



# SDMX-driven dissemination portal

## The BIS Data Portal

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SDMX Global Conference 2023

# Global statistics at the heart of international cooperation



[data.bis.org](https://data.bis.org)



Can everything be maintained in SDMX?



[sdmx.io](https://sdmx.io)

## Users needs and preferences

### General Public



- 👍
- ✓ Introductory content
- ✓ Visual and dashboard
- ✓ Defined tabular content

⚠️ ! Less interested in identifying individual time series

### Journalist



- 👍
- ✓ 'google-like' search
- ✓ Data quality (no bias)
- ✓ Easy download
- ✓ Long time series

🗨️ ✗ Language barrier (especially for non financial experts)

### Academic Researcher



- 👍
- ✓ Bookmark and save data
- ✓ Share and download in CSV or Excel

⚠️ ! Use own analysis software to manipulate data

### Statistician



- 👍
- ✓ Support from BIS staff
- ✓ Save queries for later
- ✓ SDMX artefacts

🗨️ ✗ Metadata not integrated with data  
✗ Long PDF data doc

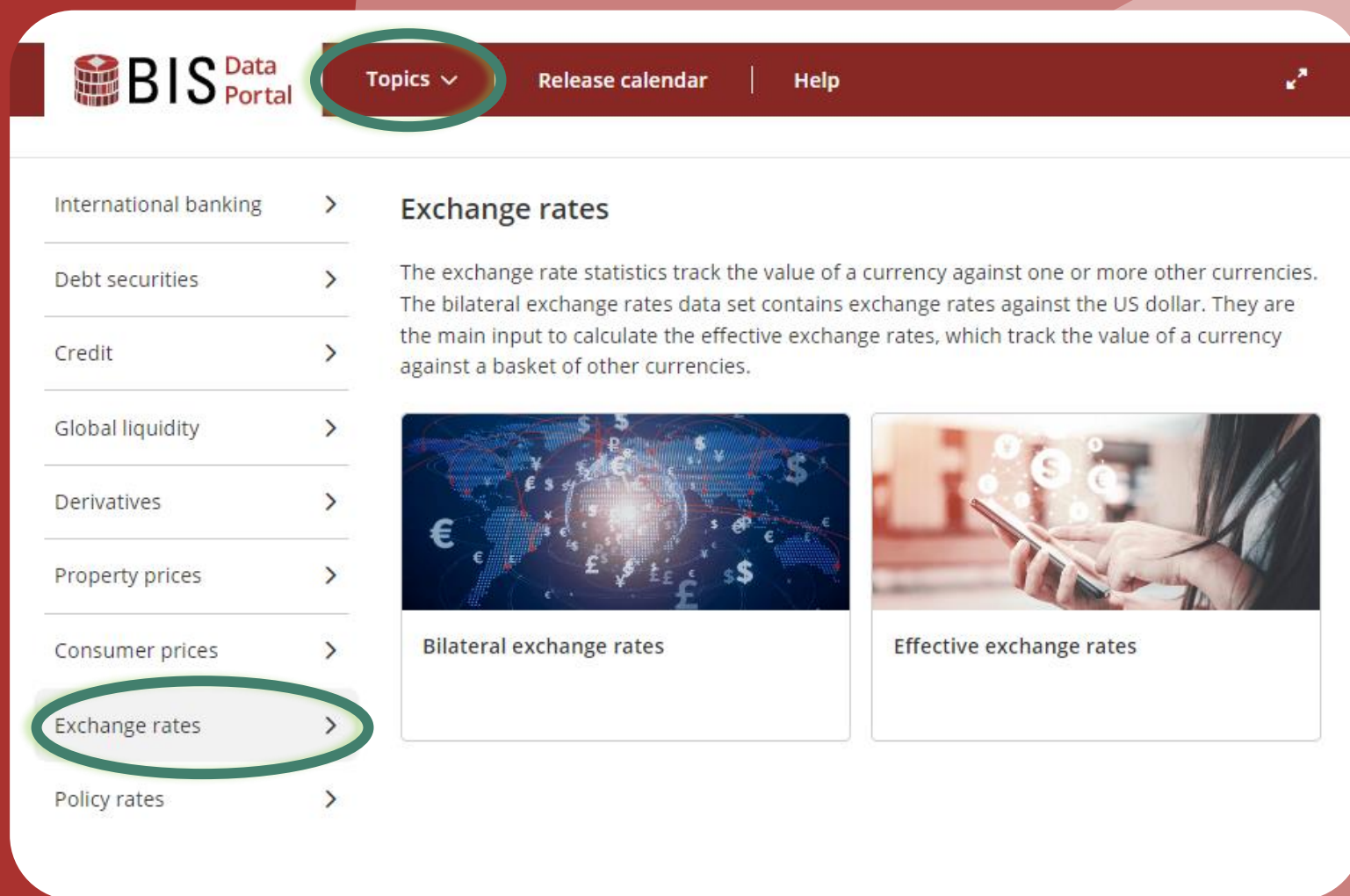


# Data sets

## Navigation by topic

Explore the data sets, grouped in *topics*

A topic contains one or more data sets



The screenshot shows the BIS Data Portal interface. At the top, the 'Topics' dropdown menu is highlighted with a green circle. Below it, a list of topics is shown, with 'Exchange rates' also highlighted by a green circle. To the right, the 'Exchange rates' topic page is displayed, featuring a description of exchange rate statistics and two data set cards: 'Bilateral exchange rates' and 'Effective exchange rates'. The 'Exchange rates' topic is selected, and its content is visible on the right side of the page.

**Exchange rates**

The exchange rate statistics track the value of a currency against one or more other currencies. The bilateral exchange rates data set contains exchange rates against the US dollar. They are the main input to calculate the effective exchange rates, which track the value of a currency against a basket of other currencies.

**Bilateral exchange rates**

**Effective exchange rates**



# Category scheme

## Category scheme

Topics and datasets are maintained in a nested structure

Names and descriptions are displayed the portal

| Id      | Name                     | Description             | Linked Structures |
|---------|--------------------------|-------------------------|-------------------|
| CPI_PDQ | Predefined queries fo... |                         | 2                 |
| EXR     | Exchange rates           | The exchange rate st... | 2                 |
| XRU     | Bilateral exchange rates |                         | 4                 |
| XRU_PDQ | Predefined queries fo... |                         | 2                 |
| EER     | Effective exchange ra... |                         | 5                 |
| EER_PDQ | Predefined queries fo... |                         | 4                 |



# Overview

## Descriptive information

- About
- Methodology documents
- Related research
- FAQs
- ... what else?

### Effective exchange rates

[Overview](#) | [Tables & dashboards](#) | [Data](#)

#### About

The BIS effective exchange rates data set covers long time series on nominal and real effective exchange rates. They can serve as a measure of international competitiveness, components of financial conditions indices or as a gauge of the transmission of external shocks.

The broad effective exchange rate indices cover 64 economies. Narrow indices include 26 and 27 economies for the nominal and real indices, respectively. Nominal effective exchange rates (NEER) are calculated as geometric trade-weighted averages of bilateral exchange rates. Real effective exchange rates (REER) are derived by adjusting the NEER by relative consumer prices.

[Show more](#) ▾

#### Metadata

[Seasonal adjustment](#)

[Frequencies](#)

[Contact](#)

[About](#)

[Metadata](#)

[Methodology](#)

[Research and publications](#)

[Glossary](#)

[FAQs](#)



sdmx.io

# Metadata Report

Based on SDMX 3.0 reference metadata model

Statistician is in control of the information management, e.g. can define new allowed sections

|  |
|--|
| [CONTENT_NAME] Content name                  |
| [CONTENT_URL] Content URL                    |
| [CONTENT_RELEASE_DATE] Content release date  |
| [CONTENT_EMBED] Content embed                |
| [CONTENT_IMAGE] Content image                |
| [CONTENT_RANK] Content rank                  |
| [METADATA] Metadata                          |
| [FREQUENCIES] Frequencies                    |
| [FREQ] FREQ                                  |
| [SEASONAL_ADJUSTMENT] Seasonal adjustment    |
| [SA] Seasonal adjustment applied             |
| [UNITS] Units                                |
| [UNIT_MEASURE] Unit measure                  |
| [COLLECTION_INDICATORS] Collection Indicator |
| [IND] Indicator                              |
| [PUBLICATION] Publication                    |
| [PUB_GROUP] Publication Group                |
| [PUB_GRP_NAME] Publication name              |
| [PUB_GRP_RANK] Publication group rank        |
| [PUB_GRP_URL] Publication url                |

## Valid Content

**Mandatory:** false

**Min Occurs:** 0

**Max Occurs:** unbounded

**Data Type:** BIS:CL\_FREQ(1.0)

**Enumeration Restrictions:** No Additional Restrictions

| Id | Name                                  |
|----|---------------------------------------|
| A  | Annual                                |
| B  | Daily - business week (not supported) |
| D  | Daily                                 |
| E  | Event (not supported)                 |
| H  | Half-yearly                           |
| M  | Monthly                               |
| Q  | Quarterly                             |
| S  | Semi-annual                           |
| W  | Weekly                                |



# Data visualization: tables

Statistician-curated view to present the data to the consumers

More than just row/header:

- Formatting rules
- Calculated values
- Different DSDs

*Historically:*

- PDF publications,
- BIS Statistical Explorer

Locational banking statistics

Overview | **Tables & dashboards** | Data

Home > Topics > Locational banking statistics > Tables & dashboards > Publication table + Create custom table Share Export

Publication tables

Summary of locational statistics, by currency, instrument and residence and sector of counterparty  
Amounts outstanding / Stocks at 2023-Q1, in billions of US dollars

2023-Q1 Measure: Amounts outstanding / Stocks View: Value Level: Level 4

| Label                                   | All sectors |             | Bank sector |             | Non-bank sector |             | Non-bank sector |             | Non-bank sector |             |
|---|-------------|-------------|-------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|
|   | Claims      | Liabilities | Claims      | Liabilities | Claims          | Liabilities | Claims          | Liabilities | Claims          | Liabilities |
| 2023-Q1                                 | 37,400.0    | 34,521.7    | 18,569.6    | 17,649.1    | 11,762.8        | 10,834.5    | 17,152.5        | 11,645.7    | 8,403.3         | 6,846.4     |
| By residence of counterparty, of which: |             |             |             |             |                 |             |                 |             |                 |             |
| Argentina                               | 16.2        | 19.6        | 3.9         | 4.9         | 3.1             | 0.3         | 12.1            | 14.3        | 1.2             | 2.2         |
| Australia                               | 535.0       | 297.0       | 342.4       | 207.5       | 168.9           | 117.6       | 177.7           | 79.1        | 64.5            | 44.9        |
| Brazil                                  | 260.9       | 81.3        | 130.0       | 48.3        | 71.6            | 15.1        | 128.0           | 32.6        | 18.1            | 9.1         |
| Canada                                  | 851.9       | 490.5       | 566.4       | 335.8       | 363.0           | 251.2       | 271.6           | 135.6       | 132.3           | 88.3        |
| China                                   | 937.2       | 978.1       | 509.2       | 659.2       | 251.5           | 376.6       | 409.8           | 301.2       | 73.8            | 49.9        |





# Data visualization: tables

## New FMR feature leveraging existing SDMX artefacts

Fully integrated in the SDMX model

- Scaling figures (with multiplier)
- Multiple data flows
- Formatting
- Calculating cells
- Free text labels
- Time manipulation: offset, frequency conversion, ...
- Conditional variables

Summary of locational statistics, by currency, instrument and residence and sector of counterparty

Amounts outstanding / Stocks at 2023-Q1, in billions of US dollars

2023-Q1 Measure: Amounts outstanding / ... View: Series Key

|  | All sectors                  | Bank sector                  |                              |
|--|------------------------------|------------------------------|------------------------------|
|  |                              | Total                        |                              |
|  | Claims                       | Liabilities                  | Claims                       |
| ✓ Cross-border positions                 | Q.S.C.A.TO1.A.5J.A.5A.A.5J.N | Q.S.L.A.TO1.A.5J.A.5A.A.5J.N | Q.S.C.A.TO1.A.5J.A.5A.B.5J.N |
| ✓ By residence of counterparty, of which |                              |                              |                              |
| Argentina                                | Q.S.C.A.TO1.A.5J.A.5A.A.AR.N | Q.S.L.A.TO1.A.5J.A.5A.A.AR.N | Q.S.C.A.TO1.A.5J.A.5A.B.AR.N |
| Australia                                | Q.S.C.A.TO1.A.5J.A.5A.A.AU.N | Q.S.L.A.TO1.A.5J.A.5A.A.AU.N | Q.S.C.A.TO1.A.5J.A.5A.B.AU.N |
| Brazil                                   | Q.S.C.A.TO1.A.5J.A.5A.A.BR.N | Q.S.L.A.TO1.A.5J.A.5A.A.BR.N | Q.S.C.A.TO1.A.5J.A.5A.B.BR.N |
| Canada                                   | Q.S.C.A.TO1.A.5J.A.5A.A.CA.N | Q.S.L.A.TO1.A.5J.A.5A.A.CA.N | Q.S.C.A.TO1.A.5J.A.5A.B.CA.N |



# Release calendar

## Upcoming and past releases

### Filter by:

- Time
- Data set

The screenshot shows the 'Release calendar of BIS statistics' page. At the top, there is a navigation bar with the BIS Data Portal logo, 'Topics', 'Release calendar', and 'Help' menus, along with a search bar. Below the navigation bar, the page title 'Release calendar of BIS statistics' is displayed, followed by a brief description: 'This page lists the upcoming and past releases of BIS statistics'. There are two dropdown menus for 'Release date' and 'Data sets', and buttons for navigation (left and right arrows), 'Export', 'Calendar', and 'List'. The main content is a calendar grid for the year 2023, showing releases for September, October, November, and December. Each month's column lists specific release dates and the corresponding statistics, such as 'Bilateral exchange rates', 'Effective exchange rates', 'Policy rates', 'Consolidated banking statistics', 'Credit to the non-financial sector', 'Credit-to-GDP gaps', 'Debt service ratios', 'Exchange-traded derivatives statistics', 'Global liquidity', and 'International debt securities'.



# Release calendar

The Release Calendar has its own DSD

The CATEGORY defines the data set which is released

Viewing: BIS\_RELEASE\_CALENDAR [1.0] X

| Data Providers                         |  |
|--|--|
| N/A                                    |  |
| Dimensions                             |  |
| [FREQ] Frequency                       |  |
| [CATEGORY] CATEGORY                    |  |
| [RELEASE_TYPE] RELEASE_TYPE            |  |
| [TIME_PERIOD] Time period or range     |  |
| Measures                               |  |
| [OBS_VALUE] Observation Value          |  |
| Dataset Attributes                     |  |
| - n/a -                                |  |
| Series Attributes                      |  |
| - n/a -                                |  |
| Observation Attributes                 |  |
| [OBS_STATUS] Observation Status        |  |
| [OBS_PRE_BREAK] Pre-Break Observation  |  |
| [OBS_CONF] Observation confidentiality |  |
| [COMMENTARY] COMMENTARY                |  |
| Group Attributes                       |  |
| - n/a -                                |  |

**Data Type:** BIS:CL\_FREQ(1.0)  
**Enumeration Restrictions:** No Additional Restrictions  
**Text Format:** String - Min Length = 1, Max Length = 1

| Id | Name                                  |
|----|---------------------------------------|
| A  | Annual                                |
| B  | Daily - business week (not supported) |
| D  | Daily                                 |
| E  | Event (not supported)                 |
| H  | Half-yearly                           |
| M  | Monthly                               |
| Q  | Quarterly                             |
| S  | Semi-annual                           |
| W  | Weekly                                |

Showing 1 to 9 of 9 entries

Search:

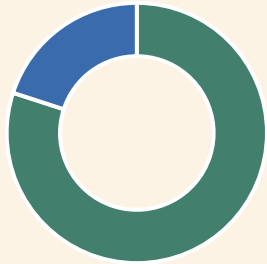
Close

## Where are we now?

Users from 149 countries

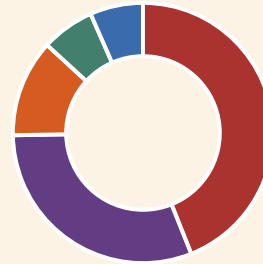
Go-live: 8<sup>th</sup> June

Device



■ desktop ■ mobile

Browser



■ Chrome ■ Edge ■ Safari mobile ■ Chrome mobile ■ Safari

Core functionality used:

- dashboards
- publication tables
- search
- timeseries views
- export ...

Thank you for your  
attention!

Questions



## Annex

Data Portal features and respective SDMX artefacts



# Data exploration

The user is guided in the data exploration

The most relevant dimensions can be filtered

Statistician-selected dimensions help the user familiarize with complex data structures

The screenshot shows the BIS Data Portal interface. At the top, there is a search bar labeled 'Search for time series' and an 'Explore' button. Below the search bar, there are two tabs: 'Topics' and 'Countries'. The 'Topics' tab is active, and a list of topics is displayed. The 'Exchange rates' topic is highlighted with a green circle. Below the 'Exchange rates' topic, there are two sub-topics: 'Bilateral exchange rates' and 'Effective exchange rates'. The 'Bilateral exchange rates' sub-topic is highlighted with a green circle. To the right of the 'Bilateral exchange rates' sub-topic, there is a list of dimensions: 'Collection Indicator', 'Reference area', and 'Frequency'. The 'Collection Indicator' dimension is highlighted with a green circle. Annotations with arrows point to these elements: 'Topic' points to the 'Exchange rates' topic, 'Data set' points to the 'Bilateral exchange rates' sub-topic, and 'Dimensions' points to the 'Collection Indicator' dimension. At the top right of the interface, there is a 'Reset' button and a 'Show 1,234 results' button.



# Data exploration

Topic

Data set (child entry)

Linked structure:  
• Dataflow (the data)  
• Dimensions

| Id      | Name                                      | Description                               | Linked Structures               |
|---------|---|---|---------------------------------|
| EXR     | Exchange rates                            | The exchange rate statistics track the... | 2                               |
| XRU     | Bilateral exchange rates                  |   | 4                               |
|         |   | <b>Structure Type</b>                     | <b>Target Structure</b>         |
|         |   | Dimension                                 | BIS:BIS_XR(1.0).COLLECTION      |
|         |   | Dimension                                 | BIS:BIS_XR(1.0).REF_AREA        |
|         |   | Dataflow                                  | <a href="#">BIS:WS_XRU(1.0)</a> |
|         |   | Dimension                                 | BIS:BIS_XR(1.0).FREQ            |
| XRU_PDQ | Predefined queries for 'Bilateral exch... |   | 2                               |
| EER     | Effective exchange rates                  |   | 5                               |
| EER_PDQ | Predefined queries for 'Effective exch... |   | 4                               |



# Data browsing

- **Data** can be selected with **filters**
- **Attributes on the series level** are displayed in a pop-up

**Time series metadata**

Exchange rates / Bilateral exchange rates | D.AU.AUD.A | BIS\_WS\_XRU.1.0  
Exchange rates against USD, Australia, AUD/USD

| Unit multiplier | Unit              | Unit code | Start date |
|-----------------|-------------------|-----------|------------|
| Units           | Australian dollar | AUD       | 1971-01-04 |
| End date        | Last updated      |           |            |
| 2023-09-11      | 2023-09-14        |           |            |

**Dimensions**   **Attributes**

| Frequency | Reference area | Currency                | Collection indicator                       |
|-----------|----------------|-------------------------|--|
| [D] Daily | [AU] Australia | [AUD] Australian dollar | [A] Average of observations through period |

[→ Go to time series](#)

**Bilateral exchange rates**

Overview | Tables & dashboards | **Data**

Search for time series in Bilateral exchange rates

Sample tables

Filters

Refine your data selection by specifying the criteria below.

Timespan | Frequency | Reference area

Currency | Collection Indicator

**Time series list**

Table view | List view

View your selection as a list of time series. Alternatively, you can switch to table view and further customise the layout and settings.

1,234 found

End Date

D.AU.AUD.A  
Exchange rates against USD, Australia, AUD/USD

Australian dollar  
1.6

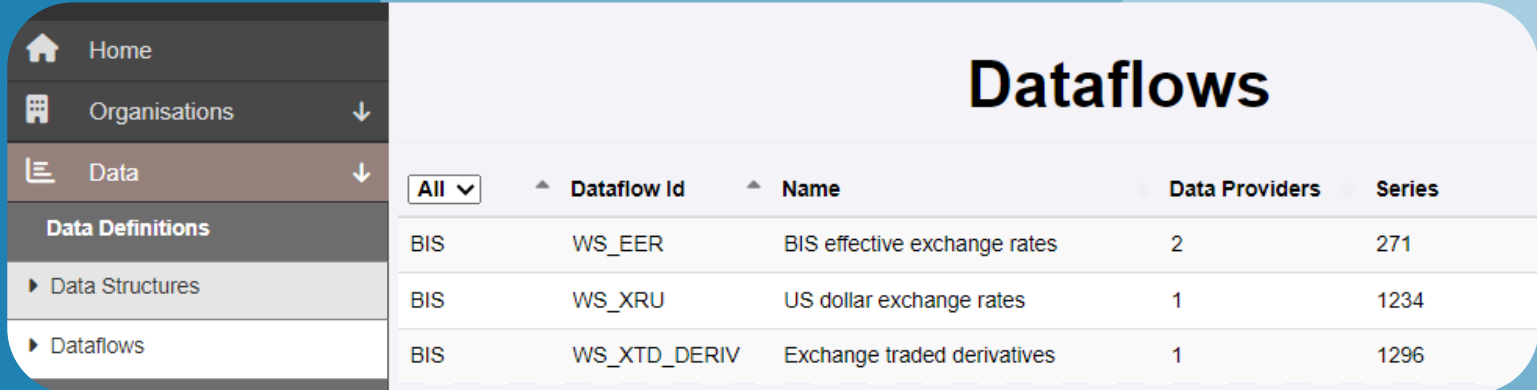
1971-01-04  
Daily (D)

Show metadata



# DSDs and Dataflows

- **Filters** come from the DSD coded dimensions
- Dataflows are queried against the filters and resulting series (data and metadata) are returned in the UI
- Queries can be reproduced with the BIS SDMX restful API



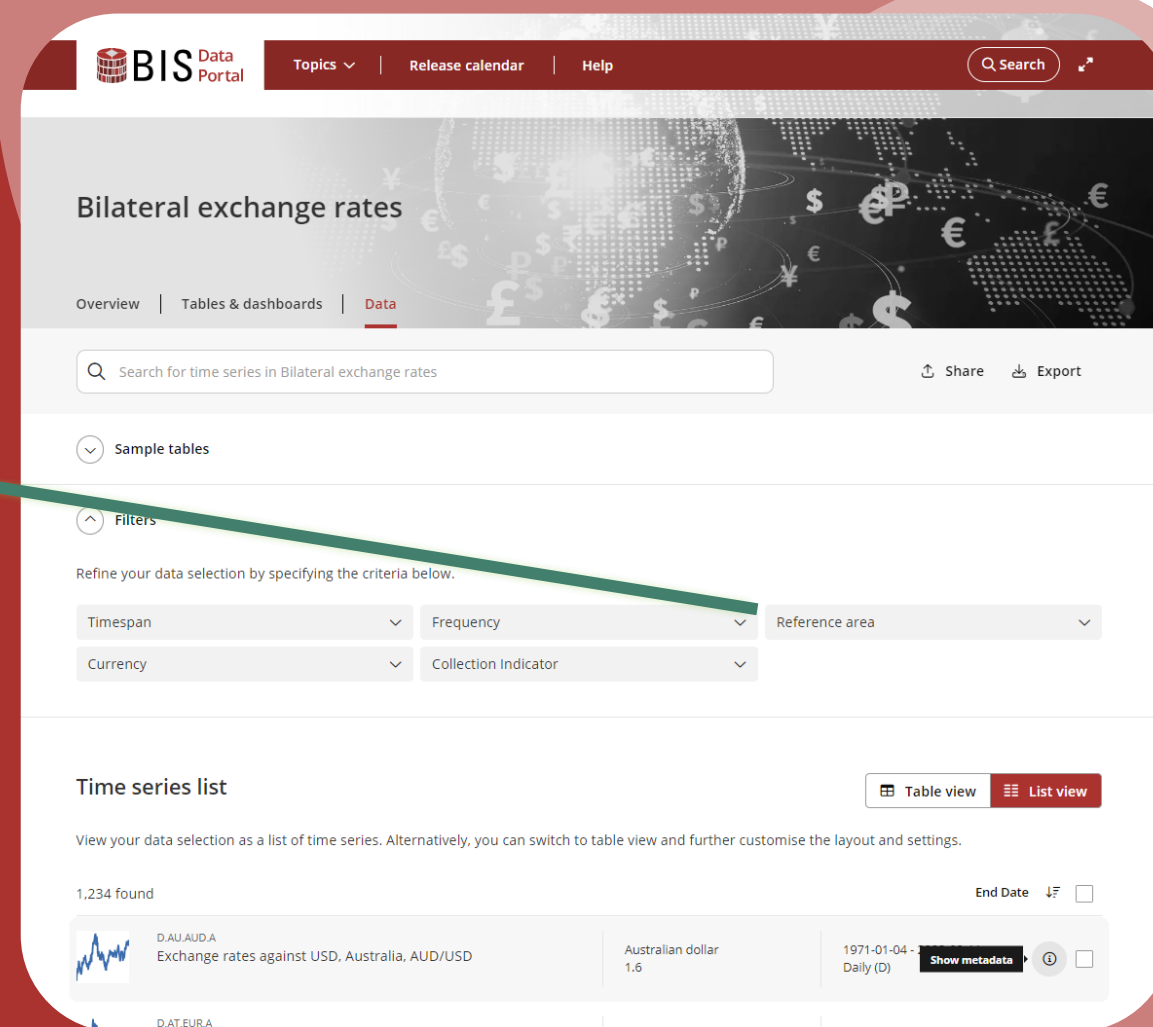
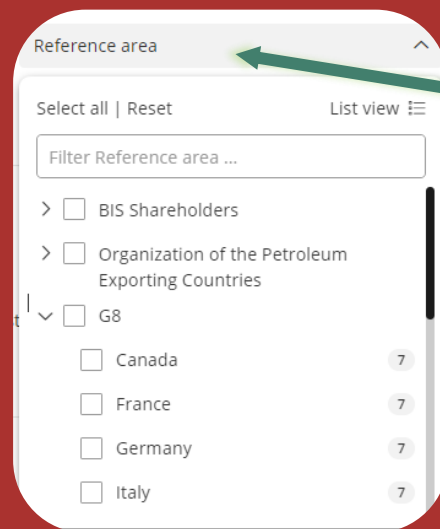
| All | Dataflow Id  | Name                         | Data Providers | Series |
|-----|--------------|------------------------------|----------------|--------|
| BIS | WS_EER       | BIS effective exchange rates | 2              | 271    |
| BIS | WS_XRU       | US dollar exchange rates     | 1              | 1234   |
| BIS | WS_XTD_DERIV | Exchange traded derivatives  | 1              | 1296   |



# Data browsing

## Tree view

Lengthy codelists displayed in groups to ease display and selection





# Hierarchies

A hierarchy is implemented on top of the country codelist

▼ EU - European Union (the)

- AT - Austria
- BE - Belgium
- BG - Bulgaria
- CY - Cyprus
- CZ - Czechia
- DE - Germany
- DK - Denmark
- EE - Estonia
- ES - Spain
- FI - Finland
- FR - France
- GB - United Kingdom (the)
- GR - Greece
- HR - Croatia
- HU - Hungary
- IE - Ireland

? Time period:

Invalid codes:

# Workflow

