

# Reading SDMX Data with SAS

Paul Van Mol



Copyright © SAS Institute Inc. All rights reserved.

1

## SDMX – Statistical Data and Metadata eXchange

[Sdmx.org](http://Sdmx.org)

- ISO Standard to describe statistical data and metadata
- ISTAT offers a SDMX helper and %gettimeseries() macro to retrieve SDMX data from different providers
- SAS Econometrics provides libname several engines
- SDMX-ML allows retrieval of SDMX timeseries in XML and JSON format



Copyright © SAS Institute Inc. All rights reserved.

2

## Reading SDMX Data

with SDMX Helper and %gettimeseries()

- <https://github.com/amattioc/SDMX>
- SDMX Helper: select Data Provider
- Data Flow and Dimensions of the Time Series like currency=USD
- Actions Menu: Build Commands
- The command in SAS uses the %gettimeseries () macro call:

The screenshot shows the SDMX Helper Tool interface. The 'Query' section has 'Provider: ECB' and 'EXR/USD...'. The 'Dataflow selection' section shows a table of dataflows with columns 'Dataflow', 'Version', and 'Agency'. The 'Dimension selection' section shows a table of dimensions with columns 'Dimension', 'Description', and 'Frequency'. The 'Codelet selection' section shows a table of codelets with columns 'Code ID' and 'Code Description'.

Dataflow	Version	Agency
EXR	1.0	ECB
EXR_PUB	1.0	ECB.DISS
EXR_PUB	1.0	ECB.DISS
MOBILE_EXR	1.0	ECB.DISS
EXR	1.0	ECB

Dimension	Description	Frequency
0/FREQ	Frequency	
1/CURRENCY	Currency	
2/CURRENCY_DENOM	Currency denominator	
3/EXR_TYPE	Exchange rate type	
4/EXR_SUFFIX	Series variation - EXR context	

Code ID	Code Description
USD	Us \$-dls
X2	All currencies except USD
X4	All currencies except EUR, USD
X5	All currencies except EUR, JPY, USD
X6	All currencies except EUR, CHF, GBP
X7	All currencies except EUR, USD, JPY
X8	All currencies except USD, EUR, GBP



Copyright © SAS Institute Inc. All rights reserved.

3

## Reading SDMX Data

with SDMX Helper and %gettimeseries()

- <https://github.com/amattioc/SDMX>

Actions Menu: Build Commands

The command in SAS uses the

%gettimeseries () macro call:

The screenshot shows the SDMX Helper Tool interface with the 'Actions' menu open. The menu options are 'Copy selection', 'Build commands', and 'Add provider...'. The 'Build commands' option is highlighted.

The screenshot shows the 'Commands in statistical tools' window. It displays the SAS command for reading SDMX data:

```

R COMMAND:
result = getTimeSeries('ECB', 'EXR/.USD...');

MATLAB COMMAND:
result = getTimeSeries('ECB', 'EXR/.USD...');

SAS COMMAND:
%gettimeseries(provider="ECB", tsKey="EXR/.USD...", metadata=1);

STATA COMMAND:
getTimeSeries ECB EXR/.USD... "" "" 0 0

URL:
https://sdw-wsrest.ecb.europa.eu/service/data/ECB%2CEXR%2C1.0/.USD...
  
```



Copyright © SAS Institute Inc. All rights reserved.

4

## Reading SDMX Data

with SDMX Helper and %gettimeseries()

```
/*create the SDMX folder in the home directory of the user*/
%let homedir=%sysget(HOME);
%let path=&homedir;
options dlcreatedir;
libname data "&path/SDMX";

/*clone the SDMX git repository to a local folder*/
data _null_;
RC = GITFN_CLONE("https://github.com/amattioc/SDMX.git",
"&path/SDMX");
run;

/* example Getting Exchange Rates from ECB data provider*/
%gettimeseries(provider="ECB", tsKey="EXR.A.USD.EUR.SP00.A",
metadata=1);
```



Copyright © SAS Institute Inc. All rights reserved.

5

## Reading SDMX Data

using SAS ETS Data Access engines

- IMF data (14742 series) & ECB (13 series) can be read using SASEFRED engine
  - FRED website here: <https://fred.stlouisfed.org/tags/series?t=imf>
  - [The SASEFRED Interface Engine](#)
- ECB data (13 series) can be read using SASEFRED engine- see FRED website here: <https://fred.stlouisfed.org/tags/series?t=ecb>
- ECB data (212,000 series) can be read using SASEQUAN engine.
  - Using the NASDAQ api , see the following documentation page: <https://data.nasdaq.com/data/ECB-european-central-bank/documentation>
- Retrieving OECD Data using SASEOECD engine
  - [https://documentation.sas.com/doc/en/etsug/15.2/etsug\\_saseoecd\\_examples01.htm](https://documentation.sas.com/doc/en/etsug/15.2/etsug_saseoecd_examples01.htm)



Copyright © SAS Institute Inc. All rights reserved.

6

## Reading SDMX Data

using SASEFRED for IMF series

- IMF data (14742 series) & ECB (13 series) can be read using SASEFRED engine
  - FRED website here: "<https://fred.stlouisfed.org/tags/series?t=imf>"
  - [The SASEFRED Interface Engine](#)
- Create an account + create API key
- Select time series



Copyright © SAS Institute Inc. All rights reserved.

7

## Reading SDMX Data

Using SASEFRED libname engine

```
title 'Retrieve Balance of Payment Data for the Exports and Imports';
libname _all_ clear;
libname fred sasefred "&path\viyawhatsnew\sdmx_query\freddata"
OUTXML=fredex01 AUTOMAP=replace
MAPREF=MyMap XMLMAP= "&path\viyawhatsnew\sdmx_query\freddata\fredex01.map"
APIKEY='399eb04a24a59583574beaa2248db31'
IDLIST='bopxgs,bopmgs'
START='1997-01-01' END='2011-01-01'
FREQ='a' OUTPUT=1 AGG='avg' FORMAT=xml;
data export_import;
set fred.fredex01 ;
run;
proc contents data=export_import; run;
proc print data=export_import; run;
```



Copyright © SAS Institute Inc. All rights reserved.

8

## Reading SDMX Data

using SASEQUAN

- ECB data (212,000 series) can be read using SASEQUAN engine.
  - Using the NASDAQ api , see the following documentation page:  
<https://data.nasdaq.com/data/ECB-european-central-bank/documentation>
  - Create an account + create API key
- Data Organization
- [https://data.nasdaq.com/data/{Time-Series\\_Code}](https://data.nasdaq.com/data/{Time-Series_Code}).
- For a complete list of Time-Series Codes included in this data feed, use:
- [https://data.nasdaq.com/api/v3/databases/ECB/metadata?api\\_key=mSqQTWCPgzkiy2KxUjzM](https://data.nasdaq.com/api/v3/databases/ECB/metadata?api_key=mSqQTWCPgzkiy2KxUjzM)



Copyright © SAS Institute Inc. All rights reserved.

9

## Reading SDMX Data

Using SASEFRED libname engine

```
title 'Historical Prices for Oil India Limited';
libname _all_ clear;
libname mylib "C:/workshop/viyawhatsnew/sdmx_query/quant/doc";
libname myQoil sasequan "C:/workshop/viyawhatsnew/sdmx_query/quant/test"
  apikey='mSqQTWCPgzkiy2KxUjzM'
  idlist='NSE/OIL'
  format=XML outXml=oil
  automap=replace mapref=MyMap
  xmlmap="C:/workshop/viyawhatsnew/sdmx_query/quant/oil.map"
  start='2013-09-01'
  end='2013-11-05'
  freq='daily'
  collapse='daily'
;
data mylib.oilall;
  set myQoil.oil;
run;
```



Copyright © SAS Institute Inc. All rights reserved.

10

## Reading SDMX Data

using SAS ETS Data Access engines

- Retrieving OECD Data using SASEOECD engine

– [https://documentation.sas.com/doc/en/etsug/15.2/etsug\\_saseoecd\\_examples01.htm](https://documentation.sas.com/doc/en/etsug/15.2/etsug_saseoecd_examples01.htm)



Copyright © SAS Institute Inc. All rights reserved.

11

## Reading SDMX Data

Using SASEOECD libname engine

```
libname oecddata base "&path/sdmx_query/oecddata";
data keylist0;
  length key0 $8;
  key0='EA17'; output; /* country is euro area; 17 countries */
run;
data keylist1;
  length key1 $8;
  key1='B1_GA'; output; /* transaction is GDP; output approach */
run;
data keylist2;
  length key2 $2;
  key2='C'; output; /* measure is current prices */
run;
title 'Request GDP for EA_17 in Current Prices';
LIBNAME myLib saseoecd "&path/sdmx_query/oecddata"
  setid=SNA_TABLE1_SNA93
  inset0=keylist0 inset1=keylist1
  inset2=keylist2 out=gstart
  ;

data myGDP;
  set myLib.gstart ;
run;
proc print data=myGDP; run;
```



Copyright © SAS Institute Inc. All rights reserved.

12

## Reading SDMX Data

SDMX-ML and SAS XMLV2 Engine

- Retrieving OECD Data using SASEOECD engine
  - [https://documentation.sas.com/doc/en/etsug/15.2/etsug\\_saseoecd\\_examples01.htm](https://documentation.sas.com/doc/en/etsug/15.2/etsug_saseoecd_examples01.htm)
- [OECD Statistics](#)



Copyright © SAS Institute Inc. All rights reserved.

13

## Reading SDMX Data

Using OECD XML Rest Api and XMLV2 libname engine

```
%let homedir=%sysget(HOME);
%let path=&homedir/viyawhatsnew;
%let xmlpath = &path/sdmx_query/;

filename map "&xmlpath.map.txt";
filename resp "&xmlpath.resp.txt";
proc http
  URL="https://stats.oecd.org/restsdmx/sdmx.ashx/GetData/QNA/AUS+AUT.GDP+B1_GE.CU
  R+VOBARSA.Q/all?startTime=2009-Q2&endTime=2011-Q4&format=compact_v2"
  METHOD="GET"
  OUT=resp;
run;quit;

libname resp XMLv2 automap=REPLACE xmlmap=map;
proc datasets;
copy out=WORK in=resp;
run;quit;
```



Copyright © SAS Institute Inc. All rights reserved.

14

