**OECD States of Fragility – Technical Report**

Institute for Economics and Peace (IEP)

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## **BACKGROUND**

The OECD States of Fragility requested that IEP review the States of Fragility 2022 fragility framework. OECD provided a review copy of the SFR2022 framework located at <https://github.com/hdesaioecd/oecd-sfr-2022-master_upload>

OECD requested that IEP review all munge scripts and src files to ensure the code is outputting the results correctly. OECD specifically requested:

* Checking each munge script to ensure the source data has been imported and cleaned correctly and that basic assumptions about the dataset (such as country coverage) or measure (such as log adjustments, rolling averages/standard deviations) are interpreted and implemented correctly
* Ensure that the “data finishing file in the munge folder and the src folder is outputting results without any error
* Check the implementation of the sixth dimension of fragility (the human dimension) to ensure that it is correctly integrated in the code and the final results.

Additionally, OECD also requested reference to the “notes” column of the “raw.datafor.R” tab in the “SFR2022 Indicator Master List.xlsx” for examples of indicators that would benefit from additional scrutiny to ensure they have been implemented correctly.

For ease of reading, R code is ***highlighted, bolded and italicized*** and both scripts and files are *highlighted and italicized.*

## **PURPOSE**

The purpose of this report is to provide a technical overview of what checks were implemented, why they were implemented and how to use them. This document also provides a brief summary of additional issues affecting the munge and source files. A comprehensive summary of the issues identified in each script is provided in a separate document (“*Identified Issues v8 2022-06-16.docx*”) located in the “units\_tests” directory of the github repository.

## **CHECKING BASIC ASSUMPTIONS**

IEP has implemented several tests to check basic assumptions about each dataset. These tests allow an individual to check whether code is functioning as expected and producing sensible results. The tests check assumptions such as:

* Correct conversion of iso3c codes to country names,
* The existence of duplicate country year pairs,
* The number of NA values in all columns
* Adequate country-year coverage.

The R code for each of the data integrity checks can be found in the file *888-logging\_unit-tests.R* within the “unit-tests” directory of the repository. All output is saved to a log file “*progress\_V2.log*” in the main branch of the repository. The checks relating to duplicated data and incorrect country code conversion are also saved to a separate excel file denoted by the check that was performed and the corresponding file munge filename.

Each function is flexible enough to be run at multiple stages within each script. The default value of ***SCRIPT*** is defined at the beginning of each munge file. When multiple checks are performed within the same script, it is necessary to change the value of SCRIPT within the function to prevent overwriting of previously outputted csv files.

The following sections describe the importance of using each check and how to implement them appropriately.

### **Checking country names**

The States of Fragility framework frequently converts iso3c codes to country names and vice versa. This conversion is implemented via a custom function in nearly 35 different scripts and data sources. The function is well implemented and accounts for multiple edge cases.

However, there are still instances in which converting from iso3c codes to country names fails. Failed conversion of iso3c codes is not always problematic if, for example it occurs for region names as opposed to country names. Unsuccessful conversion becomes problematic when it occurs for counties or iso3c codes.

Failed conversion is problematic because it can result in unnecessary data loss. When conversion fails, resulting values are set to be NA. NA values are frequently removed in later parts of the script with additional lines of code such as  ***%>% drop.na()*** or ***na.omit()*** .

To address this issue, a check was implemented to determine the countries that could not be converted from “*iso3c*” codes to a country name. The function identifies the rows in which the “*iso3c*” codes were unable to be converted by finding the rows in which the values of “*iso3c\_CONVERT*” values are NA. The actual country names that could not be converted are printed to the log files and outputted to a csv file. The function takes four arguments:

* df – a dataframe (long format)
* COL1 – an unquoted column name containing what you want to convert
* COL2 – an unquoted column names containing what was converted
* SCRIPT – a string defined at the beginning of each script. This is appended to the filename to provide additional detail about which script the issue occurred in

The function can be implemented by running the following code:

***check*\_convert\_iso(dat\_long, iso3c, iso3c\_CONVERT, SCRIPT)**

Note: The function makes use of the ***setdiff()*** function in R. The ***setdiff()*** function checks the items that exist in the first list ***iso3c*** that are not present in the second list ***iso3c\_CONVERT***. For this reason, the order of the arguments iso3c and iso3c\_CONVERT is important. The column order can be reversed, but this will perform a different check and produce different results.

### **Checking data coverage**

Each dataset in the States of Fragility framework contains columns with the following data: a country, a year, a variablename and value. For each variablename, it is expected that each country should have a corresponding value for all years. However, even well curated datasets may not contain values for every single country year pair. This is particularly relevant in the context of updating data each year and highlights potential problems with missing data.

Missing data can be problematic because necessitates a reliance on imputation and imputation may affect which countries are classified as fragile or not fragile. Imputation may be acceptable but may not be desirable for some countries. In such cases, it might be preferable to rely on an additional data source. Therefore, it can be helpful to know which countries are missing data for the latest year.

To address this issue, IEP implemented a check to compare the unique country names in the latest year versus all preceding years. This check is a quick test to determine whether data exists for the majority of countries cross the entire time series. The function takes four arguments:

* df – a dataframe (long format)
* C1 – a string name of the “iso3c” column
* C2 – a string name of the “year” column
* SCRIPT – a string defined at the beginning of each script. This is appended to the filename to provide additional detail about which script the issue occurred in

The function can be implemented by running the following code:

***check\_coverage(dat\_clean, "iso3c", "year", SCRIPT)***

Note: This data is also output to a csv as well as the log file

### **Checking NA’s**

It can be helpful to understand the number of NA values in each column. This can occur for a number of reasons such as unsuccessful conversion from iso code to country or vice versa, missing data or the inclusion of data that should not be there.

The function prints a notice to the terminal and save a warning to the log file indicating the number of NA values in each column. This function counts the number of NA’s in each column. The code takes two arguments:

* df – a dataframe (long format)
* SCRIPT - a string defined at the beginning of each script. This is appended to the filename to provide additional detail about which script the issue occurred in

The function can be implemented by running the following code

***check\_nas(dat\_clean, SCRIPT)***

Note: the output of this function is only printed to the log file. It is not printed to a csv.

### **Checking duplicates**

The States of Fragility framework contains a number of instances in which one data source is supplemented by another data source. For example,

This can result in occasional duplications of country year pairs. Additionally, a single dataset may contain different country names for the same iso3c code. When the data is duplicated in this manner and the actual values of the variable differ, it is ambiguous which one is most appropriate to use. This can be problematic depending on whether it is more appropriate to use the minimum value, the maximum value or an average value.

To identify occurrences of the duplications, IEP implemented a check to look for multiple occurrences of either the iso3c code and the year or the country name and the year. The function takes five arguments,

* df – a dataframe (long format)
* c1 – a string name of the “iso3c” column (or alternatively the country name column)
* c2 – a string name of the “year” column
* c3 = a string name of the “variablename” column. The default is NULL, so that the function can be run on dataaframe without a variablename column. If the dataframe contains a variablename column with one or more variables, then this should be included as an argument in the function. If there is a single variable or no variablename column, then this can be excluded or set to NULL.
* SCRIPT – a string defined at the beginning of each script. This is appended to the filename to provide additional detail about which script the issue occurred in

The function can be implemented by running the following code:

***check\_duplicates(dat\_clean, “iso3c”, “year”, NULL, SCRIPT)***

## **CHECKING BASIC MEASURES**

In addition to implementing data quality checks, IEP also addressed specific questions from OECD regarding the calculation of specific indicators and whether or not certain transformations of the data were correctly implemented

### **Data updates**

While reviewing code, IEP noted two scripts in which more recent data was available. This affected two scripts (*09-INFORM.R* and *21-environmental displacement.R*). This data has *been* updated by OECD.

### **Rolling mean calculation**

The calculation of the rolling mean is implemented correctly. However, two different functions are used to implement the rolling mean. This has the potential to cause issues in the future if code is changed and these differences are not noted.

One script contains calculations for the rolling mean (*03-aid volatility.R).* There were currently two different functions used to calculate the rolling mean. Specifically, ***roll\_mean*** (from the roll package) and the ***rollmeanr*** function (from the zoo package). Both appear to produce the same results and are functionally equivalent. However, the ***rollmean*** (from the zoo package) is functionally different to ***roll\_mean*** (from the roll package).

### **Rolling standard deviation calculation**

One script contains calculations for the rolling mean (*03-aid volatility.R).* The use of standard deviation as a measure of volatility is intuitive and defensible from a statistical perspective.

### **Log calculation**

Two scripts *35 non state and one sided conflict.R* and *36-battle deaths.R* contained log transformations of the data. The initial scripts took the log of the existing value. Although this is a methodologically sound approach, IEP suggested a more nuanced approach similar to what is used in the Global Terrorism Index (GTI). The change means that the log values now reflect a score relative to the worst year on record, scaled between 0 and 10. Further, the difference between 9 and 10 should reflect a greater change in fragility than a change from 1-2.

The new version of the log calculation is implemented as follows:

***max\_score = max(dat\_final$value)***

***log\_base = (max\_score+1)^(1/10)***

***dat\_final$value <- log(dat\_final$value + 1, log\_base)***

***dat\_final <- as\_tibble(dat\_final)***

***dat\_final$variablename <- "non\_state\_one\_sided"***

## **CHECKING DATA FINISHING AND SOURCE FILES**

IEP performed a thorough examination to determine whether the code could run from start to finish without errors. Overall the code ran as expected and did not produce any errors that would significantly impact the calculation of the OECD States of Fragility report. Notably, there do not appear to be any errors in the file *999-data-finishing.R* in the munge directory. However, there are some situations in which errors could occur. Where possible, fixes for these issues have been implemented. The potential issues are detailed in the following sections.

### **Operating system specific errors**

The data integrity check revealed a number of issues affecting different operating systems. While the existing code was able to run without errors on Mac, the same code produced errors when run on Windows. The issues seem to be caused by special or invalid characters in file names. For example:

* The script *01-SFR Calculation.R* outputted multiple files with a timestamp that contained a colon “:”. This was caused by appending ***Sys.time()*** as part of the filename. The issue prevented successful cloning and checking out of the original repository. Replacing the affected code with ***format(Sys.time(), %d, %m %y %H %M”)*** to exclude the colon and removing the previously affected files resolved the issue.
* Certain filenames contained special characters. For example, the file in ***“./data/additional data/UNSD — Methodology.csv“*** contained an em dash “—“. This caused an issue such that running the code ***source(/”src/05-Analysis”)*** produced errors in the termina but running the code by copying and pasting directly into the terminal did not. Removing the special character from the affected file and modifying the corresponding code resolved the issue.

These fixes should ensure the code can be run on any computer regardless of operating system.

### **Incorrect file links**

There is potentially an incorrect link in the *05-Analysis*.R script in which ***list.2016.full*** links to a file on the githubIEP version of the repository while the variable ***list.2020.full*** links to the hdesaioecd version of the repository. This code runs without errors on an internal IEP systems. However, the same code may produce errors on external systems that do not have access to the IEP github repository.

A fix for this potential has not been implemented, but can be solved by changing the url to refer to the correct repository.

### **Potential syntax errors**

There were no observable syntax errors noticed throughout the script. However, there is at least one instance in which a conditional may not be working properly. The script *01-SFR Calculation.R* contains a variable ***dimensional.pca.models.*** On line 109, inside the conditional, the value of ***all.drops*** is set. The value is set through the ***<<-*** operator which assigns a value of a variable globally and is functionally different from the ***<-*** operator which assigns a value of a variable locally. Although the condition does not seem to be satisfied in the current version of the States of Fragility framework, the behavior of the operator may not be doing what is expected when the condition is fulfilled.

Since it is unclear whether this is intended behavior, a fix has not been implemented.

In the file *05-Analysis.R*, there is a line that dealt with the special character for Cote d’Ivoire near line 1736. The original code read ***recipient\_2 = gsub("C\x93te d'Ivoire", "Cote d'Ivoire", recipient\_2)*** which did not seem to be functioning correctly. The original code was replaced with the following code which removes special characters. This code also reflects

***oda\_raw$recipient\_2 <- iconv(oda\_raw$recipient\_2, 'utf-8', 'ascii', sub='').*** Additionally, the original mutate function was modified to reflect the change. It now reads ***recipient\_2 = gsub("Cte d'Ivoire", "Cote d'Ivoire", recipient\_2).***

### **Possible data ambiguities**

There is potential ambiguity in the*04-SFR-cluster.R*file. Line 27 ***temp = temp %>% filter(year == max(year))*** may not be working as expected. The maximum year is 2022 for multiple domains. Since most datasets do not contain 2022 data, this is likely to represent imputed data (calculated in the *999-data-finishing.R* script near line 410)

Since it is unclear whether this is intended behavior, a fix has not been implemented.

## **IMPACT ON FINAL RESULTS**

IEP implemented multiple changes throughout multiple munge and src scripts. This was not expected to induce any significant changes to the scores or rankings in the States of Fragility Framework. Nevertheless, it is still important to check this assumption by comparing the output before and after changes were implemented. Accordingly, IEP compared the final outputs before and after implementing changes via an additional script *08-comparing-results.R* located in the “src” directory.

The script compares the rankings and classification of countries in the original output without changes *export of final result.xlsx* (produced by OECD) to the new output containing changes implemented by IEP *export of final results\_21 06 22 14 16.xlsx*. The full output of the script is saved in the *full\_df\_results\_comparison.csv* and *can be seen in Appendix 1 of this document.*

These files are located in the “to check” directory within the “Results” directory within the “data\_out2022” directory. The excel/csv files are copied from the original files located in the “final\_results” directory which is within the “Results” directory which is within the “data\_out2022” directory.

Specifically, the script checks for differences in:

* The countries classified as “extremely fragile”
* The countries classified as “other fragile”
* The countries classified as “Rest of the world”
* Difference in ranking
* Percentage change in score

The changes IEP made to the munge scripts and src files do not appear to have had a significant impact on the final results. A comparison of the original output to the new output *full\_df\_results\_comparison.csv* indicates minimal changes.

* Nearly all countries that were classified as “extremely fragile” or “other “fragile” are still classified as such.
  + The single exception to this was Equatorial Guinea which switched from being classified as “Other fragile” to being classified as “Extremely fragile”. However, it should be noted there was no change in ranking and a 0.42 per cent change in score.
* No country that was “Extremely fragile” or “Other fragile” switched to being classified as“Rest of the world” and vice versa
* There were minimal changes in the overall rankings. Most countries changed between 0-4 positions in either direction. Some exception to this were:
  + Gambia (the) which improved in ranking 20 positions from 38 to 58
  + Vanuatu which improved in ranking by 11 positions from 81 to 92
  + Terkmenistan which deteriorated in ranking by 10 positions from 57 to 47
* The absolute percentage change in scores for the “Extremely fragile” and “Other fragile” countries was 4.7 per cent.
* The absolute percentage change in scores for the “Rest of the world” was 14.6 per cent. However, this was skewed by a small number of countries with very low scores. For countries with very low scores, even small changes to the raw score can result in large percentage changes. For example:
  + Sri Lanka which changed from 0.0311 to -0.0233, representing a -175 per cent change
  + Bhutan which changed from 0.036 to 0.83, representing 131 per cent change

For this reason, IEP is confident the changes that were implemented and the changes to the indicators did not induce any substantial changes to the OECD states of fragility index in the scores or rankings or classifications.

## **EXCLUDED RECOMMENDATIONS**

Most changes suggest by IEP have been implemented by OECD. The following changes were \*not\* implemented:

* OECD originally requested the calculation of a composite measure of violence against women in script “*32-sigi.R*”. The code was amended to calculate a composite measure. However, OECD opted to use the original code containing the “attitudes” domain due to limited data availability for the calculation of the composite measure. OECD conformed with colleagues that this is conceptually sensible and IEP agreed.
* Two scripts contained duplicate data (*“03-aid volatility.R”* and *“10-political rights.R”*). This was initially resolved by implementing a temporary fix that calculated the mean of the two country year pairs. In keeping with the standard practise of previous State of Fragility reports, OECD opted to use the minimum of the two values.

# **APPENDIX A**

Table 1 compares the final output of the original scores to the final output of the new scores. For convenience, the change in ranking and the percentage change in overall score is also shown. The table indicates that the implemented changes have had a minimal impact on most measures.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **iso3c** | **country** | **orig**  **score** | **orig**  **type** | **orig**  **rank** | **new**  **score** | **new**  **type** | **new**  **rank** | **diff**  **rank** | **per\_chg\_score** |
| SOM | Somalia | -4.73202 | Extremely fragile | 1 | -4.56076 | Extremely fragile | 1 | 0 | -3.6191 |
| YEM | Yemen | -4.53797 | Extremely fragile | 2 | -4.26938 | Extremely fragile | 4 | 2 | -5.91867 |
| AFG | Afghanistan | -4.43566 | Extremely fragile | 3 | -4.32418 | Extremely fragile | 3 | 0 | -2.51343 |
| CAF | Central African Republic (the) | -4.36668 | Extremely fragile | 4 | -4.1955 | Extremely fragile | 5 | 1 | -3.9202 |
| SSD | South Sudan | -4.14376 | Extremely fragile | 5 | -4.45571 | Extremely fragile | 2 | -3 | 7.528094 |
| COD | Congo (the Democratic Republic of the) | -3.85049 | Extremely fragile | 6 | -4.02229 | Extremely fragile | 6 | 0 | 4.461643 |
| TCD | Chad | -3.70751 | Extremely fragile | 7 | -3.68802 | Extremely fragile | 7 | 0 | -0.52565 |
| SYR | Syrian Arab Republic (the) | -3.68775 | Extremely fragile | 8 | -3.50742 | Extremely fragile | 8 | 0 | -4.88973 |
| ERI | Eritrea | -3.5619 | Extremely fragile | 9 | -3.05641 | Extremely fragile | 13 | 4 | -14.1917 |
| COG | Congo (the) | -3.32907 | Extremely fragile | 10 | -3.44098 | Extremely fragile | 9 | -1 | 3.361666 |
| BDI | Burundi | -3.14413 | Extremely fragile | 11 | -3.219 | Extremely fragile | 11 | 0 | 2.381221 |
| HTI | Haiti | -3.03027 | Extremely fragile | 12 | -3.3219 | Extremely fragile | 10 | -2 | 9.623738 |
| SDN | Sudan (the) | -3.02134 | Extremely fragile | 13 | -3.13459 | Extremely fragile | 12 | -1 | 3.74812 |
| IRQ | Iraq | -3.0187 | Extremely fragile | 14 | -2.98605 | Extremely fragile | 14 | 0 | -1.08131 |
| GNQ | Equatorial Guinea | -2.92358 | Other fragile | 15 | -2.93591 | Extremely fragile | 15 | 0 | 0.421809 |
| NER | Niger (the) | -2.87466 | Other fragile | 16 | -2.5778 | Other fragile | 21 | 5 | -10.3269 |
| MLI | Mali | -2.85149 | Other fragile | 17 | -2.6006 | Other fragile | 19 | 2 | -8.79848 |
| LBY | Libya | -2.7915 | Other fragile | 18 | -2.73349 | Other fragile | 16 | -2 | -2.078 |
| LBR | Liberia | -2.72149 | Other fragile | 19 | -2.59451 | Other fragile | 20 | 1 | -4.66565 |
| AGO | Angola | -2.58775 | Other fragile | 20 | -2.64761 | Other fragile | 17 | -3 | 2.313277 |
| CMR | Cameroon | -2.57133 | Other fragile | 21 | -2.64381 | Other fragile | 18 | -3 | 2.818646 |
| MDG | Madagascar | -2.41849 | Other fragile | 22 | -2.56589 | Other fragile | 22 | 0 | 6.094897 |
| NGA | Nigeria | -2.38664 | Other fragile | 23 | -2.38408 | Other fragile | 26 | 3 | -0.10717 |
| UGA | Uganda | -2.36601 | Other fragile | 24 | -2.52511 | Other fragile | 23 | -1 | 6.724722 |
| GIN | Guinea | -2.33376 | Other fragile | 25 | -2.39473 | Other fragile | 25 | 0 | 2.612237 |
| ZMB | Zambia | -2.26945 | Other fragile | 26 | -2.19441 | Other fragile | 30 | 4 | -3.30678 |
| MOZ | Mozambique | -2.23725 | Other fragile | 27 | -2.4061 | Other fragile | 24 | -3 | 7.547271 |
| PNG | Papua New Guinea | -2.22489 | Other fragile | 28 | -2.35836 | Other fragile | 27 | -1 | 5.998885 |
| GNB | Guinea-Bissau | -2.21787 | Other fragile | 29 | -2.2629 | Other fragile | 28 | -1 | 2.030165 |
| COM | Comoros (the) | -2.19463 | Other fragile | 30 | -2.18466 | Other fragile | 31 | 1 | -0.45444 |
| ZWE | Zimbabwe | -2.17441 | Other fragile | 31 | -2.08939 | Other fragile | 34 | 3 | -3.90992 |
| MRT | Mauritania | -2.12228 | Other fragile | 32 | -2.11175 | Other fragile | 32 | 0 | -0.49614 |
| MMR | Myanmar | -2.12124 | Other fragile | 33 | -2.22889 | Other fragile | 29 | -4 | 5.075033 |
| BFA | Burkina Faso | -2.07261 | Other fragile | 34 | -2.00132 | Other fragile | 38 | 4 | -3.43936 |
| TJK | Tajikistan | -2.06366 | Other fragile | 35 | -2.06395 | Other fragile | 35 | 0 | 0.013778 |
| BGD | Bangladesh | -2.00852 | Other fragile | 36 | -2.01088 | Other fragile | 36 | 0 | 0.117473 |
| PAK | Pakistan | -1.93177 | Other fragile | 37 | -2.00707 | Other fragile | 37 | 0 | 3.897914 |
| GMB | Gambia (the) | -1.91073 | Other fragile | 38 | -1.37325 | Other fragile | 58 | 20 | -28.1295 |
| PSE | Palestine, State of | -1.89382 | Other fragile | 39 | -1.6369 | Other fragile | 46 | 7 | -13.5663 |
| TLS | Timor-Leste | -1.88426 | Other fragile | 40 | -2.09659 | Other fragile | 33 | -7 | 11.26853 |
| ETH | Ethiopia | -1.8405 | Other fragile | 41 | -1.98768 | Other fragile | 39 | -2 | 7.996657 |
| DJI | Djibouti | -1.78645 | Other fragile | 42 | -1.70002 | Other fragile | 43 | 1 | -4.83807 |
| SLE | Sierra Leone | -1.75827 | Other fragile | 43 | -1.8258 | Other fragile | 40 | -3 | 3.840524 |
| KHM | Cambodia | -1.72144 | Other fragile | 44 | -1.78722 | Other fragile | 41 | -3 | 3.821591 |
| VEN | Venezuela (Bolivarian Republic of) | -1.63912 | Other fragile | 45 | -1.66977 | Other fragile | 45 | 0 | 1.870102 |
| CIV | CÃ´te d'Ivoire | -1.62619 | Other fragile | 46 | -1.75865 | Other fragile | 42 | -4 | 8.145046 |
| SLB | Solomon Islands | -1.60512 | Other fragile | 47 | -1.67311 | Other fragile | 44 | -3 | 4.235728 |
| LAO | Lao People's Democratic Republic (the) | -1.59005 | Other fragile | 48 | -1.57657 | Other fragile | 48 | 0 | -0.84766 |
| SWZ | Eswatini | -1.54774 | Other fragile | 49 | -1.54476 | Other fragile | 50 | 1 | -0.19289 |
| GTM | Guatemala | -1.54343 | Other fragile | 50 | -1.54512 | Other fragile | 49 | -1 | 0.109861 |
| KEN | Kenya | -1.53808 | Other fragile | 51 | -1.51718 | Other fragile | 53 | 2 | -1.35879 |
| NIC | Nicaragua | -1.53453 | Other fragile | 52 | -1.49753 | Other fragile | 54 | 2 | -2.41071 |
| TGO | Togo | -1.51965 | Other fragile | 53 | -1.51947 | Other fragile | 52 | -1 | -0.01192 |
| TZA | Tanzania, the United Republic of | -1.50573 | Other fragile | 54 | -1.53362 | Other fragile | 51 | -3 | 1.851992 |
| LSO | Lesotho | -1.49134 | Other fragile | 55 | -1.38953 | Other fragile | 57 | 2 | -6.82706 |
| HND | Honduras | -1.45901 | Other fragile | 56 | -1.3258 | Other fragile | 59 | 3 | -9.13003 |
| TKM | Turkmenistan | -1.45739 | Other fragile | 57 | -1.58451 | Other fragile | 47 | -10 | 8.72282 |
| PRK | Korea (the Democratic People's Republic of) | -1.39067 | Other fragile | 58 | -1.42077 | Other fragile | 56 | -2 | 2.16449 |
| BEN | Benin | -1.3339 | Other fragile | 59 | -1.42986 | Other fragile | 55 | -4 | 7.193981 |
| IRN | Iran (Islamic Republic of) | -1.2346 | Other fragile | 60 | -1.26115 | Other fragile | 60 | 0 | 2.150087 |
| GAB | Gabon | -1.08884 | Rest of the world | 61 | -1.02138 | Rest of the world | 64 | 3 | -6.19565 |
| MWI | Malawi | -1.07439 | Rest of the world | 62 | -1.04546 | Rest of the world | 63 | 1 | -2.69326 |
| AZE | Azerbaijan | -0.95204 | Rest of the world | 63 | -0.84841 | Rest of the world | 69 | 6 | -10.8843 |
| RWA | Rwanda | -0.9383 | Rest of the world | 64 | -1.10147 | Rest of the world | 62 | -2 | 17.38998 |
| EGY | Egypt | -0.93014 | Rest of the world | 65 | -0.99354 | Rest of the world | 65 | 0 | 6.816533 |
| NPL | Nepal | -0.89867 | Rest of the world | 66 | -0.87862 | Rest of the world | 66 | 0 | -2.23043 |
| SEN | Senegal | -0.89594 | Rest of the world | 67 | -0.87652 | Rest of the world | 67 | 0 | -2.1677 |
| IDN | Indonesia | -0.84869 | Rest of the world | 68 | -0.87575 | Rest of the world | 68 | 0 | 3.188237 |
| PHL | Philippines (the) | -0.81105 | Rest of the world | 69 | -1.1273 | Rest of the world | 61 | -8 | 38.99176 |
| IND | India | -0.68359 | Rest of the world | 70 | -0.79258 | Rest of the world | 70 | 0 | 15.94259 |
| PRY | Paraguay | -0.65542 | Rest of the world | 71 | -0.66158 | Rest of the world | 73 | 2 | 0.939601 |
| LBN | Lebanon | -0.6223 | Rest of the world | 72 | -0.69609 | Rest of the world | 72 | 0 | 11.85799 |
| STP | Sao Tome and Principe | -0.57931 | Rest of the world | 73 | -0.51799 | Rest of the world | 76 | 3 | -10.5848 |
| DZA | Algeria | -0.55583 | Rest of the world | 74 | -0.71342 | Rest of the world | 71 | -3 | 28.35185 |
| SLV | El Salvador | -0.5261 | Rest of the world | 75 | -0.47748 | Rest of the world | 79 | 4 | -9.2424 |
| KGZ | Kyrgyzstan | -0.50821 | Rest of the world | 76 | -0.37969 | Rest of the world | 84 | 8 | -25.2894 |
| UZB | Uzbekistan | -0.50676 | Rest of the world | 77 | -0.42349 | Rest of the world | 81 | 4 | -16.4303 |
| ZAF | South Africa | -0.50642 | Rest of the world | 78 | -0.58938 | Rest of the world | 74 | -4 | 16.38181 |
| COL | Colombia | -0.48187 | Rest of the world | 79 | -0.50412 | Rest of the world | 77 | -2 | 4.618859 |
| OMN | Oman | -0.47119 | Rest of the world | 80 | -0.54978 | Rest of the world | 75 | -5 | 16.67945 |
| VUT | Vanuatu | -0.46476 | Rest of the world | 81 | -0.03634 | Rest of the world | 92 | 11 | -92.1805 |
| GHA | Ghana | -0.41177 | Rest of the world | 82 | -0.48234 | Rest of the world | 78 | -4 | 17.13859 |
| SAU | Saudi Arabia | -0.39137 | Rest of the world | 83 | -0.46118 | Rest of the world | 80 | -3 | 17.83765 |
| TUR | Turkey | -0.34401 | Rest of the world | 84 | -0.41287 | Rest of the world | 83 | -1 | 20.01548 |
| PER | Peru | -0.34236 | Rest of the world | 85 | -0.41701 | Rest of the world | 82 | -3 | 21.80628 |
| MEX | Mexico | -0.30792 | Rest of the world | 86 | -0.35244 | Rest of the world | 86 | 0 | 14.45792 |
| BHR | Bahrain | -0.27511 | Rest of the world | 87 | -0.33027 | Rest of the world | 87 | 0 | 20.0482 |
| SUR | Suriname | -0.24459 | Rest of the world | 88 | -0.37689 | Rest of the world | 85 | -3 | 54.09115 |
| ECU | Ecuador | -0.24194 | Rest of the world | 89 | -0.25836 | Rest of the world | 89 | 0 | 6.783922 |
| NAM | Namibia | -0.19053 | Rest of the world | 90 | -0.28111 | Rest of the world | 88 | -2 | 47.54105 |
| DOM | Dominican Republic (the) | -0.18695 | Rest of the world | 91 | -0.20385 | Rest of the world | 90 | -1 | 9.037144 |
| VNM | Viet Nam | -0.07796 | Rest of the world | 92 | -0.13649 | Rest of the world | 91 | -1 | 75.07966 |
| GUY | Guyana | -0.04578 | Rest of the world | 93 | -0.01088 | Rest of the world | 95 | 2 | -76.2235 |
| MDV | Maldives | -0.0296 | Rest of the world | 94 | -0.01998 | Rest of the world | 94 | 0 | -32.5084 |
| LKA | Sri Lanka | 0.03113 | Rest of the world | 95 | -0.02337 | Rest of the world | 93 | -2 | -175.065 |
| BTN | Bhutan | 0.036003 | Rest of the world | 96 | 0.083165 | Rest of the world | 98 | 2 | 130.997 |
| PAN | Panama | 0.102355 | Rest of the world | 97 | 0.143456 | Rest of the world | 100 | 3 | 40.15562 |
| KWT | Kuwait | 0.128317 | Rest of the world | 98 | 0.067798 | Rest of the world | 96 | -2 | -47.1639 |
| JOR | Jordan | 0.13745 | Rest of the world | 99 | 0.286194 | Rest of the world | 103 | 4 | 108.2161 |
| THA | Thailand | 0.145395 | Rest of the world | 100 | 0.09031 | Rest of the world | 99 | -1 | -37.8868 |
| BIH | Bosnia and Herzegovina | 0.182631 | Rest of the world | 101 | 0.230448 | Rest of the world | 102 | 1 | 26.18226 |
| BWA | Botswana | 0.184747 | Rest of the world | 102 | 0.070723 | Rest of the world | 97 | -5 | -61.7192 |
| FJI | Fiji | 0.267099 | Rest of the world | 103 | 0.197394 | Rest of the world | 101 | -2 | -26.0969 |
| BOL | Bolivia (Plurinational State of) | 0.298261 | Rest of the world | 104 | 0.287927 | Rest of the world | 104 | 0 | -3.46458 |
| ALB | Albania | 0.343595 | Rest of the world | 105 | 0.346127 | Rest of the world | 105 | 0 | 0.736889 |
| KAZ | Kazakhstan | 0.419865 | Rest of the world | 106 | 0.427453 | Rest of the world | 107 | 1 | 1.807072 |
| QAT | Qatar | 0.465311 | Rest of the world | 107 | 0.468484 | Rest of the world | 110 | 3 | 0.68186 |
| CPV | Cabo Verde | 0.544681 | Rest of the world | 108 | 0.697855 | Rest of the world | 114 | 6 | 28.12188 |
| CHN | China | 0.570596 | Rest of the world | 109 | 0.465346 | Rest of the world | 109 | 0 | -18.4456 |
| BRA | Brazil | 0.579287 | Rest of the world | 110 | 0.462644 | Rest of the world | 108 | -2 | -20.1355 |
| MAR | Morocco | 0.583803 | Rest of the world | 111 | 0.355291 | Rest of the world | 106 | -5 | -39.1419 |
| CUB | Cuba | 0.657366 | Rest of the world | 112 | 0.612335 | Rest of the world | 111 | -1 | -6.85032 |
| MYS | Malaysia | 0.688667 | Rest of the world | 113 | 0.630003 | Rest of the world | 112 | -1 | -8.51839 |
| BLZ | Belize | 0.70103 | Rest of the world | 114 | 0.664116 | Rest of the world | 113 | -1 | -5.26577 |
| JAM | Jamaica | 0.818169 | Rest of the world | 115 | 0.914258 | Rest of the world | 120 | 5 | 11.74443 |
| MKD | North Macedonia | 0.820003 | Rest of the world | 116 | 0.797468 | Rest of the world | 116 | 0 | -2.74814 |
| ARE | United Arab Emirates (the) | 0.825114 | Rest of the world | 117 | 0.762566 | Rest of the world | 115 | -2 | -7.58055 |
| UKR | Ukraine | 0.826238 | Rest of the world | 118 | 0.977964 | Rest of the world | 122 | 4 | 18.36345 |
| MUS | Mauritius | 0.830867 | Rest of the world | 119 | 0.913237 | Rest of the world | 119 | 0 | 9.913766 |
| SRB | Serbia | 0.847376 | Rest of the world | 120 | 0.920572 | Rest of the world | 121 | 1 | 8.637902 |
| ARG | Argentina | 0.856996 | Rest of the world | 121 | 0.832307 | Rest of the world | 117 | -4 | -2.88094 |
| MNG | Mongolia | 0.892702 | Rest of the world | 122 | 0.992969 | Rest of the world | 123 | 1 | 11.23191 |
| RUS | Russian Federation (the) | 0.922084 | Rest of the world | 123 | 0.866918 | Rest of the world | 118 | -5 | -5.98281 |
| TTO | Trinidad and Tobago | 0.982827 | Rest of the world | 124 | 1.046007 | Rest of the world | 124 | 0 | 6.428333 |
| BLR | Belarus | 1.047887 | Rest of the world | 125 | 1.065356 | Rest of the world | 125 | 0 | 1.667061 |
| MDA | Moldova (the Republic of) | 1.233969 | Rest of the world | 126 | 1.307726 | Rest of the world | 126 | 0 | 5.977217 |
| GEO | Georgia | 1.39388 | Rest of the world | 127 | 1.382158 | Rest of the world | 127 | 0 | -0.84091 |
| TUN | Tunisia | 1.395557 | Rest of the world | 128 | 1.388705 | Rest of the world | 128 | 0 | -0.49101 |
| ARM | Armenia | 1.423637 | Rest of the world | 129 | 1.57837 | Rest of the world | 131 | 2 | 10.86881 |
| CRI | Costa Rica | 1.472532 | Rest of the world | 130 | 1.43353 | Rest of the world | 129 | -1 | -2.64863 |
| MNE | Montenegro | 1.485433 | Rest of the world | 131 | 1.50555 | Rest of the world | 130 | -1 | 1.354233 |
| BGR | Bulgaria | 1.720373 | Rest of the world | 132 | 1.721673 | Rest of the world | 133 | 1 | 0.075565 |
| BRN | Brunei Darussalam | 1.78109 | Rest of the world | 133 | 1.720647 | Rest of the world | 132 | -1 | -3.39361 |
| CHL | Chile | 2.003921 | Rest of the world | 134 | 1.927611 | Rest of the world | 134 | 0 | -3.80807 |
| HUN | Hungary | 2.024235 | Rest of the world | 135 | 2.064029 | Rest of the world | 137 | 2 | 1.96589 |
| HKG | Hong Kong | 2.030065 | Rest of the world | 136 | 1.962995 | Rest of the world | 135 | -1 | -3.30382 |
| ROM | Romania | 2.074589 | Rest of the world | 137 | 2.05498 | Rest of the world | 136 | -1 | -0.9452 |
| HRV | Croatia | 2.098831 | Rest of the world | 138 | 2.138883 | Rest of the world | 139 | 1 | 1.908331 |
| BRB | Barbados | 2.098944 | Rest of the world | 139 | 2.097084 | Rest of the world | 138 | -1 | -0.08861 |
| SYC | Seychelles | 2.205254 | Rest of the world | 140 | 2.180107 | Rest of the world | 140 | 0 | -1.14034 |
| SVK | Slovakia | 2.305376 | Rest of the world | 141 | 2.340542 | Rest of the world | 141 | 0 | 1.525394 |
| CYP | Cyprus | 2.344925 | Rest of the world | 142 | 2.444964 | Rest of the world | 143 | 1 | 4.266187 |
| POL | Poland | 2.436819 | Rest of the world | 143 | 2.431207 | Rest of the world | 142 | -1 | -0.23029 |
| URY | Uruguay | 2.501196 | Rest of the world | 144 | 2.485694 | Rest of the world | 144 | 0 | -0.6198 |
| MLT | Malta | 2.517748 | Rest of the world | 145 | 2.557649 | Rest of the world | 145 | 0 | 1.584796 |
| GRC | Greece | 2.609744 | Rest of the world | 146 | 2.612307 | Rest of the world | 146 | 0 | 0.098209 |
| SVN | Slovenia | 2.68125 | Rest of the world | 147 | 2.716748 | Rest of the world | 147 | 0 | 1.323915 |
| CZE | Czechia | 2.786072 | Rest of the world | 148 | 2.787659 | Rest of the world | 148 | 0 | 0.056934 |
| ITA | Italy | 2.810827 | Rest of the world | 149 | 2.875257 | Rest of the world | 150 | 1 | 2.29221 |
| KOR | Korea (the Republic of) | 2.861116 | Rest of the world | 150 | 2.828512 | Rest of the world | 149 | -1 | -1.13958 |
| ISR | Israel | 2.895063 | Rest of the world | 151 | 2.93438 | Rest of the world | 151 | 0 | 1.358053 |
| LTU | Lithuania | 3.039074 | Rest of the world | 152 | 3.031344 | Rest of the world | 152 | 0 | -0.25434 |
| IRL | Ireland | 3.039213 | Rest of the world | 153 | 3.03467 | Rest of the world | 153 | 0 | -0.1495 |
| USA | United States of America (the) | 3.046503 | Rest of the world | 154 | 3.037252 | Rest of the world | 154 | 0 | -0.30369 |
| JPN | Japan | 3.125489 | Rest of the world | 155 | 3.236975 | Rest of the world | 157 | 2 | 3.566977 |
| SGP | Singapore | 3.145295 | Rest of the world | 156 | 3.159245 | Rest of the world | 156 | 0 | 0.443542 |
| LVA | Latvia | 3.157144 | Rest of the world | 157 | 3.131662 | Rest of the world | 155 | -2 | -0.80712 |
| ESP | Spain | 3.296442 | Rest of the world | 158 | 3.328799 | Rest of the world | 158 | 0 | 0.981557 |
| PRT | Portugal | 3.341821 | Rest of the world | 159 | 3.343662 | Rest of the world | 159 | 0 | 0.05507 |
| GBR | United Kingdom | 3.577481 | Rest of the world | 160 | 3.564183 | Rest of the world | 160 | 0 | -0.37171 |
| FRA | France | 3.584352 | Rest of the world | 161 | 3.610692 | Rest of the world | 164 | 3 | 0.734877 |
| EST | Estonia | 3.591987 | Rest of the world | 162 | 3.575477 | Rest of the world | 161 | -1 | -0.45965 |
| DEU | Germany | 3.609754 | Rest of the world | 163 | 3.613346 | Rest of the world | 165 | 2 | 0.0995 |
| CHE | Switzerland | 3.625695 | Rest of the world | 164 | 3.603114 | Rest of the world | 162 | -2 | -0.62281 |
| AUT | Austria | 3.626518 | Rest of the world | 165 | 3.644956 | Rest of the world | 166 | 1 | 0.508425 |
| NLD | Netherlands (the) | 3.639595 | Rest of the world | 166 | 3.605402 | Rest of the world | 163 | -3 | -0.93947 |
| AUS | Australia | 3.694739 | Rest of the world | 167 | 3.650971 | Rest of the world | 167 | 0 | -1.18458 |
| BEL | Belgium | 3.733727 | Rest of the world | 168 | 3.751012 | Rest of the world | 169 | 1 | 0.462933 |
| CAN | Canada | 3.744584 | Rest of the world | 169 | 3.728714 | Rest of the world | 168 | -1 | -0.42382 |
| NOR | Norway | 3.819401 | Rest of the world | 170 | 3.798043 | Rest of the world | 170 | 0 | -0.5592 |
| ISL | Iceland | 3.830822 | Rest of the world | 171 | 3.889273 | Rest of the world | 172 | 1 | 1.525806 |
| NZL | New Zealand | 3.899208 | Rest of the world | 172 | 3.8625 | Rest of the world | 171 | -1 | -0.94143 |
| SWE | Sweden | 3.967457 | Rest of the world | 173 | 3.989889 | Rest of the world | 174 | 1 | 0.565415 |
| LUX | Luxembourg | 4.035219 | Rest of the world | 174 | 3.986204 | Rest of the world | 173 | -1 | -1.2147 |
| FIN | Finland | 4.255733 | Rest of the world | 175 | 4.291347 | Rest of the world | 175 | 0 | 0.836869 |
| DNK | Denmark | 4.57672 | Rest of the world | 176 | 4.612573 | Rest of the world | 176 | 0 | 0.783373 |