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FINsights:

CTP Whitepaper Series

#6: Reference Data – Part 1

Fuel for the transparency journey 14

November 2023

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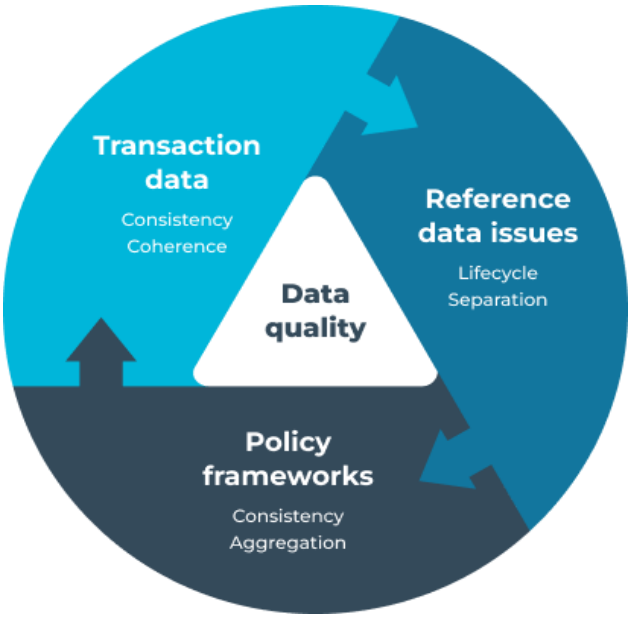
Executive Summary

Following on from previous whitepapers, we have continued to work with market participants, industry bodies and regulators to leverage the **280,000,000 transaction records** - across all asset classes (bonds, equities and derivatives) - with reference data to create **usable market data**. In our last whitepaper, we outlined a simple framework to capture the interconnected generic issues affecting "data quality":



FINBOURNE has compiled a database with all historical (July 2017 - October 2023) FIRDS information – some **107,632,766** ISIN-related records. Using that data, this paper is a deeper dive into the issues around **reference data** for all asset classes:

- The **lack of lifecycle data** means that participants get a '**snapshot**' of reference data - a point in time - rather than the **full time-series** of relevant data
- **A reference data framework**[i] that requires venues to submit overlapping, but separate, data related to the same security

The main observations we can make are:

- There are **simple inconsistencies** in the data held on FIRDS relating to **basic details** - CFI codes, LEI identifiers and, for bonds specifically, issuance amount outstanding and start (first trade) date
- The current number of **'active' ISINs** is about **7%** of the historical total
- The level of overall activity (revisions or modifications) on FIRDS masks inconsistencies across the venues with an **outsized level of activity** (modifications) on some venues that seem to have **practices and processes** that differs from other venues

Efforts must be made, in advance of any CTP operationalisation, to ensure improvements in the reference data and practices - ensuring a proven 'golden source' - to complement any work on transaction data.

While emphasis has been placed on **standardising transaction data**, similar work needs to be done to ensure that the requisite **reference data is consolidated**, **standardised** and **simplified** with **greater oversight and monitoring** from authorities and, indeed, issuers themselves, to ensure coherence.

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Overview of FIRDS

Background

T**he Financial Instruments Reference Data System (“FIRDS”)** provides reference data for all MiFID instruments that are Traded on a Trading Venue **(“TOTV”** and **“TV”)** in the **EU**. It is a database complied of reference data provided by TVs and Systematic Internalisers who submit that data for the relevant financial instruments to National Competent Authorities **(“NCAs”)** who subsequently transmit it to ESMA[ii] for publication on its **website** on a daily basis.

ESMA continuously monitors the quality of the information received.

This database also contains data related to European Economic Area ("**EEA**")/European Free Trade Association ("**EFTA**") states based on the notifications received by ESMA.

The FINBOURNE reference database currently holds some **108m** records (by ISIN).

Data

For the period from July 2017 - October 2023, we observed the following data:

CFI code	Category	Sum of distinct ISINs	Sum of MIC-ISINs
R	Entitlements (rights)	31,551,009	57,353,672
O	Listed options	13,067,474	13,142,627
S	Swaps	11,238,263	13,575,505
H	Non-listed and complex listed options	4,203,471	5,350,396
D	Debt instruments	4,061,638	7,723,968
E	Equity	2,320,144	5,080,483
J	Forwards	1,630,544	3,535,664
F	Futures	817,043	898,344
Blank	-	764,559	776,859
C	Collective investment vehicles	39,880	195,215
I	Spot	28	33
Total		**69,694,053**	**107,632,766**

The 'sum of distinct ISINs' represents **the total number of individual securities reported over the period.**

The 'sum of MIC-ISINs' represents **the total number recorded on each of the venues on which the security is traded** i.e. a security may be reported to FIRDS by several venues where it is TOTV - hence the overlapping difference.

When **cancelled ISINs** (where record submissions were cancelled by the venue) are excluded, the net 'historical' ISIN count is:

CFI code	Category	Sum of distinct ISINs	Sum of MIC-ISINs
R	Entitlements (rights)	31,551,009	57,353,672
O	Listed options	13,067,474	13,142,627
S	Swaps	11,238,263	13,575,505
H	Non-listed and complex listed options	4,203,471	5,350,396
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F	Futures	817,043	898,344
C	Collective investment vehicles	39,880	195,215
I	Spot	28	33
Total		**68,929,494**	**106,855,907**

However, for that period, when **terminated ISINs (i.e. those ISINs where the termination date of the instrument has passed) are excluded**, the current net 'active' numbers are:

CFI code	Category	Sum of distinct ISINs	Sum of MIC-ISINs
R	Entitlements (rights)	1,941,547	3,266,026
O	Listed options	781,081	781,081
S	Swaps	1,327,814	1,483,392
H	Non-listed and complex listed options	284,833	285,952
D	Debt instruments	474,105	1,107,821
E	Equity	192,200	505,107
J	Forwards	42,215	42,223
F	Futures	74,727	105,559
C	Collective investment vehicles	17,544	104,182
I	Spot	2	3
Total		**5,136,068**	**7,681,346**

From the above data, the following can be observed:

- The number of active ISINs are approximately **7%** of the historical total
- The cancelled transactions generally don't contain CFI codes

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Revisions of FIRDS data

FINBOURNE reviewed the level of activity across all venues - **527** in total - looking at the **1,229,357,758** records across the number of distinct ISINs reported at each venue.

There are significant differences in terms of how venues performed – unusually high levels of revisions occur frequently on some venues …

Venue	Number of revisions per ISIN (average)	Distinct ISINs at Venue	Total revisions
Venue #1	285.4	38	10,846
Venue #2	125.8	1,055	132,722
Venue #3	122.4	71,795	8,788,703
Venue #4	121.3	22	2,668
Venue #5	105.0	22,313	2,343,400
Venue #6	103.8	1,027	106,576
Venue #7	103.5	2,487	257,470
Venue #8	103.3	43,677	4,511,151
Venue #9	102.9	1,027	105,643
Venue #10	102.7	1,041	106,910
Venue #11	99.9	1,072	107,141
Venue #12	98.4	1,122	110,431
Venue #13	78.6	268	21,061
Venue #14	71.7	4,506	323,268
Venue #15	54.3	436	23,655
Venue #16	53.2	1,187	63,200
Venue #17	52.2	257,180	13,414,188
Venue #18	49.6	441	21,865
Venue #19	46.6	10,139	472,380
Venue #20	42.7	161	6,871

… and there is no distinct pattern with, for example, Venue #1 reporting disproportionately high levels of revisions for records in **equity securities**, whereas for Venue #2, has higher levels of revisions in **debt instrument** records.

There are also venues that have proportionately lower revisions than the average - with Venues #9 and #10 seeing few revisions for swaps data:

Venue	Number of revisions per ISIN (average)	Distinct ISINs at Venue	Total revisions
Venue #1	1.2	91	108
Venue #2	1.2	52	61
Venue #3	1.1	711	811
Venue #4	1.1	15	17
Venue #5	1.1	44	48
Venue #6	1.1	1,294	1,396
Venue #7	1.1	324	345
Venue #8	1.0	22	23
Venue #9	1.0	2,839	2,917
Venue #10	1.0	80	82

Some generic observations include:

- Seeking to standardize practices across all venues to ensure efficiency in the FIRDS data framework
- Clearer oversight and monitoring of the centralised records

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Accuracy of FIRDS data

Benchmarking by Venue (MIC)

FINBOURNE cross-referenced each CFI and LEI record for each ISIN at each venue. From this FINBOURNE developed a 'consensus' value - the modal frequency (the ones that appear most often) - for both CFI and LEI. We then benchmarked that '**consensus**' against each TV record.

The accuracy of LEI and CFI data on that basis varied and the following was observed - mainly for smaller venues …

Venue	Number of distinct ISINs	LEI 'consensus' (accuracy %)	CFI 'consensus' (accuracy %)
Venue #1	319	79.0%	80.9%
Venue #2	315	80.6%	82.5%
Venue #3	130	89.2%	89.2%
Venue #4	132	90.9%	90.9%
Venue #5	139	92.8%	94.2%
Venue #6	7,231	94.6%	92.9%
Venue #7	303	97.4%	97.4%
Venue #8	21,794	98.2%	94.5%
Venue #9	3,265	98.3%	98.4%
Venue #10	976	98.6%	100.0%

… once again, when the **largest 10 venues** were reviewed, FINBOURNE found a greater degree of accuracy:

Venue	Number of distinct ISINs	LEI 'consensus' (accuracy %)	CFI 'consensus' (accuracy %)
Venue #1	32,046,927	100.0%	100.0%
Venue #2	26,303,708	100.0%	100.0%
Venue #3	6,963,967	100.0%	100.0%
Venue #4	5,955,035	100.0%	100.0%
Venue #5	4,634,235	100.0%	99.8%
Venue #6	2,400,736	100.0%	100.0%
Venue #7	2,355,530	100.0%	100.0%
Venue #8	2,152,295	100.0%	100.0%
Venue #9	1,902,574	100.0%	100.0%
Venue #10	1,791,669	100.0%	100.0%

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Tapping of sovereign bonds ... FR0011883966 as an example

Tapping of bonds causes a unique issue for any fixed income consolidated tape. As well as the importance of capturing the outstanding issuance in relation to traded activity, it is also an important metric used for standard liquidity calculations over specific periods.

We previously observed[iii] the 'tapping' of a French 2.50% 25 May 2030 OAT, as a generic example, of this market practice:

Date	Status	Amount Outstanding (€)	Currency	Weighted Average Price (%)	Weighted Average Rate (%)
30-April-14	Initial Issuance	**4,965,000,000**	EUR	98.18	2.64
5-Jun-14	Re-opening	**7,757,000,000**	EUR	99.54	2.54
3-Jul-14	Re-opening	**11,015,000,000**	EUR	101.57	2.38
4-Sep-14	Re-opening	**15,210,000,000**	EUR	107.79	1.92
6-Nov-14	Re-opening	**17,941,000,000**	EUR	109.25	1.81
8-Jan-15	Re-opening	**22,405,000,000**	EUR	116.61	1.3
5-Feb-15	Re-opening	**24,360,000,000**	EUR	122.19	0.94
4-Jun-15	Re-opening	**28,387,000,000**	EUR	111.01	1.66
3-Sep-15	Re-opening	**31,023,000,000**	EUR	111.59	1.61
4-May-17	Re-opening	**33,208,000,000**	EUR	117.29	1.07
8-Nov-18	Re-opening	**35,119,000,000**	EUR	117.19	0.92
7-Feb-19	Re-opening	**38,876,000,000**	EUR	119.5	0.7
1-Aug-19	Re-opening	**41,642,000,000**	EUR	128.21	-0.1
4-Jun-20	Re-opening	**45,360,000,000**	EUR	124.65	0.02
6-Aug-20	Re-opening	**49,233,000,000**	EUR	127.56	-0.27
7-Oct-21	Re-opening	**52,189,000,000**	EUR	122	-0.05
2-Dec-21	Re-opening	**54,855,000,000**	EUR	122.93	-0.19
21-Apr-22	Re-opening	**57,749,000,000**	EUR	110.65	1.12
16-Feb-23	Re-opening	**60,294,000,000**	EUR	98.47	2.73
19-Oct-23	Re-opening	**62,459,000,000**	EUR	95.32	3.30

source: https://www.aft.gouv.fr/fr/titre/fr0011883966

FR0011883966 issuance history

FINBOURNE looked at the issuance history of the OAT:

- Referencing the public Agence France Trésor records
- The venues that were actively trading the bond – of the **62** venues that had submitted FIRDS records, some **12** were trading the bond since the initiation of FIRDS (August 2017)

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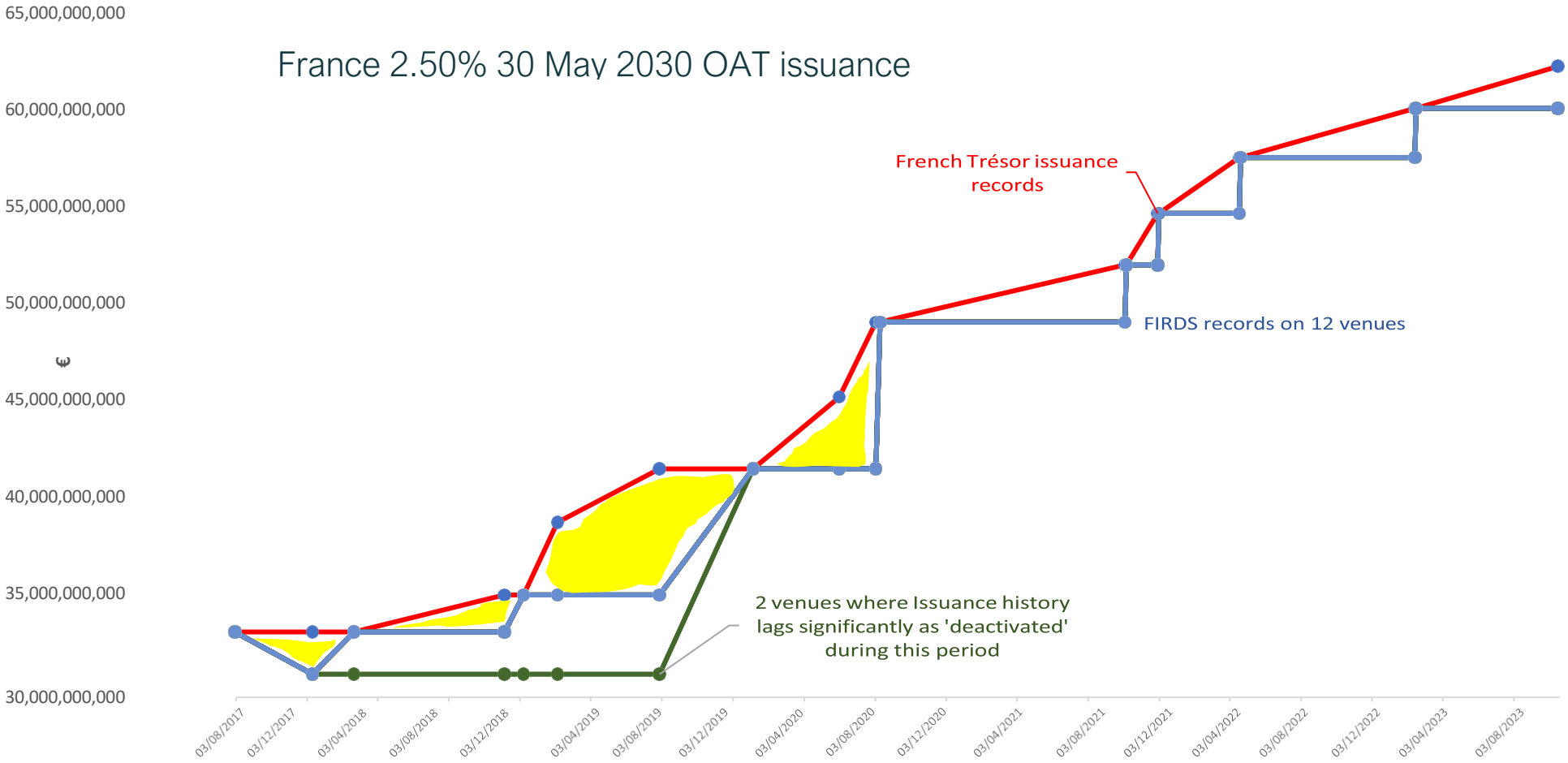
Of those **12**, FINBOURNE tracked the issuance history at each venue against the AFT records:



Some general observations include:

- There is, in general, **a short time lag (2 - 7 days)** between the AFT tapping dates and the dates on which the venues update their records
- There are periods (2018, 2019 and 2020 - shown above in yellow) where various taps of the bond were **not recorded** by any of the **12** venues
- **2** of the **12** venues were **'deactivated'** during 2017 and 2018 but, in 2019, they began submitting records again and in line with the other 10 venues

First trade date

Venue	Reported date of first trade
Venue #2	28/04/2014
Venue #5	28/04/2014
Venue #6	29/04/2014
Venue #7	29/04/2014
Agence France Trésor	**30/04/2014**
Venue #3	02/05/2014
Venue #8	02/05/2014
Venue #10	02/05/2014
Venue #11	05/05/2014
Venue #1	05/05/2014
Venue #12	06/05/2014
Venue #9	04/07/2014
Venue #4	16/05/2017

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[i] esma65-8-1776_firds_transparency_reporting_instructions_v2.1.pdf (europa.eu)

[ii] in accordance with Article 27 of Regulation (EU) No 600/2014 (MiFIR) [1] and Article 4 of Regulation (EU) No 596/2014 (MAR) [2]

[iii] see AFME paper MiFIR 2021 Sovereign Bond Trade Data Analysis and Risk Offset Impact Quantification | AFME

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About

FINBOURNE's solutions deliver an interconnected network of functionality and data that enables the investment community to better serve clients in a constantly evolving market.

Its investment management solutions and cloud-native data management platform ensure that investment and operations teams can increase revenue, reduce costs, and better manage risk across the investment life cycle.

Get in touch

To discover more about FINBOURNE and learn how our solutions can drive growth, increase control and improve data access, contact us below

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