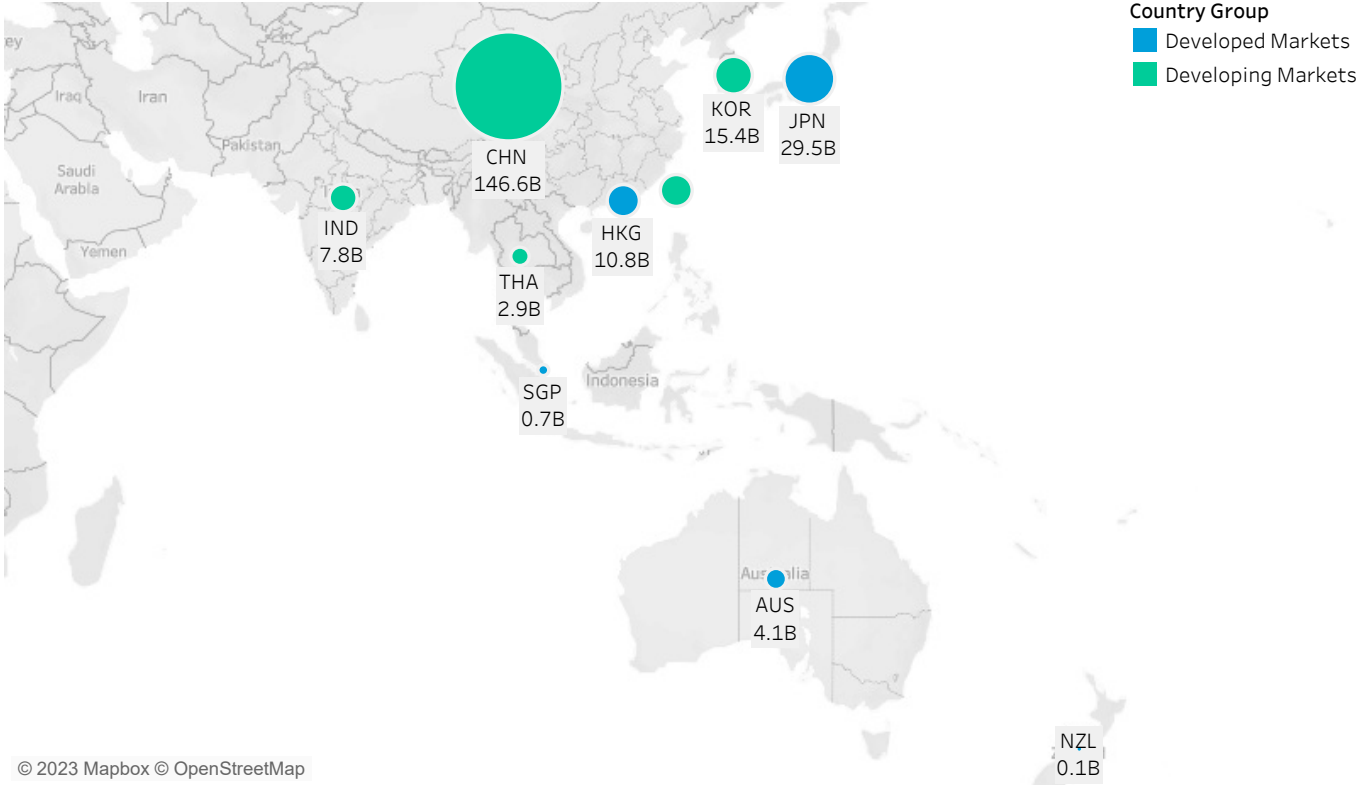


# May 2023 APAC Market Structure Monthly

## Average Daily Turnover (Notional USD)



## Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

# May 2023

## AP Market Structure Monthly

### EQUITIES MICROSTRUCTURE OBSERVATIONS

- Japan recorded YTD high average daily turnover (ADT) of USD \$29.5B, up 28% MoM; Notional traded for Japanese small cap names also saw 12-month high at USD \$120M.
- Closing auction activity in Australia contributed 24% of total daily volume, up 4% compared to the 12-month average.
- Intraday spreads in Hong Kong saw a slight uptick at 11am, tracing above the 12-month average by ~1.5bps to 15bps.

### AP MARKET STRUCTURE NEWS

#### [Tokyo Stock Exchange Will Apply Tick Sizes Applied to TOPIX100 Constituents to TOPIX Mid400 Constituents from June 5, 2023](#)

On 26 May 2023, Tokyo Stock Exchange, Inc. (TSE) announced that it will apply tick sizes applied to TOPIX 100 constituents to medium liquidity stocks (TOPIX Mid400 constituents) after June 5, 2023.

#### [Hong Kong Exchange and Clearing Limited to Launch HKD-RMB Dual Counter Model on 19 June 2023](#)

On 19 May 2023, Hong Kong Exchanges and Clearing Limited (HKEX) announced that it will launch the Hong Kong Dollar (HKD)-Renminbi (RMB) Dual Counter Model in its securities market, subject to market readiness. Along with the new model, a Dual Counter Market Making Programme will also be launched. According to HKEX, the Dual Counter Market Makers will offer quotes for the RMB-denominated securities trading and provide liquidity in the RMB counter to minimize price discrepancies between the HKD and RMB counters.

From a trading arrangement perspective, the two counters will have separate stock codes for the same stocks, for example, the HKD counter will still follow the assignment of current exchange codes (i.e. 0xxxx), while the RMB counter will have stock codes assigned that start with 8 (i.e. 8xxxx) ending in -R. Both HKD and RMB counters will have the same Volatility Control Mechanism (VCM) applicability, and Short Selling eligibility, with fees and levies all paid in HKD. Inter-counter Trading can be considered as long sale.

#### [Hong Kong Exchange and Clearing Limited Launched Swap Connect for Interbank Interest Rate Swap Trading with Mainland China on 15 May 2023](#)

On 15 May 2023, Hong Kong Exchanges and Clearing Limited (HKEX) launched Swap Connect, a new mutual access programme between Hong Kong and Mainland China's interbank interest rate swap markets. According to HKEX, the Swap Connect is part of the broader Connect Programme with mainland China markets and it aims to provide enhanced risk management capabilities to facilitate greater international participation of China's fixed-income market.

### [Singapore Exchange to Launch Depository Receipts under DR Linkage with Stock Exchange of Thailand](#)

On 23 May 2023, SGX announced that it will launch Singapore Depository Receipts (SDR) under the Thailand-Singapore DR Linkage on 30 May 2023 to enhance regional connectivity and promote more joint investment and business between SGX and the Stock Exchange of Thailand (SET).

According to SGX, the inaugural SDRs represent the beneficial ownership interest in the underlying securities of Airports of Thailand (AOT), CP All (CPALL) and PTT Exploration & Production (PTTEP), which are constituents of the benchmark SET50 Index.

### [Singapore Exchange and SSE deepen partnership with ETF Link connecting Singapore and China](#)

On 22 May 2023, Singapore Exchange (SGX) announced that it is deepening the relationship with Shanghai Stock Exchange (SSE) by signing a Memorandum of Understanding (MOU) to launch an SSE-SGX exchange-traded fund (ETF) link to further strengthen the connectivity between Singapore and China. According to SGX, "through a master-feeder fund model", SGX and SSE will join, develop, and promote the ETF markets in Singapore and China.

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

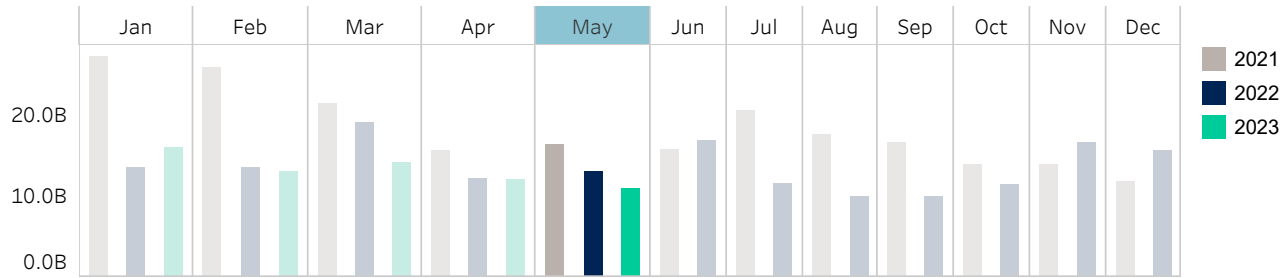
**APAC** +852.2846.3592 | **CAN** +1.416.874.0800 | **EMEA** +44.20.7670.4066 | **US** +1.646.682.6199  
[info@virtu.com](mailto:info@virtu.com) | [www.virtu.com](http://www.virtu.com)

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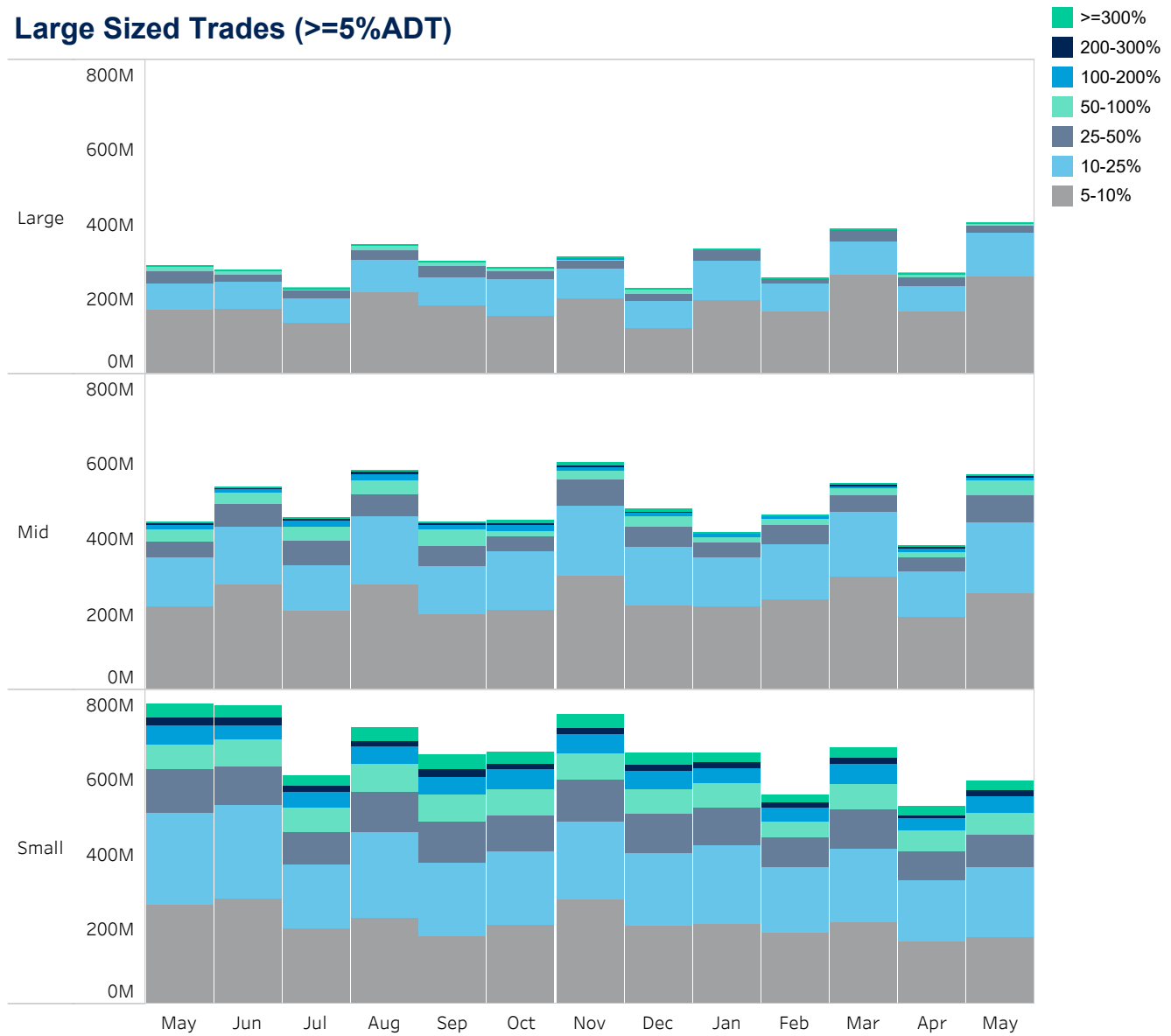
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# Hong Kong

## Average Daily Turnover (Notional USD)



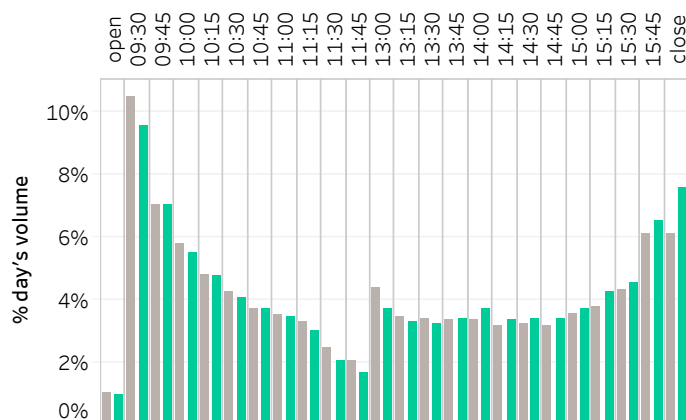
## Large Sized Trades (>=5%ADT)



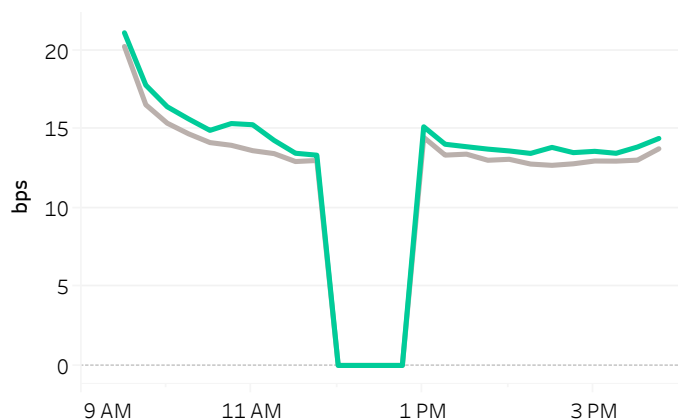
Source data: Virtu Financial

# Hong Kong

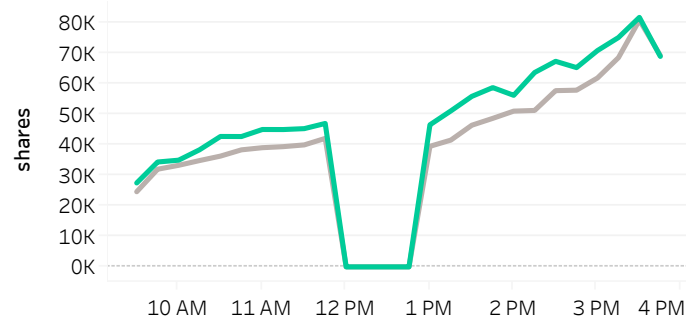
## Volume Curve



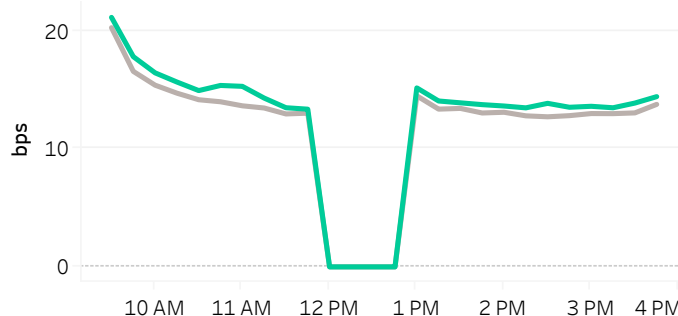
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (brown line) May 2023 (teal line)

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

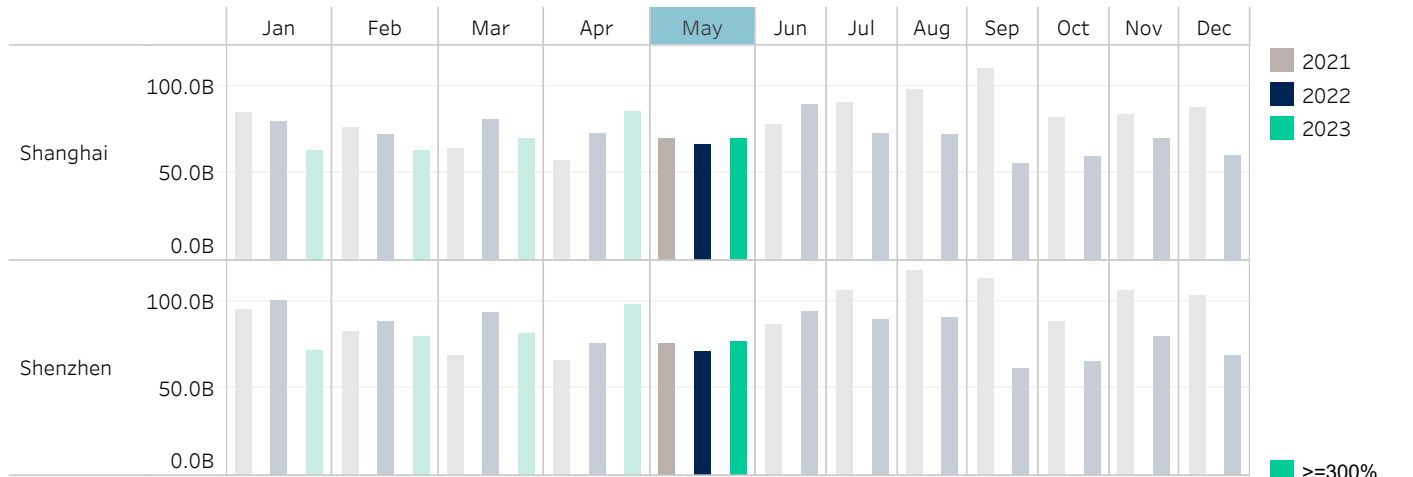
Median used for all metrics

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

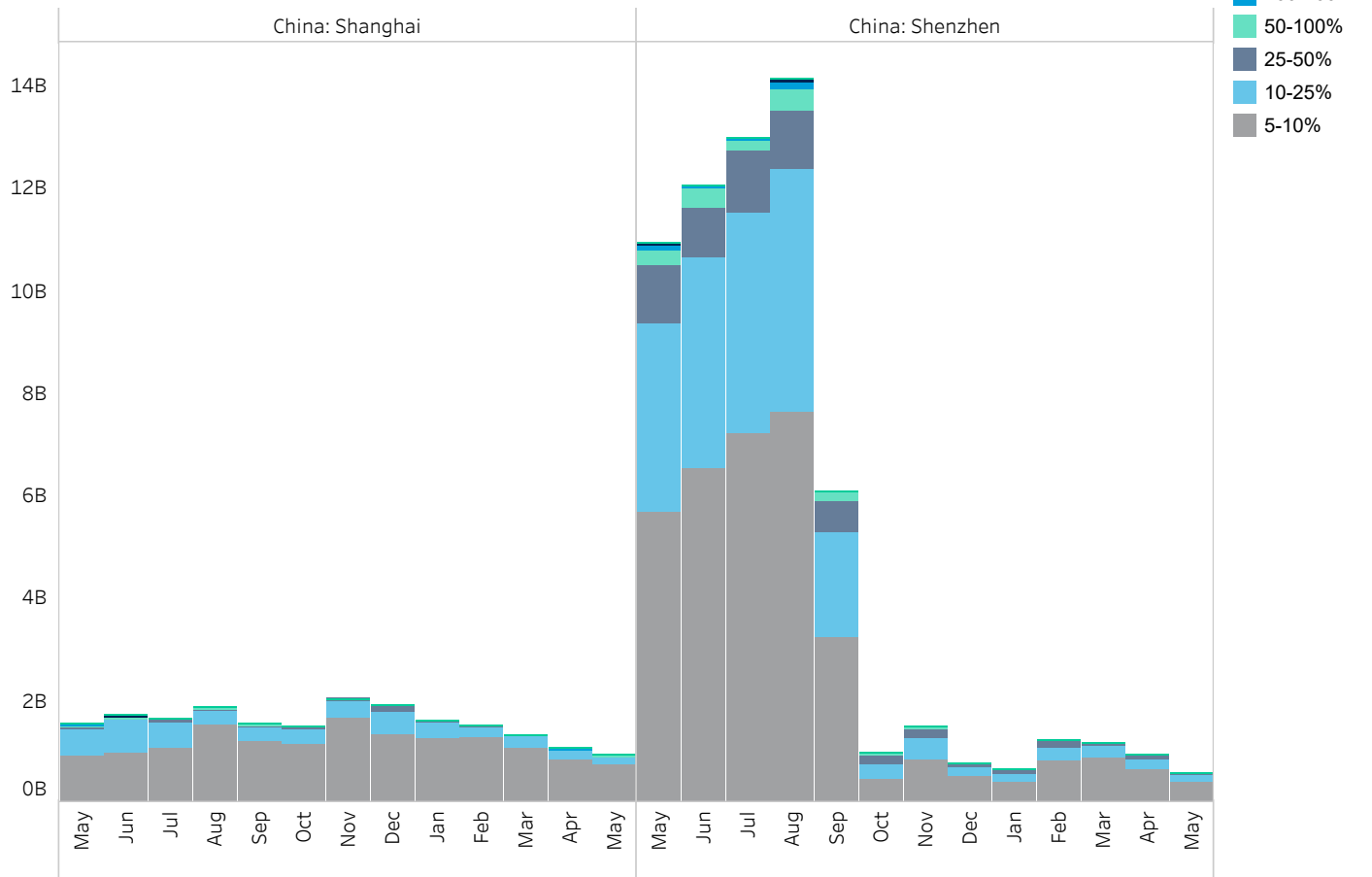
Source data: Virtu Financial

# China

## Average Daily Turnover (Notional USD)



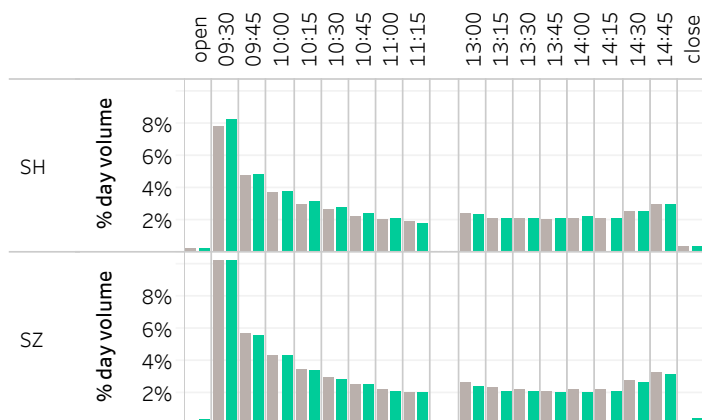
## Large Sized Trades (>=5%ADT)



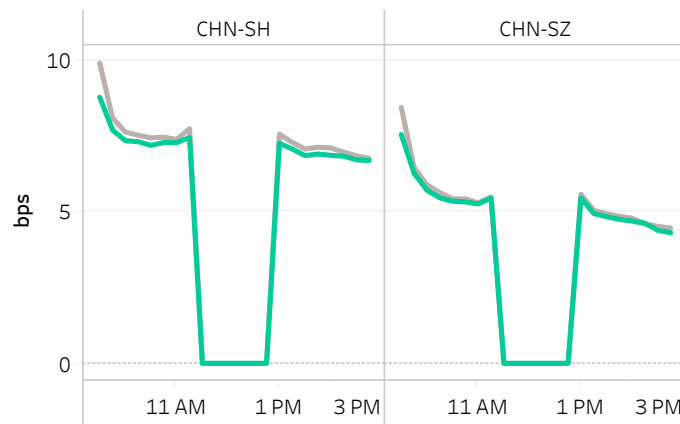
Source data: Virtu Financial

# China

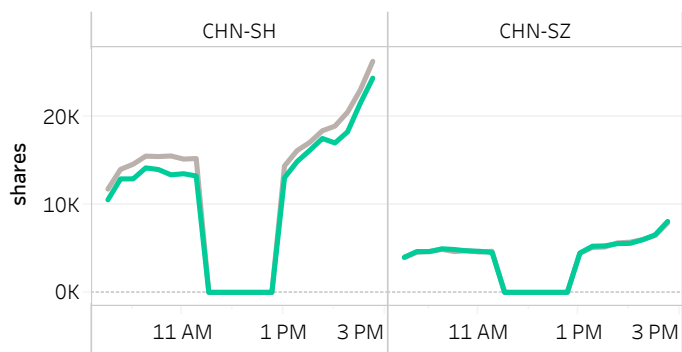
## Volume Curve



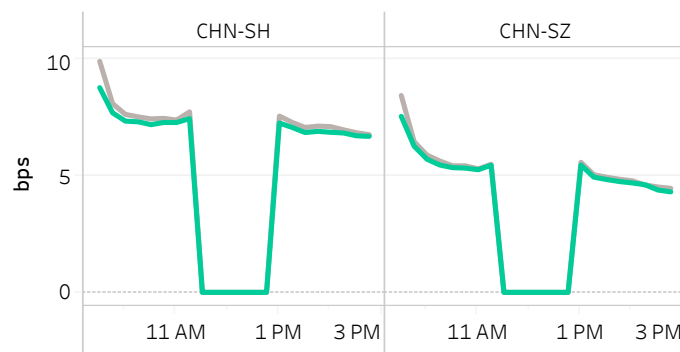
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (brown line), May 2023 (teal line)

## Spread Bps

	CHN-SH									CHN-SZ						
	2022			2023						2022			2023			
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
FirstHalfHo..	10.1	9.6	9.4	8.9	8.1	8.2	8.1	8.2	8.6	8.0	7.6	7.4	6.6	6.7	7.0	7.0
MidDay	8.5	8.3	8.0	7.4	7.2	7.2	7.1	7.2	6.3	5.9	5.6	5.2	4.9	5.2	5.3	5.3
LastHalfHo..	7.7	7.4	7.2	6.7	6.6	6.6	6.5	6.7	5.1	4.9	4.8	4.4	4.3	4.4	4.3	4.4

## One Minute Volatility Bps

FirstHalfHo..	26.9	22.9	26.2	32.5	30.2	28.6	29.2	29.5	27.9	24.9	25.5	37.5	32.7	28.9	30.3	27.5
MidDay	15.1	14.3	15.1	17.8	17.3	16.1	15.8	15.5	14.0	12.2	13.0	16.8	15.2	14.1	14.5	13.2
LastHalfHo..	13.9	13.7	14.0	16.6	15.5	15.1	14.2	14.1	11.1	11.1	11.1	14.6	12.9	11.9	11.8	11.3

## Quotesize (shares)

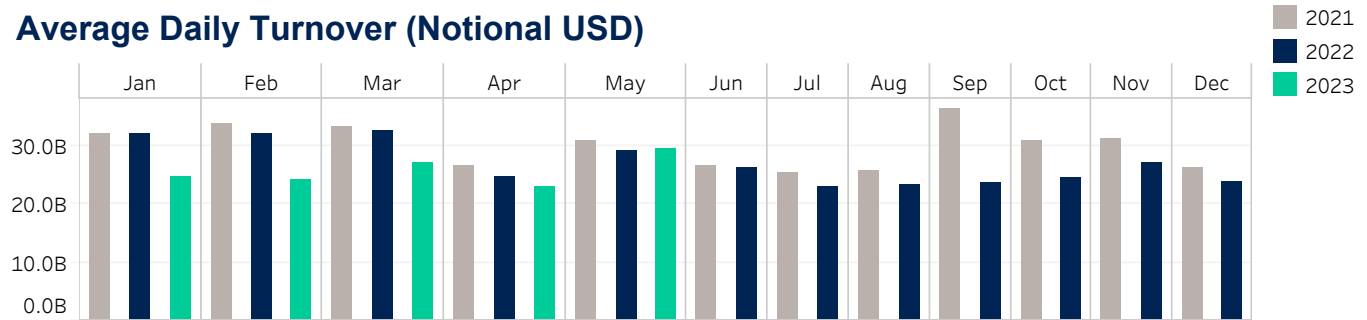
FirstHalfHo..	11,703	13,524	10,302	11,776	13,865	13,413	13,565	11,717	4,175	4,523	3,794	4,051	4,423	4,390	4,663	4,290
MidDay	14,484	15,699	12,904	15,847	17,474	15,741	15,771	13,954	4,539	5,072	4,328	5,045	5,182	4,883	5,174	4,869
LastHalfHo..	22,349	25,496	19,414	26,563	26,960	25,234	26,364	22,269	6,815	8,062	6,496	7,804	7,344	7,267	7,784	7,398

Median used for all metrics

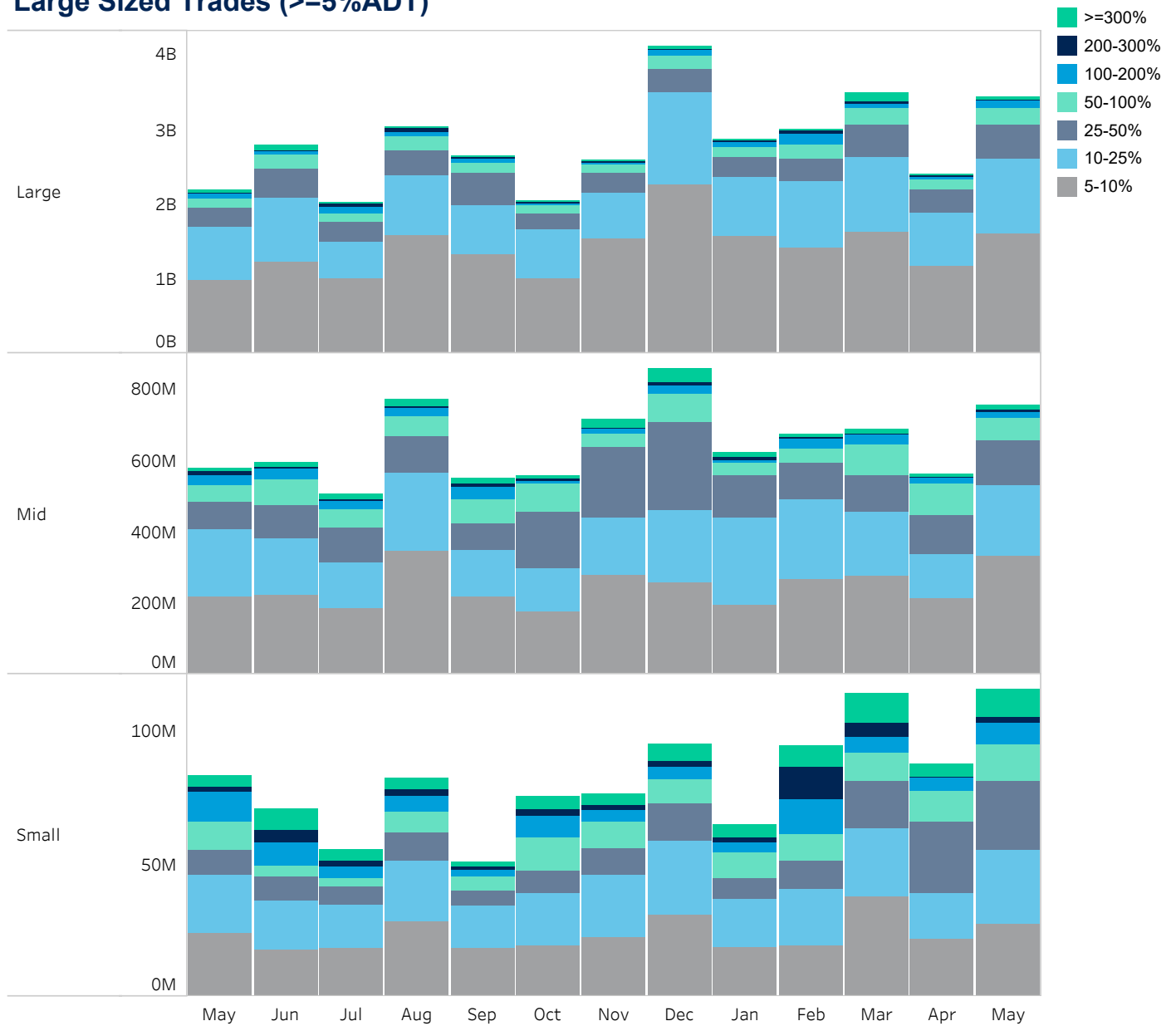
One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP..

# Japan

## Average Daily Turnover (Notional USD)



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

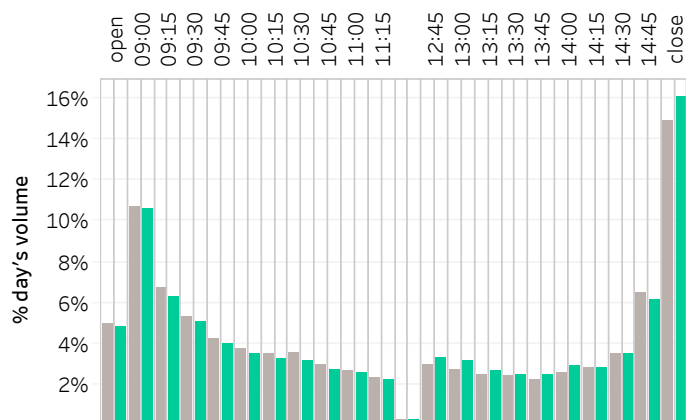


Source data: Virtu Financial

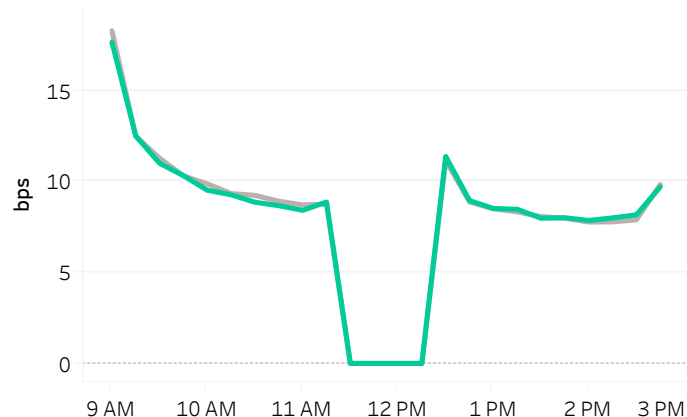


# Japan

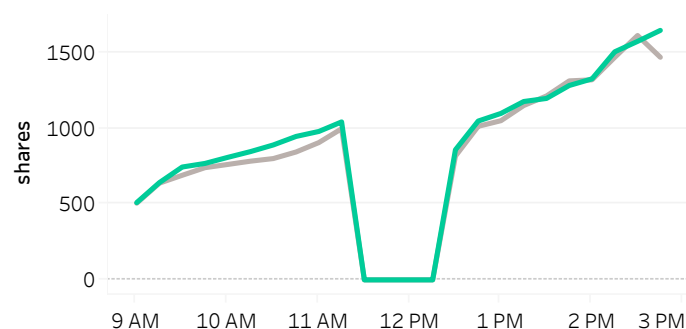
## Volume Curve



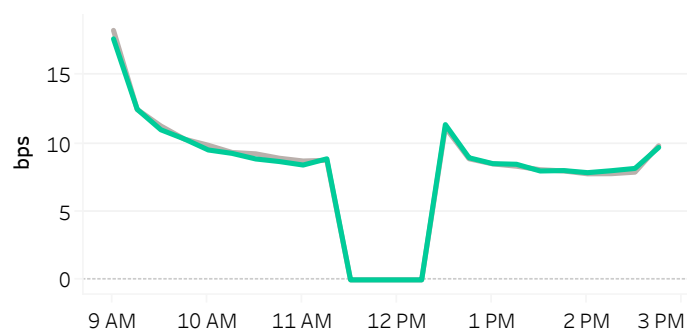
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg May 2023

## Spread Bps

	2022			2023				
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
FirstHalfHour	16.4	16.2	15.9	15.6	15.3	16.0	15.3	15.5
MidDay	9.3	9.3	9.0	8.6	8.8	9.1	8.5	8.9
LastHalfHour	9.6	9.4	9.4	9.1	9.1	9.5	9.2	9.2

## One Minute Volatility Bps

FirstHalfHour	17.6	17.7	16.1	16.2	16.1	16.3	15.4	16.4
MidDay	8.5	8.7	8.4	8.0	8.3	8.4	7.7	8.5
LastHalfHour	9.7	9.7	9.5	9.3	9.3	9.4	8.9	9.3

## Quotesize (shares)

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

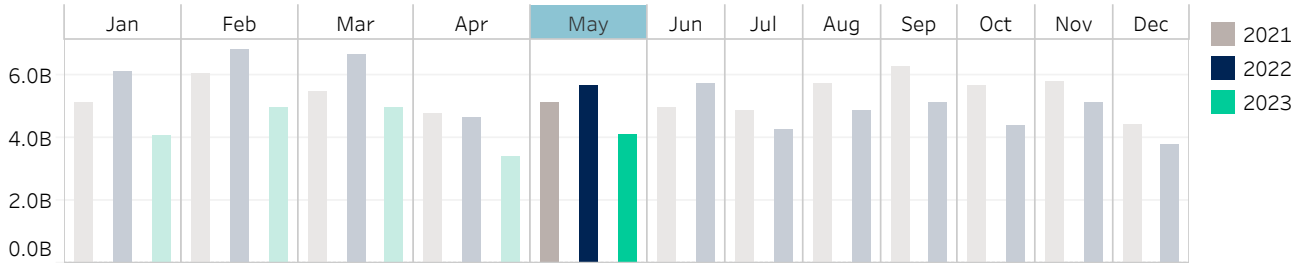
Median used for all metrics

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

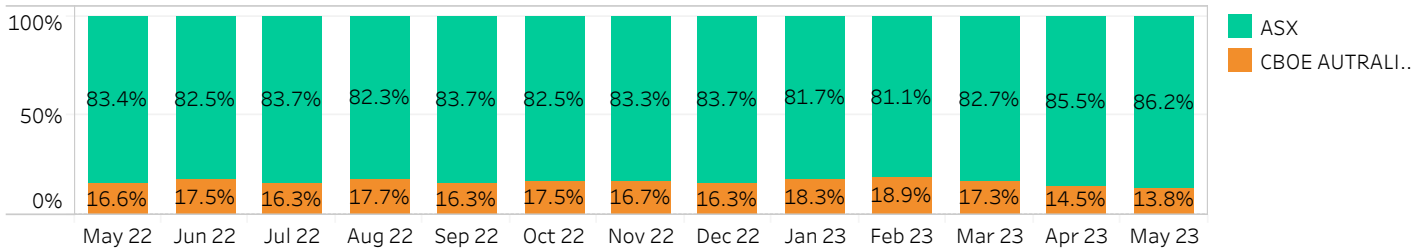
Source data: Virtu Financial

# Australia

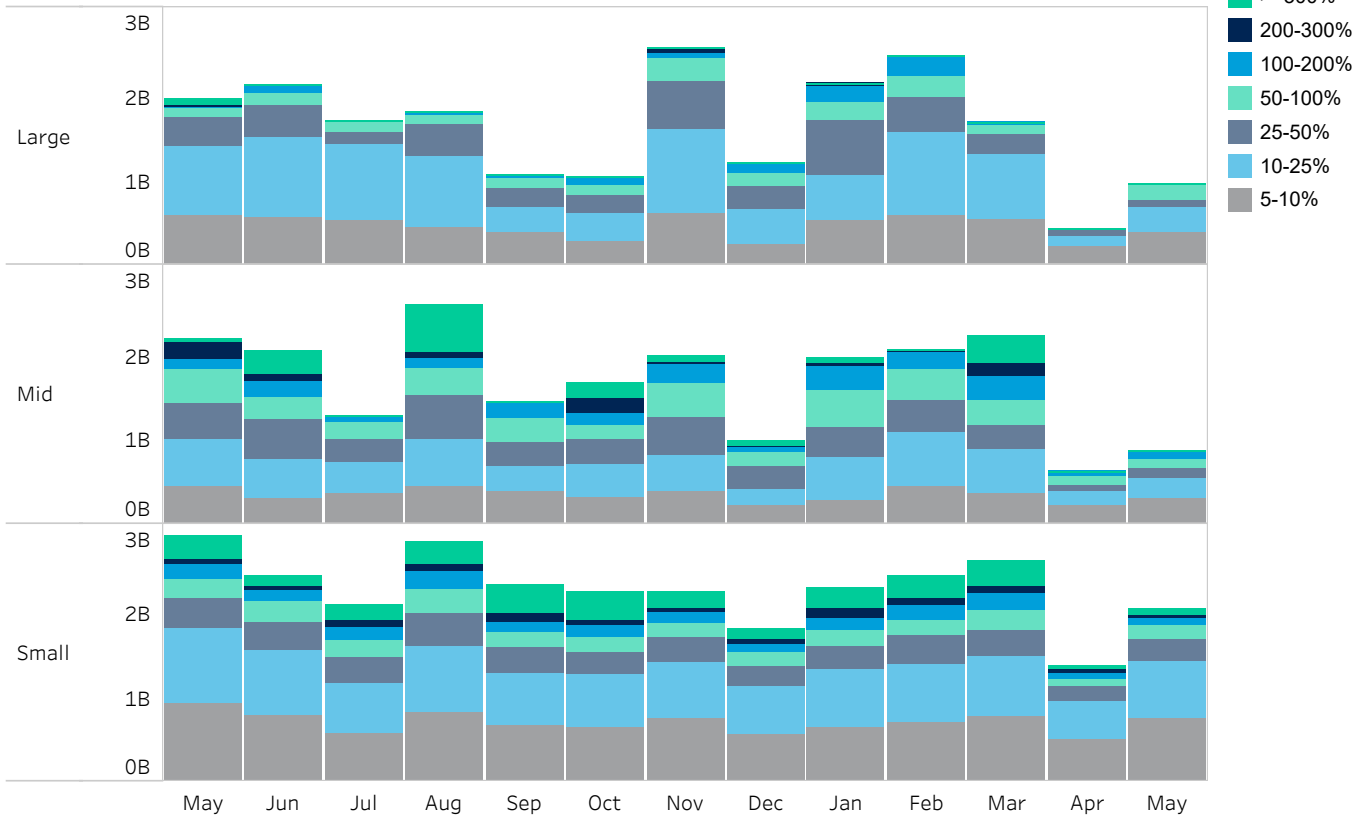
## Average Daily Turnover (Notional USD)



## Venue Market Share (Notional USD)



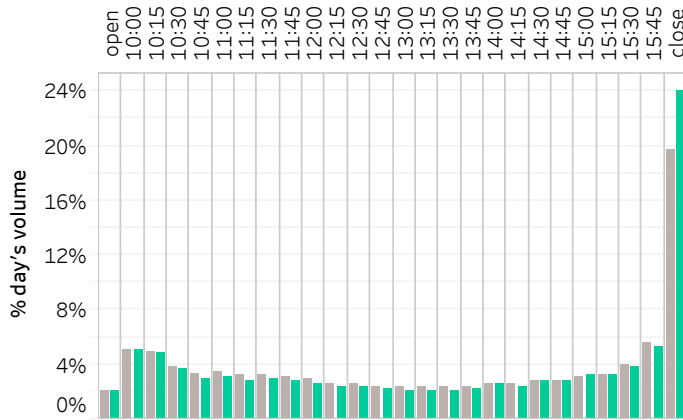
## Large Sized Trades (>=5%ADT)



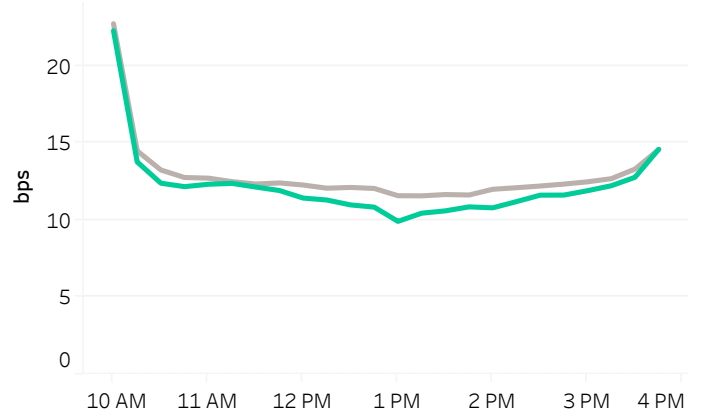
Source data: Virtu Financial

# Australia

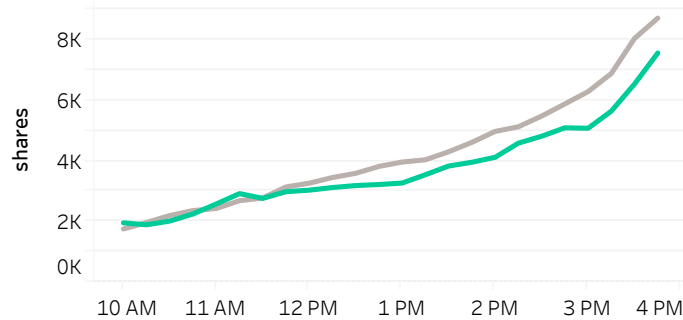
## Volume Curve



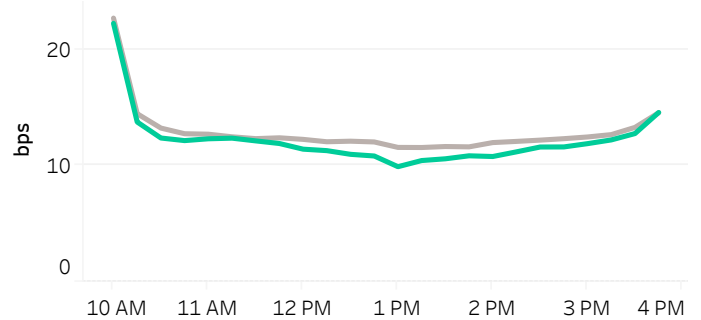
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg May 2023

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

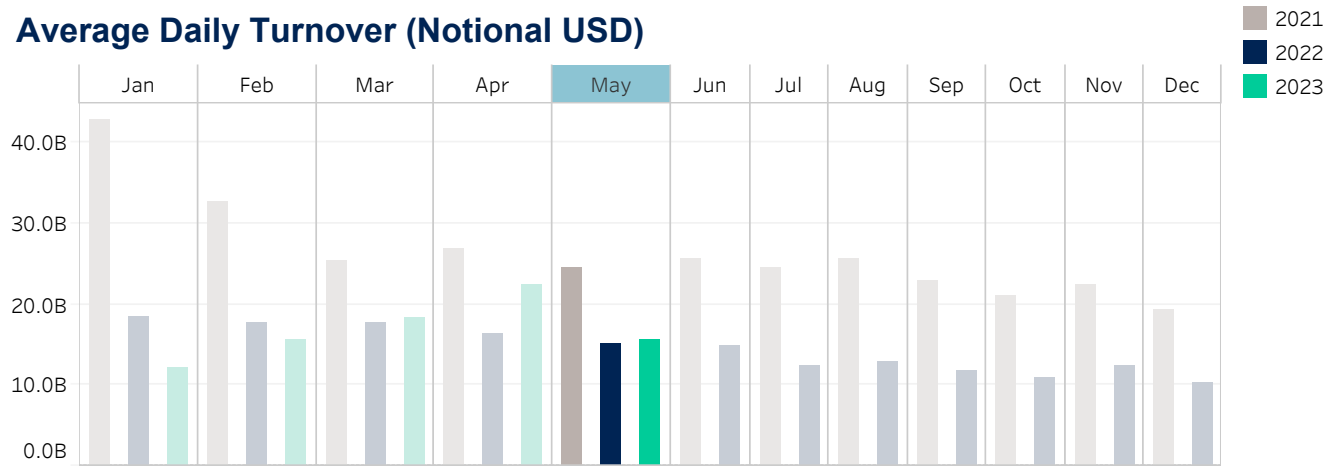
Median used for all metrics

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

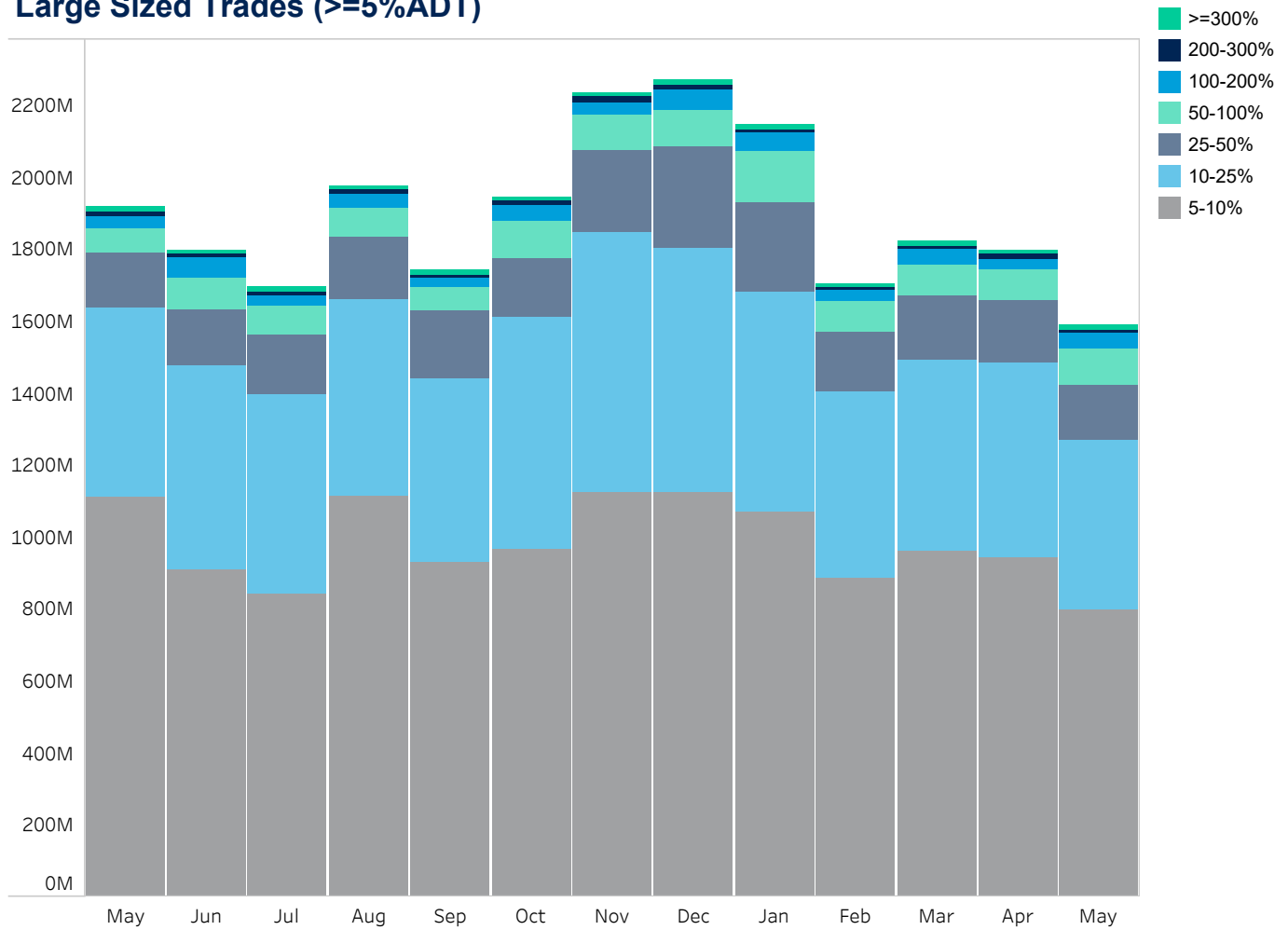
Source data: Virtu Financial

# South Korea

## Average Daily Turnover (Notional USD)



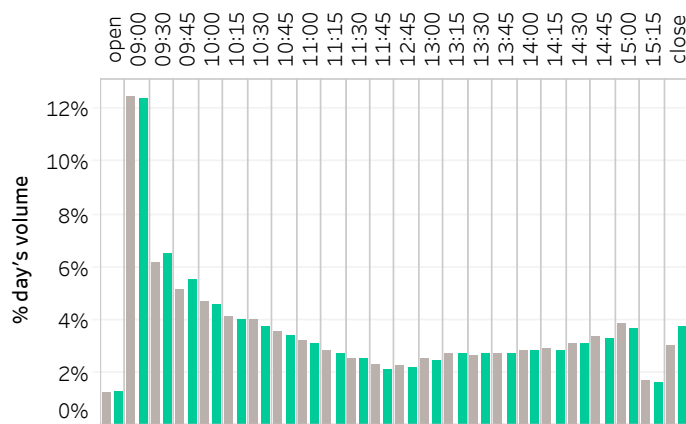
## Large Sized Trades (>=5%ADT)



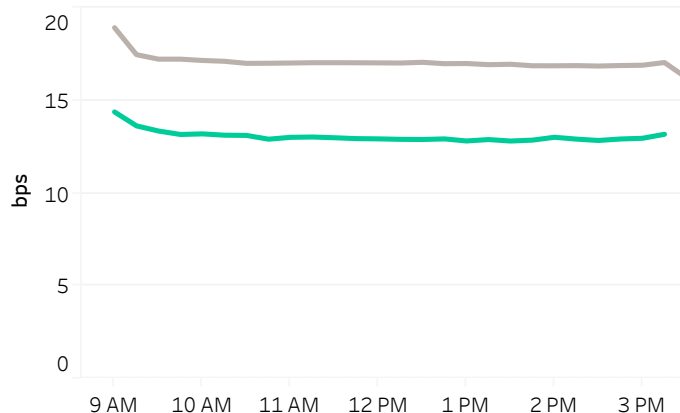
Source data: Virtu Financial

# Korea

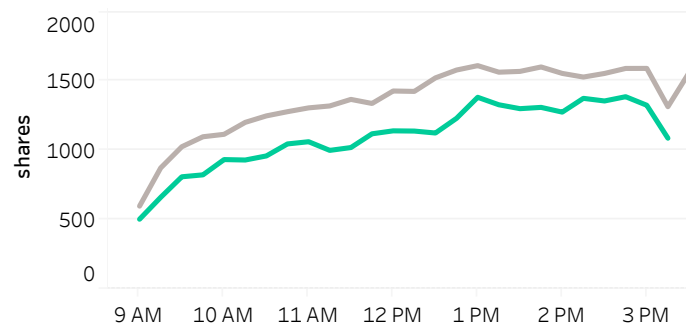
## Volume Curve



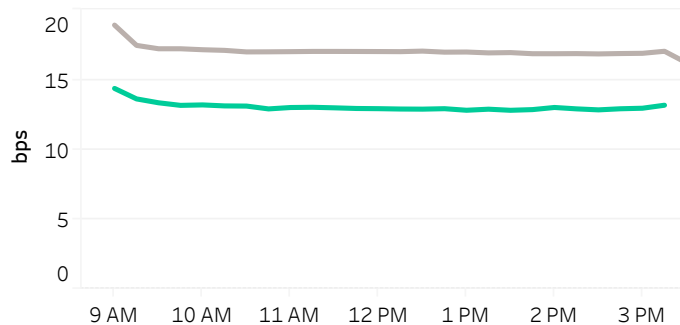
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



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

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

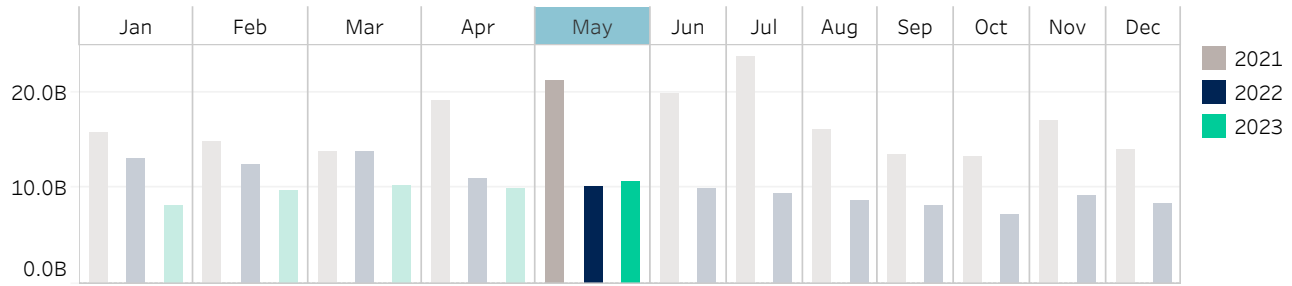
Median used for all metrics

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

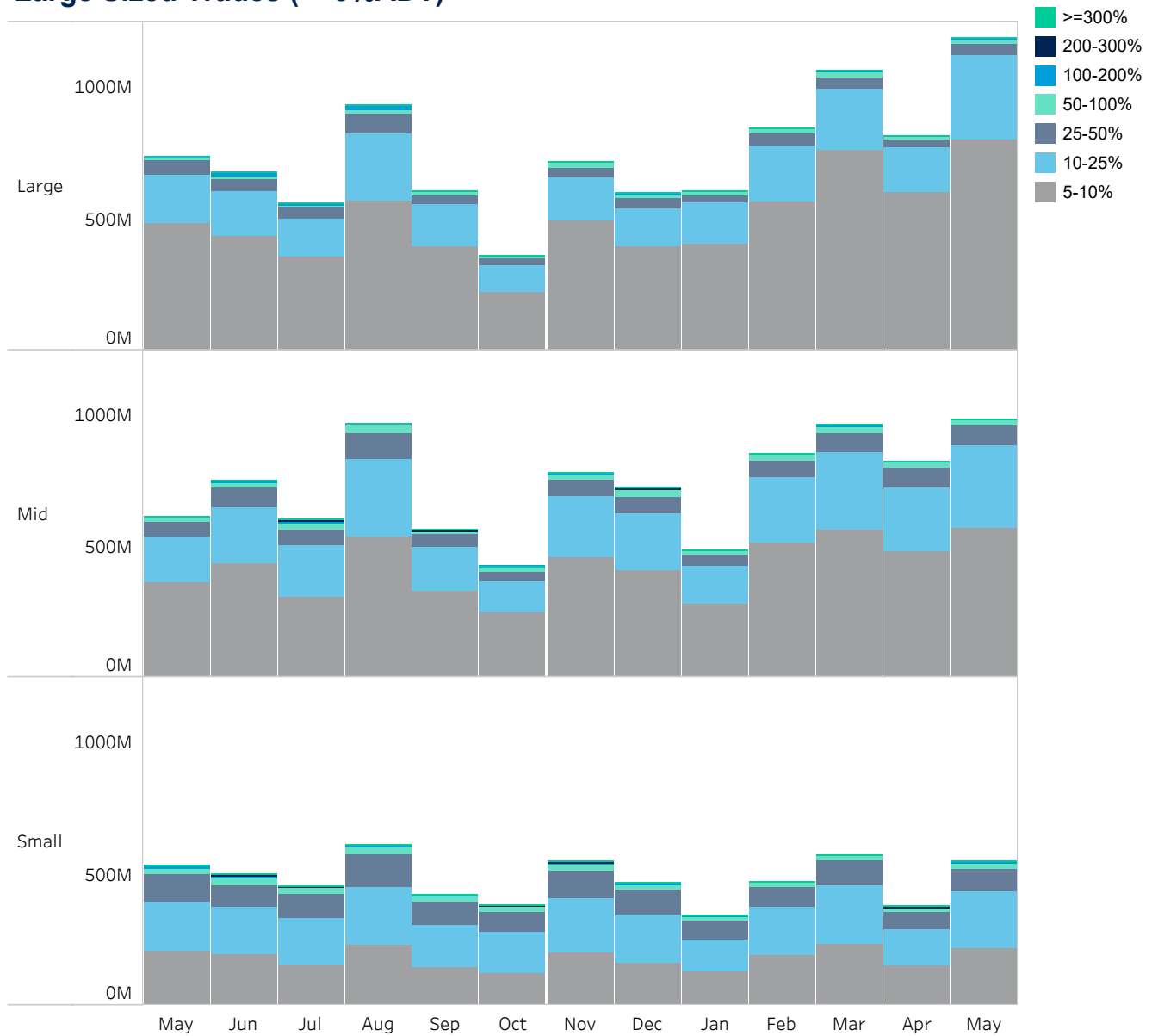
Source data: Virtu Financial

# Taiwan

## Average Daily Turnover (Notional USD)



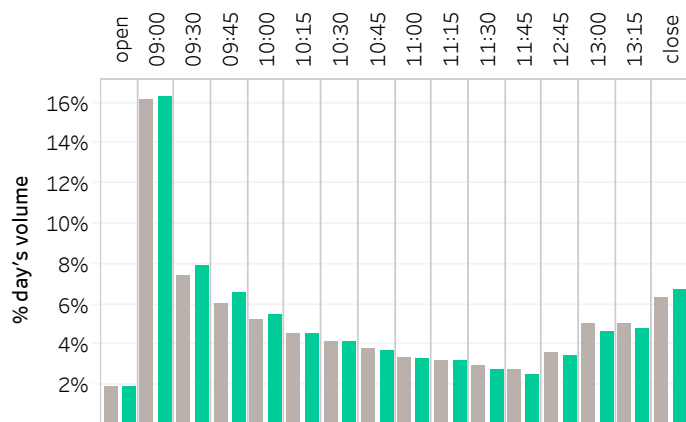
## Large Sized Trades (>=5%ADT)



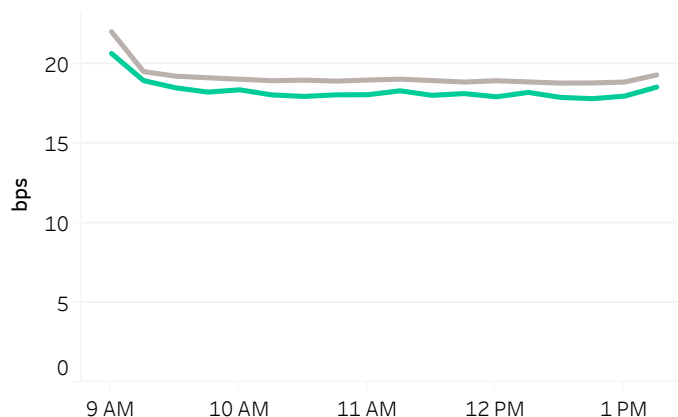
Source data: Virtu Financial

# Taiwan

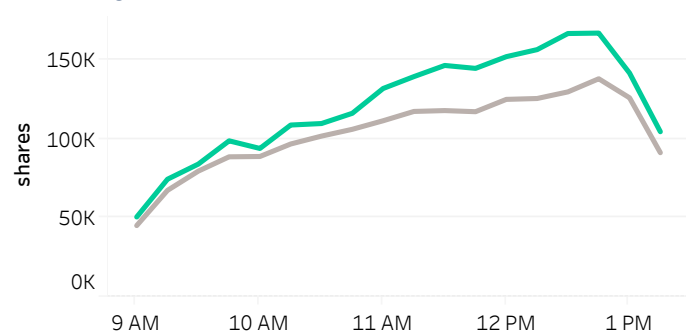
## Volume Curve



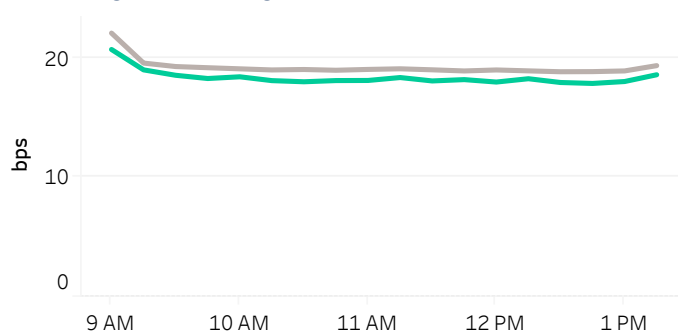
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (brown line) May 2023 (green line)

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

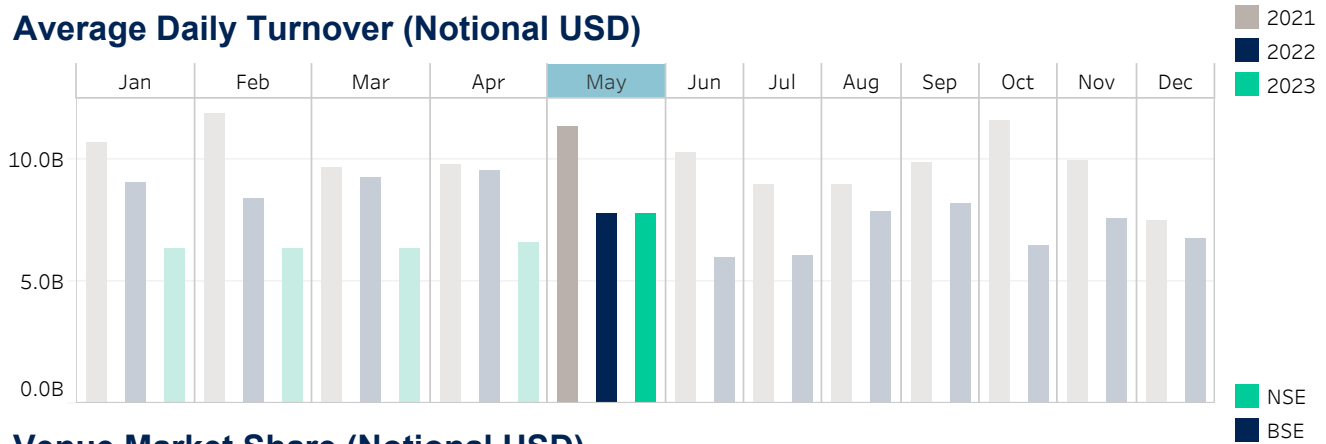
Median used for all metrics

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

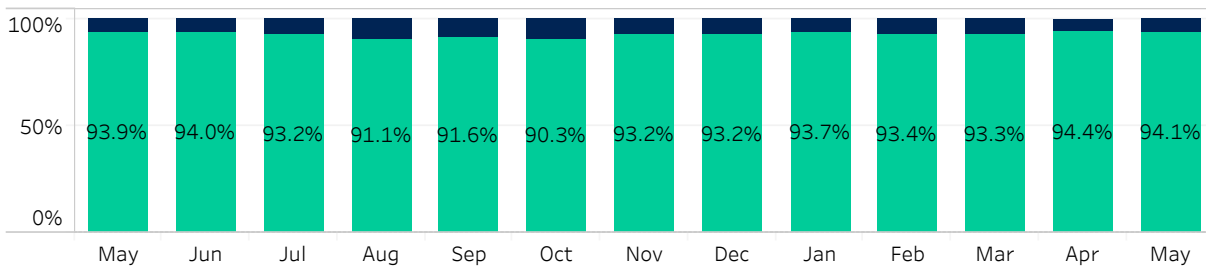
Source data: Virtu Financial

# India

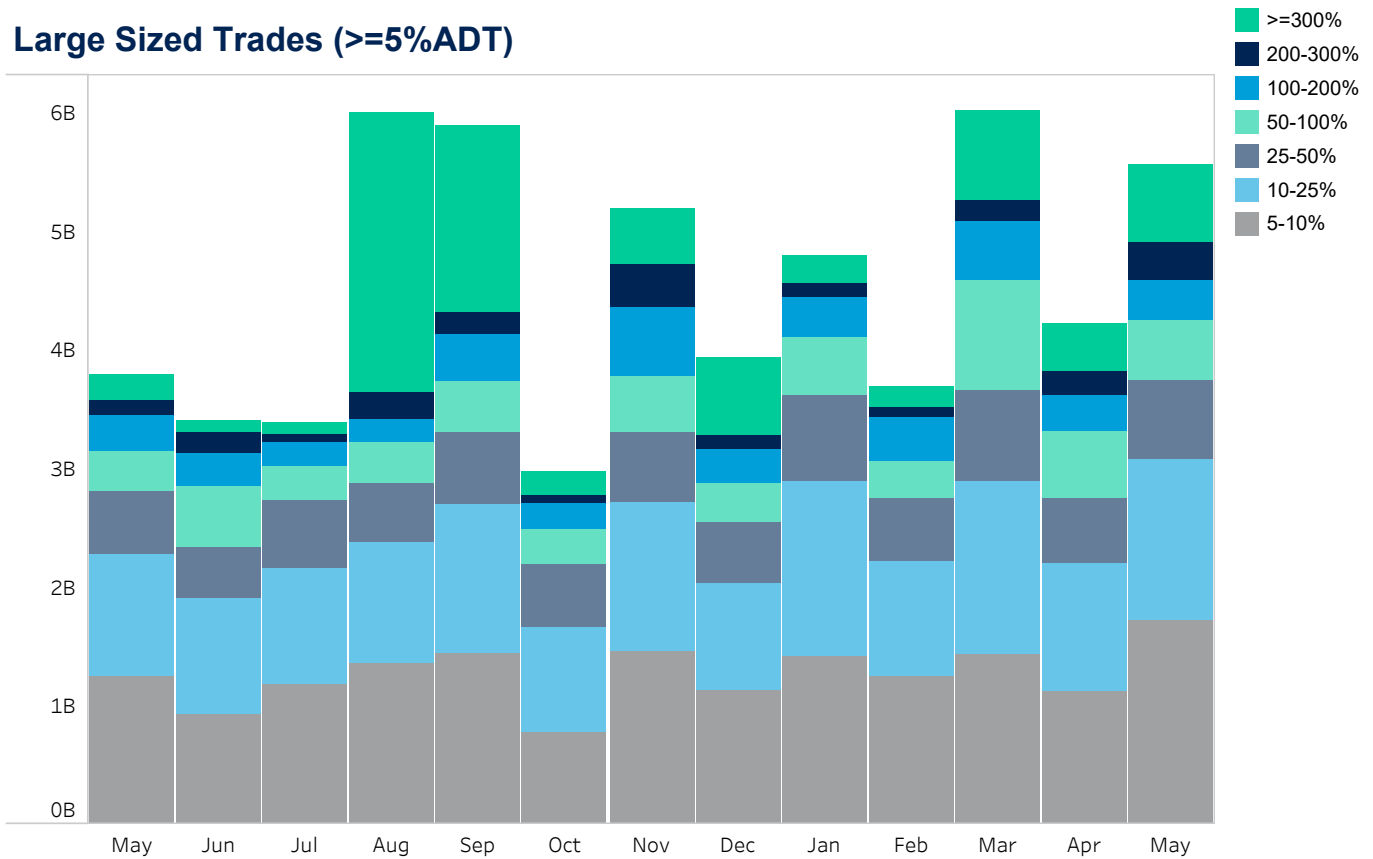
## Average Daily Turnover (Notional USD)



## Venue Market Share (Notional USD)



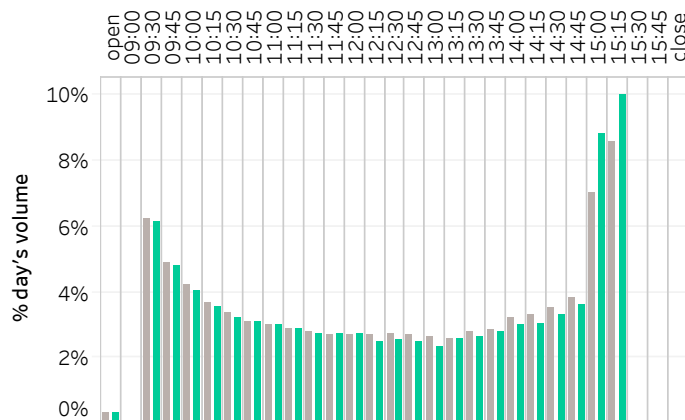
## Large Sized Trades (>=5%ADT)



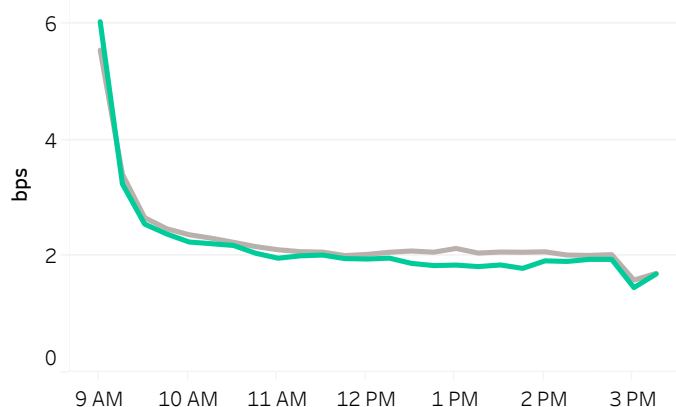


# India

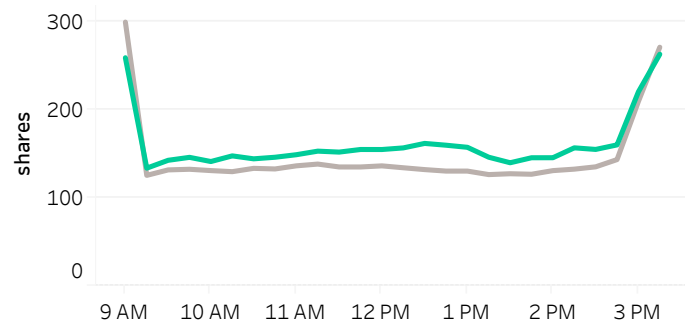
## Volume Curve



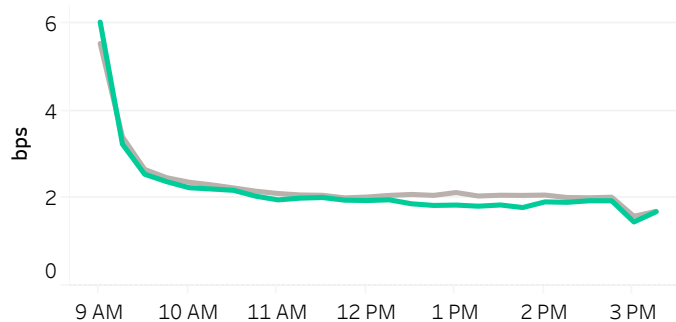
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (Brown line) May 2023 (Green line)

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

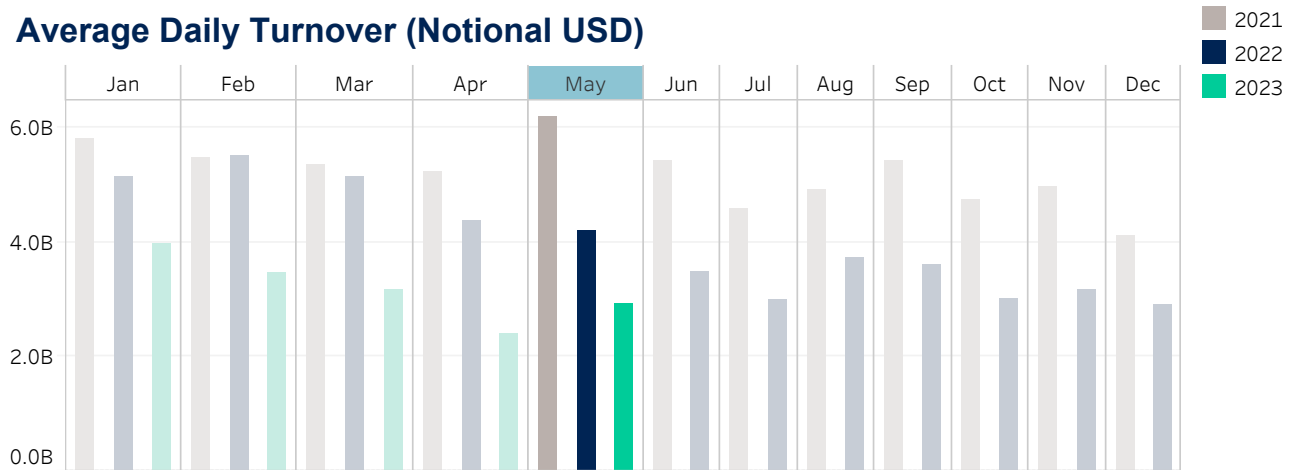
Median used for all metrics

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

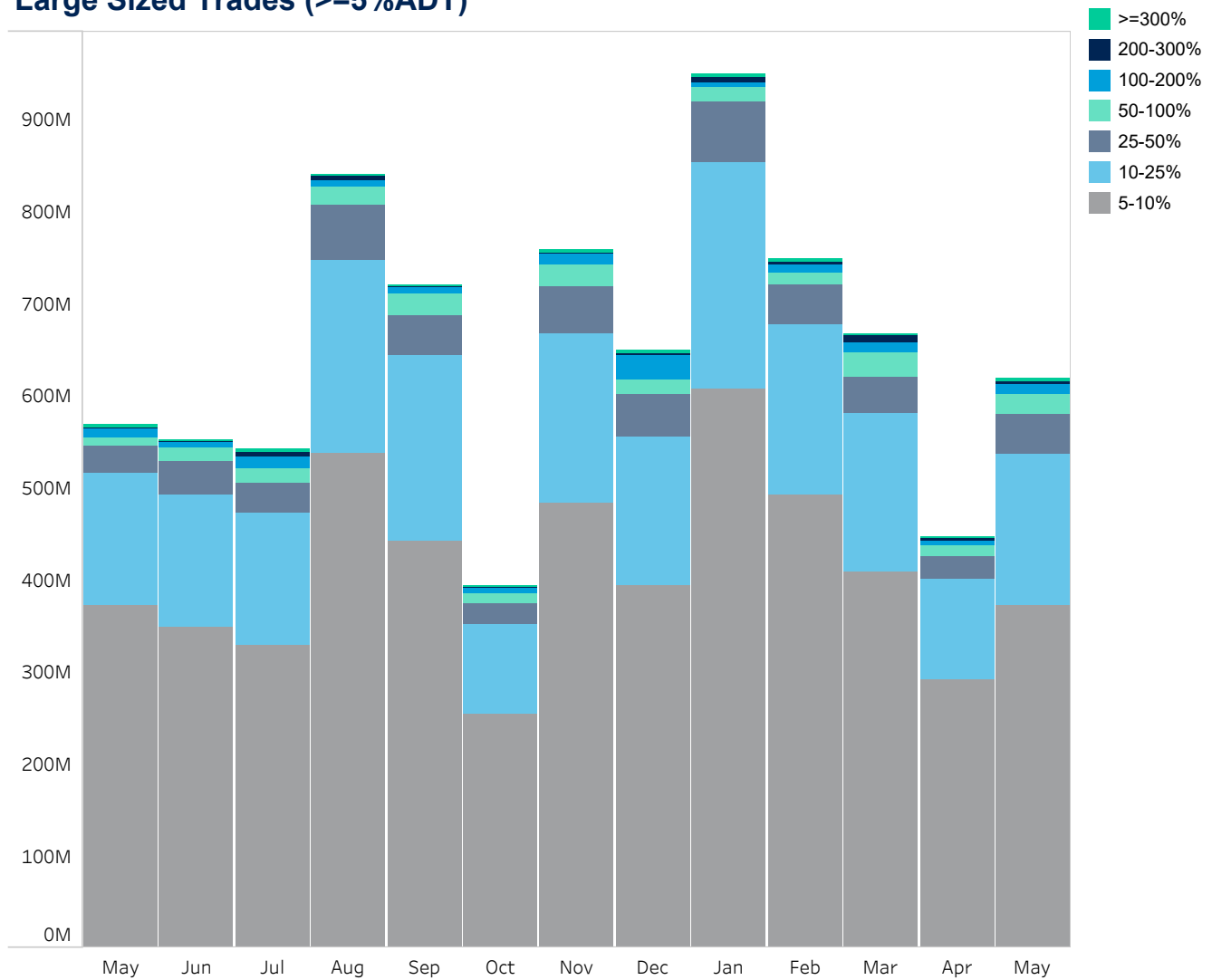
Source data: Virtu Financial

# Thailand

## Average Daily Turnover (Notional USD)



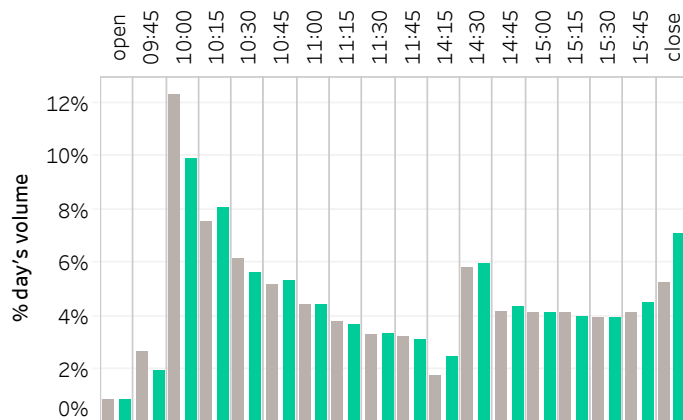
## Large Sized Trades (>=5%ADT)



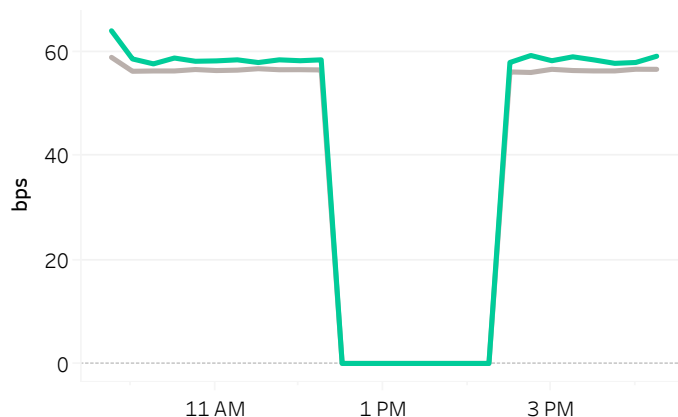
Source data: Virtu Financial

# Thailand

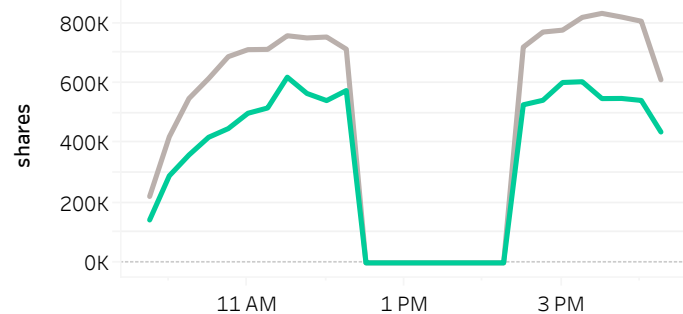
## Volume Curve



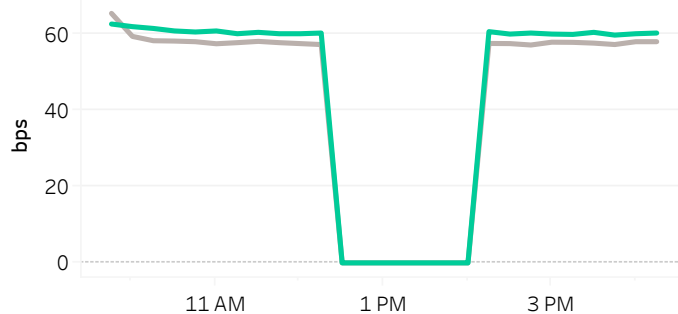
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg May 2023

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

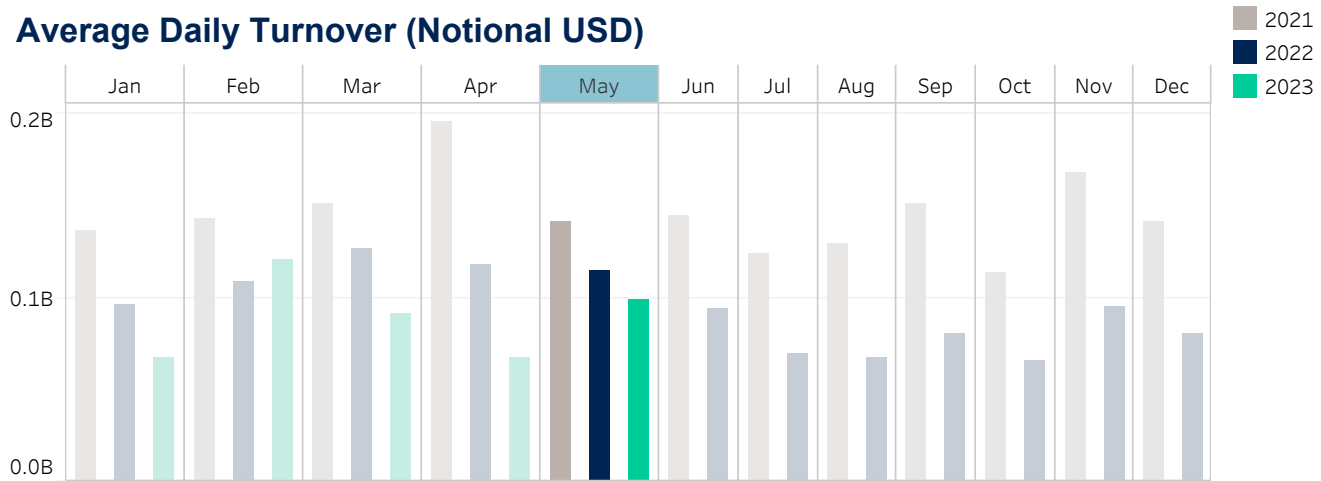
Median used for all metrics

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

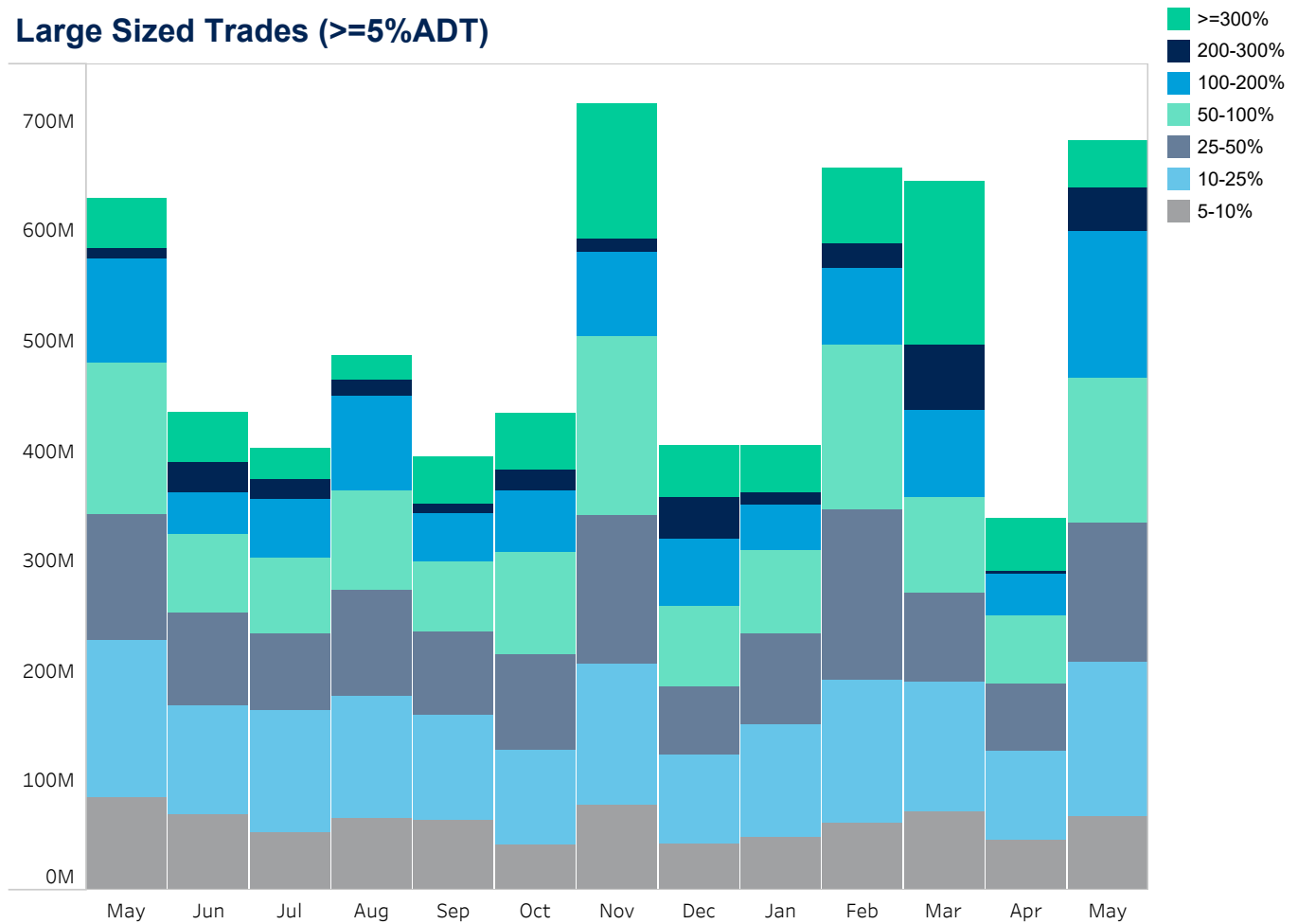
Source data: Virtu Financial

# New Zealand

## Average Daily Turnover (Notional USD)



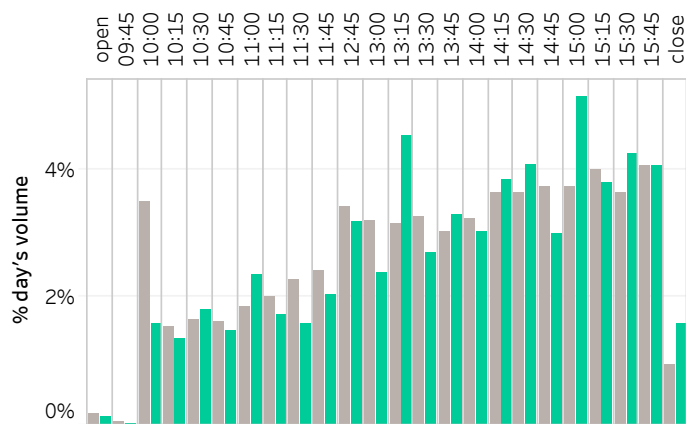
## Large Sized Trades (>=5%ADT)



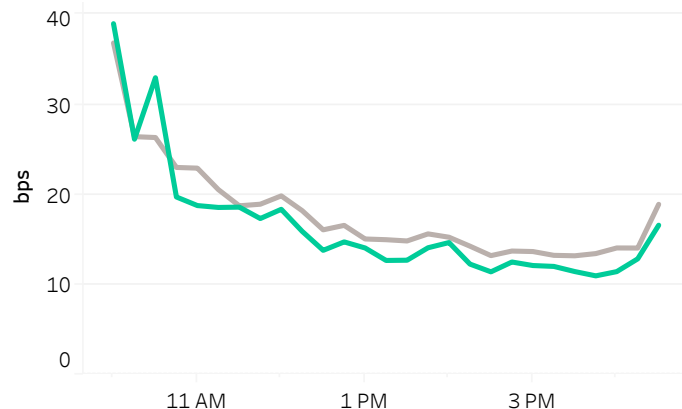
Source data: Virtu Financial

# New Zealand

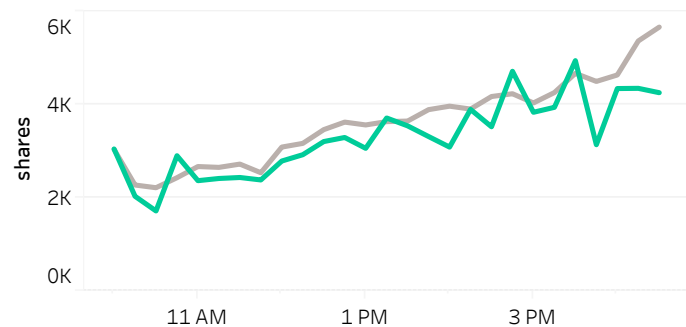
## Volume Curve



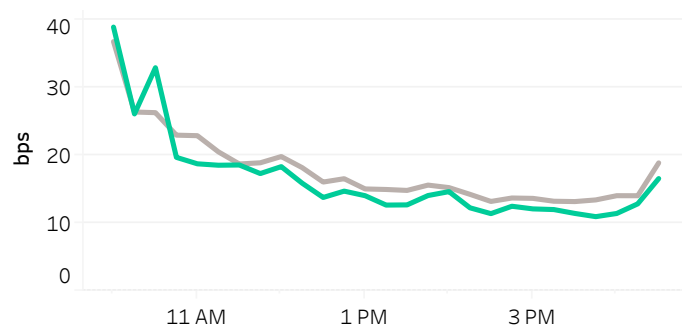
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ May 2023

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

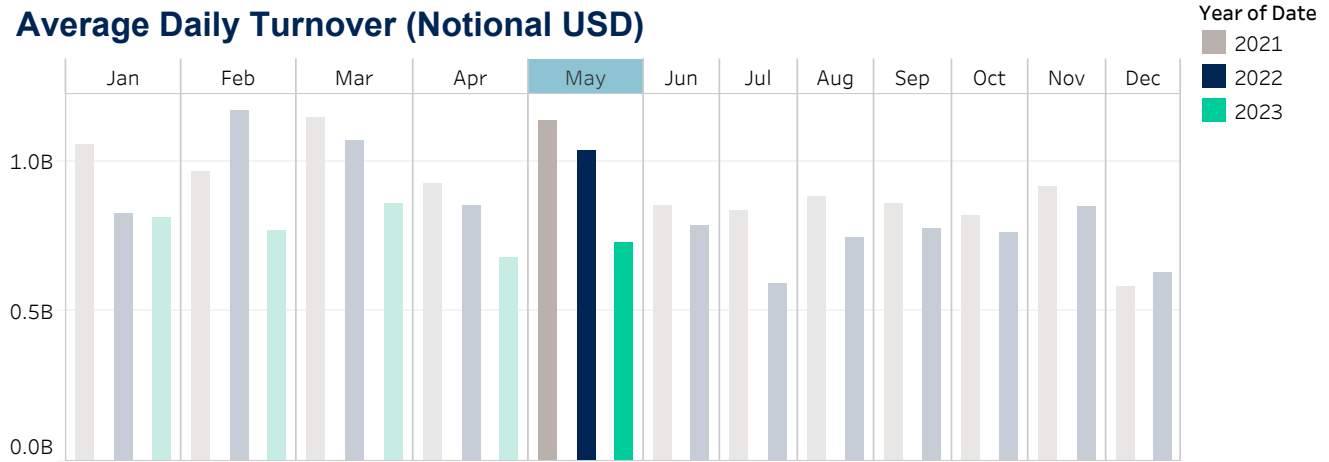
Median used for all metrics

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

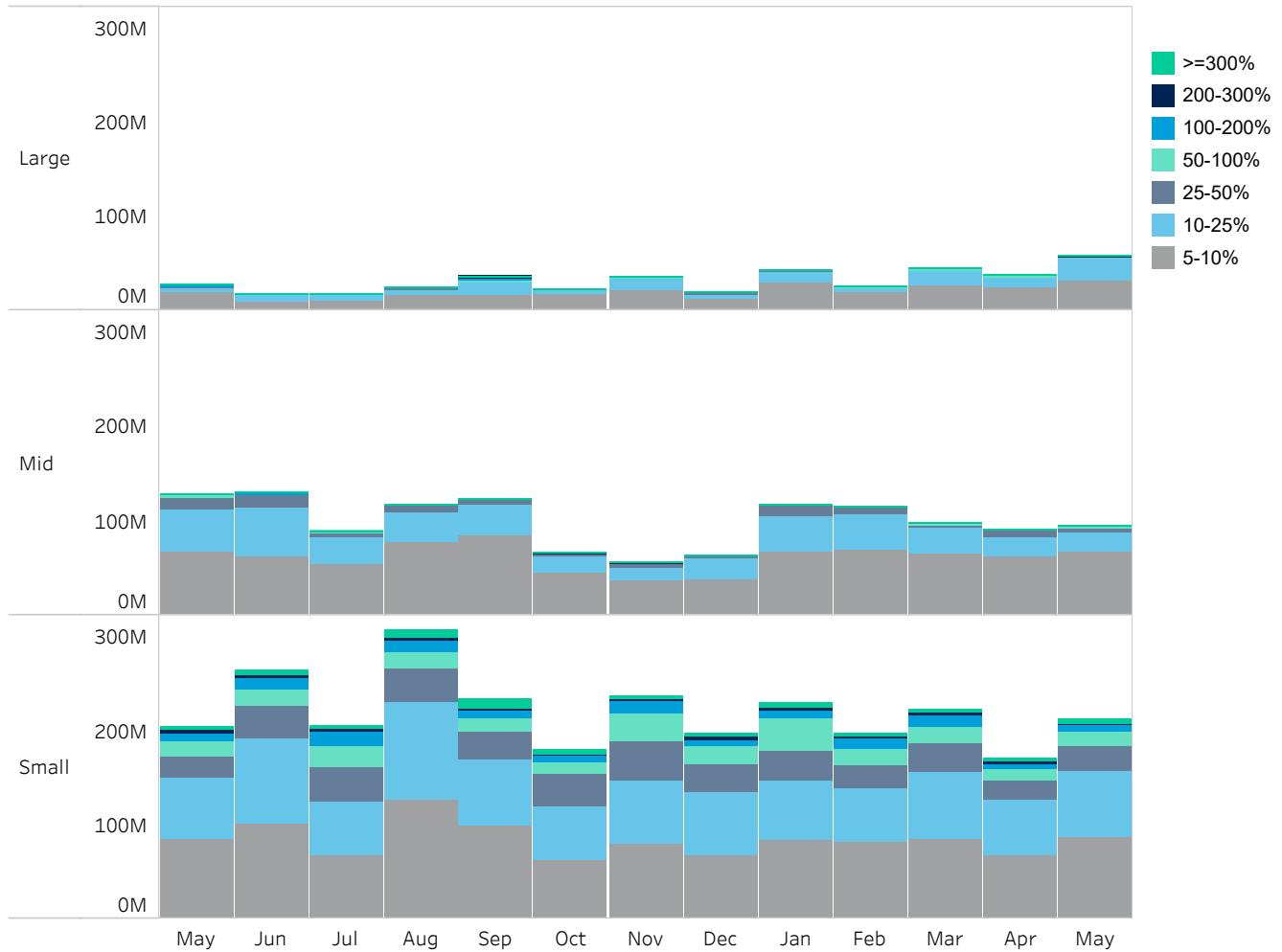
Source data: Virtu Financial

# Singapore

## Average Daily Turnover (Notional USD)



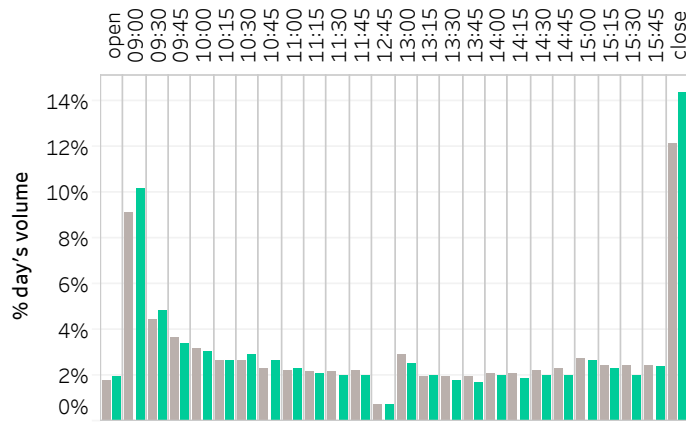
## Large Sized Trades (>=5%ADT)



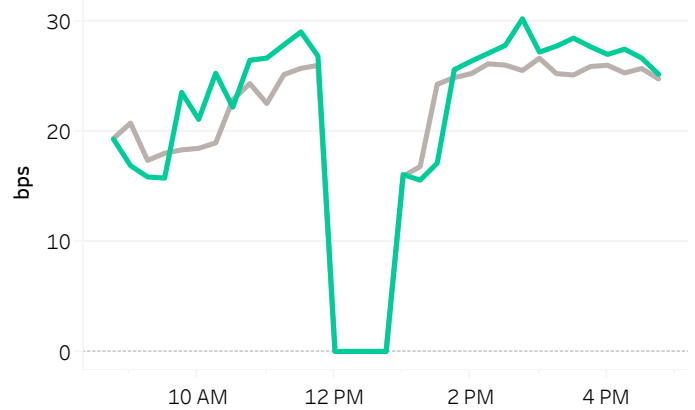
Source data: Virtu Financial

# Singapore

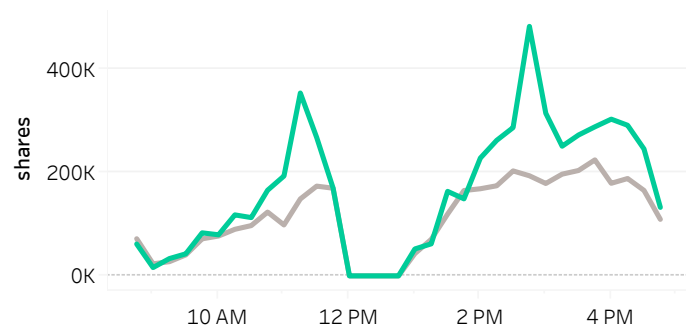
## Volume Curve



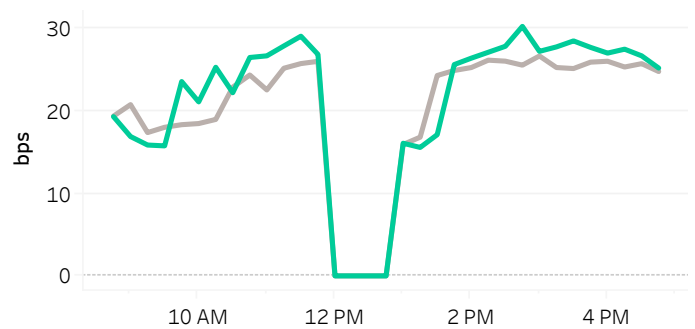
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (brown line) May 2023 (green line)

## Spread Bps

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

## One Minute Volatility Bps

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

## Quotesize (shares)

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

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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[info@virtu.com](mailto:info@virtu.com) | [www.virtu.com](http://www.virtu.com)

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