**Ad-valorem equivalent of Non-Tariff measures (AVE). GTAP level estimates.**

**Description of the database**

The database provided in here consists provides ad-valorem equivalents (AVE) of NTM for 2 broad categories of NTMs: Technical and non-technical (see Annex 1).

Data coverage includes 40 importing countries plus the European Union, and 151 exporting countries plus the European Union. Total number of observations is 53241. Importer country coverage is provided in *Annex 2*, country codes follows the standard ISO classification. Sector coverage follows GTAP 8 classification and covers 42 sectors (See *Annex 3*). AVE for four sectors could not be estimated (Wheat, Sugar cane/beet, Raw Milk and Electricity).

AVEs are to be interpreted as the average costs related to the NTMs when the product is imported. Data is in percentage points (E.g. = AVE =2 is equivalent to a tariff of 2 percentage points). Zero values indicate no effects, while missing values indicate that AVE could not be reliably estimated.

The variables in the dataset are:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| importer  |  | importer ISOcode |  |  |  |
| exporter  |  | exporter ISOcode |  |  |  |
| gtap\_code | GTAP Product Code |  |  |  |
| gtap\_desc | GTAP Product Description |  |  |
| ave1C  |  | Ad-Valorem equivalent of technical measures |
| ave2C  |  | Ad-Valorem Equivalent of non-technical measures |

Estimates are to be considered preliminary and obtained by NTMs data collected between 2013 and 2015. Technical details and reference for the estimation are provided in *Annex 4.*

**Annex 1:** **International classification of non-tariff measures. Measures covered.**

 AVE of *technical measures* captures the effects of these measures:

* Chapter A.*Sanitary and phytosanitary measures*: requirements restricting the use of specific substances, hygienic requirements or other measures for preventing the dissemination of diseases as well as conformity assessment measures related to food safety, such as certification, testing and inspection, and quarantine.
* Chapter B. *Technical measures*: labelling requirements and conformity assessment measures relating to technical product requirements, including certification, testing and inspection.

Ave of *non-technical measures* captures the effects of these measures:

* Chapter D. *Contingent trade measures*: measures to counteract adverse effects of imports, including antidumping, countervailing, and safeguards measures.
* Chapter E. *Quantitative restrictions*:licensing requirements, quotas and other quantity control measures, import prohibitions that are not related to sanitary and phytosanitary or technical barriers to trade measures.
* Chapter F. *Price controls*: measures to control or affect the prices of imported goods to support or stabilize the domestic price of competing products or raise tax revenue. Includes para-tariff measures.
* Chapter G. *Finance measures*:policies restricting payments for imports, including regulation of access and cost of foreign exchange and terms of payment.

***Source***: Based on UNCTAD (2015).

https://unctad.org/en/Pages/DITC/Trade-Analysis/Non-Tariff-Measures/NTMs-Classification.aspx

**Annex 2: Importer country coverage**

|  |  |  |  |
| --- | --- | --- | --- |
| Argentina | ARG | Malaysia | MYS |
| Australia | AUS | Mali | MLI |
| Benin | BEN | Mexico | MEX |
| Brazil | BRA | New Zealand | NZL |
| Brunei Darussalam | BRN | Niger | NER |
| Cambodia | KHM | Nigeria | NGA |
| Canada | CAN | Panama | PAN |
| Chile | CHL | Paraguay | PRY |
| Colombia | COL | Peru | PER |
| Costa Rica | CRI | Philippines | PHL |
| Cuba | CUB | Plurinational State of Bolivia | BOL |
| Ecuador | ECU | Russian Federation | RUS |
| El Salvador | SLV | Singapore | SGP |
| Ethiopia | ETH | Tajikistan | TJK |
| European Union | EUN | Thailand | THA |
| Ghana | GHA | Togo | TGO |
| Guatemala | GTM | United States of America | USA |
| Honduras | HND | Uruguay | URY |
| Indonesia | IDN | Venezuela | VEN |
| Japan | JPN | Viet Nam | VNM |
| Lao People's Dem. Rep. | LAO |  |  |

*Note: ISO Codes for all countries are available at:*

*https://unstats.un.org/unsd/tradekb/Knowledgebase/50377/Comtrade-Country-Code-and-Name*

**Annex 3: GTAP sectors**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | **PDR** | Paddy rice |  | 23 | **PCR** | Processed rice |
| 2 | **WHT** | Wheat |  | 24 | **SGR** | Sugar |
| 3 | **GRO** | Cereal grains nec |  | 25 | **OFD** | Food products nec |
| 4 | **V\_F** | Vegetables, fruit, nuts |  | 26 | **B\_T** | Beverages and tobacco products |
| 5 | **OSD** | Oil seeds |  | 27 | **TEX** | Textiles |
| 6 | **C\_B** | Sugar cane, sugar beet |  | 28 | **WAP** | Wearing apparel |
| 7 | **PFB** | Plant-based fibers |  | 29 | **LEA** | Leather products |
| 8 | **OCR** | Crops nec |  | 30 | **LUM** | Wood products |
| 9 | **CTL** | Bovine cattle, sheep and goats, horses |  | 31 | **PPP** | Paper products, publishing |
| 10 | **OAP** | Animal products nec |  | 32 | **P\_C** | Petroleum, coal products |
| 11 | **RMK** | Raw milk |  | 33 | **CRP** | Chemical, rubber, plastic products |
| 12 | **WOL** | Wool, silk-worm cocoons |  | 34 | **NMM** | Mineral products nec |
| 13 | **FRS** | Forestry |  | 35 | **I\_S** | Ferrous metals |
| 14 | **FSH** | Fishing |  | 36 | **NFM** | Metals nec |
| 15 | **COA** | Coal |  | 37 | **FMP** | Metal products |
| 16 | **OIL** | Oil |  | 38 | **MVH** | Motor vehicles and parts |
| 17 | **GAS** | Gas |  | 39 | **OTN** | Transport equipment nec |
| 18 | **OMN** | Minerals nec |  | 40 | **ELE** | Electronic equipment |
| 19 | **CMT** | Bovine meat products |  | 41 | **OME** | Machinery and equipment nec |
| 20 | **OMT** | Meat products nec |  | 42 | **OMF** | Manufactures nec |
| 21 | **VOL** | Vegetable oils and fats |  | 43 | **ELY** | Electricity |
| 22 | **MIL** | Dairy products |  | 44 | **GDT** | Gas manufacture, distribution |

*Note: in grey are sectors for which estimates are not available.*

**Annex 4 – Technical details**

Measurement of Ad-Valorem equivalents

The ad-valorem equivalents of NTMs presented in here are based on the estimation method developed in Kee and Nicita (2017), which in turn, builds on the seminal work of Kee, Nicita and Olarreaga (2009). As with most of the econometric literature estimating AVEs, the effects of NTMs on international trade are isolated using incidence measures of NTMs as explanatory variables. Following Kee and Nicita (2017), the AVEs are computed as the equivalent tariff that would be necessary to impose in order to obtain the same proportionate change in quantity imported due to the presence of NTMs. In short, the estimation method seeks to identify the instantaneous semi-elasticity of trade with respect to differences in the observed tariffs, and apply this elasticity to the estimated effects of NTMs on the quantity of trade. Bilateral variations in the AVE estimates are calculated on the assumption that trade costs associated to NTMs are a function of importers' and exporters' market power. The econometric model controls for issues related to the estimation of gravity type equations at the disaggregated level. Zero-inflated maximum likelihood estimation takes into account the large presence of zero in the bilateral trade statistics, while two-stage instrumental variable techniques address the endogeneity of tariffs and NTMs. An important point of consideration is that the estimation of AVEs cannot account for prohibitive NTMs, as they result in zero trade. Therefore, these estimates are to be intended as lower bounds.[[1]](#footnote-1) In more formal terms the second stage quantity estimation equation takes the form:

where

and .

Where *Q* denotes quantities, *t* tariffs, and *NTM* the presence of an NTM. These explanatory variables are denoted by "hat" as they are instrumented using the average tariff or NTM of the three closest countries; and where *n* denotes products, *i* importing country and *j* exporting country. The variable *share* denotes the import market share of country *i* in world trade of product *n*, and denotes export market share of country *j* in world trade of product *n*. are the standard gravity variables: the log of the gross domestic product (GDP) of the importer and the exporter, bilateral distance between the importer and the exporter, landlocked indicators for the importer and the exporter, and common border indicator.

In this setup the elasticity of trade with respect to tariff is:

,

and the AVE measuring the ad-valorem tariffs that induce the same proportionate change in quantity as the presence of an NTM is:

 for small .

In more intuitive terms, to measure the AVE of NTMs the first step is to construct the proportionate change in quantity imported due to the presence of NTMs, and then use the elasticity of trade with respect to one percentage point increase in the tariff to convert the proportionate change in quantity imported due to NTMs in terms of ad valorem equivalents.

References:

Kee, Nicita and Olarreaga (2009) Estimating Trade Restrictiveness Indices Economic Journal, Vol. 119, No. 534, pp. 172-199, January 2009.

Kee and Nicita (2017), Trade Frauds, Trade Elasticities and Non'Tariff Measures, Mimeo, available at: http://pubdocs.worldbank.org/en/315201480958601753/3-KEE-paper.pdf

1. Also note that the estimation strategy does not account for the positive effects of NTMs on international trade. Positive effects may happen when NTMs address information issues, or guarantee quality of products. In these cases the AVE of NTMs is set to zero, rather than to a negative value. [↑](#footnote-ref-1)