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MiFIR 2021 Sovereign Bond Trade Data Analysis and Risk Offset Impact Quantification

October 2022

Association for Financial Markets in Europe
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Executive Summary

1. Based on the positive feedback related to the "MiFIR 2021 Corporate Bond Trade Data Analysis and Risk Offset Impact Quantification" report (April 2022)[1], AFME and Finbourne subsequently decided to extend the analysis to **sovereign** bonds.

2. Finbourne compiled actual post-trade data from major APAs, MTFs and OTFs from 1 March 2021-31 December 2021 on sovereigns and public bonds traded on EU platforms per MiFIR reporting requirements. This represents over €8.4tn of (gross) volume, almost 1.8m transaction records and over 8,200 distinct bonds/ISINs.

   Notably, the vast majority of trades (92%) in the combined sovereign/public bond category relate to direct sovereign issuance from DMOs rather than non-sovereign public entities.

3. The main goal of this analysis is, by focusing on actual Average Daily Volume ("ADV") data as a proxy for market liquidity, to provide insights on how the transparency regime for EU-issued sovereign and public bonds can meet the needs of all market participants, with the key drivers being:

   a. increased transparency in liquid EU-issued sovereign bonds, with appropriate and well calibrated deferrals

   b. continued protection of risk-taking liquidity providers in illiquid EU-issued sovereign bonds

4. **EU 27 Sovereign and public bond data set vs Corporates, Non-EU vs EU, and Sovereigns vs Public Market Share:** In terms of the composition of trades, Tables 1 and 2 demonstrate that **only 40% of the traded volume on EU venues relates to EU sovereign and public bonds**; the remainder are non-EU bonds from the US, UK and many other countries.

5. **Sovereigns/Public Bonds vs Corporates Real-Time Transparency:** Tables 3 and 4 show that currently **'real time' reporting on EU sovereigns/public bonds is higher than that for corporates – respectively 76% versus 8% by number of trades, and 36% vs 16% by volume**. Improved targeted transparency will strengthen EU market liquidity and robustness – a key goal of Capital Markets Union.

6. **Small vs Large Issue Size Trading Volumes.** Table 5 provides breakouts of trading activity for combined sovereign/public bonds by trade size, from the current SSTI (Size Specific to the Instrument) threshold of €6.5 m to over €1 bn, and by issue size (those under €5 bn to those over €15 bn). 50% of volume occurs in issue sizes more than €15 bn. Table 5 demonstrates that a significant proportion of volume is trading in very large (or even "super large" trade sizes of over €100 m). Table 7 highlights that, a very large percentage (c64%) of the overall 3,580 EU ISINs takes place in the small trade/small issue size category, whereas a relatively small number of ISINs are involved with the largest trading volume. Table 8 indicates trading volume per issue size category.

"The main goal of this analysis is to provide insights on how a potentially reconfigured yet still balanced transparency regime for EU-issued sovereign and public bonds can meet the needs of all market participants"

1 https://www.afme.eu/publications/reports/details/MiFIR-2021-Corporate-Bond-Trade-Data-Analysis-and-Risk-Offset-Impact-Quantification

7. **Sovereigns vs Corporates Trade-Out Times/Risk Offset.** Table 9 provides average daily volume ("ADV") for a wide range of issue and trade size categories as a measure of market liquidity in these segments. Detailed trade out times also provide a proxy measure of how long it might take liquidity providers to trade out of their risk positions. As was the case in the corporate bond study, this report confirms that trade out times for sovereigns/public bonds are significantly longer for small issuance sizes and larger trade sizes. **Trade out times vary significantly for various issue and trade size categories, ranging from a few minutes to well over a year depending on the issue and trade size category. As a result, the data clearly supports real-time and EOD reporting for several categories of trades, but also that certain deferrals should be significantly longer than four weeks. This data supports AFME's consistent position that deferral times should be calibrated by ESMA**, only after analysis of actual trade data collected from the fixed income consolidated tape.

8. **Non-Data Contributors to Liquidity:** AFME trader members anecdotally highlight that in addition to this quantitative analysis there are numerous other factors which impact liquidity. These include the size of the amount outstanding. there is generally more liquidity in a very large issuance size of c €10bn (sometimes referred to as "benchmark" bonds although each sovereign may have a different definition of benchmark) than in a €1bn issue. Liquidity is also usually better in the months immediately following issuance e.g. the more that a bond ages, the less liquid it will become. Likewise, a new ten year bond will probably be more liquid than a 20 year bond with ten years remaining to maturity. Duration (change in price for a given change in yield will vary depending on the maturity of a bond, with long duration bonds changing much more in price for a 1 basis point change in yield than a short maturity bond) will impact liquidity, with long duration bonds generally less liquid. Lastly "nominal" bonds, which are generally fixed rate with bullet maturities, are more liquid than non-nominal bonds such as floating rate and index-linked bonds.

9. **In summary,** data from this analysis could provide support for revising the calibration of the deferral regime for EU sovereign bonds. Repeated exercises of this nature could help grow the EU fixed income market if near real time public dissemination for a significant number of trades is introduced progressively and carefully together with measuring the impact on market liquidity, and calibrating deferrals carefully for all sizes of transactions.

"Data from this analysis provides support for a more well-calibrated deferral regime for EU sovereign bonds"

Introduction and Methodology

AFME is supportive of an expanded, accurately calibrated MiFIR post-trade transparency regime. To assist the policy discussion on the calibration of such a regime, AFME has been working with Finbourne to provide data to support decision making. Using actual 2021 European fixed income trade data from c 8,200 of the most frequently traded ISINs of sovereigns, EU and EU-level issuance, member state public sector entities, and government-owned entities compiled by Finbourne with support from AFME members, this report provides a number of key pieces of new data and some important conclusions. Notably, in the absence of an ESMA "golden source" which maps specific ESMA FIRDs RTS 2 reporting requirements to specific ISINs, AFME and Finbourne have done their best to select a credible data base for analysis. For simplicity, below we refer to this combined sovereign and public bond data set as the "Full EU Data Set". For cases where only data for direct sovereign issuance by DMOs is presented we refer to this as "EU sovereign". A summary of the data set is described in Table 1 below. The Annex includes a description of the methodology used in our data analysis, including why the analysis of sovereign/public bond trading data is materially more complex than for corporate bonds as under the current MiFID/MiFIR reporting regime in some cases reporting for the former category of bonds can be aggregated as well as indefinitely deferred at the discretion of NCAs.

In particular, this report demonstrates that a significant majority of trades can be made near real-time transparent without placing liquidity providers at undue risk but also that many remaining transactions should continue to require various deferral periods.

In order to properly calibrate deferrals, detailed analysis is required based on complete and accurate data to determine the required extent of each type of deferral to preserve liquidity provision by various types of market makers. In particular, a goal of the data analysis in this report is to identify the issue size and trade size categories in which different portions of trading activity/liquidity takes place so that deferrals can be calibrated accordingly.

"A significant majority of trades can be made near real-time transparent but also that many remaining transactions should continue to require various deferral periods"

Findings

Again, a primary goal of this report is to identify where more trading activity/liquidity exists in various issue size and trade size categories, so deferrals can be properly calibrated for either more transparency or highly targeted deferral periods. A detailed description of how we selected and filtered the data is included in the Annex. Our key findings on issuer category, real-time vs deferred reporting, liquidity as measured by ADV, and trade-out times is below. The Finbourne data timeframe utilised is the same as for the previous report on corporate bonds, which is 1 March-31 December 2021.

Composition of Data Set Trades

To identify the category of the bonds traded during this period, MIFID post-trade transaction data was examined in terms of the legal entity identifier ("LEI") of the issuer and a regional breakdown:

Figure 1: **Overview of full EU and Non-EU Data Set bond trading activity**

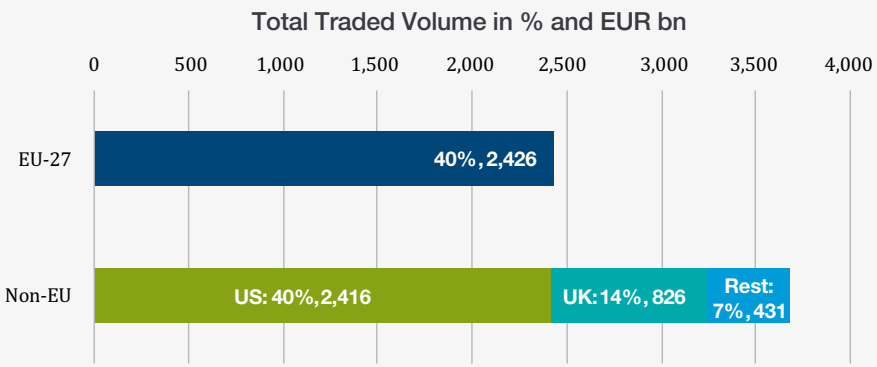


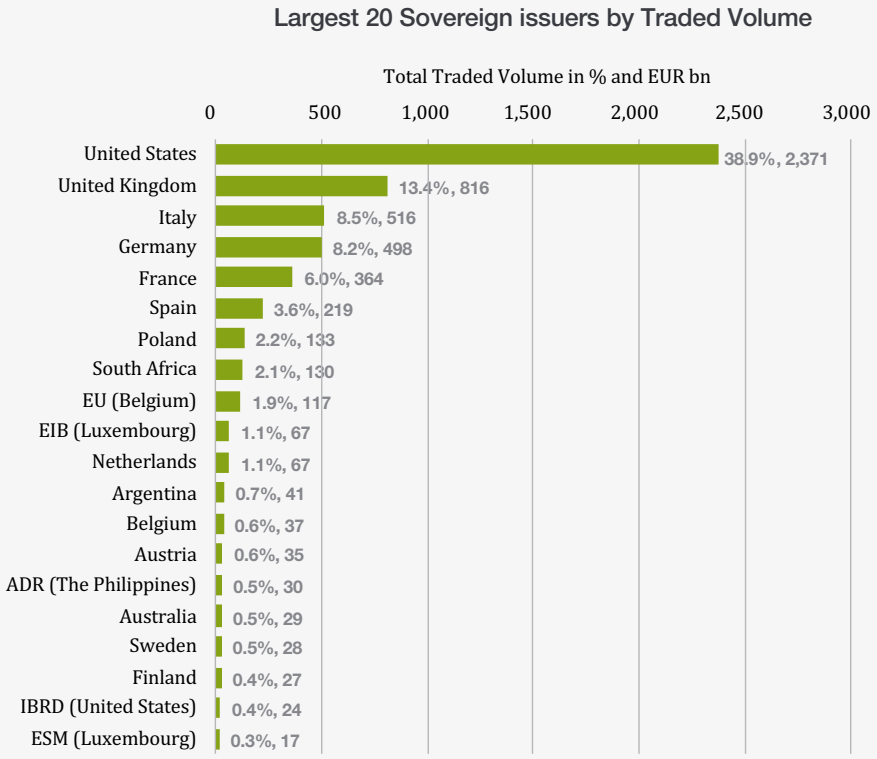
Table 1: **Overview of EU and Non-EU Data Set bond trading activity**

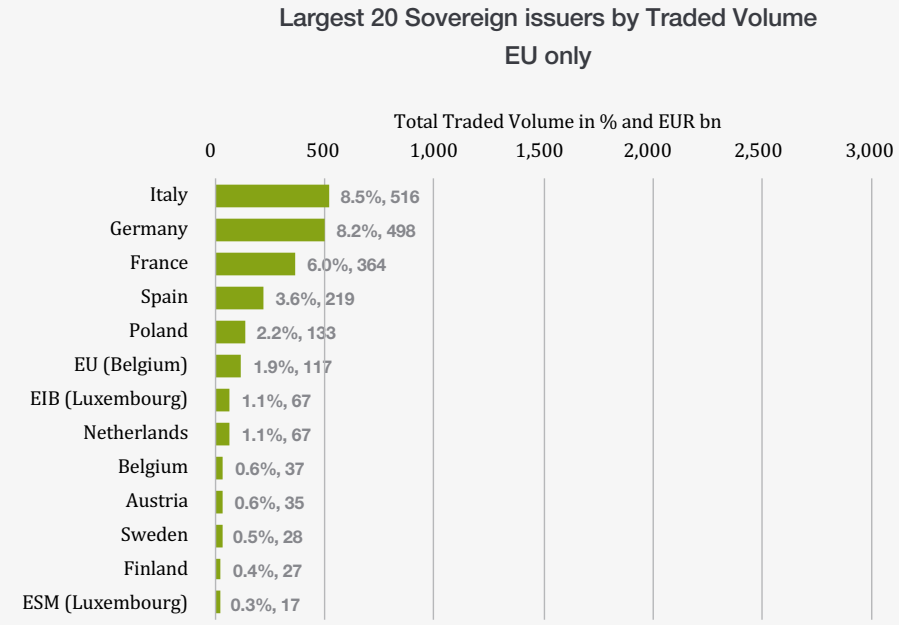
Sovereign issuers	Traded Volume (€bn)	% Total Traded Volume	Transaction records	# ISINs
EU-27 data set	2,425.6	**39.8%**	728,748	3,584
of which: EU-27 sovereign issues	2,234.3	92.1%	668,247	1,462
US	2,415.6	39.6%	756,184	816
UK	826.2	13.5%	151,132	273
Rest of World**	431.4	7.1%	163,450	3,538
Totals	**6,098.8***	**100%**	**1,799,514**	**8,211**

*includes the remaining members of EEA
**this excludes specific records that are detailed in the Annex

The largest 20 countries represent some 91% of the total traded volume, with the US Treasury representing the largest single issuer by far.

Figure 2: **Levels of Traded Volume (sovereign, agency and other public bonds)[2]**





2 AFME and Finbourne are aware of slight differences in figures between tables caused by the data quality problems

Table 2: **Levels of Traded Volume (sovereign, agency and other public bonds)**

Largest issuers	Jurisdiction	Total Traded Volume (€bn)	% Total Traded Volume
United States Treasury	United States	2,371.2	38.9%
UK Treasury	United Kingdom	815.5	13.4%
Repubblica Italiana	Italy	516.2	8.5%
Bundesrepublik Deutschland	Germany	498.0	8.2%
Tresor	France	363.6	6.0%
Tesoro	Spain	218.9	3.6%
Ministerstwo Finansów	Poland	133.2	2.2%
Republic of South Africa	South Africa	130.2	2.1%
European Union*	Belgium	116.6	1.9%
European Investment Bank*	Luxembourg	67.4	1.1%
De Staat der Nederlanden	The Netherlands	66.6	1.1%
Republic of Argentina	Argentina	41.2	0.7%
Kingdom of Belgium	Belgium	37.1	0.6%
Republik Österreich	Austria	34.9	0.6%
ADB – Asian Development Bank**	The Philippines	30.1	0.5%
AOFM – Office of Financial Management	Australia	28.6	0.5%
Riksgäldskontoret	Sweden	27.6	0.5%
Republic of Finland	Finland	26.5	0.4%
IBRD – International Bank for Reconstruction and Development (World Bank)**	United States	23.7	0.4%
ESM – European Stability Mechanism*	Luxembourg	17.0	0.3%

*location of relevant headquarters

Real-Time Reporting: Full EU Data Set vs Sovereigns-only

The table below highlights that only 40% of trading activity on EU venues relates to EU issuers.

Furthermore, when we examine the percentage of 'real time' reporting (as represented by records with no flags as explained in the annex), we can see that the EU sov/public data set has a higher level of 'real time' reporting compared to corporate bonds – for volume, 16% for corporates vs 36% for sovereigns, and by number of trades, 8% for corporates and 76% for sovereigns.

Figure 3: **EU 27 Sovereigns only Real-time vs. Deferred**

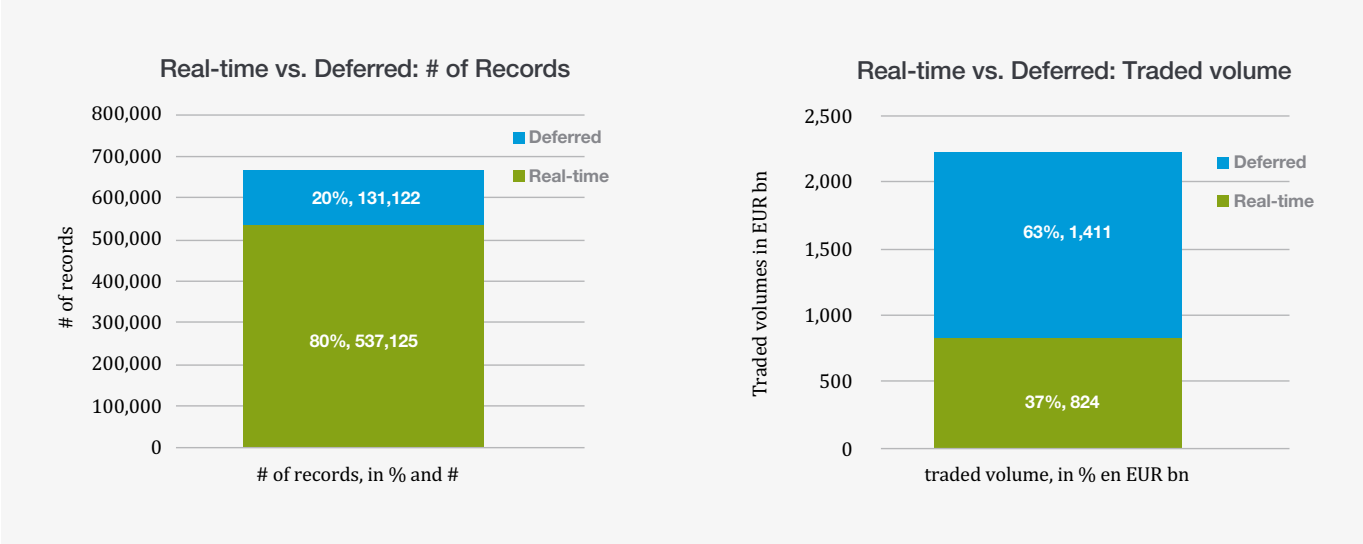


Table 3: **Percentage 'real time' - EU-27 data set vs. EU sovereigns-only**

Description	traded volume (€bn)	% total	# records	% total
EU-27 data set	2,425.6	**100%**	728,748	100%
of which: current: no flags – real time	868.5	**35.8%**	551.375	75.6%
EU-27 sovereigns-only	2,234.3	**100%**	*668,247*	100%
of which: current: no flags – real time	823.6	**36.9%**	*537,125*	80.4%

When we assess the volumes of EU sovereign issuance, we can see the larger member states representing the bulk of issuance:

Figure 4: **Chart 4: EU Sovereign traded volume market share**

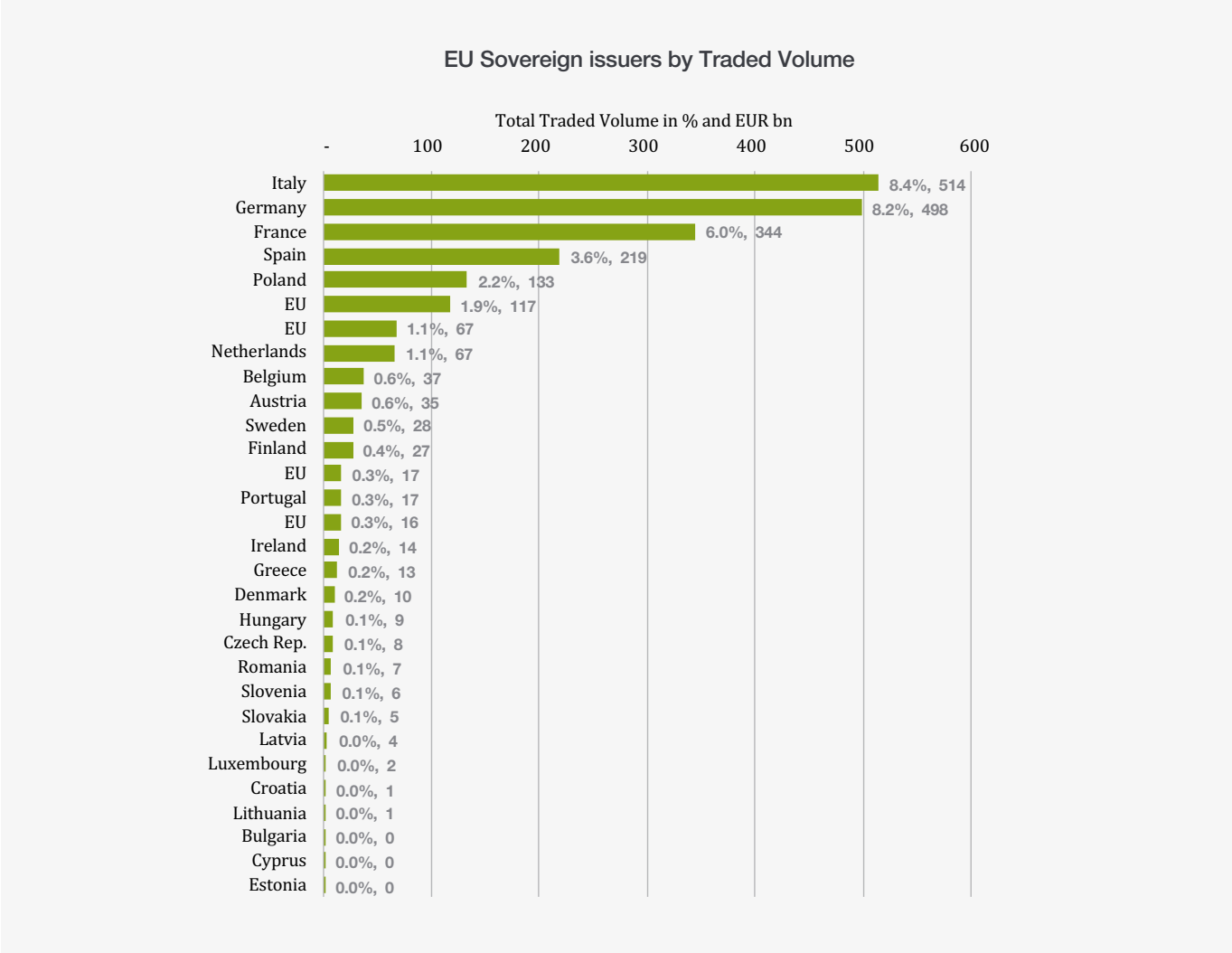


Table 4: **EU Sovereign traded volume market share**

Sovereign DMO name	Jurisdiction	Traded volume (€bn)	% EU vs €6.098 total
Repubblica Italiana	Italy	514.1	8.4%
Bundesrepublik Deutschland	Germany	498.0	8.2%
Direction Generale du Tresor	France	344.1	6.0%
Secretaría General del Tesoro y Financiación Internacional	Spain	218.9	3.6%
Ministerstwo Finansów	Poland	133.2	2.2%
European Union	EU	116.6	1.9%
European Investment Bank	EU	67.4	1.1%
De Staat der Nederlanden	Netherlands	66.6	1.1%
The Kingdom of Belgium	Belgium	37.1	0.6%
Republik Österreich	Austria	34.9	0.6%
Riksgäldskontoret	Sweden	27.6	0.5%
Suomen valtio JVK:t	Finland	26.9	0.4%
European Stability Mechanism	EU	17.0	0.3%
Republic of Portugal	Portugal	16.5	0.3%
European Financial Stability Facility	EU	15.9	0.3%
National Treasury Management Agency	Ireland	14.2	0.2%
Ελληνικη δημοκρατια-υπουργειο Οικονομικων	Greece	13.1	0.2%
Kingdom of Denmark	Denmark	9.7	0.2%
Magyarország	Hungary	9.4	0.1%
Česká republika - Ministerstvo financí	Czechia	8.3	0.1%
Ministerul Finantelor	Romania	7.1	0.1%
Republika Slovenija	Slovenia	6.3	0.1%
Ministerstvo financií Slovenskej republiky	Slovakia	4.6	0.1%
Latvijas Republika, ko pārstāv Latvijas Republikas Valsts kase	Latvia	3.5	0.0%
Grand Duchy of Luxembourg	Luxembourg	1.7	0.0%
Ministarstvo financija	Croatia	0.8	0.0%
Lietuvos Respublikos Finansų Ministerija	Lithuania	0.5	0.0%
Ministry of Finance of the Republic of Bulgaria	Bulgaria	0.3	0.0%
Ministry of Finance Public Debt Management Office	Cyprus	0.2	0.0%
Eesti Vabariigi Rahandusministeerium	Estonia	0.1	0.0%

EU Data Set Trading Liquidity Analysis

When analysing the data to try to determine the most active pockets of liquidity, we first looked at the traded volume in the various issuance and trade size segments below.

Table 5: **EU Data Set trading volume overview**

	Issuance size band				
Trading size band	**under €5bn**	**€5-10bn**	**€10-15bn**	**€15bn+**	**Total per trading size band (€bn)**
€0 – 6.5m	90.3	67.7	58.1	253.7	469.8
€6.5 - 20m	90.7	78.4	48.8	159.1	377.0
€20 - 50m	125.9	99.8	63.4	247.5	536.6
€50 - 100m	89.2	73.5	42.7	238.9	444.3
€100 - 250m	72.9	60.5	22.8	218.8	375.0
€250 - 500m	37.3	13.8	3.8	47.6	102.5
€500 - 750m	8.3	8.2	2.5	30.5	49.5
€750m – 1bn	1.9	No trades reported	1.7	3.6	7.2
€1bn+	8.8	14.7	8.3	31.9	63.7
Total per issuance band (€bn)	**525.3**	**416.6**	**252.1**	**1,231.6**	**2,425.6**

Note that there are a large number of issues of less than €5 bn in size, and small number of very large issues, liquidity is higher in larger issue sizes. To more precisely identify pockets of liquidity, prior to calculating ADV, it is useful to consider the average trading size for various trading size bands.

For example, in the €0-6.5m band, we see that from Table 5 above there is a total traded volume of €469.8bn (across all issuance bands) there are 586,960 records in that band (not included in the table), so dividing €469.8bn by the number of records in that band (586,960) we get an average size of €800,394 – within the €0-6.5m range:

Table 6: **Average Trade Size (€) per issuance/trading band category**

	Issuance size band				
Trading size band	**under €5bn**	**€5-10bn**	**€10-15bn**	**€15bn+**	**Average per trading size band**
€0 – 6.5m	771,549	862,045	701,381	822,220	800,394
€6.5 - 20m	11,246,018	10,989,277	10,893,105	10,427,260	10,791,862
€20 - 50m	29,548,188	28,960,549	28,799,117	29,986,227	29,546,903
€50 - 100m	63,589,342	63,363,738	61,457,930	63,609,815	63,351,186
€100 - 250m	134,960,645	127,244,258	125,282,797	131,117,806	130,828,079
€250 - 500m	284,834,805	312,854,803	319,250,378	312,805,486	302,231,295
€500 - 750m	517,673,575	539,952,000	570,250,000	516,243,559	522,055,669
€750m – 1bn	962,290,739	No trades recorded	829,450,000	920,000,000	907,935,185
€1bn+	1,767,413,578	2,936,073,000	4,099,124,000	4,535,714,286	3,340,298,994
Average per issuance size band	**3,982,806**	**4,578,028**	**2,763,355**	**3,642,223**	**3,719,669**

We then looked at the number of ISINs per issuance size and trading size bands associated with the traded volumes in each field in the ISIN table below. Notably, since, of course, each ISIN can appear in any trading size band, it can appear multiple times.

Table 7: **EU Data Set Number of ISINs traded per issuance and trade band category for ADV calculation**

	Issuance size band				
Trading size band	**under €5bn**	**€5-10bn**	**€10-15bn**	**€15bn+**	**Total per trading size band**
€0 – 6.5m	2,308	251	102	253	2,914
€6.5 - 20m	1,210	226	97	248	1,781
€20 - 50m	774	215	100	253	1,342
€50 - 100m	369	171	82	235	857
€100 - 250m	184	113	46	188	531
€250 - 500m	63	27	10	54	154
€500 - 750m	10	7	2	18	37
€750m – 1bn	2	No trades recorded	2	3	7
€1bn+	4	3	2	5	14
Total per issuance band	**2,894**	**314**	**107**	**265**	**3,580***

*this excludes specific records that are detailed in the Annex and 2 ISINs on records that do not have any reference details

To calculate an ADV as a proxy for market liquidity, in the following table the ADV (in €m) is the traded volume divided by the number of ISINs traded (in each of the fields) divided by the number of business days in the period (215):

Table 8: **EU Data Set ADV (€) per ISIN by issuance and trade band category**

	Issuance size band				
Trading size band	**under €5bn**	**€5-10bn**	**€10-15bn**	**€15bn+**	**Average per trading size band**
€0 – 6.5m	181,946	1,255,344	2,649,610	4,662,990	749,835
€6.5 - 20m	360,780	1,673,362	2,338,453	2,974,925	1,009,926
€20 - 50m	756,421	2,242,401	2,886,609	4,568,776	1,872,721
€50 - 100m	1,079,540	2,118,264	2,415,788	4,728,696	2,399,249
€100 - 250m	1,738,312	2,789,236	2,305,507	5,442,995	3,297,878
€250 - 500m	2,552,213	2,910,277	1,781,863	4,172,570	3,114,650
€500 - 750m	3,502,231	5,381,581	3,978,488	8,333,343	6,103,228
€750m – 1bn	4,475,771	No trades recorded	3,857,907	5,705,426	4,826,234
€1bn+	8,220,528	22,760,256	19,065,693	36,918,605	21,084,944
Average per Issuance band	**974,745**	**7,035,180**	**10,855,344**	**21,658,460**	**3,578,737**

Although the above chart gives the detail required to assess ADV for various issuance and trading size ranges, it does not provide detail on trade out times, which is described in the charts below. To calculate the trade out days, we combine the average trade size (Table 6 above) divided by the ADV using specific issuance thresholds to derive the trade out days (a proxy for the liquidity profile) across various trade bands:

Table 9: **EU Data Set Trade Out times for issue sizes </> €5bn vs €10 bn**

		Average of trades																	
	ADV per ISIN	<€6.5m		€6.5–20m		€20–50m		€50-100m		€100-250m		€250-500m		€500-750m		€750m-1bn		€1bn+	
		Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days	Average trade size (€m)	# days
Sovereign bond data set	3,792,794	1.1	<1	10.2	3	30.8	8	66.8	18	139.5	37	334.0	88	573.3	151	879.4	232	2,140.1	564
of which EU	3,578,737	.8	<1	10.8	3	29.5	8	63.3	17	130.8	37	302.2	84	522.1	146	907.9	254	3,340.3	933
Over €5bn	13,644,009	.8	<1	10.6	1	29.5	2	63.3	5	129.9	10	313.2	23	523.0	38	889.8	65	3,902.0	286
Under €5bn	974,745	.8	1	11.2	12	29.5	30	63.6	65	135.0	138	284.8	292	517.6	531	962.3	987	1,767.4	1,813
Over €10bn	18,542,736	.8	<1	10.5	<1	29.7	2	63.3	3	130.5	7	313.5	17	518.9	28	889.9	48	4,438.7	239
Under €10bn	1,575,979	.8	<1	11.1	7	29.3	19	63.5	40	131.3	83	291.9	185	528.5	335	962.3	611	2,351.7	1,492

It is important to note that other factors will influence liquidity and impact a dealers' ability to trade out of their risk positions including the age of the bond (which impacts whether it is actively traded or not).

A Note on Calculating Issue Sizes: Re-openings of Sovereign Bond Issues

Sovereign bond issuers, as a function of their normal funding cycle, frequently re-open issues, when suitable market opportunities arise, to fulfil funding needs and maximise liquidity. As a result, the 'issuance size' will frequently increase over the years - by a factor of over 10x. This is not normally the case for corporate bonds. As a result, determining liquidity by reference to the issuance amount will continually change over the life of a sovereign bond. This materially complicates the ability to look at bond ageing as a determinant of market liquidity and risks creating mis-categorisation errors in relation to issuance band sizes. As an example, the 15-year French sovereign (OAT) bond maturing in May 2030 as described in Table 10 below has been very frequently re-opened, which clearly impacts the amount outstanding.

Outstanding issuance size therefore needs to be based on the amount after the last reopening to be an accurate factor contributing to a liquidity determinant.

Table 10: **Liquidity determinant - FR0011883966 as an example**

Date	Status	Amount Outstanding (€)	Currency	Issue/Redemption Price (%)	Yield
6-May-14	Initial Issuance	**4,965,000,000**	EUR	98.18	2.64
10-Jun-14	Re-opening	**7,757,000,000**	EUR	99.54	2.54
8-Jul-14	Re-opening	**11,015,000,000**	EUR	101.57	2.38
9-Sep-14	Re-opening	**15,210,000,000**	EUR	107.79	1.92
10-Nov-14	Re-opening	**17,941,000,000**	EUR	109.25	1.81
12-Jan-15	Re-opening	**22,405,000,000**	EUR	116.61	1.3
9-Feb-15	Re-opening	**24,360,000,000**	EUR	122.19	0.94
8-Jun-15	Re-opening	**28,387,000,000**	EUR	111.01	1.66
7-Sep-15	Re-opening	**31,023,000,000**	EUR	111.59	1.61
8-May-17	Re-opening	**33,208,000,000**	EUR	117.29	1.07
12-Nov-18	Re-opening	**35,119,000,000**	EUR	117.19	0.92
11-Feb-19	Re-opening	**38,876,000,000**	EUR	119.5	0.7
5-Aug-19	Re-opening	**41,642,000,000**	EUR	128.21	-0.1
8-Jun-20	Re-opening	**45,360,000,000**	EUR	124.65	0.02
10-Aug-20	Re-opening	**49,233,000,000**	EUR	127.56	-0.27
11-Oct-21	Re-opening	**52,189,000,000**	EUR	122	-0.05
6-Dec-21	Re-opening	**54,855,000,000**	EUR	122.93	-0.19
25-Apr-22	Re-opening	**57,749,000,000**	EUR	110.65	1.12

Annex – AFME/Finbourne Sovereign Data Set Adjustments

For this analysis, Finbourne encountered and needed to make adjustments for two important major differences between the corporate bond and sovereign bond data – irregular sized transactions, and the impact of MiFIR sovereign-specific NCA-permitted differences in aggregated reporting and indefinite deferrals (collectively called "flags"). In addition, due to the common business practice of DMOs frequently "re-opening" existing issues to create larger "benchmark" size liquid transactions (described earlier), we needed to make two adjustments:

1) we assume bonds will be outstanding during the full 215 business days of the 1 March-31 December period rather than 'Date of First Trade' (This will result in a slight understatement of ADV in the tables above), and

2) due to this re-opening "tap" process, issuance amounts will slightly understated, which will change percentages slightly and cause certain transactions to be placed in slightly difference categories than would have resulted if re-openings did not occur. In the FIRDS database, there is nothing to distinguish between on vs off the run issues.

'Irregular' sized transactions records

There was a small number of unusually large transactions where the notional amounts reported were a number of times greater than the original issuance size.

These amounts represented **27.5% (€2,316.2bn)** of the gross amount and we excluded these from the analysis as we could not reconcile the 'skew' associated with **outsized single records** (as defined by trade size compared to its issuance size) that had been reported:

Table A: **Relevance of 'Irregular' records**

Description	Traded Volume (€bn)	% total	# records	% total
Original sovereign bond data set – ***'gross' traded volume***	8,414.9	100%	1,799,521	100%
Net of 'irregular' or outsized trades – ***'net' traded volume***	6,098.8	72.5%	1,799,514	100%

The details of those 'irregular' records are as follows:

Table B: **'Irregular' or outsized records**

Description	Flag	Total volume (€bn)	# ISINs	Jurisdiction	Times Issuance size
Record #1	COAF	1,764.4	1	UK	425x
Record #2	COAF	204.2	1	Germany	9x
Record #3	COAF	166.4	1	Germany	7x
Record #4	COAF	88.0	1	Slovenia	29x
Record #5	COAF	60.1	1	UK	1x
Record #6*	FULJ	40.0*	2	EU (as issuer)	2x
Record #7	COAF	13.1	1	South Korea	35x
Total		**2,316.2**			

*a record for an EU bond seemed replicated and one of the records was omitted – a single record of €20bn remains in the dataset

Aggregation and Indefinite Deferral Flags

For sovereign bonds, member state national competent authorities ("NCAs") are permitted to allow the aggregation of certain trades, as well as permit indefinite deferrals. This materially reduces Finbourne's ability to make conclusions from the data. A summary of how the various flags are defined is included below.

Table C: **Detail of application of flags in specific EU countries**

The records contains a number of flags which complicates data analysis and transparency.

Sovereign Issuers	no flags	COAF	FULA	FULJ	FULV	FWAF	IDAF	VOLO FULV	Total
Repubblica Italiana	186,428,361,269			100,276,530,525	214,772,382,640		14,714,077,000		516,191,351,435
Bundesrepublik Deutschland	226,669,064,052			12,809,078,362	252,862,527,693		5,683,986,100		498,024,656,207
Tresor (France)	75,889,704,513			44,946,072,305	231,218,832,381		2,651,942,000		354,706,551,199
Tesoro (Spain)	74,782,353,476			8,241,581,590	133,035,359,926		2,816,125,000		218,875,419,992
European Union	19,405,119,656			112,416,159,879	4,508,947,065		250,550,000		136,580,776,600
Ministerstwo Finansów (Poland)	132,813,572,101			336,326,805	77,335,185				133,227,234,091
Republika Slovenija	93,440,469,408			434,753,000	154,029,653		261,286,000		94,290,538,060
European Investment Bank	13,501,384,210			50,276,501,050	3,199,127,481			28,126,671	67,005,139,412
De Staat der Nederlanden	12,415,864,145			5,746,317,267	44,315,805,868		4,166,409,316		66,644,396,596
Kingdom of Belgium	5,235,598,691			1,252,050,253	30,007,681,651		648,110,000		37,143,440,595
Republik Österreich	8,188,039,572			6,706,196,000	19,031,260,400		964,166,000		34,889,661,972
Riksgäldskontoret (Sweden)	724,790,877	3,540	36,681,956	36,781,429	26,812,472,510				27,610,730,311
Republic of Finland	8,995,334,519			1,026,429,644	16,445,817,992		21,399,000		26,488,981,155

Table D: **Selected Trade Flag definitions**

Flag	Name of Flag	Description	Who	Source
'FULF'	Full details flag	Transaction for which limited details have been previously published in accordance with Article 11(1) (a) (i).	Venue & OTC	Execution
'DATF'	Daily aggregated transaction flag	Publication of daily aggregated transaction in accordance with Article 11(1) (a) (ii).	Venue & OTC	Execution
'FULA'	Full details flag	Individual transactions for which aggregated details have been previously published in accordance with Article 11(1) (a) (ii).	Venue & OTC	Execution
'VOLO'	Volume omission flag	Transaction for which limited details are published in accordance with Article 11(1) (b).	Venue & OTC	Execution
'FULV'	Full details flag	Transaction for which limited details have been previously published in accordance with Article 11(1)(b)	Venue & OTC	Execution
'FWAF'	Four weeks aggregation flag	Publication of aggregated transactions in accordance with Article 11(1) (c).	Venue & OTC	Execution
'FULJ'	Full details flag	Individual transactions which have previously benefited from aggregated publication in accordance with Article 11(1) (c).	Venue & OTC	Execution
'IDAF'	Indefinite aggregation flag	Transactions for which the publication of several transactions in aggregated form for an indefinite period of time has been allowed in accordance with Article 11(1) (d).	Venue & OTC	Execution
'VOLW'	Volume omission flag	Transaction for which limited are published in accordance with Article 11(1) (b) and for which the publication of several transactions in aggregated form for an indefinite period of time will be consecutively allowed in accordance with Article 11(2) (c).	Venue & OTC	Execution
'COAF'	Consecutive aggregation flag (post volume omission for sovereign debt instruments)	Transactions for which limited details have been previously published in accordance with Article 11(1) (b) and for which the publication of several transactions in aggregated form for an indefinite period of time has consecutively been allowed in accordance with Article 11(2) (c).	Venue & OTC	Execution

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