Accounting for Global Value Chains: Extended System of National Accounts and Integrated Business Statistics

Ivo Havinga
United Nations Statistics Division

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The auto industry is changing in ways that favor the U.S. – as long as Mexico and Canada are part of its supply chain.
Ford announced this week that instead of building its new Focus – the best-selling car in the world – in a new $1.6 billion dollar Mexico-based plant, it will ship cars for North American customers from China.

Ford has promised that its decision won’t reduce its workforce. Yet even if that is true, American workers will lose. Today the compact Focus uses steel from Wisconsin, axles from Oregon, seatbelts from Indiana, grills from Michigan, tire pressure sensors from Tennessee, front-side shafts from North Carolina and Ohio, and the list goes on. With the shift, these raw materials, parts and components will be sourced and put together in Asia, eliminating dozens of U.S. based suppliers, and likely costing many of their employees their jobs. While assembly was scheduled to move from Michigan to Mexico, that would have ensured ongoing American employment – as over 40 percent of the value of vehicles “made in Mexico” comes from U.S. factory floors and U.S. offices. For products imported from China – as the new Ford Focus will be starting in 2019 – this number is a negligible 4 percent.
The Paradigm Shift: The Old and New World of Production and Trade

• **New conceptual framework**
  
  GVC model is a useful tool to determine complex industry interactions of global production, link geographically dispersed activities and actors of a single industry, and determine the roles they play in economies.

• **Size matters:** Global value chains (GVCs) account for a rising share of international trade, GDP, employment and use of natural resources

• **Shift in trade policy:** Protection of the domestic producers from external competition through tariffs to protection of the consumer, workers and environment by diminishing the difference in the product, labor and environmental standards.
The Paradigm Shift: 
The Old and New World of Production and Trade

• **Implications for official statistics:** combining *international accounts* with cross border transactions between countries with *global accounts* describing the inter firm and intra firm networks as a global assembly line of globally produced goods and services.

• understanding the functional and geographical unbundling of production

• Supply-chain trade should be not viewed as standard *trade in parts and components* rather than in *final goods and services in end markets* governed by a single industry
The Paradigm Shift: The Old and New World of Production and Trade

How trade is to be understood

- Trade between countries turned into global production systems – made in the world
- Nations do not trade but firms trade
- Firms along the domestic, regional and global value chains have to be mapped and analyzed – traders, retailers, producers, lead firms capturing the gain: revenue, profit and employment
- Fundamental trade off in supply chain fragmentation is between specialization gains and coordination costs
The Paradigm Shift: The Old and New World of Production and Trade

How trade is conducted:

• Lower entry level for firms to participate in global markets: less own competence required in technology, skills and capital

• Network firms look for opportunities in economic (product, process, price, market and market share) upgrading

• Regional value chains allow for regional integration with focus on near markets, e.g. focus of ASEAN, NAFTA, EU, SADC, etc.
The Paradigm Shift: The Old and New World of Production and Trade

How trade is governed

• Inter-firms relationship between lead and supporting firms in GVC are governed by different structures to address complexity of information and knowledge, degree of codification and capacity of supplier
• Tariffs are rationalized
• Non-tariff measures related to standards for protecting consumers are becoming more important. Private standards are more important than public standards. Buyer and producers driven supply chains are seeking harmonization of standards
Recognition of Economic Globalization and Global Accounts

- 2007 ISIC Rev 4 Strict ownership principle whether ISIC manufacturer versus ISIC wholesaler
- 2008 SNA – Introduction to globalization in goods for processing, merchanting, IPP, SPEs
- 2009 WIOD data base, EC Project on MR IO tables
- 2009 Exiopol, EC project on EE-MR-Input Output Tables
- 2009, European MEETS program including EuroGroup Register
- 2010 Global Inter-Country Input-Output table, Koopmans, Wang and Wei
- 2011 The Impact of Globalization on National Accounts (UNECE, 2011)
- 2011 IDE Jetro/WTO report on Tiva analysis
- 2012 System of Environmental Economic Accounts (SEEA -2012)
- 2013, OECD/WTO Trade in Value added Data base
Recognition of GVCs

- 1990s “buyer-driven” and “producer-driven” modes of global commodity chain governance, work by G. Gereffi.
- 2000, workshops on value chains held in Bellagio, Italy
- 2005, G. Gereffi, J.Humfhey and T. Sturgeon, Governance of the global value chain – theoretical framework
- 2009 Capturing the gains project, economic and social upgrading in global production networks
- 2009 Jason Dedrick study on the ipod
- 2013 Sturgeon report Global Value Chains and Economic Globalisation
- 2014 Duke Global Summit, Governance and development in a value chain world – globalvaluechain.org
Key principles

- National perspective to measuring GVCs
- Extended multi-partner country SUT and integrated accounts - GVC accounts of the SNA
- A corporate/global enterprise perspective – large cases – integrated business statistics

Implications

- Consistent SUT and integrated accounting framework across territories: products (linking goods and services), activities (income and jobs), business functions (supporting services to core business, geography(partner countries)
- Multi-partner country GVC Accounts with shared national data compiler ownership between partner countries
A Global Value Chain is a set of interrelated activities (from conception to its end use and beyond) that cross economic territories which are coordinated by lead firms for a) the production of a product (good or service), b) its delivery to market(s), c) supporting its uses, and d) recycling.

- The GVC framework includes 4 dimensions that describe the structure, dynamics and relationships among stakeholders in GVCs:
  - Business functions
  - Geographical scope
  - Governance
  - Institutional context
Global Value Chain (GVC) Framework

Source: Frederick (2010)
Global Value Chain (GVC) Framework

Value added

Standardization
Innovation
R&D
Design
Manufacturing
Upstreamness

Production stage

Branding
Marketing
Logistics
Assembling
Downstreamness
Governance types for GVCs

The governance of global value chains, 2005 (G. Gereffi, J. Humphrey and T. Sturgeon)
Cube of Global Value Chains

- **Scale of Analysis**
  - Global
  - Regional
  - National

- **Dimensions of Sustainability**
  - Economic
  - Environmental
  - Social

- **Sector/Industry**
  - Sector/Industry 1
  - Sector/Industry n
  - Total

**By ISIC or GVC Sectors**
• Global enterprise:
  • entity that operates its business activities through foreign affiliates and/or by interacting with foreign affiliates

• Business activities are:
  • Production lines and tasks of the core business activity
  • Business functions supporting core business activity
  • Exchange of technology and use of international platforms
  • Access to global finance and global tax planning
Strategies of global enterprise:

- **Industrial strategy**
  - Where to locate core business activities
  - Where to locate related business functions
  - How to manage technology and intangible assets

- **Financial and tax planning strategy**
  - Where to locate financial activities
  - Where to locate tax revenues
Global enterprise perspective

- Rapid changes in legal structures of global enterprises in a single country over time

<table>
<thead>
<tr>
<th>Business line one: Electronic controls for engines</th>
<th>Legal entity A</th>
<th>Legal entity A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business line two: Medical equipments</td>
<td>Legal entity B</td>
<td>Legal entity A</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Legal entity C</td>
<td>Legal entity C</td>
</tr>
</tbody>
</table>

Legal entity A
Decision structure of a Global Enterprise

Business functions (BF)  Business lines (BL)

Location:
• Make or buy
• Finance and tax
A Conceptual Framework for Global Enterprise operations for profiling

Table 3: The proposed classification and analytical framework

Breakdown of GE activities as a step by step decomposition process

<table>
<thead>
<tr>
<th>Business line</th>
<th>BL</th>
<th>BF1</th>
<th>BF2</th>
<th>BF3</th>
<th>BF4</th>
<th>F</th>
<th>BF6</th>
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The business line and its business supporting activities defines a business process

Each business process can be carried out internally (I) or externally (E) the GE

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Each business process can be located in the resident country (R) or abroad (F)

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</table>

This process can be reiterated for each business process (BP) independently from each other

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</table>
Classifications of the GVC accounts

**Product**

**Industry**

**GVC Business Process**
1. R&D, Engineering and related technical services
2. Design
3. Core Business Function
4. Transport, logistics and distribution support functions
5. Marketing, sales, after sales service support function
6. IT services and software support functions
7. Management, administration and back-office support function
8. Other business functions

**GVC Governance**
1. Lead Firm
2. Affiliated supplying/processing firm controlled
3. Non-affiliated and controlled supplying/processing firm

**GVC Residency**
1. Resident
2. Non-resident
Automotive Global Value Chain - NAFTA and EU

Vehicle Design & Development
- Vehicle development
- System design

Parts & Components
- Electronic components
- Mechanical components
- Composite components
- Wiring
- Aluminum components
- Rubber components
- Software

Systems: Modules
- Interior System: Seat, interior trim, cockpit module
- Body System: Skin, finish, trim, doors
- Electrical & Electronics System: Ignition, chassis electronics, interior electronics
- Chassis System: Drive train, rolling chassis, front and rear end modules

Systems Integration & Final Assembly
- Final Products
  - Automobiles
    - Trucks
  - Buses
  - Trailers
  - Motorcycles
  - Electric Vehicles

Marketing & Sales
- Market Segments
  - Passenger
  - Commercial
  - Industrial
  - Buses
  - Motorcycles

Replacement Parts & Recycling
- Maintenance & Repair
- Recycling
- Technical training, and customer support

Source: Timothy Sturgeon, Jack Daly, Stacey Frederick, Penny Bamber and Gary Gereffi (2016) *The Philippines in the Automotive Global Value Chain*
**Example: Automotive GVC HS codes**

<table>
<thead>
<tr>
<th>Value Chain Stage/Subassembly</th>
<th>HS Codes (2002)</th>
<th>HS Code Descriptions</th>
<th>Producer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger vehicles</td>
<td>8703</td>
<td>Passenger vehicles</td>
<td>Lead Firms</td>
</tr>
<tr>
<td>Body system</td>
<td>870600</td>
<td>Chassis fitted with engines</td>
<td>Lead Firms</td>
</tr>
<tr>
<td>Drive train</td>
<td>840733 840734 840820</td>
<td>Reciprocating piston engines used for the propulsion of vehicles of Chapter 87</td>
<td>Lead Firms</td>
</tr>
<tr>
<td>Body system</td>
<td>401110 401211 8708 8707 7007</td>
<td>Tires, Brakes, Road wheels and parts, Suspension systems, Steering wheels, columns and boxes, Bodies, Laminated safety glass, Bumpers, Radiators, Silencers and exhaust pipes, Sealed beam lamp units, Seats, Safety seat belts, Instrument panel</td>
<td>Suppliers</td>
</tr>
<tr>
<td>Drive train / Electrical Equipment</td>
<td>8708 854430 8512</td>
<td>Parts/accessories of motor vehicles of headings 87.01-05; Gear boxes, Drive-axles with differential, Clutches, Ignition wiring sets, : Electrical lighting, windscreen wipers, defrosters, Air conditioning</td>
<td></td>
</tr>
</tbody>
</table>

Where

**ISIC 72** - Scientific research and development

**ISIC 293** - Manufacture of parts and accessories for motor vehicles

**ISIC 292** - Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers

**ISIC 291** - Manufacture of motor vehicles

**ISIC 73** - Manufacture of parts and accessories for motor vehicles
Experimentation and testing with compiling standardized regional multi-partner country GVCs

- agri-food sector
- apparel and textiles sector
- automotive sector
- electronics sector
- tourism sector
Research agenda for System of National Accounts

- concepts
  - control versus economic ownership – contract manufacturing, aircraft leasing
  - centre of economic interest – corporate relocations, headquartering

- statistical units (FGPs, global enterprise group, etc.)

- classifications (product (CPC, BEC, Business Functions), activity (ISIC) classification, sub-sectoring of institutional sector)
accounts for multi-partner country SUT and integrated accounts for specific GVC sectors

transactions (financial accounts)

price and volume measures (industrial processing services, trade in services – merchanting, intra company services, IPP related services)
Future GVC specific statistical products

- **UN Handbook** on Accounting for Global Value Chain: Extended System of National Accounts and Integrated Business Statistics
- **Multi-partner country SUTs for GVC specific industries** – standardized and recurrent
- Global (enterprise) Group **Register** (GGR) (building on Euro Group Register (EGR))
- Methodologies and infrastructure for **data sharing** between countries
- Methodologies for resolving GVC related **asymmetries** in merchandise trade, trade in services, income and foreign affiliate trade statistics
- **Classifications** for BEC, Business Functions, Product and industry classifications for GVC industries
Thank you!

havinga@un.org for more information