THE BENEFITS OF OECD TIVA INDICATORS AND THEIR USES TO ANALYSE IMPACTS OF COVID ON GVCS

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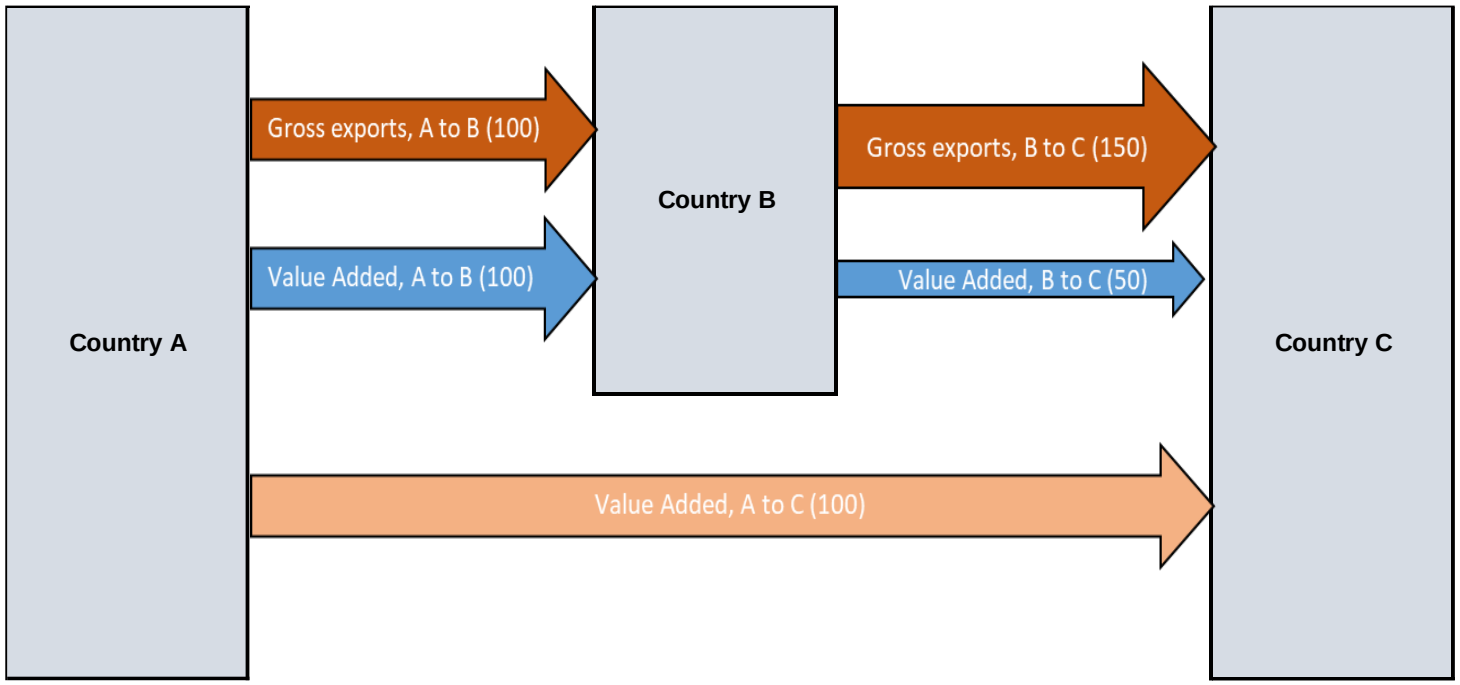
What is TiVA?

- Trade in value added (TiVA) is a statistical approach that estimates the origin (by country and industry) of value added in the exports of goods and services and, the origin of value added in final demand for goods and services

- The TiVA approach leads to a better understanding of the economic interconnections among countries by accounting for global production networks and their Global Value Chains (GVCs) and, the relations that international trade has with the generation and consumption of value added by countries.

- TiVA thus refers to a family of indicators generated from Inter-Country Input-Output (ICIO) tables. TiVA does not refer to a single indicator. In the OECD TIVA database, indicators are assigned codes and labels to reflect their definition.

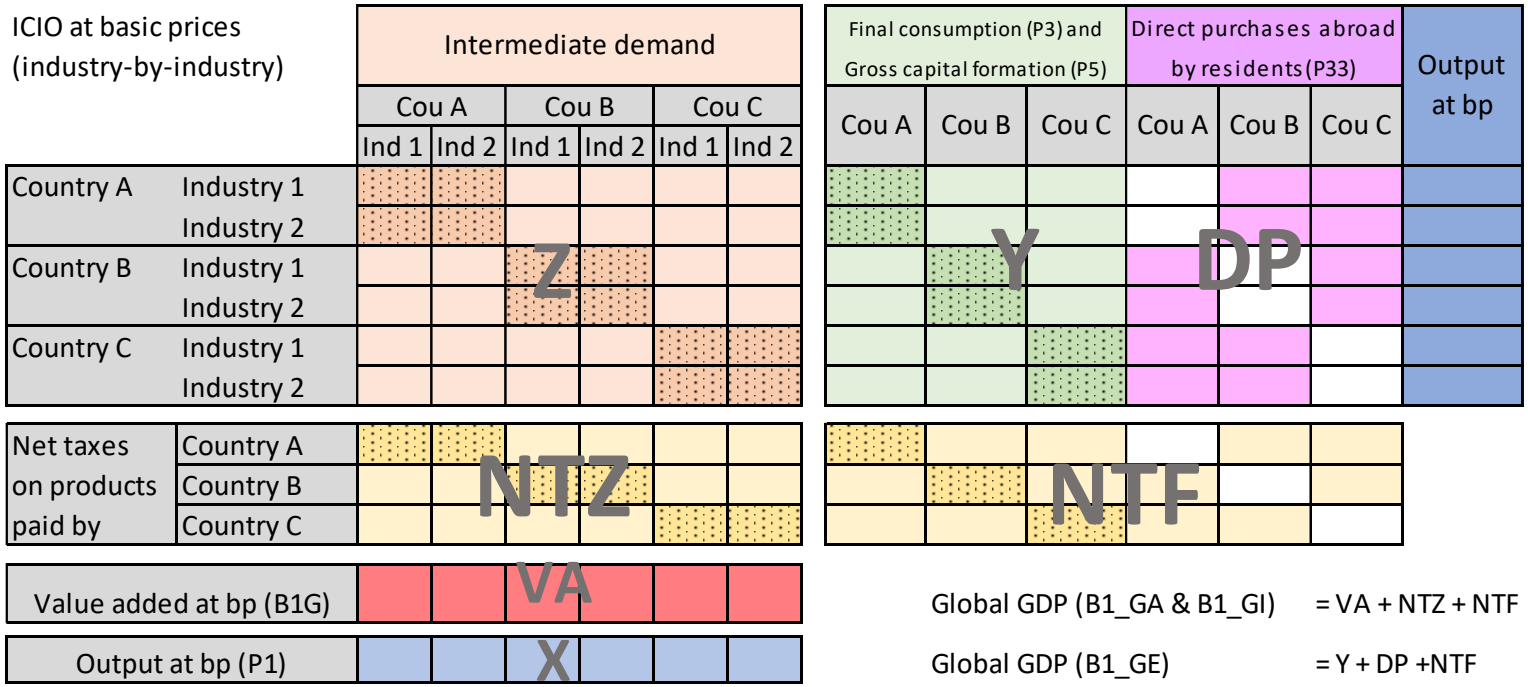
Gross exports and TiVA



Example: Country B's gross exports of products to C = 150.
of which 50 (33%) is *domestic value added content*
while 100 (67%) is *foreign value added* content *(*originating from A, the supplier of intermediate inputs)

'Traditional' trade statistics reveal gross exports.
TiVA indicators reveal the value added origin (country and industry) of gross exports

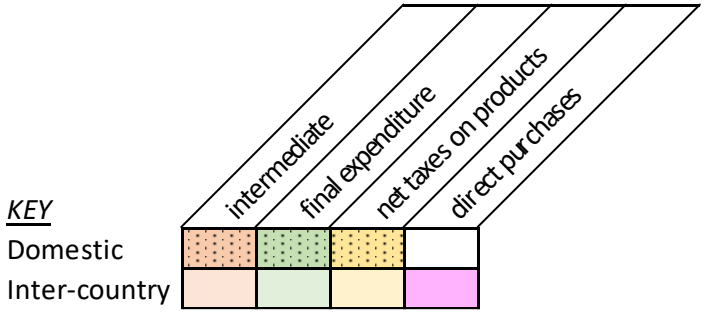
Inter-Country Input-Output (ICIO) structure



Global GDP (B1_GA & B1_GI) = VA + NTZ + NTF

Global GDP (B1_GE) = Y + DP +NTF

() SNA codes



Why ICIO

- The ICIO framework is developed within a public international organization while other global Input-Output projects are led by academic institutes;
- It is expected to be maintained in the longer-term;
- OECD has strong institutional links with national statistics producers and National Banks;
- The OECD ICIO accounts for industry heterogeneity for China and Mexico;
- Cross-border exports and direct purchases by non-residents are shown separately.

ICIO and TiVA Indicators, 2018 release

- Available online http://oe.cd/icio & http://oe.cd/tiva
  - 64 individual economies (*3 countries from MENA, Morocco, Tunisia and Saudi Arabia*)
  - 36 industries *based on ISIC Rev.4*
  - Current version 2005 to 2015 + *preliminary estimates for 2016*
  - New version 1995 to 2018
  - A set of 50+ core indicators
- Trade in Employment http://oe.cd/io-emp
- CO2 Emissions Embodied in International Trade (http://oe.cd/io-co2)
- Thinking of a new cube dedicated to tourism, *Tourism Trade in Value Added*

The OECD ICIO – Geographical coverage

OECD	All 37 OECD countries
Other G20	Argentina, Brazil, China PR, India, Indonesia, Russian Federation, Saudi Arabia, South Africa
Other EU28	Bulgaria, Croatia, Cyprus, Malta, Romania
Other South Eastern Asia	Brunei Darussalam, Cambodia, Malaysia, Philippines, Singapore, Thailand, Viet Nam
Other Eastern Asia	Chinese Taipei, Hong Kong China
Other	Costa Rica, Kazakhstan, Morocco, Peru, Tunisia, Rest of the World
Region groups	OECD, Non-OECD, APEC, ASEAN, Eastern Asia, European Union, Euro Area, North America, etc.

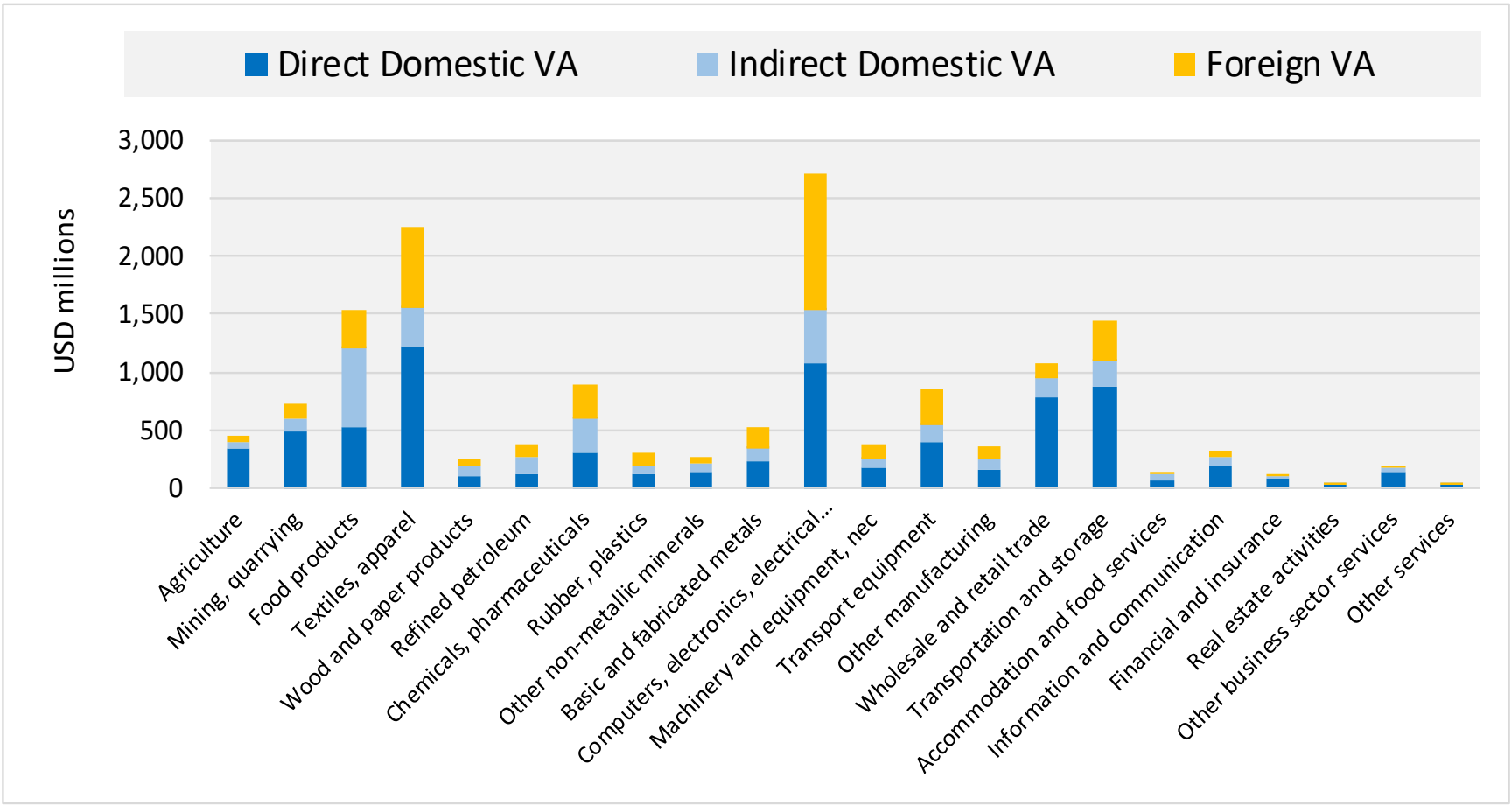
- **2018 Edition**
- Published ICIO tables include 64 economies + "Rest of the World"
- The shares of sum of 64 economies in the world economy are:
  - GDP: 92.3%
  - Exports: 91.5%
  - Imports: 88.3%
- But, only 3 countries from MENA

The OECD ICIO - Industry coverage

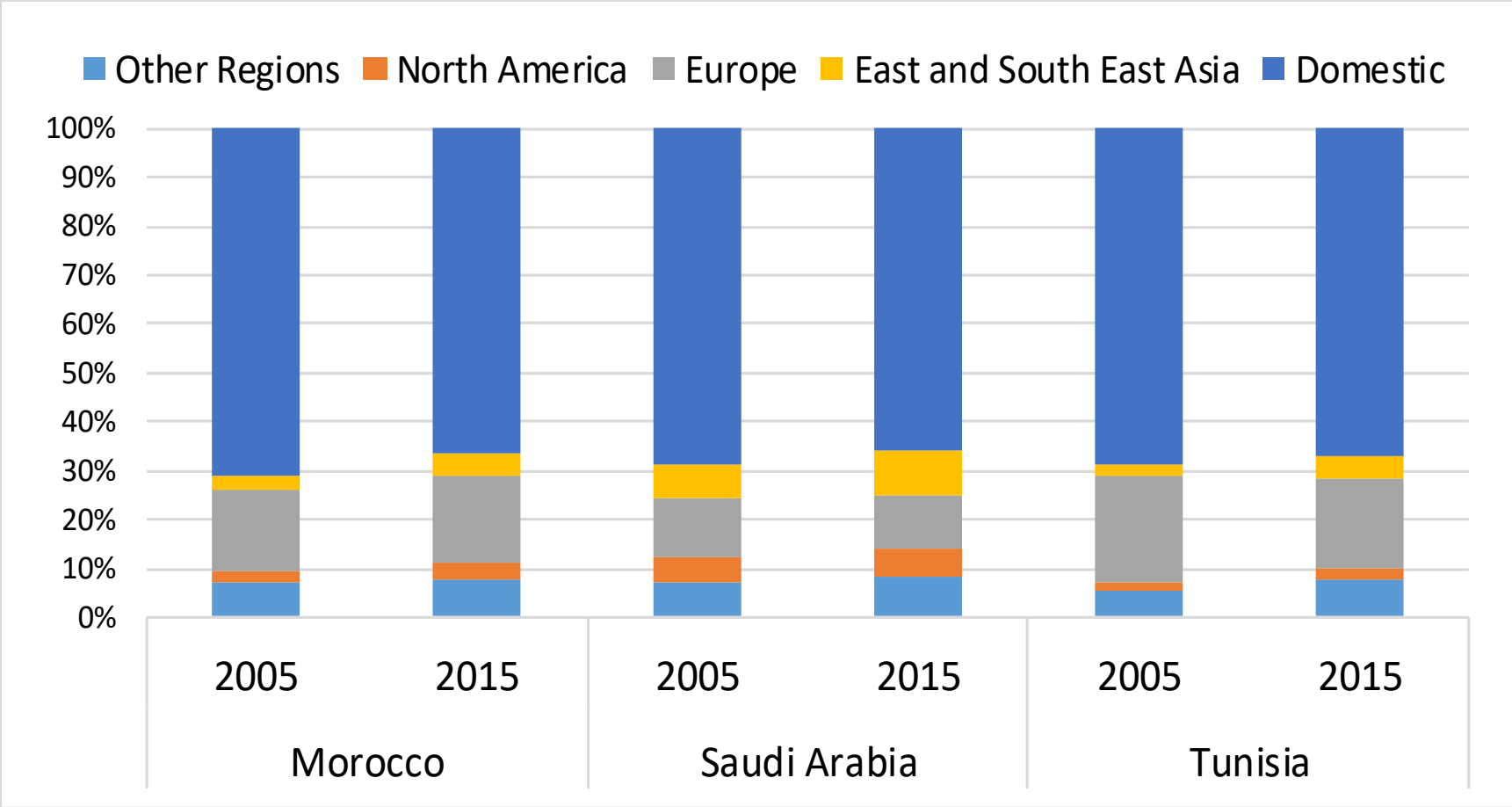
ISIC 4		Industry
0		Total
1	01, 02, 03	Agriculture
2	05,06	Mining, energy
3	07,08	Mining, non-energy
4	09	Mining, services *
5	10,11,12	Food products
6	13,14,15	Textiles & apparel
7	16	Wood
8	17,18	Paper and printing
9	19	Coke, petroleum
10	20,21	Chemicals
11	22	Rubber & plastics
12	23	Non-metal minerals
13	24	Basic metals
14	25	Fabricated metals
15	26	ICT & electronics
16	27	Electrical machinery
17	28	Machinery
18	29	Motor vehicles
19	30	Other transport
20	31,32,33	Other manufacturing
21	35 to 39	Utilities
22	41,42,43	Construction
23	45,46,47	Wholesale & retail
24	49 to 53	Transport & storage
25	55, 56	Hotels & restaurants
26	58,59,60	Publishing, broadcasting
27	61	Telecoms
28	62,63	IT services
29	64,65,66	Finance & insurance
30	68	Real estate
31	69 to 82	Other business services
32	84	Public admin
33	85	Education
34	86,87,88	Health
35	90 to 96	Other services
36	97,98	Private households

- **2018 Edition**
- Published ICIO tables:
- 16 manufacturing sectors
- 14 services sectors

Value added content of gross exports, Tunisia (2015)

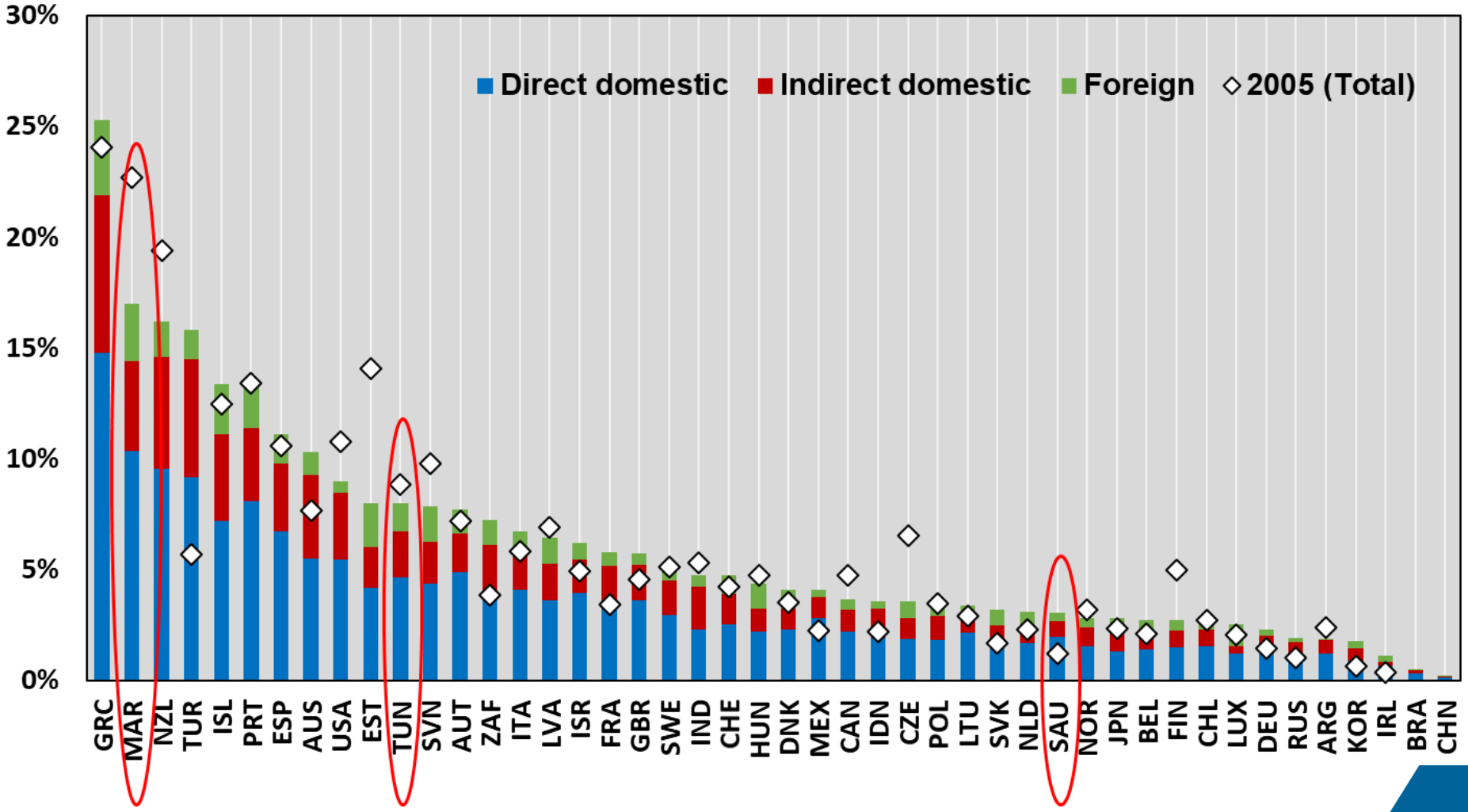


Origin of value added in domestic demand, 2005 and 2015



Non-resident household expenditure by origin of value added, 2015,

as a percentage of total gross exports



Other applications – Employment and CO2

- Trade in Employment and Compensation of employees (http://oe.cd/io-emp)
  - Domestic employment used to meet foreign final demand
  - Different bilateral net relationships from the results of value added, jobs and compensation of employees
  - Different impacts on gender and skills
- Climate change
  - Most OECD economies are net importers of CO2 emissions (http://oe.cd/io-co2)

Other applications - SDGs

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Industry for Good

Industrial policies for the Sustainable Development Goals (SDGs)

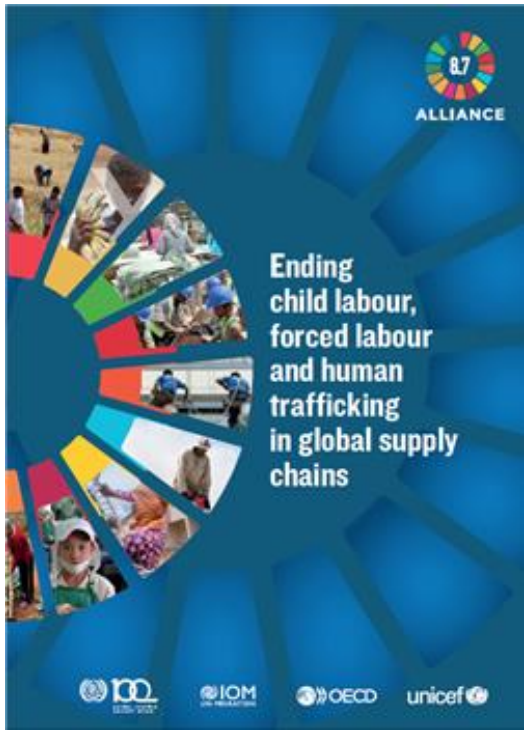
In 2015, all Member States of the United Nations adopted 17 Sustainable Development Goals (SDGs) – summarised in Figure 1. Devised as an agenda for global sustainable development, they reflect the commitment of stakeholders to eradicate poverty, respect human rights, empower women and girls and bring prosperity and peace, while tackling climate change and working to preserve oceans and forests.

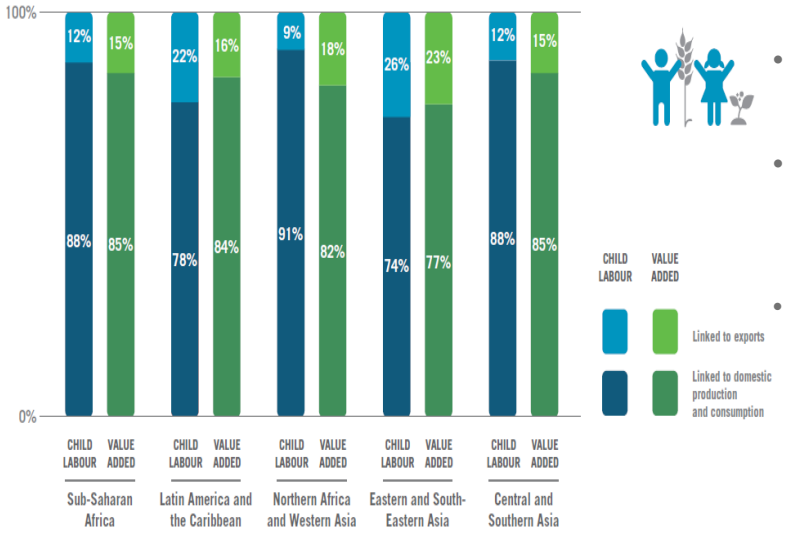
However, five years after their adoption, in its 2019 SDG report the UN warned that the global response has not been sufficiently ambitious, despite progress in some key areas. There is an urgent need to increase the pace of action from all stakeholders, including the business sector.

Figure 1. The 17 Sustainable Development Goals

- Currently working on a project with Japan about Industrial policies for SDGs:
  - *Evidence based assessment*
  - *Recommendations and Policy advice*

Other applications - Child labour





- Analysis using a combination of ICIO tables and ILO Global Estimates of Child Labour
- Joint authors: OECD, ILO, IOM and UNICEF under "Alliance 8.7"
- Final version was launched at Paris Peace Forum on November 2019 by OECD Secretary General.
- **Preliminary estimates**. A key impact was wide publicity and advocacy of the *potential* of using I-O analyses to inform policy makers on issues related to Child Labour and GVCs e.g. Child labour "hidden" in upstream in domestic supply chains.

Source: ILO, IOM, OECD and UNICEF (2019)

USES OF TIVA INDICATORS TO ANALYSE IMPACTS OF COVID ON GVCS

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Possible scenario analyses

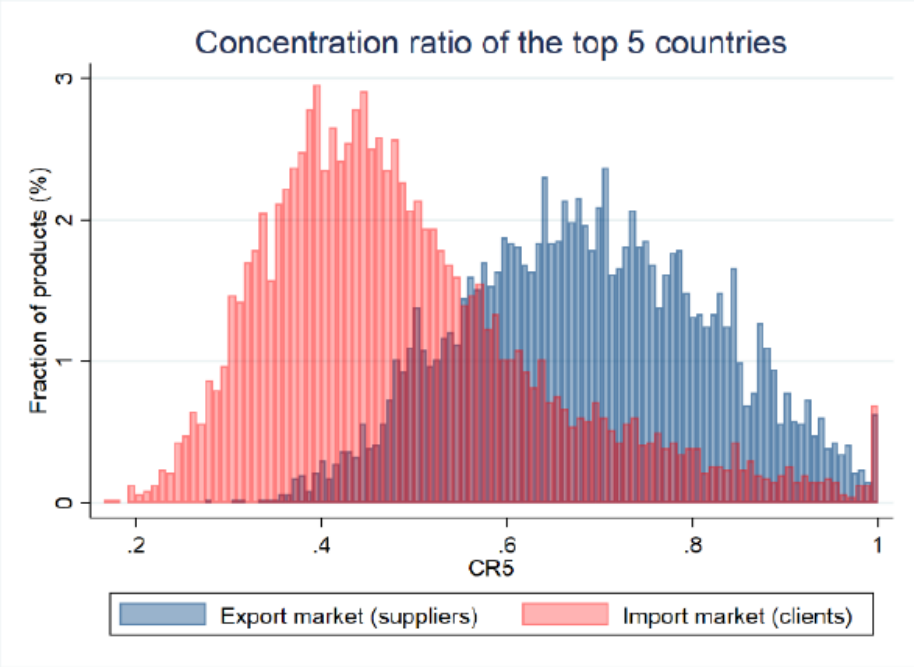
- Medium-term projection models (energy and other commodities)
- Pandemic impacts with higher frequency data
  - Mobility, infection and economic impacts
  - Bilateral trade by end-use characteristics with Monthly trade data
  - Capturing industry activities of medical supplies and key intermediate inputs
  - Recovery scenario simulation analyses using projected ICIO structure

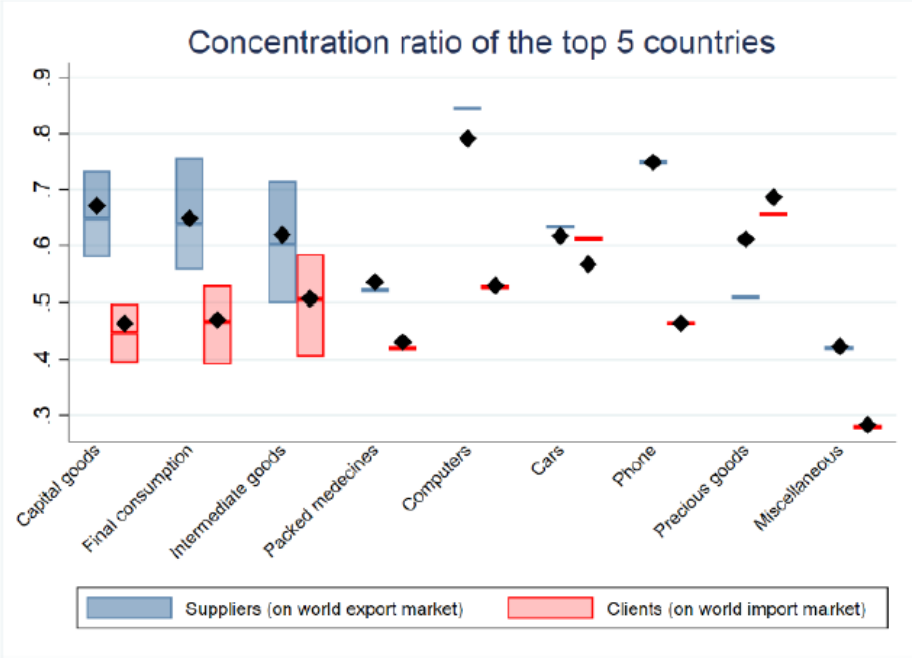
Renewed debate on cost and benefits of GVCs in the context of Covid-19

- **Disruptions in the supply** of few 'essential' goods but also in supply chains of some manufacturing industries have highlighted the interconnectedness between countries through GVCs (including the ability to cushion shocks)
- **Efficiency gains stemming from GVC participation are well established**: specialisation, economies of scale, productivity gains & lower production price, lower prices and more variety for consumers; opportunities for smaller firms and for participants from EMEs, new growth and wellbeing opportunities
- Yet, recently, **questions raised about whether these gains are worth the associated risks and instability**
- Goal of the note = provide empirical evidence on these questions
  - Identify ways of presenting trade and trade in value added data which tells us something about both potential exposures to risks, but also stabilising roles of GVCs
  - Present a stylised model-based counterfactual analysis to evaluate the purported trade-off between efficiency and risk management in GVCs

Descriptive analysis: concentration of trade on the supply and demand side

Exports tend to be concentrated more than imports, but exports of intermediate products are concentrated less than final products





Source: Christine Arriola, *et. al*, *Efficiency and risks in global value chains in the context of Covid-19. (forthcoming).*

The OECD's trade Model (METRO)

- It's a tool for analysing global markets.
- METRO model uses ICIO and TiVA indicators i.e. to analyse the effect of localising GVCs
- A computable general equilibrium (CGE) model that uses data to explore the economic impact of changes in policy, technology and other factors.
- METRO model, and CGE model in general, can be used to trace how a given policy can affect outcomes such as prices or production.

Thank You

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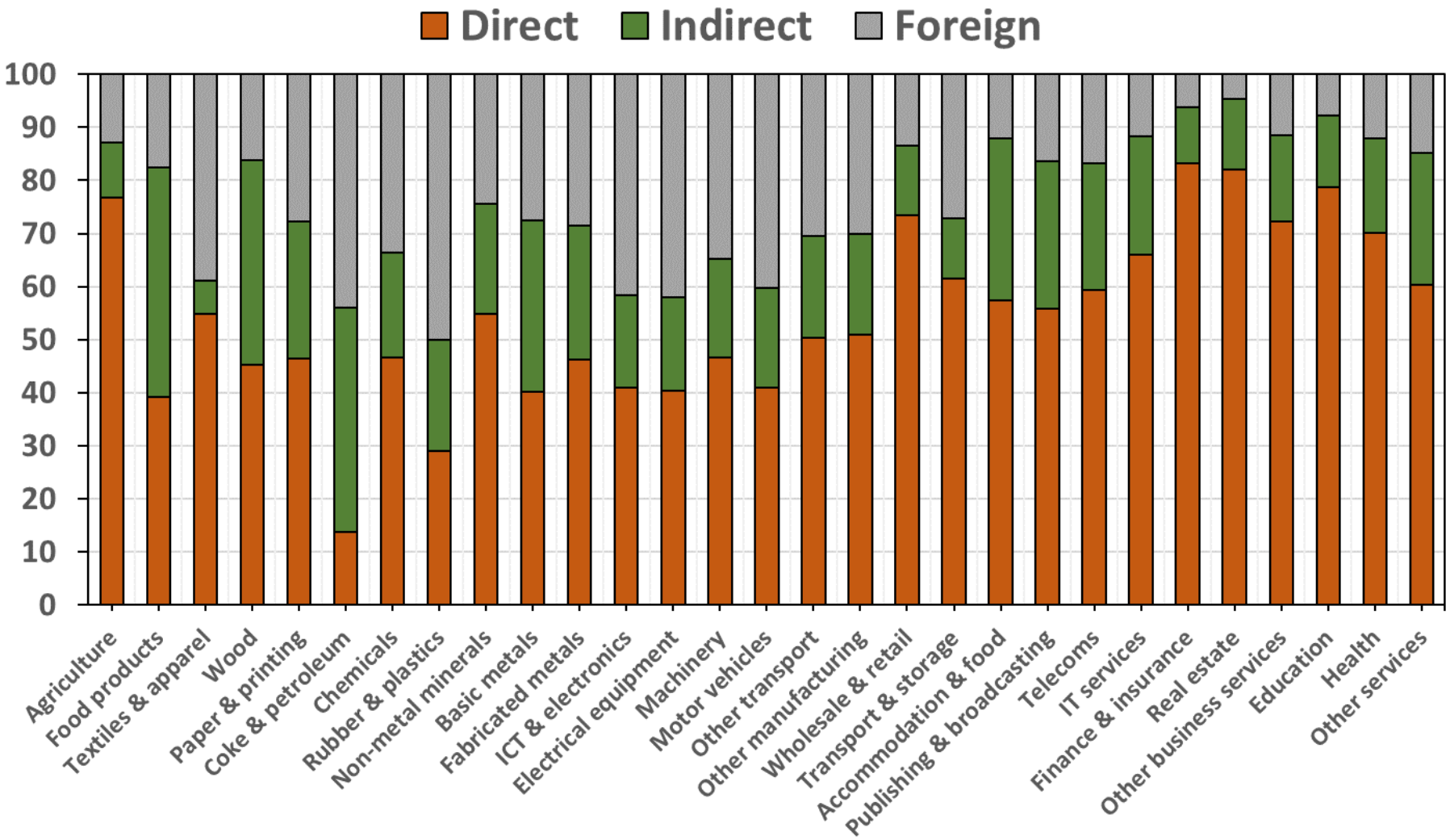
Non-residents' expenditure by origin of value added, by industry. Morocco (2015)



Data sources for OECD Inter-country inter-industry model

Data sources (national and international)

National Accounts: official country data, main aggregates and satellite accounts

Balance of Payments

Supply-use and Input-Output tables (imports, margins)

Bilateral trade statistics for goods and services

Employment

Tourism satellite account

Intermediate analytical data products at OECD

Harmonised SUT / symmetric Input-Output tables (OECD I-O)

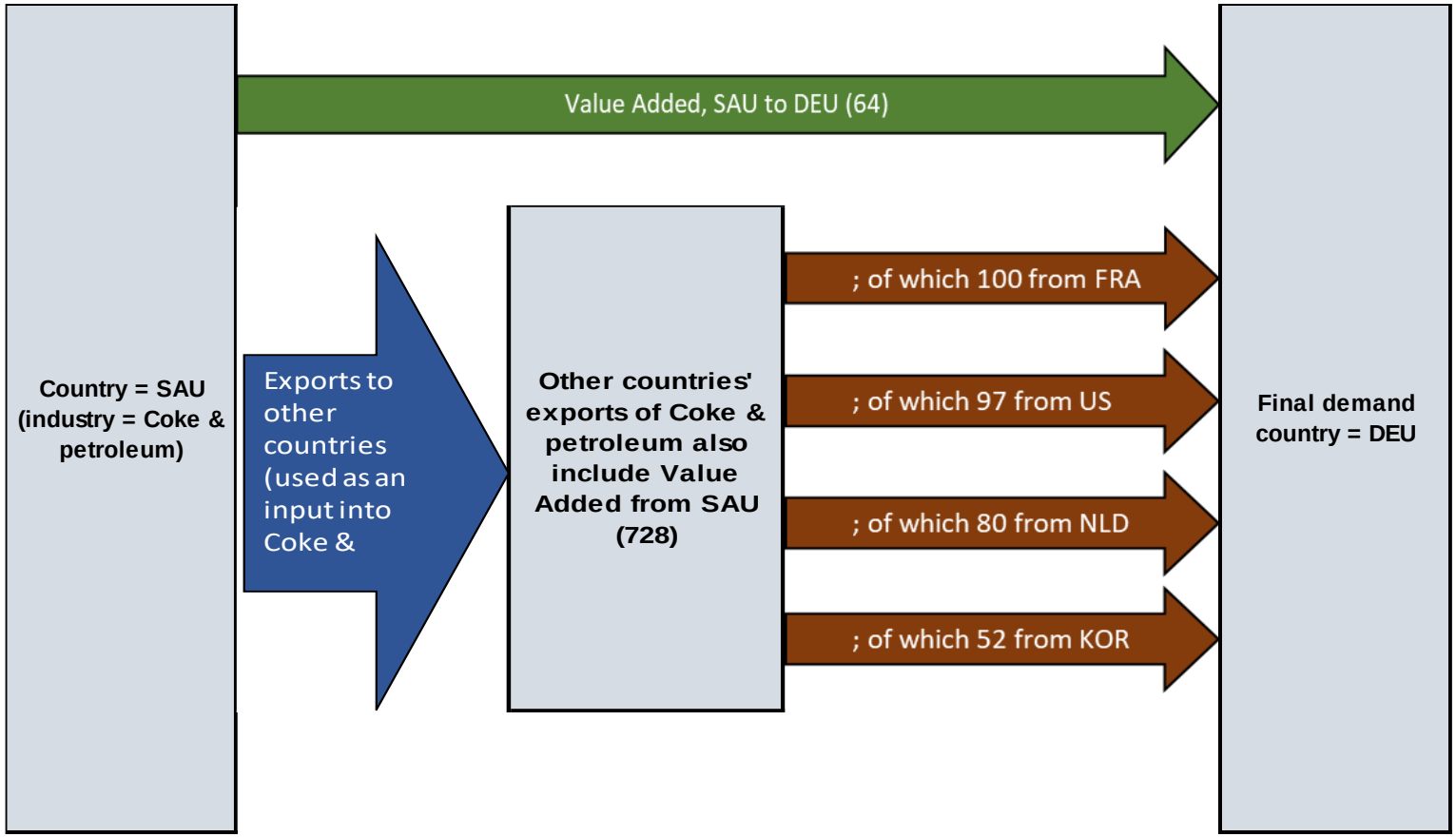
Bilateral Trade Database by Industry and by End-use for goods (OECD BTDIxE)

Bilateral Trade in Services (OECD-WTO)

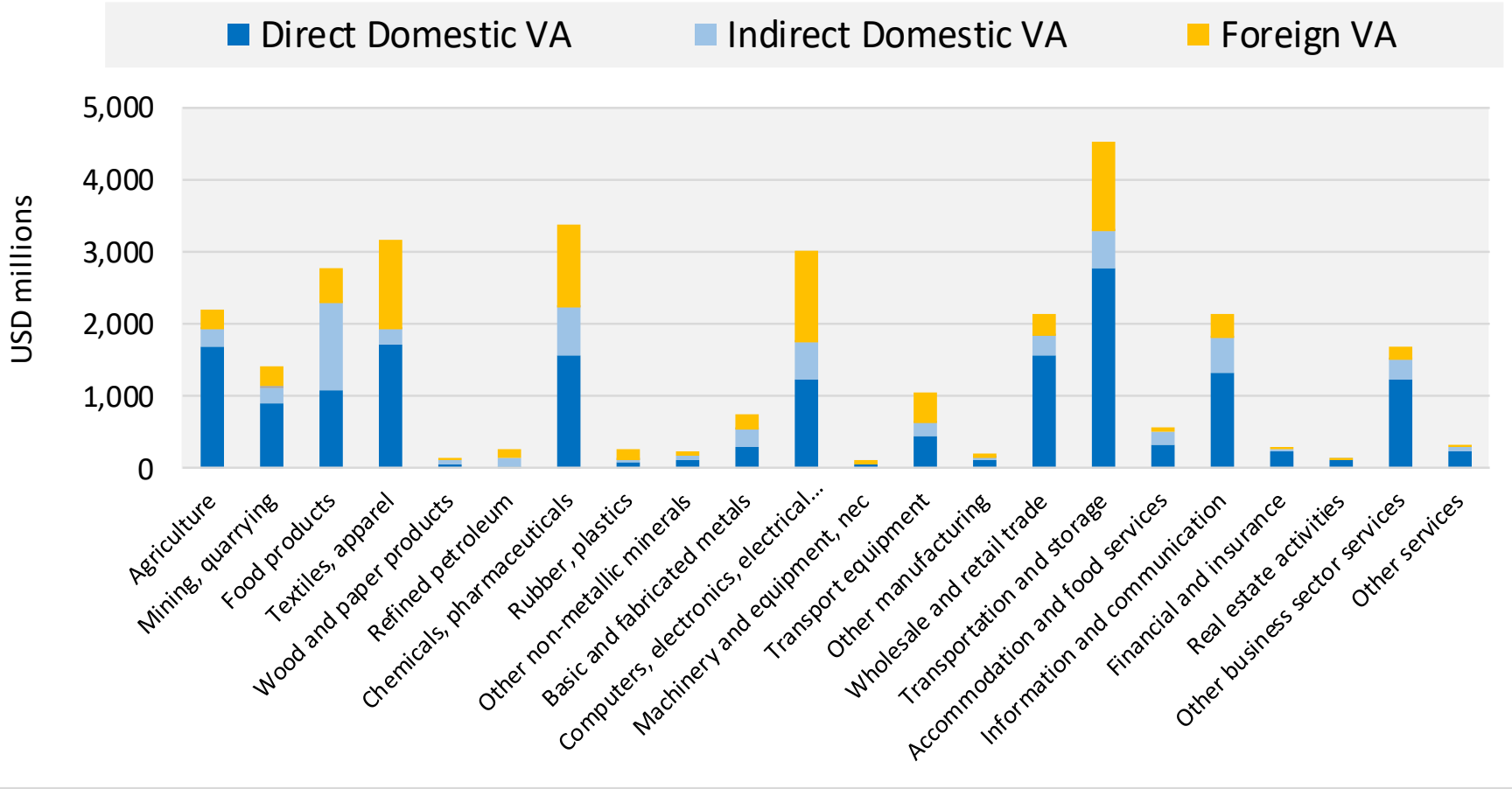
Sectoral Value-Added, Output, Employment(OECD STAN)

Adjusted National Accounts (currency, non-resident expenditures and re-exports)

Gross exports by origin of value added and final destinations



Value added content of gross exports
Morocco (2015)



Value added content of gross exports, Saudi Arabia (2015)