Using the UN Comtrade data API with **R**

Using the **R** sytem

Many users rely on non-database tools for analysing the data extracted UN Comtrade, and among those tools, the **R** system is one the most popular. **R** is an free, integrated software environment for data manipulation, calculation and graphical display, which implements a huge set of classical and modern statistical techniques. For an comprehensive introduction, please refer to http://cran.r-project.org/doc/manuals/R-intro.html (http://cran.r-project.org/doc/manuals/R-intro.html).

Extracting codes and descriptions of reporters from the UN Comtrade API

Here is quick way to read the list of country/area codes into R:

```
library(rjson)
string <- "http://comtrade.un.org/data/cache/partnerAreas.json"
reporters <- fromJSON(file=string)
reporters <- as.data.frame(t(sapply(reporters$results,rbind)))
```

A user-defined function to extract data from the UN Comtrade API

The function defined in this example, `get.Comtrade()`, extracts data from UN Comtrade using either the `csv` or the `json` format.

```
get.Comtrade <- function(url="http://comtrade.un.org/api/get?"
                         ,maxrec=50000
                         ,type="C"
                         ,freq="A"
                         ,px="HS"
                         ,ps="now"
                         ,r
                         ,p
                         ,rg="all"
                         ,cc="TOTAL"
                         ,fmt="json"
)
{
  string<- paste(url
                 ,"max=",maxrec,"&" #maximum no. of records returned
                 ,"type=",type,"&" #type of trade (c=commodities)
                 ,"freq=",freq,"&" #frequency
                 ,"px=",px,"&" #classification
                 ,"ps=",ps,"&" #time period
                 ,"r=",r,"&" #reporting area
                 ,"p=",p,"&" #partner country
                 ,"rg=",rg,"&" #trade flow
                 ,"cc=",cc,"&" #classification code
                 ,"fmt=",fmt        #Format
                 ,sep = ""
  )

  if(fmt == "csv") {
    raw.data<- read.csv(string,header=TRUE)
    return(list(validation=NULL, data=raw.data))
  } else {
    if(fmt == "json" ) {
      raw.data<- fromJSON(file=string)
      data<- raw.data$dataset
      validation<- unlist(raw.data$validation, recursive=TRUE)
      ndata<- NULL
      if(length(data)> 0) {
        var.names<- names(data[[1]])
        data<- as.data.frame(t( sapply(data,rbind)))
        ndata<- NULL
        for(i in 1:ncol(data)){
          data[sapply(data[,i],is.null),i]<- NA
          ndata<- cbind(ndata, unlist(data[,i]))
        }
        ndata<- as.data.frame(ndata)
        colnames(ndata)<- var.names
      }
      return(list(validation=validation,data =ndata))
    }
  }
}
```

The following three examples illustrate its use with a few queries:

Example 1:

Using default parameters (i.e., latest annual HS total trade data flows, in `json` format), specifying only reporting and partner areas

```
> library("rjson")
> s1 <- get.Comtrade(r="842", p="124,484")
> s1
$validation
                       status.name                        status.value
                              "Ok"                                 "0"
                   status.category                  status.description
                               "0"                                  ""
                    status.helpUrl                         count.value
                                ""                                 "6"
                     count.started                       count.finished
"2014-06-12T12:18:33.3861105-04:00" "2014-06-12T12:18:33.6513122-04:00"
             count.durationSeconds                  datasetTimer.started
                         "0.2652017" "2014-06-12T12:18:33.6513122-04:00"
             datasetTimer.finished        datasetTimer.durationSeconds
"2014-06-12T12:18:34.7745194-04:00"                          "1.1232072"

$data
  pfCode   yr period periodDesc aggrLevel IsLeaf rgCode    rgDesc rtCode rtTitle rt3ISO ptCode
1     H4 2013   <NA>       <NA>         0      0      1    Import    842     USA    USA    124
2     H4 2013   <NA>       <NA>         0      0      2    Export    842     USA    USA    124
3     H4 2013   <NA>       <NA>         0      0      3 Re-Export    842     USA    USA    124
4     H4 2013   <NA>       <NA>         0      0      1    Import    842     USA    USA    484
5     H4 2013   <NA>       <NA>         0      0      2    Export    842     USA    USA    484
6     H4 2013   <NA>       <NA>         0      0      3 Re-Export    842     USA    USA    484
  pt3ISO cmdCode        cmdDescE qtCode      qtDesc TradeQuantity NetWeight   TradeValue estCod
1    CAN   TOTAL All Commodities      1 No Quantity          <NA>      <NA> 336685686292
2    CAN   TOTAL All Commodities      1 No Quantity          <NA>      <NA> 300175625112
3    CAN   TOTAL All Commodities      1 No Quantity          <NA>      <NA>  48503512727
4    MEX   TOTAL All Commodities      1 No Quantity          <NA>      <NA> 283043473043
5    MEX   TOTAL All Commodities      1 No Quantity          <NA>      <NA> 226152895832
6    MEX   TOTAL All Commodities      1 No Quantity          <NA>      <NA>  44462740132
```

Example 2:

Same as Example 1 above, but in `csv` format. Note that in this case, there is no validation information included in the data output.

```
> library("rjson")
> s2 <- get.Comtrade(r="842", p="124,484", fmt="csv")
> s2
$validation
NULL

$data
  Classification Year Period Period.Desc. Aggregate.Level Is.Leaf.Code Trade.Flow.Code Trade.Fl
1             H4 2013     NA           NA               0            0               1     Impo
2             H4 2013     NA           NA               0            0               2     Expo
3             H4 2013     NA           NA               0            0               3  Re-Expo
4             H4 2013     NA           NA               0            0               1     Impo
5             H4 2013     NA           NA               0            0               2     Expo
6             H4 2013     NA           NA               0            0               3  Re-Expo
  Reporter.Code Reporter Reporter.ISO Partner.Code Partner Partner.ISO Commodity.Code       Com
1           842      USA          USA          124  Canada         CAN          TOTAL All Commo
2           842      USA          USA          124  Canada         CAN          TOTAL All Commo
3           842      USA          USA          124  Canada         CAN          TOTAL All Commo
4           842      USA          USA          484  Mexico         MEX          TOTAL All Commo
5           842      USA          USA          484  Mexico         MEX          TOTAL All Commo
6           842      USA          USA          484  Mexico         MEX          TOTAL All Commo
  Qty.Unit.Code    Qty.Unit Qty Netweight..kg. Trade.Value..US.. Flag
1             1 No Quantity  NA             NA      336685686292    0
2             1 No Quantity  NA             NA      300175625112    0
3             1 No Quantity  NA             NA       48503512727    0
4             1 No Quantity  NA             NA      283043473043    0
5             1 No Quantity  NA             NA      226152895832    0
6             1 No Quantity  NA             NA       44462740132    0
```

Example 3:

An example to extract monthly data

```
> library("rjson")
> s3 <- get.Comtrade(r="842", p="0", ps="201201,201202,201203", freq="M")
> s3
$validation
                        status.name                         status.value
                                "Ok"                                  "0"
                     status.category                   status.description
                                 "0"                                   ""
                      status.helpUrl                         count.value
                                  ""                                  "9"
                       count.started                        count.finished
"2014-06-12T14:56:01.9922781-04:00" "2014-06-12T14:56:02.0702786-04:00"
               count.durationSeconds                  datasetTimer.started
                           "0.0780005" "2014-06-12T14:56:01.9922781-04:00"
               datasetTimer.finished        datasetTimer.durationSeconds
"2014-06-12T14:56:02.0702786-04:00"                           "0.0780005"

$data
  pfCode   yr period    periodDesc aggrLevel IsLeaf rgCode     rgDesc rtCode                  r
1     HS 2012 201201  January 2012         0      0      1    Imports    842 United States of A
2     HS 2012 201201  January 2012         0      0      2    Exports    842 United States of A
3     HS 2012 201201  January 2012         0      0      3 Re-exports    842 United States of A
4     HS 2012 201202 February 2012         0      0      1    Imports    842 United States of A
5     HS 2012 201202 February 2012         0      0      2    Exports    842 United States of A
6     HS 2012 201202 February 2012         0      0      3 Re-exports    842 United States of A
7     HS 2012 201203    March 2012         0      0      1    Imports    842 United States of A
8     HS 2012 201203    March 2012         0      0      2    Exports    842 United States of A
9     HS 2012 201203    March 2012         0      0      3 Re-exports    842 United States of A
  rt3ISO ptCode ptTitle pt3ISO cmdCode        cmdDescE qtCode qtDesc TradeQuantity NetWeight
1   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
2   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
3   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
4   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
5   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
6   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
7   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
8   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
9   <NA>      0   World   <NA>   TOTAL All Commodities      0   <NA>          <NA>      <NA>
    TradeValue estCode
1 188224982925       0
2 118156544582       0
3  14874235690       0
4 176338299043       0
5 123448585034       0
6  15647392580       0
7 202088822547       0
8 139760502675       0
9  17447257948       0
```

Contact us

Trade Statistics Branch (http://unstats.un.org/unsd/trade/)
United Nations Statistics Division (http://unstats.un.org/)
Trade in commodities: comtrade@un.org (mailto:comtrade@un.org)
Trade in services: tradeserv@un.org (mailto:tradeserv@un.org)

Follow us

(http://twitter.com/untradestats) (http://facebook.com/untradestats)

Data services

Sign in (/Data/Auth/LogIn)
Sign out (/Data/Auth/LogOut)
