

ESMA Market Report

EU Securities Markets 2023



ESMA Market Report on EU Securities Markets 2024

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European Securities and Markets Authority (ESMA)
Economics, Financial Stability and Risk Department
201-203 Rue de Bercy
FR-75012 Paris
risk.analysis@esma.europa.eu

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Executive summary

Securities markets: There were 512 EEA securities trading infrastructures active in the EEA at the end of by end- 2022, a 5% increase since 2021, comprising 310 trading venues (TVs), 188 systematic internalisers (SIs) and 14 approved publication arrangements (APAs). Among venues, there were 128 regulated markets (RMs), 152 multilateral trading facilities (MTFs) and 30 organised trading facilities (OTFs) at the end of 2022.

The first three countries by number of infrastructures (Germany, the Netherlands and France) concentrated 39% of the infrastructures in 2021 and 2022.

Equity and bond instruments available for trading have grown from 148,700 in 2021 to 157,300 in 2022 (27,900 equity and 129,300 bond instruments), driven by bonds and ETFs.

Equity markets: In 2021, equity markets recorded a surge in new instruments admitted to trading, followed by a slowdown in 2022, reflecting the evolution of the underlying secondary market performance over time. The number of ETFs available for trading continued its upward trend.

Trading volumes in the EEA remained stable for equity markets, at EUR 15.6tn in 2022, with the vast majority of volumes in shares. SME trading activity decreased, with turnover halved in 2022.

The share of on-exchange turnover increased in 2021 and 2022, linked to the UK withdrawal from the EU. On-exchange turnover accounted for 70% of equity volumes in both years, compared to 56% in 2020 in the EEA and the UK. The impact of the UK withdrawal is also visible in the increase in MTF trading in the Netherlands (concentrating 63% of EEA MTF volumes in 2022), whereas the effect on RMs was limited. Finally, SI trading decreased substantially, amounting to 8% of equity volumes in 2021 and 2022 (down from 33% in 2020 in the EEA and the UK).

Trading activity under waivers and deferrals remained stable, with ETFs continuing to record the majority of their volumes under them (56% of ETF volumes were under pre-trade waivers and 30% under post-trade deferrals, vs. 18% and 9% for shares).

Bond markets: Bond trading volumes amounted to EUR 31.2tn in 2022, a 12% increase compared to 2021, driven by sovereign bond trading. Similarly to past years, sovereign bonds represent the vast majority of bond volumes and transactions.

The majority of bond trading remained off-exchange, with SI and OTC accounting for 46% and 15% of volumes in 2022, respectively. The distribution of bond trading on-exchange remained stable, with MTF trading amounting to 24% of bond volumes, OTFs 8% and RMs 7% in 2022, except for an increase in OTFs volumes in 2022 (+35%).

Bond volumes on-exchange are heavily concentrated in a few countries: RM volumes in Italy (90% of RM volumes in 2022), MTF volumes in the Netherlands (84% of MTF volumes in 2022) and OTF volumes in France (69% of OTF volumes in 2022); with RMs and OTFs specialised in trading European sovereign bonds.

Trading of non-European bonds increased in 2022 to a third of bond volumes in Europe (from 31% in 2021 and similar share in 2020). In comparison, domestic trading of European bonds has decreased to 37% of bond volumes in 2022 (49% in 2020).

The number of liquid bonds, as calculated for MiFID II purposes, has increased from 513 bonds at the end of 2021 to 1,010 bonds in 2022, translating into a growing share of bond trading volumes during the year.

The green bond market continued its increase in terms of volumes traded (+22% in 2022), and instruments available (+25%), with a concentration of trading in a few countries.

Essential statistics 2022

	Equity			Bond		
	All	Shares	ETFs	All	Corporate Sovereign	
Size						
Number of instruments	27,997	20,233	6,052	129,338	100,207	8,706
of which newly admitted	2,885	2,165	600	26,783	22,406	1,117
of which liquid	2,313	1,338	946	1,199	359	778
Total trading volumes (EUR tn)	15.6	13.4	2.1	31.2	3.4	25.2
Total number of transactions (mn)	1,932	1,864	48	15.8	4.7	10.1
Total EEA market capitalisation (EUR tn)	16.9	16.9	n/a	225.1	11.2	11.5
Trading activity						
Infrastructure type with largest trading activity	RMs	RMs	MTFs	SIs	MTFs	SIs
On-exchange (% of total volumes)	72	72	70	39	36	41
RMs	37	40	22	7	0	9
MTFs	34	32	48	24	35	23
OTFs	n/a	n/a	n/a	8	1	9
Off-exchange (% of total volumes)	28	28	30	61	64	59
SIs	8	6	20	46	38	46
OTC	20	22	9	15	26	12
Fragmentation indicator		0.6	0.7		0.8	0.8
Market infrastructures						
Largest country in terms of trading	NL	NL	NL	FR	NL	FR
Number of venues	220	205	112	218	184	173
RMs (% of number of venues)	31	29	30	24	23	26
MTFs (% of number of venues)	45	48	35	31	31	23
OTFs (% of number of venues)	n/a	n/a	n/a	6	5	7
SIs (% of number of venues)	24	23	35	39	41	44
International activity						
Largest EEA issuer (by volume)	DE	DE	IE	IT	FR	IT
Volumes by issuer origin (EUR tn)						
EEA	13.0	11.1	1.9	21.2	2.1	16.6
non-EEA	2.5	2.3	0.2	10.0	1.2	8.6
EEA Instruments available cross-border (%)	81	75	96	70	71	77
Cross-border EEA volumes (%)	48	89	37	61	76	60

Note: All values are for the 2022 calendar year. The fragmentation indicator (FI) is calculated as 1 minus the Herfindahl–Hirschman Index and ranges from 0 (monopoly) to 1 (maximum fragmentation). n/a= not applicable, numbers are conventionally rounded so sums may not round up to 100.

Source: Financial instruments reference data system (FIRDS), financial instruments transparency system (FITRS), ESMA.

Market monitoring

Securities markets

Summary

There were 512 securities trading infrastructures active in the EEA by end-2022, a 5% increase since 2021, comprising 310 trading venues (TVs), 188 systematic internalisers (SIs) and 14 approved publication arrangements (APAs). Among venues, there were 128 regulated markets (RMs), 152 multilateral trading facilities (MTFs) and 30 organised trading facilities (OTFs) at the end of 2022.

The first three countries by number of infrastructures (Germany, the Netherlands and France) concentrated 39% of the infrastructures in 2021 and 2022.

Equity and bond instruments available for trading have grown from 148,700 in 2021 to 157,300 in 2022 (27,900 equity and 129,300 bond instruments), driven by bonds and ETFs.

EU securities market reporting

Similar to past market reports on EU Securities Markets¹, this report is based on data on financial instruments within the scope of the markets in financial instruments directive (MiFID II), gathered by ESMA in cooperation with European national competent authorities (NCAs). Four databases are used to create the risk indicators presented in this report:

- The reference data for financial instruments, published by ESMA on its website through the **Financial Instruments Reference Data System** (FIRDS)
- Additional reference and quantitative data for the purpose of the calculation of transparency and liquidity thresholds published by ESMA through the **Financial Instruments Transparency System** (FITRS)
- For equity, further information about total trading volumes and trading volumes under exemption to pre-trade transparency are collected in ESMA's **Double Volume Cap** (DVC) register. Transparency data are used

to monitor the DVC, a mechanism intended to limit the volume executed in the dark.

- ESMA publishes a **register** of all EEA TVs, SIs and APAs (with information provided by NCAs) on its website, allowing the monitoring of EEA markets' microstructure evolution.²

The coverage of this report is exclusively equity and bond instruments that are publicly available for trading on EEA TVs under MiFID II, regardless of the type of trading (on or off-exchange).³ This means that over-the-counter (OTC) transactions are considered only as long as the instruments are publicly available on at least one TV, whereas private equity and debt are excluded from the scope. ESMA collects data on a daily basis. In this report all figures and data presented are on a monthly basis, for the reporting period of the 2021 and 2022 calendar years.

Markets and instruments data collected by ESMA cover the **EEA**.⁴ In the last report and in preparation for the end of the transition period for the UK's withdrawal, the main numbers for 2020 were presented with and without the UK, which makes possible comparisons difficult.⁵ Thus, throughout this report, when numbers are compared to their 2020 equivalent, the coverage is presented.

¹ See ESMA (2020), "[EU securities markets, Annual Statistical Report](#)" and ESMA (2021), "[EU securities markets, Annual Statistical Report](#)".

² For a further description of the MiFIDII/MiFIR reporting obligation, transparency requirements and the details of the data collected, see ESMA (2020), *ibid*.

³ Similar to coverage in previous reports, money market instruments are excluded. Furthermore, the focus is on equity and bond instruments since ESMA, through its Market Reports on EU derivatives markets, has provided a comprehensive overview of the OTC and exchange-

traded derivatives markets. See ESMA (2023), [EU Derivatives Markets 2023](#), December, for the latest edition of the report.

⁴ The EEA comprises the 27 Member States of the EU plus Iceland, Lichtenstein, and Norway. Since 2021, the transparency data includes quantitative data from the Polish Financial Supervision Authority, as it now participates in the delegation agreement with ESMA regarding data collection.

⁵ Following the UK withdrawal from the European Union and since January 2021, ESMA does not receive data on UK instruments, investment firms or from reporting service providers.

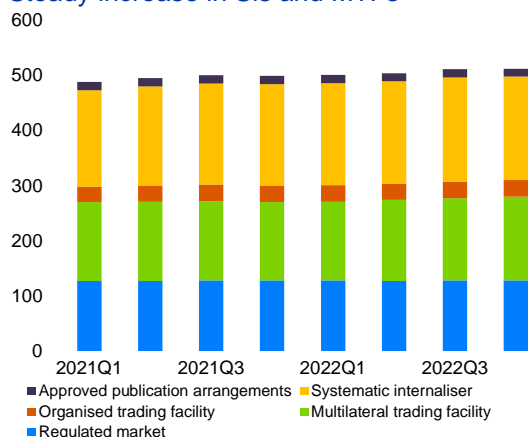
Infrastructures: Increase in MTF and SI

The total number of **trading venues** (TVs) in the EEA, at segment MIC level⁶, reached 310 at the end of 2022⁷, a decrease compared to the 439 TVs active at the end of 2020 in the EEA and the UK (among which 143 TVs were domiciled in the UK).

Among the EEA TVs, the number of regulated markets (RMs) and organised trading facilities (OTFs) remained broadly constant in 2021 and 2022, with 128 RMs and 30 OTFs at the end of 2022. The number of multilateral trading facilities (MTFs) increased, with eight new venues since the end of 2020, reaching 152 at the end of 2022.⁸

MR-MiFID.1

Number of infrastructures in the EEA by type
Steady increase in Sis and MTFs



Note: Number of EEA infrastructures in 2021 and 2022 by type, quarterly.
Sources: ESMA registers.

In addition to venues, the number of systematic internalisers (Sis) increased by 16 during 2021 and 2022, with 188 Sis in the EEA at the end of 2022. Finally, approved publication arrangements (APAs), which are authorised service providers designed to publish trade reports on behalf of investment firms, were the only infrastructure

type that observed a net decrease during the period, from 15 to 14 active APAs at the end of 2022.

Overall, the number of EEA **infrastructures**⁹ reached 512 at the end of 2022, a 5% increase since 2021 (MR-MiFID.1). During 2021 and 2022, 38 new infrastructures were authorised to operate in the EEA, while 11 were withdrawn from operations (MR-MiFID-S.3). During those two years, there has been no significant change in the distribution of infrastructures among EEA countries, with Germany, the Netherlands and France as the principal domiciles, comprising 39% of the EEA infrastructures (MR-MiFID-S.2).

Instruments: Number slightly up

The number of equity and bond instruments available for trading across all EEA countries has grown 6% from 2021 to 2022, from 148,700 to 157,300.¹⁰ This number includes 28,000 equity and 129,300 bond instruments in 2022. This was a 3% increase overall compared to the end of 2020, where 29,400 equity and 123,300 bond instruments were available in the EEA and the UK.

Shares amounted to 72% of equity and equity-like instruments (20,200), a slight decrease compared to 2021 (75%). The number of exchange-traded funds (ETFs) increased to 6,100 in 2022 (21% of equity instruments), followed by depositary receipts (1,600 or 6%), and other equity-like instruments (100; or 0.4%).

In line with previous years, most of **equity instruments** were available for trading on MTFs (27,000 in 2022, MR-MiFID-S.5), with fewer instruments available on RMs (7,600 in 2022). Additionally, 15,000 equity instruments were available for trading on SIs and 18,600 OTC, a distribution that remained stable during the reporting period.

⁶ In the context of this analysis, trading venues are identified at segment MIC level. Segment MICs are often used to distinguish different trading systems and/or different financial instruments. This allows for a precise identification of trading facilities by market type, in instances in which the same market operator runs both a RM and an MTF, for example.

⁷ This number encompasses all EEA infrastructures of ESMA's register, including those trading equity, bonds, structured finance products, emission allowances or derivatives. In the next sections, the number of infrastructures presented focuses on those trading equity or bond instruments.

⁸ For a full comparison of the evolution of the number and equity volumes of TVs and SIs before and after the UK withdrawal from the EU, see ESMA (2023), [Evolution of EEA share market structure since MiFID II](#), ESMA Report on Trends, Risks and Vulnerabilities Risk Analysis, October 2023.

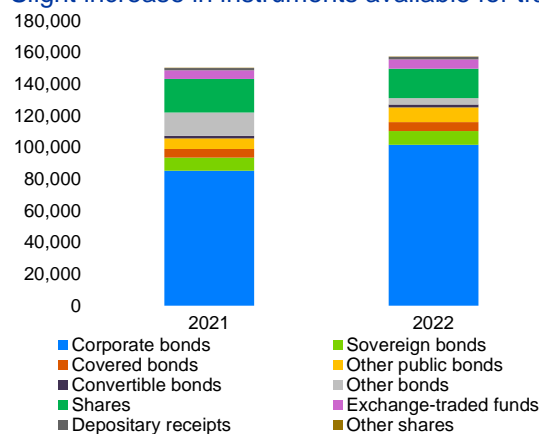
⁹ In this report "infrastructure" refers to TVs, SIs and APAs, when "venue" refers only to TV (RMs, MTFs, OTFs). See the Glossary for a definition of each infrastructure and venue type. Infrastructures are identified through the segment market identifier code (MIC) of the operator.

¹⁰ Absolute figures in this report are conventionally rounded.

MR-MiFID.2

Number of securities available for trading

Slight increase in instruments available for trading



Note: Number of EEA securities available for trading in 2021 and 2022 by asset type.
Sources: FIRDS, FITRS, ESMA.

For **bond instruments**, corporate bonds represent the main type, with 100,200 bonds available for trading in 2022 (or 77% of the total). Other public bonds accounted for 7% of bond instruments (9,300), followed by sovereign bonds (8,700 or 7%), covered bonds (5,500 or 4%), convertible bonds (1,700 or 1%), and other bonds (3,800 bonds or 3%).¹¹

Similarly to equity markets, the majority of bonds were available for trading on MTFs in 2022 (79,800). Almost half of the bonds were also available on RMs (49,100), and on SIs (45,500), but fewer bond instruments were available on OTFs (18,000). Additionally, 36,300 bonds were traded OTC (MR-MiFID-S.6).

The majority of bonds available for trading were issued in the EEA (58% in 2021 and 2022), while equity instruments available for trading were mostly from non-EEA countries (57% in 2021 and 55% in 2022). This characteristic of equities was especially true for shares, for which 61% of instruments available were from outside the EEA in 2022.

Most EEA instruments available cross-border

Regarding EEA instruments available for trading, the majority can be qualified as **cross-border instruments**. This means that they were available for trading on a TV (or traded on an SI) domiciled in the same country as the issuer of the security,

and on at least one TV or SI in another EEA country. For EEA bonds, 53,000 instruments or 70% of bonds issued in the EEA were cross-border instruments in 2022 (MR-MiFID-S.7). This proportion was even larger for EEA equity instruments, for which 10,200 out of the 12,100 EEA equity instruments available for trading were cross-border instruments in 2022 (81%, MR-MiFID-S.8). The share of cross-border instruments remained stable in 2021 and 2022 for bond and equity instruments.

Transactions: Number rising across instruments

In 2022, the total **number of transactions** in equity markets was 1.9bn (1.8bn in 2021), with 91% of these transactions originating from on-exchange share trading, with the rest being divided between transactions on ETFs (3%) or other equity instruments (MR-MiFID-S.9). In contrast, the total number of transactions observed for bond instruments was only 15.8mn in 2022 (12.1mn in 2021), of which 72% were observed on-exchange (MR-MiFID-S.10). These numbers show an increase compared to the transactions in the EEA without the UK in 2020, with 1.1bn equity and 9.3mn bond transactions.

Trading volumes: Higher for bonds, stable for equity

Trading volumes in the EEA in 2022 amounted to EUR 15.6tn in equity markets (EUR 15.5tn in 2021) and EUR 31.2tn in bond markets (EUR 27.9tn in 2021). On-exchange volumes accounted for 72% of the total equity volumes and 43% of the bond volumes, with this proportion remaining constant throughout both years (MR-MiFID-S.13 and S.14).

The evolution of equity trading shows an increase in March 2021 (+19% compared to the monthly average during the same year) and March 2022 (+44%). In March 2021, the increase in volumes followed reports of heightened retail participation, as well as the impact of the trading relocation of EEA shares following the UK's withdrawal, attributable to the Share Trading Obligation

¹¹ In 2022 an important effort to improve the classification of bond instruments was undertaken by reporting entities, mainly leading to the reclassification of the 14,800 "other bonds" available for trading in 2021 to corporate or sovereign bonds. This reclassification led to a new distribution of bond type in 2022. To reflect this improvement, bonds

that were available for trading both in 2021 and 2022 are classified according to their 2022 types. Moreover, to avoid commenting on classification changes that are not linked to bond market evolution, only 2022 bond types are commented on in this report.

(STO).¹² In March 2022, the Russian invasion of Ukraine and the sanctions introduced in response led to rising energy prices and increased inflation concerns, which in turn fuelled a surge in volatility and trading volumes on equity markets.¹³ Similarly on bond markets, increases in trading volumes were also observed during these periods (+17% in March 2021 compared to the monthly average during the same year and +19% in March 2022), and the trading increase remained sustained throughout 2022, with a +12% bond volume increase.

¹² Based on Article 23 of Regulation (EU) No 600/2014, the STO is intended to move OTC share trading onto platforms that provide market transparency. It covers all EEA shares, except those traded in pound sterling on UK trading venues.

¹³ For an extended analysis of the equity and bond market environment in 2021 and 2022, see the [ESMA Reports on trends, risks and vulnerabilities](#) for the relevant periods.

Equity markets

Summary

In 2021, equity markets recorded a surge in new instruments admitted to trading, followed by a slow-down in 2022, reflecting the evolution of the underlying secondary market performance over time. The number of ETFs available for trading continued its upward trend.

Trading volumes in the EEA remained stable for equity markets, at EUR 15.6tn in 2022, with the vast majority of volumes in shares. SME trading activity decreased with turnover halved in 2022.

The share of on-exchange turnover increased in 2021 and 2022, linked to the UK withdrawal from the EU. On-exchange turnover accounted for 70% of equity volumes in both years, compared to 56% in 2020 in the EEA and the UK. The impact of the UK withdrawal is also visible in the increase in MTF trading in the Netherlands (concentrating 63% of EEA MTF volumes in 2022), whereas the effect on RMs was limited. Finally, SI trading decreased substantially, amounting to 8% of equity volumes in 2021 and 2022 (down from 33% in 2020 in the EEA and the UK).

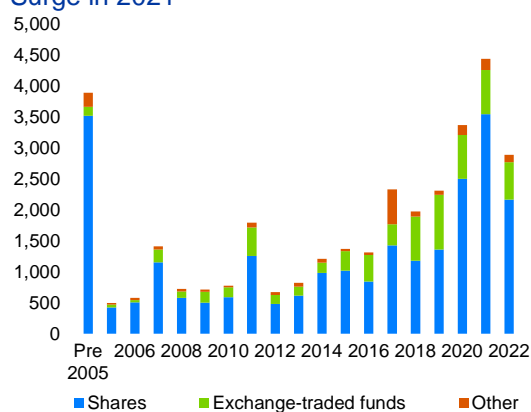
Trading activity under waivers and deferrals remained stable, with ETFs continuing to record the majority of their volumes under them (56% of ETF volumes were under pre-trade waivers and 30% under post-trade deferrals, vs. 18% and 9% for shares).

Admissions: Surge in 2021, but lower in 2022

Amid improving macroeconomic conditions after the pandemic, European equity markets valuations rose strongly in 2021. This incentivised a large demand for new listings after subdued activity in 2020, which fuelled primary markets issuance with record numbers of initial public offerings.¹⁴ This is reflected in the number of equity instruments admitted to trading on EEA venues and SIs in 2021 (4,500).

MR-MiFID.3

Number of equity instruments newly admitted to trading Surge in 2021



Note: Number of equity and equity-like instruments available for trading in 2021 and 2022, by ISIN trading start year (including new ISINs issued for previously existing instruments, stock splits, etc.).
Sources: FIRDS, FITRS, ESMA.

Most of the **admissions** occurred in 1H21, with an average of 350 instruments per month, before declining to 260 instruments per month from August 2021 until the end of 2022. In a context of rising interest rates, lower returns and challenging macrofinancial conditions, 2022 saw a general slowdown in admissions (2,900; -35% and -14% compared to 2020 and 2021 respectively).¹⁵ The new EEA-domiciled instruments admitted to trading in 2021 and 2022 were mainly issued by Swedish (1,220), Irish (600) and French (220) firms.

While there was a surge in admissions in 2021, a large number of instruments were also terminated (3,700), with peaks observed in August 2021 (610) and October 2021 (860).¹⁶ These peaks were 97% and 177% above the monthly average (310). In 2022, terminations slowed down (2,400), with no significant monthly movements.

Instruments: Trading declined

Overall, there were 28,600 **instruments available for trading** in the EEA in 2021 and 27,990 in 2022 (-2%), with 43% of them being EEA-based instruments in 2021 and 45% in 2022. In 2022,

¹⁴ For a specific analysis of the equity market environment in 2021 and 2022, see the [ESMA Reports on trends, risks and vulnerabilities](#).

¹⁵ All instrument numbers are conventionally rounded.

¹⁶ Around a quarter of the increase in admissions is linked to one venue.

for 12,600 instruments available for trading issued by EEA entities, the top-3 member states were Ireland (2,000, out of which 94% were ETFs), Sweden (1,900) and Germany (1,200), accounting for 40% of the total instruments available for trading. In 2021, the picture was broadly similar, except for a lower number of instruments available for trading in Sweden and Ireland (1,700 respectively) and a slightly higher number in Germany (1,220).

In line with the lower number of available instruments in 2022 compared to 2021, annual trading volumes in equity and equity like instruments slightly declined to EUR 15.6tn from EUR 15.9tn (-2%).

On a monthly basis, turnover volumes were stable in 2021, except for a peak in March, linked to increased retail activity and the relocation of new instruments from UK TVs, and another peak in November. The beginning of 2022 saw a large selloff in equity markets, linked to concerns about the Russian invasion of Ukraine, with increased volumes in February and March (EUR 1.5tn and EUR 1.9tn respectively, +19% and +44% compared to the monthly average). Though peaks in trading volumes appear to be recurrent in March (as also witnessed in 2019, EUR 2.5tn including UK, and 2020, EUR 1.9tn linked to the COVID-19 market stress), they appear to be linked to external events.

Similar to previous years, **shares** accounted for the majority of instruments available for trading and traded on EEA markets. In 2022 there were more than 20,200 shares available for trading in the EEA (-6% compared to 2021), of which 41% were from EEA issuers. Overall, trading in shares accounted for 1.8bn transactions each year worth EUR 13.9tn in 2021 and 13.4tn in 2022 (87% of total equity volumes). In terms of secondary market liquidity, during 2022 90% of shares traded at least once a year and 67% traded at least once a month, with similar numbers for 2021.¹⁷

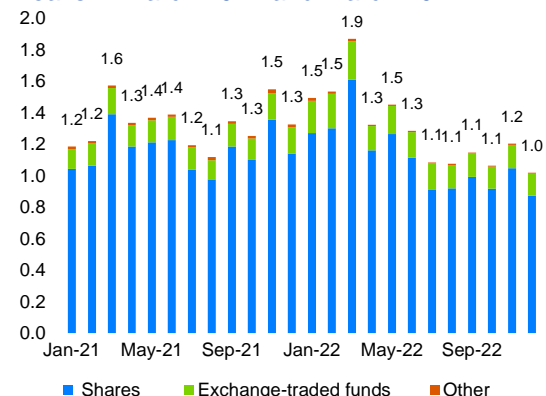
Share trading was particularly concentrated in EEA shares (81% and 83% of total volumes in shares in 2021 and 2022), with shares issued in Germany (EUR 2.7tn vs. EUR 2.8tn in 2021), France (EUR 2.4tn vs. EUR 2.5tn in 2021) and

the Netherlands (EUR 1.6tn in 2021 and 2022), accounting for 60% of total trading volumes in EEA shares (62% in 2021). While non-EEA shares accounted for 57% and 55% of the total shares available for trading in 2021 and 2022, their trading volumes amounted to EUR 2.7tn and EUR 2.3tn each year (19% and 17% of the total annual turnover in shares).

By country, most of the non-EEA shares were by issuers from the US (3,800 in 2021 and 3,700 in 2022) and Canada (2,500 in 2021 and 2,400 in 2022), followed by UK (1,800 in 2021 and 1,300 in 2022). Since the UK's withdrawal, the number of UK instruments available for trading in the EEA has significantly declined.

MR-MiFID.4

Monthly trading volumes by instrument type Peaks in March 2022 and March 2021



Note: Monthly trading volumes of equity and equity-like instruments in 2021 and 2022, by instrument type, EUR trillion. "Other" includes depository receipts and certificates.
Sources: FIRDS, FITRS, ESMA.

Market capitalisation: Stable

The total **market capitalisation**¹⁸ of EEA domiciled issuers was stable between 2021 and 2022 at EUR 17tn. Germany and France remain the main issuance domicile in the EEA, accounting for 25% (EUR 4.3tn) and 20% (EUR 3.3tn) of the total market cap of EEA issuers in both years - this was already the case in 2020 and 2019 in the EEA excluding UK and is in line with the signifi-

¹⁷ In this report, secondary market liquidity is defined as the share of instruments available for trading that are traded at least once a year or once a month. This definition differs from the liquidity definition in MiFID II.

¹⁸ In this report, market capitalisation information is based on the latest figure available in the last month of the past year, i.e. for market capitalisation numbers in 2022, the figure is from December 2021. Furthermore, the market capitalisation figures include information for all shares

available for trading at any moment during the reference year, including those replaced by other securities issued during the year as a result of corporate events. The figure on share market capitalisation uses MiFID taxonomy and includes common / ordinary shares only. This can lead to marginal changes when comparing with other ESMA publications. Furthermore, numbers for German shares are potentially inflated – a data quality issue that is currently being solved.

cant role of their RMs in Europe (see geographical distribution sub-section).

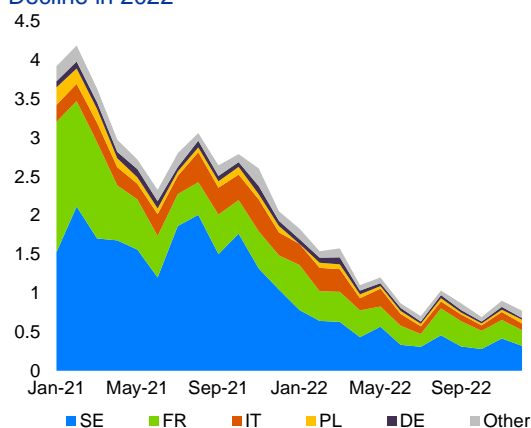
SMEs: Activity decreased, turnover halved in 2022

The number of instruments available for trading issued by **small and medium enterprises (SMEs)** has remained high (5,500 for EEA SMEs and 5,400 for non-EEA SMEs in 2022), especially compared to instruments issued by large and very large issuers (1,000 for EEA and 2,700 for non-EEA). The number of instrument rose in 2022, suggesting that the access to financing seems to have slightly improved for SMEs in Europe.

The trading volume of SME shares, however, not only remained very low but actually declined dramatically: Turnover volumes in SME shares on EEA TVs halved from a total of EUR 369bn in 2021 to EUR 192bn in 2022. Overall, it went from 3% of total volumes in shares as of the end of 2021 to 1.5% at the end of 2022. Overall, turnover was concentrated in shares issued by large and very large issuers, amounting to 95% of total equity volumes or EUR 10.6tn in 2022 (unchanged to 2021).

MR-MiFID.5

Trading volumes in SME shares on GMs Decline in 2022



Note: : Monthly trading volumes of SME shares on SME Growth Markets, in EUR billion. Other includes FI, ES, DK, IE, BG, BE, HR, PT.
Sources: FIRDS, FITRS, ESMA

Article 33 of MiFID II introduces a new category of MTFs labelled as '**SME growth markets (GM)**' (also commonly known as 'alternative markets'),

with the goal of improving access to capital markets for SMEs.¹⁹ After peaking in March 2021, the trading volumes on SME GMs receded below the levels at the end of 2020 (MR-MiFID.5). At the end of 2022, they accounted for EUR 13bn or 59% of the total volumes in SME trading on MTFs, and 7% of SME volumes. The largest GMs are domiciled in Sweden and France, making up 70% of the total SME volumes on GMs.

ETFs: Instruments and volumes increased further

While the number of listed shares declined in 2022, the number of **ETFs** available for trading increased by 8% (from 5,600 in 2021 to 6,000 in 2022). Similarly, total annual trading volumes increased by 18% (from EUR 1.7tn in 2021 to EUR 2tn in 2022) and the number of transactions increased by 8% (from 44mn to 48mn). Multiple factors have favoured the popularity of ETFs in Europe²⁰, including their cost and attractiveness to retail investors.²¹

As in previous years, in the EEA, there was a large concentration of ETF issuance in Ireland (1,500 in 2021 and 1,900 in 2022) and Luxembourg (1,000 in 2021 and 2022 respectively). By type, most of the instruments were equity ETFs (1,900 in 2021 and 2,000 in 2022 or 57% of total ETFs), followed by bond ETFs (800 in 2021 and 900 in 2022 or 24%). Overall, ETFs show slightly lower liquidity than shares, with around 83% of the available ETFs traded at least once a year and 57% at least once a month.

Trade size: Down for shares, up for ETFs

The **average trade size (ATS)**²² by instrument type in 2022 showed a slight decline from the previous year for shares (from EUR 7,800 per transaction to EUR 7,100) and an increase for ETFs (from EUR 39,100 per transaction to EUR 42,000). The median transaction size also confirms this trend.

The ATS in equity and equity-like instruments on RMs and MTFs was almost at par in 2021

¹⁹ The criteria to be used by MTFs to identify companies that qualify as SMEs for the purpose of the SME GM label and to register/deregister as an SME GM are included in Articles 77 to 79 of Commission Delegated Regulation (EU) 2017/565.

²⁰ See Oliver Wyman (2023), [The Renaissance of ETFs: Exchange-traded funds are fuelling market opportunities](#).

²¹ See ESMA (2023), [Costs and Performance of EU Retail Investment Products 2023](#), January.

²² ATS is computed as the ratio between trading volumes and the total number of transactions.

(EUR 6,100 on MTFs and EUR 6,500 on RMs). These statistics were different in 2022, with smaller transaction sizes on MTFs than on RMs (-12%). Looking at the ATS by instrument type, share transactions were higher on RMs (EUR 6,200 in both years) than on MTFs (marginally declining from EUR 5,300 in 2021 to EUR 4,700 in 2022). Substantially higher ATSs were observed for ETFs, especially on MTFs (EUR 54,800 in 2021 and EUR 70,700 in 2022) compared to RMs (EUR 16,700 in 2021 and EUR 15,700 in 2022).

Market fragmentation: Higher after UK withdrawal

On average, trading in ETFs in 2022 was slightly more distributed across TVs than trading in shares, with each instrument traded on 10 TV segments (compared to 9 for shares). Figures were similar in 2021. The minimal difference in terms of trading fragmentation between the shares and ETFs is also reflected by the monthly **fragmentation indicator (FI)** by instrument type, the inverse of the Herfindahl–Hirschman Index (HHI) and calculated as $(1 - HHI_{i,t})^{23}$, with only small differences between the fragmentation of ETFs and shares during the reporting period. Overall, fragmentation in equity markets (including shares and ETFs) has slightly increased from January 2021 (0.62) to December 2022 (0.65). Compared to the pre-UK withdrawal period, the level of concentration has particularly decreased for shares (the FI increased from 0.45 in 2020 to 0.65 in 2022) in line with the overall migration of trading volumes towards different EEA countries (see the following sub-section). The level of fragmentation varies according to the size of the issuer: SMEs tend to be on average more concentrated (FI of 0.5 compared to 0.8 for large cap) and are on average traded only on one or two market segments.

Venues: On-exchange dominates, low SI trading

The end of the Brexit transition period implied a redistribution of trading volumes across several EEA countries, with UK TVs opening hubs in the EEA. These hubs already represented a substantial part of European equity trading in January 2021.²⁴ Another change observed beginning in 2021 was the significant decline in the share of off-exchange trading, since a large number of SIs were domiciled in the UK.²⁵

In 2021 and 2022, **on-exchange** trading accounted for 72% of total equity turnover volumes (EUR 11tn). Of these, EUR 6tn and EUR 5.8tn were on RMs (38% of total equity trading) and EUR 5tn and EUR 5.3tn were on MTFs (33% of total equity trading). RMs confirmed the trend of previous years, by concentrating domestic trading: turnover in EEA-domiciled equity instruments accounted for 97% of RM volumes. On MTFs, the share of volumes from non-EEA domiciled equities was much higher (17% in 2021 and 14% in 2022, or EUR 0.8tn and EUR 0.7tn).

In a year-on-year comparison, trading volumes declined by 3% on RMs, whereas they increased by 6% on MTFs during 2022. The number of transactions also reflects this trend (924mn in 2021 and 898mn in 2022 on RMs; 823mn in 2021 and 927mn in 2022 on MTFs).

The distribution of turnover volumes by instrument type across markets shows that 72% of trading in shares occurred on-exchange in both years (respectively EUR 9.7tn out of 1.7bn transactions in 2021 and EUR 9.6tn out of 1.8bn transactions in 2022). Shares were traded more on RMs (41% of their volumes in 2022) than on MTFs (32%). The share of ETFs trading on-exchange was similar to shares, (71% in 2021 or EUR 1.3tn and 70% in 2022 or EUR 1.4tn). MTFs concentrated most of the ETF activity (48% in 2022 vs. 22% on RMs, and 41% in 2021 vs. 25% on RMs).

²³ For each and every instrument in the database, the HHI_{i,t} index is calculated as the sum of the squared share of trading volume on segment MIC j for the instrument i. The FI ranges from 0 (if the whole trading of instrument i is concentrated on only one TV) and 1 (if trading is equally distributed among all the platforms). The aggregated FI is the result of the weighted average of the fragmentation scores for each and every instrument by type.

²⁴ For example, in November 2020, the London Stock Exchange opened a European hub of its MTF Turquoise in

Amsterdam, where Cboe had previously launched its European equity exchange. Also, Goldman Sachs opened its Paris-based MTF in December 2020.

²⁵ For a full comparison of the evolution of the volumes on TVs and SIs before and after the UK withdrawal from the EU, see ESMA (2023), [Evolution of EEA share market structure since MiFID II](#), ESMA Report on Trends, Risks and Vulnerabilities Risk Analysis, October.

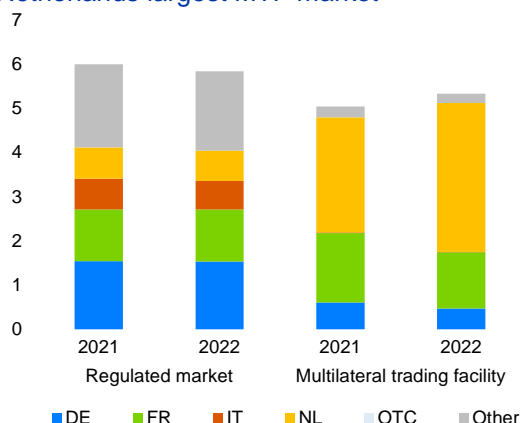
Geographical distribution: NL largest MTF market

Before 2021, the UK was a hub for investors trading on MTFs (94% of MTFs trading volumes in EEA equity securities took place on UK MTFs in 2020). In 2021 and 2022, the Netherlands increased its role in concentrating MTF volumes from 51% of MTF volumes in 2021 to 63% in 2022 (EUR 2.6 to 3.4tn). Part of MTF trading also relocated also in France (EUR 1.6tn or 31% of MTF turnover volumes in 2021 and EUR 1.3tn or 24% in 2022) and Germany (EUR 0.6tn or 12% in 2021 and EUR 0.5tn or 9% in 2022).

In comparison, the RM landscape remained unchanged with respect to past years with Germany (EUR 1.5tn), France (EUR 1.2tn) concentrating almost half (46%) of the RM turnover volumes both in 2021 and 2022.

MR-MiFID.6

Annual trading volumes by TV domicile Netherlands largest MTF market



Note: : Annual trading volumes in equity and equity-like instruments in 2021 and 2022 by market type and entity domicile, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

In terms of **cross-border trading** on TVs or SIs in 2022, equity turnover volumes in EEA equity instruments were almost evenly distributed between domestic (i.e. on TVs or SIs whose domicile coincides with the country of the issuer, 52%) and trading in multiple countries in the EEA (48%). By instrument type, the majority of domestic trading volumes on TVs or SIs were in shares (89%). On the contrary, ETFs were mainly traded cross-border (89% of the turnover volumes in

ETFs), given that the majority are issued by Luxembourgish or Irish entities. The **network map**, showing the cross-border trading activity across EEA TVs or SIs, shows the centrality of France, the Netherlands and Germany as the main centres of attraction for trading foreign securities.²⁶ Although trading volumes were concentrated in a few countries, the overall level of fragmentation has increased with respect to the period before UK's withdrawal.²⁷

Not only MTFs, but also SIs were important infrastructures in the equity trading landscape pre-UK withdrawal. Compared to the earlier period, in proportional terms, not much of the SI volumes relocated from the UK to the EEA in 2021 and 2022, as they account for 8% of total trading (EUR 1.3tn respectively in 2021 and 2022, out of 69mn and 72mn transactions), when they represented 33% of equity volumes in 2020 in the EEA and the UK. After the UK's withdrawal, SI trading is mostly concentrated in Germany (38% of SI volumes, EUR 579bn in 2021 and EUR 485bn in 2022) and France (37% in 2022 with EUR 472bn; 32%, EUR 444bn in 2021).

In general, the top 5 EEA TVs and SIs in terms of turnover concentrated around 50% of total trading volumes in equity instruments in 2021 and 2022. Concentration is slightly lower than in 2019 and 2020, suggesting further evidence towards a slightly more fragmented equity market with respect to before the UK withdrawal. SI trading remained very fragmented, with the 5 main SIs concentrating 50% of SI trading in 2022. On the contrary, the top 5 RMs attracted 77% of total turnover volumes by market type in both 2022 and 2021 (vs. 79% and 76% for MTFs).

Transparency: Mainly lit markets

On-exchange trading encourages market participation, increases liquidity and helps improve market efficiency through fair and explicit price discovery.²⁸ OTC trades are executed bilaterally and the details of transactions are agreed ad-hoc

²⁶ The network map (MR.MiFID.S51) displays a force-directed network chart. It shows the directionality of trading volumes from the issuer domicile to TV domicile (represented with blue dots). By displaying the number of connections as the size of nodes, the visualisation also shows that there are a few nodes with many connections that keep the central component tied together. The more connections there are (i.e. a higher number of grey lines going to the node), the larger the trading volumes in instrument of foreign issuers traded on this TV domicile.

²⁷ See also ESMA (2023), [Evolution of EEA share market structure since MiFID II](#), ESMA Report on Trends, Risks and Vulnerabilities Risk Analysis, October.

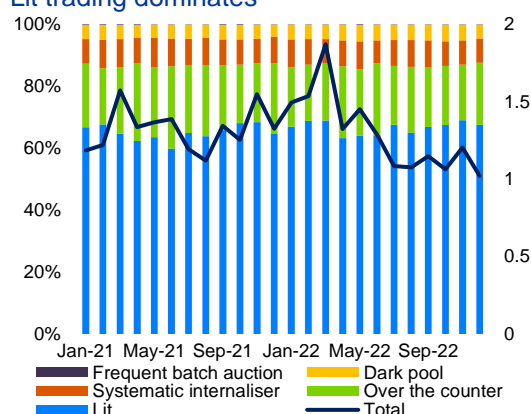
²⁸ Lit pools are the closest example of a fully transparent market where the order book is public for all subscribers. Lit markets enable traders to see the amount of liquidity posted on the bid and offer of the order book for any security.

between counterparties.²⁹ To foster transparency in financial markets, MiFID II/MiFIR introduced new requirements not only for TVs but also for SIs and investment firms trading OTC. Post-trade transparency obligations for equities apply equally to on-venue trading (Article 6 of the Regulation) and to OTC trading (Article 20).³⁰ Concerning OTC trading, investment firms are required to publish their transactions post-trade via an APA.

The largest share of turnover volumes in equity and equity like instruments occurred on registered exchanges or “lit markets” (67% of the total in both 2021 and 2022). The overall share has increase from ~50% in 2019/2020. This highlights a significant progress in the regulators’ work to enhance trading in transparent market environments. In comparison, trading on **dark pools**, which are market segments dedicated to dark trading operate outside of pre-trade transparency rules, remains limited.³¹ Total trading volumes on dark pools amounted to EUR 697bn in 2021 (4% of the total equity volumes) and EUR 763bn in 2022 (5%).

MR-MiFID.7

Monthly equity trading volumes by trading type Lit trading dominates



Note: Type of equity trading in the EEA as percentage of total volumes in 2021 and 2022, in % (lhs). Total equity trading volumes on rhs, in EUR trillion.

In 2021 (19,000) and 2022 (18,600), 67% of the equity and equity-like instruments available for trading on EEA TVs were also traded OTC. This resulted in annual **OTC activity** of around 30mn transactions worth EUR 3.5tn and EUR 3.1tn

each year, accounting for 22% and 20% of total turnover volumes in equity (MR-MiFID.7). However, OTC transactions only represented 2% of the total, signalling that pure OTC transactions (but also SI) were normally executed in larger sizes transactions than on-exchange.³² This was particularly true for both shares (with an average transaction of EUR 127,000 in 2021 and EUR 99,000 in 2022) and ETFs (EUR 102,000 in 2021 and EUR 98,000 in 2022).

According to the ESMA liquidity calculations, the number of **instruments estimated as liquid** stood at 2,283 in 2021 and 2,313 in 2022. IE (460) was the largest EEA issuer of liquid instruments in 2021 and 2022, followed by LU (319) and DE (260).

MiFID II introduced a pre- and post-trade transparency regime for equity instruments across EEA financial markets. The **pre-trade transparency regime** allows national competent authorities to waive the obligation for MTFs and RMs to make pre-trade information public, by publishing bid and offer prices for equity and equity-like instruments advertised through their system.

In 2021 and 2022 the share of on-exchange turnover under the pre-trade waivers was 23% of the total. This was similar to 2019 (22%), and 10pp lower than 2020 (32%) for the EEA+UK. Excluding UK figures (i.e. comparing the EEA only), however, the share is much higher (6% in 2019 and 7% in 2020). This highlights a potential migration of trading under waivers from the UK to the EEA, linked to the relocation of some market segments. By instrument type, the use of pre-trade waivers in both years was more substantial for ETFs (56% of total volumes in ETFs in 2022 and 53% in 2021) rather than shares (19%).

In the **post-trade transparency regime**, MiFIR provides possibilities to postpone post-trade transparency of transaction details based on their type or size. In this context, TVs are obliged to publish the price, volume and time of the transactions executed in equity and equity-like instruments traded as close to real time as technically possible.

²⁹ Trades are counted as OTC where the execution venue is reported with XXXX or XOFF.

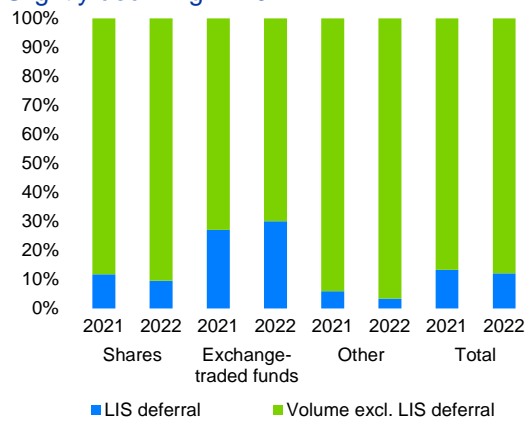
³⁰ See Articles 6 and 20 of [Regulation \(EU\) No 600/2014. For non-equity instruments, refer to Articles 7 and 21.](#) Concerning OTC trading, investment firms are required to publish their transactions post-trade via an APA.

³¹ Transactions executed on dark pools are however subject to post-trade transparency requirements. The data do not include the Order Management Facility (OMF) waivers.

³² A technical reason of such trend is that OTC transactions reported under MiFID II may capture technical trades, e.g. ‘give-up’ or ‘give-in’ transactions, where an investment firm passes a client trade to, or receives a client trade from, another investment firm for the purpose of post-trade processing.

MR-MiFID.8

Post-trade deferrals activity per instrument type Slightly declining in 2022



Note: Percentage of trading volume under the large-in-scale waiver on-venue in 2021 and 2022.

Sources: FIRDS, FITRS, ESMA.

In 2021 and 2022, 87% of the total equity trading volumes did not benefit from deferral from post-trade transparency and were thus subject to real time publication. Similar to pre-trade waivers, ETFs were the instruments most subject to deferred publications (27% in 2021 and 30% in 2022) compared to shares (12% in 2021 and 9% in 2022). These statistics are similar to those observed in 2019 and 2020 for the EEA and the UK.

Bond markets

Summary

Bond trading volumes amounted to EUR 31.2tn in 2022, a 12% increase compared to 2021, driven by sovereign bond trading. Similarly to past years, sovereign bonds represent the vast majority of bond volumes and transactions.

The majority of bond trading remained off-exchange, with SI and OTC accounting for 46% and 15% of volumes in 2022, respectively. The distribution of bond trading on-exchange remained stable, with MTF trading amounting to 24% of bond volumes, OTFs 8% and RMs 7% in 2022, except for an increase in OTFs volumes in 2022 (+35%).

Bond volumes on-exchange are heavily concentrated in a few countries: RM volumes in Italy (90% of RM volumes in 2022), MTF volumes in the Netherlands (84% of MTF volumes in 2022) and OTF volumes in France (69% of OTF volumes in 2022); with RMs and OTFs specialised in trading European sovereign bonds.

Trading of non-European bonds increased in 2022 to a third of bond volumes in Europe (from 31% in 2021 and similar share in 2020). In comparison, domestic trading of European bonds has decreased to 37% of bond volumes in 2022 (49% in 2020).

The number of liquid bonds, as calculated for MiFID II purposes, has increased from 513 bonds at the end of 2021 to 1,010 bonds in 2022, translating into a growing share of bond trading volumes during the year.

The green bond market continued its increase in terms of volumes traded (+22% in 2022), and instruments available (+25%), with a concentration of trading in a few countries.

Instruments: Number of bonds instruments rises

In contrast to equity markets, the monthly number of bond instruments admitted and terminated remained stable during 2021 and 2022 (+2,500/-1,600 on average in 2021, +2,200/-1,400 in 2022, MR-MiFID-S.60). This allowed for a positive net increase during both years (+1,000 bond instruments in 2021, +800 in 2022). 72% of the new or terminated bond instruments were corporate bonds (MR-MiFID-S.65).

This led to an increase in the number of **bonds available for trading** on EEA venues in 2022, with 129,300 bonds (+8% compared to 2021, 120,100 bond instruments). Among those instruments, 100,200 were corporate bonds (77%), 9,300 were other public bonds and 8,700 were sovereign bonds (7% each). The remaining instruments are covered bonds (5,500 or 4%), convertible bonds (1%), and other bonds (3,800 bonds or 3%).³³

Most of the bonds available for trading were issued by EEA issuers (75,720 bonds in 2022 or 58% of available instruments, MR-MiFID-S.62), a stable share since MiFID II applied (MR-MiFID-S.93). The majority of corporate bonds available for trading were issued in the EEA in 2022 (56% or 56,400 instruments), with a concentration of the main issuers in Germany (13%), the Netherlands (9%), and Luxembourg and France (8% each) (MR-MiFID-S.59). Non-EEA corporate bonds were mostly issued in the US (42%) and the UK (25%).

Similarly, half of the sovereign bonds available for trading were issued by EEA countries (4,100 bonds or 53% of available instruments), with a concentration of issuance in Austria (8% of sovereign bonds), the Netherlands (7%) and France and Italy (6% each). Non-EEA sovereign bonds available for trading in the EEA were mostly from the US (20%).

Finally, covered bonds were mostly issued in the EEA (86% of covered bonds available), with Ger-

³³ In 2022, an important effort to improve the classification of bond instruments was undertaken by reporting entities, leading mainly to the reclassification of the 10,600 "other bonds" available for trading in 2021 into a more adequate categorisation, i.e. corporate or sovereign bonds. This reclassification led to a new distribution of bond type in

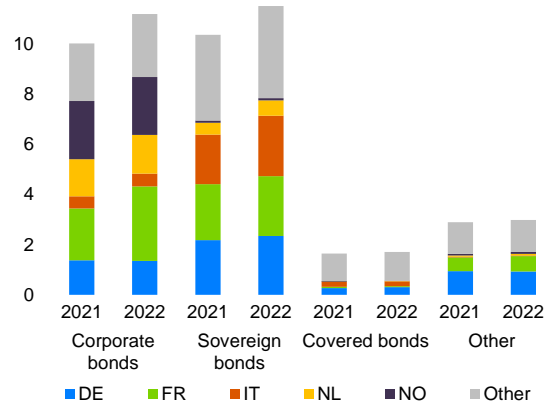
2022. To reflect this improvement, bonds that were available both in 2021 and 2022 are classified according to their 2022 types. Moreover, to avoid commenting on classification changes that are not linked to bond market evolution, only 2022 bond types are presented in this report.

many as main issuer (24% of instruments available). Non-EEA covered bonds are marginal, with only 800 instruments (including 400 from Switzerland) and EUR 13.6bn trading volumes in 2022 (1% of all covered bonds volumes).³⁴

Compared to the large number of instruments available, the total **number of issuers** appears small, even with a slight increase in 2022 from 10,500 to 10,700 issuers, with 4,900 individual issuers domiciled in the EEA and 5,800 non-EEA issuers in 2022 (MR-MiFID-S.61). The small number of issuers was especially true for sovereign bonds (128 issuers both in 2021 and 2022). This is in line with the overall characteristics of bond instruments that allow issuers to emit new debt instruments regularly, and in an ad-hoc and flexible manner.

MR-MiFID.9

Issuance by top EEA countries and bond type Nominal amounts concentrated in few countries



Note: Bond nominal amount outstanding, by issuer domicile and bond type in the EEA, in % of bond type in 2021 and 2022, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

Nominal amounts in the EEA (i.e. the amount that will be repaid to bondholders at maturity), were equally distributed between sovereign and corporate bonds (EUR 11.5tn and 11.2tn in 2022, MR-MiFID.9). Five countries concentrate 69% of the EEA nominal amounts in 2022 (France, Germany, Italy, the Netherlands and Norway, MR-MiFID-S.81). The largest sovereign nominal amounts in the EEA are observed in Italy (EUR 2.4tn), FR (EUR 2.4tn) and Germany (EUR 2.3tn), while the highest corporate nominal amounts were concentrated in France (EUR 3.0tn), Norway (EUR 2.3tn) and the Netherlands (EUR 1.5tn).

Trading volumes: Higher, driven by sovereign bonds

In 2022, the overall **bond turnover trading volumes** amounted to EUR 31.2tn, a 12% increase compared to 2021, when volumes amounted to EUR 27.9tn (MR-MiFID.10). In line with the volume increase, the number of transactions increased by 30% in 2022, from 12.1mn to 15.8mn transactions (MR-MiFID-S.66).

The growth in bond volumes in 2022 was driven by the important increase in sovereign bond trading, from EUR 21.7tn in 2021 to 25.2tn in 2022 (+16%). Sovereign bond yields generally increased in 1H22 as inflationary pressures fuelled expectations of faster monetary policy normalisation, prompting some investors to rebalance their portfolios in favour of less risky assets. For instance, insurance corporations and pension funds substantially decreased their bond holdings since the start of 2022.³⁵ Similar to past years, sovereign bonds represented the main share of bond volumes and transactions, with 81% of volumes in 2022 (78% in 2021), and 64% of transactions (57% in 2021).

In contrast, corporate bond trading decreased in 2022, from EUR 3.6tn in 2021 to 3.4tn in 2022 (-8%), with 4.2mn transactions (30% of bond transactions in 2022, 35% in 2021). This decrease, particularly visible in 3Q22 (MR-MiFID-S.69), is in line with the declining performance of corporate bond markets in 2022, as along with the deterioration of corporate bond liquidity in 2H22. Furthermore, the decrease in European corporate bond issuance on primary markets in 2022 (-42% compared with 2021, and -38% compared with 2020 and 2019) can also explain the slowdown in secondary market trading.³⁶

Activity in non-EEA bonds in 2022 increased more than the EEA bond volumes (+17% compared to +10% respectively, MR-MiFID.10). Non-EEA bonds volumes reached EUR 10.0tn in 2022 or 32% of bond turnover (from EUR 8.6tn in 2021 or 31%, with a similar share in 2020 for the EEA and UK). 86% of foreign bond volumes concern non-EEA sovereign instruments in 2022. In total, non-EEA instruments amounted to 37% of corporate and 34% of sovereign bond volumes in the EEA in 2022, with a stable share in 2021 as well (MR-MiFID-S.95). Most of the bond trading in the

³⁴ In the remaining analysis, the other public bonds, convertible bonds and other bonds are gathered into the "other bonds" category. Ultimately, there is no specific comment on the "other bond" category which remains marginal.

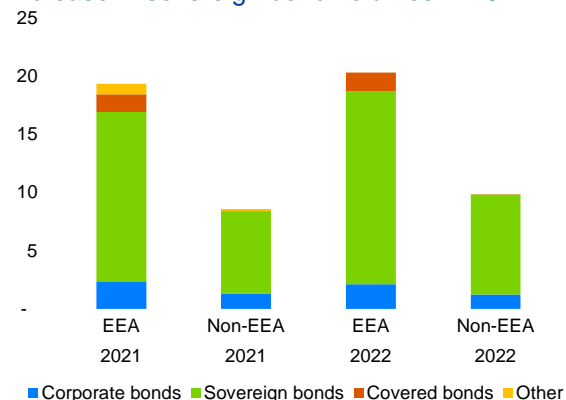
³⁵ For further analysis on the impact of the monetary policy normalisation, see for instance, ECB (2022), [Financial Stability Review, November](#).

³⁶ See ESMA (2023), [Report on Trends, Risks and Vulnerabilities, No. 1, 2023, February](#).

EEA was in EUR (70% in 2021 and 2022) or USD (23% in 2022, 22% in 2021).

MR-MiFID.10

Trading volumes by issuer origin and type Increase in sovereign bond volumes in 2022



Note: Annual trading volumes of bonds in 2021 and 2022 by issuer domicile and bond type, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

Domestic trading down, cross-border trading up

Focusing on EEA bonds, 63% of the volumes of bonds from EEA issuers were **traded in multiple countries** in 2022, meaning that only 37% of EEA bonds were traded domestically (on a TV or an SI of the same country as the bond issuer). The share of domestic trading of EEA bonds is decreasing compared to previous years, with 41% in 2021 and 49% in 2020 (MR-MiFID-S.88). This cross-border characteristic is especially observed for EEA corporate bonds, with 76% of EEA corporate bond volumes from corporate bonds traded on TVs or SIs in multiple countries (stable in 2021). Sovereign bond trading was also multi-country, with 61% of EEA sovereign bonds traded as multi-country (56% in 2021).

Finally, covered bonds activity slightly increased in 2022 (+5%), with annual trading volumes of EUR 1.6tn (up from EUR 1.5tn in 2021), with 443,000 transactions (from 324,000 in 2021 or +37%) (MR-MiFID-S.66).

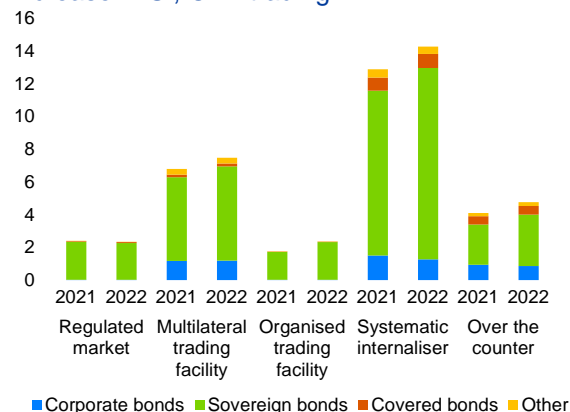
Trading mostly off-exchange, SI prevailing

Bond instruments remained mainly traded **off-exchange**, with the total bond volumes traded OTC and through SIs amounting to EUR 19.0tn or 61% of 2022 bond turnover volumes (EUR 17.0tn in 2021, stable share). The share of monthly trading volumes off-exchange fluctuated between 62% in 1Q21 and 60% in 3Q22, remaining relatively stable (MR-MiFID-S.73).

Covered bonds were the bond instruments mostly traded off-exchange, with 53% of their traded volumes on SIs and 33% OTC in 2022 (86% off-exchange in 2022 and 2021). In the same manner, 64% of corporate bond trading volumes were off-exchange in 2022, mostly traded on SIs (EUR 1.3tn or 38% of their volumes), but also OTC (EUR 861bn or 26% of their volumes). This share remained stable, with a slight decrease in SIs trading for corporate bonds since 2021, when 41% of volumes were traded on SIs (EUR 1.5tn).

MR-MiFID.11

Trading volumes by infrastructure and bond type Increase in SI, OTF trading



Note: Annual trading volumes of bonds in 2021 and 2022 by infrastructure, EUR trillion. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

Sovereign bonds were also mostly traded off-exchange (59% of their volumes in 2022), with the majority of volumes traded on SIs (EUR 11.7tn, 46% in 2022 and in 2021). Similarly, the share of OTC trading for sovereign bonds remained broadly stable in 2021 and 2022, with EUR 3.1tn in 2022, or 11% of sovereign bond trading volumes.

SIs represented 46% of bond trading volumes in 2022 and 2021, with 3.3mn transactions and EUR 14.3tn turnover (2.7mn transactions and EUR 12.9tn turnover in 2021). SIs were the infrastructures with the highest number of entities trading bonds in the EEA (85 in 2022, 86 in 2021, MR-MiFID-S.76), and are mostly situated in Germany (25), France (11) and the Netherlands (6). Turnover volumes on SIs are concentrated, with French SIs volumes amounting to 60% of EEA SI turnover in 2021 and 2022, and German SIs' volumes to 15% in 2022 (17% in 2021). SIs remain the favoured infrastructure for non-EEA bond trading, with a turnover of EUR 6.1tn, amounting to 43% of their overall volumes in 2022 (MR-MiFID-S.96).

OTC trading represented 15% of bond trading in

the EEA in 2022 and 2021, with EUR 4.8tn turnover in 2022 (EUR 4.1tn in 2021), and only 1.2mn transactions (7% of bond transactions in 2022).

MTFs were the largest type of venue in terms of bond turnover, with EUR 7.5tn or 24% of bond traded volumes (EUR 6.8tn and 24% in 2021). MTF trading volumes are larger for corporate (35% of corporate annual volumes) and sovereign (23%) than for covered bonds (11%). There are 68 MTFs trading bonds in the EEA in 2022 (71 in 2021), notably in Germany (13), Italy (9) and the Netherlands (6).

MR-MiFID.12

Trading volumes by entity domicile and type Bond trading concentrated in few countries



Note: Annual trading volumes in bonds in 2021 and 2022 by infrastructure domicile and market type. EUR trillion.
Sources: FIRDS, FITRS, ESMA.

OTFs were the second type of venue in the EEA by importance, with EUR 2.4tn in 2022 and 8% of bond turnover, a 35% increase compared to 2021 (EUR 1.7tn or 6% of bond traded volumes). With only 12 OTFs in the EEA, the majority of OTFs trading bonds were domiciled in France (6).

Finally, **RM** trading volumes amounted to EUR 2.3tn or 7% of bond traded volumes in the EEA (EUR 2.4tn, 9% in 2021). RMs were the only type of venues where a yearly decline in traded volumes was observed in 2022 (-3%), in particular for corporate bonds (-23% of corporate bonds volumes with respect to 2021). Similar to OTFs, RMs are thus more specialised than before, with 97% of their volumes in sovereign bonds in 2021 and 2022 (86% in 2020). RMs represented 9% of sovereign bond traded volumes but only 0.3% of corporate bond traded volumes in 2022. Out of the 51 RMs trading bonds domiciled in the EEA (50 in 2021), Germany remained the Member

State with the highest RM number (12).

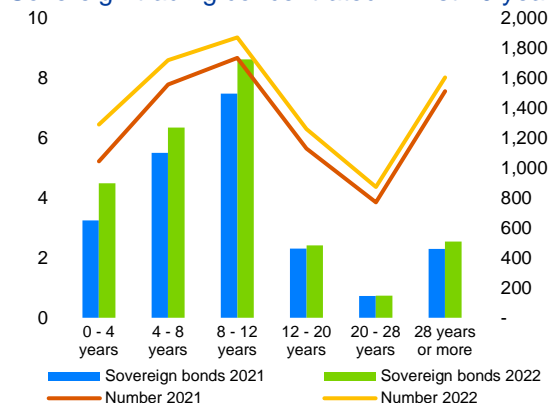
Liquidity: Low secondary market liquidity

Bond market transactions continued to be less frequent and of a larger size than other instruments in the EEA. The median trade size³⁷ in 2022 was EUR 808,300 for sovereign bonds, EUR 514,500 for covered bonds, and EUR 249,400 for corporate bonds (MR-MiFID-S.68), compared to EUR 2,600 for shares.

In line with the trading evolution, the share of corporate bonds not traded in 2022 increased to 54% of corporate bond instruments available for trading (48% in 2021), while it decreased for sovereign bonds from 34% to 32%. The low secondary market liquidity was confirmed by the low number of bonds available for trading that were traded at least once a month in 2022: only 35% of corporate and 8% of sovereign bonds (MR-MiFID-S.70).

MR-MiFID.13

Trading volumes of sovereign bonds by maturity Sovereign trading concentrated in first 10 years



Note: Annual trading volumes in EUR trillion (lhs) and number of sovereign bonds (rhs) in 2022, by original maturity as of 31 December 2022.
Sources: FIRDS, FITRS, ESMA.

The traded volumes by bond original maturity³⁸ indicate that **market liquidity** tended to be concentrated on bonds with a maturity of less than 8 years for corporate bonds and less than 12 years for sovereign bonds. 57% of corporate bonds available for trading in 2022 had a maturity of less than eight years, and they account for 49% of the corporate trading volumes (MR-MiFID-S.83). Sovereign bonds instruments liquidity was

³⁷ Median trade size is computed as the ratio between trading volumes and the total number of transactions.

³⁸ In this report, we looked at the maturity of bonds at inception since it presents a more precise picture of the lifecycle of bonds, especially regarding secondary market liquidity. Original maturity is calculated as the difference

between the maturity date and the minimum start trading date (the minimum starting date is used as a proxy for the issuance date, since the latter is not available).

slightly longer, with 55% of sovereign bonds with a maturity of less than twelve years, amounting to 75% of sovereign bond volumes (MR-MiFID.13).

Fragmentation: Slight increase

The monthly **fragmentation indicator** (FI)³⁹ points towards a similar level of concentration of sovereign and corporate bond trading (MR-MiFID-S.72), with a slight increase in 2022. The FI yearly average for sovereign bonds increased from 0.72 in 2021 to 0.74 in 2022 (0.73 to 0.74 for corporate bonds).

The important discrepancy between trading characteristics can be seen through the distribution of transaction sizes by market type (MR-MiFID-S.77, MR-MiFID-S.78). The median transaction sizes were the lowest on RMs in 2022, especially for corporate bonds (EUR 5,600 for corporate bonds and EUR 22,500 for sovereign bonds) and on MTFs (EUR 151,000 for corporate and EUR 300,000 for sovereign bonds). Similarly to previous years, the highest average trade sizes were observed on OTFs, especially for sovereign

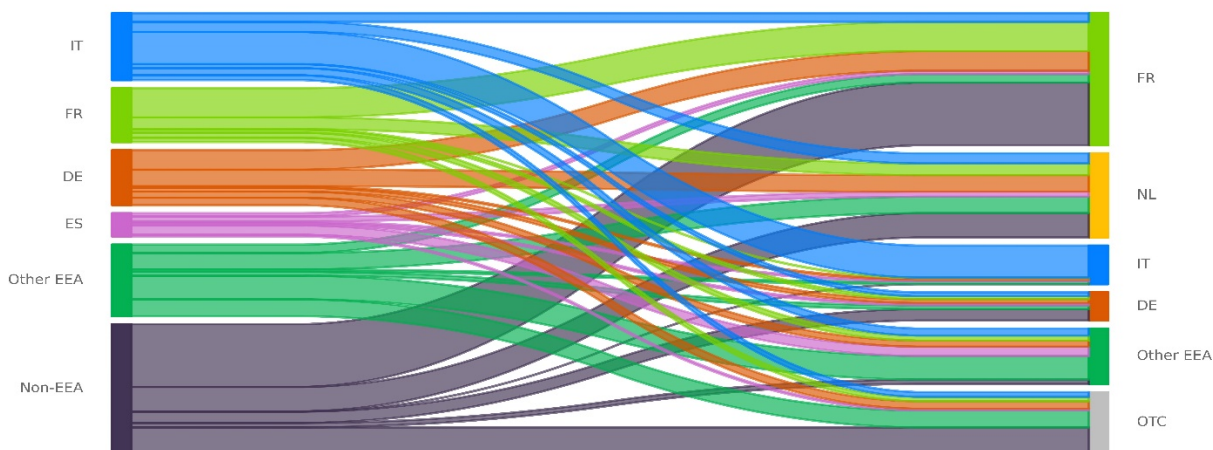
bonds with a median of EUR 8.3mn, but also for corporate bonds (EUR 754,000 median), with elevated transaction sizes at the 75th percentile.⁴⁰

The distribution of off-exchange transaction sizes showed no important differences between SI and OTC trading for corporate bonds, with median transaction sizes of EUR 210,000 and EUR 200,000 respectively in 2022. Sovereign bond trading had a higher median transaction on SIs at EUR 1,3mn compared to EUR 800,900 OTC.

In 2022, the first four trading countries for venues (RMs, OTFs, MTFs) and SIs amounted to 69% of overall bond volumes, with the rest being traded OTC (15%) or in other EEA countries (15%). This share has slightly decreased since 2021, from 73%, with the same share traded OTC, but a smaller share of trading in other EEA countries (12%). This is confirmed when looking at the distribution of trading in a Sankey diagram (MR-MiFID.14), where the **bond volumes appear concentrated**, both in terms of volumes by bond domicile (with the volumes from the first four issuer countries in terms of volumes representing 53% of overall bond volumes in 2022), and by trading domicile.

MR-MiFID.14

Trading by issuer and venue domicile
Important concentration of the bond market



Note: Annual trading volume flows in bonds in 2022: overall volumes ranked by issuer domicile (lhs) and by infrastructure domicile (rhs). Nodes and flows are proportional to volumes traded.

Sources: FIRDS, FITRS, ESMA.

³⁹ Calculated as the inverse of the Herfindahl–Hirschman Index (HHI), computed as $1 - HHI_{i,j}$, with $HHI_{i,j} = \sum_1^N s_{i,j}^2$ as the sum of the squared share of trading volume on segment MIC j for the instrument i . The FI ranges from 0 (if the whole trading of instrument i is concentrated on only

one TV) to 1 (if trading is equally distributed among all the platforms).

⁴⁰ Similarly to the explanation given at the beginning of the bond section, since the reclassification of bond instruments took effect in 2022, no comment on the 2021 average transaction sizes is proposed here.

RM trading was the most concentrated venue type in the EEA, with Italy amounting to 90% of RM trading in both years (MR-MiFID.85). The first five RMs comprised 97% of RM turnover in 2022 and 2021 (MR-MiFID-S.86). Sovereign bond trading accounts for 97% of volumes on RMs. RMs also specialised in trading EEA bonds, with non-EEA bonds amounting to only 0.1% of their turnover volumes in 2022.

MTF turnover was also heavily concentrated, with the Netherlands representing 84% of MTF volumes in 2022 (80% in 2021), followed by Italy (11% in 2022, 15% in 2021). Similarly to other bond venues, the first five venues concentrated 97% of MTF volumes during both years.

OTFs had a very limited number of venues (12) and a similar concentration of volumes, with France representing 69% of OTF volumes in 2022 (75% in 2021). Furthermore and similarly to RMs, the majority of OTF trading was in sovereign bonds (98% of OTF volumes in 2022, 97% in 2021). They also specialised in trading EEA bonds, with non-EEA bonds volumes representing 0.5% of OTFs volumes. The five first OTFs amounted to 91% of OTF volumes in 2022 and 2021 (MR-MiFID-S.86).

The fragmentation Indicator (FI) calculated at the infrastructure level (TV and SI)⁴¹ reflects this high degree of trading concentration (MR-MiFID-S.87). Bond trading was more concentrated on-exchange, with a lower fragmentation indicator (i.e. a higher concentration level), observed for RMs (0.30 on average in 2021 and 2022), MTFs and OTFs (respectively 0.66 and 0.75 in 2022), than for SIs (0.86). Furthermore, the FI calculated at the entity level also shows that trading is most fragmented in the countries that concentrate the higher number of TVs, such as Germany (0.84) (MR-MiFID-S.79).

MiFID II liquid bonds: Increase in trading

In total at the end of 2022 there were 1,010

bonds deemed as liquid as defined in the MiFID II rules and according to the ESMA quarterly liquidity assessment⁴², with 513 at the end of 2021. The higher number of liquid bonds in 2022 can be explained by the relocation of some bond issuance after Brexit, but also by the change in determination of bonds' liquidity.⁴³ This number fluctuated between 225 and 295 corporate bonds and between 270 and 667 sovereign bonds traded considered liquid.

Similarly to previous years, liquid sovereign bonds represented the vast majority of liquid bond trading (99% in 2021 and 2022). However and in line with the increase in the number of bond instruments deemed as liquid, liquid corporate bond trading slightly increased in 2022, representing 4% of corporate bond volumes in 2022 (2% in 2021), and 4% of covered bond volumes (3% in 2021).

Overall, liquid bonds trading amounted to 64% of bond volumes in 2022 on average, and 58% in 2021, in line with the rise in liquid instruments. Monthly liquid bond trading fluctuated between 54 and 63% of bond volumes in 2021, and between 59 and 66% in 2022, with a sharp decline observed during both ends of the years (MR-MiFID-S.97).

The average trade sizes observed during the two years for corporate liquid bonds (EUR 130,000) were vastly lower to illiquid ones (EUR 960,000, MR-MiFID-S.99), even if the difference decreased in 2022. For sovereign bonds, the average trade size of liquid bonds (EUR 2.8mn) was comparable to illiquid ones (EUR 3.1mn, MR-MiFID-S.100).

Green bonds: Growing market

The EEA **green bond markets** continued its

⁴¹ In this case, the FI is calculated with the HHI as the sum of the squared market share of every MIC by market type, or by TV domicile if looking at fragmentation by country.

⁴² ESMA's liquidity assessment for bonds is based on a quarterly assessment of quantitative liquidity criteria, which includes the daily average trading activity (trades and notional amount) and the percentage of days traded per quarter. See the [latest published bond liquidity assessment](#). Bond calculations are presented here without 3Q22 since the quarterly liquidity determination calculation was not published in November 2022 due to quality issues, see [ESMA's statement](#).

⁴³ In June 2022 the move from stage 2 to stage 3 as per Commission Delegated Regulation (EU) 2021/529 of 18

December 2020 for the determination of bonds liquidity reduced the requirements on the average number of daily trades for the quarterly liquidity calculations, mechanically increasing the number of liquid instruments. Furthermore, the improvement of data quality issues helped defining liquid instruments. Finally from 30 April 2021, in consequence of Brexit, the publication files do not contain ISINs admitted to trading or traded only on UK trading venues. It might have taken some time for the relocating venues to fully start their trading activity in 2021, explaining lower trading volumes, see ESMA (2021), [ESMA makes new bond liquidity data available](#).

growth in 2021 and 2022⁴⁴, with a growing number of instruments available for trading (3,200 in 2021 to 4,000 in 2022). Those instruments were mainly issued in the EEA (63% in 2022, 62% in 2021), with a larger share of corporate bonds than conventional bonds (74% in 2022, 72% in 2021). Sovereign green bonds amounted to 6% of green bond instruments available for trading during both years. The main EEA issuers are Germany (16% of available instruments), Sweden (15%) and France (7%) in 2022, with non-EEA instruments amounting to 37% of available green bonds.

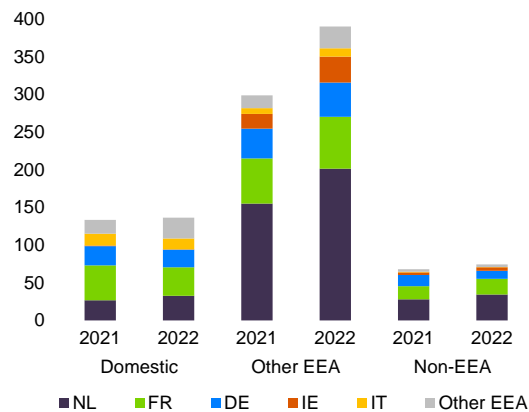
The increase in volumes observed for green bonds in 2022 was larger than for the rest of the secondary markets, showing an appetite for this segment of the market. The volumes increased from EUR 591bn to EUR 724bn in 2022 (+22%), coming from an important increase in sovereign volumes (+40%, MR-MiFID-S.103). The share of green sovereign bond trading was lower than for conventional bonds, representing 39% of green bond volumes in 2022 (34% in 2021).

Green bonds were mostly traded on MTFs (39% of green bond volumes in 2022) and SIs (39%). OTC trading represented 17% of green bond volumes, with corporate bonds trading more OTC (23% of green bond corporate turnover) than sovereign bonds (12% of their respective volumes). Finally, OTFs and RMs each represented 2% of green bond volumes in 2022. This distribution of trading by market type remained relatively stable during both years, with a slight increase of MTF share (37% in 2021) and a decrease of SI share (42% in 2021).

Green bonds appear slightly more **liquid** than other bonds, with 28% of them traded once a month in 2022 and 74% at least once a year, a slight decrease compared to 2021 (31% and 76% respectively in 2021, MR-MiFID-S.102). In comparison, 12% of conventional bonds were traded at least once a month and 46% once a year.

MR-MiFID.15

Green bond trading volumes by country and type Green bond trading concentrated



Note: Annual domestic and foreign trading volumes in green bonds by country, excluding OTC. 'Domestic' includes trading volumes in green bonds issued in the same country as the venue or SI they are traded on. Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

Even if the overall green bond turnover remained low, the concentration of trading was important. The first five trading countries amount to 75% of volumes, with the rest from other countries (8%) or OTC. The main countries were the Netherlands (37% of green bond volumes), France (18%) and Germany (11%). Compared to conventional bonds, some countries trading green bonds catered to their own market, with for instance 56% of green bond volumes in Italy from domestic green bonds, 32% in France and 29% in Germany (MR-MiFID.15). On the contrary, other important green bond trading countries observe more foreign instruments' volumes, such as the Netherlands, where the domestic trading share was only 12%, or Ireland (2%).

Green bond exchanges were also concentrated on a few venues, with the first five MTFs concentrating 98% of MTF volumes in 2022, 93% for OTFs and 98% for RM volumes (MR-MiFID-S.104). Green bond trading on SIs was more distributed among SIs, even more than for conventional bonds, with the first five SIs comprising 47% of SI volumes (67% for all bonds in 2022), a stable share in 2021 and 2022.

TEXTBOX 1

EU-Bonds issuance increased, impact to be monitored further

Following the COVID-19 pandemic, the European Commission issued EUR 98.4bn in social bonds between 3Q20 and 4Q22 to finance employment schemes across the

⁴⁴ Green bonds are defined here as being labelled as green bonds by the Climate bonds initiative, as well as self-labelled bonds, both classifications coming from Refinitiv Eikon. Conventional bonds comprise all the bonds that

are not defined as green bonds. For further analysis of the green bond market, see ESMA (2021), [Environmental impact and liquidity of green bonds](#).

EU.⁴⁵ Then, the Next Generation EU Programme created a facility to support the economic recovery from the pandemic and a greener future, with the objective to issue EU bonds up to EUR 800bn between 2021 and 2026, including up to EUR 250bn in green bonds. Although these were not the first EU bonds issued⁴⁶, these issuances were the first ones to be done with the explicit aim of creating a central funding source for Member States, and will make the EU de facto the largest issuer of EUR o-denominated debt for the coming years.

At the end of 2022, EUR 171bn EU bonds had been issued in this context, of which EUR 36.5bn were green bonds, along with EUR 80.3bn in short-term bills.⁴⁷ According to the Commission, more than 70% of the issued EU bonds went to buy-and-hold investors (i.e. fund managers, insurance companies, pension funds and central banks) in 2022, so low traded volumes on secondary markets can be expected.⁴⁸ However, ESMA will continue to monitor this market and its characteristics.

⁴⁵ See the Commission's page on 'The European instrument for temporary support to mitigate unemployment risks in an emergency', [SURE](#), for further details.

⁴⁶ Previous EU issuances included loans through the European Stability Mechanism (EUR 47bn), the balance of payments programme to non-euro area Members (EUR 13bn), and macro-financial assistance to non-EU countries (EUR 5bn).

⁴⁷ See the Commission's [Next Generation EU](#) dedicated pages for more details on the use of proceeds and transactions details.

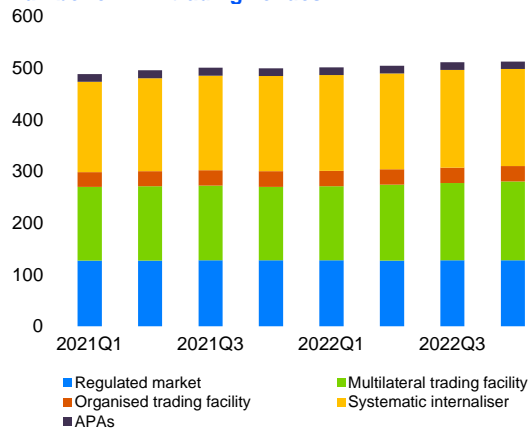
⁴⁸ See European Commission (2022), [Second semi-annual report on the execution of NextGenerationEU funding operations](#), July, and European Commission (2023), [Third half-yearly report on the execution of the EU borrowing and lending operations](#), February.

Statistics

Securities markets

MR-MiFID-S.1

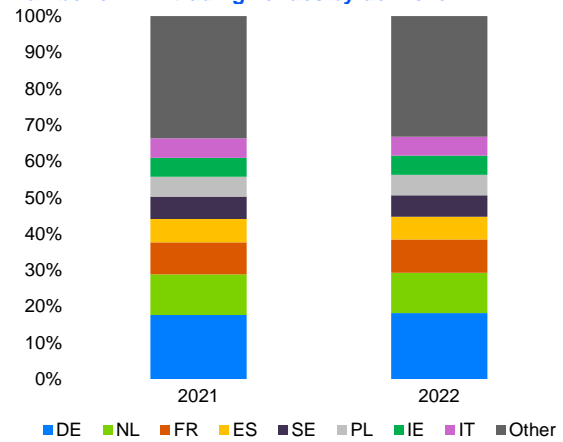
Number of EEA trading venues



Note: Number of EEA infrastructure in 2021 and 2022 by type, quarterly. Sources: ESMA registers.

MR-MiFID-S.2

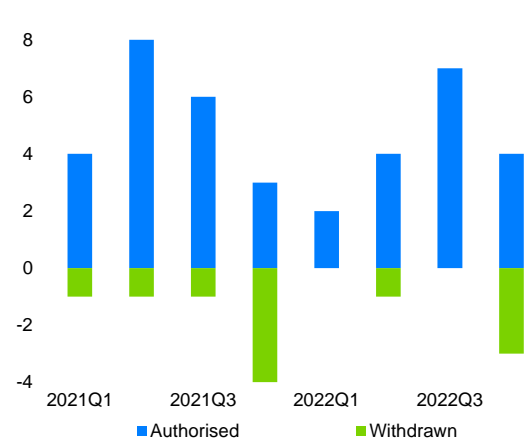
Number of EEA trading venues by domicile



Note: Share of EEA infrastructures in 2021 and 2022 by country domicile. Sources: ESMA registers.

MR-MiFID-S.3

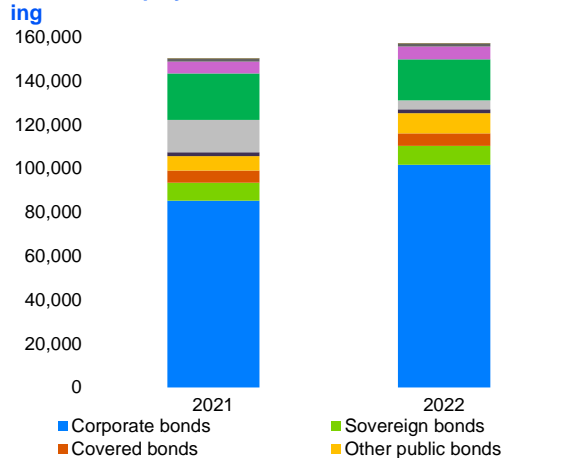
Total number of TVs and SIs authorised and withdrawn



Note: Number of trading venues registered and withdrawn and SIs notifications in ESMA registers in 2021 and 2022. Sources: ESMA registers.

MR-MiFID-S.4

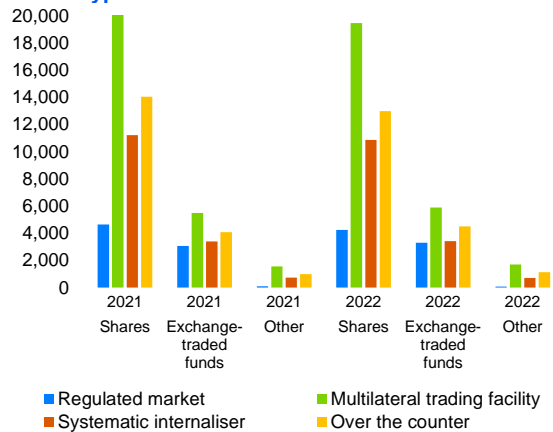
Number of equity and bond instruments available for trading



Note: Number of EEA securities in 2021 and 2022 by asset type. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.5

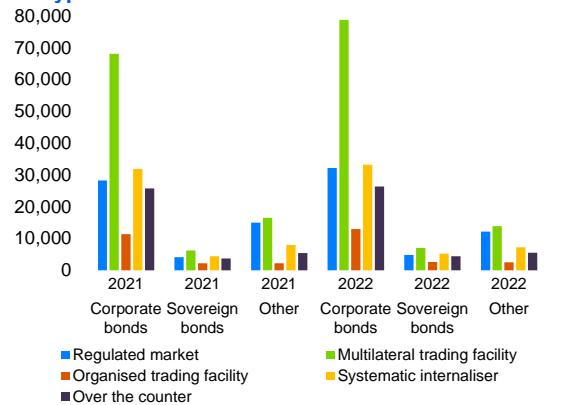
Number of equity instruments available for trading by market type



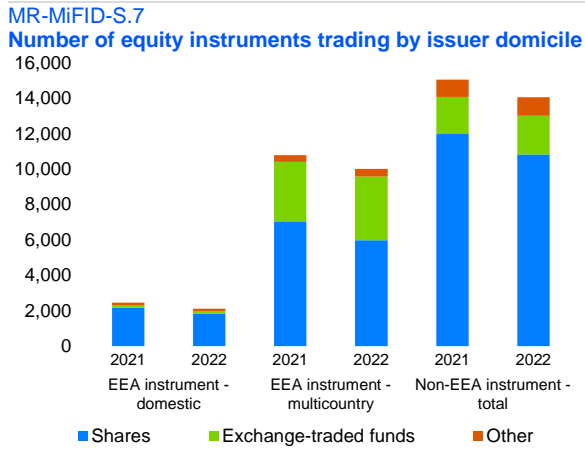
Note: Number of equity and equity-like instruments available for trading in 2021 and 2022 by market type and asset type. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.6

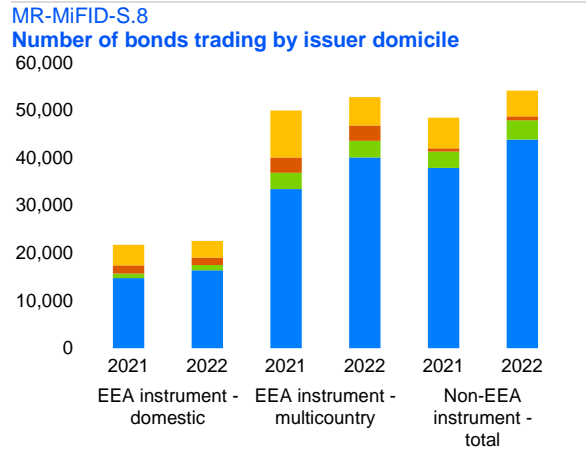
Number of bonds instruments available for trading by market type



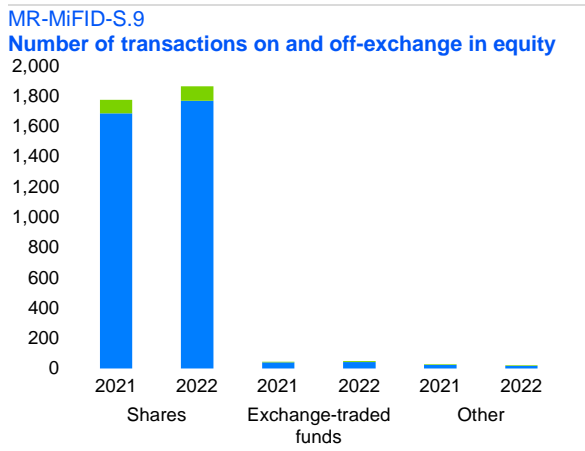
Note: Number of bonds available for trading in 2021 and 2022 by infrastructure and bond type. "Other" includes covered bonds, convertible bonds and other public bonds. Sources: FIRDS, FITRS, ESMA.



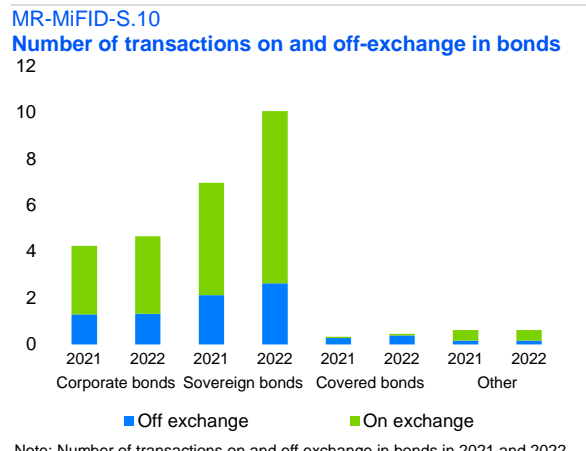
Note: Number of equity and equity-like instruments available for trading domestically and multicountry (by comparing issuer country and trading venue domicile) in 2021 and 2022.
 Sources: FIRDS, FITRS, ESMA.



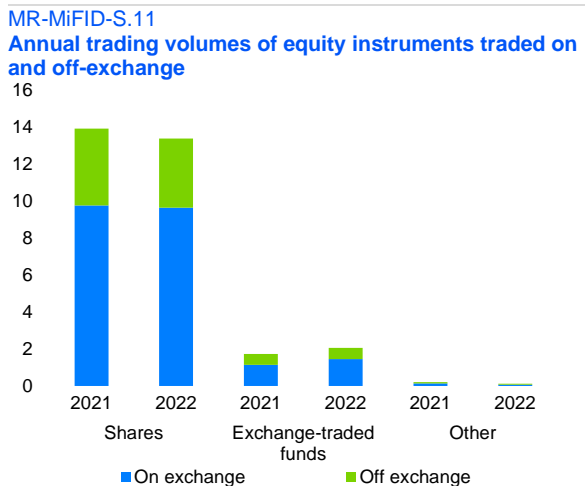
Note: Number of bonds available for trading domestically and cross-border (by comparing issuer country and trading venue domicile) in 2021 and 2022.
 Sources: FITRS, FIRDS, ESMA.



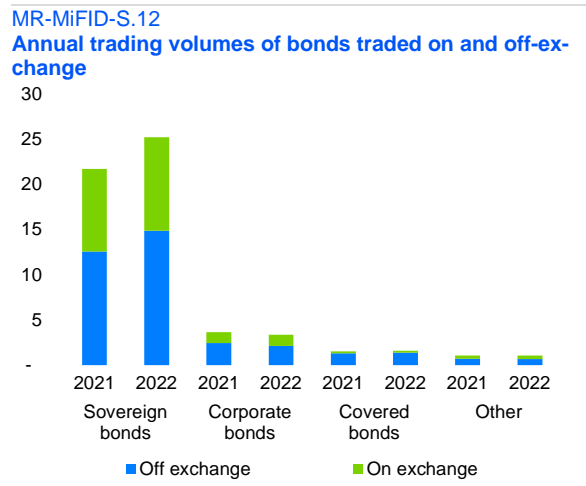
Note: Number of transactions on and off exchange in equity and equity-like instruments in 2021 and 2022 by instrument type, in million.
 Sources: FIRDS, FITRS, ESMA.



Note: Number of transactions on and off exchange in bonds in 2021 and 2022 by instruments type, in million. "Other" includes convertible bonds and other public bonds.
 Sources: FIRDS, FITRS, ESMA.

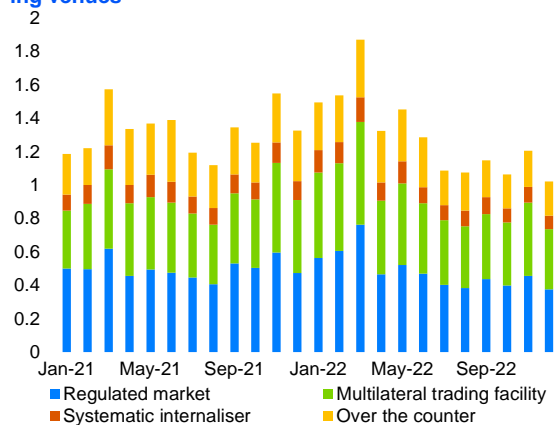


Note: Annual trading volumes of equity and equity-like instruments traded on and off exchange (including through systematic internalisers) in 2021 and 2022, EUR trillion.
 Sources: FIRDS, FITRS, ESMA.



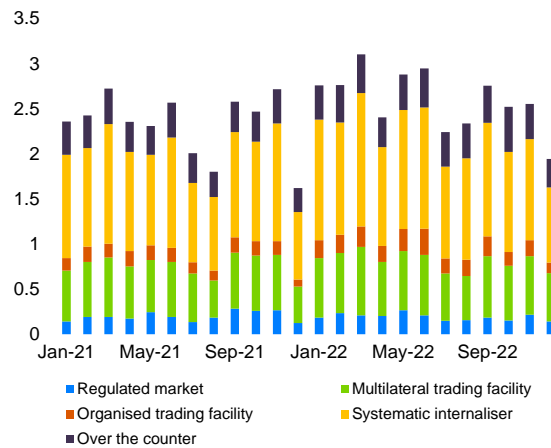
Note: Annual trading volumes of bonds traded on and off exchange (including through systematic internalisers) in 2021 and 2022, EUR trillion. "Other" includes convertible bonds and other public bonds.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.13
Monthly trading volumes of equity instruments by trading venues



Note: Monthly trading volumes of equity and equity-like instruments in 2021 and 2022 by infrastructure, EUR trillion.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.14
Monthly trading volumes of bonds by trading venues



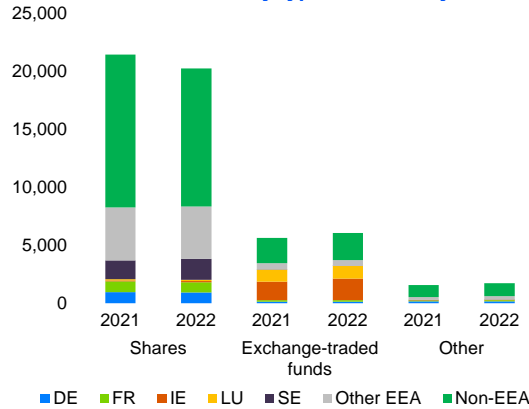
Note: Monthly trading volumes bonds in 2021 and 2022, by infrastructure in EUR trillion.
 Sources: FIRDS, FITRS, ESMA

Equity markets

Instruments

MR-MiFID-S.15

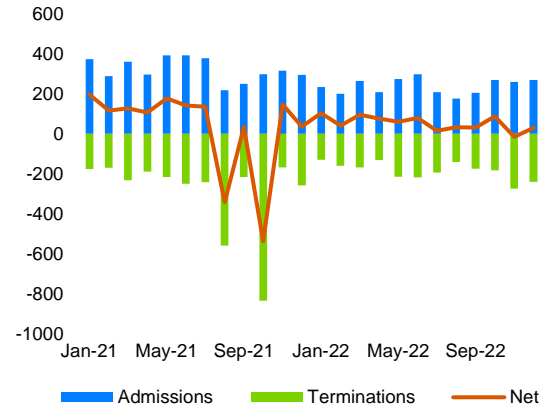
Number of instruments by type and country of issuance



Note: Number of equity and equity-like instruments by instrument type and country of issuance.
Sources: FIRDS, FITRS, ESMA

MR-MiFID-S.16

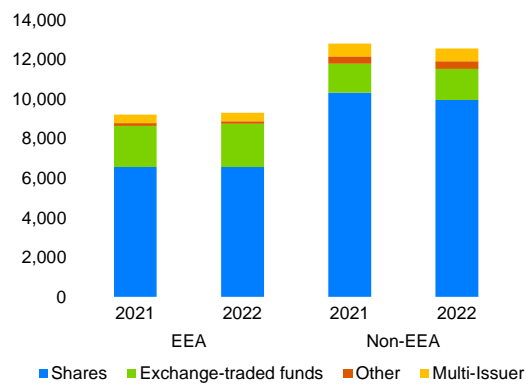
Number of instruments admitted and terminated



Note: Number of equity and equity-like instruments admitted to trading and terminated on EEA trading venues in 2021 and 2022, and net value, by month.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.17

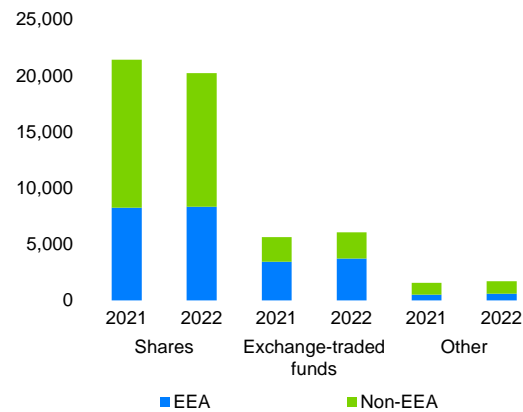
Number of issuers (LEI) by instrument type and domicile



Note: Number of issuers (unique LEIs) of equity and equity-like instruments available for trading in 2021 and 2022. Multi-issuer indicates entities that have issued more than one instrument type.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.18

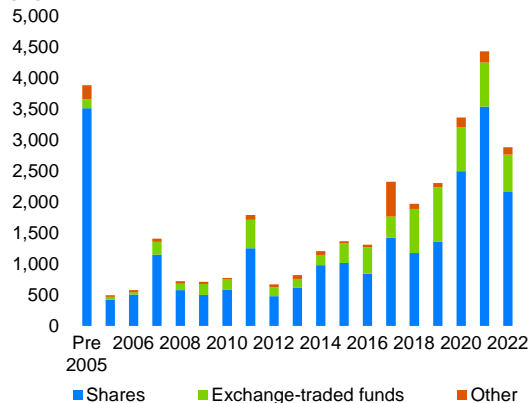
Number of instruments by issuer and type



Note: Number of equity and equity-like instruments available for trading in 2021 and 2022, by issuer origin and instrument type. "Other" includes depository receipts and certificates.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.19

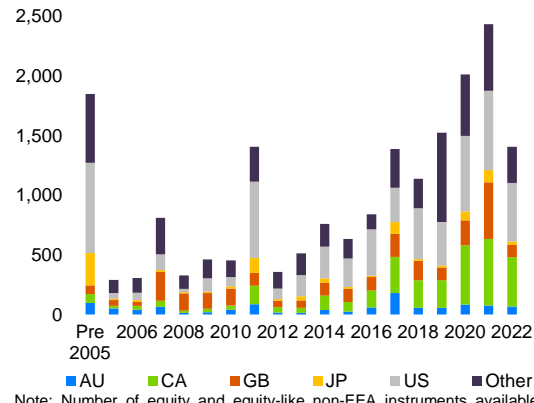
Number of issuers (LEI) by instrument type and domicile



Note: Number of equity and equity-like instruments available for trading in 2021 and 2022, by ISIN trading start year (including new ISINs issued for previously existing instruments, stock splits, etc.).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.20

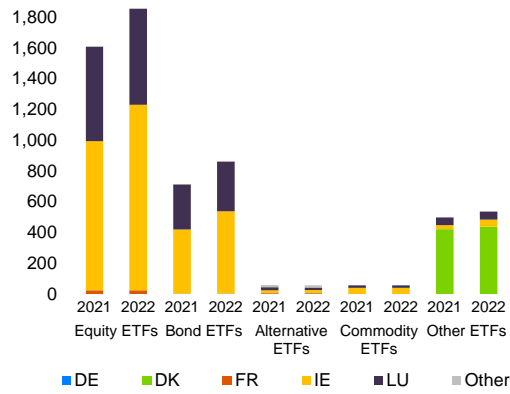
Number of issuers (LEI) by instrument type and domicile



Note: Number of equity and equity-like non-EEA instruments available for trading in 2021 and 2022 in the EEA, by ISIN trading start year and issuer domicile (including new ISINs issued for previously existing instruments, stock splits, etc.).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.21

Number of EEA ETFs by underlying asset



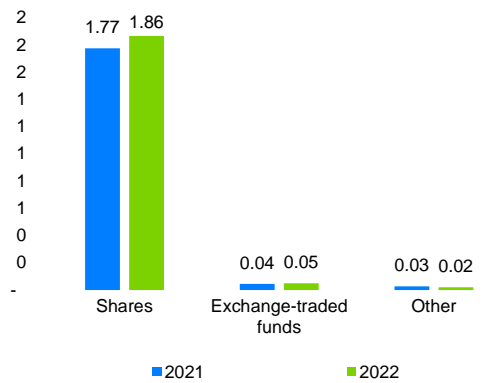
Note: Number of EEA ETFs by underlying asset and issuer country in 2021 and 2022.

Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

Trading activity by instrument type

MR-MiFID-S.22

Number of transactions by instrument type

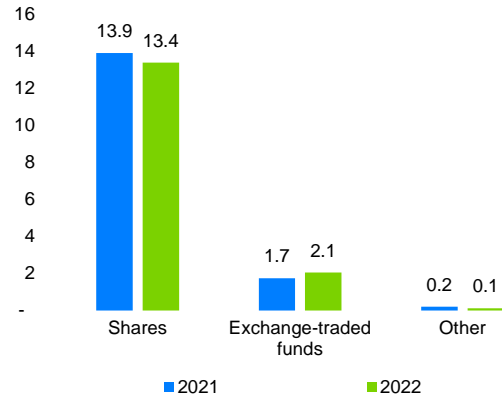


Note: Annual number of transactions in equity and equity-like instruments in 2021 and 2022 by instrument type, in bn. "Other" includes depository receipts and certificates.

Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.23

Trading volumes by instrument type

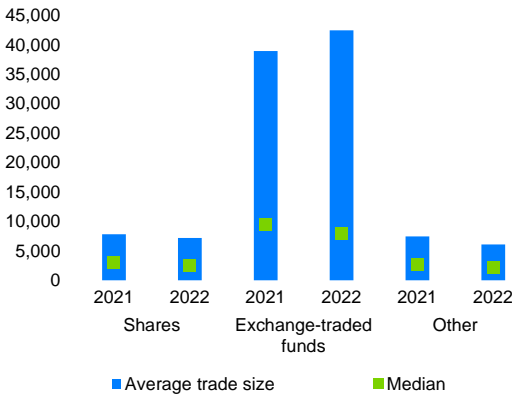


Note: Annual trading volumes of equity and equity-like instruments in 2021 and 2022 by instrument type, EUR trillion. "Other" includes depository receipts and certificates.

Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.24

Average and median trade size by instrument type

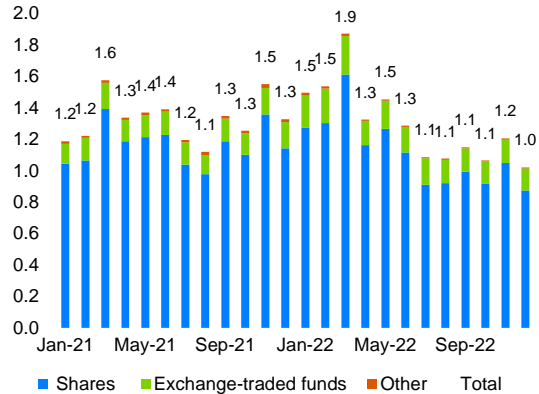


Note: Average trade size and median transaction size of equity and equity-like instruments in 2021 and 2022 by instrument type, in EUR. "Other" includes depository receipts and certificates.

Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.25

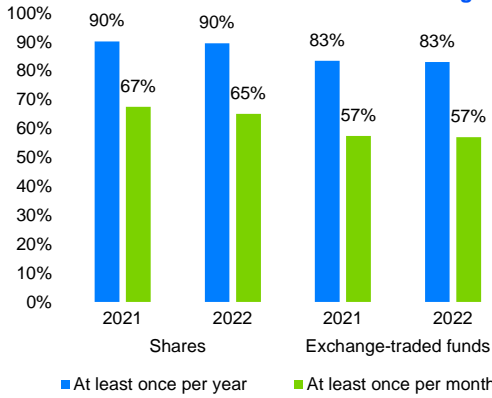
Monthly trading volumes by instrument type



Note: Monthly trading volumes of equity and equity-like instruments in 2021 and 2022, by instrument type, EUR trillion. "Other" includes depository receipts and certificates.

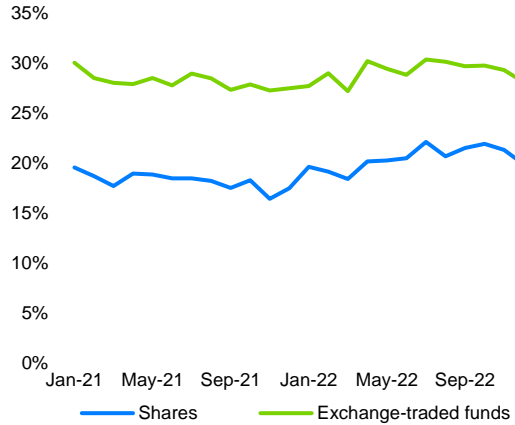
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.26
Instruments traded versus available for trading



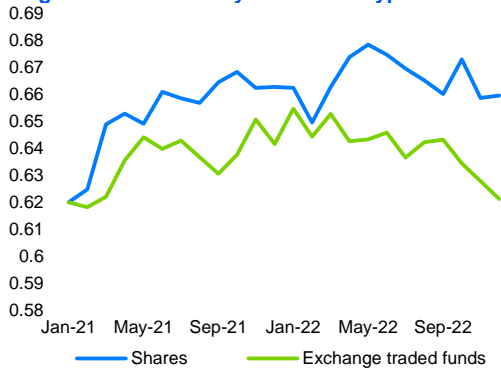
Note: Share of equity and equity-like instruments traded at least once per month and once per year in 2021 and 2022 by instrument type, as % of instrument type.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.27
Share of instruments not traded



Note: Monthly share of non-traded shares and exchange-traded funds in 2021 and 2022, in % of all instruments available for trading.
 Sources: FIRDS, FITRS, ESMA.

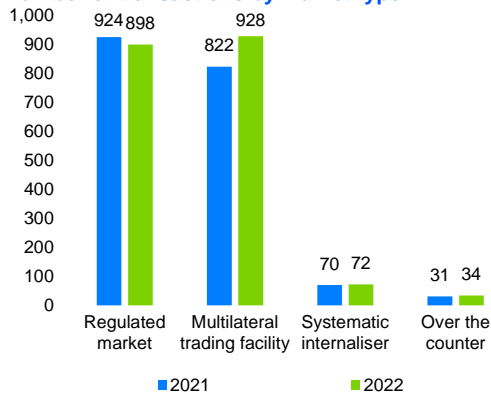
MR-MiFID-S.28
Fragmentation index by instrument type and month



Note: Monthly fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by instrument type. Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation).
 Sources: FIRDS, FITRS, ESMA.

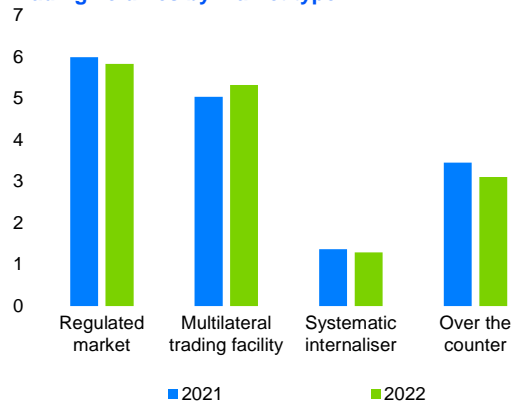
Trading venues

MR-MiFID-S.29
Number of transactions by market type



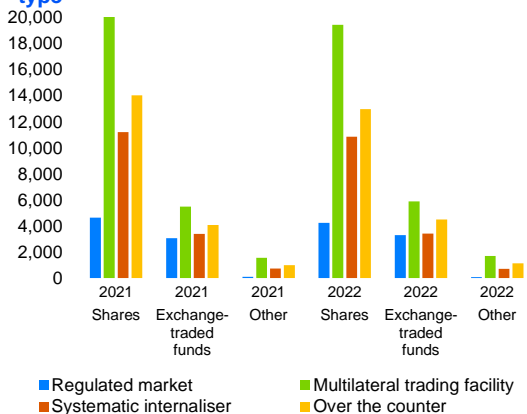
Note: Annual number of transactions in equity and equity-like instruments in 2021 and 2022 by market type, in million. "Other" includes depository receipts and certificates.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.30
Trading volumes by market type



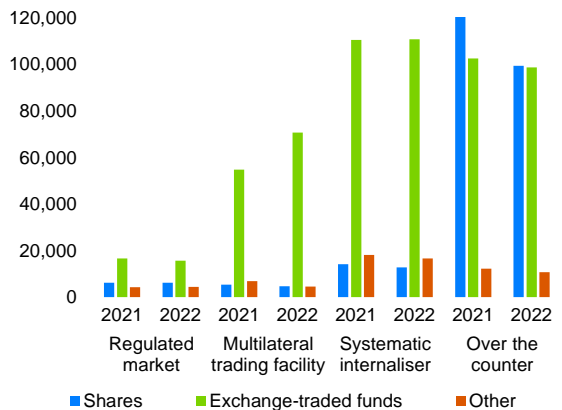
Note: Annual trading volumes of equity and equity-like instruments in 2021 and 2022 by market type, EUR trillion. "Other" includes depository receipts and certificates.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.31
Number of instruments by instrument and market type



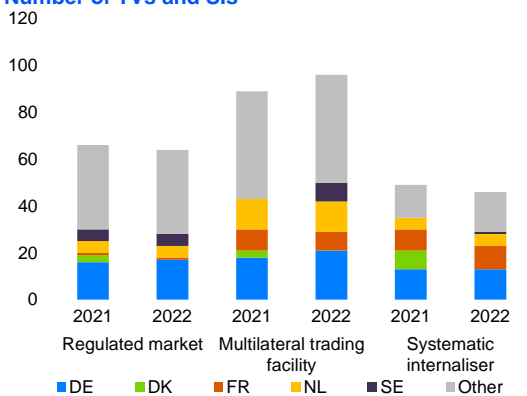
Note: Number of equity and equity-like instruments available for trading in 2021 and 2022 by market type and asset type.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.32
Average trade size by instrument and market type



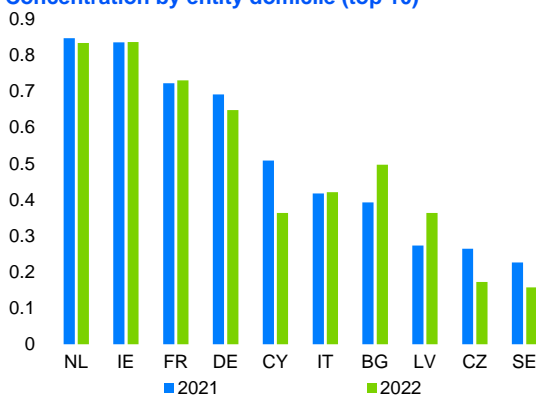
Note: Average trade size of equity and equity-like instruments in 2021 and 2022 by instrument and market type, EUR. "Other" includes depository receipts and certificates.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.33
Number of TVs and SIs



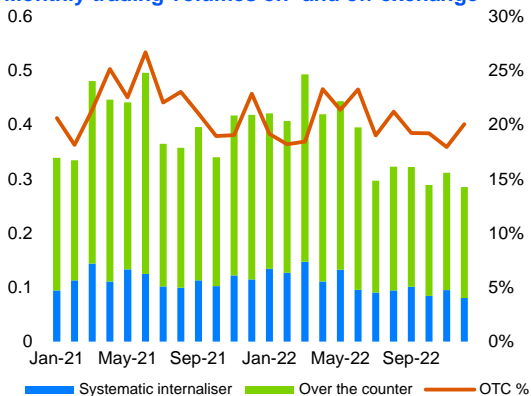
Note: Number of EEA infrastructures on which equity and equity-like instruments are available for trading in 2021 and 2022, by type and domicile.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.34
Concentration by entity domicile (top 10)



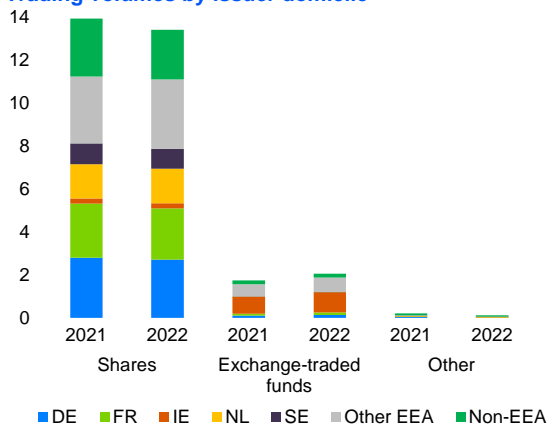
Note: Fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by entity domicile (top 10). Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation).
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.35
Monthly trading volumes on- and off-exchange



Note: Monthly trading volumes in equity and equity-like instruments and share of pure OTC volumes (rhs) in 2021 and 2022, by market type in EUR trillion.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.36
Trading volumes by issuer domicile

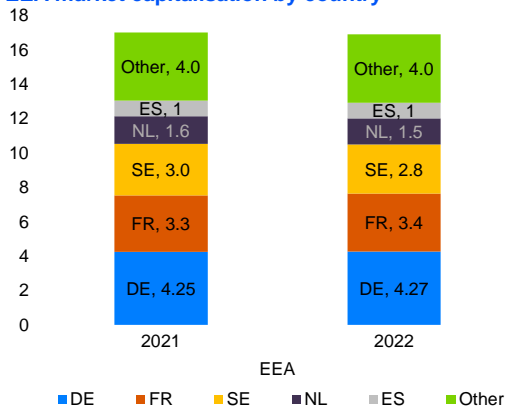


Note: Annual trading volumes by instrument type and country of issuance in 2021 and 2022, in EUR trillion.
 Sources: FIRDS, FITRS, ESMA.

Market capitalisation

MR-MiFID-S.37

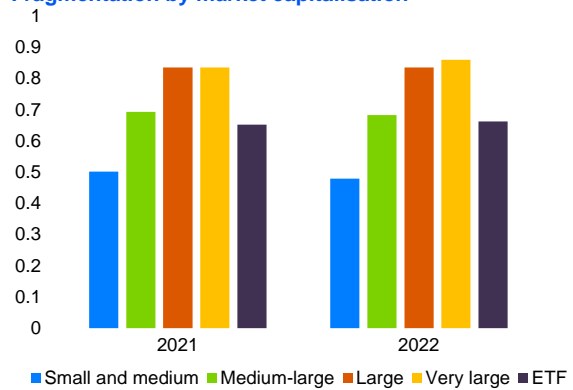
EEA market capitalisation by country



Note: Sum of 2021 and 2022 EEA share market capitalisation by issuer domicile, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.38

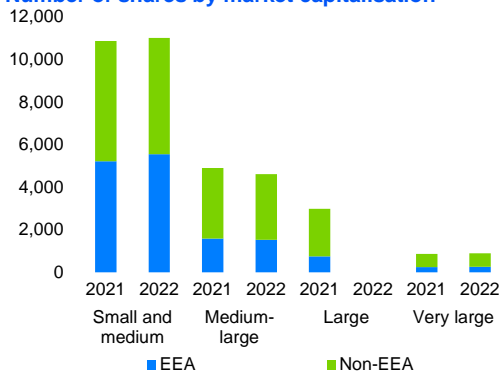
Fragmentation by market capitalisation



Note: Fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by market capitalisation. Index calculated as $(1-HHI)$ and ranging from 0 (monopoly) to 1 (maximum fragmentation).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.39

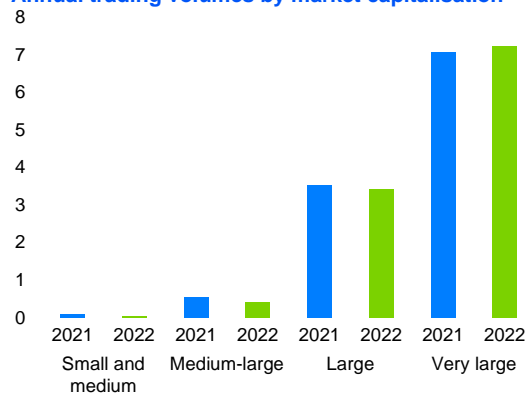
Number of shares by market capitalisation



Note: Number of shares available for trading by market capitalisation and market type in 2021 and 2022. "Small and medium" = 0 to 200 million, "Medium large" = 200 million to 2 billion, "Large" = 2 billion to 20 billion, "Very large" = more than 20 billion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.40

Annual trading volumes by market capitalisation

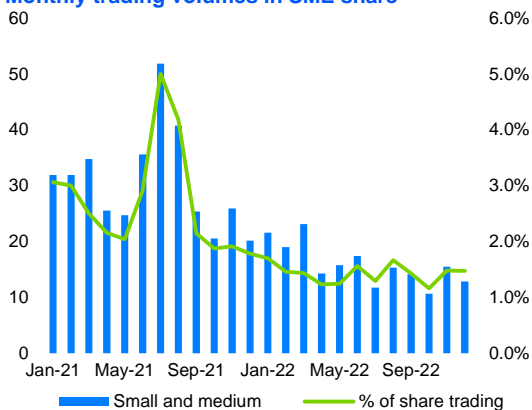


Note: Annual trading volumes of EEA shares by market capitalisation and market type in 2021 and 2022, EUR trillion. "Small and medium" = 0 to 200 million. "Medium-large" = 200 million to 2 billion. "Large" = 2 billion to 20 billion. "Very Large" = more than 20 billion.
Sources: FIRDS, FITRS, ESMA.

SMEs

MR-MiFID-S.41

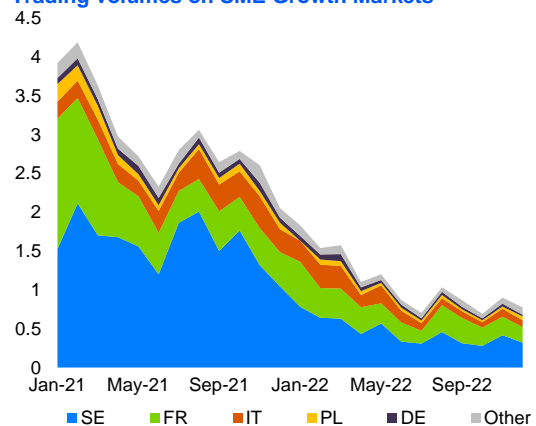
Monthly trading volumes in SME share



Note: Monthly trading volumes of SME shares, EUR bn (lhs) and % of total trading in shares (rhs).
Sources: FIRDS, FITRS, ESMA

MR-MiFID-S.42

Trading volumes on SME Growth Markets

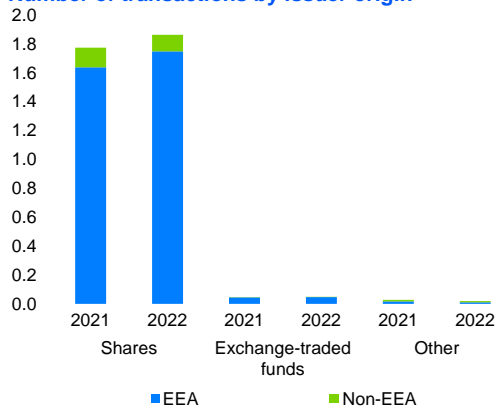


Note: Monthly trading volumes of SME shares on SME Growth Markets, in EUR billion. Other includes FI, ES, DK, IE, BG, BE, HR, PT.
Sources: FIRDS, FITRS, ESMA

International activity

MR-MiFID-S.43

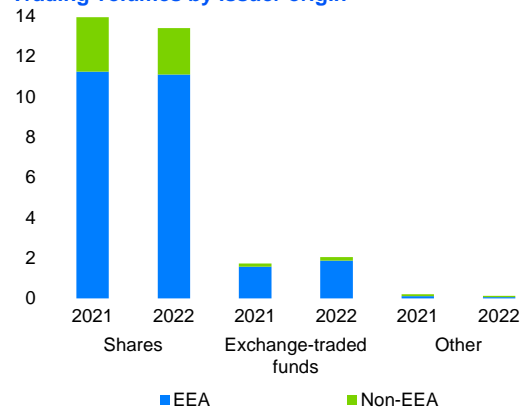
Number of transactions by issuer origin



Note: Annual number of transactions of equity and equity-like instruments in 2021 and 2022 by issuer origin, EUR thousands.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.44

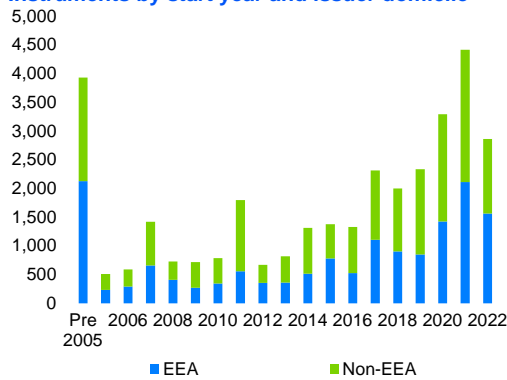
Trading volumes by issuer origin



Note: Annual trading volumes of equity and equity-like instruments in 2021 and 2022, by instrument type and issuer domicile, in EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.45

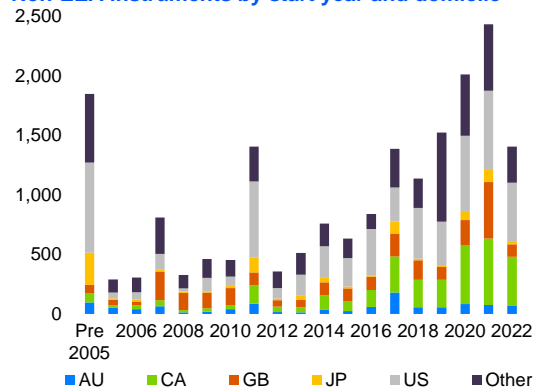
Instruments by start year and issuer domicile



Note: Number of equity and equity-like instruments available for trading in 2021 and 2022 in the EEA, by ISIN trading start year and issuer domicile (including new ISINs issued for previously existing instruments, stock splits, etc.).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.46

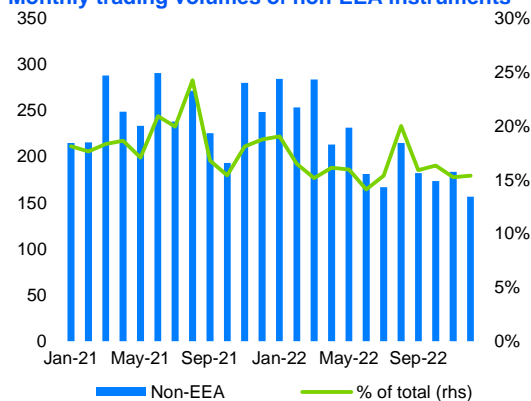
Non-EEA instruments by start year and domicile



Note: Number of equity and equity-like non-EEA instruments available for trading in 2021 and 2022 in the EEA, by ISIN trading start year and issuer domicile (including new ISINs issued for previously existing instruments, stock splits, etc.).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.47

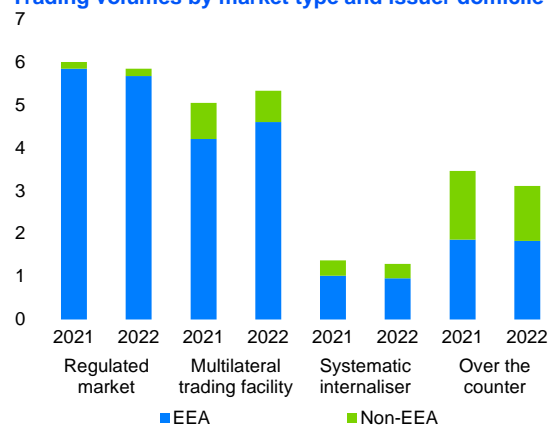
Monthly trading volumes of non-EEA instruments



Note: Monthly trading volumes of non-EEA equity and equity-like instruments in 2021 and 2022 by month, EUR billion (lhs), and share of total trading in equity and equity-like instruments (rhs).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.48

Trading volumes by market type and issuer domicile

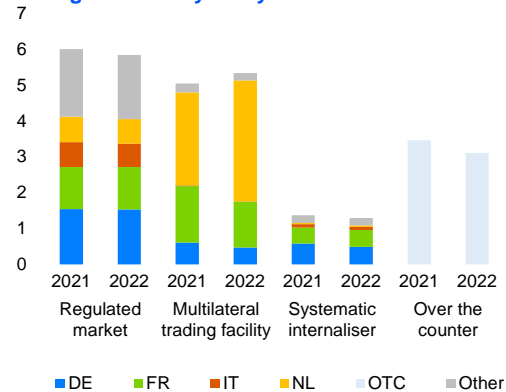


Note: Annual trading volumes of equity and equity-like instruments in 2021 and 2022, by issuer domicile, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

Fragmentation and cross-border trading

MR-MiFID-S.49

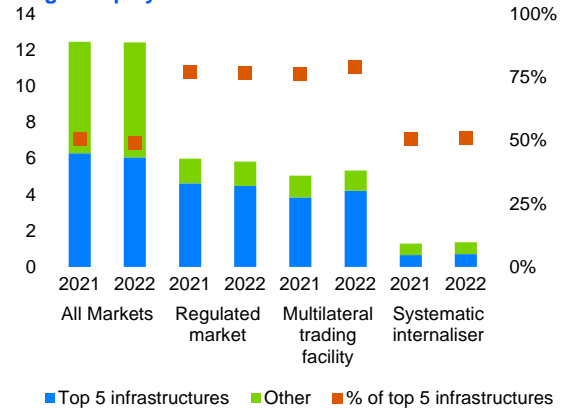
Trading volumes by entity domicile



Note: Annual trading volumes in equity and equity-like instruments in 2021 and 2022 by market type and entity domicile, EUR trillion. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.50

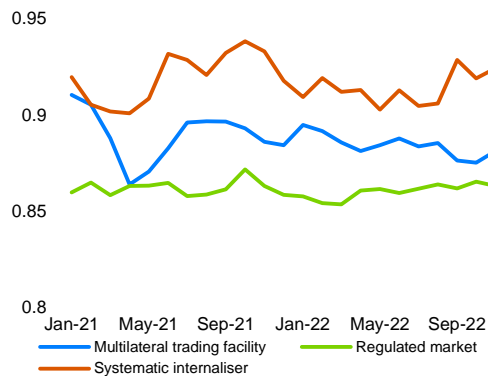
Largest equity markets



Note: Annual equity trading volumes in 2021 and 2022 on top 5 infrastructures, in EUR trillion (lhs) and share of the total in % (rhs). Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.51

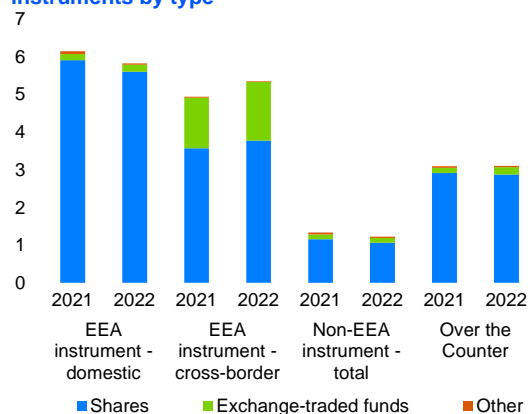
Fragmentation indicator by market type and month



Note: Monthly fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by market type. Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation). Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.52

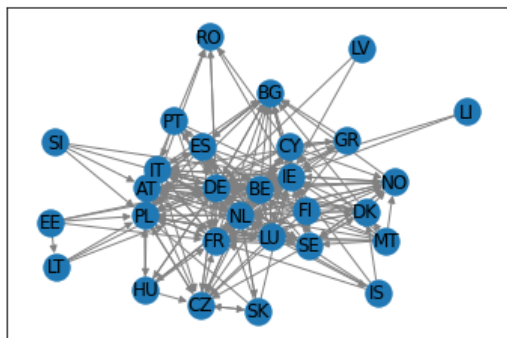
Volumes of cross-border vs. domestically traded instruments by type



Note: Trading volumes in equity and equity-like instruments available for trading only domestically or cross-border within the EEA (by comparing issuer country and trading venue domicile) in 2021 and 2022. EUR trillion. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.53

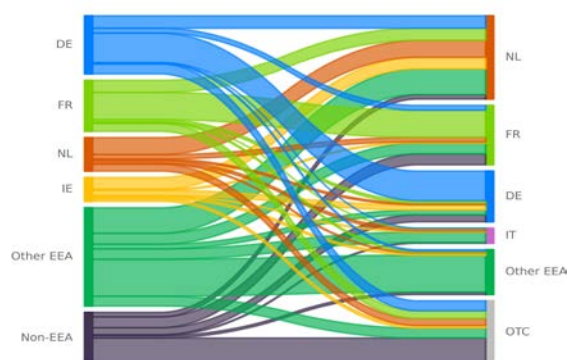
Network map: share trading activity by TV and issuer country



Note: Force-directed network of cross-border trading volumes in EEA sovereign bonds, by TV and issuer domicile. The connections (grey lines) represent cross-border trading volumes. The node at the origin of each grey line represents the issuer domicile, while the node at the end stands for the TV domicile. The more the connections (i.e. a higher number of grey lines going to the node), the larger the trading volumes in instruments of foreign issuers traded on this TV domicile. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.54

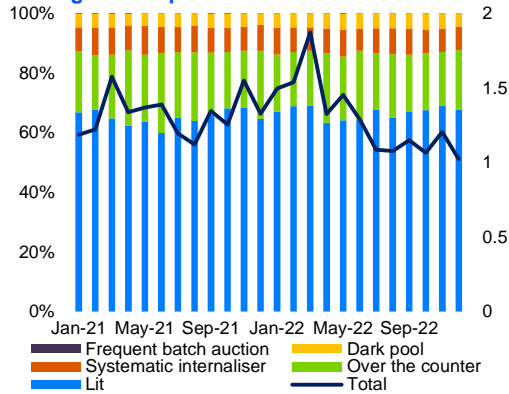
Sankey diagram: Trading volumes by country and infrastructure domicile in 2022



Note: Annual trading volume flows in equity and equity-like instruments in 2022: overall volumes ranked by issuer domicile (lhs) and by infrastructure domicile (rhs). Nodes and flows are proportional to volumes traded. Sources: FIRDS, FITRS, ESMA.

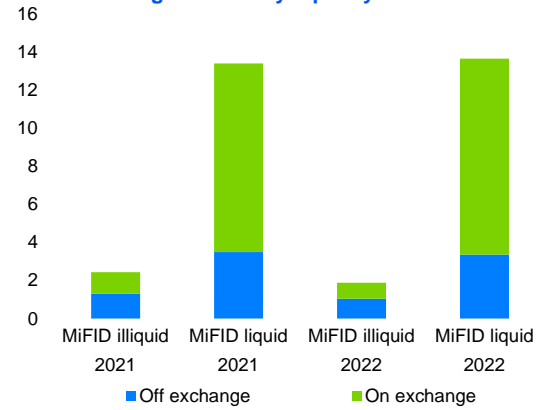
Market transparency

MR-MiFID-S.55
Trading landscape



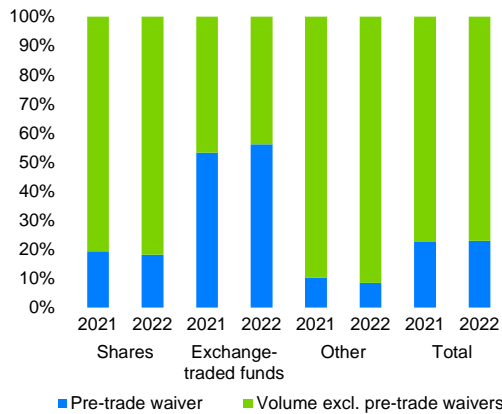
Note: Type of equity trading in the EEA as percentage of total volumes in 2021 and 2022, in % (lhs). Total equity trading volumes on rhs, in EUR trillion.

MR-MiFID-S.56
Annual trading volumes by liquidity status



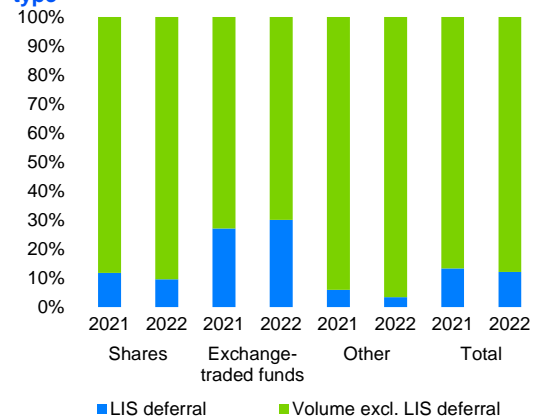
Note: Annual trading volumes in equity and equity-like instruments in 2021 and 2022 by liquidity status under MiFID transparency calculations, EUR trillion. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.57
Waiver trading activity per instrument type



Note: Percentage of trading volume under the pre-trade waiver on-venue in 2021 and 2022. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.58
Large-in-scale deferral trading activity per instrument type



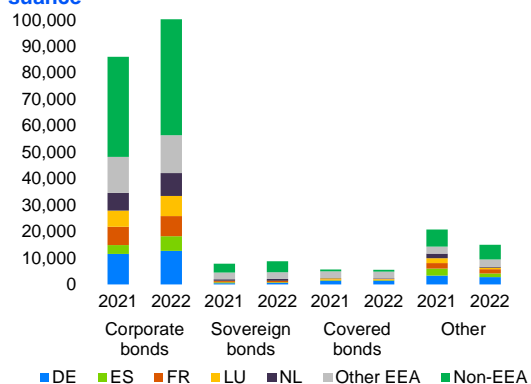
Note: Percentage of trading volume under the large-in-scale deferral on-venue in 2021 and 2022. Sources: FIRDS, FITRS, ESMA.

Bond markets

Instruments

MR-MiFID-S.59

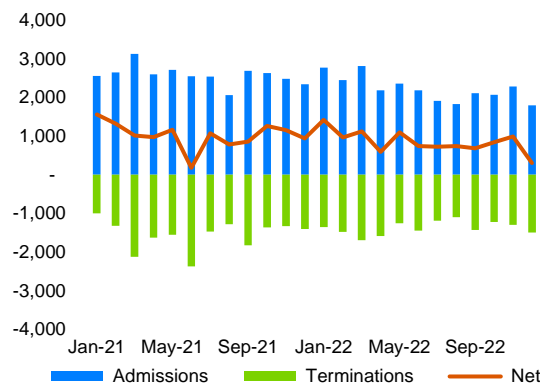
Number of instruments by bond type and country of issuance



Note: Number of instruments by bond type and country of issuance, in 2021 and 2022. "Other" includes convertible bonds and other public bonds. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.60

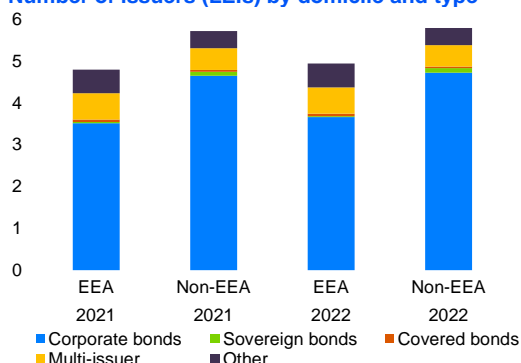
Number of instruments admitted and terminated



Note: Number of bonds admitted to trading and terminated on EEA trading venues in 2021 and 2022 and net value, by month. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.61

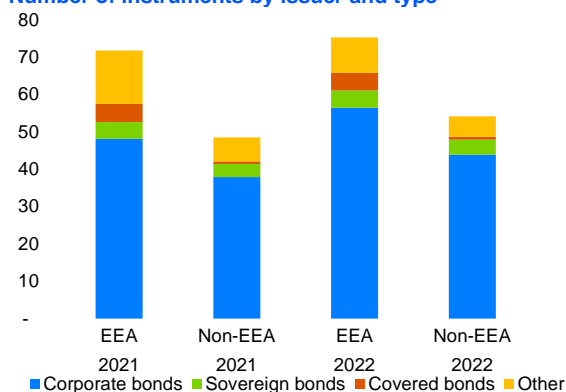
Number of issuers (LEIs) by domicile and type



Note: Number of issuers (unique LEIs) of bond instruments available for trading in 2021 and 2022. Multi-issuer indicates entities that have issued more than one instrument type, in thousands. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.62

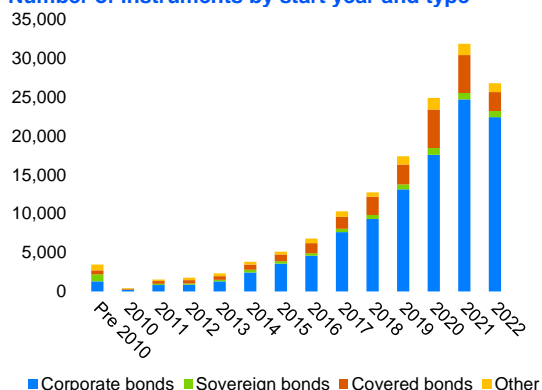
Number of instruments by issuer and type



Note: Number of bonds available for trading in 2021 and 2022 by issuer domicile (thousands). Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.63

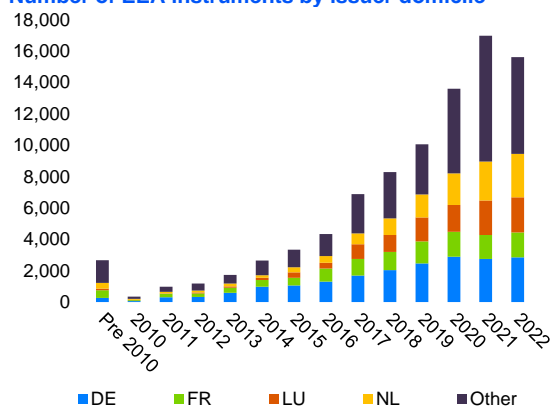
Number of instruments by start year and type



Note: Number of bonds available for trading in 2021 and 2022, by ISIN trading start year. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.64

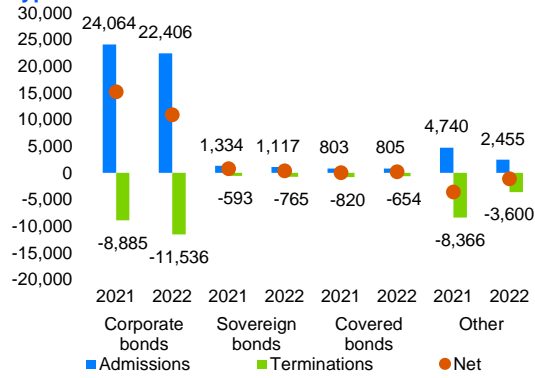
Number of EEA instruments by issuer domicile



Note: Number of EEA bonds available for trading in 2021 and 2022 in the EEA, by ISIN trading start year. Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.65

Type of instruments admitted and terminated

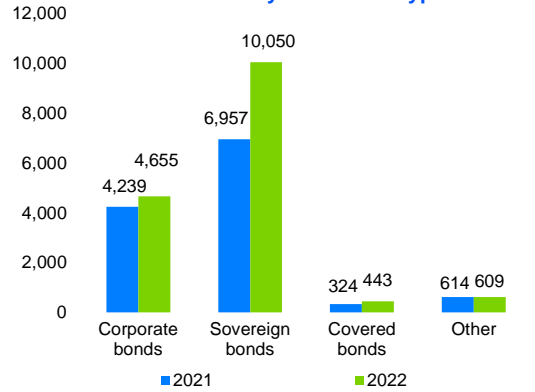


Note: Number of instruments admitted to trading and terminated in 2021 and 2022, by bond type. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

Trading activity by instrument type

MR-MiFID-S.66

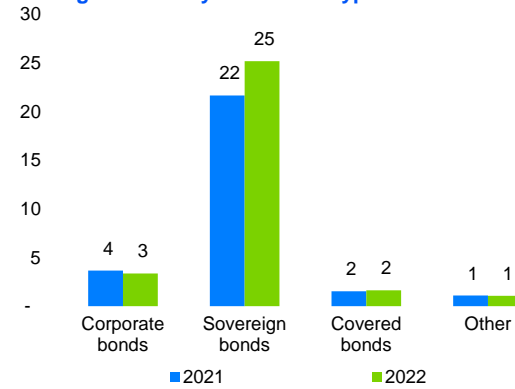
Number of transactions by instrument type



Note: Number of transactions in bonds in 2021 and 2022 by bond type, in thousands. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.67

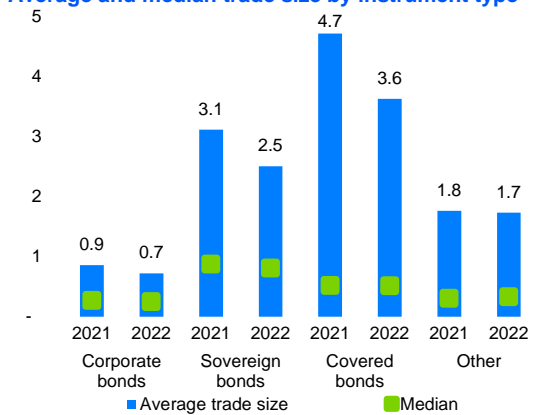
Trading volumes by instrument type



Note: Annual trading volumes of bonds in 2021 and 2022 by bond type, EUR trillion. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.68

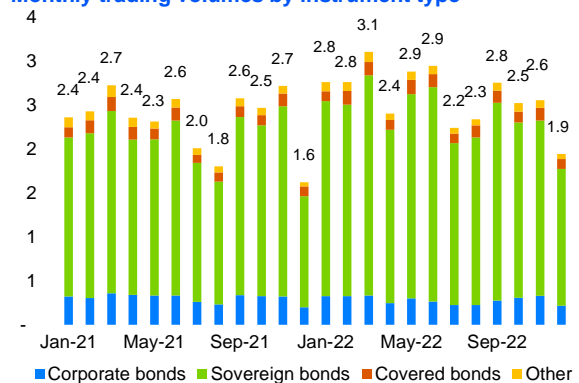
Average and median trade size by instrument type



Note: Average trade size and median transaction size of bonds in 2021 and 2022 by bond type, EUR million. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

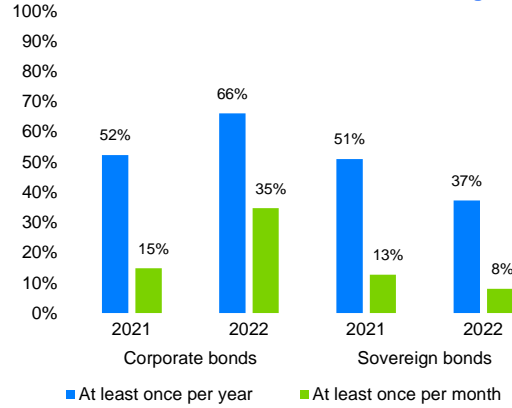
MR-MiFID-S.69

Monthly trading volumes by instrument type



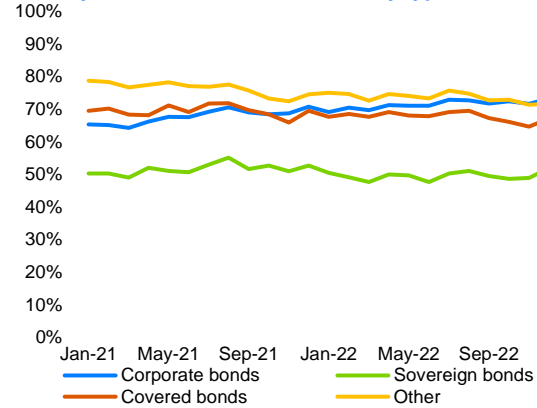
Note: Monthly trading volumes of bonds in 2021 and 2022 by bond type, EUR trillion. "Other" includes convertible bonds and other public bonds.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.70
Instruments traded versus available for trading



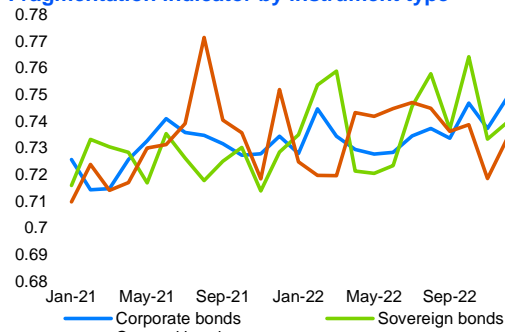
Note: Share of bonds traded at least once per month and once per year in 2021 and 2022 by instrument type, as % of bond type.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.71
Monthly share of non-traded bonds by type



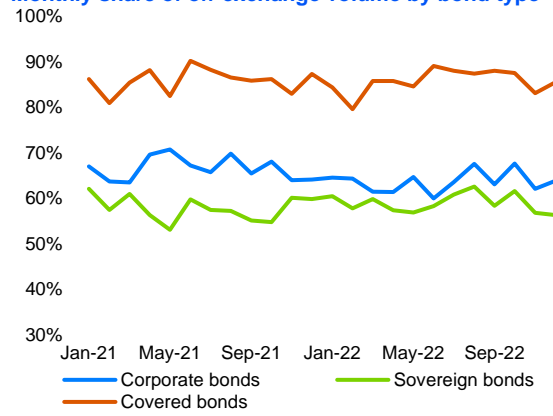
Note: Share of non-traded bonds in 2021 and 2022 by month, in % of all instruments available for trading.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.72
Fragmentation indicator by instrument type



Note: Monthly fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by instrument type. Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation).
 Sources: FIRDS, FITRS, ESMA.

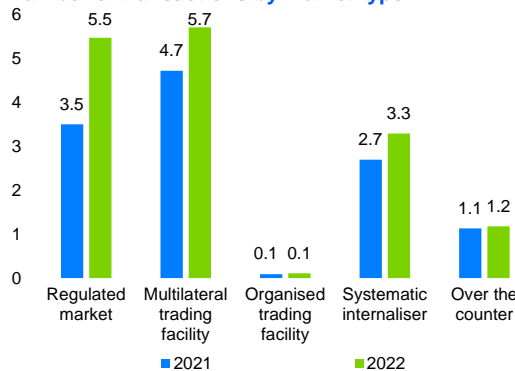
MR-MiFID-S.73
Monthly share of off-exchange volume by bond type



Note: Monthly share of bonds traded off exchange (including through systematic internalisers) in 2021 and 2022, as % of bond type.
 Sources: FIRDS, FITRS, ESMA.

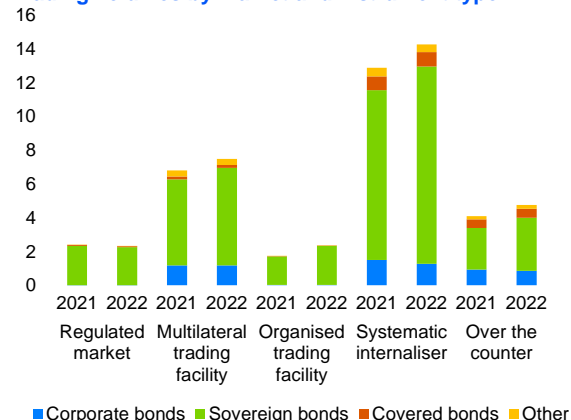
Trading venues

MR-MiFID-S.74
Number of transactions by market type



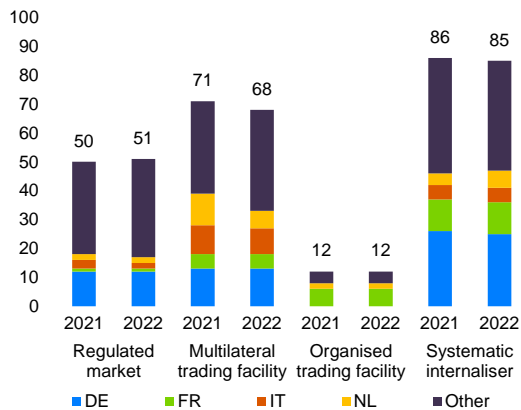
Note: Number of transactions in bonds in 2021 and 2022 by infrastructure type, in million.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.75
Trading volumes by market and instrument type



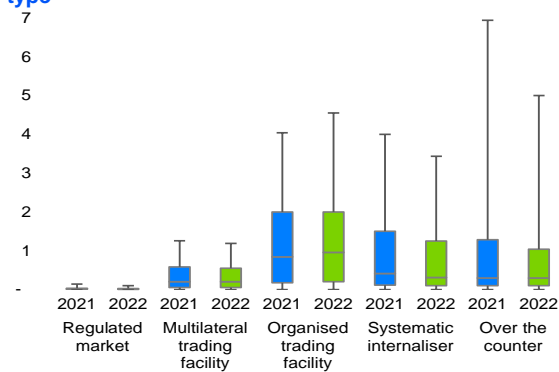
Note: Annual trading volumes of bonds in 2021 and 2022 by infrastructure, EUR trillion. "Other" includes convertible bonds and other public bonds.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.76
Number of TVs and SIs by domicile



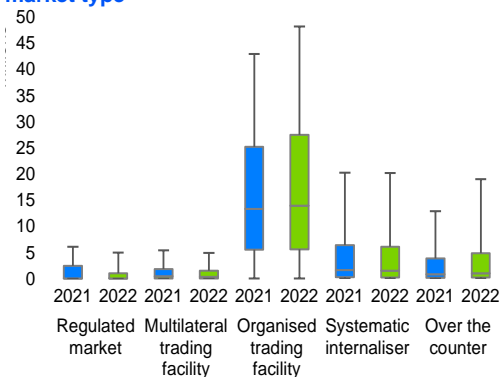
Note: Number of EEA trading venues on which bonds are available for trading in 2021 and 2022, by infrastructure type.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.77
Distribution of corporate bonds transaction size by market type



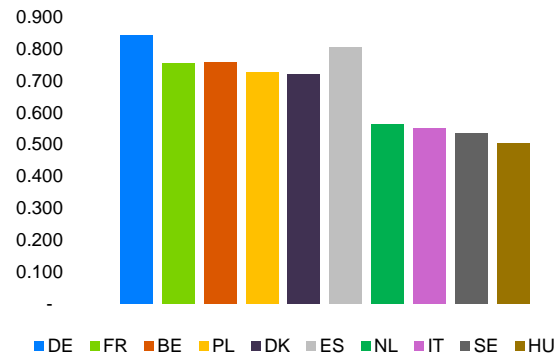
Note: Distribution of corporate bond transaction sizes by market type, EUR million, in 2021 and 2022. The 25th percentile threshold is the bottom edge of the column base, the median is the second middle bar, the 75th is the 3rd bar or the end of the box, and 90% of transactions sizes are below the upper data point.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.78
Distribution of sovereign bonds transaction size by market type



Note: Distribution of sovereign bond transaction sizes by market type, EUR million in 2021 and 2022. The 25th percentile threshold is the bottom edge of the column base, the median is the second middle bar, the 75th is the 3rd bar or the end of the box, and 90% of transactions sizes are below the upper data point.
Sources: FIRDS, FITRS, ESMA.

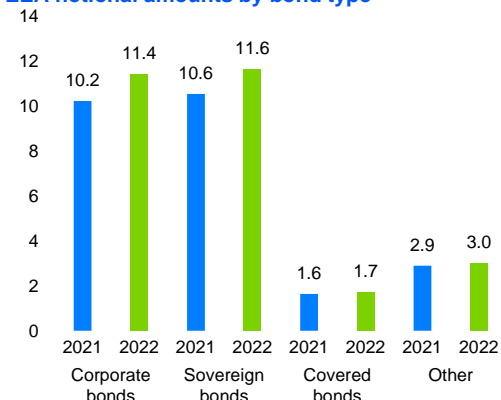
MR-MiFID-S.79
Concentration by entity domicile (top 10)



Note: Fragmentation index of bond trading volumes on EEA trading venues and systematic internalisers in 2022, by entity domicile (top 10). Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation).
Sources: FIRDS, FITRS, ESMA.

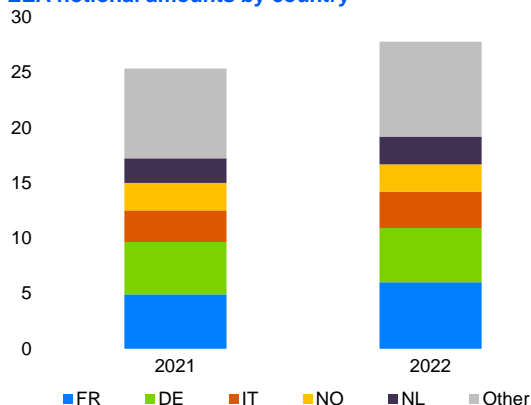
Issuance and maturity

MR-MiFID-S.80
EEA notional amounts by bond type



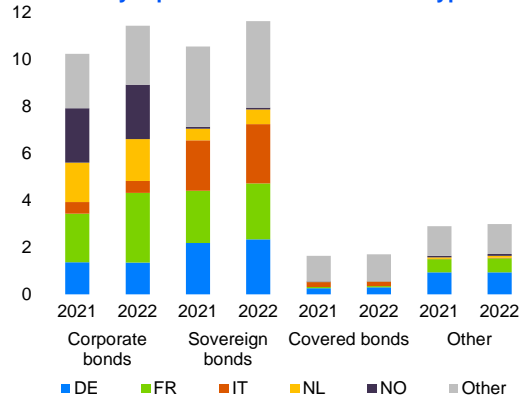
Note: Sum of nominal amount outstanding from EEA issuers in 2021 and 2022, by bond type, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.81
EEA notional amounts by country



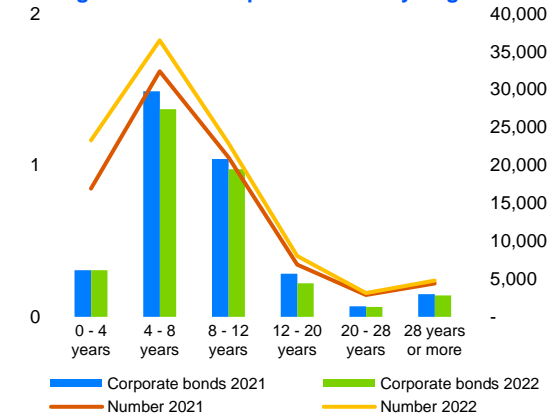
Note: Sum of 2021 and 2022 EEA bond notional amount outstanding by country, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.82
Issuance by top EEA countries and bond type



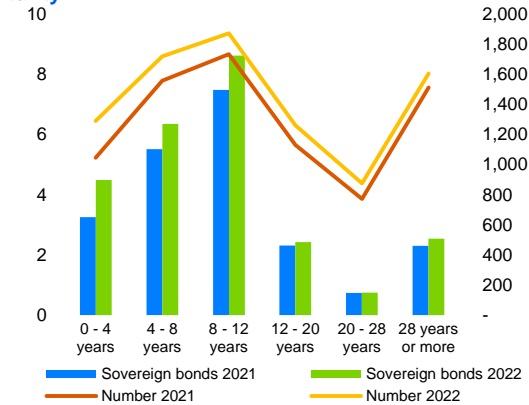
Note: Bond nominal amount outstanding, by issuer domicile and bond type in the EEA, in % of bond type in 2021 and 2022, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.83
Trading volumes of corporate bonds by original maturity



Note: Annual trading volumes in EUR trillion (lhs) and number of corporate bonds (rhs) in 2022, by original maturity as of 31 December 2022.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.84
Trading volumes of sovereign bonds by original maturity



Note: Annual trading volumes in EUR trillion (lhs) and number of sovereign bonds (rhs) in 2022, by original maturity as of 31 December 2022.
Sources: FIRDS, FITRS, ESMA.

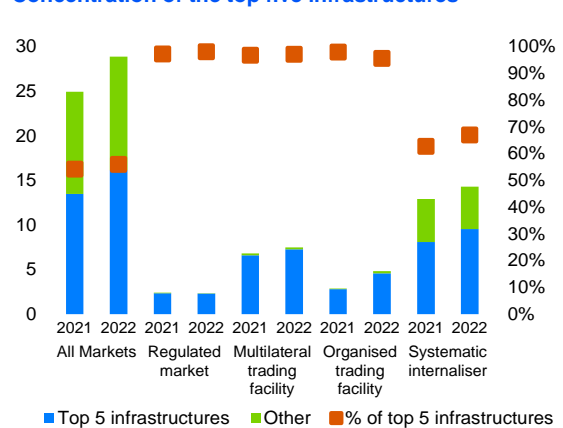
Fragmentation and cross-border activity

MR-MiFID-S.85
Trading volumes by entity domicile and type



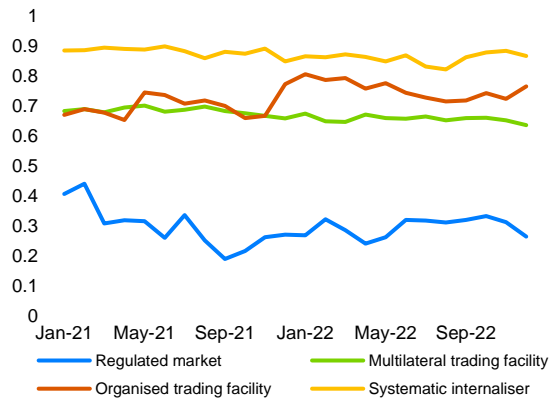
Note: Annual trading volumes in bonds in 2021 and 2022 by infrastructure domicile and market type. EUR trillion.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.86
Concentration of the top five infrastructures



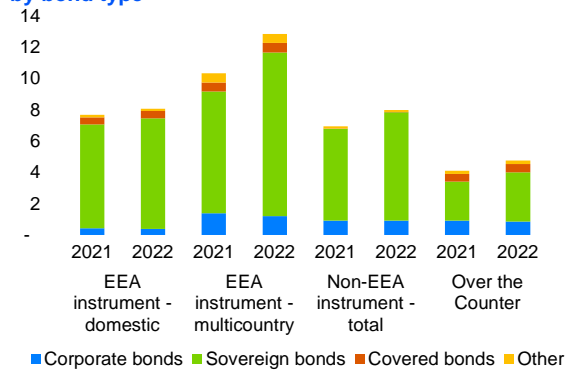
Note: Annual trading volumes of bonds in 2021 and 2022 on top 5 infrastructures, in EUR trillion (lhs) and share of the total volumes in % (rhs).
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.87
Fragmentation indicator by market type and month



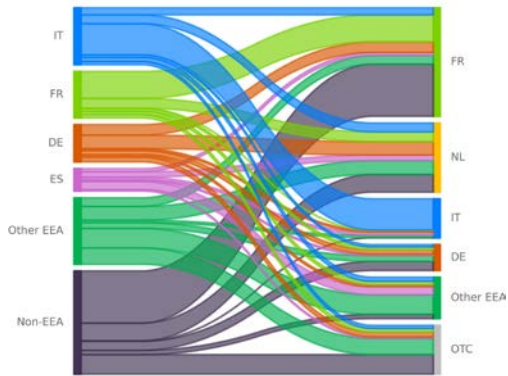
Note: Monthly fragmentation index of trading volumes on EEA trading venues and systematic internalisers in 2021 and 2022, by market type. Index calculated as (1-HHI) and ranging from 0 (monopoly) to 1 (maximum fragmentation).
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.88
Volumes of cross-border vs. domestically traded bonds by bond type



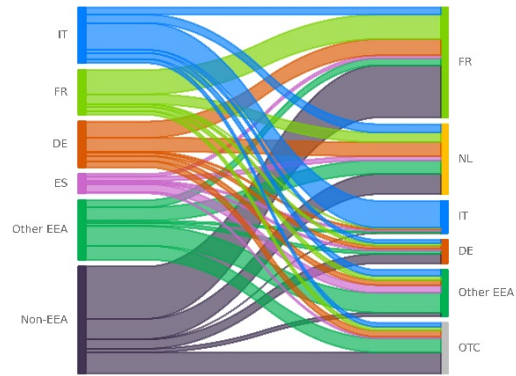
Note: Annual trading volumes of bonds by type, trading domestically and multicountry (comparing issuer country and the TV or SI domicile) in 2021 and 2022, EUR trillion, Over-the-counter is only pure OTC.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.89
Sankey diagram: trading volumes by country and infrastructure domicile in 2021



Note: Annual trading volumes flows in bonds in 2021: overall volumes ranked by issuer domicile (lhs) and by infrastructure domicile (rhs). Nodes and flows are proportional to volumes traded.
 Sources: FIRDS, FITRS, ESMA.

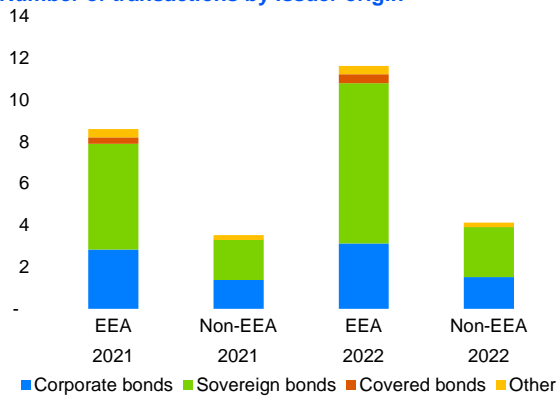
MR-MiFID-S.90
Sankey diagram: trading volumes by country and infrastructure domicile in 2022



Note: Annual trading volumes flows in bonds in 2022: overall volumes ranked by issuer domicile (lhs) and by infrastructure domicile (rhs). Nodes and flows are proportional to volumes traded.
 Sources: FIRDS, FITRS, ESMA.

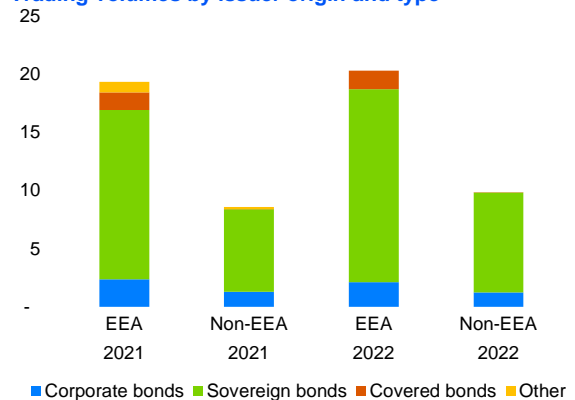
International activity

MR-MiFID-S.91
Number of transactions by issuer origin



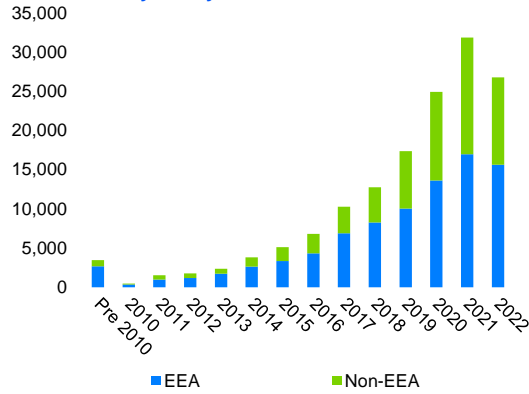
Note: Annual number of transactions of bonds in 2021 and 2022 by issuer domicile and bond type, EUR trillion.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.92
Trading volumes by issuer origin and type



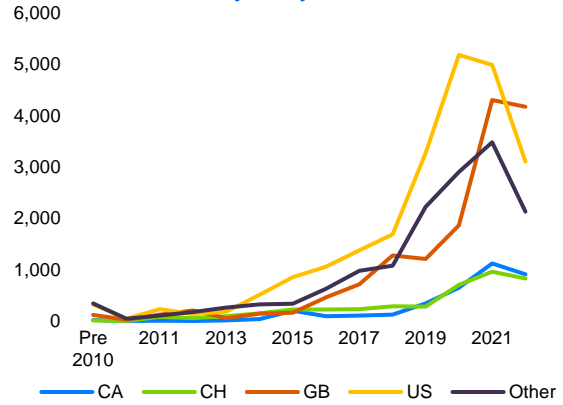
Note: Annual trading volumes of bonds in 2021 and 2022 by issuer domicile and bond type, EUR trillion.
 Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.93
Instruments by start year and issuer domicile



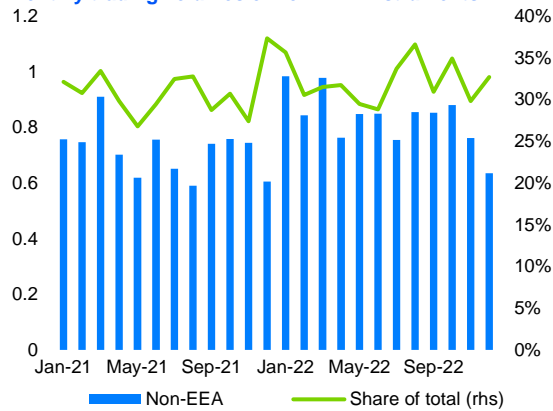
Note: Number of bonds available for trading in 2021 and 2022 in the EEA, by ISIN trading start year and issuer domicile.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.94
Non-EEA instruments by start year and domicile



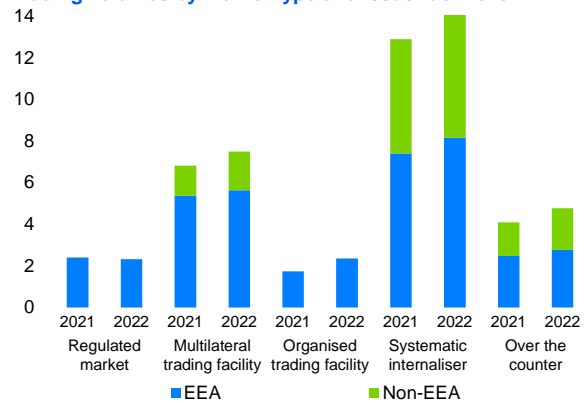
Note: Number of non-EEA bonds available for trading in 2021 and 2022 in the EEA, by ISIN trading start year and issuer domicile.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.95
Monthly trading volumes of non-EEA instruments



Note: Monthly trading volumes of non-EEA bonds in 2021 and 2022, EUR trillion, and share in total bond trading (right axis), in %.
Sources: FIRDS, FITRS, ESMA.

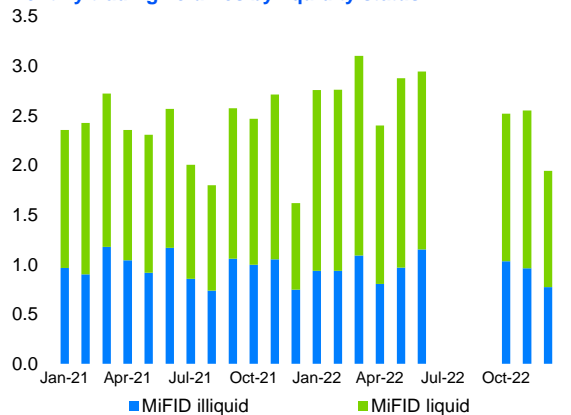
MR-MiFID-S.96
Trading volumes by market type and issuer domicile



Note: Annual trading volumes of bonds in 2021 and 2022 by issuer domicile, EUR trillion.
Sources: FIRDS, FITRS, ESMA.

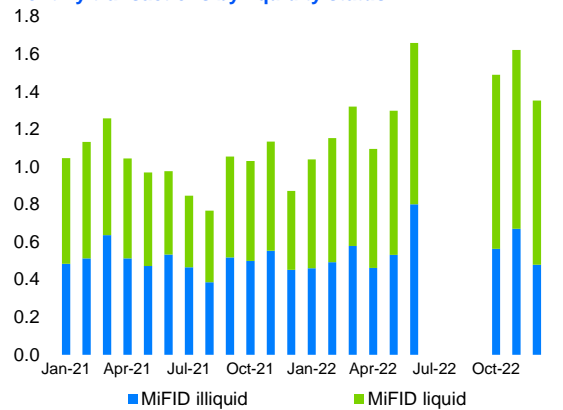
Market transparency

MR-MiFID-S.97
Monthly trading volumes by liquidity status



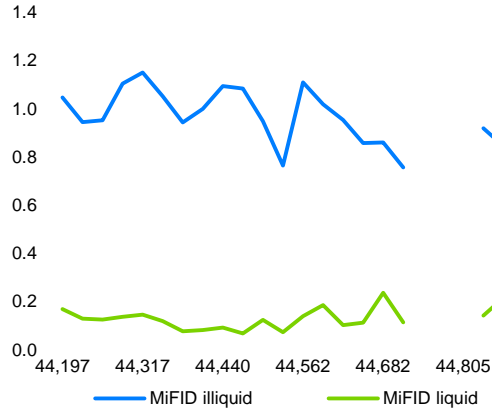
Note: Monthly trading volumes for bonds by liquidity status under MiFID transparency calculations in 2021 and 2022, EUR trillion. 3Q22 calculation were not presented.

MR-MiFID-S.98
Monthly transactions by liquidity status



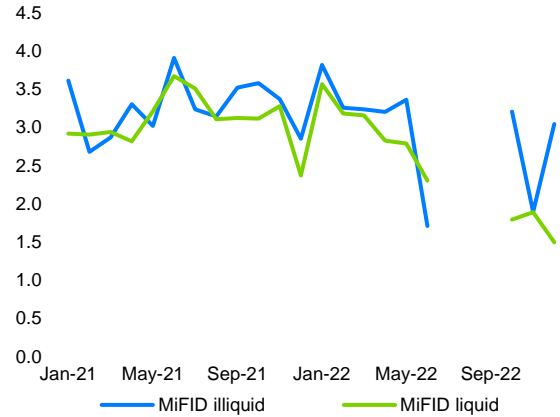
Note: Monthly number of transactions for bonds by liquidity status under MiFID transparency calculations in 2021 and 2022, EUR million. 3Q22 calculation were not presented.
Sources: FIRDS, FITRS, ESMA.

MR-MiFID-S.99
Monthly average trade size for corporate bonds by liquidity status



Note: Monthly average trade size of corporate bonds in 2021 and 2022 by liquidity status under MiFID transparency calculations, EUR million. Sources: FIRDS, FITRS, ESMA.

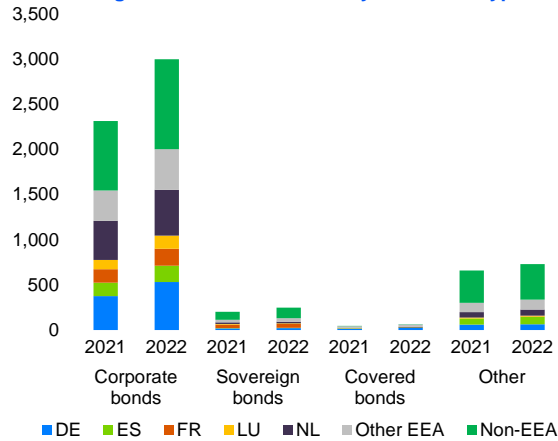
MR-MiFID-S.100
Monthly average trade size for sovereign bonds by liquidity status



Note: Monthly average trade size of sovereign bonds in 2021 and 2022 by liquidity status under MiFID transparency calculations, EUR million. 3Q22 calculation were not presented. Sources: FIRDS, FITRS, ESMA.

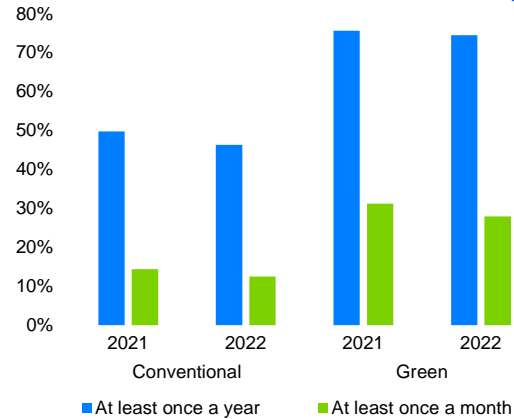
Green bonds

MR-MiFID-S.101
Number of green bond instruments by issuer and type



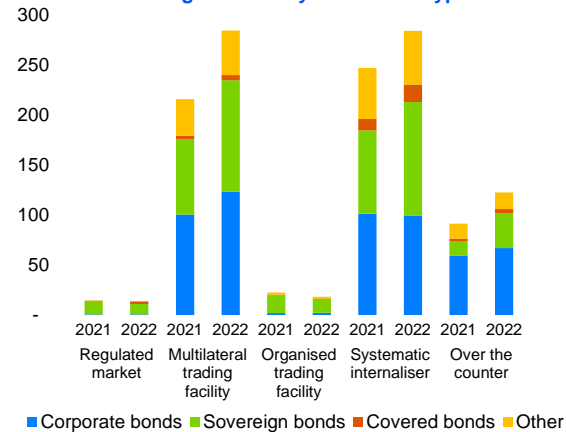
Note: Number of green bonds available for trading in 2021, by issuer domicile and bond type. "Other" includes convertible bonds and other public bonds. Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

MR-MiFID-S.102
Green instruments traded versus available for trading



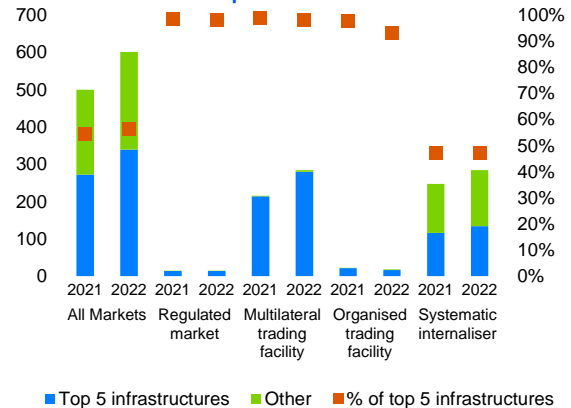
Note: Share of conventional and green bonds traded at least once per month and once per year in 2021 and 2022. Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

MR-MiFID-S.103
Green bond trading volumes by market and type



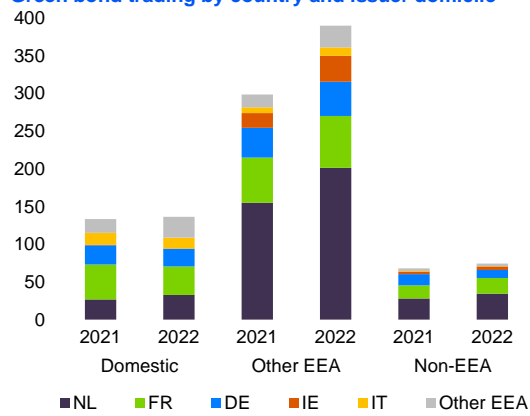
Note: Annual trading volumes of green bonds in 2021 and 2022 by infrastructure and bond type, EUR billion. Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

MR-MiFID-S.104
Concentration of the top five infrastructures



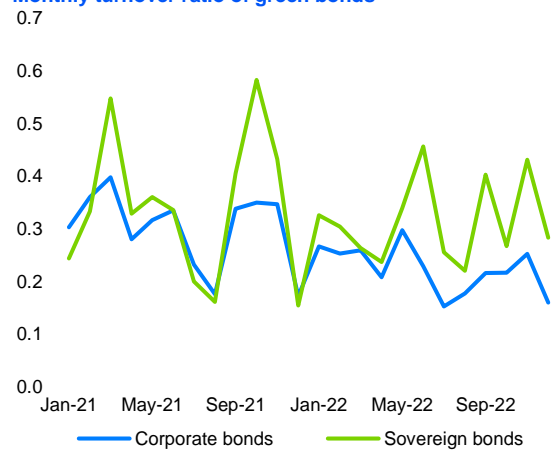
Note: Top 5 infrastructures annual trading volumes of green bonds in 2021 and 2022, EUR billion and share of the total volumes. Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

MR-MiFID-S.105
Green bond trading by country and issuer domicile



Note: Annual domestic and foreign trading volumes in green bonds by country, excluding OTC. 'Domestic' includes trading volumes in green bonds issued in the same country as the venue or SI they are traded on.
 Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

MR-MiFID-S.106
Monthly turnover ratio of green bonds



Note: Monthly turnover ratio of green bonds in 2021 and 2022, by type.
 Sources: FIRDS, FITRS, Refinitiv Eikon, ESMA.

Essential statistics 2021

	Equity			Bond		
	All	Shares	ETFs	All	Corporate	Sovereign
Size						
Number of instruments	28,605	21,419	5,629	120,109	82,017	7,802
of which newly admitted	3,878	3,111	628	30,941	20,557	1,338
of which liquid	2,283	1,307	946	730	226	462
Total trading volumes (EUR tn)	15.9	13.9	1.7	27.9	3.8	21.6
Total number of transactions (mn)	1,847	1,775	45	12.2	4.3	6.9
Total EEA market capitalisation (EUR tn)	17	17	n/a	30.3	10.1	10.3
Trading activity						
Infrastructure type with largest trading activity	RMs	RMs	MTFs	SIs	SIs	SIs
On-exchange (% of total volumes)	70	70	66	39	34	42
RMs	38	40	25	9	0	11
MTFs	32	30	41	24	32	24
OTFs	n/a	n/a	n/a	6	1	8
Off-exchange (% of total volumes)	30	30	34	61	66	58
SIs	9	7	25	46	42	46
OTC	22	23	9	15	25	11
Fragmentation indicator (FI)		0.6	0.7		0.8	0.8
Market infrastructures						
Largest country in terms of trading	NL	FR	NL	FR	NL	FR
Number of venues	215	204	110	222	192	171
RMs (% of number of venues)	31	29	32	23	21	25
MTFs (% of number of venues)	46	47	32	32	33	22
OTFs (% of number of venues)	n/a	n/a	n/a	5	5	7
SIs (% of number of venues)	23	24	36	39	41	46
International activity						
Largest EEA issuer (by volume)	DE	DE	IE	IT	FR	IT
Volumes by issuer origin (EUR tn)						
EEA	12.9	11.2	1.6	19.4	2.5	14.5
non-EEA	2.9	2.7	0.2	8.6	1.3	7.1
EEA Instruments available cross-border (%)	82	77	97	70	69	77
Cross-border EEA volumes (%)	45	89	25	57	77	54

Note: All values are for the calendar year 2021. The fragmentation indicator (FI) is calculated as $(1-HHi)$ and ranges from 0 (monopoly) to 1 (maximum fragmentation). n/a= not applicable, numbers are conventionally rounded so sums may not round up to 100.

Source: FIRDS, FITRS, ESMA.

Annex

Glossary

Approved publication arrangements (APAs): an APA is an authorised service provider designed to publish trade reports on behalf of investment firms. Introduced by MiFID II, APAs aim to further implement the disclosure of OTC trades, along with approved reporting mechanism (ARMs) and consolidated tape providers (CTPs) as new categories of data reporting service providers.

Depository Receipt: Depository receipts are financial instruments negotiable on a regulated market, and which represent ownership of the securities of a non-domiciled issuer. Depository receipts allows investors to hold shares in equity of a foreign company, which are traded on a local exchange.

Double Volume Cap (DVC): The DVC mechanism (Article 5 of MiFIR) aims to limit trading under the reference price waiver (Article 4(1)(a) MiFIR) and the negotiated transaction waiver for liquid instruments (Article 4(1)(b)(i) MiFIR) in an equity instrument.

Exchange traded fund (ETF): An ETF is a basket of securities that tracks an underlying index, although it can invest in any number of industry sectors or use various strategies. ETFs are in many ways similar to mutual funds; however, they are continuously tradeable on at least one RM or MTF.

Financial Instruments Reference Data System (FIRDS): Register of instruments reference data collected under the Regulation on Market Abuse Article 4 and MiFIR Article 27.

Financial Instruments Transparency System (FITRS): Register of equity and non-equity transparency calculation results.

Large in scale (LIS): Waiver used for orders that are large in scale compared with normal market size, avoiding a negative impacting on the market.

Multilateral Trading Facility (MTFs): Multilateral Trading Facilities, like RMs, are another type of non-discretionary trading venue. They are operated by a qualifying investment firm, or a market operator, and bring together multiple third-party buying and selling interests in financial instruments, in accordance with non-discriminatory rules, in a way that results in a contract.

Organised Trading Facility (OTF): Organised Trading Facilities are a type of TV introduced by MiFID II that allows trading of non-equity instruments. In the same manner, OTF are multilateral systems in which multiple third-party buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in the system in a way that results in a contract. A key difference with other TVs lies in the discretionary basis of OTF execution, taking a role in negotiations between market participants. The creation of OTF intends to level the playing field between the various venues for the execution of orders.

Pre-trade transparency: Refers to the obligation for market operators and investment firms operating a trading venue to make public current bid and offer prices, as well as the depth of trading interests at those prices which are advertised through their systems for financial instruments traded on a trading venue.

Post-trade transparency: Refers to the obligation for market operators and investment firms operating a trading venue to make public the price, volume and time of the transactions executed in respect to financial instruments traded on a trading venue as close to real-time as technically possible.

Regulated Market (RM): Regulated Markets are multilateral systems operated by and/or managed by a market operator, which bring together multiple third-party buying and selling interests in financial instruments, in accordance with non-discretionary rules, in a way that results in a contract.

Systematic Internaliser (SI): Systematic Internalisers are investment firms that, on an organised, frequent systematic and substantial basis, deals on their own account when executing client orders. They offer a third avenue for trading outside a lit market but without the liquidity disadvantage of pure bilateral OTC transactions. MiFID II/MiFIR introduced the obligation for investment firms to trade most shares on a trading venue or an SI and extended it to non-equity instruments. SIs tend to be operated either by investment banks or by electronic liquidity providers such as high-frequency market makers.

Small- and medium-sized-enterprise growth market (SME GM): MiFID II introduced a new category of MTFs named 'SME GM', aimed at facilitating access to capital markets for small and medium-sized enterprises. Increased access to diversified sources of finance by smaller businesses in the EU is a key

goal of the Capital Markets Union (CMU) agenda. MTFs or MTF segments can be registered as an SME GM, provided that at least 50% of the issuers with shares available for trading on the relevant exchange have a market capitalisation of less than EUR 200mn.

Trading Venue (TV): A trading venue refers to an EEA trading venue which includes Regulated Markets (RM), Multilateral Trading Facilities (MTF) and Organised Trading Facilities (OTF).

List of abbreviations

APA	Approved Publication Arrangement
ARM	Approved Reporting Mechanism
CMU	Capital Market Union
CTP	Consolidated Tape Provider
DVC	Double Volume Cap mechanism
EMIR	European Markets Infrastructure Regulation
EEA	European Economic Area
EA	Euro area
ESMA	European Securities and Markets Authority
ETF	Exchange-traded fund
FIRDS	Financial Instruments Reference Data System
FITRS	Financial Instruments Transparency System
ECB	European Central Bank
EU	European Union
IPO	Initial Public Offering
ISIN	International Securities Identification Number
LEI	Legal Entity Identifier
LIS	Large in scale
MIC	market identifier code
MiFID I	Markets in Financial Instruments Directive – Directive 2004/39/EC of the European Parliament and of the Council
MiFID II	Markets in Financial Instruments Directive (recast) – Directive 2014/65/EU of the European Parliament and of the Council
MiFIR	Markets in Financial Instruments Regulation – Regulation 600/2014 of the European Parliament and of the Council
MTF	Multilateral trading facility
NCA	National competent authority
OTC	Over the counter
OTF	Organised Trading Facility
ppt	Percentage point
RM	Regulated market
SME GM	SME growth market
SI	Systematic internaliser
STO	Share trading obligation
TV	trading venue

Currencies and countries abbreviated in accordance with ISO standards



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