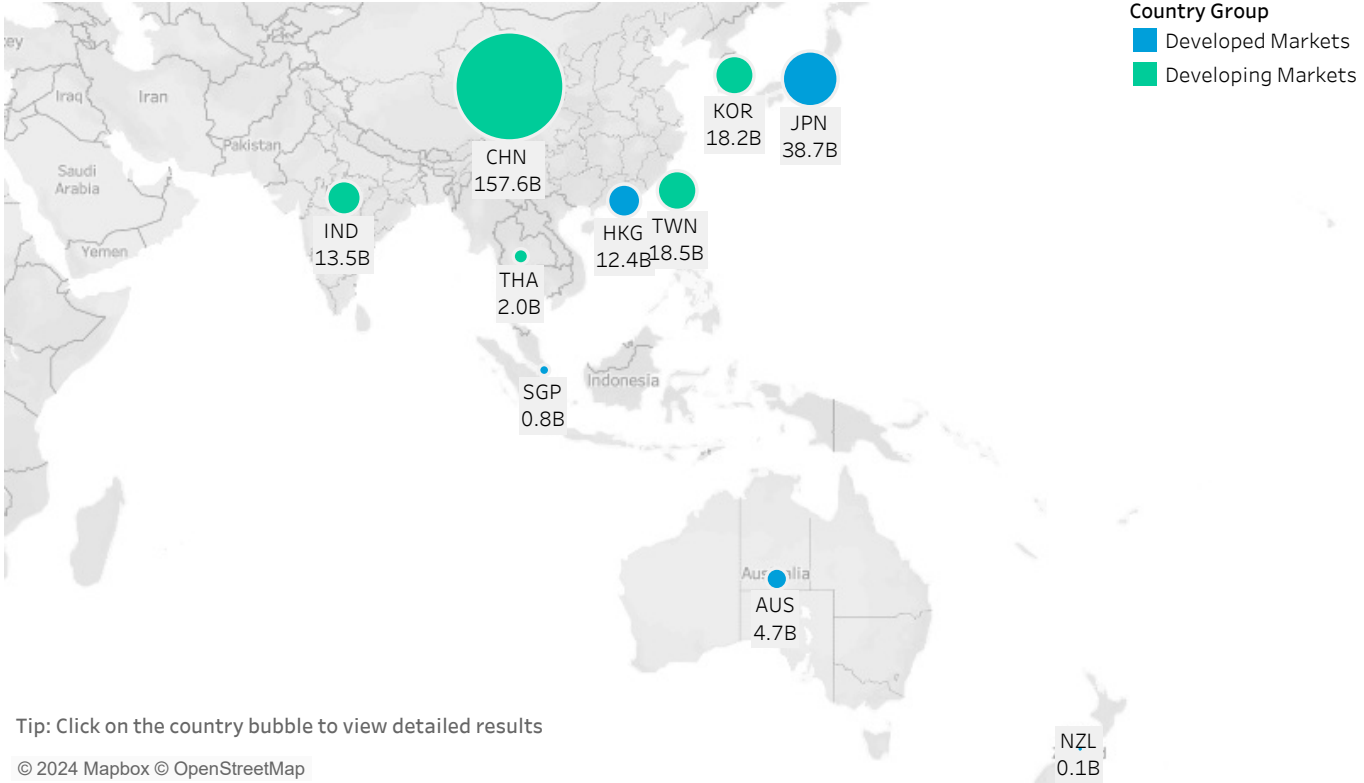


March 2024 APAC Market Structure Monthly

Average Daily Turnover (Notional USD)



Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

March 2024

APAC Market Structure Monthly

MICROSTRUCTURE OBSERVATIONS

- Average daily turnover (ADT) in Hong Kong increased +25% month-over-month (MoM) to US\$12.4B, rebounding from relatively quiet trading during the lunar holidays last month. Other developed markets such as Australia and Japan continued to see ADT increases, albeit at a reduced rate at +3.2% and +1.1% respectively.
- Despite India seeing 9% lower ADT MoM, block turnover was noticeably higher in March. Namely, trades that were >50% of average daily volume (ADV) increased 173% from US\$3B to US\$8B. This consisted of a 5X increase in 50-100% ADV group, 8X in 200-300% ADV group, and finally 2X in both 100-200% ADV and >300% ADV groups. Please refer to P.16 for more details.

APAC MARKET STRUCTURE NEWS

ASX Commenced Industry Consultation on Delivery Approach of CHESSE Replacement

On 14 March 2024, ASX released the first of two consultation papers seeking feedback on the “proposed staged implementation approach to CHESSE replacement”, which is planned to be via two releases. ASX is also seeking feedback on the proposed design, scope and schedule for Release 1 and the testing approach for Release 1.

<https://www.asx.com.au/markets/clearing-and-settlement-services/chess-replacement>

SEBI Introduces Beta Version of T+0 Settlement Segment on an Optional Basis

On 21 March 2024, Securities and Exchange Board (SEBI) of India announced the introduction of Beta version of T+0 settlement cycle, on an optional basis, in addition to the existing T+1 settlement cycle in its cash equity markets.

According to SEBI, the Beta Version of T+0 Settlement will first be conducted within a limited set of brokers for 25 stocks.

https://www.sebi.gov.in/legal/circulars/mar-2024/introduction-of-beta-version-of-t-0-rolling-settlement-cycle-on-optional-basis-in-addition-to-the-existing-t-1-settlement-cycle-in-equity-cash-markets_82455.html

Hong Kong Exchanges and Clearing Limited Published Rules for Self-Match Prevention Service

On 25 March 2024, Hong Kong Exchanges and Clearing Limited published a “Rule Update” to the “Rules of the Exchange” to include the rules for the newly developed Self-Match Prevention (SMP) service. This update will take effect from 2 April 2024, which defines the concepts of SMP, SMP ID, SMP Instruction, and set forth the operational trading rules of SMP.

https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2024/027_24_SEHK_SMP_e.pdf

Japan Exchange Group Launched a Proof of Concept for Generative AI-powered Service to Disseminate Japanese Market Information

On 12 March 2024, Japan Exchange Group (JPX) Market Innovation & Research, Inc. (JPXI) announced the launch of a proof of concept (PoC) for "JPX Market Explorer," a new service that leverages generative AI technology, to disseminate information on the Japanese market.

According to JPXI, JPX Market Explorer is a free service website for investors both inside and outside Japan.

<https://www.jpjx.co.jp/english/corporate/news/news-releases/6020/20240312-01.html>

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

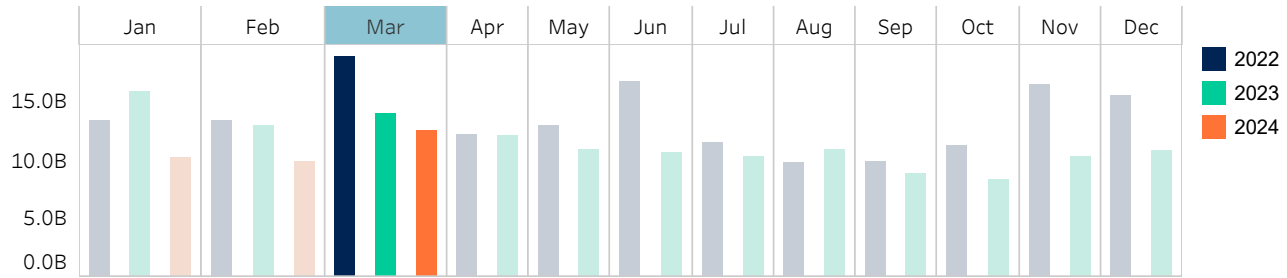
info@virtu.com | www.virtu.com

© 2024 Virtu Financial, Inc. All rights reserved. Not to be reproduced or retransmitted without permission. These materials are for informational purposes and are not intended to be used to make trading or investment decisions, they are not intended as an offer to sell or the solicitation of an offer to buy any security or financial product, and are not intended as advice (investment, tax or legal). The information contained herein includes Virtu proprietary information and/or has been taken from sources we believe to be reliable, but we do not represent or warrant that such information is accurate or complete and it should not be relied upon as such.

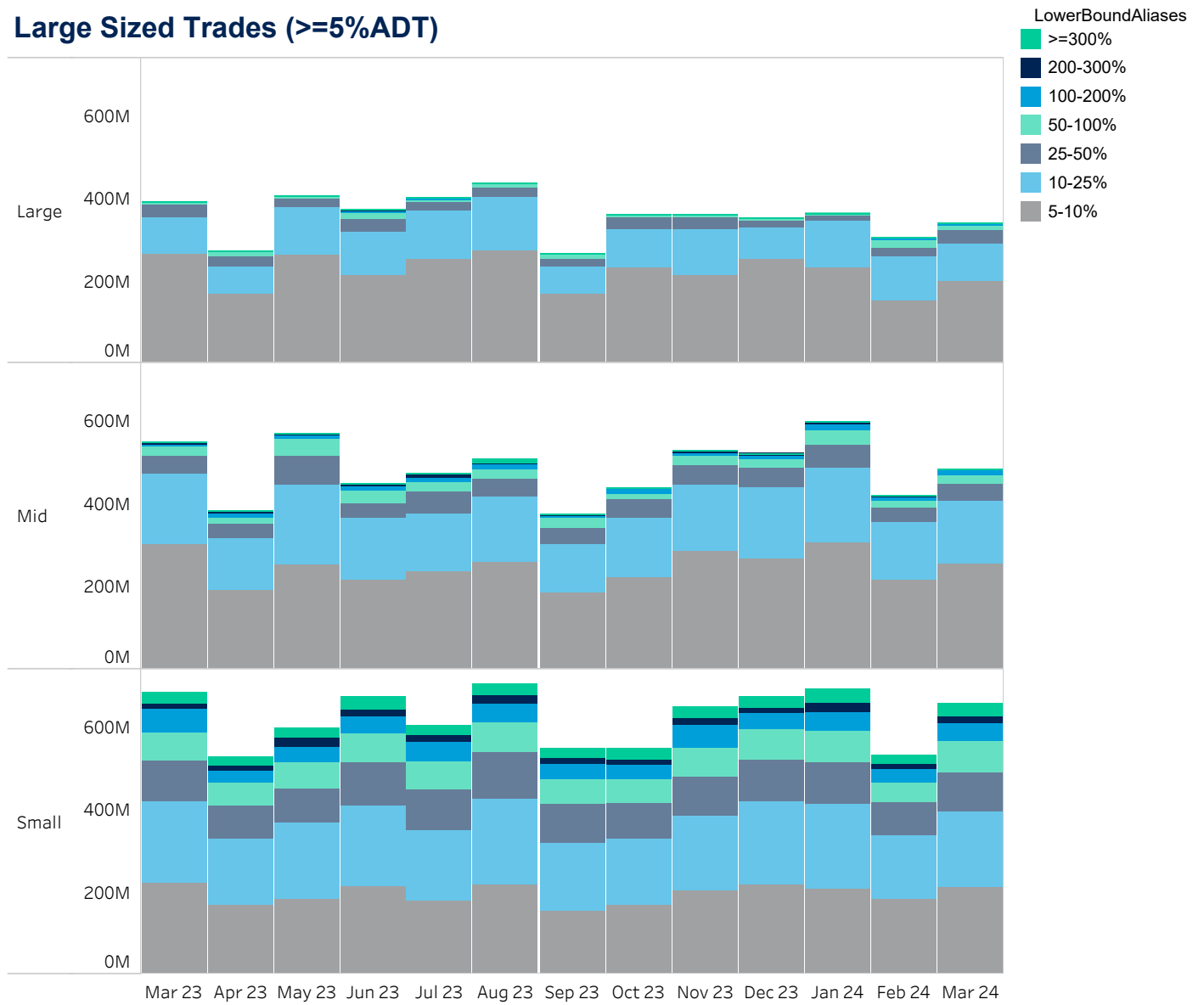
Securities products and services are offered by the following subsidiaries of Virtu Financial, Inc. In the U.S., Virtu Americas LLC, member FINRA and SIPC; in Canada, Virtu Canada Corp., member Canadian Investor Protection Fund and Canadian Investment Regulatory Organization; in Europe, Virtu Europe Trading Limited, registered in Ireland No. 283940 ("VETL") (VETL is authorized and regulated by the Central Bank of Ireland), and Virtu Financial Ireland Limited, registered in Ireland No. 471719 ("VFIL") (VFIL is authorized and regulated by the Central Bank of Ireland). The registered office of VETL and VFIL is North Dock One, Fifth Floor, 91-92 North Wall Quay, Dublin 1, Ireland, D01 H7V7; in Asia, Virtu ITG Hong Kong Limited (SFC License No. AHD810), Virtu ITG Singapore Pte Limited (CMS License No. 100138-1), and Virtu ITG Australia Limited (AFS License No. 219582)

Hong Kong

Average Daily Turnover (Notional USD)



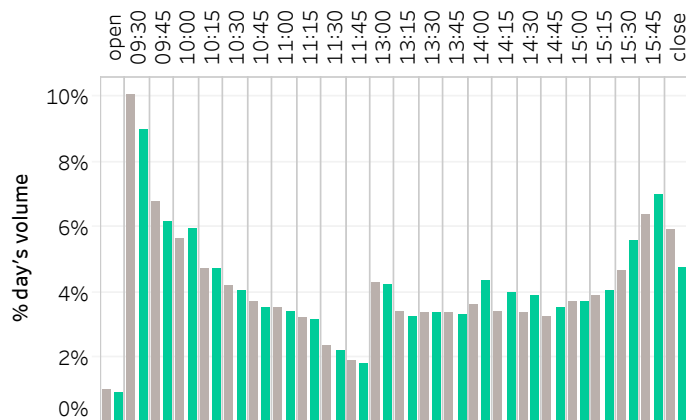
Large Sized Trades (>=5%ADT)



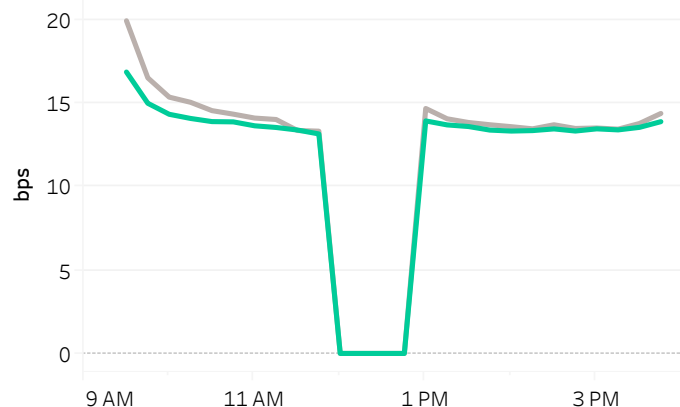
Source data: Virtu Financial

Hong Kong

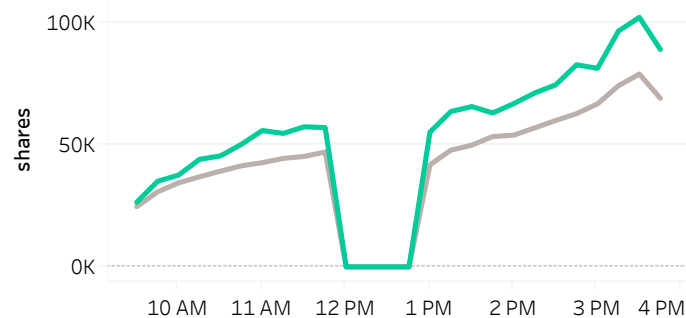
Volume Curve



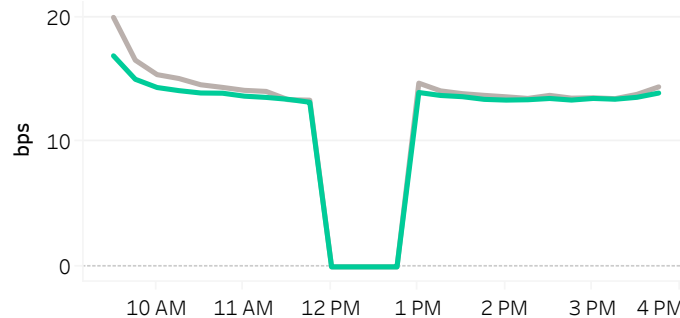
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg March 2024

Spread Bps

	2023				2024								
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHo..	19.3	19.5	19.5	19.6	18.3	18.7	18.1	18.4	17.1	17.0	16.7	16.8	16.2
MidDay	13.7	14.5	14.0	14.6	13.5	14.0	14.4	14.7	13.4	14.2	14.4	13.6	13.5
LastHalfHo..	14.0	14.1	14.1	14.9	13.8	13.9	14.8	15.0	14.3	15.2	15.1	14.3	13.8

One Minute Volatility Bps

FirstHalfHo..	28.1	25.8	25.2	24.1	23.6	25.8	23.8	24.3	24.3	24.1	25.7	26.8	26.1
MidDay	16.2	16.1	15.7	16.2	15.4	15.8	15.6	16.0	15.2	15.9	16.5	16.1	15.8
LastHalfHo..	17.3	16.4	16.3	17.2	15.7	16.1	16.5	16.6	16.9	17.6	17.3	16.4	15.9

Quotesize (shares)

FirstHalfHo..	30,646	31,145	29,974	26,818	25,478	27,693	28,391	27,601	23,593	24,188	25,581	23,164	28,948
MidDay	43,572	50,780	47,975	41,143	42,053	45,912	52,298	46,953	46,472	52,781	52,997	41,722	57,521
LastHalfHo..	77,473	76,329	74,417	64,333	69,285	74,613	78,499	77,442	72,387	70,619	79,360	72,944	95,535

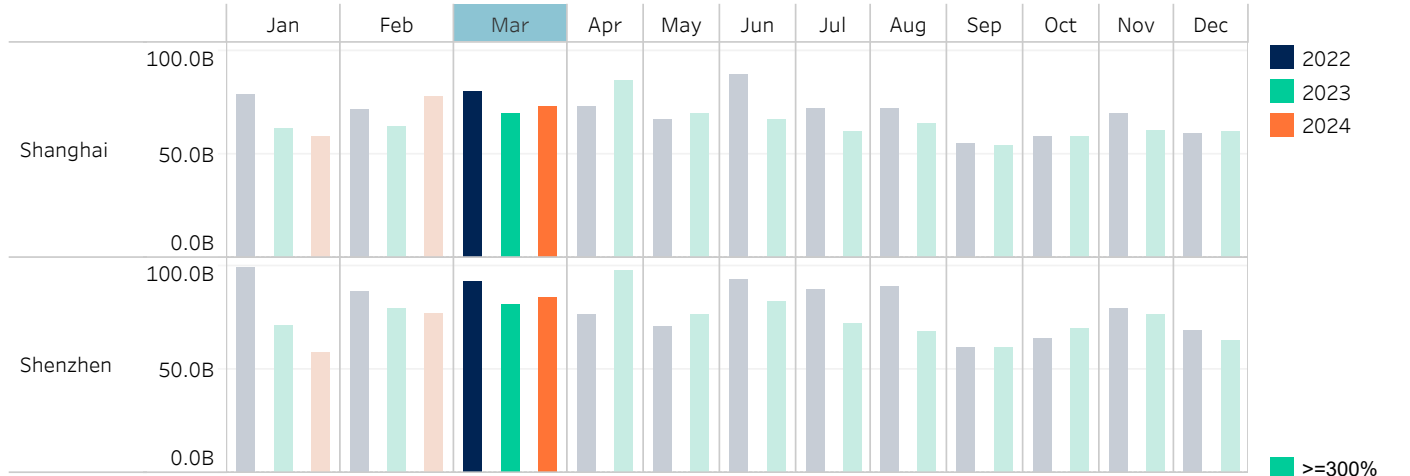
Median used for all metrics

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

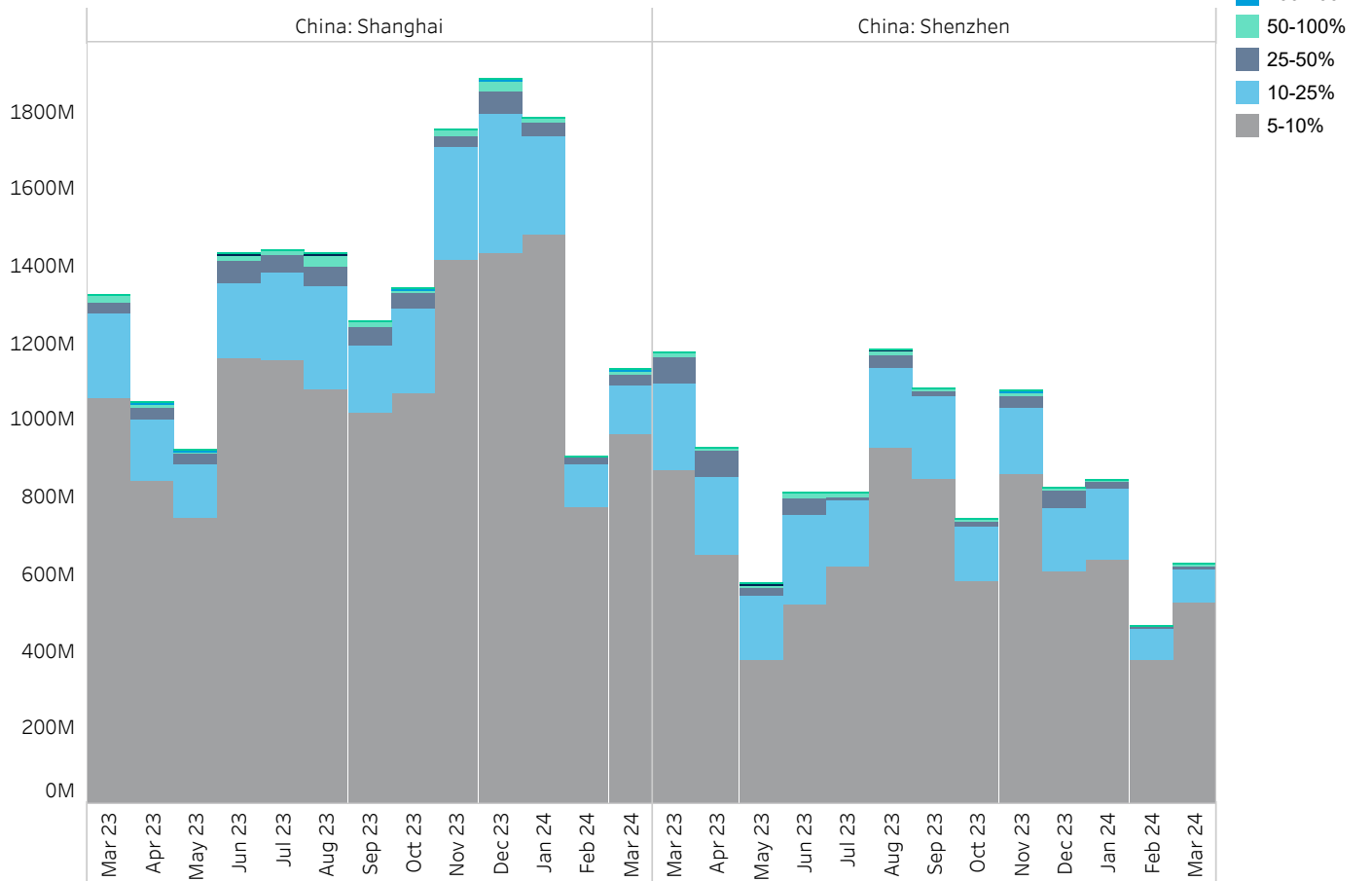
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



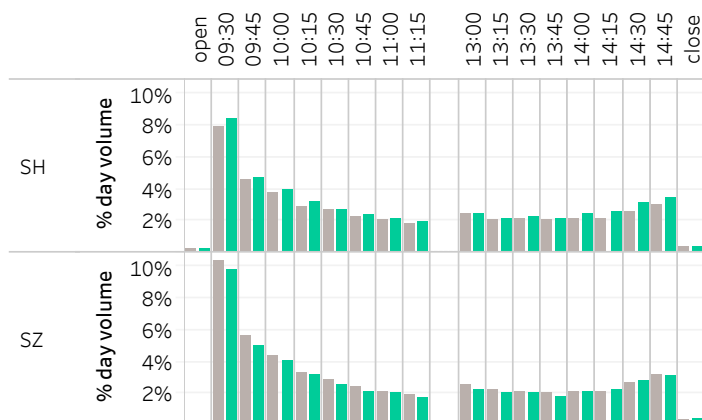
Large Sized Trades (>=5%ADT)



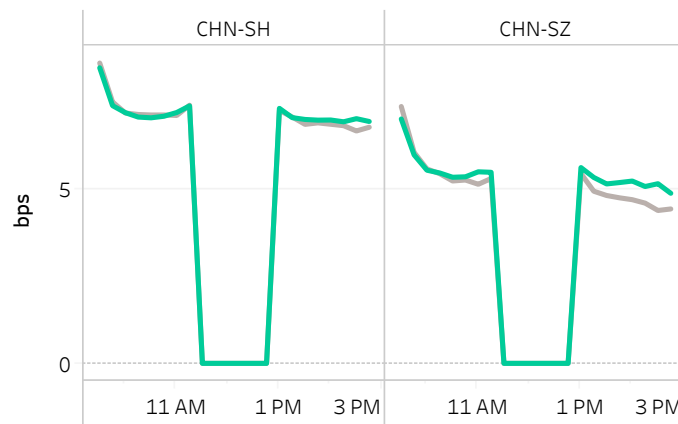
Source data: Virtu Financial

China

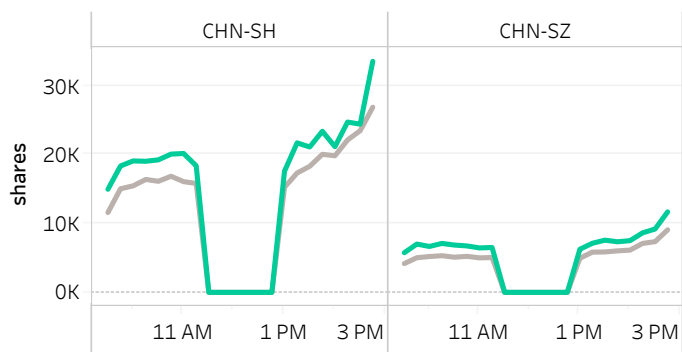
Volume Curve



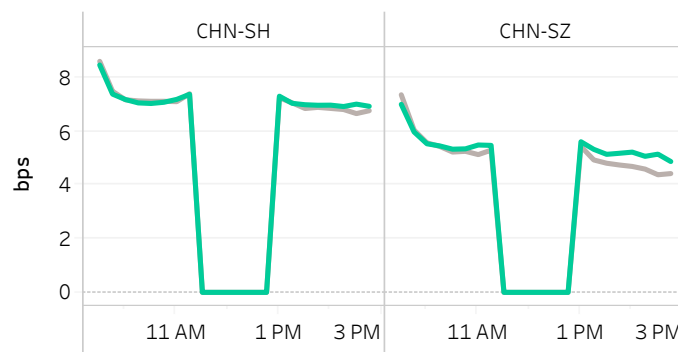
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (Grey line) March 2024 (Green line)

Spread Bps

	CHN-SH						CHN-SZ					
	Oct	Nov	Dec	Jan	Feb	Mar	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHour	8.2	7.5	8.1	8.7	8.9	8.0	7.0	6.4	6.6	7.1	7.4	6.5
MidDay	7.1	6.9	7.4	8.0	7.8	7.1	5.4	5.1	5.5	5.9	6.0	5.4
LastHalfHour	7.1	6.8	7.4	8.2	7.8	7.0	5.0	4.7	5.1	5.8	5.6	5.1

One Minute Volatility Bps

FirstHalfHour	27.6	32.4	25.6	25.6	21.2	23.4	30.2	34.1	28.0	28.2	23.2	25.9
MidDay	17.3	18.8	15.3	13.9	13.0	14.5	15.7	18.9	14.6	13.0	11.3	12.7
LastHalfHour	18.1	17.8	14.5	14.2	12.8	14.7	15.7	15.8	12.6	12.7	10.7	12.1

Quotesize (shares)

FirstHalfHour	12,742	16,573	15,099	13,651	14,145	16,705	5,099	5,595	4,563	4,495	4,979	6,105
MidDay	16,209	21,210	18,639	16,308	16,111	19,611	5,775	6,549	5,263	5,280	5,654	6,860
LastHalfHour	23,440	30,704	25,698	20,444	24,112	29,770	8,647	10,309	8,150	7,099	8,454	10,445

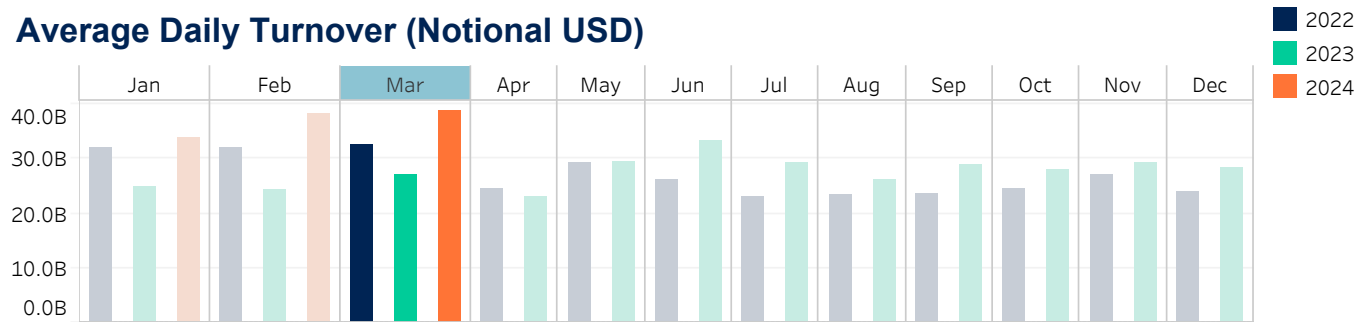
Median used for all metrics

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

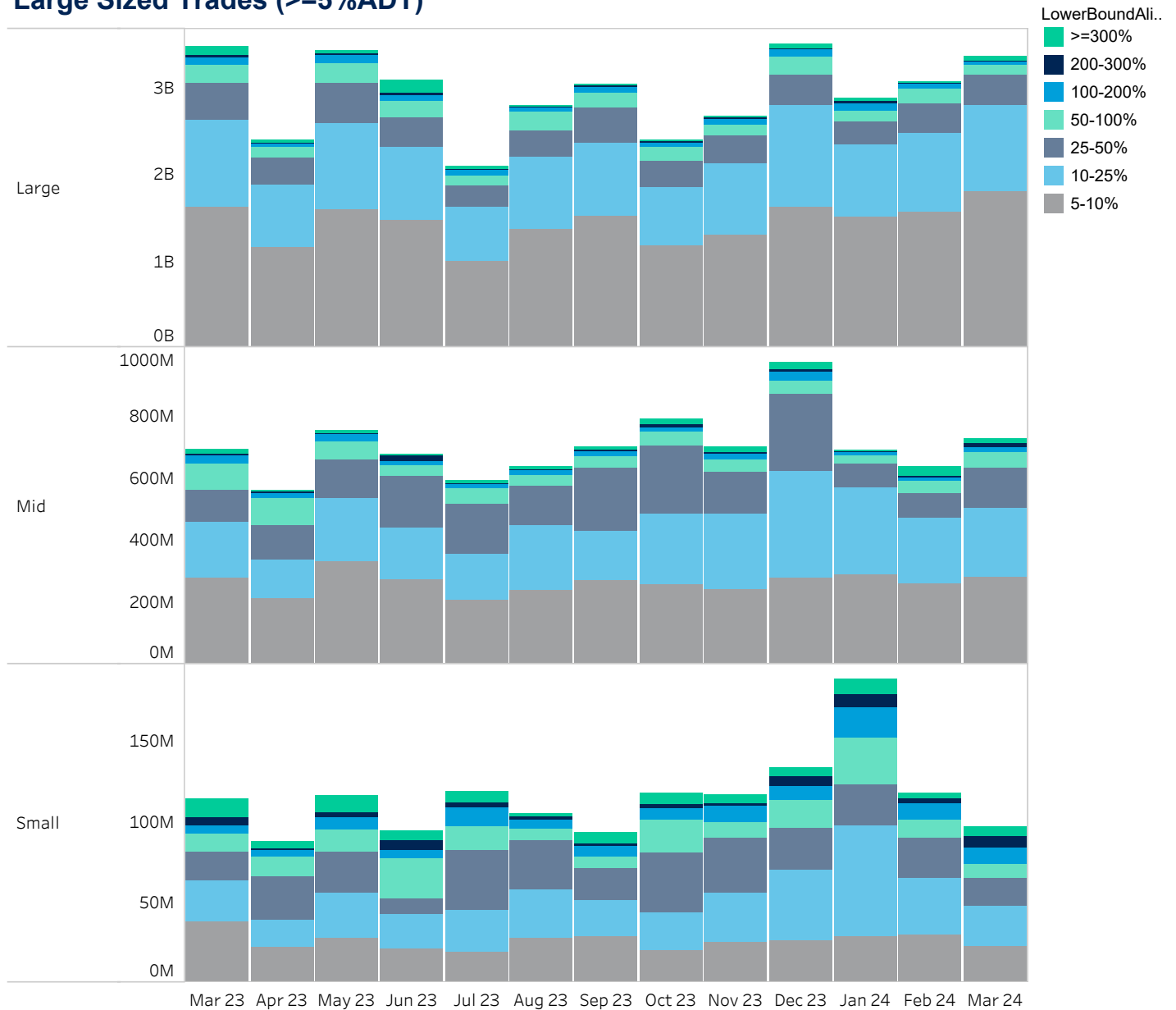
Source data: Virtu Financial

Japan

Average Daily Turnover (Notional USD)



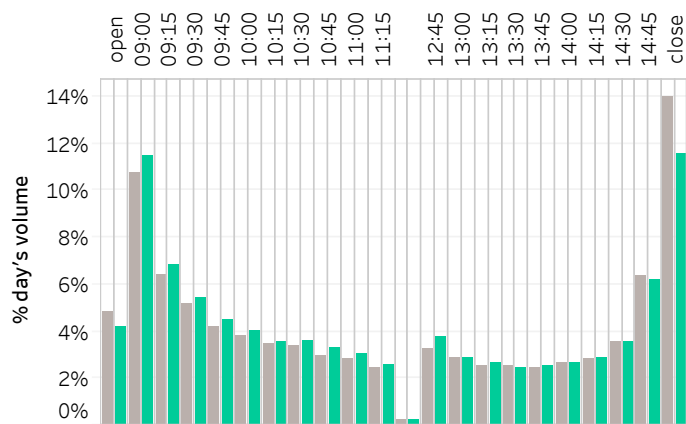
Large Sized Trades (>=5%ADT)



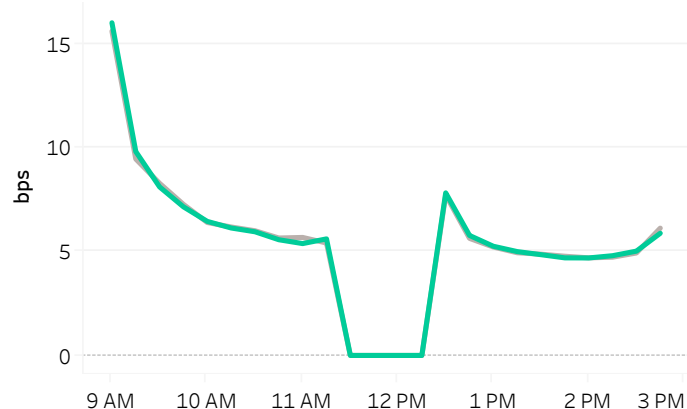
Source data: Virtu Financial

Japan

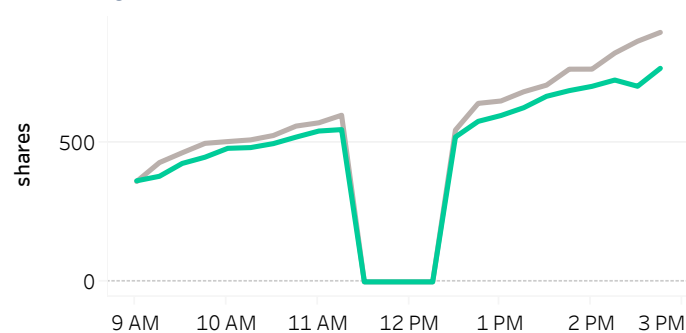
Volume Curve



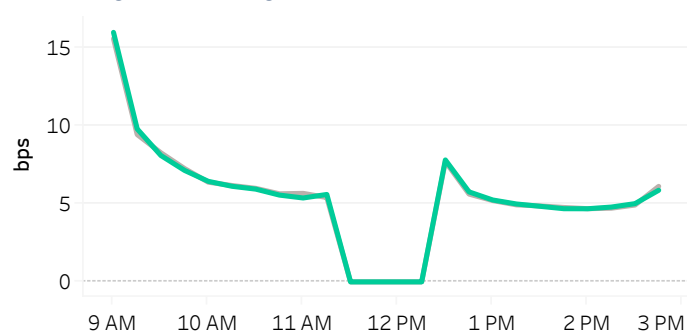
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (grey line) March 2024 (teal line)

Spread Bps

	2023												2024		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
FirstHalfHo..	16.0	15.3	15.5	12.4	11.7	12.2	11.4	13.0	13.5	11.7	11.6	13.1	12.8		
MidDay	9.1	8.5	8.9	5.7	5.2	5.4	5.2	5.8	6.0	5.3	5.3	6.0	5.6		
LastHalfHo..	9.5	9.2	9.2	5.4	5.0	4.9	5.1	5.7	5.5	5.1	4.9	5.6	5.5		

One Minute Volatility Bps

FirstHalfHo..	16.3	15.4	16.4	14.8	14.2	14.8	14.1	16.0	16.8	14.7	14.9	17.1	16.7
MidDay	8.4	7.7	8.5	6.7	5.9	6.1	6.0	7.1	7.3	6.2	6.4	7.3	7.1
LastHalfHo..	9.4	8.9	9.3	7.1	6.6	6.4	6.8	7.9	7.5	7.0	6.8	7.6	7.7

Quotesize (shares)

FirstHalfHo..	556	564	569	427	386	379	388	340	340	357	359	369	369
MidDay	891	951	968	582	569	575	580	494	526	551	555	549	534
LastHalfHo..	1,387	1,495	1,578	860	855	882	829	694	779	750	764	784	739

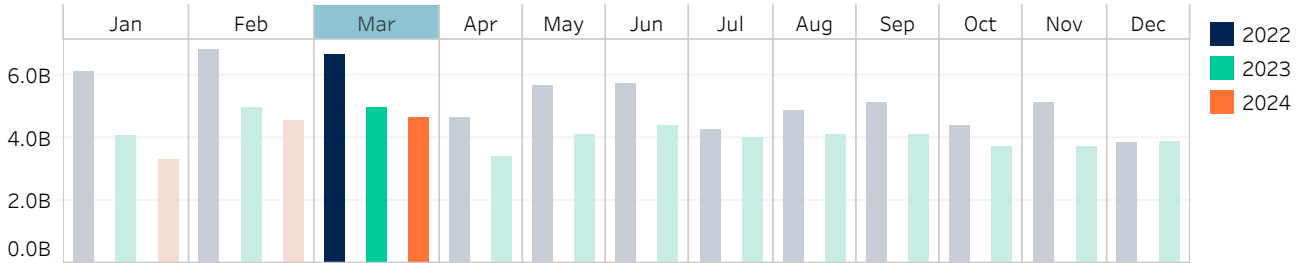
Median used for all metrics

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

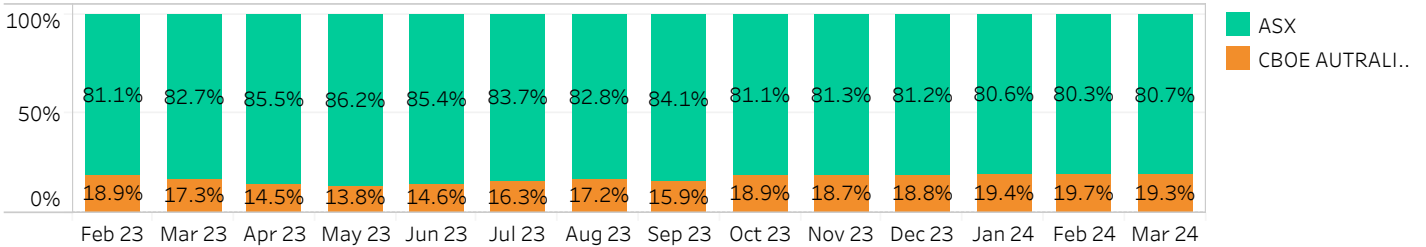
Source data: Virtu Financial

Australia

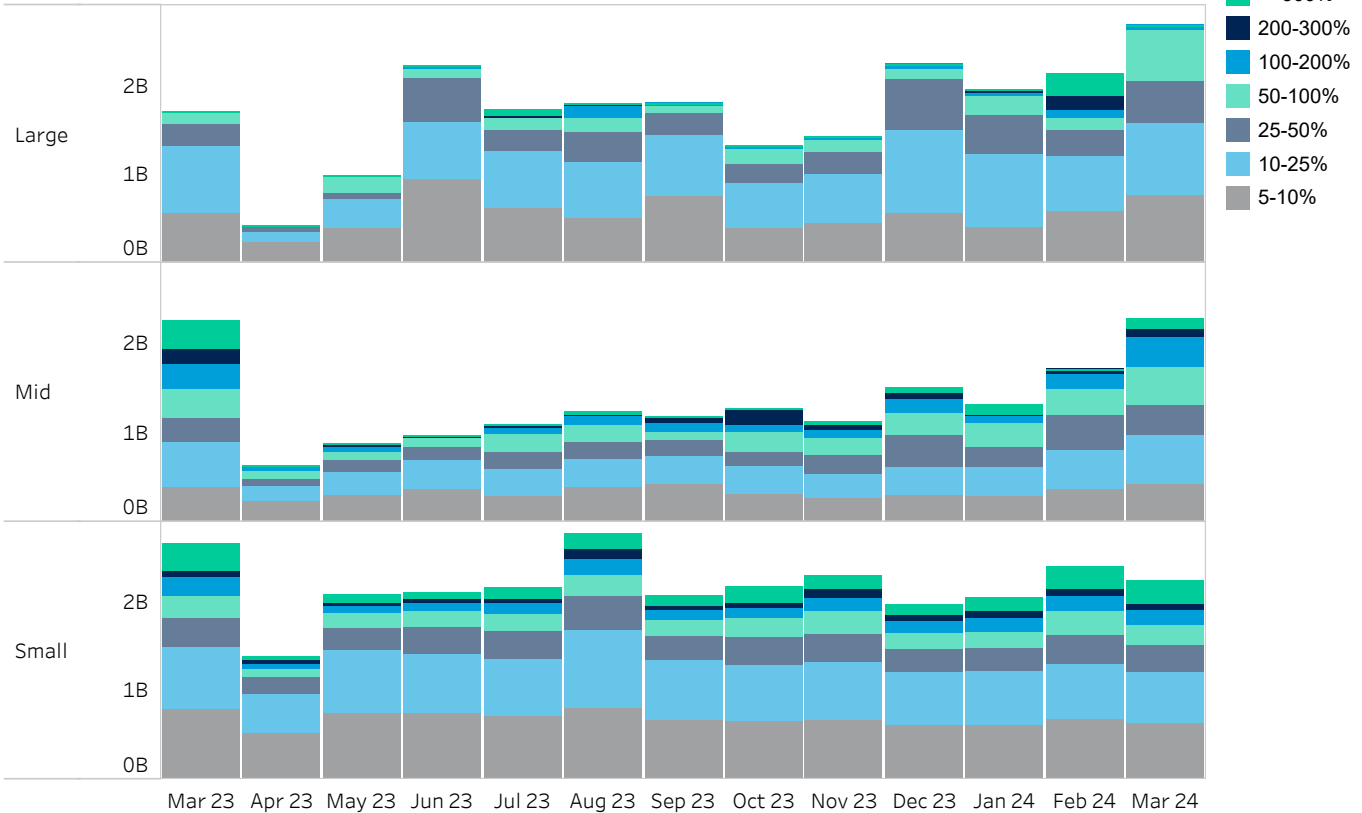
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



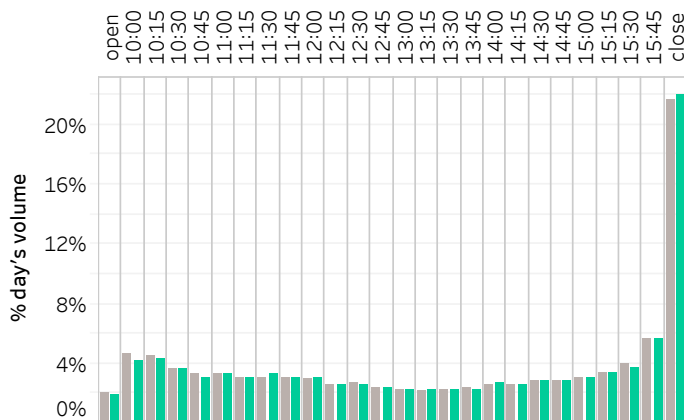
Large Sized Trades (>=5%ADT)



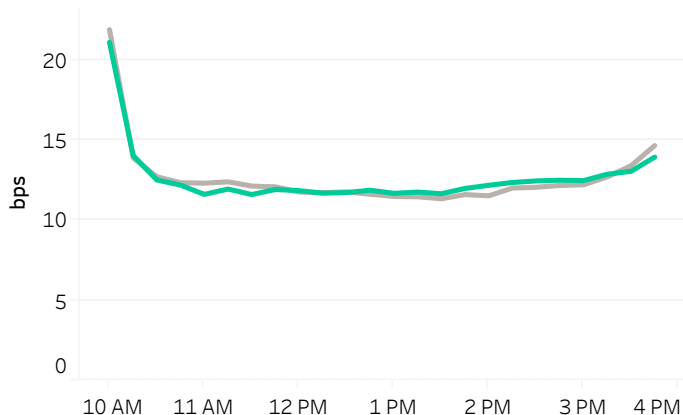
Source data: Virtu Financial

Australia

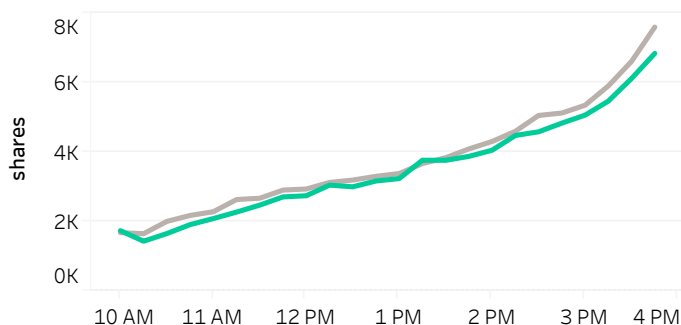
Volume Curve



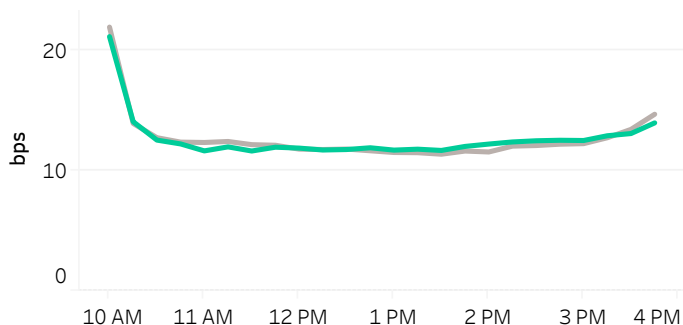
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg March 2024

Spread Bps

	2023												2024		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
FirstHalfHo..	17.4	17.4	17.0	16.6	16.6	16.6	17.0	18.7	18.1	17.6	16.7	17.7	16.7		
MidDay	12.4	12.1	11.6	11.8	11.3	11.1	12.3	13.1	13.1	12.6	12.0	12.5	11.9		
LastHalfHo..	14.3	14.3	13.7	14.0	13.9	14.1	14.7	15.4	15.1	14.1	13.7	13.7	13.5		

One Minute Volatility Bps

FirstHalfHo..	21.7	20.6	19.1	18.7	18.0	18.9	17.9	19.4	18.7	18.3	16.7	19.2	18.2
MidDay	10.7	9.5	9.2	9.8	9.5	9.7	9.6	10.6	10.8	10.1	9.5	10.5	10.0
LastHalfHo..	13.2	12.4	11.9	12.5	11.9	12.4	12.7	13.5	13.3	12.5	11.7	12.6	12.2

Quotesize (shares)

FirstHalfHo..	1,864	2,108	1,897	1,901	1,672	1,703	1,756	1,601	1,443	1,515	1,528	1,587	1,547
MidDay	3,759	3,968	3,313	3,860	3,520	3,310	3,720	3,289	3,147	3,258	3,388	3,303	3,261
LastHalfHo..	8,215	8,141	7,163	8,042	7,173	7,405	7,388	7,156	6,633	6,873	6,851	6,654	6,518

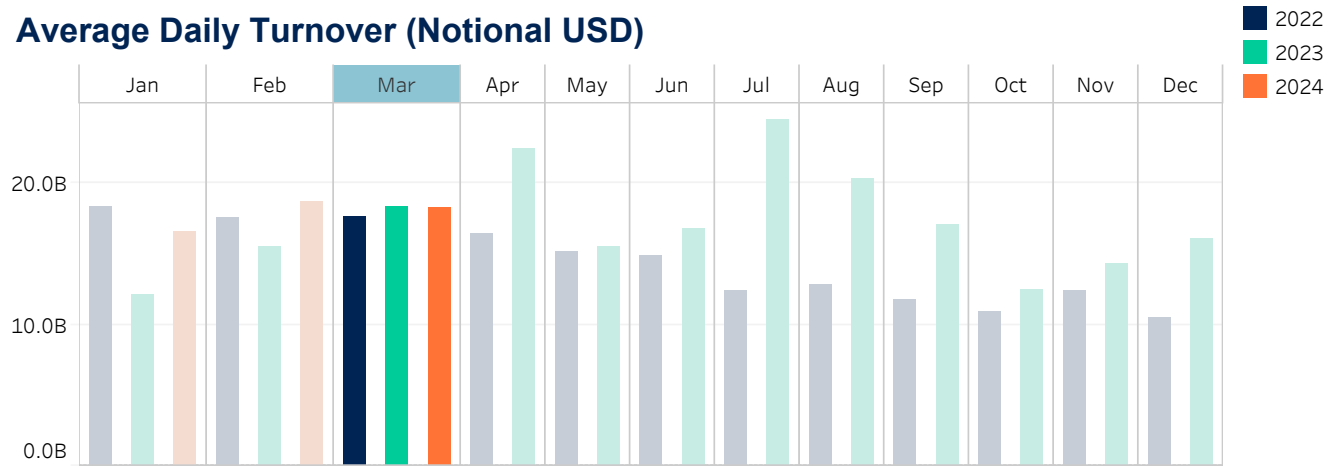
Median used for all metrics

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

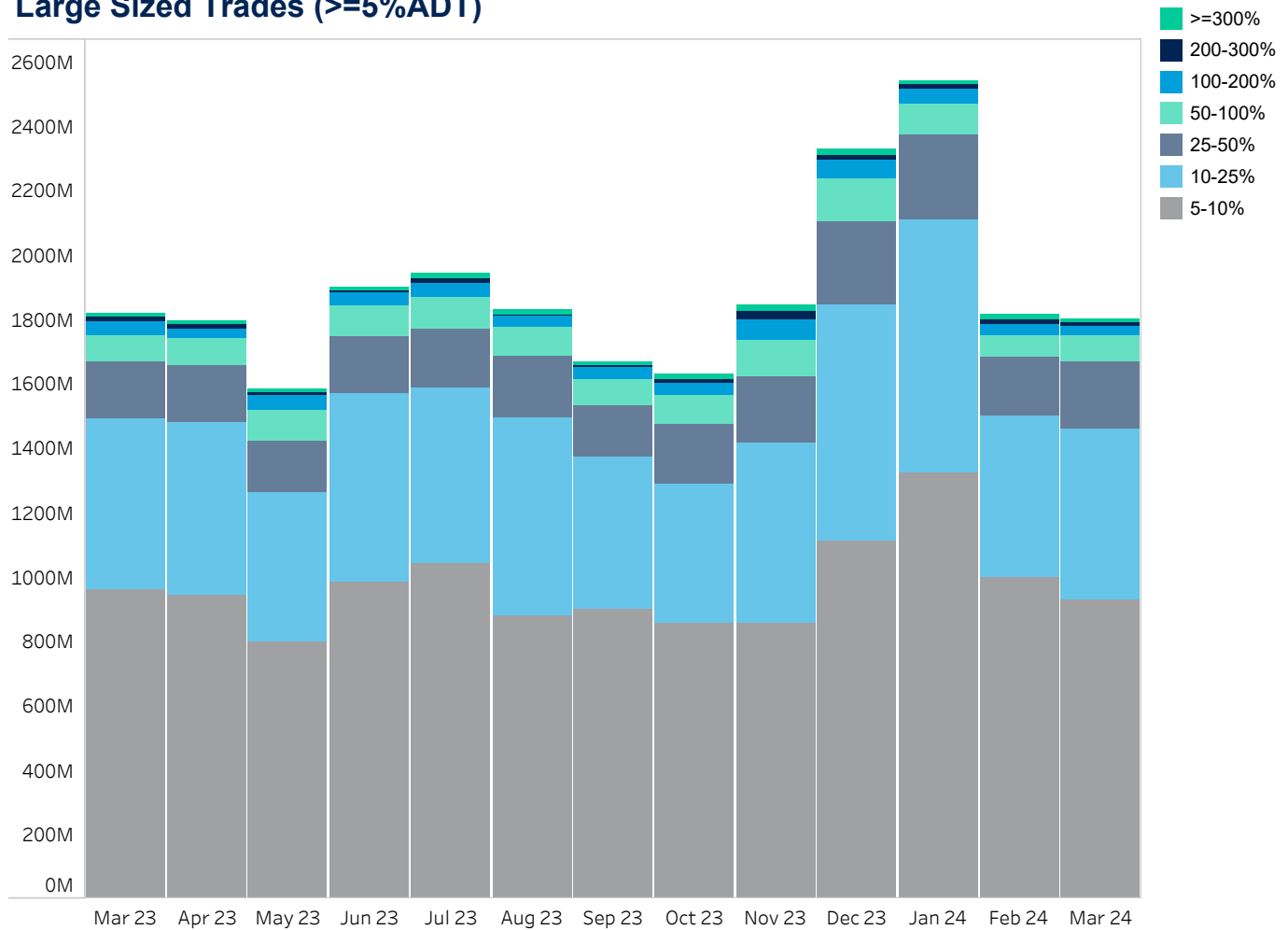
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



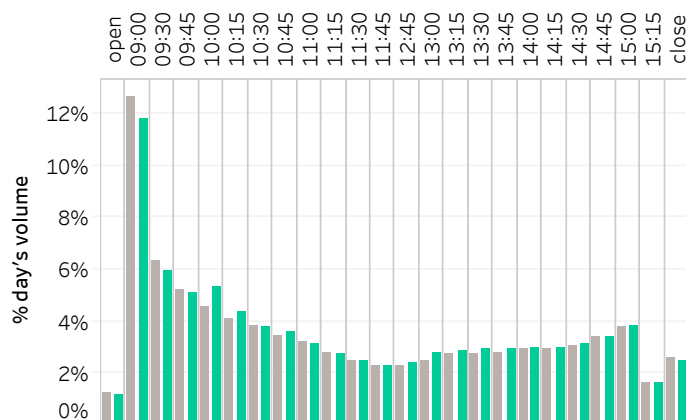
Large Sized Trades (>=5%ADT)



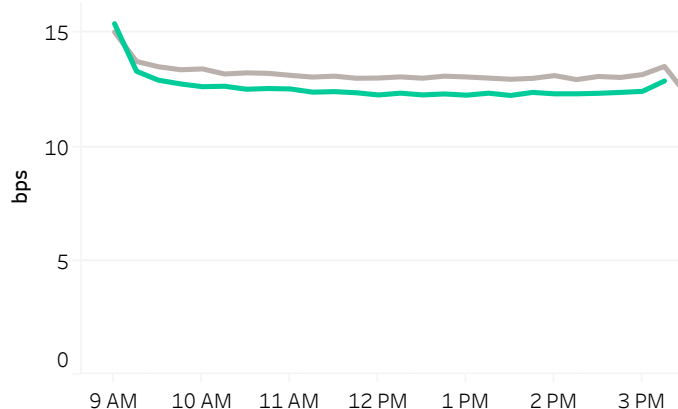
Source data: Virtu Financial

Korea

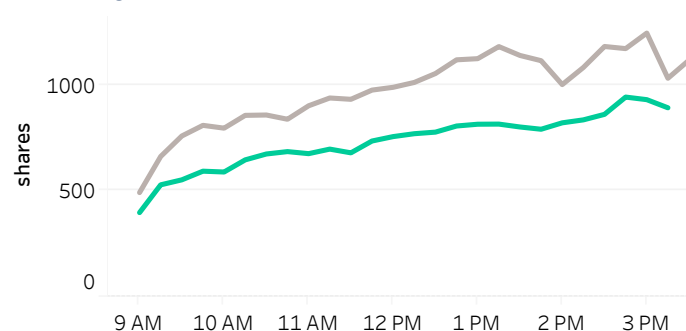
Volume Curve



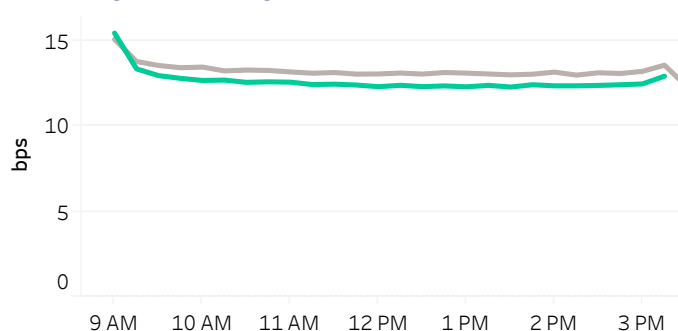
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (brown line), March 2024 (green line)

Spread Bps

	2023				2024								
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHo..	14.7	14.3	14.0	13.7	14.3	14.2	13.9	14.5	14.5	14.3	15.1	15.6	14.3
MidDay	13.4	12.9	12.9	12.9	13.2	12.8	12.5	12.8	13.1	12.8	13.6	13.6	12.4
LastHalfHo..	13.5	13.1	13.0	13.0	13.3	12.8	12.6	13.2	13.4	13.3	13.8	13.9	12.6

One Minute Volatility Bps

FirstHalfHo..	24.9	25.6	22.7	21.5	27.1	26.7	23.3	27.5	25.1	22.2	25.7	31.4	27.9
MidDay	15.0	14.8	14.2	14.0	14.9	14.3	14.0	14.6	15.1	14.5	15.7	16.4	15.7
LastHalfHo..	16.0	15.9	14.9	14.8	16.2	15.2	15.3	16.1	14.9	16.3	17.1	17.6	16.5

Quotesize (shares)

FirstHalfHo..	595.2	578.5	579.9	634.3	563.4	491.2	491.0	443.8	457.6	535.9	445.6	465.2	451.8
MidDay	1,025.1	1,014.3	1,165.6	1,249.0	1,023.8	875.5	922.8	808.1	760.3	895.4	806.7	749.1	773.4
LastHalfHo..	1,390.2	1,189.4	1,276.8	1,443.6	1,164.2	1,108.1	1,065.7	911.6	920.9	1,010.4	871.0	901.7	952.1

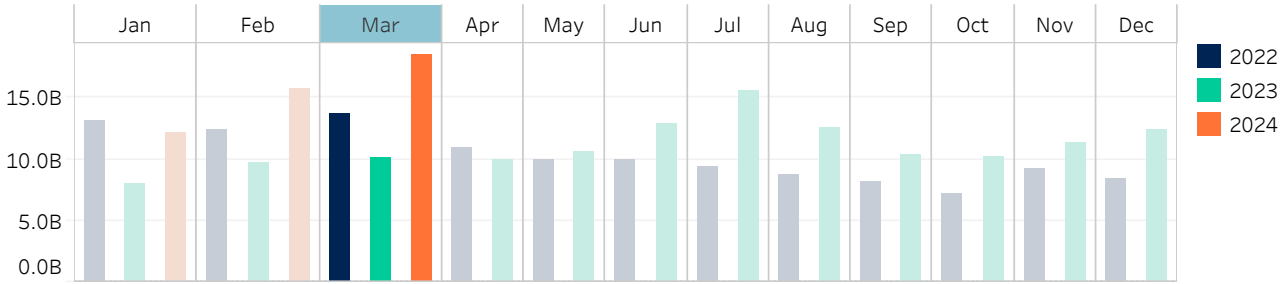
Median used for all metrics

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

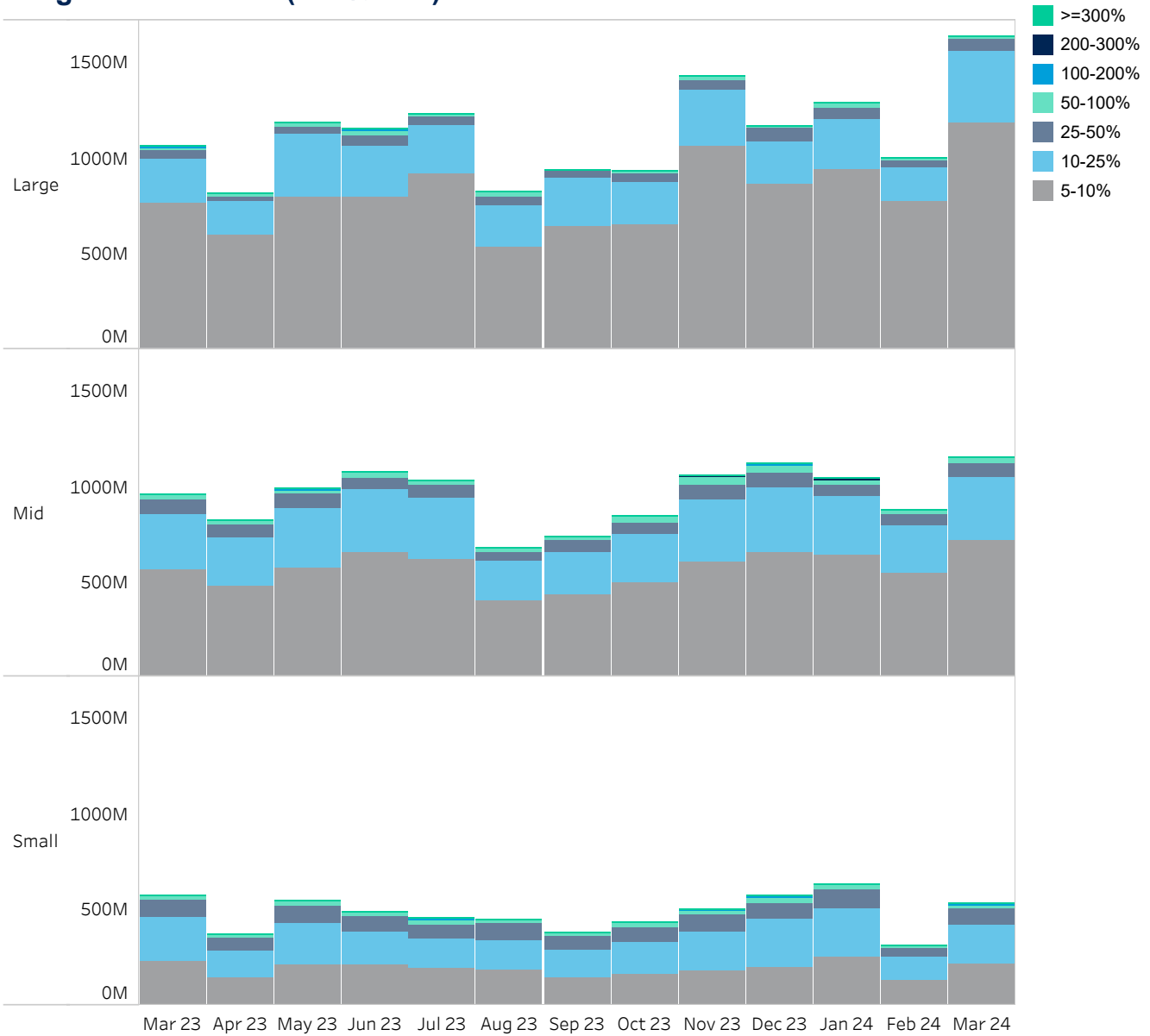
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



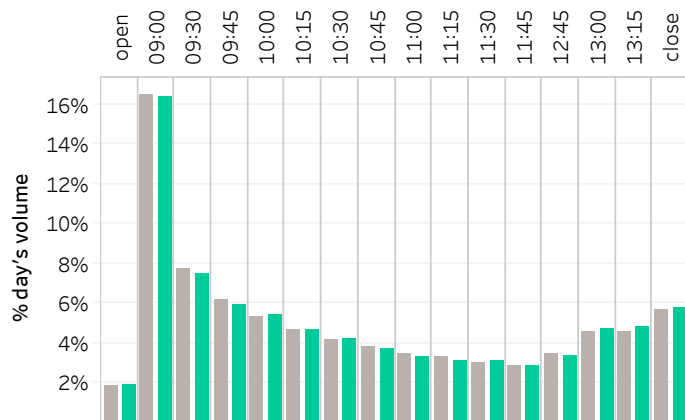
Large Sized Trades (>=5%ADT)



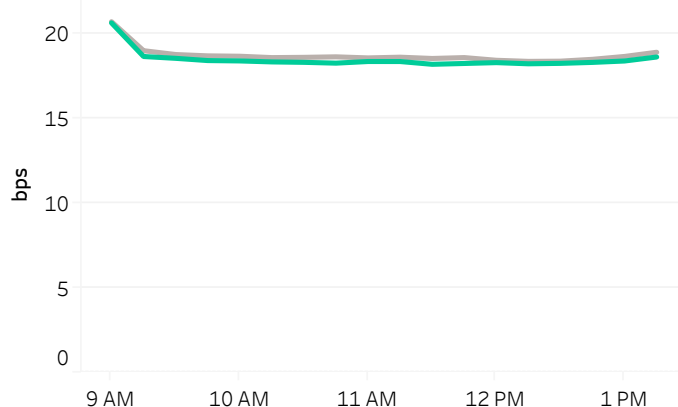
Source data: Virtu Financial

Taiwan

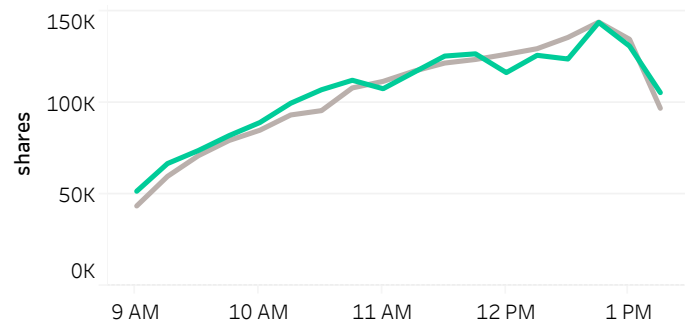
Volume Curve



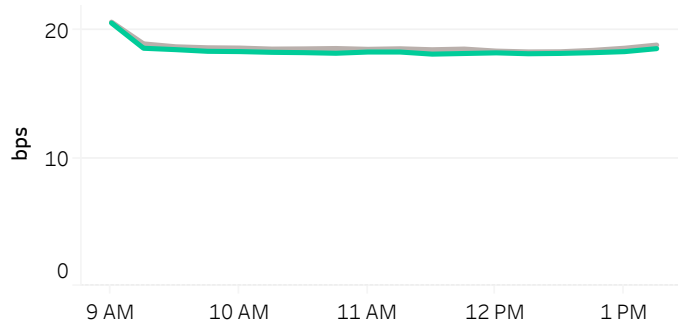
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (brown line) March 2024 (green line)

Spread Bps

	2023				2024								
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHo..	20.1	19.9	19.8	19.3	19.6	20.5	19.9	20.3	19.6	19.5	19.6	19.5	19.5
MidDay	19.0	18.9	18.2	17.8	18.0	18.8	18.8	19.0	18.2	18.6	18.6	18.3	18.3
LastHalfHo..	19.1	19.0	18.3	18.1	18.3	18.8	19.0	19.1	18.6	18.7	18.8	18.3	18.6

One Minute Volatility Bps

FirstHalfHo..	31.6	30.3	31.3	31.2	34.5	37.1	32.6	33.3	29.9	30.6	32.8	31.3	32.7
MidDay	29.1	28.8	28.1	28.4	31.5	36.4	29.8	31.1	26.4	27.8	29.2	28.6	28.9
LastHalfHo..	29.6	29.2	28.3	28.9	32.6	34.4	29.9	31.5	27.6	28.1	30.3	28.7	30.4

Quotesize (shares)

FirstHalfHo..	61,802	53,240	60,150	57,819	51,257	44,628	44,984	46,915	50,161	52,263	57,046	48,244	57,635
MidDay	138,448	125,681	133,760	139,513	105,466	95,368	103,352	109,280	111,917	104,185	124,365	117,027	110,699
LastHalfHo..	124,571	121,314	127,420	122,742	102,051	100,542	105,527	109,997	124,934	124,186	118,507	116,047	117,591

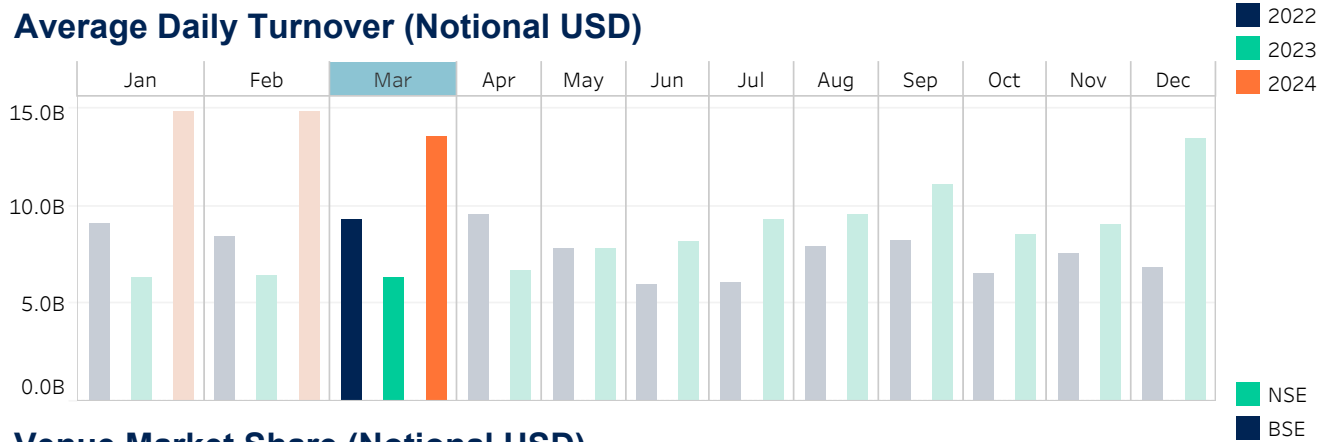
Median used for all metrics

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

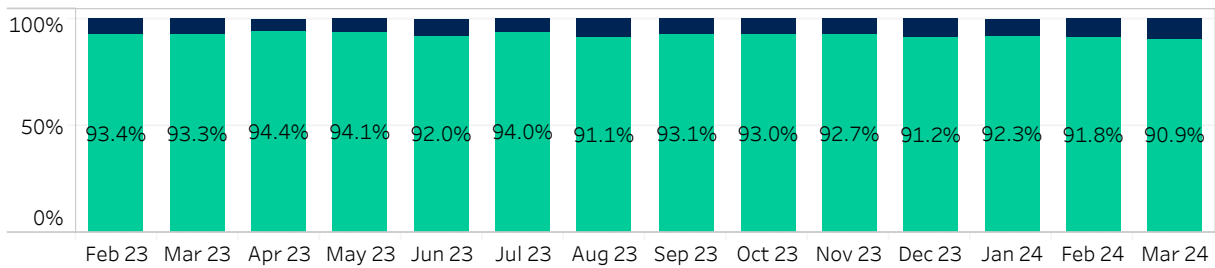
Source data: Virtu Financial

India

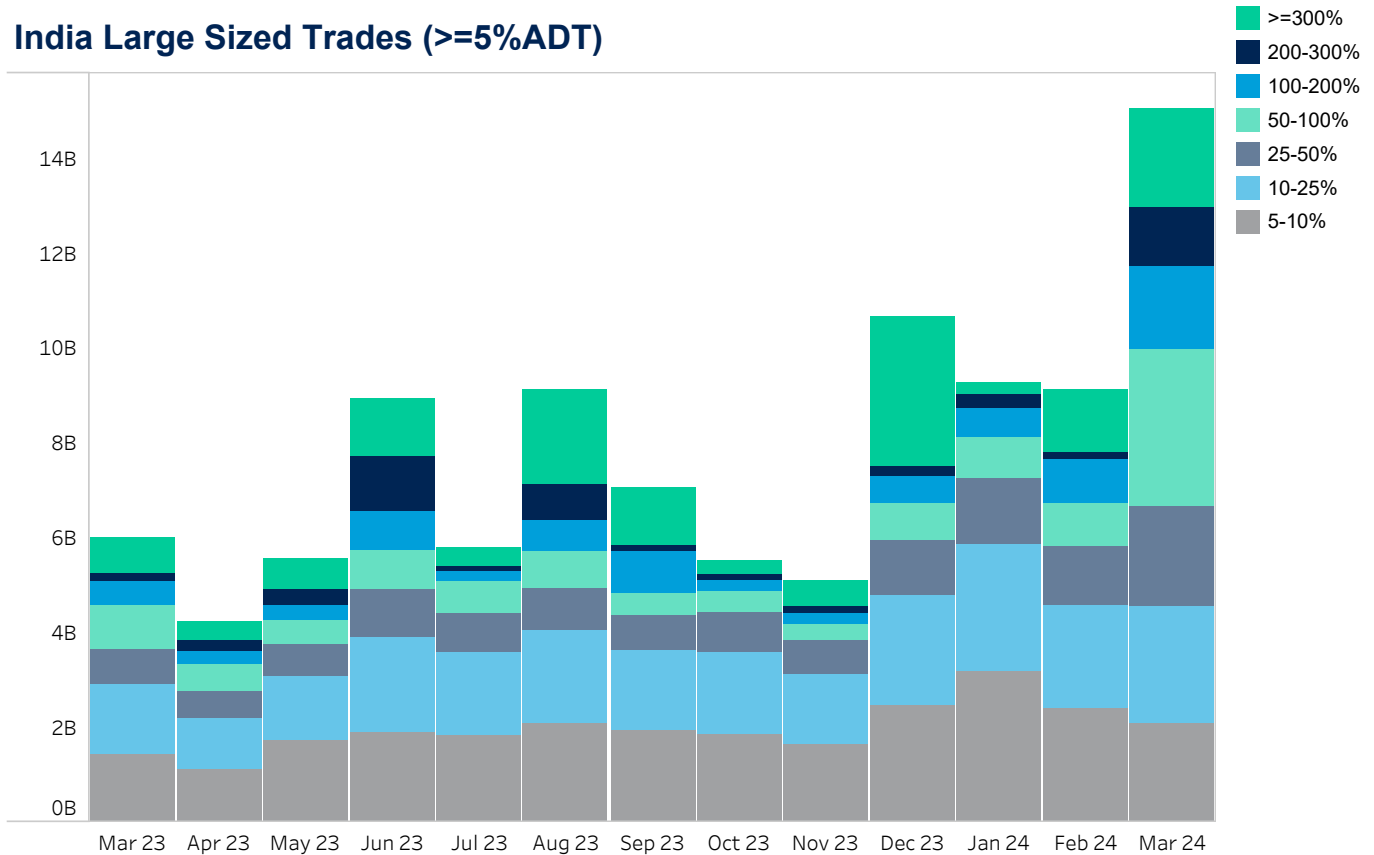
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



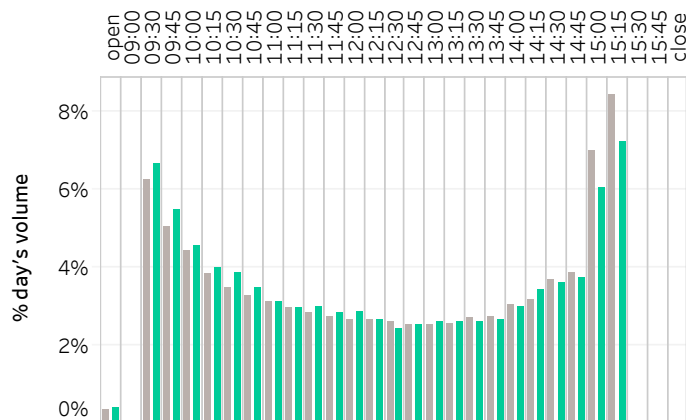
India Large Sized Trades (>=5%ADT)



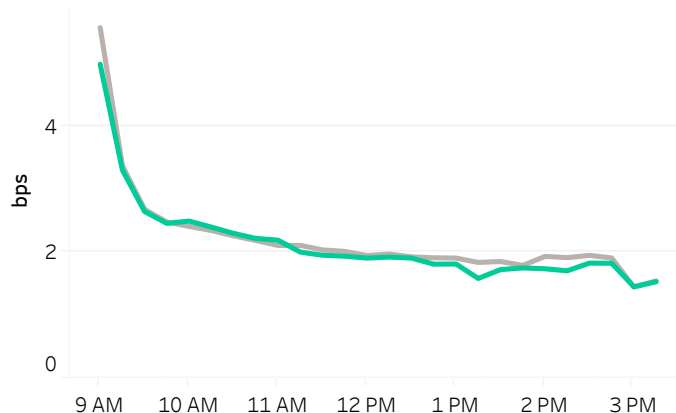
Source data: Virtu Financial

India

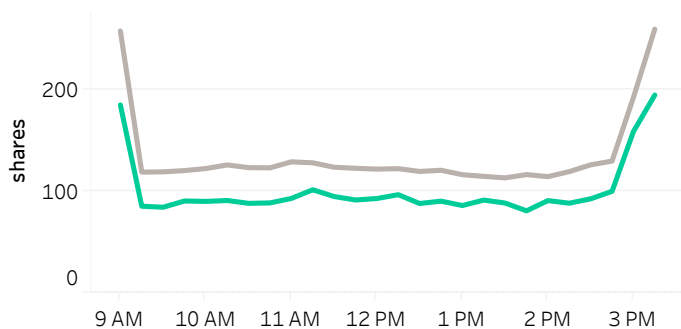
Volume Curve



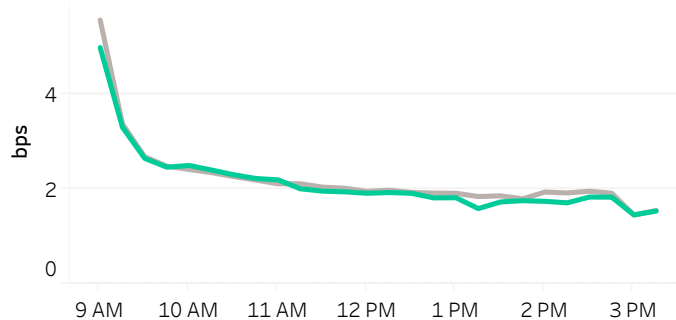
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg March 2024

Spread Bps

	2023						2024						
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHo..	3.4	3.4	3.3	3.1	3.5	3.5	3.5	3.4	3.2	3.4	3.5	3.5	3.3
MidDay	2.1	2.1	2.0	1.9	1.9	1.9	2.0	1.8	2.0	1.9	1.9	2.0	1.9
LastHalfHo..	1.7	1.7	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5

One Minute Volatility Bps

FirstHalfHo..	19.1	17.6	16.2	16.3	17.2	16.6	15.2	17.3	14.7	17.9	19.6	19.6	19.5
MidDay	8.2	7.7	7.4	7.6	7.1	7.0	6.8	7.6	7.1	8.0	8.7	9.1	8.9
LastHalfHo..	10.5	9.9	9.6	9.6	9.1	9.2	9.1	9.5	8.7	10.5	10.8	11.2	12.1

Quotesize (shares)

FirstHalfHo..	123.5	133.9	142.2	143.1	131.7	114.8	117.2	112.5	108.1	118.4	102.2	90.9	91.8
MidDay	124.2	143.1	151.0	151.7	124.1	118.6	120.7	108.5	116.7	118.3	99.1	90.4	91.0
LastHalfHo..	253.0	256.4	262.0	268.0	231.3	206.0	230.8	197.4	229.1	196.5	182.0	169.3	188.1

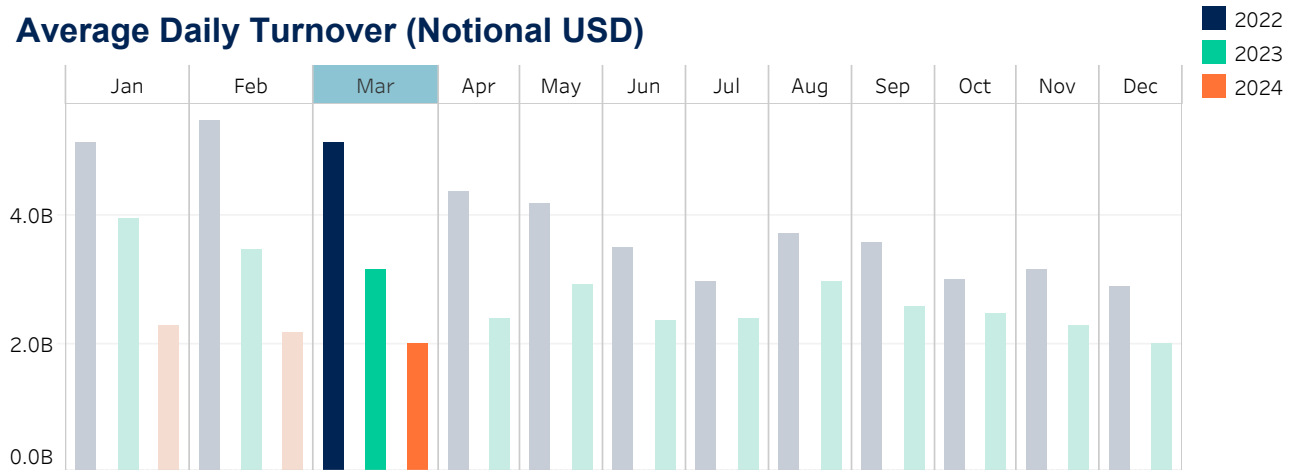
Median used for all metrics

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

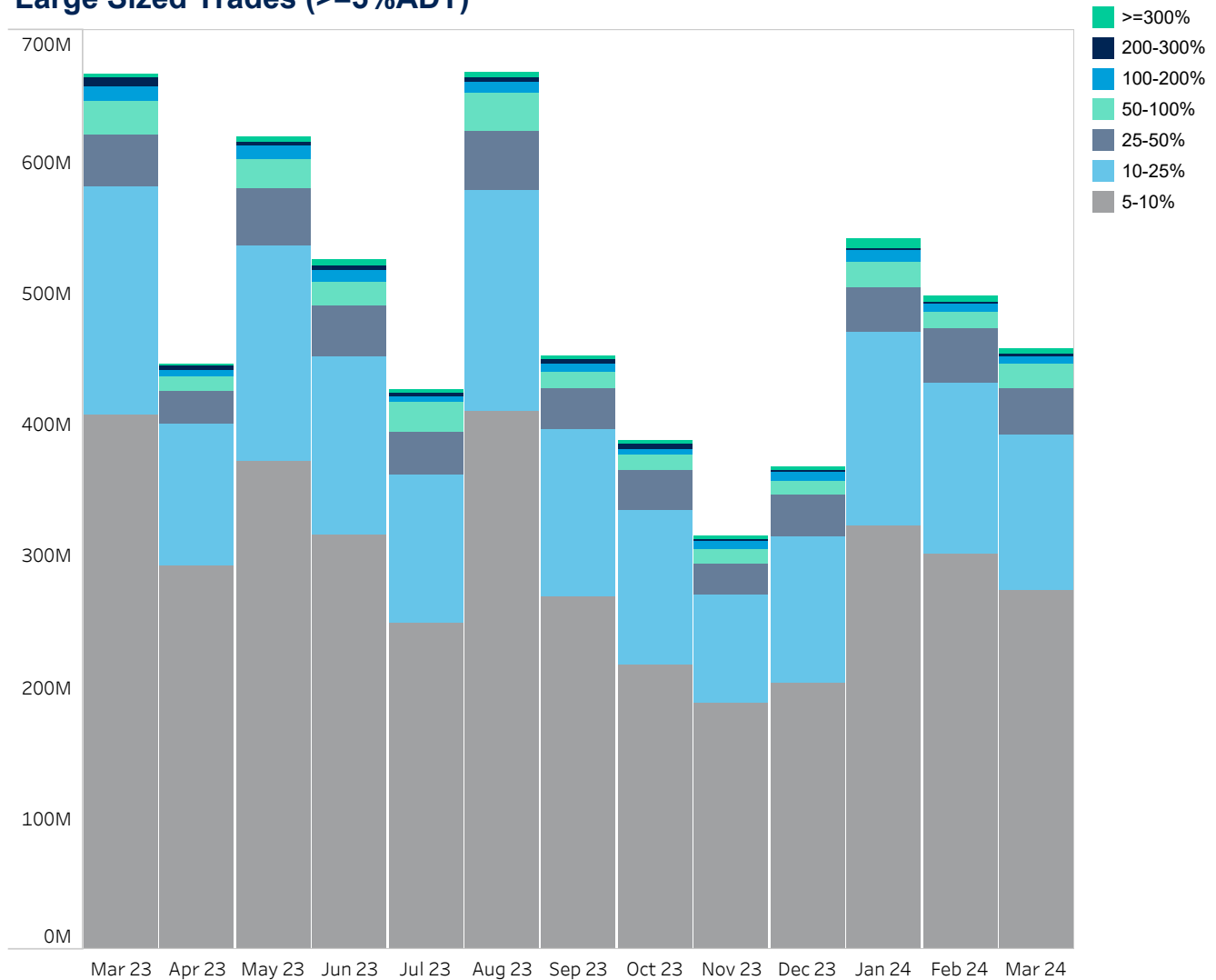
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



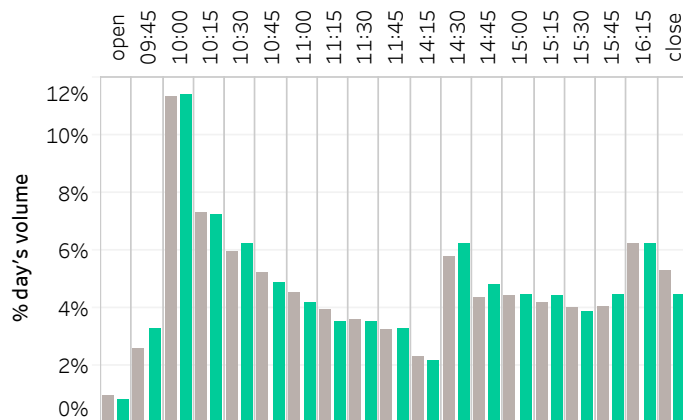
Large Sized Trades (>=5%ADT)



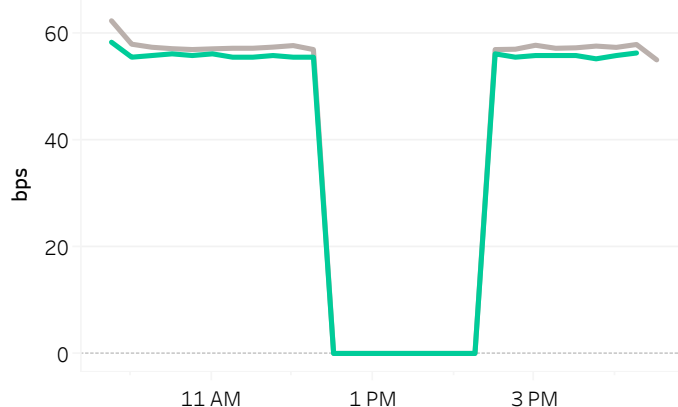
Source data: Virtu Financial

Thailand

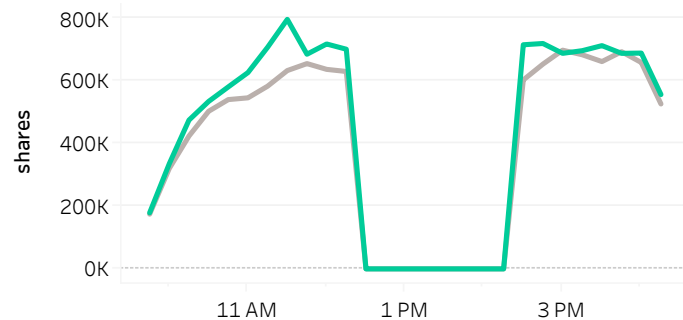
Volume Curve



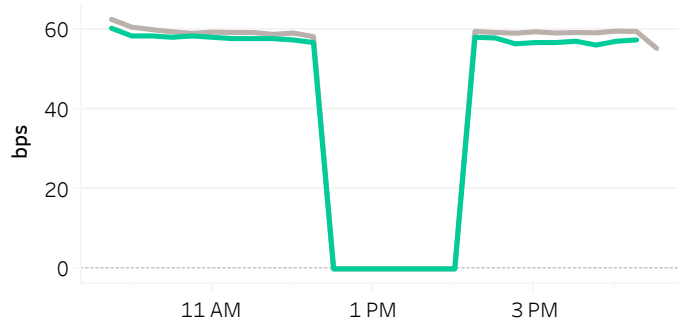
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg March 2024

Spread Bps

	2023				2024								
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
FirstHalfHo..	59.5	59.2	65.1	65.6	61.9	62.3	61.9	64.3	62.7	64.0	61.2	60.1	58.8
MidDay	56.0	55.8	58.4	59.3	56.7	56.3	58.7	59.3	58.3	59.2	57.6	57.0	56.2
LastHalfHo..	56.7	56.0	58.7	59.3	58.0	57.0	59.0	59.3	59.0	51.4	58.3	57.3	56.3

One Minute Volatility Bps

FirstHalfHo..	67.8	60.8	63.9	63.5	60.4	61.7	61.2	64.3	63.5	63.8	61.2	62.3	60.4
MidDay	57.6	57.0	60.4	60.8	58.7	58.3	60.1	60.4	60.4	60.4	59.3	58.1	57.6
LastHalfHo..	58.3	57.6	60.1	60.8	59.0	58.7	59.0	60.8	60.4	51.4	59.3	58.1	57.6

Quotesize (shares)

FirstHalfHo..	219,491	200,957	156,753	157,282	170,264	205,336	202,658	146,123	160,913	162,686	190,460	187,498	201,086
MidDay	634,271	624,930	536,008	510,989	542,854	699,283	749,767	485,941	528,048	602,762	686,060	674,355	709,700
LastHalfHo..	552,716	570,432	472,021	490,710	518,167	619,275	626,196	465,624	501,806	371,650	597,307	602,884	611,971

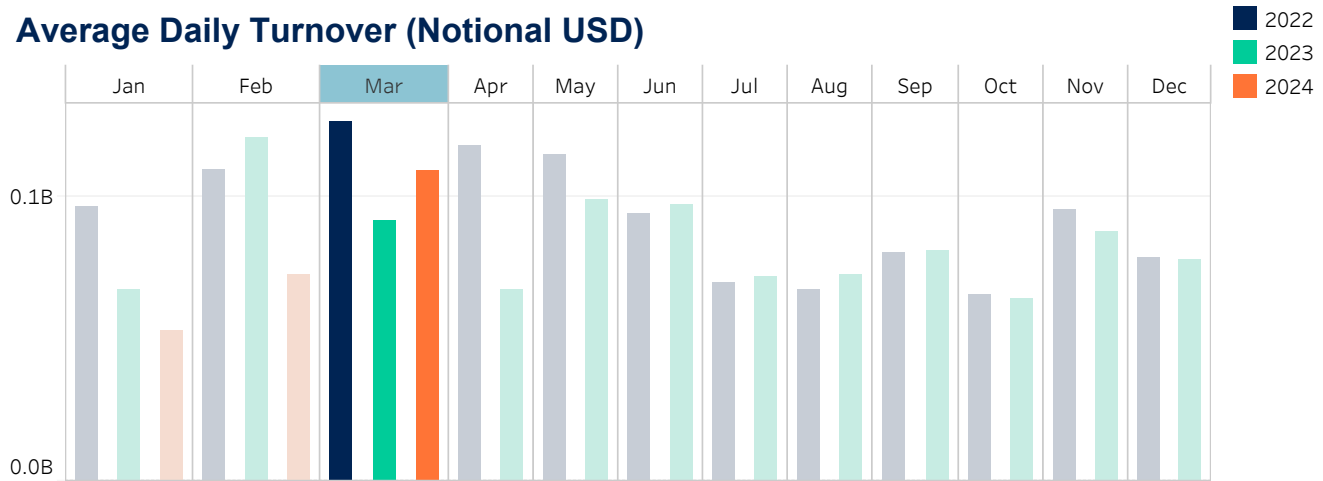
Median used for all metrics

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

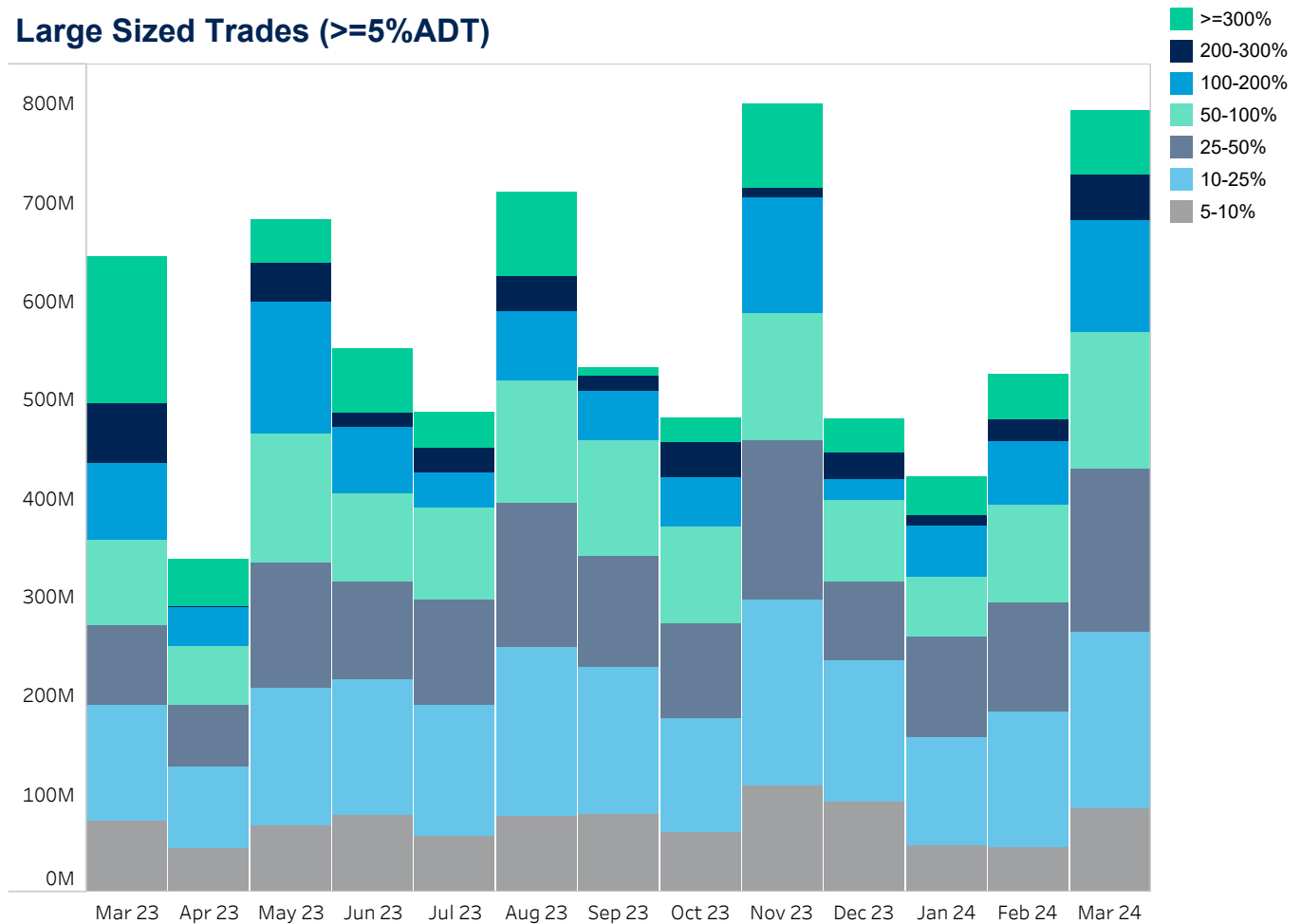
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



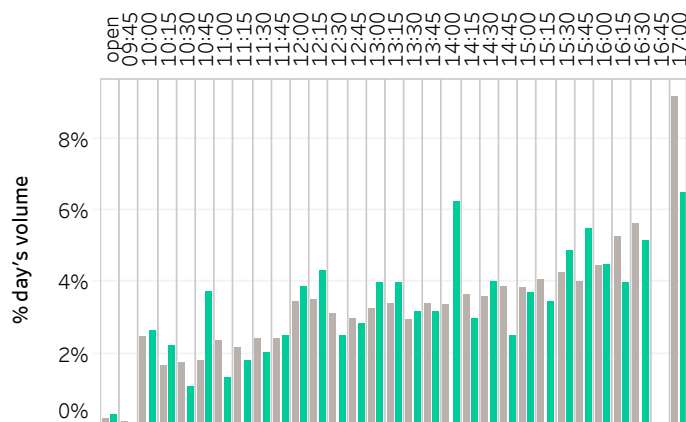
Large Sized Trades (>=5%ADT)



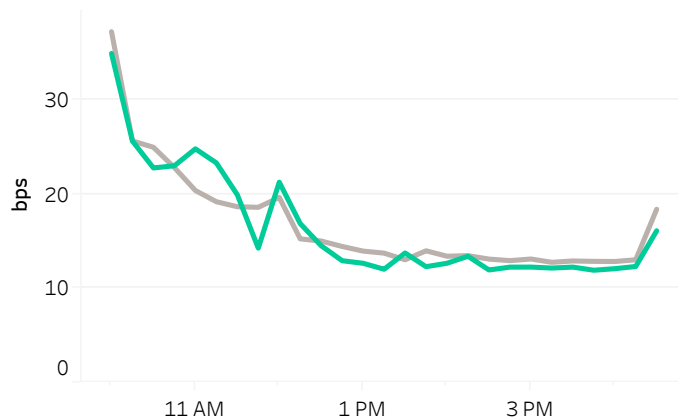
Source data: Virtu Financial

New Zealand

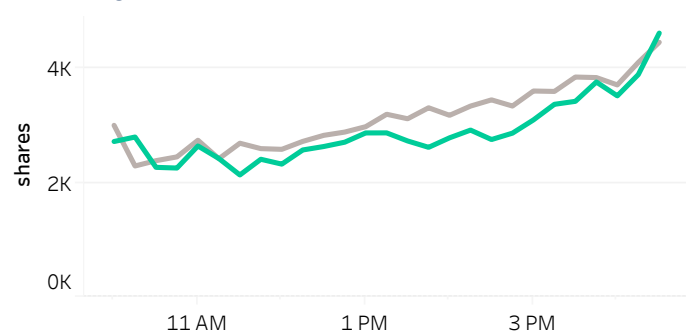
Volume Curve



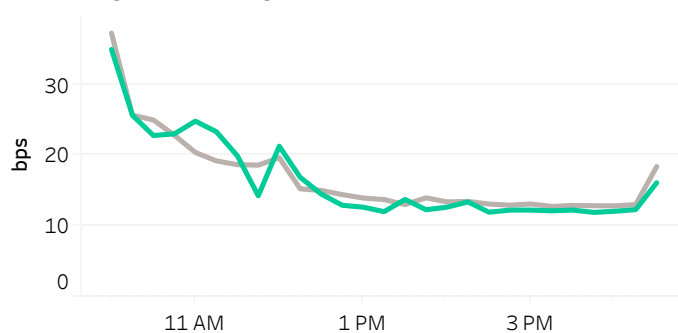
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg March 2024

Spread Bps

	2023												2024		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
FirstHalfHo..	32.4	23.3	33.5	23.1	27.3	26.0	30.3	28.2	28.9	35.4	37.0	35.1	31.2		
MidDay	13.5	13.8	13.7	13.3	13.5	14.5	12.4	14.7	14.3	16.7	17.1	19.6	12.7		
LastHalfHo..	17.5	18.4	17.4	17.7	17.9	18.0	16.3	19.7	18.1	18.6	22.2	22.5	17.1		

One Minute Volatility Bps

FirstHalfHo..	23.1	19.0	18.6	15.9	18.4	19.0	20.9	23.1	19.9	19.4	29.1	28.3	23.8
MidDay	13.8	15.2	13.3	13.3	12.8	13.7	12.5	15.0	14.6	16.4	17.2	19.2	12.3
LastHalfHo..	19.7	19.0	18.2	18.5	18.3	18.4	19.4	20.8	19.6	19.3	22.5	23.4	20.4

Quotesize (shares)

FirstHalfHo..	2,470	2,669	2,496	2,658	2,980	2,981	2,681	3,043	2,397	2,093	2,584	3,199	2,413
LastHalfHo..	4,537	5,071	4,691	5,091	4,326	4,567	3,988	4,171	4,335	4,150	4,284	4,516	4,518
MidDay	3,092	3,102	3,512	3,372	3,016	3,363	3,098	3,456	2,624	2,939	2,784	3,414	2,746

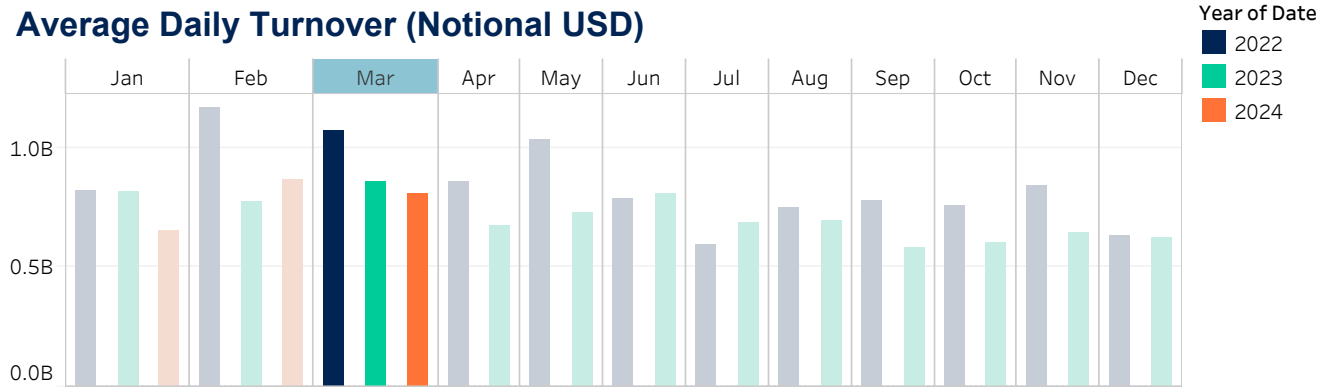
Median used for all metrics

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

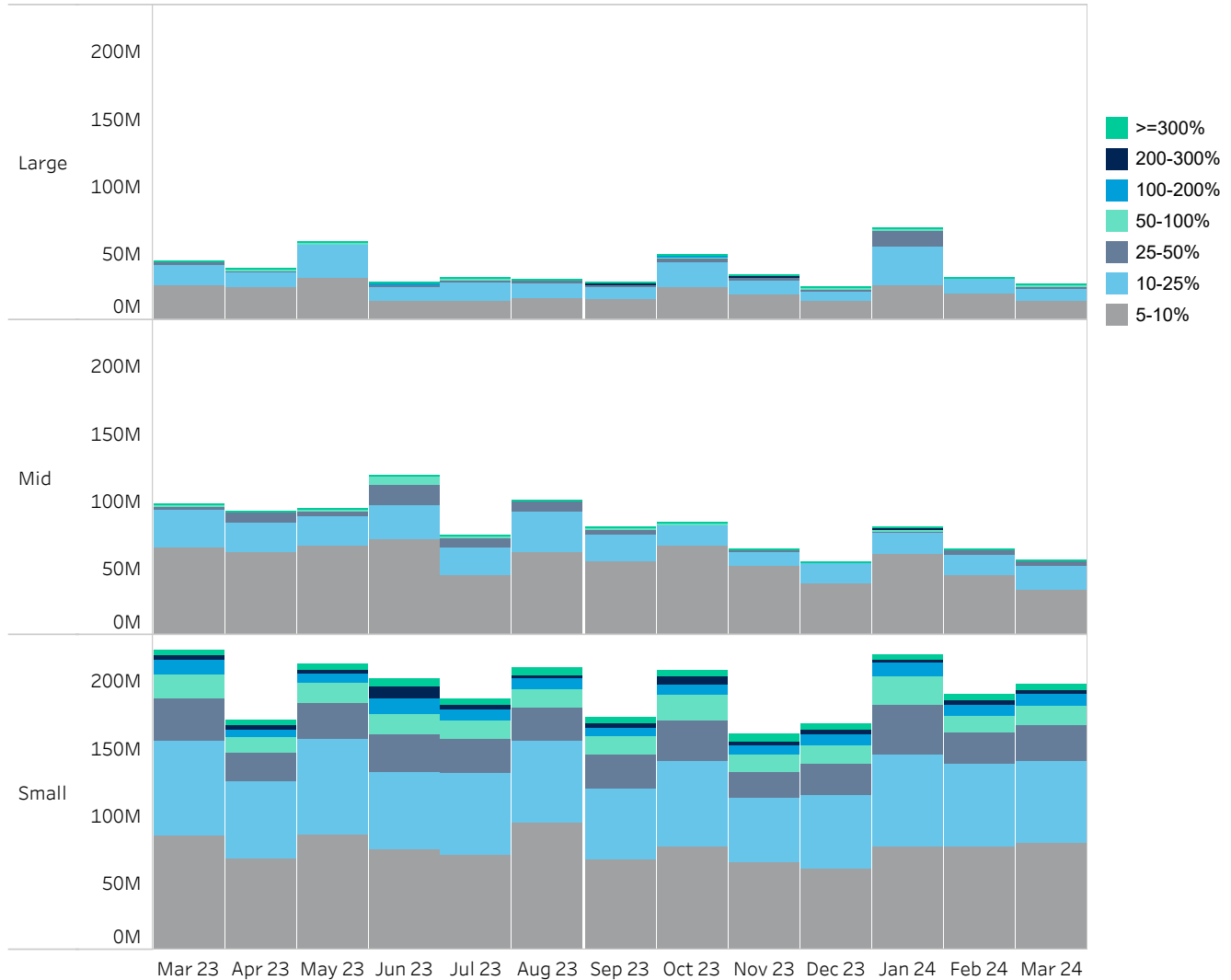
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



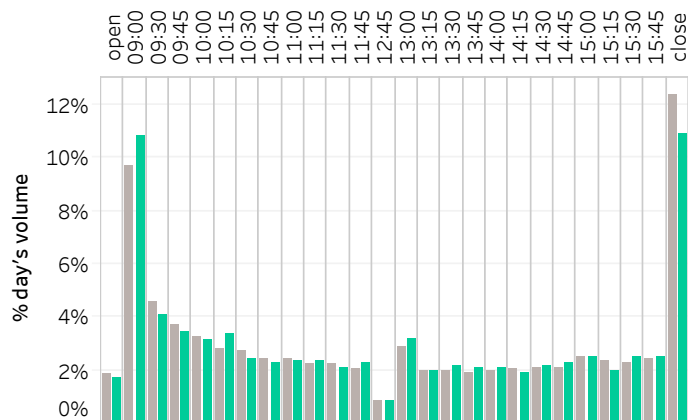
Large Sized Trades (>=5%ADT)



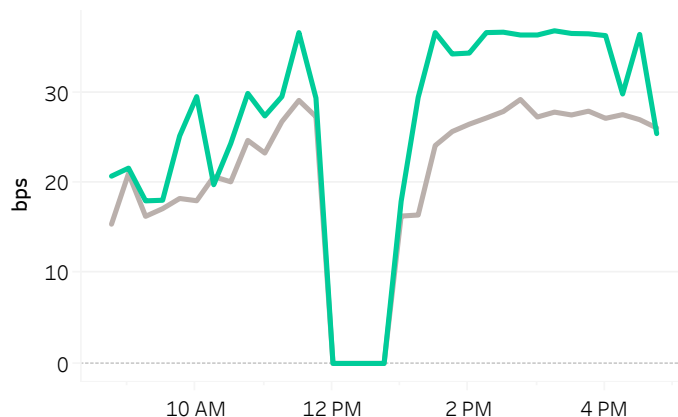
Source data: Virtu Financial

Singapore

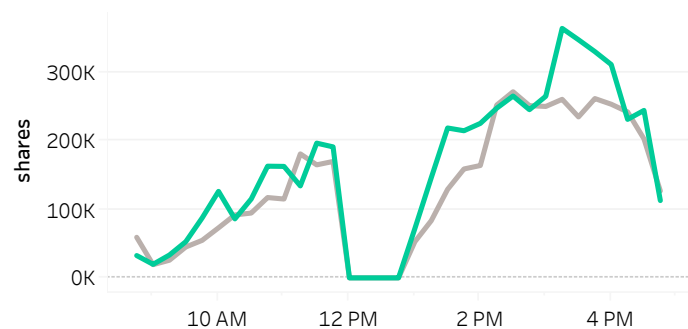
Volume Curve



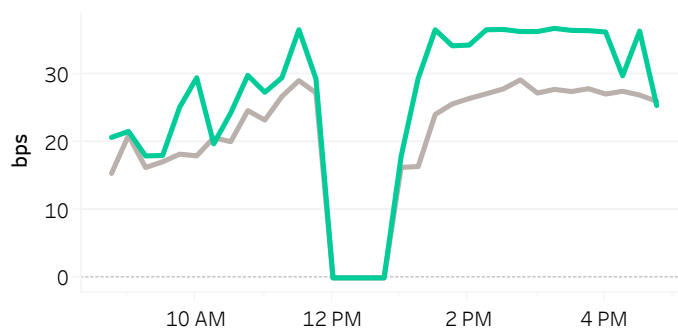
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



Rolling 12 Months Avg (brown line) March 2024 (green line)

Spread Bps

	2023												2024		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar		
FirstHalfHo..	16.6	14.2	16.4	16.6	14.6	19.1	16.2	15.8	16.8	15.1	15.0	15.0	18.7		
MidDay	27.2	27.0	27.0	24.5	17.5	27.1	26.7	28.5	26.5	28.9	26.8	18.1	30.0		
LastHalfHo..	25.3	26.8	26.3	25.8	26.4	26.3	26.9	29.5	27.1	28.0	29.7	26.4	29.4		

One Minute Volatility Bps

FirstHalfHo..	34.5	34.4	35.7	41.7	41.7	51.4	31.3	50.6	52.8	40.9	41.6	42.5	39.9
MidDay	28.4	27.6	27.5	26.9	26.3	27.6	27.0	31.3	27.3	29.1	28.8	26.3	34.2
LastHalfHo..	27.6	27.1	26.8	27.4	27.1	28.0	27.4	32.6	27.9	29.4	32.6	30.4	30.1

Quotesize (shares)

FirstHalfHo..	126,098	48,869	57,725	86,605	39,923	30,361	36,050	50,518	72,786	53,345	55,164	68,837	35,573
MidDay	169,961	327,685	231,700	112,054	126,638	232,427	176,852	239,708	89,777	193,459	181,018	116,322	187,792
LastHalfHo..	141,752	256,196	170,897	139,765	143,803	181,844	179,377	226,408	119,166	139,335	199,052	164,279	161,581

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

ABOUT VIRTU

Virtu is a leading financial services firm that leverages cutting-edge technology to provide execution services and data, analytics and connectivity products to its clients and deliver liquidity to the global markets. Leveraging its global market making expertise and infrastructure, Virtu provides a robust product suite including offerings in execution, liquidity sourcing, analytics and broker-neutral, multi-dealer platforms in workflow technology. Virtu's product offerings allow clients to trade on hundreds of venues across 50+ countries and in multiple asset classes, including global equities, ETFs, foreign exchange, futures, fixed income and myriad other commodities. In addition, Virtu's integrated, multi-asset analytics platform provides a range of pre and post-trade services, data products and compliance tools that clients rely upon to invest, trade and manage risk across global markets.

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

APAC+852.2846.3553 | **CAN**+1.416.874.0800 | **EMEA**+44.20.7670.4066 | **US**+1.212.444.6250

info@virtu.com | www.virtu.com

© 2024 Virtu Financial, Inc. All rights reserved. Not to be reproduced or retransmitted without permission. These materials are for informational purposes and are not intended to be used to make trading or investment decisions, they are not intended as an offer to sell or the solicitation of an offer to buy any security or financial product, and are not intended as advice (investment, tax or legal). The information contained herein includes Virtu proprietary information and/or has been taken from sources we believe to be reliable, but we do not represent or warrant that such information is accurate or complete and it should not be relied upon as such.

Analytics products and services referenced herein may not be subject to oversight by regulatory authorities in one or more jurisdictions, including in Europe, Hong Kong or Australia, where such products and services are offered by Virtu ITG Ventures Limited, Virtu ITG Hong Kong Limited or Virtu ITG Australia Limited, registered in Ireland No. 295549 ("VIVL"), Hong Kong CE No. AHD810 ("VIHK") and Australia AFSL No. 219582 ("VIAU"), respectively. VIVL does not engage in regulated activity.

Securities products and services are offered by the following subsidiaries of Virtu Financial, Inc. In the U.S., Virtu Americas LLC, member FINRA and SIPC; in Canada, Virtu Canada Corp., member Canadian Investor Protection Fund and Canadian Investment Regulatory Organization; in Europe, Virtu Europe Trading Limited, registered in Ireland No. 283940 ("VETL") (VETL is authorized and regulated by the Central Bank of Ireland), and Virtu Financial Ireland Limited, registered in Ireland No. 471719 ("VFIL") (VFIL is authorized and regulated by the Central Bank of Ireland). The registered office of VETL and VFIL is North Dock One, Fifth Floor, 91-92 North Wall Quay, Dublin 1, Ireland, D01 H7V7; in Asia, Virtu ITG Hong Kong Limited (SFC License No. AHD810), Virtu ITG Singapore Pte Limited (CMS License No. 100138-1), and Virtu ITG Australia Limited (AFS License No. 219582).