

Using the Open Data Service Interface

28 March 2023  
BOF/FIN-FSA-UNRESTRICTED

Public

## Using the Open Data Service Interface

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## 1 Loading Data Using API

Go to the address: [Bank of Finland / Financial Supervisory Authority open data developer portal \(boffsaopendata.fi\)](https://boffsaopendata.fi). There is no need to register or log in to the service. Choose from the top of the page "APIS" and select newest version of the Time series statistics (while writing it was v4):

The screenshot shows the top navigation bar with links for HOME, APIS, PRODUCTS, and ISSUES, and a SIGN IN button. Below the navigation bar, the main heading is "APIs" with a search box. The content is organized into sections: "Banking Calendar" (v1), "BoFCoRe" (v1), "Reference Rates" (Original and v2), and "Timeseries statistics" (v3, v4, v2). The v4 version of Timeseries statistics is highlighted as the latest version.

**SUOMEN PANKKI** EUROJÄRJESTELMÄ | **FINLANDS BANK** EUROSYSTEMET | **FIN-FSA** FINANSSIVALVONTA

HOME APIS PRODUCTS ISSUES SIGN IN

### APIs

Search

#### Banking Calendar

- v1  
The data provides Finnish National Bank Holidays when banks are closed, in two sets: All National Bank Holidays and National Bank Holidays, when TARGET system is open.

#### BoFCoRe

- v1

#### Reference Rates

- Original  
The exchange rates are euro reference rates published by the European central bank. The reference rates are published daily at about 5 PM Finnish time, when the TARGET system is open. The reference rates are published for the information of the public and different institutions but not as a basis for trade.
- v2  
The exchange rates are euro reference rates published by the European central bank. The reference rates are published daily at about 5 PM Finnish time, when the TARGET system is open. The reference rates are published for the information of the public and different institutions but not as a basis for trade.

#### Timeseries statistics

The data provides Bank of Finland's timeseries data from the different topics. See full list of datasets by using v4 Datasets -API.

- v3  
Deprecated. Use v4 instead.
- v4  
Latest version of timeseries data.
- v2  
Deprecated. Use v4 instead.

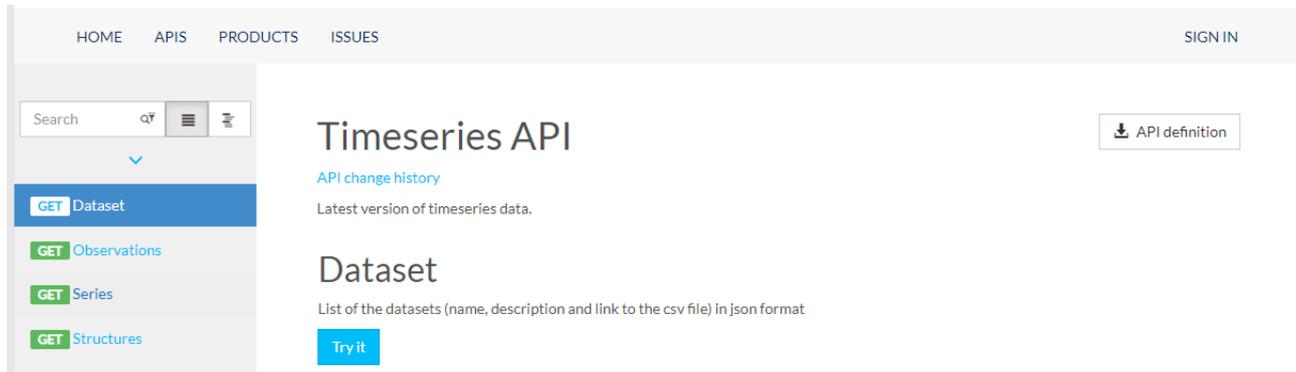
## 2 Dataset Names

To retrieve the names of datasets, go to "GET dataset" in the developer portal. Here you can find information about the names, descriptions, and the number of time series in the Bank of Finland's data sets. Search the list of datasets by clicking "Try it" and explore the datasets.

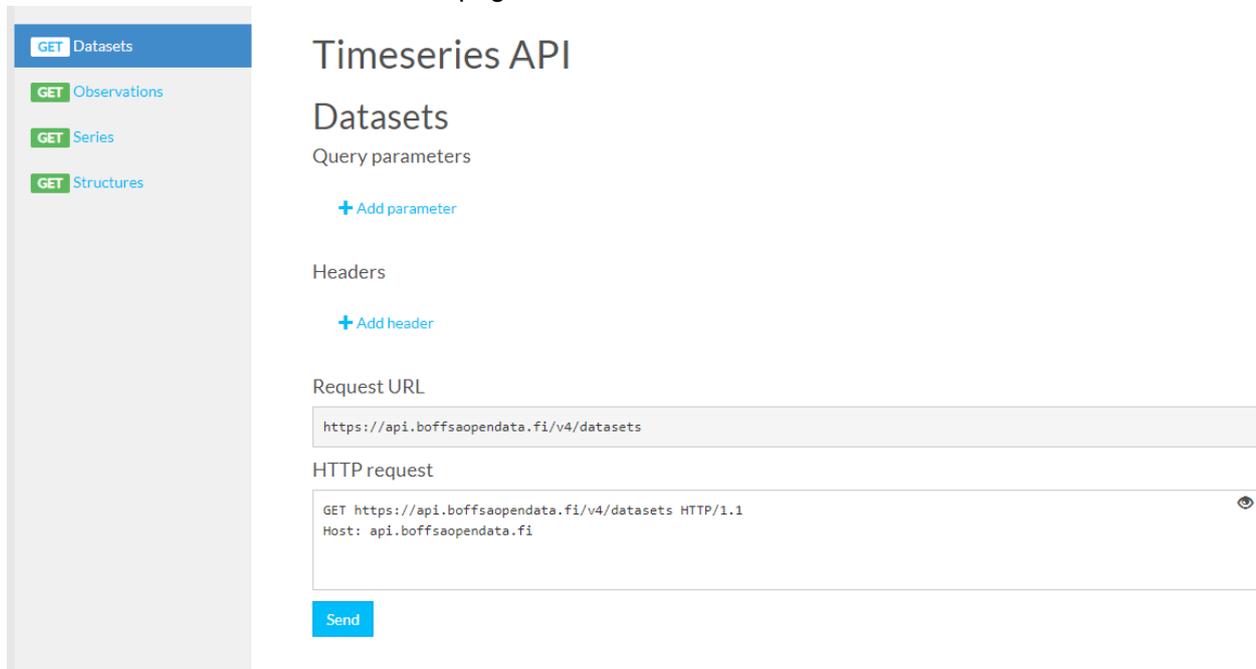
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Press "send" from the bottom of the page.



Copy "Request URL" field and open the dataset with for example Excel (see Search for Time Series Observations further in the instructions). You can also check the information directly from the "Response Content" section. For example, a user looking for information on household loans and deposits could take a closer look at the time series of the MFI\_PUBL dataset.

```
"name": "MFI_PUBL",  
  "description": "The data set provides information on loans and deposits, collected from credit institutions. The data covers loans and deposits in all currencies, converted into euro. Data are available on stocks, new drawdowns, new agreements and annualised agreed rates. Loans to households are broken down by the purpose of loan. For consumer credit, there is also information on the type of collateral. New drawdowns of loans to non-financial corporations are broken down by the size of loan. Deposits are broken down in deposits with agreed maturity, investment deposits and overnight deposits.",  
  "csvLink": "https://bofprvrpopendata.blob.core.windows.net/csv/mfi_publ.csv",  
  "countOfSeries": 1214  
}]  
}
```

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### 3 Retrieval of Time Series Observations

Select "GET observations" to access observations of the timeseries. Instructions open to the webpage for each field. Dataset field and seriesName are the most important fields from the user point of view.

**Timeseries API**

API change history  
Latest version of timeseries data.

## Observations

List of the series observations (dataset, series name, period, period code, value) in json format

[Try it](#)

### Request

Request URL

```
https://api.boffsaopendata.fi/v3/api/Observations/{dataset}[?seriesName][&startPeriod][&endPeriod][&pageNumber][&pageSize]
```

Request parameters

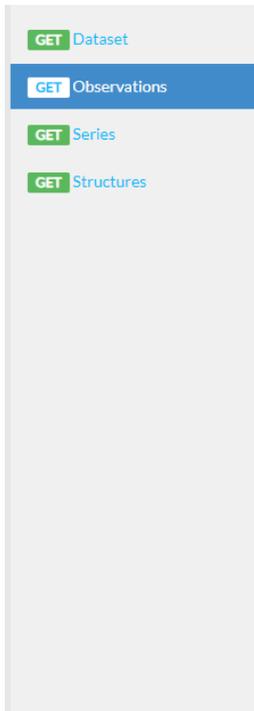
Parameter	Type	Description
dataset	string	Name of the dataset e.g. MFI_PUBL (see full list from Datasets API)
seriesName (optional)	string	Full name of the series or list of series names (separated by semicolon) or series name filter e.g. %Z5.%
startPeriod (optional)	string	Format - date-time (as date-time in RFC3339). Format - date-time (as date-time in RFC3339).
endPeriod (optional)	string	Format - date-time (as date-time in RFC3339). Format - date-time (as date-time in RFC3339).
pageNumber (optional)	integer	Format - int32. Format - int32.
pageSize (optional)	integer	Format - int32. Format - int32.

Press "Try it" to search observations. Use semicolon to separate timeseries when accessing multiple time series. Don't add spaces between multiple timeseries in "seriesName" field. For example when using timeseries M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 and M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 from dataset MFI\_PUBL, write MFI\_PUBL to "dataset" field and write M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0;M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 to "seriesName" field.

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## Timeseries API

### Observations

List of the series observations (dataset, series name, period, period code, value) in json format

#### Query parameters

dataset	<input type="text" value="MF1_PUBL"/>	
seriesName	<input type="text" value="M.A.0.A.L20.A.A.U6.2"/>	<a href="#">✕ Remove parameter</a>
startPeriod	<input type="text" value="Value"/>	<a href="#">✕ Remove parameter</a>
endPeriod	<input type="text" value="Value"/>	<a href="#">✕ Remove parameter</a>
pageNumber	<input type="text" value="1"/>	<a href="#">✕ Remove parameter</a>
pageSize	<input type="text" value="20"/>	<a href="#">✕ Remove parameter</a>

[+ Add parameter](#)

#### Headers

[+ Add header](#)

Press "send" from the bottom of the page after filling up fields. The next part of the instruction applies also to Power BI even though some fields may be located elsewhere than in Excel. Copy "Request URL" field and open Excel. NB! The default pageSize in URL field is pageSize=20. Increase the page size for example to 10000 when extracting a lot of data.

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### Request URL

```
https://api.boffsaopendata.fi/v3/api/Observations/MFI_PUBL?seriesName=M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0;M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0&pageNumber=1&pageSize=20
```

### HTTP request

```
GET https://api.boffsaopendata.fi/v3/api/Observations/MFI_PUBL?seriesName=M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0;M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0&pageNumber=1&pageSize=20 HTTP/1.1  
Host: api.boffsaopendata.fi
```

Send

### Response status

200 OK

### Response latency

265 ms

### Response content

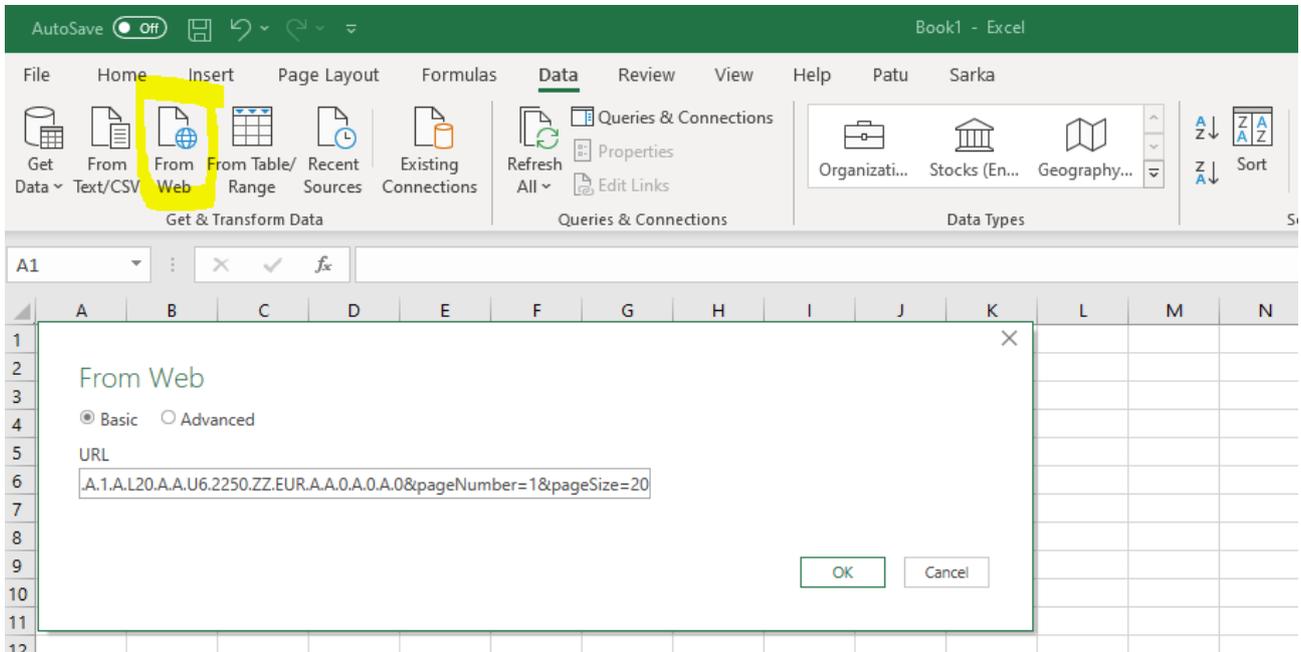
```
Pragma: no-cache  
Transfer-Encoding: chunked  
Cache-Control: no-store, must-revalidate, no-cache  
Set-Cookie: ARRAffinity=ae786a41071179dad918feafa6be2f015be9cf54e3fc2ba567f791444cfe2572;Path=/;HttpOnly;Secure;Domain=rvrp-opendata.azurewebsites.net,ARRAffinitySameSite=ae786a41071179dad918feafa6be2f015be9cf54e3fc2ba567f791444cfe2572;Path=/;HttpOnly;SameSite=None;Secure;Domain=rvrp-opendata.azurewebsites.net  
Strict-Transport-Security: max-age=2592000  
X-Powered-By: ASP.NET  
License: Creative Common CC BY 4.0.  
Request-Context: appId=cid-v1:0a10c7ac-cf90-48dc-85b0-273b2a683bc4  
Date: Wed, 29 Jun 2022 08:45:43 GMT  
Content-Type: application/json; charset=utf-8  
Expires: Wed, 29 Jun 2022 08:45:44 GMT  
  
{  
  "currentPage": 1,  
  "totalPages": 1,  
  "pageSize": 20,  
  "totalCount": 2,  
  "items": [{  
    "dataset": "MFI_PUBL",  
    "name": "M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0",  
    "observations": [{  
      "period": "1997-09-30",  
      "periodCode": "1997M9",  
      "value": 39167.531079971  
    }, {  
      "period": "1997-10-31",  
      "periodCode": "1997M10",  
      "value": 38237.5841618124  
    }  
  ]  
}
```

Go to the Data tab in Excel and choose "From web" and paste the created link:

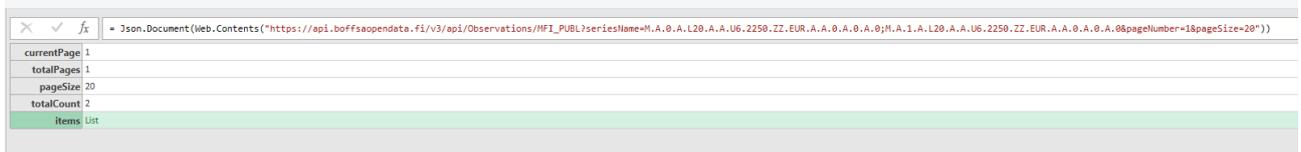
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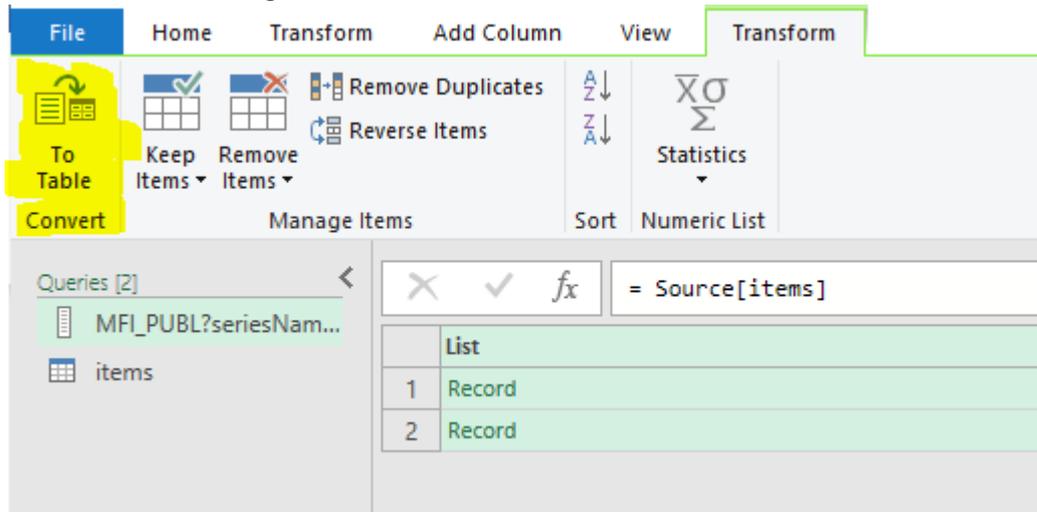
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Select "items" by pressing it.



Convert to table using "To table"-button:



Select OK in the next menu and press the arrows next to the column.

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ABC 123 Column1	
1	Record
2	Record

Click OK after this. Continue the same process until double arrows no longer appear to the columns. Choose "Expand to New Rows" if necessary:

ABC 123 Column1.dataset	ABC 123 Column1.name	ABC 123 Column1.observations
1	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0
2	MFI_PUBL	M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0

Save the final table.

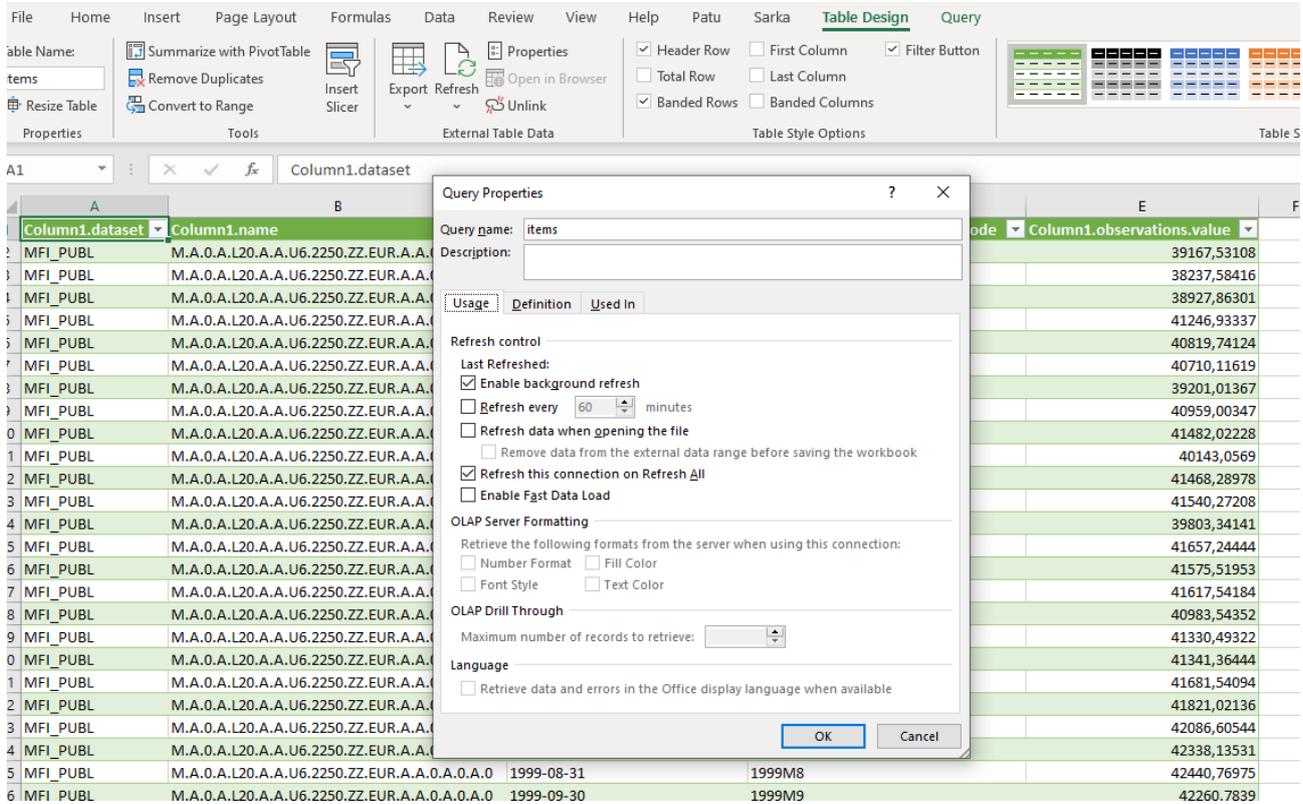
ABC 123 Column1.dataset	ABC 123 Column1.name	ABC 123 Column1.observations.period	ABC 123 Column1.observations.periodCode	ABC 123 Column1.observations.value	
1	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1997-09-30	1997M9	39167,53108
2	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1997-10-31	1997M10	38237,58416
3	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1997-11-30	1997M11	38927,86301
4	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1997-12-31	1997M12	41246,93337
5	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-01-31	1998M1	40819,74124
6	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-02-28	1998M2	40710,11619
7	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-03-31	1998M3	39201,01367
8	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-04-30	1998M4	40959,00347
9	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-05-31	1998M5	41482,02228
10	MFI_PUBL	M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0	1998-06-30	1998M6	40143,0569

You can adjust how often excel refreshes the data. Choose Table design > Properties > Refresh control.

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4 Limiting Observations of Time Series When Searching

Time series can be searched by the full name of the time series, as was done above. For example, when looking for dozens of time series, the above can be tedious. The "%" character can be used to replace the value of a dimension, in which case all values from that dimension will be searched. In the time series retrieved in the previous example M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 and M.A.1.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 are the same except for the third dimension, which has a value of 0 in the first and 1 in the second time series. These time series could be searched with one code M.A.%.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0, which searches all values for the third dimension.

The percent sign can be placed in several places in the search. For example with time series code M.A.%.%.%.%.U6.2251.ZZ.Z01.%.%.%.%.% you can search for 134 timeseries at once. The previous time series code can also be written in the form M.A.%.U6.2251.ZZ.Z01.%. In the time series code described above, all values for the last seven dimensions are retrieved with the last percent sign.

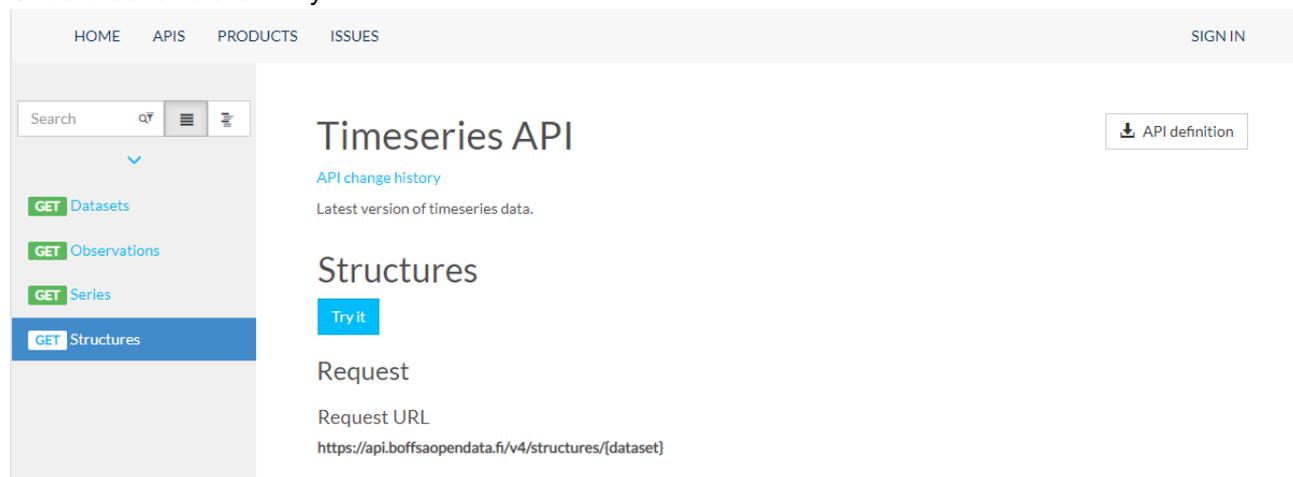
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## 5 Interpretation of Time Series Codes

Time series code is formed with group of 18 dimensions, separated by a dot. For Example, in timeseries M.A.0.A.L20.A.A.U6.2250.ZZ.EUR.A.A.0.A.0.A.0 the first dimension has value M (Monthly) meaning that the frequency of the time series is monthly. In this part of the guide, a table is searched for in Excel, which can be used to interpret the content of the time series one dimension at a time. On the website, go to "GET Structures" and click "Try it".



The screenshot shows the 'Timeseries API' website. The navigation bar includes 'HOME', 'APIS', 'PRODUCTS', 'ISSUES', and 'SIGN IN'. A search bar is located on the left. The main content area is titled 'Timeseries API' and includes a link for 'API change history' and the text 'Latest version of timeseries data.' Below this, the 'Structures' section is highlighted, featuring a 'Try it' button. Underneath, the 'Request' section shows the 'Request URL' as `https://api.boffaopendata.fi/v4/structures/{dataset}`. A 'GET Structures' menu item is selected in the left sidebar, and a 'GET API definition' button is visible in the top right corner.

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The name of the dataset must be entered in the search field, for example MFI\_PUBL. After that, click the "Send" button and copy the "Request URL".

Timeseries API  
Structures

Query parameters

dataset MFI\_PUBL

+ Add parameter

Headers

+ Add header

Request URL

https://api.boffsaopendata.fi/v4/structures/MFI\_PUBL

HTTP request

GET https://api.boffsaopendata.fi/v4/structures/MFI\_PUBL HTTP/1.1  
Host: api.boffsaopendata.fi

Send

Copy the Request URL to Excel as was done in the instructions above. Double-click "dimensions" on the right side of the "List" column.

Record Tools MFI\_PUBL - Power Query Editor

File Home Transform Add Column View Convert

Convert

Into Table

Queries [1] MFI\_PUBL

This preview may be up to 6 days old. Refresh

= Json.Document(Web.Contents("https://api.boffsaopendata.fi/v4/structures/MFI\_PUBL"))

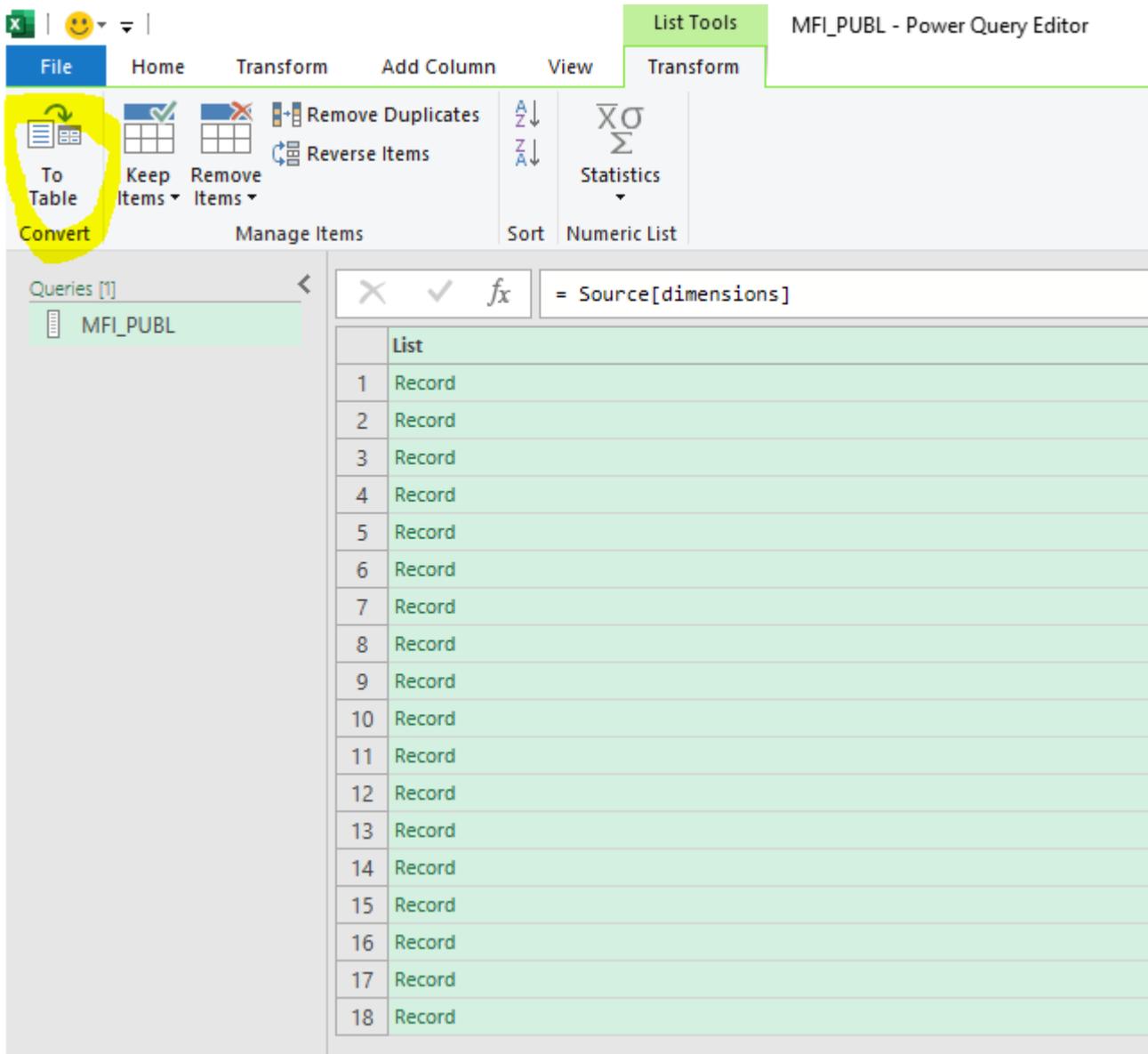
dataset	MFI_PUBL
dimensions	List
metadatas	List

Click "To table" at the top of the page. and click "OK" on the menu that opens.

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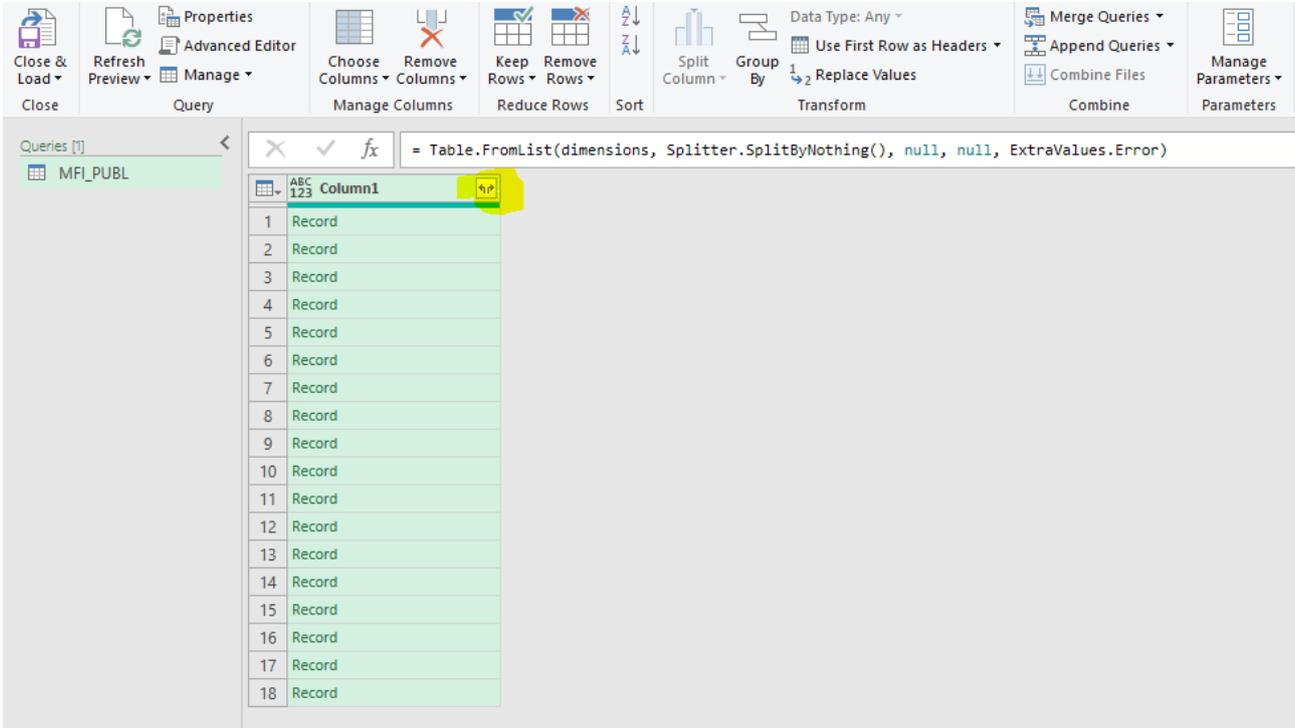


Click the arrow button in the column header and repeat the command until the symbol no longer appears in any column header.

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Finally, press "Close & Load". In the final table, "Column1.position" indicates the dimension under consideration, i.e., how many characters separated by dots are in question. The column "Column1.codelistValues.value" describes the values that the dimension can have and "Column1.codelistValues.description" contains the plain language interpretation of the dimension. For example, the first dimension can have either the value H or M.

	A	B	C	D	E	
1	Column1.name	Column1.descripti	Column1.co	Column1.position	Column1.codelistValues.value	Column1.codelistValues.description
2	FREQ	Frequency	CL_FREQ	1	H	Half-yearly
3	FREQ	Frequency	CL_FREQ	1	M	Monthly
4	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	A	MFIs excl. Bank of Finland
5	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	B	Credit institutions
6	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	L	Commercial banks
7	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	M	MFIs
8	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	O	Cooperative banks
9	REPORTER_GROUP_MFI	MFI reporter group	CL_REPORTER	2	S	Savings banks