



WORLD TRADE
ORGANIZATION

Trade in Value Added

WTO TiVA Profiles

**Regional Workshop on
International Merchandise Trade Statistics
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Ninez Piezas-Jerbi (ninez.piezas-jerbi@wto.org)

What is trade in value added?



Trade in value added is a statistical approach that estimates the sources (by country and industry) of the **value** that is **added** in the production of goods and services for exports.

Some advantages of the trade in value added measure:

- ❑ Highlights the actual contribution of trade to an economy
- ❑ Addresses the double counting observed with traditional statistics.
- ❑ Estimates trade taking place within GVCs.
- ❑ Highlights interlinkages between economies.

[OECD-WTO TiVA video](#)

Why do we care about TiVA?

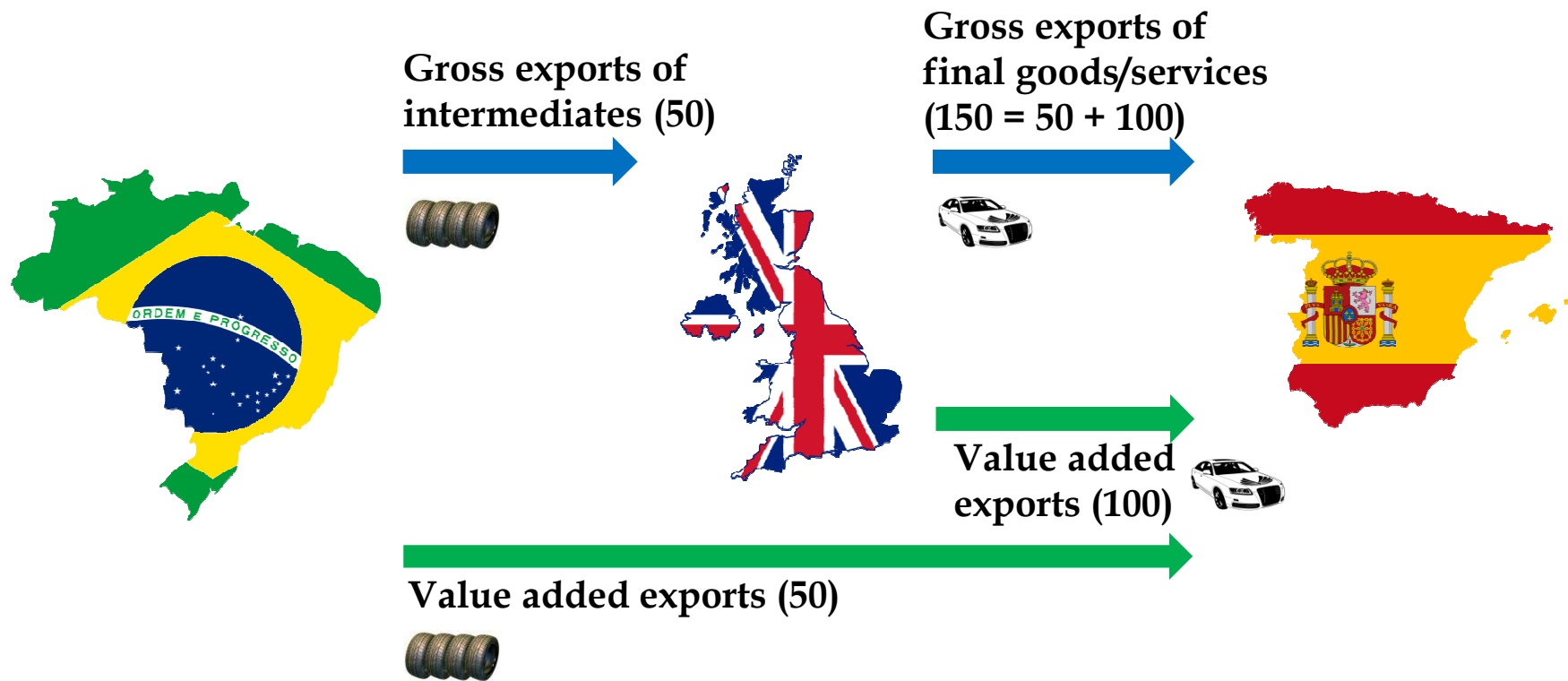


6 compelling reasons why trade statistics in Value-Added terms are relevant for trade policy:


- ❑ Global imbalances (Apple iPhone example)
- ❑ Market access and trade disputes
- ❑ The impact of macro-economic shocks
- ❑ Trade and employment
- ❑ Trade and environment
- ❑ Trade, growth and competitiveness

Source: Joint OECD-WTO note: TiVA, Concepts, Methodologies and challenges.

Gross vs Value Added measures of trade flows



 : Gross trade flows

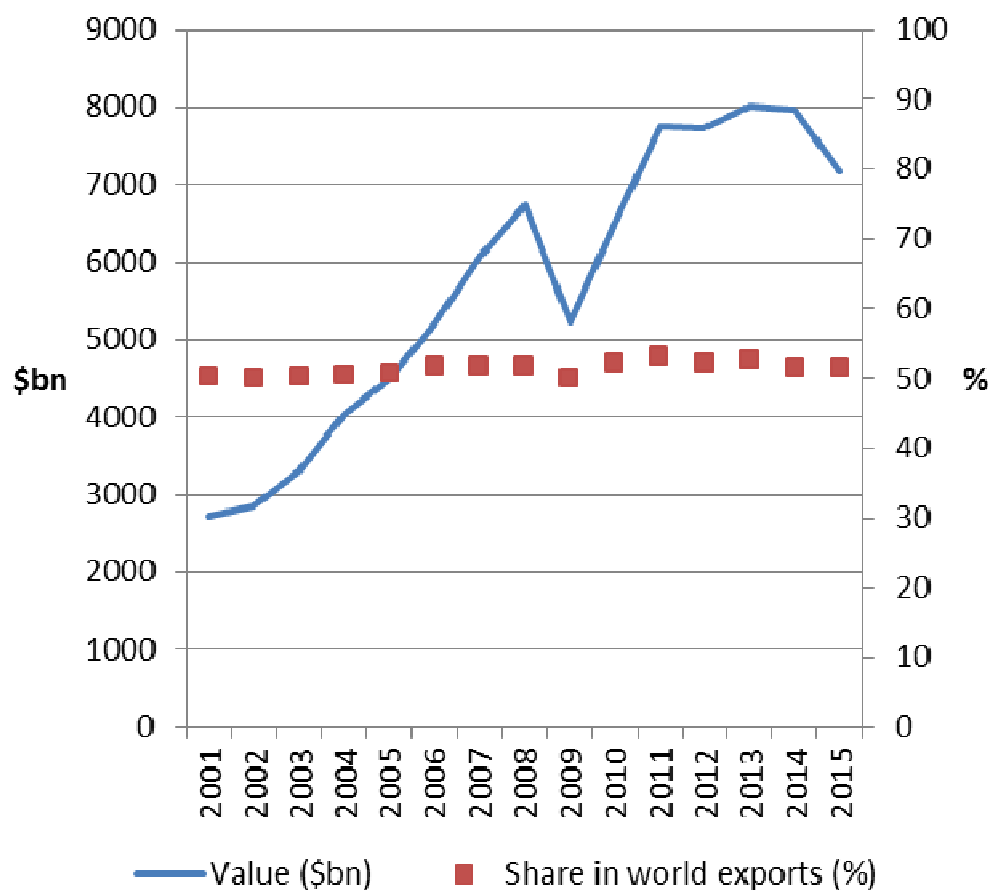
 : Value added trade flows



Trade in intermediate goods

50% of world merchandise exports are intermediate goods

World exports of intermediate goods, 2001-2015
(Billion \$ and % shares)



Note: world total exports exclude fuels

Source: UN Comtrade database and WTO Secretariat estimates



Accessing TiVA statistics

- OECD-WTO TiVA database: http://stats.oecd.org/Index.aspx?DataSetCode=TIVA_2016_C1

The screenshot shows the OECD.Stat interface for 'Trade in Value Added (TiVA) - October 2015'. The table displays data for various countries from 2007 to 2014. The columns are labeled 'Year' and 'A.Y.' (Actual Year). The rows list countries including AUS, AUT, BEL, CAN, CHL, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, and ISL. The data is presented in a grid format with alternating light and dark blue rows.

Country	2007	2008	2009	2010	2011	2012	2013	2014
AUS	12.11	11.91	12.19	13.75	13.03	12.88	14.1	
AUT	21.45	24.81	26.48	28.07	24.69	26.43	27.62	
BEL	31.11	34.48	31.26	30.06	30.57	30.37	34.54	
CAN	24.85	26.85	23.86	22.75	22.33	23.88	24.47	
CHL	14.15	21.80	18.87	24.86	18.83	17.78	20.16	
CZE	30.47	38.73	42.55	42.31	45.16	44.88	45.28	
DNK	23.14	28.17	27.54	34.07	35.74	29.34	32.64	
EST	38.17	44.56	42.68	32.96	28.58	33.57	36.21	
FIN	24.07	30.42	31.81	33.18	30.56	31.81	34.17	
FRA	17.28	22.83	23.44	24.77	21.54	22.74	25.13	
DEU	14.86	20.22	21.34	24.17	21.87	22.34	25.54	
GRC	18.25	22.84	21.28	25.71	28.71	21.75	24.65	
HUN	30.11	31.57	40.38	41.4	44.95	40.05	40.02	
IRL	18.84	24.24	28.87	29.82	38.37	31.17	33.16	
ISL	38.47	47.37	41.86	43.84	47.01	43.68	41.87	

- WTO TiVA-GVC profiles, including technical notes: https://www.wto.org/english/res_e/statis_e/miwi_e/countryprofiles_e



- OECD-WTO TiVA country notes, including technical notes: <http://www.oecd.org/sti/ind/tiva2015countrynotes>



TRADE IN VALUE ADDED: SOUTH AFRICA

The international fragmentation of production in global value chains (GVCs) challenges the way we look at the global economy. Today, total production in a country is often split across several countries, making the global market more fluid than ever.

Understanding how GVCs work and how they affect countries is essential to determine what policies help create the growth needed to reduce the unemployment rate.



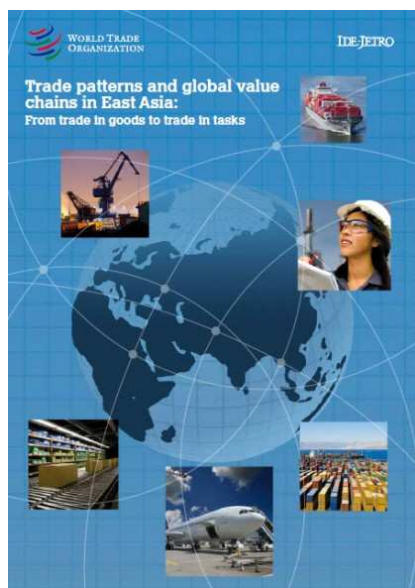
Link to the WTO web portal on TiVA and GVC statistics: <http://www.wto.org/miwi>



Accessing educative TiVA reports

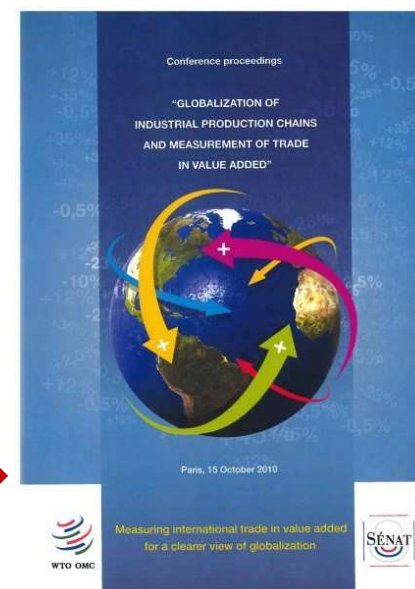
Link to the WTO web portal on TiVA and GVC statistics:

<http://www.wto.org/miwi>



← **WTO/IDE-JETRO joint publication:
“Trade Patterns and Global Value Chains in East Asia: from trade in goods to trade in tasks”**

**WTO/French Senate conference proceedings:
“Globalization of industrial production chains and measurement of trade in value added”**





Further reading on TiVA

- Baldwin, Richard and Anthony J. Venables (2013) “Spiders and Snakes: Offshoring and Agglomeration in the Global Economy”, *Journal of International Economics* 90 (2013) 245–254.
- Costinot, Arnaud and Jonathan Vogel (2013) “An Elementary Theory of Global Supply Chains”, *Review of Economic Studies*, 80, 109–144.
- Elms, Deborah K. and Patrick Low (2013) *Global Value Chains in a Changing World*
https://www.wto.org/english/res_e/booksp_e/aid4tradeglobalvalue13_e.pdf
- IDE-JETRO and WTO (2011) Trade patterns and global value chains in East Asia: From trade in goods to trade in tasks.
https://www.wto.org/english/res_e/booksp_e/stat_tradepat_globvalchains_e.pdf
- Grossman, Gene M. and Esteban Rossi-Hansberg, 2008. "Trading Tasks: A Simple Theory of Offshoring," *American Economic Review*, vol. 98(5), pages 1978-97.
- Kraemer, Kenneth L., Greg Linden, and Jason Dedrick (2011) “Capturing Value in Global Networks: Apple’s iPad and iPhone”, http://pcic.merage.uci.edu/papers/2011/value_ipad_iphone.pdf
- Park, Albert, Gaurav Nayyar and Patrick Low (2013) Supply Chain Perspectives and Issues: A Literature Review
https://www.wto.org/english/res_e/booksp_e/aid4tradesupplychain13_e.pdf
- *WTO World Trade Report 2014* https://www.wto.org/english/res_e/booksp_e/wtr14-2c_e.pdf
- *WTO World Trade Report 2015* https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf
- *WTO World Trade Report 2016* https://www.wto.org/english/res_e/booksp_e/world_trade_report16_e.pdf
- Yi, K.-M. (2010), 'Can Multistage Production Explain the Home Bias in Trade?', *American Economic Review* 100(1): 364-393.

Trade in Value Added (TiVA) database



- ▶ a joint OECD-WTO initiative
- ▶ To better track global production networks and supply chains, better than what's possible with conventional trade statistics.
- ▶ some 40 of indicators measuring the VA content of international trade flows and final demand
 - ▶ Derived from the OECD's Inter-Country Input-Output (ICIO) Database.
- ▶ Data from 1995-2011, 64 economies, 34 industries
- ▶ In USD million (in current prices) or percentages

Inter-Country Input-Output (ICIO) database



**National Input-Output tables (IOTs)
or
Supply and Use tables (SUTs)**

**Bilateral trade statistics in
goods and services**

Countries

Countries, WTO
(estimations, adjustments)

		Country A			Country B			Country C			Final Demand		
		Sector 1	Sector 2	Sector 3	Sector 1	Sector 2	Sector 3	Sector 1	Sector 2	Sector 3	Country A	Country B	Country C
Country A	Sector 1												
	Sector 2												
	Sector 3												
Country B	Sector 1												
	Sector 2												
	Sector 3												
Country C	Sector 1												
	Sector 2												
	Sector 3												
Taxes less subsidies on products													
Cif-fob adjustments													
Value added	Labour compensation												
	Operating surplus												
	Taxes less subsidies on production												
Output													

Inter-Country Input-Output (ICIO) table

TiVA and GVC indicators

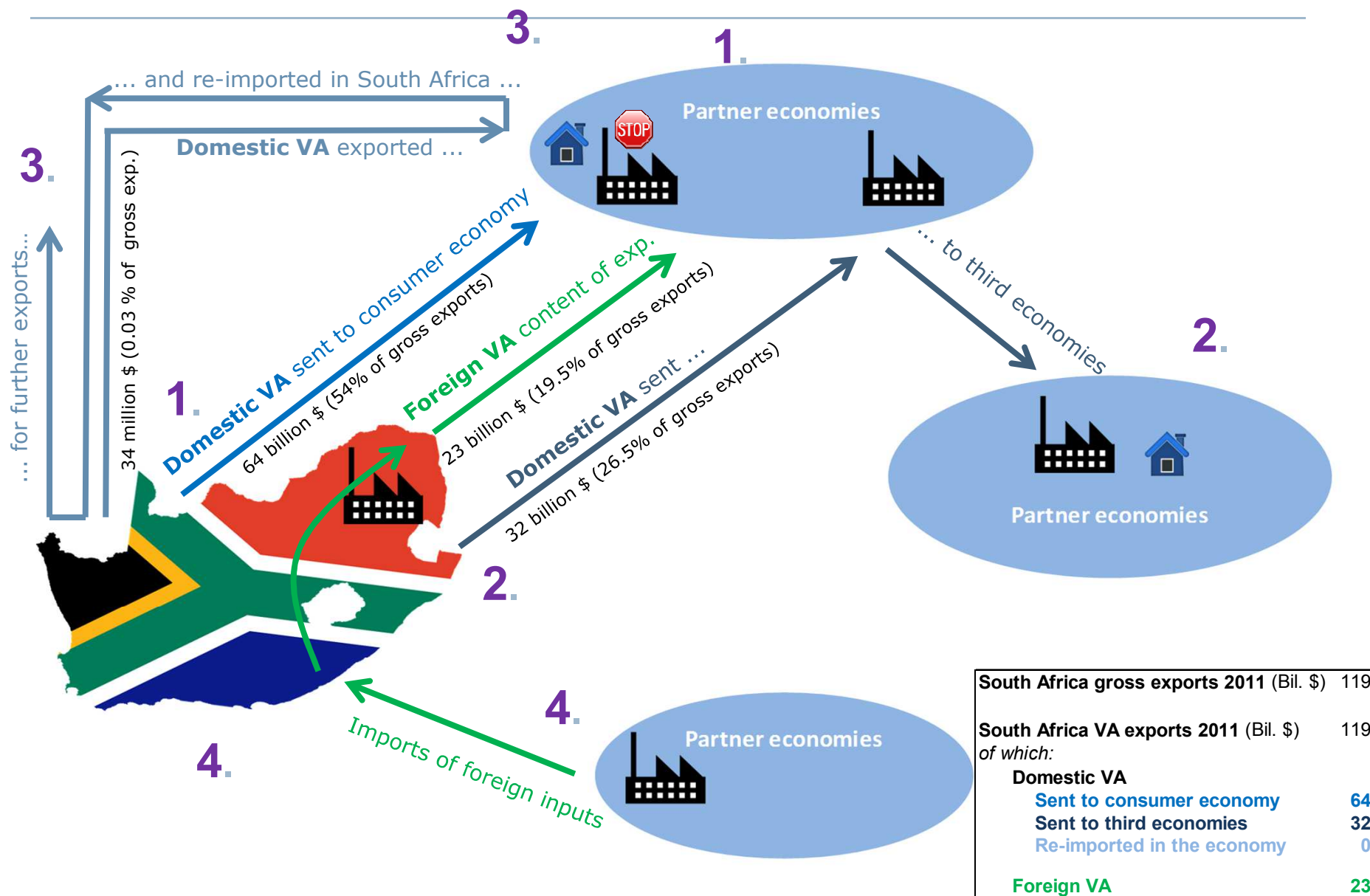


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Overview of South Africa TiVA-GVC statistical profile

The decomposition of gross exports in VA components

The example of South Africa



South Africa TiVA-GVC profile 1/4

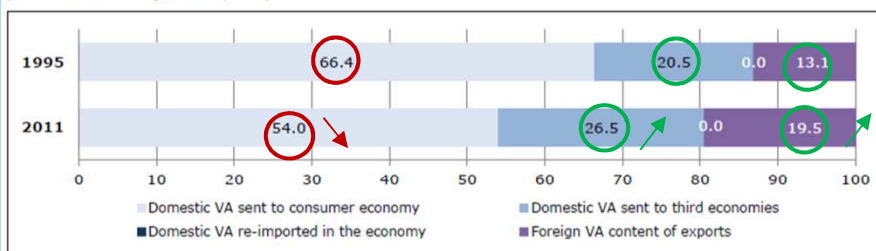


South Africa

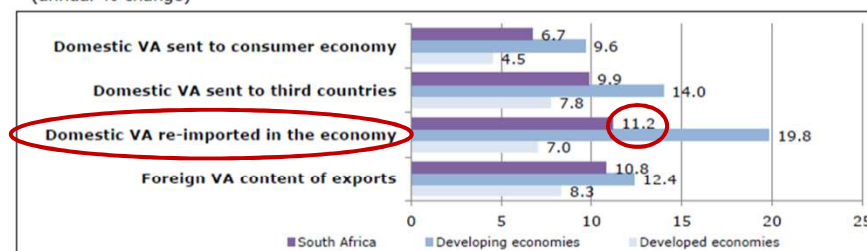
Trade in Value Added and Global Value Chains

VALUE ADDED CONTENT OF GROSS EXPORTS

The value added (VA) components of gross exports, 1995 and 2011
(% share in total gross exports)



Evolution of the VA components of gross exports, 1995-2011
(annual % change)



Top export industries - Domestic and foreign VA content of exports, 2011

(% share in industry total gross exports)

1. Mining
2. Basic metals
3. Wholesale and retail trade

	Domestic VA	Foreign VA	Total
1. Mining	87.9	12.1	100.0
2. Basic metals	67.2	32.8	100.0
3. Wholesale and retail trade	91.8	8.2	100.0

(% share in economy total gross exports)

	Domestic VA	Foreign VA
1. Mining	24.6	3.4
2. Basic metals	9.3	4.6
3. Wholesale and retail trade	8.2	0.7

Top export destinations - Domestic and foreign VA content of exports, 2011

(% share in total gross exports to partner)

1. China
2. India
3. United States

	Domestic VA	Foreign VA	Total
1. China	86.1	13.9	100.0
2. India	80.2	19.8	100.0
3. United States	80.0	20.0	100.0

(% share in economy total gross exports)

	Domestic VA	Foreign VA
1. China	13.9	2.2
2. India	8.4	2.1
3. United States	6.4	1.6

Domestic and foreign sectoral VA contribution to gross exports, 2011

(% share in industry total gross exports)

Export industry

- Total**
- Primary products
 - Manufactures
 - Services

	Domestic			Foreign			Total
	Primary products	Manufactures	Services	Primary products	Manufactures	Services	
Total	24.4	18.4	37.8	8.0	4.3	7.1	100.0
Primary products	61.1	5.4	21.1	2.9	3.6	6.0	100.0
Manufactures	11.8	32.2	27.7	13.8	5.6	8.9	100.0
Services	1.4	4.9	84.9	2.0	2.4	4.3	100.0

Value added origin

South Africa TiVA-GVC profile 2/4



PARTICIPATION IN GLOBAL VALUE CHAINS (GVCs)

The GVC participation index, 2011

(% share in total gross exports)

Total GVC participation

Forward participation
Backward participation

	South Africa	Developing economies	Developed economies
Total GVC participation	45.9	48.6	48.0
Forward participation	26.5	25.1	24.2
Backward participation	19.5	25.5	23.8

Forward GVC participation, 2011

Top exporting industries to GVCs

(% share in total exports of domestic inputs sent to third countries)

1. Mining	37.6
2. Wholesale and retail trade	14.8
3. Transport and storage	8.2

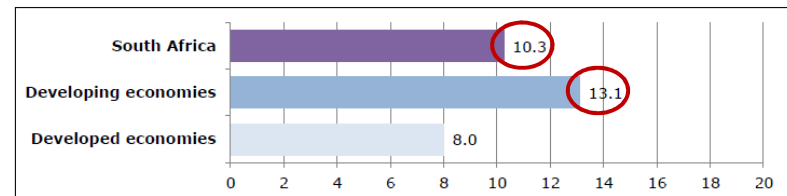
Top exporters of South Africa inputs through GVCs

(% share in total exports of domestic inputs sent to third countries)

1. China	19.3
2. Germany	8.1
3. Japan	6.3

Evolution of total GVC participation, 1995-2011

(annual % change)



Backward GVC participation, 2011

Top GVC-importing industries

(% share in total foreign content of exports)

1. Basic metals	23.4
2. Mining	17.4
3. Petroleum products	11.2

Top foreign inputs providers

(% share in total foreign content of exports)

1. Saudi Arabia, Kingdom of	13.3
2. United States	7.5
3. China	6.9

South Africa TiVA-GVC profile 3/4



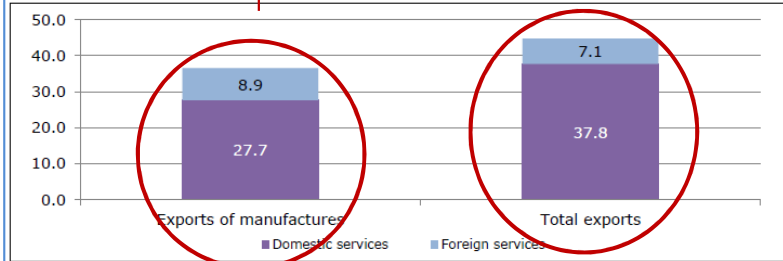
Indirect exports of services

Direct + indirect exports of services

ROLE OF SERVICES VALUE ADDED IN EXPORTS

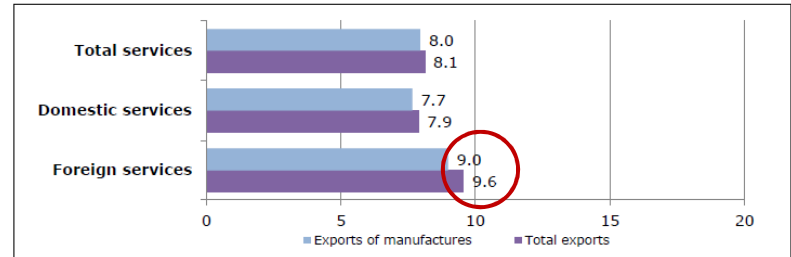
The services VA content of exports, by origin, 2011

(% shares in manufactures and total exports)



Evolution of the services VA content of exports, 1995-2011

(annual % change)



Services VA contribution to exports of manufactures

Top services industries contributing to exports of manufactures, 2011

(% share in gross exports of manufactures)

1. Wholesale and retail trade	11.8
2. Transport and storage	6.5
3. Other community and social services	5.9

Top foreign services providers to exports of manufactures, 2011

(% share in gross exports of manufactures)

1. United States	0.9
2. United Kingdom	0.7
3. China	0.7

Services VA contribution to total exports

Top services industries contributing to total exports, 2011

(% share in total gross exports)

1. Wholesale and retail trade	14.0
2. Transport and storage	9.6
3. Financial intermediation	6.2

Top foreign services providers to total exports, 2011

(% share in total gross exports)

1. United States	0.8
2. United Kingdom	0.6
3. Germany	0.6

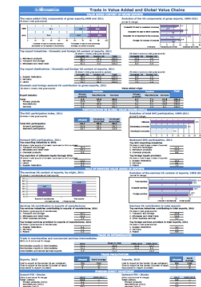
South Africa TiVA-GVC profile 4/4



TRADE IN INTERMEDIATES					
Trade in merchandise and commercial services intermediates (Billion \$, % and annual % change)					
	2014	Share in total	1995-2014	2005-2014	
Merchandise exports in intermediates	55.4	67.9	7.5	6.8	
Merchandise imports in intermediates	33.5	43.7	5.1	6.1	
Intermediate commercial services exports	2.6	15.8	...	9.4	
TRADE FACILITATION					
Exports, 2014	South Africa	World average	Imports, 2014	South Africa	World average
Cost to export at the border (\$ per container)	1830	1841	Cost to import at the border (\$ per container)	2080	2084
Time to export at the border (number of days)	16	22	Time to import at the border (number of days)	21	25
Documents to export (number)	5	6	Documents to import (number)	6	8
FOREIGN DIRECT INVESTMENT					
Inward FDI - Stocks (billion \$ and annual % change)	2013	2005-2013	Outward FDI - Stocks (billion \$ and annual % change)	2013	2005-2013
Total	140.0	7.7	Total	95.8	15.1
Primary products (2012)	0.2	...	Primary products
Manufactures (2012)	32.1	...	Manufactures
Services (2012)	91.2	...	Services

WTO TiVA-GVC statistical profiles, including technical notes:

https://www.wto.org/english/res_e/statis_e/miwi_e/countryprofiles_e.htm



OECD-WTO TiVA country notes, including technical guide :

<http://www.oecd.org/sti/ind/tiva2015countrynotes.htm>



TRADE IN VALUE ADDED: SOUTH AFRICA

The International Department of Production (IDP) at the OECD/WTO has developed a set of TiVA country notes. These notes provide an overview of the TiVA data for each country, including the methodology used to calculate the TiVA data. The notes also provide a brief overview of the TiVA data for each country.

To remember about TiVA



Trade in value added statistics:

- ✓ Are estimates !
- ✓ Do not replace traditional trade statistics but rather complement them by providing another angle for trade analysis
- ✓ Are useful to understand current trade patterns, especially exchanges taking place within GVCs
- ✓ Are useful to assist trade policy orientations but not for decision-making at product level

Some projects and initiatives to improve TiVA data



- ✓ **OECD-WTO joint collaboration on “Balancing bilateral international merchandise trade and international trade in services statistics”** => Improving trade statistics used for the ICIO tables (estimation of missing data, corrections of bilateral trade asymmetries, estimation of cif/fob margins,...)
- ✓ **UN ECA/OECD/WTO forthcoming project**
to foster the development of African SUTs, and facilitate the integration of African economies in the OECD-WTO TiVA database
- ✓ **Develop WTO TiVA sectoral profiles, start with Automotive Sector (2018)**
- ✓ **Write more advocacy papers and publications to show TiVA analysis results**
- ✓ **Other international initiatives (APEC, ADB, NAFTA, ECLAC, ...)**
to develop regional ICIO tables compatible with OECD ICIO tables



Thank you for your attention.