Trends in ETD Trading
Q3 2025

29 October 2025

Speakers

Guest Speakers:

- **Rahul Amin**, Americas Head ETD Execution & FX Algos, UBS Securities
- **J.P. Spatola**, Americas Head ETD Voice Execution, UBS Securities

Presenter:

- **Will Acworth**, Global Head of Market Intelligence, FIA

Data Analyst:

- **Chris Mendelson**, Business Analyst, FIA

Agenda

Overview

- Global volume and open interest
- Impact of SEBI crackdown in India
- ROW: slowdown from Q1 and Q2
- Analysis: How noisy are volume curves?

Rates

- US Treasury complex – record OI
- Insights on Treasury futures rolls
- Liquidity trends in Canadian rates futures
- UK: steady growth in open interest
- Credit futures – inflection point?

Equities

- Trends in intraday ETD & ETF volume
- Equity index options in India
- Total return futures on CME and Eurex

Commodities

- Brent and WTI
- Gold and silver
- US agriculture

Appendix

- Methodology
- Exchange rankings by volume

Overview: Global Volume and Open Interest in Q3 2025

Type	Jan-Sep 2025 Volume	Change vs. Last Year	Sep 2025 Open Interest	Change vs. Last Year
Options	62,828,781,732	*-53.4%*	1,205,542,835	*18.8%*
Futures	22,725,420,231	*8.1%*	343,766,967	*13.3%*
Total	85,554,201,963	*-45.1%*	1,549,309,802	*17.5%*

Region	Jan-Sep 2025 Volume	Change vs. Last Year	Sep 2025 Open Interest	Change vs. Last Year
Asia-Pacific	54,288,984,801	*-58.0%*	130,267,084	*-7.8%*
North America	17,179,228,527	*17.8%*	801,696,732	*19.3%*
Latin America	8,233,669,591	*11.0%*	328,168,410	*40.4%*
Europe	3,323,747,534	*7.3%*	247,256,693	*6.9%*
Other	2,528,571,510	*54.9%*	41,920,883	*5.9%*
Total	85,554,201,963	*-45.1%*	1,549,309,802	*17.5%*

Note: Other consists of Greece, Israel, South Africa and Turkey

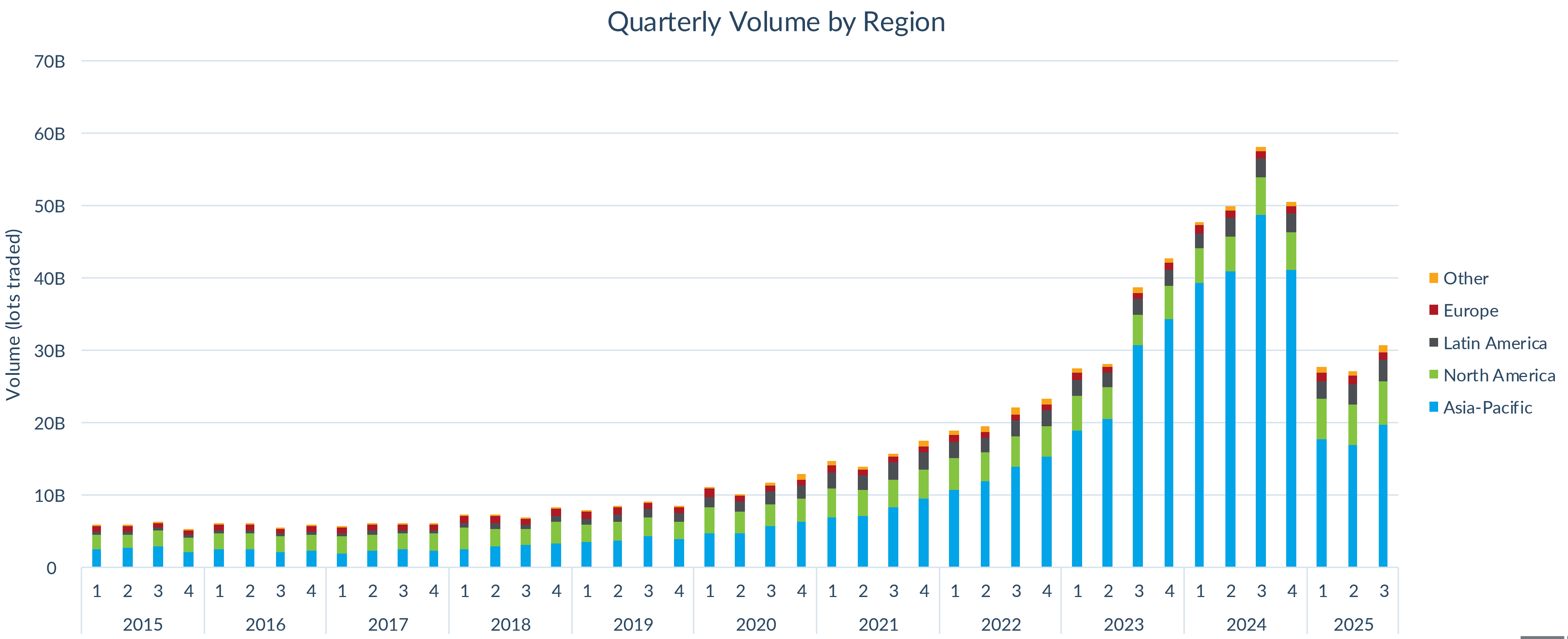
Overview: Global Volume and Open Interest in Q2 2025

Category	Jan-Sep 2025 Volume	Change vs. Last Year	Sep 2025 Open Interest	Change vs. Last Year
Equity	68,287,515,190	*-51.1%*	1,110,802,455	*23.3%*
Interest Rates	5,403,019,461	*2.6%*	224,614,262	*-3.1%*
Energy	2,799,219,360	*41.2%*	31,168,129	*14.7%*
Other	2,747,603,293	*29.1%*	91,636,123	*10.8%*
Metals	2,606,184,954	*14.9%*	24,064,630	*8.9%*
Agriculture	2,267,230,890	*-0.1%*	31,340,073	*9.6%*
Currencies	1,443,428,815	*-38.6%*	35,684,130	*44.3%*
Total	85,554,201,963	*-45.1%*	1,549,309,802	*17.5%*

Note: Other includes futures and options based on chemicals, plastics, cryptocurrencies, emissions, freight, volatility, weather

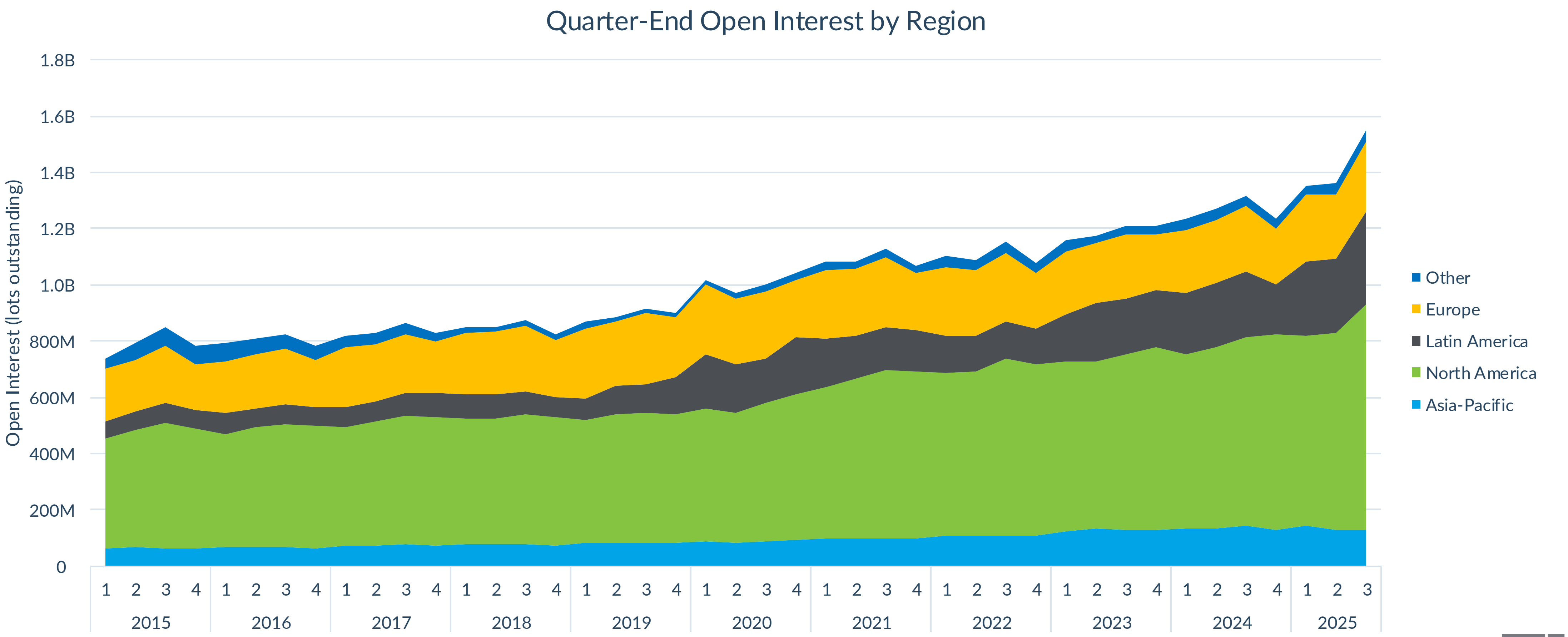
Overview: Volume Falls in APAC

The number of contracts traded on exchanges in the Asia-Pacific region reached 19.8 billion contracts in Q3 2025, down 59% from a year ago, mainly due to a crackdown on speculative trading in India.



Overview: Open Interest Hits a Record

The number of contracts outstanding in North America reached a record 802 million contracts at the end of June, up 19% from a year ago and more than half of the global total.



How Noisy Are Volume Curves? – Defining a Framework

- For a **VWAP algo**, there are several ways to define **slippage** versus the market VWAP benchmark, including the following:

how much bid/offer spread is captured vs crossed per child slice

difference between predicted VWAP curve and actual execution curve

VWAP slippage = Spread cost + Timing cost + Tracking error + Profile noise

how well the child slices are timed within a given interval

difference between predicted VWAP curve and actual market volume curve

- Spread cost and Timing cost are part of the **micro** component of the VWAP algo, focusing on order placement and crossing decisions.
- Tracking error and Profile noise belong to the **macro** component of the algo, aiming to optimize the VWAP curve construction.
- To improve the macro component, you want to **reduce the noise** of a contract's volume curve…

How Noisy Are Volume Curves? – Measuring Noise

- One way to measure the noisiness of a volume curve is by calculating the Fractional **Mean Absolute Error (MAE)** which tells us how variable the intraday volume is compared to its 3-month average. We look at **5-minute volume buckets** and sample data from **July 01 to Sep 30, 2025**.
- A lower MAE means a lower variability and therefore a **higher predictability** of the volume curve, making it a better candidate for a VWAP algo.

Top 30 most fitted curves

Region	Exchange	Asset Class	RIC	Contract Name	Day Count	Q3 2025 Fractional MAE-5min
AMER	BVMF	EQUITY INDEX	WIN	Mini BOVESPA Index Future	64	0.13
EMEA	XSTO	EQUITY INDEX	OMXS30	SWEDISH INDEX OMXS30 Future	65	0.14
EMEA	IFLL	EQUITY INDEX	FFI	FTSE 100 IDX Future	64	0.15
APAC	XHKF	EQUITY INDEX	HSI	HANG SENG IDX Future	65	0.16
APAC	XHKF	EQUITY INDEX	HMH	MINI HANG SENG IDX Future	65	0.17
APAC	XSFE	EQUITY INDEX	YAP	SPI 200 Index Future	65	0.17
AMER	XCME	EQUITY INDEX	NQ	NASDAQ 100 E-MINI Future	65	0.17
EMEA	XEUR	EQUITY INDEX	FSMI	SWISS MKT IX Future	64	0.17
APAC	XHKF	EQUITY INDEX	HCEI	HSCEI Futures (China H) Future	65	0.18
APAC	XOSE	EQUITY INDEX	JNM	NIKKEI 225 MINI Index Future	64	0.18
APAC	XSIM	EQUITY INDEX	SFC	FTSE CHINA A50 Index Future	65	0.18
AMER	XCME	EQUITY INDEX	ES	S&P 500 E-MINI Future	65	0.18
APAC	XOSE	EQUITY INDEX	JTI	TOPIX INDX Future	64	0.18
EMEA	XEUR	EQUITY INDEX	FDX	DAX INDEX FUTURE	64	0.18
EMEA	XEUR	EQUITY INDEX	STXE	EURO STOXX 50 Future	65	0.18
AMER	XCME	EQUITY INDEX	1MQN	NASD100 MICRO EMIN Future	65	0.18
AMER	BVMF	CURRENCY	WDO	Mini Dollar Future	64	0.19
EMEA	XDMI	EQUITY INDEX	IFS	FTSE MIB INDEX Future	64	0.19
EMEA	XEUR	BOND	FGBL	EURO-BUND Future	64	0.19
EMEA	XMON	EQUITY INDEX	FCE	CAC40 INDEX Future	64	0.19
EMEA	IFLL	BOND	FLG	Long Gilt Future	64	0.19
AMER	XNYM	ENERGY	RB	RBOB Oil Future	65	0.19
APAC	XSIM	EQUITY INDEX	STWN	SGX FTSE Taiwan Index Future	65	0.19
APAC	XHKF	EQUITY INDEX	HHTI	HSTECH Future	65	0.20
EMEA	XEUR	EQUITY INDEX	FDXM	DAX Mini Future	64	0.20
APAC	XOSE	EQUITY EQUITY INDEX	JNU	NIKKEI 225 Micro Nikkei Micro Future	62	0.20
AMER	XMOD	EQUITY INDEX	SXF	TSX 60 Index Future	65	0.20
AMER	XCME	MEATS	1LH	Lean Hogs Future	62	0.20
AMER	XCBT	EQUITY INDEX	1MYM	DJIA MICR MIN CBOT Future	65	0.20
EMEA	XEUR	BOND	FGBX	EURO BUXL 30Y BOND Future	64	0.20

Top 30 most noisy curves

Region	Exchange	Asset Class	RIC	Contract Name	Day Count	Q3 2025 Fractional MAE-5min
EMEA	IFLL	INTEREST RATE	SARO3	Three Month SARON Future	62	0.67
AMER	XCME	INTEREST RATE	1S1R	One-Month SOFR Future	64	0.63
AMER	XCBT	INTEREST RATE	1FF	FED FUND 30DAY Future	65	0.62
APAC	XSFE	INTEREST RATE	YBA	90-DAY BANK BILL Future	65	0.62
APAC	XSIM	EM CURRENCY	SDKU	KRW/USD Future	65	0.60
EMEA	IFLL	INTEREST RATE	FEI	Three Month Euribor Future	65	0.59
EMEA	IFLL	INTEREST RATE	SON3	Three Month SONIA Future	64	0.57
AMER	XMOD	INTEREST RATE	CRA	3M CORRA Future	61	0.55
APAC	XHKF	CURRENCY	HCUS	USD/CNH Future	65	0.55
AMER	XCME	INTEREST RATE	1SRA	Three-Month SOFR Future	65	0.52
APAC	XSFE	BOND	YTT	SFE 3 Year Treasury Bond Future	65	0.46
EMEA	XEUR	EQUITY INDEX	FVS	VSTOXX Index Future	64	0.45
AMER	XCME	EM CURRENCY	1BR	Brazilian Real Future	64	0.44
APAC	XSFE	BOND	YTC	SFE 10 Year Treasury Bond Future	65	0.44
AMER	BVMF	INTEREST RATE	DIJ	ONE-DAY BANK DEP Future	64	0.43
APAC	XSIM	INDUSTRIAL MATERIAL	SZZF	SGX Iron Ore 62% Future	65	0.41
AMER	XMOD	BOND	CGZ	Two-Year CAD Govt Bond Future	64	0.41
AMER	IFEU	ENERGY	WTCL	WTI Crude Future	65	0.36
AMER	XMOD	BOND	CGF	Five-Year CAD Govt Bond Future	65	0.36
EMEA	XEUR	BOND	FGBS	EURO-SCHATZ FUT Future	65	0.35
AMER	XCME	EM CURRENCY	1MP	MXNUSD Currency Future	65	0.34
APAC	XSIM	EM CURRENCY	SDIU	INR/USD Future	65	0.34
AMER	IFUS	CURRENCY	DX	Dollar Index Future	65	0.33
AMER	IFEU	ENERGY	NGLNM	ICE NAT GAS Future	64	0.33
AMER	XCME	CURRENCY	MTE	CME Micro Ether	65	0.33
EMEA	XMAT	COMMODITY	BL2	MILL WHEAT EURO Future	64	0.33
APAC	XSIM	EM CURRENCY	SUC	USD/CNH Future	65	0.33
AMER	XCME	CURRENCY	HTE	CME Ether Future	62	0.32
AMER	XCBF	EQUITY INDEX	VX	VIX Index Future	65	0.32
AMER	IFLX	COMMODITY	LCC	London Cocoa Future	63	0.31

UBS

Source: UBS

How Noisy are Volume Curves? - Observations

- The data shows **Equity Index Futures** have the most predictable volume curves, where an **all-day VWAP algo** would do a decent job tracking the market VWAP.
- **Interest Rate Futures** have the least predictive volume curves, indicating a more **opportunistic algo** might be more suitable to exploit liquidity opportunities.

Top 30 most fitted curves

Region	Exchange	Asset Class	RIC	Contract Name	Day Count	Q3 2025 Fractional MAE-5min
AMER	BVMF	EQUITY INDEX	WIN	Mini BOVESPA Index Future	64	0.13
EMEA	XSTO	EQUITY INDEX	OMXS30	SWEDISH INDEX OMXS30 Future	65	0.14
EMEA	IFLL	EQUITY INDEX	FFI	FTSE 100 IDX Future	64	0.15
APAC	XHKF	EQUITY INDEX	HSI	HANG SENG IDX Future	65	0.16
APAC	XHKF	EQUITY INDEX	HMH	MINI HANG SENG IDX Future	65	0.17
APAC	XSFE	EQUITY INDEX	YAP	SPI 200 Index Future	65	0.17
AMER	XCME	EQUITY INDEX	NQ	NASDAQ 100 E-MINI Future	65	0.17
EMEA	XEUR	EQUITY INDEX	FSMI	SWISS MKT IX Future	64	0.17
APAC	XHKF	EQUITY INDEX	HCEI	HSCEI Futures (China H) Future	65	0.18
APAC	XOSE	EQUITY INDEX	JNM	NIKKEI 225 MINI Index Future	64	0.18
APAC	XSIM	EQUITY INDEX	SFC	FTSE CHINA A50 Index Future	65	0.18
AMER	XCME	EQUITY INDEX	ES	S&P 500 E-MINI Future	65	0.18
APAC	XOSE	EQUITY INDEX	JTI	TOPIX INDX Future	64	0.18
EMEA	XEUR	EQUITY INDEX	FDX	DAX INDEX FUTURE	64	0.18
EMEA	XEUR	EQUITY INDEX	STXE	EURO STOXX 50 Future	65	0.18
AMER	XCME	EQUITY INDEX	1MQN	NASD100 MICRO EMIN Future	65	0.18
AMER	BVMF	CURRENCY	WDO	Mini Dollar Future	64	0.19
EMEA	XDMI	EQUITY INDEX	IFS	FTSE MIB INDEX Future	64	0.19
EMEA	XEUR	BOND	FGBL	EURO-BUND Future	64	0.19
EMEA	XMON	EQUITY INDEX	FCE	CAC40 INDEX Future	64	0.19
EMEA	IFLL	BOND	FLG	Long Gilt Future	64	0.19
AMER	XNYM	ENERGY	RB	RBOB Oil Future	65	0.19
APAC	XSIM	EQUITY INDEX	STWN	SGX FTSE Taiwan Index Future	65	0.19
APAC	XHKF	EQUITY INDEX	HHTI	HSTECH Future	65	0.20
EMEA	XEUR	EQUITY INDEX	FDXM	DAX Mini Future	64	0.20
APAC	XOSE	EQUITY EQUITY INDEX	JNU	NIKKEI 225 Micro Nikkei Micro Future	62	0.20
AMER	XMOD	EQUITY INDEX	SXF	TSX 60 Index Future	65	0.20
AMER	XCME	MEATS	1LH	Lean Hogs Future	62	0.20
AMER	XCBT	EQUITY INDEX	1MYM	DJIA MICR MIN CBOT Future	65	0.20
EMEA	XEUR	BOND	FGBX	EURO BUXL 30Y BOND Future	64	0.20

Top 30 most noisy curves

Region	Exchange	Asset Class	RIC	Contract Name	Day Count	Q3 2025 Fractional MAE-5min
EMEA	IFLL	INTEREST RATE	SARO3	Three Month SARON Future	62	0.67
AMER	XCME	INTEREST RATE	1S1R	One-Month SOFR Future	64	0.63
AMER	XCBT	INTEREST RATE	1FF	FED FUND 30DAY Future	65	0.62
APAC	XSFE	INTEREST RATE	YBA	90-DAY BANK BILL Future	65	0.62
APAC	XSIM	EM CURRENCY	SDKU	KRW/USD Future	65	0.60
EMEA	IFLL	INTEREST RATE	FEI	Three Month Euribor Future	65	0.59
EMEA	IFLL	INTEREST RATE	SON3	Three Month SONIA Future	64	0.57
AMER	XMOD	INTEREST RATE	CRA	3M CORRA Future	61	0.55
APAC	XHKF	CURRENCY	HCUS	USD/CNH Future	65	0.55
AMER	XCME	INTEREST RATE	1SRA	Three-Month SOFR Future	65	0.52
APAC	XSFE	BOND	YTT	SFE 3 Year Treasury Bond Future	65	0.46
EMEA	XEUR	EQUITY INDEX	FVS	VSTOXX Index Future	64	0.45
AMER	XCME	EM CURRENCY	1BR	Brazilian Real Future	64	0.44
APAC	XSFE	BOND	YTC	SFE 10 Year Treasury Bond Future	65	0.44
AMER	BVMF	INTEREST RATE	DIJ	ONE-DAY BANK DEP Future	64	0.43
APAC	XSIM	INDUSTRIAL MATERIAL	SZZF	SGX Iron Ore 62% Future	65	0.41
AMER	XMOD	BOND	CGZ	Two-Year CAD Govt Bond Future	64	0.41
AMER	IFEU	ENERGY	WTCL	WTI Crude Future	65	0.36
AMER	XMOD	BOND	CGF	Five-Year CAD Govt Bond Future	65	0.36
EMEA	XEUR	BOND	FGBS	EURO-SCHATZ FUT Future	65	0.35
AMER	XCME	EM CURRENCY	1MP	MXNUSD Currency Future	65	0.34
APAC	XSIM	EM CURRENCY	SDIU	INR/USD Future	65	0.34
AMER	IFUS	CURRENCY	DX	Dollar Index Future	65	0.33
AMER	IFEU	ENERGY	NGLNM	ICE NAT GAS Future	64	0.33
AMER	XCME	CURRENCY	MTE	CME Micro Ether	65	0.33
EMEA	XMAT	COMMODITY	BL2	MILL WHEAT EURO Future	64	0.33
APAC	XSIM	EM CURRENCY	SUC	USD/CNH Future	65	0.33
AMER	XCME	CURRENCY	HTE	CME Ether Future	62	0.32
AMER	XCBF	EQUITY INDEX	VX	VIX Index Future	65	0.32
AMER	IFLX	COMMODITY	LCC	London Cocoa Future	63	0.31

UBS

Source: UBS

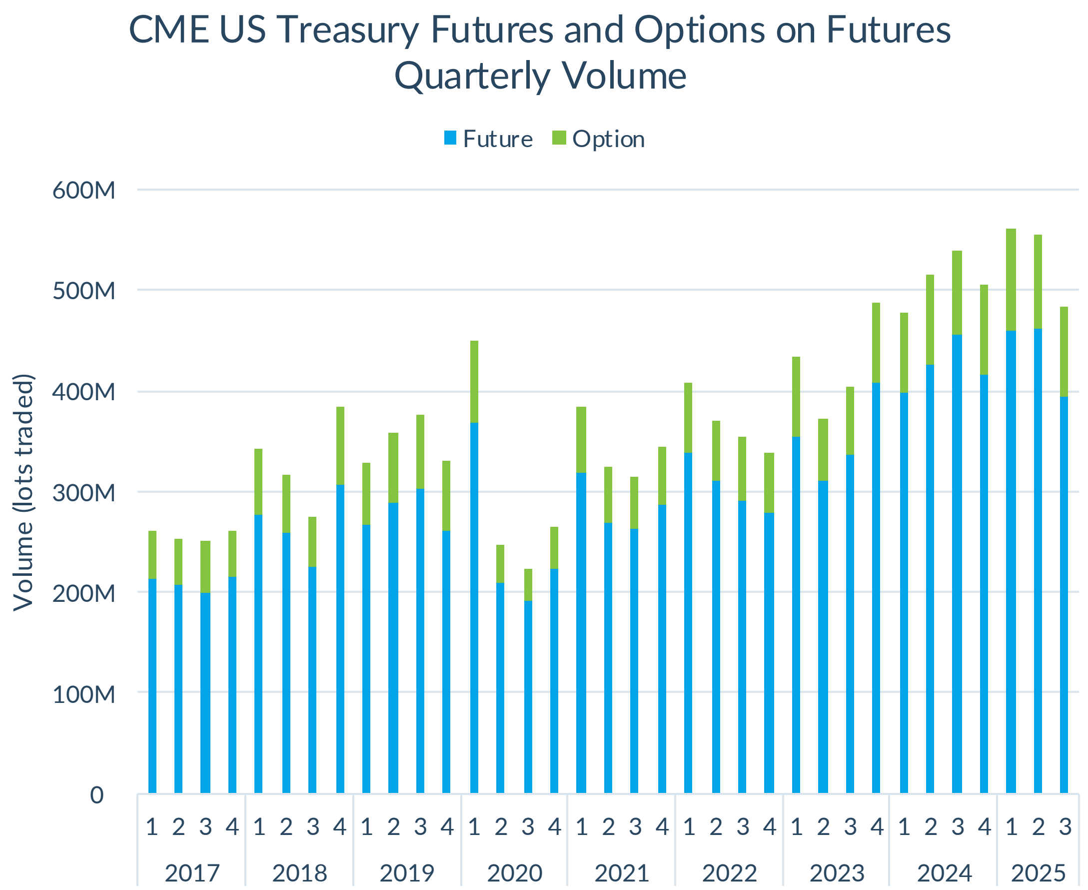
Interest Rates – Top Bond Contracts by Volume

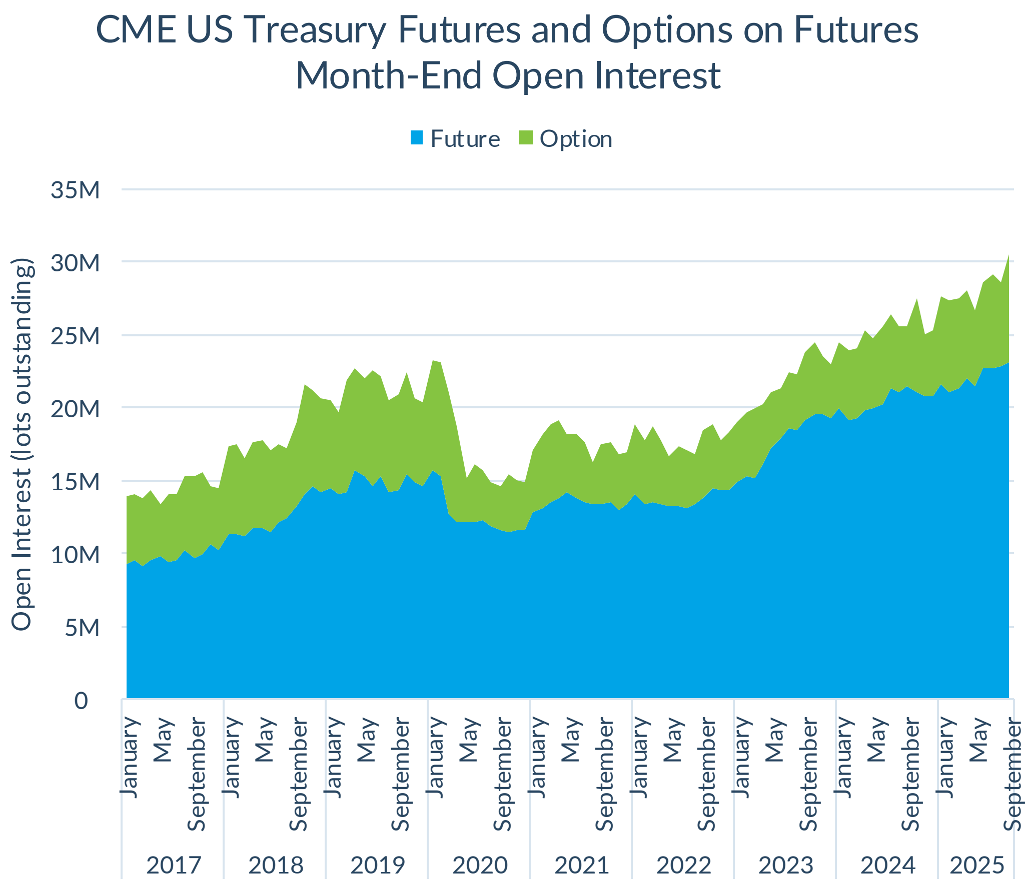
Rank	Contract and Exchange	Jan-Sep 2025 Volume	Change vs Yr Ago	Sep 2025 Open Interest	YOY Change
1	10 Year Treasury Note Futures, Chicago Board of Trade	437,792,370	-2.9%	5,462,258	10.3%
2	5 Year Treasury Note Futures, Chicago Board of Trade	347,760,245	5.2%	6,642,163	4.0%
3	Euro-Bund (FGBL) Futures, Eurex	217,251,253	8.4%	1,391,861	16.1%
4	2 Year Treasury Note Futures, Chicago Board of Trade	198,829,477	4.8%	4,610,882	3.3%
5	10 Year Treasury Note Options, Chicago Board of Trade	182,878,652	10.5%	4,106,351	64.3%
6	Euro-Bobl (FGBM) Futures, Eurex	162,644,874	4.2%	1,317,626	10.4%
7	Euro-Schatz (FGBS) Futures, Eurex	140,544,914	1.0%	2,156,460	-0.8%
8	Ultra 10 Year Treasury Note Futures, Chicago Board of Trade	139,716,753	11.2%	2,449,316	15.1%
9	iShares Barclays 20+ Year Treasury Bond ETF Options *	106,201,429	46.5%	6,617,307	23.9%
10	30 Year Treasury Bond Futures, Chicago Board of Trade	104,251,567	4.6%	1,844,283	5.5%
11	Ultra Treasury Bond Futures, Chicago Board of Trade	81,620,547	3.4%	2,050,150	19.1%
12	Euro-BTP (FBTP) Futures, Eurex	66,326,805	29.1%	499,290	16.6%
13	Euro-OAT (FOAT) Futures, Eurex	54,316,530	14.9%	598,248	33.0%
14	Long Gilt Futures, ICE Futures Europe	53,495,714	-1.4%	1,252,174	48.2%
15	3 Year Treasury Bond Futures, ASX 24	50,664,976	17.8%	970,932	22.1%

* Traded on multiple US options exchanges

US Treasury Futures: Open Interest Edges Higher

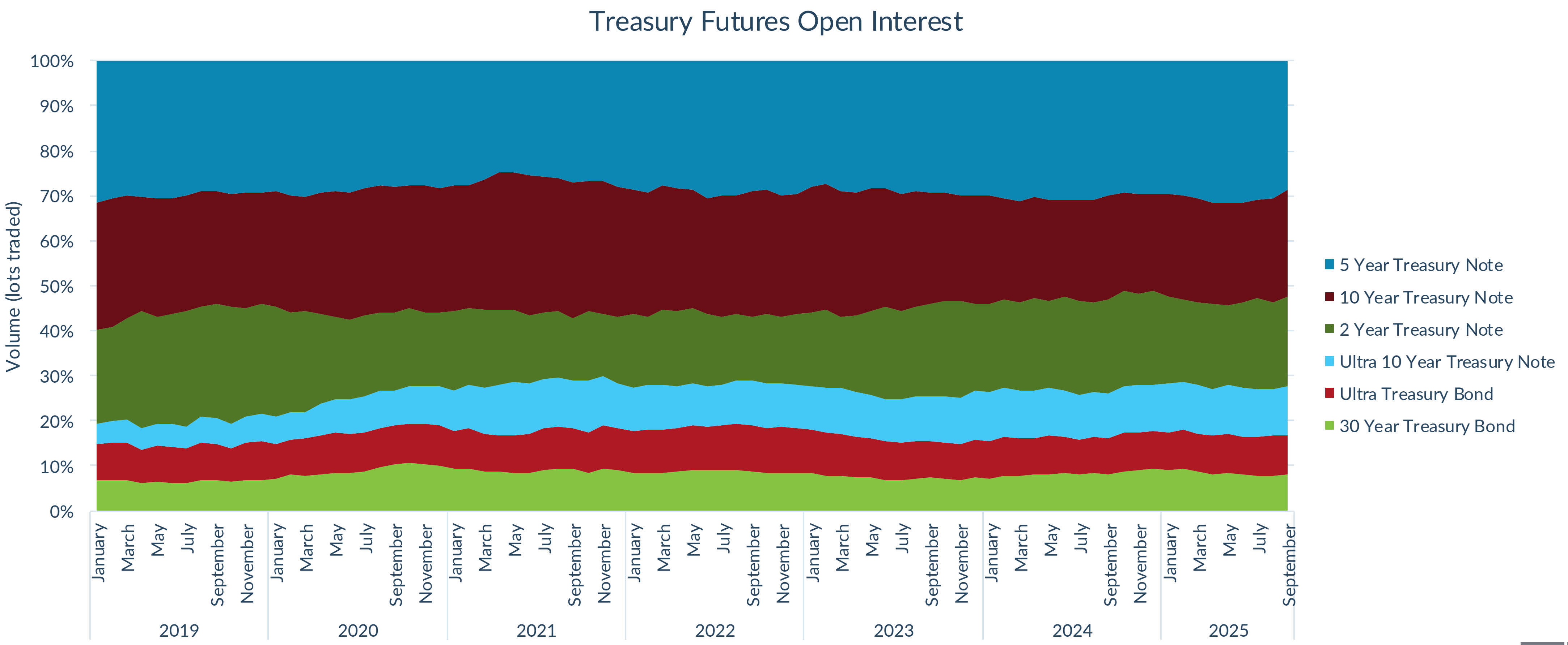
Outstanding positions in Treasury futures reached a record 23.1 million at the end of Q3, up 8% from a year ago.





US Treasury Futures: Breakdown of Open Interest

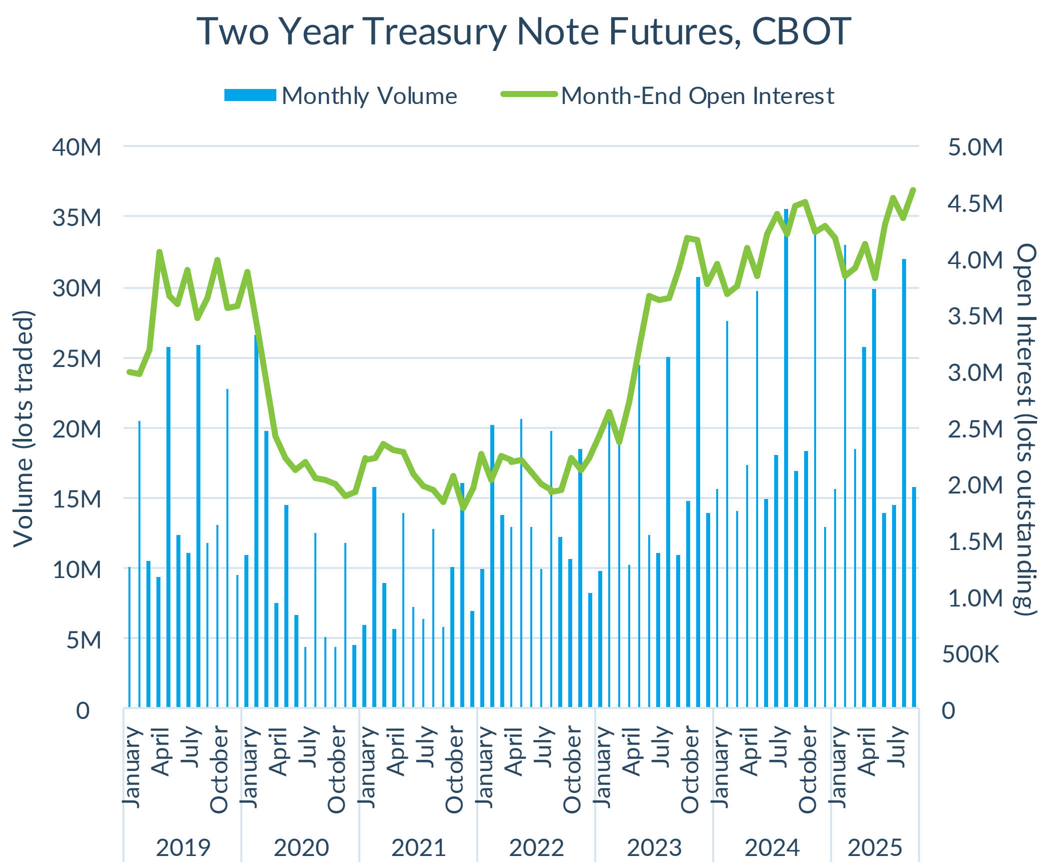
The five-year, ten-year and two-year futures accounted for 73% of the outstanding positions at the end of Q3

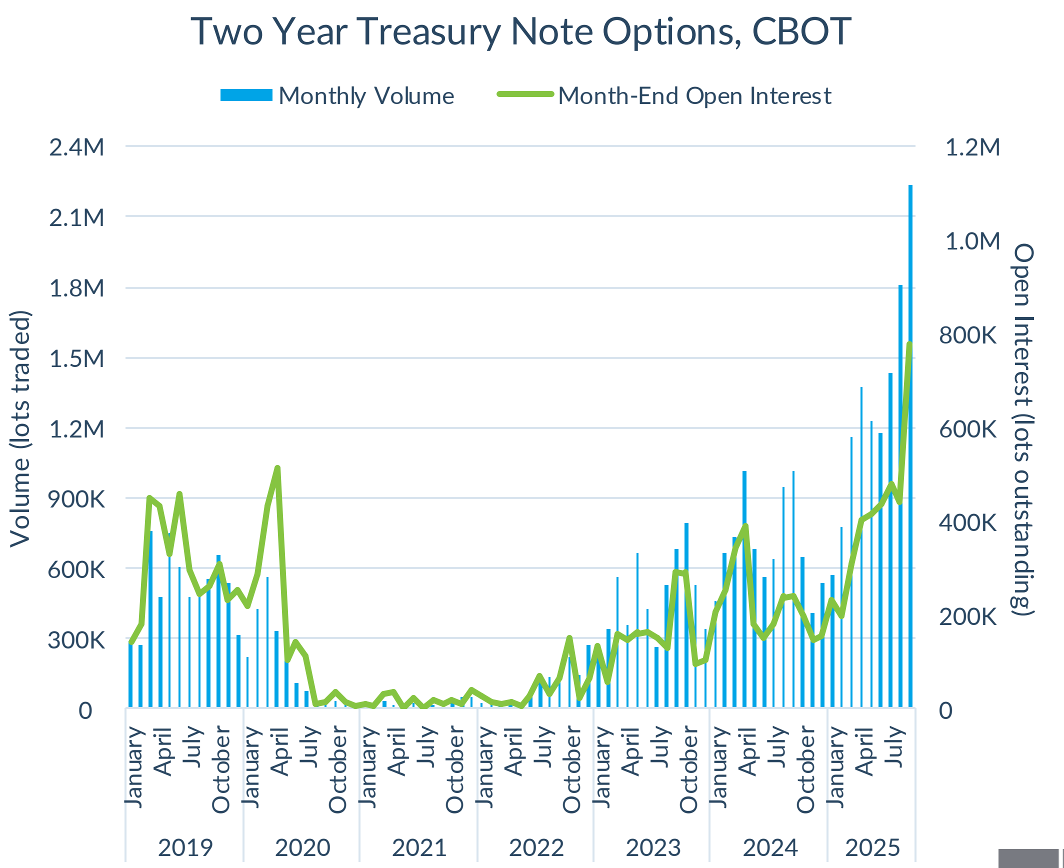


Note: futures on the 13-week bill, 3 Year note and 20 year bond are not included; open interest in these contracts was less than 1% of the total in Q3

Treasury Futures: Surge in Two Year Options

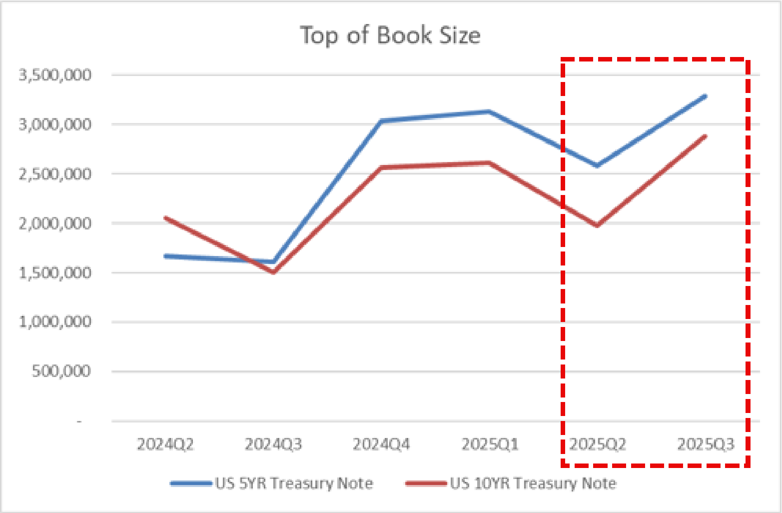
Open interest hit a record 400K contracts in April, rose to 480K in July, and then hit 780K in September.

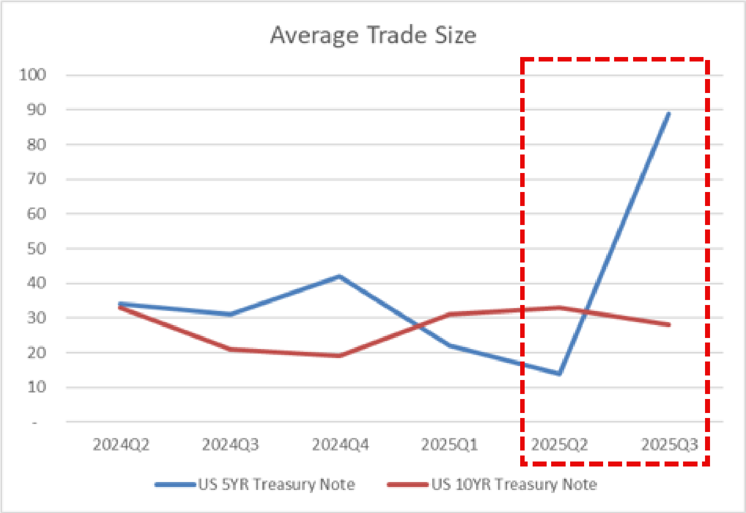


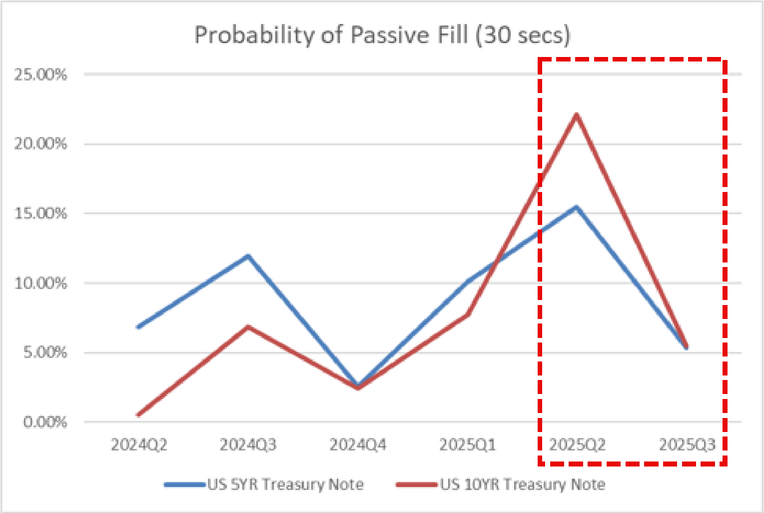


The Impact of CME's MEP on UST Rolls

- In May 2025, the CME introduced the **Messaging Efficiency Program** (MEP) for **5- and 10-Year Treasury Note Futures Rolls**, imposing a $10k fine on order entry quantity exceeding executed volume by 3000x.
- The purpose of the MEP is to encourage **responsible messaging practices** during the Treasury Futures roll period, which in turn would deter participants from frequently re-sizing orders in a pro-rata market and theoretically flush out "shadow liquidity" at the top of the order book.
- How has MEP impacted the FV and TY Roll market structure in Q2 and Q3? **Top of Book Size** increased in Q3 to over 3mm lots on average for FV and just under 3mm lots for TY, while **Average Trade Size** dramatically increased for FV and stayed relatively unchanged for TY. **Probability of Passive Fill** within 30 seconds dropped in Q3 to ~5% for both FV and TY which reflects a larger ToB in both roll contracts.





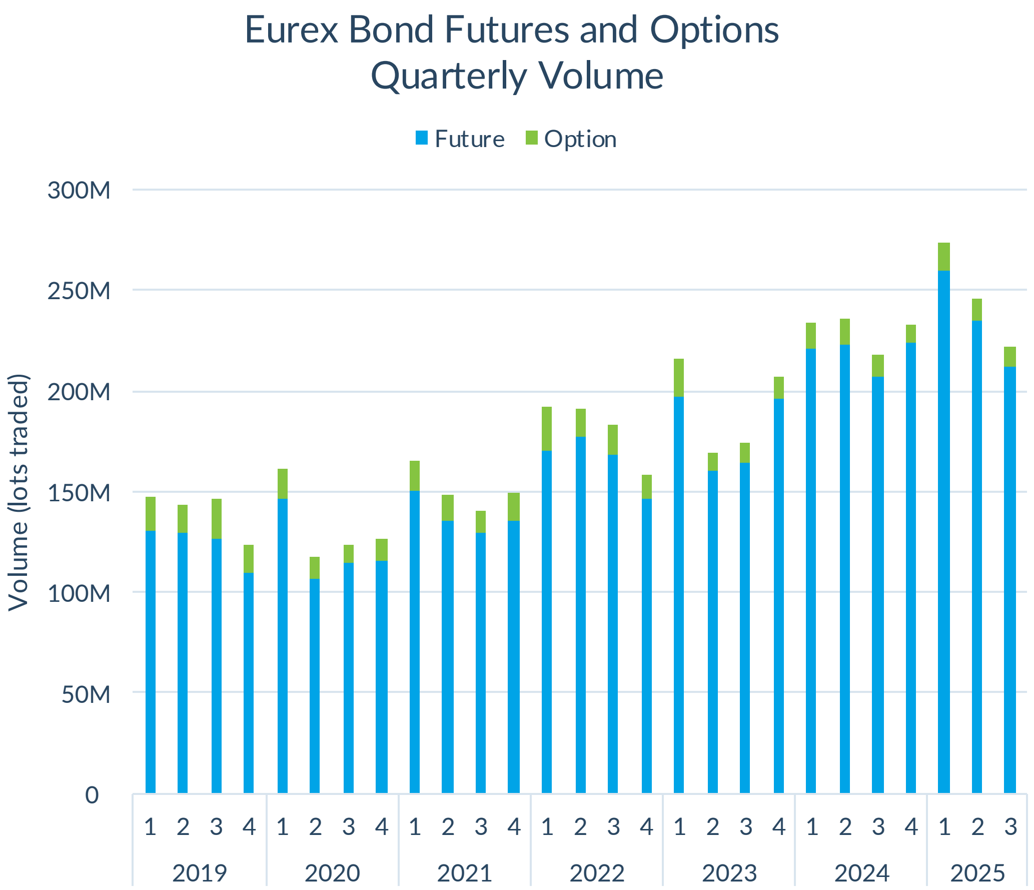


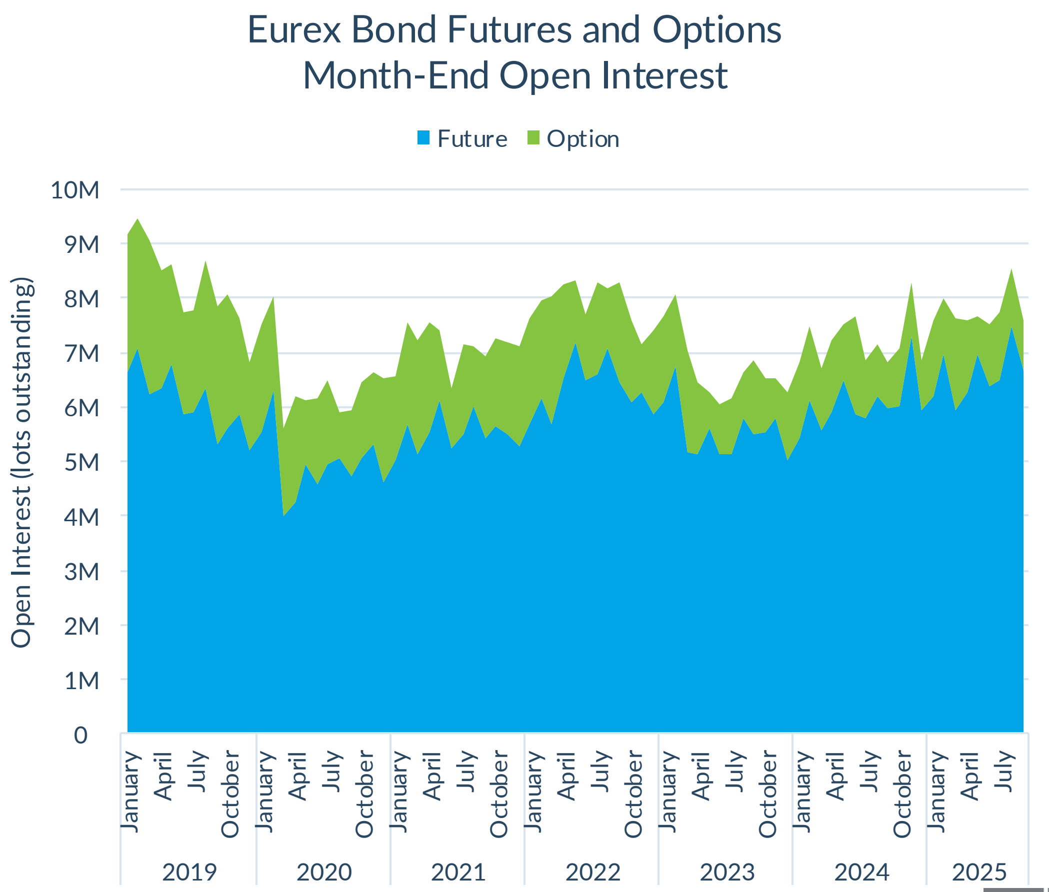
- Evidently, introduction of the **MEP has not quite achieved what CME intended** – to democratize the order book and encourage higher passive fill rates while reducing ToB to only "real liquidity".

UBS

Source: UBS

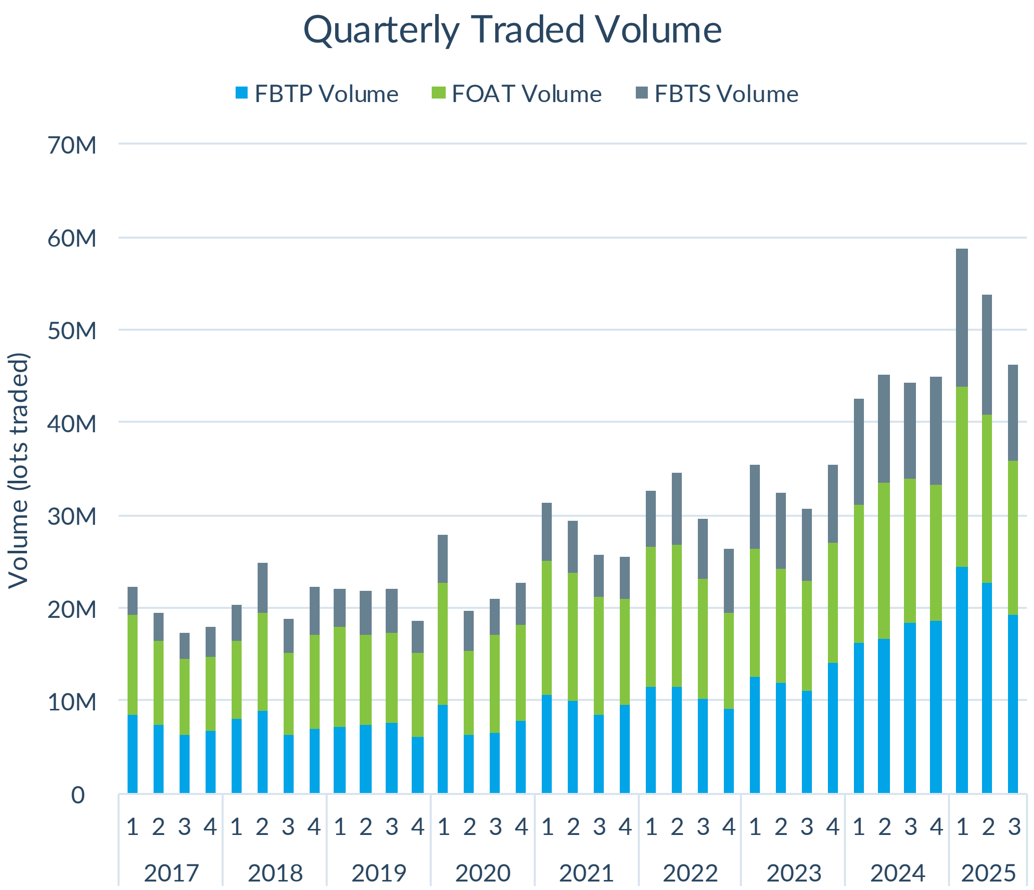
EU Bond Futures: High Turnover, Stable Open Interest

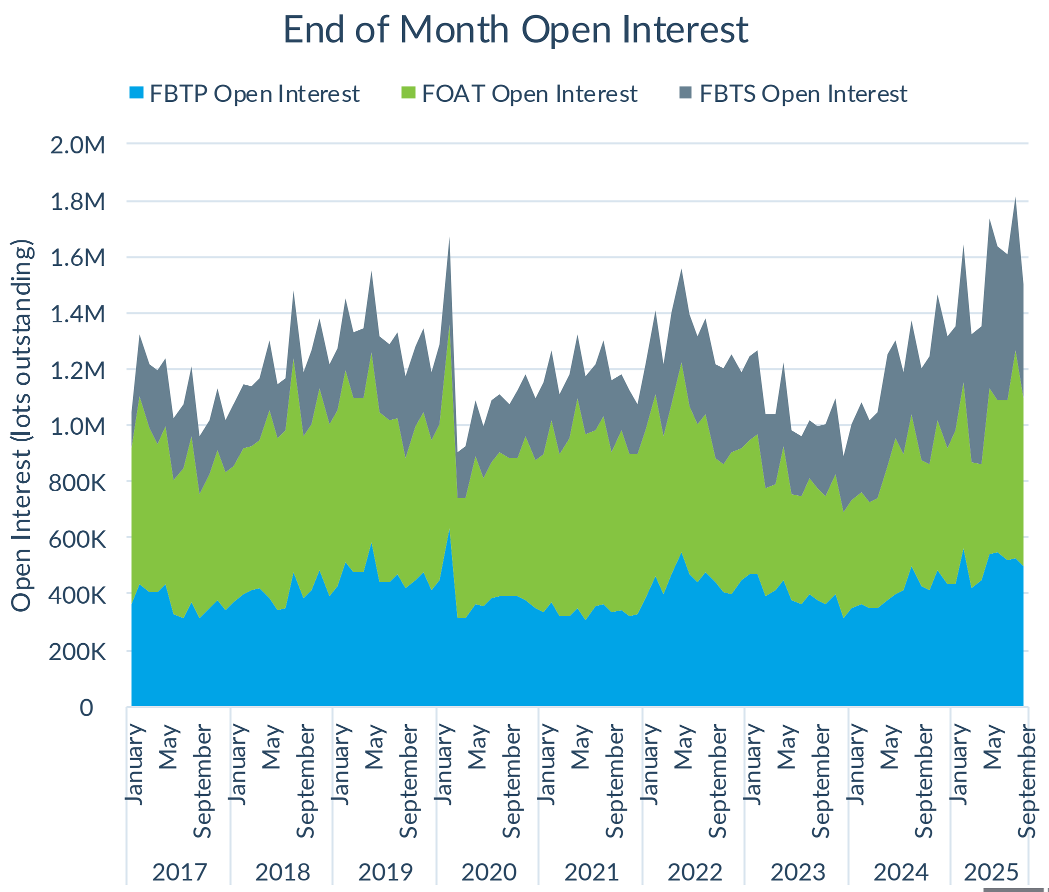




Credit Spreads in EU Bond Markets

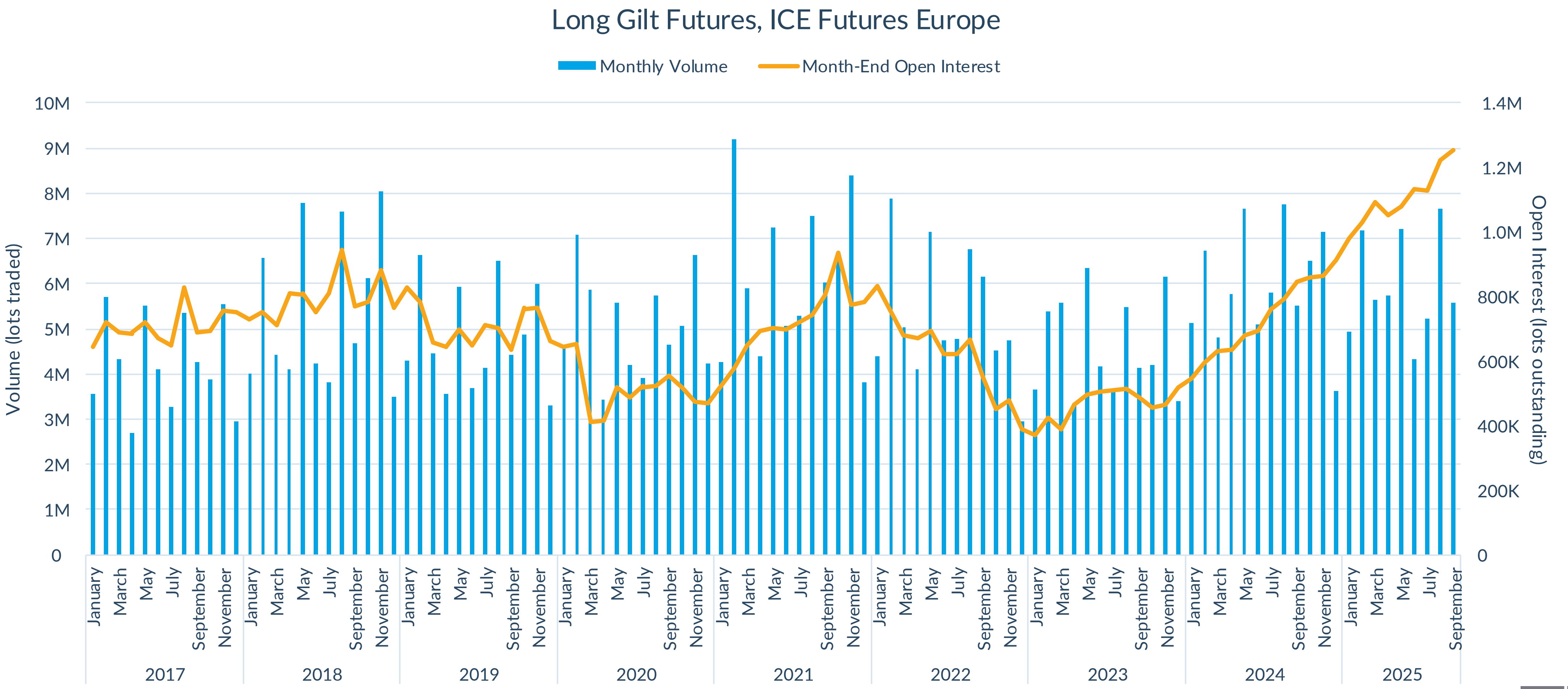
Q3 volume in French and Italian bond futures and options retreated from the record high of 59 million contracts in the first quarter, but trading activity remains well above previous years.





Note: FBTP = futures on long term Italian debt. FOAT = futures on French government debt. FBTS = futures on short term Italian government debt.

Gilt Futures: Open Interest Has Doubled since 2023



Canadian Rates Growth

- Canadian Rates Futures on Montreal Bourse has **grown rapidly** in recent years.

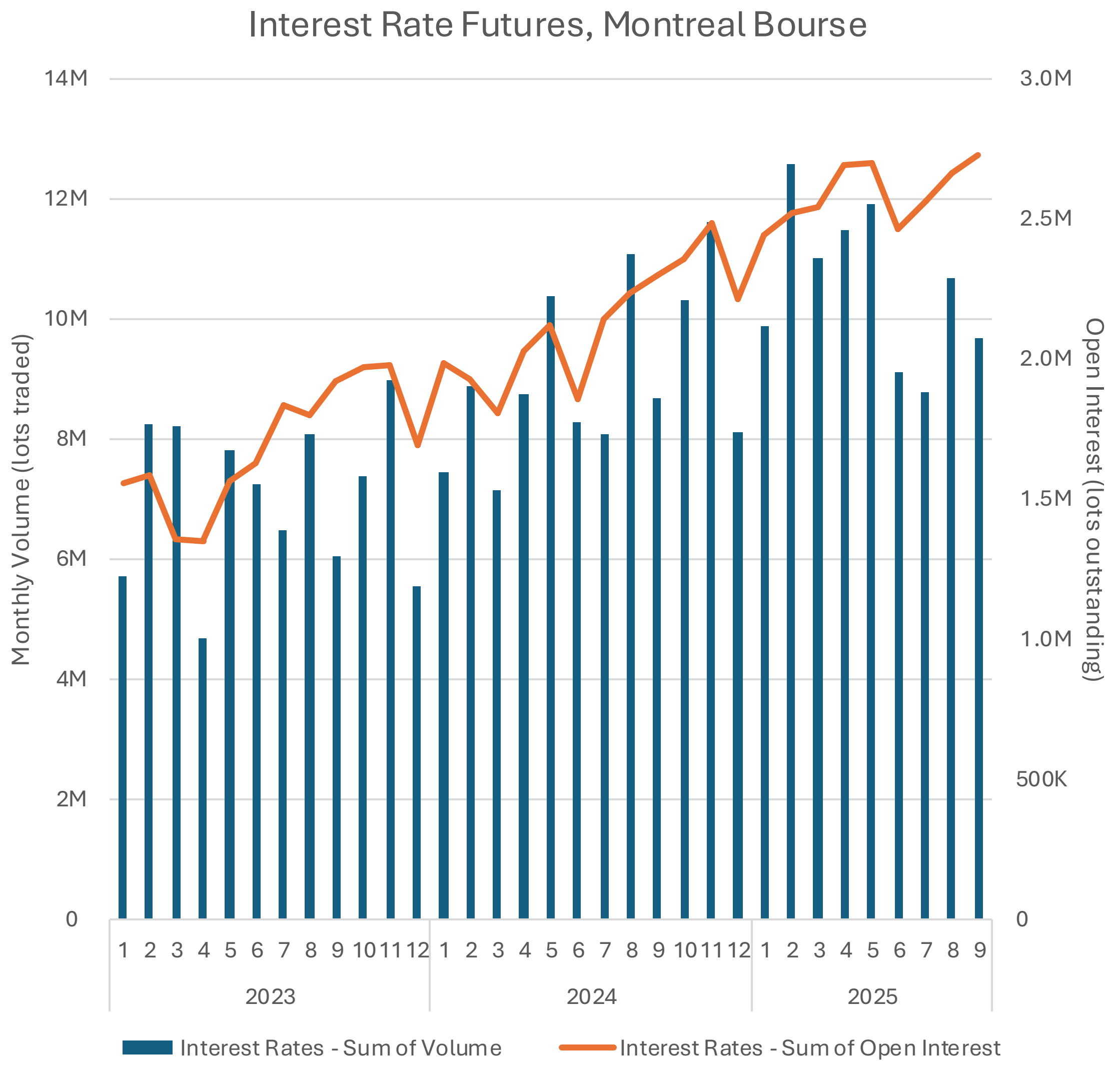
- There is strong momentum across the **fixed income suite** and expiry curve.

- **3m CORRA**
  - 3mo contract ADV in Q3 of 151k and 161k YTD (**+36%**)
  - Options volumes increasing – more liquidity via screen/block, existing market maker program
  - 1mo contract – coming market maker program in November should deepen liquidity

- **2yr and 5yr Canadian Gov't Bond**
  - Contract volumes near **all-time highs**
  - Combined ADV up **10%** in Q3 2025 (154k) vs. Q3 2024
  - Combined OI up **35%** in Q3 2025 (584k) vs. Q3 2024

- **Active basis trading**
  - Markets in **2yrs and 5yrs**
  - 2yr EFP Q3 ADV 19% of overall volume
  - 5yr EFP Q3 ADV 15% of overall volume

Source: BBG, TMX

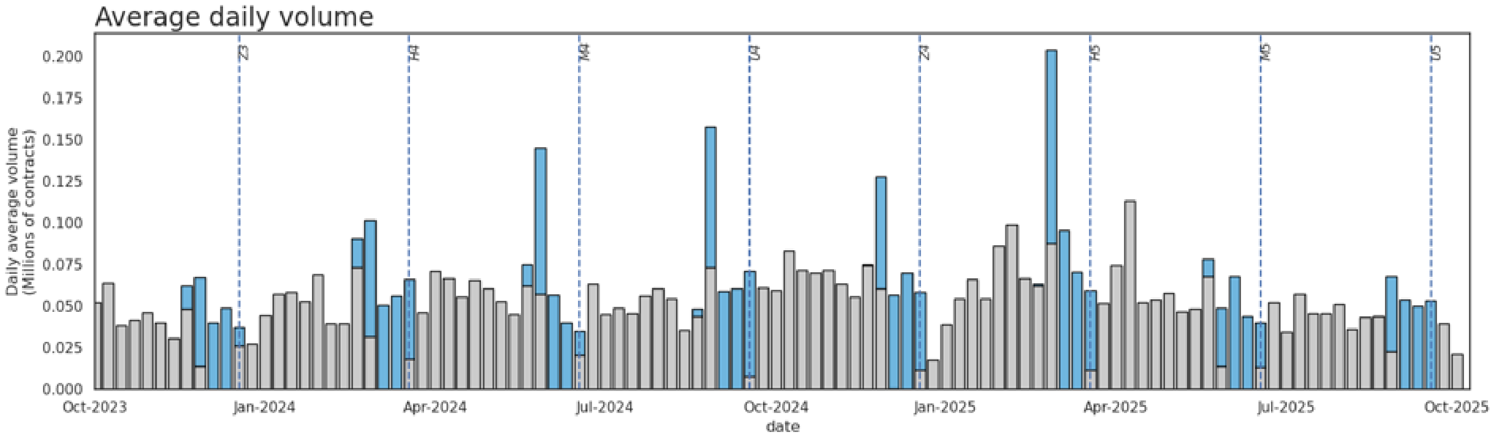


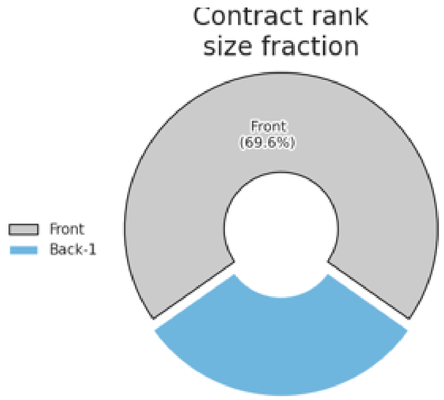
Source: FIA

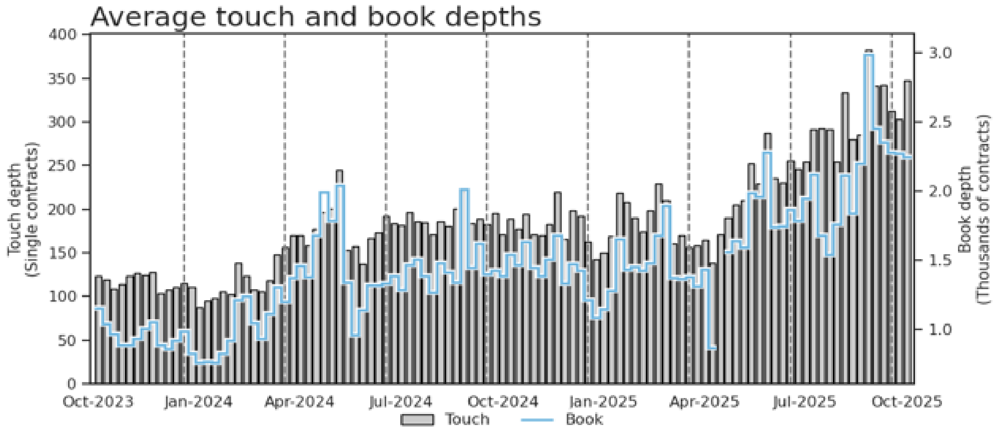
UBS

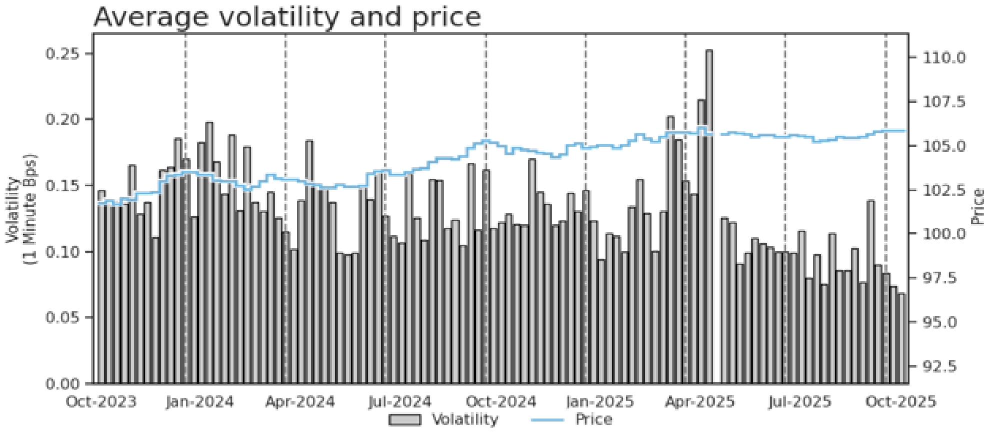
Montreal Rates Growth - 2yr Govt Bond Liquidity

- **Average daily volume** has remained resilient going back 2 years, while **roll activity has significantly increased** from Nov 2023 to April 2025, with a slight drop-off in the last cycle.
- **Average touch and book depth** have increased materially, **~3x since Oct 2023**, whilst volatility has come down considerably.







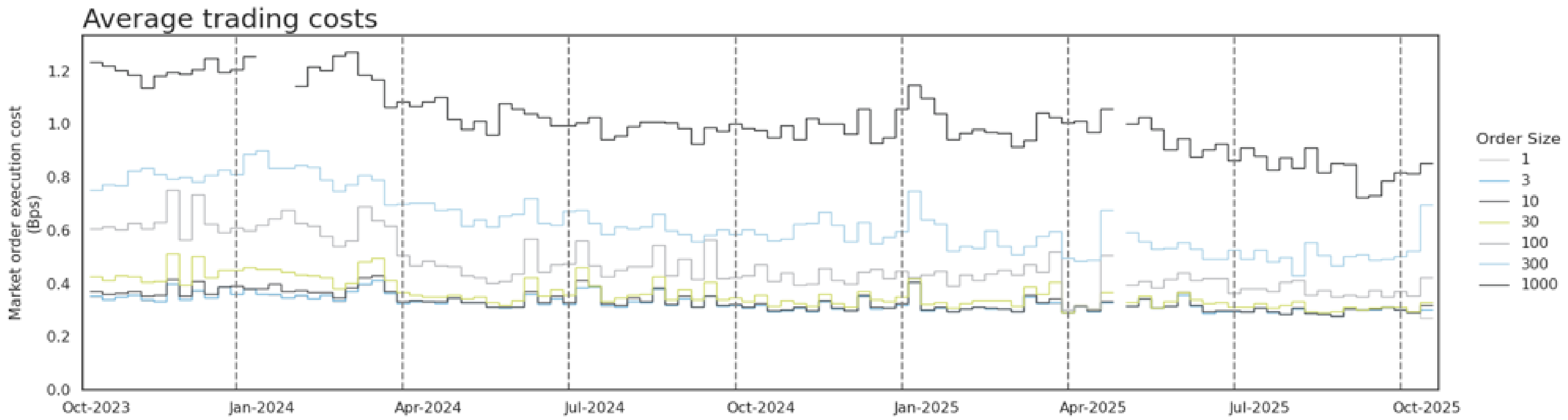


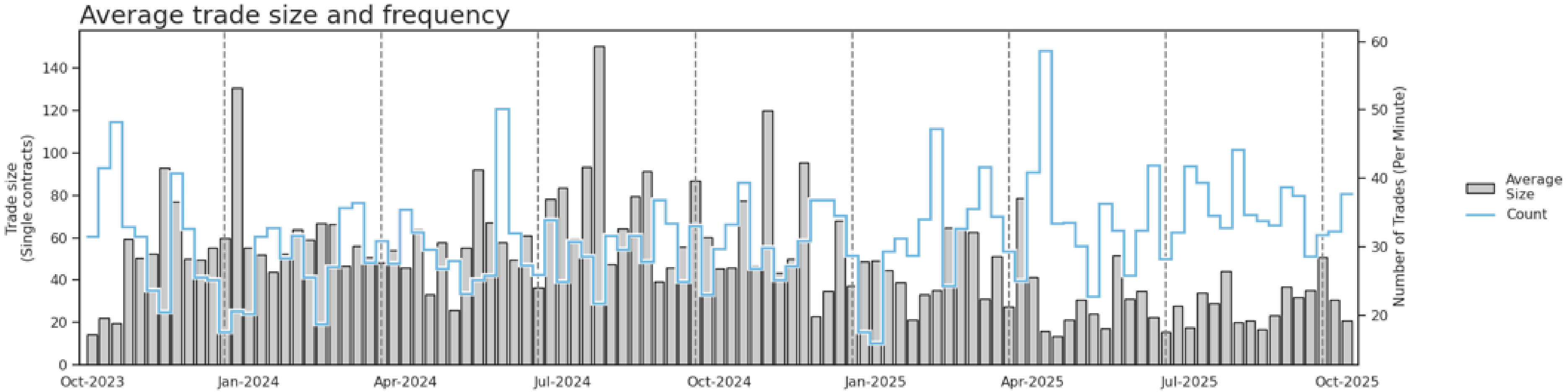
UBS

Source: UBS

Montreal Rates Growth - 2yr Govt Bond Liquidity

- **Average trading costs** (sweep to fill) have gradually fallen for order sizes ranging from 1 to 1000 lots, reflective of **more book depth and resilience**.
- Interestingly, **average trade size** has fallen in the past year while **order count** has remained the same, indicating **increased algorithmic trading**.



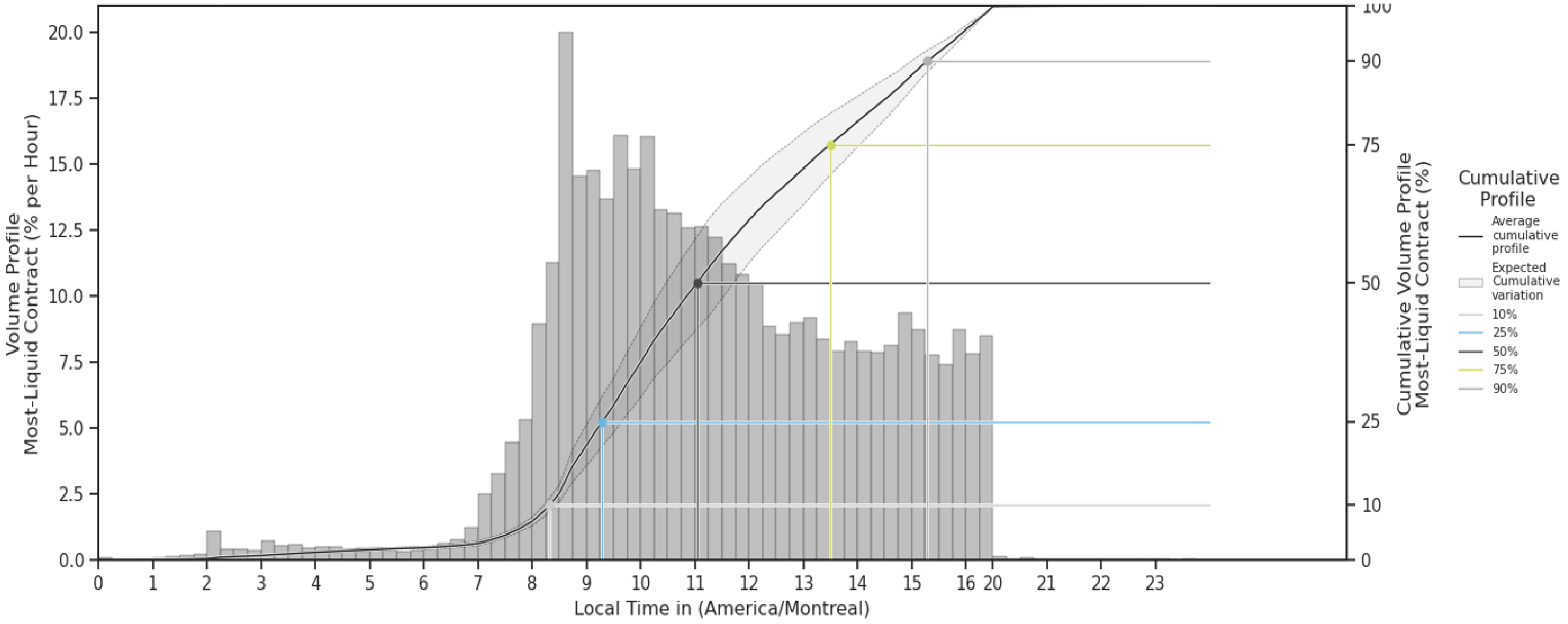


UBS

Source: UBS

Montreal Rates Growth - 2yr Govt Bond Liquidity

- The 2yr **volume curve** is very skewed to the cash open, where over **25% of trading is done before 9:30am ET**. This is typical of 5yr and 10yr Govt Bonds as well.
- Volume drops off after lunchtime and **75% of trading** is typically done by 1:30pm ET.
- If trading an all-day VWAP it may make more sense to **front-load execution**.



UBS

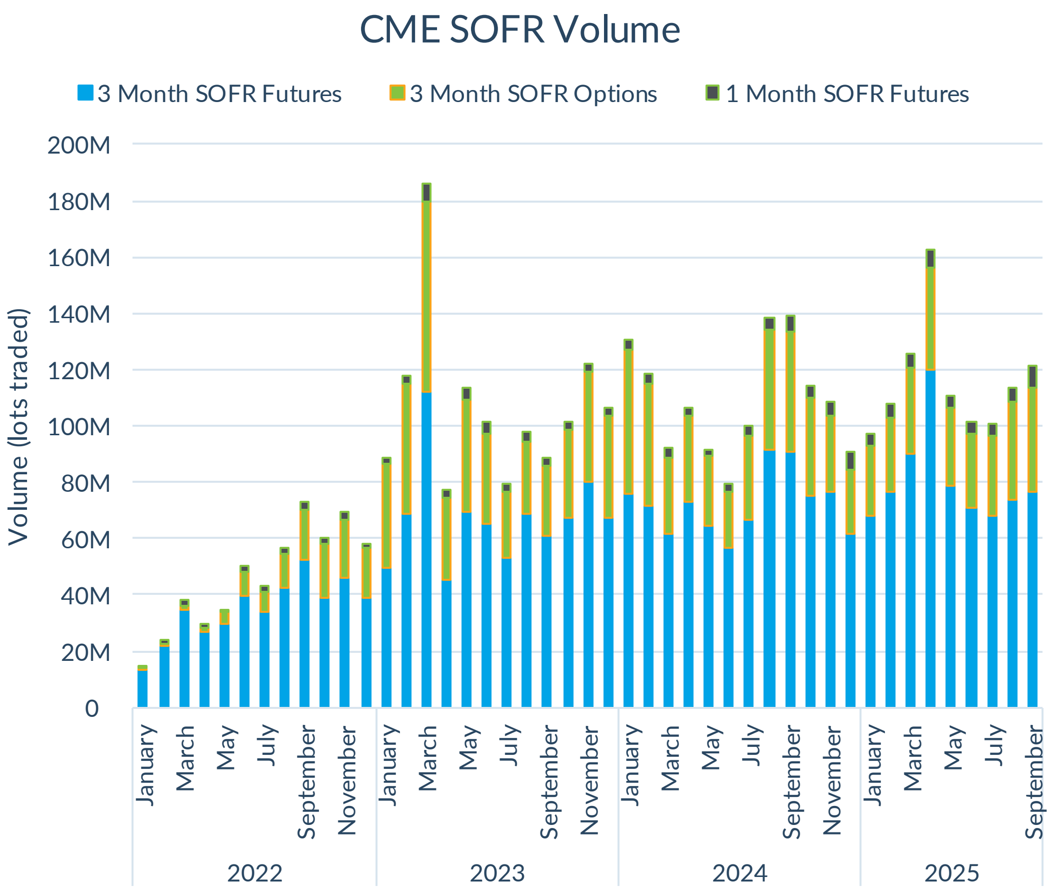
Source: UBS data, Oct 23, 2023 to Oct 22, 2025

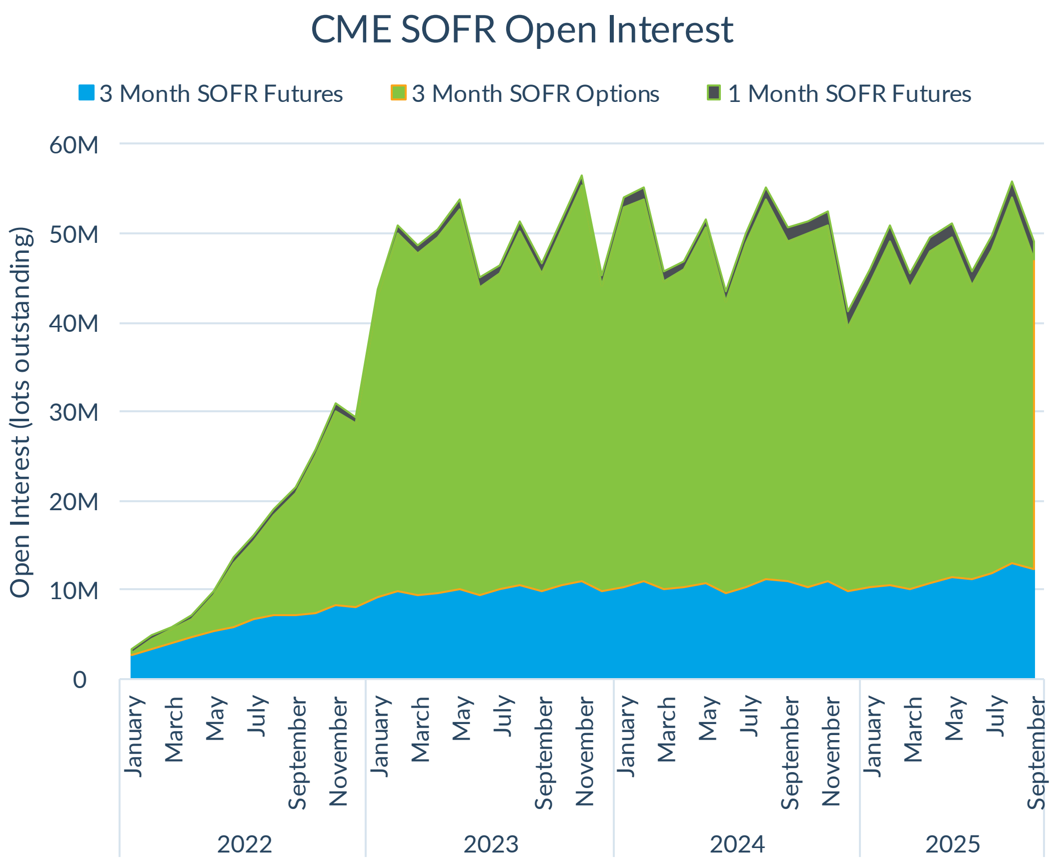
Interest Rates – Top STIR Contracts by Volume

Rank	Contract and Exchange	Notional Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Chang
1	3 Month SOFR Futures, Chicago Mercantile Exchange	USD 1,000,000	723,532,048	*10.9%*	12,319,064	*12.6%*
2	One-Day Interbank Deposit (DI1) Futures, B3	BRL 100,000	591,714,259	*-22.3%*	39,142,786	*3.3%*
3	3 Month Euribor Futures, ICE Futures Europe	EUR 1,000,000	311,858,029	*15.5%*	4,891,202	*17.3%*
4	3 Month SOFR Options, Chicago Mercantile Exchange	USD 1,000,000	272,329,990	*-12.8%*	34,697,032	*-9.2%*
5	Average One-Day Interbank Deposit Rate Index (IDI) Options, B3	BRL 100,000	208,468,784	*-32.2%*	41,380,359	*-42.0%*
6	3 Month SONIA Futures, ICE Futures Europe	GBP 1,000,000	127,369,873	*20.1%*	3,226,577	*46.6%*
7	Federal Funds Futures, Chicago Board of Trade	USD 5,000,000	87,430,134	*12.4%*	2,944,402	*28.2%*
8	3 Month Euribor Options, ICE Futures Europe	EUR 1,000,000	67,580,451	*20.4%*	10,891,109	*23.7%*
9	1 Month SOFR Futures, Chicago Mercantile Exchange	USD 1,000,000	45,531,401	*47.1%*	1,980,158	*41.6%*
10	90 Day Bank Bill Futures, ASX 24	AUD 1,000,000	35,565,240	*14.7%*	1,370,906	*18.0%*
11	Three-Month Euro STR (FST3) Futures, Eurex	EUR 1,000,000	33,378,771	*76.7%*	789,776	*237.9%*
12	3 Month SONIA Options, ICE Futures Europe	GBP 1,000,000	32,438,271	*45.6%*	6,296,650	*101.8%*
13	3 Month CORRA (CRA) Futures, Montreal Exchange	CAD 1,000,000	30,114,618	*35.4%*	1,430,216	*19.0%*
14	3 Month Euribor Futures, Eurex	EUR 1,000,000	24,928,709	*34.6%*	456,082	*323.2%*
15	DI x IPCA Spread (DAP) Futures, B3	BRL 100,000	15,422,676	*25.0%*	2,539,801	*59.5%*

SOFR Complex: Uncertainty Spurs Trading

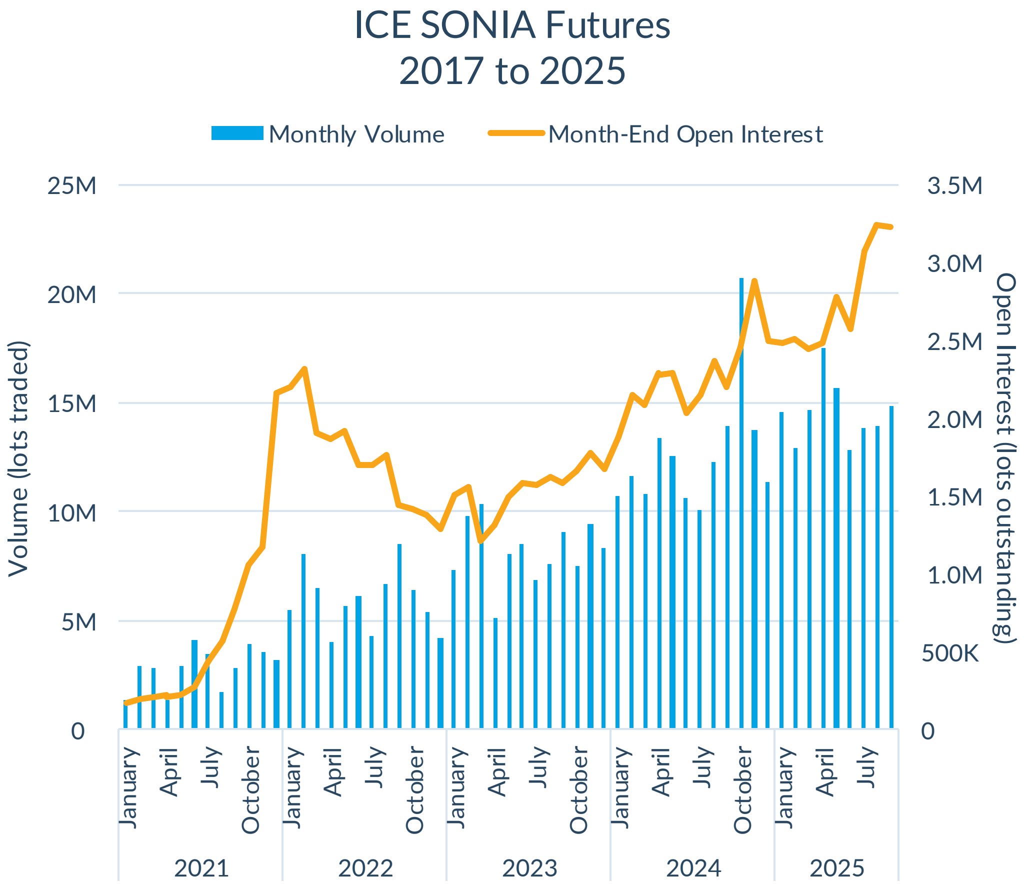
SOFR futures and options volume peaked at 162.5 million contracts in April on the back of trade policy turmoil.

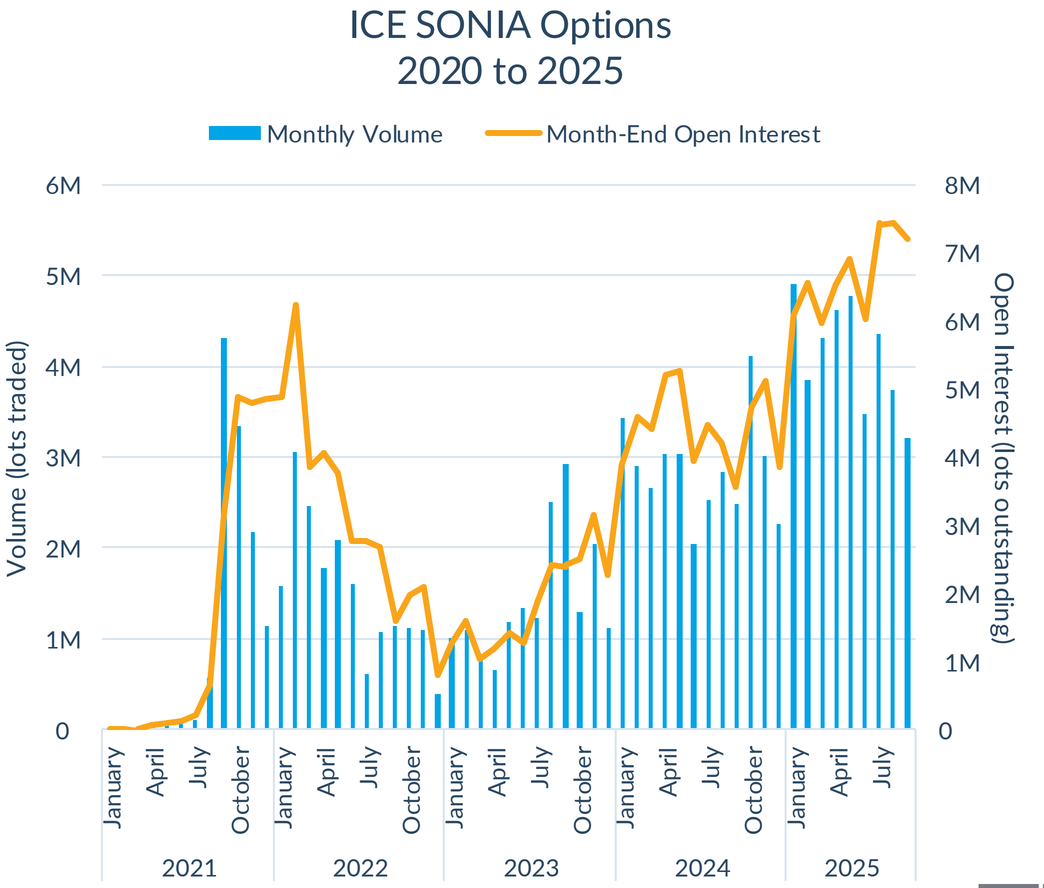




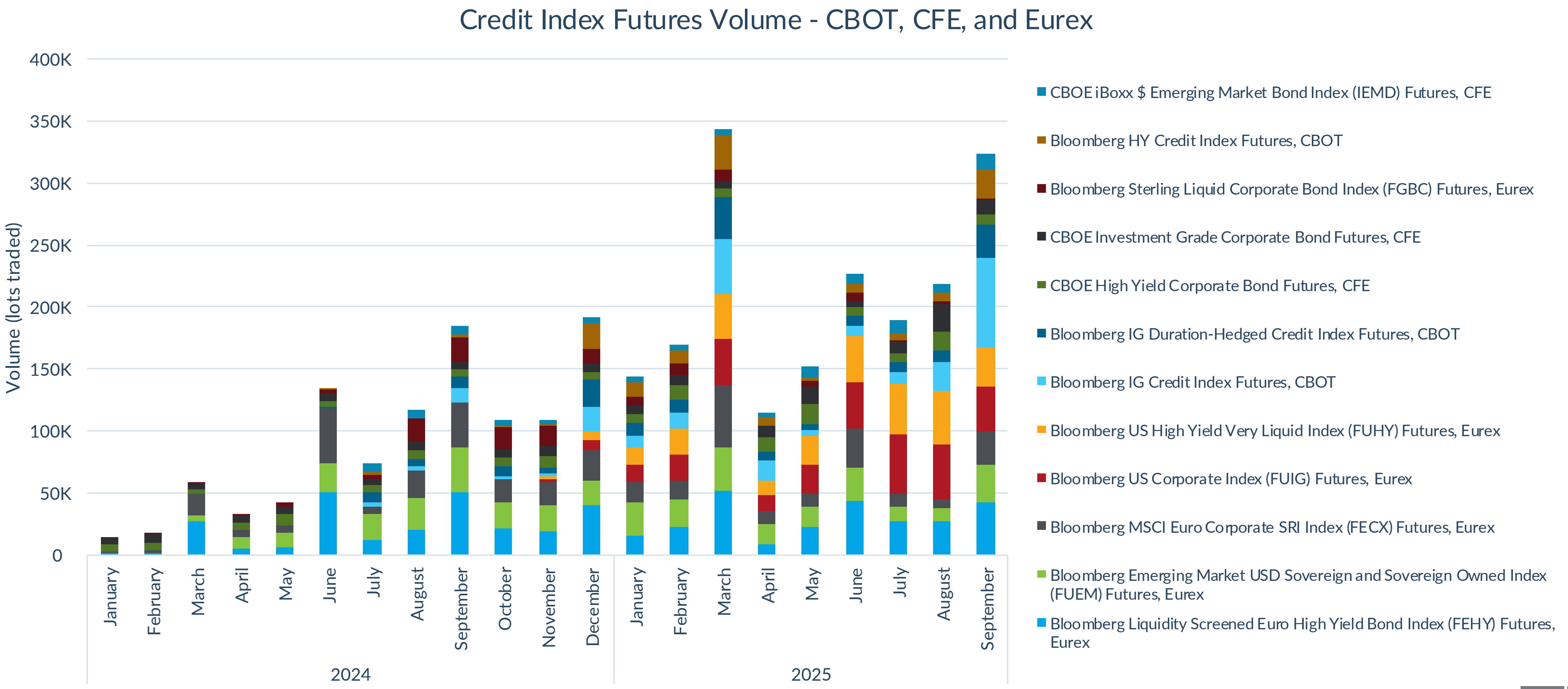
SONIA: Volume and OI Trending Higher

Open interest in both futures and options on SONIA set records in August 2025

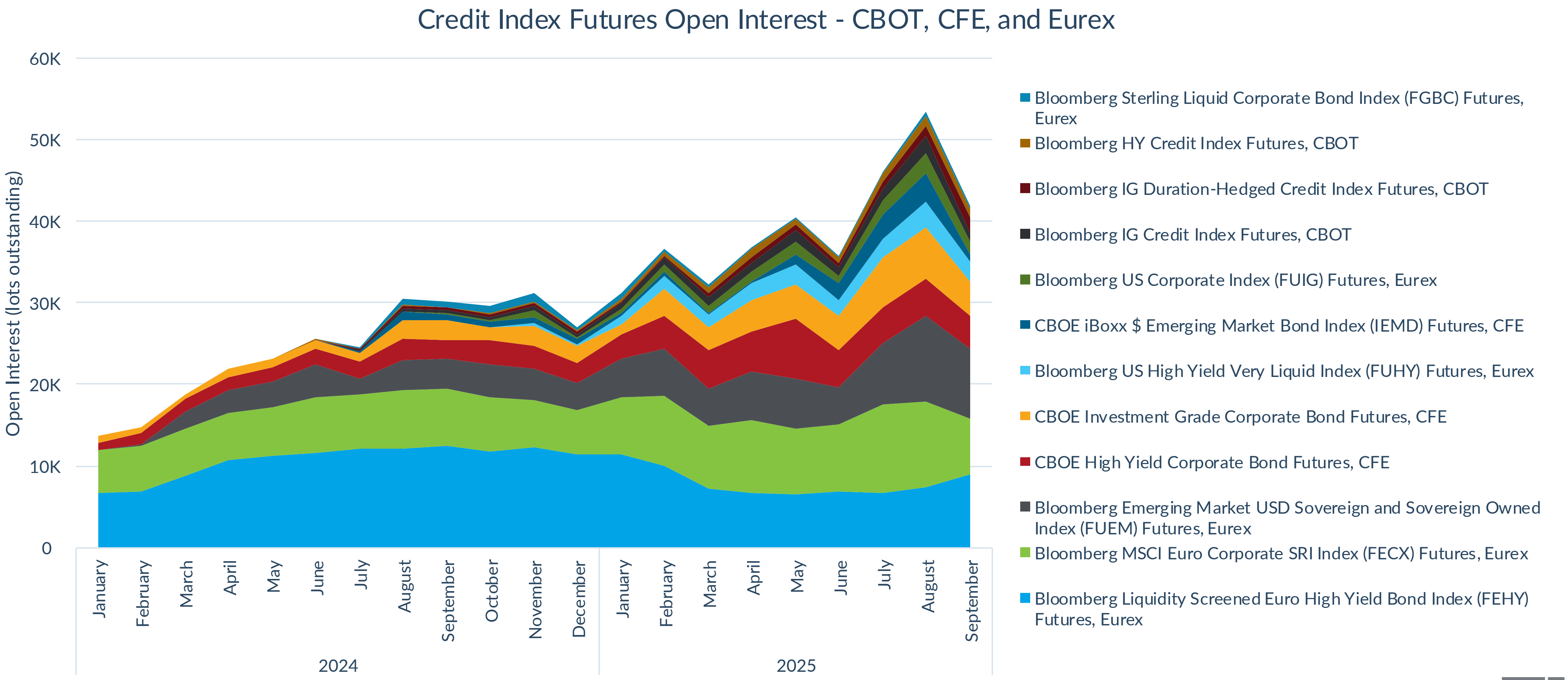




Credit Index Futures: Inflection Point for Volume

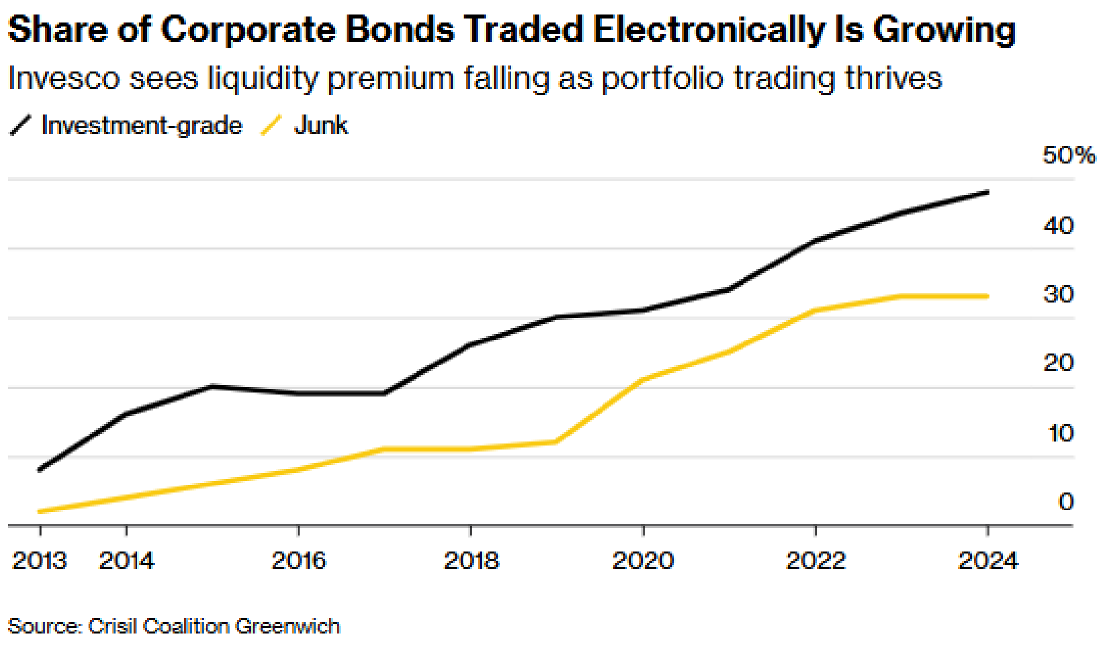


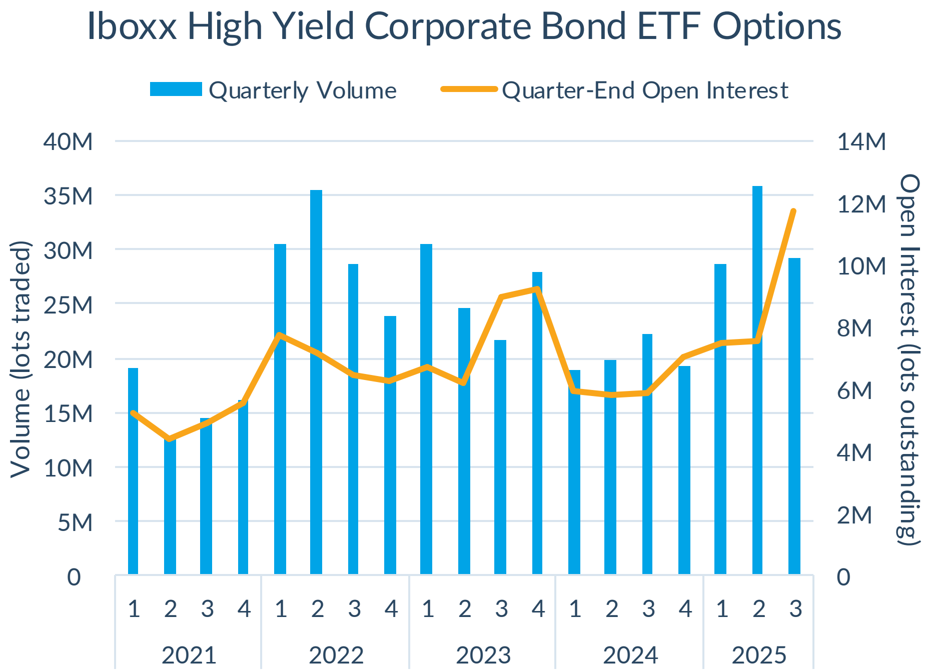
Credit Index Futures: Fragmented Liquidity



Credit Futures: Part of a Broader Trend towards Greater Adoption of Electronic Trading for Corporate Bonds

"It's cheaper and easier to trade large blocks of bonds now than ever before and so people are doing more of it. You can move risk in sizes that you were not able to move before." -- Matt Brill, head of North America investment-grade credit at Invesco. Source: [Corporate-Bond Trading Gets Frenzied as More Volume Goes Digital - Bloomberg]



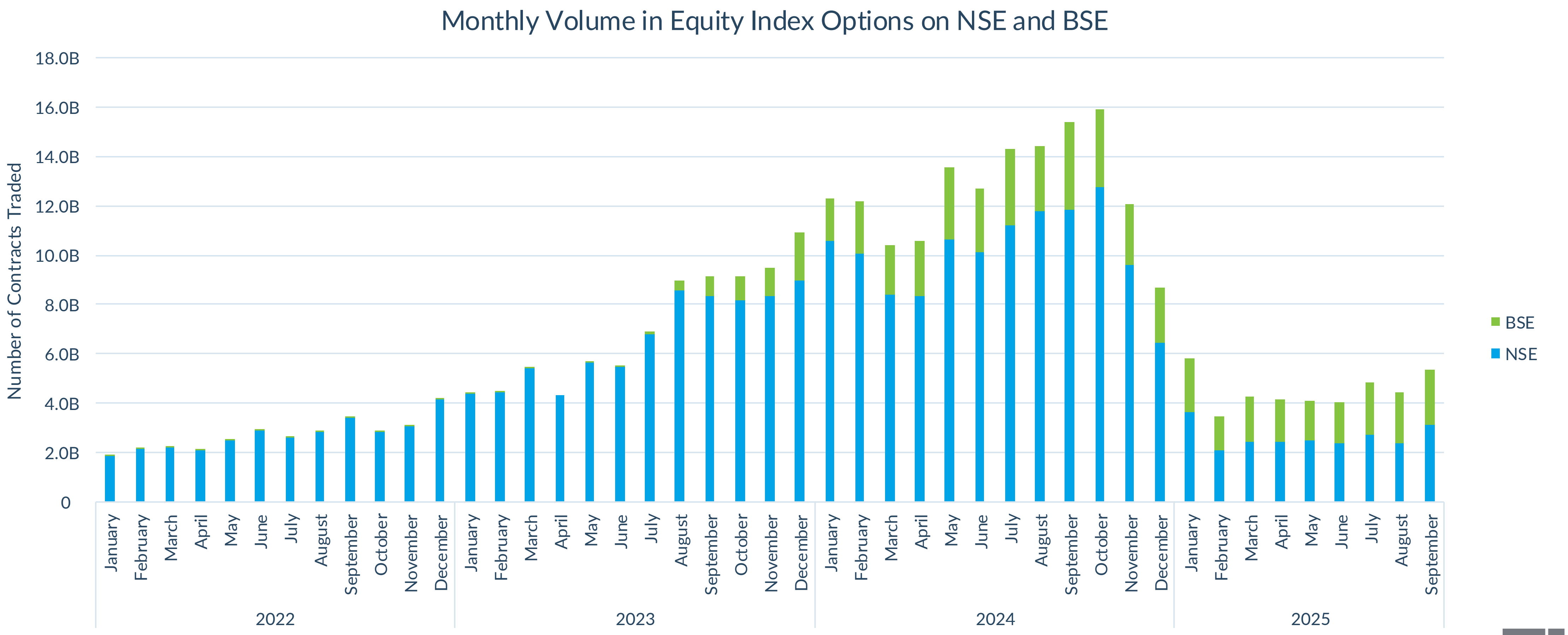


Equity Index: Top Contracts by Volume – APAC

Rank	Contract and Exchange	Jan-Sep 2025 Volume	Change vs Yr Ago	Sep 2025 Open Interest	Change vs. Yr Ago
1	CNX Nifty Index Options, National Stock Exchange of India	20,783,215,316	*-35.4%*	3,665,154	*-74.5%*
2	S&P Sensex 30 Index Options, BSE	16,608,856,655	*-2.4%*	2,059,032	*102951500.0%*
3	Bank Nifty Index Options, National Stock Exchange of India	2,422,590,004	*-93.8%*	554,419	*-93.6%*
4	CSI 500 ETF Options, Shanghai Stock Exchange	270,628,754	*13.1%*	1,081,096	*6.6%*
5	Nifty Midcap Select Index Options, National Stock Exchange of India	247,679,019	*-96.1%*	29,993	*-79.7%*
6	SSE 50 ETF Options, Shanghai Stock Exchange	216,315,041	*-12.6%*	1,336,646	*-14.1%*
7	CSI 300 ETF Options, Shanghai Stock Exchange	206,768,293	*-3.3%*	1,121,764	*-15.2%*
8	Kospi 200 Options, Korea Exchange	205,863,063	*-24.1%*	1,176,752	*-5.7%*
9	Star 50 ETF Options, Shanghai Stock Exchange	201,792,740	*107.5%*	1,798,135	*56.0%*
10	Nifty Financial Services Index Options, National Stock Exchange of India	137,500,692	*-99.1%*	1,217	*-99.9%*
11	Nikkei 225 Mini Futures, Osaka Exchange	136,055,171	*-27.1%*	289,547	*-4.9%*
12	Kospi 200 Weekly Options, Korea Exchange	130,243,394	*-7.9%*	0	*-100.0%*
13	Taiex (TXO) Options, Taiwan Futures Exchange	120,154,328	*-21.0%*	271,086	*-18.1%*
14	Kospi 200 Monday Weekly Options, Korea Exchange	115,285,653	*-14.3%*	6,949	*271.8%*
15	S&P Bankex Index Options, BSE	112,901,631	*-98.0%*	1,083	*n/a*

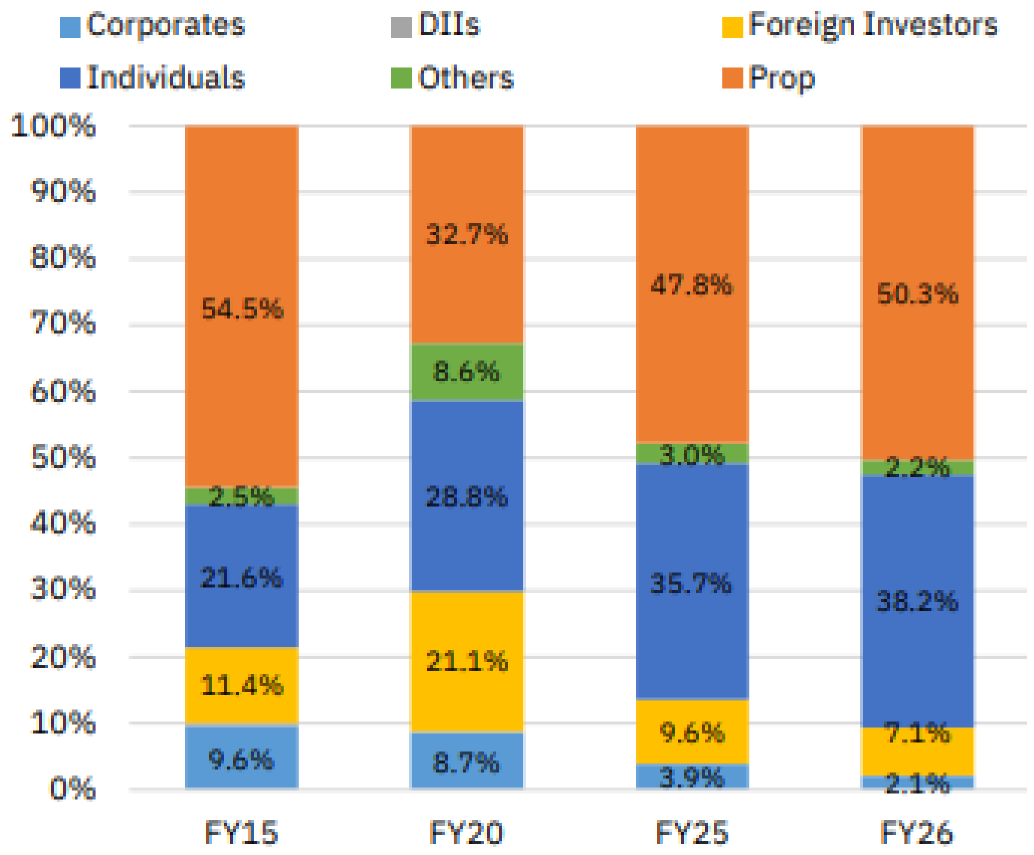
India Equity Index Options

Trading of equity index options on India's two financial derivatives exchanges dropped from a peak of 15.9 billion contracts in October to a low of 3.4 billion in February then recovered to 5.3 billion in September.



India: Retail Trading Continues to Dominate

Figure 272: Annual trends in share of client participation in Index Options (premium turnover) at NSE (%)



Although trading volume in equity index options has fallen dramatically as a result of the clampdown by SEBI, the composition of the market is still roughly the same.

According to NSE, more than 88% of the turnover in equity index options comes from two types of market participants: proprietary trading firms and retail traders.

Since April 1, the start of NSE's financial year, 38% of the volume in its equity index options has come from individuals and 50% from proprietary trading firms.

Source:

[Market Pulse_October 2025_0.pdf]

India: Trading Channels

According to NSE, the two most important channels for sending trades in equity options and futures to the exchange are co-location and mobile phones.

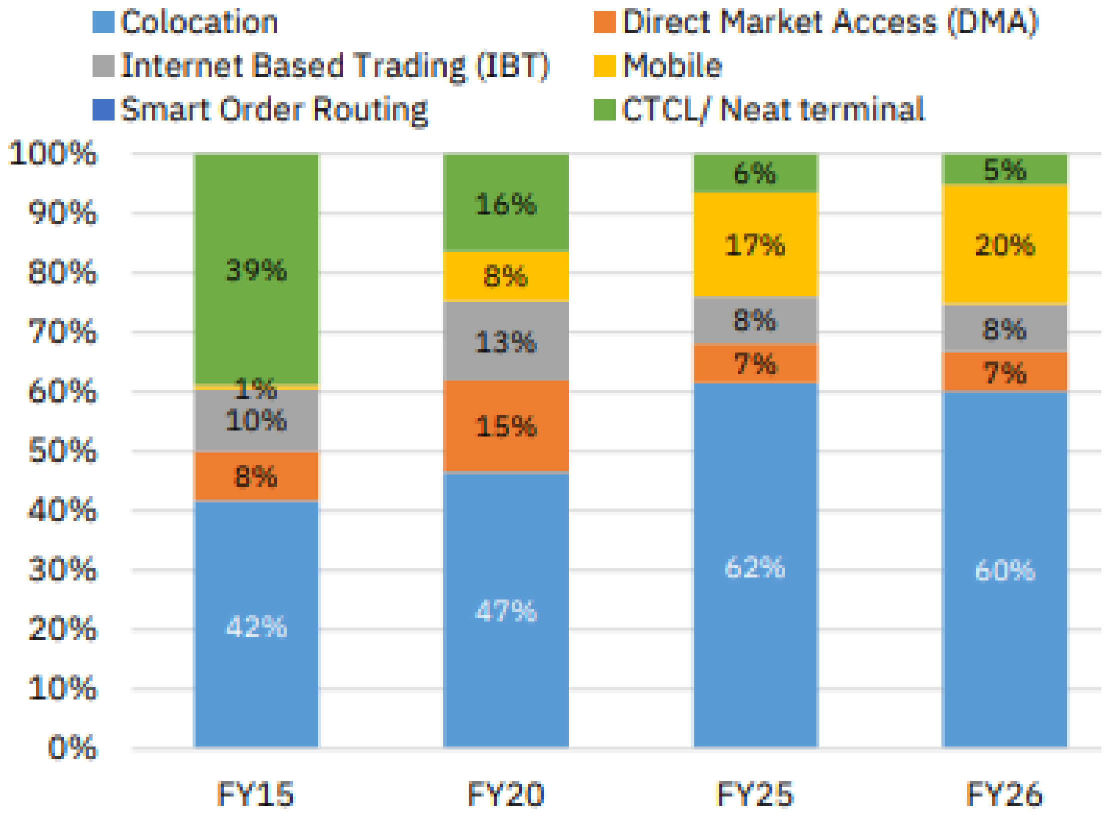
In September, the share of turnover generated through co-location was 53.1% in equity options (based on premium), and 50.5% in equity futures, reflecting the dominance of principal traders in equity derivatives.

Mobile trading advanced significantly, reaching 28.2% in equity options and 9.2% in equity futures, signaling growing engagement from individual investors.

Source:

[Market Pulse_October 2025_0.pdf]

Figure 294: Annual trend in turnover share for different channels in the equity derivatives segment



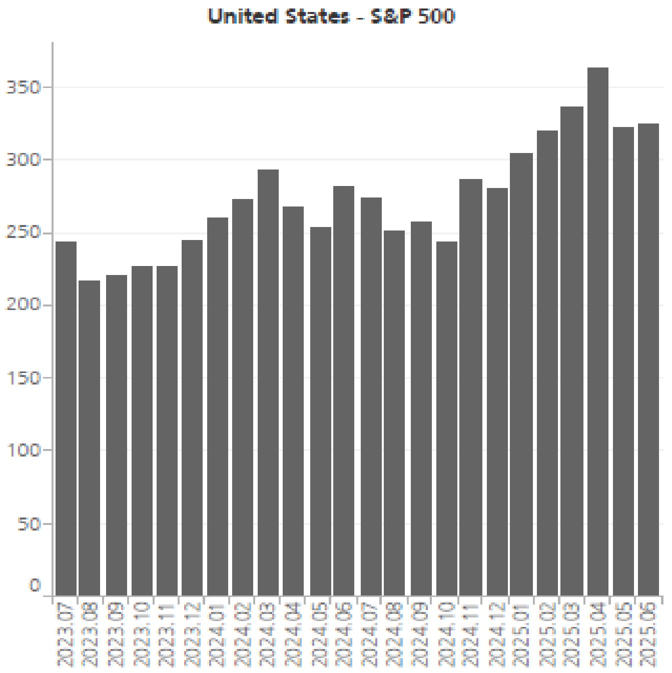
Equity Index: Top Contracts by Volume – Americas

Rank	Contract and Exchange	Jan-Sep 2025 Volume	Change vs Yr Ago	Sep 2025 Open Interest	Change vs. Yr Ago
1	Mini Ibovespa Index (WIN) Futures, B3	2,590,353,317	-13.9%	1,380,734	2.1%
2	SPDR S&P 500 ETF Options *	1,701,162,971	12.1%	25,405,252	10.0%
3	Powershares QQQ ETF Options *	805,087,032	14.3%	11,921,697	25.3%
4	Ibovespa Index (IBOV) Options, B3 [1]	754,132,961	5346.9%	90,830,084	3774.5%
5	S&P 500 Index (SPX) Options, Cboe Options Exchange	693,467,445	18.5%	23,932,900	6.6%
6	Micro E-mini Nasdaq 100 Index Futures, Chicago Mercantile Exchange	300,411,005	15.9%	76,012	45.5%
7	E-mini S&P 500 Futures, Chicago Mercantile Exchange	300,151,789	-4.8%	1,942,546	-7.0%
8	iShares Russell 2000 ETF Options *	272,160,871	3.3%	13,207,505	8.1%
9	Micro E-mini S&P 500 Index Futures, Chicago Mercantile Exchange	227,941,910	30.5%	128,250	24.6%
10	E-mini S&P 500 Options, Chicago Mercantile Exchange	151,663,372	-23.7%	2,245,483	-26.1%
11	E-mini Nasdaq 100 Futures, Chicago Mercantile Exchange	110,252,352	-10.7%	278,188	16.8%
12	E-mini Russell 2000 Index Futures, Chicago Mercantile Exchange	39,652,364	-4.1%	355,262	-20.9%
13	iShares MSCI Emerging Markets ETF Options *	39,320,705	-6.1%	7,986,817	-22.8%
14	Financial Select Sector SPDR ETF Options *	38,258,084	19.1%	5,951,587	-7.3%
15	iShares China Large-Cap ETF Options *	36,387,611	2.7%	5,160,264	-28.1%

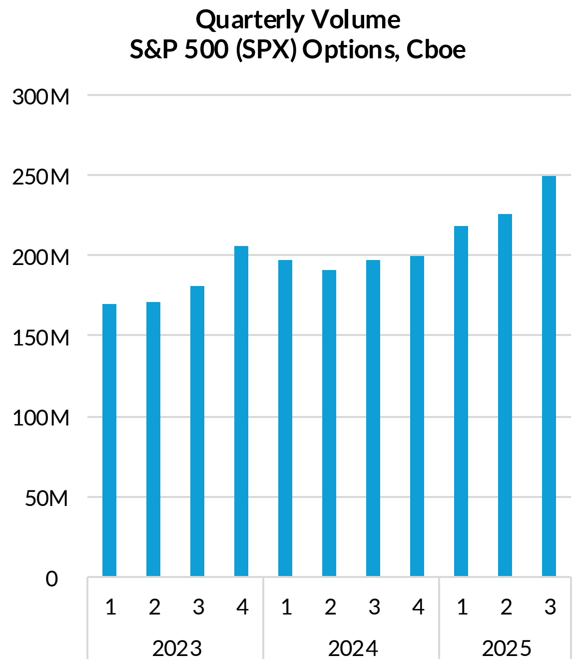
* Traded on multiple US options exchanges. [1] B3 reduced the size of this contract by a factor of 100 in February 2025

US Options Volumes Growth

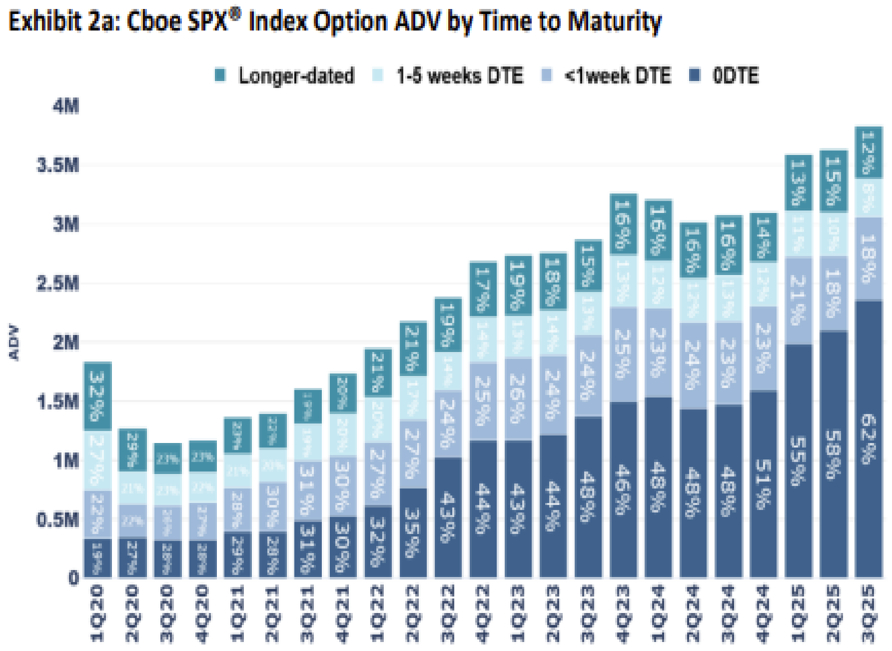
- Daily turnover of **S&P 500 Cash Index** (below left) continues to **grow in USD notional value**, with **USD 300bn** of shares changing hands in June 2025, up over 20% versus two years prior. Part of this is driven by **more electronic trading** of stocks in a resurging ECM environment, but also by the inflation in stock prices since 2023.
- Similarly, trading volumes in **S&P 500 (SPX) Options** on CBOE have grown significantly, with quarterly volumes **hitting new highs** each quarter this year.
- A major catalyst has been the growth of **Zero-days-to-Expiration options**, which now represent **more than half of all SPX options traded.** However, this remains a largely **retail product**, with retail participants comprising up to 60% of trading in 0DTE options.



Source: UBS



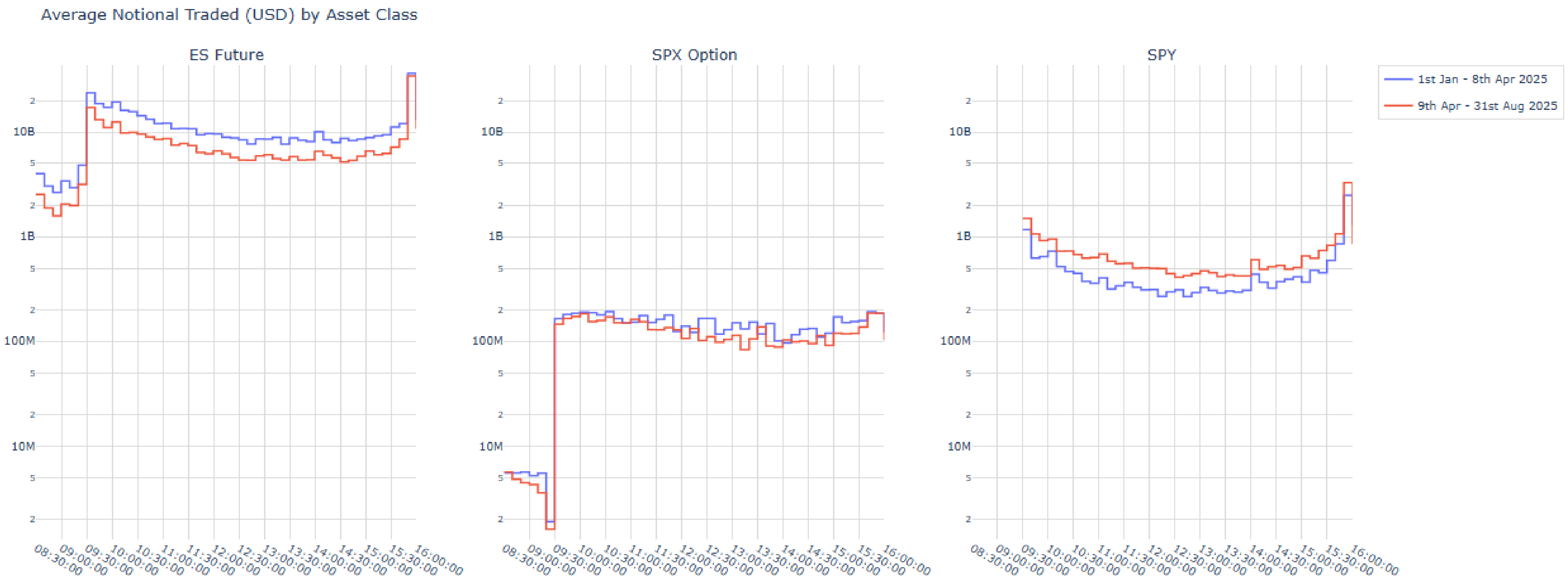
Source: FIA



Source: Cboe

US Options Volumes Compared to Futures & ETFs

- Whereas the **average USD notional traded** in **Emini S&P Futures** fell post-Liberation Day due to lower volatility and reduced long positioning from asset managers, the average USD notional traded in **SPY ETFs** grew in Q2 and beyond, due to the continued growth of retail activity and index-tracking ETFs.
- Looking at **SPX Options**, average USD notional traded has remained about the same throughout 2025. While slight deviations in intraday trading activity have emerged post-April, volumes have been stable.
- Interesting to note that of all the products, SPX Options see the largest proportionate jump in USD notional traded on the **US equity market open** compared to Futures and ETFs.



UBS

Source: UBS & Reuters

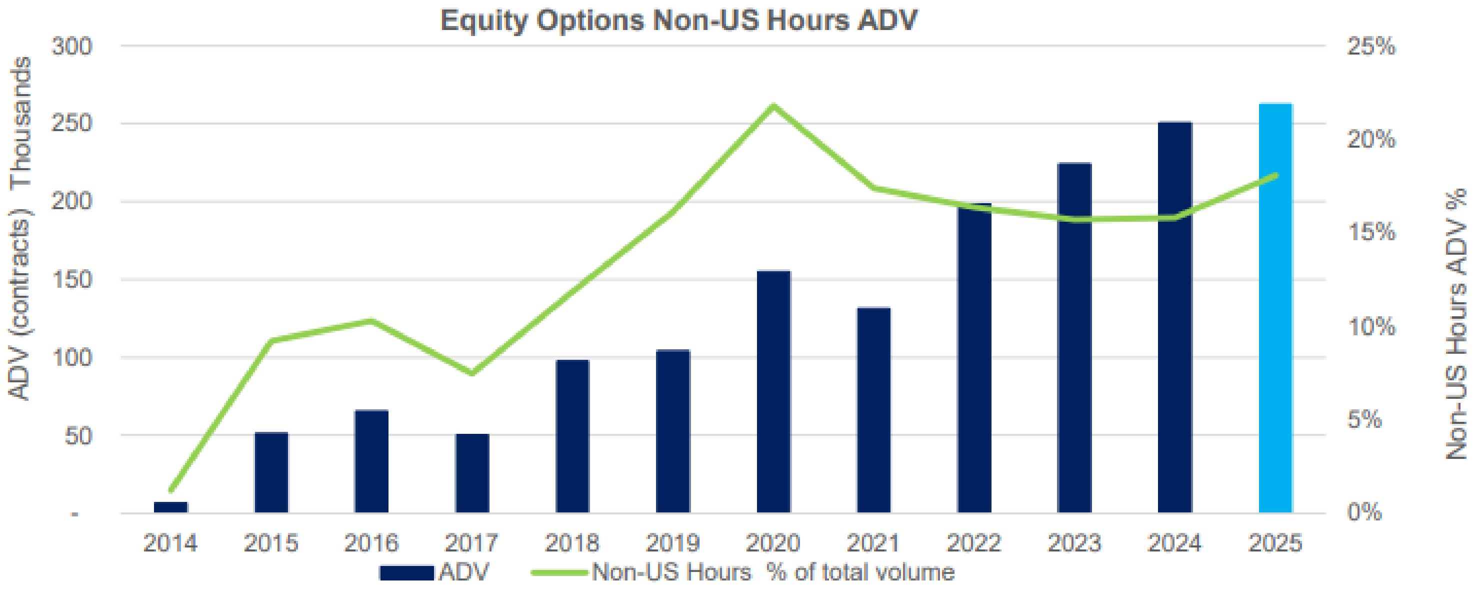
US Futures Options – Overnight Trading

- **US Equity Index Futures** volumes in the overnight session have been steadily increasing over the past few years, and the below extract from the **UBS Weekly Liquidity Heatmap** underscores healthy top-of-book liquidity of **Emini S&P Futures**, particularly right around CME market re-open and during APAC hours.

	Ads per hour [Exchange Local Timezone]																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
ES	17	14	14	14	14	15	16	18	32	37	40	39	31	38	41	32	8	8	8	30	30	30	30	30

- However, a lesser known and more recent growth story is **US Equity Index Options on Futures** liquidity in the **night session**, where Equity Options are now **~17%** of non-US hours volume and overall ADV has grown **+30%** over the past 3 years.

- As of Q2'25, a **record 262k contracts** are traded daily outside of US trading hours, with most of the activity taking place in **Emini S&P Options**, where ADV in non-US hours reached a record 231k contracts. The second most liquid Index futures option in the overnight session is **Emini Nasdaq Options**, where ADV in non-US hours was 18k in Q2'25.

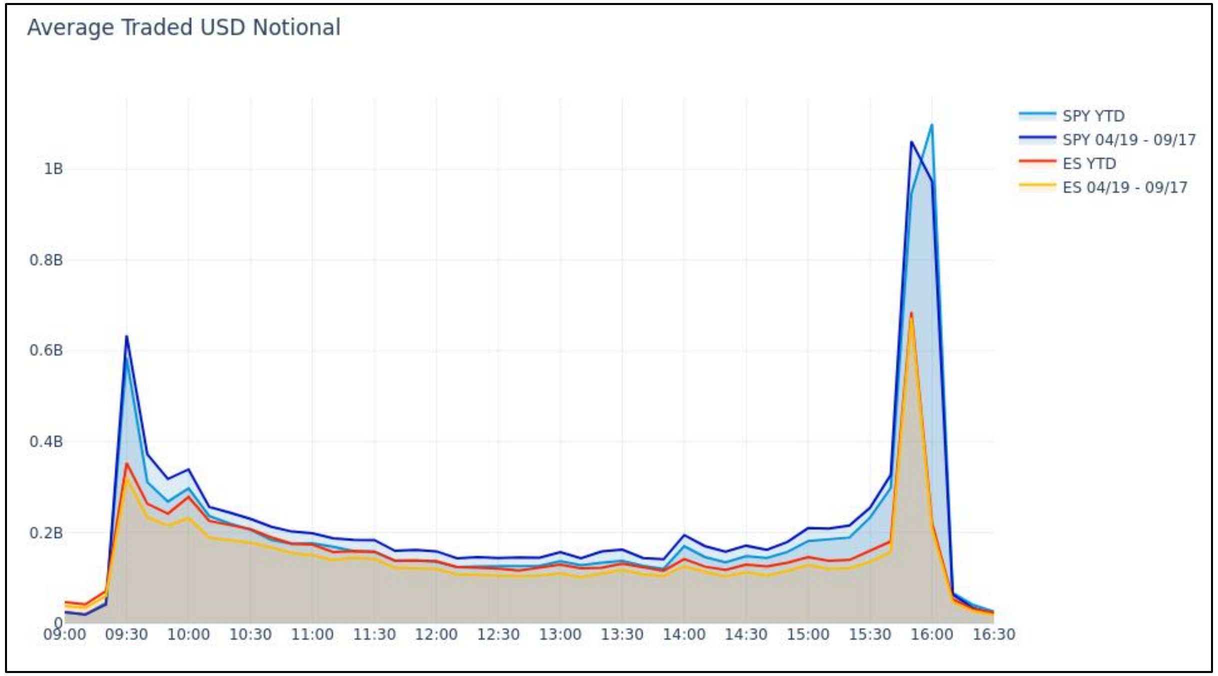


**Non-US Trading hours are 6pm - 9am ET*

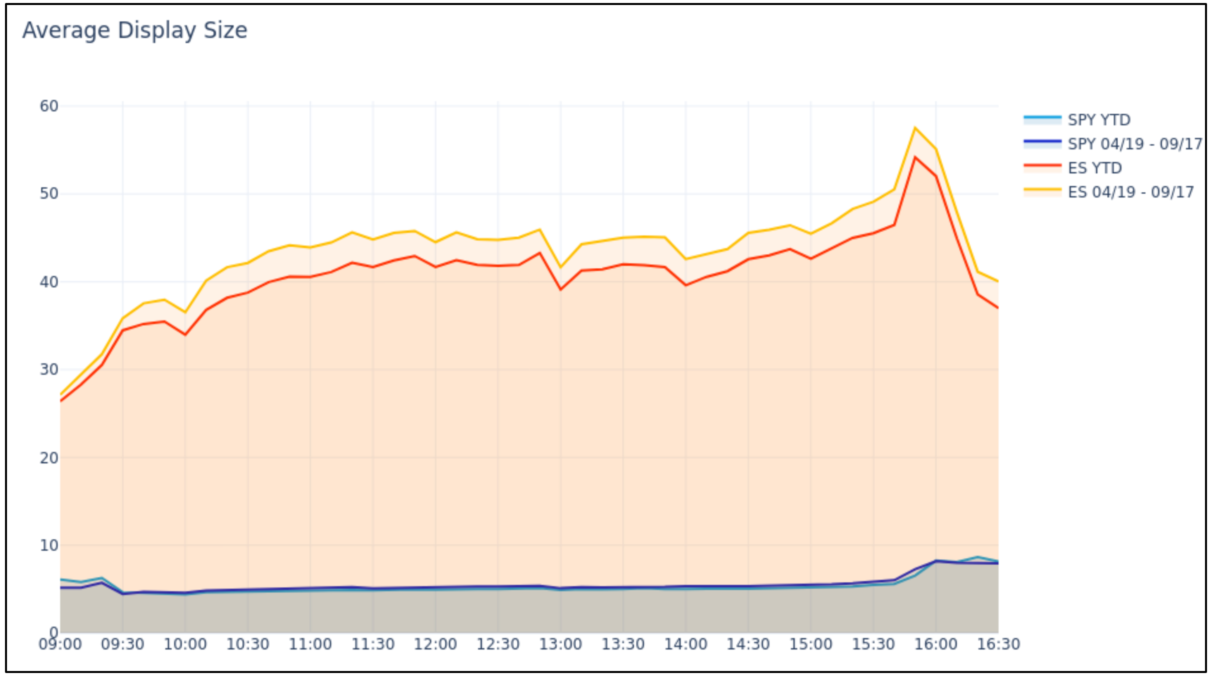
Source: UBS, CME Group

US ETFs vs Futures – Volumes & Liquidity

- The variance of the **proportion of open vs close volume** when comparing ETFs and Futures microstructure is also quite significant, with **~30% more USD notional traded in ETFs** compared to Futures when looking at equivalent S&P 500 products.
- However, in looking at Emini S&P 500 Futures, although Market on Close (MOC) liquidity doesn't as sharply spike as the SPY ETF, we do observe a more notable uptick in ES average display size. On average, market participants are increasing their order sizes by **~15%** in the last 30 minutes before US equity cash close
- In another deviation from the ETF markets, the **average display size significantly drops off** after the cash close heading into the 5pm ET CME trading session close.



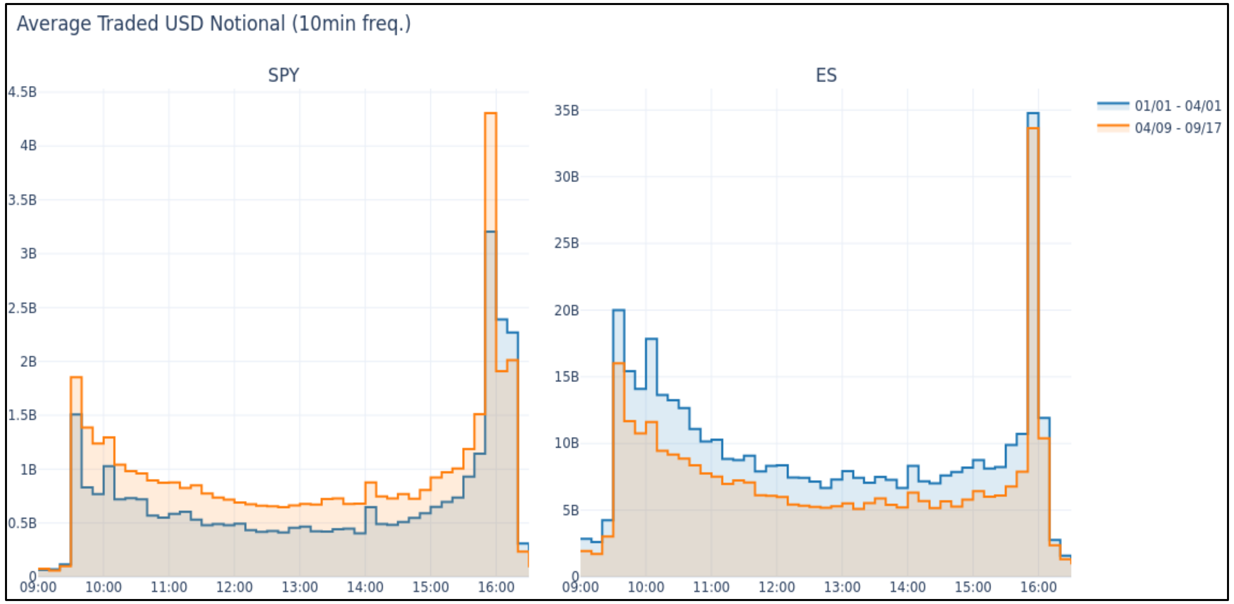
Source: UBS



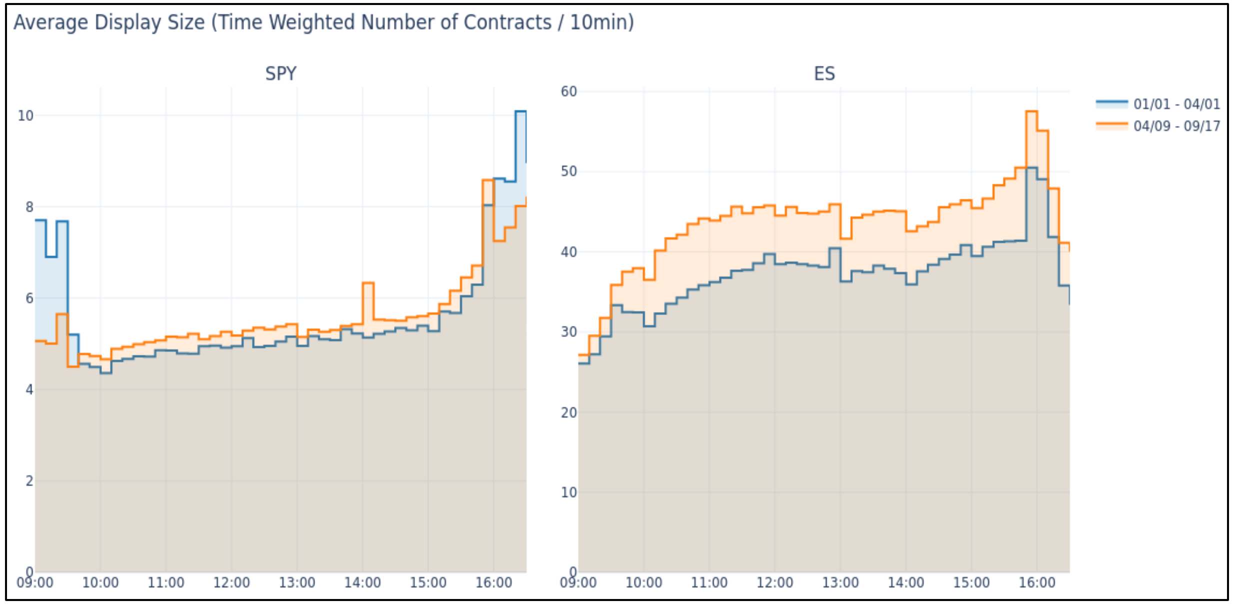
Source: UBS

US ETFs vs Futures – Volumes & Liquidity

- Looking closer at **average USD notional traded** in 10-minute frequency, we observe an uptick in SPY notional traded post-April with a larger concentration to the close (~$4.7B vs ~$3.2B). Conversely, ES futures saw higher notional traded in the first months until April compared to post-Liberation day, especially in the opening and continuous phases of US equity cash hours. Close volumes remained comparable across the two time periods.
- Digging deeper into **average display size** in 10-minute bins and focusing on US equity cash hours, display sizes increased on average for both SPY and ES since April, butsignificantly more so for Futures. Additionally, while post-April ADS for MOC orders in ES increased **~16%**, the ADS for MOC orders in SPY remained the same.



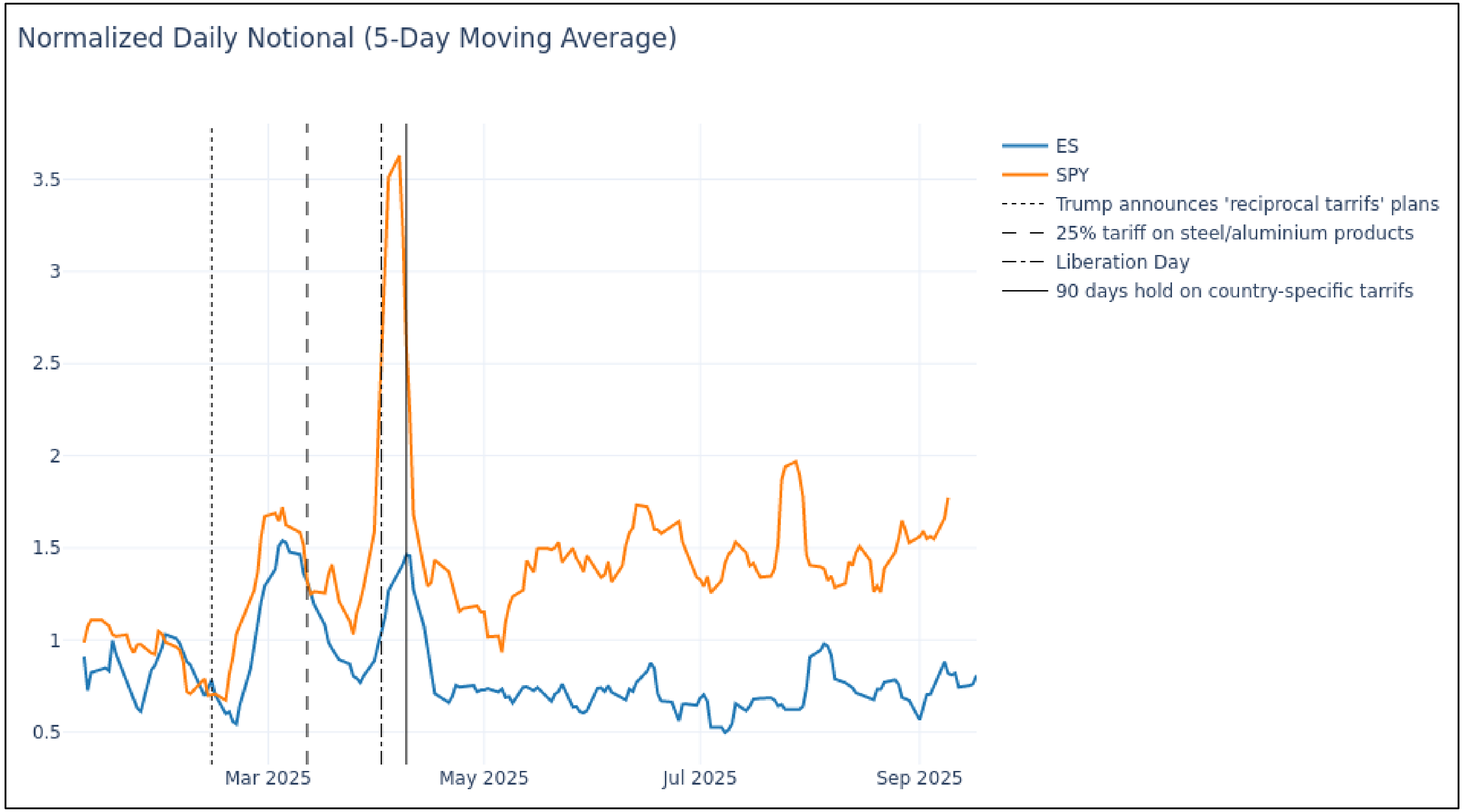
Source: UBS



Source: UBS

US ETFs vs Futures – Volumes & Liquidity

- Similar to the divergent volume trends observed in US Equities vs. Futures, we also observe growth in **normalized daily notional traded** in ETFs since the start of the year, while normalized daily notional traded in Futures has slightly decreased.
- This trend is observed across the spectrum of CME US equity index futures, where ADV (ex-micro contracts) is **-6%** YoY and Open Interest (ex-micro contracts) is **-1%** YoY.



Source: UBS

UBS

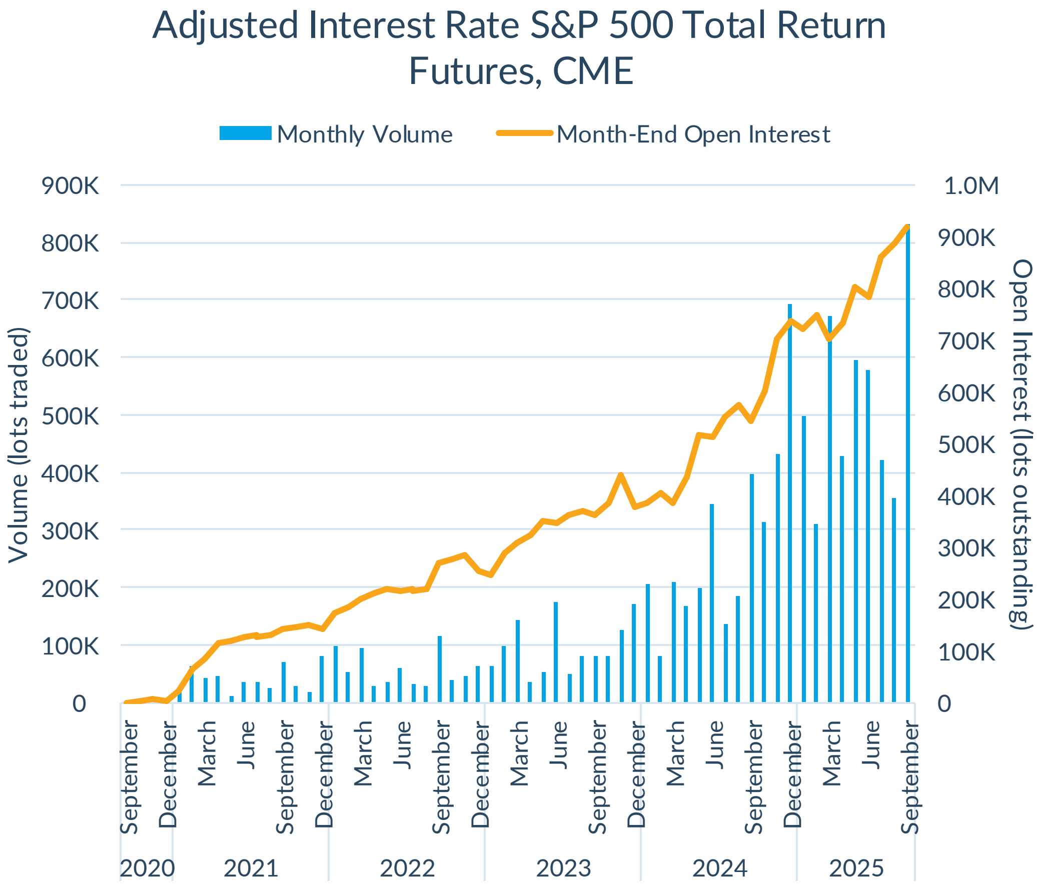
Equity Index: Top Contracts by Volume – EMEA

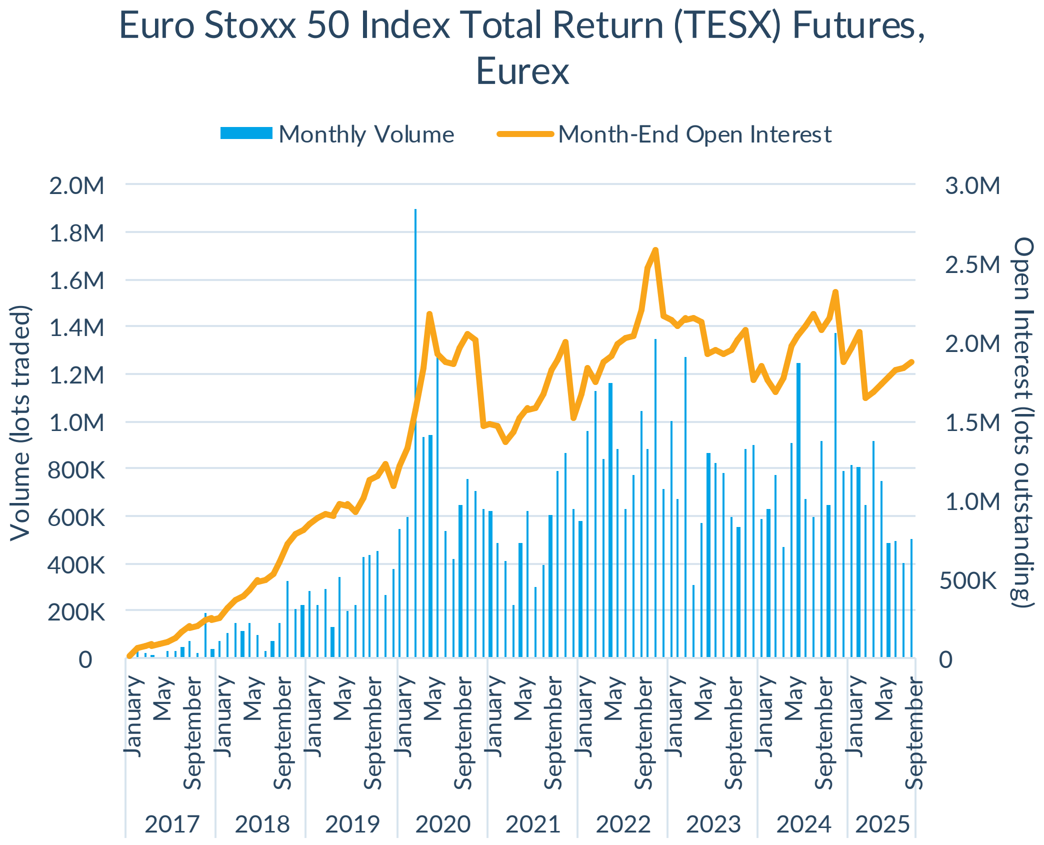
Rank	Contract and Exchange	Jan-Sep 2025 Volume	Change vs Yr Ago	Sep 2025 Open Interest	Change vs. Yr Ago
1	Euro Stoxx 50 Index (OESX) Options, Eurex	179,003,094	-5.6%	27,814,847	-11.0%
2	Euro Stoxx 50 Index (FESX) Futures, Eurex	134,979,760	-16.0%	1,759,778	-15.3%
3	BIST 30 Index Futures, Borsa Istanbul	52,088,328	32.2%	496,157	2.7%
4	Euro Stoxx Banks Futures, Eurex	39,865,809	-6.6%	962,991	0.9%
5	Euro Stoxx Banks Options, Eurex	36,994,677	3.1%	9,465,171	7.7%
6	TA-35 Index Options, Tel-Aviv Stock Exchange	25,951,639	20.4%	247,244	23.4%
7	Stoxx Europe 600 Futures, Eurex	22,220,082	19.8%	558,756	36.5%
8	OMX Futures, Nasdaq Nordic	20,880,885	-11.9%	299,385	-24.7%
9	FTSE 100 Index Futures, ICE Futures Europe	17,609,208	-16.6%	391,550	-13.8%
10	DAX (ODAX) Options, Eurex	11,735,144	-0.4%	770,827	-23.7%
11	CAC 40 (€10) Futures, Euronext Derivatives Market	11,612,734	-17.3%	160,405	-16.2%
12	DAX (FDAX) Futures, Eurex	7,028,960	-23.6%	40,859	-10.8%
13	Euro Stoxx 50 End-of-Day Index (OEXP) Options, Eurex	6,439,473	32.3%	78,776	89.6%
14	Swiss Market Index (SMI) Futures, Eurex	6,008,692	-7.0%	140,314	-13.8%
15	Euro Stoxx 50 Index Total Return (TESX) Futures, Eurex	5,822,331	-14.2%	1,875,794	-9.7%

[1] formerly the TA-25 Index.   Note: table does not include contracts listed on the Moscow Exchange

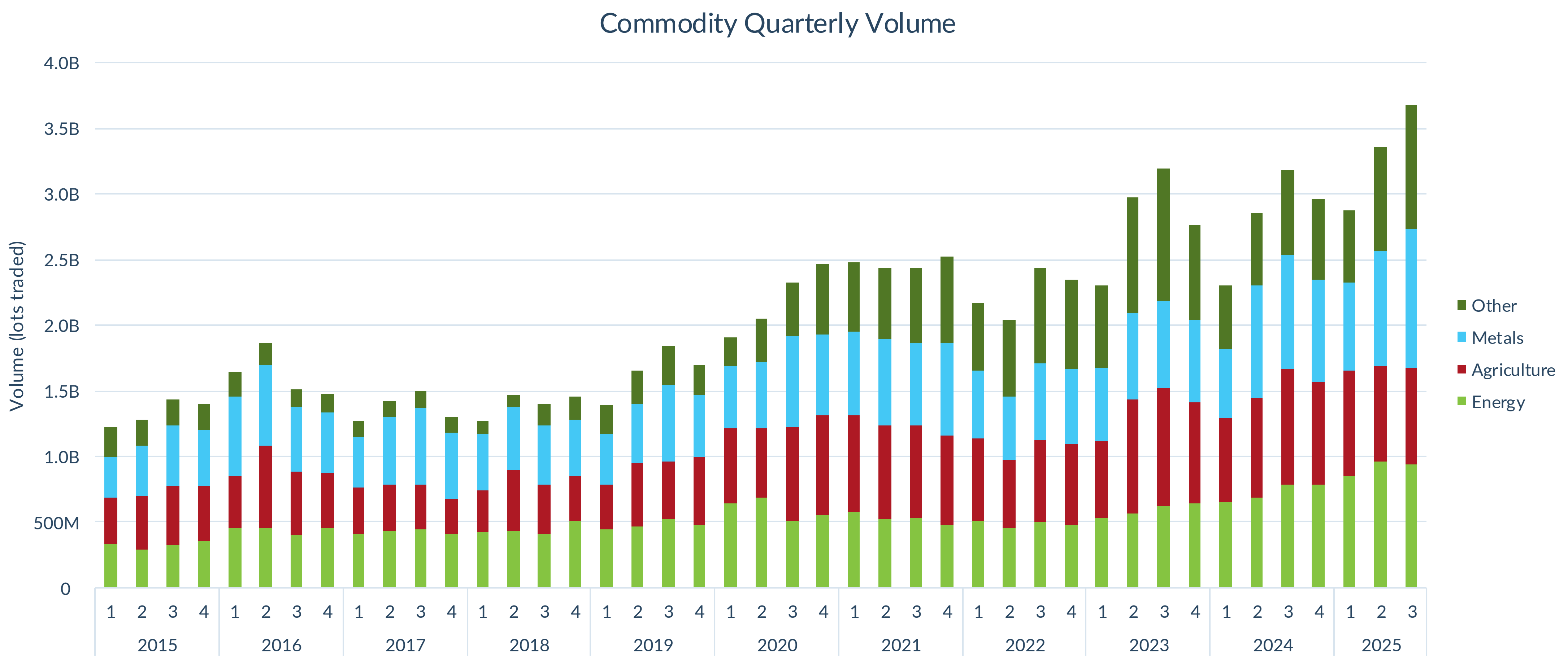
Total Return Futures: Inflows from OTC Equity Markets

The total return version of the Euro Stoxx 50 futures now has more open interest than the conventional Euro Stoxx 50 futures, and the total return version of the S&P 500 futures doubled its trading volume in 2024.



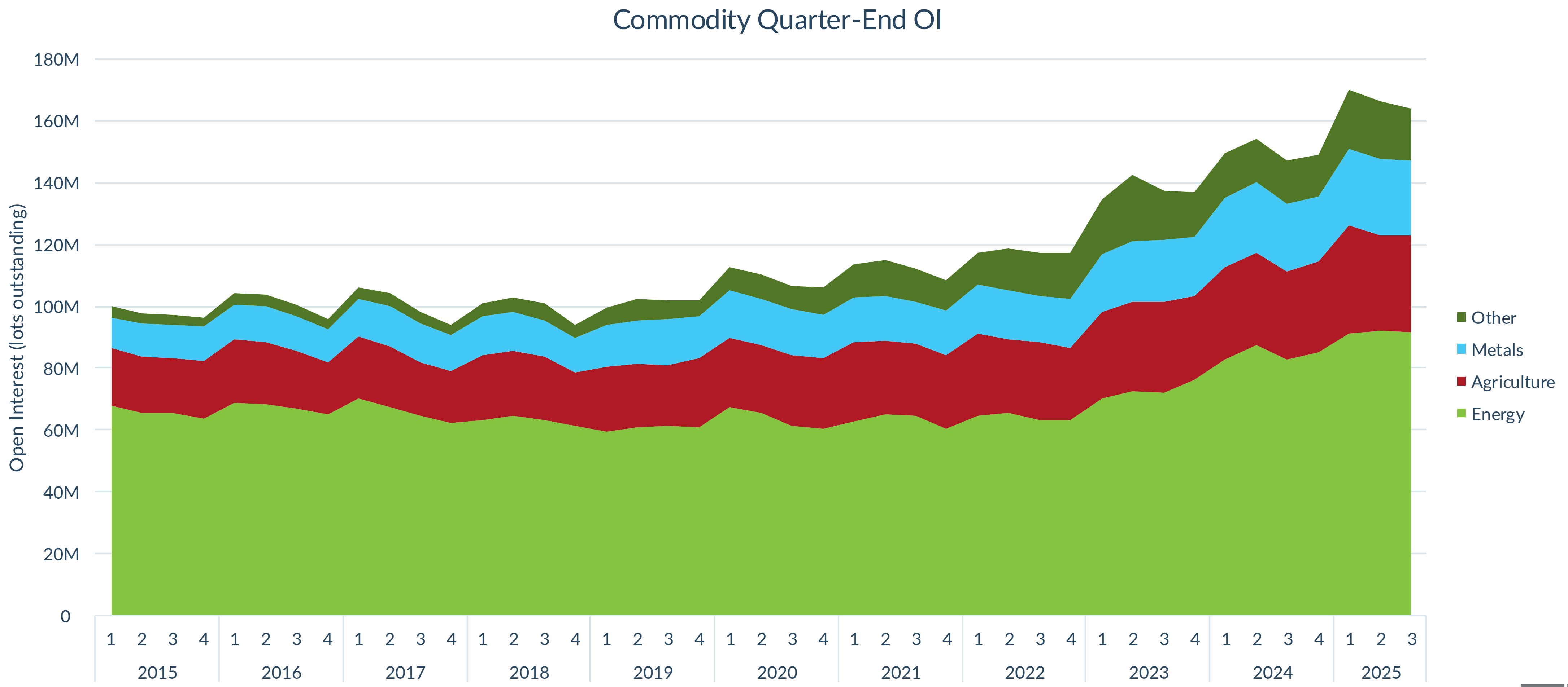


Commodities: On Track for Record Year



Note: Other includes futures and options based on chemicals, plastics, cryptocurrencies, emissions, freight, volatility, weather

Commodities: Open Interest Trending Higher



Note: Other includes futures and options based on chemicals, plastics, cryptocurrencies, emissions, freight, volatility, weather

Energy Futures: Top Contracts by Volume

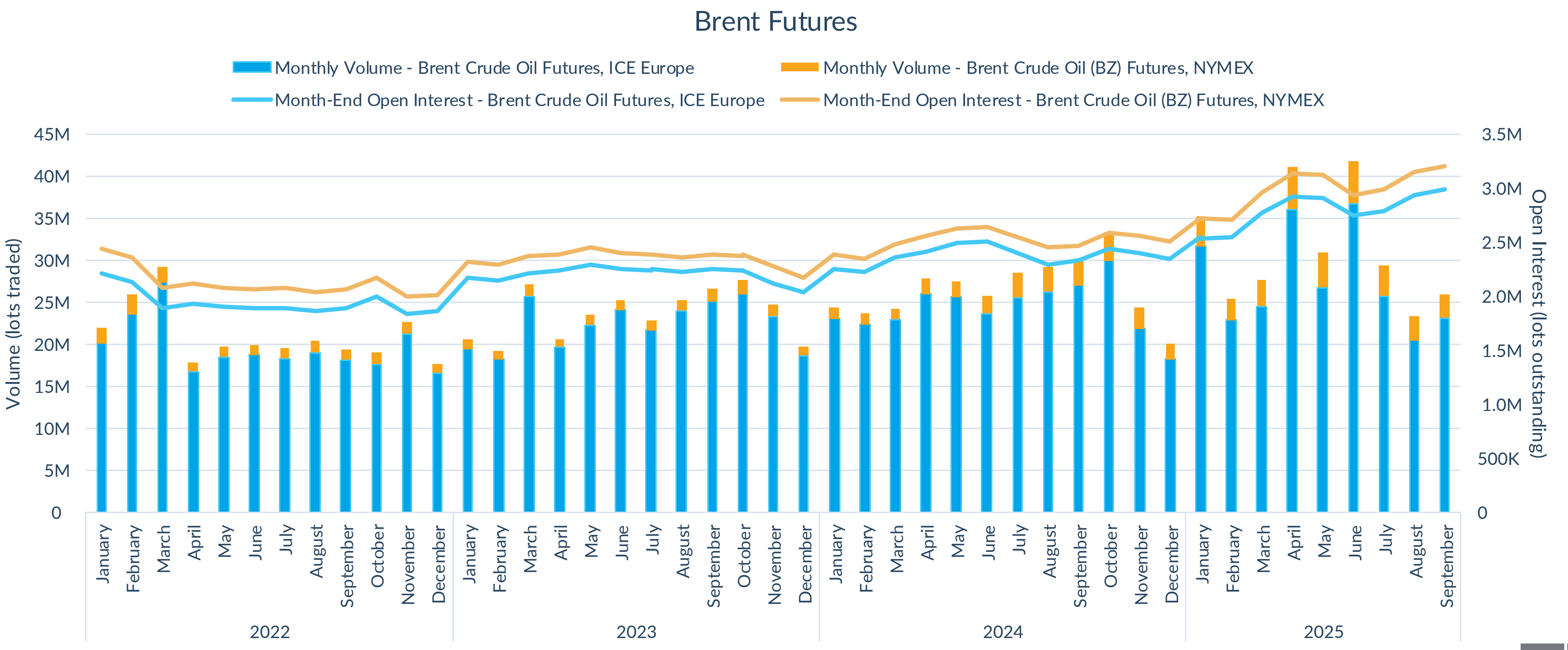
Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Brent Crude Oil Futures, ICE Futures Europe	1000 Barrels	247,709,769	*11.5%*	2,983,614	*28.1%*
2	Hard Coking Coal Futures, Dalian Commodity Exchange	60 Metric Tons	189,014,487	*658.8%*	745,944	*323.0%*
3	WTI Light Sweet Crude Oil (CL) Futures, New York Mercantile Exchange	1000 Barrels	176,469,713	*4.7%*	2,006,358	*12.8%*
4	Fuel Oil Futures, Shanghai Futures Exchange	10 Metric Tons	147,932,792	*10.4%*	389,942	*-14.5%*
5	Henry Hub Natural Gas (NG) Futures, New York Mercantile Exchange	10,000 MMBtu	99,484,862	*6.1%*	1,659,086	*11.1%*
6	Gas Oil Futures, ICE Futures Europe	100 Metric Tons	73,900,498	*7.6%*	1,032,556	*11.4%*
7	WTI Light Sweet Crude Oil Futures, ICE Futures Europe	1000 Barrels	72,519,840	*14.3%*	913,578	*22.6%*
8	Dutch TTF Gas Futures, ICE Endex	1 MW/Day	68,126,444	*23.8%*	2,362,988	*23.3%*
9	Bitumen Futures, Shanghai Futures Exchange	10 Metric Tons	63,213,974	*63.2%*	316,935	*34.7%*
10	NY Harbor ULSD (HO) Futures, New York Mercantile Exchange	42,000 Gallons	37,539,264	*10.3%*	404,481	*-4.0%*
11	RBOB Gasoline Physical (RB) Futures, New York Mercantile Exchange	42,000 Gallons	36,454,280	*1.9%*	349,083	*8.6%*
12	Brent Crude Oil Last Day Financial (BZ) Futures, New York Mercantile Ex	1000 Barrels	32,720,397	*76.9%*	222,255	*65.1%*
13	Medium Sour Crude Oil Futures, Shanghai International Energy Exchange	1000 Barrels	31,639,056	*6.3%*	69,454	*47.7%*
14	Low Sulfur Fuel Oil Futures, Shanghai International Energy Exchange	10 Metric Tons	27,720,730	*2.6%*	124,388	*-9.3%*
15	Natural Gas Futures, Multi Commodity Exchange of India	1,250 MMBtu	24,227,474	*0.5%*	30,591	*7.8%*

Energy Options: Top Contracts by Volume

Rank	Contract and Exchange	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Crude Oil Options, Multi Commodity Exchange of India	418,923,881	*22.9%*	152,105	*-19.4%*
2	Natural Gas Options, Multi Commodity Exchange of India	176,831,495	*44.4%*	85,643	*19.1%*
3	Crude Oil Mini Options, Multi Commodity Exchange of India [1]	61,719,110	*472.8%*	53,162	*69.1%*
4	Natural Gas (European) (LN) Options, New York Mercantile Exchange	48,014,107	*23.9%*	3,460,343	*0.3%*
5	Brent Crude Oil Options, ICE Futures Europe	46,693,478	*21.7%*	3,245,866	*4.1%*
6	Crude Oil (LO) Options, New York Mercantile Exchange	30,189,589	*12.3%*	2,080,748	*-11.5%*
7	Natural Gas Mini Options, Multi Commodity Exchange of India [1]	26,991,970	*811.6%*	20,143	*213.6%*
8	WTI Crude Oil Options, National Stock Exchange of India	22,177,165	*117.9%*	3,028	*55.7%*
9	Dutch TTF Gas Options, ICE Endex	16,692,051	*38.2%*	1,861,268	*-15.0%*
10	U.S. Oil Fund ETF Options *	9,044,074	*29.5%*	426,179	*-7.0%*
11	U.S. Natural Gas ETF Options *	4,728,739	*-26.6%*	370,369	*8.9%*
12	WTI Light Sweet Crude Oil Options, ICE Futures Europe	3,484,263	*9.5%*	537,751	*-18.7%*
13	Light Sweet Crude Oil (WTI) Financial 1 Month Spread (7A) Options, Nymex	3,167,102	*85.2%*	1,190,534	*322.8%*
14	Natural Gas (Henry Hub) Last-day Financial 1 Month Spread (G4) Options, Nymex	1,645,253	*22.4%*	301,508	*140.1%*
15	Natural Gas (American) (ON) Options, New York Mercantile Exchange	1,284,326	*-4.8%*	45,269	*-24.7%*

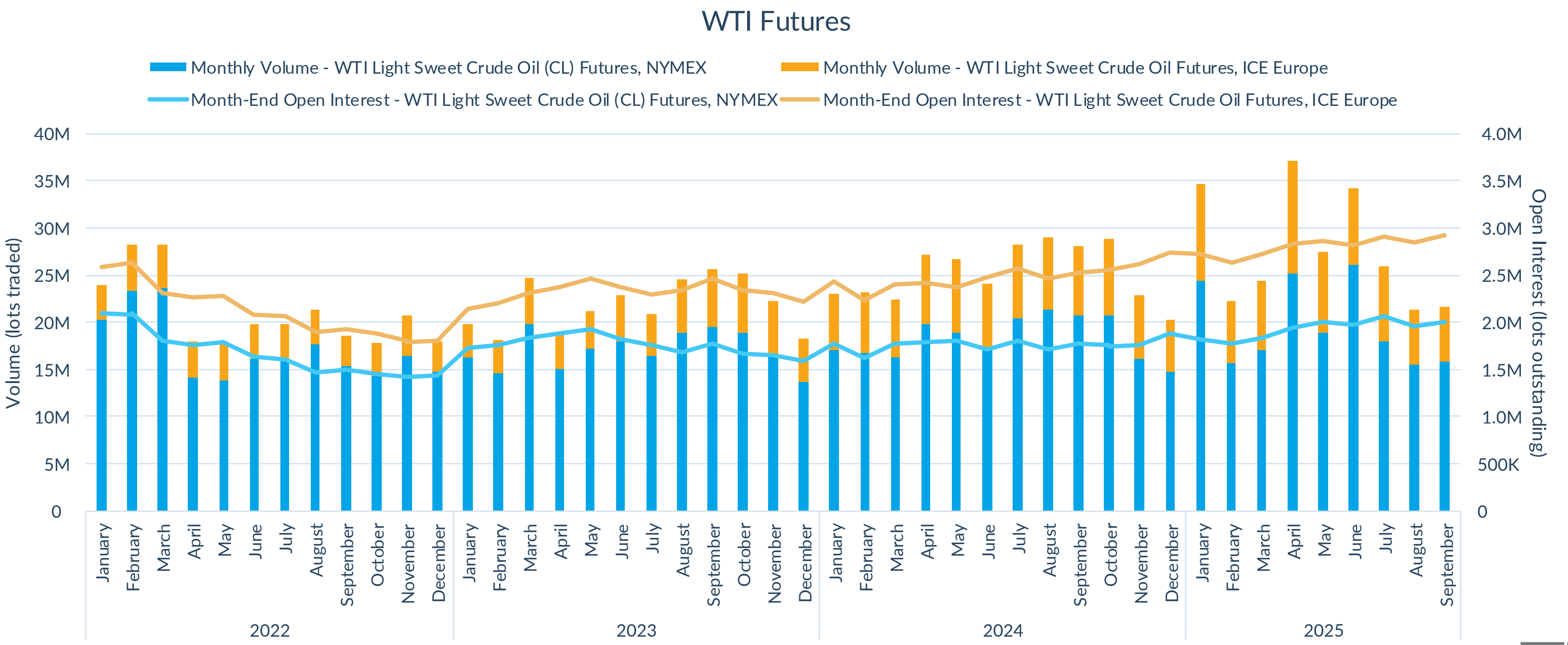
[1] Began trading in April 2024

Brent Futures: Steady Climb in Open Interest



WTI Futures: Open Interest Rising at Both Nymex and ICE

ICE WTI gradually picking up market share, currently holding 27% of the volume, 31% of open interest.



Industrial Metals: Top Contracts by Volume

Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Steel Rebar Futures, Shanghai Futures Exchange	10 Metric Tons	338,921,803	-3.2%	2,440,698	1.3%
2	Hot Rolled Coil Futures, Shanghai Futures Exchange	10 Metric Tons	134,470,001	15.2%	1,695,288	11.7%
3	Industrial Silicon Futures, Guangzhou Futures Exchange	5 Metric Tons	111,143,121	61.5%	399,733	33.7%
4	Aluminum Oxide Futures, Shanghai Futures Exchange	20 Metric Tons	91,960,599	93.7%	376,501	107.6%
5	Lithium Carbonate Futures, Guangzhou Futures Exchange	1000 KG	90,309,780	125.5%	676,349	53.7%
6	Iron Ore Futures, Dalian Commodity Exchange	100 Metric Tons	88,429,683	-12.5%	746,253	8.6%
7	Silicon Manganese (SM) Futures, Zhengzhou Commodity Exchange	5 Metric Tons	80,462,651	-17.2%	482,657	5.5%
8	Polysilicon Futures, Guangzhou Futures Exchange[1]	3 Metric Tons	61,083,655	n/a	226,349	n/a
9	Ferrosilicon (SF) Futures, Zhengzhou Commodity Exchange	5 Metric Tons	52,542,370	20.4%	320,118	54.7%
10	Aluminium Futures, London Metal Exchange	25 Metric Tons	50,887,350	0.0%	790,156	7.2%
11	Aluminum Futures, Shanghai Futures Exchange	100 Metric Tons	49,202,827	-11.8%	462,094	13.3%
12	Zinc Futures, Shanghai Futures Exchange	5 Metric Tons	45,620,226	-5.4%	234,904	16.9%
13	Iron Ore Options, Dalian Commodity Exchange	20 Metric Tons	44,209,067	-23.5%	237,890	-45.2%
14	Iron Ore 62% Futures, Singapore Exchange	100 Metric Tons	43,640,466	15.2%	1,835,575	39.2%
15	Stainless Steel Futures, Shanghai Futures Exchange	5 Metric Tons	40,849,536	-7.8%	252,069	17.3%

[1] Began trading in September 2024

Precious Metals: Top Contracts by Trading Volume

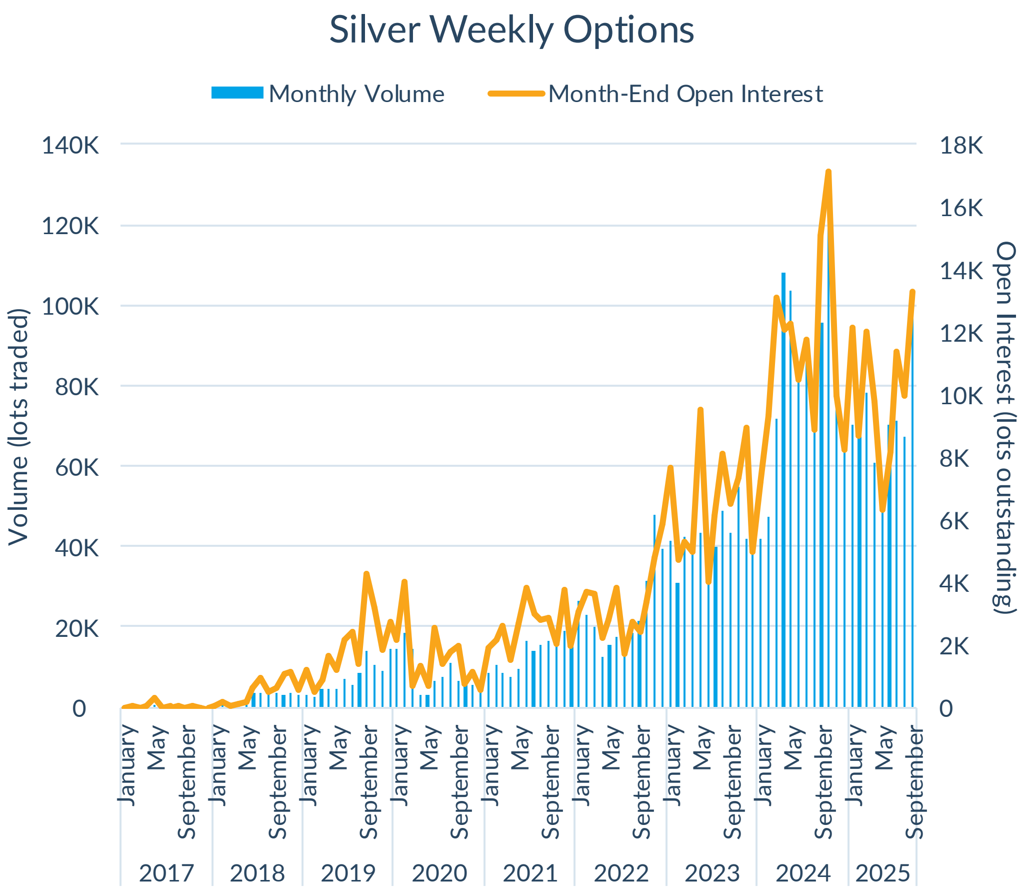
Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Silver Futures, Shanghai Futures Exchange	15 KG	188,904,671	-31.4%	785,132	12.6%
2	Gold Futures, Shanghai Futures Exchange	1000 Grams	80,843,356	54.4%	429,097	14.4%
3	iShares Silver Trust ETF Options *	N/A	78,480,783	28.9%	8,176,271	50.2%
4	SPDR Gold Shares ETF Options *	N/A	72,379,054	112.2%	6,781,766	134.8%
5	Silver Options, Shanghai Futures Exchange	15 KG	66,410,285	9.1%	283,310	17.1%
6	Gold (GC) Futures, Commodity Exchange (COMEX)	100 Troy Ounces	45,374,044	-2.4%	493,748	-6.6%
7	E-Micro Gold (MGC) Futures, Commodity Exchange (COMEX)	10 Troy Ounces	41,704,322	120.9%	55,129	16.6%
8	Gold Futures, Borsa Istanbul	1 Gram	35,178,496	9.1%	554,301	-18.3%
9	Gold Mini Options, Multi Commodity Exchange of India	100 Grams	35,128,639	408.8%	42,055	163.0%
10	US Dollar/Ounce Silver Futures, Borsa Istanbul	10 OZ	35,065,216	18.6%	438,576	-34.7%
11	Silver Micro Futures, Multi Commodity Exchange of India	1 KG	31,698,192	-5.2%	186,673	35.7%
12	Gold Petal Futures, Multi Commodity Exchange of India	1 Gram	23,788,899	279.0%	264,064	240.5%
13	Gold Options, Shanghai Futures Exchange	1000 Grams	22,771,298	83.8%	92,263	37.6%
14	Silver Mini Options, Multi Commodity Exchange of India	5 KG	21,781,750	382.3%	34,922	118.6%
15	Gold Options, Multi Commodity Exchange of India	1 KG	14,767,269	397.2%	11,221	103.0%

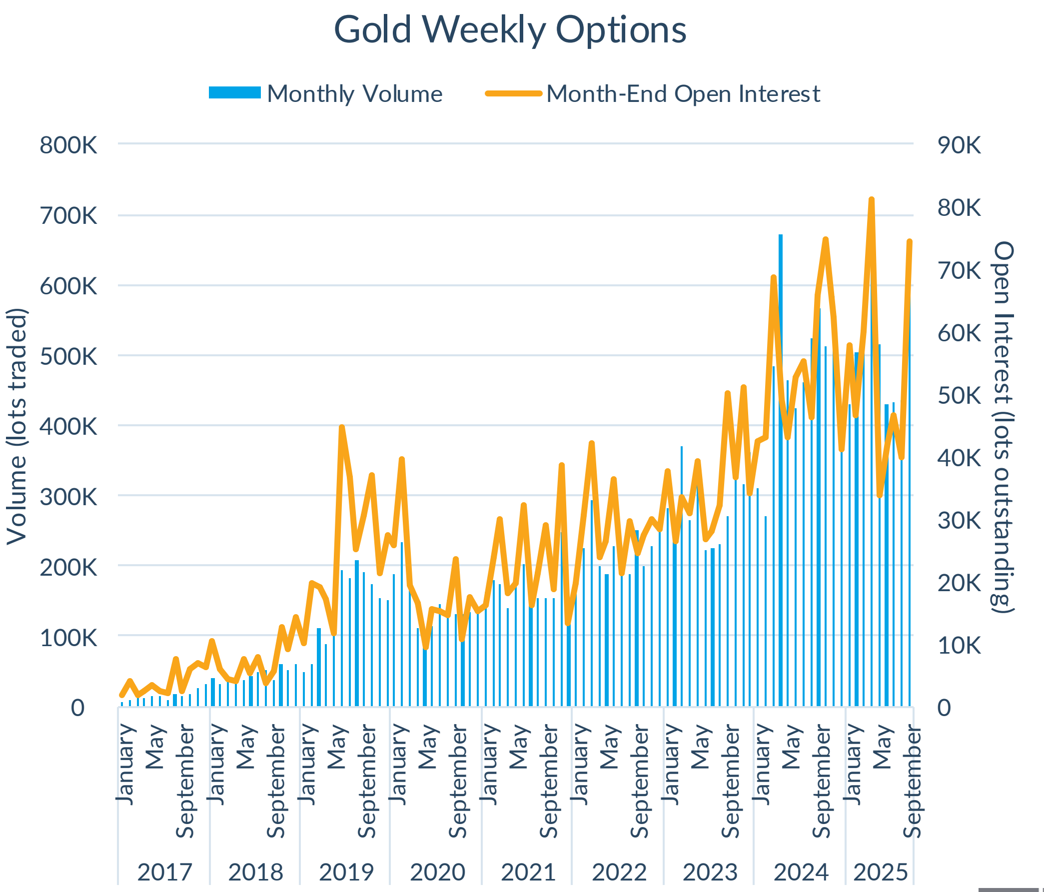
Precious Metals: Retail Interest in the US

Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	iShares Silver Trust ETF Options *		78,480,783	*28.9%*	8,176,271	*50.2%*
2	SPDR Gold Shares ETF Options *		72,379,054	*112.2%*	6,781,766	*134.8%*
3	Gold (GC) Futures, Commodity Exchange (COMEX)		45,374,044	*-2.4%*	493,748	*-6.6%*
4	E-Micro Gold (MGC) Futures, Commodity Exchange (COMEX)		41,704,322	*120.9%*	55,129	*16.6%*
5	Silver (5,000 oz) (SI) Futures, Commodity Exchange (COMEX)		14,025,289	*-16.8%*	163,837	*13.3%*
6	Gold (OG) Options, Commodity Exchange (COMEX)		12,649,302	*5.5%*	854,811	*-16.1%*
7	Platinum (PL) Futures, New York Mercantile Exchange		7,180,241	*16.3%*	91,091	*24.7%*
8	Silver (1,000 oz) (SIL) Futures, Commodity Exchange (COMEX)		3,930,000	*16.2%*	14,346	*59.3%*
9	Silver (SO) Options, Commodity Exchange (COMEX)		2,161,122	*-20.8%*	138,903	*-15.8%*
10	1-Ounce Gold (1OZ) Futures, Commodity Exchange (COMEX) [5]		1,794,227	*n/a*	14,422	*n/a*
11	Palladium (PA) Futures, New York Mercantile Exchange		1,202,251	*7.4%*	21,678	*18.3%*
12	Gold Futures, Coinbase Derivatives Exchange [4]		1,076,249	*883.2%*	6,269	*270.7%*
13	miNY Gold (QO) Futures, Commodity Exchange (COMEX)		710,149	*169.7%*	2,454	*114.1%*
14	Gold Weekly Wk 2 (OG2) Options, Commodity Exchange (COMEX)		552,678	*5.1%*	9,087	*61.3%*
15	Gold Weekly Wk 1 (OG1) Options, Commodity Exchange (COMEX)		489,146	*-9.7%*	23,116	*17.6%*
16	Gold Weekly Wk 4 (OG4) Options, Commodity Exchange (COMEX)		442,763	*5.9%*	266	*144.0%*
17	Gold Weekly Wk 3 (OG3) Options, Commodity Exchange (COMEX)		411,994	*-25.7%*	1,903	*-14.7%*

* Traded on multiple US options exchanges

Comex Gold and Silver – Weekly Options





Top Contracts in Agriculture: China

Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Soybean Meal Futures, Dalian Commodity Exchange	10 Metric Tons	370,568,743	*18.9%*	3,985,607	*24.4%*
2	Rapeseed Meal (RM) Futures, Zhengzhou Commodity Exchange	10 Metric Tons	157,630,700	*-39.3%*	617,579	*-18.3%*
3	RBD Palm Olein Futures, Dalian Commodity Exchange	10 Metric Tons	155,903,236	*2.3%*	442,955	*-29.7%*
4	Corn Futures, Dalian Commodity Exchange	10 Metric Tons	133,021,408	*16.5%*	1,547,597	*24.2%*
5	Rapeseed Oil (OI) Futures, Zhengzhou Commodity Exchange	10 Metric Tons	91,196,038	*-23.4%*	385,201	*6.2%*
6	Soybean Oil Futures, Dalian Commodity Exchange	10 Metric Tons	87,852,552	*-19.1%*	756,287	*-19.4%*
7	Natural Rubber Futures, Shanghai Futures Exchange	10 Metric Tons	79,294,770	*3.1%*	173,725	*-30.4%*
8	Egg Futures, Dalian Commodity Exchange	5 Metric Tons	65,331,381	*26.1%*	662,957	*119.2%*
9	Soybean Meal Options, Dalian Commodity Exchange	10 Metric Tons	63,281,218	*23.2%*	1,050,399	*15.7%*
10	Cotton No. 1 (CF) Futures, Zhengzhou Commodity Exchange	5 Metric Tons	56,665,892	*-23.8%*	745,181	*30.5%*
11	Woodpulp Futures, Shanghai Futures Exchange	10 Metric Tons	50,534,946	*-23.7%*	354,968	*57.1%*
12	RBD Palm Olein Options, Dalian Commodity Exchange	10 Metric Tons	46,869,275	*53.7%*	139,582	*-31.2%*
13	White Sugar (SR) Futures, Zhengzhou Commodity Exchange	10 Metric Tons	46,311,068	*-39.4%*	486,457	*1.1%*
14	No. 1 Soybean Futures, Dalian Commodity Exchange	10 Metric Tons	37,254,003	*81.5%*	316,993	*54.1%*
15	No. 2 Soybean Futures, Dalian Commodity Exchange	10 Metric Tons	36,067,878	*28.4%*	211,777	*71.5%*

Top Contracts in Agriculture: US

Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Corn Futures, Chicago Board of Trade	5,000 Bushels	85,237,060	*13.5%*	1,551,154	*5.1%*
2	Soybean Futures, Chicago Board of Trade	5,000 Bushels	53,297,763	*7.6%*	934,300	*8.1%*
3	Soybean Oil Futures, Chicago Board of Trade	60,000 Pounds	34,342,521	*5.6%*	620,367	*19.3%*
4	Soybean Meal Futures, Chicago Board of Trade	100 Short Tons	32,205,542	*-0.5%*	651,374	*22.4%*
5	Sugar #11 Futures, ICE Futures U.S.	112,000 Pounds	29,004,391	*2.4%*	859,715	*5.3%*
6	Corn Options, Chicago Board of Trade	5,000 Bushels	26,732,301	*19.6%*	1,491,446	*19.4%*
7	Chicago Soft Red Winter Wheat Futures, Chicago Board of Trade	5,000 Bushels	25,919,803	*5.8%*	472,903	*26.5%*
8	Soybean Options, Chicago Board of Trade	5,000 Bushels	17,901,380	*1.9%*	870,009	*-7.0%*
9	Live Cattle Futures, Chicago Mercantile Exchange	40,000 Pounds	14,984,903	*23.0%*	375,602	*16.9%*
10	KC Hard Red Winter Wheat Futures, Chicago Board of Trade	5,000 Bushels	13,779,904	*11.8%*	319,802	*33.1%*
11	Lean Hog Futures, Chicago Mercantile Exchange	40,000 Pounds	13,010,834	*15.7%*	376,558	*37.8%*
12	Canola Futures, ICE Futures U.S.	20 Tonnes	9,726,536	*7.0%*	258,044	*-9.2%*
13	Cotton #2 Futures, ICE Futures U.S.	50,000 Pounds	8,943,487	*4.1%*	278,283	*20.7%*
14	Coffee C Futures, ICE Futures U.S.	37,500 Pounds	7,419,442	*-23.1%*	165,749	*-21.0%*
15	Live Cattle Options, Chicago Mercantile Exchange	40,000 Pounds	5,897,778	*35.6%*	568,173	*44.7%*

Top Contracts in Agriculture: Rest of World

Rank	Contract and Exchange	Size	Jan-Sep 2025 Volume	YOY Change	Sep 2025 OI	YOY Change
1	Milling Wheat Futures, Euronext Derivatives Market	50 Tonnes	17,287,908	*5.1%*	706,354	*33.7%*
2	Crude Palm Oil (FCPO) Futures, Malaysia Derivatives Exchange	25 Metric Tons	14,322,478	*10.7%*	258,884	*0.8%*
3	Cocoa Futures, ICE Futures Europe	10 Tonnes	4,285,268	*-24.0%*	153,614	*-10.8%*
4	White Sugar Futures, ICE Futures Europe	50 Tonnes	3,718,684	*20.8%*	137,358	*20.1%*
5	Rapeseed Futures, Euronext Derivatives Market	50 Tonnes	3,633,376	*-6.0%*	147,130	*11.1%*
6	Robusta Coffee 10 Tonne Futures, ICE Futures Europe	10 Tonnes	3,275,455	*-9.6%*	75,813	*-20.0%*
7	Corn Cash-Settled (CCM) Futures, B3	27 Metric Tonnes	2,799,974	*-1.8%*	120,589	*3.5%*
8	TSR20 Rubber Futures, Singapore Exchange	5 Metric Tonnes	2,643,459	*-7.6%*	54,850	*-27.0%*
9	Live Cattle Cash-Settled (BGI) Futures, B3	10,560 Pounds	1,059,283	*96.3%*	42,341	*1.3%*
10	White Maize 100 Ton (WMAZ) Futures, JSE Securities Exchange	100 Tonnes	836,687	*-2.6%*	38,729	*17.1%*
11	Guar Seed Options, National Commodity & Derivatives Exchange	10 Metric Tonnes	834,874	*869.4%*	1,153	*29.3%*
12	Guar Seed Futures, National Commodity & Derivatives Exchange	10 Metric Tonnes	827,731	*-14.0%*	12,621	*-1.9%*
13	Milling Wheat Options, Euronext Derivatives Market	50 Tons	682,044	*-0.2%*	33,303	*12.2%*
14	Corn Cash-Settled (CCM) Options, B3	10 Metric Tonnes	681,811	*-47.7%*	130,524	*-36.4%*
15	Robusta Coffee Options, ICE Futures Europe	10 Metric Tonnes	666,354	*-0.9%*	124,728	*8.4%*

Appendix

Methodology

- FIA collects data on volume and open interest from approximately 90 exchanges and clearinghouses around the world.
- Volume is measured in terms of the number of futures and options contracts traded and/or cleared per month
- Open interest is measured in terms of the number of contracts outstanding at the end of the month
- FIA publishes a monthly summary on its website and distributes the summary to FIA members
- For more information, contact data@fia.org

FIA ETD VOLUME

Monthly and open interest report for exchange-traded derivatives

June 2025 Highlights

Worldwide volume of exchange-traded derivatives reached 8.76 billion contracts in June. This was down 0.6% from May 2025 and down 48.5% from June 2024.

Options growth has slowed. Global trading of options reached 6.33 billion contracts in June, down by more than 57% from last year, with most of that decline taking place in the Asia-Pacific region.

Global trading of futures reached 2.43 billion contracts in June, up 8% from the same month last year.

On a year-to-date basis, volume in the half of the year was 54.98 billion contracts, down 44.2% from the first half of 2024. The majority of that decrease came from equity contracts.

Total options volume for the year so far was 40.2 billion contracts, down 52.7% from the previous year. Total futures volume was 14.77 billion contracts in 2025 so far, up 9% from 2024.

Exchange Ranking – Part One

Rank	Exchange	Jan-Sep 2025 Volume	YoY % Change	Sep 2025 Open Interest	YoY % Change
1	**National Stock Exchange of India**	**25,459,812,038**	***-73.4%***	**15,949,987**	***-56.0%***
	National Stock Exchange of India	25,441,970,230	*-73.4%*	15,661,508	*-56.4%*
	NSE International Exchange	17,841,808	*2.7%*	288,479	*-5.9%*
2	**BSE**	**16,722,359,552**	***-26.8%***	**2,062,483**	***219313.1%***
	BSE	16,722,165,813	*-26.8%*	2,062,101	*2241314.1%*
	India International Exchange	193,739	*-87.4%*	382	*-55.0%*
3	**B3** [2]	**7,992,624,781**	***9.3%***	**318,183,410**	***38.2%***
4	**CME Group**	**5,311,552,918**	***5.1%***	**125,833,950**	***5.9%***
	Chicago Mercantile Exchange	2,600,648,123	*3.9%*	65,230,079	*-1.5%*
	Chicago Board of Trade	2,040,058,685	*5.1%*	42,168,282	*18.3%*
	New York Mercantile Exchange	523,664,048	*10.7%*	16,071,093	*12.2%*
	Commodity Exchange (COMEX)	147,182,062	*9.0%*	2,364,496	*-10.2%*
5	**Intercontinental Exchange**	**3,677,121,072**	***10.6%***	**105,404,645**	***15.5%***
	ICE Futures Europe	1,282,459,563	*16.8%*	53,702,404	*27.2%*
	NYSE Arca [1]	1,149,488,921	*0.9%*	n/a	*n/a*
	NYSE Amex [1]	748,368,922	*15.7%*	n/a	*n/a*
	ICE Futures U.S.	393,089,784	*10.2%*	45,968,505	*5.5%*
	ICE Endex	95,832,415	*23.6%*	5,685,318	*4.5%*
	ICE Futures Abu Dhabi	6,614,922	*46.1%*	45,810	*13.5%*
	ICE Futures Singapore	1,266,545	*-25.9%*	2,608	*-7.8%*

[1] US equity options are cleared through the Options Clearing Corp.

[2] B3 open interest was affected by a reduction of the size of its Ibovespa options in February 2025

Exchange Ranking – Part Two

Rank	Exchange	Jan-Sep 2025 Volume	YoY % Change	Sep 2025 Open Interest	YoY % Change
6	**Cboe Global Markets**	**3,406,533,332**	***21.2%***	**535,563**	***53.0%***
	Cboe Options Exchange [1]	1,934,206,782	*20.9%*	n/a	*n/a*
	Cboe EDGX Options Exchange [1]	691,313,531	*18.0%*	n/a	*n/a*
	Cboe BZX Options Exchange [1]	444,911,774	*37.3%*	n/a	*n/a*
	Cboe C2 Options Exchange [1]	294,813,699	*16.1%*	n/a	*n/a*
	Cboe Futures Exchange	41,113,187	*-12.4%*	500,764	*48.9%*
	Cboe Europe Derivative Exchange	136,799	*91.8%*	34,799	*160.2%*
	ErisX	37,560	*-22.7%*	0	*-100.0%*
7	**Nasdaq**	**2,969,275,883**	***20.5%***	**5,913,832**	***8.6%***
	Nasdaq PHLX [1]	983,437,649	*21.9%*	n/a	*n/a*
	Nasdaq ISE [1]	691,025,804	*26.2%*	n/a	*n/a*
	Nasdaq Options Market [1]	393,009,505	*-13.1%*	n/a	*n/a*
	Nasdaq GEMX [1]	385,553,537	*82.1%*	n/a	*n/a*
	Nasdaq MRX [1]	306,033,017	*44.3%*	n/a	*n/a*
	Nasdaq BX Options [1]	165,410,512	*-11.2%*	n/a	*n/a*
	Nasdaq Exchanges Nordic Markets	44,614,680	*-7.3%*	5,845,160	*8.7%*
	Nasdaq Commodities	191,179	*15.4%*	68,672	*-1.2%*
8	**Zhengzhou Commodity Exchange**	**2,354,576,490**	***20.5%***	**13,757,301**	***15.1%***
9	**Borsa Istanbul**	**2,329,743,166**	***65.5%***	**25,263,734**	***41.8%***
10	**Korea Exchange**	**1,991,877,659**	***5.0%***	**16,425,349**	***-15.3%***

[1] US equity options are cleared through the Options Clearing Corp.

Exchange Ranking – Part Three

Rank	Exchange	Jan-Sep 2025 Volume	YoY % Change	Sep 2025 Open Interest	YoY % Change
11	**Dalian Commodity Exchange**	**1,986,169,530**	***17.8%***	**16,625,433**	***25.8%***
12	**Shanghai Futures Exchange**	**1,811,747,157**	***3.5%***	**10,370,890**	***10.8%***
	Shanghai Futures Exchange	1,686,110,317	*2.6%*	9,954,700	*11.0%*
	Shanghai International Energy Exchange	125,636,840	*18.7%*	416,190	*4.2%*
13	**Miami International Holdings**	**1,677,106,023**	***38.8%***	**76,866**	***-3.5%***
	MIAX Options [1]	759,613,855	*50.1%*	n/a	*n/a*
	MIAX Emerald [1]	366,631,684	*15.8%*	n/a	*n/a*
	MIAX Pearl [1]	280,391,315	*2482.7%*	n/a	*n/a*
	MIAX Sapphire [1] [2]	267,732,856	*-28.0%*	n/a	*n/a*
	MIAX Futures [3]	2,736,313	*13.5%*	76,866	*-3.5%*
14	**Eurex**	**1,589,465,853**	***1.4%***	**138,851,088**	***1.4%***
15	**Shanghai Stock Exchange**	**952,276,554**	***11.3%***	**5,818,116**	***2.3%***
16	**Multi Commodity Exchange of India**	**915,169,588**	***50.8%***	**1,182,998**	***47.5%***
17	**TMX Group**	**896,448,988**	***29.3%***	**30,750,422**	***56.5%***
	Boston Options Exchange [1]	721,897,673	*30.9%*	n/a	*n/a*
	Montreal Exchange	174,551,315	*23.0%*	30,750,422	*56.5%*
18	**Hong Kong Exchanges and Clearing**	**452,280,395**	***8.6%***	**20,465,358**	***17.5%***
	Hong Kong Exchanges and Clearing	312,325,423	*11.3%*	17,941,180	*20.0%*
	London Metal Exchange	139,954,972	*3.1%*	2,524,178	*2.4%*
19	**Guangzhou Futures Exchange**	**371,208,214**	***165.8%***	**2,154,857**	***93.6%***

[1] US equity options are cleared through the Options Clearing Corp. [2] MIAX Sapphire began trading Aug 2024. [3] Minneapolis Grain Exchange was renamed MIAX Futures in Sep 2024.

Exchange Ranking – Part Four

Rank	Exchange	Jan-Sep 2025 Volume	YoY % Change	Sep 2025 Open Interest	YoY % Change
20	**Members Exchange** [1]	**360,438,933**	***82.9%***	**n/a**	***n/a***
21	**Japan Exchange Group**	**308,224,016**	***-16.4%***	**2,983,609**	***-5.8%***
	Osaka Exchange	307,337,876	*-16.4%*	2,944,350	*-5.9%*
	Tokyo Commodity Exchange	886,140	*-20.5%*	39,259	*4.2%*
22	**Taiwan Futures Exchange**	**266,401,008**	***-12.7%***	**1,170,165**	***-5.1%***
23	**Singapore Exchange**	**230,362,832**	***13.8%***	**6,519,331**	***6.6%***
24	**A3** [4]	**227,747,678**	***136.9%***	**8,391,277**	***253.3%***
	A3	227,747,557	*136.9%*	8,391,275	*253.3%*
	Uruguay Futures Exchange	121	*-99.6%*	2	*-98.8%*
25	**China Financial Futures Exchange**	**226,816,823**	***31.8%***	**2,131,227**	***13.2%***
26	**ASX**	**202,638,301**	***8.7%***	**10,354,408**	***-0.6%***
	ASX 24	150,897,340	*12.4%*	4,405,159	*18.1%*
	ASX	51,740,961	*-0.7%*	5,949,249	*-11.0%*
27	**Coinbase Derivatives Exchange**	**157,112,306**	***415.7%***	**494,348**	***726.0%***
28	**JSE Securities Exchange**	**152,137,111**	***-18.1%***	**14,409,177**	***-27.9%***
29	**North American Derivative Exchange**	**146,574,819**	***514.9%***	**n/a**	***n/a***
30	**Euronext**	**113,019,370**	***-7.0%***	**23,758,547**	***-4.0%***
31	**Thailand Futures Exchange**	**76,723,759**	***-11.7%***	**2,297,740**	***-34.1%***
32	**Tokyo Financial Exchange**	**55,677,157**	***-8.1%***	**1,986,143**	***12.6%***
33	**Tel-Aviv Stock Exchange**	**37,316,803**	***17.8%***	**1,471,082**	***7.6%***

[4] MATba ROFEX was renamed A3 in March 2025

Exchange Ranking – Part Five

Rank	Exchange	Jan-Sep 2025 Volume	YoY % Change	Sep 2025 Open Interest	YoY % Change
34	**MEFF**	**25,470,906**	*23.7%*	**7,846,172**	*19.2%*
35	**EEX Group**	**25,126,133**	*14.0%*	**12,449,582**	*14.4%*
	European Energy Exchange (EEX)	18,031,417	*19.4%*	7,880,071	*18.9%*
	Nodal Exchange	7,094,716	*2.2%*	4,569,511	*7.4%*
36	**Malaysia Derivatives Exchange**	**17,062,063**	*7.3%*	**305,215**	*0.4%*
37	**BMV Group**	**11,255,889**	*78.2%*	**1,465,109**	*61.1%*
38	**Warsaw Stock Exchange**	**9,702,912**	*-9.3%*	**515,023**	*18.4%*
39	**Athens Derivatives Exchange**	**9,374,430**	*32.9%*	**776,890**	*80.5%*
40	**Pakistan Mercantile Exchange**	**8,133,618**	*120.9%*	**13,443**	*83.8%*
41	**Budapest Stock Exchange**	**4,867,468**	*47.1%*	**545,261**	*31.4%*
42	**National Commodity & Derivatives Exchange**	**3,291,401**	*9.7%*	**42,677**	*-16.2%*
43	**Metropolitan Stock Exchange of India**	**2,898,200**	*-77.5%*	**0**	*n/a*
44	**Osaka Dojima Commodity Exchange**	**2,114,096**	*14.4%*	**93,836**	*122.2%*
45	**Bolsa de Valores de Colombia**	**2,041,243**	*-44.7%*	**128,614**	*-59.1%*
46	**Dubai Gold & Commodities Exchange**	**1,537,755**	*32.2%*	**9,191**	*-13.2%*
47	**FMX Futures Exchange** [5]	**1,085,103**	*4340312.0%*	**75,125**	*1073114.3%*
48	**Dubai Mercantile Exchange**	**902,224**	*-10.9%*	**18,434**	*19.2%*
49	**Indonesia Commodity & Derivatives Exchange**	**792,840**	*26.3%*	**4,553**	*95.0%*
50	**Asia Pacific Exchange**	**5,036**	*-99.0%*	**100**	*-95.8%*

[5] FMX Futures Exchange began trading in September 2024.

Contacts & Sales/Trading Disclaimer

- US Electronic Execution, +1 203 719 8889, ol-electronicexecution-na@ubs.com
- US High Touch Execution, +1 203 719 1754, dl-etd-e&c-nyc@ubs.com

This material has been issued by UBS AG and/or any of its affiliates ("UBS", "our", "we" and "us"). The securities, derivatives or other financial instruments described herein ("Instruments") may not be eligible for sale in all jurisdictions or to certain categories of investors. This material is for distribution only under such circumstances as may be permitted by applicable law, rules and/or regulations. All communications between you and us may be monitored.

Please also see further details as set out under "Country-specific information" below.

Provenance and purpose This material has been prepared by sales or trading personnel and it is not a product of our Research Department and is not intended to recommend, suggest or inform an investment strategy. Opinions expressed may differ from the opinions expressed by our other divisions, including those of the Research Department.

Recipient to exercise own judgment The information contained herein should not be regarded by recipients as a substitute for the exercise of their own judgment. It has no regard to the specific investment objectives, financial situation or particular needs of any specific recipient and does not constitute the provision of investment advice. Prior to entering into a transaction you should consult with your own legal, regulatory, tax, financial and accounting advisers to the extent you deem necessary to make your own investment, hedging and trading decisions

Not an offer to transact This material has been prepared for informational purposes only and is not an offer to buy or sell, or a solicitation of an offer to buy or sell, any Instrument or to participate in any particular trading strategy. This material is not an official confirmation of terms.

Conflicts of Interest This material may contain proprietary commentary produced in conjunction with our trading desks that trade as principal in the Instruments. This commentary may therefore not be independent from our proprietary interests or those of connected parties which may conflict with your interests. We may have accumulated, or may acquire, a long or short position in the subject Instrument, or related derivative, on the basis of this material prior to its dissemination. We may trade as principal or otherwise act, or have acted, as market-maker and/or as an execution venue in the Instruments. Instruments may be highly illiquid which may adversely impact the price, spread and speed of execution of orders in those Instruments. Furthermore we may have, or have had, a relationship with or may provide, or have provided, investment banking, capital markets and/or other financial services to the companies associated with the Instruments. We have policies and procedures in place which are designed to manage conflicts of interest. In order to control the flow of information contained in an area of UBS we may rely on information barriers. Additional information can be found at: ubs.com/ibterms

Contents of Material This material is prepared from information believed to be reliable, but we make no representations or warranties, express or implied, and owe no duties (including in negligence) as to the accuracy, completeness or reliability of the material, nor is it intended to be a complete statement or summary of the Instruments, markets or developments referred to. The material is subject to change without notice. We do not undertake any obligation to update this material. Any prices or quotations contained herein are indicative only and are not for valuation purposes. Past performance is not necessarily indicative of future results.

Statement of Risk The Instruments are not suitable for all investors, and trading in these Instruments is considered risky and is appropriate only for sophisticated investors and in particular any target market identified herein. These Instruments may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates, foreign exchange rates and other market conditions. Some Instruments may be physically settled or cash settled.

No Liability To the fullest extent permitted by law, neither we nor any of our directors, employees or agents is liable for any loss (including indirect, special or consequential losses or damages, even if we have been advised of the possibility of such loss or damage) arising out of any person's use of, or reliance upon, the information contained herein.
.

Securities Act Any Instruments that have not been registered under the United States Securities Act of 1933 may not be offered or sold in the United States except under an exception from the registration requirements of the Securities Act and applicable state securities laws.

Country-specific information
Except as otherwise specified herein, these materials are distributed to professional clients only, and are not suitable for retail clients.

UBS

Country Specific Disclaimer

The default scenario that is produced by the HOLT valuation model establishes a warranted price that represents the expected mean value for a security based upon various factors, including the use of third-party data and empirically derived fade algorithms that forecast a firm's future cash return on capital and growth rates over an extended period of time. A default set of algorithms apply to all the securities. As the data are updated, the warranted price updates automatically. A company's future achieved return on capital or growth rate may differ from the result generated from the default scenario that is produced by the HOLT valuation model. Additional information about the HOLT methodology is available upon request.

EMEA

Europe Except as otherwise specified herein, these materials are distributed by UBS Europe SE, a subsidiary of UBS AG, to persons who are eligible counterparties or professional clients (as detailed in the Bundesanstalt fur Finanzdienstleistungsaufsicht (BaFin) Rules and according to MIFID) and are only available to such persons. The information does not apply to, and should not be relied upon by, retail clients. UBS Europe SE is a Societas Europaea registered with the commercial register (Handelsregister) of the local court (Amtsgericht) of Frankfurt am Main under HRB 107046. Registered office: Bockenheimer Landstraße 2-4, OpernTurm, 60306 Frankfurt am Main. UBS Europe SE is authorised and regulated by the German federal financial supervisory authority (Bundesanstalt für Finanzdienstleistungaufsicht) and the European Central Bank (ECB).. **United Kingdom** Prepared and distributed by UBS AG, London Branch which is authorised by the Prudential Regulation Authority (PRA) and regulated by the Financial Conduct Authority (FCA) and the PRA. **Germany, Luxembourg, the Netherlands, Belgium and Ireland** To the extent these materials relate to products other than cash equities or cash bond trading, prepared and distributed by UBS AG, London Branch. **Poland** These materials are distributed by UBS Europe SE (spółka europejska) Oddział w Polsce regulated by the Polish Financial Supervision Authority only to institutional investors in Poland. The information contained herein does not apply to, and should not be relied upon by retail clients.

Switzerland These materials are intended for distribution in Switzerland by UBS AG to to institutional and professional investors pursuant to the Swiss Financial Services Act (FINSA). **Turkey** Prepared and distributed by UBS AG, London Branch. **Russia** Prepared and distributed by UBS Bank (OOO). No non-Russian securities or derivatives are offered within Russia to anybody except for investors qualified under Russian law. **South Africa** UBS South Africa (Pty) Limited (Registration No. 1995/011140/07) is an authorised user of the Johannesburg Stock Exchange (JSE) and an authorised Financial Services Provider (FSP 7328). **UAE / Dubai** These materials are distributed by UBS AG Dubai Branch and are only intended for Professional Clients and/or Market Counterparties, as classified under the DFSA rulebook. No other person should act upon these materials. These materials are not for further distribution within the United Arab Emirates. UBS AG Dubai Branch is regulated by the DFSA in the DIFC. UBS is not licensed to provide banking services in the UAE by the Central Bank of the UAE, nor is it licensed by the UAE Securities and Commodities Authority. **Saudi Arabia** These materials have been issued by UBS AG (and/or any of its subsidiaries, branches or affiliates), a public company limited by shares, incorporated in Switzerland with its registered offices at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH-8001 Zurich. This publication has been approved by UBS Saudi Arabia (a subsidiary of UBS AG), a Saudi closed joint stock company incorporated in the Kingdom of Saudi Arabia under commercial register number 1010257812 having its registered office at Tatweer Towers, P.O. Box 75724, Riyadh 11588, Kingdom of Saudi Arabia. UBS Saudi Arabia is authorized and regulated by the Capital Market Authority to conduct securities business under license number 08113-37. **Israel** UBS AG and its affiliates incorporated outside Israel are not licensed under the Investment Advice Law. These materials are being issued only to and/or are directed only at persons who are Sophisticated Investors within the meaning of the Israeli Securities Law and these materials must not be relied or acted upon by any other persons.

AMERICAS

United States These materials constitute an invitation to consider entering into a derivatives transaction under the rules and regulations of the Commodity Futures Trading Commission (CFTC) and the U.S. Securities and Exchange Commission (SEC), where applicable. These materials are distributed by UBS Securities LLC (member New York Stock Exchange (NYSE), Financial Industry Regulatory Authority (FINRA) and Securities Investor Protection Corporation (SIPC)) or by UBS Financial Services Inc. (member FINRA and SIPC), both of which are subsidiaries of UBS AG; or solely to US institutional investors by UBS AG or by a subsidiary or affiliate thereof that is not registered as a US broker-dealer (a "non-US affiliate"). Transactions resulting from materials distributed by a non-US affiliate must be effected through UBS Securities LLC or UBS Financial Services Inc. **Canada** These materials are distributed by UBS Securities Canada Inc., a registered investment dealer in Canada and a Member of the Canadian stock exchanges and Canadian Investor Protection Fund, or by another affiliate of UBS AG which is registered to conduct business in Canada or otherwise exempt from registration. **Brazil** Except as otherwise specified herein, this material is prepared by UBS Brasil CCTVM S.A. to persons who are eligible investors residing in Brazil, which are considered to be: (i) financial institutions, (ii) insurance firms and investment capital companies, (iii) supplementary pension entities, (iv) entities that hold financial investments higher than R$300,000.00 and that confirm the status of qualified investors in written, (v) investment funds, (vi) securities portfolio managers and securities consultants duly authorized by Comissão de Valores Mobiliários (CVM), regarding their own investments, and (vii) social security systems created by the Federal Government, States, and Municipalities.

Country Specific Disclaimer

APAC

Hong Kong Materials relating to equities and other securities business and related research are distributed in Hong Kong by UBS Securities Asia Limited to professional investors. Materials relating to corporate finance, foreign exchange, fixed income products and other banking business and related research are distributed in Hong Kong by UBS AG Hong Kong Branch (incorporated in Switzerland with limited liability) or UBS Securities Hong Kong Limited to professional investors. Singapore These materials are distributed in Singapore by UBS Securities Pte. Ltd or UBS AG Singapore Branch to institutional investors or accredited investors, as defined under the Securities and Futures Act ("SFA"). These materials may be defined as an "advertisement" in the SFA and Financial Advisers Act. This advertisement has not been reviewed by the Monetary Authority of Singapore. **Indonesia** These materials are distributed in Indonesia by PT UBS Sekuritas Indonesia to professional investors. **Malaysia** These materials are authorized to be distributed in Malaysia by UBS Securities Malaysia Sdn. Bhd (199201022321 / 253825-x), holder of Capital Markets Services Licence No. CMSL/A0063/2007. **Australia** These materials are distributed by UBS AG (ABN 47 088 129 613 and holder of Australian Financial Services Licence No. 231087) and/or UBS Securities Australia Ltd (ABN 62 008 586 481 and holder of Australian Financial Services Licence No. 231098). These materials contain general information and/or general advice only and do not constitute personal financial product advice. As such, the materials have been prepared without taking into account any investor's objectives, financial situation or needs, and investors should, before acting, consider the appropriateness of the materials, having regard to their objectives, financial situation and needs. If the materials relate to the acquisition, or potential acquisition of a particular financial product by a "retail client" as defined by section 761G of the Corporations Act 2001 (Cth) where a Product Disclosure Statement would be required, the retail client should obtain and consider the Product Disclosure Statement relating to the product before making any decision about whether to acquire the product and consult the relevant Financial Services Guide. UBS AG, Australia Branch is a foreign Authorised Deposit-taking Institution ("foreign ADI") under the Banking Act 1959 (Cth) and is supervised by the Australian Prudential Regulation Authority. However, it is important for you to note that should you make a deposit with UBS AG, Australia Branch in connection with the services UBS AG, Australia Branch provides you, provisions of the Banking Act 1959 (Cth) for the protection of depositors generally do not apply to foreign ADIs including UBS AG, Australia Branch. For example, depositors with foreign ADIs do not receive the benefit of the following protections: (i) Deposits are not covered by the financial claims scheme and are not guaranteed by the Australian Government; (ii) Deposits do not receive priority ahead of amounts owed to other creditors. This means that if a foreign ADI were unable to meet its obligations or otherwise is in financial difficulties and ceases to make payments, its depositors in Australia would not receive priority for repayment of their deposits from the foreign ADI's assets in Australia; (iii) A foreign ADI is not required to hold assets in Australia to cover its deposit liabilities in Australia. This means that if the foreign ADI were unable to meet its obligations or otherwise is in financial difficulties and ceases to make payments, it is uncertain whether depositors would be able to access the full amount of their deposit. UBS Securities Australia Ltd is a subsidiary of UBS AG. However, it is not an authorised deposit-taking institution under the Banking Act 1959 (Cth). The obligations of UBS Securities Australia Ltd do not represent deposits or other liabilities of UBS AG, and UBS AG does not stand behind, support or guarantee UBS Securities Australia Ltd in any way. **New Zealand** These materials are distributed in New Zealand by UBS New Zealand Ltd. UBS New Zealand Ltd is not a registered bank in New Zealand. You are being provided with this UBS publication or material because you have indicated to UBS that you are a "wholesale client" within the meaning of section 5C of the Financial Advisers Act 2008 of New Zealand (Permitted Client). This publication or material is not intended for clients who are not Permitted Clients (non-permitted Clients). If you are a non-permitted Client you must not rely on this publication or material. If despite this warning you nevertheless rely on this publication or material, you hereby (i) acknowledge that you may not rely on the content of this publication or material and that any recommendations or opinions in such this publication or material are not made or provided to you, and (ii) to the maximum extent permitted by law (a) indemnify UBS and its associates or related entities (and their respective Directors, officers, agents and Advisors) (each a 'Relevant Person') for any loss, damage, liability or claim any of them may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material and (b) waive any rights or remedies you may have against any Relevant Person for (or in respect of) any loss, damage, liability or claim you may incur or suffer as a result of, or in connection with, your unauthorised reliance on this publication or material. **Korea** These materials are distributed in Korea by UBS Securities Pte. Ltd., Seoul Branch to professional investors. Affiliates of UBS Securities Pte. Ltd., Seoul Branch may have edited or may have contributed to the editing of these materials. **India** Distributed in India by UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 3 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000 SEBI Registration Number: INZ000259830. **Japan** These materials are distributed in Japan to institutional investors only by UBS Securities Japan Co., Ltd., a registered financial instruments business operator, or by UBS AG Tokyo Branch, a licensed bank. For further details of our local services, please call your regular contact at UBS in Japan. **Philippines** These materials are distributed in the Philippines by UBS Securities Philippines, Inc. to institutional investors. **China** These materials are distributed in People's Republic of China (for the avoidance of doubt, excluding Hong Kong Special Administration Region, Macau Special Administration Region and Taiwan District) by UBS Securities Co., Limited to professional investors. **Thailand** These materials are distributed only upon request in Thailand by UBS Securities (Thailand) Limited, which is licensed by the Securities and Exchange Commission of Thailand ("Thai SEC") under the Securities and Exchange Act and Derivatives Act. The contents of this material have not been approved by the Thai SEC or any other authorities in Thailand. This material has been prepared and issued for distribution in Thailand to "institutional investors" only. Thai recipients should contact UBS Securities (Thailand) Limited for any matters arising from, or in connection with, this material. This material is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of, or is located in, any jurisdiction where such distribution, publication, availability or use would be contrary to applicable law or regulation, or which would subject UBS AG, UBS Securities (Thailand) Limited and/or its subsidiaries or affiliates to any registration or licensing requirement within such jurisdiction. Materials have been furnished to the recipient and should not be redistributed without the express written consent of UBS Securities (Thailand) Limited. Past performance is not necessarily indicative of future performance. Any prospective investor must understand the conditions, risks and return before making a decision. **All other Asian jurisdictions** These materials are not to be construed as a solicitation or an offer to buy or sell any securities, related financial instruments or services. Please also note that the products are not intended for marketing to the public.