This practical exercise allows you to compute some country and product group specific indicators of NTMs incidence as presented in chapter 2.

The data needed for this practical exercise were originally built by the CEPII. This institute provides on its website different indicators measuring NTMs' incidence (http://www.cepii.fr/cepii/fr/bdd_modele/presentation.asp?id=28). These indicators are based on the TNT NTM data (http://unctad.org/en/Pages/DITC/Trade-Analysis/Non-Tariff-Measures/NTMs-TNT.aspx).

Download the two files "NTM-MAP Country.dta" and "NTM-MAP HS-Section.dta" from the course website.

The first file reports the data at the country level, while in the second one they are at the country and HS section levels.

The sample includes 63 countries, of which 24 European countries, and deals with the five categories of NTMs defined in the TNT classification (SPS, TBT, pre-shipment inspections, price control, and quantity control measures, cf. Figure 4).

To open the dataset at the country level in STATA, the command "use" should be applied. Before running the graphs and reporting the descriptive statistics, we have to finalize the dataset. We first average all European countries. Second we define a "continent" variable, which groups countries included in the dataset by continent (Latin America, Africa, Asia, Middle East and North Africa, Developed countries). The latter group includes both the European Union and Japan.

```
/*Before opening the dataset you may want to change the default directory that is the directory STATA will use unless another directory is specified. We created a folder called STATA_NTM (c:/ STATA_NTM) and copied all files that are needed to run the application (data files and do-files) into that folder. To change the default directory just run*/

cd c:/ STATA_NTM/Application1

/*If you want to save the output of your session you must open a so-called log file */

log using application_1.log, replace /*it is in a text format*/
```

We first consider the dataset defined at the country level. For the time being, there is no information at the sector level.

Once again datasets are uploaded by running the use command

```
use NTM-MAP_Country.dta, clear

* If you had not changed the default directory the right command would be
* use c:/ STATA_NTM/ NTM-MAP_Country.dta, clear
```

The dataset is now uploaded and the list of variables available appears in the upper right window together with a brief description of each variable, the label. Take the time to look at these descriptions.

We first generate a dummy variable that identifies all observations referring to an EU country. To do so we create a variable EU that is given a value 1 for all observations for which the variable identifying the countries corresponds to an EU country.

```
* Average all European countries

gen EU = 1 if isor == "AUT" | isor == "BEL" |isor == "CYP" | isor == "CZE" | isor == "DEU" | isor == "DNK" | isor == "ESP" | isor == "EST" | isor == "FIN" | isor == "FRA" | isor == "GBR" | isor == "GRC" | isor == "HUN" | isor == "IRL" | isor == "ITA" | isor == "LTU" | isor == "LUX" | isor =="LVA" | isor=="NLD" | isor == "POL" |isor=="PRT" | isor=="SVK" | isor == "SVN" | isor == "SWE"
```

We treat all observations of EU countries as if they were belonging to a single entity named EU. To do so we replace isor values by EUR if the variable we just constructed is equal to one. This is done with the replace command.

```
replace isor = "EUR" if EU == 1
```

We them recalculate all variables by taking their mean along the new isor classification. For non EU countries this command does change anything. However, EU countries are treated as one and the respective values for each variable correspond to the average across all EU countries. This is done by running the collapse command.

```
collapse HSline Num* Pres* Cov* Freq* , by(isor)
```

The next set of commands create some continent indicators: one for Latin American countries, one for African countries, one for Asian countries, one for MENA countries and one for developed basically EU and JPN.

```
* Define continent

gen continent = "Lat_America" if isor == "ARG" | isor == "BOL" | isor == "BRA" | isor == "CHL" | isor == "COL" | isor == "CRI" | isor == "ECU" | isor == "GTM" | isor == "MEX" | isor == "PER" | isor == "PRY" | isor =="VEN" | isor == "URY"

replace continent = "Africa" if isor == "BDI" | isor == "BFA" | isor == "CIV" | isor == "GIN" | isor == "KEN" | isor == "MDG" | isor == "MUS" | isor == "SEN" | isor == "TZA" |isor == "UGA" | isor == "ZAF"
```

```
replace continent = "Asia" if isor == "BGD" | isor == "IND" | isor == "LKA" | isor == "NPL" | isor == "PAK" | isor == "CHN" | isor == "IDN" |isor == "KHM" | isor == "LAO" | isor ==" PHL"

replace continent = "MENA" if isor == "EGY" | isor == "LBN" | isor == "MAR" |isor == "SYR" | isor == "TUN"

replace continent = "Dvlped" if isor == "EUR" | isor == "JPN"
```

The new dataset is saved with a name different from that of the original. It is important to keep the original dataset in its original form, always. In case you lose some intermediary steps results it will be easier to retrieve them form your original dataset.

```
save temp_NTM_country, replace
```

We now use the dataset defined at the country-HS section level.

Variables are the same as before plus an identifier for sectors.

Manipulations are similar to those just made with country level data. The main difference is the construction of a new variable identifying observations belonging to the various sectors represented. There are 21 of them.

You should run the do file and check the final results.

```
use NTM-MAP_HS-Section.dta, clear

* Sections' label

gen Section_label = "Live animals" if Section == 1

replace Section_label = "Vegetable products" if Section == 2

replace Section_label = "Fats and oils" if Section == 3

replace Section_label = "Processed food" if Section == 4

replace Section_label = "Mineral products" if Section == 5

replace Section_label = "Chemicals" if Section == 6

replace Section_label = "Rubber and plastics" if Section == 7

replace Section_label = "Rawhide and skins" if Section == 8

replace Section_label = "Wood" if Section == 9

replace Section_label = "Paper" if Section == 10
```

```
replace Section_label = "Textile" if Section == 11

replace Section_label = "Footwear" if Section == 12

replace Section_label = "Stone and Cement" if Section == 13

replace Section_label = "Pearls" if Section == 14

replace Section_label = "Base metals" if Section == 15

replace Section_label = "Machinery and electrical equipment" if Section == 16

replace Section_label = "Motor vehicles" if Section == 17

replace Section_label = "Optical and medical instruments" if Section == 18

replace Section_label = "Arms and ammunition" if Section == 19

replace Section_label = "Miscellaneous" if Section == 20

replace Section_label = "Works of Art" if Section == 21

* Average all EU countries

gen EU = 1 if isor == "AUT" | isor == "BEL" | isor == "CYP" | isor == "CZE" | isor ==
"DEU" | isor == "DNK" | isor == "ESP" | isor == "EST" | isor == "FIN" | isor == "FRA" |
isor == "GBR" | isor == "GRC" | isor == "HUN" |isor == "IRL" | isor == "ITA" | isor ==
"LTU" | isor == "LUX" | isor == "LVA" | isor == "NLD" | isor == "POL" | isor == "PRT"
|isor == "SVK" | isor == "SVN" | isor == "SWE"

replace isor = "EUR" if EU == 1

collapse Num* Pres* Cov* Freq* , by(isor Section Section_label)

 * Define continent

gen continent = "Lat_America" if isor == "ARG" | isor == "BOL" | isor == "BRA" | isor ==
"CHL" | isor == "COL" | isor == "CRI" | isor == "ECU"| isor == "GTM"| isor == "MEX" |
isor == "PER" | isor == "PRY" | isor == "VEN" | isor == "URY"

replace continent = "Africa" if isor == "BDI" | isor == "BFA" | isor == "CIV" | isor == "GIN"
| isor == "KEN" | isor == "MDG" | isor == "MUS" | isor == "SEN" | isor == "TZA" | isor
== "UGA" | isor == "ZAF"

replace continent = "Asia" if isor == "BGD" | isor == "IND" | isor == "LKA" | isor =="NPL" |
isor == "PAK" | isor == "CHN" | isor == "IDN" | isor == "KHM" | isor == "LAO" | isor
=="PHL"
```

```
replace continent = "MENA" if isor == "EGY" | isor == "LBN"| isor == "MAR" | isor == "SYR" | isor == "TUN"

replace continent = "Dvlped" if isor == "EUR" | isor == "JPN"

save temp_NTM_section, replace
```

We will now generate graphs using the different incidence indicators defined in module 2 that is the frequency index, the coverage ratio and the prevalence ratio.

These graphs can be obtained for all countries, by continent, for some specific countries and/or continents, for all NTMs, by type of NTMs, etc.

We will provide different examples that can be extended to any possible combination.

Let us start with Frequency index and coverage ratio, by broad type of NTMs. To do so we use the new version of the NTM_country dataset.

```
use temp_NTM_country, clear
```

Mean values are obtained by running the collapse command. You must keep in mind that the collapse command significantly modifies your original dataset. The collapse command computes by default averages but other statistics can also be obtained such as standard deviations, summations.

```
collapse FreqA-FreqE CovA-CovE NumA-NumE
```

We then generate some bar graphs with the graph + bar command. There is a large set of options that allow us to refine the appearance of the graph and include some additional information such as labels and titles.

```
graph bar Freq*, legend(label(1 "SPS") label(2 "TBT") label(3 "Pre-shipment")label(4 "Price control") label(5 "Quantity control")) title("Frequency Index, by broad type of NTMs") ytitle("Value")

/*In order to export your graph in a format that is usable in a text editor use the graph export command*/

graph export FREQ_index_all_NTM.wmf /*it is here exported in windows metafile format

graph bar Cov*, legend(label(1 "SPS") label(2 "TBT") label(3 "Pre-shipment")label(4 "Price control") label(5 "Quantity control")) title("Coverage Ratio, by broad type of NTMs") ytitle("Value")

graph export COV_ratio_all_NTM.wmf
```

As an exercise you should be able to reproduce the same type of graph with the Num variables that represent the prevalence ratio for each type of NTMs.

We now replicate previous manipulations using Frequency index and prevalence ratio of NTMs and computing averages by broad type of NTMs and by continent.

```
use temp_NTM_country, clear

collapse FreqNTM CovNTM NumNTM, by(continent)

graph bar FreqNTM CovNTM, over(continent) legend(label(1 "Freq. Index (all NTMs)") label(2 "Coverage ratio (all NTMs)")) title("Frequency Index and Coverage Ratio, by continent") ytitle("Value")

graph export COV_ratio_ALL_CONT.wmf

graph bar NumNTM, over(continent) legend(label(1 "Prevalence Ratio (all NTMs)")) title("Prevalence Ratio, by continent") ytitle("Value")

graph export PREV_ratio__ALL_CONT.wmf
```

As an exercise you should be able to reproduce the same type of graph with the COV variables that represent the coverage ratio for each type of NTMs .

Frequency index, coverage ratio and prevalence ratio of NTMs can also be computed and represented for countries belonging to the same sub group such as African countries.

```
use temp_NTM_country, clear
```

Here no average computation is necessary you just have to select the countries you want to represent. To select African countries you would just have to keep observations for which the continent variable is equal to Africa.

```
graph bar FreqNTM CovNTM if continent == "Africa", over(isor) legend(label(1 "Freq. Index (all NTMs)") label(2 "Coverage ratio (all NTMs)")) title("Frequency Index and Coverage Ratio, by African country") ytitle("Value")

graph export FREQ_index_NTM_AFRI.wmf

graph bar NumNTM if continent == "Africa", over(isor) legend(label(1 "Prevalence Ratio (all NTMs)")) title("Prevalence Ratio, by African country") ytitle("Value")

graph export PREV_ratio_NTM_AFRI.wmf
```

Data can also be used to compute some simple descriptive statistics. For instance we can calculate the share of product lines (defined at the HS 6-digit level) with at least one NTM, one SPS, and one TBT measure. This only requires some straightforward variables manipulation.

```
use temp_NTM_country, replace
```

We compute shares by simply dividing the number of tariff lines affected by each type of NTM by the total number of HSlines. The resulting ratio is multiplied by 100 to obtain percentages.

```
gen shr_NTM = PresNTM/HSline * 100

gen shr_SPS = PresA/HSline * 100

gen shr_TBT = PresB/HSline * 100

label var shr_NTM "Share of HS6 lines with at least one NTM (%)"

label var shr_SPS "Share of HS6 lines with at least one SPS (%)"

label var shr_TBT "Share of HS6 lines with at least one TBT (%)"

sort isor
```

The edit command allows to glance at the data.

```
edit isor shr_NTM

edit isor shr_NTM shr_SPS shr_TBT
```

We can compute the average share over the whole sample of countries by using the sum command

```
sum shr_*
```

We can also generate graphs and descriptive statistics by economic sector

We now account for the sector dimension by adding the HS section dimension in our graphs and descriptive statistics.

Let us start with the computation and representation of Frequency index of NTMs across economic sectors. Manipulations are similar to previous ones.

```
use temp_NTM_section, replace

collapse FreqNTM, by(Section Section_label)
```

The section and section_label variables both provide the same information meaning that the average value is obtained by section but the section_label variable remains. Eventually all variables are dropped but FreqNTM, Section and Section_label.

```
edit Section Section_label FreqNTM
```

Let us now compute frequency indices of NTMs across economic sector this time by continent.

```
use temp_NTM_section, replace
```

collapse FreqNTM , by(Section Section_label continent)

The collapse that is the computation of the average is now along two dimensions: the section and the continent.

The next command, that is the reshape one, allows reorganize the data. They are now in a long form and after the collapse transformation they may be more easily readable in a wide form.

reshape wide FreqNTM, i(Section Section_label) j(continent) string

Take a few minutes to observe the changes.

Some renaming is also welcome.

rename FreqNTMAfrica Freq_Africa

rename FreqNTMAsia Freq_Asia

rename FreqNTMDvlped Freq_Dvlped

rename FreqNTMLat_America Freq_LatAmerica

rename FreqNTMMENA Freq_MENA

Variables names can be completed by teh adjunction of labels that will appear in the variable windows of your STATA.

label var Freq_Africa "Freq. Index, Africa & all NTMs"

label var Freq_Asia "Freq. Index, Asia & all NTMs"

label var Freq_Dvlped "Freq. Index, Dvlped countries & all NTMs"

label var Freq_LatAmerica "Freq. Index, Latin America & all NTMs"

label var Freq_MENA "Freq. Index, MENA & all NTMs"

Edit allows glance at your data.

edit Section Section_label Freq*

/* you must close your log file at the end of the session*/

log close