

**Statistical Capacity Building (StatCaB) Programme
Online Training Course on
“International Trade Statistics and Balance of Payments”**

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Introduction to Trade in Value Added (TiVA) indicators

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Presentation overview

- Main concepts behind TiVA and GVC indicators
- The decomposition of gross exports into domestic and foreign VA contents
- Direct and indirect value added exports
- The actual role of services in exports
- GVC indicators and core messages derived from TiVA



Main concepts behind TiVA and GVC indicators



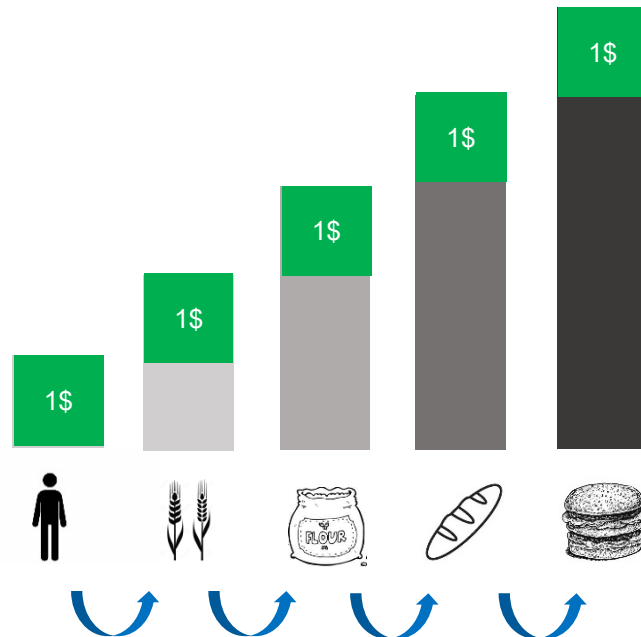
About value added...

Value added = Labour compensation (wages) + Profits + Taxes on production (less subsidies on production)



GDP measures the additional value that is created at every stage of production in all industries and sectors of an economy

$$\text{GDP} = 1\$ + 1\$ + 1\$ + 1\$ + 1\$ = 5\$$$



⇒ Same principle applies to trade in value added !



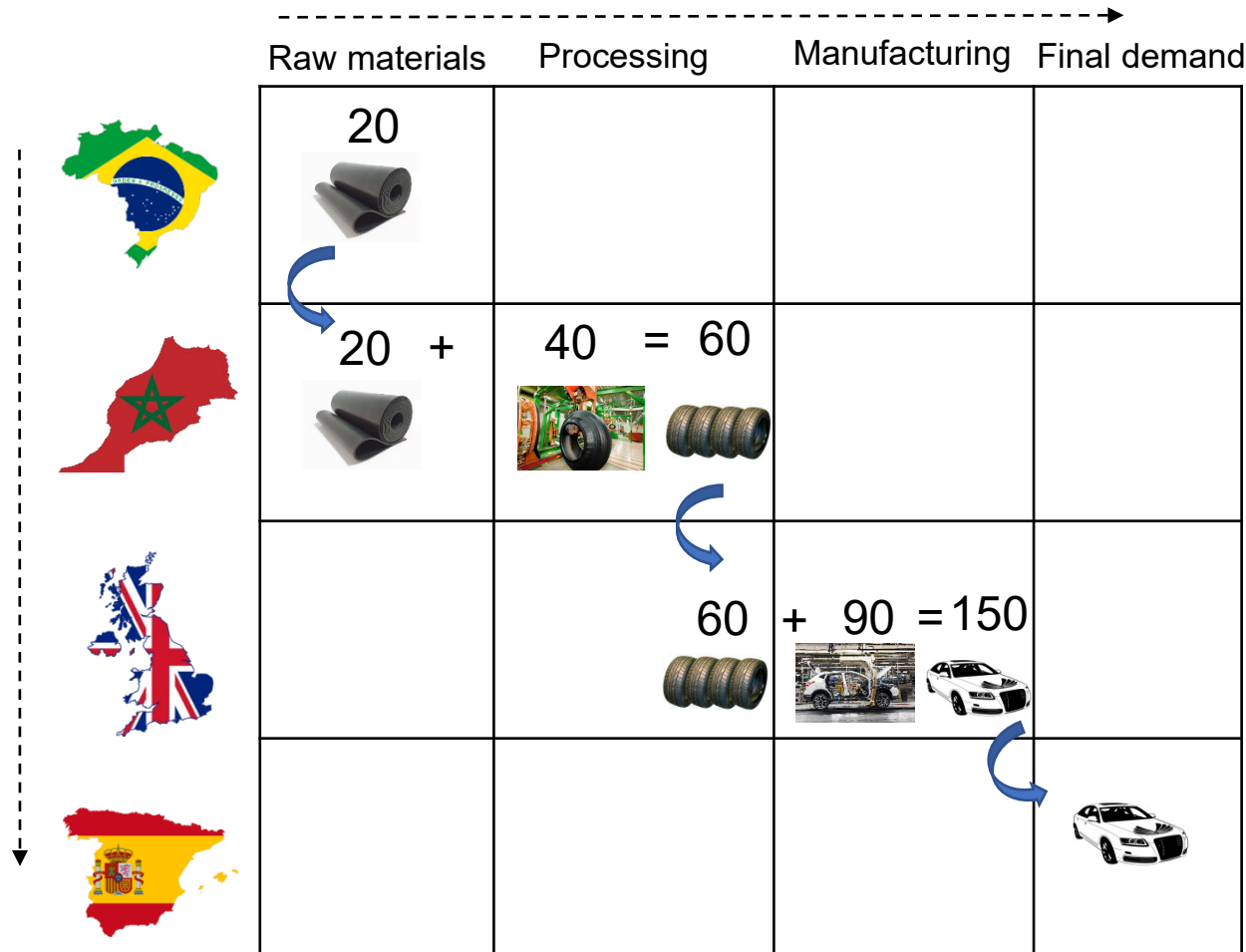
What is trade in value added ?

Trade in value added is a statistical approach that estimates the origin (by country and industry) of the value added that is contained in the exports of goods and services

Some advantages of the TiVA measure:

- ❑ To split traditional gross trade flows into domestic and foreign VA contents
- ❑ To highlight the actual contribution of trade to an economy's GDP, employment... (through the domestic VA content)
- ❑ To address the double/multiple counting observed with traditional trade statistics
- ❑ To estimate trade flows taking place within GVCs

Gross vs Value Added measures of trade flows



Source: WTO, based on UNCTAD "GVCs and Development" 2013 report

Gross exports = Domestic VA + Foreign VA

20	20	0
60	40	20
150	90	60

80

The foreign VA content in countries' exports is a source of multiple counting in gross exports, which is not the case with the VA approach where the domestic VA origin is clearly identified.

Global value chains (GVCs) and world trade - Ins and outs



Rise of international consumer demand
(mass consumption)

Improvement of market access conditions
(lower applied tariffs and trade policy
incentives, through WTO agreements...)

Development of infrastructure
and technological progress
(container, internet, digital trade...)

Export processing zones
(special administrative and fiscal status,
promotion of investment, production and trade,
notably in supply chains)

Outsourcing and offshoring strategies from multi-national
enterprises (MNEs) and Foreign Direct Investment (FDI)

Global value chains and world trade



Rise of specific trade patterns and emergence of “Trade in tasks”:

- Predominance of trade in intermediate goods and services
- Increase of processing trade
- Development of intra-firm trade



Need for new statistical measures of international trade
(VA approach of trade, estimation of trade in GVCs)



New perspectives for trade and GVC analysis and policy-making



Key features of trade in GVCs

A definition of GVCs

International organization of investment, production and trade where the different stages of production of goods and services are located in various **countries/regions/firms**

Essentially about trade in intermediates

✓ *Intermediate goods*: parts, components, accessories

✓ *Intermediate services*, e.g. :

- Business services (R&D, legal consulting,...)
- Information and Communication Technology services (IT consultancy,...)

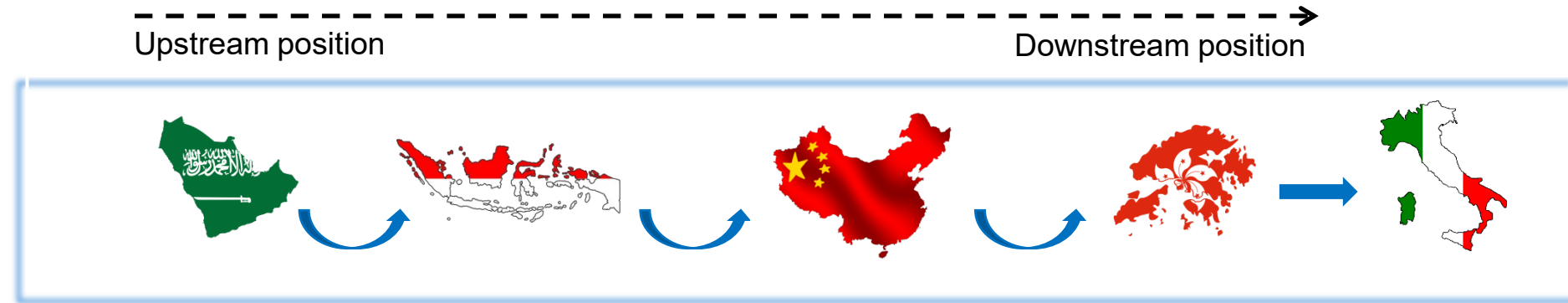
Country/industry participation in GVCs is envisaged in two directions:

- ✓ *Backward linkages (buyer/sourcing side of GVCs)*: import of foreign inputs to produce goods/services for export
- ✓ *Forward linkages (seller/supplier side of GVCs)*: export of intermediates/inputs to GVC partners to produce their exports of goods and services

Schematic presentation of trade flows in GVCs



1. Economy position in the production chain



2. Industrial task

Oil production

Plastic production

Plastic box
manufacturing

Plastic box labelling
and packaging
(“Manu-services” or
“servicification” of manufacturing)

Final consumption

3. Product type

Primary product



Intermediate good



Intermediate good



Final good



4. Type of GVC participation

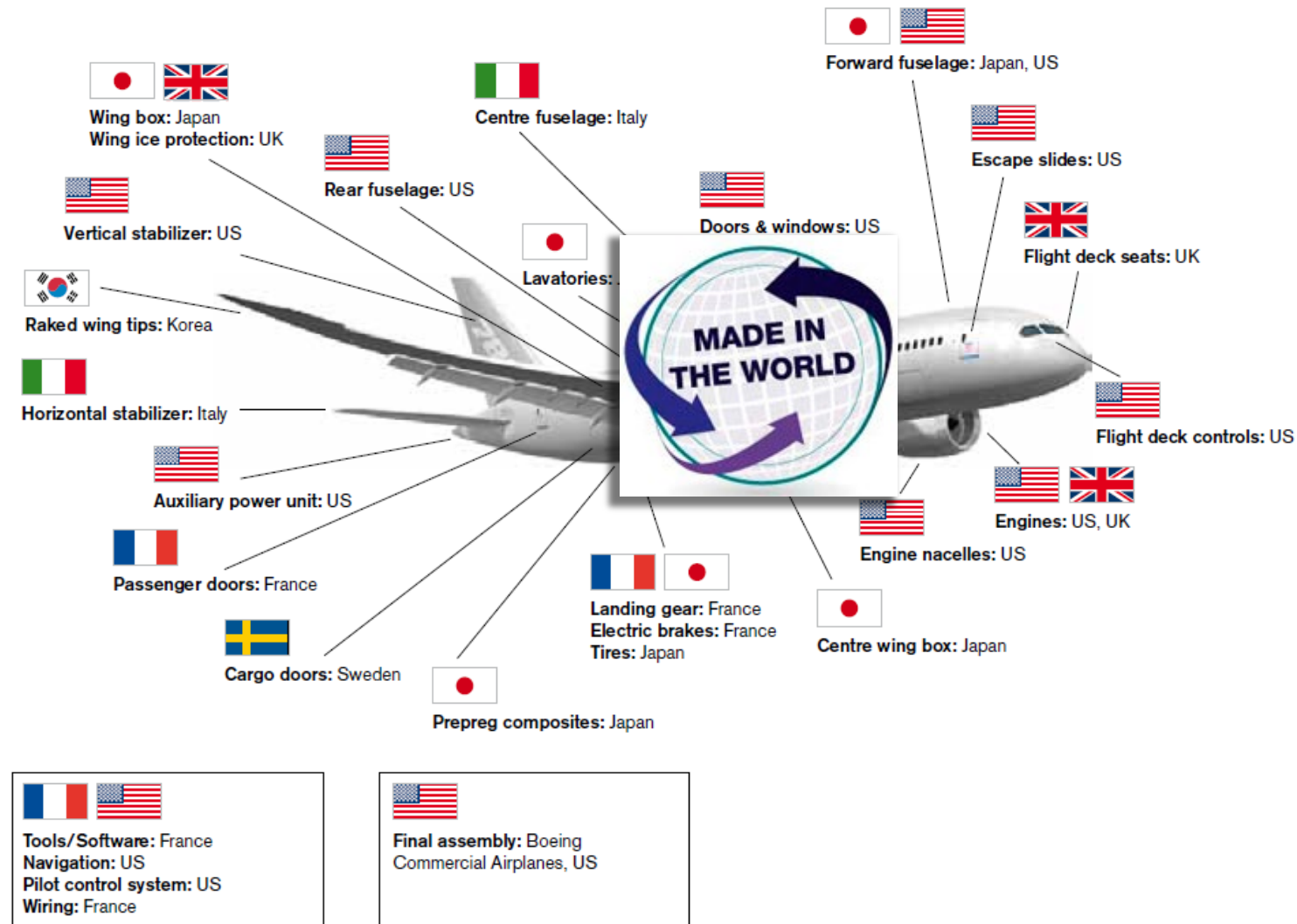
Forward GVC linkage



Backward GVC linkage

An illustration of GVCs 1/3

The Boeing 787 Dreamliner

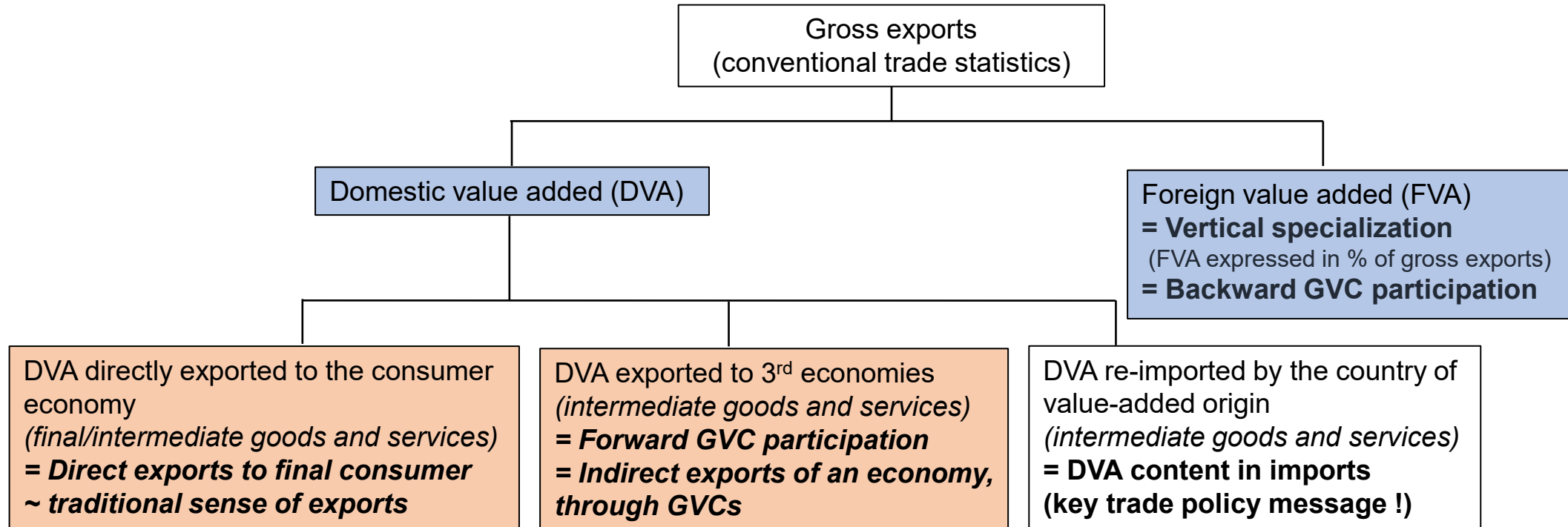




The decomposition of gross exports into domestic and foreign VA contents

A decomposition of gross exports into VA components

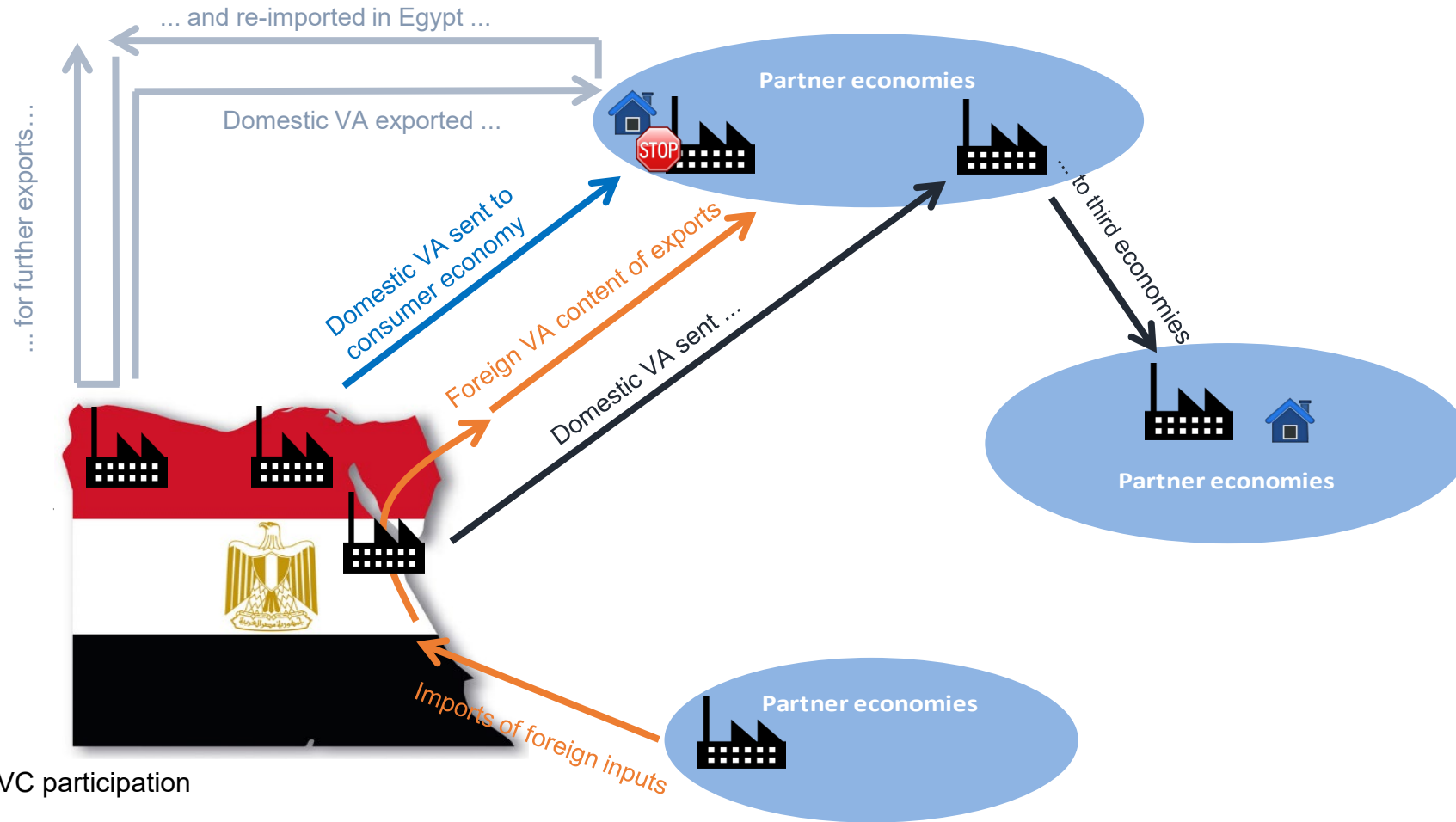
Based on DVA destination - An international trade and GVC approach



Source: Koopman et al. (2014)

A decomposition of gross exports into VA components

Graphical illustration



Orange arrow : backward GVC participation

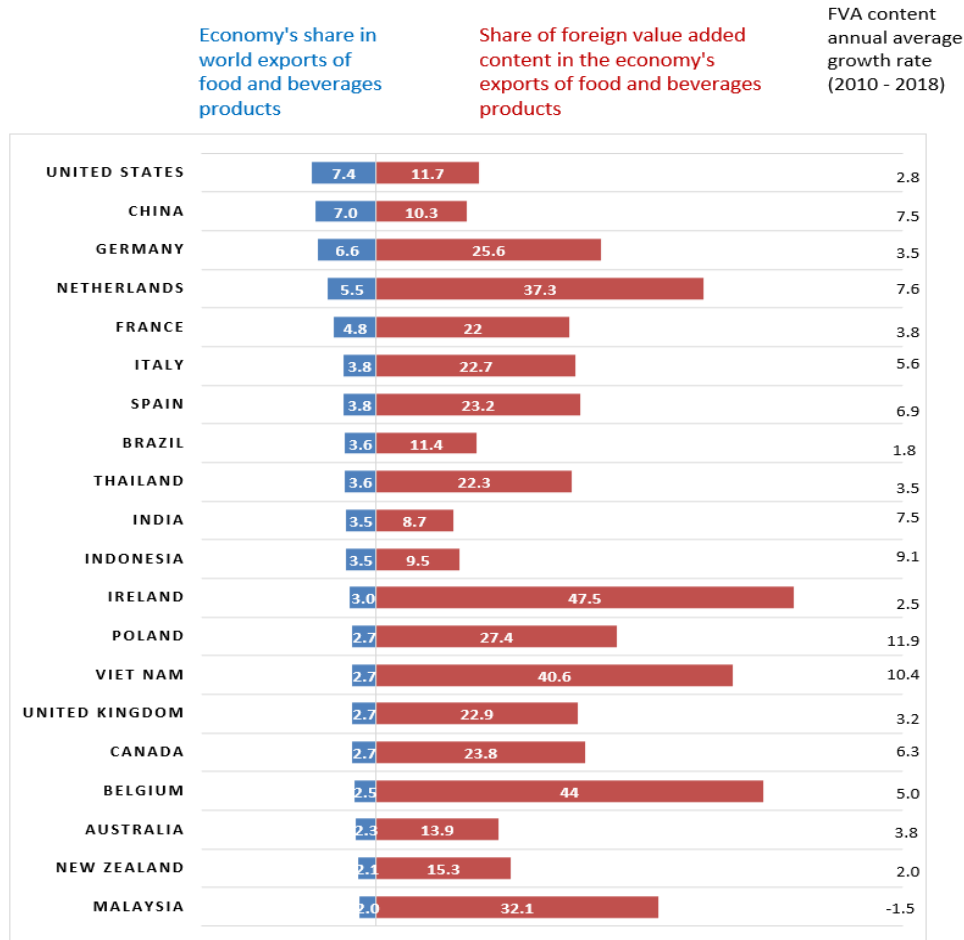
Black arrow : forward GVC participation



The foreign value-added (FVA) content of exports (backward GVC participation)

A useful indicator for policy makers

Top 20 exporters of food and beverage products - Shares in world exports and foreign value-added content, 2018



In crisis times, policy makers seek to identify the main dependencies of national industries vis-à-vis foreign suppliers:

- To control/reduce national dependency for critical goods (e.g. health and food final or intermediate products)
- For more resilient and sustainable value chains (higher resistance to shocks and chain disruptions, lower risks of shortages and business slowdown)















⇒ Using the notion of **FVA content in exports**. An indication of:

- ⇒ Countries' integration to supply chains
- ⇒ Countries' dependency vis-a-vis foreign suppliers



Importing to export – Good or bad ?

Some factors influencing the level of vertical specialization (VS)

Factor		Foreign VA in exports	Domestic VA in exports	Reason
Size of economy	Large economy (USA, VS = 9.5% in 2018)			Industrial capacity to domestically produce the inputs required for its production and exports (=> domestic value chains)
	Small economy (Luxembourg, VS = 66.4%)			
Economy's position in GVCs (indust. specialization)	Primary product exporter (Saudi Arabia, VS = 3.7%)			<u>Position in the chain: beginning/upstream</u> Requires less inputs (domestic/foreign) than downstream producers in the chain
	High-Tech components producer (South Korea, VS = 32%)			<u>Position in the chain: middle</u> Imports basic inputs to produce High-Tech/VA components and final products. High Tech. specialization, highly skilled labour force
	Assembler (Viet Nam, VS = 51.1%)			<u>Position in the chain: end/downstream</u> Last link in the chain, cumulating the VA of foreign inputs from previous production stages
Level of industrialization	Low (Cambodia, VS = 29%)			Importer of inputs to export (Newcomer in GVCs)
	High (Japan, VS = 17.2%)			Producer and exporter of high VA intermediates / final goods and services

Other factors

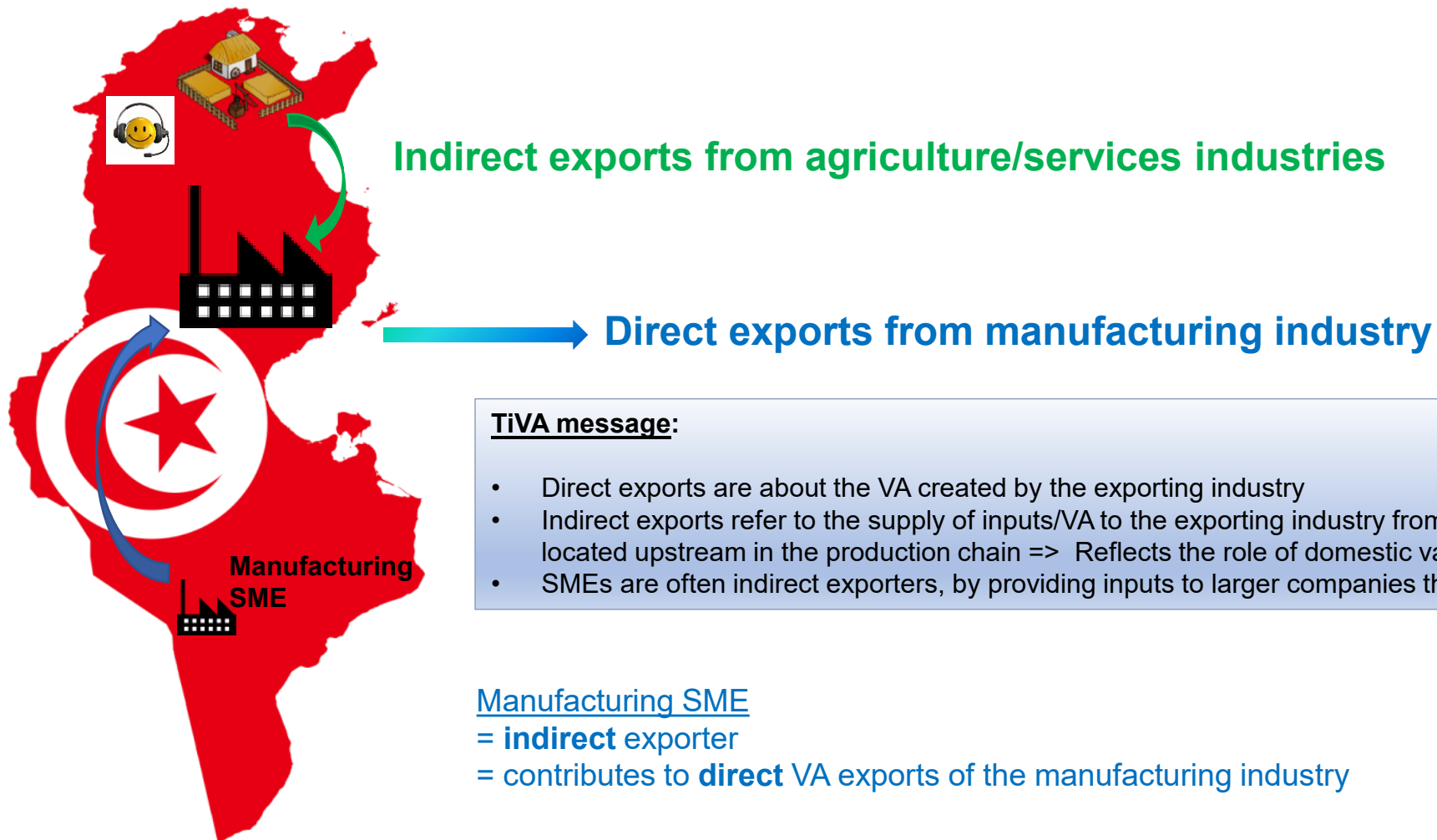
FDI-related exports and exports from processing zones usually have high FVA content



Direct and indirect value added exports

Direct / indirect value added exports

A domestic value chain perspective





Domestic and foreign sectoral VA contributions to Tunisia exports

(% share in industry's total gross exports)

Value added origin ↓

Export
industry
→

	Domestic				Foreign			Total
	Primary products	Manufactures	Services		Primary products	Manufactures	Services	
Total, of which:	9.7	21.3	32.2		6.4	13.6	16.8	100.0
Primary products	65.6	1.4	15.3		6.5	3.7	7.4	100.0
Manufactures	6.6	31.3	14.5		7.5	18.7	21.4	100.0
Services	3.2	1.4	80.3		3.7	3.7	7.8	100.0

: direct domestic VA exports (*from the manufacturing sector itself*)

: indirect domestic VA exports of primary products and services (*embedded in exports of the manufacturing industry*)

: foreign content of manufacturing exports (*inputs imported by national industries to produce their exports*)

Source: WTO calculations based on the OECD TiVA database



The actual role of services in exports

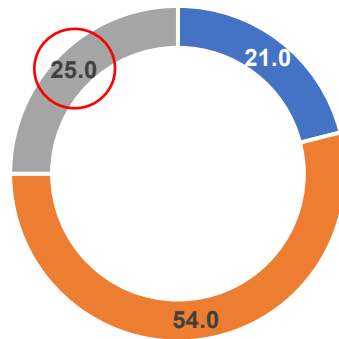
The actual role of services in exports

Structure of world exports, by main sector, 2018



In gross terms

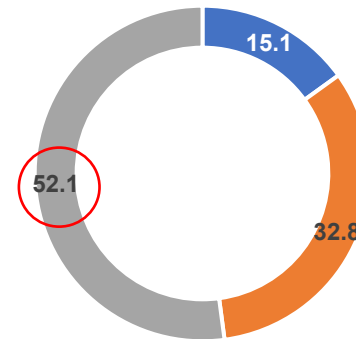
2018



■ Primary products ■ Manufactures ■ Services

In value-added terms

2018



■ Primary products ■ Manufactures ■ Services

TiVA data highlight the actual role of services in exports => **Why ?**

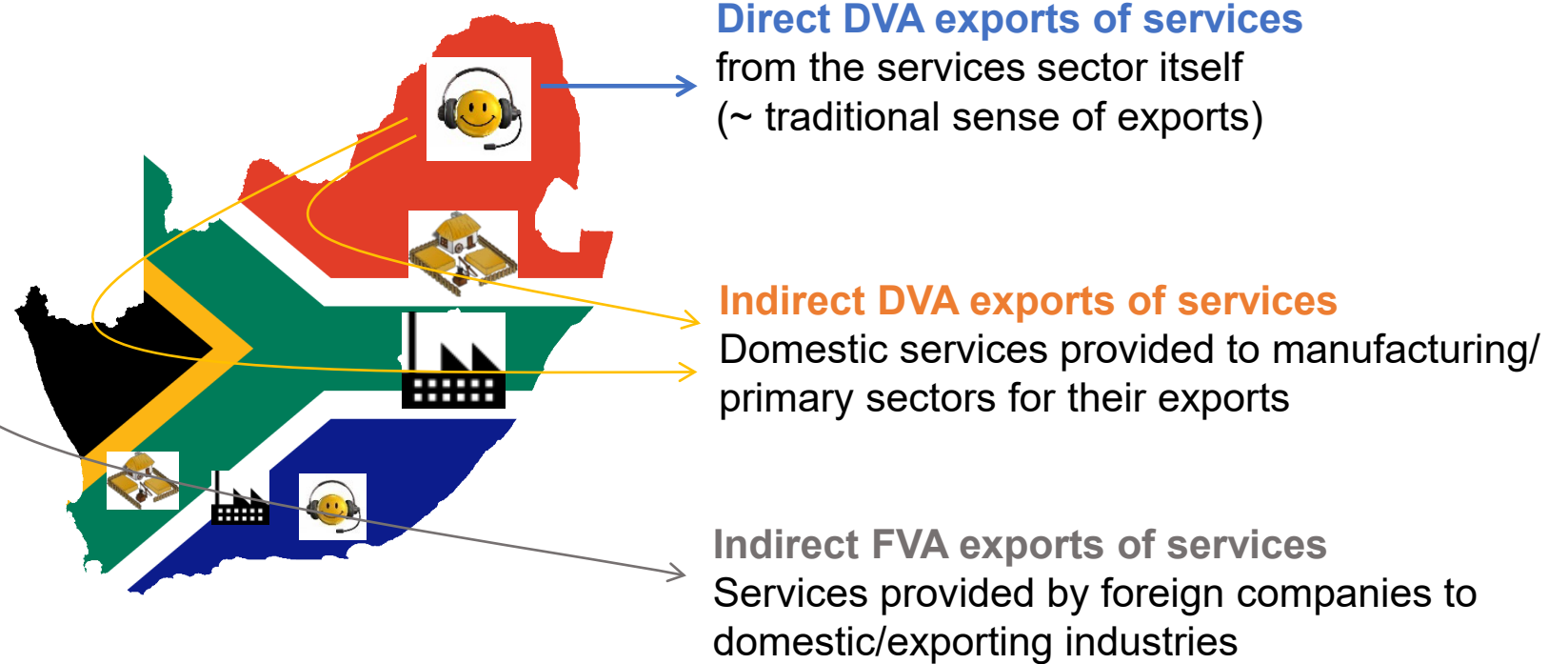
Source: BOP, WTO calculations based on the OECD TiVA database.

The services value added contents in exports

Why services become so important with TiVA

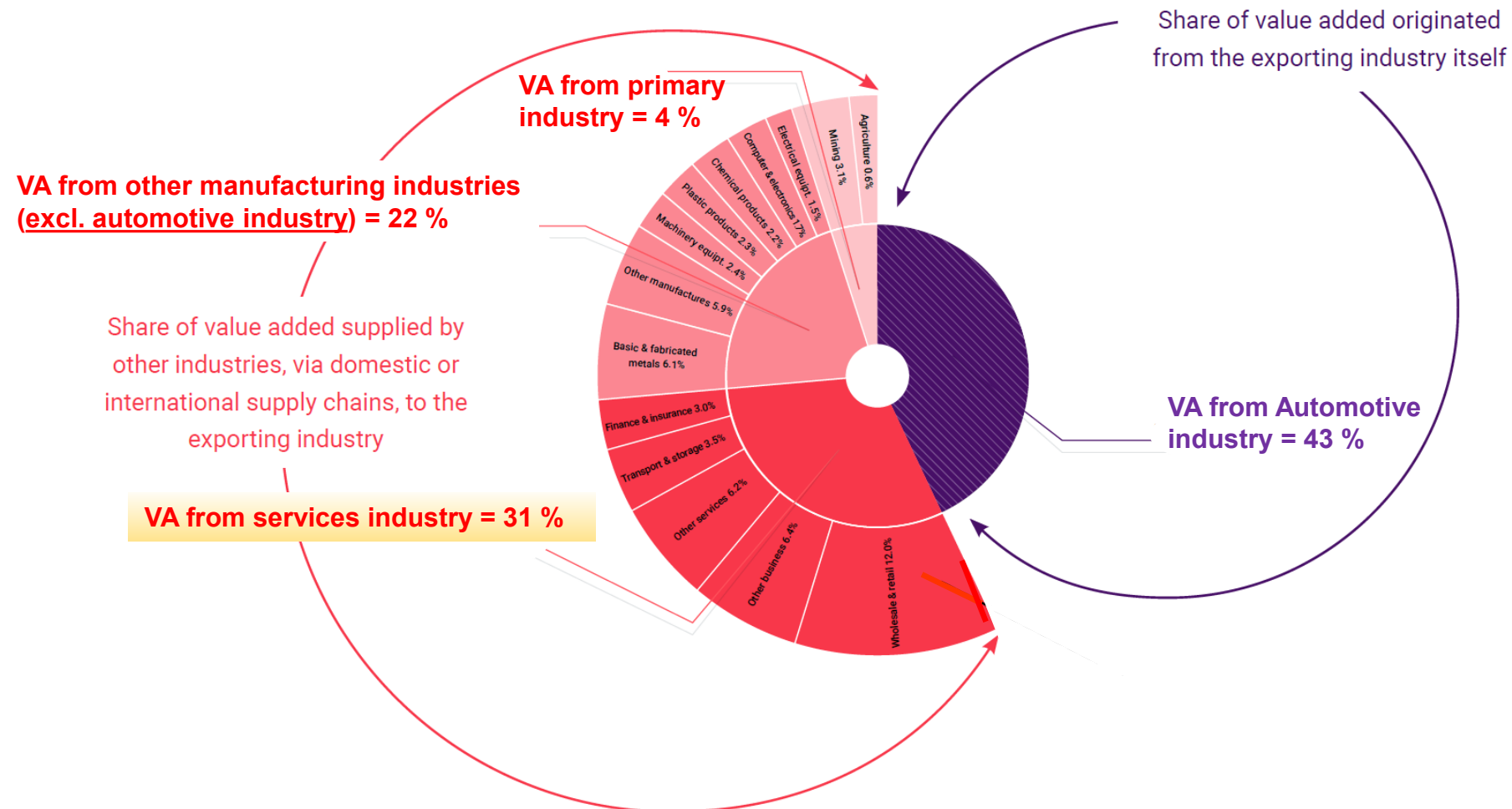


Total services VA content in exports = direct services exports + indirect services exports + foreign services content



Sectoral origin of value-added in world exports of automotive products

An example of the role of services in the manufacturing sector

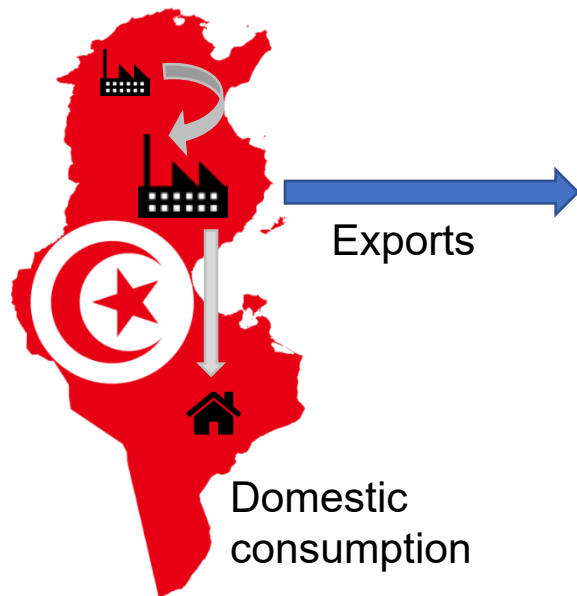




GVC indicators and core messages derived from TiVA

The geographical dimensions of value chains

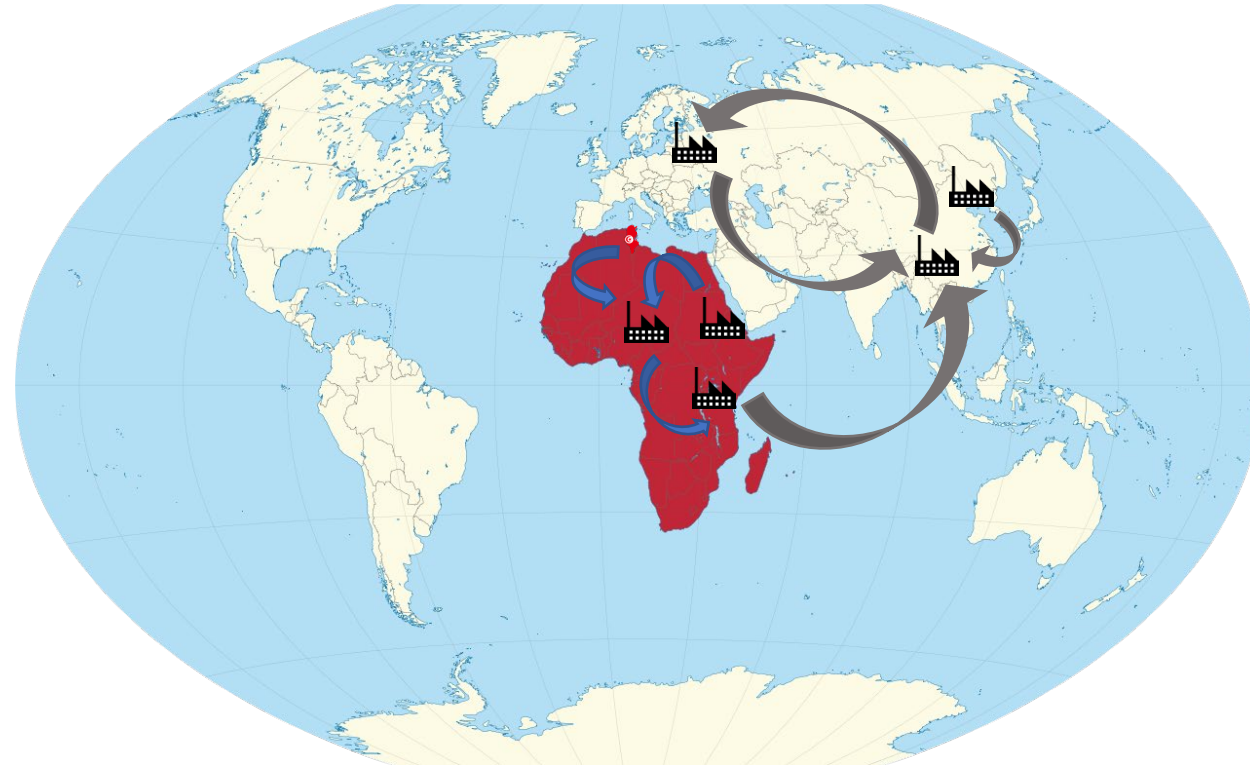
Domestic (DVCs) – Regional (RVCs) – Global (GVCs)



Domestic value chains



- National production networks
- Exchange of VA inputs for domestic market or exports



Regional value chains



- Geographical proximity
- Regional consumer markets
- « Asia factory »: industrial linkages in South-East Asia

Global value chains

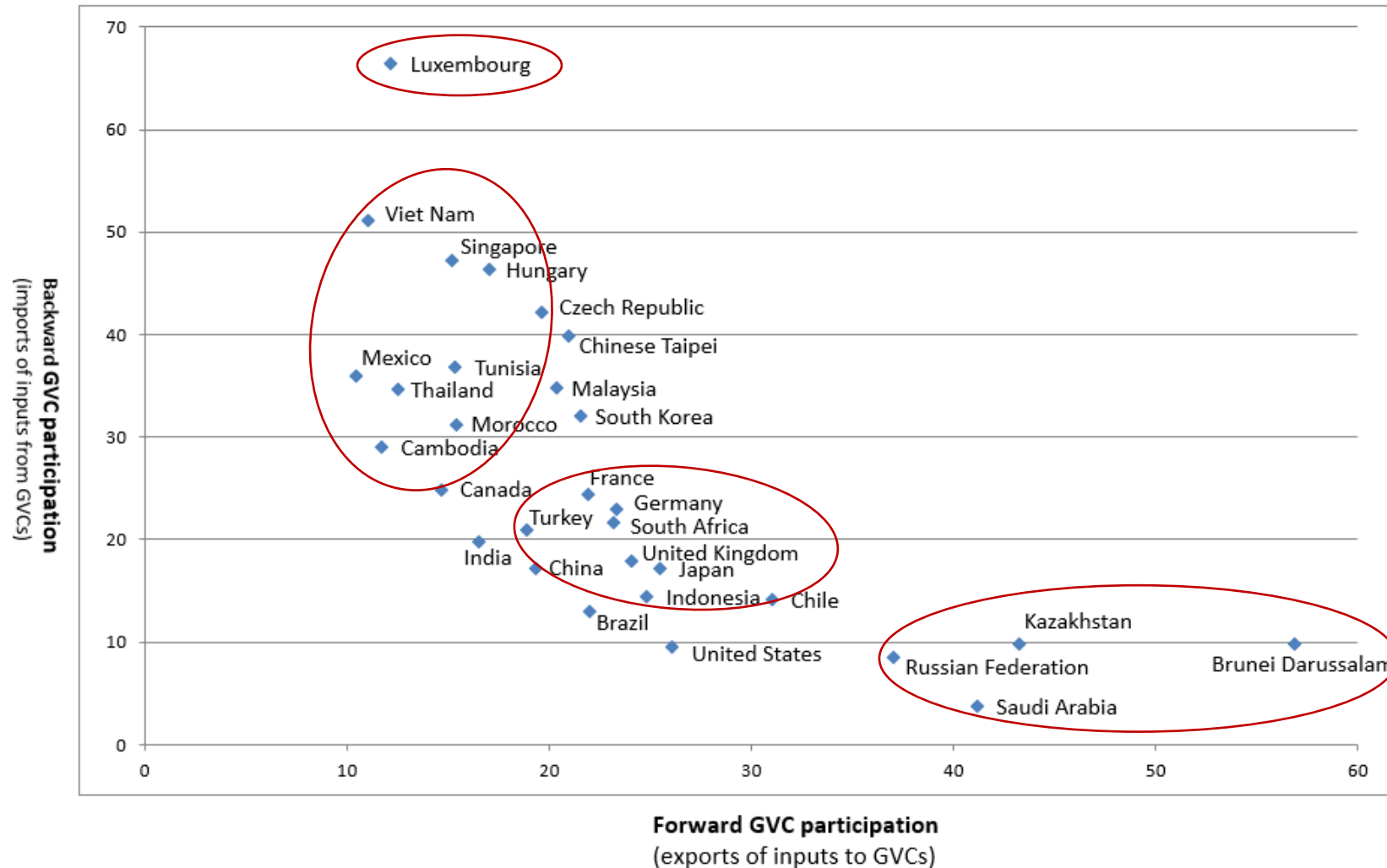


- FDI
- MNEs' offshoring strategies
- Export Processing Zones



The participation of economies in GVCs

GVC participation index, selected economies, 2018 (% in total gross exports)

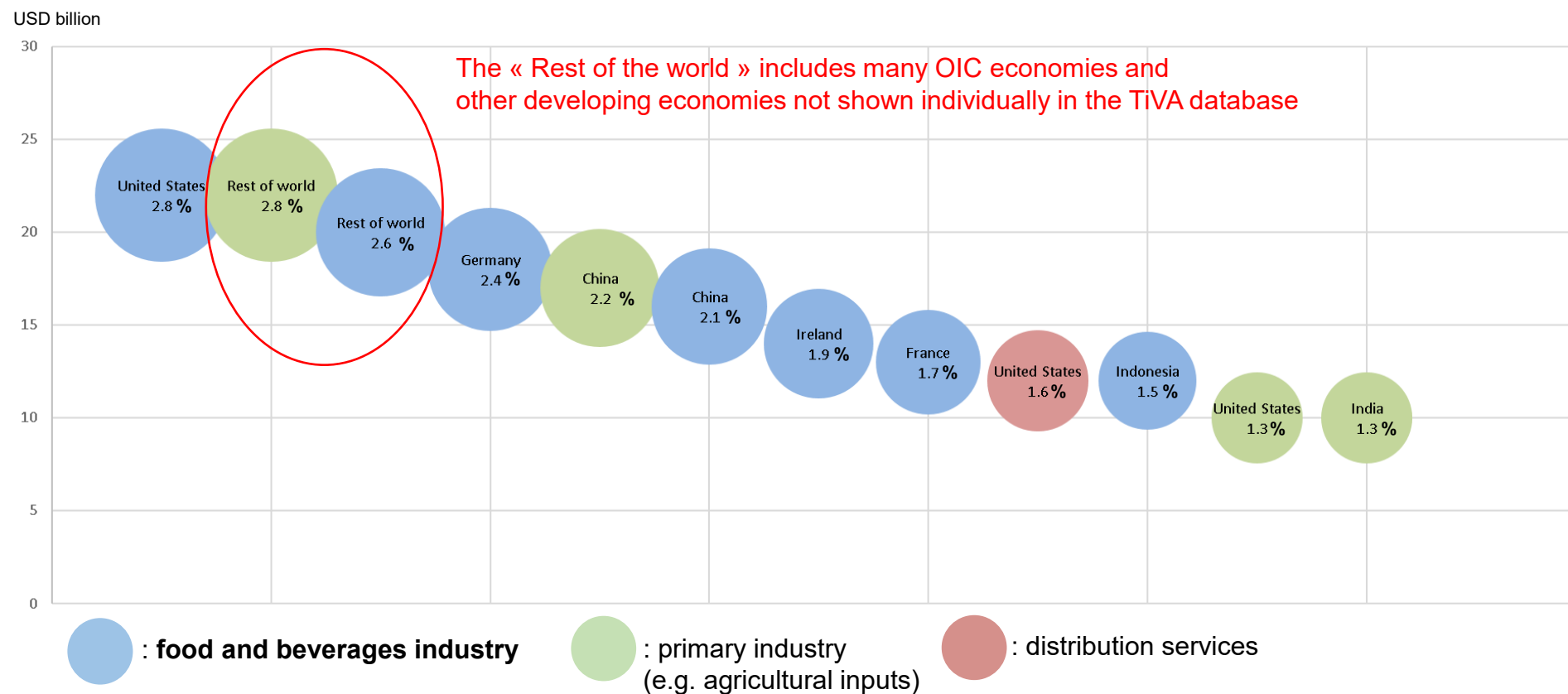


Source: WTO calculations based on the OECD TiVA database

Key players in food and beverages GVCs



Top 12 value-added contributors to world exports of food and beverages products, 2018
(USD billion and % share in world exports of food and beverages products)



Source: WTO calculations based on the OECD TiVA database

TiVA key policy messages – Recap 1/2

TiVA and GVCs



TiVA message: Importing to export
or foreign value added (FVA) content of exports, backward GVC participation, vertical specialisation (VS).
FVA is a sign of integration in production chains (e.g. South Korea VS rate of 30% in 2020) and also an indication on the level of dependency vis-a-vis foreign suppliers

TiVA message: Protectionist measures
can affect national companies which they are supposed to protect: companies already involved in GVCs or prevent others from joining GVCs

TiVA message: Exporting to supply chains partners
Or forward GVC participation
Exporting inputs to the next production step in the chain

TiVA message:
High interconnections
(backward, forward) between
countries and industries
within supply chains

TiVA message: The role of services in exports
is as important as that of goods
More especially the indirect contribution of services in exports of manufactured goods

TiVA message: Indirect DVA exports
The role of domestic value chains (DVCs)
National industries supplying VA inputs to exporting ones

TiVA message: Domestic VA (DVA) content in imports
Domestic VA is present not only in exports but also in imports
("Circular trade", returned DVA, back and forth intra-firm VA exchanges)

TiVA key policy messages – Recap 2/2

GVCs risks



Shocks propagation

Recent crisis (COVID-19, Ukraine war,...)
impacted on supply chains, involving
disruptions, shortages and inflation

Other potential and rising risks

Environmental/climate change, geopolitical, social crisis, etc ...

GVCs risks

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graph TD; A((GVCs risks)) --> B[Shocks propagation]; A --> C[Other potential and rising risks]; A --> D[Your country's dependency vis-a-vis foreign suppliers]; A --> E[TiVA message];
```

Your country's dependency vis-a-vis foreign suppliers

Towards more resilient GVCs :

- Diversification of foreign suppliers
- Identifying and focusing on essential industries
- Conducive regulatory environment
- ...

TiVA message: the FVA indicator informs on the level of concentration
and dependency vis-a-vis foreign countries/industries

The Africa TiVA project - 2020 to June 2023



Project objective

To launch a **statistical capacity building program for 5 African pilot economies** to develop a sustainable production of Supply-and-Use tables (SUTs) and other statistics, in line with TiVA requirements, and **to increase the coverage of Africa in the OECD and other global TiVA databases**

Multiple stakeholders unified their resources, skills and experience to reach the project goals



5 African pilot countries (OLC members)

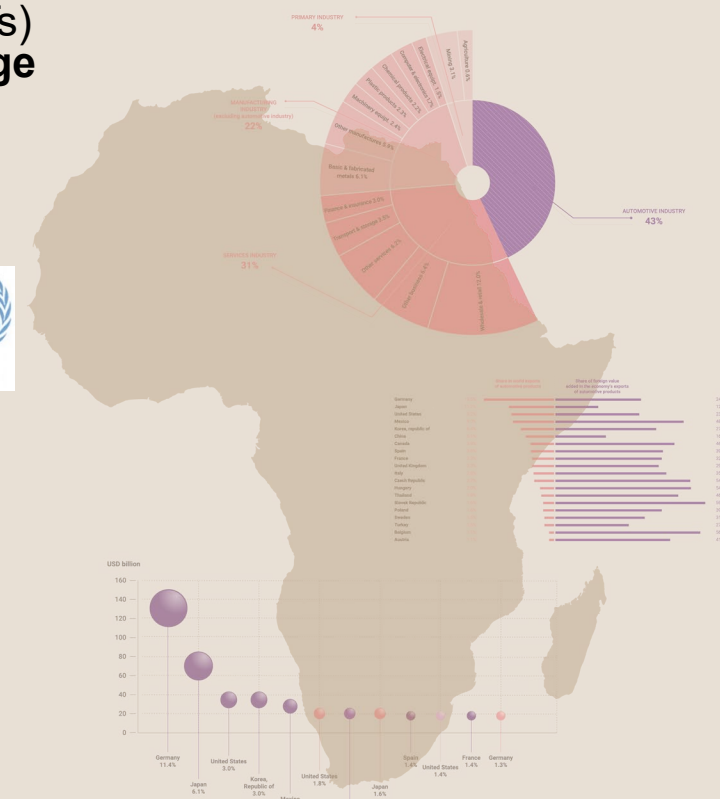
Cameroon, Côte D'Ivoire, Egypt, Nigeria and Senegal

Objectives achieved and deliverables

- Building a sustainable statistical capacity
- Country integration in the TiVA DB
- Country reports (first TiVA results)
- Training activities
- The UNECA AfCIOT regional database



A statistical tool for regional value chains analysis within the AfCFTA and towards a TiVA community in Africa



Thank you

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