Replication and Aggregation Instructions: New Price-based Estimates of Non-tariff Measures

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This guide accompanies the paper “New price-based estimates of non-tariff measures: A global database”, *Journal of Global Economic Analysis*, December 2022 .

Section A provides a guide to generating an aggregation of the NTM database that is compatible with your chosen GTAP aggregation. Section B describes how you may replicate or modify the original NTM estimates.

# Preparing a GTAP aggregation of the database

This section provides a guide to using RStudio to generate an aggregation of the NTM database that is compatible with GTAP.

For users who do not have R installed, it must first be downloaded and installed from the [CRAN website](https://cran.r-project.org/), selecting the version which applies to you (Linux, Mac or Windows). Users are also encouraged to download [RStudio](https://www.rstudio.com/) – a free user interface that allows easier use of the code.

In addition, there are three files supplied with this package that will allow you to create a GTAP aggregation. Please put all three files together in one folder, which will become your working directory in Step 1.

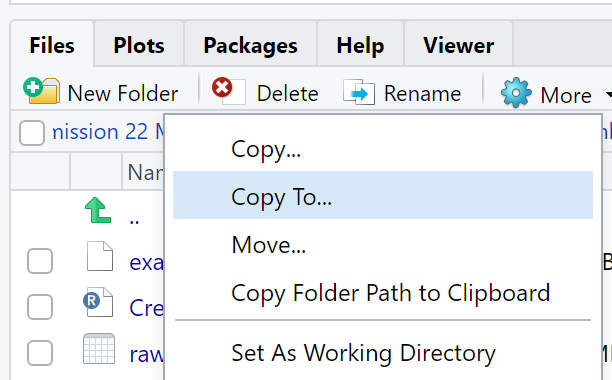
* CreateCustomAgg.R
* Example.agg
* RawGTAPAgg.csv

Begin by opening the file CreateCustomAgg.R with the RStudio software. Then follow steps 1-5 detailed below.

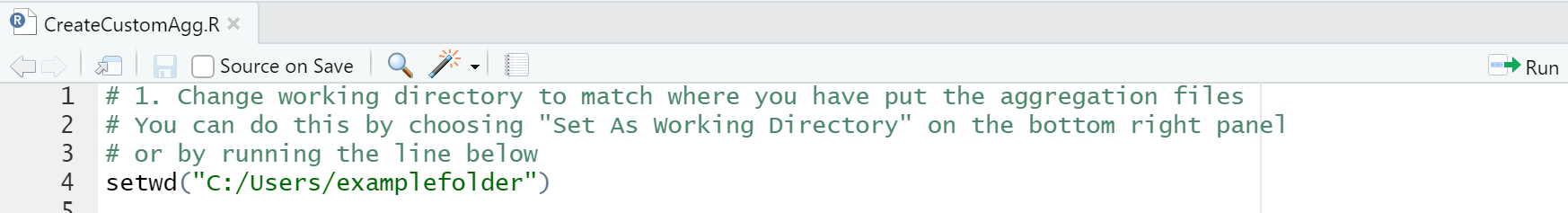
Step 1:

Change the working directory to match where you have saved the three files noted above using **either** one of the following methods:

1. **Either -** You may either go to the lower right hand panel of RStudio, open the appropriate folder in the list provided then click on the “More” icon then “Set as Working Directory”:



1. **Or -** You can modify the folder name appropriately in line 4 of the top left panel of RStudio, place your cursor anywhere in line 4 (i.e. move your mouse there then click) then click on the “Run” icon. NB if you change this directory, please be sure to note that R requires the use of forward slash (/) rather than backslash (\) :

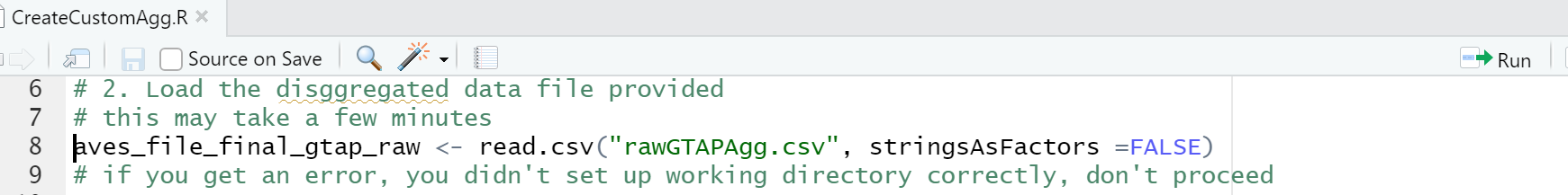


Notes:

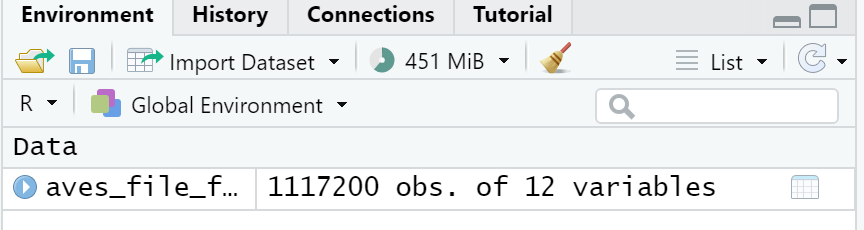
* If you go with option a), do not run line four as in option b).
* Lines with hash tags are comments so even though you run them, they are not executed.

Step 2:

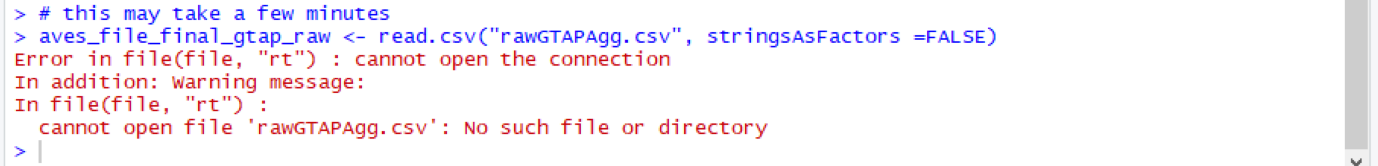
Load the disaggregated file provided (RawGTAPAgg.csv). To do this, place your cursor anywhere in line 8 then click on the “Run” icon.



Once this has loaded, you will see it populated in the upper right hand window of RStudio:



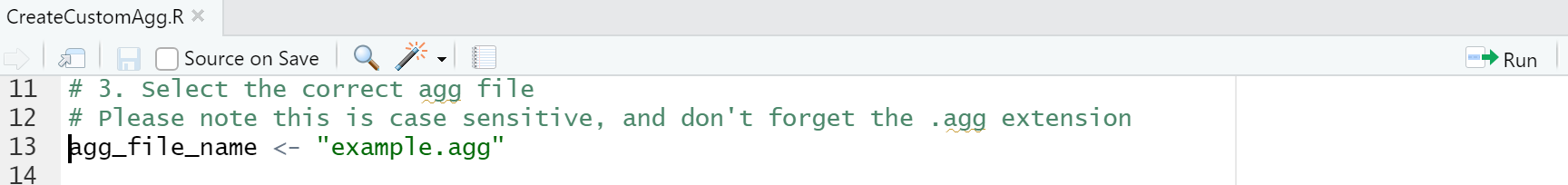
NB If you see an error message in the console as below, please check you have set your working directory correctly (do not proceed further).



Step 3:

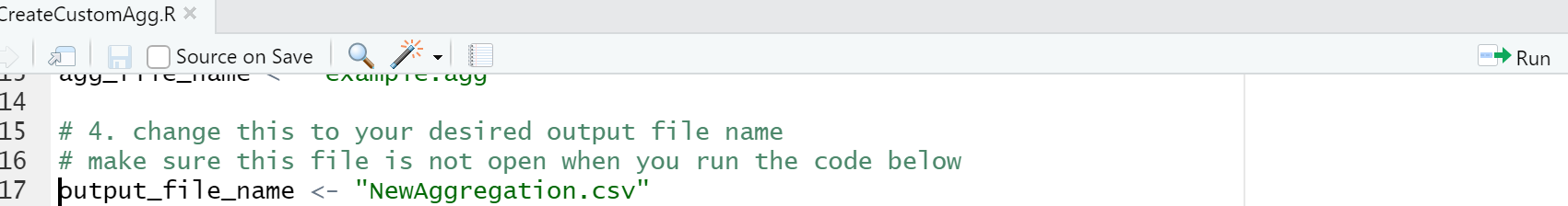
Select your chosen agg file. You may modify ‘example.agg’, based on GTAP version 10A,[[3]](#footnote-3) to match your chosen aggregation – please do not use a different file as the base for changing the aggregation otherwise it may not be compatible with the programs. The best approach is to edit the sectors and regions in the example.agg file to ensure compatibility.

If you save your agg file under a different name, please ensure it is saved in the working directory and that you modify the file name in line 13. Then place your cursor anywhere in line 13 and click on the “Run” icon:



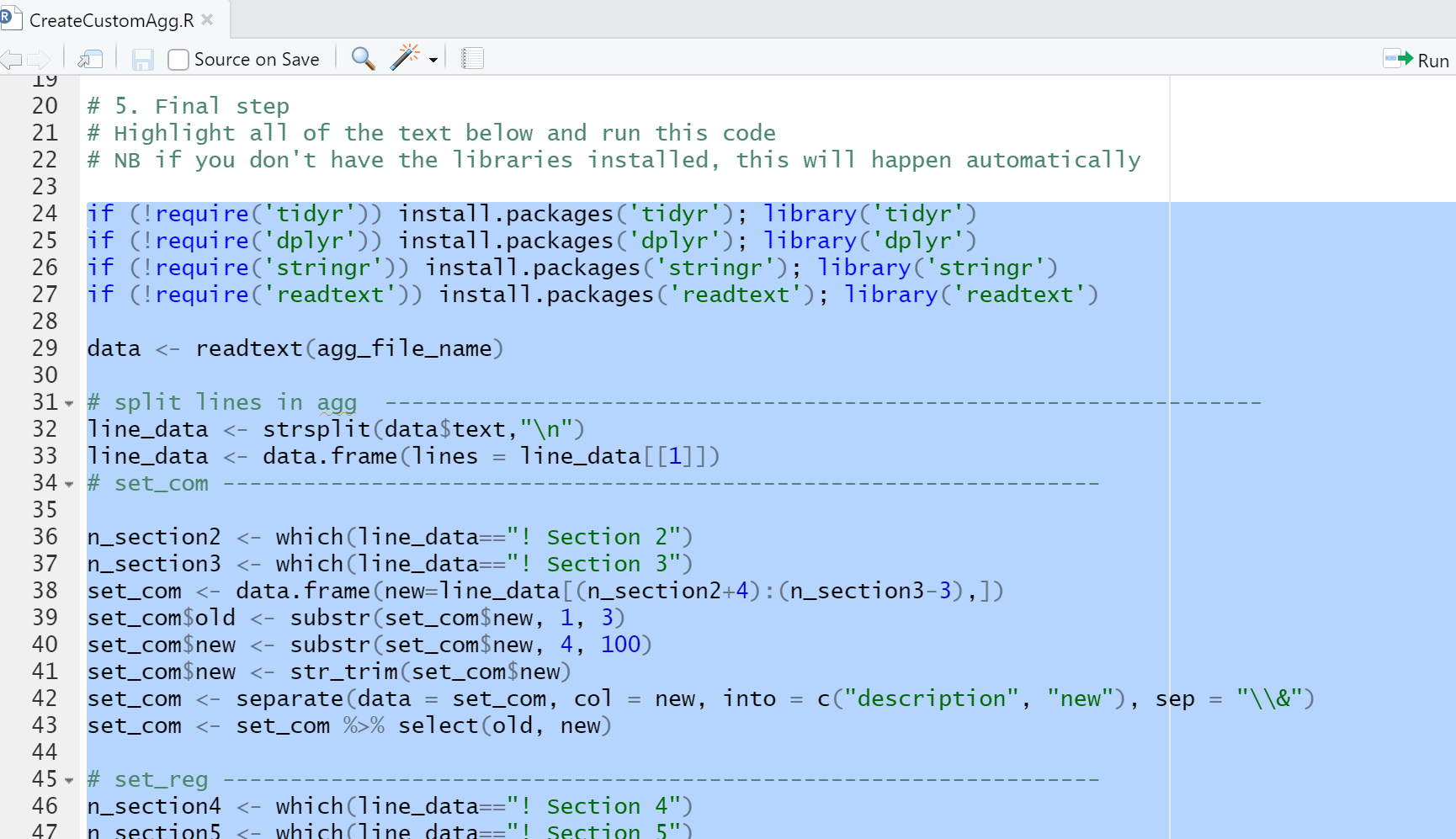
Step 4:

Select your desired output file name. Replace “newAggregation.csv” if you wish, then place your cursor in line 17 and click on the “Run” icon:



Step 5:

Highlight all of the text from line 24 onwards. Then click on the “Run” icon:



Output:

Completion of Step 5 will generate your new aggregation file as output e.g. NewAggregation.csv. The aggregated file containing NTM estimates will produce the following output:

|  |  |  |
| --- | --- | --- |
| Column | Data contained in column | Example |
| reporter\_new | Importer | EastAsia |
| partner\_new | Exporter | LatinAmer |
| sector\_new | Sector | GrainsCrops |
| ave\_t\_weighted | % AVE for technical measures (UNCTAD categories A-C) | 7.72 |
| ave\_nt\_weighted | % AVE for non-technical measures (UNCTAD categories D+, excluding P) | 1.31 |
| t\_count\_weighted | Trade-weighted number of NTMs in each sector at the bilateral level for technical measures | 63.35 |
| nt\_count\_weighted | Trade-weighted number of NTMs in each sector at the bilateral level for non-technical measures | 3.35 |
| t\_estimated\_count | Number of AVE’s that have been filled by estimates for technical measures | 0 |
| nt\_estimated\_count | Number of AVE’s that have been filled by estimates for non-technical measures | 4 |
| TradeValue | Amount of trade used in estimation i.e. value of trade covered by the NTMs for which AVEs are estimated | 29,012,887 |
| TotalTrade | Total value of trade | 29,013,205 |
| share | Proportion of trade covered by NTMs, i.e.: TradeValue/TotalTrade | 99.99 |

The example in the final column above may be interpreted as follows: For imports of GrainsCrops from LatinAmer to EastAsia, the AVE of technical measures is 7.72%, the AVE of non-technical measures is 1.31%. The trade-weighted average number of NTMs in this sector is 63.35 technical measures and 3.35 non-technical measures. In this bilaterally traded sector, 0 AVEs have been filled using estimates for technical measures and 4 have been filled using estimates for non-technical measures. The trade value covered by NTMs for which AVEs are estimated is US$29,013m, which is 99.99% of the total trade value in this sector

Once you have created this file of NTM estimates, you can use it to calculate appropriate shocks to implement, e.g. to reduce NTMs in GTAP.[[4]](#footnote-4)

# Full replication and modification of assumptions

For advanced users, the complete underlying dataset used in estimation of the AVE equivalents of non-tariff measures (NTMs), together with the estimation code (in R) and detailed explanations are available at <https://r.tiid.org/AVEs>. This provides all of the materials needed for any researchers wishing to reproduce the estimates generated in the paper or to explore imposing alternative assumptions or estimation methods.

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2. b Waikato Management School, University of Waikato, Private Bag 3105, Hamilton, New Zealand (e-mail: [astrutt@waikato.ac.nz](mailto:astrutt@waikato.ac.nz)) [↑](#footnote-ref-2)
3. If you are using a different version of the GTAP database, please prepare an aggregation of this file that is compatible with the aggregation you are using. We will later make an update available that is compatible with GTAP v11. [↑](#footnote-ref-3)
4. Ensuring appropriate shocks are calculated. Please see the online supplementary appendix in Walmsley and Strutt (2021) “A comparison of approaches to modelling non-tariff measures.” *Journal of Global Economic Analysis*. *6*(1): 1-33. <http://dx.doi.org/10.21642/JGEA.060101AF>. [↑](#footnote-ref-4)