R Notebook

# Trade flow matrix

This code reads the BACI: International Trade Database at the Product-Level[<http://www.cepii.fr/CEPII/en/publications/wp/abstract.asp?NoDoc=2726>] dataset and prepares a matrix of international trade flows for network analysis.

## Load packages

## -- Attaching packages ----------------------------------------------------------------------------------------------- tidyverse 1.2.1 --

## v ggplot2 3.0.0 v purrr 0.2.5  
## v tibble 1.4.2 v dplyr 0.7.6  
## v tidyr 0.8.1 v stringr 1.3.1  
## v readr 1.1.1 v forcats 0.3.0

## -- Conflicts -------------------------------------------------------------------------------------------------- tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

##   
## Attaching package: 'data.table'

## The following objects are masked from 'package:dplyr':  
##   
## between, first, last

## The following object is masked from 'package:purrr':  
##   
## transpose

# Read data

Since the data is very large, we run this only once. For further analysis, we will use the subset for the latest year.

tradedata <- fread('D:/hanh data/trad\_charact\_0016.csv', header = T, sep = ',')  
tradedata <- tradedata %>%  
 filter(t == 2016)  
saveRDS(tradedata, file = "D:/R/2016data.RDS")

Reading prepared data.

First twelve rows of data.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| t | hs6 | i | j | uv | trade\_type | GL | price\_range |
| 2016 | 80132 | 4 | 12 | 8771.161 | OWT | 0 | M |
| 2016 | 130190 | 4 | 12 | 2575.872 | OWT | 0 | L |
| 2016 | 370239 | 4 | 12 | 373805.943 | OWT | 0 | H |
| 2016 | 970600 | 4 | 12 | 907132.389 | OWT | 0 | H |
| 2016 | 851310 | 4 | 28 | 26060.431 | OWT | 0 | H |
| 2016 | 852719 | 4 | 28 | 30748.776 | OWT | 0 | H |
| 2016 | 40110 | 4 | 31 | NA | OWT | 0 | . |
| 2016 | 40120 | 4 | 31 | NA | OWT | 0 | . |
| 2016 | 40299 | 4 | 31 | NA | OWT | 0 | . |
| 2016 | 40310 | 4 | 31 | NA | OWT | 0 | . |
| 2016 | 90240 | 4 | 31 | NA | OWT | 0 | . |
| 2016 | 170191 | 4 | 31 | NA | OWT | 0 | . |
| ## Data | columns |  |  |  |  |  |  |

* t: Year of data
* hs6: product HS96 revision
* i: exporter code
* j: importer code
* u: unit value
* trade\_type:
* GL:
* price\_range:

Summarise by country pairs

kable(head(tradesum, 12), caption = "First twelve rows of summarised data.")

First twelve rows of summarised data.

|  |  |  |
| --- | --- | --- |
| i | j | uvt |
| 100 | 104 | 2.183501e+06 |
| 100 | 108 | 3.917595e+06 |
| 100 | 112 | 3.938019e+07 |
| 100 | 116 | 7.373519e+05 |
| 100 | 12 | 1.702185e+07 |
| 100 | 120 | 5.133804e+06 |
| 100 | 124 | 1.170581e+08 |
| 100 | 132 | 6.344009e+04 |
| 100 | 136 | 1.196291e+04 |
| 100 | 140 | 3.483407e+03 |
| 100 | 144 | 8.366361e+06 |
| 100 | 148 | 4.381844e+04 |

Save output to disk.

write.csv(tradesum, "trade\_summary.csv", row.names = FALSE)

## Total export by country

exportsum <- tradedata %>%   
 select(-one\_of("t")) %>%   
 group\_by(i) %>%   
 summarise(euvt = sum(uv, na.rm = TRUE))   
 # head(exportsum)  
importsum <- tradedata %>%   
 select(-one\_of("t")) %>%   
 group\_by(j) %>%   
 summarise(iuvt = sum(uv, na.rm = TRUE))

Machine info

sessionInfo()

## R version 3.5.1 (2018-07-02)  
## Platform: x86\_64-w64-mingw32/x64 (64-bit)  
## Running under: Windows 10 x64 (build 17134)  
##   
## Matrix products: default  
##   
## locale:  
## [1] LC\_COLLATE=English\_United States.1252   
## [2] LC\_CTYPE=English\_United States.1252   
## [3] LC\_MONETARY=English\_United States.1252  
## [4] LC\_NUMERIC=C   
## [5] LC\_TIME=English\_United States.1252   
##   
## attached base packages:  
## [1] stats graphics grDevices utils datasets methods base   
##   
## other attached packages:  
## [1] bindrcpp\_0.2.2 knitr\_1.20 data.table\_1.11.4  
## [4] forcats\_0.3.0 stringr\_1.3.1 dplyr\_0.7.6   
## [7] purrr\_0.2.5 readr\_1.1.1 tidyr\_0.8.1   
## [10] tibble\_1.4.2 ggplot2\_3.0.0 tidyverse\_1.2.1   
##   
## loaded via a namespace (and not attached):  
## [1] Rcpp\_0.12.18 highr\_0.7 cellranger\_1.1.0 pillar\_1.3.0   
## [5] compiler\_3.5.1 plyr\_1.8.4 bindr\_0.1.1 tools\_3.5.1   
## [9] digest\_0.6.15 lubridate\_1.7.4 jsonlite\_1.5 evaluate\_0.11   
## [13] nlme\_3.1-137 gtable\_0.2.0 lattice\_0.20-35 pkgconfig\_2.0.1   
## [17] rlang\_0.2.1 cli\_1.0.0 rstudioapi\_0.7 yaml\_2.1.19   
## [21] haven\_1.1.2 withr\_2.1.2 xml2\_1.2.0 httr\_1.3.1   
## [25] hms\_0.4.2 rprojroot\_1.3-2 grid\_3.5.1 tidyselect\_0.2.4  
## [29] glue\_1.3.0 R6\_2.2.2 readxl\_1.1.0 rmarkdown\_1.10   
## [33] modelr\_0.1.2 magrittr\_1.5 backports\_1.1.2 scales\_0.5.0   
## [37] htmltools\_0.3.6 rvest\_0.3.2 assertthat\_0.2.0 colorspace\_1.3-2  
## [41] stringi\_1.1.7 lazyeval\_0.2.1 munsell\_0.5.0 broom\_0.5.0   
## [45] crayon\_1.3.4