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TRADE IMPACT
FOR GOOD

Detecting Outliers and Computing Trade Indices

New ITC application

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Application's goals

“[...] **Trade-Related Technical Assistance** to **Least Developed Countries**” (SDGs 8.a)



- Based on ITC data processing experience
- Improve data trade quality and transparency
- Latest methodologies on outliers detections
- Customizable indices calculations on value, quantity and unit value

- Demand form National Statistics Office of Malawi
- Offline and user-friendly application
- Developed on an open source software – no licences fees

Program main steps

1. Cleaning dataset to ensure data consistency

- Checking products (nomenclature, revision)
- Removing double records
- Verifying quantity unit homogeneity

2. Outliers detection

3. Heterogeneity check

4. Indices compilation

FOCUS 1: Outliers Detection

- Distinction between long and short time series
- Using log transformation
- Combine detections $UV+V$, $UV+Q$

Long time series ($n > 30$)

Method:

Residuals of a **robust regression using M-estimators** method $Y = X\theta_W + r$

Short time series ($n \leq 30$)

Method:

Z-modified score for each observation, based on robust estimators
 $|M_i| > 3.5$

FOCUS 2: Trade Indices

Main indices parameters:

- Indices computed on unit value, value and quantity – based or chained
- Laspeyres, Paasche, Fisher indices available
- Year-to-date indices as an option

Application design



Detecting Outliers and Computing Trade Indices

Welcome on the ITC application developed by the Market Analysis and Research (MAR) section. This application detects outliers in values and/or quantities and then computes trade indices.

Input trade dataset (CSV comma delimited)

Browse... georgie_data.csv
Upload complete

Please select the maximum percentage of missing data by series

0 64 100

Please select the time breakdown for indices

Yearly
 Quarterly
 Monthly

Please select the date range to analyse

2005/01 to 2015/11

WARNING: Please make sure the date range parameter follows the time breakdown logic. (e.g. if time breakdown is quarterly, date should start with the first month of a quarter)

Please select the type of indices you want to compute

Base
 Chained
 Year to date

Please select the breakdown level of the product variable

Tariff Line

Aggregated on Reporter variable
 Aggregated on Partner variable

WARNING: Make sure world partner is not counted twice.

Go!

Parameters setting

Processing Report Input Dataset Outliers Heterogeneous Series Indices Table **Cover Rate** ?Help

Cover rate

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Show 25 entries Search:

step	trade_value_0	trade_value_pct_0	nb_series_0
Original dataset	11222824000	100	108367
After removing non-HS product code	11217730000	99.95	108152
After removing double records	11217730000	99.95	108152
After quantity unit homogeneity verification	11217730000	99.95	108152
After removing series with unstable HS revision	10187540000	90.78	81719
After removing incomplete series	5350578000	47.68	243
After removing outliers	5328754000	47.48	243
After removing heterogeneous series	5305004000	47.27	238
After calculating indices	5305004000	47.27	238

step trade_value_0 trade_value_pct_0 nb_series_0

Showing 1 to 9 of 9 entries Previous 1 Next

Results display

Outliers detected

Processing Report

Input Dataset

Outliers

Heterogeneous Series

Indices Table

Cover Rate

?Help

Detected Outliers

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Search:

Outliers sorted by the ratio with the median

PARTNER_CD	PRODUCT_CD	period	year	UNIT_VALUE	QUANTITY	VALUE	median_uv	div.median_uv	outlier_value	outlier_quantity
031	33051000000	3	2012	1000.000000	1	1000	5.6197634	0.005619763	0	1
643	49070010100	8	2012	5122.807018	57	292000	71.4285714	0.013943249	1	0
795	22021000000	2	2011	25.000000	40	1000	0.4487313	0.017949252	1	1
031	84212390000	12	2012	125.000000	16	2000	2.6195435	0.020956348	1	1
804	49070010100	8	2012	2695.129665	1581	4261000	76.6467066	0.028438968	1	0
051	49119900000	12	2008	500.000000	2	1000	16.0857909	0.032171582	0	1
051	49111010000	6	2015	72.727273	55	4000	3.0160415	0.041470570	0	1
031	84212390000	9	2014	61.224490	49	3000	2.6195435	0.042785877	1	1



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Thank you for your attention

