

FINsights:

CTP Whitepaper Series

#2: Identifying issues around consistency

Consistency, thou art a jewel 27

January 2022

Executive Summary

Following the recent announcements by the European Commission of its 2021 Capital Markets Union package and the UK HMT's Wholesale Markets Review, we believe the developments leading to the creation of a Consolidated Tape (CT) for European capital markets are moving in the right direction.

But while the starting gun has been fired, there are still several vital steps needed to support this market mechanism: the design of an operational framework, the technological infrastructure, and a commercial model to be created - in collaboration with the market - across the four defined asset classes.

While issues will continue to be addressed in the on-going political debate, as a technology provider, fusing together domain expertise and deep technology, our focus is to resolve the data quality issues - a basic, yet significant, challenge.

All stakeholders identified data quality as a need to be solved, given that **the quality of the data input will determine the effectiveness of any CT**. To effectively support progress, we believe that the best way forward is to make the public transaction records visible and transparent.

However, we don't believe this analysis needs to wait until a decision has been made on the form of any CT. If anything, starting this process will improve the quality and efficiency of the CT while it is being developed, and contribute to the resiliency of the end-product.

We have continued to access publicly available post-trade transaction data from a number of the largest trading venues and APAs ('data groups'). As at the end of December 2021, we've collated some **64 million** actual transactions - net of duplicates - across equities, ETFs, fixed income and derivatives.

The Three C's of CT data

We have broken the data quality issues down into the following component parts, to aid the design of a series of structured solutions:



In general, we observed issues across the following areas:

- **Consolidation** and aggregation challenges around the myriad of codes, formats and transaction reporting conventions
- **Consistency** of data where we see the same fields for transactions completed in different ways, leading to inconsistent treatment that requires remediation/intervention
- **Coherence** is another area of concern where we see incorrect data reported in a manner that either distorts any aggregates/averages, or leads to incorrect/incoherent output

Following on from our first whitepaper on consolidation and aggregation (December 2021), our **second whitepaper** tackles the **consistency of transaction records** - the issues and patterns that arise - and suggests some potential solutions as a path forward.

The issue of consistency and uniformity becomes even more important where, as has been reported recently, a higher proportion of securities are predominately traded electronically - reinforcing the greater opportunity for straight-through processing to facilitate real time transparency.

We continue to work with the members of our Design Council to recognise, manage and problem- solve for the current data barriers. This will enable a CT that is fit for purpose, meets the needs of all users and delivers FINBOURNE's core mission of lowering the cost of investing and promoting greater transparency in the market.

Transaction records' data

Overview of the public 'portfolio'

Our analysis comprises of post-trade transaction records covering all asset classes from the largest data groups.. This data, collected from **1 March – 31 December 2021**, formed part of the preliminary workings that FINBOURNE is conducting, in order to prepare for the creation of a **post-trade** CT. The data is publicly available and is provided in a variety of formats, on a delayed basis.

Transaction data source details

The data sources that FINBOURNE accessed were, as identified in the ESMA Annual Statistical Report 2021i, the largest venues for the **equities, ETF, bond** and **derivatives** markets. We also included other sources, both to deliver a substantial and objective sample, and for comparison purposes:

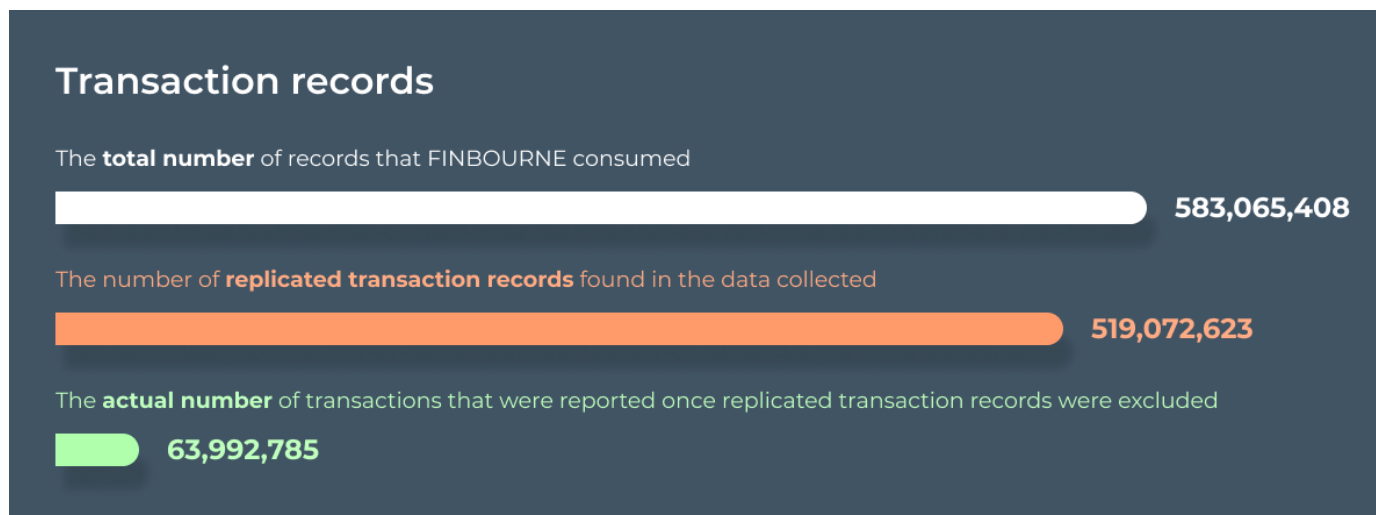
Type	Jurisdiction	Data Group #1	Data Group #2	Data Group #3	Data Group #4	Data Group #5	Data Group #6
APA	EU	✓	✓	✓		✓	✓
	UK	✓	✓	✓			✓
MTF	EU			✓			✓
	UK						✓
OTF	EU			✓			✓
	UK			✓	✓		✓

For analysis purposes, we also linked the transaction records to the EU's **Financial Instruments Reference Data System** ('FIRDS') database, which covers the publication, collection and processing of additional issuer data, to support the MiFIR transparency regime.

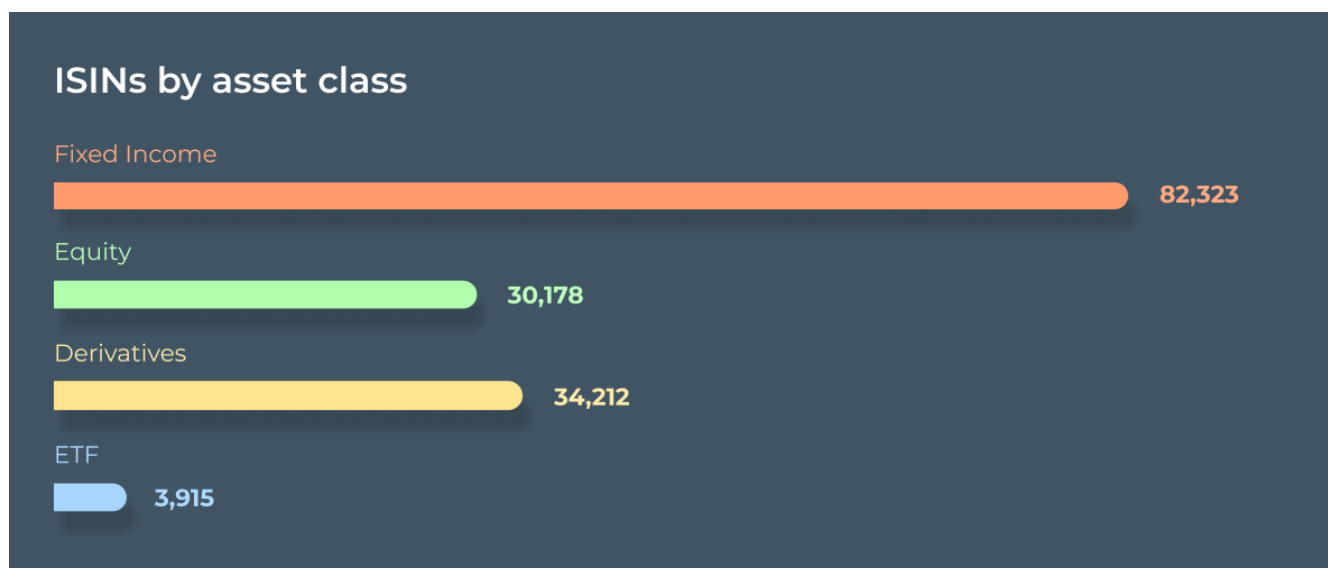
The 2021 year-end 'portfolio'

De-duplication process

The high-level **overview** is as follows:



Distinct bonds



We have focused on **Fixed Income** transactions for the purpose of this whitepaper.

Breakdown

1. Overall context

Description	# transactions	% total	# ISINs	% total
all Fixed Income transactions	5,110,525		82,323	12.3%
all FI transactions net of AMND, DUPL and CANC	4,466,814	87.4%	81,191	12.1%
all FI transactions net of flags	1,601,927	31.3%	38,046	5.5%

2. 'VENUE(S) OF EXECUTION and PUBLICATION'

by 'VENUE OF EXECUTION'	# of 'net' transactions	%	by 'VENUE OF PUBLICATION'	# of 'net' transactions	%
SINT	1,993,573	44.6%	SINT	-	-
			Data Group #1	122,082	2.7%
Data Group #2	575,413	12.9%	Data Group #2	1,904,966	42.9%
Data Group #3	1,258,974	28.2%	Data Group #3	2,427,097	54.3%
Data Group #4	12,669	0.3%			
XOFF	626,185	14.0%	XOFF	-	-

- when we look at 'VENUE OF PUBLICATION' as a proxy for location, some 67% of the transaction records are reported from EU venues

3. Breakdown by sub-asset class

Description	# transactions	% total	# ISINs	% total
Asset Backed Security	84,541	1.9%	2,031	2.5%
Bond	2,964,996	66.4%	28,445	35.0%
Bond with warrant	470	-	7	-
Convertible Bond	43,661	1.0%	668	0.8%
Depositary Receipt	466	-	8	-
Medium Term Note	1,047,878	23.5%	13,858	17.1%
Miscellaneous	2,274	0.3%	369	0.5%
Money Market Instrument	9,796	0.1%	1,091	2.3%
Mortgage-Backed Security	13,200	0.2%	932	1.1%
Municipal Bond	25,264	0.6%	957	1.2%
Structured Product (with Capital Protection)	49,446	1.1%	1,099	1.4%
Structured Product (without Capital Protection)	224,822	5.0%	30,916	38.1%
totals	4,466,818		81,191	

Consistency

Currency

4. 'NOTIONAL CURRENCY' and 'NOTIONAL AMOUNT'

- there are **55** currencies represented in total – with a (large) number '**blank**'
- it is impossible to simply aggregate the data available to give an indication of debt instruments' liquidity by currency

'Notional Currency'	# ISIN	# transactions	sum 'Notional Amount'	FX rate*	adjusted 'Notional Amount' **
Indonesian Rupiah	73	3,569	19,344,178,031,961	16,868	1,146,808,662
Korean Won	45	3,562	5,574,325,386,888	1,356	4,109,914,796
Hungarian Florint	124	8,743	3,890,732,426,880	389	10,851,624,560
€	44,836	2,272,790	3,881,023,184,401	-	3,881,023,184,401
US\$	21,910	1,519,732	3,402,964,634,185	1.18	2,895,497,030,686
'blank'	12,289	111,008	-	-	-
GB£	2,256	269,951	2,341,638,924,863	.85	2,740,352,665,694
ZAR	107	10,427	2,153,796,709,725	17	123,981,652,718
JP¥	211	3,099	1,559,876,525,833	130	11,958,450,372
Colombian Peso	19	202	998,154,847,937	4,543	219,696,541
Danish kröner	782	73,184	805,716,803,402	7,43	108,338,756,269

*source : ECB Statistical Database: 9 month 'simple' average FX rates per EURO except COP where spot rate 14 January used

** estimates only

- applying appropriate, but, estimated FX rates, transforms the picture of liquidity based on a volume of 'notional' traded
- presentation of 'raw' data **does not** make any immediate aggregation useful
- comparison requires **estimates of the FX rates** used for the transactions and would require 'real time' translation **in the absence of a '€ equivalent field'** being available.
- this was feedback received in the Call for Evidence on RTS 1 and RTS 2 by ESMA and considered as part of the recent RTS 1/RTS 2 Consultation Paper:

3.3.1.3 Fields "Price", "Price currency", "Price notation" and "Quantity"

142. In the CfE several stakeholders requested that APAs publish the price in the post-trade reports in EUR. ESMA considers that the information on the currency in which the trade was made is sufficient to compare post-trade reports and does not consider it necessary to add this new requirement.

5. Legacy currencies

- included in 55 currencies are **3** legacy currencies - **Italian lira, Dutch Guilder and German Deutschemark** (long dated bonds issued pre-EMU)
- in total, there were 188 transactions reported in those currencies – since 1st March 2021

6. Example: 5-year BUND

fields specified	Trade #1 Data Group #3	Trade #2 Data Group #3
ISIN	DE0001102432	
Instrument ID type	ISIN	
Notional Amount	1,000,000	2,500,000
Notional Currency	EUR	USD
Price	133.553	133.545
Price Currency	EUR	EUR
Price Notation	MONE	PERC
Quantity	10,000	2,500,000
To be Cleared	FALSE	FALSE
TradeTimeDate	2021-08-XX	2021-08-XX
Transaction ID	XXXXXXXXXXXX	XXXXXXXXXXXX
Venue of Execution	SINT	SINT
Venue of Publication	XXXX	XXXX
Flags	ILQD, FULJ	-

This transaction is a 30-year BUND:

- the same data group reported two transactions in the same instrument with different '**QUANTITY**', '**NOTIONAL CURRENCY**' and '**NOTIONAL AMOUNT**' conventions, although neither seems to reflect the '**PRICE**'

7. Example: physical gold ETC

fields specified	Trade #1 Data Group #1	Trade #2 Data Group #4
ISIN	IE00B579F325	
Instrument ID type	ISIN	
Notional Amount	695.89	1
Notional Currency	EUR	USD
Price	139.178	138.44
Price Currency	EUR	EUR
Price Notation	PERC	MONE
Quantity	5	1
Venue of Execution	XOFF	XOFF
Flags	ILQD, FULJ	-

This transaction is:

- an Irish registered ETC

From a 'market' perspective, we can make the following observations about this bond:

- 2 different data groups take a different convention to '**NOTIONAL AMOUNT**'
- the fact that the '**NOTIONAL CURRENCY**' differs makes comparison even more difficult

Liquidity and transparency

8. Most 'liquid' trades (by total volume of transactions)

bond details	volume	% total
1.25% 10-year US Treasury (August 2031)	77,714	1.7%
1.125% 10-year US Treasury (February 2031)	73,637	1.6%
1.625% 10-year US Treasury (May 2031)	67,210	1.6%
1.375% 10-year US Treasury (November 2031)	52,985	1.2%
1.25% 5-year US Treasury (November 2026)	31,673	0.7%

- less than **2%** of the ISINs represent some **49%** of trading
- some **98%** of bonds (by ISIN) trade less than twice a day

9. 'Liquidity' buckets (by total volume of transactions)

stage	threshold number	# ISINs	# transactions	% total
Stage 1 (15 trades per day)	3,225	102	1,007,329	22.6%
Stage 2 (10 trades per day)	2,150	177	1,201,226	26.9%
Stage 3 (7 trades per day)	1,505	296	1,415,053	31.7%
Stage 4 (2 trades per day)	430	1,407	2,194,031	49.1%
Top 5			303,219	6.8%
Top 10			419,064	9.4%
average # trades per day	55			
at or above average		12,369	3,893,714	87.2%
below average		68,822	573,100	12.8%
Total			4,466,844	

- a large number of bonds (some 85%) trade below the average threshold for Stage 4

10. Volume of transactions and (main) deferral flags

A total of **39** currencies have more than 50% of their transactions flagged 'ILQD':

'NOTIONAL CURRENCY'	volume	% total (9 months)	% LRGS (LIS)	% ILQD
€	2,272,790	50.9%	3.1%	58.1%
US dollar	1,519,732	34.0%	3.6%	43.5%
GB sterling	269,951	6.0%	2.9%	50.4%
'blank'	191,739	4.3%	0.2%	9.4%
Danish kröner	73,184	1.6%	2.0%	77.5%
Swiss franc	21,990	0.5%	2.6%	97.0%
Hungarian forint	8,743	0.2%	5.6%	78.3%

- in the case of **8** currencies, including Chinese Yuan, the transactions are **100%** 'ILQD'

11. Example: consistency of use of flags by venues

This ETC was one of the most traded bonds with some **6,312** trades in 2021:

by venue of publication	number	ILQD % of total*
Data Group #1	3,512	0%
Data Group #2	357	71.2%
Data Group #3	2,443	55.6%

* ILQD flagged

- the patterns were not solely linked to 'SINT' or 'XOFF' transactions

Quality of 'PRICE' or 'QUANTITY' data

12. example: zero coupon 10 year (August 2026) BUND via Data Group #3

fields specified	Trade #1 Data Group #3	Trade #2 Data Group #3	Trade #3 Data Group #3
ISIN	DE0001102408		
Instrument ID type	ISIN		
Notation of Quantity in Measurement Unit	-	-	-
Notional Amount	1,560,000	1,000,000	2,543
Notional Currency	EUR	EUR	EUR
Price	104.06	104.05	104.014
Price Currency	EUR	EUR	EUR
Price Notation	PERC	PERC	PERC
Quantity	1,560,000	1	1
To be Cleared	TRUE	FALSE	FALSE
Venue of Execution	XOFF	SINT	XOFF
Venue of Publication	XXXX	XXXX	XXXX

We looked at this bond in detail as it was one of the most traded European bonds in 2021.

In a snapshot of **4,908** trades, during a one-month period (August 2021) - where there were **458** trades - we could observe:

- some **23** trades - **5%** - had similar issues with the **'NOTIONAL AMOUNT'** and **'QUANTITY'**
- a further **19** trades - **4%** - had a **'PNDG'** flag i.e. no price reported at the time of the transaction
- a further **16** trades - **3%** - had **'TPAC'**, **'VOLO'** or **'VOLW'** flags i.e. **'NOTIONAL AMOUNT'** or **'QUANTITY'** reported

In total, some **12%** of the transactions reported **could not currently be used in a CT**.

What's next

Forming part of the theme around the need for certain data issues to be tackled, the issue of consistency presents a variety of barriers that need to be addressed. Dissecting the causes of the data quality issue - such as duplication, differing lineage, formatting and uniform application of standards will be key to ensuring a robust CT that is fit for purpose.

Our analysis is the first step in the journey ahead, and while we have identified some pressing concerns, we know that together with the collaboration of our Design Council members, and the use of our cloud-native SaaS technology, we can respond to the current data challenges, ahead of the creation of a CT.

Alongside this market engagement, we will continue to publish whitepapers in the series, providing more detail on the coherence of CT data.

FINBOURNE's Design Council

FINBOURNE is inviting market participants with an interest in the mechanics of developing a Consolidated Tape to join its Design Council.

The first meeting took place in December 2021 and the Council will continue to meet through June 2022.

FINBOURNE's Design Council - benefits to Members

In return for providing views and expertise, the Design Council offers Members the following:

- an opportunity to shape the implementation in a way that could make a CT more relevant for their institution
- a forum where the elements of the operation and governance of any CT entity can be discussed, explored and evolve an open environment where issues of data quality can be raised and examined in sufficient detail
- where the data discussed can be used by the Members either internally or at other fora or bodies where they participate
- where agreed by Members, analysis of data can be presented to other bodies in the form of whitepapers to help to develop the concept of market data standards or principles
- access to beta releases of the FINBOURNE CT Platform ("CT Platform") and other relevant material and services, including training
- exposure to thought leaders and the latest cloud technology in this space.

Get in touch

Tell us what you think. If you'd like to learn more about the CT journey, or have your say in the CTDesign Council, get in touch with us at ctp@finbourne.com

ANNEX 1 - ACRONYMS

General

Acronym	Definition	Explanation
APA	Approved Publication Arrangement	A person/venue authorised under the provisions established in the MIFID II Directive to provide the service of publishing trade reports on behalf of investment firms.
API	Application Programming Interface	A set of programming code that enables data transmission between one software product and another.
BUND	Security issued by the German Government	A BUND is a fixed-interest, euro-denominated security issued by the German government to fund its debt. Although BUND refers to bonds with maturities of 10 years +, the term is used for a broader range of German government debt securities.
CT	Consolidated Tape	A Consolidated Tape is an electronic system that collates real-time exchange-listed data, such as price and volume, and disseminates it to investors.
ETF	Exchange Traded Fund	A type of security that tracks an index, sector, commodity, or other asset, but which can be purchased or sold on a stock exchange the same way a regular stock can.
FIRDS	Financial Instruments Reference Data System	A system created by the European Securities and Markets Authority (ESMA) that lists meta- information to all financial instruments included in the scope of MiFID II.
ISIN	International Securities Identification Number	A 12-digit alphanumeric code that uniquely identifies a specific financial security.
MTF	Multilateral Trading Facility	A trading system that facilitates the exchange of financial instruments between multiple parties.
OTF	Organised Trading Facility	Multilateral trading venues in the European Union enabling third parties to trade bonds, derivatives, structured finance products and emission allowances but not equities.
SINT	SI Trade	"SINT" is used when the transaction on a financial instrument is executed on a Systematic Internaliser.
XOFF	A trade made off the main exchange	"XOFF" is used when the transaction on a financial instrument is executed off the market and not on a trading venue, systematic internaliser or organised trading platform.

Trade Flags

Acronym	Definition	Explanation
AMND	Amendment Flag	When a previously published transaction is amended.
DUPL	Duplication Flag	When a transaction is reported to more than one APA.
CANC	Cancellation Flag	When a previously published transaction is cancelled.
PNDG	Pending Flag	When a transaction or price is currently not available but due to become available.
LGRS (LIS)	Post-Trade Large in Scale Transaction Flag	Transactions where deferred publication is permitted on the basis that they are large in scale compared with normal market transactions.
TPAC	Package Transaction Flag	A trade composed of several components/legs.
ILQD	Illiquid Instrument Flag	Transactions executed under the deferral for instruments for which there is not a liquid market.
FULJ	Full Details Flag	Individual transactions which have previously benefited from aggregated publications because of their status as non-equity instruments that are not sovereign debt.
FULV	Full Details Flag	Transactions for which limited details have been previously published about why an individual transaction has been given an extended time period of deferral for four weeks.
FULF	Full Details Flag	A transaction whereby limited details have been published about the value and average daily turnover of the transaction.
FULA	Full Details Flag	Individual transactions for which aggregated details have been previously published.
LMTF	Limited Details Flag	A supplementary deferral which requires additional information.
DATF	Daily Aggregated Transaction Flag	A supplementary deferral which requires additional daily aggregation information.
VOLO	Volume Omission Flag	A supplementary deferral allowing for an extended period without full post-trade transparency.
VOLW	Volume Omission Flag	Transactions for which limited details are published and for which the publication of several transactions in aggregated form for an indefinite period of time will be allowed.

Other

Acronym	Definition	Explanation
AFM	De Autoriteit Financiële Markten	AFM are responsible for supervising the operation of the financial markets in The Netherlands.
AFME	Association for Financial Markets in Europe	AFME is the regulatory representative for Europe's wholesale financial markets.
AIMA	Alternative Investment Management Association	AIMA is the global representative body of the alternative investment industry.
AMF	Autorité des Marchés Financiers	AMF regulate the French financial marketplace and are responsible for ensuring that savings invested in financial products are protected and providing investors with adequate information.
BVI	Bundesverband Investment (German Investment Funds Association)	BVI represent the interests of the German fund industry at the national and international level via the promotion of various regulations.
DG-FISMA	Directorate-General for Financial Stability, Financial Services and Capital Markets Union	DG-FISMA is the EU Commission department responsible for EU policy on banking and finance.
EDMA	Electronic Debt Markets Association	EDMA represent the common interests of companies whose primary business is the operation of regulated electronic fixed income trading venues in Europe.
EFAMA	European Fund and Asset Management Association	EFAMA is the representative association for the European investment management industry.
ESMA	European Securities and Markets Authority	ESMA is an independent EU Authority that contributes to safeguarding the stability of the EU's financial system by enhancing the protection of investors and promoting stable and orderly financial markets.
FCA	Financial Conduct Authority	FCA regulate the UK's financial services industry and focus on protecting consumers, keeping the industry stable and promoting competition between financial service providers.
FIX	The Financial Information eXchange	FIX is an organisation that seeks to set transaction data/field protocols in equity markets. FIX's Fixed Income Working Group (FIWG) is tasked with creating a set of trade field standards/protocol for fixed income products.
FMSB	The Fixed Income, Currencies and Commodities Markets Standards Board	FMSB is a regulatory standards body for the wholesale fixed income, currencies and commodities (FICC) markets.
ICMA	International Capital Markets Association	ICMA is a not-for-profit membership association serving the needs of its wide range of member firms active in the international debt capital markets

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i EU Securities Market, ESMA Annual Statistical Report (18 November 2020) ESMA-50-165-1355



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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