

Statistics Methodology

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1. Introduction

The Statistical Methodology of the Federation of European Securities Exchanges (FESE) provides the reader with detailed explanations of the statistics published by FESE.

FESE follows the principles of good statistics, aiming to provide figures that are accurate, comparable, complete, replicable, and timely. However, one should be cautious when directly comparing FESE figures with statistics of other trading venues¹ as these may be based on different standards.

The next chapter contains information on the various statistical reports published by FESE², as well as an overview of the data and figures provided within them. The third chapter gives definitions of the products or data.

The Federation of European Securities Exchanges AISBL (FESE) shall not be liable for any errors or omissions nor for the use of the information contained in this document.

2. Statistical reports

2.1. General principles

Single counting

In order to ensure data comparability, the number of trades and turnover are generally single counted. The single-counting procedure depends on the methodology of every exchange.

The most common procedures used include:

- halving the trades and turnover figures
- counting only one side of the transaction
- using one single identification per trade as suggested by the exchange systems

Due to the great variety of business included under off-electronic order book transactions the concept of single counting cannot be applied to all components in this category.

Turnover categories

All turnover categories - [electronic order book \(EOB\)](#), [off-electronic order book \(Off-EOB\)](#), [reporting transactions](#), and [dark pool](#) - are mutually exclusive.

European Economic Area (EEA) and Non-European Economic Area (Non-EEA)

Data collected through FESE members³ and published in the monthly statistics are divided by EEA exchanges and non-EEA exchanges.

Notation

The following notation is used in the statistics:

¹ The term exchange is used interchangeably to the official term “regulated market”, a trading venue, under MiFID II.

² The data analysed in all of them has a changing composition given that it is derived from the membership at a particular time, as reflected in the changelog.

³ The term members is used to refer to FESE members throughout this document.

- “n/a” means “not available”. Figures may exist although cannot be reported (i.e. due to technical reasons, etc.).
- “0” means “zero”. There was no trading of that instrument during the relevant period.
- “//” means “not applicable”. The instrument is not traded on the exchange or there is no such market at the exchange. In these circumstances, there is no meaningful data.

2.2. Monthly Statistics

Every month, FESE members supply data on a broad range of asset classes. This data is structured in tables and provides an invaluable source of international comparison for European securities trading.

Instruments and indicators

Tables 1a, 1b, 1c, 1d, & 1e: [Stock exchange indices](#)

These tables provide data on a range and classes of indices. They include information on the index name, the value at month end, % change month on month and % change year to date; month high and day of month high; month low and day of month low; year high; and year low.

Monthly high and low figures provided are based on all available index figures throughout the month, i.e. they include intra-day figures where available and not just end of day figures. Some exchanges may use end of day figures in line with their policy.

The tables are split by type of indices:

- Table 1a: [Price index](#)
- Table 1b: [Return index](#)
- Table 1c: [Traded index](#)
- Table 1d: [Specialised market / segment index in equity](#)
- Table 1e: [Specialised market / segment index in bonds](#)

Table 2: Market capitalisation

This table provides figures on the [market capitalisation](#), including the value at month end (EUR million); % change month on month; % change year to date in EUR; and % change year to date in local currency.

Note that statistics of “Specialised Markets / Segments in Equity” (Table 6a) are included in these figures. International Exchange Groups calculate their market capitalisation figures based on the underlying listed companies of all their European markets and countries of incorporation. Thus, double counting is excluded.

Tables 3a, 3b, 3c, & 3d: Listed companies and investment flows

These tables include information on the number of listed companies and their investment and financing flows channelled through the exchange. The data provided is split as follows:

- Table 3a Listed companies and Table 3b Listed companies year to date: these tables show the number of companies (split between [domestic](#) and [foreign](#) except for foreign securities with exclusive listing) whose shares were [admitted to listing](#) for the first time

during the period through an [IPO](#) or other means (splits, mergers,...); or having already floated shares at the end of the period. Figures of new companies listed are disaggregated with the number of which are or have been listed through an IPO.

- **Table 3c Investment flows and 3d Investment flows year to date:** these tables present the aggregated value of money raised on the [primary market](#) with offer of domestic shares and exclusive traded foreign shares (already issued or newly issued) in the period.

The figure is calculated by multiplying the number of shares that were placed by the offer price or the first price of the new shares in the market when the offer price is not available. Figures are reported in EUR million and split by new companies ([IPOs](#)); new companies (non-IPO); and already listed companies. Private placements (including overallotment options) are excluded from the investment flow statistics.

Data is recorded by newly issued shares, already issued shares, total figures and % change month on month. Total figures on newly issued shares, already issued shares and grand total are also provided, to present the user with additional information about investment flows representing new funds for companies or providing money to former shareholders during the period.

Investment flows included within the categories of newly or already issued shares are shown in the table below.

Type of listing	Newly issued shares	Already issued shares
IPOs	A new IPO listing takes place and new shares are offered to the public.	A new IPO listing takes place and already listed shares are offered to the public
New companies (non-IPO)	A new non-IPO listing takes place (through direct listings, spin-offs, mergers, transfers of listing venues, etc.) and new shares are issued for sale as part of the listing process.	A new non-IPO listing takes place (through direct listings, spin-offs, mergers, transfers of listing venues, etc.) and already issued shares are issued for sale as part of the listing process.
Already listed companies	An already listed company sells newly issued shares to the public for: <ul style="list-style-type: none"> • Financing the acquisition of another company, the purpose of paying dividends to shareholders, or in case of a debt conversion to equity shares that are offered for consideration of the debt as part of the conversion process • Exercising rights issue • Exercising stock options leading to the creation of new shares 	An already listed company sells already issued shares to the public. This includes a previously non-listed company's share value if it has been acquired by a listed company.

Note that statistics of “Specialised Markets / Segments in Equity” (Table 6a) are included in these figures. These tables include all markets and segments and excludes ETFs, investment trusts, listed unit trusts, UCITS and market transfers. Only those [companies admitted to listing](#) are included in these tables.

Tables 4a, 4b, 4c, 4d, 4e, & 4f: Value of equity trading

Tables 4a, 4b and 4c provide data on the number of trading days, number of trades, [turnover](#) (EUR million), % change month on month in EUR, and % [turnover velocity](#) of equity trading for the respective month. Equity trading data is broken down by the trading system by which the transaction occurred, i.e. on an [electronic order book](#), as an [off-electronic order book transaction](#), as a [dark pool transaction](#), or as a [reporting transaction](#). The tables are divided by:

- Table 4a - [Domestic](#) equity trading
- Table 4b - [Foreign](#) equity trading
- Table 4c - Value of equity trading summarising both domestic and foreign

Tables 4a2, 4b2 and 4c2 provide more details on electronic order book trading, split across different types of [auctions](#). Data provides information on number of trades and turnover (EUR million). The tables are as follows:

- Table 4a2 - [Domestic](#) equity trading - Electronic order book
- Table 4b2 - [Foreign](#) equity trading - Electronic order book
- Table 4c2 - Value of equity trading - Electronic order book

Tables 4d, 4e and 4f provide year to date data on domestic (Table 4d), foreign equity trading (Table 4e), and their total value (Table 4f), within the reporting period. Tables 4d2, 4e2 and 4f2 give figures on the year-to-date EOB trading of domestic and foreign equity, and the total value of equity trading as a sum of both.

Note that transactions in “Specialised Markets / Segments in Equity” (Table 6a) and companies admitted to listing and admitted to trading are included in these figures.

Table 5: Top 5 Most traded shares

This table represents the top five [primary](#) listed companies traded on each exchange each month based on the share of the total value of order-book share trading.

Tables 6a, 6b, 6c, & 6d: Specialised markets / segments

The tables on [specialised markets/segments](#) provide figures for equity and for bond and money market instruments on the market name, whether it is a market or segment, the type of market (Regulated Market (RM) or Multilateral Trading Facility (MTF)), the type (no specific or SME), the number of listed companies end of month, and market capitalisation end of month. Data on the number of trades, turnover (EUR million) and % change month on month is split by type of transaction, i.e. EOB, Off-EOB and reporting transactions. The tables are split as follows:

- Table 6a: Specialised markets/segments in equity
- Table 6a2: Specialised markets/segments in equity, electronic order book
- Table 6b: Specialised markets/segments in equity, year to date
- Table 6b2: Specialised markets/segments in equity, electronic order book, year to date

- Table 6c: Specialised markets/segments in bonds and money market instruments
- Table 6d: Specialised markets/segments in bonds and money market instruments, year to date

Note that the equity trading values include companies admitted to listing and admitted to trading.

Tables 7a, 7b, 7c, & 7d: Securitised derivatives

Trading statistics for [securitised derivatives](#) provide data on investment products, divided into new listings during the respective month and those listed at the end of the month, showing the total number of listed companies at the end of the reporting period. Figures on number of trades, turnover (EUR million) and % change month on month are shown by trading categories, i.e. EOB, Off-EOB and reported transactions. The tables provide figures across the two different types of securitised derivatives, as well as year to date totals:

- Table 7a: Securitised derivatives - investment products
- Table 7b: Securitised derivatives - investment products, year to date
- Table 7c: Securitised derivatives - leverage products
- Table 7d: Securitised derivatives - leverage products, year to date

Tables 8a & 8b: ETFs

Trading statistics for [Exchange Traded Funds](#) provide figures on ETFs divided by new listings at the end of the month and the total listed up to the respective month. Data on the number of trades, turnover (EUR million) and % change month on month are shown split by trading categories, i.e. EOB, Off-EOB and reported transactions. The tables show figures for the month, as well as for year to date:

- Table 8a: ETFs
- Table 8b: ETFs, year to date

Tables 9a & 9b: Investment funds

Trading statistics for [investment funds](#) include non-ETF Undertakings for Collective Investment in Transferable Securities ([UCITS](#)), listed unit trusts, closed-end funds and investment trusts. They are divided into new listings during the month and the total number of investment funds listed at end of month. Figures on number of trades, turnover (EUR million) and % change month on month are shown by trading categories, i.e. EOB, off-EOB and reported transactions. The tables show figures for the month, as well as for year to date:

- Table 9a: Investment funds
- Table 9b: Investment funds, year to date

Tables 10a, 10b, 10c, & 10d: Total bond and money market instruments

The tables on total [bond](#) trading value provide data on the number of trading days, as well as the number of trades, turnover (EUR million), and % change month on month by trading category (EOB, Off-EOB, reported transactions). Bond trading value is also provided across a series of instrument types, in this case for sovereign bonds, other public bonds, convertible bonds, covered bonds, corporate bonds, and other bonds and money market instruments. Year to date figures are also reported.

- Table 10a: Total bond and money market instruments trading
- Table 10b: Total bond and money market instruments trading, year to date
- Table 10c: Total bond and money market instruments trading by instrument type
- Table 10d: Total bond and money market instruments trading by instrument type, year to date

Note that turnover figures supplied in FESE statistics are based on the real market value of transactions and not the nominal value.

Bond turnover calculation example:

Bond financial instrument	Price (in percentage)	Nominal value traded	Bond turnover in market value
A	95.5	500,000,000	478,500,000

Note that only bonds admitted to listing are included in the data. Transactions in “Specialised Markets / Segments in Bonds” (Table 6c) are included in these figures.

Tables 11a & 11b: Listed bond and money market instruments

These tables provide the number of listed bonds and money raised (EUR million):

- Table 11a: Listed bonds and money market instruments: figures are split by all [segments](#) of the bonds markets of the exchanges.
- Table 11b: Listed bonds and money market instruments, year to date: this provides the number of new listings and money raised (EUR million) up to the respective month.

Note that transactions in “Specialised Markets / Segments in Bonds” (Table 6c) are included in these figures.

Table 12: Exchange rates

This table details the euro (EUR) conversion rates at month end applied to our figures; when the data is available, these are the daily exchange rates published by the respective central bank. It includes currency, conversion rate, and the percentage change in the previous month.

The table below shows the source and type of exchange rate used for the domestic currency of each exchange.

Exchange	Currency	Source of exchange rate	Type of exchange rate
Bucharest Stock Exchange	Romanian Leu	National Central Bank	Daily
Bulgarian Stock Exchange	Bulgarian Lev	National Central Bank	Daily
Budapest Stock Exchange	Hungarian forint	National Central Bank	End of Month
OMX Nordic Exchange Iceland under Nasdaq	Icelandic krona	National Central Bank	Daily

Exchange	Currency	Source of exchange rate	Type of exchange rate
OMX Nordic Exchange Copenhagen under Nasdaq	Danish krone	National Central Bank	Daily
OMX Nordic Exchange Stockholm under Nasdaq	Swedish krona	National Central Bank	Daily
Prague Stock Exchange	Czech koruna	National Central Bank	End of Month
SWX Swiss Exchange	Swiss franc	SIX Financial Information	Daily
Warsaw Stock Exchange	Polish zloty	National Central Bank	Daily
Zagreb Stock Exchange	Croatian Kuna	National Central Bank	Daily

Note well that as of January 2010, market capitalisation is calculated with the end of month exchange rate and turnover calculations are calculated with the daily average exchange rate.

Tables 13a & 13b: Stock / Index options and futures turnover

These tables provide information on standardised derivatives, [options](#) and [futures](#), which have stocks/equity indices as underlying value. The figures show the number of trading days overall, with the number of [contracts traded](#), [notional turnover](#) (EUR million), % change month on month and [open interest](#) split by the segments stock options: single stock futures, stock index options, and stock index futures. Year to date data is also provided.

- Table 13a: Stock/index options and futures turnover
- Table 13b: Stock/index options and futures turnover, year to date

Tables 14a & 14b: Interest rate options and futures turnover

These tables consolidate options and futures turnover of interest rate derivatives products. The following tables are provided:

- Table 14a: Bond options and futures turnover
- Table 14b: Bond options and futures turnover, year to date

The information provided by the tables consists of number of trading days, [contracts traded](#), [notional turnover](#) and [open interest](#). Data on number of contracts traded, the notional turnover (EUR million), % change month on month in EUR, and open interest is split by [interest rate options](#) and [interest rate futures](#). Year to date data is also provided.

Tables 15a & 15b: Commodities derivatives turnover

These tables on [commodity derivatives](#) consolidate options and futures turnover of derivatives products, which have commodity contracts as underlying value. Examples of commodity contracts include agricultural and energy contracts. The tables provided are:

- Table 15a: Commodities derivatives turnover
- Table 15b: Commodities derivatives turnover, year to date

The information provided by the tables consists of number of trading days, contracts traded, notional turnover, and open interest. Data on contracts traded, notional turnover, % change month on month in EUR, and open interest are split by [commodities options](#), [commodities futures](#), and other contracts.

Tables 16a & 16b: Foreign exchange derivatives turnover

These tables on [foreign exchange derivatives](#) consolidate options and futures contracts traded, turnover, and open interest of derivatives which have currencies as underlying value.

The information provided by the tables consists of number of contracts traded, notional turnover, and open interest.

Table 17: Trading participants

Table 17 represents trading participants (clearing and settlement members are excluded). Trading participants include dealers, brokers, broker-dealers and individuals who acquired the status of exchange member or equivalent and trade on the exchange through direct access to the trading system (either through native exchange connectivity or through connectivity from application service providers).

The table is split into new trading participants in the current month and into total number of trading participants in the exchange. The number is divided by the type of products traded by the intermediary in the exchange: equity, bonds, and derivatives. Note that each category is independent from the others. In this table there are not cumulative figures.

A FESE member operating more than one exchange/market but reporting as one operator to FESE should not count legal entities/participants in their figures multiple times in case it is the same legal entity. For instance, if the same legal entities/participant has access to one or more exchange/market that the member is reporting for it should be counted as one trading participant.

Tables 18a & 18b: ESG products - Total bond and money market instruments

The tables contain aggregated data on [ESG](#) bonds and money market instruments, according to regulation and standards, in particular: the EU Taxonomy and the Non-Financial Reporting Directive, and aligned with recognisable standards, frameworks, taxonomies, codes, and labels, the proposed EU Green Bond Standard, ICMA's Green Bond Principles, Social Bond Principles and Sustainability Bond Guidelines, and the Climate Bond Initiative Taxonomy.

The figures provide information on new listings in the month, the number of ESG bonds listed at the end of month, and the money raised (EUR million) in the month. The data on the number of trades and the turnover (EUR million) is split across turnover categories EOB, Off-EOB, and reported transactions.

The tables provided are the following:

- Table 18a: ESG products - Total bond and money market instruments
- Table 18b: ESG products - Total bond and money market instruments, year to date

Note that only bonds admitted to listing are included in the data.

Tables 19a & 19b: REITs

The figures provide information on [REITs](#), including the number of new listings in the month, the number of REITs listed at the end of the month, and market capitalisation end of month. The number of trades and turnover (EUR million) is split by EOB and Off-EOB. Year to date figures are also provided. The tables are:

The tables are:

- Table 19a: REITs
- Table 19b: REITs, year to date

Table 20: Median Simple Spread

The median simple spread (MSS) is a pre-trade liquidity measure calculated using bid-ask spread data. The information is denominated in basis points (bps). The median simple spread is calculated and presented per market segment, namely large cap, mid cap, small cap and micro cap.

The formula for calculating the MSS is composed of two steps:

- Step 1 - Applying the spread formula for each intraday market record in domestic instruments of all continuously traded listed companies during the month on Regulated Markets

$$[(\text{Best Ask Price} - \text{Best Bid Price}) / ((\text{Best Ask Price} + \text{Best Bid Price}) / 2)] \times 10000$$

- Step 2 - Computing the median value from all the relevant universe of individual intraday spread values records

In addition to the relevant MSS figures for each segment, exchanges also provide information about the market capitalisation (EUR million) and number of listed companies in each of the relevant segments.

The segmentation criteria for the liquidity bands are as follows:

- Large cap: market cap > USD 1.3 bn
- Mid cap: USD 1.3 bn > market cap > USD 200 m
- Small cap: USD 200 m > market cap > USD 65 m
- Micro cap: market cap < USD 65 m

2.3. European Equity Market Report (EEMR)

The EEMR gathers data from the market segments operated by all major European regulated markets and multilateral trading facilities.

The EEMR reports the following data:

- For FESE members, the data reported is retrieved from the monthly statistics, specifically from Tables 4a, 4b, 4c, 4d, 4e, & 4f: Value of equity trading.
- For non-FESE members, the data reported is provided directly by them or retrieved from the World Federation of Exchanges (WFE)

The figures are published on a monthly basis and the respective graphs visualising the figures on a quarterly basis.

2.4. Capital Markets Fact Sheet

The Capital Markets Fact Sheet provides a quarterly visual overview of trading on FESE members. The report includes figures aggregating statistics from each asset class, split by equity, derivatives and other instruments as well as providing an overview of quarter on quarter (QoQ) and year on year differences (YoY).

The figures are drawn from the [Monthly Statistics](#), as well as the EEMR.

2.5. Listed Equity Database

The Listed Equity Database (LED) provides a detailed overview of new listings, delistings and total listed equity instruments on FESE members.

The LED includes the number of new listings by sector name and their market capitalisation on the first day of trading. There are different categories of listings: [IPO](#); [direct listing](#); [private placement](#); [spin-off from listed company](#); [merger](#) of listed companies; [reverse merger](#); [transfer of listing venue](#); and other.

The number of delistings is shown by sector name, market capitalisation on the last day of trading, and by the type of delisting. There are different categories of delistings: going private; merger with listed company; merger with non-listed company; [takeover](#) by listed company; takeover by non-listed company; company [wind up](#); transfer to another listing venue; and other.

The data on total listed companies includes the sector name and market capitalisation on the last trading day of the year, as well as annual turnover, trades, and number of trading days.

2.6. European Exchange Report (EER)

The European Exchange Report (EER) provides integrated information on Europe's exchange industry. The report includes a one-page statement on each FESE member and outlines company information, trading figures and financial figures.

Company information of the exchange includes contact details, sectors, number of employees, and other company information.

Trading figures are based on the end of the previous year, drawn from the monthly statistics. The report provides data on trading across various instruments. For equity, securitised derivatives, ETFs, and UCITS, data is provided on the turnover (EUR million), number of trades, market capitalisation (EUR million) and number of listings. Figures on fixed income include data on turnover (EUR million), number of trades, and number of listings. Data on derivatives is divided by stock/index options and futures, bond options and futures, commodity derivatives, and foreign exchange derivatives. They include the notional turnover (EUR million) and number of contracts traded.

Financial figures provide detailed information on revenues, costs, [EBITDA](#), [EBIT](#), and [net income](#). Revenue and cost figures are broken down by a series of categories:

- Listing (admissions and ongoing): companies can list their securities on exchanges after meeting eligibility criteria. Revenues generated from listing activities stem from the one-time listing fee and the recurring annual fee for listing services

- Cash trading: revenues generated through charges for transactions from cash equity trading
- Derivatives trading: revenues stemming from charges for transactions from derivatives trading
- Clearing: revenues stemming from fees for clearing services provided
- Settlement: revenues generated from fees for settlement services provided
- Custody and banking: revenues stemming from charges for custodial services provided
- Information products: revenues generated through fees for the provision of data products and services
- IT services: revenues stemming from fees for access to trading software and IT services

2.7. Index Database

The Index Database provides a detailed overview of a selection of market indices most commonly used in Europe.

The information collected within the Database is the following:

- Short name: the index's short name
- Full name: the index's full name
- Country: country of origin
- Exchange where [constituents](#) are traded: name(s) of the exchange(s)
- Index coverage: open field but the coverage of an index is typically the underlying grouping of the stocks following a certain rationale
- Index type: open field where exchanges provide the most suitable categorisation to the index, e.g. price index; total return index, blue chip index, etc.
- [BMR benchmark group](#): the type of benchmark following the BMR benchmark group (critical, significant or non-significant) or blank if not applicable
- [BMR low-carbon benchmark group](#): the type of low-carbon benchmark that applied to the index (EU Paris-aligned or EU climate transition benchmark, blank if not applicable)
- [ISIN](#)
- [Bloomberg code](#)
- [Reuters code](#)
- Base value: value upon which the index or benchmark is based
- Base date: date of the index's base value
- Number of [constituents](#)
- Currency: three letter abbreviation of index currency
- Calculation formula: name of the calculation formula - a large majority of the indices are calculated based on [Laspeyres](#)
- Market capitalisation: open field where exchanges indicate whether the index is market capped
- Weight methodology: where applicable, the weight methodology applied to the index
- Free float: where applicable, the category "yes" is applied if the index is a free float index
- Free float factor: if the index is free float and a free float factor is available, the free float factor is indicated
- Review frequency: the temporal frequency of index review is provided (e.g. annually, quarterly, etc.)
- Tick frequency: the frequency at which the tick size is updated (e.g. real-time, end-of-day, every day, every minute, 15 seconds, etc.)

- Computation time: the overall timeframe for which the benchmark is computed (e.g. 09:00 to 17:35 CET, etc.)
- Classification standard: classification standard is the industry classification or industry taxonomy used to classify the index constituents based on similar production processes, similar products, or similar behaviour in financial markets. One example is the Industry Classification Benchmark ([ICB](#))
- [Corporate actions treatment](#): indication whether corporate action treatment is applied to the index
- Historical time series start: starting date of the historical index quotas
- Type of historical data: this indicates the types of data provided for the historical time series (e.g. opening, close, high, low, intra-day, etc.)
- Exchange Traded Fund: this category indicates whether ETFs are based on the respective index (yes/no)
- Standardised futures: this category indicates whether standardised futures are based on the respective index (yes/no)
- Standardised warrants: this category indicates whether standardised warrants are based on the respective index (yes/no)
- Standardised options: this category indicates whether standardised options are based on the respective index (yes/no)
- Standardised derivatives traded on: the name of the exchange where the standardised derivatives are traded on, if applicable
- Administrator LEI: [LEI](#) code of the index administrator
- Index compiler- name: name of the entity compiling the respective index
- Index compiler - phone number: phone number of the respective index compiler, harmonised by including the country code at the beginning
- Index compiler - email: email address of the respective index compiler
- Index compiler - website: link to the website of the respective index compiler
- Trademark: indication whether the index is a registered trademark.
- License fee: this indicates whether a license fee is required
- License purchase - contact person: name of the responsible person for license purchase of the respective index
- License purchase - phone number: phone number of the responsible person for license purchases of the respective index
- License purchase - email: email address of the responsible person for license purchases of the respective index
- Last update received: date of the last update received on the respective index

2.8. Trading Calendar and Trading Hours

A comprehensive compilation of closing days and regular CET trading hours for trading venues for the current year.

2.9. Changelog

Complimentary to the methodology is the changelog, a record of all the updates affecting the statistics, including changes to the membership. The changelog covers the statistical report(s) and the trading venue affected by the change, a description of the change, and the date of application of the change.

3 Definitions

Auctions

Auctions are different from regular trading, as matching between buyers and sellers is paused for a specific period of time, during which orders are collected from the market. During this time - the call period - the matching algorithm considers the orders that have been entered and calculates the most popular price, or the price at which the maximum number of securities can be executed. At the end of the call period, orders that can be matched are executed.

There are various types of auctions:

- An opening auction determines the opening price of a security on a trading venue by matching buyers with sellers. Orders to buy and sell securities can be entered from a specific pre-opening time order that are accepted before the market officially opens.
- An intra-day auction is a scheduled auction held throughout the trading day.
- A closing auction determines the closing price as it takes place at the end of the trading day, before the market closes and reopens the following morning.
- Miscellaneous. Mainly includes unscheduled auctions, which are a protective mechanism, a volatility interruption, that whereby trading is interrupted by an additional auction price determination.

Basis points (bps)

Basis points is a unit of measurement for interest rates and other percentages in the financial sector. One basis point equals 1/100th of 1% (0.01% or 0.0001) and is commonly used to indicate the percentage change of a financial instrument.

Benchmark

A benchmark is defined as per the EU Benchmark Regulation (BMR) as an index upon which the amount payable under a financial instrument or financial contract, or the value of a financial instrument, is determined. Alternatively, a benchmark is an index that is used as a reference to measure the performance of an investment fund, pursuing the goal of tracking the return of the index or defining the asset allocation of a portfolio or computing the performance fees. Most ETF, exchange traded funds, are pure index funds.

Bloomberg code

A Bloomberg code is an alpha-numerical code to uniquely identify a company in Bloomberg. There are two types of codes:

- Equity Bloomberg code: this code is made up of three parts, the Bloomberg ticker, exchange code and market sector
- Index Bloomberg code: this code consists of the Bloomberg ticker and market sector

BMR benchmark group

BMR benchmark group refers to the categorisation of benchmarks established by the EU Benchmarks Regulation according to particular quantitative and qualitative measures. The groups are divided into critical benchmark, significant benchmark, and non-significant benchmark:

- Critical benchmarks are used for financial instruments or financial contracts or to measure the performance of investment funds with a value of at least EUR 500 billion. A benchmark can also be critical under other circumstances, e.g. if it is based on submissions by contributors who are largely located in only one member state and the it would have a negative impact on the markets' integrity and financial stability if the provision of the benchmark would no longer apply.
- Significant benchmarks are used for financial instruments, contracts or to measure the performance of investment funds with a value of at least EUR 50 billion. They may be significant benchmarks when there are no or very few market-led substitutes and it could lead to negative impacts on markets' integrity and financial stability if the benchmarks were to cease.
- Non-significant benchmarks are benchmarks that are neither critical nor significant.

BMR low carbon benchmark

In line with the EU Benchmarks Regulation, the low carbon benchmark group is divided in two:

- EU Climate Transition Benchmark: a benchmark where the underlying assets are selected, weighted or excluded in such a manner that the resulting benchmark portfolio is on a decarbonisation trajectory and is also constructed in accordance with the minimum standards laid down in the delegated acts.
- EU Paris-aligned Benchmark: a benchmark where the underlying assets are selected in such a manner that the resulting benchmark portfolio's greenhouse gas (GHG) emissions are aligned with the long-term global warming target of the Paris Climate Agreement and is also constructed in accordance with the minimum standards laid down in the delegated acts.

Bonds

Bonds are fixed income financial instruments issued by governments, local authorities, and state-owned or private organisations. They may be listed or traded in one or several exchanges and ensure predetermined levels of returns in the form of interest. Interest rates may remain fixed throughout the bond's life or vary according to the bond's terms of listing.

The bond market is composed of various segments:

Convertible Bond	An instrument consisting of a bond or a securitised debt instrument with an embedded derivative, such as an option to buy the underlying equity.
Corporate Bond	Bonds issued by companies incorporated with limited liability ⁴¹ or equivalent in third countries.
Covered Bond	Bonds issued by a credit institution which has its registered office in an EU Member State or country and is backed by a basket of assets.
Other Bond and Money Market Instruments	This includes bonds that do not belong to any of the above bond types and money market instruments, i.e. Treasury Bills, Commercial Papers, etc.

⁴ Type of company listed in Article 1 of Directive 2009/101/EC.

Other Public Bond	Bonds issued by any of the following public issuers: (a) in the case of a federal Member State, a member of that federation; (b) a special purpose vehicle for several Member States; (c) an international financial institution established by two or more Member States which have the purpose of mobilising funding and providing financial assistance to the benefit of its members that are experiencing or are threatened by severe financial problems; (d) the European Investment Bank; (e) a public entity which is not an issuer of a sovereign bond as specified in the previous row.
Sovereign Bond	Bonds issued by a sovereign issuer which is either: (a) the Union; (b) an EU Member State including a government department, an agency or a special purpose vehicle of an EU Member State; (c) a sovereign entity which is not listed under points (a) and (b).

Commodity derivatives

Commodity derivatives are financial instruments, whose value depend on a commodity, for instance agricultural products, mining products such as metals or fuels, or energy produced.

Commodity options endow holders with the right - but not the obligation - to buy or sell a determined number of commodities according to a predetermined price and terms. Commodity options are settled by physical delivery, and they can be based on a wide range of commodities (e.g. agricultural, energy, metal).

Commodity futures are contracts for the purchase and delivery of commodities. The buyer is obliged to buy a determined number of commodities from a seller, at a specified future date, at an agreed price (the future's contract price). Correspondingly, the seller is obliged to complete the transaction, i.e. deliver the commodities at the agreed price at the specified date. Commodity futures contracts are settled by physical delivery, and they can be based on a wide range of commodities from agricultural to mining products.

Company admitted to listing

A company whose shares are listed and traded on a certain trading venue. Admitted to listing implies that the issuing company has to comply with a series of admission requirements provided by a series of EU regulatory requirements, including the Listing, the Prospectus, and the Transparency Directive.

Company admitted to trading

A company whose shares are traded but not listed at the exchange. Admitted to trading implies that the company has to comply with a series of transaction reporting requirements under MiFID II/MiFIR.

Contracts traded

This the number of standardised units of trading, as defined by an exchange. The standardised units of trading are part of the product specifications and as such they are individual for each product.

Corporate actions treatment

A corporate action may be defined as an action conducted by a company with a fixed date, and which affects shareholders, e.g. rights issue, special dividend, stock split, redemption

of shares, etc. The indices in which the company is included will be subject to an adjustment on the respective date if corporate actions treatment is applied.

Dark pool

A dark pool is a privately organised trading venue or exchange that allows institutional investors to trade without exposure until after the trade has been executed and reported.

Dark pool trading: this category includes all trading where matching algorithms do not provide for pre-trade transparency. For dark pool trading, in case of platforms also offering smart order routing systems, only the ultimate execution venue is allowed to integrate the corresponding trade into its statistics.

Direct listing

A listing of shares of a new company in a Regulated Market or on an MTF without a previous Initial Public Offering. Usually, the company already fulfils the requirement of having a sufficient dissemination of shares among shareholders.

Domestic companies

A company is considered domestic when it is incorporated in the country in which the trading venue is located.

EBITDA

This stands for earnings before interest, taxes, depreciation, and amortisation. It is usually used to evaluate a company's operating performance.

Electronic Order Book (EOB)

EOB refers to an electronic list of buy and sell orders for a specific security. The list entails the number of shares being bid on or offered at each price point and identifies the market participants behind the bid and sell orders. Orders placed by trading members are usually exposed to all market participants and automatically matched according to precise rules set up by exchanges/MTFs (generally based on price or time priority) and whose prices are displayed to the market.

EOB transactions include trading executed through the trading venue's electronic order book. These trades may include floor trading organised by an exchange/MTF. For equities trades additional data granularity is available. Electronic order book trades and turnover statistics display details broken down by type of execution mechanism. This more granular data breakdown is designed alongside FIX Market Model Typology (MMT).

Environmental, Social and Governance (ESG)

Environmental, social, and governance (ESG) criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments.

As an example, in the EU this refers to data disclosed by companies under the Corporate Sustainability Reporting Directive (CSRD) providing information on environmental matters, social matters and treatment of employees, respect for human rights, anti-corruption and bribery, and diversity on company boards (i.e. age, gender, educational and professional background).

Exchange Traded Funds (ETFs)

ETFs are portfolio investment products that are admitted to listing or trading on a regulated exchange. An ETF provides investors with exposure to a diversified basket of shares or other financial instruments. ETFs aim to replicate the performance of a specific index; this index can be a blue chip, a regional, or a sector index. The index type is not just limited to shares and may include bond indices and other types of sophisticated index.

Unlike most traditional Investment Funds, ETFs are traded in exchanges the same way as any other share.

Foreign Companies

A company is considered foreign when it is incorporated in a country other than that where the exchange is located.

Foreign exchange derivatives

Foreign exchange derivatives include:

- Foreign exchange futures: contracts that are traded on an exchange and settled on a specified date, in which the underlying is a currency, and which involve the exchange of the currency against another currency based on the rate of exchange between the currency pairs.
- Foreign exchange options: contracts in which the underlying is a currency and, at the option of the buyer, may involve the exchange of the currency against another currency based on the pre-negotiated rate of exchange between the currency pairs.

Free float

When calculating the free float, shares held by two types of shareholders are excluded: firstly, shares held by interested parties (strategic holdings, directors, employee holdings, etc.) and, secondly, shareholders of a significant portion of the issued shares.

Futures

A futures contract is a standardised tradable contract that provides the terms of a transaction on underlying assets (commodity or financial instrument) at a specified date in the future at a predetermined price. Both buyers and sellers have the obligation to complete the transaction. There are several varieties:

- A stock futures contract is a standardised contract for the purchase and delivery of stocks at a future date. According to the market rules, stock futures contracts are settled by the physical delivery of underlying stocks and settled cash (i.e. the difference between the value of the underlying stock at the expiration and the price of futures is credited/debited to the counterparties).
- An index futures contract is a standardised contract that enables a buyer and a seller to exchange an amount based on the value of an index (i.e. a stock index). Stock index futures are settled in cash. Should the expiration index value be less than the futures contract price, the seller is credited, and the buyer is debited the difference.
- An interest rate futures contract is a standardised contract that enables a buyer and a seller to exchange an amount based on the level of a specific interest rate, depending upon the extent of the interest rate term (long- or short-term). A short-term interest rate refers to maturity periods equal or shorter to 12 months while long-term interest

rates refer to periods exceeding 12 months (treasury bonds, corporate bonds, Eurobonds, etc.).

Key characteristics of an options and a futures transaction could be summarised in the following table:

Basic characteristics	Options contract transaction	Futures contract transaction
Agreement today	Yes	Yes
Delivery and payment in the future	Yes	Yes
Obligation to complete the transaction	One of the parties may choose to complete the transaction	Both parties have the obligation to complete the transaction

Global Industry Classification Standard (GICS)

A method and classification that assign companies to a specific economic sector and industry group that best defines its business operations.

The GICS was developed by S&P Dow Jones Indices. It consists of a series of sectors, industry groups, industries and sub-industries. Companies are assigned to a sub-industry, which in turn corresponds to an industry, industry group, and sector.

Index

An index is an indicator that reflects the aggregated performance of the underlying set of constituents included in the index. Broad market indices generally include a large number of shares (constituents), while basket indices and sector indices are composed by a subset of listed shares, according to their size/liquidity or sectoral activity. Usually, stock indices are market capitalisation weighted or free float-based. Indices calculations are adjusted to reflect changes in constituents and corporate actions such as changes in share capital.

Industry Classification Benchmark (ICB)

The ICB, like GICS, is a method and classification that assign companies to a specific economic sector and industry group that best defines its business operations. Both ICB and GICS are the most popular global standards for the categorisation of companies listed in world exchanges. ICB is structured across four levels consisting of industries (level 1), super-sectors (level 2), sectors (level 3), and subsectors (level 4). Companies are allocated to subsectors based on their core business activity.

Index constituent

An index constituent is a member or part of the index, usually an issuer.

Investment funds

Investment funds are collective funds managed by an investment trust company (a company established with the purpose of investing in other companies) or a management team. For FESE statistics, these encompass non-ETF UCITS, listed unit trusts, closed-end funds and investment trusts, which are all different forms of collective investment, depending on a country's legislation.

IPO (Initial Public Offering)

An IPO is the placement of stocks by an unlisted company aimed at creating the float for admission to listing on a market operator (i.e. exchange regulated or regulated market). Figures presented include both IPOs (when a prospectus has been approved by a regulator) and private placements (where the prospectus is not mandatory). During the offer, both existing shareholders (i.e. qualified investors and private individuals) and the company itself may place - through an offer usually run by a pool of intermediaries and managed by a global coordinator - already issued or newly issued shares.

For the purpose of the FESE Methodology, IPOs must have the following characteristics:

- The company must be listed for the first time
- The prospectus, approved by a regulatory authority, or a document required by the rules of a Multilateral Trading Facility (MTF) for shares to become listed on the MTF, must be available
- Shares must be offered to the public

ISIN

International Securities Identification Numbers (ISIN) is a 12-character alpha-numerical code that uniquely identifies a security. ISINs are issued for bonds, commercial paper, equities and warrants.

EBIT

This stands for earnings before interest and taxes and is usually used as an indicator of a company's profitability. Other ways often used for EBIT include operating earnings, operating profit, or profit before interest and taxes.

Laspeyres

The Laspeyres mathematical formula is the most commonly used to calculate stock exchange indices. It measures the change in the prices of a weighted basket or group of stocks against a fixed base quantity weighted by the market capitalisation of a company adjusted by free float. The Laspeyres formula is as follows:

$$\sum_{i=1}^N \frac{(p_i \times s_i \times f_i \times c_i)}{d}$$

Where:

- N is the number of companies in the index
- P_i is the price of the company i
- S_i is the number of shares of company i
- F_i is the free float factor of company i
- C_i is the weighting cap factor of company i
- D is the divisor of the index

Legal Entity Identifier (LEI)

The Legal Entity Identifier (LEI) is a 20-digit unique code to identify parties to financial transactions worldwide.

Market capitalisation

A company's market capitalisation is the total number of issued shares of the company (including their several classes) multiplied by the respective share price at a given time.

The total market capitalisation of an exchange is the sum of the total market capitalisation of each domestic company and exclusively listed foreign companies included in all markets/segments of an exchange.

The figures for a given exchange include:

- Shares of [domestic companies](#)
- Shares of foreign companies which are exclusively listed on an exchange, which mean the foreign company is not listed on any other exchange
- Common and preferred shares
- Shares without voting rights when available
- Investment/participation certificates when available

The figures for a given exchange exclude:

- Collective investment funds
- Rights, warrants, convertible instruments
- Options, futures
- Foreign listed shares other than those exclusively listed
- Companies whose only business goal is to hold shares of other listed companies
- Companies admitted to trading (not admitted to listing)

Market Model Typology (MMT)

The MMT is a standard established by a range of industry participants within the FIX trading community. The aim is to provide a practical and common solution for standards on post-trade data across asset classes under MiFID II.

Merger

A merger usually occurs when one company purchases another company by buying a certain amount of their shares in exchange for its own shares. There can be a merger of listed and non-listed companies.

Multilateral Trading Facilities (MTFs)

One of the three categories of trading venue defined under MiFID II. An MTF is a multilateral system, operated by an investment firm or a market operator, which brings together multiple third party buying and selling interests in financial instruments, in the system and in accordance with non-discretionary rules, in a way that results in a contract.

Net income

Net income is derived from the company's total revenues after deducing total expenses. In more detail, the net income formula could be expressed as follows:

$$\text{Net income} = \text{net revenue} - \text{operating expenses} - \text{other business expenses} - \text{taxes} - \text{interest on debt} + \text{other income}$$

Notional turnover

It is an approximate measure of the value of the number of contracts traded expressed with reference to the underlying, enabling comparison between cash and derivatives trading and among different derivatives products. It is computed and consists of the number of contracts traded multiplied by the nominal value of the underlying, trading unit/contract size (for futures) or multiplied by the strike price (for options).

In detail, for futures and options, it is computed as the product of the number of contracts traded by the price by the value of an index point (in the case for index futures or options) or by the size (number of underlying shares) in the case of stock futures or options; alternatively, the value of the underlying asset may be used in place of the price.

Off-Electronic Order Book (Off-EOB)

This refers to trades confirmed through a system managed (directly or indirectly) by the exchange, where both seller and buyer agree on the transaction (price and quantity). The system checks automatically if the transaction is compliant with the exchange rules, including most often consistency with EOB price. Bilateral negotiations leading to such trades may not be exposed to the market until after the trade is completed. In compliance with the exchange/MTF/trade reporting venue trading rules, they can be executed in several ways adopted by intermediaries for their interaction.

The Off-EOB turnover category is included as of January 2009 figures onwards. These figures are all other transfers of ownership by way of trades matched neither on an electronic order book nor on a dark pool nor reported under reporting transactions. In order to be included in the FESE statistics, this activity must generate revenues to the exchange/MTF/trade reporting venue and/or be managed by a reporting system organised by the exchange/MTF/trade reporting venue. They can be executed in a number of ways - including floor trading and special trading platforms, telephone trading, or other structures - and are reported by the exchange members. They are reported by an intermediary to the exchange/MTF/trade reporting venue, which should avoid counting both sides of the trade, but single counting cannot always be guaranteed. Off-EOB transactions also include late trades (reported after market close), and those trades for which MiFID II allows delayed reporting.

Open interest

Number of derivatives contracts (futures and options) outstanding at a given time (close of trading at the last trading day of the month). It may be computed on a net or gross basis, according to the way the opening/closing of the position is managed at the clearing level.

Options

An option is an instrument, which allows investors to buy or sell an underlying asset (commodity or financial instrument) according to a pre-determined price - the strike price of the option - and terms during a specified period - the lifetime of the option. Options can be exercised either solely on the expiration day (European type) or at any time during their lifetime (American type). After the end of its lifetime, the option has no value, as it has expired. Options are also distinguished into call (providing the right to buy) or put (sell) options.

Key characteristics of an options and a futures transaction could be summarised in the following table:

Basic characteristics	Options contract transaction	Futures contract transaction
Agreement today	Yes	Yes
Delivery and payment in the future	Yes	Yes
Obligation to complete the transaction	One of the parties may choose to complete the transaction	Both parties have the obligation to complete the transaction

In an options transaction agreement, investors are equally distinguished into holders (i.e. buyers) and writers (i.e. sellers). Holders have the right but not the obligation to sell or buy, while writers only have the obligation to sell or buy. Therefore, call options allow holders to buy and oblige writers to sell the underlying asset, while put options allow holders to sell and oblige writers to buy the underlying asset.

Options are distinguished according to the underlying asset with the most common being:

- Stock options, which are settled by physical delivery of underlying stocks.
- Index options are settled in cash. The underlying value of the option is the cash equivalent value of the index (also called the index amount).
- Interest rate options have the value of the underlying reference (for example a bond or a currency) determined by the level of a specific, depending upon the extent of the term (long or short term), interest rate. A short-term interest rate refers to maturity periods equal or shorter to 12 months while long-term interest rates refer to periods exceeding 12 months (treasury bonds, corporate bonds, Eurobonds, etc.).

Price index

A price index reflects the aggregated performance of the underlying index constituents based upon the price value of the shares only. It does not include dividend payments.

Primary market

The primary market is where instruments are created, usually the first stopover for companies to raise capital. Frequently, the primary market leads to new company listings on a RM or an MTF.

Private placement

A listing of shares not sold through a public offering but rather through a private offering, aimed at pre-determined categories or numbers of investors.

Real estate investment trusts (REITs)

REITs are a company, listed and traded on an exchange, whose purpose is to invest in property or finance income-generating real estate/infrastructure. REITs pool the capital of numerous investors and, similarly to a mutual fund, sell shares in those investments, providing the holder with exposure to real estate investment without buying, managing or financing any properties themselves. REITs are also distinguished in industry classifications, such as ICB, whereby the distinction between real estate investment and services and real estate investment trusts is made. Similarly, under the GICS classification, the broad real estate sector and industry group is divided into equity REITs and real estate management and development industries.

Regulated market (RM)

One of the three categories of trading venue defined under MiFID II. An RM is a multilateral system operated and/or managed by a market operator, which brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments, in the system and in accordance with the RM's nondiscretionary rules, and in a way that results in a contract, in respect of the financial instruments admitted to trading under the RM's rules and/or systems.

Reporting transactions

This category in FESE statistics contains trades reported through a Trade Reporting Facility (TRF) when only one counterparty provides information on the trade. The other counterparty could use this facility if reporting is mandatory. They include OTC trades (matched at conditions different from those established by the exchange) but data reported by Approved Publication Arrangements (APAs) is excluded from this category. This category is included as of January 2009 figures onwards.

Return index

A return index reflects the aggregated performance of the underlying index constituents based upon the price value of the shares plus dividend payments reinvested.

Reuters Instrument Code (RIC)

Reuters code is a code that was used by Thomson Reuters, now Refinitiv, to uniquely identify financial instruments and indices.

Reverse merger

A reverse merger is a mean used by a private non-listed company to be listed. The private non-listed company acquires a company listed in a public market and the private company's shareholders exchange their shares for new shares issued by the listed public company.

Securitised derivatives

A securitised derivatives product is a tradable financial instrument designed to meet specific investor needs and to respond to different investment strategies by incorporating non-standard features.

Each securitised derivatives product has its own characteristics. They are generally issued by intermediaries different from the issuer of the underlying financial instruments.

Securitized derivatives products include different types of instruments which can be classified into investment and leverage products:

- Investment products are geared to the medium and long term with a rather conservative risk-return profile. Certificates (with the exception of constant leverage certificates) are the most common products in this category.
- Leverage products are associated with a higher level of risk and a relatively short-term investment horizon. With a small investment, they can generate a leveraged performance relative to the underlying. Warrants are the most common products in this category.

Special Acquisition Company (SPAC)

A special purpose acquisition company (SPAC) is a company with no commercial operations that is formed strictly to raise capital through an initial public offering (IPO) and to be listed in a stock exchange, for the purpose of acquiring an existing private company and facilitate a direct access to the stock market.

Specialised market / segment

Those markets/segments operated by the exchange which have different listing rules than those of the official list/main market. Most Multilateral Trading Facilities (MTFs) managed by FESE members are included under this category. They may be dedicated to small and medium enterprises (e.g. SME Growth Markets), young, fast-growing companies from the high-tech sector, companies with specific features, etc.

Specialised market/segment index in equity and in bonds

Specialised indices can be price or return indices: these indices represent markets/segments that are defined as having different listing rules than those of the main market, in particular lower requirements. These indices include the most liquid shares traded in the specialised market/segment of each stock exchange and some of them are free float-weighted.

Spin-off from listed company

This refers mostly to the listing of shares of a listed company's constituent entity or business, the shares of which are allocated to the company's existing shareholders.

Takeover bid

A takeover occurs when one company successfully bids to take control of or acquire another company that is listed. Takeover bids may happen by listed or non-listed companies.

Traded index

Traded indices can be price or return indices; the index value is the underlying basis for options, futures, exchange traded funds, and other derivatives. These indices include the most liquid shares traded in the stock exchange and are generally free float-weighted.

Transfer of listing venue

This refers to the transfer of a company listing from one exchange to another. The listing of a company transferred from another venue counts as delisting for the respective other venue.

Turnover

Turnover or trading value is the total number of cash financial instruments traded during a certain period multiplied by their respective executed prices.

Turnover velocity (%)

The turnover velocity is calculated as follows:

$$\frac{24 * \text{Domestic EOB Share Turnover}}{\text{Domestic Market Capitalisation}_m + \text{Domestic Market Capitalisation}_{m-1}}$$

UCITS

Undertakings for Collective Investment in Transferable Securities (UCITS) are a category of investment funds established and regulated in the European Union by Directive 2009/65/EC. This Directive allows UCITS-labelled funds to operate across the EU with a single authorisation from one Member State. It enforces standardised regulatory and transparency requirements for the protection of investors, making UCITS-labelled funds more accessible to retail investors.

Volatility

The annualised volatility of a given traded index is calculated as follows:

$$\sqrt{250}\sigma_p$$

Where:

- σ_p is the standard deviation on the daily returns (p) of the last six months.
- $\sqrt{250}$ is the factor to annualise.

Wind up

A company wind up is the process of dissolving a company. The main purpose of a wind up is to sell assets, pay off creditors and distribute any remaining assets.