OECD/WTO TRADE IN VALUE ADDED (TIVA) INDICATORS

GUIDE TO COUNTRY NOTES

Figure 1: Domestic value added content of gross exports, % (EXGRDVA_EX)

Countries with relatively open and liberal trade regimes and high degrees of foreign investment will be typically expected to have higher foreign content in their exports. But a number of other factors impact on the extent of a country's integration into, and specialisation within, global value chains. Geography, i.e. (proximity to neighbouring markets), size (ability to source intermediates from domestic suppliers), and natural endowments of mineral resources all play a role. Larger economies, those with significant mineral resources, and those that are relatively far from foreign markets and suppliers tend to have higher domestic (and lower foreign) value added content in their exports than smaller economies. Similarly, countries that specialise in activities at the beginning of the value chain (upstream), such as mining and agriculture, and those that specialise in services will typically have higher domestic value added content in their exports. Movements over time provide a broad indication of changes in a country's participation in global value chains but, again, some care is needed in interpretation, as the driver for the change can often reflect changes in specialisation towards activities at the beginning or end of the value chain, or indeed in services.

Figure 2: Foreign value added content of gross exports, by industry, % (EXGR_FVASH)

Figure 2 provides an indication of how the foreign content of specific activities differs, reinforcing the comments made above concerning Figure 1. However because they are at a more detailed level the indicators provide a good measure of the degree of integration within global value chains and changes over time. However, Figure 2 does not illustrate the importance (weights) of the specific activities, which can often be negligible. The indicator demonstrates therefore the overall importance of imports from all upstream intermediate providers to any given industry's exports.

Figure 3: Share of imported intermediate inputs that are exported, by import category, % (REI)

The presentation of Figure 3 is slightly different from those used above. Figure 3 refers to product groups and not industries. In other words it shows the share of imported intermediates of a specific product group that is eventually used in the production of exports, noting that the exports can be in completely different products, reflecting the transformation and embodiment of the imported product into a different product. For example, agricultural products are typically transformed by the *Food Products* industry and shown as exports of that industry. Figure 2 therefore will include, under the heading, 'Agriculture' the share of intermediate imports of agriculture products used in producing exports of the domestic *Food Products* industry (and other industries). The indicator therefore demonstrates the relative importance of various import products to exports and the potential counter-productive nature of tariffs.

Figure 4: Origin of foreign value-added by originating region and industry (product group) for a country specific industry.

Figure 4 is designed to illustrate the richness in the TiVA dataset. It selects an industry where there is a high degree of integration within global value chains and decomposes the foreign content of that industry's exports into the origin industries and regions (where the total foreign content of that industry is given in Figure 2). As such. it is able to provide an indication of how the global value chain for a particular country's exports is created, illustrating the (shifting) importance of regions and upstream industries as providers of goods, and increasingly, services. The percentages refer to shares of total (domestic and foreign) value added in the industry's exports. Underlying figures can be found in a separate cube, TIVA: Origin of value added by source country and industry, on OECD.STAT

Figures 5 and 6: Partner shares of exports and imports, gross versus value added terms and related Bilateral Balances comparisons.

Figures 5 and 6 illustrate trade patterns in gross and value added terms, providing a measure of how bilateral relationships in exports, imports and overall trade balances differ when measured in a value added sense. Bilateral relationships are determined on the basis of value added origin country and of the final demand destination country (i,e. the country where value-added is finally consumed, that is, not re-exported). The selection of countries in Figure 5 reflects the top 15 partner countries based on gross trade statistics. For Figure 6, the selection of countries is based on those partners with which the reported country has the top 6 gross surpluses and top 6 gross deficits. If this does not yield major trading partners, then the countries with the top 12 absolute differences between gross trade balances and value added trade balances are selected. Shares of exports and imports, and bilateral balances, with 'partner' Rest of World have been excluded from Figures 5 and 6.

Figures 7 and 8: Services content of gross exports

Services are defined as in ISIC Rev. 3 (50-99). Figure 7 reflects the contribution made by the service sector to overall exports, showing the value added that the service sector creates and exports directly (as direct exports of services) but also indirectly as intermediate inputs into the production of goods (Figure 8). For comparison with Figure 7, Table 1 shows services shares of total exports of goods and services as reported in countries' Annual National Accounts statistics or, in the case of Brazil and China, their Balance of Payments statistics.

Table 1. Exports of Services as % of Total Exports

	1995	2000	2005	2008	2009		1995	2000	2005	2008	2009
Australia	23.6	22.9	21.4	18.4	20.3	Netherlands	20.3	20.7	21.1	20.1	23.4
Austria	30.6	27.1	27.1	27.5	29.9	New Zealand	25.6	24.5	28.1	23.1	24.2
Belgium	17.1	19.6	19.8	21.3	25.2	Norway	25.7	23.2	22.8	20.2	23.5
Canada	12.3	12.5	13.3	13.2	16.0	Poland	14.4	22.6	14.5	16.7	17.1
Chile			15.4	15.6	14.0	Portugal	20.5	21.5	23.2	26.5	28.6
Czech Republic	24.8	18.9	14.3	14.9	16.4	Slovak Republic	22.1	15.9	11.9	10.9	10.1
Denmark	25.5	32.6	34.6	39.2	38.6	Slovenia	19.9	17.7	18.3	19.8	21.3
Estonia	34.1	31.2	30.3	32.6	36.1	Spain	30.2	31.5	32.4	33.4	34.9
Finland	15.0	13.7	20.0	24.2	29.9	Sweden	18.8	22.1	25.9	29.1	32.5
France	22.0	21.3	21.2	21.0	22.5	Switzerland	26.0	27.0	28.3	29.6	32.5
Germany	13.2	13.5	14.0	14.4	16.7	Turkey	36.7	42.5	25.5	19.8	23.3
Greece			54.3	55.5	54.8	United Kingdom	27.8	30.5	37.8	41.3	43.6
Hungary	28.5	17.9	14.9	16.4	19.1	United States	28.2	28.3	30.6	29.7	32.9
Iceland	27.7	35.0	40.1	29.0	36.7	OECD - Total			22.7	23.0	25.4
Ireland	13.1	22.0	37.4	46.0	47.0						
Israel	28.9	33.7	29.5	29.3	31.6	Brazil			11.9	13.3	15.3
Italy	20.0	19.6	19.6	17.6	19.1	China	13.0	10.9	8.9	9.3	9.7
Japan	11.4	10.7	13.2	12.9	15.0	India			35.9	36.7	34.9
Korea	15.7	15.4	13.0	14.8	13.1	Indonesia		8.5	9.8	8.7	9.4
Luxembourg	62.0	72.8	75.8	78.9	81.8	Russian Federation			9.3	9.8	12.1
Mexico			7.0	5.9	6.2	South Africa	13.4	13.6	16.7	13.0	15.3

Source: OECD Annual National Accounts (SNA), except Brazil and China: IMF Balance of Payments

Note on OECD averages

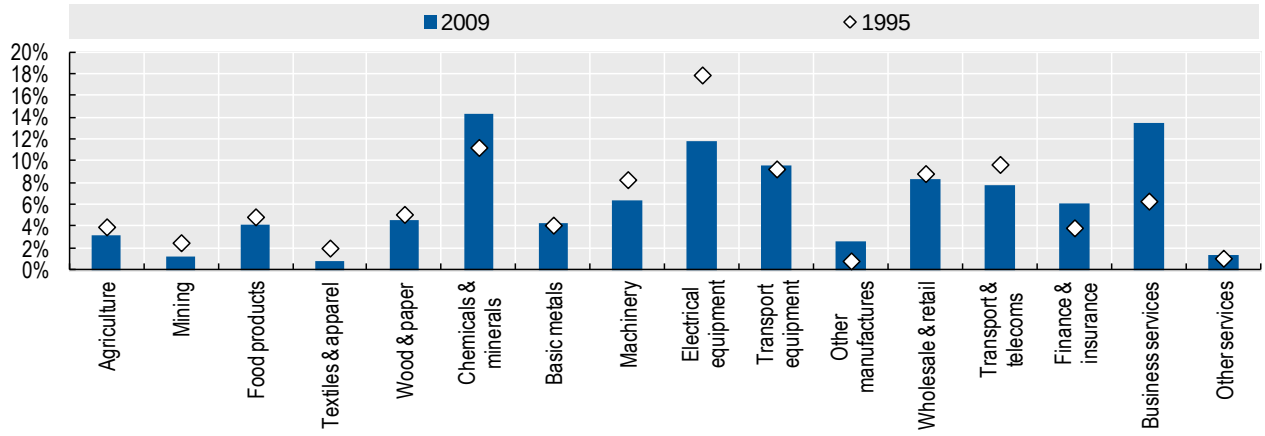
OECD averages used for comparisons refer to un-weighted averages of the 34 OECD economies, unless otherwise specified. The average values for 2009 are:

- Figure 1: Domestic value added content of gross exports: 76%
- Figure 3: Share of imported intermediate inputs that are exported, total: 47%
- Figure 7: Services content of gross exports: 48%

Industry shares of exported value added

Some country notes provide information (not shown in the figures) on the contribution of different industries to value added exports. These contributions are understood as industry shares of total domestic value added embodied in gross exports (EXGRDVA), for all trade partners combined. The shares provide an indication of each sector's contribution to overall trade. An example is provided in Figure 1 of this note below, showing the contribution of each sector to total domestic value added in exports for the United States. For instance, it shows that 14% of the domestic value added embodied in the United States' gross exports to other economies originated in the chemicals and minerals industry.

Figure 1: Industry shares of value added exports, United States, 2009



Country codes used in the charts

Table 2. ISO 3-character country codes used in the TiVA Country Notes charts

code	Country	code	Country	code	Country
ARG	Argentina	GRC	Greece	NOR	Norway
AUS	Australia	HKG	Hong Kong, China	NZL	New Zealand
AUT	Austria	HUN	Hungary	PHL	Philippines
BEL	Belgium	IDN	Indonesia	POL	Poland
BGR	Bulgaria	IND	India	PRT	Portugal
BRA	Brazil	IRL	Ireland	ROU	Romania
BRN	Brunei Darussalam	ISL	Iceland	RUS	Russian Federation
CAN	Canada	ISR	Israel	SAU	Saudi Arabia
CHE	Switzerland	ITA	Italy	SGP	Singapore
CHL	Chile	JPN	Japan	SVK	Slovak Republic
CHN	China	KHM	Cambodia	SVN	Slovenia
CZE	Czech Republic	KOR	Korea	SWE	Sweden
DEU	Germany	LTU	Lithuania	THA	Thailand
DNK	Denmark	LUX	Luxembourg	TUR	Turkey
ESP	Spain	LVA	Latvia	TWN	Chinese Taipei
EST	Estonia	MEX	Mexico	USA	United States
FIN	Finland	MLT	Malta	VNM	Viet Nam
FRA	France	MYS	Malaysia	ZAF	South Africa
GBR	United Kingdom	NLD	Netherlands		

The information included in the country notes is based on the May 2013 release of the Trade in Value-Added (TiVA) database. The data can be accessed from www.oecd.org/trade/valueadded. For further information, please contact us (tiva.contact@oecd.org).

General caveats

Some assumptions are necessarily used in creating global input-output tables and the Trade in Value Added indicators.

- **Production Assumption**: Indicators created via input-output techniques are limited by the degree of industry disaggregation provided by the tables. The national input-output tables used by the OECD are based on a harmonised set of 37 industries. Any given indicator therefore assumes that all consumers of a given industry's output purchase exactly the same shares of products produced by all of the firms allocated to that industry. This boils down in practice (but is not the same thing) to assuming that there exists only one single production technique for all of the firms (and all of the products) in the industry grouping. We know that this is not true and that different firms, even those producing the same products, will have different production techniques and therefore different technical coefficients, and we also know that different firms produce different products and that these products will be destined for different types of consumers and markets. Of chief concern in this respect is the evidence that points to exports having very different coefficients than goods and services produced for domestic markets, particularly when the exports (typically intermediate) are produced by foreign-owned affiliates in a global value chain. Because exporting firms are generally more integrated into value-added chains they will typically have higher foreign content ratios, particularly when they are foreign-owned, as such the estimates provided in this release should be considered as prudent. Generally they will point to lower shares of foreign content than might be recorded if more detailed input-output tables were available, with consequences for all other indicators presented. One important innovation in the indicators presented here is to use specially constructed input-output tables for China that differentiate between processing firms, other exporting firms, and those that produce goods and services only for domestic consumption. Because of China's importance to trade this significantly improves the quality of the results.

- **Proportionality Assumption:** At the national level the quantity and quality of information available to allocate specific imports to using industries varies. Where information is not available, countries and indeed practitioners necessarily use the 'Proportionality assumption'. This generally means that for a given product one assumes that the proportion of intermediates that an industry purchases from abroad is equal to the ratio of imports to total domestic demand in that product. For those countries where it has been necessary to use this assumption (and indeed others) refinements have been introduced by using trade data that differentiates between those imported goods in a given product grouping that are intermediate and those that are final domestic demand. On its own, this assumption is not expected to have a significant impact on total economy estimates but it will affect the import content of various industries, and so, by extension, bilateral trade estimates of trade in value added. But the results are not expected to be biased in any particular direction.

- **Dealing with internationally inconsistent official trade statistics**: It is a well-known fact that the international trade statistics produced by national authorities are not globally consistent: total global gross exports do not equal total global gross imports. This inconsistency is larger when bilateral trade flows are considered and larger still when those flows are looked at on a detailed product level. Even if total gross exports from country A equal those imported by country B, there may still be differences when these flows are looked at on a product by product level. The global input-output tables used to produce Trade in Value Added indicators necessarily resolve all of these inconsistencies. Total exports and total imports of a given country will be consistent with totals recorded in their official National Accounts statistics but the balancing process will necessarily introduce coherence adjustments to bilateral trade flows that will lead to differences between official recorded bilateral gross trade flows and those reflected within the input-output table. The results of this balancing will form the basis of dialogue with national statistics institutions as part of on-going international efforts to reconcile international trade statistics; particularly in the area of trade in services where official statistics on bilateral trade data are notoriously weak. The balancing does not introduce any directional or structural bias but, clearly, the quality of TIVA results will be significantly improved as global inconsistencies reduce. This is not expected to have a significant impact on overall foreign content estimates broken down by industry but bilateral trade in value-added estimates will be affected.