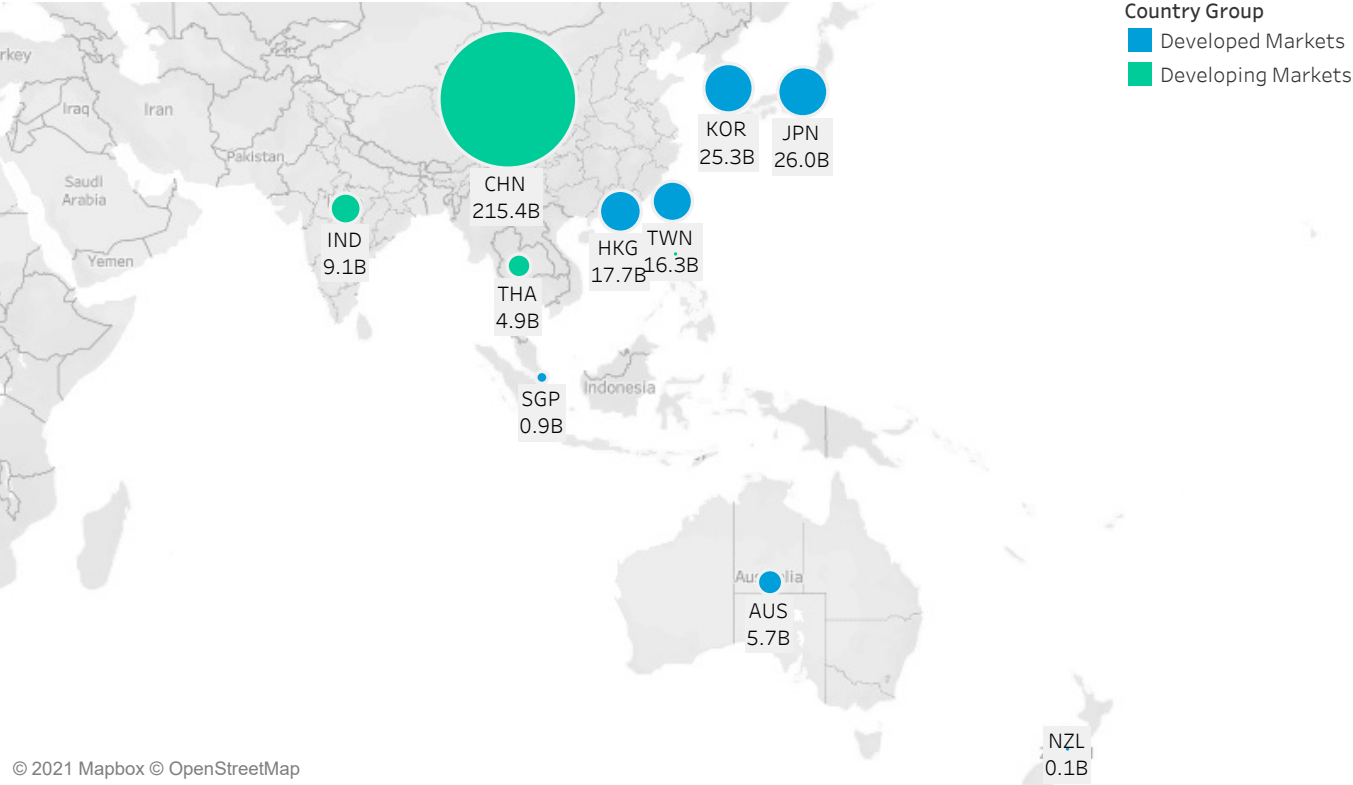


August 2021 APAC Market Structure Monthly

Average Daily Turnover (Notional USD)



Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

August 2021

APAC Market Structure Monthly

MICROSTRUCTURE OBSERVATIONS

- Australia, China, India, Japan, Korea and Thailand saw higher turnover in August, whereas Hong Kong and Taiwan's turnover decreased by 14% and 31% MoM respectively.
- Historical high monthly turnover recorded in China with US\$98B in Shanghai and US\$117B in Shenzhen. One minute volatility in first half hour trading in Shanghai increased to its highest so far this year.
- Intraday spreads and volatility across most APAC-based countries remained consistent MoM. One minute volatility in the last half hour of trading decreased 31% and 34% in Japan and Korea respectively.

APAC MARKET STRUCTURE NEWS

China to Establish Beijing Bourse to Help Support Equity Financing Needs of Small- and Medium-Sized Innovative Businesses

China Securities Regulatory Commission recently announced plans for a new stock exchange in Beijing to boost the share of equity financing for small- and medium-sized innovative companies. The announcement comes after the Chinese government said it wants to reduce economy debt levels by raising the share of equity financing within its bank-dominated financial system, and has also recently introduced rules making it harder for companies that manage consumer data to list overseas. No launch date for the of the new exchange has been set.

<https://www.bloomberg.com/news/articles/2021-09-02/china-s-xi-to-talk-on-services-trade-as-u-s-tensions-simmer>

CSRC (CHN): http://www.csrc.gov.cn/pub/newsite/zjhxwfb/xwdd/202109/t20210902_404637.html

NEEQ (CHN): http://www.neeq.com.cn/bse_news/200010653.html

Hong Kong Exchanges and Clearing Market Launches MSCI China A 50 Connect Index Derivatives Product

On 20 August 2021, Hong Kong Exchanges and Clearing Market (HKEX) announced the launch of its first A-share derivatives product, the MSCI China A 50 Connect Index Futures, which tracks the performance of 50 key Shanghai Stock Exchange and Shenzhen Stock Exchange listed companies available via Stock Connect. This is a key step in HKEX's plans to build an offshore Mainland China equities derivatives suite in Hong Kong. The first trading day of the product is scheduled to be 18 October 2021.

https://www.hkex.com.hk/News/News-Release/2021/210820news?sc_lang=en

Hong Kong Securities and Futures Commission Issues Conclusion on Investor Identification Regime and OTC Securities Reporting for Stock Market

On 10 August 2021, the Hong Kong Securities and Futures Commission issued consultation conclusions on proposals to introduce investor identification for the securities market and require reporting of over-the-counter (OTC) security transactions. Under the investor identification regime, licensed corporations and registered institutions will submit to The Stock Exchange of Hong Kong Limited (SEHK) the names and identity document information of clients placing securities orders on SEHK.

<https://apps.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=21PR82>

Singapore Exchange Introduces Special Purpose Acquisition Companies (SPAC) Listing Framework

Singapore Exchange (SGX) announced new rules that enable Special Purpose Acquisition Companies (SPACs) to list on its Mainboard effective 3 September 2021. The key criteria for SGX's SPAC listings include a minimum market capitalization of S\$150M (US\$112M) and that "de-SPAC" must take place within 24 months of IPO (with an extension of up to 12 months subject to fulfilment of prescribed conditions), among others.

<https://www.sgx.com/media-centre/20210902-sgx-introduces-spac-listing-framework>

To learn more, contact your sales representative or call our desk at: **APAC** +852.2846.3592 | **CAN** +1.416.874.0800 | **EMEA** +44.20.7670.4066 | **US** +1.646.682.6199

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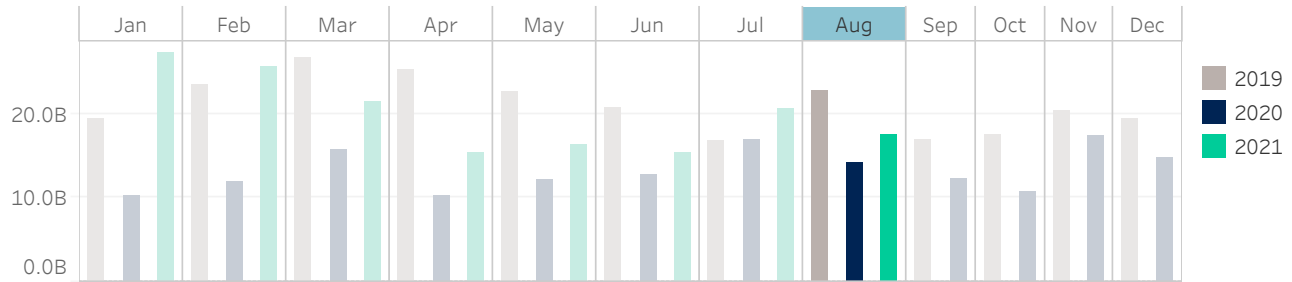
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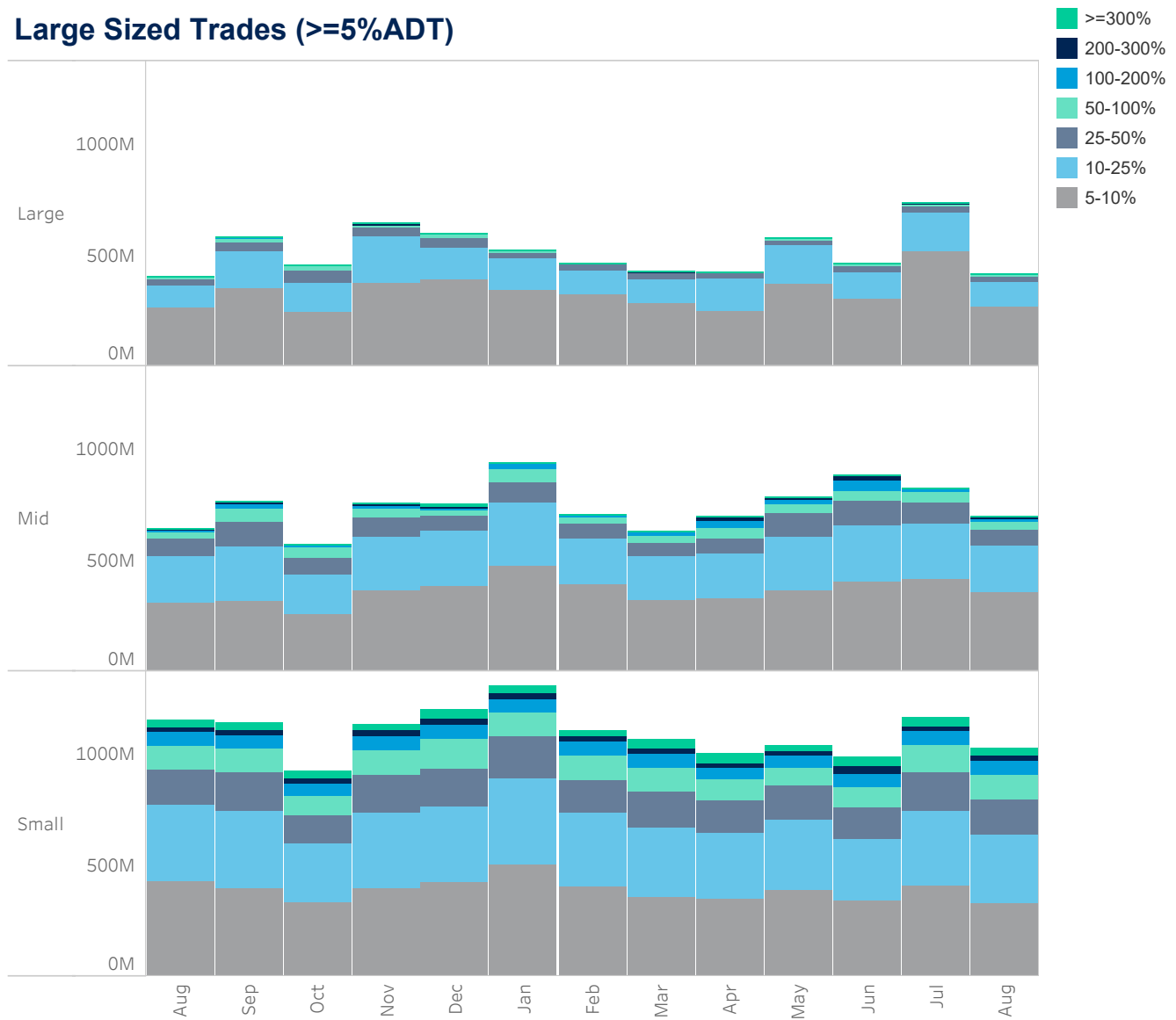
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Hong Kong

Average Daily Turnover (Notional USD)



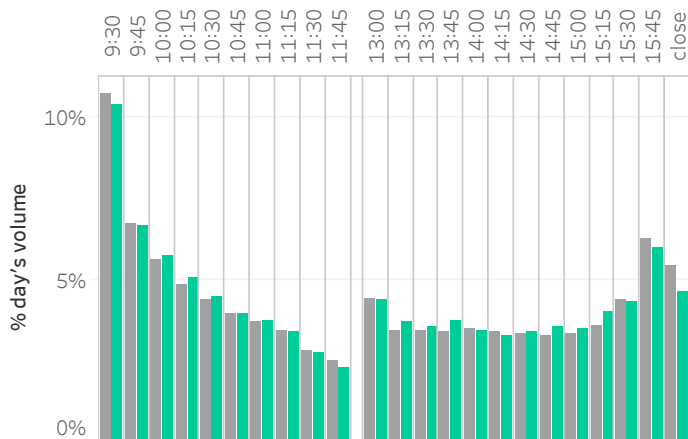
Large Sized Trades (>=5%ADT)



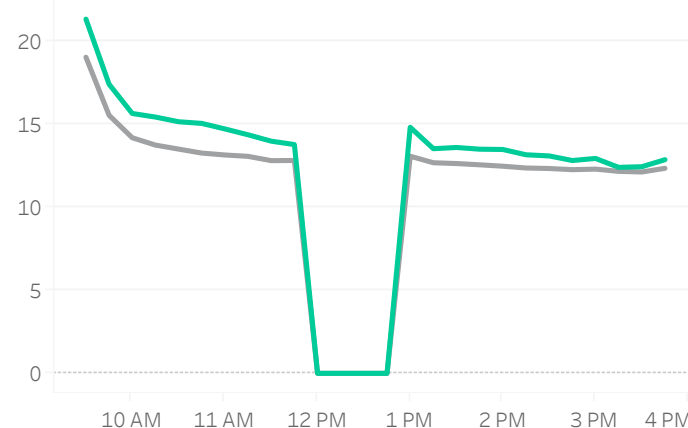
Source data: Virtu Financial

Hong Kong

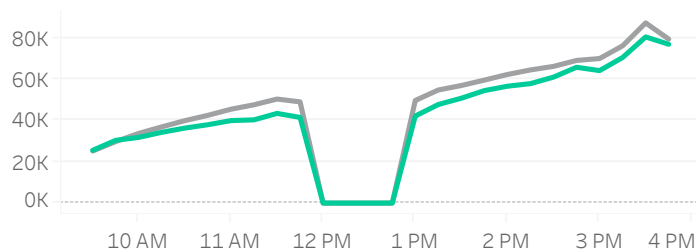
Volume Curve



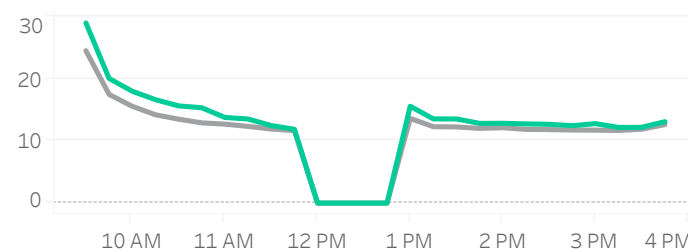
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	16.9	16.6	16.9	15.8	15.4	15.6	16.9	18.4
midday	13.4	13.0	12.5	12.4	11.7	11.9	13.1	13.7
lastHalfHour	12.5	12.1	11.7	11.7	11.3	11.5	12.3	12.6

One Minute Volatility Bps

firstHalfHour	17.6	16.8	18.5	12.2	11.8	11.6	15.8	16.7
midday	8.1	8.8	8.7	6.0	6.0	5.8	7.8	7.0
lastHalfHour	6.9	6.9	7.3	6.5	6.6	6.1	8.1	6.7

Quotesize in Shares

firstHalfHour	29,369	28,259	24,138	24,880	28,539	27,890	26,823	27,946
midday	52,420	49,671	39,835	49,281	59,450	57,843	49,961	47,200
lastHalfHour	80,787	82,321	70,652	79,757	92,195	85,221	76,912	80,882

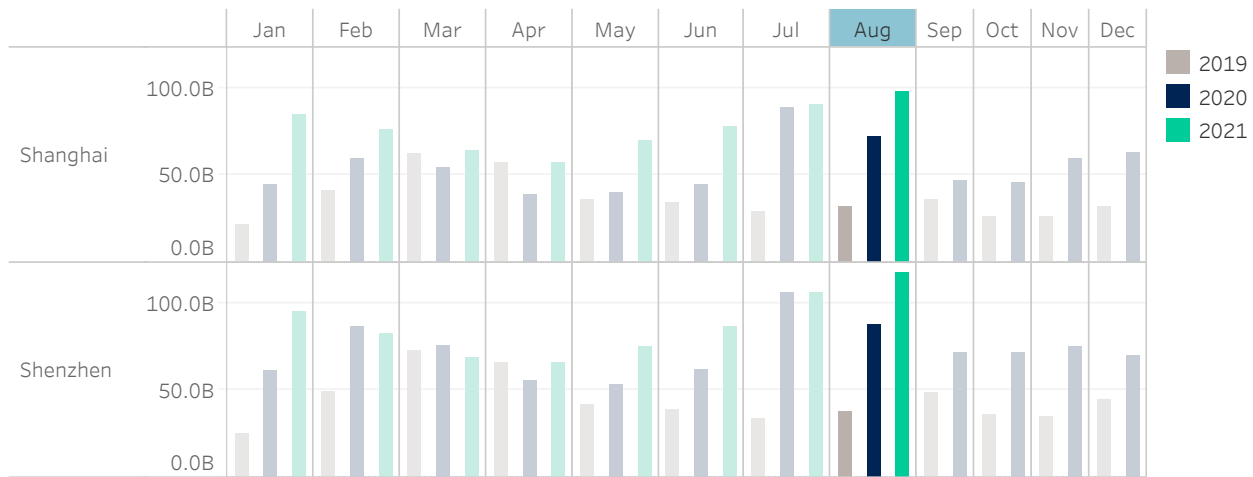
Median used for all metrics

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

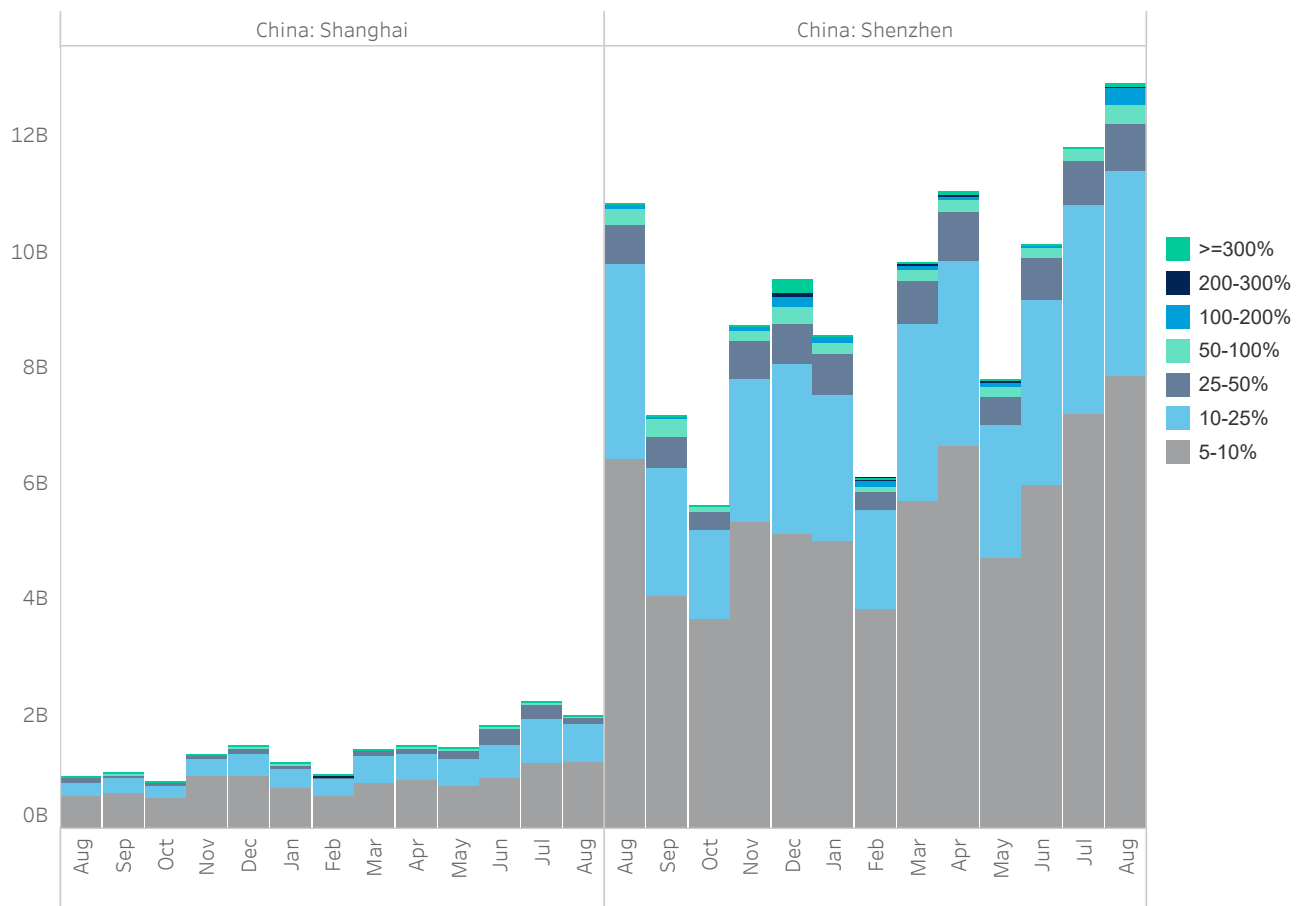
Source data: Virtu Financial

China

Average Daily Turnover (Notional USD)



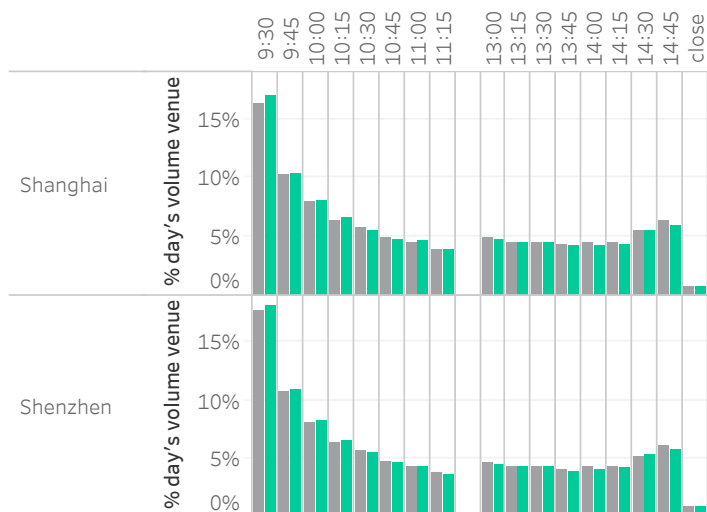
Large Sized Trades (>=5%ADT)



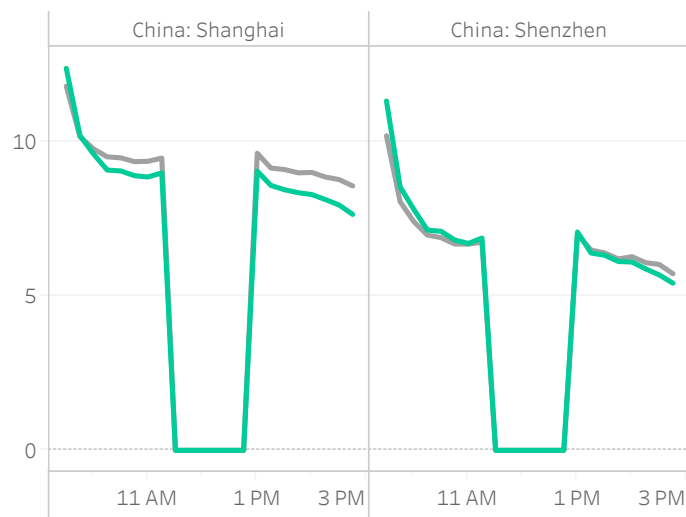
Source data: Virtu Financial

China

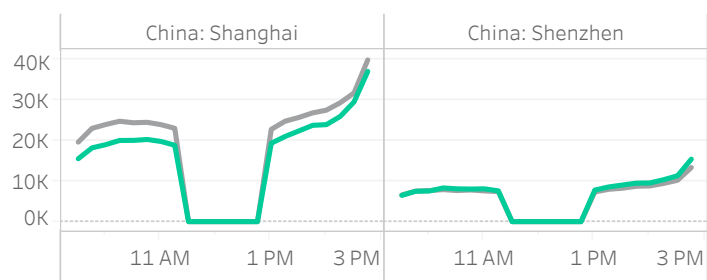
Volume Curve



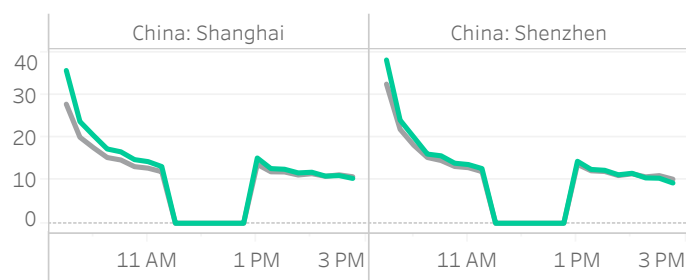
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	China: Shanghai									China: Shenzhen						
	21 Q1			21 Q2			21 Q3			21 Q1			21 Q2			21 Q3
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
firstHalfHour	10.6	10.8	10.2	10.1	10.3	9.9	10.5	10.8	9.3	9.3	8.8	8.1	8.4	8.3	8.8	9.3
midday	9.2	9.5	9.1	9.0	9.1	8.5	8.6	8.7	7.0	7.1	6.7	6.4	6.5	6.1	6.4	6.6
lastHalfHour	8.6	8.9	8.5	8.5	8.6	8.0	7.8	7.7	6.1	6.2	5.9	5.6	5.6	5.3	5.4	5.5

One Minute Volatility Bps

firstHalfHour	23.2	23.2	20.9	17.1	17.8	18.4	21.6	23.3	31.4	31.0	26.7	21.3	21.4	21.6	25.1	26.6
midday	11.6	11.4	9.5	7.0	7.8	8.0	9.2	10.0	15.0	14.7	12.2	9.1	9.5	9.5	11.1	11.7
lastHalfHour	9.7	9.6	7.9	6.3	6.3	6.5	7.7	7.5	12.0	12.2	9.5	7.5	7.5	7.5	8.2	8.2

Quotesize in Shares

firstHalfHour	19K	18K	18K	20K	22K	19K	17K	17K	7K	7K	6K	7K	8K	7K	7K	7K
midday	21K	20K	21K	25K	27K	23K	21K	21K	8K	7K	7K	8K	9K	8K	8K	8K
lastHalfHour	31K	29K	31K	37K	40K	34K	31K	33K	11K	10K	10K	13K	13K	12K	12K	13K

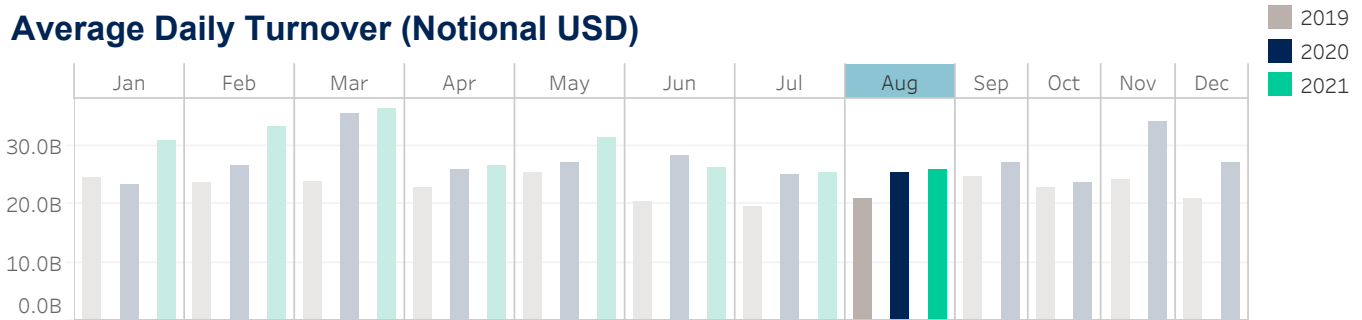
Median used for all metrics

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

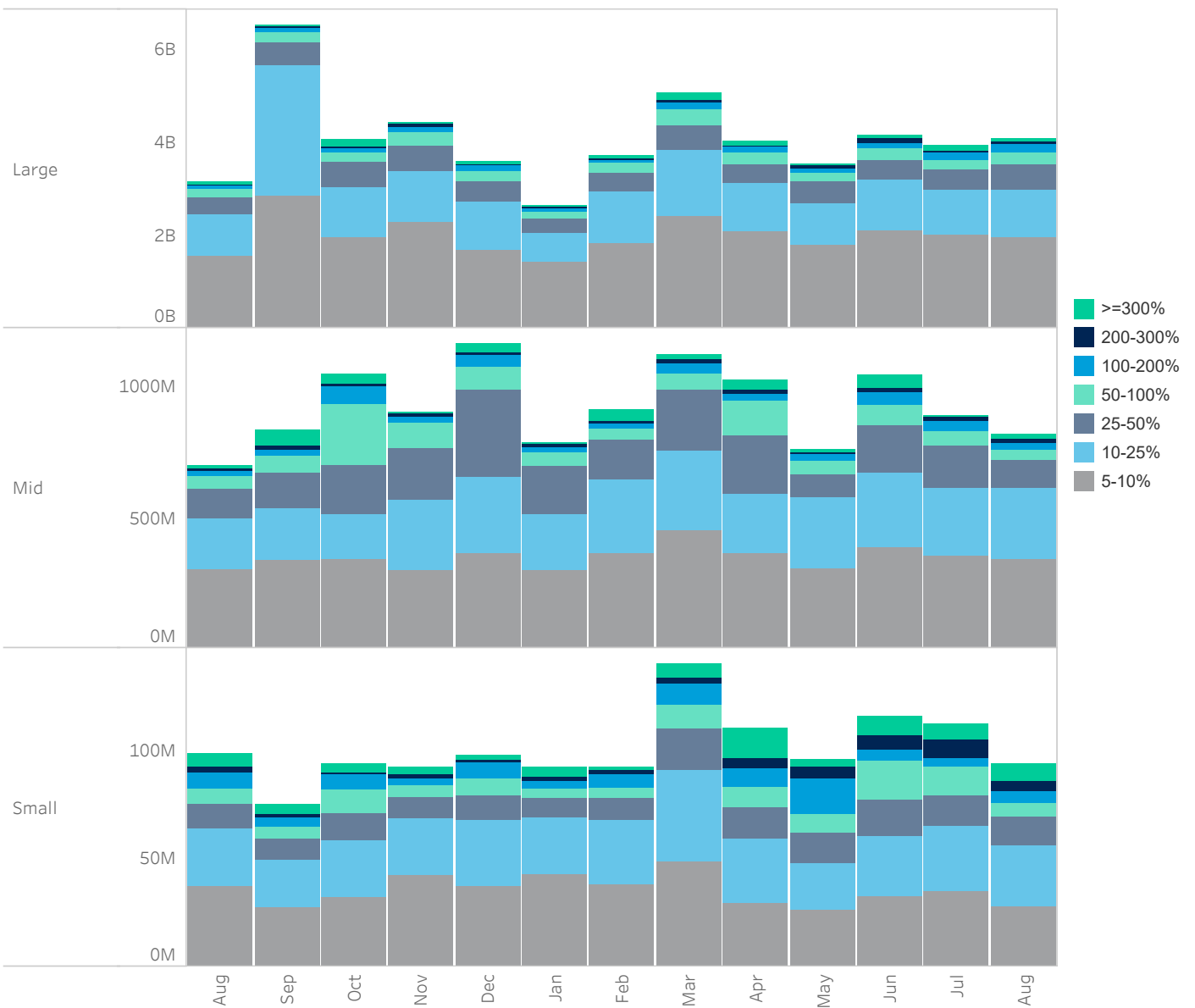
Source data: Virtu Financial

Japan

Average Daily Turnover (Notional USD)



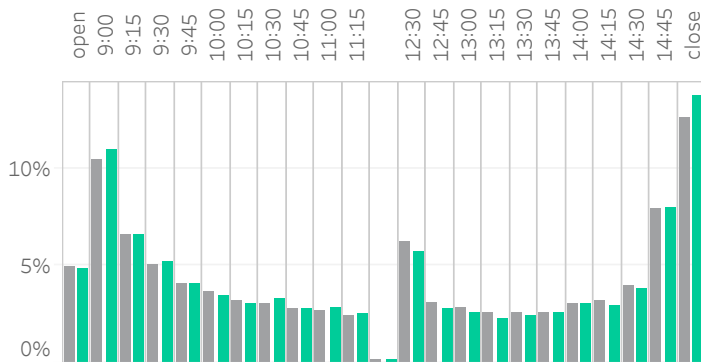
Large Sized Trades (>=5%ADT)



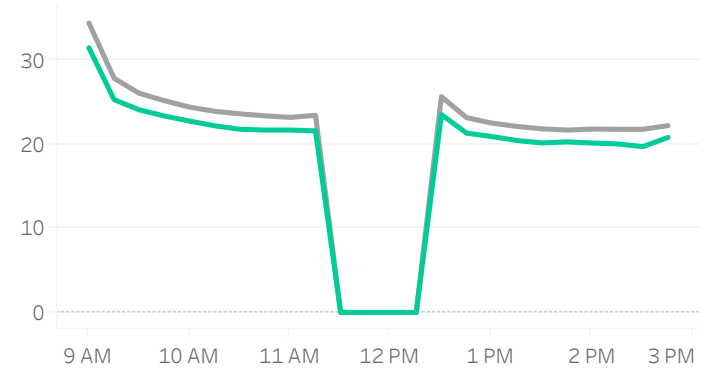
Source data: Virtu Financial

Japan

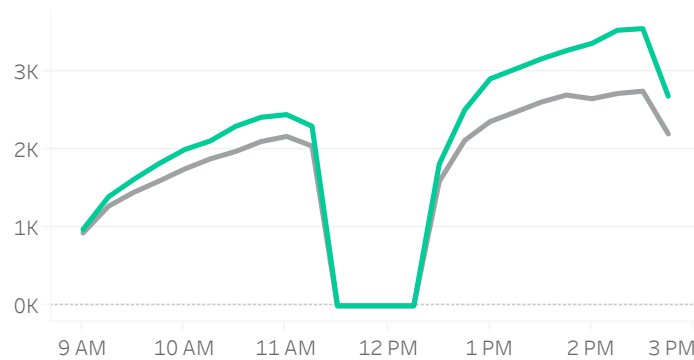
Volume Curve



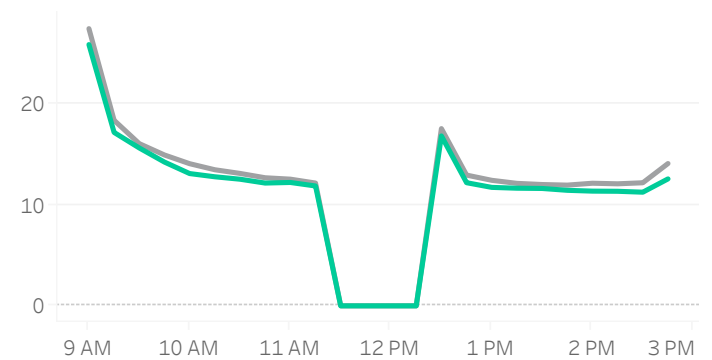
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	29.3	33.1	32.7	29.4	28.2	26.6	25.6	27.3
midday	22.9	24.6	24.8	22.9	21.7	21.0	20.7	21.4
lastHalfHour	21.7	22.6	22.5	21.1	20.5	19.8	19.6	19.9

One Minute Volatility Bps

firstHalfHour	15.1	15.7	15.9	14.7	15.9	13.0	12.1	12.6
midday	6.8	6.5	6.9	6.3	6.8	5.9	6.2	5.9
lastHalfHour	7.3	6.7	6.6	6.5	7.0	6.5	11.5	7.9

Quotesize in Shares

firstHalfHour	1,202	1,248	1,170	1,198	1,120	1,295	1,334	1,280
midday	2,260	2,167	1,921	2,163	2,147	2,573	2,700	2,525
lastHalfHour	2,814	2,559	2,177	2,622	2,582	3,165	3,218	3,328

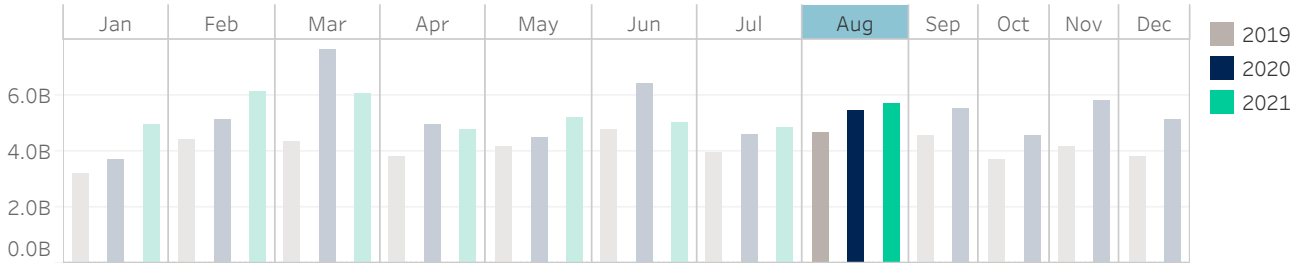
Median used for all metrics

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

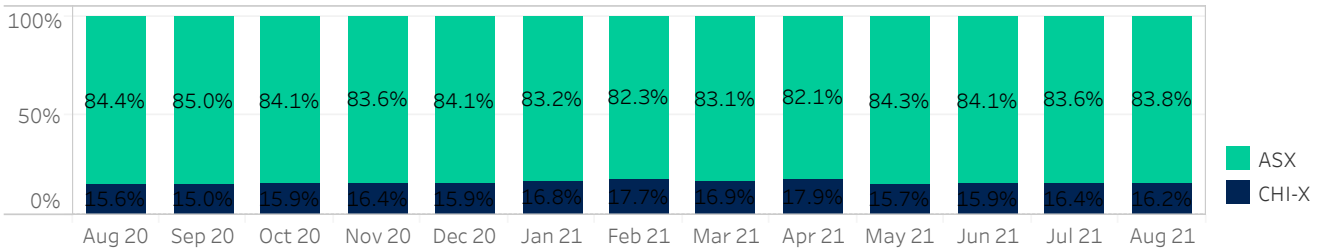
Source data: Virtu Financial

Australia

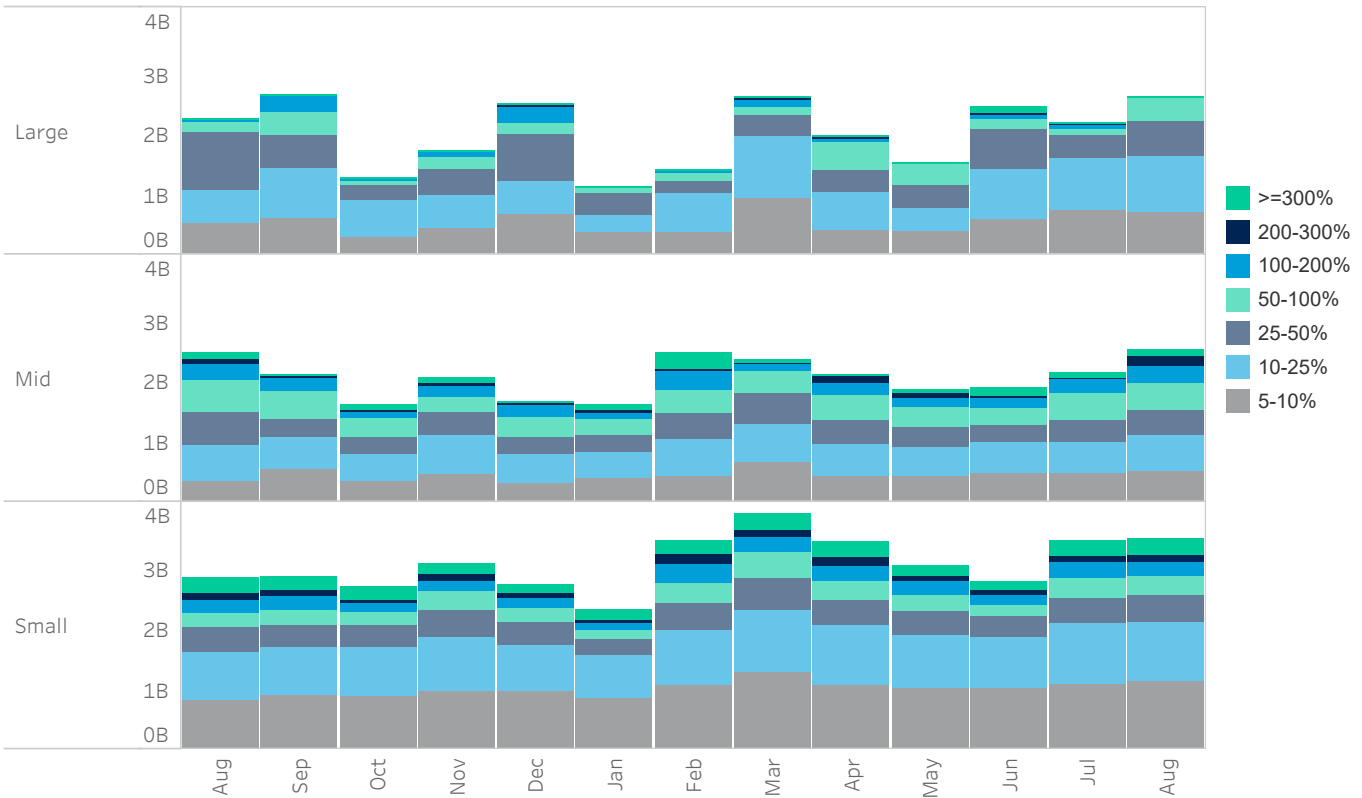
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



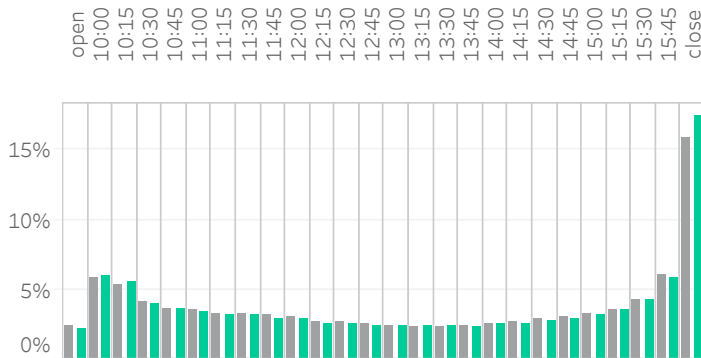
Large Sized Trades (>=5%ADT)



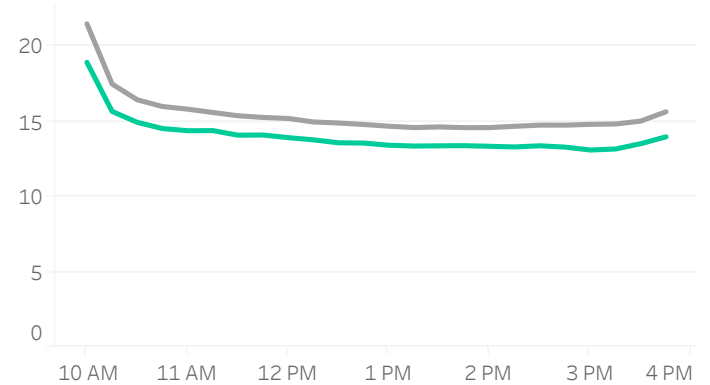
Source data: Virtu Financial

Australia

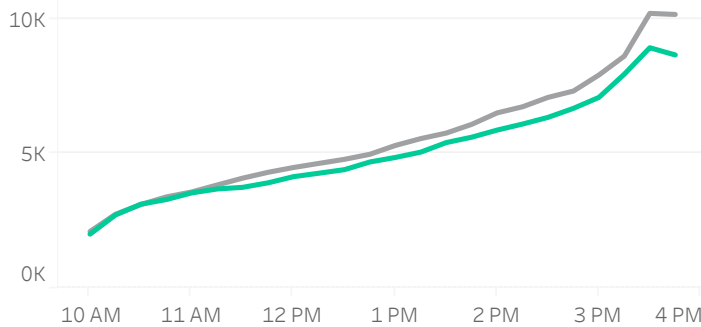
Volume Curve



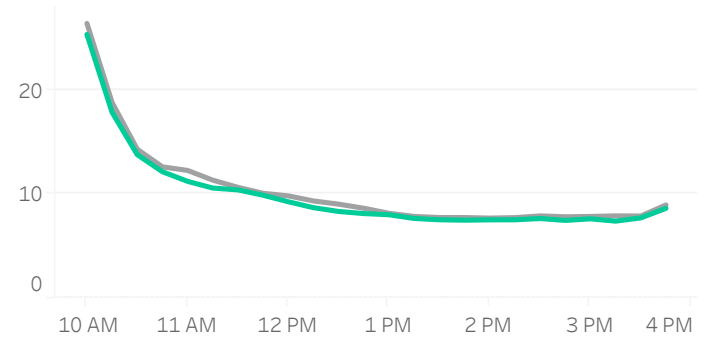
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	19.8	20.2	20.0	18.3	18.9	17.5	17.1	16.5
midday	15.0	15.5	15.6	14.7	14.9	14.1	13.8	13.7
lastHalfHour	15.0	15.5	15.6	14.9	14.9	14.3	13.9	13.8

One Minute Volatility Bps

firstHalfHour	14.4	16.6	16.8	16.0	17.5	17.4	15.5	15.5
midday	4.1	4.6	4.8	3.7	3.9	3.8	3.6	3.6
lastHalfHour	3.7	3.4	3.7	3.4	3.6	3.2	3.3	2.6

Quotesize in Shares

firstHalfHour	2,583	2,326	2,194	2,218	2,190	2,320	2,426	2,388
midday	5,358	4,931	4,686	4,526	4,489	4,747	4,584	4,807
lastHalfHour	11,014	9,734	9,100	8,141	8,231	9,230	8,943	9,020

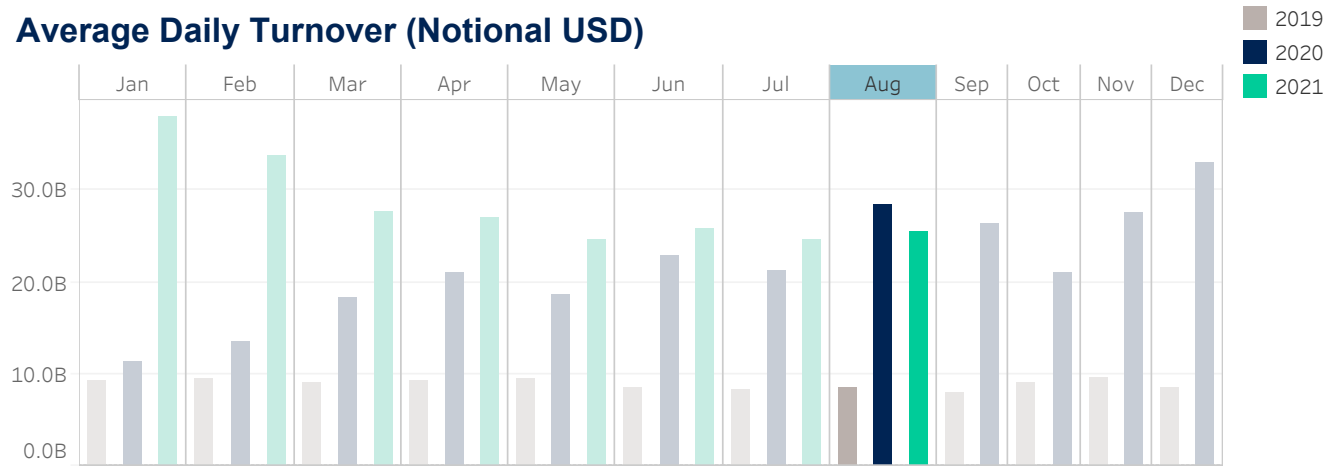
Median used for all metrics

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

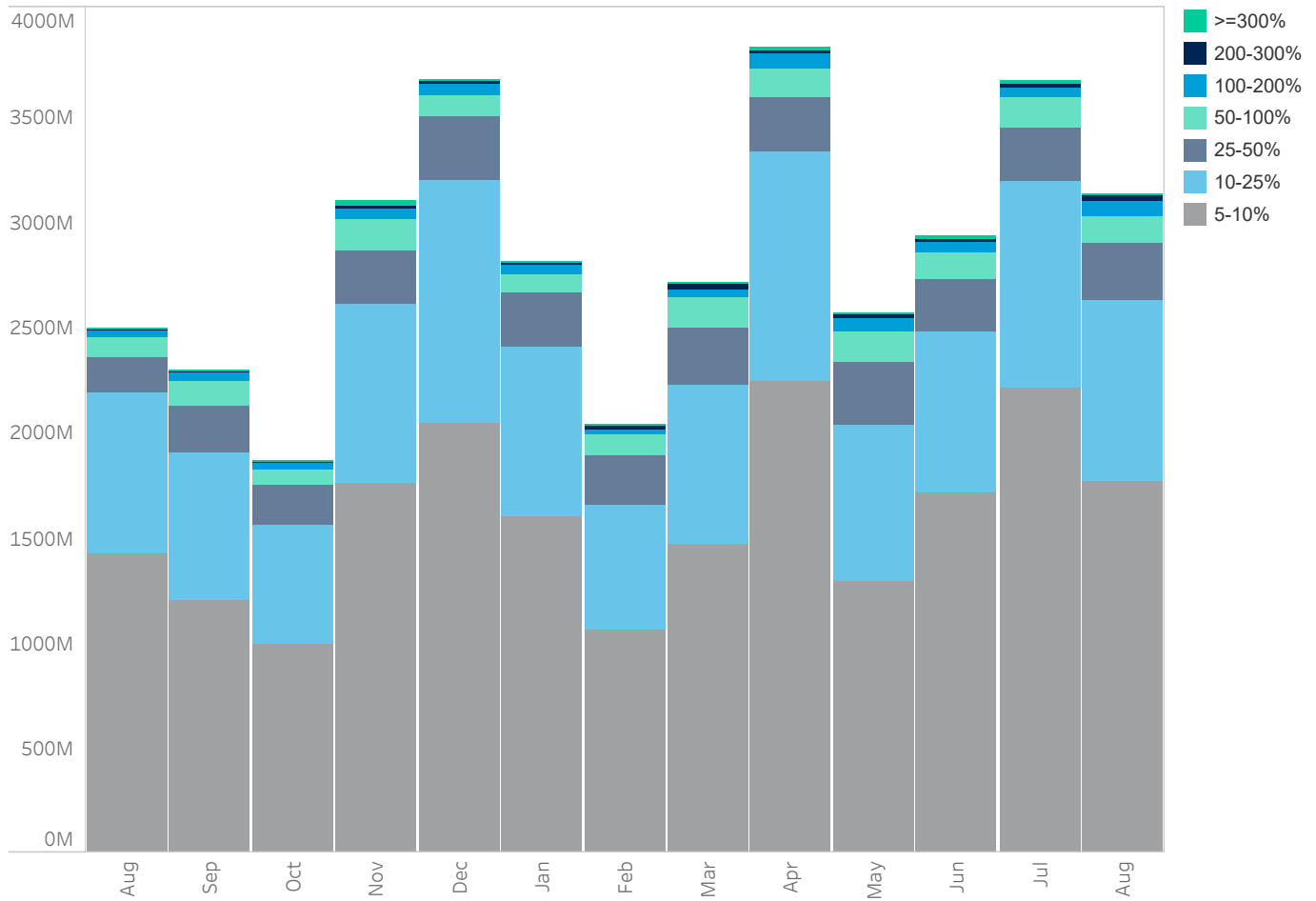
Source data: Virtu Financial

South Korea

Average Daily Turnover (Notional USD)



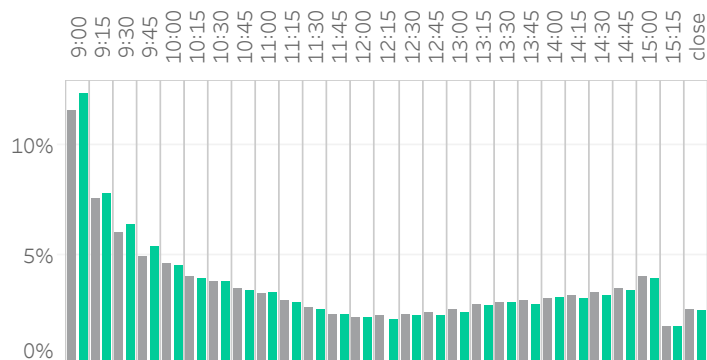
Large Sized Trades (>=5%ADT)



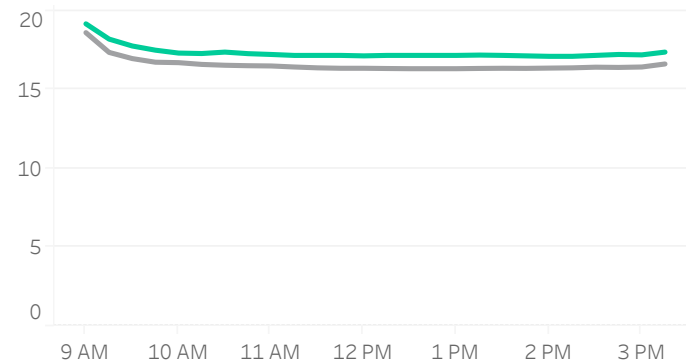
Source data: Virtu Financial

South Korea

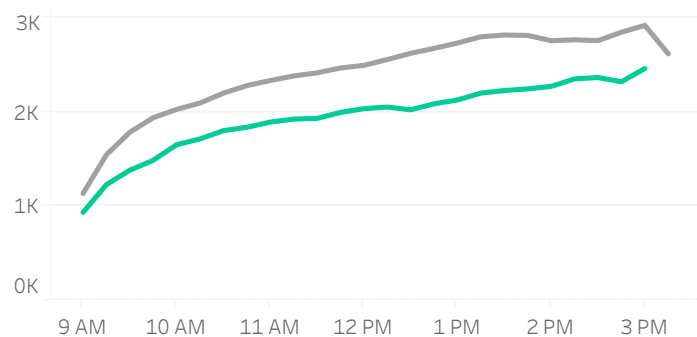
Volume Curve



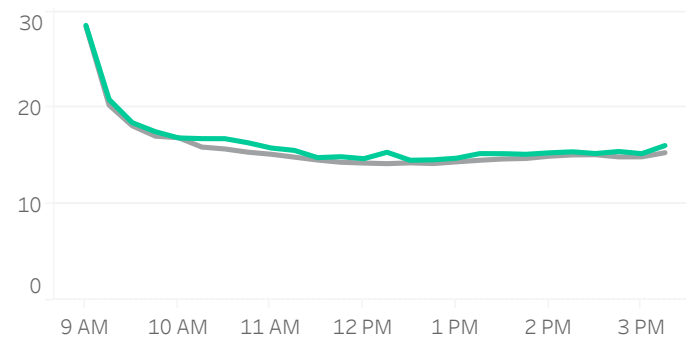
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	18.0	17.4	17.1	17.1	18.3	18.3	18.3	18.5
midday	15.9	15.6	15.8	16.2	17.2	17.6	17.7	17.3
lastHalfHour	15.8	15.6	15.8	16.3	17.2	17.6	17.8	17.3

One Minute Volatility Bps

firstHalfHour	20.9	18.0	15.1	12.7	15.6	13.2	13.0	15.8
midday	11.4	11.1	11.0	10.5	10.9	10.5	10.5	11.1
lastHalfHour	11.3	11.2	14.2	19.7	16.7	26.5	22.9	15.0

Quotesize in Shares

firstHalfHour	1,352	1,140	1,138	1,384	1,302	1,675	1,526	1,053
midday	2,400	1,995	1,986	2,504	2,462	3,161	2,812	2,004
lastHalfHour	2,905	2,454	2,358	2,702	2,864	3,744	3,230	2,336

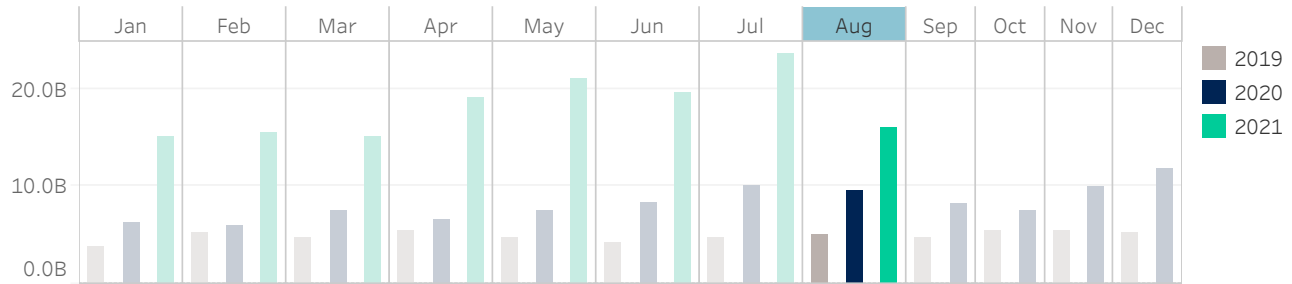
Median used for all metrics

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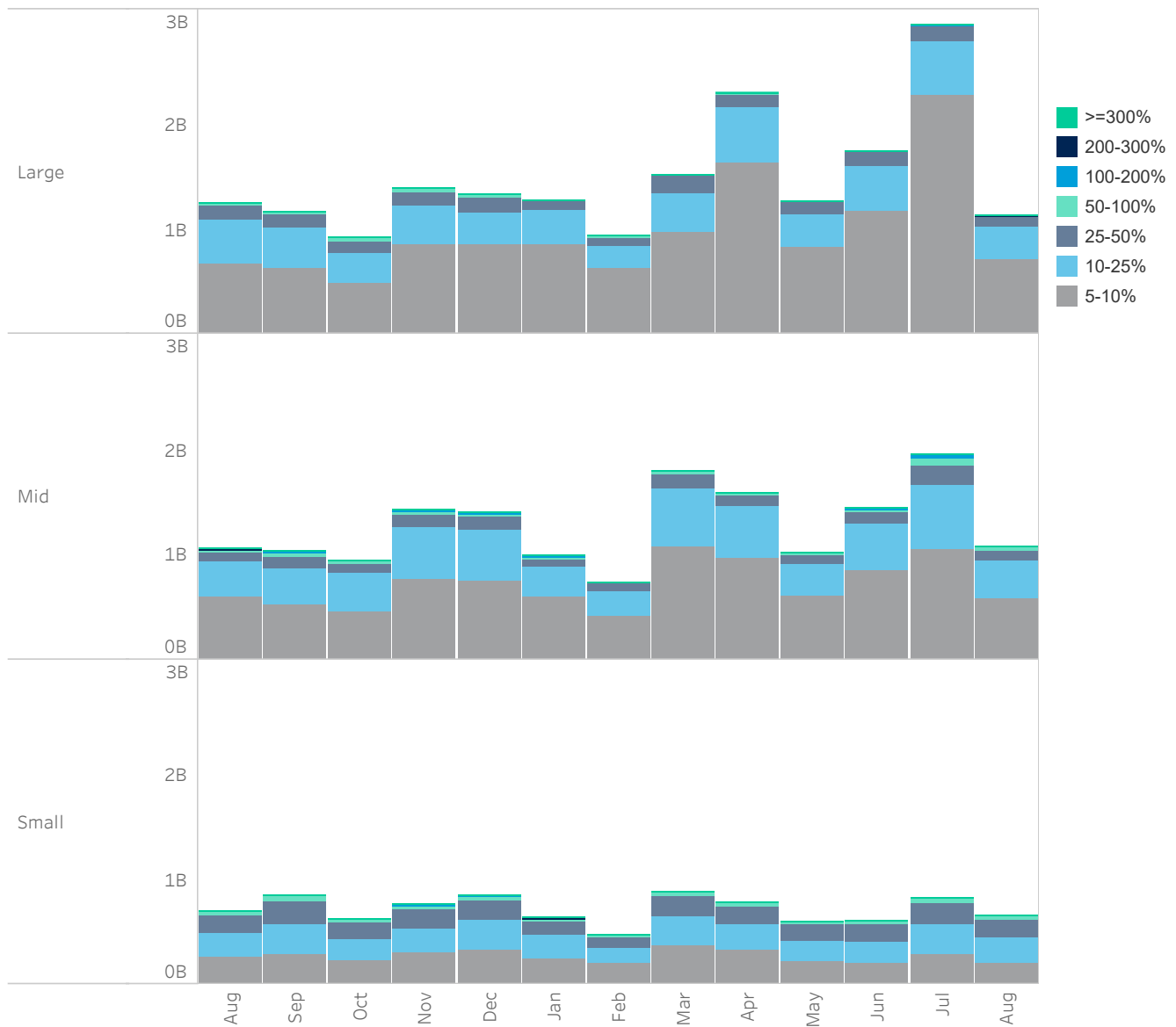
Source data: Virtu Financial

Taiwan

Average Daily Turnover (Notional USD)



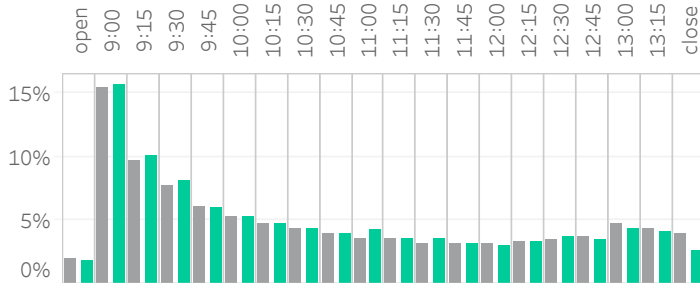
Large Sized Trades (>=5%ADT)



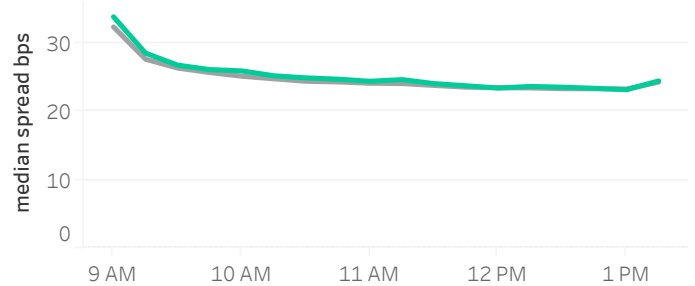
Source data: Virtu Financial

Taiwan

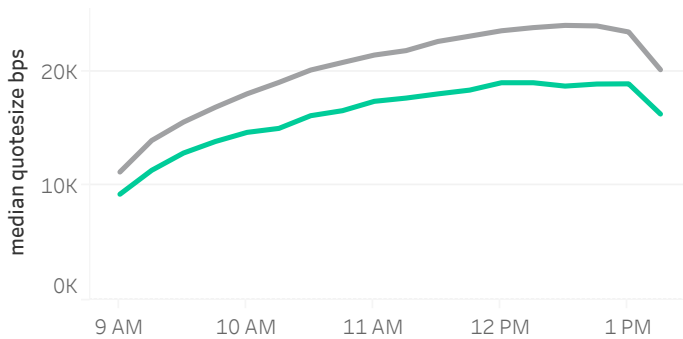
Volume Curve



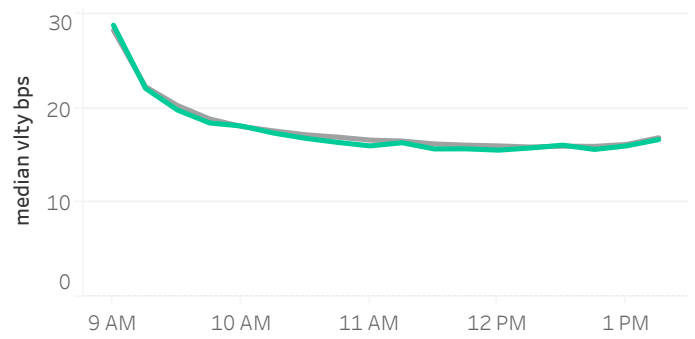
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	28.5	28.3	26.1	27.4	35.2	28.7	29.0	30.1
midday	24.0	23.3	22.2	22.9	27.8	23.4	23.6	24.1
lastHalfHour	24.1	23.1	22.0	22.3	27.0	23.2	22.7	23.8

One Minute Volatility Bps

firstHalfHour	15.5	15.7	12.5	16.2	27.1	15.6	17.1	17.1
midday	7.2	6.8	6.6	8.2	11.2	7.6	7.5	7.6
lastHalfHour	7.7	8.4	8.4	9.0	10.4	6.7	7.9	7.8

Quotesize in Shares

firstHalfHour	12,798	12,216	14,419	14,883	9,069	12,568	12,027	10,553
midday	20,042	21,454	25,453	24,145	13,090	21,194	18,860	17,088
lastHalfHour	20,321	22,767	26,000	24,740	13,874	21,503	20,270	17,592

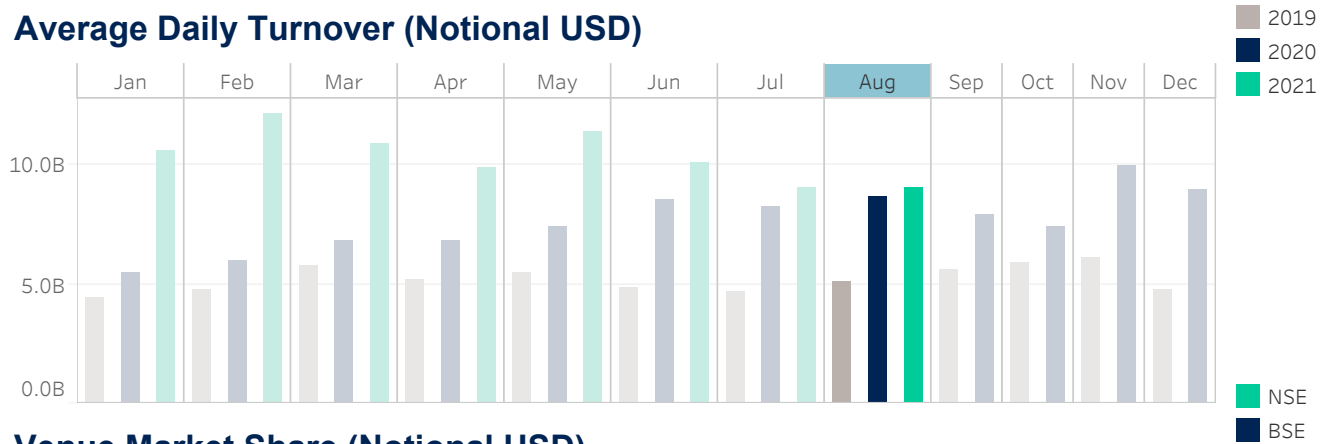
Median used for all metrics

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

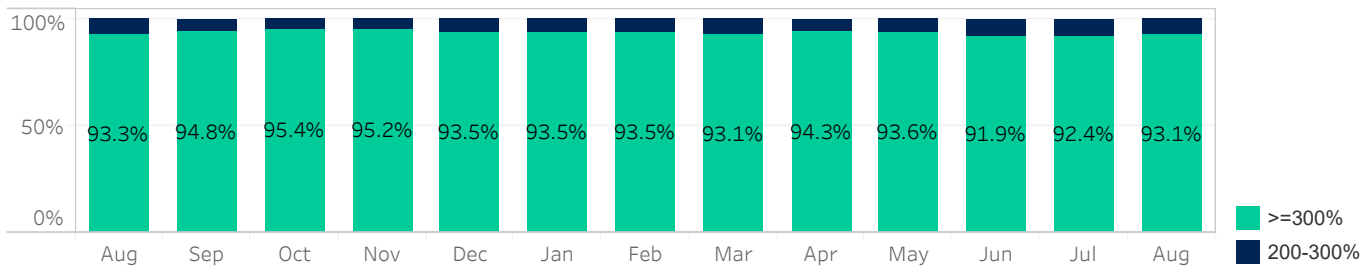
Source data: Virtu Financial

India

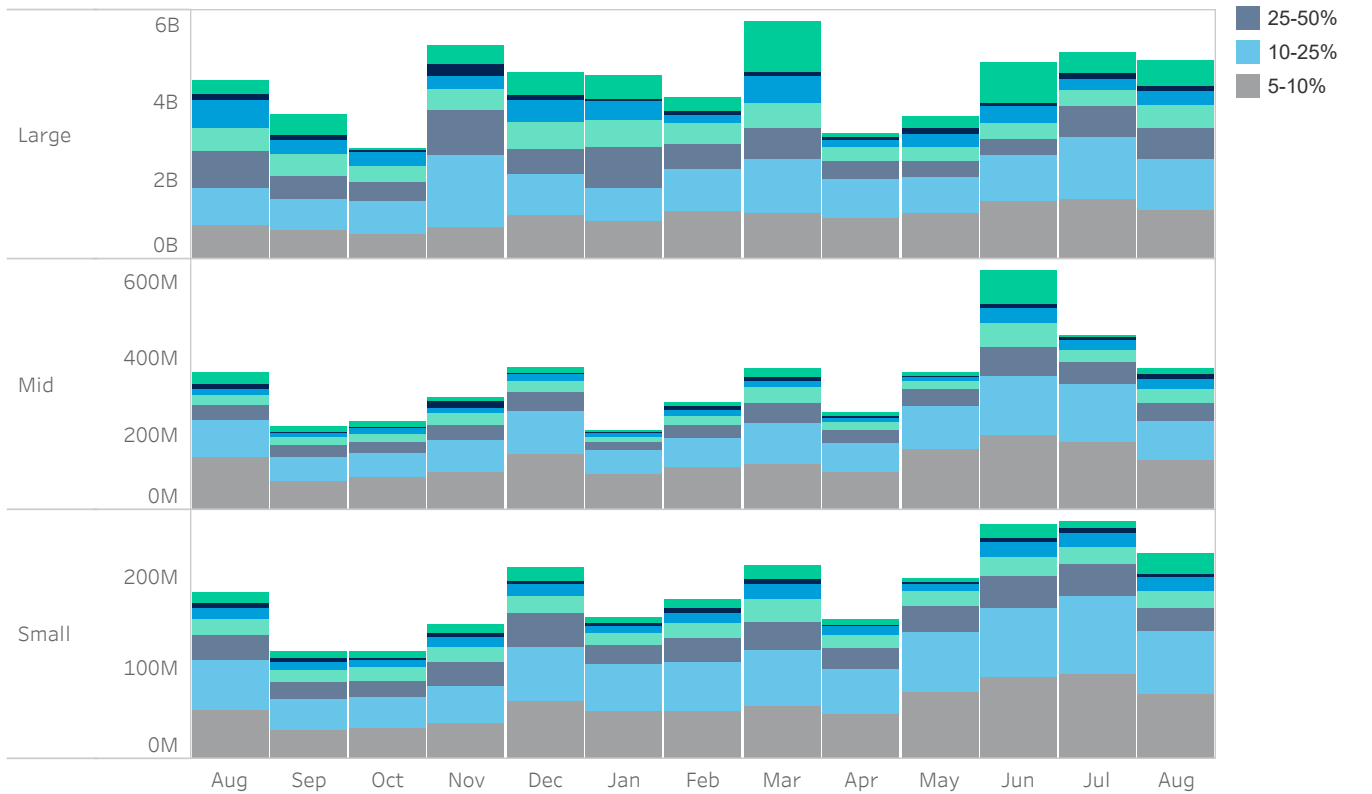
Average Daily Turnover (Notional USD)



Venue Market Share (Notional USD)



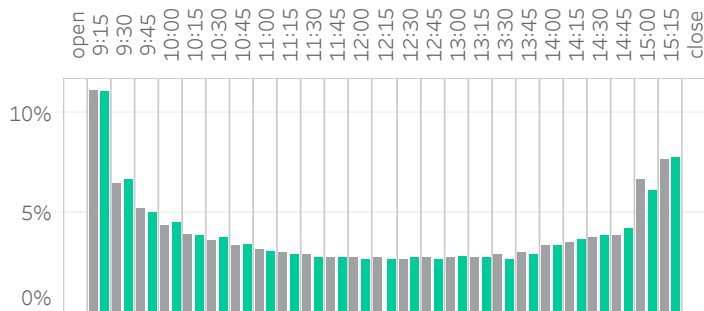
Large Sized Trades (>=5%ADT)



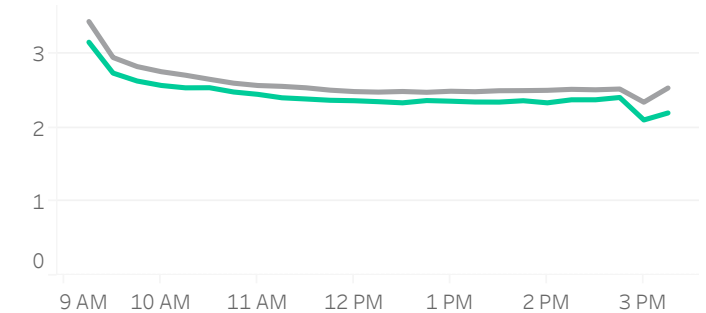
Source data: Virtu Financial

India

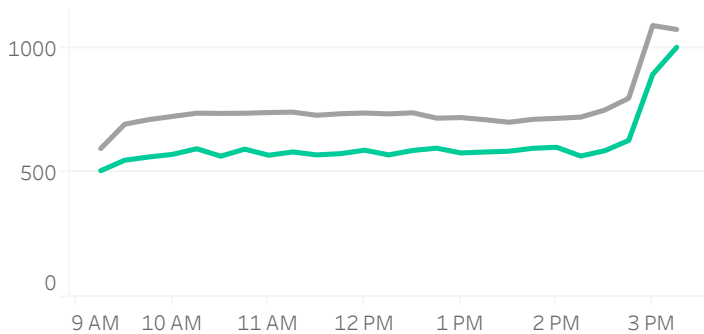
Volume Curve



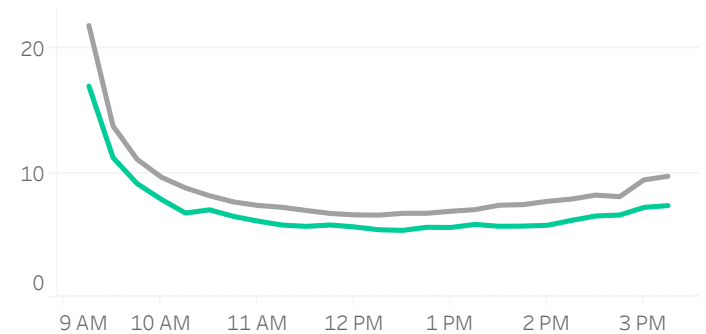
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	3.1	3.2	3.0	3.1	2.9	2.8	2.6	2.8
midday	2.7	2.6	2.5	2.5	2.3	2.2	2.2	2.4
lastHalfHour	2.5	2.6	2.3	2.3	2.2	2.1	2.0	2.1

One Minute Volatility Bps

firstHalfHour	17.3	19.8	17.6	17.7	16.1	12.5	10.5	12.6
midday	7.8	8.8	8.2	7.6	6.4	5.3	4.7	5.5
lastHalfHour	10.1	11.0	10.6	8.9	8.2	7.1	6.1	6.8

Quotesize in Shares

firstHalfHour	684	626	680	559	541	548	533	527
midday	781	757	695	650	630	584	593	583
lastHalfHour	1,080	1,041	1,074	974	918	903	952	929

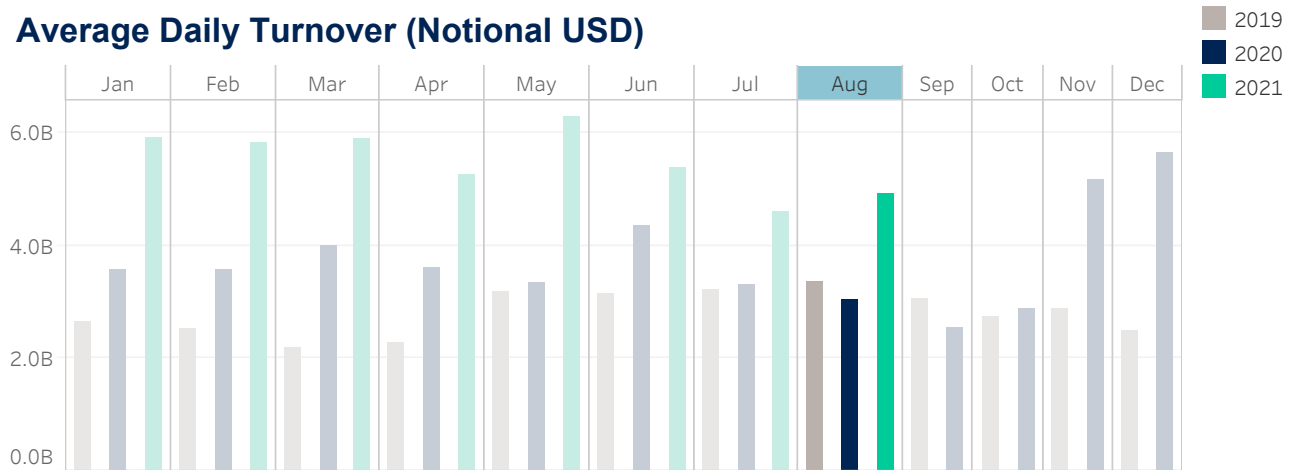
Median used for all metrics

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

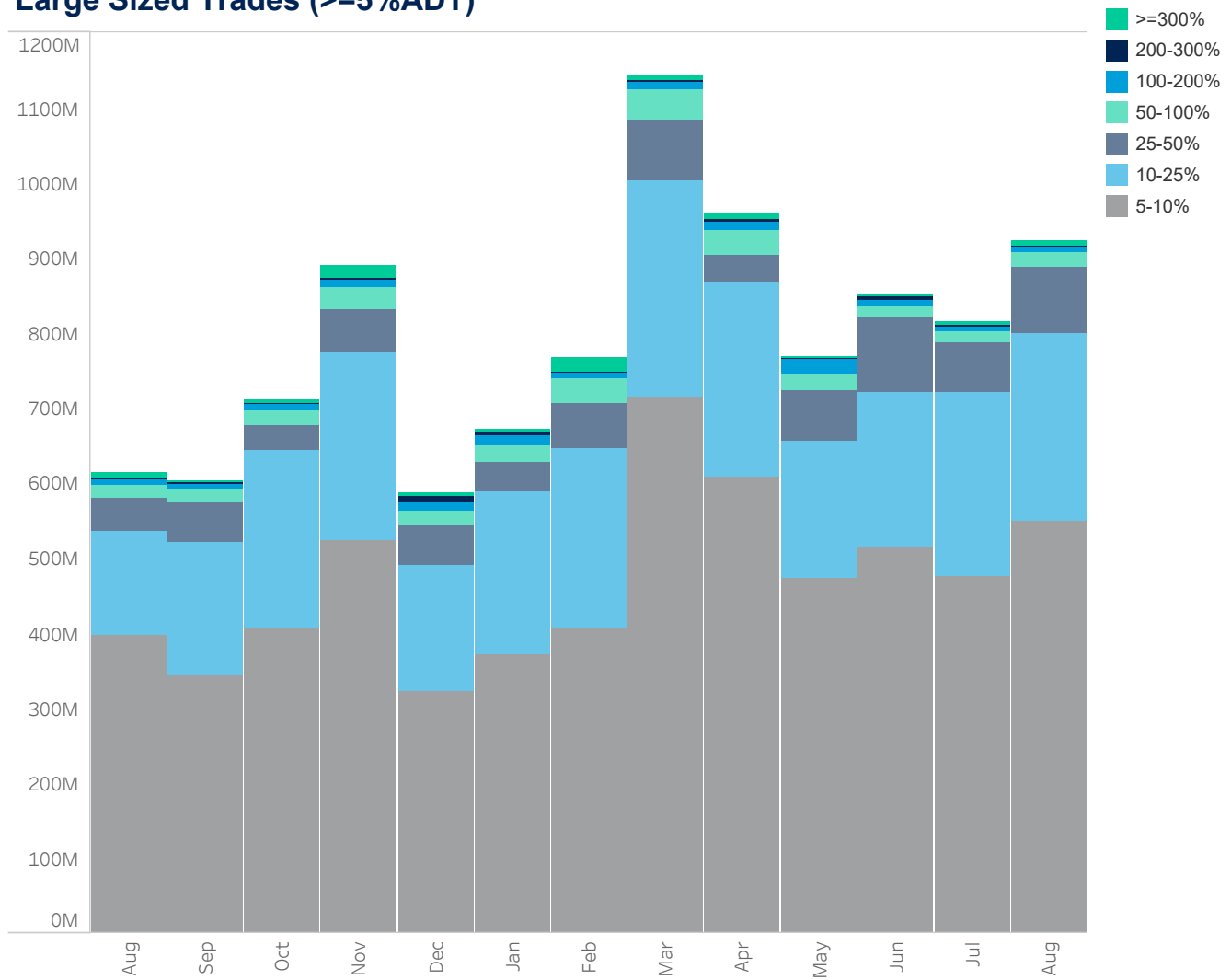
Source data: Virtu Financial

Thailand

Average Daily Turnover (Notional USD)



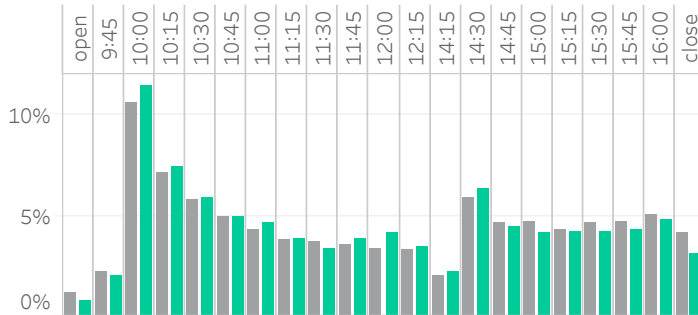
Large Sized Trades (>=5%ADT)



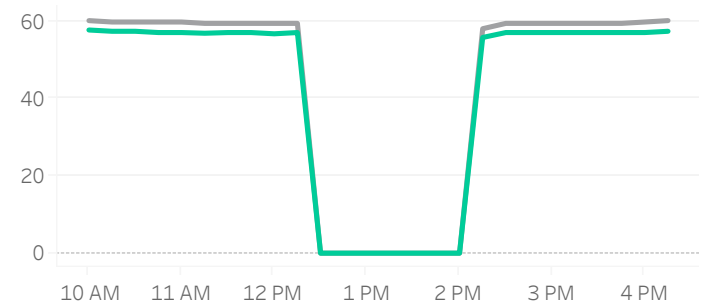
Source data: Virtu Financial

Thailand

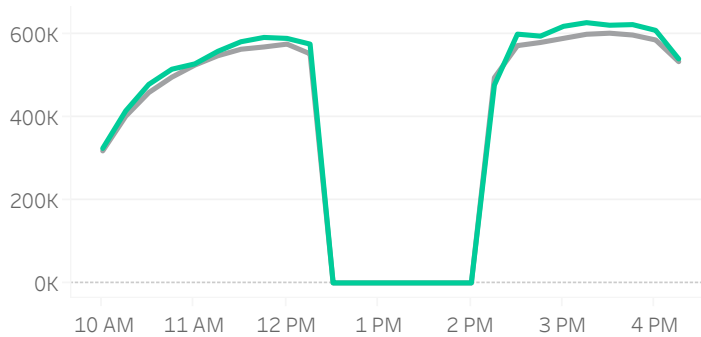
Volume Curve



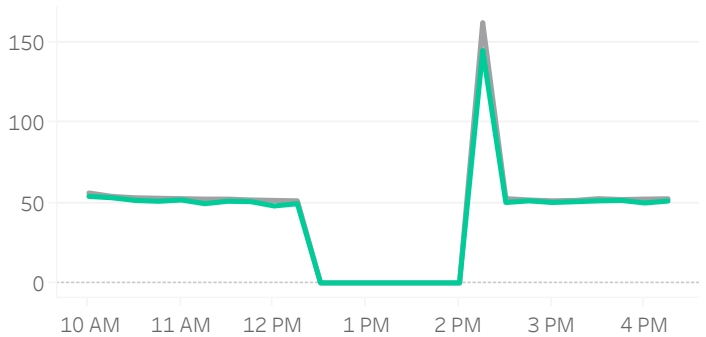
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	59.5	61.8	58.7	57.6	58.1	57.0	58.5	57.3
midday	58.8	61.3	58.4	57.5	57.4	56.5	58.0	56.8
lastHalfHour	59.5	61.5	58.6	57.8	57.6	56.9	58.7	57.1

One Minute Volatility Bps

firstHalfHour	163.6	249.4	233.7	232.1	230.9	177.0	159.4	162.4
midday	229.8	231.9	224.9	223.9	223.2	164.5	130.5	159.5
lastHalfHour					11.0			

Quotesize in Shares

firstHalfHour	329,239	333,863	415,974	396,954	369,050	405,115	327,728	343,555
midday	511,597	531,652	673,700	702,142	632,652	659,585	550,461	566,015
lastHalfHour	524,220	541,490	680,594	713,523	624,167	686,033	542,139	571,302

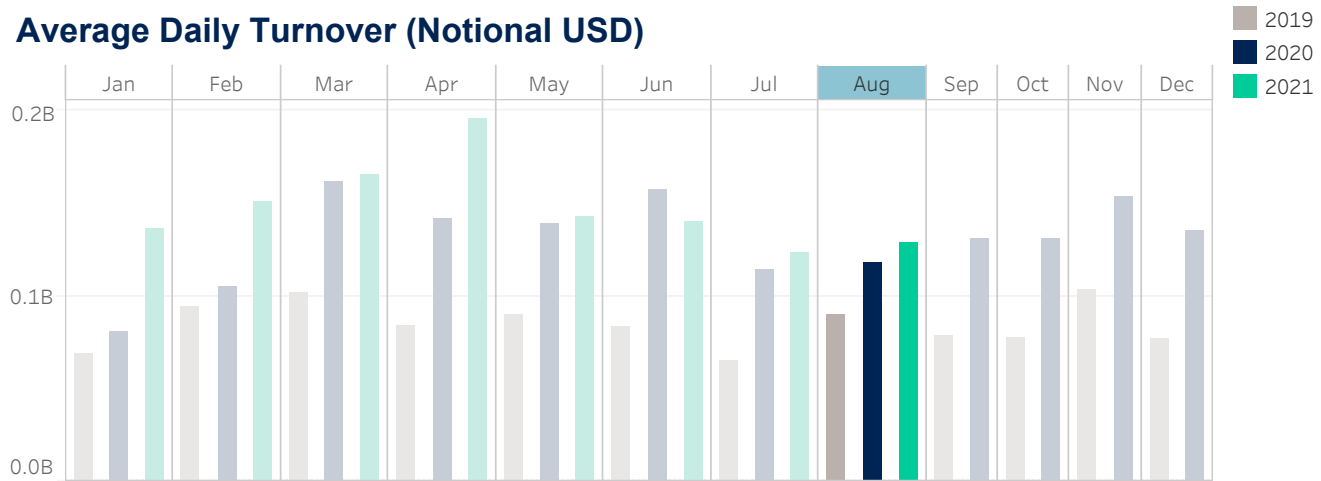
Median used for all metrics

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

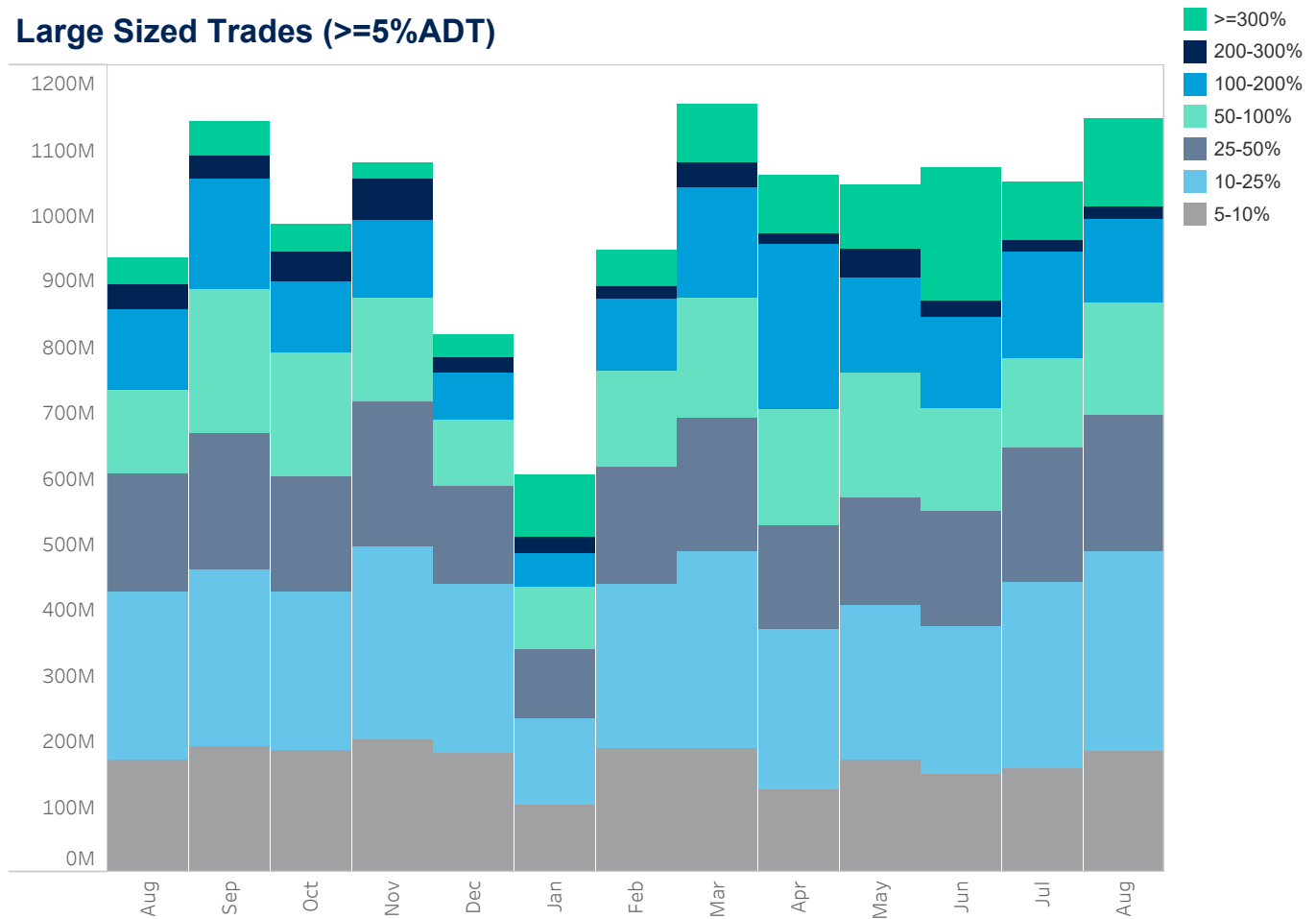
Source data: Virtu Financial

New Zealand

Average Daily Turnover (Notional USD)



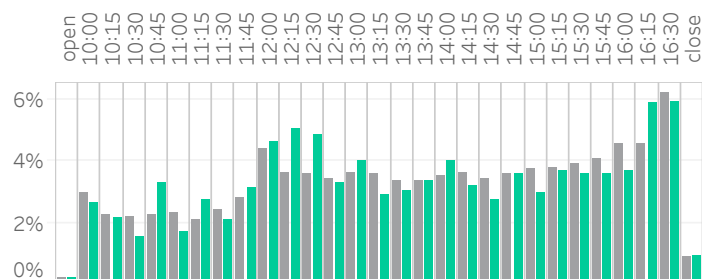
Large Sized Trades (>=5%ADT)



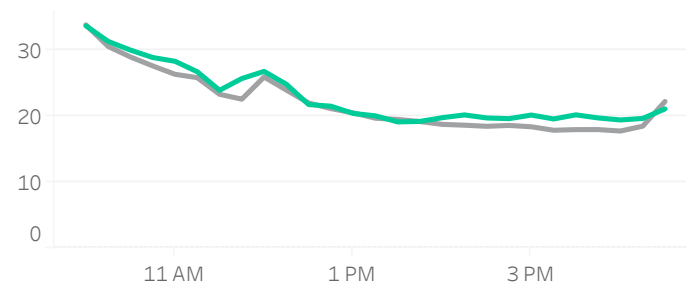
Source data: Virtu Financial

New Zealand

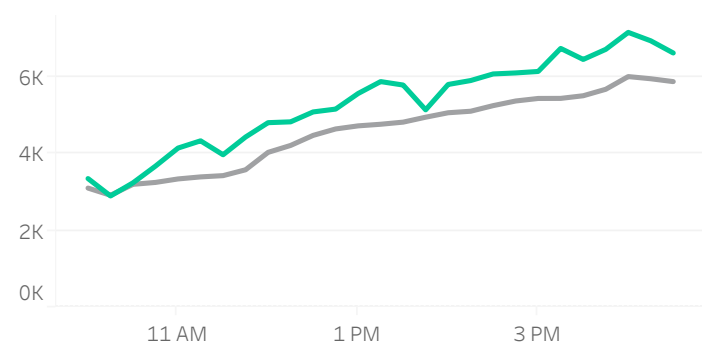
Volume Curve



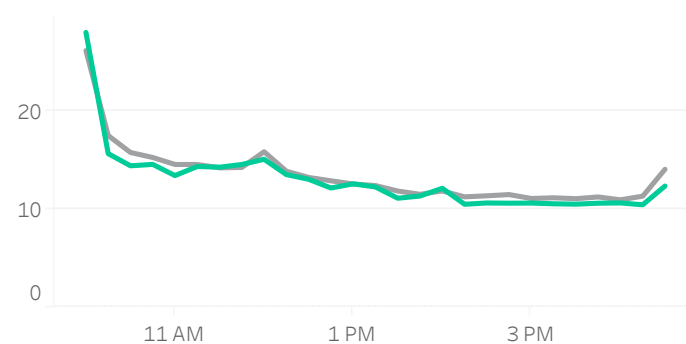
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	33.6	32.4	32.9	29.1	30.1	29.9	30.8	31.6
midday	22.0	22.2	21.3	19.3	20.5	18.4	19.0	21.0
lastHalfHour	22.0	22.2	21.1	21.1	19.6	17.7	19.0	20.0

One Minute Volatility Bps

firstHalfHour	6.0	7.4	7.2	5.7	6.8	5.7	6.1	7.0
midday	3.7	3.6	3.5	3.6	3.5	3.5	3.4	3.6
lastHalfHour	4.7	4.4	6.7	4.0	5.3	4.4	4.0	3.8

Quotesize in Shares

firstHalfHour	2,934	2,863	3,226	3,083	2,848	2,985	2,792	3,149
midday	4,261	4,306	4,708	5,232	5,145	5,287	5,453	5,494
lastHalfHour	5,198	5,319	6,011	6,862	6,538	6,859	7,213	6,762

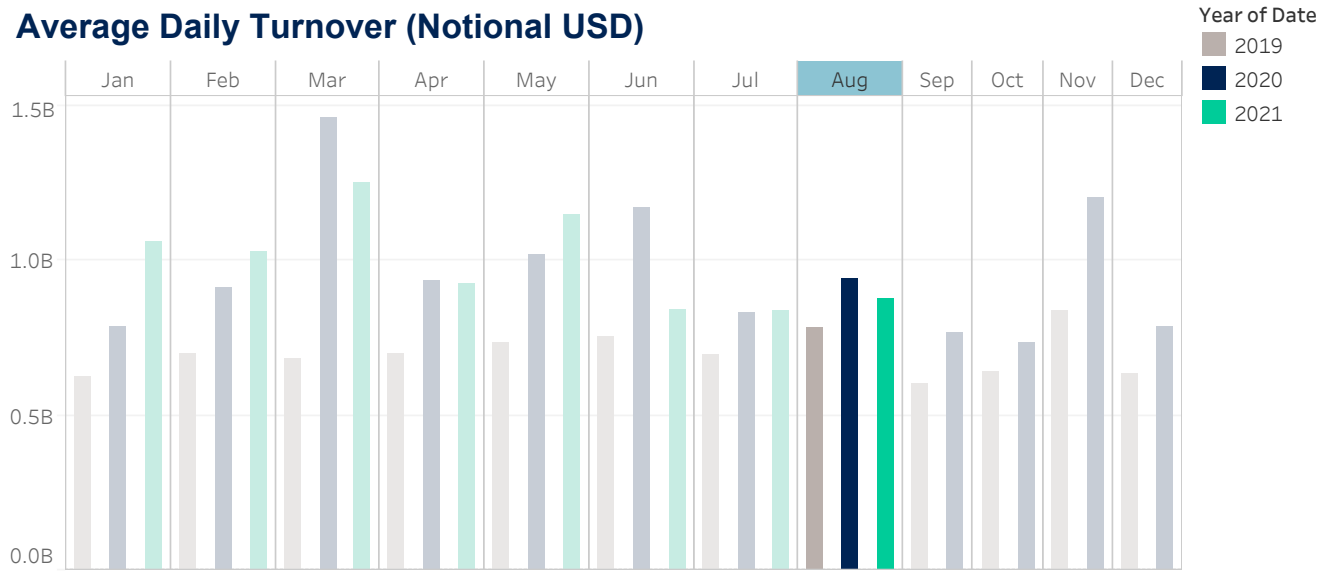
Median used for all metrics

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

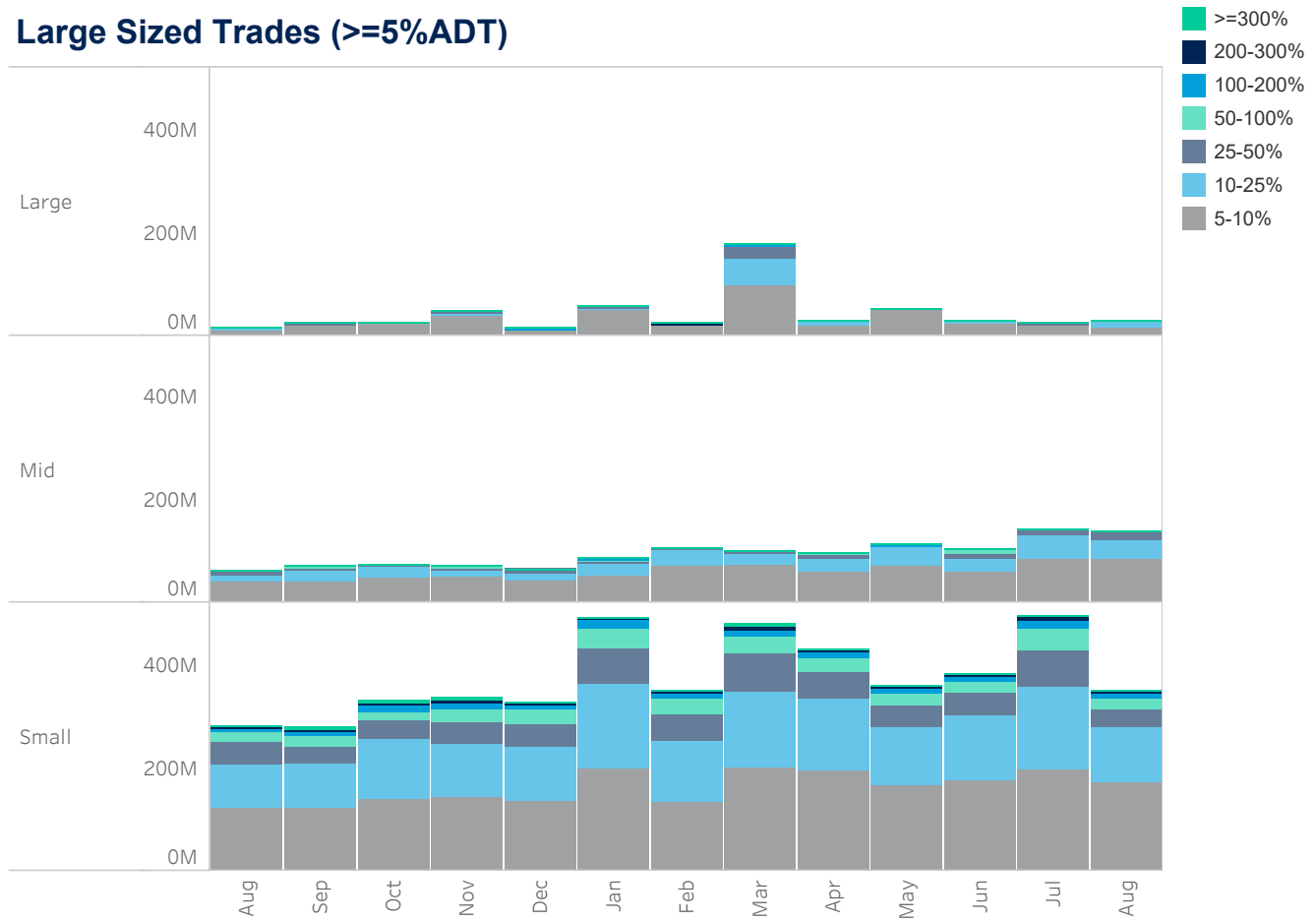
Source data: Virtu Financial

Singapore

Average Daily Turnover (Notional USD)



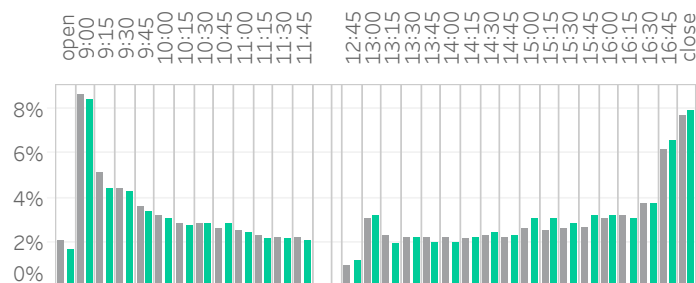
Large Sized Trades (>=5%ADT)



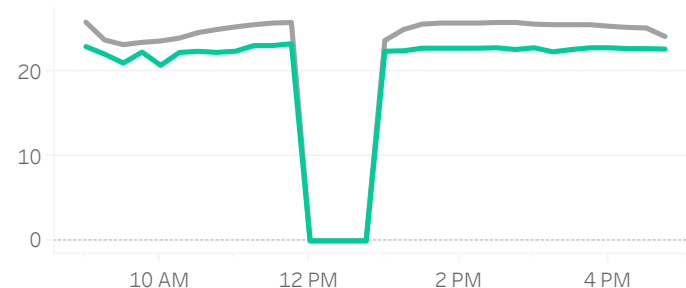
Source data: Virtu Financial

Singapore

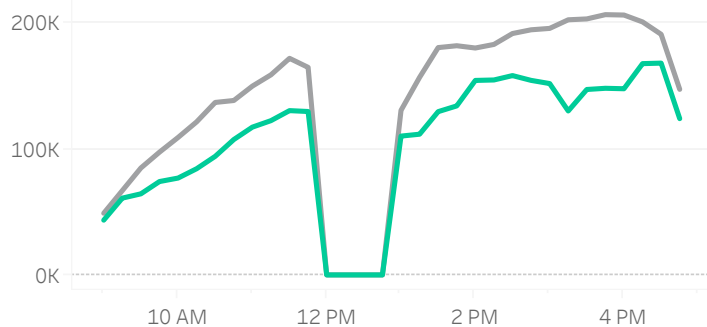
Volume Curve



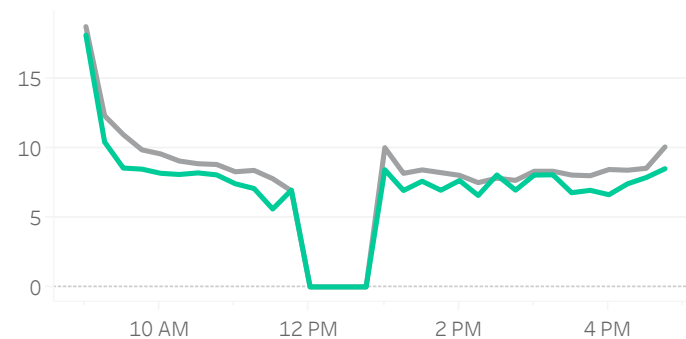
Intraday Spread (bps)



Intraday Quotesize (Shares)



Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ August 2021

Spread Bps

	21 Q1			21 Q2			21 Q3	
	Jan 21	Feb 21	Mar 21	Apr 21	May 21	Jun 21	Jul 21	Aug 21
firstHalfHour	23.4	24.7	22.2	21.8	24.1	23.0	22.9	21.6
midday	24.4	25.3	22.6	22.5	24.5	22.5	22.7	22.4
lastHalfHour	24.3	24.0	22.2	21.0	23.3	21.4	22.3	22.5

One Minute Volatility Bps

firstHalfHour	7.1	7.7	6.1	5.1	7.2	6.7	6.6	7.7
midday	5.4	5.7	4.5	5.6	6.6	4.1	4.5	3.9
lastHalfHour	5.7	3.9	5.2	5.3	6.6	3.8	4.9	1.6

Quotesize in Shares

firstHalfHour	59,630	65,948	58,395	76,129	61,752	55,719	51,982	58,984
midday	161,583	189,564	171,200	197,195	181,346	141,942	122,557	127,510
lastHalfHour	180,964	195,173	162,162	180,880	165,147	134,075	118,307	142,612

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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