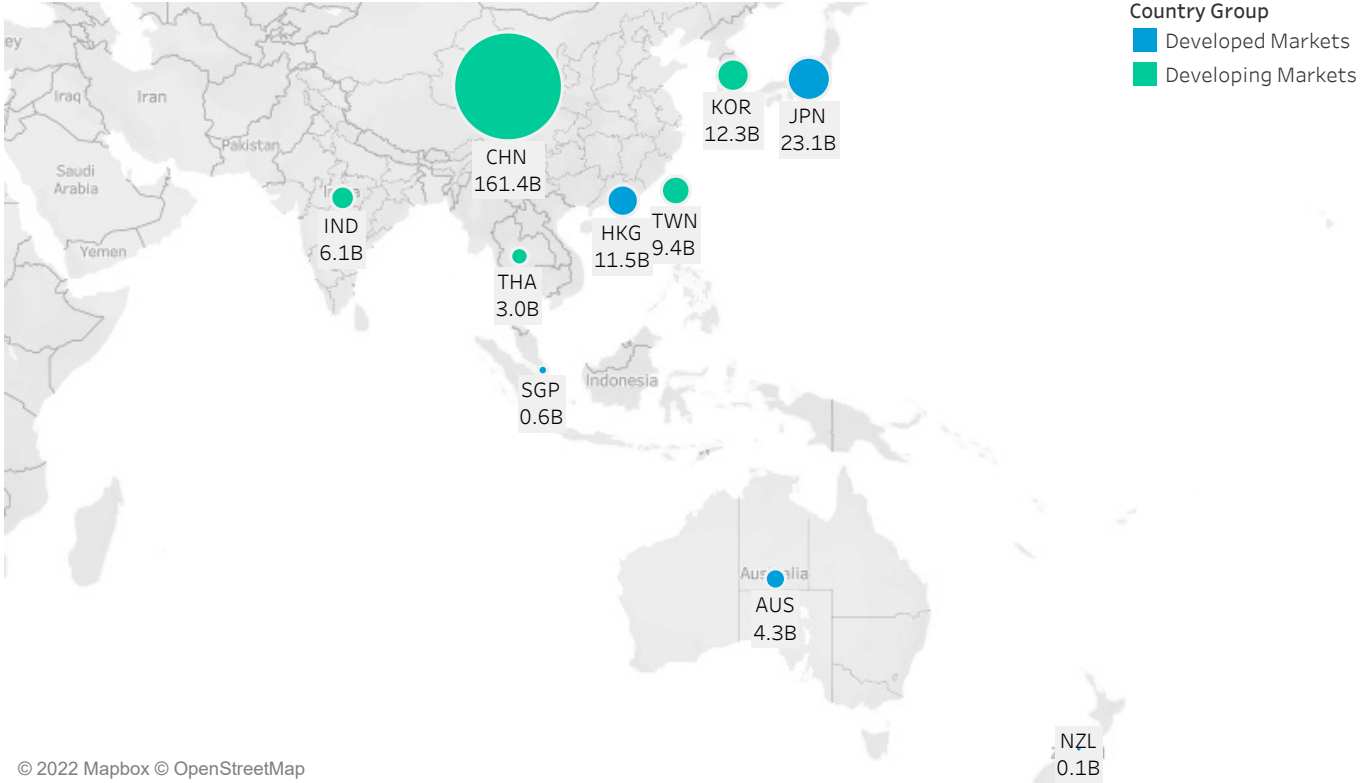


July 2022 APAC Market Structure Monthly

Average Daily Turnover (Notional USD)



Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

Jul 2022

AP Market Structure Monthly

MICROSTRUCTURE OBSERVATIONS

- Turnover across the overall APAC region fell MoM to YTD low, with HKG, AUS and NZL leading the largest decreases at -31%, -27% and -26% respectively. India was the only exception with a flat turnover MoM.
- Large sized trades ($\geq 5\%$ ADT) across the region also collectively fell to the lowest level in the past rolling 12 months.
- Intraday spread and volatility remained consistent MoM.

AP MARKET STRUCTURE NEWS

Hong Kong Investor Identification Regime's End-To-End Test Extended

In response to requests from some relevant regulated intermediaries (RRIs), Hong Kong Exchanges and Clearing Limited (HKEX) extended the end-to-end test date for the Hong Kong Investor Identification Regime (HKIDR) from 15 July 2022 to 5 August 2022. HKIDR's go-live date has not yet been announced but is expected in 2H 2022.

<https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/CT10322E.pdf>

<https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/CT11222E.pdf>

HKEX Launches Hong Kong International Carbon Market Council, Unveils Carbon Market Plans

HKEX announced the launch of the Hong Kong International Carbon Market Council (the Council) on 5 July 2022. Ultimately, HKEX aims to develop an international carbon market, contributing to the realization of carbon neutrality goals and the development of the green and sustainable finance ecosystem in Hong Kong, Mainland China and beyond.

https://www.hkex.com.hk/News/News-Release/2022/220705news?sc_lang=en

Interest Rate Swap Connect to Be Launched by Hong Kong and Mainland-China Exchanges and Regulators

On 4 July 2022, the People's Bank of China (PBOC), the Hong Kong Securities and Futures Commission (SFC) and the Hong Kong Monetary Authority (HKMA) announced their agreement to establish a China Foreign Exchange Trade System (National Interbank Funding Center) and Shanghai Clearing House (collectively Mainland Infrastructure Institutions). To promote the development of financial derivatives markets in both Mainland China and Hong Kong, Mainland Infrastructure Institutions and OTC Clearing Hong Kong Limited (collectively Hong Kong Infrastructure Institution) will collaborate to establish mutual access between their respective interest rate swap markets (Swap Connect). HKEX issued an announcement echoing this

initiative. As HKEX and its partners note, the preparation work for Swap Connect is expected to take six months. An official launch date will be announced in due course, subject to regulatory approval. <https://www.sfc.hk/en/News-and-announcements/Policy-statements-and-announcements/Joint-Announcement-of-the-PBoC-the-SFC-and-the-HKMA>
https://www.hkex.com.hk/News/News-Release/2022/220704news?sc_lang=en

IR Connect, HKEX's New Investor Relations Portal, Now Live

A new digital investor relations platform called IR Connect was launched by HKEX on 6 July 2022 to help Hong Kong-listed issuers establish regular communication with their investors. HKEX believes the new online platform will facilitate issuer outreach, increase visibility within the global investment community and provide an accessible, professional, and cost-effective way for Hong Kong-listed issuers to connect with investors.

https://www.hkex.com.hk/News/News-Release/2022/220706news?sc_lang=en

Shanghai-Hong Kong Stock Connect and Market Participants Prepare for the Migration to New Shanghai Stock Exchange Trading Gateway

A notice was issued on 19 July 2022 by HKEX to China Connect Exchange Participants (CCEPs) stating that the second and final practice session would be held on 23 July 2022 (Saturday). Though the exact launch date has not yet been announced, it is expected that the Orion Trading Platform—China Stock Connect (OTP-CSC) for Northbound trading—will migrate to the new trading gateway shortly after the completed practice sessions. There will be no functional change to OTP-CSC for the gateway migration.

<https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/CT08422E.pdf>

<https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/CT10522E.pdf>

China-Switzerland Stock Connect Launched

China-Switzerland Stock Connect was officially launched on 28 July 2022 by Vice Chairman Fang Xinghai of the China Securities Regulatory Commission (CSRC) and State Secretary Daniela Stoffel of the Swiss Federal Department of Finance. A key goal of the China-Switzerland Stock Connect is to expand cross-border financing and investment channels and to enhance Sino-Swiss financial cooperation.

In parallel, both Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) reported that a number of the companies listed on the SSE and SZSE had issued and listed Global Depository Receipts (GDRs) on the SIX Swiss Exchange.

http://www.csrc.gov.cn/csrc_en/c102030/c4885446/content.shtml

<http://english.sse.com.cn/news/newsrelease/c/5706389.shtml>

http://www.szse.cn/English/about/news/szse/t20220729_595135.html

Availability of English Disclosure Information by Listed Companies Survey Results Published by Tokyo Stock Exchange

Tokyo Stock Exchange (TSE) published the results of its survey "Availability of English Disclosure Information by Listed Companies" on 3 August 2022. In this survey, 3,770 companies listed on the TSE as of July 14, 2022 were asked to participate. The survey found that 92.1% of prime-listed companies disclosed their information in English, up from 85.8% in December 2021. Further improvement is expected because of the revised Code of Corporate Governance, which stipulates that companies listed on the prime market are required to disclose and provide the necessary information in English.

<https://www.jpix.co.jp/english/corporate/news/news-releases/0060/20220803-01.html>
<https://www.jpix.co.jp/english/corporate/news/news-releases/0060/b5b4pj0000051u8f-att/b5b4pj0000051ub1.pdf>

New Environmental, Social and Governance Bond Information Platform Launched by Japan Exchange Group and JPX Market Innovation & Research, Inc.

The Environmental, Social, and Governance (ESG) Bond Information Platform was launched by Japan Exchange Group (JPX) and JPX Market Innovation & Research, Inc. (JPXI) on 19 July 2022. By moving information from various individual issuers, review providers, and securities companies onto a single platform, the exchange hopes to improve the convenience and visibility of the products, thereby contributing to the growth of sustainable finance.

<https://www.jpix.co.jp/english/corporate/news/news-releases/0090/20220719-01.html>

Korea Exchange Amends Listing Regulation and Enforcement Rules to Boost Exchange-Traded-Product Market

Korea Exchange (KRX) announced on 28 July 2022, that it will revise its Listing Regulations and Enforcement Rules of the Korea Composite Stock Price Index (KOSPI) Market to introduce new bond Exchange-Traded Funds (ETFs) with expiration dates, lower disclosure obligations, and improve the listing review regulation system for ETFs, Exchange-Traded Notes (ETNs) and Exchange-Linked Warrants (ELWs).

<https://global.krx.co.kr/contents/GLB/02/0203/0203000000/GLB0203000000.jsp#ab8758eced0475769e200e7e309baf77=1&view=20673>

A Wide-Ranging Collaboration Including Dual Listing of Companies Is Announced Between Singapore Exchange and New York Stock Exchange

The Singapore Exchange (SGX Group) and the New York Stock Exchange (NYSE) signed a new agreement on 22 July 2022 to collaborate on the dual-listing of companies on both exchanges as well as various other capital markets-related initiatives. Their collaboration focuses on:

- Dual listing on SGX Group and NYSE
- Identify and develop new ESG products and services
- Support index product development at SGX Group and NYSE affiliate ICE Data Indices
- Explore new ETF products

<https://corp.sgx.com/media-centre/20220722-sgx-group-and-new-york-stock-exchange-announce-wide-ranging>

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

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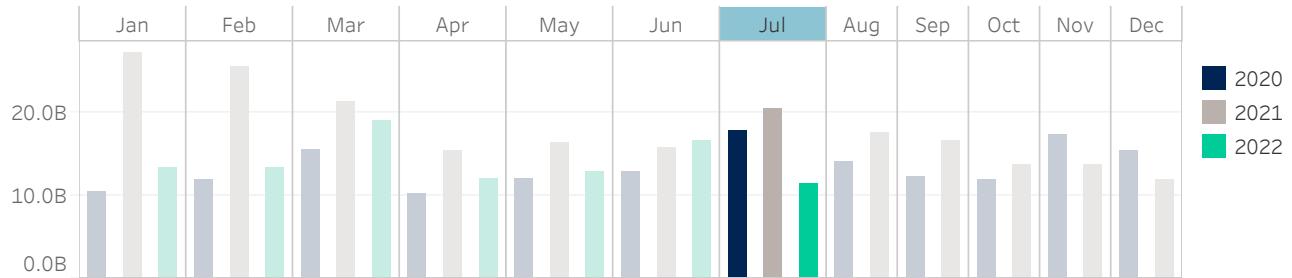


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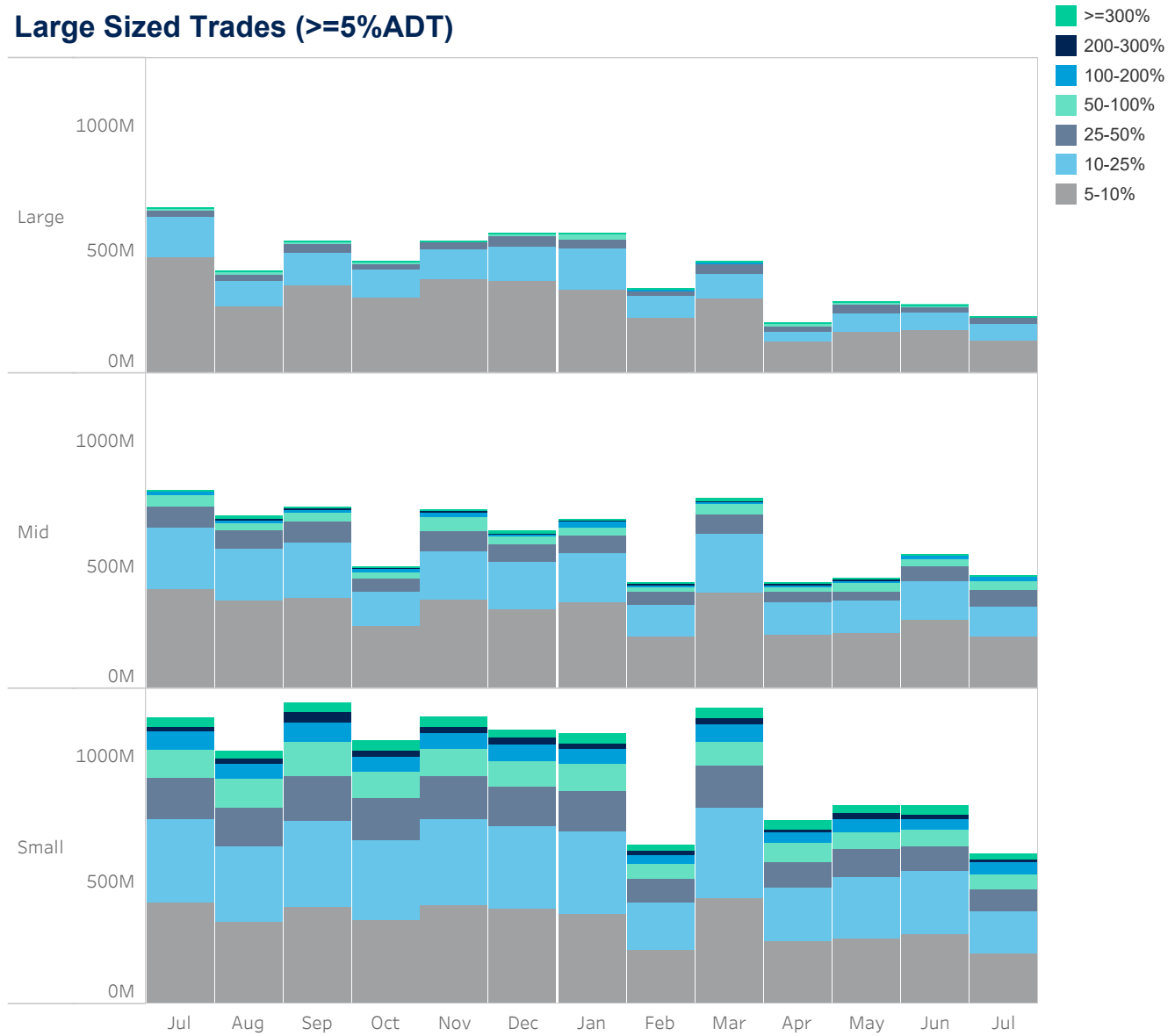
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Hong Kong

Average Daily Turnover (Notional USD)



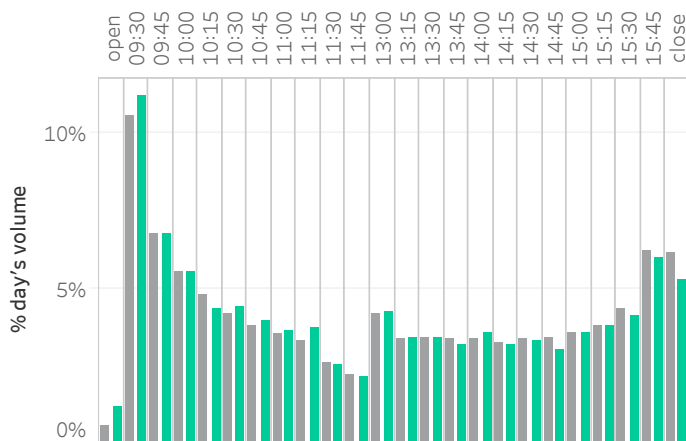
Large Sized Trades (>=5%ADT)



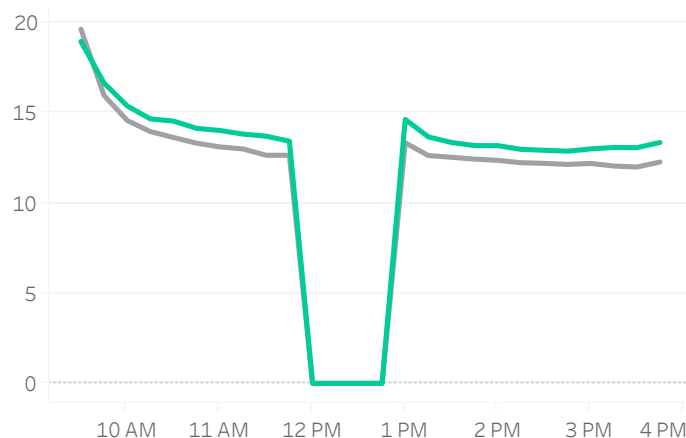
Source data: Virtu Financial

Hong Kong

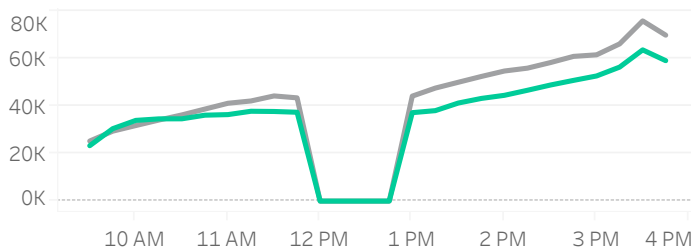
Volume Curve



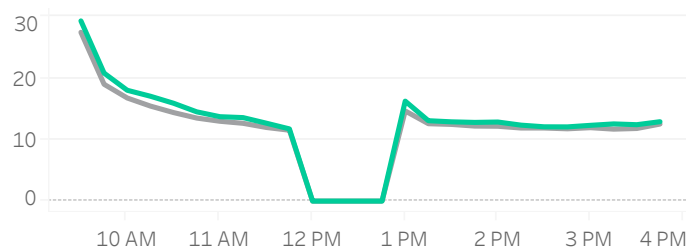
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	18.5	17.3	17.3	16.2	15.8	17.8	17.6	17.3	17.2	17.1
midday	12.7	12.8	12.5	11.9	12.0	13.4	13.3	13.5	13.6	13.1
lastHalfHour	12.3	12.5	12.4	11.6	11.7	12.6	12.3	13.1	13.2	12.4

One Minute Volatility Bps

firstHalfHour	18.2	13.8	14.7	15.5	15.1	21.2	17.7	18.0	19.0	16.8
midday	6.7	6.1	6.3	6.4	6.5	9.7	8.4	7.3	7.7	7.3
lastHalfHour	6.5	6.0	5.8	6.1	6.9	7.8	6.5	6.2	6.5	6.0

Quotesize in Shares

firstHalfHour	26,921	27,455	23,936	28,480	27,737	29,034	28,977	27,325	28,776	26,961
midday	47,554	47,292	35,935	47,428	46,616	40,716	40,059	40,646	42,935	42,223
lastHalfHour	75,001	72,389	54,283	70,843	71,318	65,291	62,184	60,328	71,107	68,053

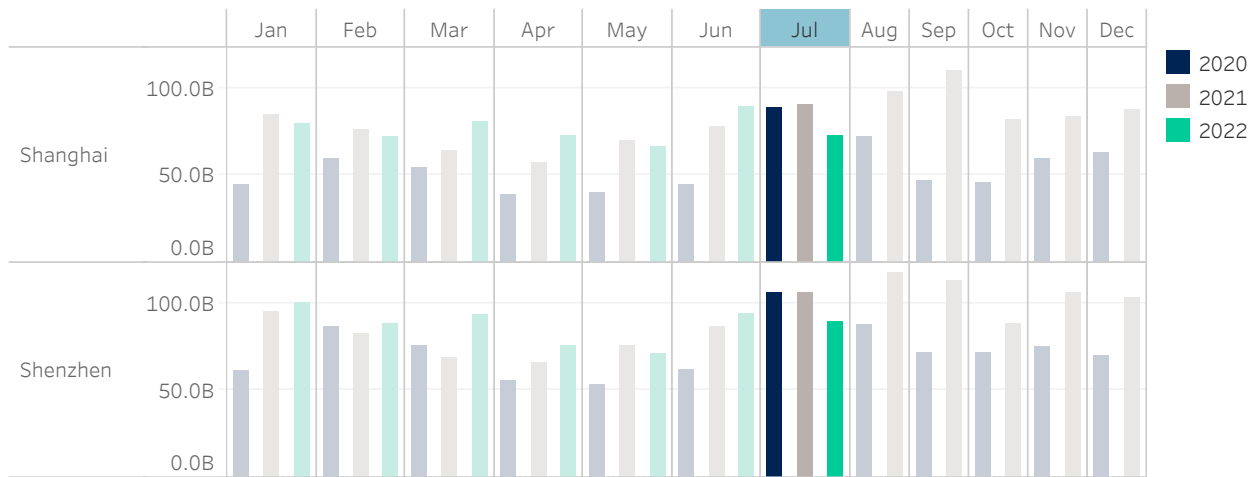
Median used for all metrics

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

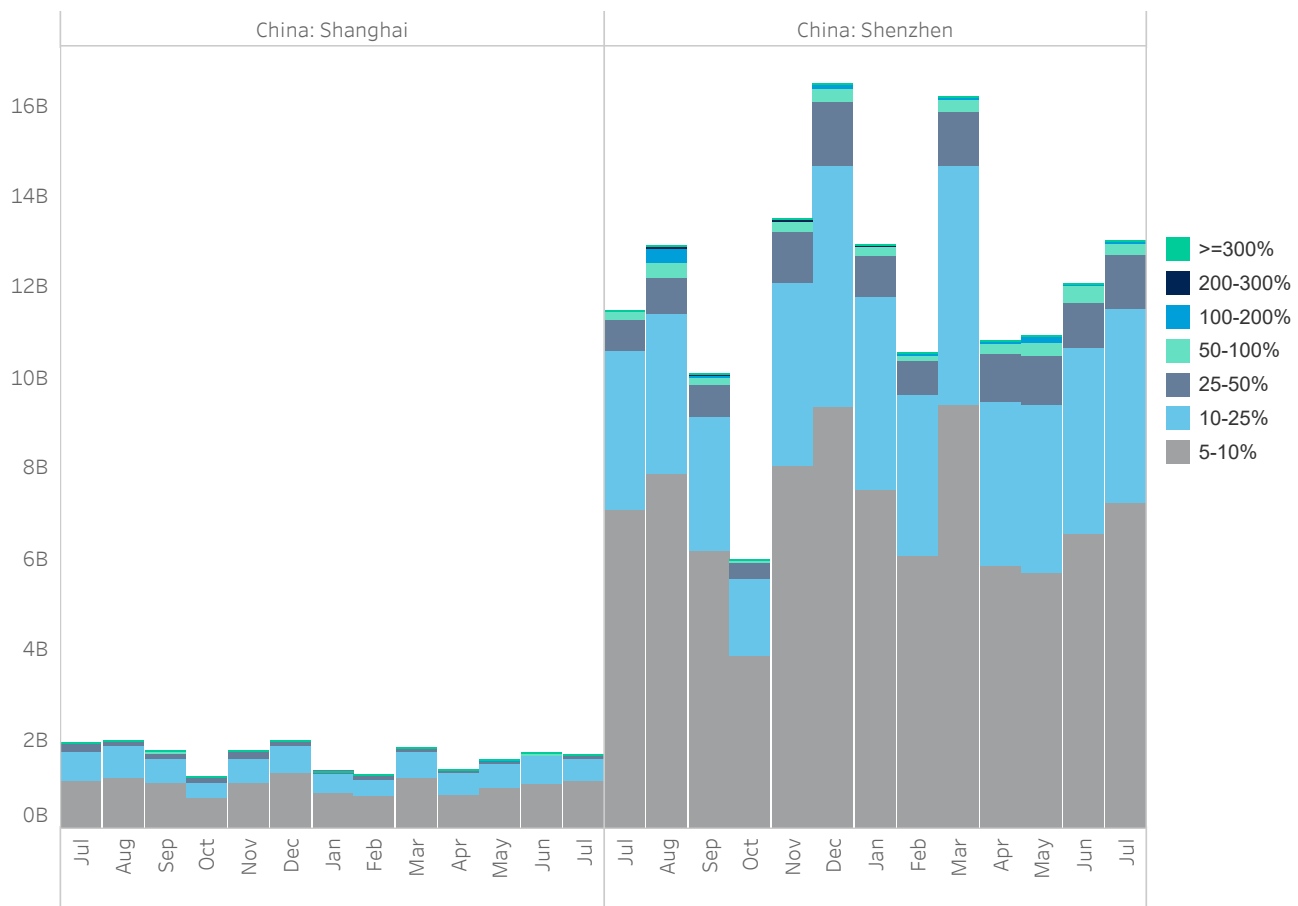
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



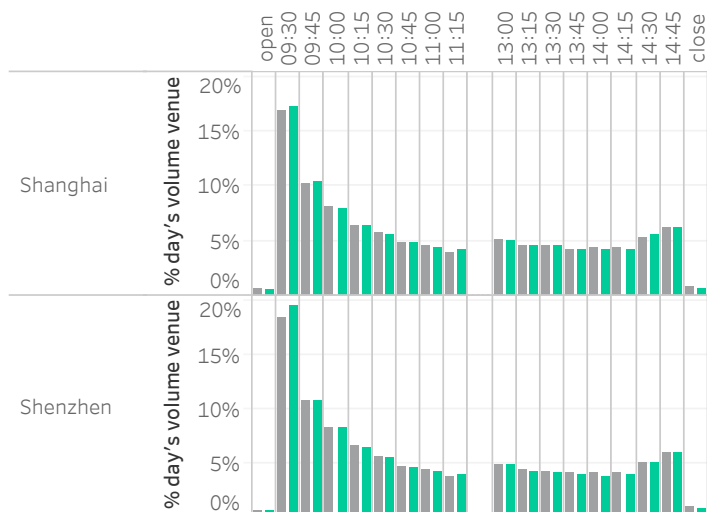
Large Sized Trades (>=5%ADT)



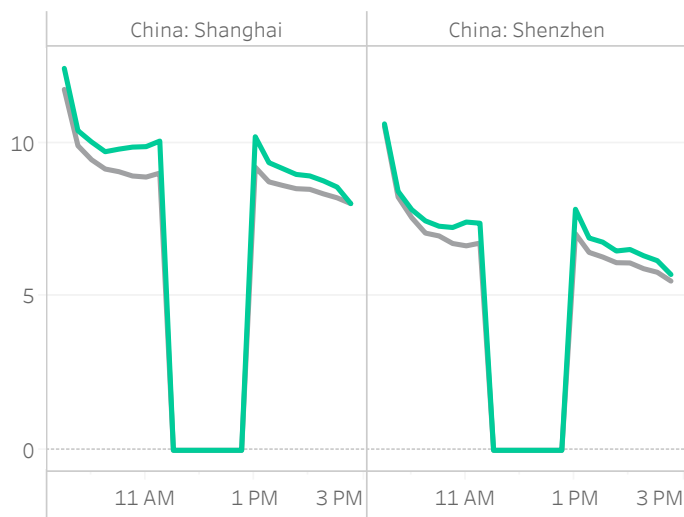
Source data: Virtu Financial

China

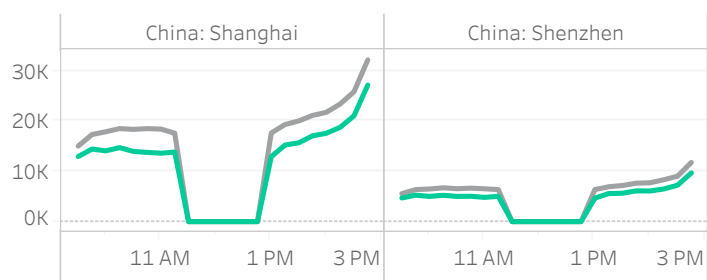
Volume Curve



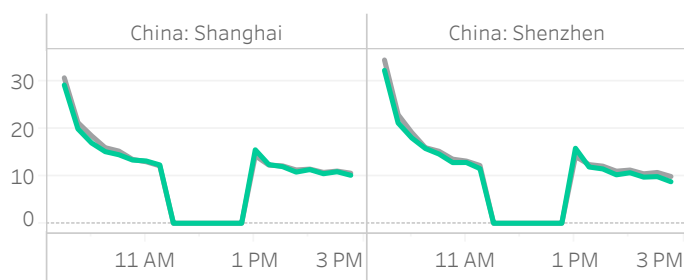
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	China: Shanghai										China: Shenzhen									
	21 Q4			22 Q1			22 Q2			22 ..	21 Q4			22 Q1			22 Q2		22 ..	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
firstHalfHour	10.3	9.8	9.3	10.0	9.9	10.9	11.1	10.9	10.3	9.9	9.0	8.4	7.8	9.0	8.3	9.1	9.9	9.0	8.5	8.6
midday	8.5	8.3	8.0	8.2	8.4	9.4	9.7	9.5	8.6	7.9	6.5	6.2	5.8	6.3	6.2	7.0	7.4	7.0	6.4	6.0
lastHalfHour	7.6	7.6	7.3	7.7	7.7	8.3	8.4	8.2	7.4	7.3	5.4	5.3	4.9	5.3	5.2	5.9	6.2	5.9	5.3	5.0

One Minute Volatility Bps

firstHalfHour	22.8	19.2	17.8	20.5	18.5	21.7	23.8	19.6	20.1	17.2	26.3	24.1	21.8	27.0	22.1	24.2	27.8	23.3	23.4	23.2
midday	9.0	7.5	7.3	8.4	7.8	10.1	11.6	9.1	10.1	7.1	10.4	9.6	9.2	11.3	9.8	11.9	13.1	10.6	11.3	9.8
lastHalfHour	7.1	5.9	5.9	7.4	6.4	8.3	9.3	6.6	7.3	6.0	7.9	7.2	7.1	8.8	7.6	8.7	9.8	7.4	8.0	7.5

Quotesize in Shares

firstHalfHour	14K	16K	16K	13K	13K	13K	11K	14K	14K	14K	6K	7K	5K	4K	4K	4K	4K	5K	4K
midday	17K	19K	19K	16K	16K	14K	12K	15K	16K	17K	8K	8K	6K	4K	5K	5K	5K	6K	5K
lastHalfHour	26K	31K	30K	23K	23K	22K	19K	24K	25K	25K	12K	13K	9K	6K	7K	7K	7K	8K	7K

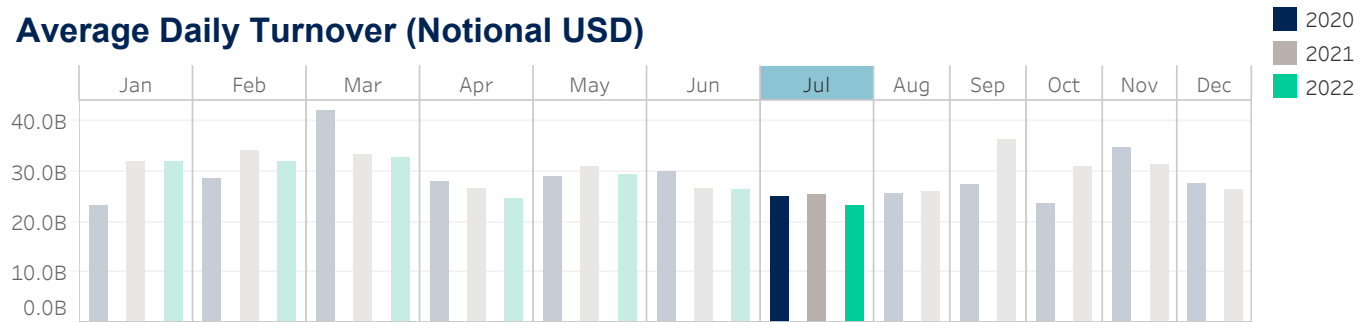
Median used for all metrics

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

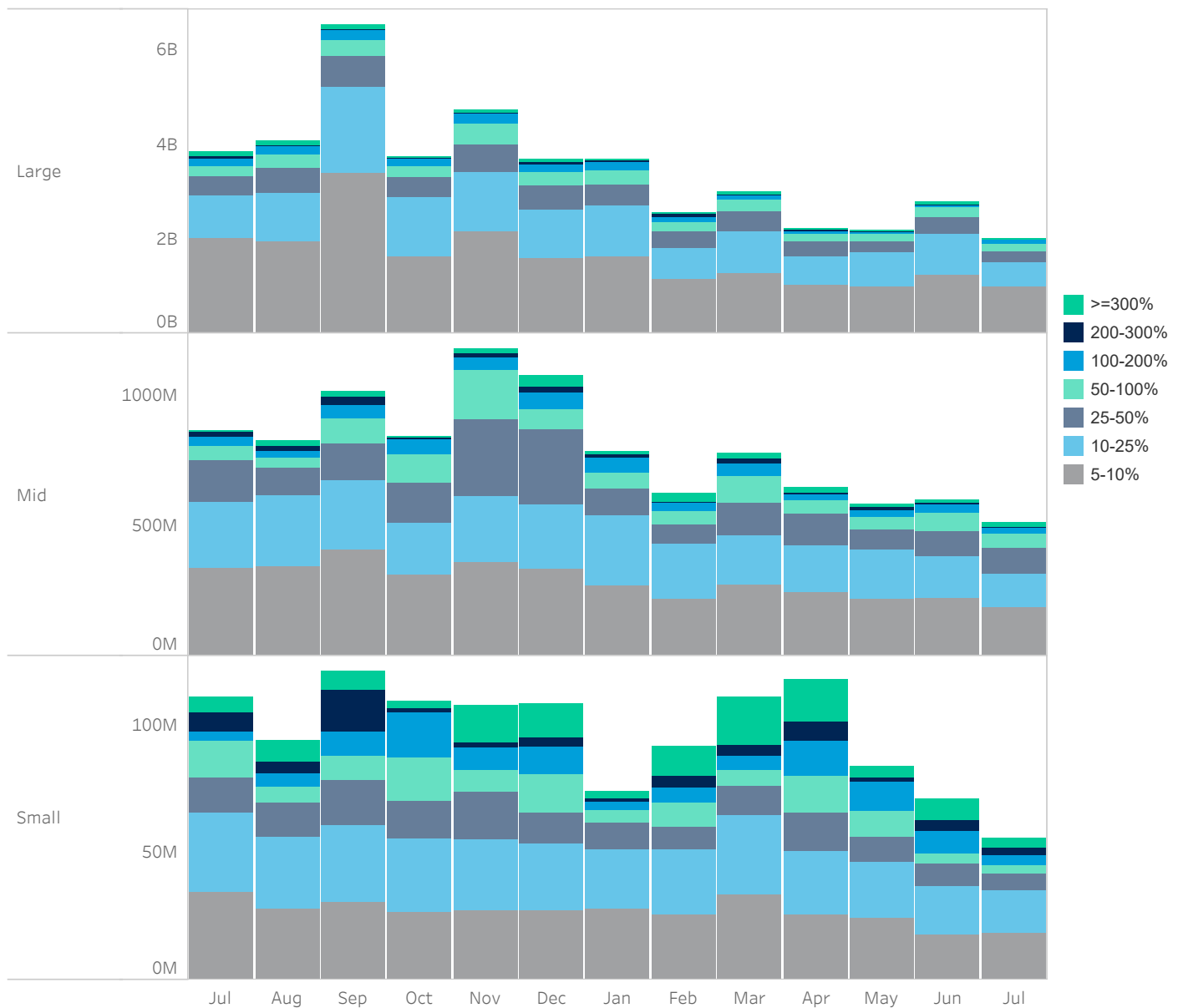
Source data: Virtu Financial

Japan

Average Daily Turnover (Notional USD)



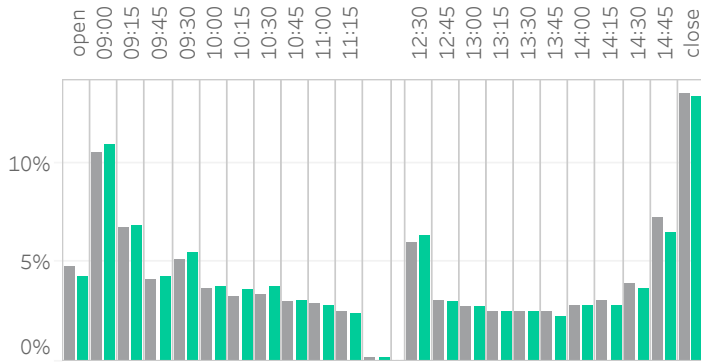
Large Sized Trades (>=5%ADT)



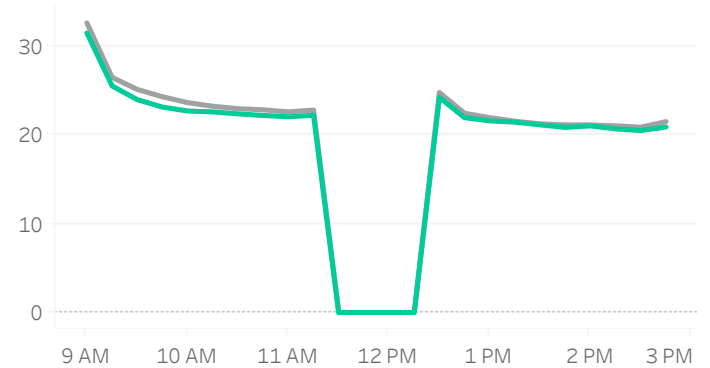
Source data: Virtu Financial

Japan

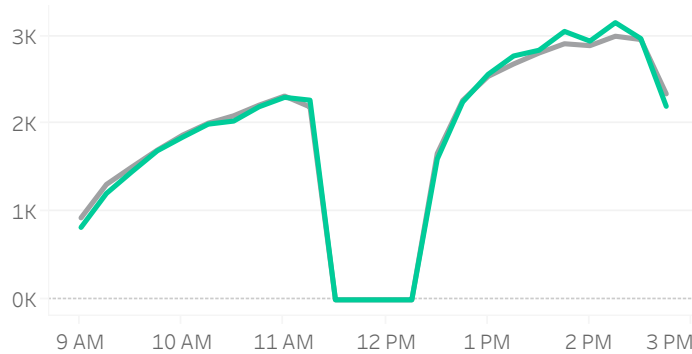
Volume Curve



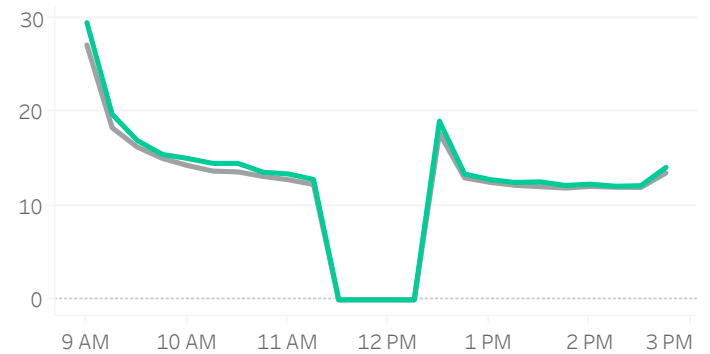
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	26.7	27.2	28.7	29.4	28.2	28.4	26.8	27.3	26.7	26.5
midday	21.9	22.1	22.5	23.3	22.7	22.7	22.1	22.0	21.8	22.0
lastHalfHour	19.7	20.2	20.7	21.6	21.2	21.2	20.6	20.4	20.8	20.7

One Minute Volatility Bps

firstHalfHour	14.5	13.2	14.6	16.5	17.0	17.5	15.2	16.6	15.4	13.3
midday	7.1	6.1	6.4	7.7	7.6	8.9	7.0	7.1	6.6	6.3
lastHalfHour	6.8	10.1	6.1	6.5	7.1	8.0	6.4	6.2	5.9	5.9

Quotesize in Shares

firstHalfHour	1,263	1,289	1,136	1,084	1,033	1,019	1,160	1,085	1,126	1,267
midday	2,521	2,700	2,453	2,128	2,031	2,109	2,379	2,337	2,423	2,592
lastHalfHour	3,161	3,282	2,896	2,602	2,605	2,496	2,872	2,720	2,642	2,902

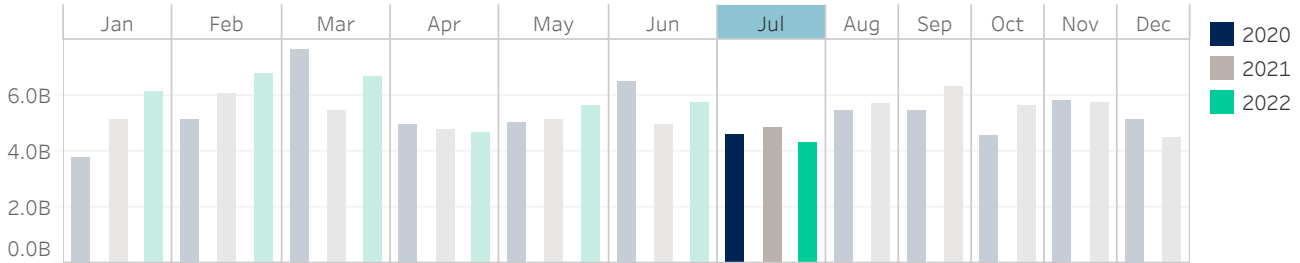
Median used for all metrics

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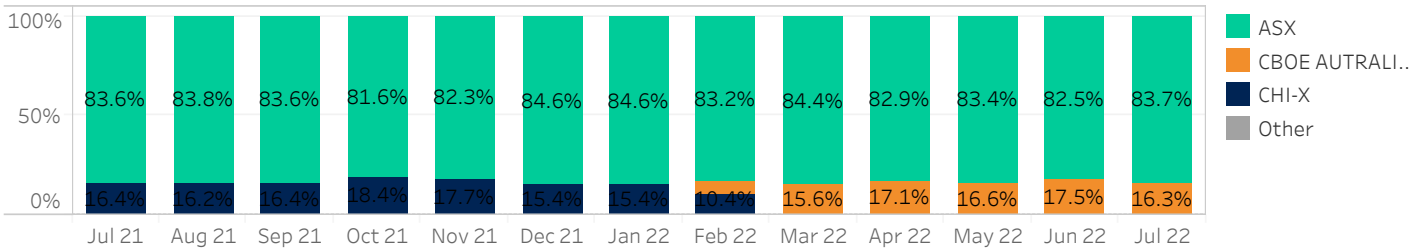
Source data: Virtu Financial

Australia

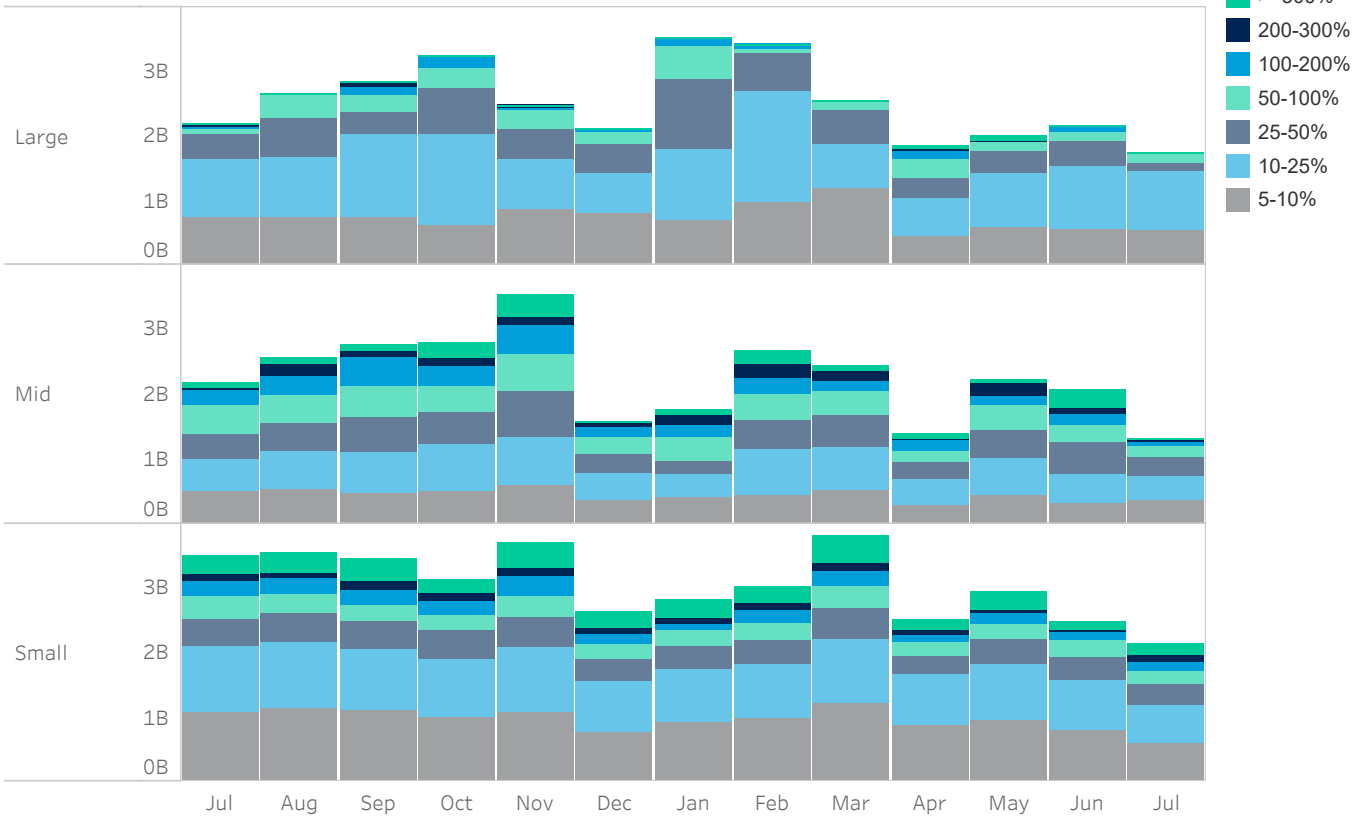
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



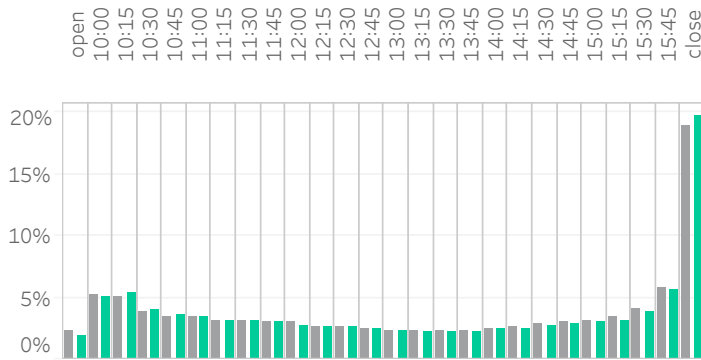
Large Sized Trades (>=5%ADT)



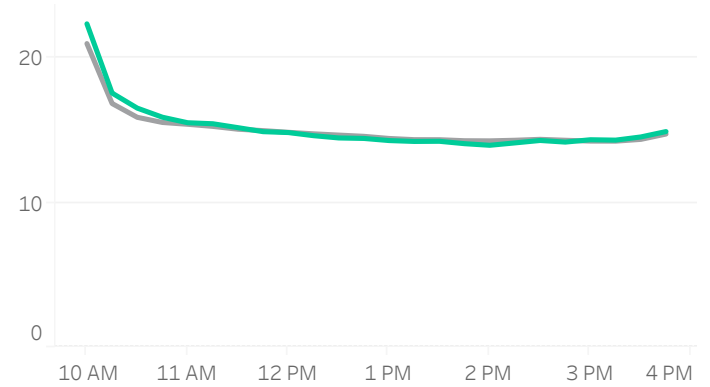
Source data: Virtu Financial

Australia

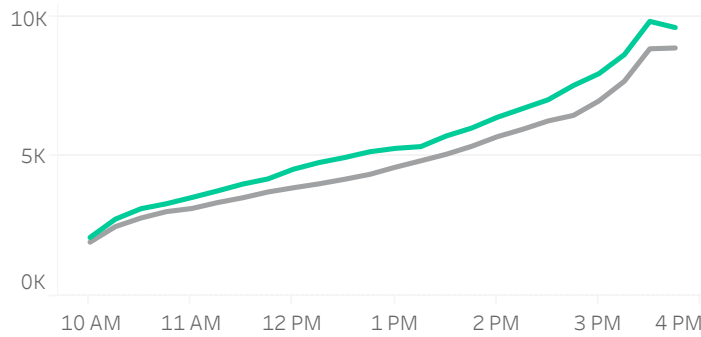
Volume Curve



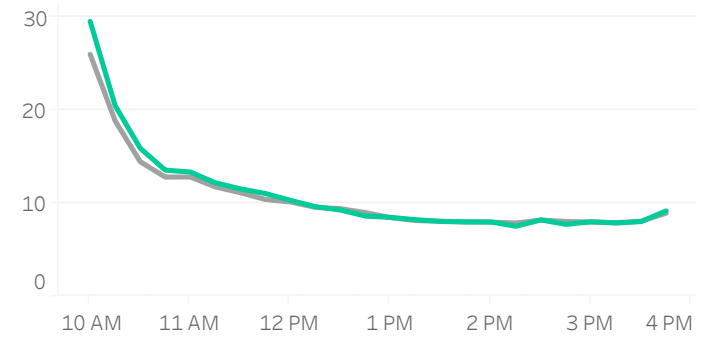
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	16.9	17.1	17.7	18.0	18.9	18.6	18.4	19.0	20.5	20.7
midday	14.0	14.1	14.5	14.6	15.0	15.1	14.6	14.6	16.2	15.9
lastHalfHour	13.9	14.1	14.2	14.1	14.3	14.5	14.3	14.7	16.4	16.0

One Minute Volatility Bps

firstHalfHour	15.6	15.7	15.9	16.4	20.9	18.6	15.8	19.3	21.3	18.3
midday	4.4	4.2	4.2	5.4	6.2	5.2	4.2	4.7	5.3	5.0
lastHalfHour	3.9	3.4	3.2	5.0	3.9	3.7	3.1	3.6	4.0	4.0

Quotesize in Shares

firstHalfHour	2,177	2,120	1,936	1,991	2,092	2,236	2,394	2,413	2,340	2,405
midday	4,276	4,427	4,117	3,945	4,008	4,728	5,180	5,148	5,554	5,352
lastHalfHour	9,183	9,297	8,472	8,020	8,680	9,575	9,457	9,953	9,528	9,648

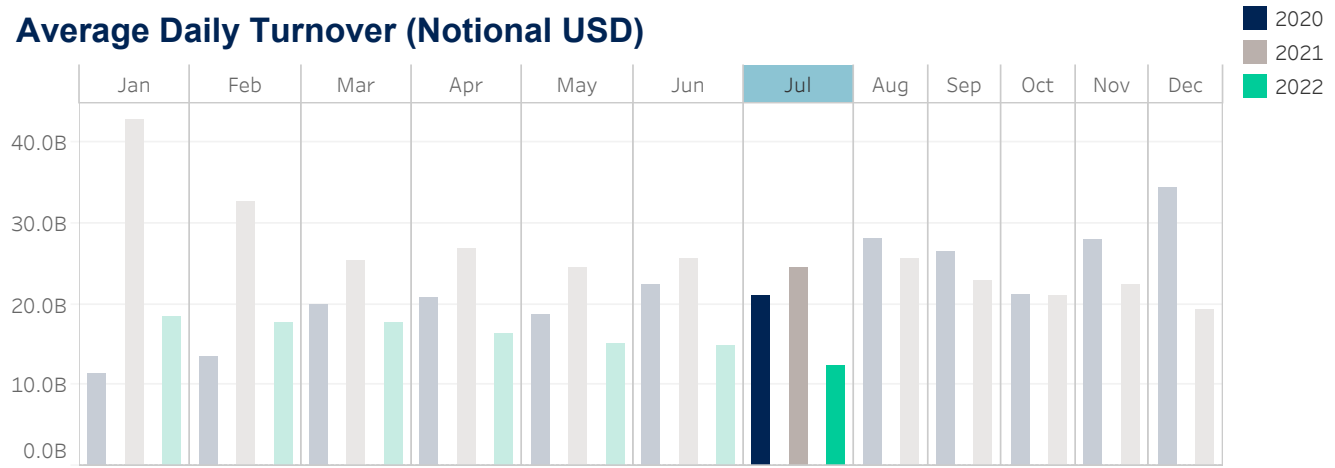
Median used for all metrics

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

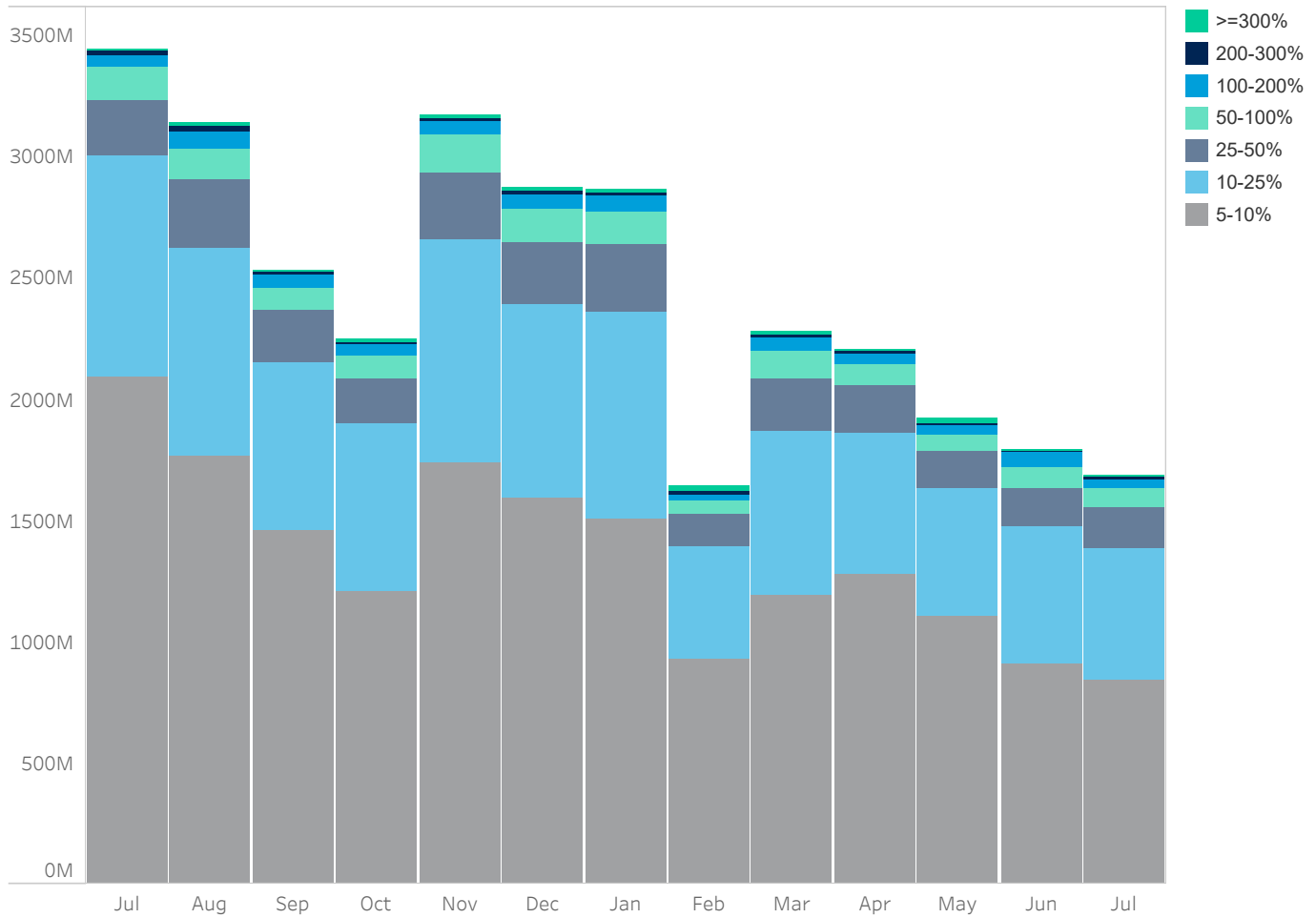
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



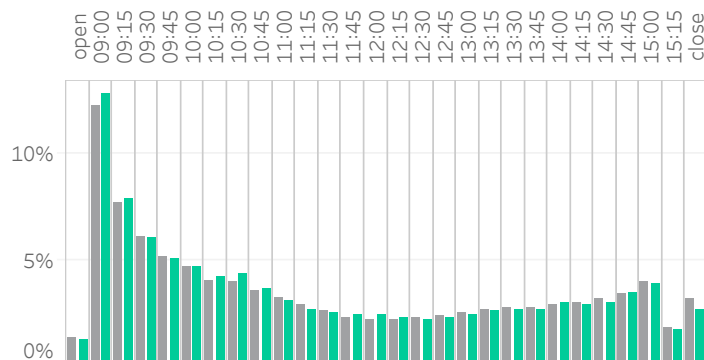
Large Sized Trades (>=5%ADT)



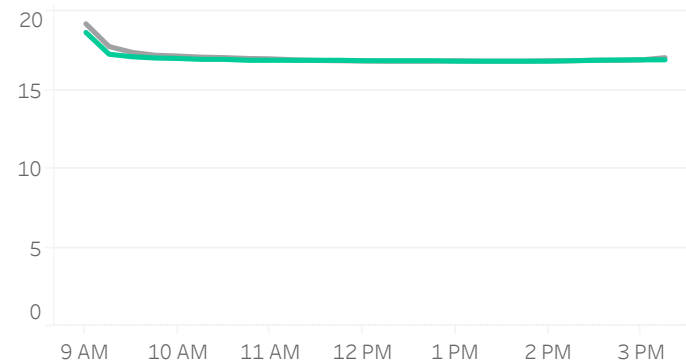
Source data: Virtu Financial

South Korea

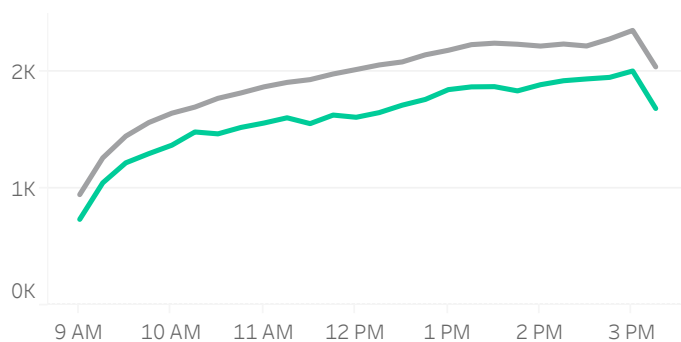
Volume Curve



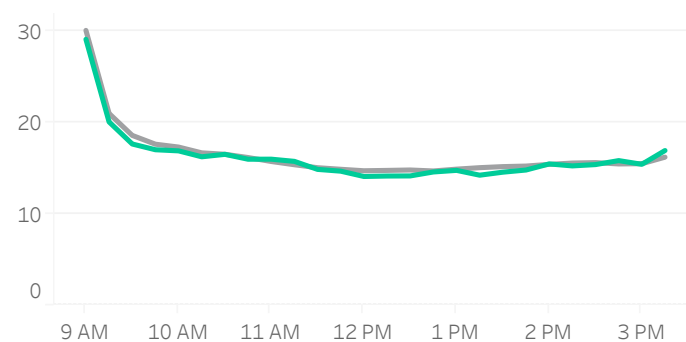
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	18.9	19.8	18.3	18.9	18.8	17.9	17.5	17.6	18.5	18.8
midday	17.2	17.9	17.2	17.4	17.4	17.0	16.6	16.9	17.2	17.1
lastHalfHour	17.2	17.9	17.3	17.4	17.3	17.0	16.7	16.9	17.3	17.2

One Minute Volatility Bps

midday	10.7	11.2	10.6	11.9	11.5	10.3	10.2	10.8	11.6	11.2
firstHalfHour	16.5	16.9	14.9	18.2	17.6	15.1	13.1	14.4	18.0	17.1
lastHalfHour	12.7	15.6	25.1	13.0	13.3	25.4	23.1	25.3	13.8	12.7

Quotesize in Shares

firstHalfHour	890	909	899	813	822	931	945	898	743	731
midday	1,653	1,773	1,608	1,528	1,313	1,669	1,603	1,653	1,351	1,235
lastHalfHour	1,871	2,018	1,807	1,727	1,598	1,929	1,900	1,950	1,495	1,375

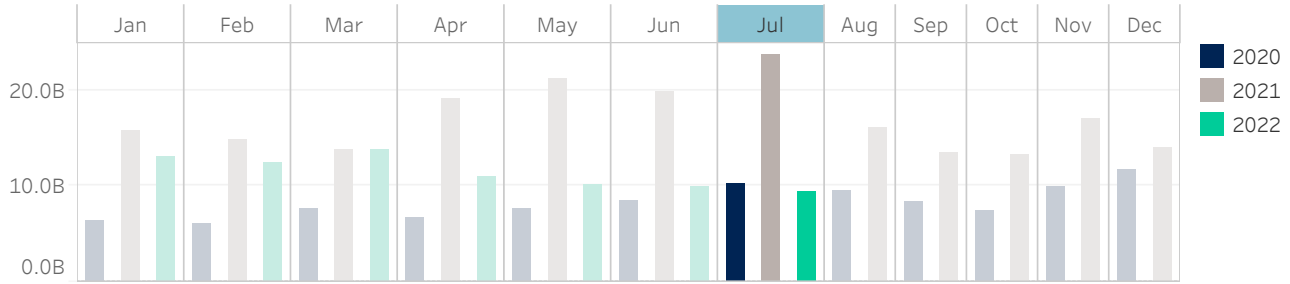
Median used for all metrics

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

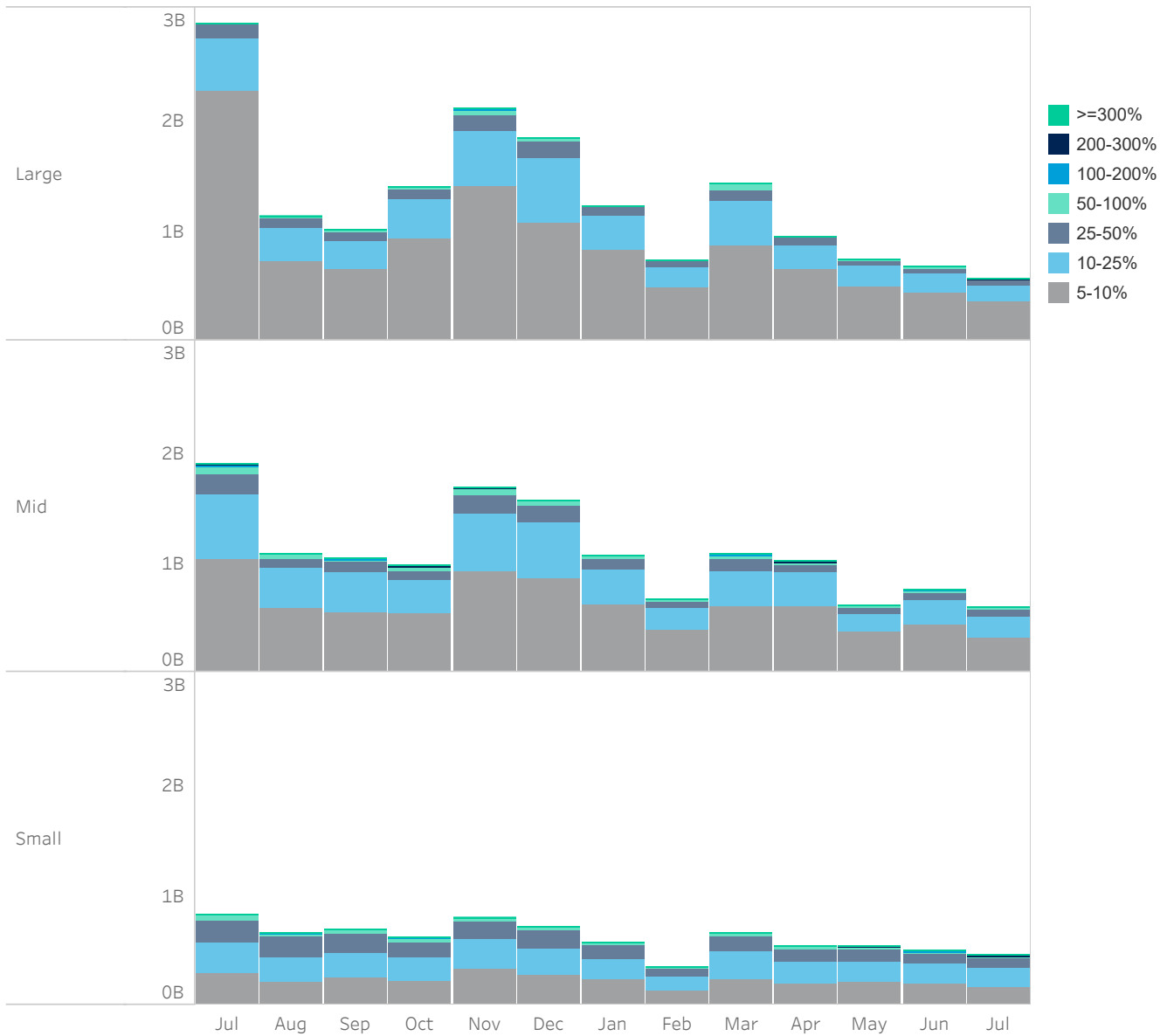
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



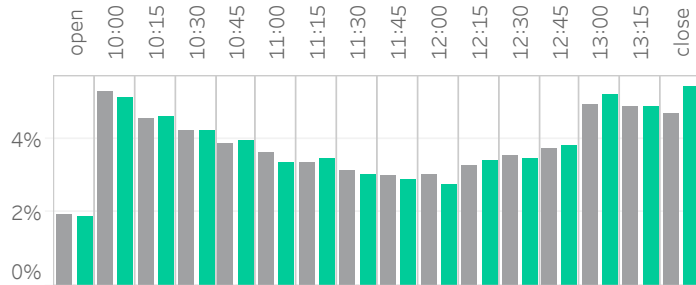
Large Sized Trades (>=5%ADT)



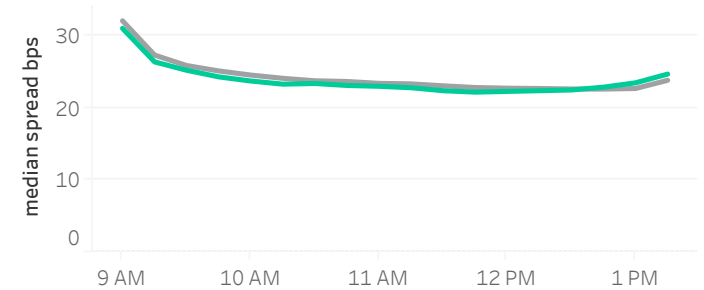
Source data: Virtu Financial

Taiwan

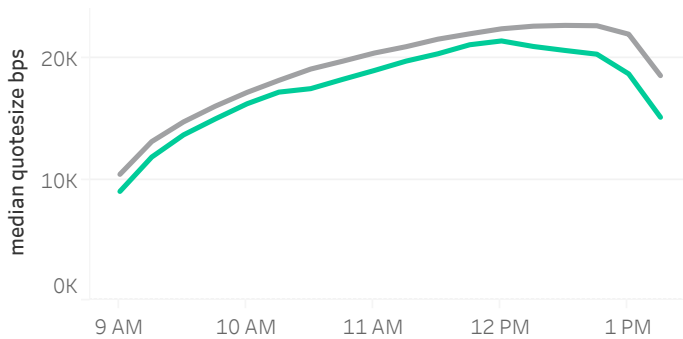
Volume Curve



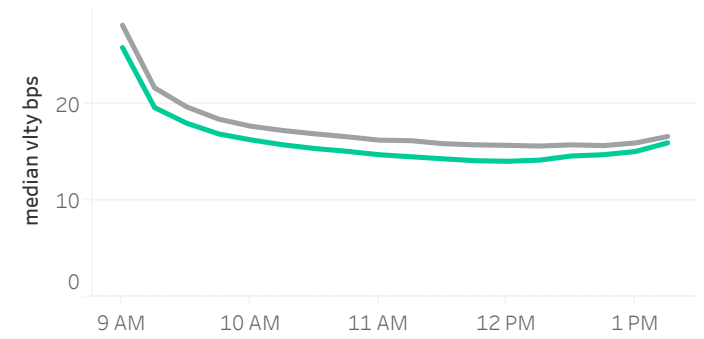
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	30.4	28.0	26.5	28.6	26.7	26.6	26.7	27.3	28.1	29.5
midday	24.2	22.5	21.7	22.2	21.9	21.7	22.4	22.9	23.3	24.5
lastHalfHour	23.8	22.4	21.6	22.6	22.3	22.2	23.0	23.9	24.9	25.5

One Minute Volatility Bps

firstHalfHour	15.5	14.4	11.7	13.6	11.9	12.2	13.2	13.0	14.5	17.0
midday	7.2	6.6	6.6	7.6	6.5	6.5	6.8	6.8	7.7	8.6
lastHalfHour	8.1	9.3	9.2	7.8	9.1	8.1	8.1	8.7	10.0	8.9

Quotesize in Shares

firstHalfHour	10,944	12,921	13,588	12,185	11,983	12,049	11,350	10,743	10,141	9,550
midday	18,385	22,487	24,891	22,588	22,644	24,091	20,379	19,000	17,224	14,616
lastHalfHour	18,001	22,498	24,520	21,888	20,421	22,083	18,462	16,745	14,500	14,186

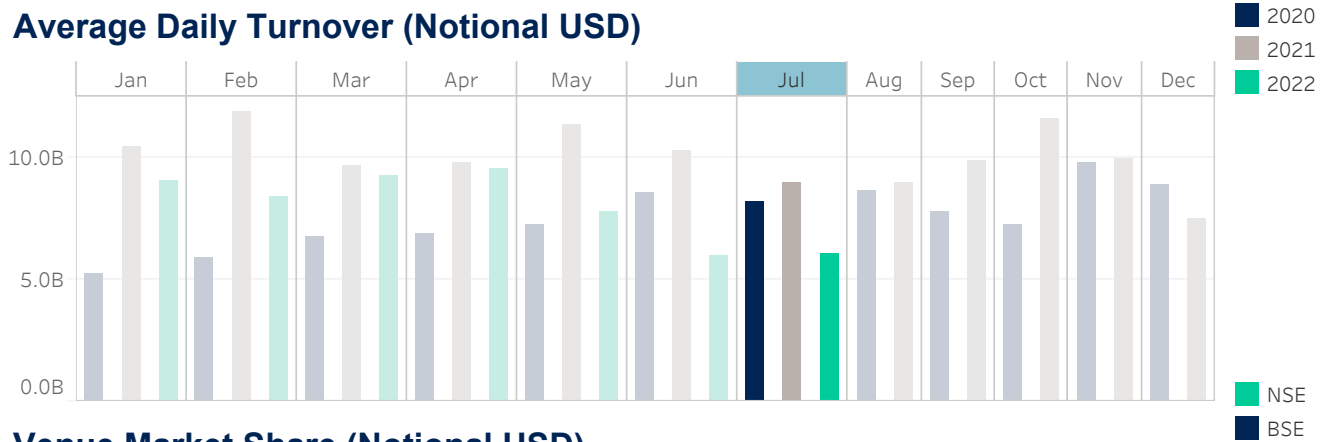
Median used for all metrics

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

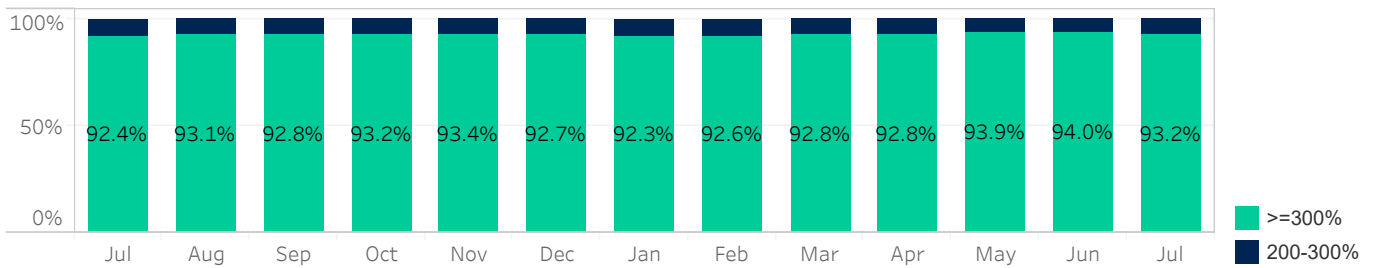
Source data: Virtu Financial

India

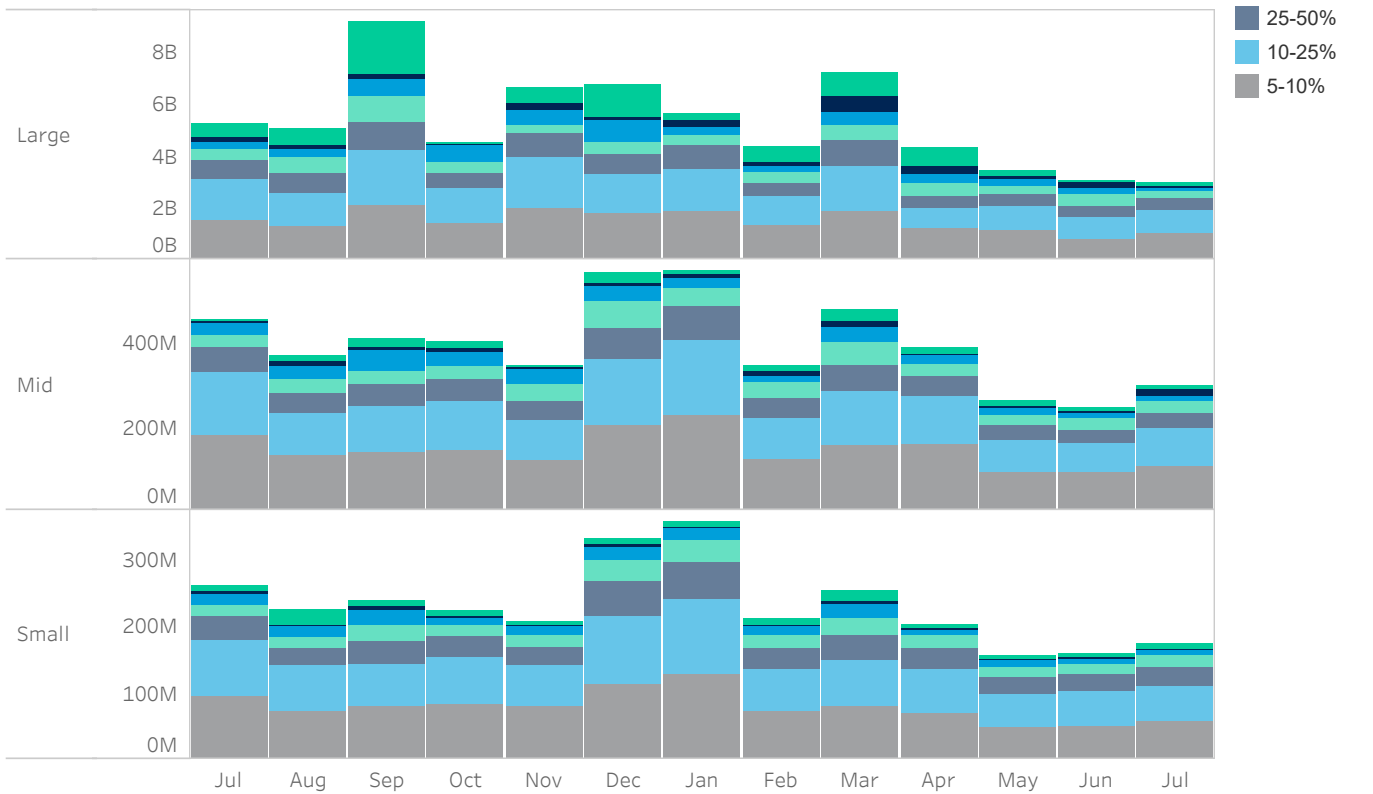
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



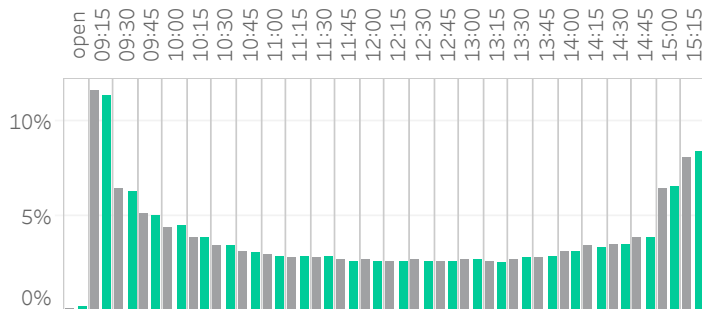
Large Sized Trades (>=5%ADT)



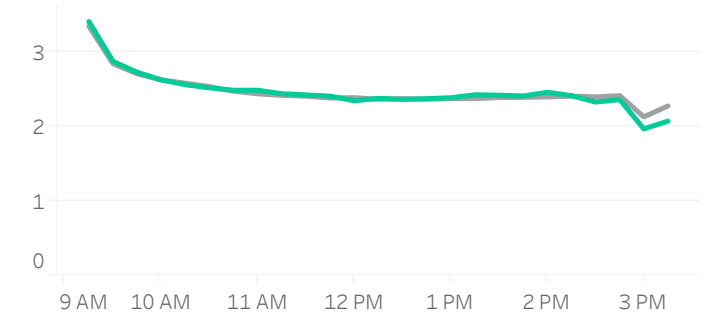
Source data: Virtu Financial

India

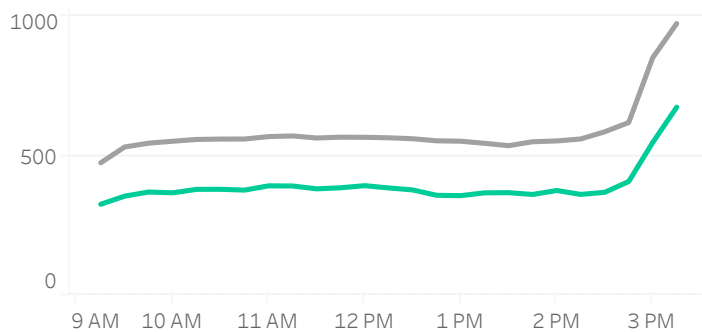
Volume Curve



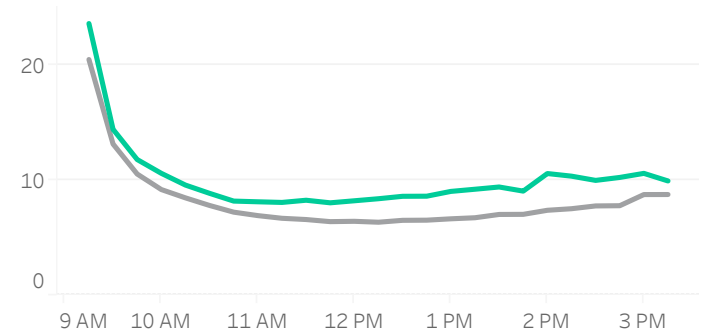
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	3.2	3.1	3.0	3.1	3.1	2.9	2.8	3.0	3.0	2.7
midday	2.6	2.5	2.4	2.4	2.5	2.4	2.2	2.4	2.4	2.2
lastHalfHour	2.1	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.8

One Minute Volatility Bps

firstHalfHour	16.9	14.7	13.7	14.7	16.4	15.7	13.4	16.7	14.8	12.0
midday	7.3	6.5	5.6	5.9	7.4	7.3	6.1	8.6	7.1	5.5
lastHalfHour	7.7	7.3	7.0	7.3	7.8	8.7	7.8	9.7	8.1	7.0

Quotesize in Shares

firstHalfHour	425	408	416	394	370	465	415	345	364	411
midday	459	444	502	451	417	478	455	373	393	458
lastHalfHour	780	826	856	736	664	783	725	586	672	703

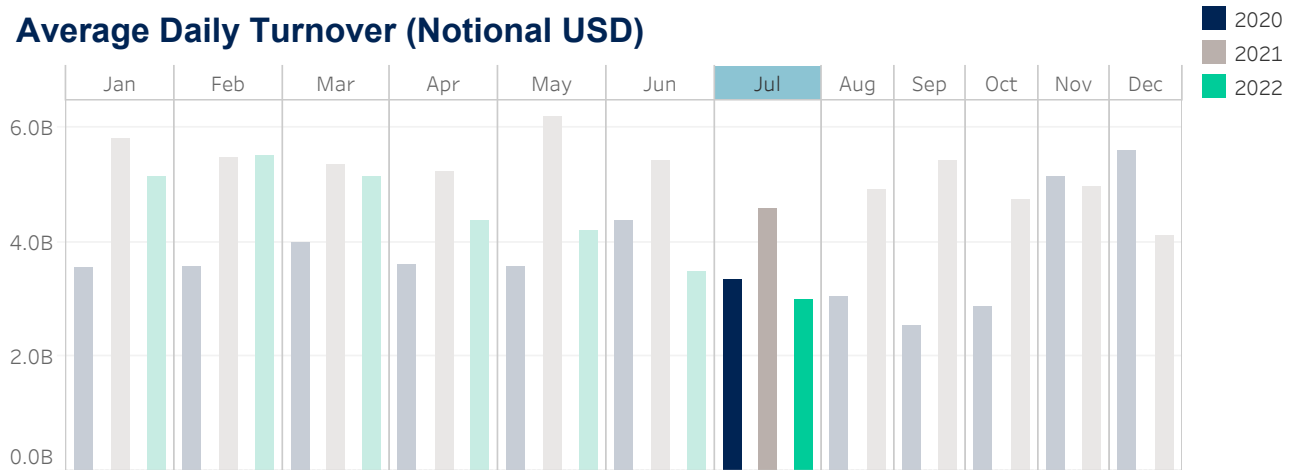
Median used for all metrics

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

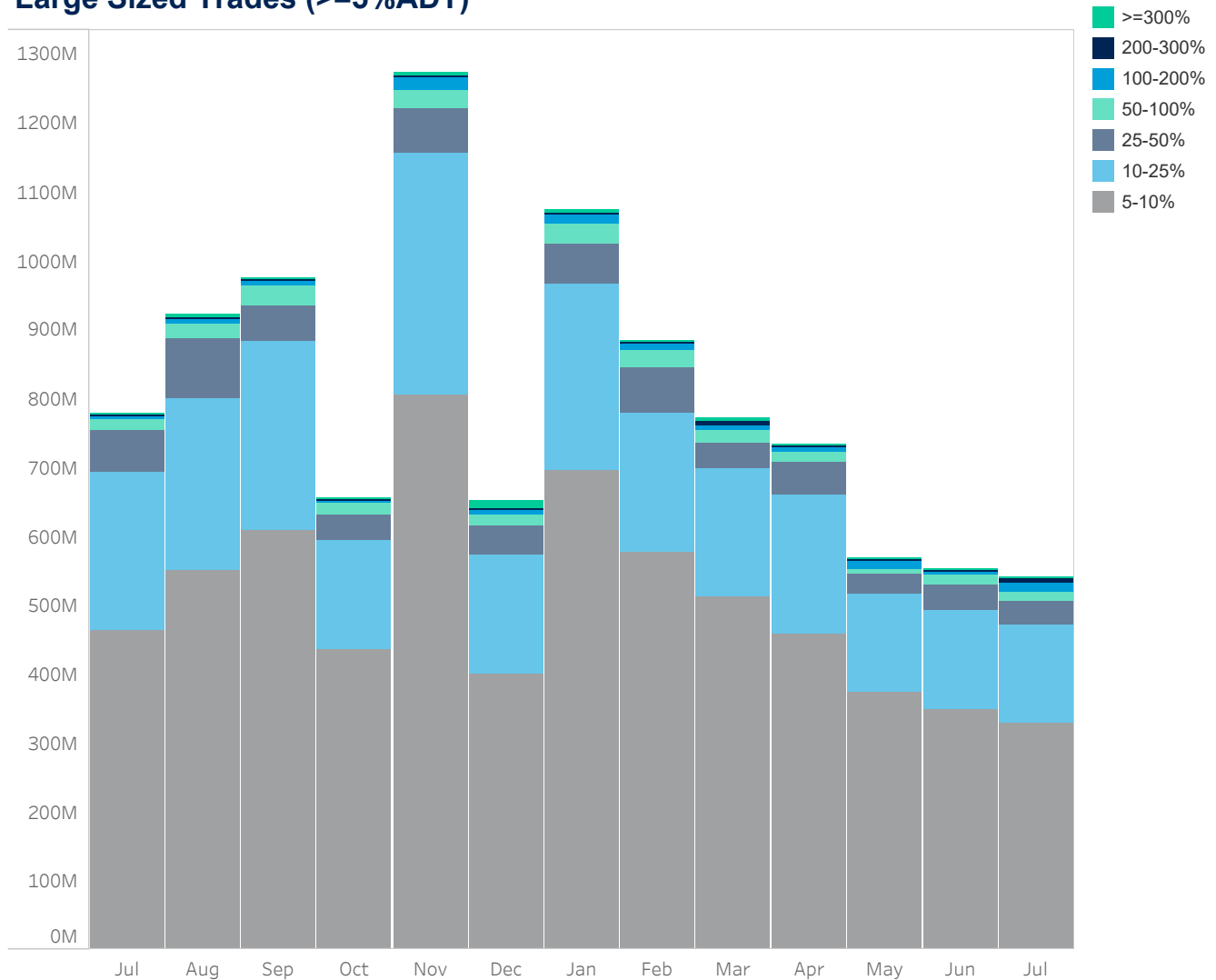
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



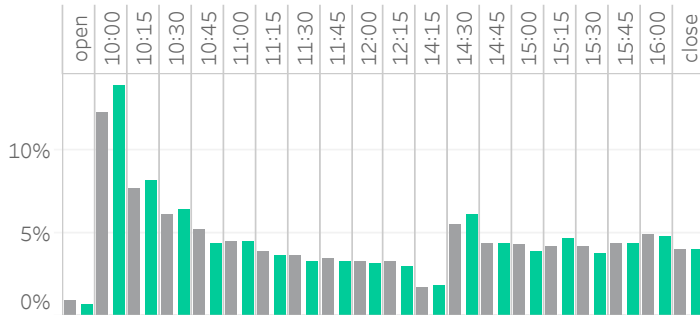
Large Sized Trades (>=5%ADT)



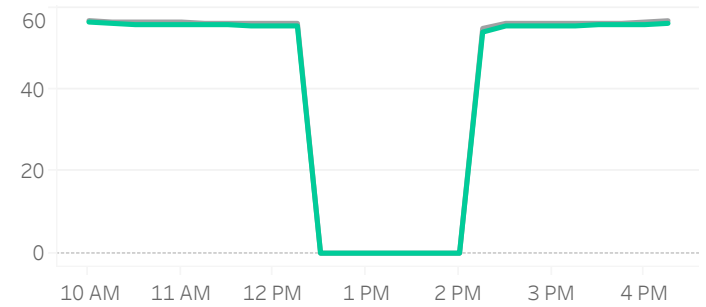
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Thailand

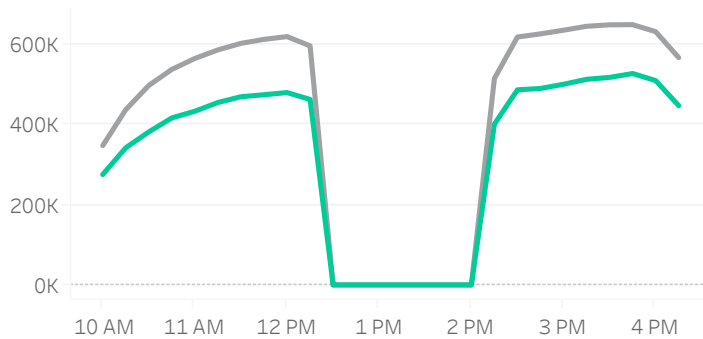
Volume Curve



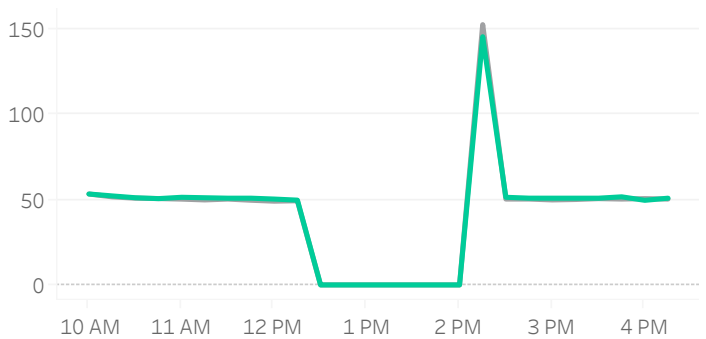
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3	
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22	
firstHalfHour	56.5	55.2	54.1	54.5	55.2	56.2	55.8	56.5	57.5	60.1	
midday	56.3	54.6	53.4	54.3	54.9	55.6	55.4	55.9	57.1	59.9	
lastHalfHour	56.5	55.1	53.8	54.4	55.2	55.7	55.9	56.2	57.5	60.0	

One Minute Volatility Bps

firstHalfHour	181.9	182.6	120.6	145.0	151.1	54.1	158.6	54.3	144.1	148.5
midday	168.2	158.8	152.8	152.7	158.8	152.0	157.2	155.2	173.0	142.6
lastHalfHour										

Quotesize in Shares

firstHalfHour	416,429	402,253	360,899	385,390	374,157	334,148	350,199	296,888	309,227	249,174
midday	669,728	654,185	562,512	617,268	597,117	540,531	568,254	472,504	481,812	401,100
lastHalfHour	656,823	637,808	551,613	606,051	597,584	539,031	562,618	479,643	473,218	415,479

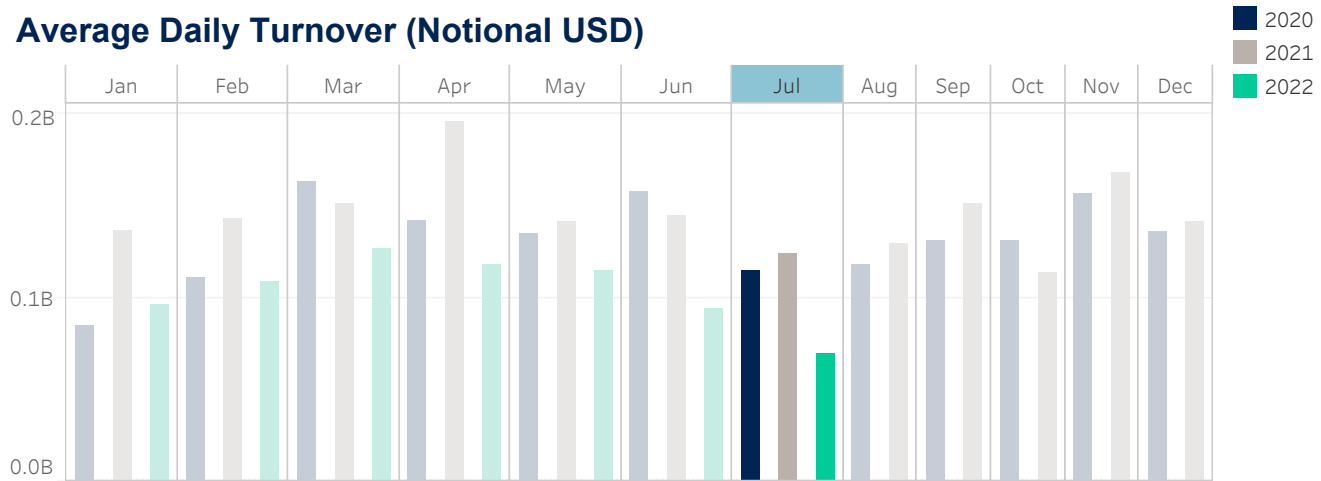
Median used for all metrics

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

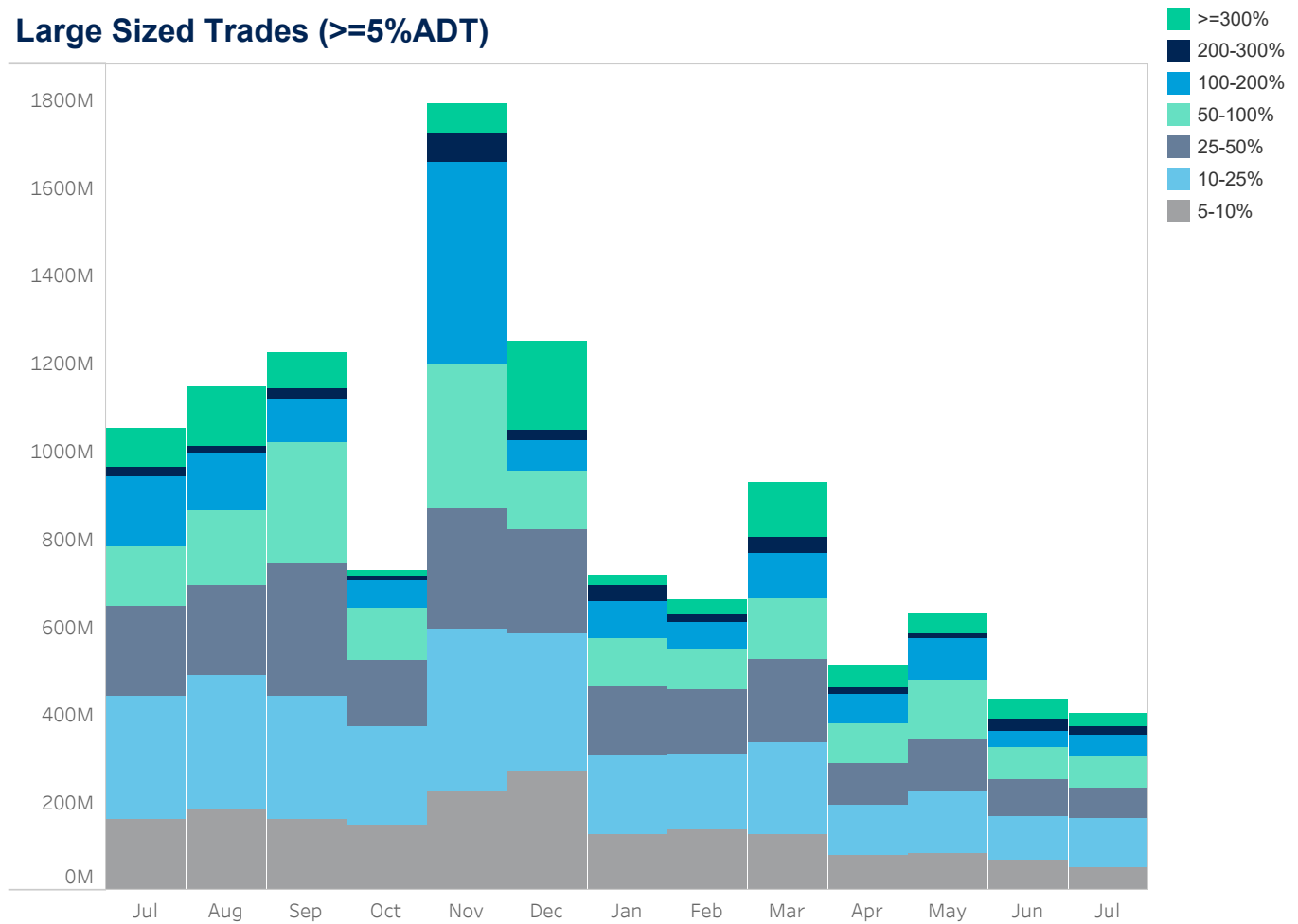
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



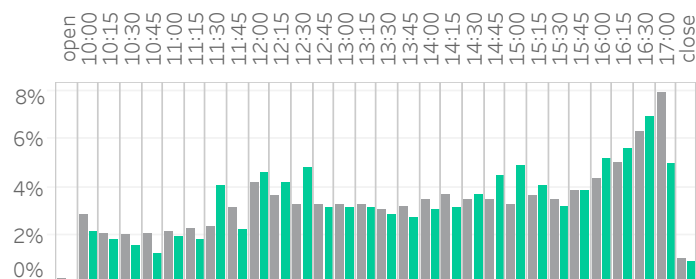
Large Sized Trades (>=5%ADT)



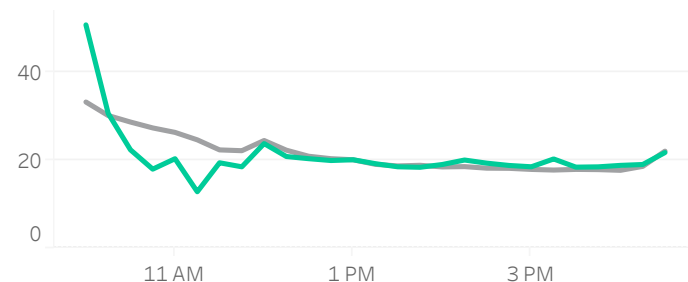
Source data: Virtu Financial

New Zealand

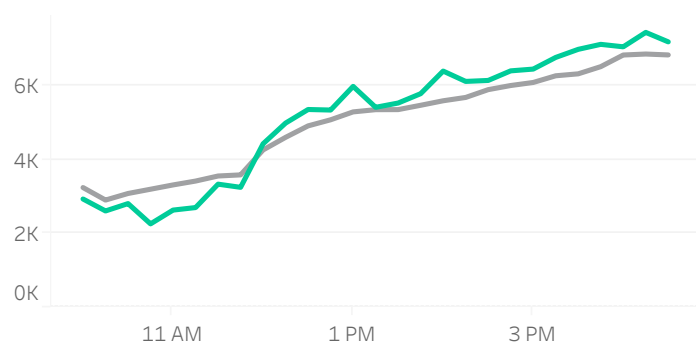
Volume Curve



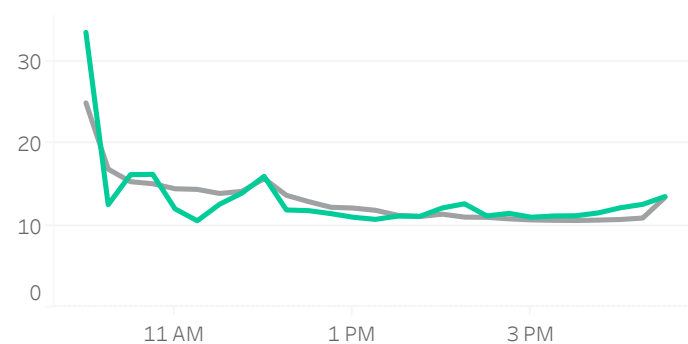
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	29.1	31.3	34.0	33.3	32.2	30.8	34.0	38.6		
midday	18.2	20.0	21.7	21.6	20.8	19.3	17.7	19.6	22.2	20.0
lastHalfHour	18.3	18.7	20.5	21.3	23.6	19.3	18.0	20.7	24.8	20.4

One Minute Volatility Bps

firstHalfHour	7.5	7.4	9.1	9.6	8.8	7.1	6.3	9.1		
midday	3.3	4.0	4.2	4.3	4.8	4.3	3.2	3.8	3.7	3.7
lastHalfHour	4.3	3.5	4.1	3.3	4.7	4.8	3.7	5.3	5.6	4.7

Quotesize in Shares

firstHalfHour	3,090	3,356	3,316	2,843	3,412	3,092	3,044	2,841		
midday	5,679	5,456	5,315	5,011	5,684	5,284	5,456	5,955	6,180	5,959
lastHalfHour	7,910	6,898	7,038	6,831	7,951	8,238	7,811	7,376	7,341	7,577

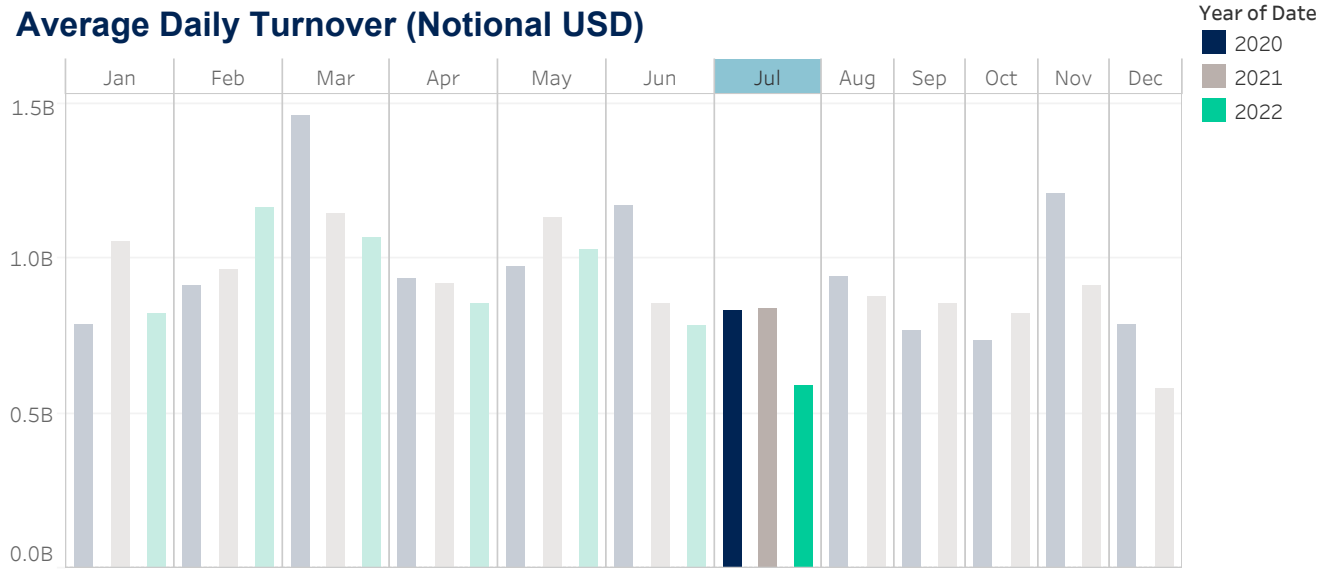
Median used for all metrics

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

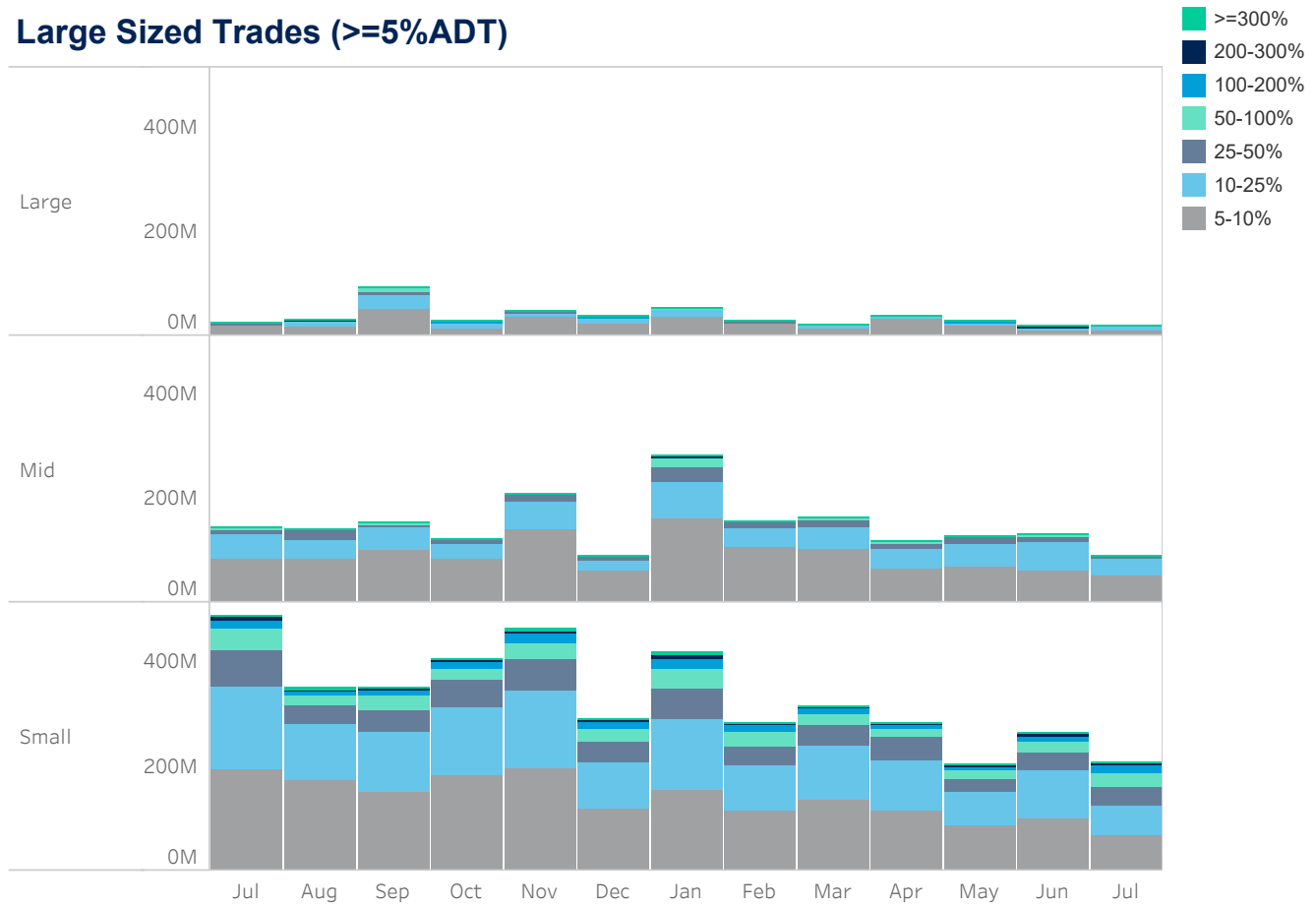
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



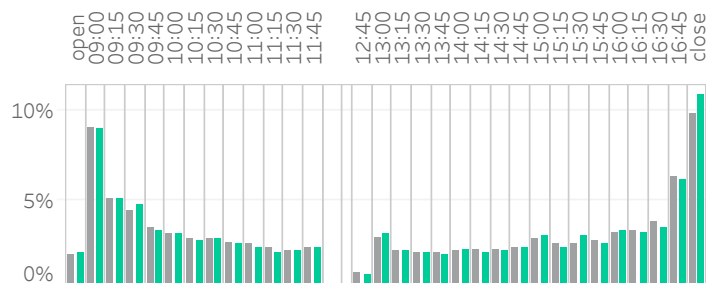
Large Sized Trades (>=5%ADT)



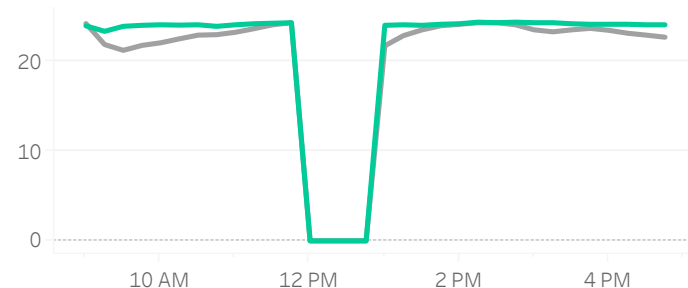
Source data: Virtu Financial

Singapore

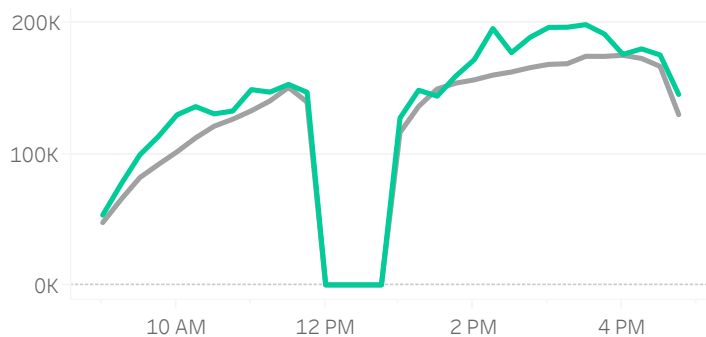
Volume Curve



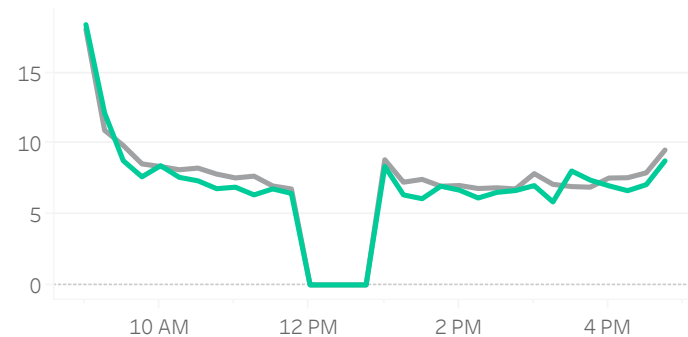
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ July 2022

Spread Bps

	21 Q4			22 Q1			22 Q2			22 Q3
	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	Apr 22	May 22	Jun 22	Jul 22
firstHalfHour	22.7	21.6	23.6	22.5	21.3	21.0	20.5	22.2	22.8	23.0
midday	22.8	22.2	24.2	23.4	21.6	21.2	21.8	23.9	24.0	24.4
lastHalfHour	22.0	22.1	22.7	21.9	21.2	20.8	21.1	23.9	22.8	22.0

One Minute Volatility Bps

firstHalfHour	7.3	6.4	5.3	5.5	7.6	8.7	5.7	8.1	5.9	6.2
midday	3.3	5.5	3.7	4.1	5.3	5.0	4.5	5.8	3.9	5.1
lastHalfHour	4.8	4.0	2.9	4.6	2.7	3.7	4.9	5.7	3.6	4.4

Quotesize in Shares

firstHalfHour	54,873	78,883	58,696	57,597	62,465	51,450	48,491	66,272	58,725	49,988
midday	150,127	165,639	146,991	140,047	127,607	119,649	116,792	159,349	136,036	111,790
lastHalfHour	158,656	183,894	150,357	134,260	152,729	122,584	122,775	163,525	129,298	102,873

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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