

Datastream Web Service Getting started with R

Introducing Datastream Web Service via R

Datastream is the world's leading time series database, enabling strategists, economists and research communities' access to the most comprehensive financial information available. With histories back to the 1950's, you can explore relationships between data series; perform correlation analysis, test investment and trading ideas and research countries, regions and industries.

Datastream content is available via R version 3.3 or above using the Datastream Web Service tool. R is a language and environment for statistical computing and graphics. R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering,...) and graphical techniques, and is highly extensible.

This document provides examples on how to establish connection to Datastream Web Service (DSWS) and retrieve historical data for one or more instruments.

Requirements

- A Datastream Child ID, with access to DSWS API
- R version 3.3 or above
- Access to Datastream Navigator for code look up would be recommended, either via DFO or Eikon

Getting started

Package required to use Datastream Web Service is available on GitHub page:

<https://github.com/CharlesCara/DatastreamDSWS2R>

You need to have subscription to Datastream Web Service and appropriate credentials (Datastream Child ID and password) to use this package. Credentials need to be entered in capital letters, while Datastream ID format must be entered with four letters and 3 numbers.

The installation of the package is done using:

```
require(devtools)
install_github("CharlesCara/DatastreamDSWS2R")
```

Your Datastream username and password are best stored in environment variables by adding to your .Renviro file the following lines. This approach makes DatastreamDSWS2R able to be run securely in Docker containers by passing the credentials into the container at runtime.

DatastreamUsername= ZXXX000

DatastreamPassword= PASSWORD123

For backwards compatibility we have retained the ability to put credentials into options(). In this scenario you would add these lines to your .RProfile file:

```
options(Datastream.Username = " ZXXX000")
```

```
options(Datastream.Password = " PASSWORD123")
```

Running simple commands within R

A typical request would be for a snapshot request. To get the name (NAME), exchange name (EXNAME) and other static information on given instrument (U:F,U:BA,U:CAT,U:CVX,U:KO,U:XOM,@INTC,U:JNJ,U:IBM) use:

```
mysws <- dsws$new()
```

```
myData <- mysws$snapshotRequest(instrument =
c("U:F","U:BA","U:CAT","U:CVX","U:KO","U:XOM","@INTC","U:JNJ","U:IBM"),
```

```
    datatype = c("NAME", "EXNAME", "GEOGN", "TR1N", "TR2N", "TR3N", "TR4N", "TR5N"),
```

```
    requestDate = "0D")
```

Other type of request is time series request. To get the daily equity pricing for last 2 years for above instruments use:

```

mysdws <- dsdws$new()

xtsData <- mysdws$timeSeriesListRequest(instrument =
c("U:F","U:BA","U:CAT","U:CVX","U:KO","U:XOM","@INTC","U:JNJ","U:IBM"),
    datatype = c("P", "MV", "PO", "PH", "PL", "VO", "DY", "PE"),
    startDate = "-2Y",
    endDate = "-0D",
    frequency = "D")

```

Other Time Series request examples

To obtain the last 10 years of Worldscope Ratios for previously given instruments in annual frequency use:

```

mysdws <- dsdws$new()

xtsData2 <- mysdws$timeSeriesListRequest(instrument =
c("U:F","U:BA","U:CAT","U:CVX","U:KO","U:XOM","@INTC","U:JNJ","U:IBM"),
    datatype =
c("WC08326","WC08371","WC08351","WC08311","WC08366","WC08321","WC08306","WC08331","WC08376"),
    startDate = "-10Y",
    endDate = "-0D",
    frequency = "Y")

```

For 10 years IBES company level items in monthly frequency you could use:

```

mysdws <- dsdws$new()

xtsData3 <- mysdws$timeSeriesListRequest(instrument =
c("U:F","U:BA","U:CAT","U:CVX","U:KO","U:XOM","@INTC","U:JNJ","U:IBM"),
    datatype =
c("BPS1MN","DPS1MN","EBT1MN","EBD1MN","EPS1MN","PRE1MN","ROA1MN","ROE1MN","SAL1MN"),
    startDate = "-10Y",
    endDate = "-0D",
    frequency = "M")

```

To get the last 10 years of ESG company level items for given instruments on annual level use:

```
mysdws <- dsws$new()

xtsData4 <- mysdws$timeSeriesListRequest(instrument =
c("U:F","U:BA","U:CAT","U:CVX","U:KO","U:XOM","@INTC","U:JNJ","U:IBM"),

      datatype =
c("ENERDP0011","ENERDP023","ENERDP024","ENERDP025","ENERDP096","ENERDP089","ENERO05V","ENERDP031"
,"ENERDP033","ENERDP036"),

      startDate = "-10Y",

      endDate = "-0D",

      frequency = "Y")
```

#To get the first datatype,ENERDP0011, in this request as an xts object use:

```
xtsData5 <- xtsData4[[1]]
```

#The first WS datatype in a simple plot to quickly check the data:

```
xtsData6 <- xtsData2[[1]]
```

```
plot(xtsData6)
```

Size of requests

Users are advised of the maximum size limits of DSWS requests via R:

- Maximum instruments per request 50
- Maximum datatypes per request 50
- Maximum items (instrument x datatypes) per request not to exceed 100