April 2022EMEA Market Structure Monthly



MICROSTRUCTURE OBSERVATIONS

- In April 2022, the average daily volume in EMEA equities decreased to €49.1B, 24% lower versus March (€64.2B) and above April 2021's volume by 14% (€43B).
- The median quote size at the European Best Bid and Offer (EBBO) increased in April. Both the STOXX 50 increased and STOXX 600 increased by 11% during the intraday trading period (08:30 to 16:00 GMT).
- Median spreads decreased in April. Median spreads in STOXX 50 decreased by 6% to 3bps and STOXX 600 symbols spreads decreased by 10% to 5.2bps, during the intraday trading period.
- In April, volatility levels decreased significantly. STOXX 50 volatility has decreased 27% and STOXX 600 volatility has decreased 24% during intraday trading. Volatility is back to pre-Russian invasion of Ukraine levels.
- The market share distribution between venues changed slightly in April, relative to the prior month. Primary lit decreased by 1.6% and MTF, dark venues increased by 0.6% and periodic auctions venues also increased by 0.4%.
- As trading conditions stabilized during April, closing auction volumes as a percent of ADV have increased. Auction volume trading in STOXX 600 symbols increased by 2% to 26%.

EMEA MARKET STRUCTURE NEWS

Flash Crash in European Equities

On 2 May 2022, a flash crash caused European shares to plunge suddenly—Nordic stocks were hardest hit and other European indexes also plummeted for a while—when trading was particularly thin due to public holidays around the world.

Nordic exchange operator, Nasdaq, used circuit breakers on specific stocks which went into volatility auction. Sweden's Benchmark index fell nearly 8% and Denmark's All-Share index fell over 6% just before 9 am GMT both indexes closed the day at about 2% down. The sell-off spread to other European markets such as Germany and France causing Euronext Stock Exchange to halt trading to help mitigate the market impact. https://www.bbc.co.uk/news/business-61303217

• UK Government Plans to Make the UK a Global Cryptoasset Technology Hub

Her Majesty's Treasury (HMT) announced a series of measures designed to make the UK a global hub for cryptoasset technology and investment. Stablecoins are to be recognized as a valid form of payment in the UK. The Financial Conduct Authority (FCA) will lead a <u>CryptoSprint</u> event in May that will focus on informing regulatory policy changes based on evolving technologies. Other measures include:

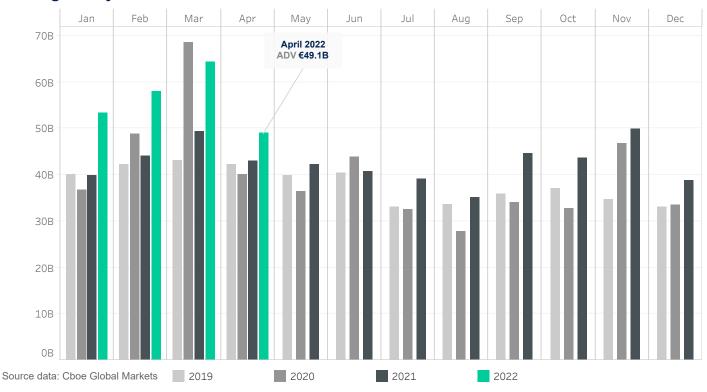
- introducing a 'financial market infrastructure sandbox' to enable firms to experiment and innovate,
- establishing a Cryptoasset Engagement Group to work more closely with the industry
- exploring ways of enhancing the competitiveness of the UK tax system to encourage further development of the cryptoasset market
- and working with the Royal Mint on a Non-Fungible Token (NFT) this summer as an emblem of the forward-looking approach the UK is determined to take

Additionally, the UK will proactively explore the potentially transformative benefits of distributed ledger technology (DLT) in UK financial markets, which enables data to be synchronized and shared in a decentralized way to potentially achieve greater efficiency, transparency and resilience.

https://www.gov.uk/government/news/government-sets-out-plan-to-make-uk-a-global-cryptoasset-technology-hub

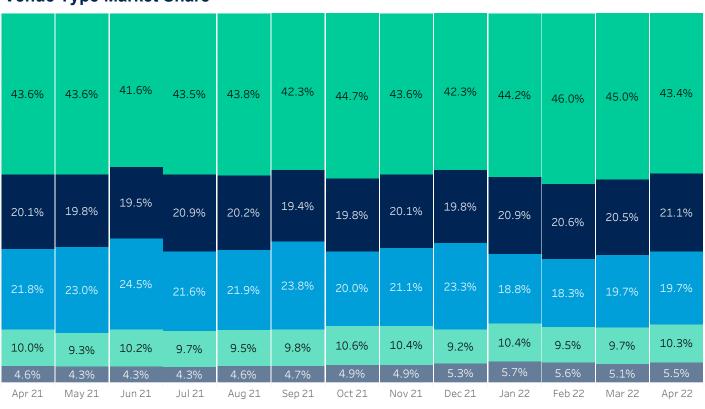


Average Daily Market Volume



Venue Type Market Share

Source data: Cboe Global Markets



Auctions

DARK

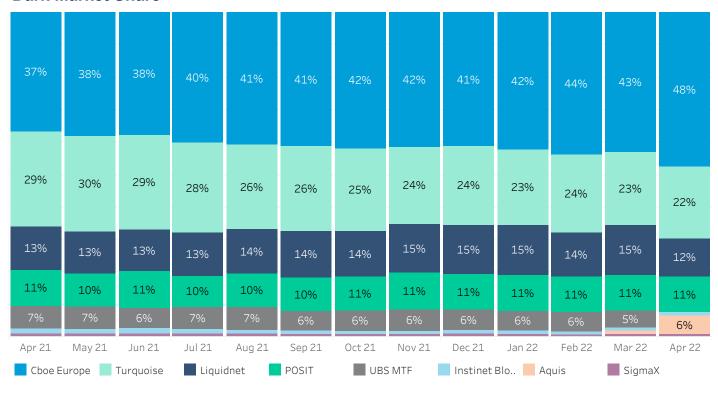
FBA

Primary

MTF

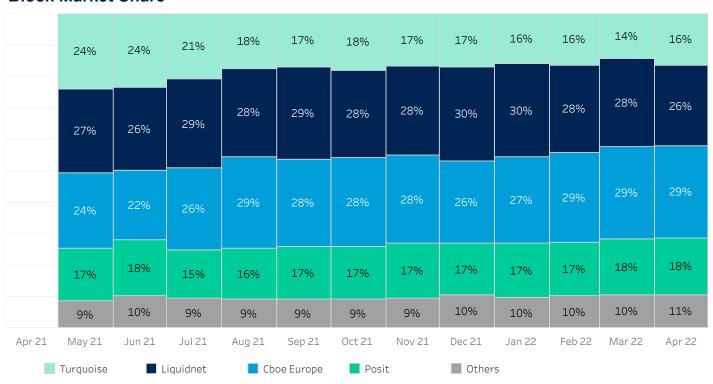


Dark Market Share



Source data: Cboe Global Markets

Block Market Share



Large In Scale values as per defined per symbol by ESMA; Source data: Virtu Financial



Quotesize in Notional USD

| | | | 2Q 21 | | | 3Q 21 | | | 4Q 21 | | | 1Q 22 | | 2Q 22 |
|---------------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | Apr 21 | May 21 | Jun 21 | Jul 21 | Aug 21 | Sep 21 | Oct 21 | Nov 21 | Dec 21 | Jan 22 | Feb 22 | Mar 22 | Apr 22 |
| 8:00 - 8:30 | Stoxx50 | 20.8K | 21.9K | 22.4K | 19.3K | 20.0K | 18.7K | 19.1K | 18.0K | 18.5K | 18.8K | 16.3K | 17.3K | 18.3K |
| | Stoxx600 | 11.0K | 11.0K | 11.5K | | 11.0K | 10.6K | 10.4K | 10.1K | 10.6K | 10.4K | 9.6K | 10.1K | 11.0K |
| 8:30 - 16:00 | Stoxx50 | 35.0K | 36.3K | 37.4K | 32.5K | 34.4K | 32.7K | | 32.0K | 33.6K | 33.8K | 29.7K | 23.1K | 25.8K |
| | Stoxx600 | | 17.3K | 18.2K | 16.0K | 17.0K | 16.7K | 17.0K | 16.3K | 17.0K | 17.0K | 15.5K | 12.6K | 14.0K |
| 16:00 - 16:30 | Stoxx50 | 44.3K | 43.3K | 44.8K | 38.1K | 40.2K | 37.8K | 39.7K | 38.1K | 39.3K | 37.9K | 35.1K | 28.3K | 33.3K |
| | Stoxx600 | 20.6K | 20.8K | 22.1K | 18.4K | 19.4K | | 19.9K | 18.9K | 19.0K | 19.1K | 18.6K | 14.6K | 17.0K |
| Sproad | D | | | | | | | | | | | | | |

Spread Bps

| 8:00 - 8:30 | Stoxx50 | 3.7 | 3.9 | 3.8 | 4.5 | 4.1 | 3.9 | 4.1 | 4.2 | 4.2 | 4.0 | 4.5 | 5.3 | 4.9 |
|---------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
| | Stoxx600 | 7.0 | 7.2 | 6.9 | 8.0 | 7.2 | 7.0 | 7.6 | 8.1 | | 8.2 | 8.8 | 10.1 | 9.1 |
| 8:30 - 16:00 | Stoxx50 | 2.4 | 2.4 | 2.4 | 2.7 | 2.3 | 2.3 | 2.3 | 2.4 | 2.5 | 2.5 | 2.7 | 3.2 | 3.0 |
| | Stoxx600 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.2 | 4.5 | 4.5 | 4.7 | 5.0 | 5.8 | 5.2 |
| 16:00 - 16:30 | Stoxx50 | 2.2 | 2.2 | 2.1 | 2.3 | 2.0 | 2.0 | 2.0 | 2.1 | 2.2 | 2.2 | 2.3 | 2.7 | 2.5 |
| | Stoxx600 | 3.5 | 3.6 | 3.5 | | 3.4 | 3.5 | 3.5 | 3.8 | 4.0 | 4.1 | 4.1 | 4.7 | 4.4 |

One Minute Volatility Bps

| 8:00 - 8:30 | Stoxx50 | 10.3 | 11.1 | 9.1 | 12.7 | 10.5 | 11.9 | 12.7 | 12.9 | 12.1 | 14.8 | 17.6 | 22.3 | 18.2 |
|---------------|----------|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| | Stoxx600 | 10.4 | 10.5 | 9.2 | | 9.8 | 11.0 | 11.8 | 12.5 | 11.0 | 14.1 | 16.5 | 21.5 | 17.3 |
| 8:30 - 16:00 | Stoxx50 | 4.5 | 4.7 | 4.2 | | 4.5 | 5.3 | 5.2 | 5.6 | 5.3 | 6.6 | 7.8 | 10.0 | 7.3 |
| | Stoxx600 | 4.3 | 4.4 | 4.0 | 4.8 | 4.2 | 4.8 | 4.9 | 5.2 | | 5.9 | 6.7 | 8.5 | 6.5 |
| 16:00 - 16:30 | Stoxx50 | 4.4 | 4.7 | 4.2 | 5.1 | 4.2 | 5.1 | 4.7 | 4.9 | 5.6 | 6.7 | 7.0 | 9.5 | 7.2 |
| | Stoxx600 | 4.2 | 4.2 | 3.8 | 4.3 | 3.8 | | 4.1 | 4.5 | 4.8 | 5.5 | 5.5 | 7.3 | 6.0 |

Percent ADV by Time of Day

| reiceili | ADVA | у пин | e oi D | ay | | | | | | | | | | |
|---------------|----------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Open | Stoxx50 | 1.1% | 1.1% | 1.0% | 1.0% | 1.0% | 1.0% | 1.0% | 0.9% | 0.9% | 1.0% | 1.0% | 0.9% | 1.0% |
| | Stoxx600 | | 0.6% | 0.5% | 0.5% | 0.5% | 0.6% | 0.5% | 0.5% | 0.6% | 0.7% | 0.6% | 0.5% | 0.6% |
| | | | | | ı | | | | | | | | | |
| 8:00 - 8:30 | Stoxx50 | 6.9% | 7.2% | 6.1% | 7.0% | 7.1% | 7.0% | 8.5% | 9.4% | 9.0% | 9.9% | 9.2% | 7.8% | 7.5% |
| | Stoxx600 | 7.1% | 7.2% | 6.2% | 6.6% | 6.5% | 7.0% | | 7.3% | 6.8% | 8.3% | 7.9% | 7.8% | 8.2% |
| 16:00 - 16:30 | Stoxx50 | 15.4% | 20.1% | 18.0% | 16.3% | 17.2% | 15.2% | 11.7% | 18.3% | 19.4% | 16.1% | 15.5% | 16.9% | 14.8% |
| | Stoxx600 | 14.4% | 15.2% | 14.4% | | 13.8% | 13.1% | 11.5% | 12.8% | 13.6% | 12.7% | 12.2% | 12.4% | 10.6% |
| | | | | | | | | | | | | | | |
| Close | Stoxx50 | 26.6% | 26.6% | 29.3% | 27.2% | 26.5% | 26.5% | 26.6% | 25.8% | 28.7% | 22.2% | 21.9% | 23.6% | 23.5% |
| | Stoxx600 | 28.9% | | 30.4% | 27.8% | 27.7% | 26.9% | 26.7% | 26.3% | 29.0% | 24.0% | 24.5% | 23.8% | 26.0% |

Median used for all metrics

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



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