



Euroclear LiquidityDrive

Client user guide • August 2024

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Overview

Introduction

Euroclear is a leading provider of post-trade services with global data coverage and strong relationships across the international financial markets, enabling us to offer our clients a unique view on liquidity in the fixed-income space.

Euroclear LiquidityDrive offers daily settlement liquidity data on a broad range of fixed-income instruments and can be used to enhance trading models, support post-trade analysis and reporting, and strengthen investment and research intelligence.

It uses activity and holding data across Euroclear entities: Euroclear Bank in its role as an international CSD as well as Euroclear ESES as the domestic CSDs for France, Belgium and The Netherlands; with Data reflecting activity in Euroclear UK and Ireland being added in 2021.

As Euroclear LiquidityDrive is delivered over API, it allows for straightforward integration with portfolio models, trade execution and risk management tools as well as other liquidity evaluation systems.

What data is available in the Euroclear LiquidityDrive product?

Euroclear LiquidityDrive comprises a range of data blocks and for each security present in the product, the following data is available:

- Securities reference data including a selection of static and dynamic characteristics of the security
- Liquidity indicators and top five substitutes providing four liquidity scores measuring the liquidity of a given security compared to its peers, and a list of five comparable securities, selected generally as well as specifically in the issuer's sector
- Aggregated holding and transaction data showing the amount of securities held in Euroclear's inventory holders as well as associated activity in those securities including the average size and price. These aggregates are available per business date, and per simple rolling average over 30, 60, 260 days
- Transaction details showing individual transactions per reference date, including size, price and party information, for securities that have met the relevant trading criteria, with a 30-day delay.

The service also offers historical data from 1 September 2018.

What are the request/response options?

To retrieve the desired data, a request must be submitted through the Application Programming Interface (API) channel.

Euroclear LiquidityDrive offers two options:

- **Option 1:** Collection of ISINs
The request should specify the desired market, issuer type, tenor and a reference date in the past (one value is allowed per parameter).
There are three additional optional filters in this case:
 - Denomination currency: the user can select one or more currencies.
 - If the filtered collection contains too many records, the API will paginate the result set in block of maximum 750 records and will provide an URL to request the following records.
- **Option 2:** One specific ISIN
The request should specify the ISIN in question for one specific reference date.


The response will provide for every ISIN in scope all of the data blocks, in function of the user's subscription rights. The order is per common code.

All these parameters are described further in this document.

What are the subscription options for this product?

The user can choose to subscribe for:

- **Basic data service:** including securities reference data, liquidity scores and the top five substitutes
- **General data service:** including the above data blocks as well as aggregated data on holdings and transactions
- **Premium data service:** including the above data blocks as well as detailed transaction data

 **Note:** Basic and General data blocks will be available on the reference date +1, while the Premium data block will be available on the reference date +30.

Scope of ISINs

The user can choose which segment of ISINs to subscribe to. The segments are defined by regions and issuer type, with Government issues including securities issued by sovereigns, supranationals, agencies and state-owned entities.

The list of markets within each region is available in annex.

- European - Government issues
- European - Non Government issues
- Eurobonds (XS ISINs) - Government issues
- Eurobonds (XS ISINs) - Non Government issues
- North America - Government issues
- North America - Non Government issues
- LatAm, APac and Emerging Markets - Government issues
- LatAm, APac and Emerging Markets - Non Government issues

How do I get access to the data?

To access the data, the client will need a combination of client owned credentials (client private key and its corresponding public key certificate) and credentials generated by Euroclear on its behalf (API key(s) and client ID).

These combined credentials will allow the client to request a secured and signed access token and set up a secure communication channel (mutual authenticated HTTPS session) to get authenticated and authorized to the subscribed services.

What is the billing model for this product?

The billing model utilises the segments of ISINs and the depth of information described earlier in this document. The subscription allows the client to access data for each ISIN in the subscription once a day; an extra fee is charged for additional requests.

Data dictionary

The below search options are limited by the client's subscription i.e. the system will only return data for ISINs belonging to the segments to which the client has subscribed.

Search parameters – Option 1: Collection of ISINs

Query parameter	Business name	Description	Mandatory (Y/N)	Format																					
market	<i>Market</i>	Securities are grouped per geographic area, using the first two letters of their ISIN. Possible values: <table border="1"> <tr> <td>EU-BNL</td> <td>EU-STH</td> <td>JAP</td> </tr> <tr> <td>EU-CEE</td> <td>EU-SWI</td> <td>LATAM</td> </tr> <tr> <td>EU-ESP</td> <td>EU-UK</td> <td>MEA</td> </tr> <tr> <td>EU-FRA</td> <td>EU-XS</td> <td>ROA</td> </tr> <tr> <td>EU-GER</td> <td>AU-NZ</td> <td>CAN</td> </tr> <tr> <td>EU-ITA</td> <td>CIS</td> <td>USA</td> </tr> <tr> <td>EU-NOR</td> <td>HK</td> <td></td> </tr> </table>	EU-BNL	EU-STH	JAP	EU-CEE	EU-SWI	LATAM	EU-ESP	EU-UK	MEA	EU-FRA	EU-XS	ROA	EU-GER	AU-NZ	CAN	EU-ITA	CIS	USA	EU-NOR	HK		Y	enum
EU-BNL	EU-STH	JAP																							
EU-CEE	EU-SWI	LATAM																							
EU-ESP	EU-UK	MEA																							
EU-FRA	EU-XS	ROA																							
EU-GER	AU-NZ	CAN																							
EU-ITA	CIS	USA																							
EU-NOR	HK																								
issuertype	<i>Issuer type</i>	The type of issuer. Possible values: GOV (government and government-related) NGOV (non government)	Y	enum																					
tenor	<i>Tenor</i>	The duration of the security, measured between the first closing date and the maturity date. Possible values: ST (up to 1 year) LT (more than 1 year)	Y	enum																					
nominalcurrency	<i>Nominal Currency</i>	The currency in which a financial instrument is currently denominated (e.g. EUR, USD).	N	string (char3)																					
referencedate	<i>Reference date</i>	The business date on which the data was recorded. The date must be a Euroclear working day, i.e. no weekends, Christmas or New Year's day.	Y	datetime (yyyy-mm-dd)																					

Search parameters – Option 2: One specific ISIN

Query parameter	Business name	Description	Mandatory (Y/N)	Format
isin	<i>ISIN</i>	The International Securities Identification Number.	Y	string
referencedate	<i>Reference date</i>	The business date on which the data was recorded. The date must be a Euroclear working day, i.e. no weekends, Christmas or New Year's day.	Y	datetime (yyyy-mm-dd)

Securities reference data

This data block contains a set of static and dynamic characteristics of the security. Some of the characteristics are populated only when Euroclear owns the relevant rights to the data, e.g. when it is the Issuer CSD for the security. When data is not available, the field will not be reported.

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Field name	Business name	Description	Format	Line N°												
referencedate	<i>Reference Date</i>	The business date on which the data was recorded. The date must be a Euroclear working day, i.e. no weekends, Christmas or New Year's day.	datetime	146												
isin	<i>ISIN</i>	The International Securities Identification Number.	string	125												
commonCode	<i>Common Code</i>	A nine-digit number used to identify securities, which are allocated by either Euroclear or Clearstream Banking Luxembourg and which is common to both ICSDs. The common code will always be available, even in the rare cases where the security does not have an ISIN.	int	126												
secName	<i>Security Name</i>	The name of the financial instrument.	string	127												
nominalCurrency	<i>Nominal currency</i>	The currency in which a financial instrument is currently denominated.	string	130												
amountType	<i>Amount type</i>	The expression of the amount as a unit number or as a face nominal amount. Possible values: A : face nominal amount U : unit number	enum	151												
maturityDate	<i>Maturity date</i>	The date on which a financial instrument becomes due and assets are to be repaid. The value 0001-01-01 refers to a perpetual security without maturity date.	datetime	131												
issuerName	<i>Issuer Name</i>	The name of the entity that issued the security.	string	153												
issuerType	<i>Issuer type</i>	The type of issuer. Possible values: GOV : governmental or government-related issuer NGOV : non governmental issuer	enum	154												
issuerClassification	<i>Issuer classification</i>	Description: The classification assigned to the issuer. Possible values: <table border="1"> <thead> <tr> <th>GOV: governmental or government-related issuer</th> <th>NGOV: non governmental issuer</th> </tr> </thead> <tbody> <tr> <td>Agency</td> <td>Corporation</td> </tr> <tr> <td>Municipal</td> <td>CreditInstitution</td> </tr> <tr> <td>PublicSector</td> <td>OtherFinancial</td> </tr> <tr> <td>Sovereign</td> <td>Other</td> </tr> <tr> <td>Supranational</td> <td></td> </tr> </tbody> </table>	GOV : governmental or government-related issuer	NGOV : non governmental issuer	Agency	Corporation	Municipal	CreditInstitution	PublicSector	OtherFinancial	Sovereign	Other	Supranational		string	155
GOV : governmental or government-related issuer	NGOV : non governmental issuer															
Agency	Corporation															
Municipal	CreditInstitution															
PublicSector	OtherFinancial															
Sovereign	Other															
Supranational																

(continued)

Securities reference data *(continued)*

Field name	Business name	Description	Format	Line N°
issuerSector	<i>Issuer sector</i>	Industry classification assigned to the issuer. Possible values are described in Annex 4.	string	128
ecbTiering	<i>ECB tiering</i>	ECB's creditworthiness classification of the security.	string	
ecbHaircut	<i>ECB haircut</i>	Identification of the haircut applied by the ECB.	string	
optionFlag	<i>Option flag</i>	The flag indicates whether the issuer has the right to reduce his outstanding debt by purchasing securities in the market. Possible values: Y : Yes N : No C : Conditional	enum	157
zeroCouponFlag	<i>Zero coupon flag</i>	Flag indicating whether the terms and conditions foresee that coupons will be paid. Possible values: - Y : no coupons - N : coupons	bool	158
couponPaymentDate	<i>Current coupon payment date</i>	The date upon which the current coupon will be paid, regardless of the requested reference date.	datetime	159
couponRecordDate	<i>Current coupon record date</i>	The date upon which client holdings are considered in view of the current coupon payment, regardless of the requested reference date.	datetime	160
interestPeriodStartDate	<i>Interest period start date</i>	The first day of the current coupon period, regardless of the requested reference date.	datetime	161
interestPeriodEndDate	<i>Interest period end date</i>	The last day of the current coupon period, regardless of the requested reference date.	datetime	162
couponPaymentFrequency	<i>Coupon payment frequency</i>	The frequency at which the current coupons will be paid, regardless of the requested reference date. Possible values: ANNUA IRREG WEEK ANY MONTH FOURMTHS BIANN OIPED FIVEMTHS BIMTH QUART NINEMTHS DAILY SINGL THIRTYDAY FORTN SMANN NINTYDAY	enum	163

(continued)

Securities reference data *(continued)*

Field name	Business name	Description	Format	Line N°
rateType	<i>Rate type</i>	The type of rate applicable to the calculation of the current coupon, regardless of the requested reference date. Possible values: - FRN: floating rate notes - FIX: fixed rate notes	enum	129
couponInterestRate	<i>Coupon Interest rate</i>	Interest rate that will be used to calculate the current coupon, regardless of the requested reference date.	decimal	165
refBaseIndexIdentifier	<i>Reference base index identifier</i>	The index of reference serving as the basis to calculate the current coupon amount, regardless of the requested reference date.	string	
floatingRateMargin	<i>Floating Rate Margin</i>	The percentage, if any, of the fixed margin intervening to determine the total interest rate, for the current coupon, regardless of the requested reference date.	decimal	
couponFunction	<i>Coupon function</i>	Explains how to apply the Floating rate Margin for the current coupon, regardless of the requested reference date, compared to the reference base index. Possible values: - A : Add the margin to the basis index rate - D : Deduct the margin from the basis index rate - R : Reverse by deducting the basis index rate from the margin	enum	
couponGrossAmount	<i>Current coupon gross amount</i>	The gross amount that will be paid for the current coupon, regardless of the requested reference date.	decimal	166

Aggregated data

Confidentiality of client data is of paramount importance to us. Therefore, we have defined a number of rules that limit the reported information if a minimum number of transactions and/or a minimum number of holders has not been reached in the period under consideration.

All data is expressed in face nominal amount, even if the security is originally set up in units.

Aggregated holding data

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Field name	Business name	Description	Format	Line N°
freeFloatHolding	<i>Free-float holding</i>	The current holding free-float of the financial instrument is calculated by subtracting the total balance held by central banks or by collateral takers in Euroclear group from the total balance of the financial instrument held in Euroclear group on the reference date. If there is no holding, the system will report '0' (zero).	decimal	7
concentration	<i>Concentration</i>	The number of holders over which the securities holdings are spread. If there are one or two holders, or if there was no holding on the reference date, then the system will not report this field.	int	13
averageHoldingSize	<i>Average holding size</i>	The average amount of holding per holder. If there are one or two holders, or if there was no holding on the reference date, then the system will not report this field.	decimal	14
medianHoldingSize	<i>Median holding size</i>	The Median holding size is the middle value of the sorted list of all holding size values. If there are one or two holders, or if there was no holding on the reference date, then the system will not report this field.	decimal	20

Aggregated transaction data

Our algorithm filters out instructions in the following cases:

- primary market activity (new issues instructions)
- instructions related to, or generated by, other Euroclear services such as triparty collateral management, auto-collateralisation, securities lending and borrowing, processing of corporate actions elections and market claims;
- bilateral repo instructions flagged by clients and/or detected by Euroclear;
- client intra-family instructions;
- central bank instructions; and,
- technical movements e.g. instructions related to Euroclear internal accounts, realignment instructions between Euroclear entities, and activity with agents and depositaries.

On 16 October 2023, we upgraded the filtering performance for the instructions. Please note that this may result in a drop in figures you see as of that date.

For the selected instructions, we convert instructions into transactions.

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.”

Field name	Business name	Description	Format	Line N°
totalVolCurrentBD	<i>Total volume of transactions with contractual settlement date equal to reference date</i>	Defined as the sum of security amounts (nominal or units) of transactions that have a contractual settlement date equal to the reference date, across the CSD in scope. Status of the transactions can be settled only (i.e. unmatched, unsettled and cancelled transactions are excluded). If there were no transactions on the reference date, then the system will not report this field.	decimal	48-->51
totalVolNext1BD	<i>Total volume of transactions with contractual settlement date equal to reference date +1 BD</i>	Defined as the sum of security amounts (nominal or units) of all newly sent transactions with contractual settlement date equal to ref date+1BD (ie transactions that are still pending from earlier business dates are excluded). Status of the transactions can be unmatched, unsettled and settled (i.e. cancelled transactions are excluded). - business days means that weekends are excluded, local bank holidays are included. Euroclear Bank holidays are excluded: 25/12 and 1/1 - this data element is only available for the most recent reference date, it is not available for reference dates in the past If there were no transactions on the reference date + 1BD, then the system will not report this field.	decimal	53-->56
totalVolNext2BD	<i>Total volume of transactions with contractual settlement date equal to reference date +2 BD</i>	Defined as the sum of security amounts (nominal or units) of all newly sent transactions with contractual settlement date equal to ref date+2BD. Status of the transactions can be unmatched, unsettled and settled (i.e. cancelled transactions are excluded). - business days means that weekends are excluded, local bank holidays are included. Euroclear Bank holidays are excluded: 25/12 and 1/1 - this data element is only available for the most recent reference date, it is not available for reference dates in the past If there were no transactions on the reference date + 2BD, then the system will not report this field.	decimal	58-->61
transactionCount	<i>Transaction count</i>	The Transaction count is the number of transactions that are in scope of aggregation Total volume of transactions with contractual settlement date equal to reference date. If there were no transactions or only one or two transactions in that period, the system will not report this field.	int	63

(continued)

Aggregated transaction data *(continued)*

Field name	Business name	Description	Format	Line N°
averageTicketSize	<i>Average ticket size</i>	The total volume of transactions with contractual settlement date equal to the reference date, divided by the Transaction count. If there were no transactions or only one or two transactions in that period, the system will not report this field.	decimal	64,65,66
medianTicketSize	<i>Median ticket size</i>	The median ticket size that is the middle value of the sorted list of all ticket size values. If there were no transactions or only one or two transactions in that period, the system will not report this field.	decimal	70,71,72
averageGrossSettlementPrice	<i>Average gross settlement price</i>	The Average gross settlement price is calculated by making the sum of cash amounts in the transactions, divided by the sum of the nominal amounts in the transactions. The formula considers all transactions, that have a contractual settlement date equal to the reference date, and for which the cash amount is not zero. The cash amounts are converted into the denomination currency of the security.	decimal	67,68,69
settlementVWAP	<i>Settlement VWAP</i>	The settlement value weighted average price is calculated as follows: The sum of (nominal amount of the transaction x settlement price of the transaction) for all transactions that have a contractual settlement date equal to the reference date, divided by the sum of the nominal amounts of all transactions with a contractual settlement date equal to the reference date.	decimal	76,77,78
medianGrossSettlementPrice	<i>Median gross settlement price</i>	The Median gross settlement price is the middle value of the sorted list of all gross settlement price values.	decimal	73,74,75

Statistics available for holding data and transaction data

For each of the holding concepts and transaction concepts, the following statistics are available except for:

- transactions on reference date +1 business day or +2 business days: no SMAs will be available
- Settlement VWAP, averageGrossSettlementPrice, and medianGrossSettlementPrice: will only be available in denomination currency

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Business name	Description	Format	Line N°
<i>Reference date - denomination currency</i>	Calculated as described in the above sections of holding aggregates and transaction aggregates.	decimal	
<i>Reference date - EUR</i>	Same as above, converted into EUR.	decimal	8, 11
<i>Reference date - EUR, market value</i>	Same as above, converted into EUR, expressed in market value.		
<i>Reference date - USD</i>	Same as above, converted into USD.	decimal	9, 12
<i>Reference date - USD, market value</i>	Same as above, converted into USD, expressed in market value.		
<i>simpleMovingAverage 30 - EUR</i>	The simple moving average over 30 working days: counting 30 days back starting from the reference date: - weekends are excluded - bank holidays remain included, except 25/12 and 1/1 - days with zero activity remain included	decimal	Holding: 38-40-42-44 Transactions: 97-99-101-103-105-107-109
<i>Delta (30 & reference date) - %</i>	It is expressed as 'the current value is X% lower/higher than the SMA average'. The formula is (reference date amount-SMA) /SMA. If there were no results in that period or in the current counter, then this field will not be reported.	decimal	Holding: 39-41-43-45 Transaction: 98-100-102-104-106-108-110
<i>simpleMovingAverage 60 - EUR</i>	The simple moving average over 60 working days: counting 60 days back starting from the reference date: - weekends are excluded - bank holidays remain included, except 25/12 and 1/1 - days with zero activity remain included	decimal	Holding:28-30-32-34 Transaction: 81-83-85-87-89-91-93
<i>Delta (60 & reference date) - %</i>	It is expressed as the current value is X% lower/higher than the SMA average. The formula is (reference date amount-SMA) /SMA. If there were no results in that period or in the current counter, then this field will not be reported.	decimal	Holding: 29-31-33-35 Transaction: 82-84-86-88-90-92-94
<i>simpleMovingAverage 260 - EUR</i>	The simple moving average over 260 working days: counting 260 days back starting from the reference date: - weekends are excluded - bank holidays remain included, except 25/12 and 1/1 - days with zero activity remain included	decimal	
<i>Delta (260 & reference date) - %</i>	It is expressed as the current value is X% lower/higher than the SMA average. The formula is (reference date amount-SMA) /SMA. If there were no results in that period or in the current counter, then this field will not be reported.	decimal	

Transaction details

In this section, the transactions are listed for which the contractual settlement date corresponds to the selected reference date. The transactions can be settled only. Transaction details will not be populated if there are less than three settlement transactions on the reference date and will be available after a 30-day delay (i.e. on reference date +30). For confidentiality reasons, we anonymise the identity of the parties to the transaction and instead report on categories of parties.

The set of transactions for which details are available is the same as the one used to build aggregate information, as described in the ‘**Aggregated transaction data**’ section.

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Field name	Business name	Description	Format	Line N°												
contractualSettlementDate	<i>Contractual settlement date</i>	Date at which the financial instruments are contractually to be delivered or received.	datetime	114												
tradeDate	<i>Trade date</i>	Date at which the trade was executed. This field can be blank as it is not always provided in the settlement instruction.	datetime	115												
nominalAmount	<i>Nominal amount</i>	The notional amount of securities.	decimal	116												
cashAmount	<i>Cash amount</i>	Total amount of money to be paid or received in exchange for the financial instrument. Not available for transactions that settle free of payment.	decimal	117												
cashSettlementCurrency	<i>Cash settlement currency</i>	Currency in which the cash amount is expressed. Not available for transactions that settle free of payment.	string	118												
grossSettlementPrice	<i>Gross settlement price</i>	Gross price of the financial instrument. The gross settlement price is calculated by dividing the cash amount of the transaction, converted into the denomination currency of the security, by the nominal quantity. Not available for transactions that settle free of payment.	decimal	119												
deliveringPartyType	<i>Delivering party type</i>	Party that delivers the financial instrument in the settlement transaction. Possible values: <table border="1" style="margin-left: 20px;"> <tr> <td>Broker dealers</td> <td>Government Related</td> <td>Market infrastructures</td> </tr> <tr> <td>Corporates</td> <td>Financial Institutions</td> <td>Other financial institutions</td> </tr> <tr> <td>Depository institutions</td> <td>Insurance</td> <td>Real estate</td> </tr> <tr> <td></td> <td>Investment managers</td> <td></td> </tr> </table> For a definition of each party type, see annex.	Broker dealers	Government Related	Market infrastructures	Corporates	Financial Institutions	Other financial institutions	Depository institutions	Insurance	Real estate		Investment managers		enum	121
Broker dealers	Government Related	Market infrastructures														
Corporates	Financial Institutions	Other financial institutions														
Depository institutions	Insurance	Real estate														
	Investment managers															
receivingPartyType	<i>Receiving party type</i>	Party that receives the financial instrument in the settlement transaction. Possible values: <table border="1" style="margin-left: 20px;"> <tr> <td>Broker dealers</td> <td>Government Related</td> <td>Market infrastructures</td> </tr> <tr> <td>Corporates</td> <td>Financial Institutions</td> <td>Other financial institutions</td> </tr> <tr> <td>Depository institutions</td> <td>Insurance</td> <td>Real estate</td> </tr> <tr> <td></td> <td>Investment managers</td> <td></td> </tr> </table> For a definition of each party type, see annex.	Broker dealers	Government Related	Market infrastructures	Corporates	Financial Institutions	Other financial institutions	Depository institutions	Insurance	Real estate		Investment managers		enum	120
Broker dealers	Government Related	Market infrastructures														
Corporates	Financial Institutions	Other financial institutions														
Depository institutions	Insurance	Real estate														
	Investment managers															

Liquidity scores

For each ISIN, the system defines a group of peer securities, by grouping all securities with the same market, issuer type and tenor.

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Field name	Business name	Description	Format	Line N°
compositeLiquidityScore	<i>Composite liquidity score</i>	For each security in the peer group the system determines the following value: [Total Nominal Amount on latest date that there was activity/Total Nominal Free-Float Holding Amount on the latest date that there was activity] /Number of days since the last transaction. The values are then ranked in descending order, and the list is divided in percentiles. The composite liquidity score corresponds to the percentile that has been assigned to the specified ISIN as a result of the above process.	decimal	2
concentrationWeightedLiquidityScore	<i>Concentration weighted liquidity score</i>	For each security in the peer group the system determines the following value: [Average ticket size on latest activity date/Average Free-Float Holding size on that date] /Number of days since the last transaction. The Concentration weighted liquidity score corresponds to the percentile that has been assigned to the specified ISIN as a result of the above process.	decimal	3
holdingScore	<i>Holding score</i>	For each security in the peer group the system determines the following value: Total Free-Float Holding Amount/Number of days since the last transaction. The values are then ranked in descending order, and the list is divided in percentiles. The Holding score corresponds to the percentile that has been assigned to the specified ISIN as a result of the above process.	decimal	4
turnoverScore	<i>Turnover score</i>	For each security in the peer group the system determines the following value: Total Transaction Amount/ Number of days since the last transaction. The values are then ranked in descending order, and the list is divided in percentiles. The Turnover score corresponds to the percentile that has been assigned to the specified ISIN as a result of the above process.	decimal	5

Substitute securities

For each ISIN, the system defines a group of peer securities by grouping securities with same:

- coupon type: fixed rate coupons, floating rate coupons or zero coupon securities
- nominal currency
- range of maturity date
- rate range for:
 - securities with a fixed interest rate: a similar interest rate
 - securities with a floating interest rate: comparable reference base index and margin
 - zero coupons: n/a

In the column on the right hand side, reference is made to the line number in Annex 5, in which you can find a concrete example.

Top five substitutes	Top five substitutes in sector	Field name	Description	Line N°
<p>To identify the top five substitutes, the system considers an ordered list of peers and reports the five most liquid securities.</p> <p>In case more than 5 securities having with same liquidity score, the system will rank the securities alphabetically on the ISIN code, and report the first 5.</p> <p>There can be less than 5 securities reported , in case of limited peers in the peer group or many illiquid securities.</p>	<p>To identify the top five substitutes in sector, the system considers an ordered list of peers within the same sector and reports the five most liquid securities.</p>	ISIN	The International Securities Identification Number.	125, 136
		Common code	A nine-digit number used to identify securities, which are allocated by either Euroclear or Clearstream Banking Luxembourg and which is common to both ICSDs.	126, 137
		Security name	The name of the financial instrument.	127, 138
		Sector	The industry sector the issuer is active in.	128, 139
		Rate type	The type of rate applicable to the calculation of the current coupon, regardless of the requested reference date.	129, 140
		Nominal currency	The currency in which a financial instrument is currently denominated.	130, 141
		Maturity date	The date on which a financial instrument becomes due and assets are to be repaid.	131, 142
		Liquidity score	The composite liquidity score.	132, 143

Technical specifications

API Specifications

A swagger file containing the API specifications is available upon requests.

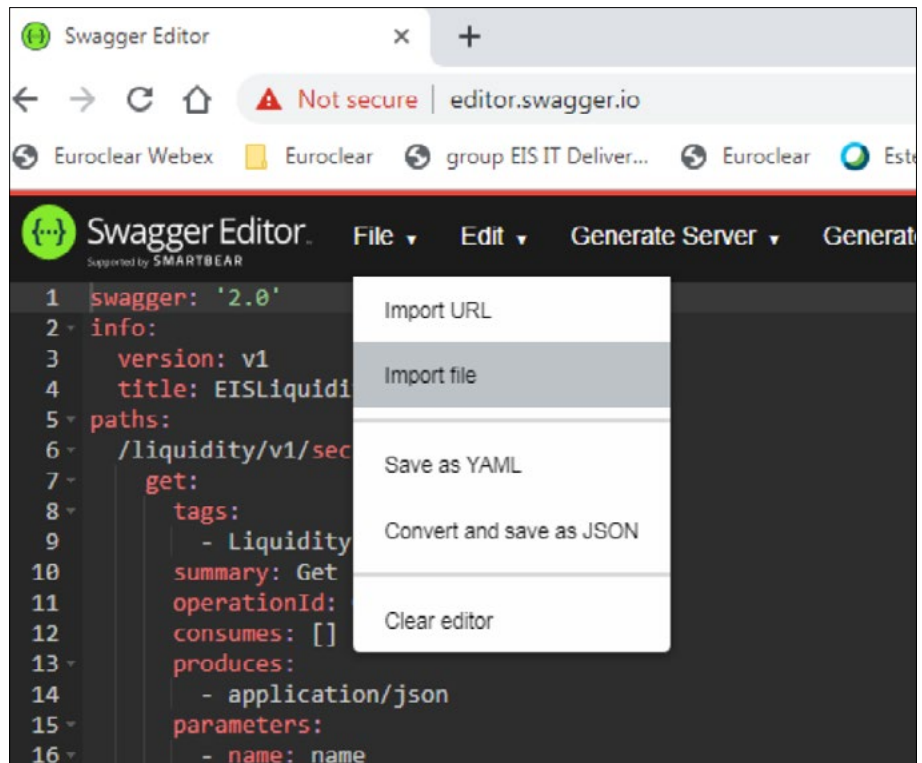
API Client code generators

A swagger codegen tool is available to generate client code of any language using Swagger file.

Go to > <http://editor.swagger.io/>

Go to **File > Import File**, where you import EIS liquidity swagger file

First save this file to your disk to import in tool.



Go to **Generate Client > Select your choice of language** which will download client code on your disk, and you can refer the same to consume EIS liquidity API.

Annex 1

Which markets are included in each of the regions?

To determine which market a security belongs to, first look at the two letters of the ISIN to determine the market.

In absence of an ISIN, we look at the issuer country.

EU region: Europe

Market		Issuer country / First two letters of ISIN			
EU-BNL	Belgium, Netherlands, Luxembourg	BELGIUM	BE		
		LUXEMBURG	LU		
		NETHERLANDS	NL		
EU-CEE	Central and eastern Europe	ALBANIA		LITHUANIA	LT
		AUSTRIA	AT	MACEDONIA	
		BOSNIA-HERZEGOV		MONTENEGRO	
		BULGARIA		POLAND	PL
		CROATIA		ROMANIA	RO
		CZECH REPUBLIC	CZ	SERBIA	RS
		ESTONIA	EE	SLOVAKIA	SK
		HUNGARY	HU	SLOVENIA	SI
		LATVIA/LETONIE	LV	TURKEY	
		LIECHTENSTEIN	LI	UKRAINE	
EU-ESP	Spain	ANDORRA			
		SPAIN	ES		
EU-FRA	France	FRANCE	FR		QS
EU-GER	Germany	GERMANY	DE		
EU-ITA	Italy	ITALY	IT		
EU-NOR	Northern Europe	DENMARK	DK	ICELAND	
		FAEROE ISLANDS	FO	NORWAY	NO
		FINLAND	FI	SWEDEN	SE
		GREENLAND			
EU-STH	Southern Europe	CYPRUS	CY	MONACO	MC
		GREECE	GR	PORTUGAL	PT
		MALTA	MT		
EU-SWI	Switzerland	SWITZERLAND	CH	ISLE OF MAN	
EU-UK	United Kingdom & Ireland	GIBRALTAR	GI	JERSEY C.I.	JE
		GUERNSEY CI	GG	UNITED KINGDOM	GB
		IRELAND	IE	ISLE OF MAN	IM

XS region: XS Eurobonds

EU-XS	International		EU		
			XS		
			XD		

LAE region: LatAm, Apac and Emerging

Market		Issuer country / First two letters of ISIN							
AU&NZ	Australia, New Zealand and Oceania	AUSTRALIA		MARSHALL ISL.	MH				
		COOK ISLANDS		NEW ZEALAND	NZ				
		FIJI ISLES		PAPUA NW GUINEA	PG				
		FRENC.POLYNESIA		TOKELAU					
		GUAM		USA SAMOA					
CIS	Commonwealth of Independent States	ARMENIA		RUSSIAN FEDERAT	RU				
		BELARUS		TAJKISTAN					
		KAZAKSTAN	KZ	UZBEKISTAN					
		MOLDOVA							
HK	Hong Kong	HONG KONG	HK						
JAP	Japan	JAPAN	JP						
LATAM	Latin America	ANGUILLA		COSTA RICA	CR	NETHERL. ANTILLES AN			
		ANTIGUA BARBUDA		CURACAO	CW	NICARAGUA			
		ARGENTINA	AG	DOMINICA		PANAMA	PA		
		ARUBA		DOMINICAN REP		PARAGUAY			
		BAHAMAS	BS	ECUADOR		PERU	PE		
		BARBADOS	BB	EL SALVADOR		PUERTO RICO	PR		
		BELIZE	BZ	FALKLANDS ISLANDS	FK	ST KITTS& NEVIS			
		BERMUDA	BM	FRENCH GUIANA		ST LUCIA			
		BOLIVIA		GRENADA		ST VINCENT-GREN			
		BOUVET ISLAND		GUADELOUP		SURINAME			
		BRAZIL	BR	GUATEMALA		TRINIDAD/TOBAGO			
		BRIT.VIRGIN ISLANDS	VG	HONDURAS		TURKS CAICOS IS			
		CAYMAN ISLANDS	KY	JAMAICA		URUGUAY	UY		
		CHILE	CL	MARTINIQUE		USA VIRGIN ISLANDS	VI		
		COLOMBIA	CO	MEXICO	MX	VENEZUELA			
						GHANA			
		MEA	Middle East & Africa	ALGERIA		JORDAN		SENEGAL	SN
				ANGOLA		KENYA		SEYCHELLES	SC
				AZERBAIJAN		KUWAIT		SOUTH AFRICA	
BAHRAIN	BH			LEBANON	LB	SUDAN			
BENIN				LIBERIA	LR	S.TOME&PRINCIPE			
BOTSWANA				LIBYA		SAUDI ARABIA	SA		
BRT.IND OC TER				MADAGASCAR		SENEGAL			
BURUNDI				MAURITIUS	MU	SEYCHELLES			
CAMEROON	CM			MOROCCO	MA	SOUTH AFRICA	ZA		
CONGO				MOZAMBIQUE		SUDAN			
CONGO (BRAZZA)				NAMIBIA		TANZANIA			
EGYPT				NIGER		TOGO			
ETHIOPIA				NIGERIA		TUNISIA			
GABON	GA			OMAN		UGANDA			
GHANA				QATAR		UTD ARAB EMIRS	AE		
IRAN				REUNION		ZAIRE			
IRAQ				RWANDA		ZAMBIA	ZM		
ISRAEL	IL			S.TOME&PRINCIPE		ZIMBABWE	ZW		
IVORY COAST				SAUDI ARABIA					

(continued)

LAE region: LatAm, Apac and Emerging *(continued)*

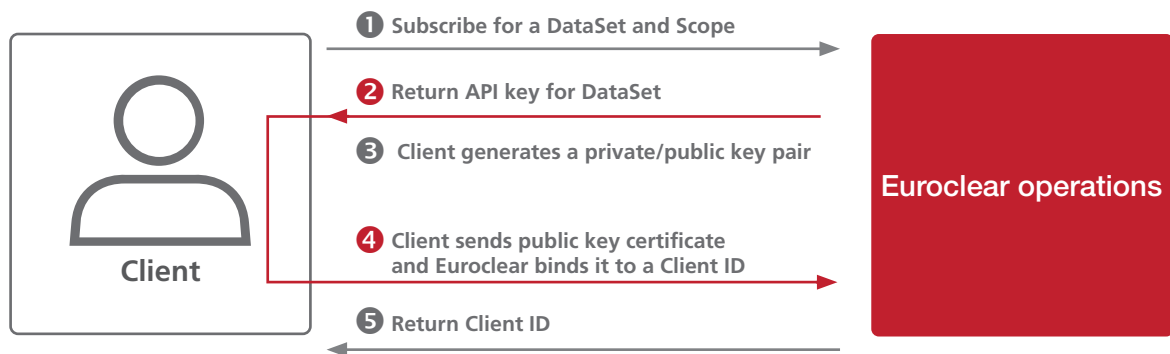
Market		Issuer country / First two letters of ISIN					
ROA	Asia ex-Japan and Hong Kong	AFGHANISTAN		KYRGYSTAN	KG	PHILIPPINES	PH
		BANGLA DESH		MACAO		SINGAPORE	SG
		CHINA	CN	MALAYSIA	MY	SRI LANKA	
		GEORGIA		MALDIVES		TAIWAN	TW
		INDIA	IN	MONGOLIA		THAILAND	TH
		INDONESIA	ID	MYANMAR		VIETNAM	
		KAMPUCHEA		NORTH KOREA			
		KOREA	KR	PAKISTAN			

NAM region: North America

Market		Issuer country / First two letters of ISIN	
CAN	Canada	CANADA	CA
USA	United States of America	UNITED STATES	US

Annex 2

Connectivity setup



- 1 You notify us that you want to subscribe to a specific EIS dataset.
- 2 We generate and return the API key to you.
You will receive one API key for each dataset depth you are subscribing to.
- 3 You generate a private/public key pair.
- 4 You send your public key certificate to us and we bind it to a Client ID.
- 5 We then return the Client ID to you.



For more information on the technical connectivity, please refer to the *Euroclear LiquidityDrive and SettlementDrive Connection guide (OP3289)*

Annex 3

Party type definitions

Party types are derived as follows :

Broker dealers	Includes securities brokers, investment banks and capital market desks.
Corporates	Includes companies producing goods or non financial services
Depository institution	Includes institutions involved in deposit banking or closely related functions like custodians, saving banks, private banks, commercial banks.
Government related financial institutions	Includes all government related institutions such as government agencies, infrastructure and development banks, and supra-national institutions. Central banks are excluded.
Insurance	Represents insurance and reinsurance companies, including insurance agents, brokers & services.
Investment managers	Includes all asset managers, wealth managers, fund managers, ETFs, mortgage lenders, CDOs, CLOs, and Stichtingen.
Market infrastructures	Includes exchanges, clearing houses, CCPs, and CSDs.
Other financial institutions	Includes non deposit taking financial institutions, like consumption credit lenders, fund service companies and trustees.
Real estate	Includes real estate operators, developers, brokers.
Blank	Party data is not available.

Annex 4

Issuer sector values

The possible values for Issuer sector are as follows:

Agriculture, Forestry and Fishing
Communications
Construction
Corporates
Electric, Gas & sanitary services
Financial Institutions
Government
Holding and other investment companies
Insurance
Manufacturing - Chemicals, plastics
Manufacturing - electronics & electrics
Manufacturing - Food
Manufacturing - Glass, stone, concrete, metal
Manufacturing - instruments
Manufacturing - machinery
Manufacturing - miscellaneous
Manufacturing - Paper
Manufacturing - Textile & Leather
Manufacturing - transportation equipment
Manufacturing - Wood & Furniture
Mining
Not categorized
Real estate
Retail Trade
Services
Transportation
Wholesale Trade

Annex 5

JSON response for XS1992154341

The below shows an extract of a JSON file that you will receive when requesting data for this ISIN for reference date December 6, 2019.

Line number	Fields	Line number	Fields
1	{	31	"freeFloatHoldingDelta": 0.0293,
2	"compositeLiquidityScore": 0.9335,	32	"averageHoldingSize": 7652510.2272,
3	"concentrationWeightedLiquidityScore": 0.9709,	33	"averageHoldingSizeDelta": 0.0096,
4	"holdingScore": 0.9973,	34	"medianHoldingSize": 1491991.6667,
5	"turnoverScore": 0.9917,	35	"medianHoldingSizeDelta": -0.0489
6	"aggregatedHoldingData": {	36	},
7	"freeFloatHolding": 772618000.0000,	37	"30": {
8	"freeFloatHoldingEur": 772618000.0000,	38	"concentration": 100.0000,
9	"freeFloatHoldingUsd": 857142416.5533,	39	"concentrationDelta": 0.0000,
10	"freeFloatMarketValue": 859305739.6000,	40	"freeFloatHolding": 741525300.0000,
11	"freeFloatMarketValueEur": 859305739.6000,	41	"freeFloatHoldingDelta": 0.0419,
12	"freeFloatMarketValueUsd": 953313795.6908,	42	"averageHoldingSize": 7410067.4875,
13	"concentration": 100.0,	43	"averageHoldingSizeDelta": 0.0427,
14	"averageHoldingSize": 7726180.0000,	44	"medianHoldingSize": 1441583.3333,
15	"averageHoldingSizeEur": 7726180.0000,	45	"medianHoldingSizeDelta": -0.0157
16	"averageHoldingSizeUsd": 8571424.1655,	46	}}},
17	"averageHoldingSizeMarketValue": 8593057.3960,	47	"aggregatedTransactionData": {
18	"averageHoldingSizeMarketValueEur": 8593057.3960,	48	"totalVolCurrentBD": {
19	"averageHoldingSizeMarketValueUsd": 9533137.9569,	49	"volume": 23404000.0000,
20	"medianHoldingSize": 1419000.0000,	50	"volumeEur": 23404000.0000,
21	"medianHoldingSizeEur": 1419000.0000,	51	"volumeUsd": 25951436.8218
22	"medianHoldingSizeUsd": 1574238.6135,	52	},
23	"medianHoldingSizeMarketValue": 1578211.8000,	53	"totalVolNext1BD": {
24	"medianHoldingSizeMarketValueEur": 1578211.8000,	54	"volume": 26127000.0000,
25	"medianHoldingSizeMarketValueUsd": 1750868.1859,	55	"volumeEur": 26127000.0000,
26	"simpleMovingAverage ": {	56	"volumeUsd": 28985294.0491
27	"60": {	57	},
28	"concentration": 98.0000,	58	"totalVolNext2BD": {
29	"concentrationDelta": 0.0000,	59	"volume": 5130000.0000,
30	"freeFloatHolding": 750640566.6667,	60	"volumeEur": 5130000.0000,

Annex 5 (continued)

Line number	Fields	Line number	Fields
61	"volumeUsd": 5691222.0489	96	"30": {
62	},	97	"concentration": 13.0,
63	"transactionCount": 23.0,	98	"concentrationDelta": 0.0,
64	"averageTicketSize": 1017565.2174,	99	"volume": 12387033.3333,
65	"averageTicketSizeEur": 1017565.2174,	100	"volumeDelta": 0.8894,
66	"averageTicketSizeUsd": 1128323.3401,	101	"averageTicketSize": 1008754.1907,
67	"averageGrossSettlementPrice": 111.3902,	102	"averageTicketSizeDelta": 0.0087,
68	"averageGrossSettlementPriceEur": 111.3917,	103	"medianTicketSize": 580500.0000,
69	"averageGrossSettlementPriceUsd": 111.4788,	104	"medianTicketSizeDelta": -0.3971,
70	"medianTicketSize": 350000.0000,	105	"averageGrossSettlementPrice": 112.0378,
71	"medianTicketSizeEur": 350000.0000,	106	"averageGrossSettlementPriceDelta": -0.7947,
72	"medianTicketSizeUsd": 387835.0033,	107	"medianGrossSettlementPrice": 112.0339,
73	"medianGrossSettlementPrice": 111.3601,	108	"medianGrossSettlementPriceDelta": -0.0060,
74	"medianGrossSettlementPriceEur": 111.3666,	109	"settlementVWAP": 111.3290,
75	"medianGrossSettlementPriceUsd": 111.4843,	110	"settlementVWAPDelta": -0.0310
76	"settlementVWAP": 111.5285,	111	}}},
77	"settlementVWAPEur": 107.8755,	112	"transactionDetails": ⁽¹⁾ [
78	"settlementVWAPUsd": 107.9514,	113	{
79	"simpleMovingAverage": {	114	"contractualSettlementDate": "2019-12-06T00:00:00",
80	"60": {	115	"tradeDate": "2019-12-04T00:00:00",
81	"concentration": 16.0,	116	"nominalAmount": 1000000.0000,
82	"concentrationDelta": 0.0,	117	"cashAmount": 1113966.6700,
83	"volume": 15185250.0000,	118	"cashSettlementCurrency": "EUR",
84	"volumeDelta": 0.5412,	119	"grossSettlementPrice": 111.396600,
85	"averageTicketSize": 975227.6541,	120	"receivingPartyType": "DEPOSITORY INSTITUTIONS"
86	"averageTicketSizeDelta": 0.0434,	121	"deliveringPartyType": "BROKER DEALERS"
87	"medianTicketSize": 581991.6667,	122	}},
88	"medianTicketSizeDelta": -0.3986,	123	"topFiveSubstitutes": ⁽²⁾ [
89	"averageGrossSettlementPrice": 112.5357,	124	{
90	"averageGrossSettlementPriceDelta": -0.7956,	125	"isin": "XS1864418857",
91	"medianGrossSettlementPrice": 112.5618,	126	"commonCode": "186441885",
92	"medianGrossSettlementPriceDelta": -0.0106,	127	"secName": "BANFF MERGER SUB INC REGS",
93	"settlementVWAP": 112.1264,	128	"issuerSector": "Services"
94	"settlementVWAPDelta": -0.0379	129	"rateType": "FIX",
95	},	130	"nominalCurrency": "EUR",

⁽¹⁾ The real version of the sample contains 23 transactions.

⁽²⁾ This block is repetitive 5 times

Annex 5 (continued)

Line number	Fields
131	"maturityDate": "2026-09-01T00:00:00",
132	"compositeLiquidityScore": 0.9673
133	}],
134	"topFiveSubstitutesInSector": ⁽²⁾ [
135	{
136	"isin": "XS1992154424",
137	"commonCode": "199215442",
138	"secName": "ALTICE LUXEMBOURG SA 144A",
139	"issuerSector": "Communications"
140	"rateType": "FIX",
141	"nominalCurrency": "EUR",
142	"maturityDate": "2027-05-15T00:00:00",
143	"compositeLiquidityScore": 0.8962
144	}
145],
146	"referenceDate": "2019-12-06T00:00:00",
147	"isin": "XS1992154341",
148	"commonCode": "199215434",
149	"secName": "ALTICE LUXEMBOURG SA REGS",
150	"nominalCurrency": "EUR",
151	"amountType": "A",
152	"maturityDate": "2027-05-15T00:00:00",
153	"issuerName": "ALTICE LUXEMBOURG SA",
154	"issuerType": "NGOV",
155	"issuerClassification": "Corporation",
156	"issuerSector": "Communications",
157	"optionFlag": "C",
158	"zeroCouponFlag": "N",
159	"couponPaymentDate": "2020-05-15T00:00:00 ",
160	"couponRecordDate": "2020-05-01T00:00:00",
161	"interestPeriodStartDate": "2019-11-15T00:00:00",
162	"interestPeriodEndDate": "2020-05-15T00:00:00",
163	"couponPaymentFrequency": "SMANN",
164	"rateType": "FIX"
165	"couponInterestRate": 8.0000,
166	"couponGrossAmount": 40.00000000000000000000,
167	}



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