# **March 2022**

# **APAC Market Structure Monthly**

# **Average Daily Turnover (Notional USD)**



#### **Country Breakdowns**

Hong Kong Taiwan

**China** India

**Japan** Thailand

Australia New Zealand

South Korea Singapore



# Mar 2022 AP Market Structure Monthly

#### MICROSTRUCTURE OBSERVATIONS

- Overall higher notional turnover MoM seen across the region, with Hong Kong and China leading the greatest increases at 46% and 15% respectively. Exception to this was Singapore, Australia and New Zealand.
- Intraday spread in Hong Kong widened by ~2bps MoM and one minute volatility in first half hour of trading increased by +6bps to 21bps, the highest since 2020 pandemic levels.
- 10-25% ADT trades in China exceeded US\$14B, the highest since December 2021.
   Otherwise, distribution of large sized trades (>=5% ADT) was consistent in other countries.

#### **AP MARKET STRUCTURE NEWS**

# Japan Exchange Group and QUICK Corp. Publish Anthology of Environmental, Social and Governance Issues

On 30 March 2022, Japan Exchange Group, Inc. (JPX) and QUICK Corp. (QUICK) published their **Environmental, Social and Governance (ESG) Anthology** (in Japanese only) as a complement to the Practical Handbook for ESG disclosure published by JPX in March 2020. The anthology aims to provide Japan-listed companies with useful ESG guidance by covering 31 issues across ten ESG topics. It also includes commentary on accompanying business risks, opportunities, possible impact on corporate value, metrics that could be used for risk evaluations and management and other aspects relating to each issue. https://www.jpx.co.jp/english/corporate/news/news-releases/0090/20220330-01.html

JPX and S&P Dow Jones Indices Launch S&P/JPX 500 ESG Score Tilted Index Series

On 28 March 2022, JPX announced that it had joined forces with S&P Dow Jones Indices (S&P DJI) to increase transparency and support the growth of the ESG market in Japan with the launch of the S&P/JPX 500 ESG Score Tilted Index Series, which are designed to improve the ESG characteristics of Japan's widely followed TOPIX 500, while offering a similar risk and return profile of its parent index, TOPIX. <a href="https://www.jpx.co.jp/english/corporate/news/news-releases/0060/20220328-01.html">https://www.jpx.co.jp/english/corporate/news/news-releases/0060/20220328-01.html</a>

Shanghai Stock Exchange and Shenzhen Stock Exchange Publish Interim Measures and Guidelines for the Stock Connect Listing and Trading of Overseas Depository Receipts

On 25 March 2022, in a bid to advance institutional access to capital markets and deepen the connectivity between China's domestic and overseas markets, Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) published their Notice on Issuing the Interim Measures for the Listing and Trading of Depository for the listing, trading, cross-border conversion, and market making of depository receipts under the Stock Connect scheme between SSE / SZSE and overseas exchanges. The rules and guidelines took effect from the date of issuance.

1



http://english.sse.com.cn/news/newsrelease/c/5700281.shtml http://www.szse.cn/English/about/news/szse/t20220325 592083.html

#### Hong Kong Exchanges and Clearing Limited Publishes Fact Book 2021

On 18 March 2022, Hong Kong Exchanges and Clearing Limited (HKEX) published its annual HKEX Fact Book 2021 which reviews the securities, derivatives and commodity markets and related clearing and settlement information. Additionally, market indices' movements, trading statistics and analysis, corporate actions of listed companies, fund-raising figures and historical statistics are also included. The total number of HKEX listed companies increased by 1.34% to 2,572 companies, 98 of which were new 2021 listings (compared to the 154 new listed companies in 2020), and in 2021 listed securities increased by 10.8% to 18,882 securities.

https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/SEHK/2022/20220318 MDD 001 22 e.pdf

# Hong Kong Futures Exchange Confirms Derivatives Holiday Trading Implementation on 9 May 2022

On 11 March 2022, Hong Kong Futures Exchange Limited (HKFE) confirmed, subject to regulatory approval, that all MSCI futures and options listed on HKFE would be the first suite of products to be traded on Hong Kong public holidays commencing on 9 May 2022 (Monday) for Buddha's Birthday. <a href="https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/HKFE/2022/MO\_DT\_057\_22\_e.pdf">https://www.hkex.com.hk/-/media/HKEX-Market/Services/Circulars-and-Notices/Participant-and-Members-Circulars/HKFE/2022/MO\_DT\_057\_22\_e.pdf</a>

# Australian Securities & Investments Commission Publishes Information Sheet for Social Media Influencers and Licensees

On 21 March 2022, Australian Securities & Investments Commission (ASIC) announced that it had published a resource <a href="Discussing Financial Products and Services Online">Discussing Financial Products and Services Online</a> outlining how the law applies to social media influencers and the licensees who use them, and case studies for reference. According to ASIC's 2021 Young People and Money Survey, 33% of 18-21 year-olds follow at least one financial influencer on social media and a further 64% reported changing at least one of their financial behaviors as a result.

Due to the changing nature of investor information access, ASIC monitors select online financial discussions by influencers who feature or promote financial products for misleading or deceptive representations or unlicensed advice or dealing and will take action to enforce the law if they see harm occurring—an influencer does not need to be licensed to breach the misleading or deceptive provisions. <a href="https://asic.gov.au/about-asic/news-centre/find-a-media-release/2022-releases/22-054mr-asic-issues-information-for-social-media-influencers-and-licensees/">https://asic.gov.au/about-asic/news-centre/find-a-media-release/2022-releases/22-054mr-asic-issues-information-for-social-media-influencers-and-licensees/</a>

# Stock Exchange of Thailand to Tighten Market Surveillance Measures to Enhance Supervisory Efficiency and Mitigate Investor Risks from 4 April 2022

On 23 March 2022, the Stock Exchange of Thailand (SET) announced that it would tighten market surveillance and impose a one-day trading suspension at the maximum level of the measures in a bid to bolster stock market oversight and investor protections. The measures may be imposed when SET detects irregular trading activities set forth in its trading rules. The measures have been approved from the Thai Securities and Exchange Commission and will take effect on 4 April 2022.

 $\underline{\text{https://www.set.or.th/set/newsdetails.do?newsld=16479926273440\&sequence=2022037162\&language=enloce-2022037162&language=enlo$ 



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

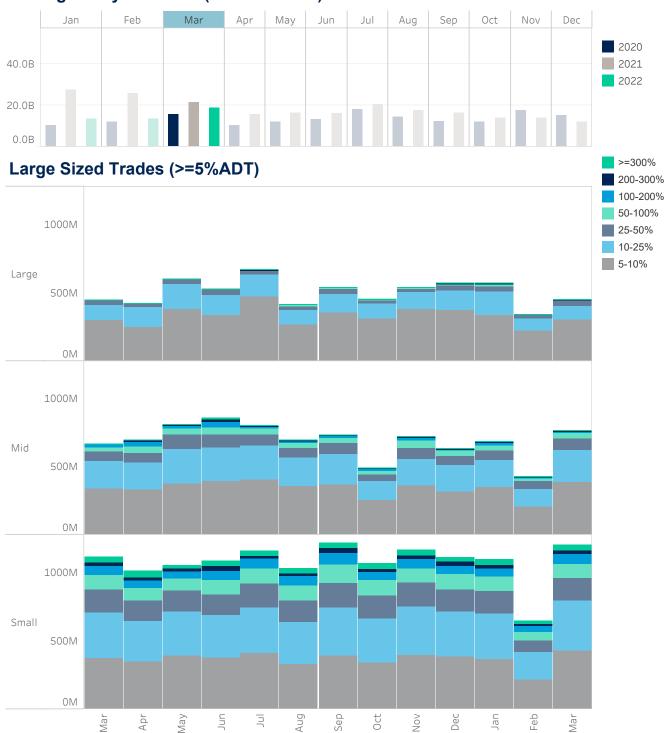
© 2022 Virtu Financial, Inc. All rights reserved. Not to be reproduced or retransmitted without permission. These materials are for informational purposes and are not intended to be used to make trading or investment decisions, they are not intended as an offer to sell or the solicitation of an offer 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, where such products and services are offered by Virtu ITG Ventures Limited, registered in Ireland No. 295549 ("VIVL"). 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 ITG Canada Corp., member Canadian Investor Protection Fund and Investment Industry Regulatory Organization of Canada; in Europe, Virtu ITG Europe Limited, registered in Ireland No. 283940 ("VIEL") (VIEL 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 VIEL and VFIL is Whitaker Court, Whitaker Square, Sir John Rogerson's Quay, Dublin 2, Ireland; 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)**



# **Hong Kong**

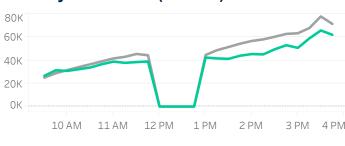
#### **Volume Curve**

# % day's volume % 09:30 09:30 10:00 10:10 11:10

#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



Rolling 12 Months Avg

March 2022

#### **Spread Bps**

	21 Q3				21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	16.9	18.4	18.1	18.5	17.3	17.3	16.2	15.8	17.8	
midday	13.1	13.7	12.9	12.7		12.5	11.9	12.0	13.4	
lastHalfHour	12.3	12.6	12.3	12.3	12.5	12.4	11.6	11.7	12.6	

#### **One Minute Volatility Bps**

firstHalfHour	15.8	16.7	17.5	18.2	13.8	14.7	15.5	15.1	21.2
midday	7.8	7.0	7.5	6.7	6.1	6.3	6.4	6.5	9.7
lastHalfHour	8.1	6.7	6.5	6.5	6.0	5.8	6.1	6.9	7.8

#### **Quotesize in Shares**

firstHalfHour	26,823	27,946	28,697	26,921	27,455	23,936	28,480	27,737	29,034
midday	49,961	47,200	49,020	47,554		35,935	47,428	46,616	40,716
lastHalfHour	76,912	80,882	77,790	75,001	72,389	54,283	70,843	71,318	65,291

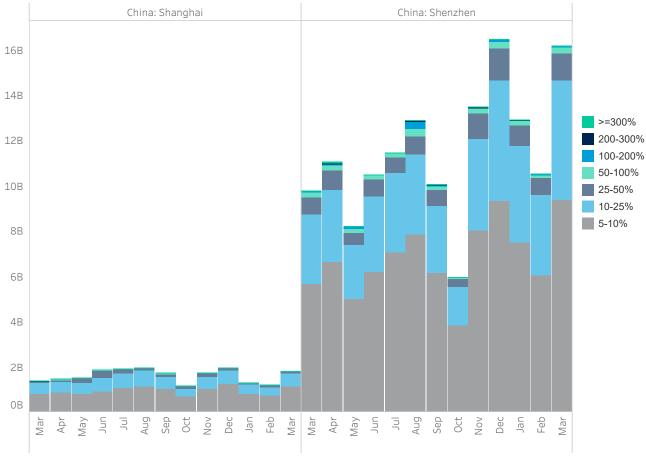
Median used for all metrics

# China

#### **Average Daily Turnover (Notional USD)**



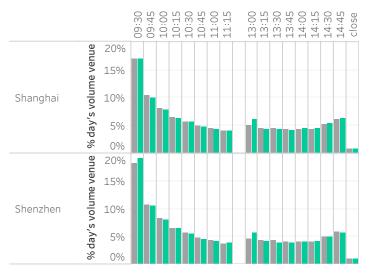
#### **Large Sized Trades (>=5%ADT)**

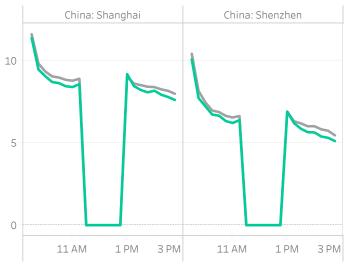


# China

#### **Volume Curve**

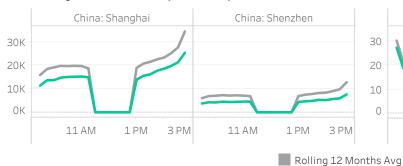
#### **Intraday Spread (bps)**

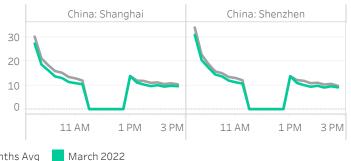




#### **Intraday Quotesize (Shares)**

# Intraday Volatility (bps)





#### **Spread Bps**

			China: Sh	anghai			China: Shenzhen					
		21 Q4 22 Q1						21 Q4			22 Q1	
	Oct	Nov	Dec	Jan	Feb	Mar	Oct	Nov	Dec	Jan	Feb	Mar
firstHalfHour	10.3	9.8	9.3	10.0	9.9	10.9	9.0	8.4	7.8	9.0	8.3	9.1
midday	8.5	8.3		8.2	8.4	9.4	6.5	6.2	5.8	6.3	6.2	7.0
lastHalfHour	7.6	7.6			7.7	8.3	5.4	5.3	4.9	5.3	5.2	5.9

#### One Minute Volatility Bps

firstHalfHour	22.8	19.2	17.8	20.5	18.5	21.7	26.3	24.1	21.8	27.0	22.1	24.2
midday	9.0	7.5	7.3	8.4	7.8	10.1	10.4	9.6	9.2	11.3	9.8	11.9
lastHalfHour	7.1	5.9	5.9	7.4	6.4	8.3	7.9	7.2	7.1	8.8	7.6	8.7

#### **Quotesize in Shares**

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

Median used for all metrics

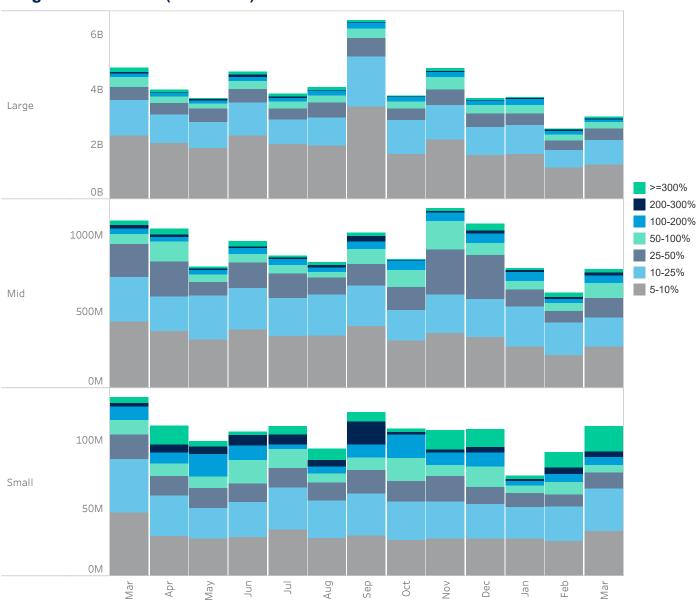
# Japan

0.0B

# **Average Daily Turnover (Notional USD)**

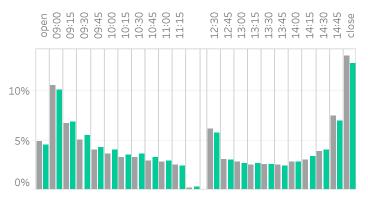


# Large Sized Trades (>=5%ADT)



# Japan

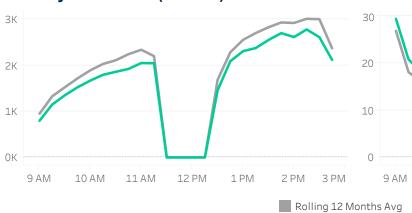
#### **Volume Curve**



#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



# Spread Bps

	21 Q3				21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	25.6	27.3	25.8	26.7	27.2	28.7	29.4	28.2	28.4	
midday	20.7	21.4	21.1	21.9		22.5	23.3	22.7	22.7	
lastHalfHour	19.6	19.9	19.8	19.7		20.7	21.6	21.2	21.2	

# **One Minute Volatility Bps**

firstHalfHour	12.1	12.6	12.4	14.5	13.2	14.6	16.5	17.0	17.5
midday	6.2	5.9	6.0	7.1	6.1	6.4	7.7	7.6	8.9
lastHalfHour	11.5	7.9	7.9	6.8	10.1	6.1	6.5	7.1	8.0

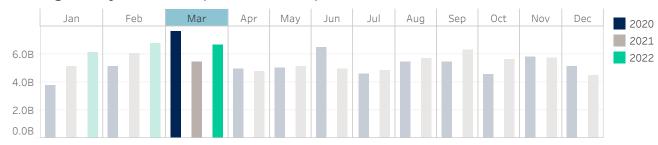
#### **Quotesize in Shares**

firstHalfHour	1,334	1,280	1,380	1,263	1,289	1,136	1,084	1,033	1,019
midday	2,700	2,525	2,630		2,700	2,453	2,128	2,031	2,109
lastHalfHour	3,218	3,328	3,397	3,161	3,282	2,896	2,602	2,605	2,496

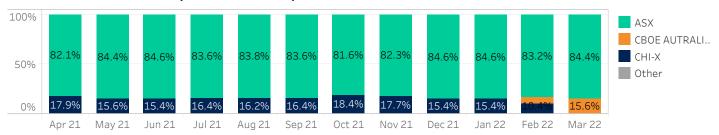
Median used for all metrics

#### Australia

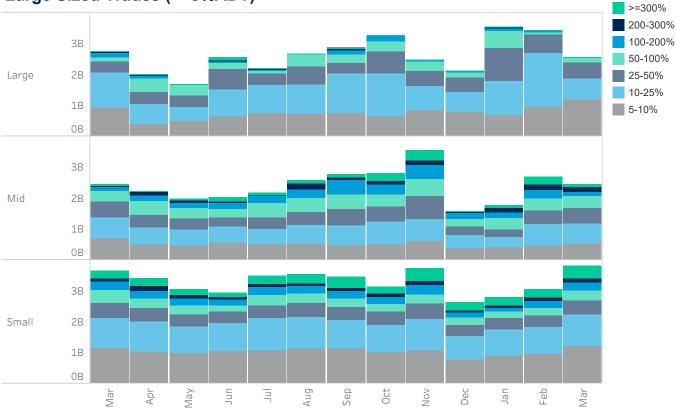
#### **Average Daily Turnover (Notional USD)**



#### **Venue Market Share (Notional USD)**



#### **Large Sized Trades (>=5%ADT)**



#### **Australia**

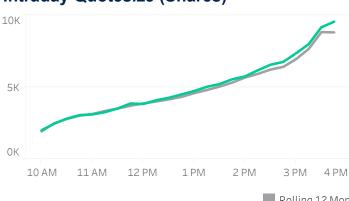
#### **Volume Curve**



#### **Intraday Spread (bps)**



# **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

	21 Q3				21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	17.1	16.5	16.9	16.9	17.1	17.7	18.0	18.9	18.6	
midday	13.7	13.7		14.0	14.1	14.5	14.6	15.0	15.1	
lastHalfHour	13.9	13.8	14.3	13.9	14.1	14.2	14.1	14.3	14.5	

#### **One Minute Volatility Bps**

firstHalfHour	15.5	15.4	16.9	15.6	15.7	16.0	16.5	20.8	18.8
midday	3.6	3.6	4.0	4.4	4.3	4.3	5.5	6.2	5.2
lastHalfHour	3.3	2.7	3.7	4.0	3.6	3.2	4.9	3.9	3.6

#### **Quotesize in Shares**

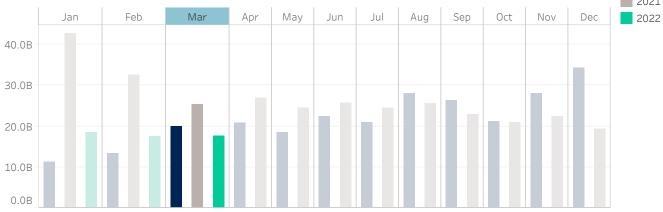
firstHalfHour	2,425	2,398	2,375	2,178	2,129	1,938	1,994	2,092	2,237
midday	4,620	4,845	4,604	4,298		4,134	3,969	4,019	4,734
lastHalfHour		9,113	8,565	9,226	9,302	8,480	8,111	8,675	9,578

Median used for all metrics

# South Korea

#### **Average Daily Turnover (Notional USD)**



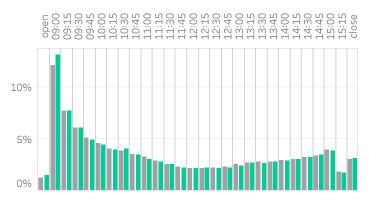


# Large Sized Trades (>=5%ADT)



#### **South Korea**

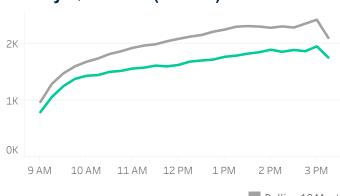
#### **Volume Curve**



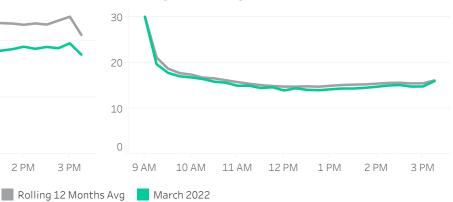
#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

		21 Q3			21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	18.3	18.5	18.7	18.9	19.8	18.3	18.9	18.8	17.9	
midday	17.7	17.3	17.6	17.2	17.9	17.2		17.4	17.0	
lastHalfHour	17.8	17.3	17.6	17.2	17.9	17.3	17.4	17.3	17.0	

#### **One Minute Volatility Bps**

firstHalfHour	13.0	15.8	15.1	16.5	16.9	14.9	18.2	17.6	15.1
midday	10.5	11.1	10.1	10.7	11.2	10.6	11.9	11.5	10.3
lastHalfHour	22.9	15.0	19.0	12.7	15.6	25.1	13.0	13.3	25.4

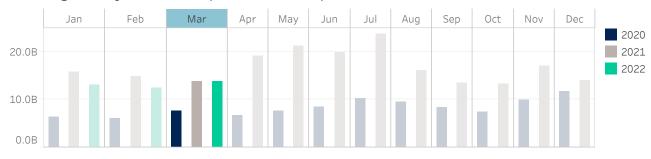
#### **Quotesize in Shares**

firstHalfHour	1,526	1,053	1,012	890		899	813	822	931
midday	2,812	2,004	2,023	1,653	1,773	1,608	1,528	1,313	
lastHalfHour	3,230	2,336	2,362	1,871	2,018	1,807	1,727	1,598	1,929

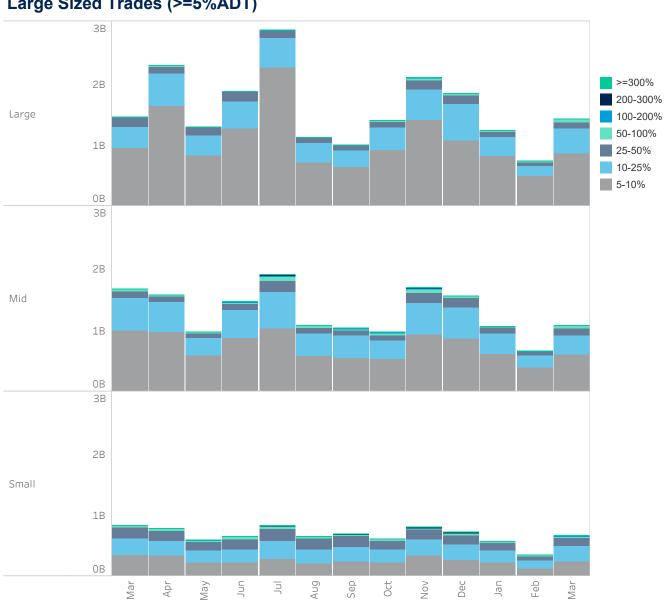
Median used for all metrics

# **Taiwan**

# **Average Daily Turnover (Notional USD)**

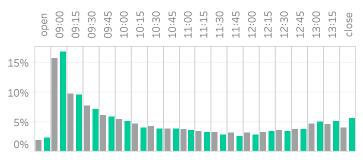


#### Large Sized Trades (>=5%ADT)



# **Taiwan**

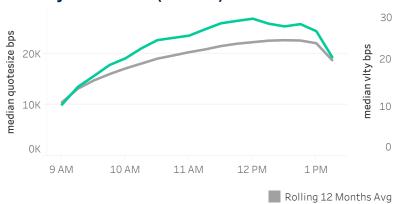
#### **Volume Curve**



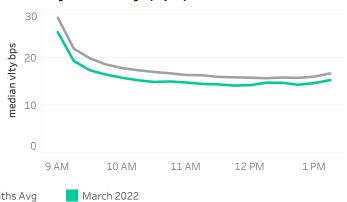
#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

		21 Q3			21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	29.0	30.1	29.1	30.4	28.0	26.5	28.6	26.7	26.6	
midday	23.6	24.1	23.2	24.2		21.7	22.2	21.9	21.7	
lastHalfHour	22.7	23.8	23.4	23.8	22.4	21.6	22.6	22.3	22.2	

#### **One Minute Volatility Bps**

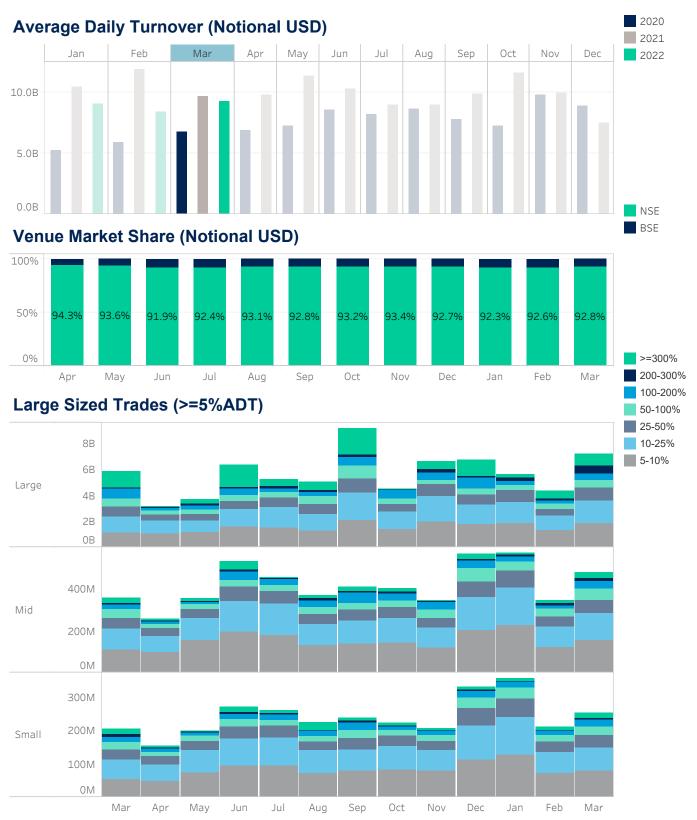
firstHalfHour	17.1	17.1	14.7	15.5	14.4	11.7	13.6	11.9	12.2
midday	7.5	7.6	6.8	7.2	6.6	6.6	7.6	6.5	6.5
lastHalfHour	7.9	7.8	7.9	8.1	9.3	9.2	7.8	9.1	8.1

#### **Quotesize in Shares**

firstHalfHour	12,027	10,553	11,061	10,944	12,921	13,588	12,185	11,983	12,049
midday	18,860	17,088	19,152	18,385		24,891	22,588	22,644	24,091
lastHalfHour	20,270	17,592	18,484	18,001	22,498	24,520	21,888	20,421	22,083

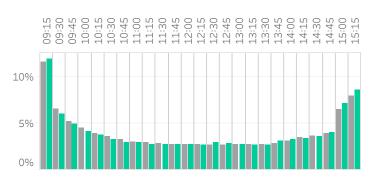
Median used for all metrics

India



# India

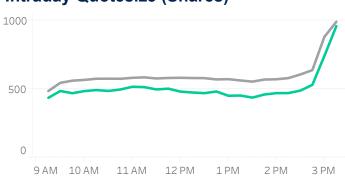
#### **Volume Curve**



#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

		21 Q3			21 Q4		22 Q1			
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22	
firstHalfHour	2.6	2.8	2.8	3.2	3.1		3.1	3.1	2.9	
midday	2.2		2.3	2.6	2.5	2.4	2.4	2.5	2.4	
lastHalfHour	2.0	2.1	1.9	2.1	2.0	2.0	2.0	2.0	2.0	

#### **One Minute Volatility Bps**

firstHalfHour	10.5	12.6	12.7	16.9	14.7	13.7	14.7	16.4	15.7
midday	4.7	5.5	5.8	7.3	6.5	5.6		7.4	7.3
lastHalfHour	6.1	6.8	6.4	7.7	7.3	7.0	7.3	7.8	8.7

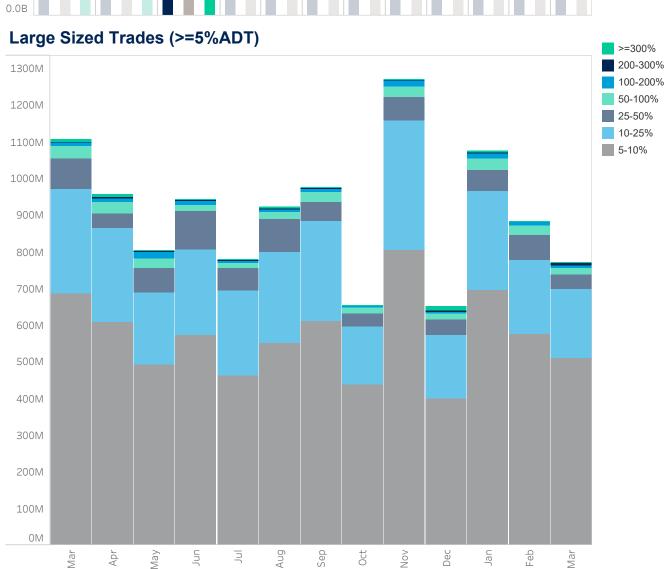
#### **Quotesize in Shares**

firstHalfHour	533	527	526	425	408	416	394	370	465
midday	593	583	540	459	444	502	451	417	
lastHalfHour	952	929	946	780		856	736	664	783

Median used for all metrics

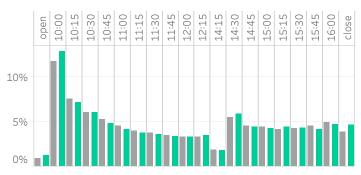
# **Thailand**





# **Thailand**

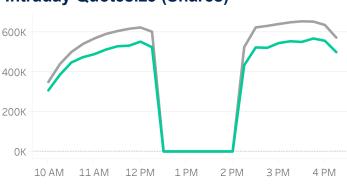




#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

		21 Q3			21 Q4		22 Q1		
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22
firstHalfHour	58.5	57.3		56.3	55.0	53.8	54.3	55.1	56.0
midday	58.0	56.8	55.6	56.2	54.4	53.2	54.1	54.6	
lastHalfHour	58.7	57.1	55.9	56.5	54.9	53.6	54.2	55.0	

#### **One Minute Volatility Bps**

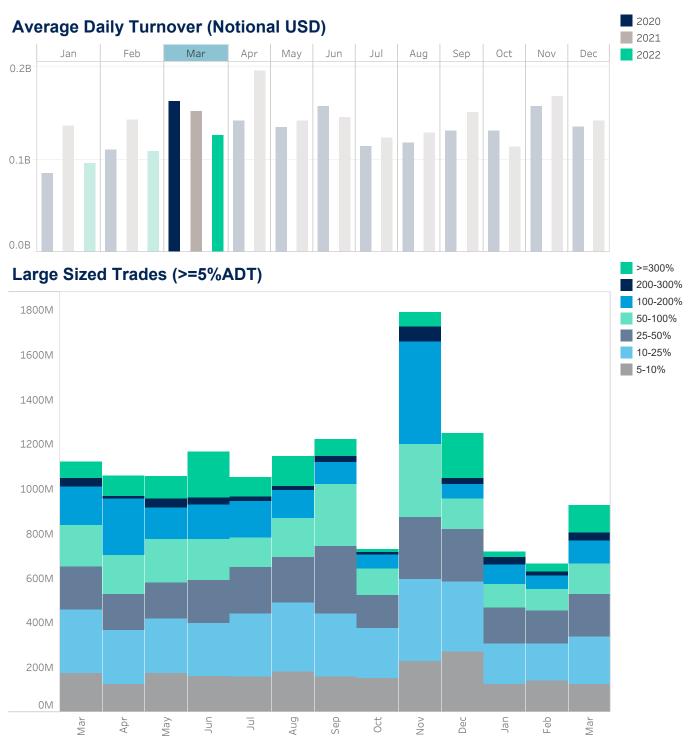
firstHalfHour	159.4	162.4	168.7	180.7	179.3	120.6	143.8	150.9	51.6
midday	130.5	159.5	164.4	167.5	158.7	152.8	151.5	156.1	151.2
lastHalfHour									

#### **Quotesize in Shares**

firstHalfHour	327,728	343,555	393,145	415,379	402,678	363,207	388,450	374,353	332,974
midday	550,461	566,015	644,261	663,065	654,635	569,102	618,574		544,083
lastHalfHour	542,139	571,302	629,320	657,872	643,271	564,619	611,447		542,318

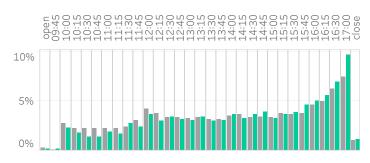
Median used for all metrics

# **New Zealand**



# **New Zealand**

#### **Volume Curve**



# **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

	21 Q3			21 Q4			22 Q1		
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22
firstHalfHour	30.8	31.6	29.0	29.1	31.3	34.0	33.3	32.2	30.8
midday	19.0	21.0	19.5	18.2		21.7	21.6	20.8	19.3
lastHalfHour	19.0	20.0	19.7	18.3	18.7	20.5	21.3	23.6	19.3

# **One Minute Volatility Bps**

firstHalfHour	6.1	7.0	6.0	7.5	7.4	9.1	9.6	8.8	7.1
midday	3.4	3.6	3.3	3.3	4.0	4.2	4.3	4.8	4.3
lastHalfHour	4.0	3.8	3.6	4.3	3.5	4.1	3.3	4.7	4.8

#### **Quotesize in Shares**

firstHalfHour	2,792	3,149	3,533	3,090	3,356	3,316	2,843	3,412	3,092
midday	5,453	5,494	5,752	5,679		5,315	5,011	5,684	5,284
lastHalfHour	7,213	6,762	7,042	7,910	6,898	7,038	6,831	7,951	8,238

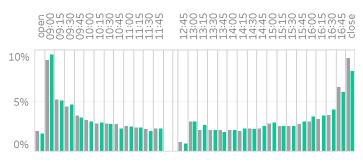
Median used for all metrics

# Singapore



# **Singapore**

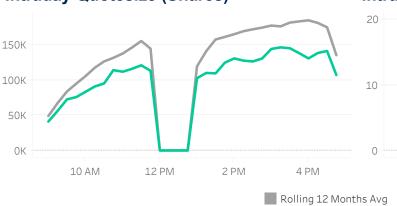
#### **Volume Curve**



#### **Intraday Spread (bps)**



#### **Intraday Quotesize (Shares)**



#### **Intraday Volatility (bps)**



#### **Spread Bps**

	21 Q3			21 Q4			22 Q1		
	Jul 21	Aug 21	Sep 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22
firstHalfHour	22.9	21.6	23.3	22.7	21.6	23.6	22.5	21.3	21.0
midday		22.4	24.1	22.8	22.2	24.2	23.4	21.6	21.2
lastHalfHour	22.3	22.5	23.1	22.0	22.1	22.7	21.9	21.2	20.8

#### **One Minute Volatility Bps**

firstHalfHour	6.6	7.7	6.6	7.3	6.4	5.3	5.5	7.6	8.7
midday	4.5	3.9	3.3	3.3	5.5	3.7	4.1	5.3	5.0
lastHalfHour	4.9	1.6	3.4	4.8	4.0	2.9	4.6	2.7	3.7

#### **Quotesize in Shares**

firstHalfHour	51,982	58,984	61,969	54,873	78,883	58,696	57,597	62,465	51,450
midday	122,557	127,510	145,217	150,127	165,639	146,991		127,607	119,649
lastHalfHour	118,307	142,612	146,413	158,656	183,894	150,357	134,260	152,729	122,584

Median used for all metrics

#### 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

© 2022 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, where such products and services are offered by Virtu ITG Ventures Limited, registered in Ireland No. 295549 ("VIVL"). 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 ITG Canada Corp., member Canadian Investor Protection Fund and Investment Industry Regulatory Organization of Canada; in Europe, Virtu ITG Europe Limited, registered in Ireland No. 283940 ("VIEL") (VIEL 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 VIEL and VFIL is Whitaker Court, Whitaker Square, Sir John Rogerson's Quay, Dublin 2, Ireland; 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).