Towards a Global Value Chains Model for Official Statistics

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The Concept of Global Value Chain

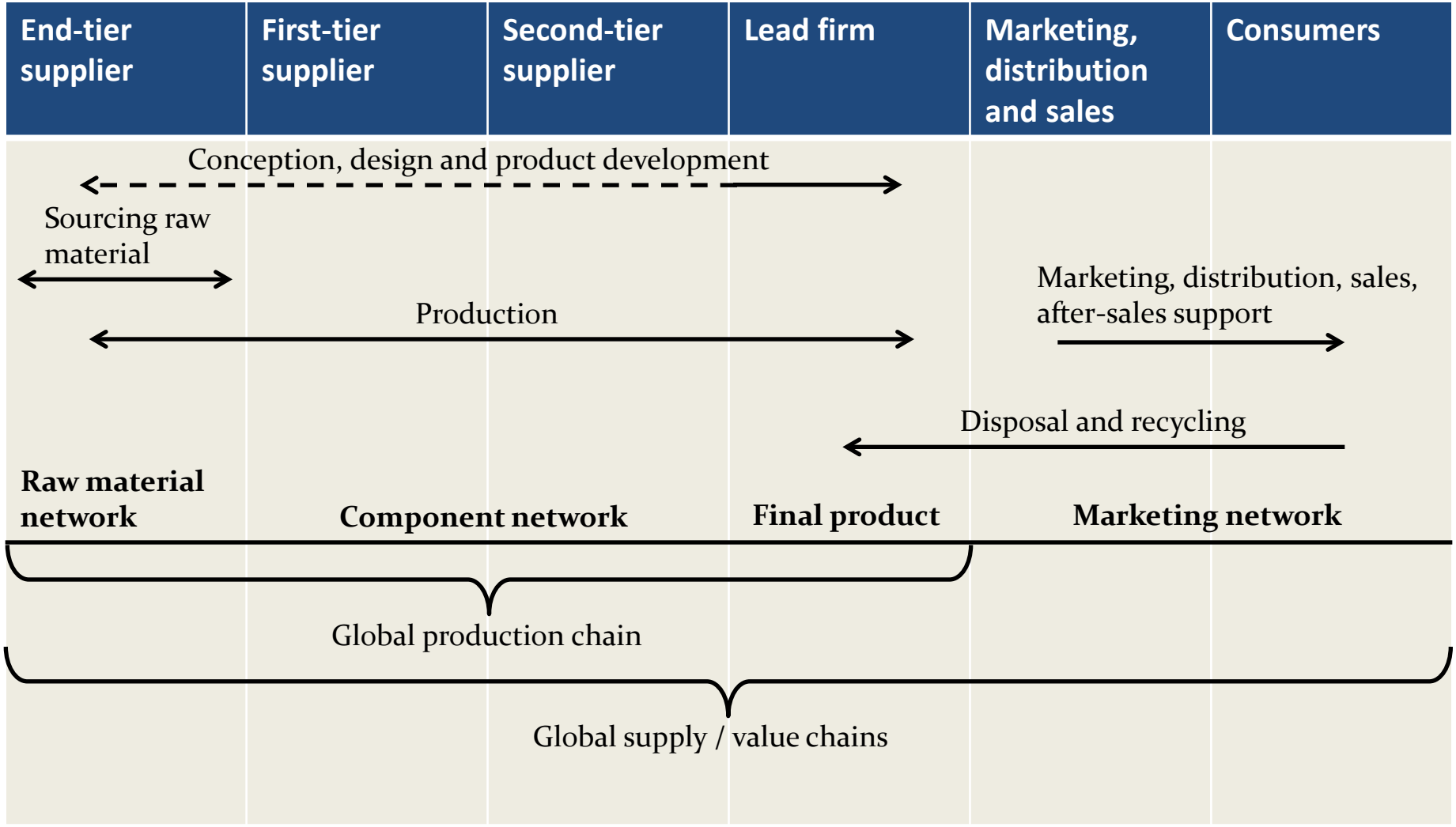
- The value chain describes the full range of activities, business functions, institutional environment and governance of the value chain required to bring a product or service from conception through the different phases of production, delivery to final consumers, and the final disposal after use

Table 1 Globalization factors and the most affected main national accounts items

Source: UNECE, Eurostat, and OECD, The Implications of Globalization on National Accounts, United Nations, 2011

Global phenomenon	National accounts items most affected
Arrangements within MNEs, including transfer pricing	Allocation of Gross value added (GVA)/GDP across countries; international trade in goods and services; investment income and financial flows
FDI relationships	Investment income and financial flows; i.i.p.
Special purpose entities (SPEs)	GDP in relation to GNI, International trade in services; investment income and financial flows; i.i.p.
Goods sent abroad for processing	GVA/GDP; international trade in goods and services
Merchanting	International trade in goods (and possibly services)
IPPs	GVA/GDP; capital formation; international trade in assets and related services
Quasi-transit trade	GVA/GDP; international trade in goods
International labour movement and remittances	GDP; GNI; gross national disposable income; international transfers
Ownership of property abroad	International trade in services; investment income and financial flows; i.i.p.
Internet trading	International trade in goods and services; household consumption
Limitations of national data collections	Imports, import prices, GDP/GVA, and Productivity

Global value/supply/production chains



Building blocks for GVC Mapping and Analysis

- ***Input-output structure***

includes all supply chain segments (inputs, components, final products, distribution/sales) and value-adding activities (research, design, marketing and support services).

- ***Geographic scope***

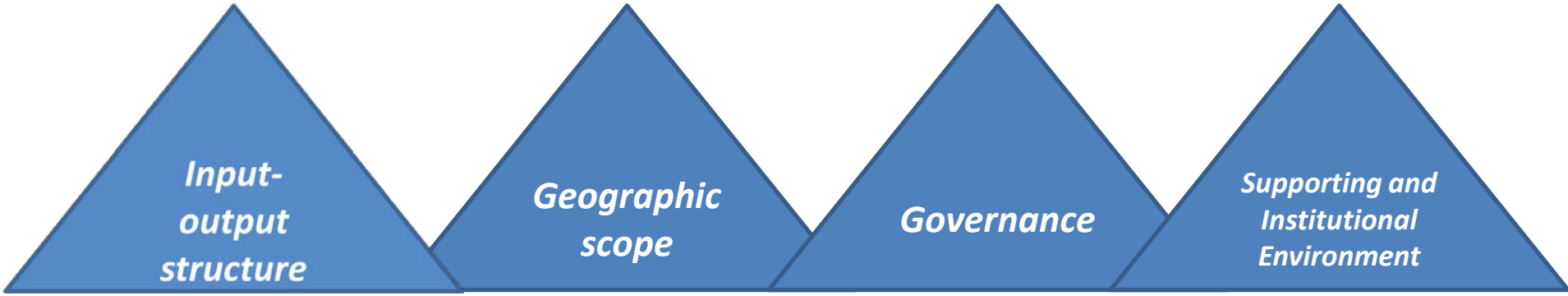
the industry-specific mix of activities in the input-output structure is often carried out in different parts of the world and countries participate in industries by leveraging their competitive advantages in assets. Usually developing countries offer low labor costs and raw materials, while more advanced nations with more advanced education systems control research and development, design and marketing. As a result, firms in widely separated locations affect one another more than they have in the past.

- ***Governance***

is about power and the ability of a firm (or organization or institution) to exert control along the value chain by setting and/or enforcing parameters under which others in the chain operate (see below).

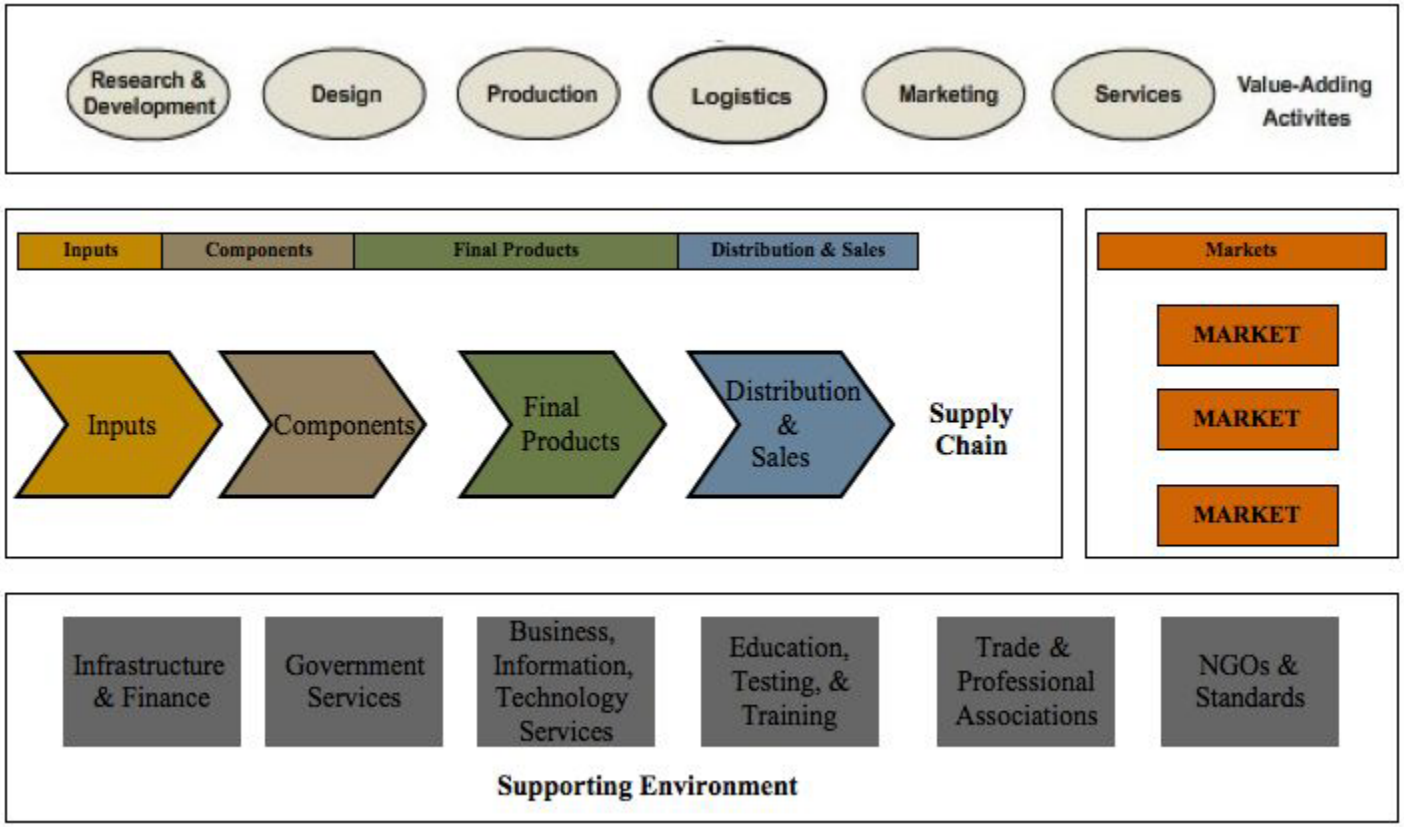
- ***Supporting and Institutional Environment***

identifies how local, national and international conditions and policies shape the globalization of each stage of the value chain. GVCs are embedded within economic, social and environmental institutional dynamics.



Four Parts of Value Chain Model

for I/O structure, geographic scope and supporting environment

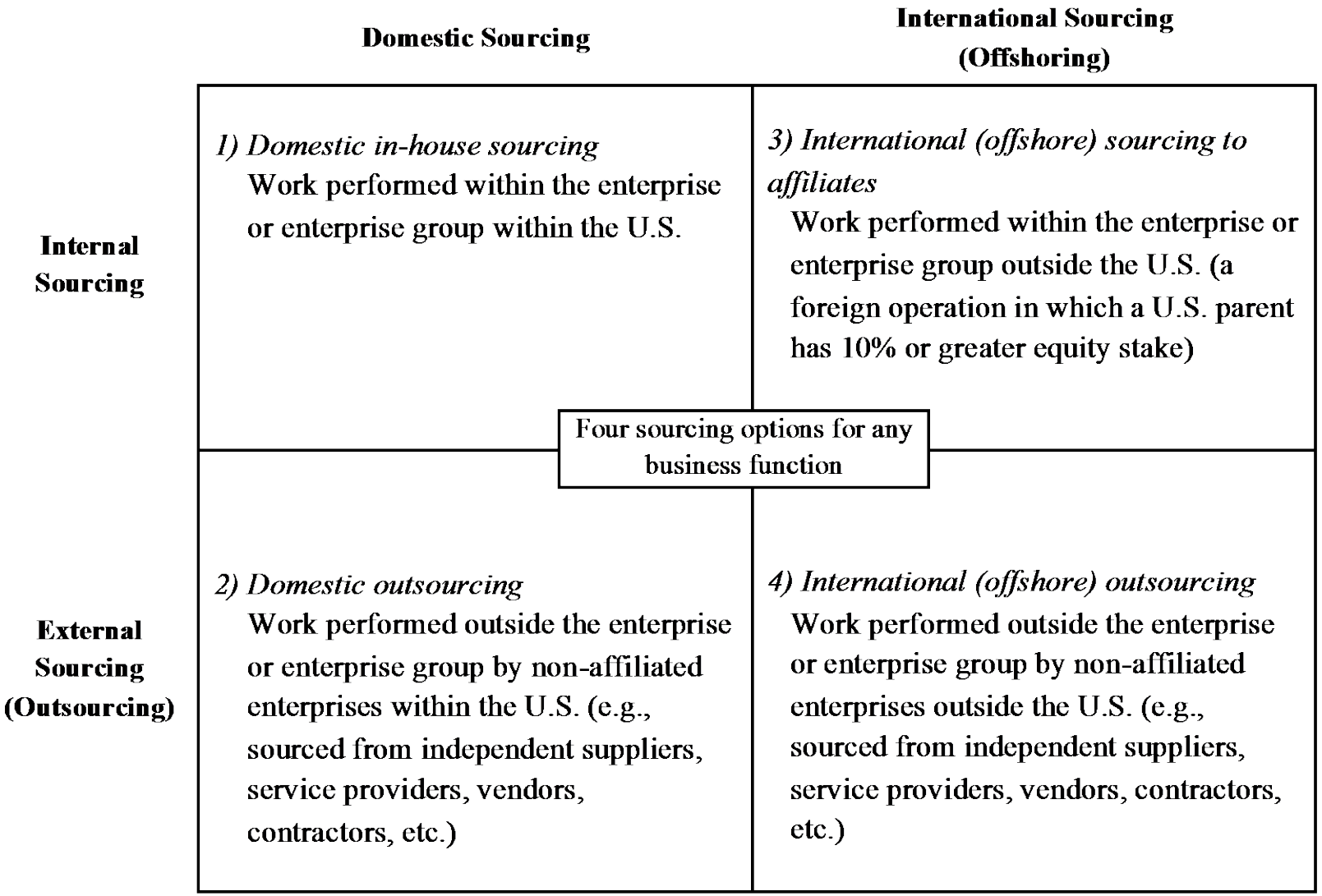


Part 1: Value-Adding Activities -Business Functions

Value-Adding Activity	Description
) Research and Development	Companies, organizations, institutions, etc. that engage in research and/or new product development. This includes both activities related to improving the physical product or process as well as market and consumer research
Design & Development	People and companies that offer aesthetic design services for products and components throughout the value chain. Design and style activities are used to attract attention, improve product performance, cut production costs, and give the product a strong competitive advantage in the target market. Design can also refer to “engineering” or industrial design in which the focus is placed on optimizing the relationship between materials and function.
Production, Primary function	Or manufacturing; this step is the actual production of the product.
Transportation, Logistics and Distribution	Inbound and outbound companies and processes involved in transporting products between all stages in the value chain (full-package) or between two stages. This function includes companies that are involved in physically transporting products as well as managing or providing technology and equipment for supply chain coordination. Logistics can involve domestic or overseas coordination.
Sales and Marketing	All activities and companies associated with pricing, selling, and distributing a product including activities such as branding or advertising any product, service, or entity in the supply chain. These companies frequently do not make any physical alternations to the product.
Strategic Management, Administration and Back office functions	Activities related to setting the overall strategy for a company or a chain; these activities would typically be undertaken at the headquarters location.

Value adding activities - Business Functions in International Sourcing options

Four Sourcing Options for Business Functions (from 2010 NOS)



NATIONAL ORGANIZATIONS SURVEY

Thinking about the same functions, now we're going to ask you some questions about how your organization is structured. Within each functional category, we'd like to know about where the work takes place, whether within your organization or by an outside supplier either in the U.S. or in a foreign country. For each function, please indicate the percentage of costs for each location during calendar year 2010. Please indicate the **percentage of costs** (click definitions link below for an explanation) incurred during calendar year 2010 for PLG Retail in each of the following locations.

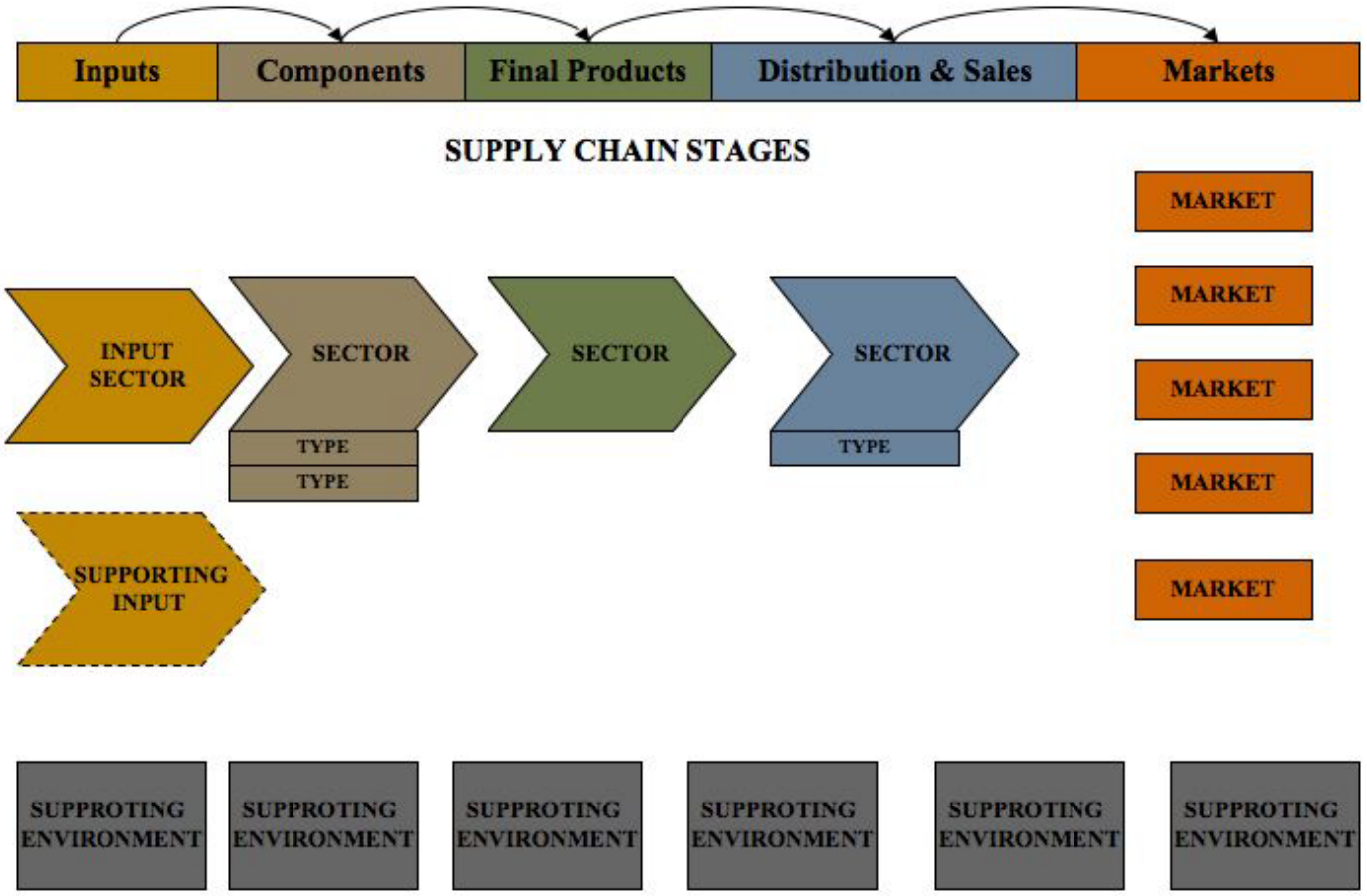
(The locations for each function should total 100%)

	...by **your organization**? **DOMESTICALLY**	...by an **independent supplier** or suppliers (no ownership of 10% or more)? **DOMESTICALLY**	...by a **foreign affiliate** of your organization (ownership of 10% or more)? **INTERNATIONALLY**	...by an **independent supplier** or suppliers (no ownership of 10% or more)? **INTERNATIONALLY**	TOTAL	Not Applicable
Primary business function	100				100	☐
Research and development of products, services, or technology	100				100	☐
Sales and marketing	100				100	☐
Transportation, logistics, and distribution	100				100	☐
Customer and after sales service	90			10	100	☐
Management, administration, and back office functions	100				100	☐
Information technology systems		100			100	☐
Facilities maintenance and repair	100				100	☐

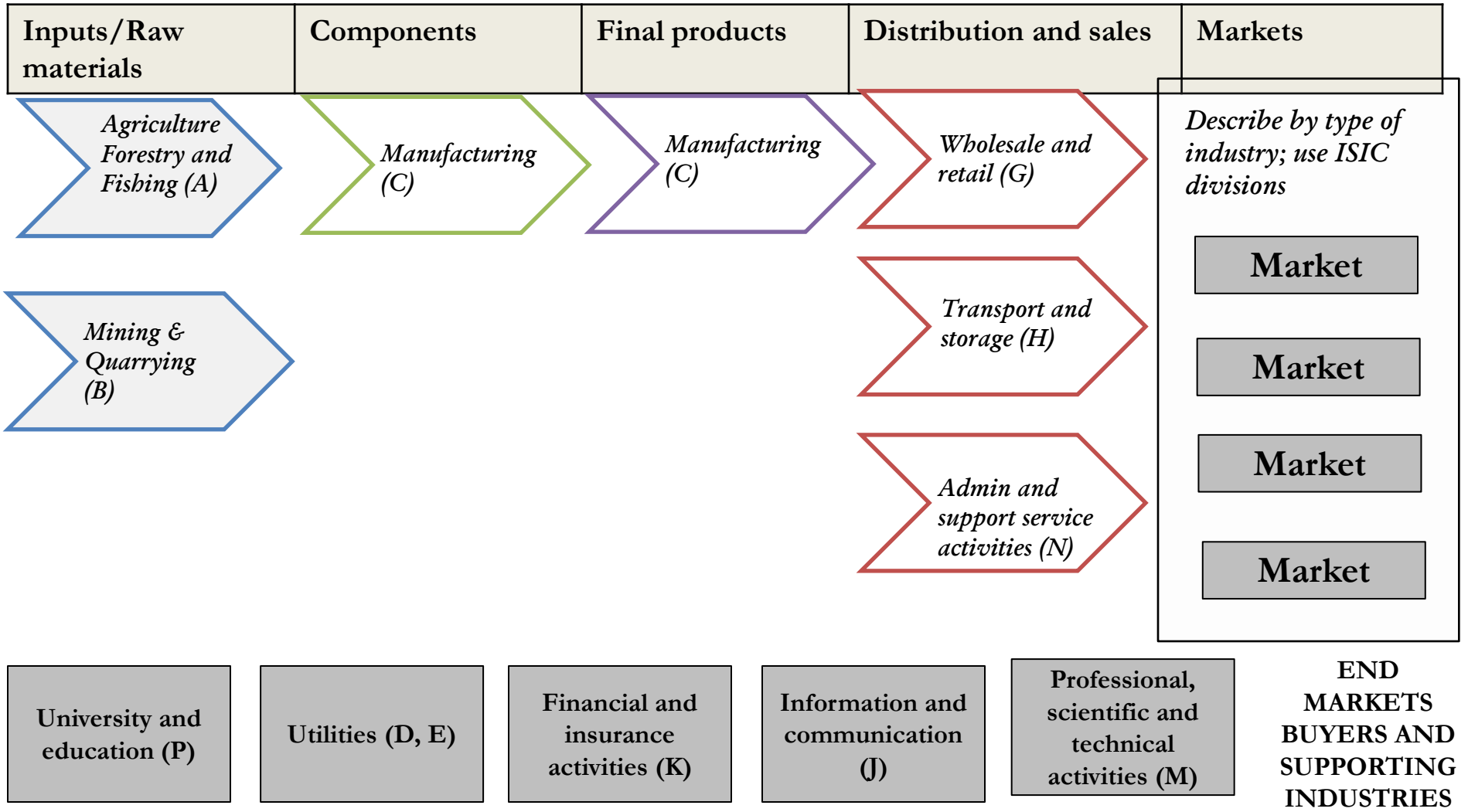
View Business Function & Other Definitions Here

Progress - 50%

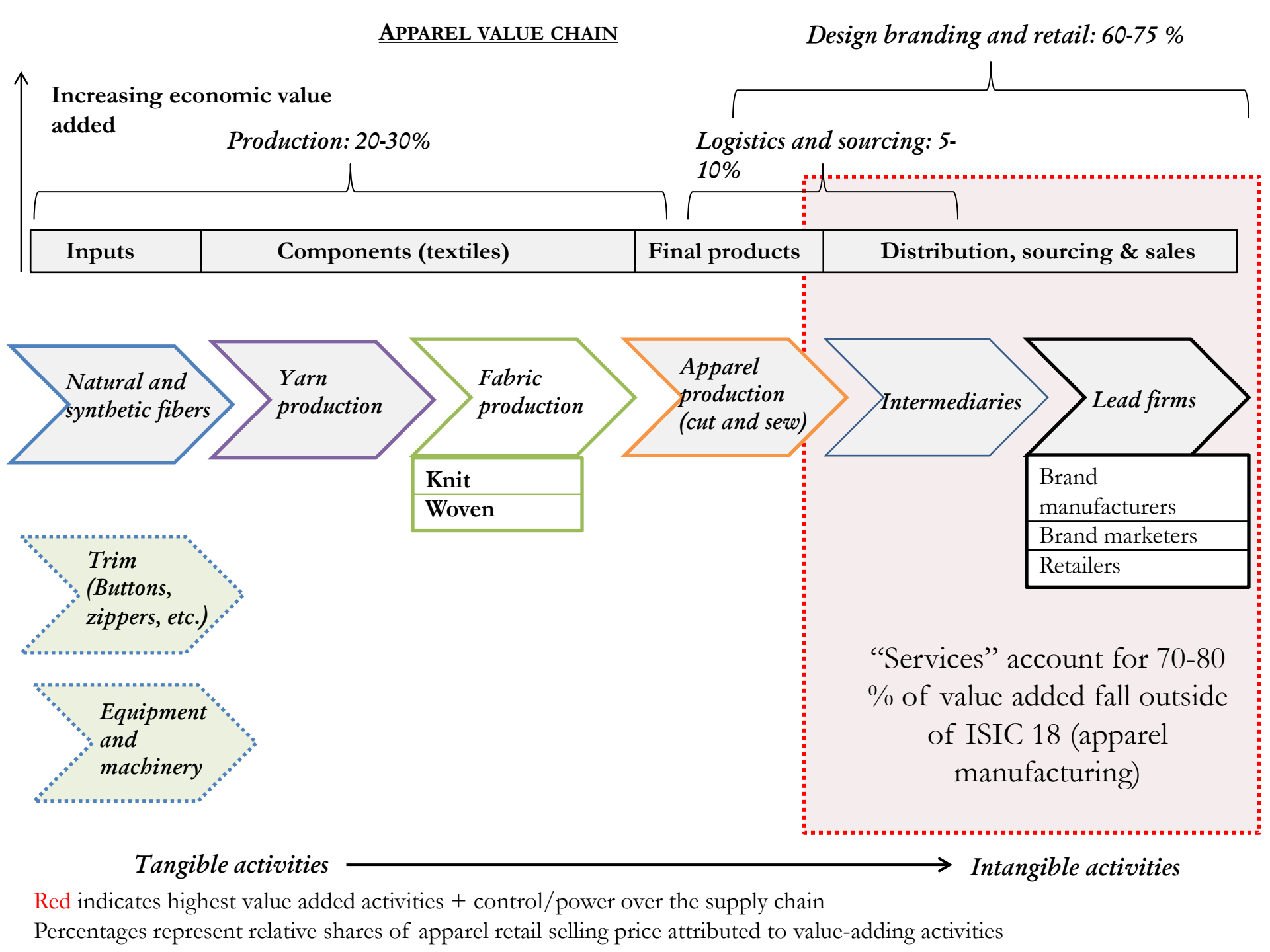
Part 2: Supply Chain



SUPPLY CHAIN STAGES



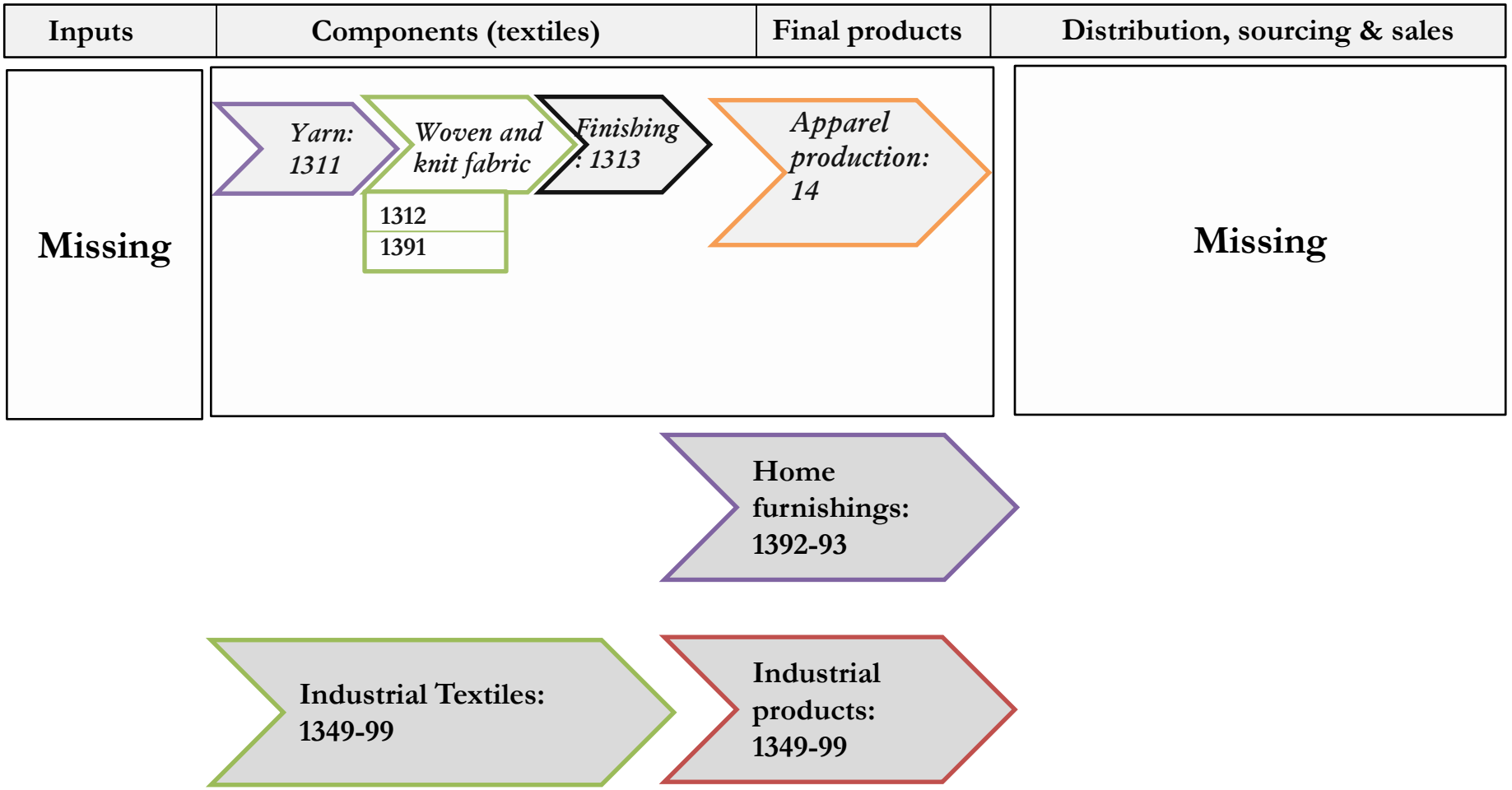
APPAREL VALUE CHAIN



Red indicates highest value added activities + control/power over the supply chain

Percentages represent relative shares of apparel retail selling price attributed to value-adding activities

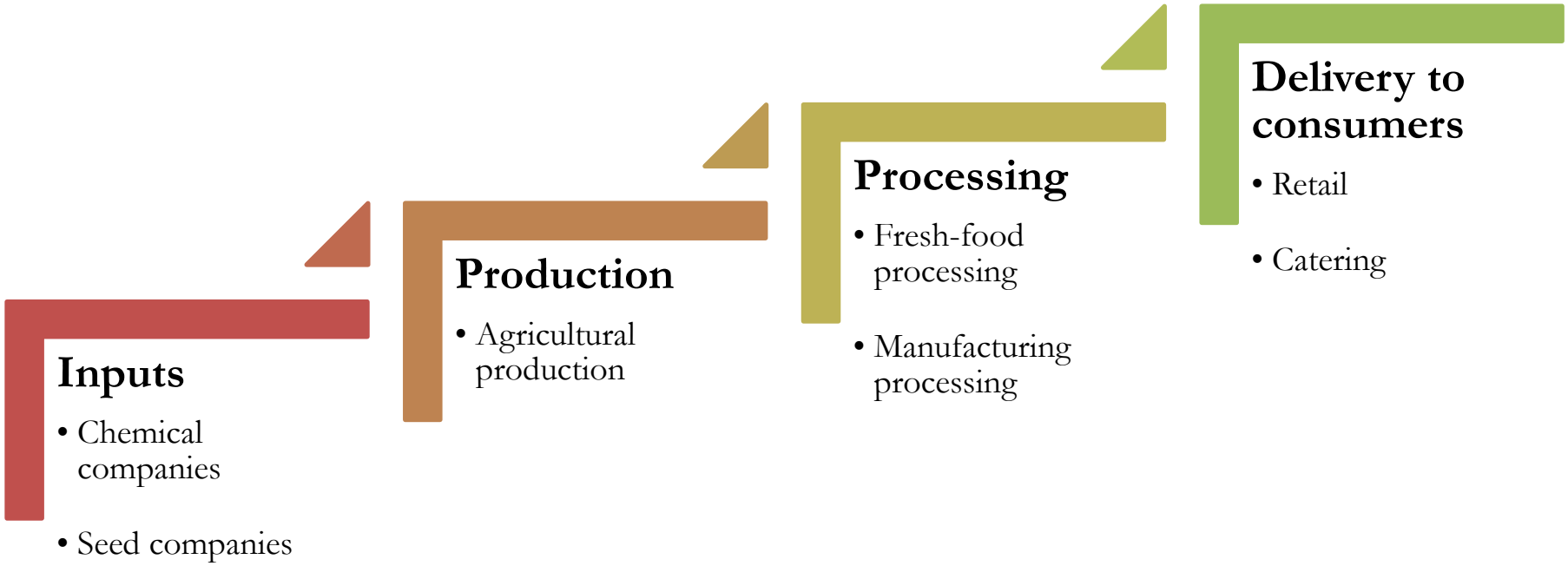
APPAREL VALUE CHAIN



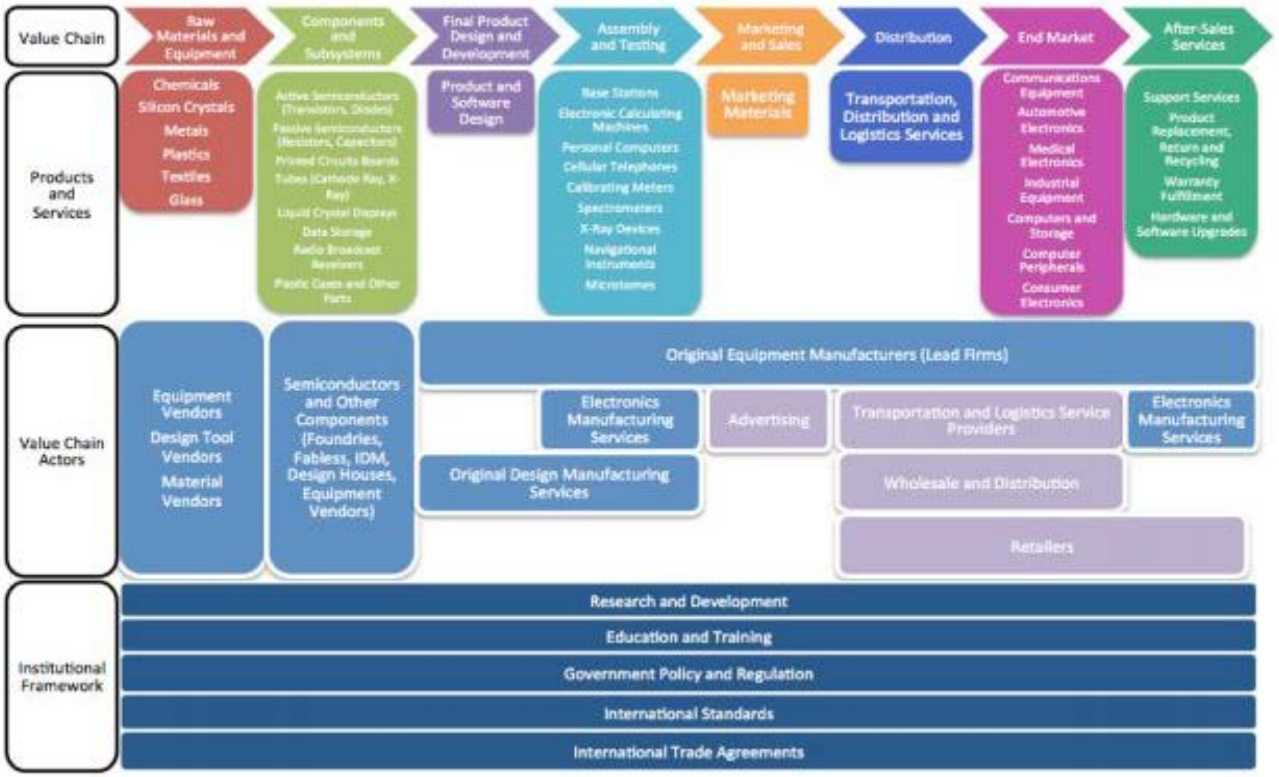
Even the best possible categorizations using ISIC do not provide adequate detail.

Textile components are grouped with final products and knit fabric classified at 3-digist level with non-apparel end-uses (and was not separated knit apparel in ISIC Rev. 3). Also not a connection to upstream and more importantly, downstream segments.

Simplified agribusiness value-chain diagram

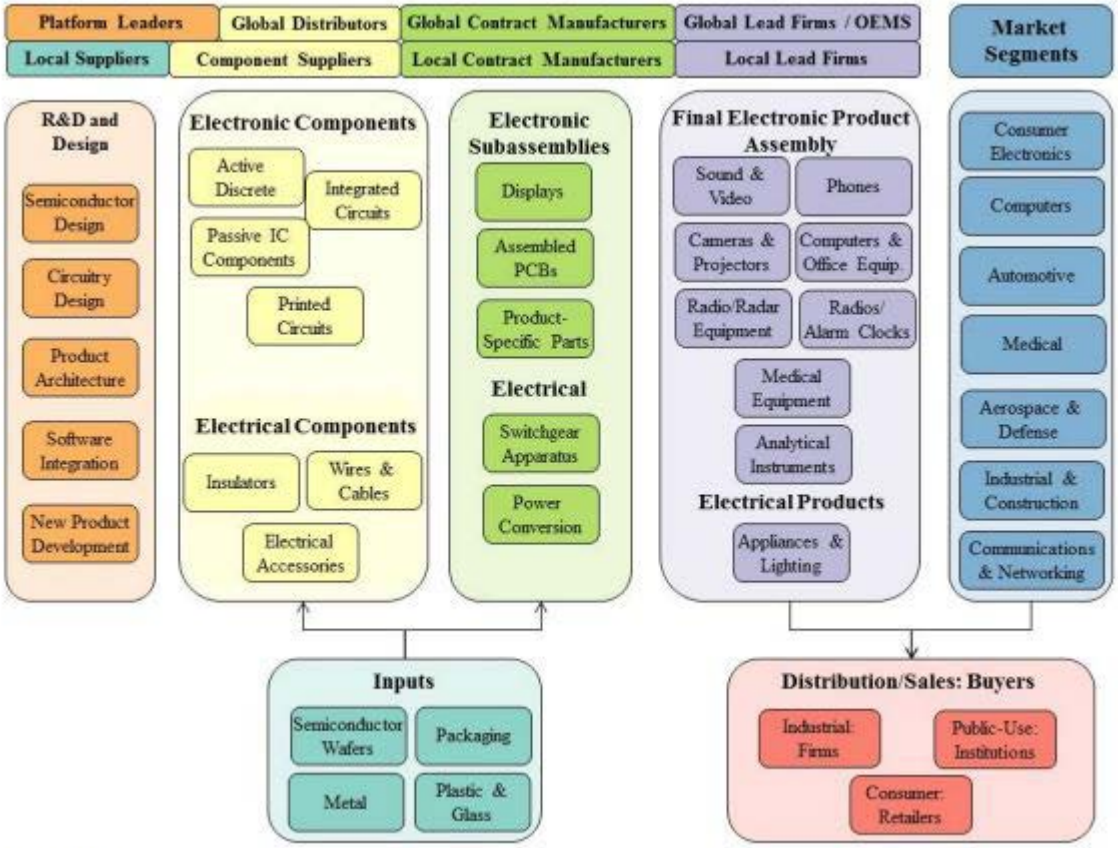


Mapping Supply Chain of GVC for Electronics



Tim Sturgeon et all

Mapping of Supply Chain of GVC for Electronics



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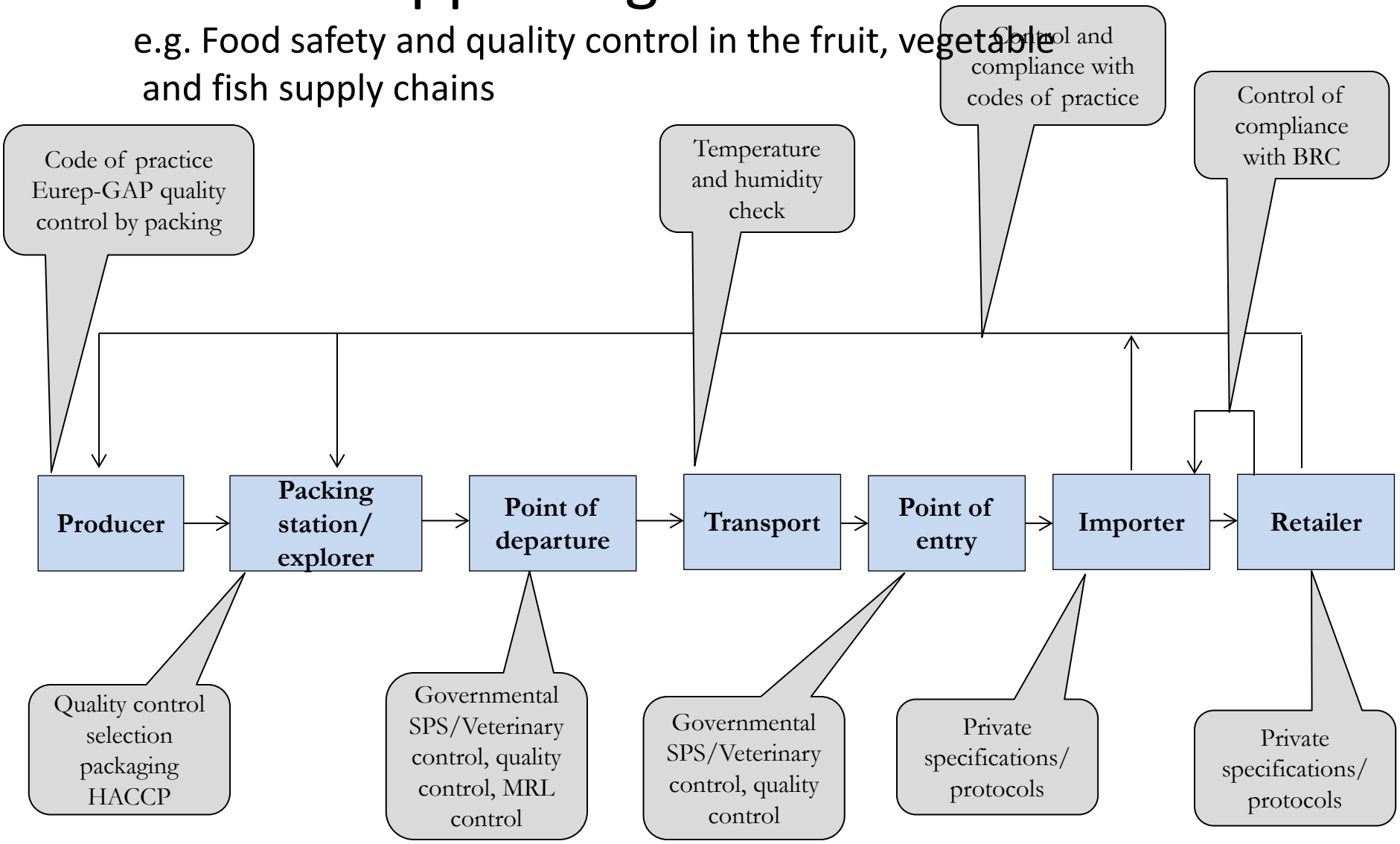
Part 3: Supporting Environment

e.g. Food safety and quality control in the fruit, vegetable and fish supply chains



Source: Williems et al. (2005: p.23)

Part 4: Three Types of End Markets examples for textiles and apparel

Consumer market

Retail products

Home furnishings, apparel, sports and leisure

Industrial market

Products used in processing

Industrial and Construction, Agriculture, Transportation Protection

Institutional market

Products for hospitality (hotels, restaurants) medical (hospitals), contract (offices), and government (military, prisons, schools).

Key variables in cross-border chain governance

1. Complexity of information and knowledge on products and processes required for a transaction

2. Extent to which this information and knowledge can be codified

3. Supplier capabilities in relation to a transaction's requirements to meet the buyers demand

2005, Gary Gereffi (Duke University), John Humphrey (Institute of Development Studies, Sussex), and Timothy Sturgeon (MIT)

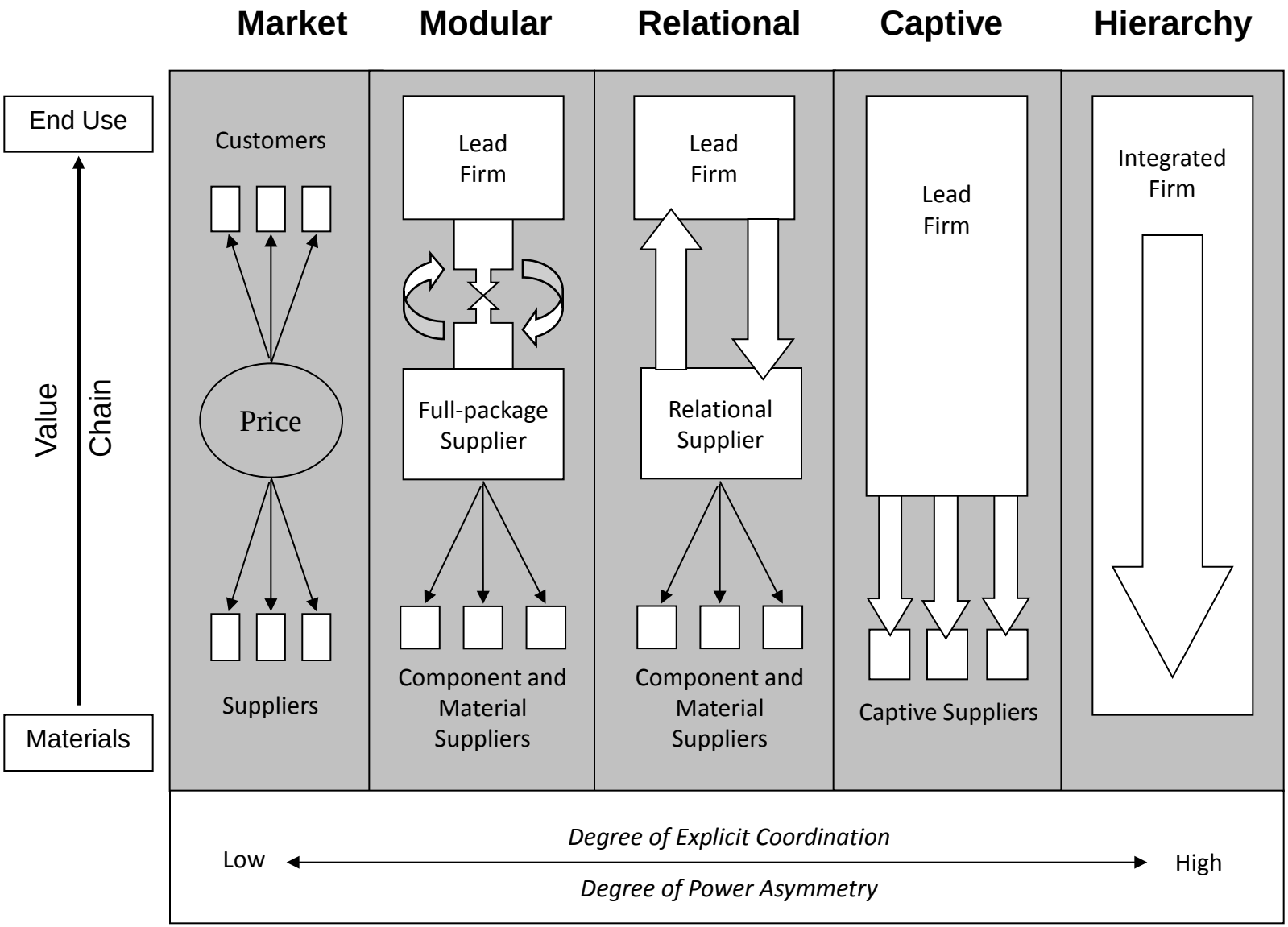
Typology of GVC governance structures

Governance Type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	*Degree of explicit coordination and power asymmetry*
Market	Low	High	High	*Low* ↕ *High*
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	Low	Low	

Network org. forms

2005, Gary Gereffi (Duke University), John Humphrey (Institute of Development Studies, Sussex), and Timothy Sturgeon (MIT)

Five GVC Governance Types



Dynamics in Global Value Chain Governance

Governance Type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base
Market	Low	High	High
Modular	① High ②	High ④	High
Relational	High	③ Low	⑤ High ⑥
Captive	High	High	Low
Hierarchy	High	Low	Low

① increasing complexity of transactions (harder to codify transactions; effective decrease in supplier competence)
② decreasing complexity of transactions (easier to codify transactions; effective increase in supplier competence)
③ better codification of transactions (open or de facto standards, computerization)
④ de-codification of transactions (technological change, new products, new processes)
⑤ increasing supplier competence (decreased complexity, better codification, learning)
⑥ decreasing supplier competence.(increased complexity, new technologies, new entrants)

Global Accounts : A simplified two country (global) IO table

		Country 1		Country 2		Country 1	Country 2
		Industry 1	**Industry 2**	**Industry 1**	**Industry 2**	**Domestic Final Demand**	**Domestic Final Demand**
Country 1	**Industry 1**	A_{11}	A_{12}	M^2_{11}	M^2_{12}	D_1	MD^2_1
	Industry 2	A_{21}	A_{22}	M^2_{21}	M^2_{22}	D_2	MD^2_2
Country 2	**Industry 1**	M_{12}	M_{12}	A^2_{11}	A^2_{12}	A_{11}	D^2_1
	Industry 2	M_{21}	M_{22}	A^2_{21}	A^2_{22}	A_{21}	D^2_2
Taxes less subsidies on product		TP_1	TP_2	TP^2_1	TP^2_2	DTP	D^2 TP
Value-added at basic prices		V_1	V_2	V^2_1	V^2_2		
Output		O_1	O_2	O^2_1	O^2_2		

TiVA - Value Added related measures of trade: Gross vs. Value Added Basis

Trade	Exports	Imports	Balance
Gross basis	Domestic VA that stays overseas +	Foreign VA that stays home +	Domestic VA that stays overseas - Foreign VA that stays home
	Domestic VA that will return home in imports ($ A) +	Domestic VA that is embedded in imports ($ A) +	
	Foreign VA that is embedded in exports	Foreign VA that will be embedded in exports	
Value added basis	Domestic value added that stays overseas ($B)	Foreign value added that stays home ($B)	Domestic VA that stays overseas - Foreign VA that stays home

(Benedetto 2012)

Addressing Firm Heterogeneity in TiVA related Global IO tables

Foreign owned													**Domestic owned MNE**												**Domestic owned**											
With high export orientation ‘Exporters’						**With low export orientation ‘Non-exporters’**							**With high export orientation ‘Exporters’**						**With low export orientation ‘Non-exporters’**							**With high export orientation ‘Exporters’**						**With low export orientation ‘Non-exporters’**					
Low import orientation			*High import orientation*			*Low import orientation*			*High import orientation*				*Low import orientation*			*High import orientation*			*Low import orientation*			*High import orientation*				*Low import orientation*			*High import orientation*			*Low import orientation*			*High import orientation*		
S	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**		**S**	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**		**S**	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**	**S**	**M**	**L**

Global GVC related Satellite Account
A simplified two country global Accounts Supply and Use Table

		Products		Industry		Final use		Exports	Output
		Country 1	*Country 2*	*Country 1*	*Country 2*	*Country 1*	*Country 2*		
Products	*Country 1*			D	M	D	M	D	D
	Country 2			M	D	M	D	D	D
Industry	*Country1*	D	0						
	Country 2	0	D						
Import		M	M						
Trade and Transport		D	D						
Value added				VA	VA				
Output		D	D						