



Introduction to Accounting for Global Value Chains (GVCs) - GVC Satellite Accounts and Integrated Business Statistics

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United Nations Statistics Division

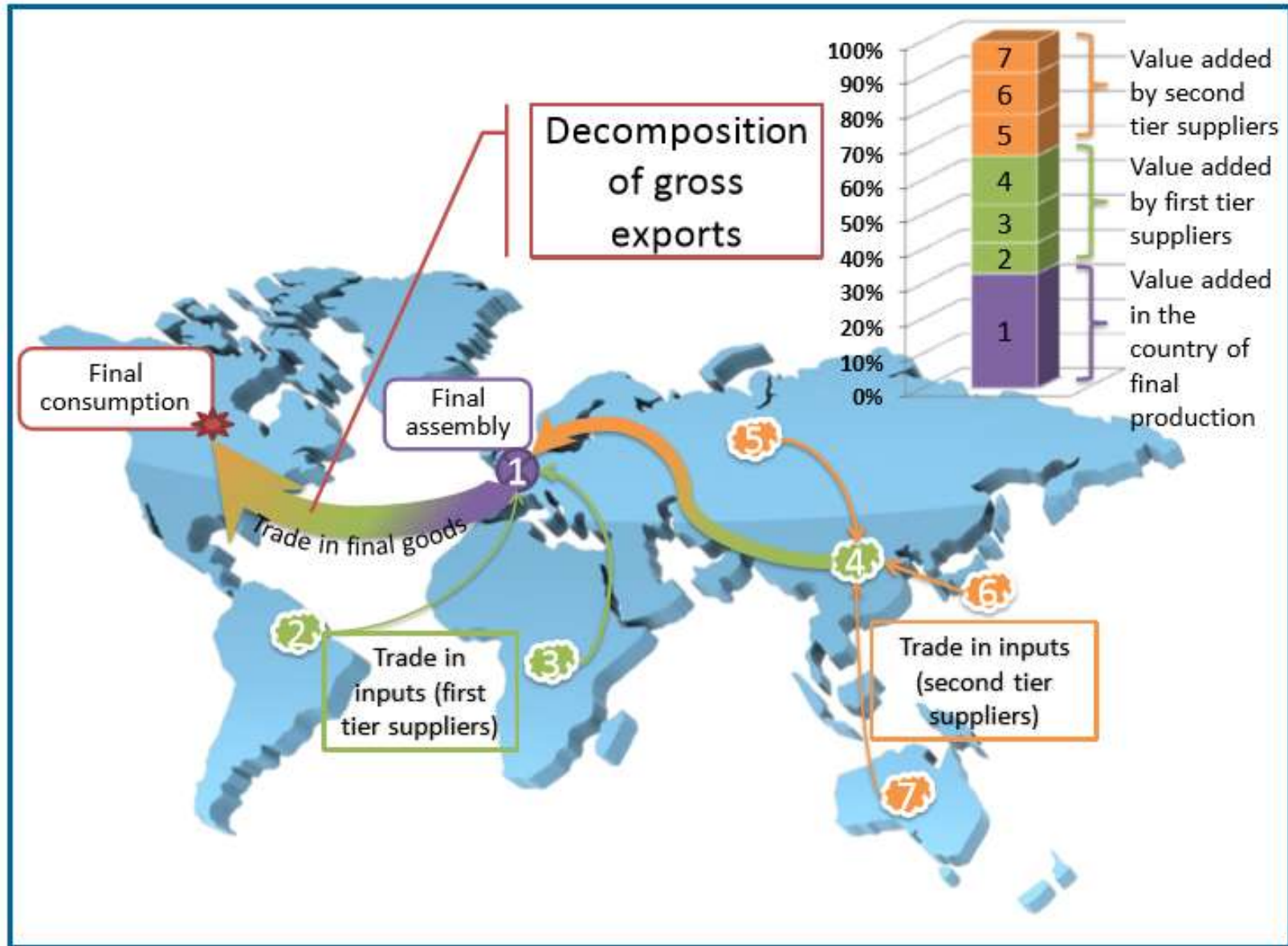


- Scene setting: global value chains and its impact on trade statistics and policy analysis
- Guidance from UN Handbook on Accounting for Global Value Chains,
- Data sources
- Policy examples
- Current status and future work



The fragmentation of production

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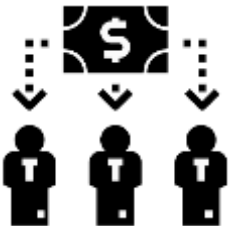
- The flows of goods, services, people, ideas & capital are **interdependent and must be assessed jointly**



- **Gross bilateral trade balances hide significant import content.** Protectionist measures based on gross trade flows can (i): lower the competitiveness of domestic lead firms that rely on imported inputs; (ii) tax domestic value-added embodied in imports; and (iii) lead to higher consumer prices if firms pass through costs



- **Economic development** can occur through GVC upgrading



- New policy framework depends on statistics classified into **business functions rather than aggregated industrial sectors.**



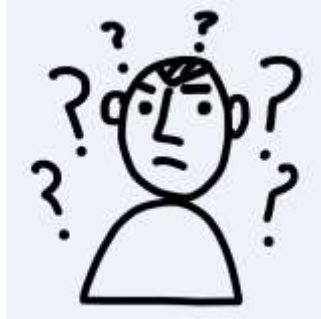
“The full range of activities that firms and workers perform to bring a product from its conception to end use and beyond, including **research and development, design, production, marketing, distribution and support** to the final consumer. The activities can be contained within a single firm or divided among different firms in a local economy or among a group of countries.”





Why GVC accounting framework?

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- National statistical compilers **only measure the domestic chains of firms with global activities in their economic territory**
- National accounting framework only measures the **international production, income, investment and financing linkages of GVCs as aggregates in “rest of the world”**
- Standard macroeconomic accounts are organized around *products, industries and sectors*, while global corporate activities are arranged in **business processes and functions**
- **GVC accounting framework measures total value added, jobs, investment and financing of GVCs across economic territories**



UN Handbook on Accounting for Global Value Chains
prepared by UN Expert Group on International Trade and
Globalization Statistics (chair Ireland)

Statistical Commission (2019) encouraged countries to
implement the Handbook.

- ➡ To provide a national perspective on globalization based on a Global Value Chain (GVC) model
- ➡ Focus on a specific GVC with major trading partners to highlight the multi-country supply chain of goods, value-adding services & institutional arrangements
- ➡ **Flexible** implementation approach: GVC-specific SUTs and GVC specific institutional sector accounts (either national or multi-country)



- **GVC satellite accounts** measure specific aspects of GVCs that are otherwise hidden in the macro-economic accounts.
- **GVC-specific Supply and Use Tables and GVC-specific Institutional Sector Accounts** are comparable across countries using standardized GVC specific products and industry classifications and sector classifications.
- **Business functions** are mapped to the international classifications of products and economic activities; e.g., in the automotive GVC, the core business function is manufacture of motor vehicles.
- **Participating firms** are classified as:
 - Lead firm* - the firm that 'controls' the chain
 - Affiliated Supplier*
 - o Controlled [Subsidiary (controlled)]
 - o Non-controlled [Associates (influenced)]
 - Non-affiliated supplier*



Classifications used

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Business Functions

- A business line represents a sequence of business functions controlled by the lead firm
- Can be mapped to the reference classification of products and economic activities

GVC participating firms

- Firms are classified according to their role in the GVC (whether lead firm, affiliated or non-affiliated supplier)

GVC products by GVC industry

- A standardized list of product codes and descriptions for industry-specific GVCs
- Can be mapped to HS for traded products and CPC for the SUT framework

GVC institutional sectors

- An extension to the institutional sector framework is largely made to accommodate concepts from FDI

GVC functional breakdown

- Enhances the standard BOP/IIP functional classification to include a separate category distinct from foreign direct investment – namely *other inter-company financing*



1. Choose GVC of interest, based on **economic and financial size, importance of investment and trade, and/or policy needs**.
2. Define the **geographic boundary** of the GVC (by main partner countries) to better understand a country's position in the generation of **income, jobs and productivity** of its business functions.
3. **Identify the firms involved** in the production of the final product and suppliers of intermediate goods and services



4. Decide on the **scope of the GVC**; e.g., are only direct suppliers included? Or suppliers or specialized intermediate goods? (e.g. steel -> components-> cars)

5. Classify the firms in scope according to their **role within the GVC**.

- Lead firm
- Affiliated supplier (subsidiary/associate)
- Non-affiliated supplier



6. Identify the **GVC industries** and **products** and **business functions**.

7. **Map** the GVC industries and business functions to **ISIC** and map the GVC products to **CPC** codes.



To determine the scope of the studied GVC, it is important to identify the relevant intermediate and final products of the GVC.



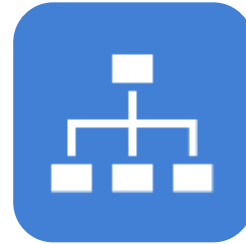
All these elements are then mapped to the standard classification of products, namely the **Harmonized System** (HS) for internationally traded products and the **Central Product Classification**, CPC Ver. 2.1 for the classification in the SUT framework.



The mappings are based on standardized lists of product codes and descriptions for industry-specific GVCs based on industry and/or academic research.



- A sequence of business production processes or business functions bring a product from its conception to its final consumers.
- They are **controlled** by the lead firm in a GVC.
- They can be divided into **core** functions and **support** functions and are undertaken by the lead, affiliate and non-affiliate firms in the GVC.



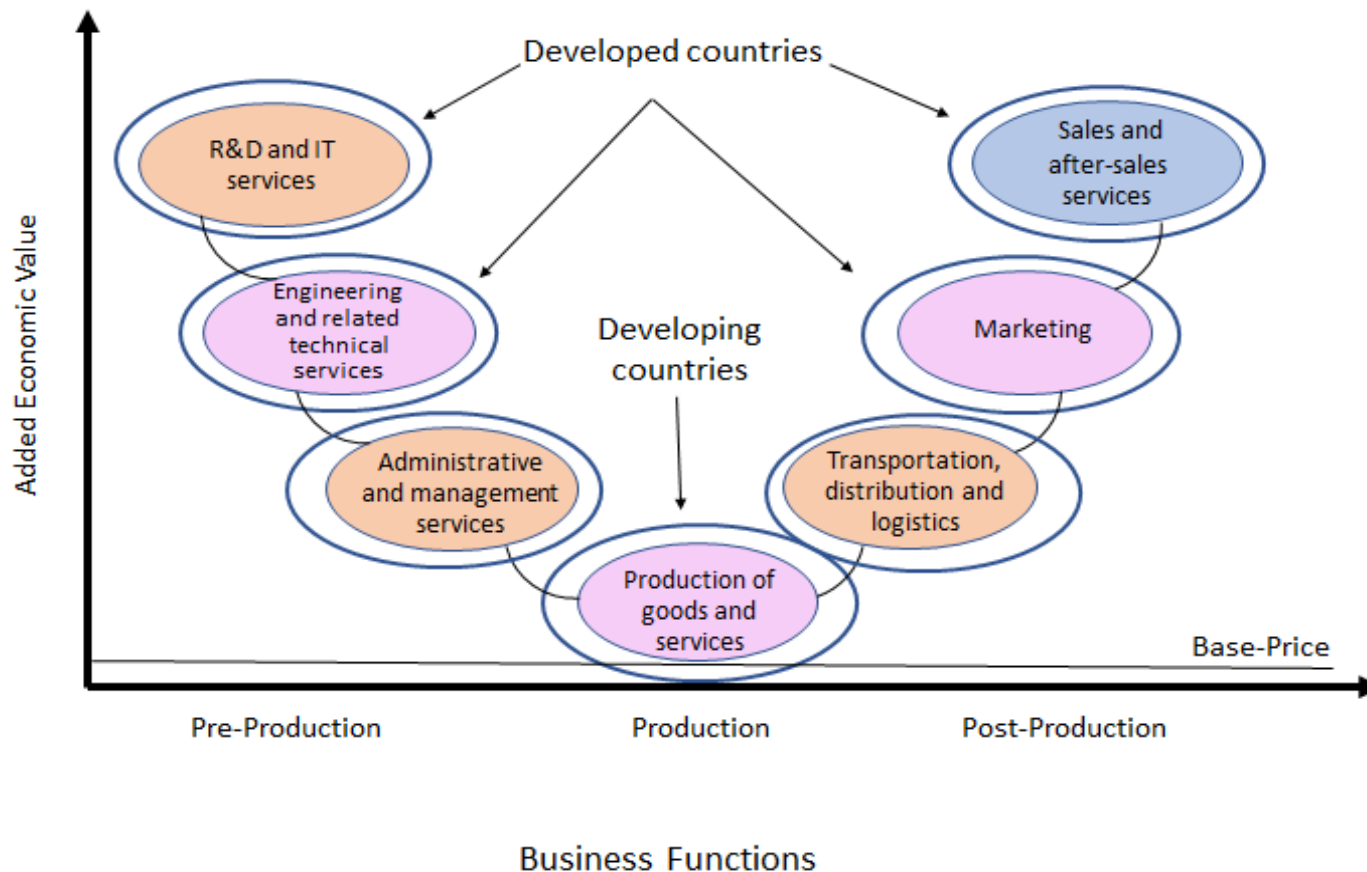
- **Core business functions** are activities that yields income, normally primary activity of the enterprise.
- **Support business functions** are ancillary supporting activities that facilitate the core business functions
- Outputs of support business functions are not themselves intended directly for the market or for third parties



- **Support business functions** can include:
 - transportation, distribution and logistics
 - marketing, sales and after-sales services
 - ICT services
 - administrative and management services
 - engineering and related technical services
 - Research & development



How business functions are generally located about generation of value added in a GVC:



This can allow for the identification of opportunities for upgrading by gaining competitiveness in higher value-added products through skill, capital and process upgrading.



8. Compile a **national and/or multi-country GVC-specific supply and use tables** using standardized products and industries.

- Compilation of national SUTs with a **common breakdown of industries (ISIC) and products (CPC) of the GVC** -> Mapped to business functions.
- In order to reflect the governance structure in the SUTs, there should be a further breakdown for each of the ISIC categories to reflect if the firm is **foreign-controlled** or **nationally-controlled** and **if the firm is part of the GVC or not.**
- In a similar way, the list of standardized products identified in the SUTs reflects the GVC-related products (including intermediate and final products) and non-GVC related products



9. Extend the **(national and/or multi-country) institutional sector accounts** to account for GVC concepts & GVC industries

The **institutional sector classification** of the 2008 SNA:

- Non-financial corporations
 - Financial corporations
 - General Government
 - Households
- Non-profit institutions serving households

The GVC extension to the institutional sector framework is largely made to accommodate concepts from FDI. The first extension is the distinction between **foreign-controlled (and foreign-influenced)** and **nationally-controlled corporations**, which is applied to both non-financial corporations and financial corporations

As regards the financial corporate sector, the distinction between foreign control and national control is less relevant for the development of the extended framework, as we would only want to identify those financial corporations that fulfil a specialized financial function only in the context of the GVC.



What are the data sources?

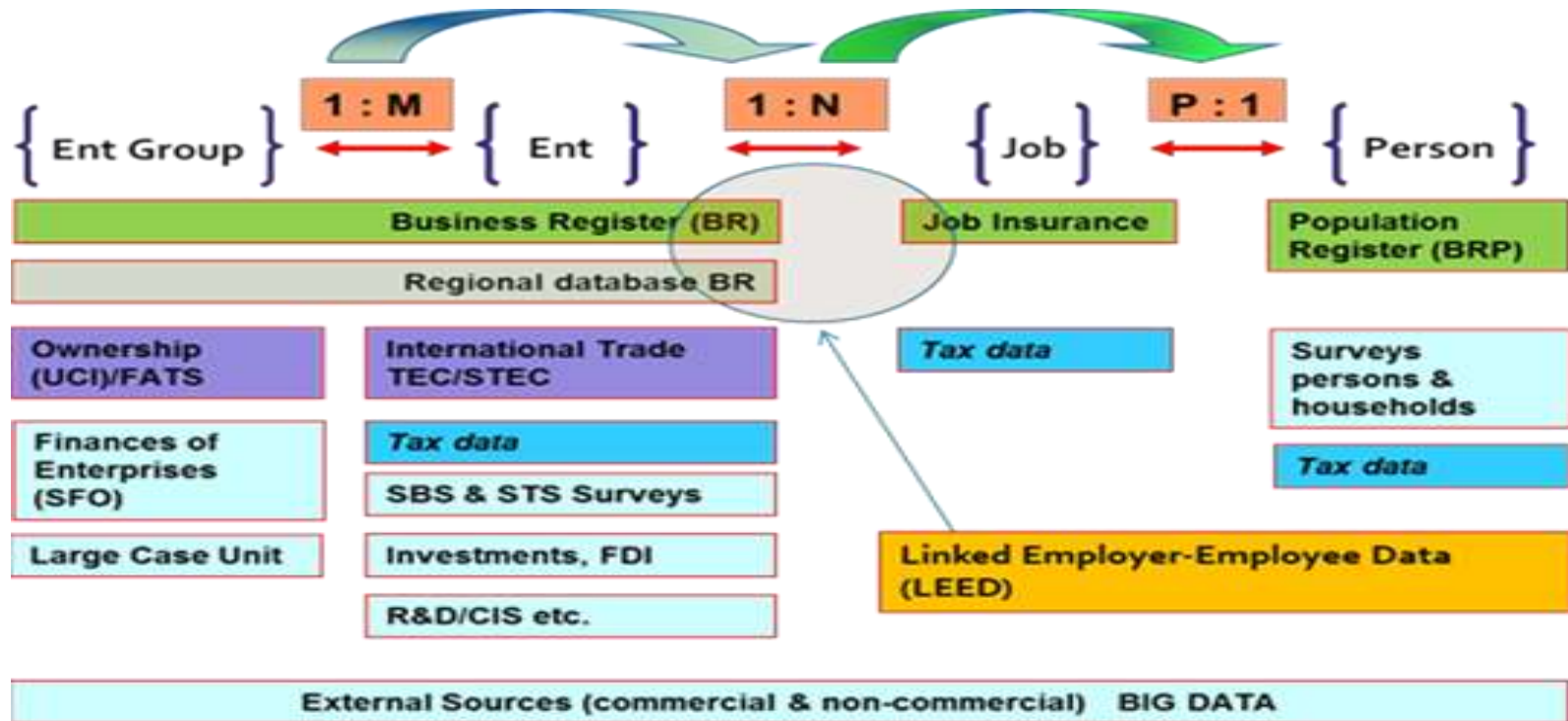
- Firm-level data aided by profiling conducted by large case units
- Micro Data Linking, data exchange and data linking
- Business registers should identify **cross-border control and ownership** established by the lead firms in their firm networks
- UNSD is working on a **Global Enterprise Groups Register**

What are the benefits of using microdata?

- Will allow for indicators on employment, income, productivity and international trade **within the GVCs** as compared to firms **not participating in the GVCs**
- And tailored collaboration between partner countries in analyzing **bi-lateral asymmetries**



General MDL Model used at Statistics Netherlands





Proposed approaches for compiling GVC satellite accounts

	Microdata linkage approach	Aggregate approach
Data	Microdata linking to get complete domestic picture at the firm-product level	Extracting data from existing databases
	Questionnaire sent to NSO to identify GVC participation and international transactions	GVC mapping - by product (HS, ISIC)
	GVC mapping – by products (HS, ISIC) and firm	
Process	Re-aggregation of the micro data into full set of GVC Satellite Accounts	Full set of GVC satellite accounts produced from aggregate information
	Country by country IOT and Extended SUT are informed by GVC satellite account	Leverage SUT, Extended SUT and country-by country IOT
Pros & Cons	Data intensive (precise mapping of GVC players is required)	Simplicity of approach (vs. micro-linkage approach)
	Precision and accuracy	Assumptions may be problematic. Assumes all firms in an industry are part of the chain. Assumes all products are produced in the GVC
	Access to micro-data required	

Basic assumptions:

1. *There are a limited number of large firms involved in a GVC or at the very least there are a limited number of firms that contribute to a large share of the total activity of the GVC.*
2. *The majority of the information required to construct a GVC satellite account already exists within the NSO.*



Policy examples from several countries

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Domestic value-added of exports in manufacturing in Mexico



Morocco's participation in the Automotive GVC



Trade Policy implications for GVCs in the United States



Costa Rica's participation in the Medical Devices GVC





Country Consultation Results

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Country	Response	Evaluation
Germany	Challenges	√
Hungary	Challenges - Global register	?
Lithuania	Extensions of data sources	√
Norway	Challenges	√
Poland	Challenges	?
ECB	Clear benefits	√
Denmark	Challenges and benefits	√
Netherlands	Challenges and benefits	√
Ireland	Challenges and benefits	√
Italy	Challenges and benefits	√
Eurostat	Challenges and benefits	√



Agri - Food GVC

- IE
- DK



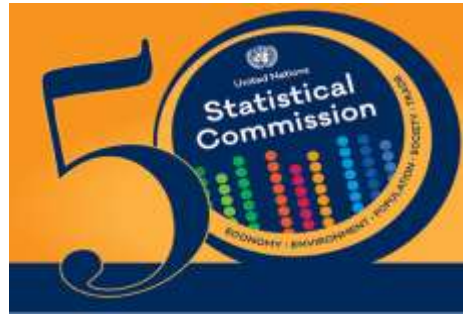
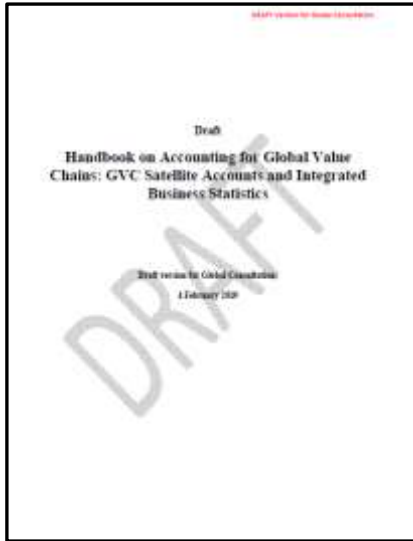
Automotive GVC

- DE, GB, FR, CZ, ES



Tourism/Transport GVC.

- GB
- FR, NL, DE, IE



- ❖ Statistical Commission (50th session, 2019) encouraged implementation of **Handbook on Accounting for Global Value Chains**
- ❖ An **online compendium** with original chapters & more detailed information
- ❖ Countries compile GVC satellite accounts on pilot basis and share experience – e.g. EU IGA projects
- ❖ Continuation of the work on globalization in the newly established **UN Committee of Experts on Business & Trade Statistics**



Thank you!