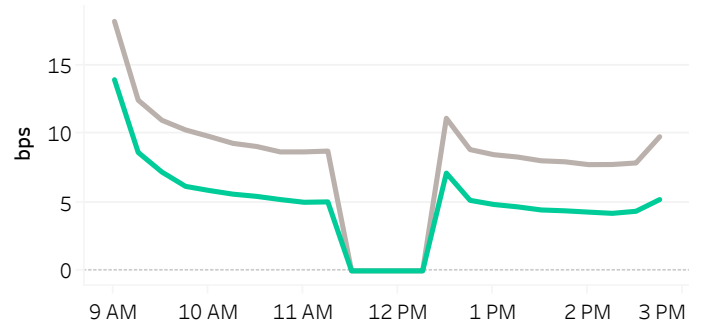
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	16.4	16.2	15.9	15.6	15.3	16.0	15.3	15.5	12.4	11.7
MidDay	9.3	9.3	9.0	8.6	8.8	9.1	8.5	8.9	5.7	5.2
LastHalfHour	9.6	9.4	9.4	9.1	9.1	9.5	9.2	9.2	5.4	5.0

One Minute Volatility Bps

FirstHalfHour	17.6	17.7	16.1	16.2	16.1	16.3	15.4	16.4	14.8	14.2
MidDay	8.5	8.7	8.4	8.0	8.3	8.4	7.7	8.5	6.7	5.9
LastHalfHour	9.7	9.7	9.5	9.3	9.3	9.4	8.9	9.3	7.1	6.6

Quotesize (shares)

FirstHalfHour	531	563	561	550	593	556	564	569	427	386
MidDay	809	927	902	897	1,012	891	951	968	582	569
LastHalfHour	1,375	1,572	1,441	1,414	1,620	1,387	1,495	1,578	860	855

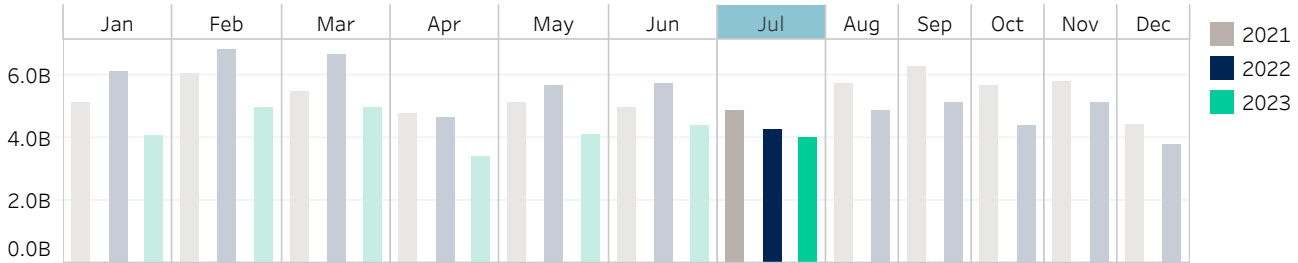
Median used for all metrics

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

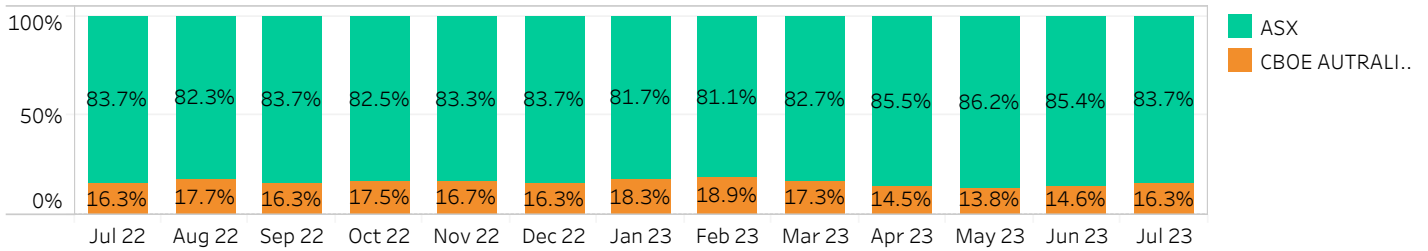
Source data: Virtu Financial

Australia

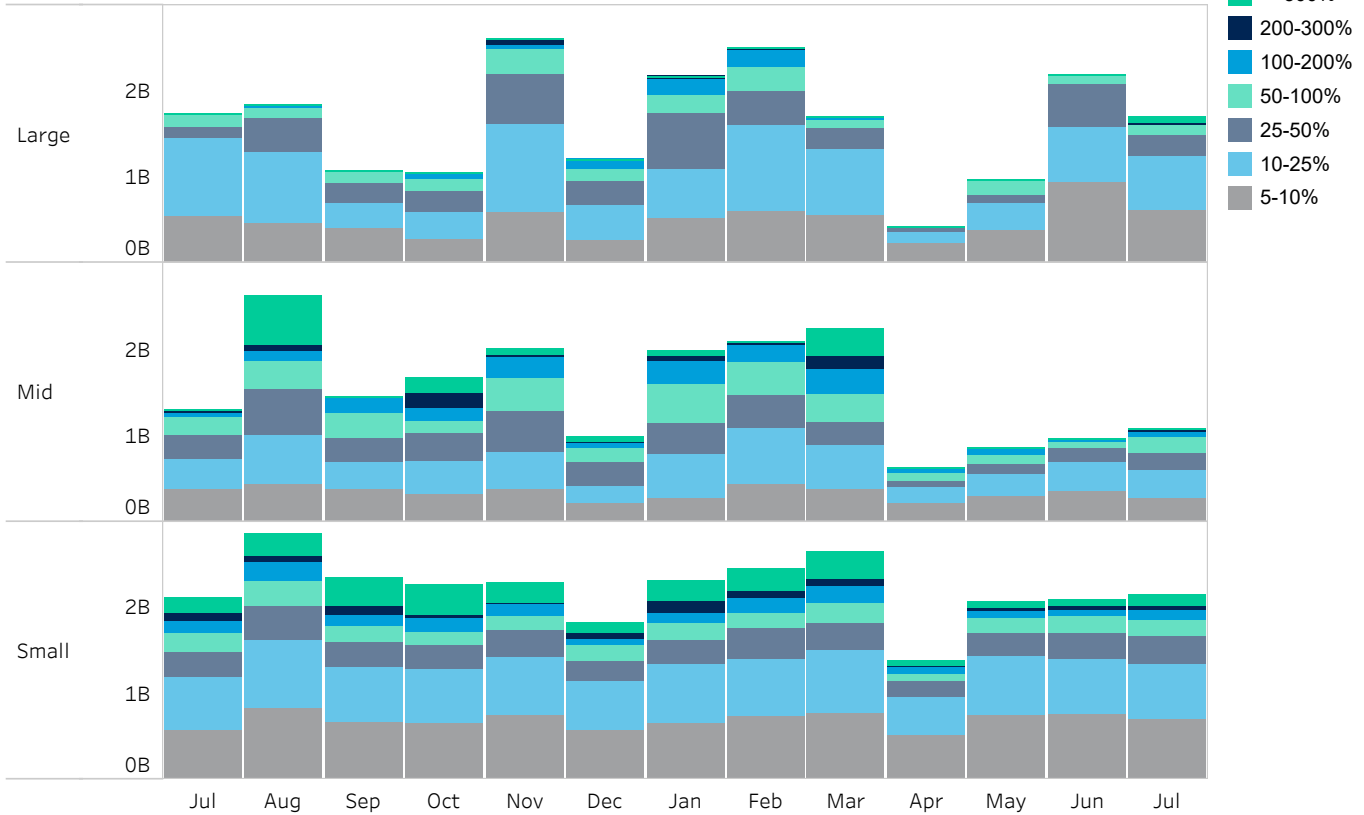
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



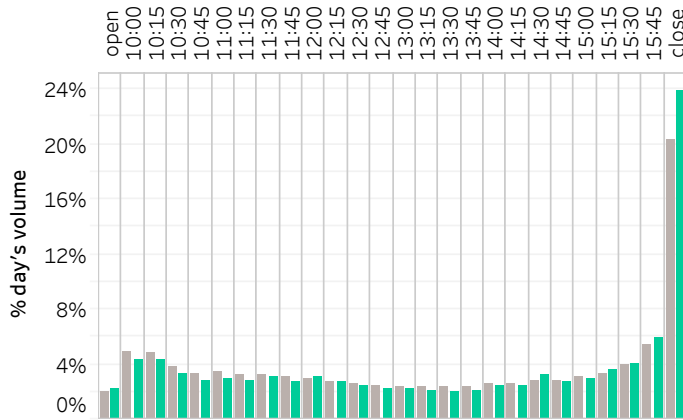
Large Sized Trades (>=5%ADT)



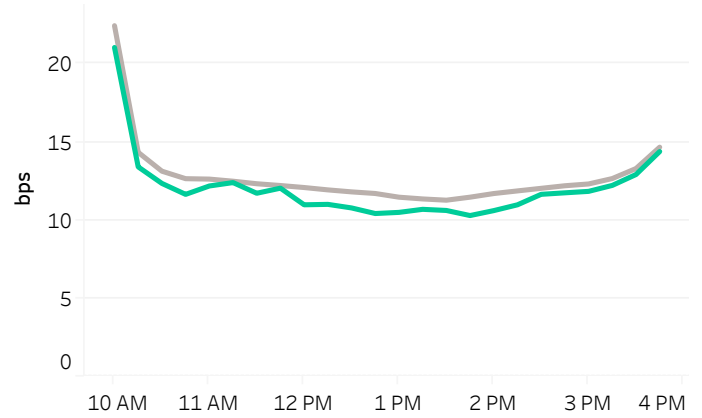
Source data: Virtu Financial

Australia

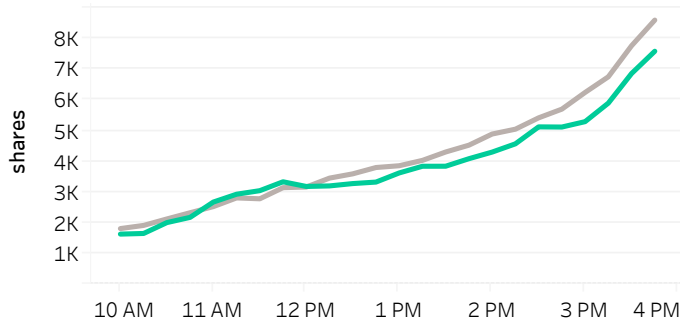
Volume Curve



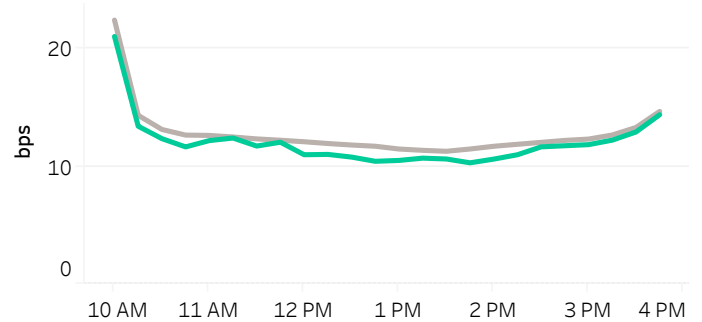
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	18.9	17.5	16.6	15.9	16.8	17.4	17.4	17.0	16.6	16.6
MidDay	13.0	12.5	12.1	11.1	11.6	12.4	12.1	11.6	11.8	11.3
LastHalfHour	14.9	13.9	13.7	13.1	13.8	14.3	14.3	13.7	14.0	13.9

One Minute Volatility Bps

FirstHalfHour	19.1	21.3	21.7	20.6	19.1	18.7	22.9	21.5	20.4	18.0
MidDay	9.9	10.3	10.7	9.5	9.2	9.8	12.3	11.4	10.5	9.5
LastHalfHour	12.2	12.5	13.2	12.4	11.9	12.5	13.8	12.9	12.6	11.9

Quotesize (shares)

FirstHalfHour	1,938	2,000	1,772	1,629	1,640	1,864	2,108	1,897	1,901	1,672
MidDay	4,056	4,453	3,558	3,279	3,260	3,759	3,968	3,313	3,860	3,520
LastHalfHour	9,008	9,111	7,705	6,643	7,185	8,215	8,141	7,163	8,042	7,173

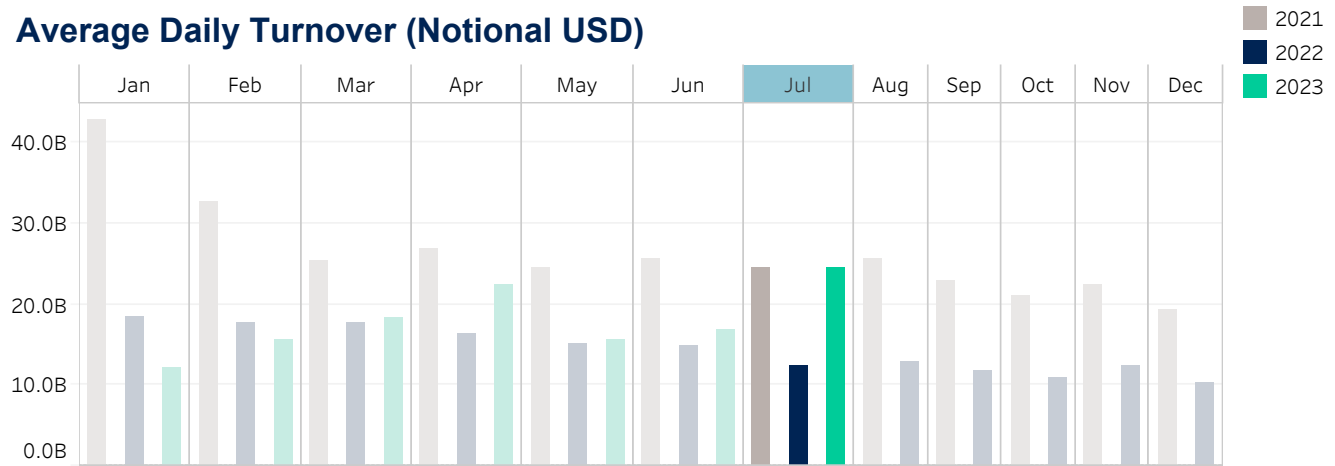
Median used for all metrics

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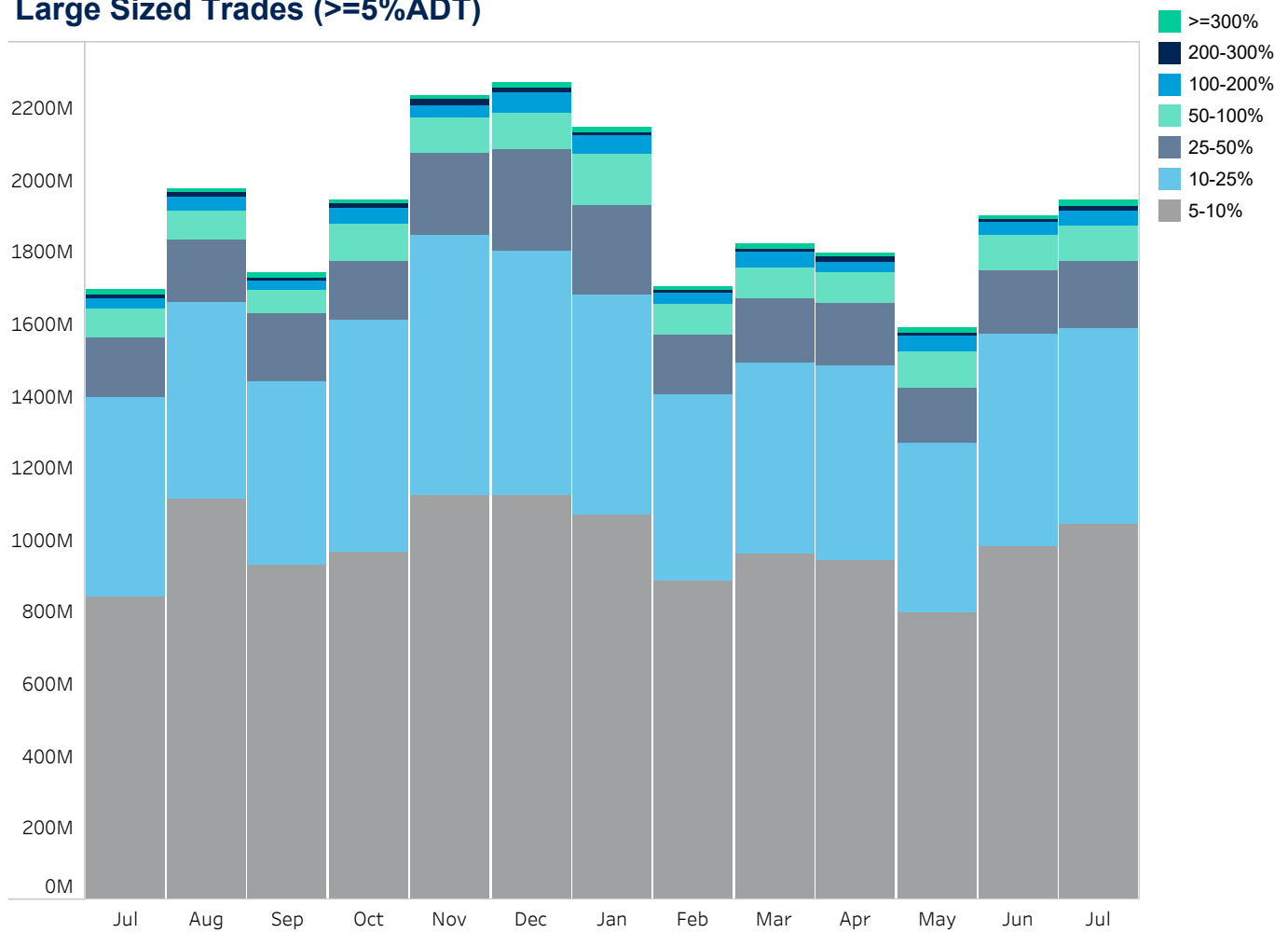
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



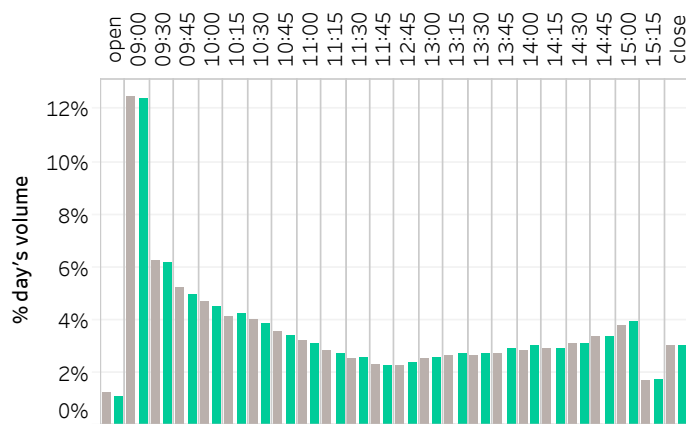
Large Sized Trades (>=5%ADT)



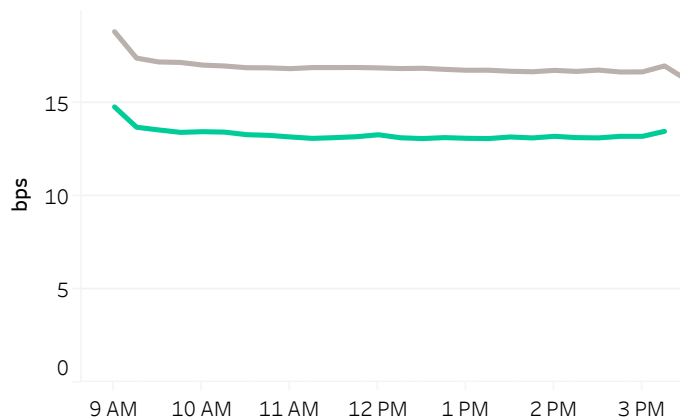
Source data: Virtu Financial

Korea

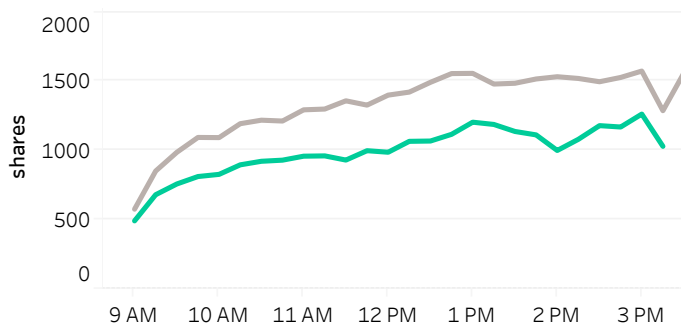
Volume Curve



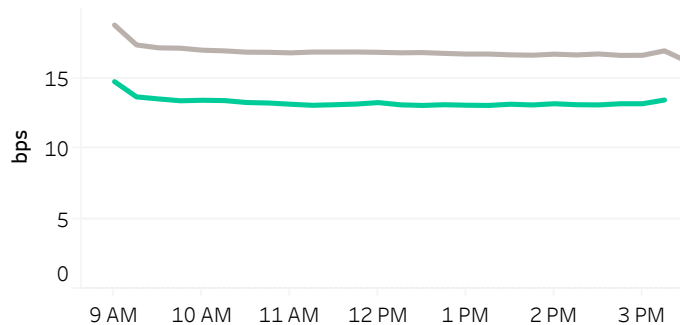
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	19.1	18.1	18.1	17.4	14.7	14.7	14.3	14.0	13.7	14.3
MidDay	17.5	16.7	17.1	16.5	13.5	13.4	12.9	12.9	12.9	13.2
LastHalfHour	17.5	16.2	17.1	16.5	13.7	13.5	13.1	13.0	13.0	13.3

One Minute Volatility Bps

FirstHalfHour	29.4	23.6	24.9	25.6	22.7	21.5	32.7	31.4	29.5	27.1
MidDay	18.1	14.9	15.0	14.8	14.2	14.0	19.6	18.7	18.7	14.9
LastHalfHour	18.9	15.6	16.0	15.9	14.9	14.8	20.8	19.7	20.6	16.2

Quotesize (shares)

FirstHalfHour	704	716	803	727	655	595	579	580	634	563
MidDay	1,415	1,541	1,721	1,396	1,188	1,025	1,014	1,166	1,249	1,024
LastHalfHour	1,529	1,360	1,628	1,506	1,447	1,390	1,189	1,277	1,444	1,164

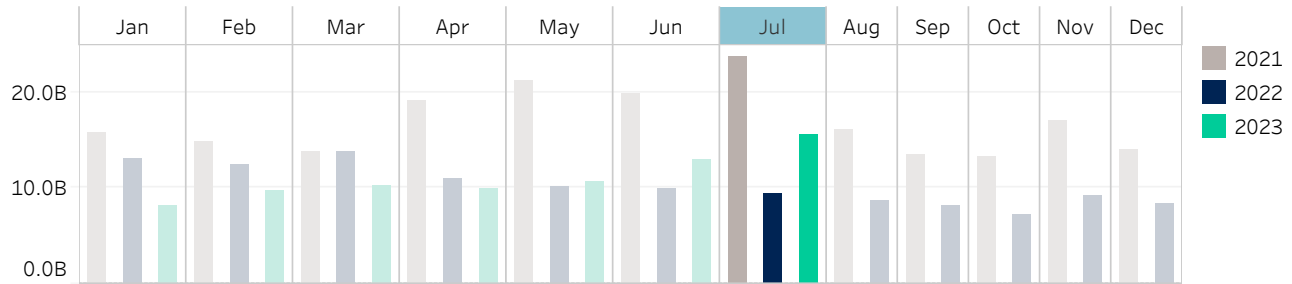
Median used for all metrics

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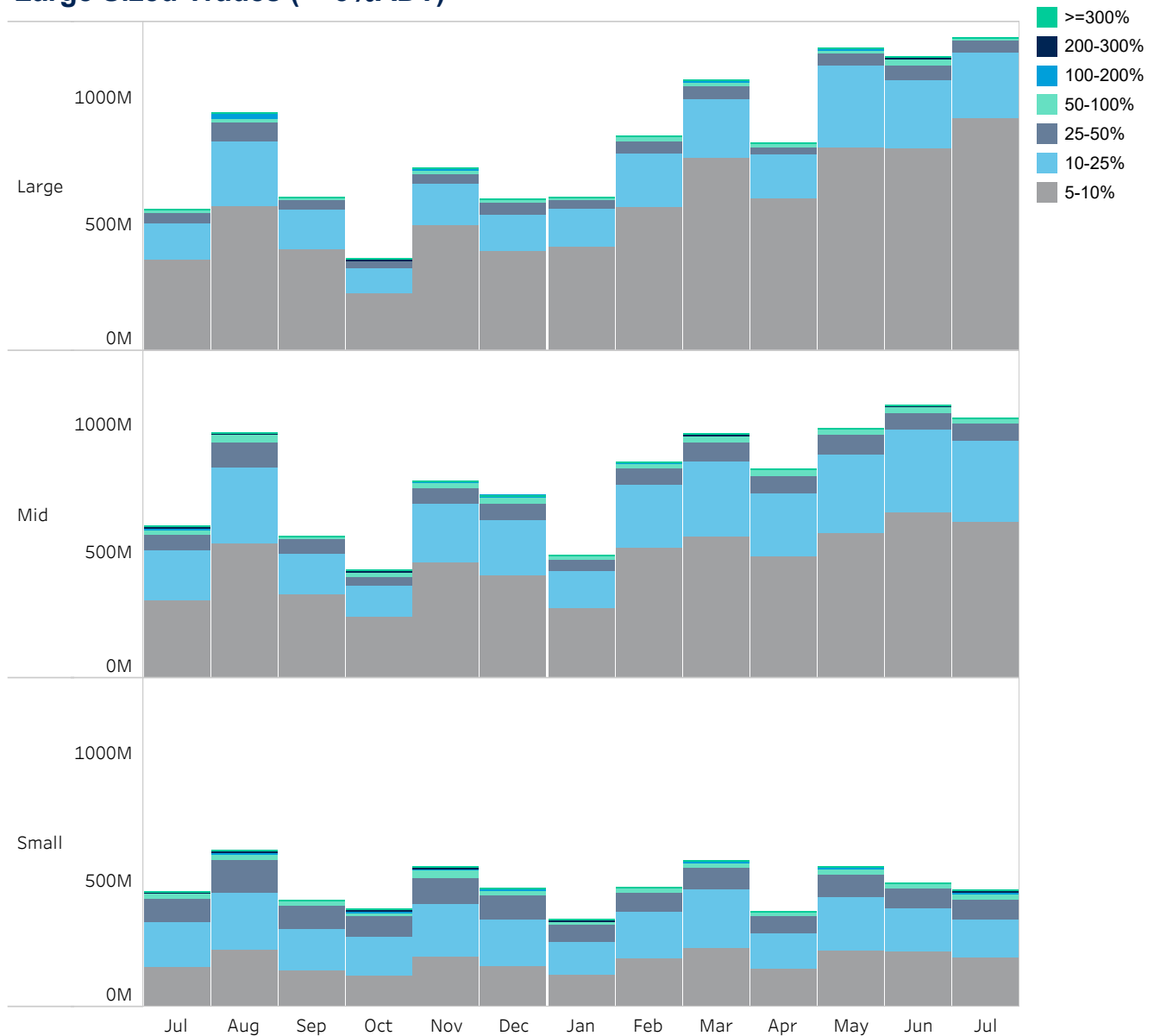
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



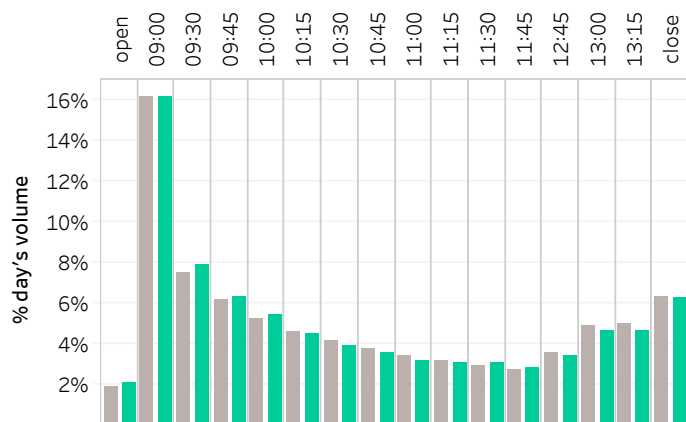
Large Sized Trades (>=5%ADT)



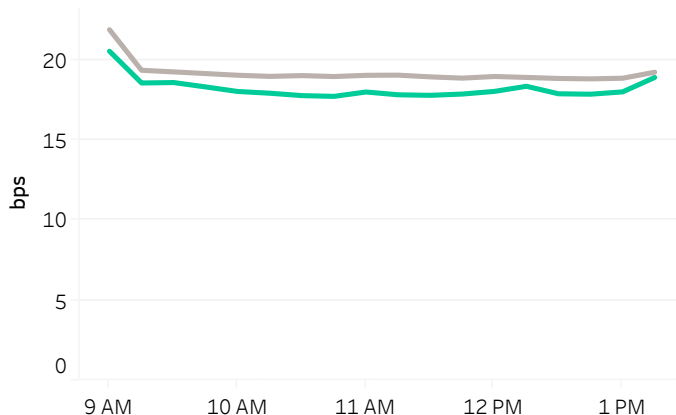
Source data: Virtu Financial

Taiwan

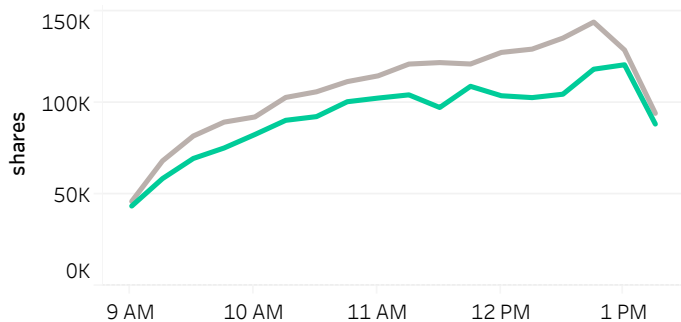
Volume Curve



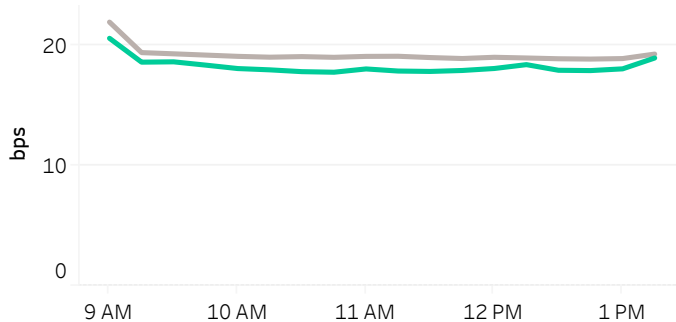
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	24.0	21.5	20.9	20.2	20.6	20.1	19.9	19.8	19.3	19.6
MidDay	20.9	19.1	19.2	18.5	18.9	19.0	18.9	18.2	17.8	18.0
LastHalfHour	21.2	19.2	19.2	18.7	18.9	19.1	19.0	18.3	18.1	18.3

One Minute Volatility Bps

FirstHalfHour	31.1	31.3	31.6	30.3	31.3	31.2	34.5	30.8	31.0	34.5
MidDay	28.9	28.9	29.1	28.8	28.1	28.4	25.8	23.4	28.6	31.5
LastHalfHour	29.0	28.9	29.6	29.2	28.3	28.9	26.7	23.6	28.9	32.6

Quotesize (shares)

FirstHalfHour	42,999	52,487	55,849	59,008	57,971	61,802	53,240	60,150	57,819	51,257
MidDay	77,390	113,736	109,432	118,834	117,559	138,448	125,681	133,760	139,513	105,466
LastHalfHour	81,045	112,549	102,743	113,870	116,979	124,571	121,314	127,420	122,742	102,051

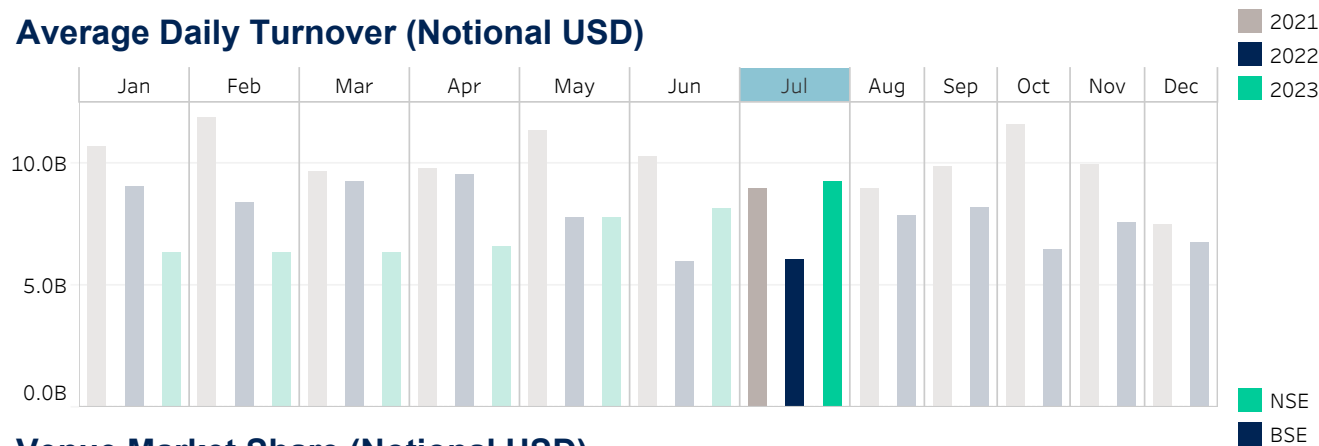
Median used for all metrics

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

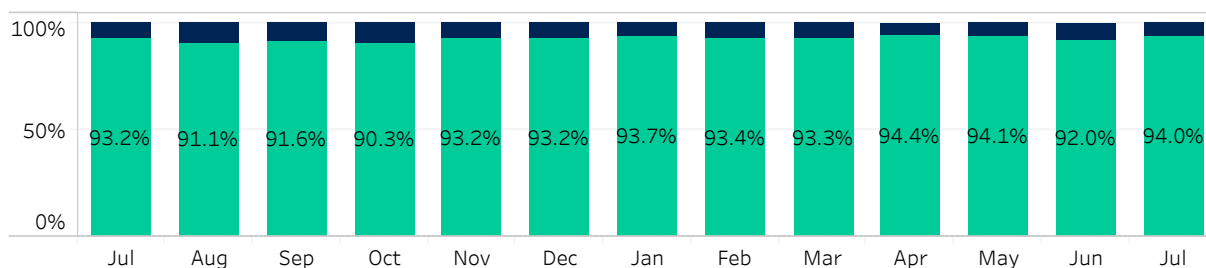
Source data: Virtu Financial

India

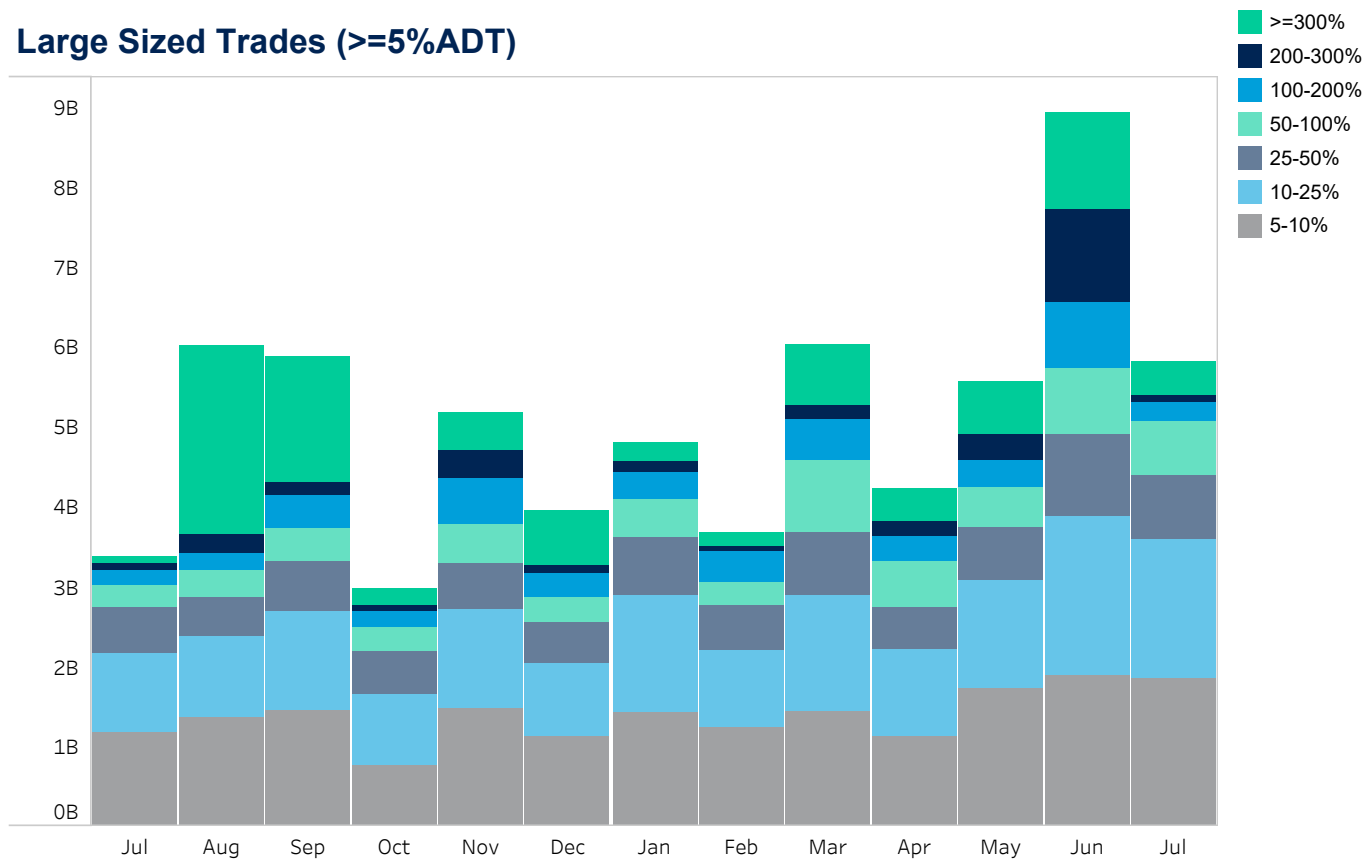
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



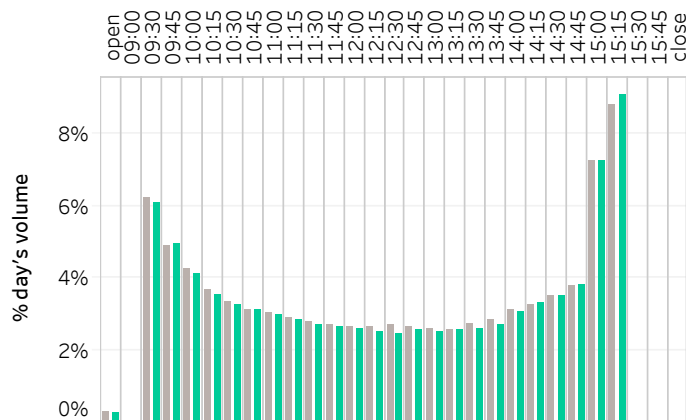
Large Sized Trades (>=5%ADT)



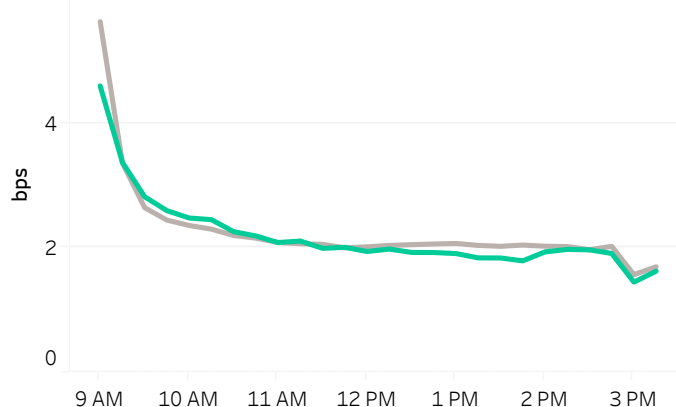
Source data: Virtu Financial

India

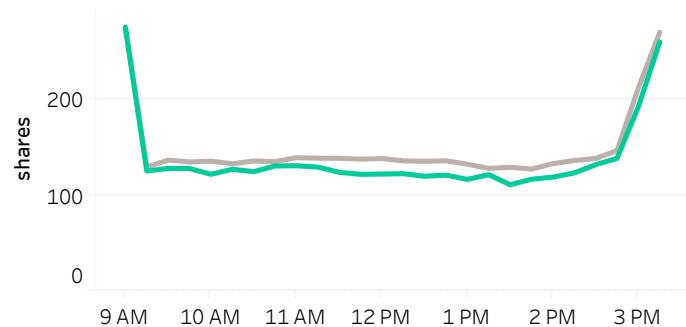
Volume Curve



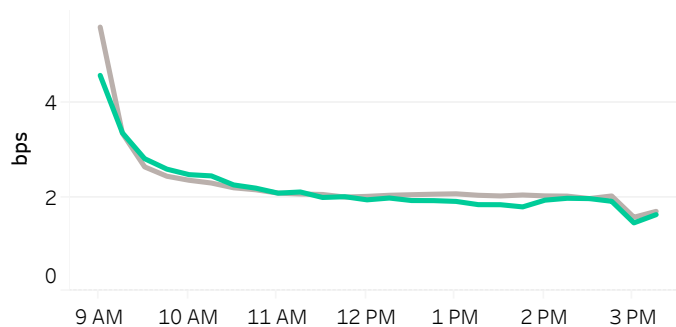
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	3.5	3.3	3.4	3.5	3.7	3.4	3.4	3.3	3.1	3.5
MidDay	2.1	1.9	2.0	2.1	2.2	2.1	2.1	2.0	1.9	1.9
LastHalfHour	1.6	1.6	1.6	1.7	1.8	1.7	1.7	1.6	1.5	1.5

One Minute Volatility Bps

FirstHalfHour	18.8	19.7	19.1	17.2	16.6	15.2	20.3	18.4	18.0	17.6
MidDay	8.2	8.4	8.2	7.1	7.0	6.8	8.2	7.4	7.7	7.7
LastHalfHour	10.1	10.3	10.5	9.1	9.2	9.1	10.2	9.7	10.2	9.9

Quotesize (shares)

FirstHalfHour	125.4	138.7	120.1	121.8	119.8	123.5	133.9	142.2	143.1	131.7
MidDay	131.3	143.8	122.4	128.7	124.1	124.2	143.1	151.0	151.7	124.1
LastHalfHour	243.8	257.7	257.9	228.8	249.5	253.0	256.4	262.0	268.0	231.3

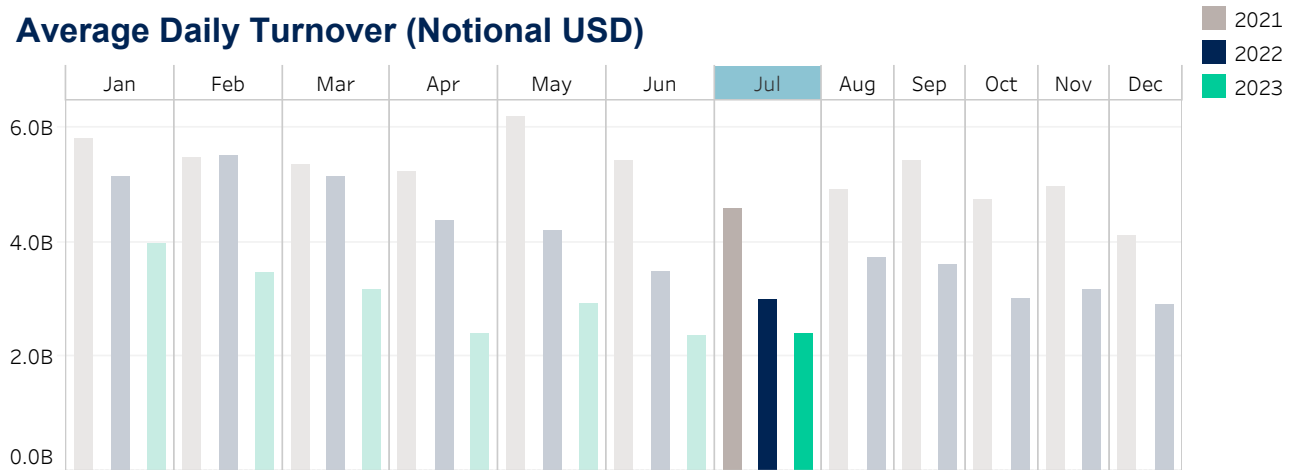
Median used for all metrics

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

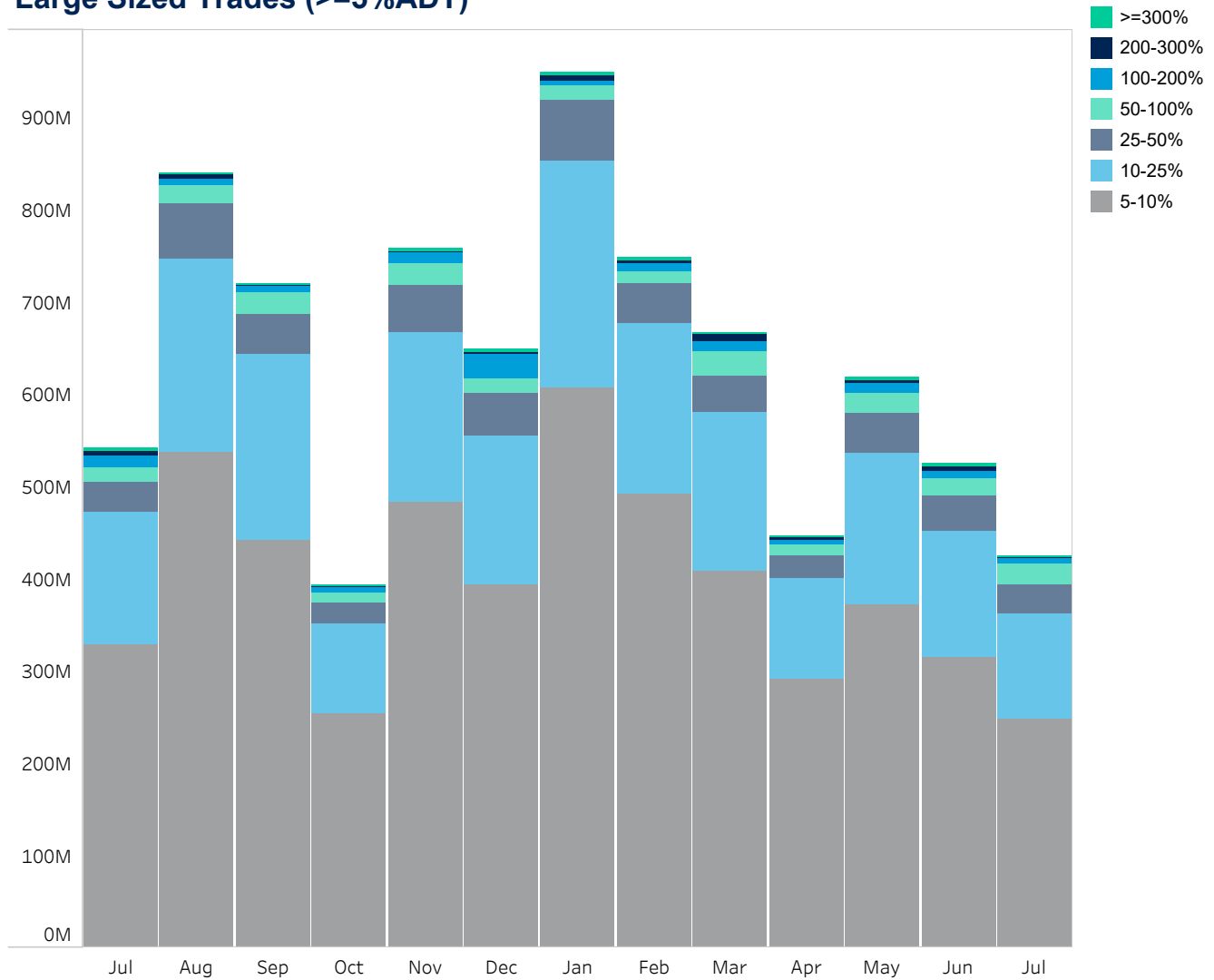
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



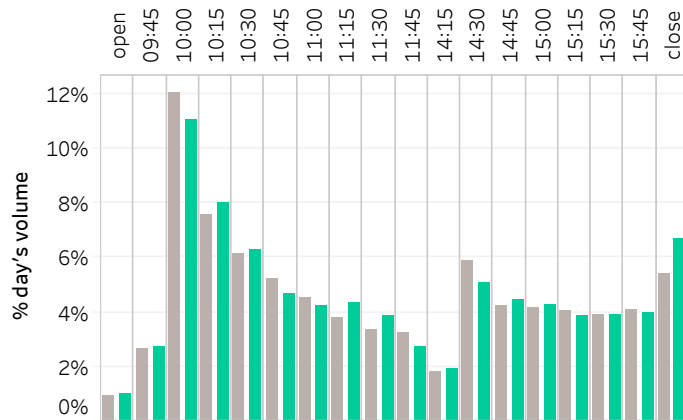
Large Sized Trades (>=5%ADT)



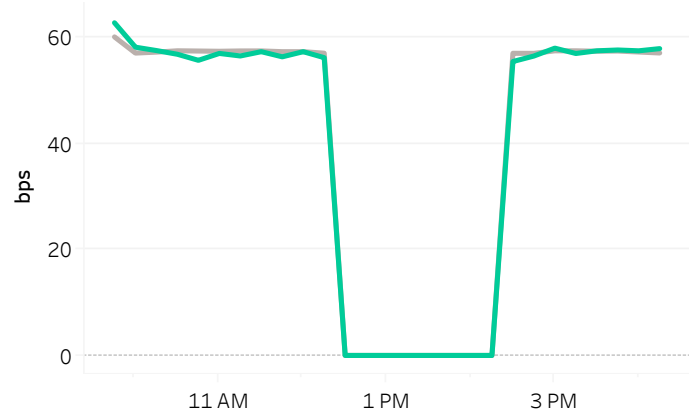
Source data: Virtu Financial

Thailand

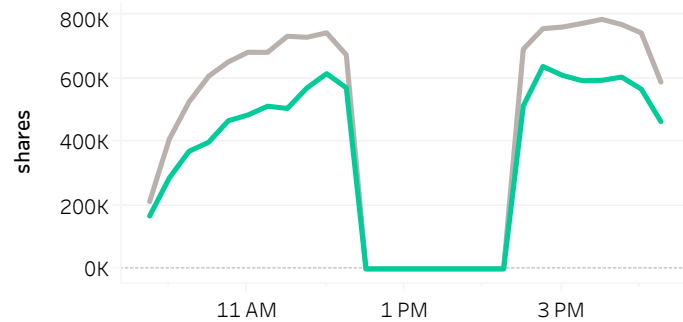
Volume Curve



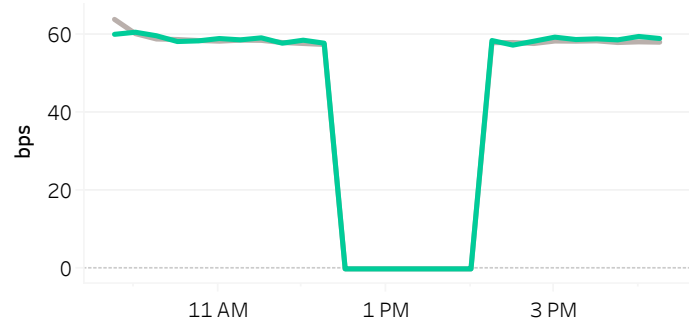
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	61.2	61.0	58.1	58.0	56.4	59.5	59.2	65.1	65.6	61.9
MidDay	59.2	57.6	55.9	54.1	54.1	56.0	55.8	58.4	59.3	56.7
LastHalfHour	59.7	57.3	55.7	54.2	54.8	56.7	56.0	58.7	59.3	58.0

One Minute Volatility Bps

FirstHalfHour	64.3	61.9	67.8	60.8	63.9	63.5	74.9	71.7	74.1	60.4
MidDay	55.4	55.4	57.6	57.0	60.4	60.8	60.8	58.3	56.7	58.7
LastHalfHour	56.0	56.0	58.3	57.6	60.1	60.8	60.4	58.0	56.7	59.0

Quotesize (shares)

FirstHalfHour	217,331	227,211	245,311	284,548	236,082	219,491	200,957	156,753	157,282	170,264
MidDay	691,861	760,712	805,102	865,107	737,967	634,271	624,930	536,008	510,989	542,854
LastHalfHour	620,002	675,335	738,049	812,231	679,491	552,716	570,432	472,021	490,710	518,167

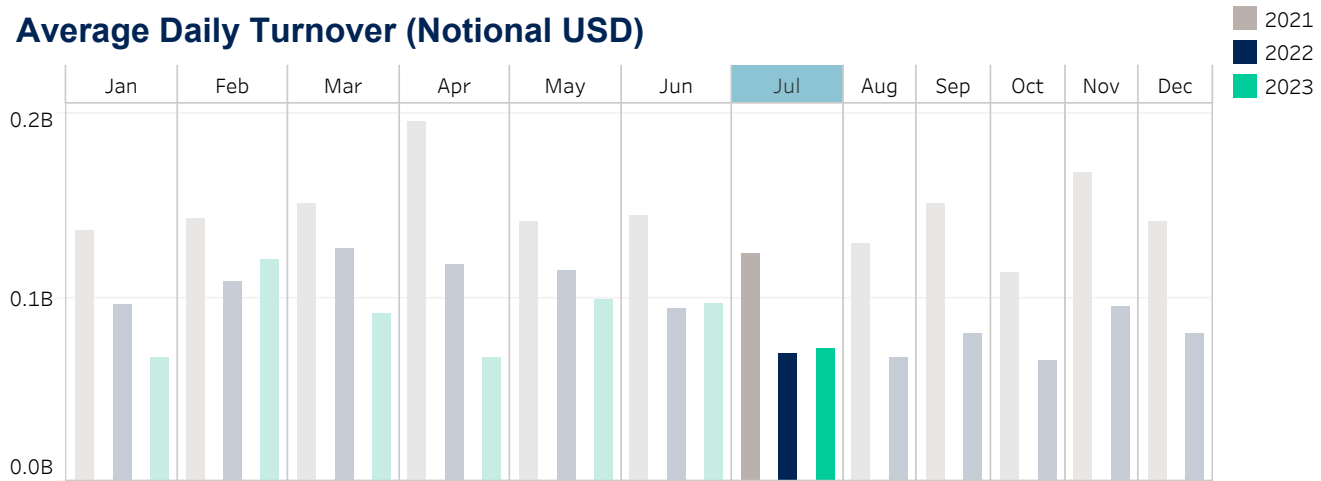
Median used for all metrics

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

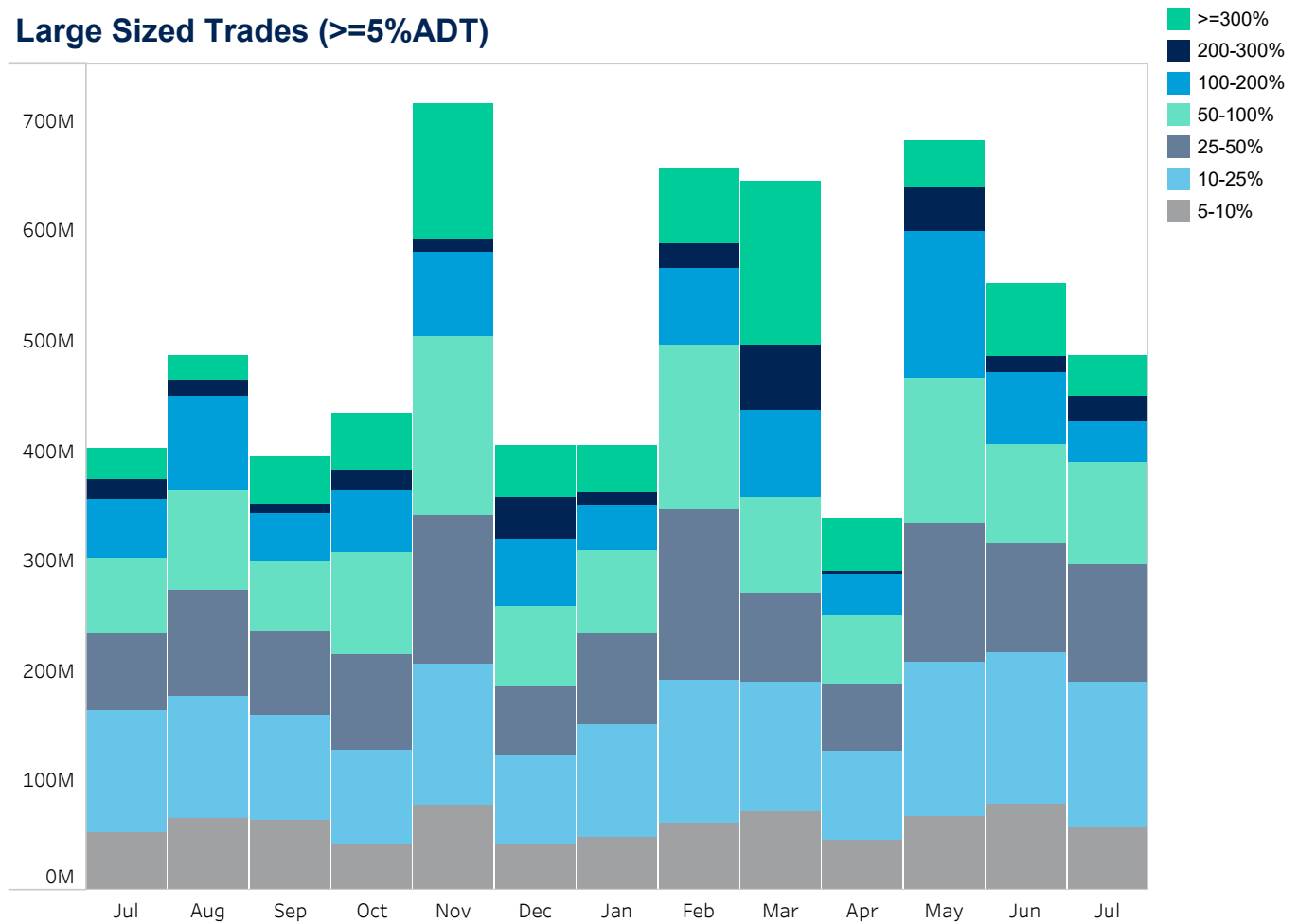
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



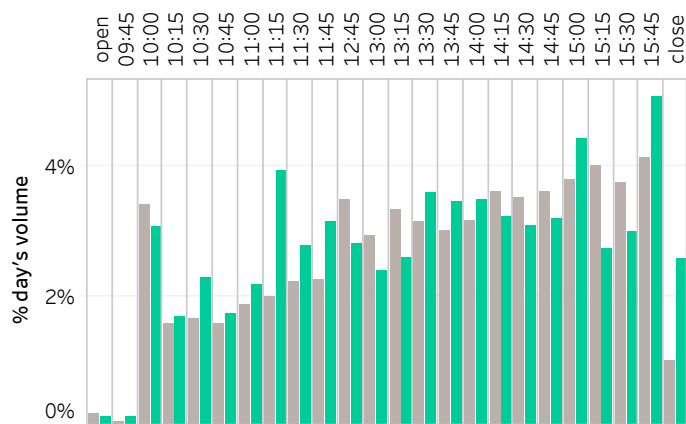
Large Sized Trades (>=5%ADT)



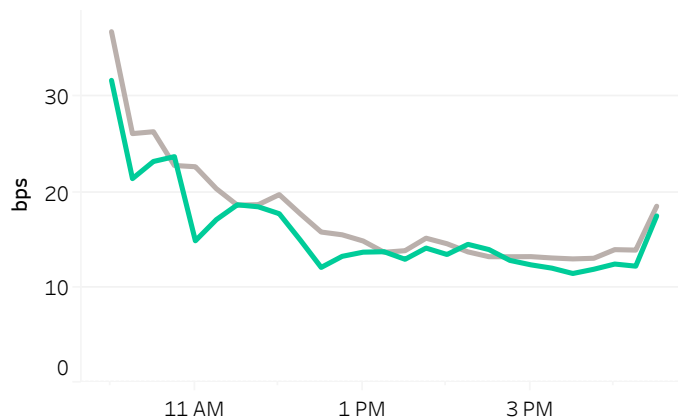
Source data: Virtu Financial

New Zealand

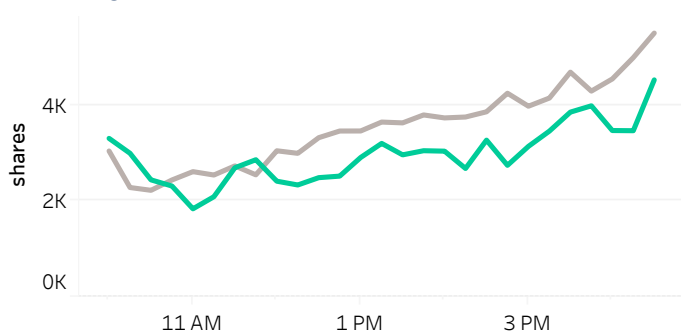
Volume Curve



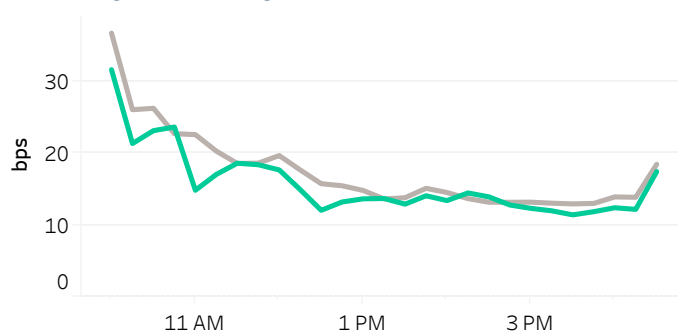
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	34.5	38.8	33.0	28.6	36.2	32.4	23.3	33.5	23.1	27.3
MidDay	17.2	17.4	14.4	13.0	14.2	13.5	13.8	13.7	13.3	13.5
LastHalfHour	20.3	19.7	19.9	17.6	19.1	17.5	18.4	17.4	17.7	17.9

One Minute Volatility Bps

FirstHalfHour	19.2	20.9	23.1	19.0	18.6	15.9	25.5	25.6	20.2	18.4
MidDay	12.9	15.1	13.8	15.2	13.3	13.3	17.7	17.3	14.7	12.8
LastHalfHour	18.7	23.1	19.7	19.0	18.2	18.5	21.5	22.0	21.1	18.3

Quotesize (shares)

FirstHalfHour	2,695	2,859	2,800	2,352	2,572	2,470	2,669	2,496	2,658	2,980
LastHalfHour	5,615	5,396	6,890	5,554	6,137	4,537	5,071	4,691	5,091	4,326
MidDay	3,955	3,593	3,663	2,964	3,634	3,092	3,102	3,512	3,372	3,016

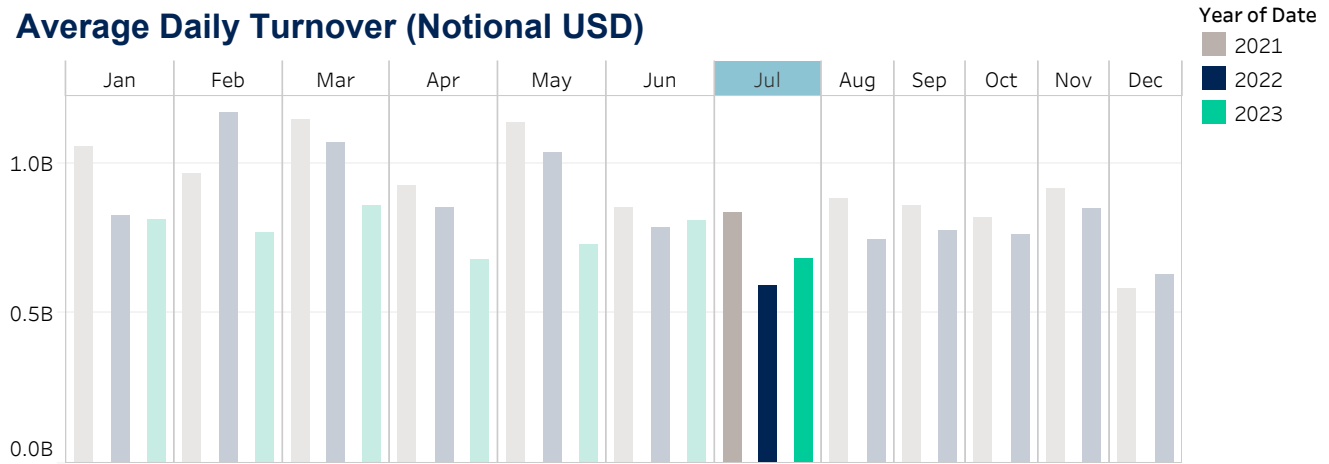
Median used for all metrics

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

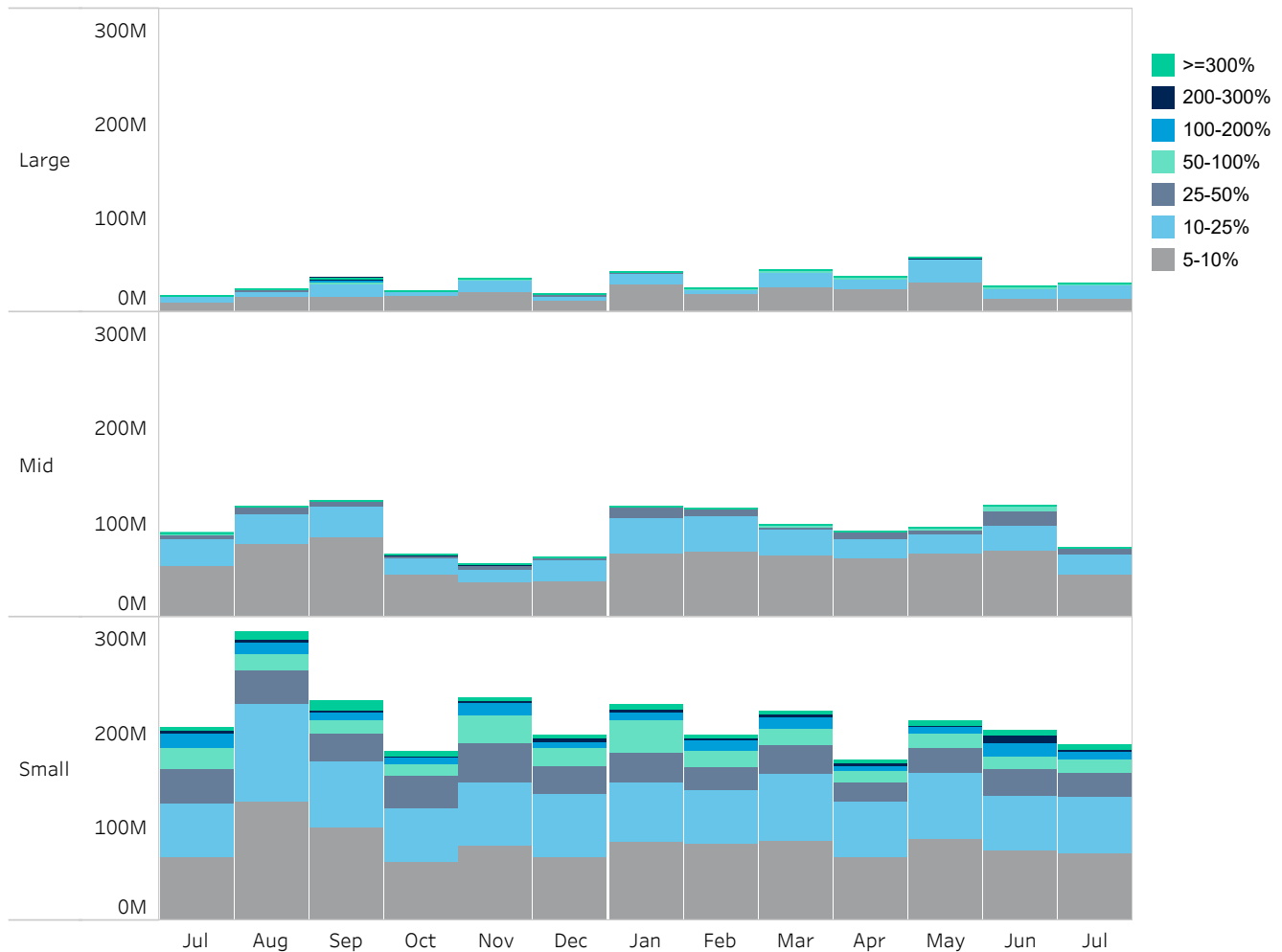
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



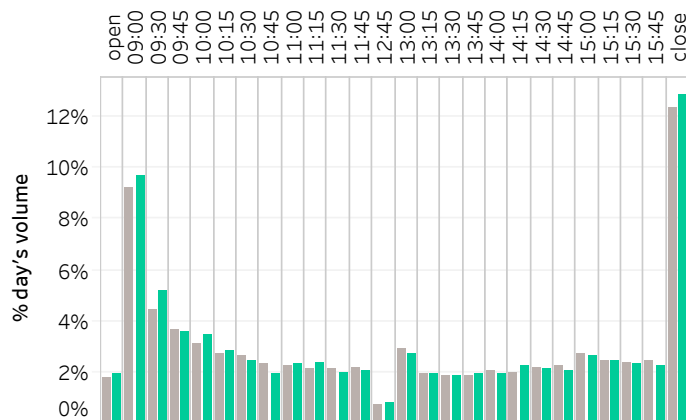
Large Sized Trades (>=5%ADT)



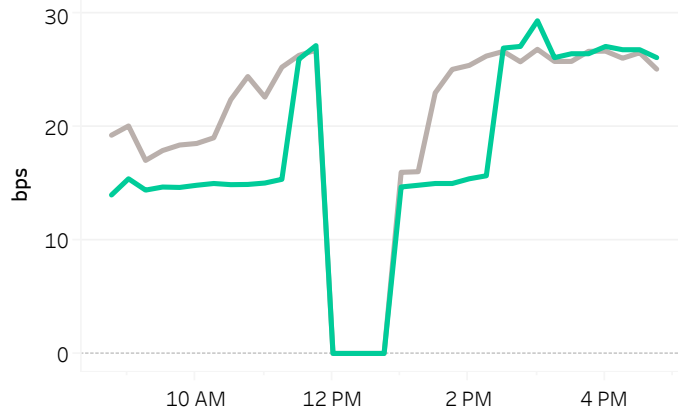
Source data: Virtu Financial

Singapore

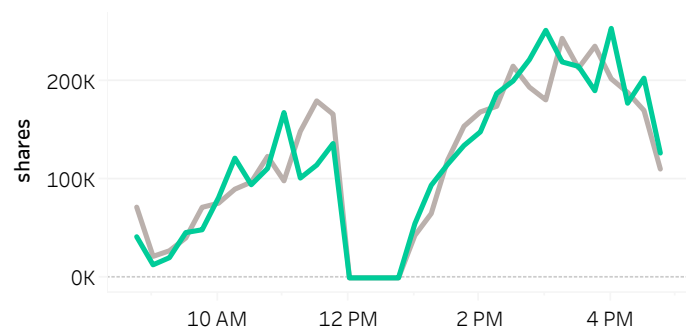
Volume Curve



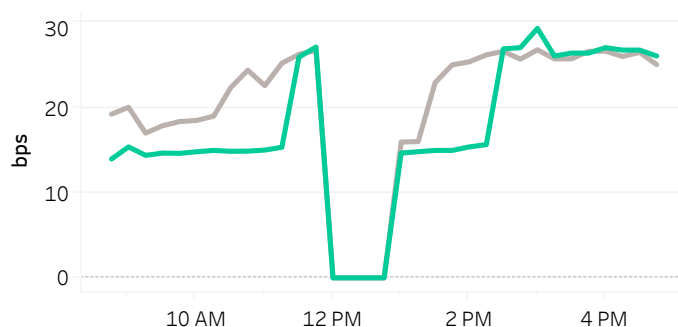
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg July 2023

Spread Bps

	2022			2023						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
FirstHalfHour	19.2	16.5	18.0	19.8	14.5	16.6	14.2	16.4	16.6	14.6
MidDay	22.8	22.3	24.2	24.3	25.0	27.2	27.0	27.0	24.5	17.5
LastHalfHour	27.8	20.3	24.4	24.2	25.1	25.3	26.8	26.3	25.8	26.4

One Minute Volatility Bps

FirstHalfHour	37.7	43.5	34.5	34.4	35.7	41.7	66.4	44.0	34.5	41.7
MidDay	25.2	25.4	28.4	27.6	27.5	26.9	26.6	25.3	24.6	26.3
LastHalfHour	24.8	25.5	27.6	27.1	26.8	27.4	28.5	24.7	27.1	27.1

Quotesize (shares)

FirstHalfHour	41,303	59,495	65,760	55,481	49,035	126,098	48,869	57,725	86,605	39,923
MidDay	89,492	106,664	123,584	140,704	159,315	169,961	327,685	231,700	112,054	126,638
LastHalfHour	121,825	94,969	128,454	109,921	138,744	141,752	256,196	170,897	139,765	143,803

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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