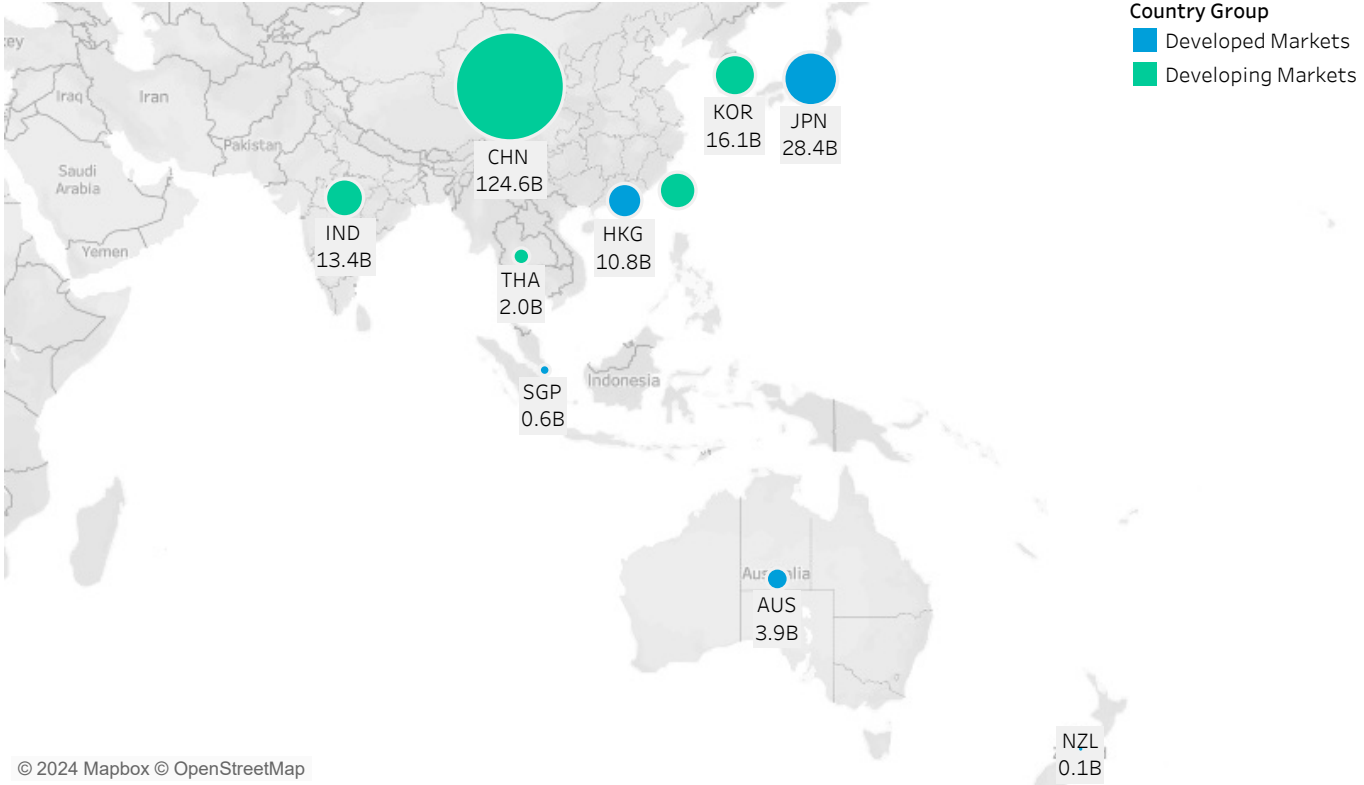


# December 2023 APAC Market Structure Monthly

## Average Daily Turnover (Notional USD)



## Country Breakdowns

Hong Kong

China

Japan

Australia

South Korea

Taiwan

India

Thailand

New Zealand

Singapore

# Dec 2023

## AP Market Structure Monthly

### MICROSTRUCTURE OBSERVATIONS

- India saw the sharpest increase in average daily turnover (ADT), up +48.8% month-over-month (MoM) to year-to-date high at US\$13.4B. This was driven by increased turnover in the >300% MDV segment, which accounted for US\$3.1B in December.
- ADT in Australia, Hong Kong, Korea and Taiwan also increased by +4.8%, +4.6%, +13.2% and +9.7% respectively.
- Observed intraday spreads, volatility remained consistent MoM across the region.

### AP MARKET STRUCTURE NEWS

#### [Shanghai Stock Exchange and Singapore Exchange Launched ETF Connectivity](#)

On the 1st and the 4<sup>th</sup> of December 2023, Singapore Exchange (SGX) and Shanghai Stock Exchange (SSE) announced the official launch of Shanghai-Singapore ETF Connectivity. A pair of ETFs were listed and started trading on the two exchanges: a large-cap and high-dividend Chinese stock themed ETF listed on SGX; and a Southeast Asia tech themed ETF listed on SSE.

<https://www.sgxgroup.com/media-centre/20231201-sgx-group-and-shanghai-stock-exchange-etf-product-link-debuts-first>

#### [Securities and Exchange Board of India Published Consultation Paper on Optional T+0 Settlement](#)

On 22 Dec 2023, India regulator Securities and Exchange Board of India (SEBI) published a consultation paper to solicit public comments on the introduction of "T+0 and instant settlement cycle on optional basis", which is in addition to the existing T+1 settlement cycle for secondary market cash equity. The abbreviated consultation period ended 12 Jan 2024.

According to the consultation paper, the Work Group of stakeholders have proposed "implementation of the same in two phases - Phase 1: T+0 Settlement Cycle and Phase 2: Instant Settlement Cycle."

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

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

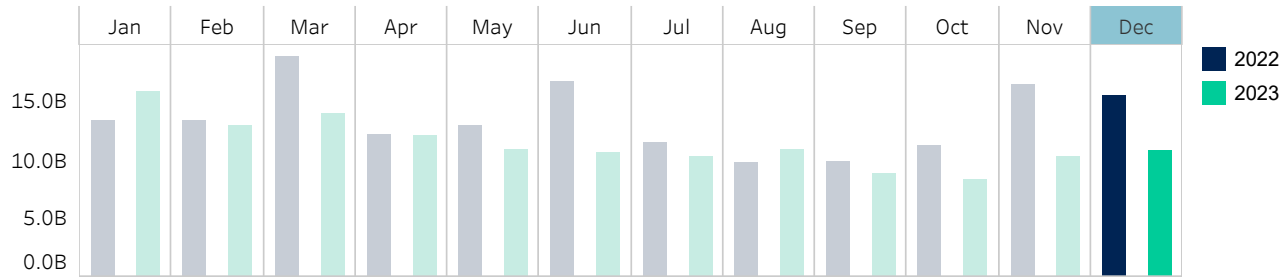
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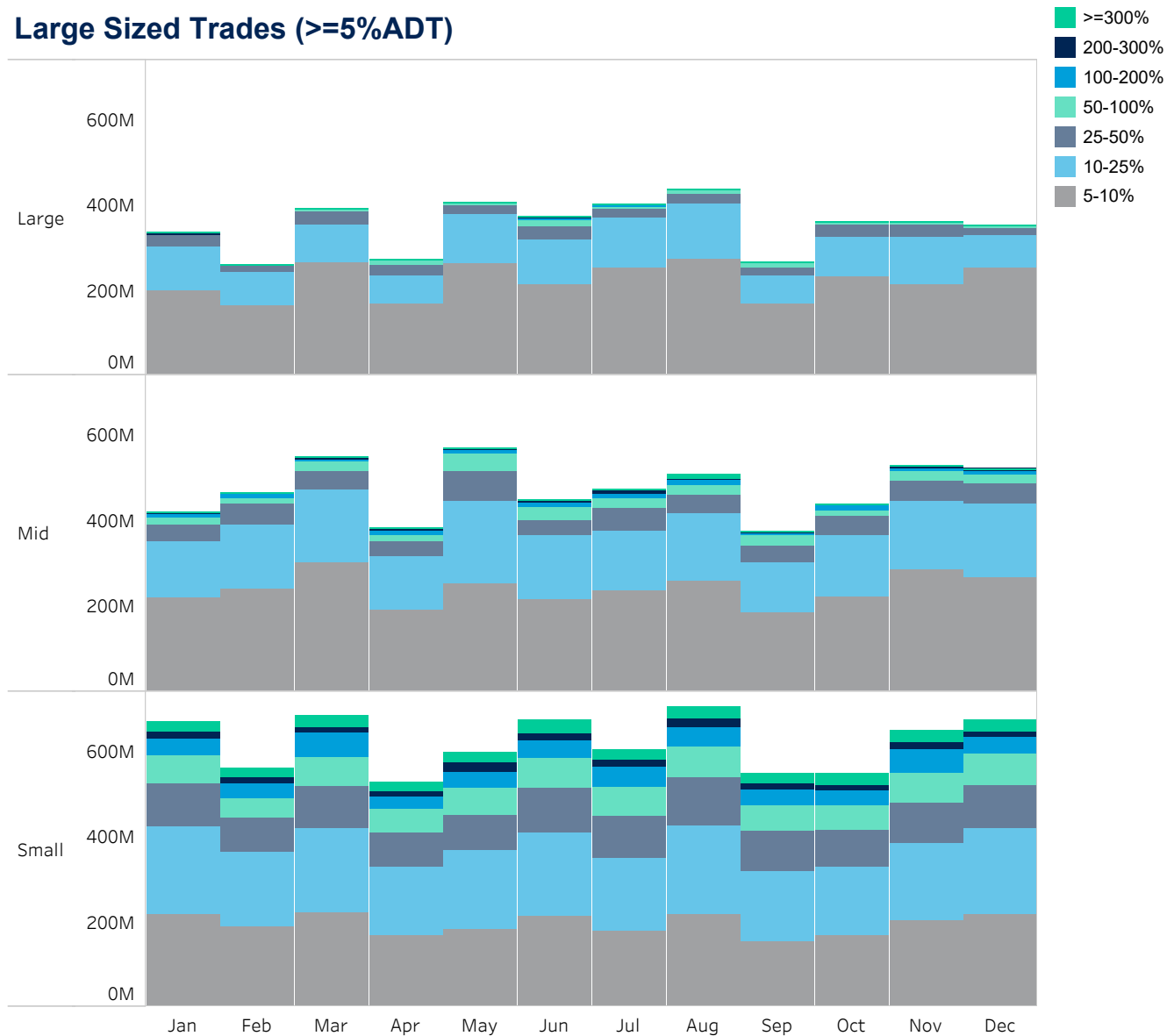
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# Hong Kong

## Average Daily Turnover (Notional USD)



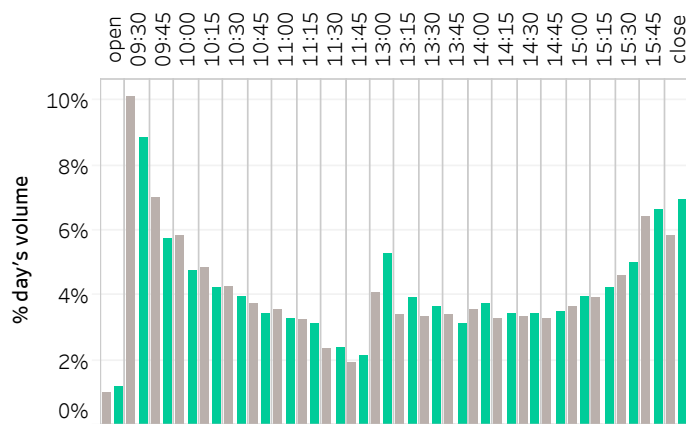
## Large Sized Trades (>=5%ADT)



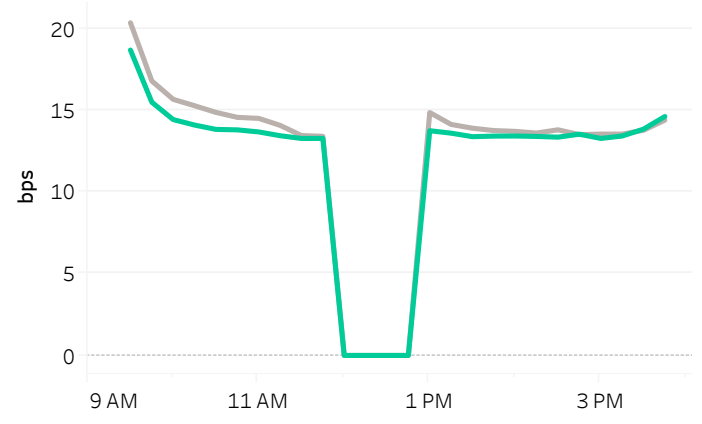
Source data: Virtu Financial

# Hong Kong

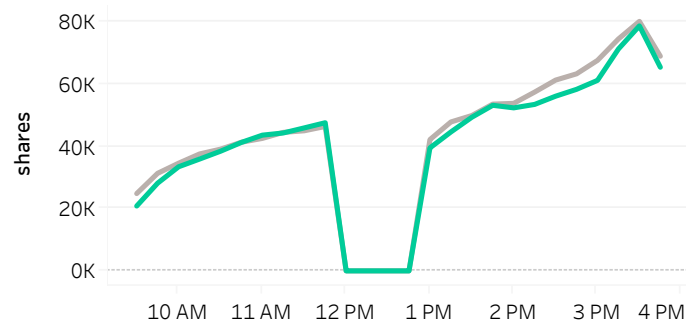
## Volume Curve



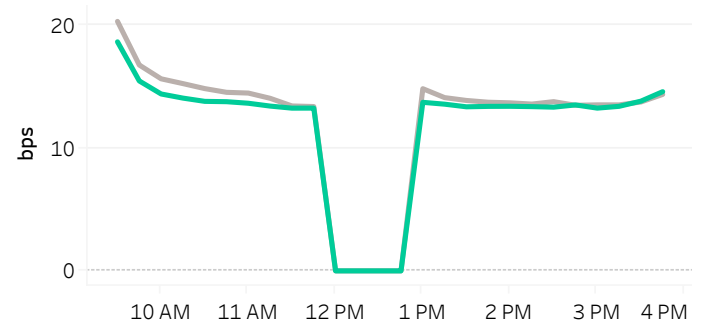
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	18.3	18.0	19.3	19.5	19.5	19.6	18.3	18.7	18.1	18.4	17.1	17.0
MidDay	13.1	12.8	13.7	14.5	14.0	14.6	13.5	14.0	14.4	14.7	13.4	14.2
LastHalfHour	13.0	13.2	14.0	14.1	14.1	14.9	13.8	13.9	14.8	15.0	14.3	15.2

## One Minute Volatility Bps

FirstHalfHour	26.4	25.3	28.1	25.8	25.2	24.1	23.6	25.8	23.8	24.3	24.3	24.1
MidDay	17.0	15.9	16.2	16.1	15.7	16.2	15.4	15.8	15.6	16.0	15.2	15.9
LastHalfHour	16.5	16.7	17.3	16.4	16.3	17.2	15.7	16.1	16.5	16.6	16.9	17.6

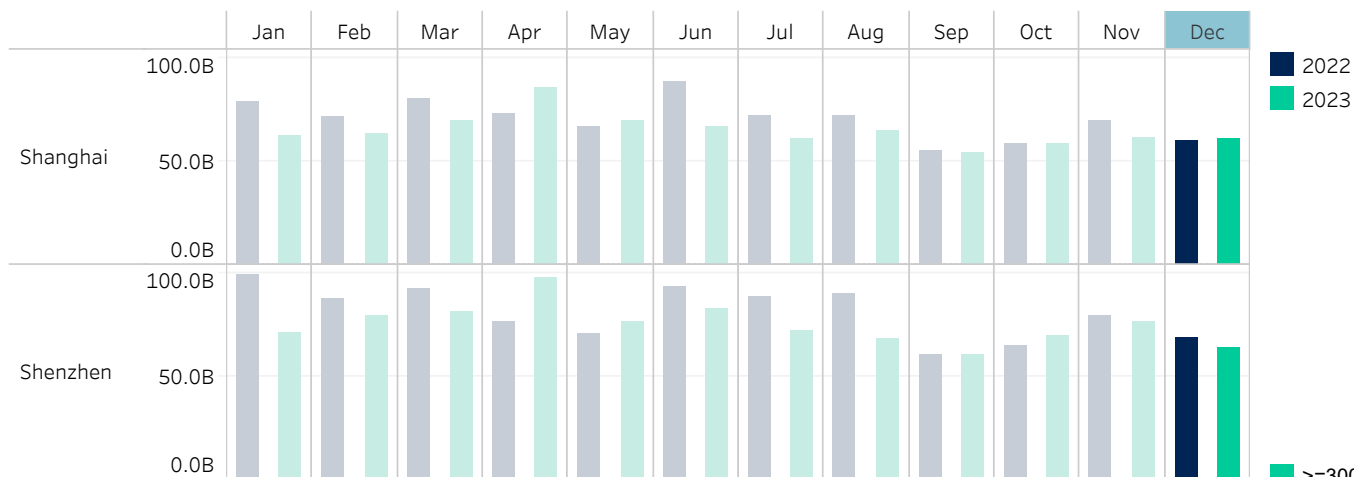
## Quotesize (shares)

FirstHalfHour	29,622	27,296	30,646	31,145	29,974	26,818	25,478	27,693	28,391	27,601	23,593	24,188
MidDay	46,105	44,622	43,572	50,780	47,975	41,143	42,053	45,912	52,298	46,953	46,472	52,781
LastHalfHour	78,406	74,936	77,473	76,329	74,417	64,333	69,285	74,613	78,499	77,442	72,387	70,619

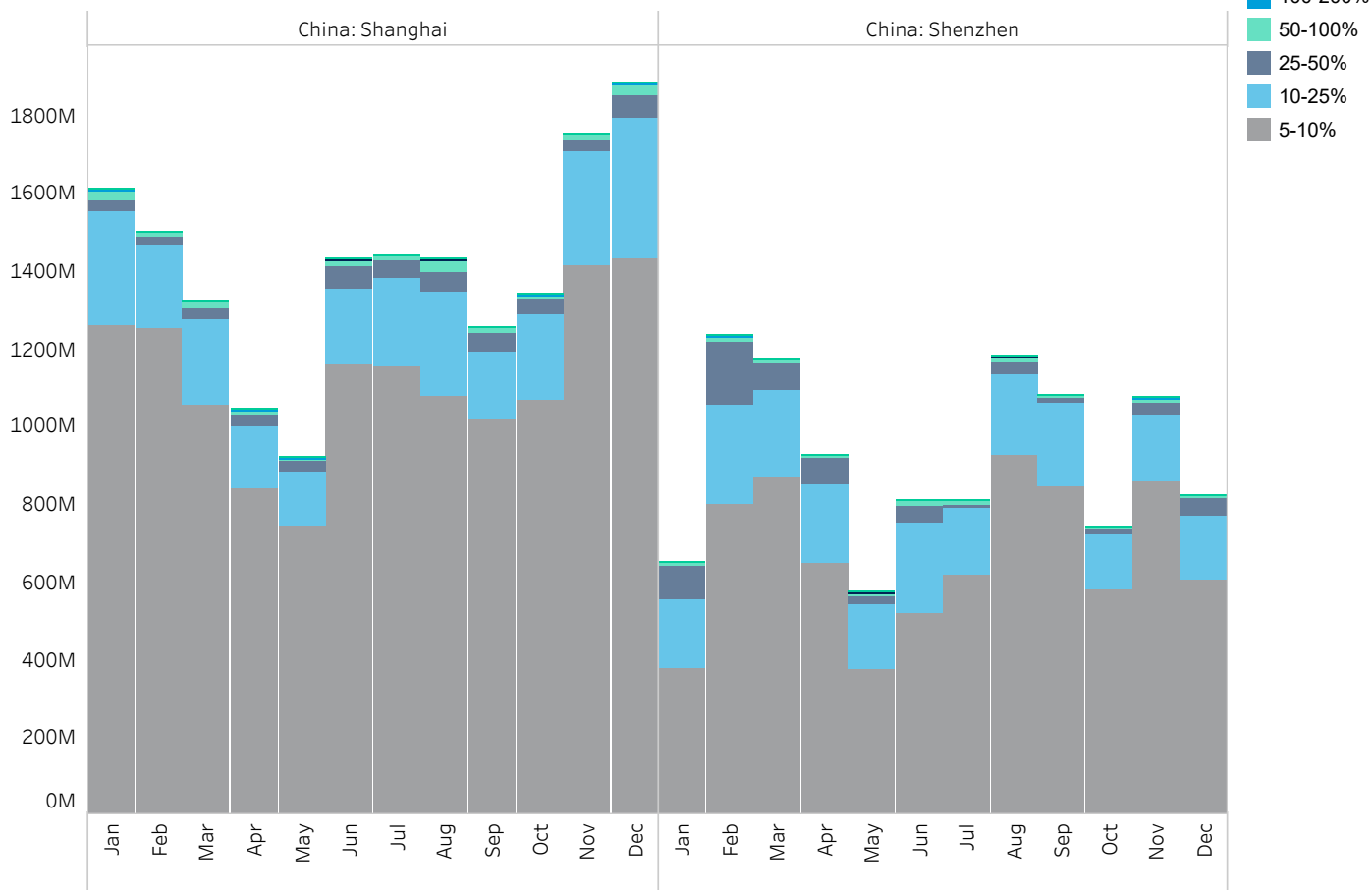
Median used for all metrics  
 One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP  
 Source data: Virtu Financial

# China

## Average Daily Turnover (Notional USD)



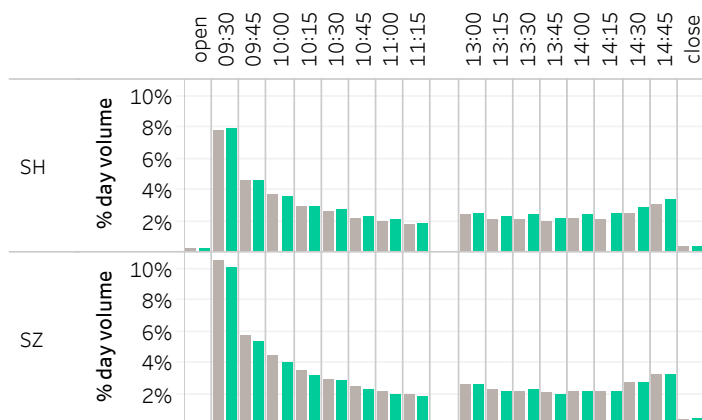
## Large Sized Trades (>=5%ADT)



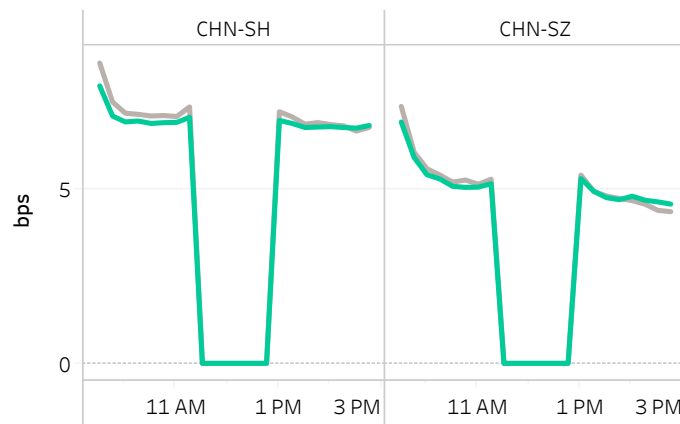
Source data: Virtu Financial

# China

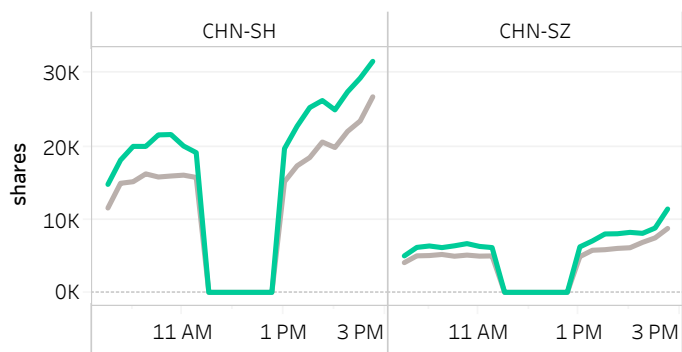
## Volume Curve



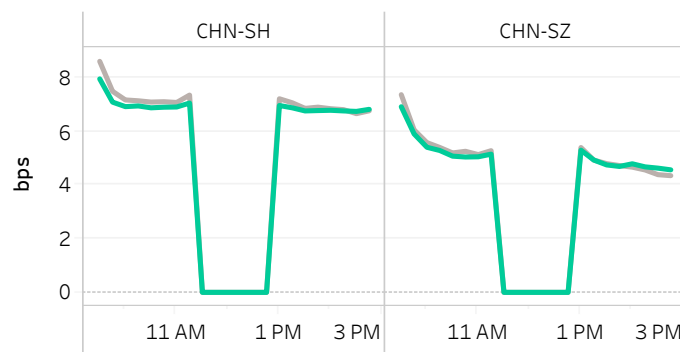
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ December 2023

## Spread Bps

	CHN-SH						CHN-SZ					
	Jul	Aug	Sep	Oct	Nov	Dec	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	8.0	8.1	7.6	8.2	7.5	8.1	6.8	6.9	6.3	7.0	6.4	6.6
MidDay	7.0	7.1	6.8	7.1	6.9	7.4	5.1	5.5	5.0	5.4	5.1	5.5
LastHalfHour	6.6	6.9	6.7	7.1	6.8	7.4	4.3	4.8	4.6	5.0	4.7	5.1

## One Minute Volatility Bps

FirstHalfHour	24.0	26.8	21.8	25.6	21.2	23.4	24.8	26.4	22.6	28.2	23.2	25.9
MidDay	13.8	15.3	13.1	13.9	13.0	14.5	11.7	13.3	10.9	13.0	11.3	12.7
LastHalfHour	13.1	14.9	13.2	14.2	12.8	14.7	10.4	12.3	10.8	12.7	10.7	12.1

## Quotesize (shares)

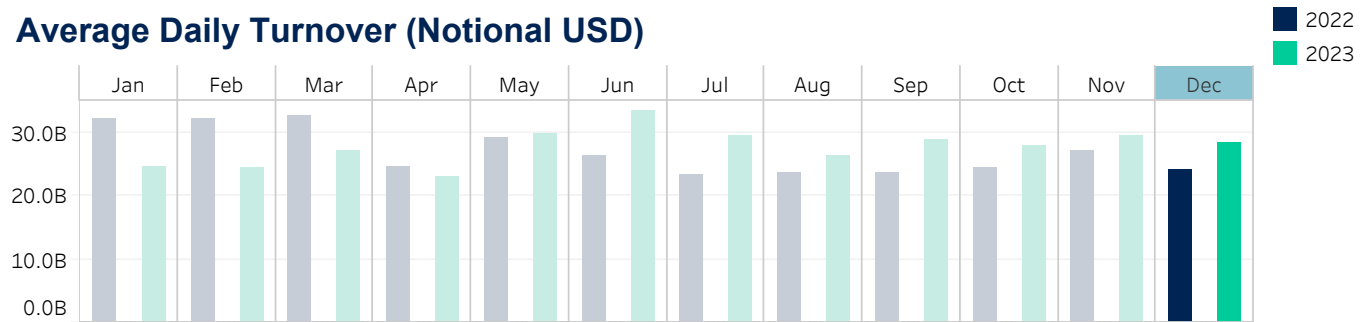
FirstHalfHour	13,213	12,047	13,236	12,742	16,573	15,099	4,893	4,432	4,575	5,099	5,595	4,563
MidDay	17,111	14,014	16,898	16,209	21,210	18,639	5,637	4,897	5,593	5,775	6,549	5,263
LastHalfHour	27,475	21,342	25,276	23,440	30,704	25,698	9,319	7,434	8,373	8,647	10,309	8,150

Median used for all metrics

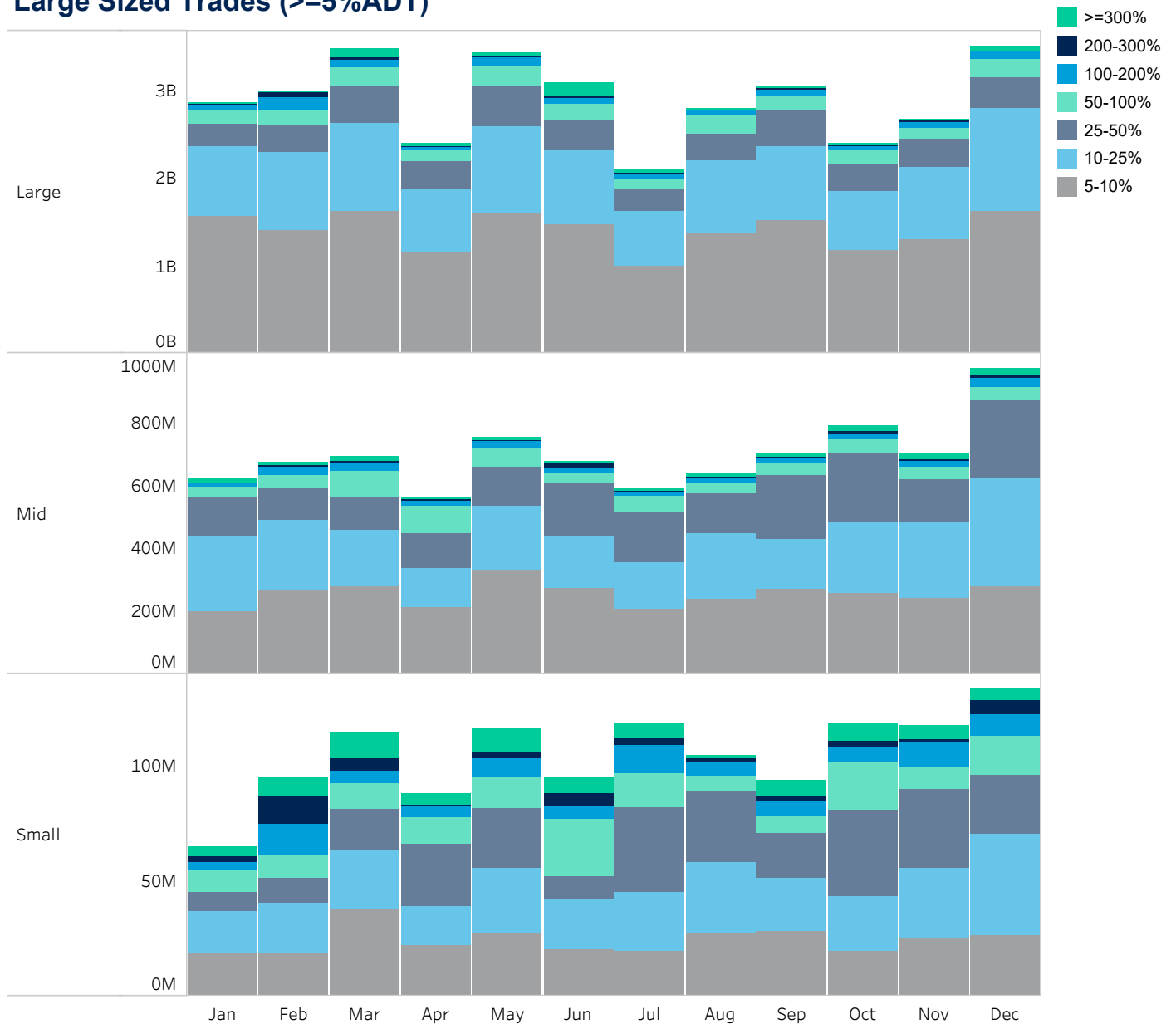
One minute volatility is calculated using the difference between the high and low price within a one minute time bin, divided by that bin's VWAP..

# Japan

## Average Daily Turnover (Notional USD)



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

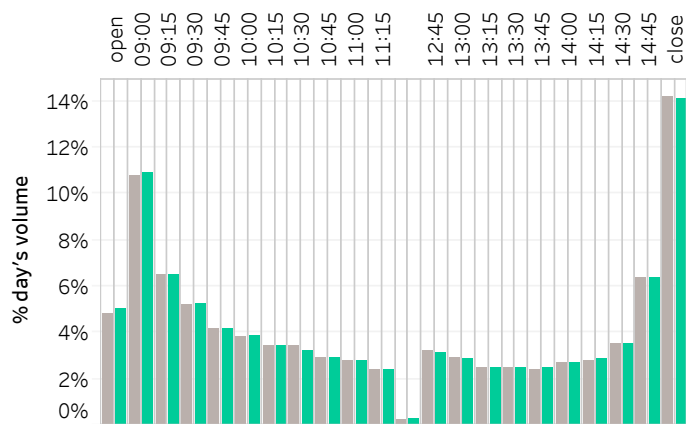


Source data: Virtu Financial

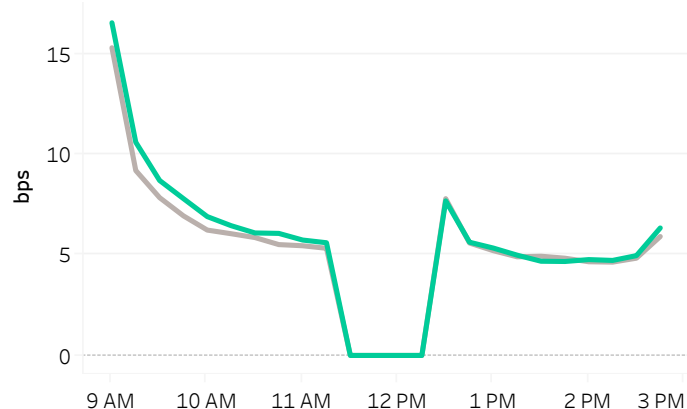


# Japan

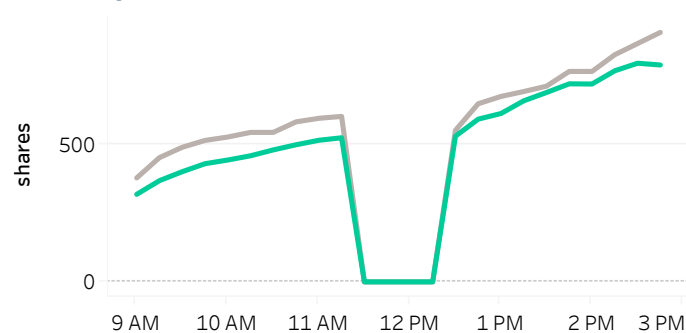
## Volume Curve



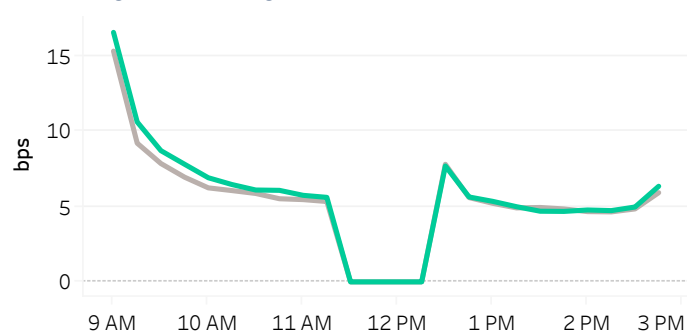
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg    December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	15.6	15.3	16.0	15.3	15.5	12.4	11.7	12.2	11.4	13.0	13.5	11.7
MidDay	8.6	8.8	9.1	8.5	8.9	5.7	5.2	5.4	5.2	5.8	6.0	5.3
LastHalfHour	9.1	9.1	9.5	9.2	9.2	5.4	5.0	4.9	5.1	5.7	5.5	5.1

## One Minute Volatility Bps

FirstHalfHour	16.2	16.1	16.3	15.4	16.4	14.8	14.2	14.8	14.1	16.0	16.8	14.7
MidDay	8.0	8.3	8.4	7.7	8.5	6.7	5.9	6.1	6.0	7.1	7.3	6.2
LastHalfHour	9.3	9.3	9.4	8.9	9.3	7.1	6.6	6.4	6.8	7.9	7.5	7.0

## Quotesize (shares)

FirstHalfHour	550	593	556	564	569	427	386	379	388	340	340	357
MidDay	897	1,012	891	951	968	582	569	575	580	494	526	551
LastHalfHour	1,414	1,620	1,387	1,495	1,578	860	855	882	829	694	779	750

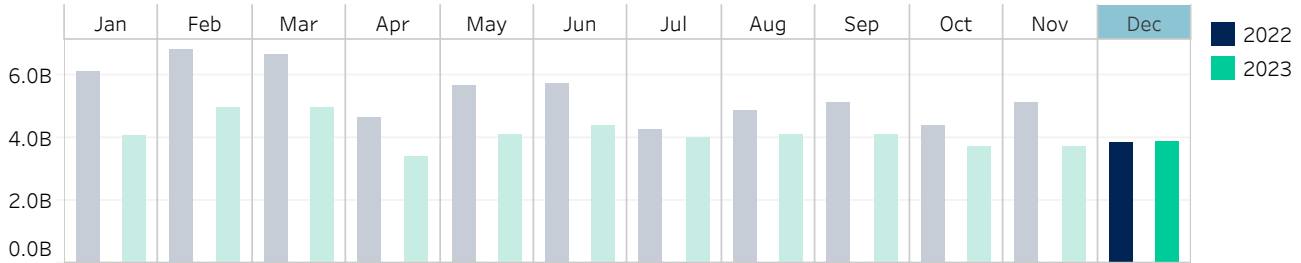
Median used for all metrics

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

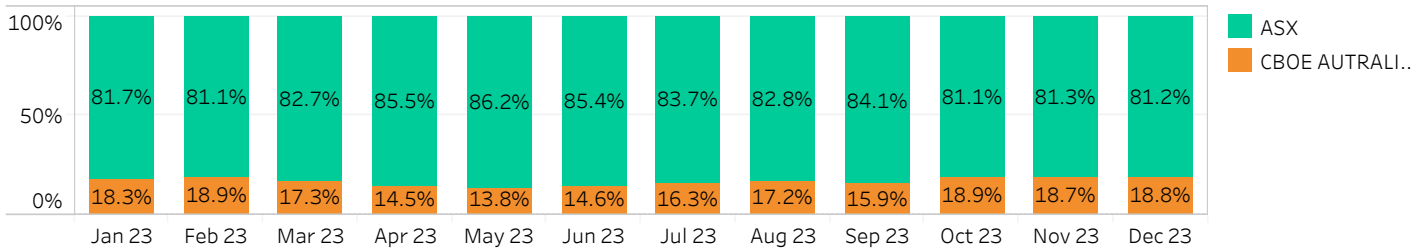
Source data: Virtu Financial

# Australia

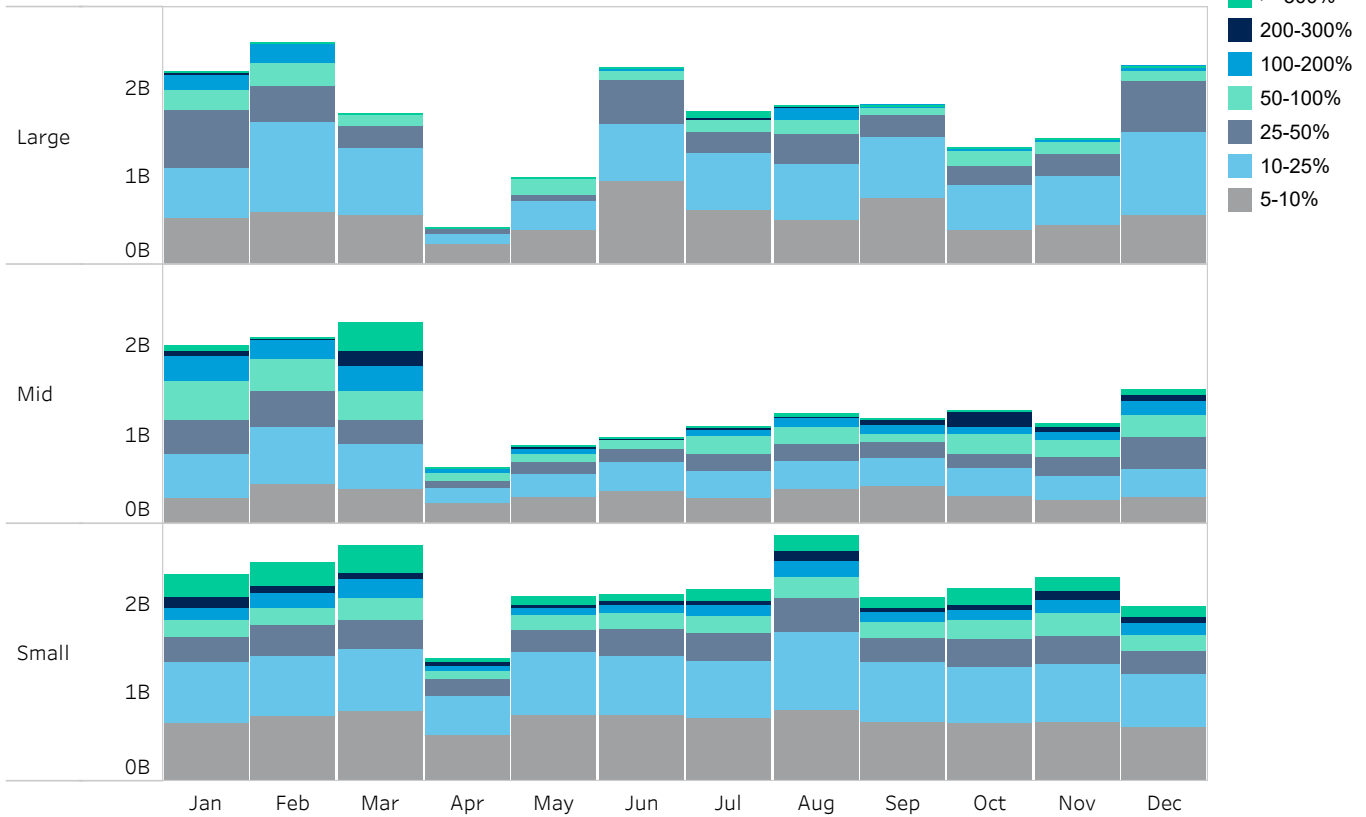
## Average Daily Turnover (Notional USD)



## Venue Market Share (Notional USD)



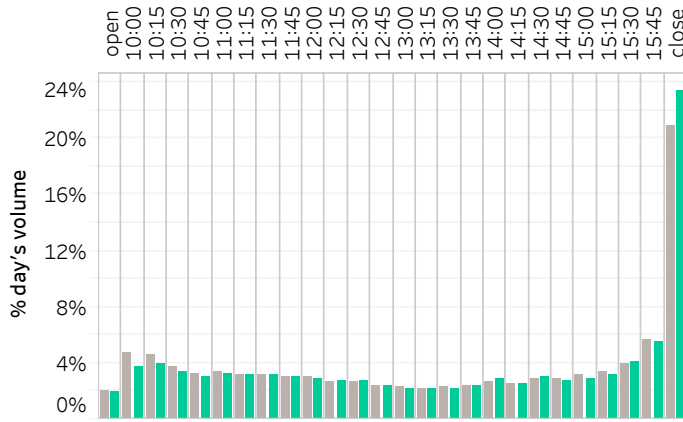
## Large Sized Trades (>=5%ADT)



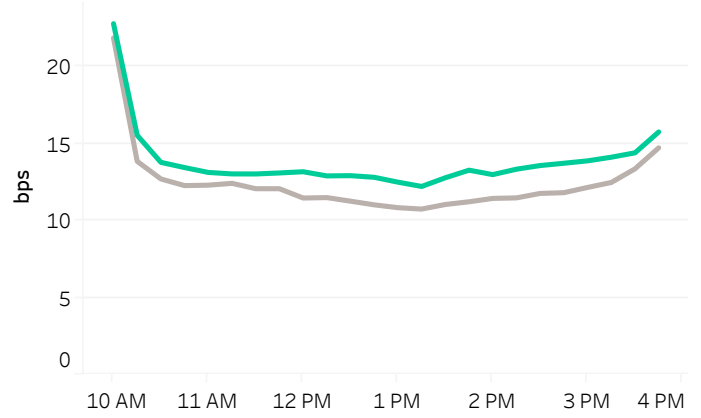
Source data: Virtu Financial

# Australia

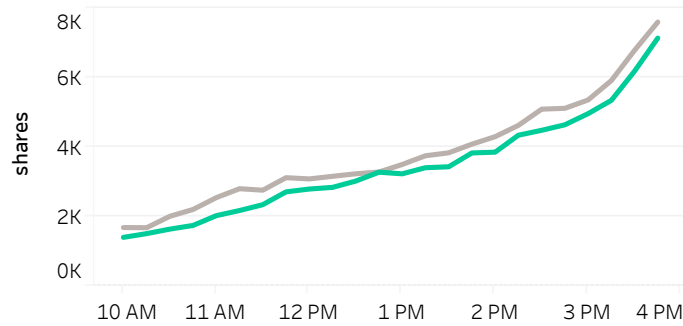
## Volume Curve



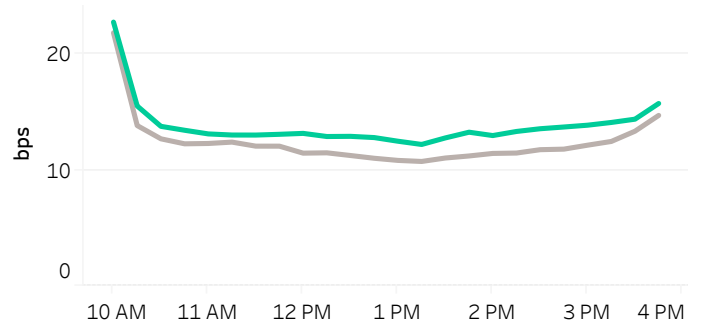
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	15.9	16.8	17.4	17.4	17.0	16.6	16.6	16.6	17.0	18.7	18.1	17.6
MidDay	11.1	11.6	12.4	12.1	11.6	11.8	11.3	11.1	12.3	13.1	13.1	12.6
LastHalfHour	13.1	13.8	14.3	14.3	13.7	14.0	13.9	14.1	14.7	15.4	15.1	14.1

## One Minute Volatility Bps

FirstHalfHour	19.1	21.3	21.7	20.6	19.1	18.7	18.0	18.9	17.9	19.4	18.7	18.3
MidDay	9.9	10.3	10.7	9.5	9.2	9.8	9.5	9.7	9.6	10.6	10.8	10.1
LastHalfHour	12.2	12.5	13.2	12.4	11.9	12.5	11.9	12.4	12.7	13.5	13.3	12.5

## Quotesize (shares)

FirstHalfHour	1,629	1,640	1,864	2,108	1,897	1,901	1,672	1,703	1,756	1,601	1,443	1,515
MidDay	3,279	3,260	3,759	3,968	3,313	3,860	3,520	3,310	3,720	3,289	3,147	3,258
LastHalfHour	6,643	7,185	8,215	8,141	7,163	8,042	7,173	7,405	7,388	7,156	6,633	6,873

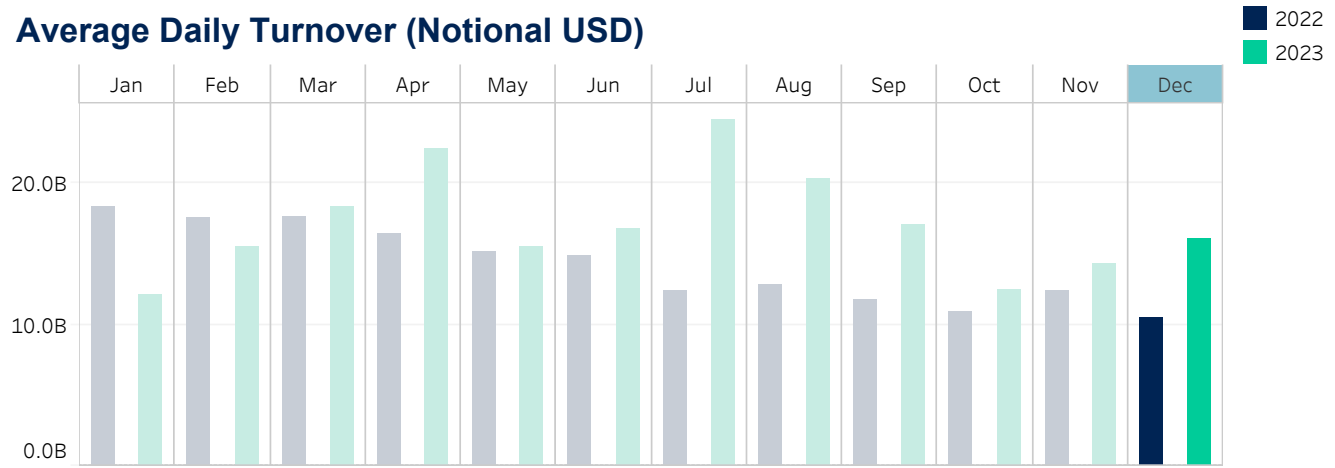
Median used for all metrics

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

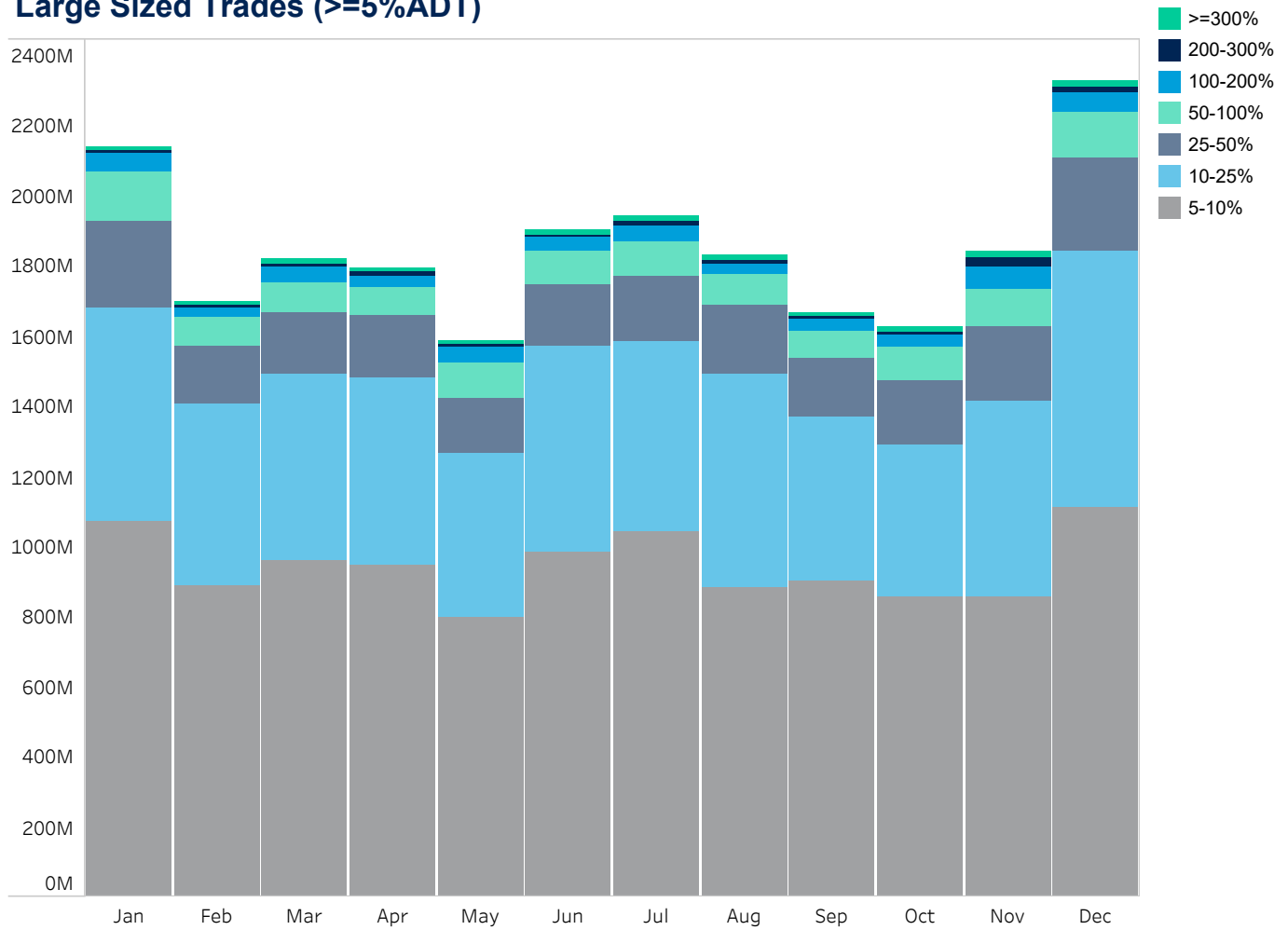
Source data: Virtu Financial

# South Korea

## Average Daily Turnover (Notional USD)



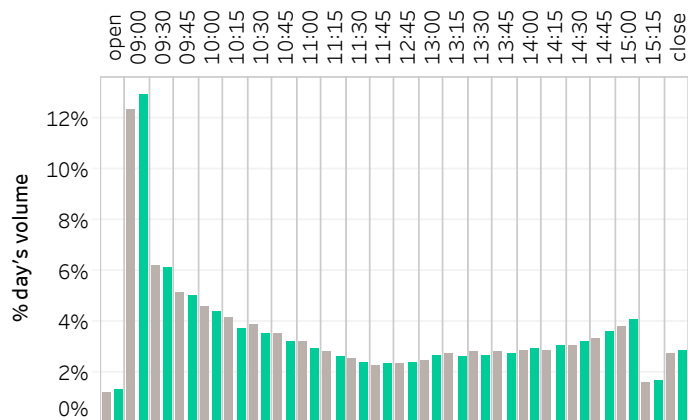
## Large Sized Trades (>=5%ADT)



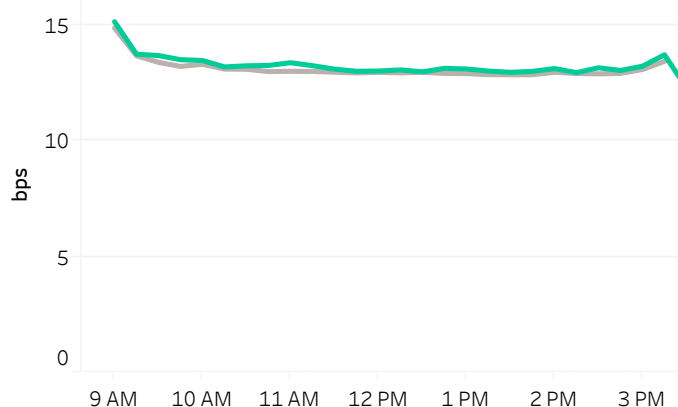
Source data: Virtu Financial

# Korea

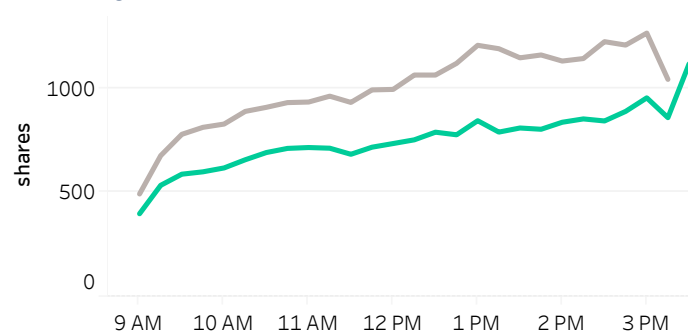
## Volume Curve



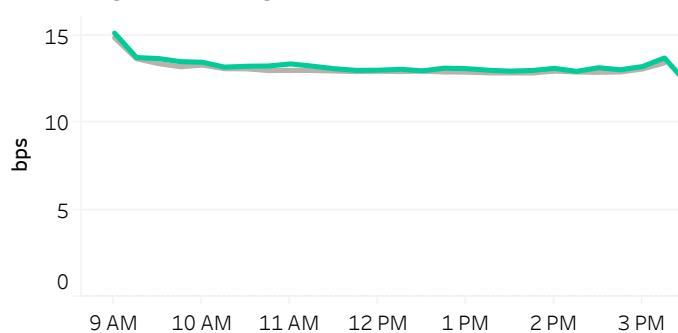
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



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

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	17.4	14.7	14.7	14.3	14.0	13.7	14.3	14.2	13.9	14.5	14.5	14.3
MidDay	16.5	13.5	13.4	12.9	12.9	12.9	13.2	12.8	12.5	12.8	13.1	12.8
LastHalfHour	16.5	13.7	13.5	13.1	13.0	13.0	13.3	12.8	12.6	13.2	13.4	13.3

## One Minute Volatility Bps

FirstHalfHour	29.4	23.6	24.9	25.6	22.7	21.5	27.1	26.7	23.3	27.5	25.1	22.2
MidDay	18.1	14.9	15.0	14.8	14.2	14.0	14.9	14.3	14.0	14.6	15.1	14.5
LastHalfHour	18.9	15.6	16.0	15.9	14.9	14.8	16.2	15.2	15.3	16.1	14.9	16.3

## Quotesize (shares)

FirstHalfHour	727	655	595	579	580	634	563	491	491	444	458	536
MidDay	1,396	1,188	1,025	1,014	1,166	1,249	1,024	875	923	808	760	895
LastHalfHour	1,506	1,447	1,390	1,189	1,277	1,444	1,164	1,108	1,066	912	921	1,010

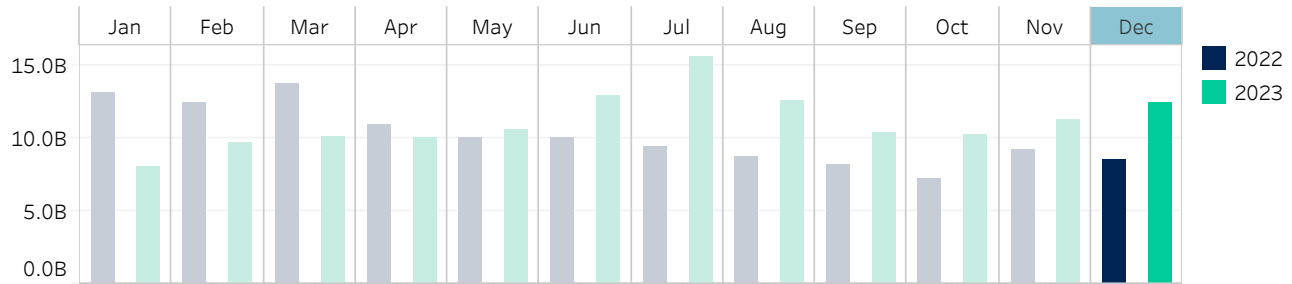
Median used for all metrics

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

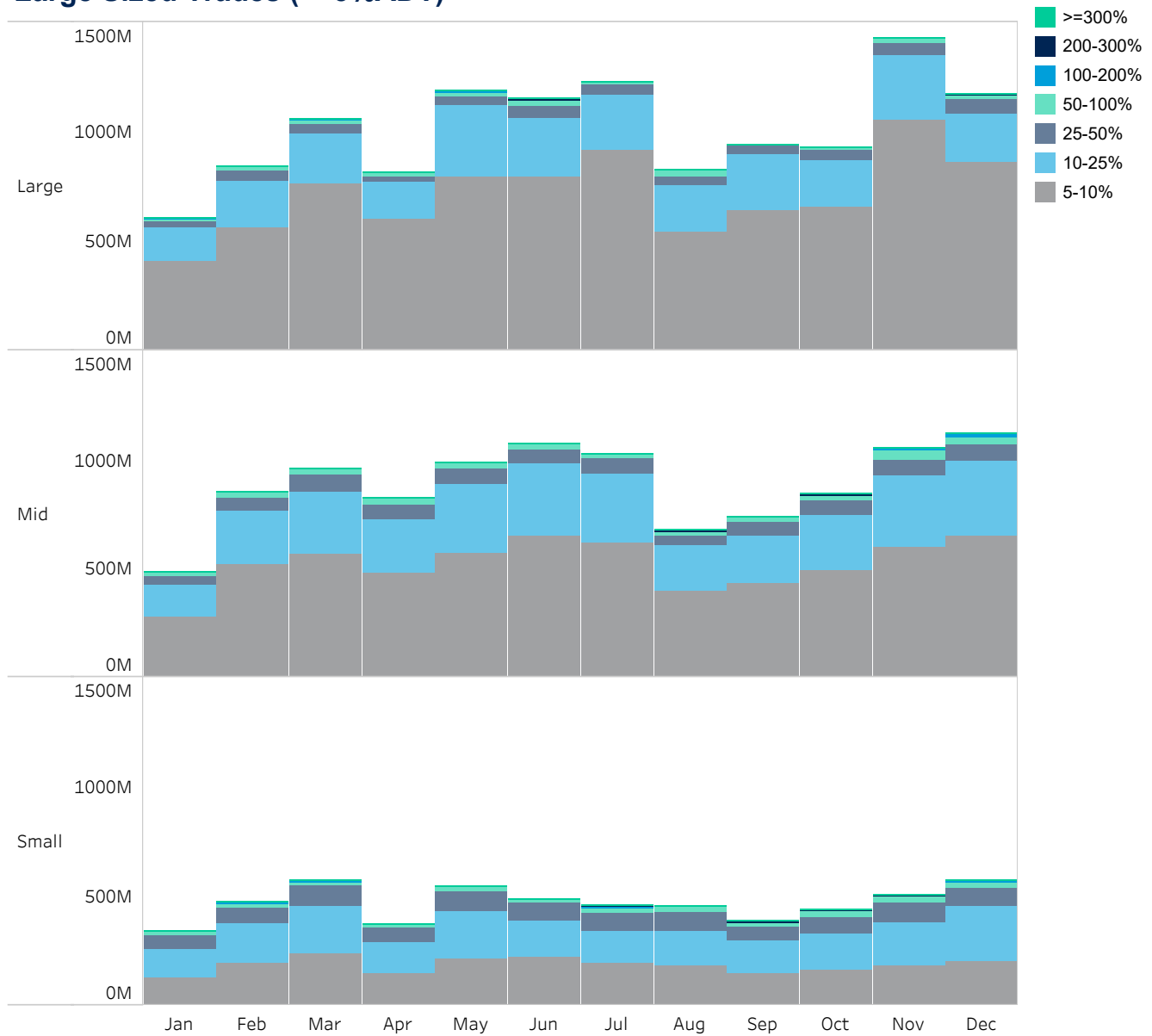
Source data: Virtu Financial

# Taiwan

## Average Daily Turnover (Notional USD)



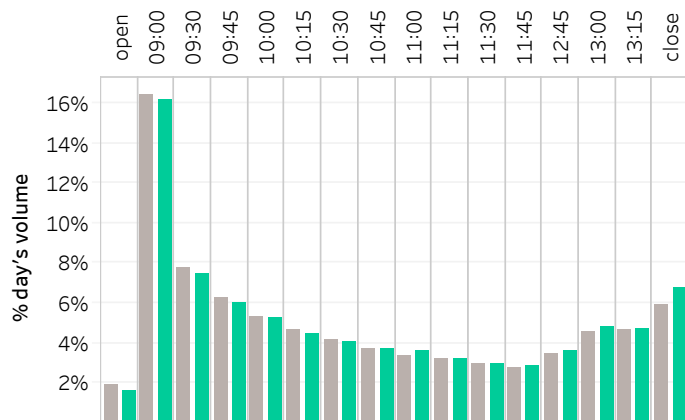
## Large Sized Trades (>=5%ADT)



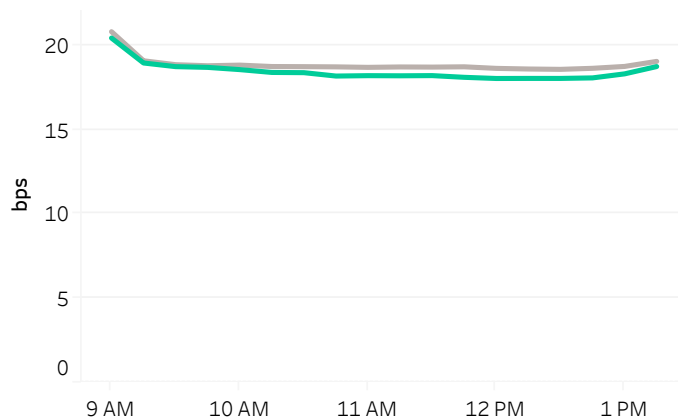
Source data: Virtu Financial

# Taiwan

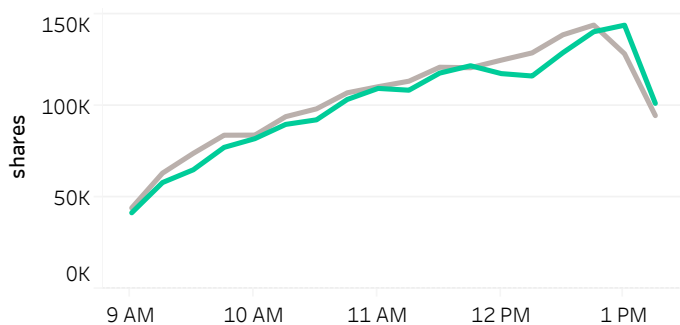
## Volume Curve



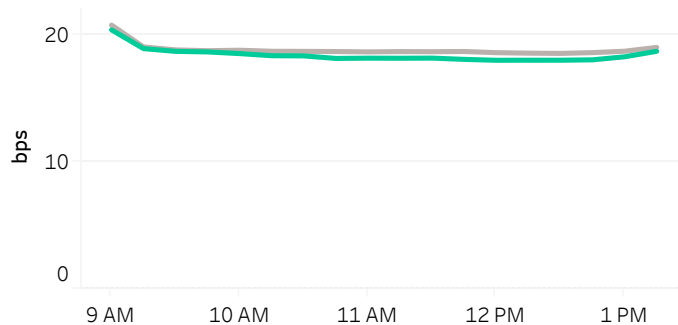
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg (grey line) December 2023 (green line)

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	20.2	20.6	20.1	19.9	19.8	19.3	19.6	20.5	19.9	20.3	19.6	19.5
MidDay	18.5	18.9	19.0	18.9	18.2	17.8	18.0	18.8	18.8	19.0	18.2	18.6
LastHalfHour	18.7	18.9	19.1	19.0	18.3	18.1	18.3	18.8	19.0	19.1	18.6	18.7

## One Minute Volatility Bps

FirstHalfHour	31.1	31.3	31.6	30.3	31.3	31.2	34.5	37.1	32.6	33.3	29.9	30.6
MidDay	28.9	28.9	29.1	28.8	28.1	28.4	31.5	36.4	29.8	31.1	26.4	27.8
LastHalfHour	29.0	28.9	29.6	29.2	28.3	28.9	32.6	34.4	29.9	31.5	27.6	28.1

## Quotesize (shares)

FirstHalfHour	59,008	57,971	61,802	53,240	60,150	57,819	51,257	44,628	44,984	46,915	50,161	52,263
MidDay	118,834	117,559	138,448	125,681	133,760	139,513	105,466	95,368	103,352	109,280	111,917	104,185
LastHalfHour	113,870	116,979	124,571	121,314	127,420	122,742	102,051	100,542	105,527	109,997	124,934	124,186

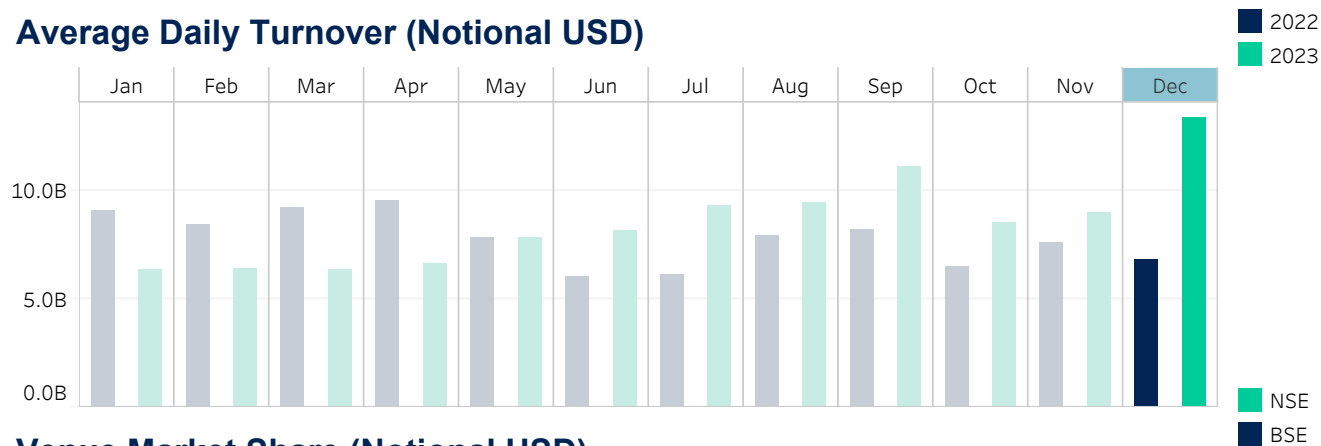
Median used for all metrics

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

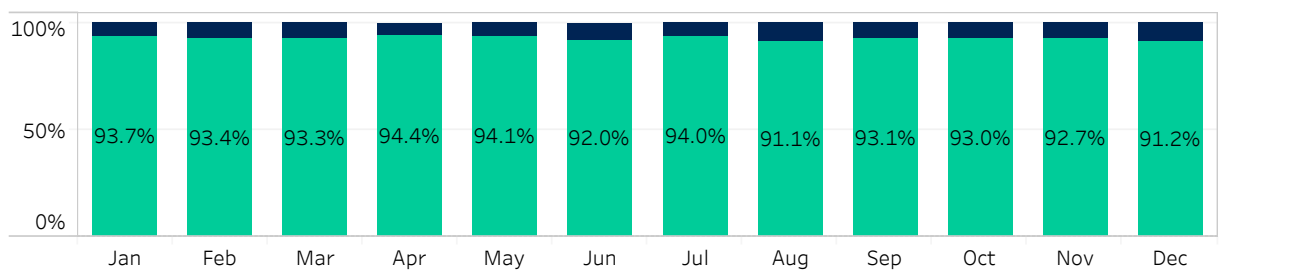
Source data: Virtu Financial

# India

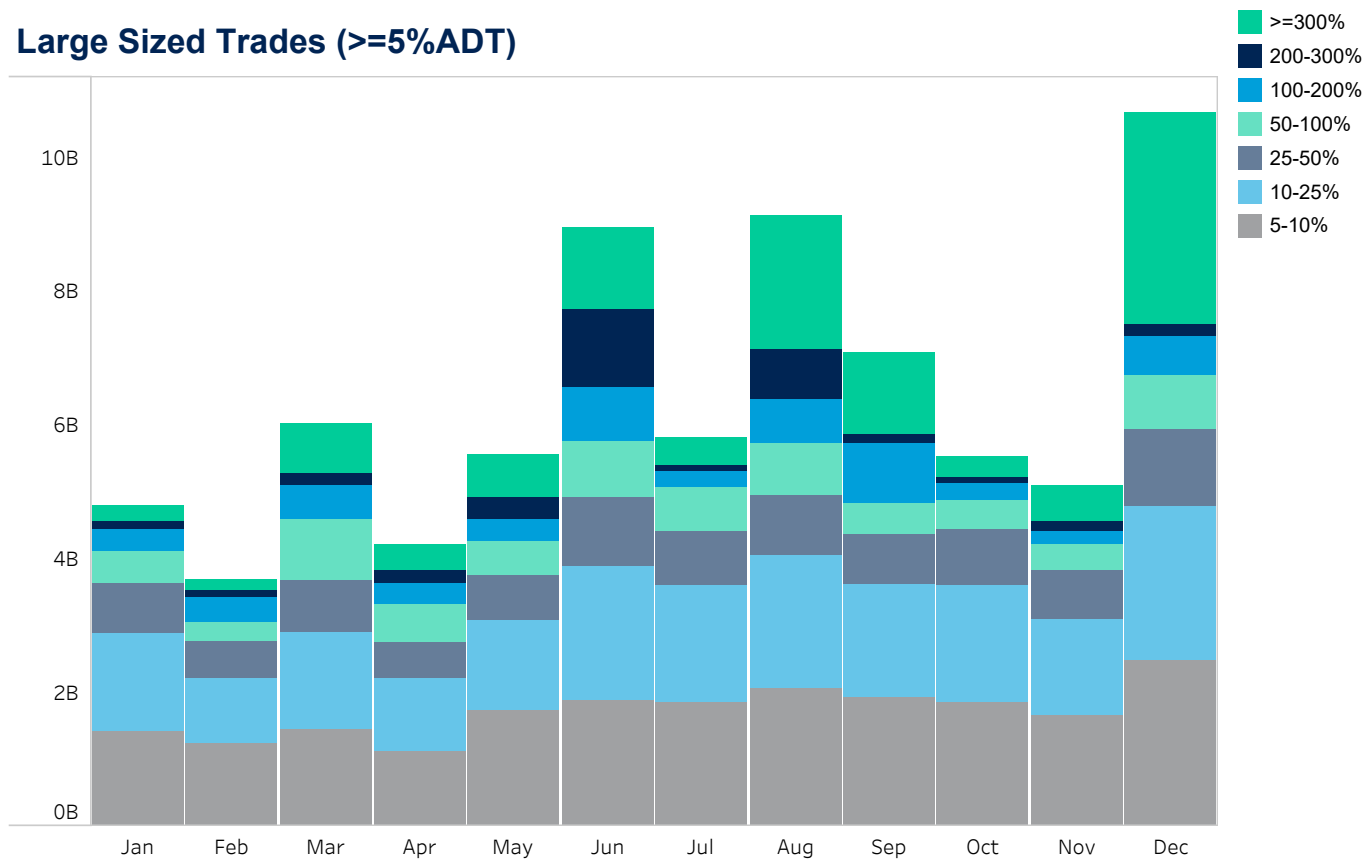
## Average Daily Turnover (Notional USD)



## Venue Market Share (Notional USD)



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

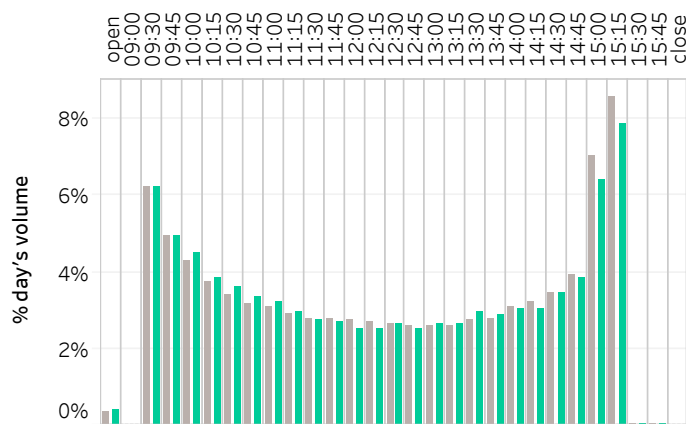


Source data: Virtu Financial

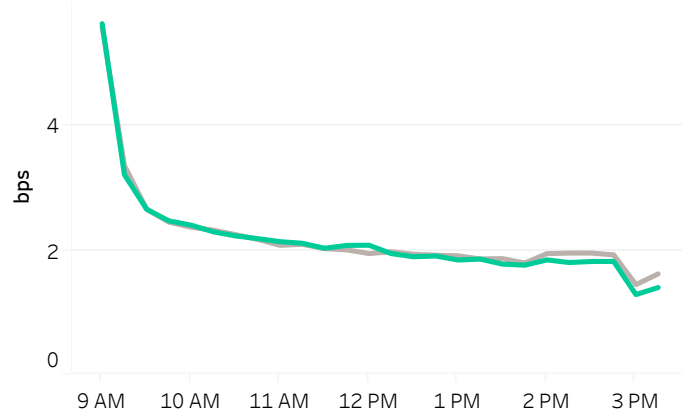


# India

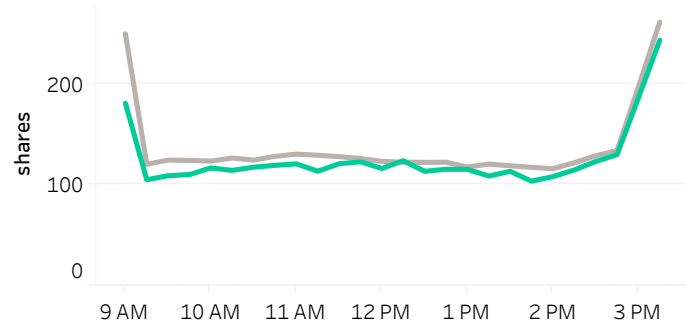
## Volume Curve



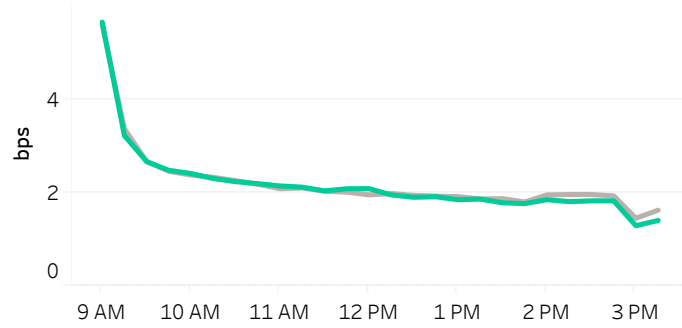
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



Rolling 12 Months Avg    December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	3.5	3.7	3.4	3.4	3.3	3.1	3.5	3.5	3.5	3.4	3.2	3.4
MidDay	2.1	2.2	2.1	2.1	2.0	1.9	1.9	1.9	2.0	1.8	2.0	1.9
LastHalfHour	1.7	1.8	1.7	1.7	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.5

## One Minute Volatility Bps

FirstHalfHour	17.6	16.2	16.3	18.8	19.7	19.1	17.2	16.6	15.2	17.3	14.7	17.9
MidDay	7.7	7.4	7.6	8.2	8.4	8.2	7.1	7.0	6.8	7.6	7.1	8.0
LastHalfHour	9.9	9.6	9.6	10.1	10.3	10.5	9.1	9.2	9.1	9.5	8.7	10.5

## Quotesize (shares)

FirstHalfHour	121.8	119.8	123.5	133.9	142.2	143.1	131.7	114.8	117.2	112.5	108.1	118.4
MidDay	128.7	124.1	124.2	143.1	151.0	151.7	124.1	118.6	120.7	108.5	116.7	118.3
LastHalfHour	228.8	249.5	253.0	256.4	262.0	268.0	231.3	206.0	230.8	197.4	229.1	196.5

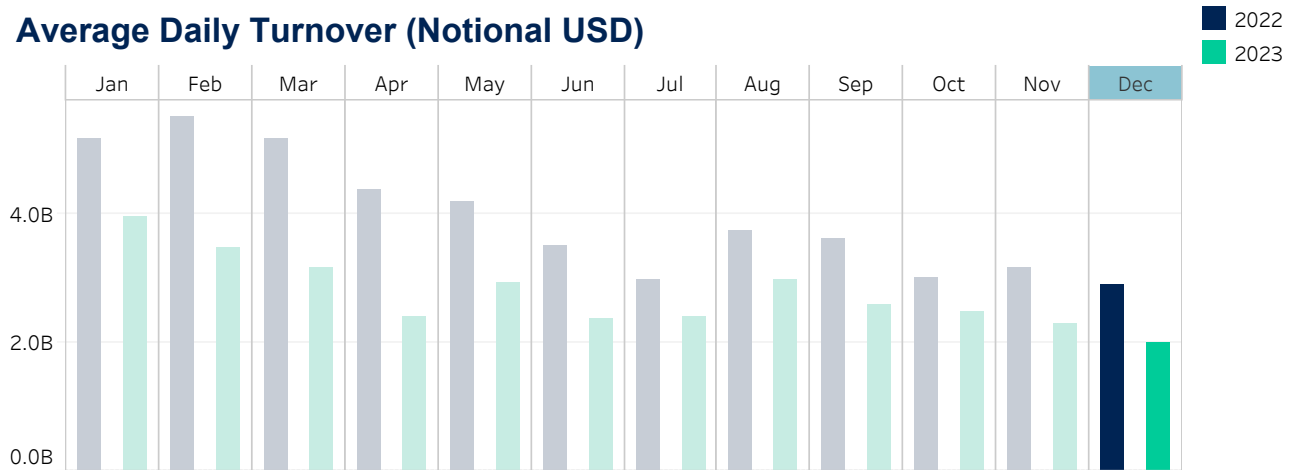
Median used for all metrics

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

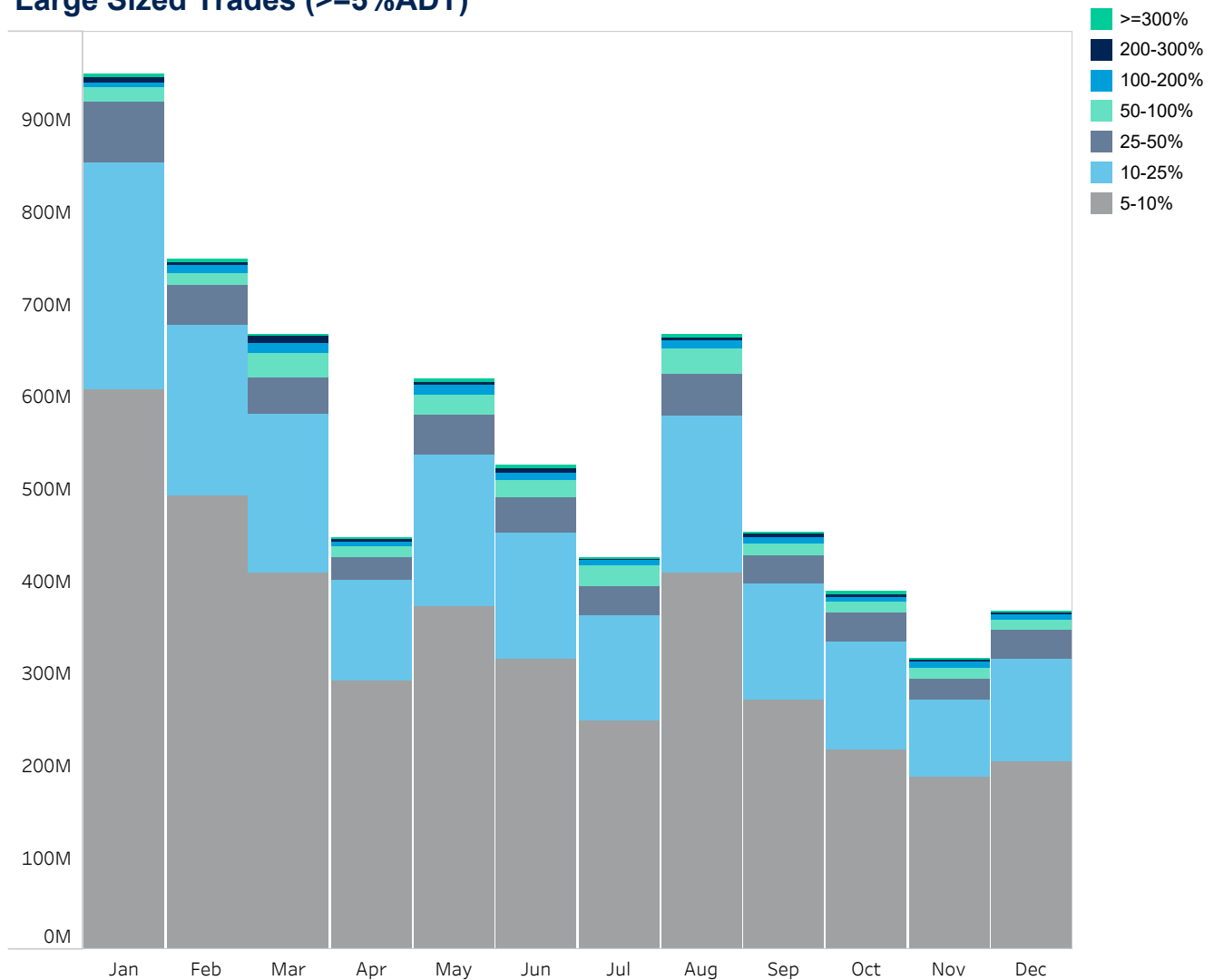
Source data: Virtu Financial

# Thailand

## Average Daily Turnover (Notional USD)



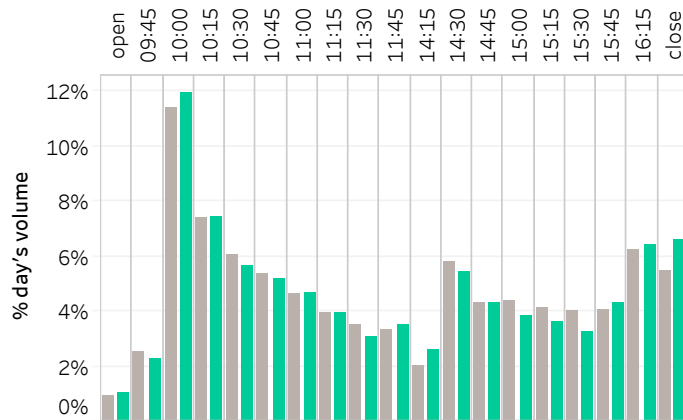
## Large Sized Trades (>=5%ADT)



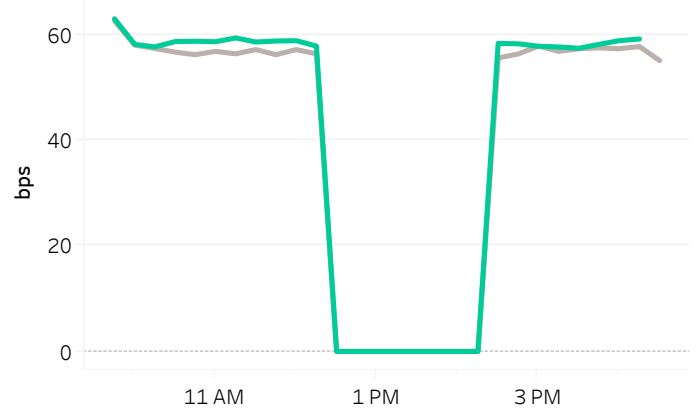
Source data: Virtu Financial

# Thailand

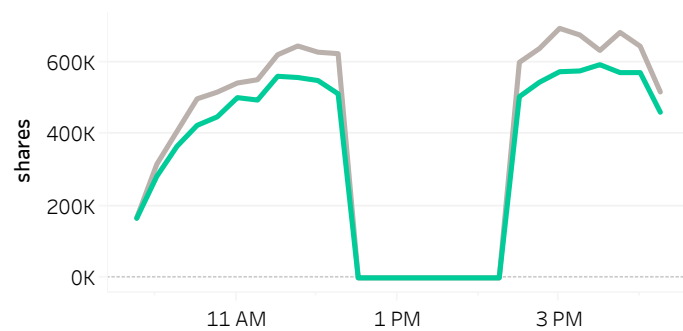
## Volume Curve



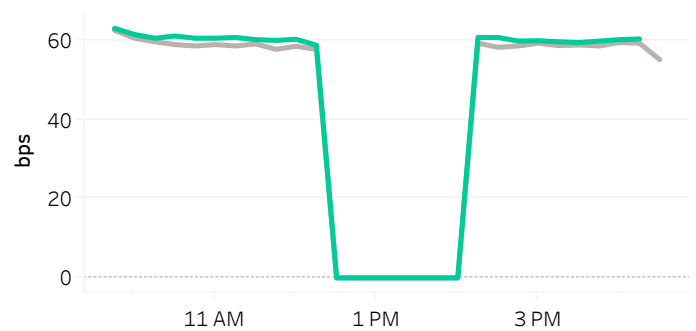
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



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

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	58.0	56.4	59.5	59.2	65.1	65.6	61.9	62.3	61.9	64.3	62.7	64.0
MidDay	54.1	54.1	56.0	55.8	58.4	59.3	56.7	56.3	58.7	59.3	58.3	59.2
LastHalfHour	54.2	54.8	56.7	56.0	58.7	59.3	58.0	57.0	59.0	59.3	59.0	51.4

## One Minute Volatility Bps

FirstHalfHour	64.3	61.9	67.8	60.8	63.9	63.5	60.4	61.7	61.2	64.3	63.5	63.8
MidDay	55.4	55.4	57.6	57.0	60.4	60.8	58.7	58.3	60.1	60.4	60.4	60.4
LastHalfHour	56.0	56.0	58.3	57.6	60.1	60.8	59.0	58.7	59.0	60.8	60.4	51.4

## Quotesize (shares)

FirstHalfHour	284,548	236,082	219,491	200,957	156,753	157,282	170,264	205,336	202,658	146,123	160,913	162,686
MidDay	865,107	737,967	634,271	624,930	536,008	510,989	542,854	699,283	749,767	485,941	528,048	602,762
LastHalfHour	812,231	679,491	552,716	570,432	472,021	490,710	518,167	619,275	626,196	465,624	501,806	371,650

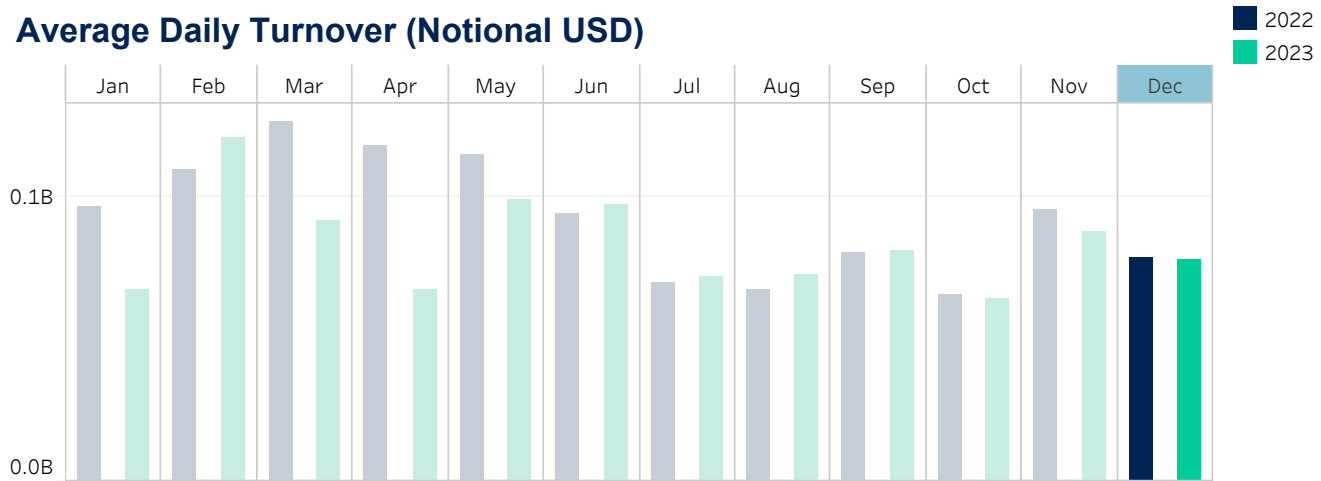
Median used for all metrics

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

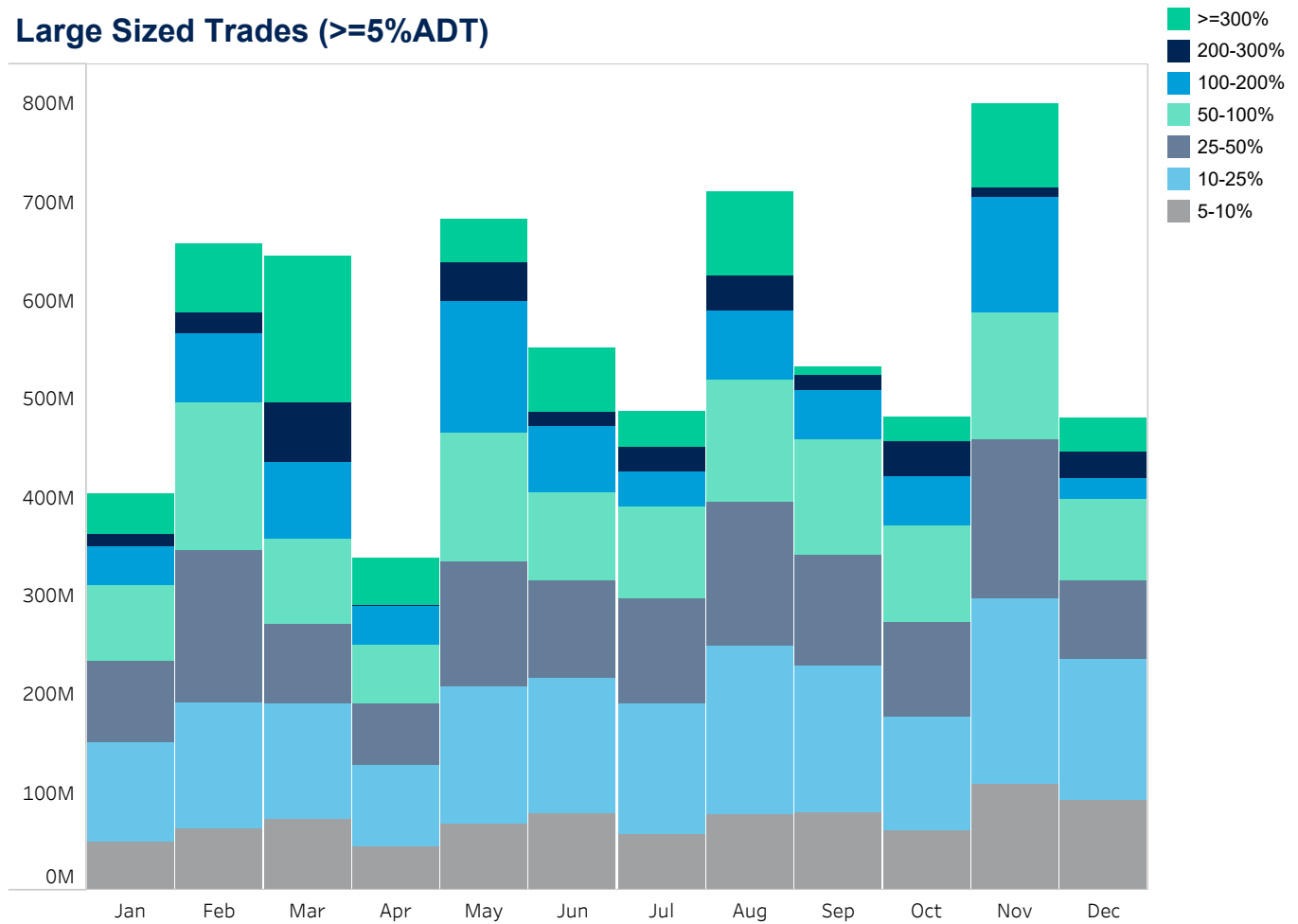
Source data: Virtu Financial

# New Zealand

## Average Daily Turnover (Notional USD)



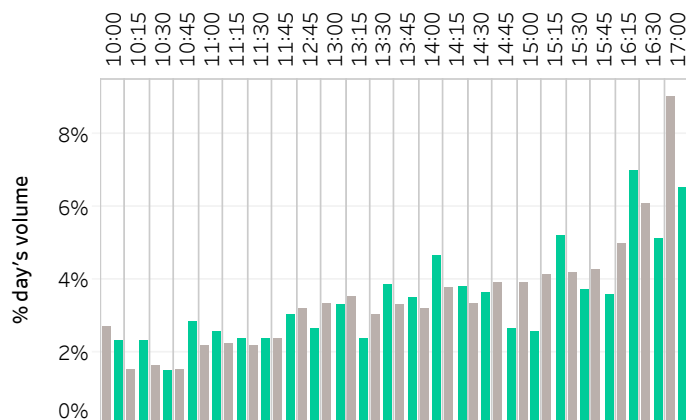
## Large Sized Trades (>=5%ADT)



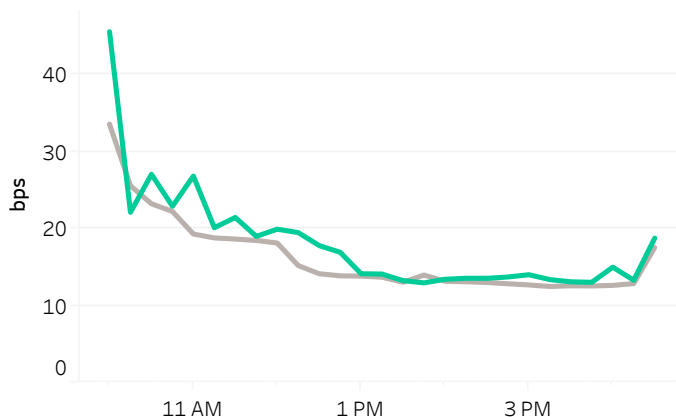
Source data: Virtu Financial

# New Zealand

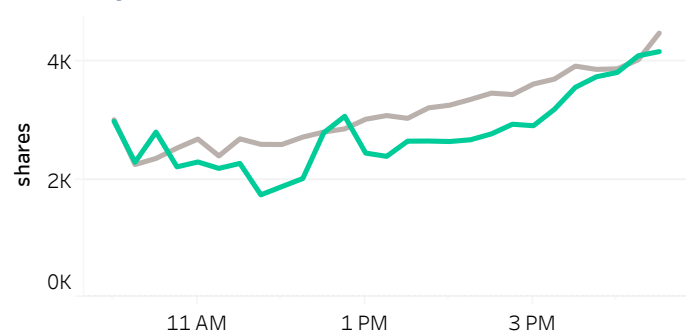
## Volume Curve



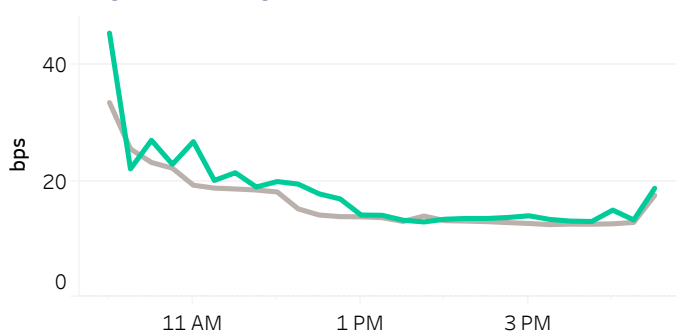
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	28.6	36.2	32.4	23.3	33.5	23.1	27.3	26.0	30.3	28.2	28.9	35.4
MidDay	13.0	14.2	13.5	13.8	13.7	13.3	13.5	14.5	12.4	14.7	14.3	16.7
LastHalfHour	17.6	19.1	17.5	18.4	17.4	17.7	17.9	18.0	16.3	19.7	18.1	18.6

## One Minute Volatility Bps

FirstHalfHour	19.2	20.9	23.1	19.0	18.6	15.9	18.4	19.0	20.9	23.1	19.9	19.4
MidDay	12.9	15.1	13.8	15.2	13.3	13.3	12.8	13.7	12.5	15.0	14.6	16.4
LastHalfHour	18.7	23.1	19.7	19.0	18.2	18.5	18.3	18.4	19.4	20.8	19.6	19.3

## Quotesize (shares)

FirstHalfHour	2,352	2,572	2,470	2,669	2,496	2,658	2,980	2,981	2,681	3,043	2,397	2,093
LastHalfHour	5,554	6,137	4,537	5,071	4,691	5,091	4,326	4,567	3,988	4,171	4,335	4,150
MidDay	2,964	3,634	3,092	3,102	3,512	3,372	3,016	3,363	3,098	3,456	2,624	2,939

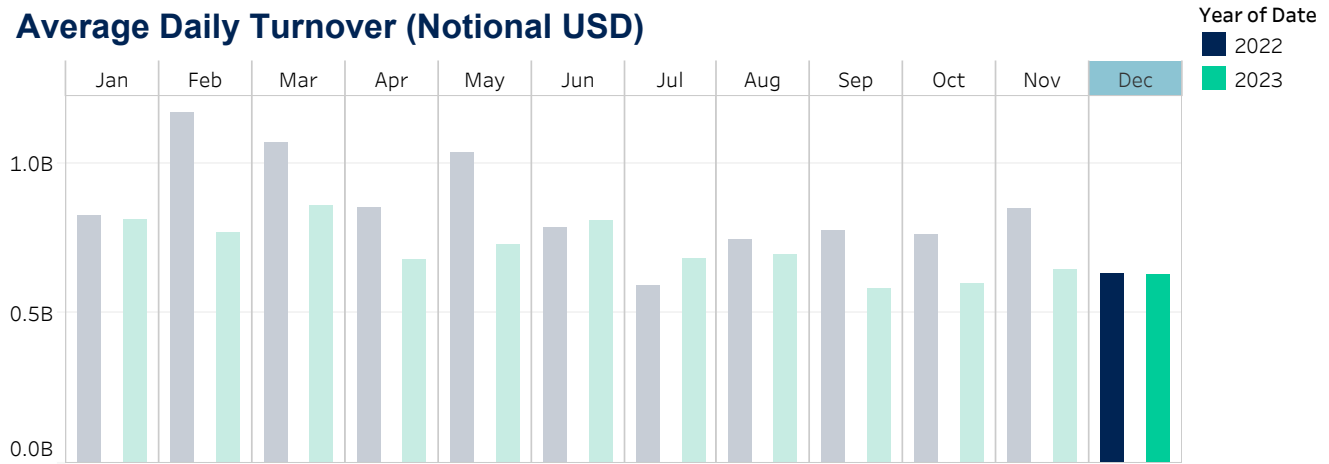
Median used for all metrics

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

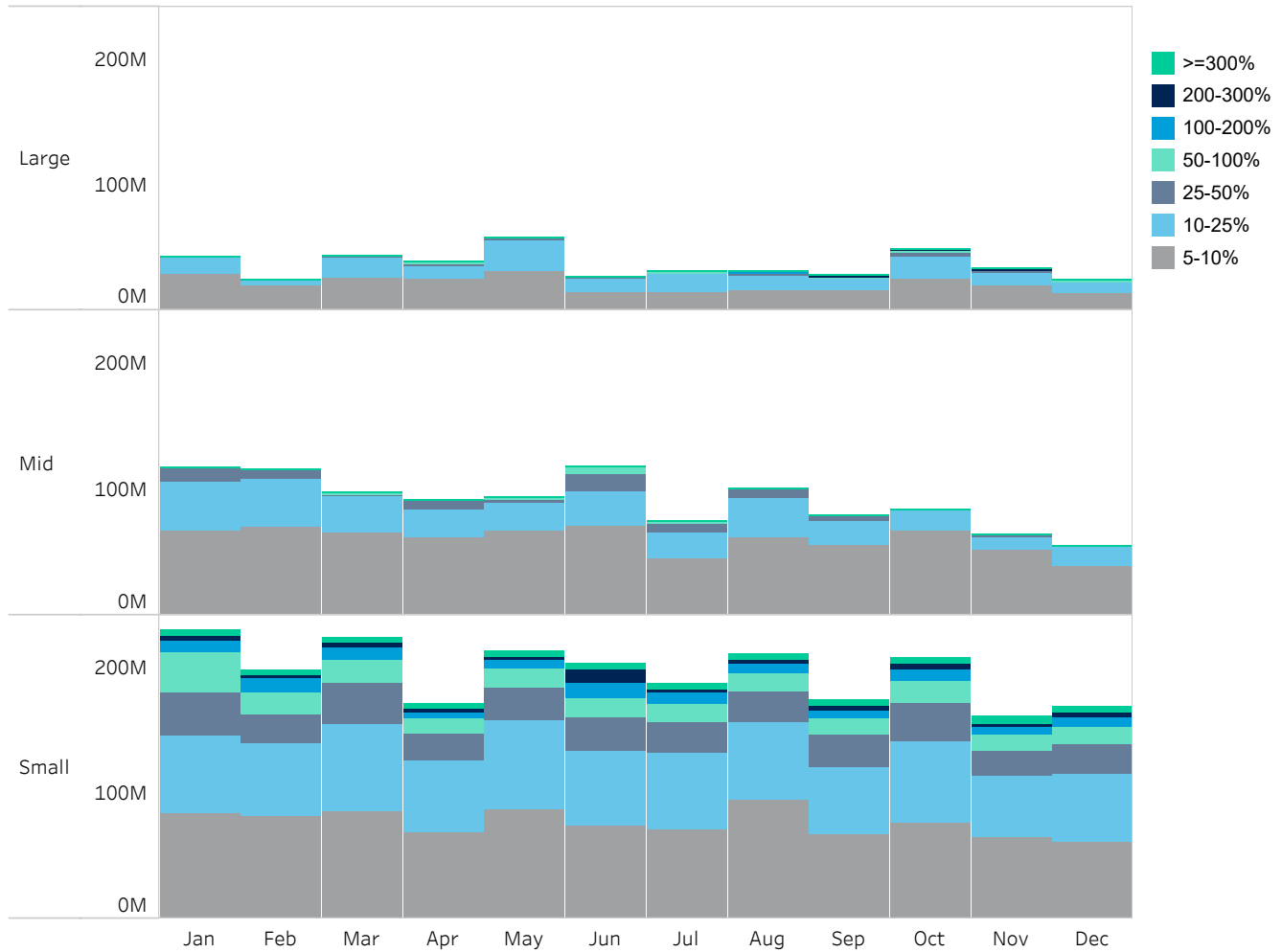
Source data: Virtu Financial

# Singapore

## Average Daily Turnover (Notional USD)



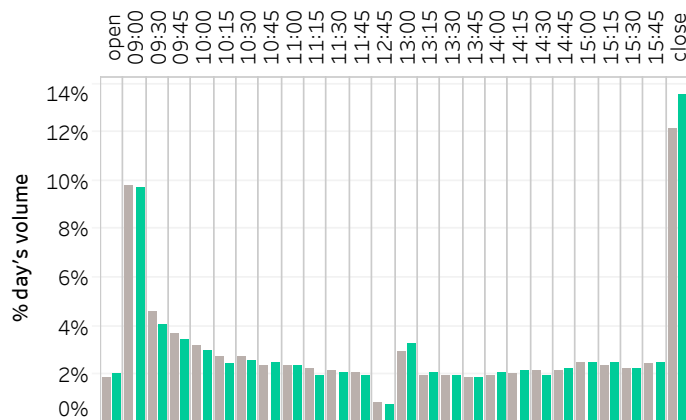
## Large Sized Trades (>=5%ADT)



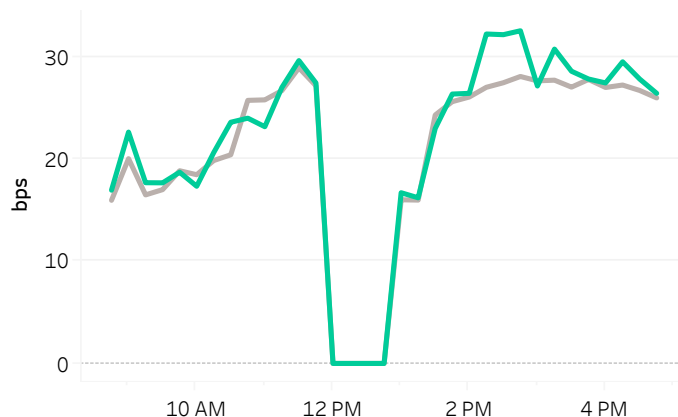
Source data: Virtu Financial

# Singapore

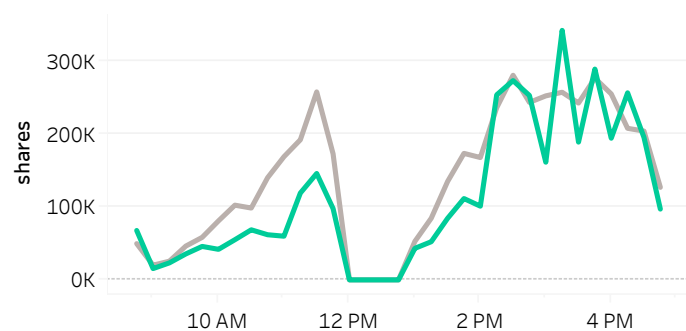
## Volume Curve



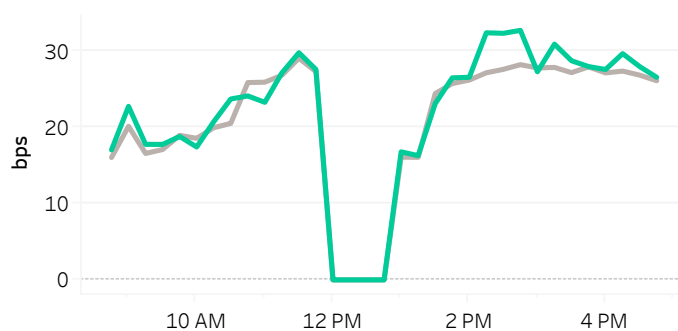
## Intraday Spread (bps)



## Intraday Quotesize (Shares)



## Intraday Volatility (bps)



■ Rolling 12 Months Avg ■ December 2023

## Spread Bps

	2023											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FirstHalfHour	19.8	14.5	16.6	14.2	16.4	16.6	14.6	19.1	16.2	15.8	16.8	15.1
MidDay	24.3	25.0	27.2	27.0	27.0	24.5	17.5	27.1	26.7	28.5	26.5	28.9
LastHalfHour	24.2	25.1	25.3	26.8	26.3	25.8	26.4	26.3	26.9	29.5	27.1	28.0

## One Minute Volatility Bps

FirstHalfHour	37.7	43.5	34.5	34.4	35.7	41.7	41.7	51.4	31.3	50.6	52.8	40.9
MidDay	25.2	25.4	28.4	27.6	27.5	26.9	26.3	27.6	27.0	31.3	27.3	29.1
LastHalfHour	24.8	25.5	27.6	27.1	26.8	27.4	27.1	28.0	27.4	32.6	27.9	29.4

## Quotesize (shares)

FirstHalfHour	55,481	49,035	126,098	48,869	57,725	86,605	39,923	30,361	36,050	50,518	72,786	53,345
MidDay	140,704	159,315	169,961	327,685	231,700	112,054	126,638	232,427	176,852	239,708	89,777	193,459
LastHalfHour	109,921	138,744	141,752	256,196	170,897	139,765	143,803	181,844	179,377	226,408	119,166	139,335

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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