Commonly used trade integration and trade performance indicators in ESCAP work

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Aspect of use

- Trade indices and indicators calculated on ad hoc or regular basis for the purpose of trade analysis and research at regional and/or individual country levels.
Areas of use

- APTIAD
- Extension of APTA
- Market access of LDCs and SVEs
- Demonstration of use of statistics in trade policymaking to various stakeholder

Handbook is downloadable or can be ordered (with CD) through the UN publications
Indicators in APTIAD

- Pre-calculated indicators
- Interactive Trade Indicators (ITI platform)
- Trade data sourced from UN COMTRADE (downloaded through WITS)
- GDP data from WDI
Pre-calculated indicators
Export propensity shows the degree of reliance of domestic producers on foreign markets. It is measured by dividing exports by gross domestic product and expressing the ratio as a percentage. Export is either total or intraregional exports of a single country or the given preferential trade agreement.

The mathematical definition of export propensity for a single country is:

\[
EP = \frac{\sum_{d \in s} X_{d, s}}{GDP_{d}} \times 100
\]

where \( d \) is the country under study, \( s \) stands for a set of all other countries, \( X \) represents exports from country \( d \) to countries \( s \), and \( GDP \) is the gross domestic product of country \( d \). The set of other countries, \( s \), may include one or more countries, such as a partner or partners in a preferential trade agreement (PTA), or the rest of the world.

The figure entitled “Export Propensity” shows the contribution of the total exports by each country to the world to its GDP (columns), and total exports of the countries party to a PTA to the world as a ratio of their joint GDPs (line).

The figure entitled “Intraregional Export Propensity” shows the contribution of intraregional (bilateral) exports by each country to its GDP (columns), and total intraregional export of the PTA as a ratio of countries’ joint GDP (line).

Range of values: Values of this index range from 0 (with no exports) to 100 (with domestic production fully exported). In some cases, economies engage in re-exporting, which tends to increase the value of the index and where re-export sizeable they can push the index over 100 per cent. Except in a rare case of very high trade dependence between countries, the export propensity of a country will be much higher than that country’s intraregional export propensity.

Original data sources: All indicators have been calculated from export values sourced from United Nations Commodity Trade Statistics downloaded from World Integrated Trade Solution (WITS), available online at wits.worldbank.org/witsweb/ GDP data have been downloaded from World Development Indicators (WDI), available online at http://go.worldbank.org/9U9ZUHUZ0 United Nations COMTRADE and WDI copyrights on original data are gratefully acknowledged. The most recent update was April/May 2008, which includes the most recent trade data up to the year 2006.
Import dependence

For members of the Asia-Pacific Trade Agreement (APTA)

Import dependence indicates a contribution by foreign supply to domestic production. It is measured by dividing imports by gross domestic product and expressing the ratio as a percentage. Import is either total or intraregional import of a single country or the given preferential trade agreement.

Notes

The import dependence index, or a ratio of imports to GDP, may provide limited information of vulnerability to certain types of external shocks. This index should not be confused with the Import Penetration Index, which shows the degree of domestic demand (the difference between GDP and net exports) that is satisfied by imports. Import dependence is negatively correlated with economic size of a country (e.g., import dependence indices of two countries with the same value of imports will differ with regard to their economic size, so that the larger country of the two will exhibit smaller import dependence). Economic size is measured by gross domestic product (GDP); thus the larger the GDP, the larger will be the country.

The mathematical definition of import dependence for a single country is:

$$MD = \frac{\sum d M_{sd}}{GDP_d} \times 100$$

where $d$ is the country under study, $s$ stands for a set of all other countries, $M$ represents imports of country $d$ from countries $s$, and GDP is gross domestic product of country $d$. The set of other countries, $s$, may include one or more country (such as a partner or partners in a preferential trade agreement, PTA) or the rest of the world.

The figure entitled “Import Dependence” shows the contribution of imports by each country from the world to its GDP (columns), and total imports of the countries parties to a PTA from the world as a ratio of their joint GDPs (line).

The figure entitled “Intraregional Import Dependence” shows the contribution of intraregional (bilateral) imports of each country to its GDP (columns), and total intraregional import of the PTA as a ratio of countries’ joint GDP (line).

Range of values: Values of this index range from 0 (with no imports) to 100 (with domestic production fully imported, and disregarding exports). In some cases, economies engage in re-exporting, which tends to increase the value of the index and, where re-export are sizable, they can push the index to over 100 per cent. Except in a rare case of very high trade dependence between countries, the import dependence of a country will be much higher than that country’s intraregional import dependence.

Original data sources: All indicators have been calculated from import values sourced from United Nations Commodity Trade Statistics downloaded from World Integrated Trade Solution (WITS), available online at wits.worldbank.org/witsweb/. GDP data have been downloaded from World Development Indicators (WDI), available online at http://wdi.worldbank.org/WDS/3UH2ZD. UN COMTRADE and WDI copyrights on original data are gratefully acknowledged. The most recent update was April/May 2006, which includes the most recent trade data included up to year 2000.
Trade dependence (Openness)

Trade dependence is often used to measure the degree of integration in a global economy. This trade-to-GDP ratio is also often referred to as "trade openness." However, using this indicator as a representation of openness could be misleading because a relatively small value does not necessarily imply high trade barriers. A small value may, in fact, be caused by a large proportion of GDP being created by non-traded activities and other factors. It is not possible to evaluate trade regimes as "open" or "closed" on the basis of this indicator alone.

The mathematical definition of trade dependence of a single country is given as the value of total trade (export plus import) as percentage of GDP:

$$TD = \frac{\sum_{d} X_{sd} + \sum_{d} M_{sd}}{GDP} \cdot 100$$

where $d$ is the country under study, $s$ stands for a set of all other countries, $X$ represents exports and $M$ is imports of country $d$ with countries $s$, and GDP is the gross domestic product of country $d$. The set of other countries, $s$, may include one or more country (such as a partner or partners in a preferential trade agreement, PTA) or the rest of the world.

The figure entitled “Trade Dependence” shows the total exports and imports by each country from the world to its GDP (columns), and total exports and imports of the countries party to a PTA from the world as a ratio of their joint GDPs (line).

The figure entitled “Intraregional Trade Dependence” shows the contribution of intraregional (bilateral) exports and imports of each country to its GDP (columns) and total intraregional exports and import of the PTA as a ratio of countries’ joint GDP (line).

Range of values: Values of this index range from 0 to 1. In some cases, economies engage in re-exporting, which tends to increase the value of the index and, where the re-exporting value is sizable, it can push the index over 100 percent. Except in a rare case of very high trade dependence between countries, the import dependence of a country will be much higher than that country’s intraregional import dependence.

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Export-import coverage

**Export-Import Coverage** is an alternative measure to normalized trade balance (NTB). It indicates whether or not a country's imports are fully covered (paid for) by exports in a given year. This indicator is defined as the ratio of the total exports to total imports for a single country or the PTA. It also can be defined for values of intraregional exports and imports.

\[
EMC = \frac{\sum w_i X_{w_i}}{\sum w_i M_{w_i}} \cdot 100
\]

where \( s \) is the set of countries in the source, \( w \) stands for a set of all countries in the world, \( X \) is exports and \( M \) is imports. In other words, we take total exports from the source region and divide by the total imports from the source region and express the result as a percentage.

The figure entitled "Export-Import Coverage" shows how much of the total imports were paid for by total exports for each country (columns) and the country members of the PTA taken together (line).

The figure entitled "Intraregional Export-Import Coverage" shows how much of the intraregional (bilateral) imports were paid for by intraregional (bilateral) exports for each country (columns) and the country members of the PTA taken together (line).

Range of values: Values of the index range from 0 when there are no exports to +\( \infty \) when there are no imports. A value of 100 indicates that 100 per cent of imports was paid for by exports (in other words, balanced trade). Figures may differ significantly if calculated only for merchandise trade or for merchandise and services trade.

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Normalized trade balance

Normalized trade balance relates the difference between exports and imports to total trade (exports plus imports), and reflects the trade performance. The indicators are given at the level of total exports and imports for a single country or the PTA.

Notes

The normalized trade balance is the trade balance (total exports minus total imports) as a fraction of total trade (total exports plus total imports). In other words, it represents a record of a country’s trade transactions with the rest of the world normalized with its own total trade. In general, economists expect that the trade balance will be zero in the long term. Hence, imports will not be financed by exports in the short term.

The mathematical definition of normalized trade balance of a single country is:

\[ NTB = \frac{\sum_{s} X_{sw} - \sum_{w} M_{ws}}{\sum_{s} X_{sw} + \sum_{w} M_{ws}} \times 100 \]

where \( s \) is the set of countries in the source, \( w \) stands for a set of all countries in the world, \( X \) is exports and \( M \) is imports. In other words, we take the total exports from the source region less the total imports to the source region, and divide them by the total trade of the source region.

The figure entitled "Normalized Trade Balance" shows the trade balance of each country with the world as a fraction of their total trade with the world (columns), and trade balance of the countries party to a PTA as a ratio of their joint trade value (line).

Range of values: Values of this index range from -100 and +100. A value of zero indicates trade balance. Negative figures indicate a deficit and positive figures indicate surpluses. The figures may differ significantly if calculated only for merchandise trade or for merchandise and services trade.

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Trade (export, import) shares

Trade Shares
For members of the Asia-Pacific Trade Agreement (APTA)

Trade Share tells us the importance of a particular trade partner in terms of the overall trade profile of an economy or preferential trade agreement (PTA).

Trade Shares (TS)
Asia-Pacific Trade Agreement (APTA)

Notes
Trade share is expressed as a percentage of national or PTA trade from the region of interest to the total national or PTA trade. The changes in trade shares over time may indicate that the economies in question are becoming more integrated. In the case of intraregional trade shares, increases in the values over time are sometimes interpreted as an indicator of the significance of a PTA.

The mathematical definition of trade share index is:

\[ TS = \frac{\sum_{s \in d} X_{sd} - \sum_{w \in d} M_{dw}}{\sum_{w \in w} X_{sw} + \sum_{w \in w} M_{ws}} \times 100 \]

where \( s \) is the set of countries in the source, \( d \) stands for a set of countries in the destination, \( w \) is the set of countries in the world, \( X \) is intraregional (bilateral) or the total exports and \( M \) is the intraregional (bilateral) or total imports.

The figure entitled “Trade Shares” shows the share of the total trade of a country with the bilateral (regional) partner in total trade of that country (columns), and the share of intraregional trade in total trade of the PTA (line).

Range of values: Values of this index range from 0 and 100 per cent, with higher values indicating greater importance of the selected trading partner.

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Interactive trade indicators

Note that this platform is being updated at present and may not be accessible at periods.
Indicators for analysis of

- Trade in relation to economy
- Trade performance
- Direction of trade
- Sectoral structure of trade
- Protection
Trade and economy

To reflect significance of trade relative to the overall economy: Trade Dependence, Export Propensity, Import Penetration, (Marginal) Propensity to Import

Useful in understanding an economy’s vulnerability to certain types of external shocks (e.g., exchange rate movements).
The *import penetration index* measures the proportion of domestic demand that is satisfied by imports. It is also termed an *import dependency index* and an aggregate *self-sufficiency index*.

*The marginal propensity to import* index is an approximation to a commonly used macroeconomic variable. It tells us how much we expect imports to rise for a given rise in the value of income (GDP).
Trade performance

Provide information on trade performance of a country or a region in terms of:

- growth (real or nominal) of total or product trade (export / import)
- economists expect that the trade balance will be zero in the long run meaning that imports are financed by exports, but it may vary considerably over shorter periods so normalized trade balance and export-import coverage are used to help track these
indicators which can inform policymakers on the level of and changes in the regional pattern or direction of trade flows

Probably most frequently used is the trade intensity index which can be thought of as a normalized export share. It tells us whether or not the observed share of trade is greater than the world average, or ‘intense’ relative to what we might expect (used in relation to finding “natural trading partners”)
… to show integration into the world (regional) economy

- **regional Hirschmann** (a measure of the geographical concentration of exports), and
- **trade entropy index**

address the question of whether or not an economy is heavily reliant on a small number of export markets, or sells to a diverse range of economies.
Sectural structure of trade

- Competitiveness
- Major export category (sectoral export share)
- Sectoral Hirschmann
- Export diversification
- Revealed comparative advantage
- Additive revealed comparative advantage
- Michelaye index
- Regional orientation
- Complementarity
- Export similarity
- Sectoral/aggregate intra-industry trade
- Sectoral/aggregate marginal intra-industry trade
- Trade overlap
Protection

- Simple (average) tariff
- Weighted tariff
- Dispersion of tariff
Work on market access of LDCs and SVEs

- Duty free trade to total imports (dutiable imports) and broken down to sectors in individual developed countries
- Average tariff on products of export interest of LDCs and SVEs
- Preferences actual value/utilization rate
Demonstration and training

- Talks at fora with policymakers, business sector and other parties interested in inclusive and socially sustainable trade reforms
- Training to policymakers, analysts and researchers
- Developing collaboration with other organizations and institutions