dlstats

Release 0.5.0

January 03, 2016

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CHAPTER 1

Resume

Version 0.5.0

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Repository https://github.com/Widukind/dlstats

Tickets https://github.com/Widukind/dlstats/issues

Doc http://widukind-dlstats.readthedocs.org/en/latest/

CHAPTER 2

Contents:

2.1 What is a dlstats?

This python module retrieves times series from the major statistical offices (Eurostat, World Bank, european statistical officesdots) and records those series in a pyMongo database. MongoDB allows to download the data using a REST interface. Widukind provides a graphical client, and a set of functions for Matlab, R, Excel and pandas.

2.2 API

2.2.1 Fetchers Commons

Fetcher

DlstatsCollection

Providers

Categories

Datasets

Series

Changed in version 0.3.0: Remove Inherit DlstatsCollection

CodeDict

2.2.2 dlstats.fetchers.BEA

2.2.3 dlstats.fetchers.bis

dlstats.fetchers.bis.**extract_zip_file**()

dlstats.fetchers.bis.**csv_dict**()

dlstats.fetchers.bis.**local_read_csv**()

2.2.4 All Fetchers

dlstats.fetchers.ecb

dlstats.fetchers.esri

dlstats.fetchers.eurostat

dlstats.fetchers.IMF

dlstats.fetchers.oecd

dlstats.fetchers.world_bank

2.3 Commands

2.3.1 Environment

Les variables d'environnement peuvent être utilisés pour définir la valeur des options de la ligne de commande.

Toutes les variables de l'application, commence par **DLSTATS_**

Example:

```
$ DLSTATS_DEBUG=True dlstats fetchers run -v -S -f BIS

# Or:

$ export DLSTATS_DEBUG=True
$ dlstats fetchers run -v -S -f BIS

# Is the same as:

$ dlstats fetchers run --debug -v -S -f BIS
```

2.3.2 dlstats.client

```
$ dlstats --help

Usage: dlstats [OPTIONS] COMMAND [ARGS]...

Options:
  --version  Show the version and exit.
  --help     Show this message and exit.

Commands:
  fetchers  Fetchers commands.
  mongo     MongoDB commands.
```

2.3.3 dlstats fetchers

```
$ dlstats fetchers --help

Usage: dlstats fetchers [OPTIONS] COMMAND [ARGS]...

  Fetchers commands.

Options:
  --help  Show this message and exit.

Commands:
  datasets  Show datasets list
  list      Show fetchers list
  report    Fetchers report
  run       Run Fetcher - All datasets or selected...
```

fetchers list

```
$ dlstats fetchers list

-----------------------------------------------------
BIS
INSEE
BEA
IMF
EUROSTAT
WB
-----------------------------------------------------
```

fetchers datasets

```
$ dlstats fetchers datasets

Usage: dlstats fetchers datasets [OPTIONS]

  Show datasets list

Options:
  -f, --fetcher [INSEE|BIS|BEA|IMF|WB|EUROSTAT]
                                  Fetcher choice  [required]
  --help                          Show this message and exit.
```

fetchers report

```
$ dlstats fetchers report --help

Usage: dlstats fetchers report [OPTIONS]

  Fetchers report

Options:
  --mongo-url TEXT  URL for MongoDB connection.  [default:
```

```
                    mongodb://127.0.0.1:27017/widukind]
  --help            Show this message and exit.
```

Example

```
$ dlstats fetchers report
```

```
-------------------------------------------------------------------------------------------
MongoDB: mongodb://127.0.0.1:27017/widukind :
-------------------------------------------------------------------------------------------
Provider             | Dataset                          | Series     | last Update
-------------------------------------------------------------------------------------------
WorldBank            | GEM                              |       9346 | 2015-09-15 21:38:18
Eurostat             | demo_pjanbroad                   |        834 | 2015-04-23 00:00:00
Eurostat             | gov_10a_taxag                    |      94512 | 2015-07-01 00:00:00
Eurostat             | gov_10q_ggnfa                    |      19218 | 2015-07-01 00:00:00
Eurostat             | namq_10_a10_e                    |      24265 | 2015-09-18 00:00:00
Eurostat             | namq_gdp_p                       |      11956 | 2015-04-13 00:00:00
INSEE                | 1427                             |         37 | 1900-01-01 00:00:00
INSEE                | 158                              |        393 | 1900-01-01 00:00:00
IMF                  | WEO                              |      10936 | 2015-04-01 00:00:00
BIS                  | CNFS                             |        938 | 2015-09-16 09:34:20
BIS                  | DSRP                             |         66 | 2015-09-16 08:47:38
-------------------------------------------------------------------------------------------
```

fetchers run

```
$ dlstats fetchers run --help

Usage: dlstats fetchers run [OPTIONS]

  Run Fetcher - All datasets or selected dataset

Options:
  -v, --verbose                   Enables verbose mode.
  -S, --silent                    Suppress confirm
  -D, --debug
  --mongo-url TEXT                URL for MongoDB connection.  [default:
                                  mongodb://127.0.0.1:27017/widukind]
  -f, --fetcher [EUROSTAT|BEA|BIS|IMF|INSEE|WB]
                                  Fetcher choice  [required]
  -d, --dataset TEXT              Run selected dataset only
  --help                          Show this message and exit.
```

2.3.4 dlstats mongo

```
$ dlstats mongo --help

Usage: dlstats mongo [OPTIONS] COMMAND [ARGS]...

  MongoDB commands.

Options:
  --help  Show this message and exit.
```

```
Commands:
  check          Verify connection
  check-schemas  Check datas in DB with schemas
  clean          Delete MongoDB collections
  reindex        Reindex collections
```

mongo check

```
$ dlstats mongo check --help

Usage: dlstats mongo check [OPTIONS]

  Verify connection

Options:
  -v, --verbose     Enables verbose mode.
  --pretty          Pretty display.
  --mongo-url TEXT  URL for MongoDB connection.  [default:
                    mongodb://127.0.0.1:27017/widukind]
  --help            Show this message and exit.
```

Example:

```
$ dlstats mongo check
```

```
-----------------------------------------------------
Connection OK
-----------------------------------------------------
pymongo version : 3.1
-------------------- Server Infos --------------------
{'allocator': 'system',
 'bits': 64,
 'compilerFlags': '/TP /nologo /EHsc /W3 /wd4355 /wd4800 /wd4267 /wd4244 /Z7 '
                  '/errorReport:none /O2 /Oy- /MT /GL',
 'debug': False,
 'gitVersion': '05bebf9ab15511a71bfbded684bb226014c0a553',
 'javascriptEngine': 'V8',
 'loaderFlags': '/nologo /LTCG /DEBUG /LARGEADDRESSAWARE '
                '/NODEFAULTLIB:MSVCPRT',
 'maxBsonObjectSize': 16777216,
 'ok': 1.0,
 'sysInfo': 'windows sys.getwindowsversion(major=6, minor=1, build=7601, '
            "platform=2, service_pack='Service Pack 1') "
            'BOOST_LIB_VERSION=1_49',
 'version': '2.4.14',
 'versionArray': [2, 4, 14, 0]}
-------------------- Host Infos ----------------------
{'extra': {'pageSize': 4096},
 'ok': 1.0,
 'os': {'name': 'Microsoft Windows 7',
        'type': 'Windows',
        'version': '6.1 SP1 (build 7601)'},
 'system': {'cpuAddrSize': 64,
            'cpuArch': 'x86_64',
            'currentTime': datetime.datetime(2015, 11, 5, 7, 9, 6, 766000),
            'hostname': 'admin-VAIO',
            'memSizeMB': 6125,
```

```
            'numCores': 4,
            'numaEnabled': False}}
-----------------------------------------------------
```

mongo check-schemas

```
$ dlstats mongo check-schemas --help

Usage: dlstats mongo check-schemas [OPTIONS]

  Check datas in DB with schemas

Options:
  -v, --verbose             Enables verbose mode.
  -S, --silent              Suppress confirm
  -D, --debug
  --mongo-url TEXT          URL for MongoDB connection.  [default:
                            mongodb://127.0.0.1:27017/widukind]
  -M, --max-errors INTEGER  [default: 0]
  --help                    Show this message and exit.
```

Example:

```
dlstats mongo check-schemas --max-errors 5 --silent
```

```
Attention, opération très longue
check series...
Max error attempt. Skip test !
check categories...
Max error attempt. Skip test !
check datasets...
Max error attempt. Skip test !
check providers...
-------------------------------------------------------------------
Collection           | Count      | Verified   | Errors     | Time
series               |     315032 |       9826 |          5 | 10.488
categories           |       6875 |       1200 |          5 | 0.335
datasets             |         23 |          9 |          5 | 0.012
providers            |          5 |          5 |          0 | 0.001
-------------------------------------------------------------------
time elapsed : 10.841 seconds
```

mongo clean

Warning: Dangerous operation !

```
$ dlstats mongo clean --help

Usage: dlstats mongo clean [OPTIONS]

  Delete MongoDB collections

Options:
  -v, --verbose     Enables verbose mode.
```

```
  -S, --silent      Suppress confirm
  -D, --debug
  --mongo-url TEXT  URL for MongoDB connection.  [default:
                    mongodb://127.0.0.1:27017/widukind]
  --help            Show this message and exit.
```

mongo reindex

Warning: All Writes operations is blocked pending run !

```
$ dlstats mongo reindex --help

Usage: dlstats mongo reindex [OPTIONS]

  Reindex collections

Options:
  -v, --verbose     Enables verbose mode.
  -S, --silent      Suppress confirm
  -D, --debug
  --mongo-url TEXT  URL for MongoDB connection.  [default:
                    mongodb://127.0.0.1:27017/widukind]
  --help            Show this message and exit.
```

2.4 Configuration

2.4.1 Medium

The configuration of dlstats is achieved through editing of an INI file named dlstats. For example, on a UNIX platform, the user-specific configuration would be found in $HOME/.dlstats and the system configuration is in /etc. If the user executing dlstats has a personal configuration file, the system-wide configuration is simply ignored.

2.4.2 Structure

The INI file is divided in sections, enclosed in square brackets.

MongoDB

Those options are passed to the MongoClient instance used by dlstats and follow the pymongo API. Please refer to the pymongo documentation[1]_ for more information.

2.5 Database

2.5.1 Specification

dlstats stores information from various statistical providers. The main goal is to keep up-to-date time series that are useful to the economist as well as their historical revisions.

2.5.2 Structure

The database structure is described in bson[1]_.

Journal

On top of MongoDB internal journaling mechanics, we keep a reference of all operations impacting the database. The method field stores the name of the method from dlstats.

```
journal : {
              _id : MongoID,
              method : str,
              arguments : []
             }
```

Categories

Generic schema

Time series are organized in a tree of categories. Each node stores a reference to the node's children. It provides a simple and efficient solution to tree storage[2]_.

```
categories : {
              _id : MongoID,
              _id_journal : MongoID,
              name : str,
              children_id : [MongoID],
              series_id : [MongoID]
             }
```

Metadata

The metadata differs across statistical providers. We add the corresponding fields when needed.

Eurostat For eurostat, we add a number of URLs for accessing the raw tsv, dft or sdmx files. Also, there is a field for the flowRef identifying the dataflow[3]_. We name codes the nomenclature of attributes that defines atomically the time series. Those codes are only provided for exploration of the database. In the program, a time series is of course identified by its unique id. A document from the codes collection contains all the series related to this code. Consequently, it is possible to query for time series using a set of constraint on codes; at the application level, the client would differentiate all the series_id sets to only get the relevant time series. We keep a pointer to the time series for better performances.

```
categories : {
              _id : MongoID,
              _id_journal : [MongoID],
              name : str,
              children_id : MongoID,
              url_tsv : str,
              url_dft : str,
              url_sdmx : str,
              flowRef : str,
              codes : {
                       _id_journal : MongoID,
```

```
                        name : str,
                        values : {
                                  key : str,
                                  description : str,
                                  series_id : [MongoID]
                                 }
                       }
             }
```

Time series

The values are in a list. The position field in the revisions subcollection relates to the index of that list.

```
series : {
          _id : MongoID,
          _id_journal : MongoID,
          name : str,
          start_date : timestamp,
          end_date : timestamp,
          release_dates : [timestamp],
          values : [float64],
          frequency : str,
          revisions : {
                       value : float64,
                       position : int,
                       release_date : timestamp
                      },
          codes : {
                    name : str,
                    value : str
                   },
          categories_id : MongoID
         }
```

2.5.3 Implementation

MongoDB

Pros

- simple (from a developer perspective)
- large number of drivers
- no ORM headache
- painless sharding
- very large user base
- decent documentation

Cons

- immature (mongodb 1.x was scary, 2.x is stable)

- complex configuration, lot of fine-tuning required
- slow map/reduce

Impact on the structure

Growing documents impact performance and should be avoided. Preallocation can alleviate the issue. Alternatively, setting the padding to a higher value may help but comes with a memory cost.

Large number of keys are bad because MongoDB isn't Python. Collections aren't indexed with hash tables; if the collection has a large number of keys, mongoDB has to do a large number of comparisons to execute a query. In case of reading performance issues, normalization should improve the results.

HDF5

Better than all the other solutions as long as everything is loaded in RAM. Unfit for our job,

Cassandra

Pros

- supported by the Apache Software Foundation
- excellent write performances

2.6 MongoDB Schemas

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- *MongoDB Schemas*
  - *categories*
    - *Fields*
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  - *datasets*
    - *Fields*
    - *Examples*
  - *series*
    - *Fields*
    - *Example - IMF*
    - *Example - WorldBank (GEM)*

2.6.1 categories

Fields

Unique Constraint

Fields provider + categoryCode

id

required Yes

unique Yes

type ObjectID

comments Unique ID

name

required Yes ???

unique No ???

type String

default value null ???

comments ???

- **Examples:**
  - Catches by fishing area - historical data (1950-1999)
  - Soil erosion by water by NUTS 3 regions (data source: JRC)
  - Enterprises in high-tech sectors by NACE Rev.2 activity
  - Enterprises in high-tech sectors by NACE Rev.1.1 activity
  - Business statistics
  - High-technology trade
  - Data on employment at national level

categoryCode

required Yes ???

unique No

type String

default value null ???

comments ???

- **Examples:**
  - fish_ca_h

  - aei_pr_soiler
  - htec_eco_ent2
  - htec_eco_ent
  - htec_sti_pat
  - ipr_dfa_cres

provider

required Yes

unique No

type String

comments Name of Provider

- **Examples:**
  - WorldBank
  - Eurostat
  - INSEE
  - IMF

children

required No

unique No

type Array of bson.objectid.ObjectId or null

default value [None]

comments ???

docHref

required No

unique No

type String

default value null

comments Not used

lastUpdate

required No

unique No

type ISODate / datetime

default value null

comments ???

exposed

required No ???

unique No

type Bool

default value false

comments ???

Examples

```
{
    "_id": ObjectId('559d6f819f8f0807a98ee821'),
    "provider": "WorldBank",
    "docHref": null,
    "lastUpdate": null,
    "children": null,
    "categoryCode": "GEM",
    "exposed": false,
    "name": "GEM"
},
{
    "_id": ObjectId('559e40c29f8f081123ecd8f8'),
    "docHref": null,
    "categoryCode": "WEO",
    "provider": "IMF",
    "exposed": false,
    "name": "WEO",
    "lastUpdate": null,
    "children": null
},
{
    "_id": ObjectId('559d6fc69f8f0807a98f0c2f'),
    "lastUpdate": null,
    "categoryCode": "ei_bcs_cs",
    "exposed": false,
    "children": [
        ObjectId('560287d79f8f0857111ce31d'),
        ObjectId('560287d79f8f0857111ce31e')
    ],
    "provider": "Eurostat",
    "docHref": null,
    "name": "Consumer surveys (source: DG ECFIN)"
}
```

2.6.2 providers

Fields

Unique Constraint

Fields name

id

required Yes

unique Yes

type ObjectID

comments Unique ID

name

required Yes

unique Yes

type String

comments Name of Provider

- **Examples:**
  - WorldBank
  - Eurostat
  - INSEE
  - IMF

website

required Yes ???

unique No

type String

comments URL of Provider Site

Examples

```
{
    "_id": ObjectId('559d6f81bc00a4d38e44ed74'),
    "website": "http://www.worldbank.org/",
    "name": "WorldBank"
},
{
    "_id": ObjectId('559d6fc6bc00a4d38e44ed76'),
```

```
    "website": "http://ec.europa.eu/eurostat",
    "name": "Eurostat"
}
```

2.6.3 datasets

Fields

Unique Constraint

Fields provider + datasetCode

id

required Yes

unique Yes

type ObjectID

comments Unique ID

provider

required Yes

unique No

type String

comments Name of Provider

- **Examples:**
  - WorldBank
  - Eurostat
  - INSEE
  - IMF

datasetCode

required Yes ???

unique No ???

type String

comments ???

- **Examples:**
  - demo_pjanbroad
  - GEM

  - 158
  - 1427
  - 1430
  - WEO
  - namq_gdp_c
  - namq_gdp_k
  - namq_gdp_p
  - nama_gdp_c
  - nama_gdp_k
  - nama_gdp_p
  - namq_10_a10
  - namq_10_an6
  - lfsi_act_q
  - gov_10a_taxag
  - gov_10q_ggdebt
  - gov_10q_ggnfa
  - namq_10_a10_e
  - irt_st_q
  - namq_10_gdp

name

required Yes ???

unique Yes ???

type String

default value null ???

comments ???

- **Examples:**
  - Population on 1 January by broad age group and sex
  - Global Economic Monirtor
  - Harmonised consumer price index - Base 2005 - French series by product according to the European classification
  - Producer price indices of French industry for all markets (base 2010) - Main aggregates
  - Producer price indices of French industry for the French market (base 2010) - Basic price - Main aggregates
  - World Economic Outlook
  - GDP and main components - Current prices

  - GDP and main components - volumes
  - GDP and main components - Price indices
  - Gross value added and income A*10 industry breakdowns
  - Gross fixed capital formation with AN_F6 asset breakdowns
  - Population, activity and inactivity - quarterly data
  - Main national accounts tax aggregates
  - Quarterly government debt
  - Quarterly non-financial accounts for general government
  - Employment A*10 industry breakdowns
  - Money market interest rates - quarterly data
  - GDP and main components (output, expenditure and income)

lastUpdate

required No ???

unique No

type ISODate / datetime

default value null

comments ???

docHref

required No

unique No ???

type String

default value null

comments URL for Dataset ???

- **Examples:**
  - null
  - http://data.worldbank.org/data-catalog/global-economic-monitor
  - http://www.bdm.insee.fr/bdm2/documentationGroupe?codeGroupe=158
  - http://www.bdm.insee.fr/bdm2/documentationGroupe?codeGroupe=1427
  - http://www.bdm.insee.fr/bdm2/documentationGroupe?codeGroupe=1430
  - http://www.imf.org/external/ns/cs.aspx?id=28

dimensionList

required Yes

unique No

type dlstats.fetchers._commons.CodeDict (list of OrderedDict)

default value CodeDict()

comments ???

attributeList

required No

unique No

type dlstats.fetchers._commons.CodeDict (list of OrderedDict)

default value CodeDict()

comments ???

notes

required No

unique No

type String

default value empty string

comments ???

Examples

```
{
    "_id": ObjectId('56016d84fab819e7b143892a'),
    "dimensionList": {
        "geo": [
            [
                "EU28",
                "European Union (28 countries)"
            ],
            [
                "EU27",
                "European Union (27 countries)"
            ],
            [
                "EA19",
                "Euro area (19 countries)"
            ],
            [
                "EA18",
                "Euro area (18 countries)"
            ],
```

```
            [
                "BE",
                "Belgium"
            ],
            [
                "BG",
                "Bulgaria"
            ],
            [
                "CZ",
                "Czech Republic"
            ],
            [
                "DK",
                "Denmark"
            ],
            [
                "DE",
                "Germany (until 1990 former territory of the FRG)"
            ],
            [
                "DE_TOT",
                "Germany (including former GDR)"
            ],
            [
                "EE",
                "Estonia"
            ],
            [
                "IE",
                "Ireland"
            ],
            [
                "EL",
                "Greece"
            ],
            [
                "ES",
                "Spain"
            ],
            [
                "FR",
                "France"
            ],
            [
                "FX",
                "France (metropolitan)"
            ],
            [
                "HR",
                "Croatia"
            ],
            [
                "IT",
                "Italy"
            ],
            [
                "CY",
```

```
                "Cyprus"
            ],
            [
                "LV",
                "Latvia"
            ],
            [
                "LT",
                "Lithuania"
            ],
            [
                "LU",
                "Luxembourg"
            ],
            [
                "HU",
                "Hungary"
            ],
            [
                "MT",
                "Malta"
            ],
            [
                "NL",
                "Netherlands"
            ],
            [
                "AT",
                "Austria"
            ],
            [
                "PL",
                "Poland"
            ],
            [
                "PT",
                "Portugal"
            ],
            [
                "RO",
                "Romania"
            ],
            [
                "SI",
                "Slovenia"
            ],
            [
                "SK",
                "Slovakia"
            ],
            [
                "FI",
                "Finland"
            ],
            [
                "SE",
                "Sweden"
            ],
```

```
            [
                "UK",
                "United Kingdom"
            ],
            [
                "EEA31",
                "European Economic Area (EU-28 plus IS, LI, NO)"
            ],
            [
                "EEA30",
                "European Economic Area (EU-27 plus IS, LI, NO)"
            ],
            [
                "EFTA",
                "European Free Trade Association"
            ],
            [
                "IS",
                "Iceland"
            ],
            [
                "LI",
                "Liechtenstein"
            ],
            [
                "NO",
                "Norway"
            ],
            [
                "CH",
                "Switzerland"
            ],
            [
                "ME",
                "Montenegro"
            ],
            [
                "MK",
                "Former Yugoslav Republic of Macedonia, the"
            ],
            [
                "AL",
                "Albania"
            ],
            [
                "RS",
                "Serbia"
            ],
            [
                "TR",
                "Turkey"
            ],
            [
                "AD",
                "Andorra"
            ],
            [
                "BY",
```

```
                "Belarus"
            ],
            [
                "BA",
                "Bosnia and Herzegovina"
            ],
            [
                "XK",
                "Kosovo (under United Nations Security Council Resolution 1244/99)"
            ],
            [
                "MD",
                "Moldova"
            ],
            [
                "MC",
                "Monaco"
            ],
            [
                "RU",
                "Russia"
            ],
            [
                "SM",
                "San Marino"
            ],
            [
                "UA",
                "Ukraine"
            ],
            [
                "AM",
                "Armenia"
            ],
            [
                "AZ",
                "Azerbaijan"
            ],
            [
                "GE",
                "Georgia"
            ]
        ],
        "freq": [
            [
                "A",
                "Annual"
            ],
            [
                "S",
                "Half-yearly, semester"
            ],
            [
                "Q",
                "Quarterly"
            ],
            [
                "M",
```

```
                "Monthly"
            ],
            [
                "W",
                "Weekly"
            ],
            [
                "B",
                "Business week"
            ],
            [
                "D",
                "Daily"
            ],
            [
                "H",
                "Hourly"
            ],
            [
                "N",
                "Minutely"
            ]
        ],
        "age": [
            [
                "TOTAL",
                "Total"
            ],
            [
                "Y_LT15",
                "Less than 15 years"
            ],
            [
                "Y15-64",
                "From 15 to 64 years"
            ],
            [
                "Y_GE65",
                "65 years or over"
            ],
            [
                "UNK",
                "Unknown"
            ]
        ],
        "sex": [
            [
                "T",
                "Total"
            ],
            [
                "M",
                "Males"
            ],
            [
                "F",
                "Females"
            ]
```

```
        ]
    },
    "lastUpdate": ISODate('2015-04-23T00:00:00.000Z'),
    "attributeList": {
        "obs_status": [
            [
                "b",
                "break in time series"
            ],
            [
                "c",
                "confidential"
            ],
            [
                "d",
                "definition differs (see metadata)"
            ],
            [
                "e",
                "estimated"
            ],
            [
                "f",
                "forecast"
            ],
            [
                "i",
                "see metadata (phased out)"
            ],
            [
                "n",
                "not significant"
            ],
            [
                "p",
                "provisional"
            ],
            [
                "r",
                "revised"
            ],
            [
                "s",
                "Eurostat estimate (phased out)"
            ],
            [
                "u",
                "low reliability"
            ],
            [
                "z",
                "not applicable"
            ]
        ],
        "time_format": [
            [
                "P1Y",
                "Annual"
```

```
            ],
            [
                "P6M",
                "Semi-annual"
            ],
            [
                "P3M",
                "Quarterly"
            ],
            [
                "P1M",
                "Monthly"
            ],
            [
                "P7D",
                "Weekly"
            ],
            [
                "P1D",
                "Daily"
            ],
            [
                "PT1M",
                "Minutely"
            ]
        ]
    },
    "name": "Population on 1 January by broad age group and sex",
    "provider": "Eurostat",
    "datasetCode": "demo_pjanbroad",
    "docHref": null
}
```


2.6.4 series

Fields

Unique Constraint

Fields provider + datasetCode + key

id

required Yes

unique Yes

type ObjectID

comments Unique ID

provider

required Yes

unique No

type String

comments Name of Provider

- **Examples:**
  - WorldBank
  - Eurostat
  - INSEE
  - IMF

key

required Yes

unique Yes

type String

comments Unique key of Serie

- **Examples:**
  - Q.PYP_MNAC.WDA.P3.IT
  - Q.PYP_MNAC.WDA.P3.LU
  - Q.PYP_MNAC.WDA.P3.LV
  - Q.PYP_MNAC.WDA.P31_S13.IT
  - Q.PYP_MNAC.WDA.P31_S13.LU
  - Q.PYP_MNAC.WDA.P31_S13.LV

name

required Yes

unique Yes

type String

comments Unique name of Serie

attributes

required No

unique No

type Dict

comments ???

datasetCode

required Yes ???

unique No ???

type String

comments ???

- **Examples:**
  - GEM
  - nama_gdp_c
  - namq_gdp_c
  - 158
  - 1427
  - 1430
  - WEO
  - namq_gdp_k
  - namq_gdp_p
  - nama_gdp_k
  - nama_gdp_p
  - demo_pjanbroad
  - namq_10_a10
  - gov_10a_taxag
  - namq_10_an6
  - lfsi_act_q
  - gov_10q_ggdebt
  - gov_10q_ggnfa
  - namq_10_a10_e
  - irt_st_q
  - namq_10_gdp

dimensions

required Yes ???

unique No

type Dict

comments ???

startDate

required Yes ???

unique No

type Integer ???

comments ???

endDate

required Yes ???

unique No

type Integer ???

comments ???

frequency

required Yes ???

unique No

type String

comments ???

- **Examples:**
  - A
  - M
  - Q

releaseDates

required Yes ???

unique No

type Array

comments ???

revisions

required Yes ???

unique No

type Dict

comments ???

values

required Yes ???

unique No

type Array

comments ???

notes

required No ???

unique No

type String

comments ???

Example - IMF

```
{
    "_id": ObjectId('560154fe9f8f084db8e653a3'),
    "attributes": {
        "flag": [
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
            "",
```

```
            "",
            "e",
            "e",
            "e",
            "e",
            "e",
            "e",
            "e",
            "e"
        ]
    },
    "datasetCode": "WEO",
    "dimensions": {
        "Scale": "Billions",
        "WEO Country Code": "512",
        "Country": "AFG",
        "Units": "0",
        "Subject": "NGDP"
    },
    "endDate": 50,
    "frequency": "A",
    "key": "NGDP.AFG.0",
    "name": "Gross domestic product, current prices.Afghanistan.National currency",
    "notes": "Expressed in billions of national currency units . Expenditure-based GDP is total fina
    "provider": "IMF",
    "releaseDates": [
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
```

```
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z'),
        ISODate('2015-04-01T00:00:00.000Z')
    ],
    "revisions": {
        "33": [
            {
                "value": "1,148.113",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "34": [
            {
                "value": "1,248.663",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "35": [
            {
                "value": "1,378.499",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "36": [
            {
                "value": "1,526.441",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "37": [
            {
                "value": "1,682.614",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "38": [
            {
                "value": "1,858.130",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ],
        "39": [
            {
                "value": "2,057.319",
                "releaseDates": ISODate('2014-10-01T00:00:00.000Z')
            }
        ]
    },
    "startDate": 10,
    "values": [
        "n/a",
        "n/a",
```

```
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "n/a",
        "181.605",
        "220.013",
        "246.210",
        "304.926",
        "345.817",
        "427.495",
        "517.509",
        "607.227",
        "711.759",
        "836.222",
        "1,033.591",
        "1,114.649",
        "1,165.605",
        "1,250.023",
        "1,382.709",
        "1,535.283",
        "1,699.171",
        "1,884.765",
        "2,081.098"
    ]
}
```

Example - WorldBank (GEM)

```
{
    "_id": ObjectId('55f927739f8f087fa959e3ed'),
    "values": [
        "",
        "0.736533",
        "0.68195",
        "0.714125",
        "0.666342",
        "0.840883",
        "0.881617",
        "1.02235",
        "1.041133",
        "1.085208",
```

```
        "1.222867",
        "1.304292",
        "1.345858",
        "1.480267",
        "2.010875",
        "1.582225",
        "1.327092",
        "1.581",
        "1.506467",
        "2.138275",
        "2.884017",
        "2.759967",
        "2.474358",
        "2.389625",
        "2.439892",
        "2.27315",
        "2.154142",
        "2.09215",
        "2.385942",
        "2.517075",
        "2.569058",
        "2.563233",
        "2.663358",
        "2.454575",
        "2.617542",
        "2.33285",
        "1.907025",
        "1.785242",
        "1.855433",
        "1.725658",
        "1.84335",
        "1.932108",
        "2.129333",
        "2.1048",
        "1.979733",
        "2.512563",
        "2.616948",
        "2.547255",
        "2.602967",
        "3.137989",
        "2.636496",
        "3.351451",
        "4.042094",
        "4.142297",
        "4.073449",
        "4.948254",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA",
        "NA"
    ],
```

```
    "key": "Commodity_Prices.Meat, beef, $/kg, nominal$.A",
    "startDate": -10,
    "releaseDates": [
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
```

```
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z'),
        ISODate('2015-07-08T11:24:24.000Z')
    ],
    "dimensions": {
        "Commodity": "4"
    },
    "name": "Commodity Prices; Meat, beef, $/kg, nominal$; Annual",
    "frequency": "A",
    "attributes": {},
    "endDate": 55,
    "provider": "WorldBank",
    "datasetCode": "GEM"
}
```

2.7 Sources Referential

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- *Sources Referential*
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    - *IN-PROGRESS Australian Bureau of Statistics*
    - *Bank of International Settlements*
    - *IN-PROGRESS Belgium*
    - *IN-PROGRESS Brazil*
    - *IN-PROGRESS Canada*
    - *IN-PROGRESS China*
    - *IN-PROGRESS CIRCAB*
    - *CME groupe*
    - *IN-PROGRESS ECB SDW*
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    - *IN-PROGRESS USA*
    - *World Bank*
  - *Related projects*
    - *IN-PROGRESS Links*
    - *TODO standard*

2.7.1 Standards

IN-PROGRESS SDMX

- Standards for the exchange of statistical information

- Raw data : SDMX-ML(XML),SDMX-EDI(EDIFACT)
- DSD: Data Structure Definition, logical container for specific data with specific format
- Dimension/attribute, identifier, attachement level, code list
- Concept scheme : Dimension(time,country,frequency,topic), Attributes(observation statsus:estimated or provisional), Measures(observation values)
- SDMX Compact, Query
- Cross domain concept
- Provision agreement: describes the way of delivering data in specific DSD at certain period
- SDMX registry: central online repository
- SDMX Technical speficiations:Preparation, SDMX compliance with DSD standard, implementation(installed), production
- Sponsor: BIS, ECB, Eurostat, IMF, OECD, UN, World Bank
- Rest(SDMX2.1): URL with a keyfilter and a periodfilter
- http://sdmx.org
- https://webgate.ec.europa.eu/fpfis/mwikis/sdmx/index.php/Main_Page
- http://sdmx.wikispaces.com/
- http://opensdmx.wikispaces.com/Presentations
- SDMX-JSON:
- SDMX ISO: 17369

TODO Others

TODO RDF

- Resource Description Framework respresentation : metadata data model.

General method for conceptual description or modeling of information that is implemented in web resources, using a variety of syntax notations and data serialization formats.

TODO SAX

- Simple API for XML (Faster and less memory than DOM)

TODO XLST

- eXtensible Stylesheet Transformation of XML

IN-PROGRESS RSS

- Really Simple Syndication: RSS feeds enable publishers to syndicate data automatically

2.7.2 Sources

IN-PROGRESS African Development Bank

- http://dataportal.afdb.org didn't work on 12/28/2013
- xls,pdf?

IN-PROGRESS Asian Development Bank

- files download at https://sdbs.adb.org/sdbs/index.jsp. Yearly data. CSV. PDF file?
- files download at http://aric.adb.org/macroindicators, monthly quaterly yearly indicators. HTML or Excel files.

IN-PROGRESS Australian Bureau of Statistics

- http://stat.abs.gov.au/sdmxws/sdmx.asmx
- http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by+Subject/1407.0.55.002~2013~Main+Features~SDMX+Web+Service+Meth

Bank of International Settlements

- CSV, Excel, SDMX-ML, URL of favorties queries

URLs

- http://www.bis.org/statistics/biswebstats_help.htm

IN-PROGRESS Belgium

IN-PROGRESS Statistics Belgium

- Excel format, could be difficult to download
- http://statbel.fgov.be/fr/statistiques/chiffres/population/

IN-PROGRESS Brazil

IN-PROGRESS Intituto Brasileiro de Geographia e Estatistica

- XLS http://downloads.ibge.gov.br/downloads_estatisticas.htm
- XLS http://servicodados.ibge.gov.br/Download/Download.ashx?u=ftp.ibge.gov.br/Contas_Nacionais/Contas_Nacionais_Trimestr
- http://www.ibge.gov.br/english/default.php
- http://downloads.ibge.gov.br/downloads_estatisticas.htm
- pdf, ods, xls

IN-PROGRESS Canada

- Statistique Canada
- http://www.statcan.gc.ca/concepts/index-fra.htm?MM

IN-PROGRESS China

IN-PROGRESS National Bureau of Statistics of China

- no API? Only web page?
- XLS, until 2011 : http://www.stats.gov.cn/tjsj/ndsj/2012/html/
- XLS, until 2012 : http://www.stats.gov.cn/tjsj/ndsj/2013/html/

IN-PROGRESS CIRCAB

- Communication and Information Resource Centre for Administrations, Businesses and Citizens.
- https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp
- http://ec.europa.eu/idabc/en/document/7400.html
- forge.osor.eu/projects/circabc

CME groupe

- http://www.cmegroup.com
- data on future and option market
- proprietary data, can't be used on our web site

IN-PROGRESS ECB SDW

- http://sdw.ecb.europa.eu/
- SDMX(ML/query), CSV (excel and)
- https://www.ecb.europa.eu/stats/services/sdmx/html/tutorial.en.html

IN-PROGRESS EUROSTAT

- SDMX(REST,SOAP with ZIP),TSV, DFT(multi-dimensional table) with GZ
- Html explorator online search with New (data and DSD) and Modified online search

IN-PROGRESS FAO

- SDMX registry and repo, SDMX-ML
- data.fao.org

Germany

Federal Statistical Office and the statistical Offices of the Länder

- Csv, pdf, xls
- http://www.statistikportal.de/Statistik-Portal/en/en_about.asp
- https://ergebnisse.zensus2011.de/?locale=en#StaticContent:00,,,

IN-PROGRESS DESTATIS

- Federal Statistical Offiice of Germany
- no download or API?
- https://www.destatis.de/EN/Homepage.html

Greece

hellenic Statistical Authority(EL.STAT.)

- http://www.statistics.gr/portal/page/portal/ESYE/PAGE-database
- anonymous users there is an upper limit of 500 records you can extract from the Statistical Database
- XLS, CSV, TEXT
- Difficukt to automatize

IN-PROGRESS IMF

- the data in eLibrary don't seem to be free
- http://www.imf.org/external/data.htm
- World Economic Outlook database: (Tab Delimited Values format) http://www.imf.org/external/pubs/ft/weo/2013/02/weodata/download.aspx
- User Query Test Interface : http://sdmxws.imf.org/Gateway/Home.aspx
- IMF Balance of Payments Pilot SDMX Data Dissemination Site with DSD in XML or excel: http://sdmx.imf.org/bop/

IN-PROGRESS India

Indian Statistical System official statistics

-http://164.100.34.62:8080/dwh/

IN-PROGRESS INSEE

- Banque de données macro-économiques (BDM)(server unavailable?): consult and download more than 170.000 series and index over all economics and social area

IN-PROGRESS ISTAT

- Equivalent of INSEE: old version before 2012 Con.ISAT short term indicator time-series database :prices, industry, services, wages and salaries, employment and labour indicators, foreign trade, national accounts)
- SDMX ML, CSV, excel, beta version,open and free, online API: http://dati.istat.it/
- EUROSTAT SODI (SDMX Open Data Interchange) for exchanging PEEIs (Principal Economical European Indicators) :
- private logging http://sodi.istat.it/progettosodiDW/ or http://bms.istat.it/sodidownload/download.aspx
- https://joinup.ec.europa.eu/community/osor/description
- SDMX is not working?

IN-PROGRESS Japan

Statistics of Japan

- API in Japanese only http://www.stat.go.jp/english/info/news/1957.htm

Bank of Japan

- no API? Only files?

IN-PROGRESS Luxembourg

Central Service for Statistics and Economic Studies (STATEC)

- http://www.statistiques.public.lu/en/index.html

IN-PROGRESS Madagascar

http://www.instat.mg/

IN-PROGRESS Monaco

Monaco Statistics (IMSEE)

- http://www.monacostatistics.mc/Key-Figures

National Bureau of Statistics of China

- no API? Only web page?
- XLS, until 2011 : http://www.stats.gov.cn/tjsj/ndsj/2012/html/
- XLS, until 2012 : http://www.stats.gov.cn/tjsj/ndsj/2013/html/

IN-PROGRESS Netherlands

Statistics Netherlands (CBS)

- Statline : http://statline.cbs.nl/StatWeb/?LA=en

OECD

OpenDataAPI

- http://stats.oecd.org/OpenDataAPI/OData.html
- not all datasets seems to be available with this API

SDMX-JSON API

- http://stats.oecd.org/OpenDataAPI/Json.htm
- SDMX-JSON API is easier and more concise than OData. Data and metadata are obtained in a single call
- The list of datasets must be obtained with OData

Webservice

- http://stats.oecd.org/SDMXWS/sdmx.asmx
- http://stats.oecd.org/SDMXQuery/Home.aspx
- http://sdmx.wikispaces.com/OECD+Web+Service

IN-PROGRESS Portugal

Statistics Portugal (INE)

- http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_base_dados&contexto=bd&selTab=tab2

IN-PROGRESS Russia

http://www.gks.ru/

IN-PROGRESS Sweden

Statistics Sweden

- Statistics Sweden
- PC, excel, csv, tsv

IN-PROGRESS South Korea

Statistics Korea

- http://kostat.go.kr/portal/english/resources/1/index.static

IN-PROGRESS Spain

IN-PROGRESS ILO

- no API, download files
- old database: laborstat, CSV, http://laborsta.ilo.org/
- new database: ilostat, CSV (, TAB ;) http://www.ilo.org/ilostat/faces/home/statisticaldata/bulk-download?_adf.ctrl-state=hlizkfzwc_98&clean=true&_afrLoop=368699868737048
- SDMX http://www.ilo.org/ilostat/sdmx/ws/rest/

IN-PROGRESS INE

- http://www.ine.es/en/inebmenu/indice_en.htm#2
- CSV, excel, or PC-Axis program : http://www.ine.es/ss/Satellite?c=Page&p=1254735116596&pagename=ProductosYServicios%

IN-PROGRESS Swiss

IN-PROGRESS Federal Statistical Office (FSO)

- http://www.pxweb.bfs.admin.ch/Dialog/statfile.asp?lang=2&prod=01
- Excel, PX, CSV

IN-PROGRESS United Nations

IN-PROGRESS National accounts (Excel files)

- http://unstats.un.org/unsd/snaama/dnlList.asp. Easy to download with wget type tool https://www.gnu.org/software/wget/

Monthly Bulletin of Statistics Online (MBS)

- API SOAP : http://unstats.un.org/unsd/mbs/api/wsMbsServices.asmx

IN-PROGRESS United Kingdom

Office for National Statistics (ONS)

- http://www.statistics.gov.uk/hub/statistics-producers/index.html

http://data.gov.uk/

http://www.statsusernet.org.uk/home

http://www.statisticsauthority.gov.uk/

IN-PROGRESS USA

Bureau of Economic Analysis (BEA)

- http://www.bea.gov/iTable/index_nipa.cfm

Bureau of Labor Statistics (BLS)

- http://www.bls.gov/data/

World Bank

IN-PROGRESS General information on API

- http://data.worldbank.org/node/9
- RESTful interfaces
- Indicators (or time series data): API, XML and JSON
- Projects (or data on the World Bank's operations) : Atom representation
- the World Bank financial data (World Bank Finances API):API, XML, JSON and RDF

2.7.3 Related projects

IN-PROGRESS Links

- Haver Analytics(Matlab; STATA, SAS, EVIEWs, RATS): the provider of time series data for the global strategy and research community. Containes more than 200+ databases from over 1200 government and private sources.
- Bloomberg:
- Datastream(Pro):The industry's largest and most trusted set of macro-time series data. Containing up to 50 years of history on many series, over 3.5 million global financial instruments and indicators, more than 10,000 different fields, and more than 75,000 active (and 30,000 inactive) securities. Together they cover 175 countries in 60 global markets totaling over 140 million time series.
- Datahub http://datahub.io : free access to many of CKAN's core features
- Eurostat linked data: http://eurostat.linked-statistics.org/
- Linked dataspaces http://270a.info , http://csarven.ca/linked-sdmx-data
- OpenRefine (ex Google refine) https://github.com/OpenRefine, data cleaning, transforming, extending with web services
- Opendatafoundation : Adoption of global metadata standards http://www.opendatafoundation.org
- Quandl http://www.quandl.com

- Google Public Data Explorer(DSPL):visualisation no download, https://www.google.com/publicdata/directory#
- http://opendatahandbook.org/fr/how-to-open-up-data/make-data-available.html

TODO standard

- CKAN : powerful data management system. It is used by national and local governments, research institutions, and other organisations which collect a lot of data

CHAPTER 3

Indices and tables

- genindex
- modindex
- search

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csv_dict() (in module dlstats.fetchers.bis), 3

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extract_zip_file() (in module dlstats.fetchers.bis), 3

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local_read_csv() (in module dlstats.fetchers.bis), 3