



Global Production Sharing: Emerging Patterns and Policy Implications

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Structure

- What is global production sharing?
- How big is ‘network trade’*?
- What are the policy implications?

* Trade based on global production sharing (‘fragmentation trade’)

Network trade = parts and components + final assembly

Global production sharing and production networks

Global production sharing:

‘Splitting of the production process (of a good or a service) into discrete tasks which are located in countries in which factor prices are well matched to the factor intensity of the particular task’

Alternative terms: International production fragmentation; vertical specialization, Slicing the value chain , Offshoring (international outsourcing

Example: Apple iPhone

Apple iPhone: Components and Cost

Component	Manufacturer/country	Cost (US\$)
Flash memory	Toshiba, Japan	24.00
Display module		19.25
Touch screen		16.00
FEM	Murata, Japan	1.35
Application processor	Samsung, Korea	14.46
SDRAM-Mobile		8.50
DDR		13.00
Baseband	Infineon, Germany	9.55
Camera module		2.80
RF Transceiver		2.25
Power IC RF function		1.25
Power IC application processor	Dialog Semiconductor, Germany	1.30
Bluetooth/FM/WLAN	Broadcom, USA	5.95
Memory MCP	Numonyx, USA	3.65
Audio codec	Cirrus Logic, USA	1.15
Other material	Other countries	48.00
Total material		172.46
Cost of assembly (labour)	China	6.50
Total ex-factory price		178.96

Global production sharing is not an entirely new phenomenon, but it has become a defining feature of world manufacturing trade only from about the late 1960s:

- Wider, ever increasing product coverage
- Global spread from mature industrial economies to developing countries

Developing countries' involvement in global production sharing began in electronics in the late 1960.

Since then product coverage has expanded to encompass a wide range of products: footwear, furniture, electrical goods, machine tool, automobile, cameras and watches, pharmaceuticals, bio-medical equipment, solar panels, and light emitting diodes (LED) etc.

Three phases in the global spread of production networks

- (1) two-way exchange between home and host country: parts and component assembly/testing in the host country to be incorporated in final assembly in the home country

- (1) Component assembly networks encompassing many host countries (R&D, final assembly and head-quarter functions still in the home country)

- (3) Full-fledged production networks involving component production/assembly/testing and final assembly encompassing host countries
(R&D and head-quarter functions are still predominantly in the home country)

Global production sharing and trade patterns

Table 1: Global production sharing and the shift in manufacturing trade from developed to developing countries

	<u>1990-91</u>	<u>2010-11</u>
World network trade, US\$ bn.	12803	59070
Developing-country exports, US\$ bn.	1524	26641
Developing-country share in world network exports (%)	11.9%	45.1%
Share of network products in total manufacturing exports from developing countries (%)	41.4%	60.1%

Table 2: Share of network products in manufacturing exports, 2010-11 (%)

	Parts & components	Final assembly	Total
Developing East Asia	38.5	24.7	63.2
China	20.5	36.8	57.3
Taiwan	44.7	20.9	65.6
Republic of Korea	43.2	25.5	68.7
ASEAN	59.2	10.1	69.2
Indonesia	19.5	18.0	37.5
Malaysia	65.5	13.2	78.7
The Philippines	71.2	16.3	87.5
Singapore	49.5	18	67.5
Thailand	44.5	21.4	65.9
Viet Nam	12.03	7.5	19.5
South Asia	8.1	4.2	12.3
India	10.4	3.7	14.1
Developed countries	25.2	23.6	48.8
Developing countries	35.2	18.4	53.6
World	28.2	23	51.2

With the rapid global spread of production sharing, the conventional approach to trade flow analysis, which attributes the commercial value of a product to the last country of origin, is becoming increasingly misleading.

‘This phenomenon [global production sharing] calls for a change in analytical and statistical tools we use to measure and understand the real world’

Pascal Lamy

Financial Times, 24, January 2011

WTO’s ‘Made in World’ research initiative
(<http://www.wto.org/english/res-e/statis-e>)

Policy Implications

1. Opportunities for export-led industrialization
2. Trade and investment liberalisation
3. Approaches to trade liberalisation
4. Measurement of bilateral trade imbalances
5. Efficacy of exchange rate policy

1. Opportunities for export-led industrialization

Global production sharing opens up new opportunities for countries participation in a finer international division of labour, to specialize in different slices (tasks) of the production process.

It defeats the *fallacy of composition argument* against export-led industrialisation.

But, a country's success in joining global production networks does not depend on the availability of labour at relatively low wages alone.

(Table 1

Only a handful of developing countries have gained significantly from global production sharing)

What are the other determinants?

- Human capital [middle-level (supervisory) technical manpower, at the initial stage]
- Service link cost

Human capital development

(middle-level skilled manpower, at the initial stage)

- Under global production sharing, firms in developed countries shift low-skill-intensive segments of the production process to developing countries
- But, low-skill intensive activities in the developed country are more-skill intensive than the labour-intensive activities in the developing country
- Human capital development is, therefore, a vital element in developing countries' endeavour to join production networks

At the initial stage, availability of middle-level (supervisory) technical manpower is a key concern in the site selection process of MNEs

Lowering 'service link' costs

Cost of services such as transportation, communication, and coordination needed for linking production blocks located in two or more countries.

Service link cost in a given country depends on a whole range of factors impacting on the overall investment environment:

- (i) Infrastructure and trade-related logistic (**air transport is vital for electronics**)
- (ii) political stability and policy certainty
- (iii) Property right protection, including enforcement of contracts
- (iv) Concurrent liberalisation of trade and investment policy regimes

2. Foreign trade and investment liberalisation

Growth of global production sharing makes a strong case for concurrent liberalisation of trade and FDI policy regimes

FDI and trade policies are co-determinants of the location choice of MNEs within production networks.

With the rapid expansion of global production sharing, the boundary between international trade and foreign direct investment have become blurred.

MNEs are the key players in global production sharing:

A close relationship between foreign direct investment (FDI) and trade in parts and components and final assembly

In recent years, production sharing practices have begun to spread beyond the domain of MNEs:

- As production operations in host countries become firmly established, MNE subsidiaries have begun to subcontract some activities to local (host-country) firms to which they provide detailed specifications and even fragments of their own technology.

But, the bulk of global production sharing takes place through intra-firm linkages rather than in an arms-length manner.

3. Approaches to trade liberalisation

The rise of global production sharing strengthen the case for multilateral (WTO-based) or unilateral, rather than regional (FTA) approach, to trade liberalisation:

- Production-sharing based international specialisation can't be sustained as a regional phenomenon because of the importance of extra-regional (global) markets for final products.
- Formulation of rules of origin (RoOs) for network trade is rather complicated task (next slide).

‘Bilateralism distorts flows of goods In structuring the supply chain, every country of origin rule and every bilateral deal has to be tackled on as additional consideration, thus constraining companies in optimising production globally’

Victor Fung, *Financial Times*, November 3, 2005.

The trade effects of any FTA depends very much on the nature of the rules of origin (RoOs) built into it. (The term ‘free trade agreement’ is a misnomer)

- The conventional value added criterion is not virtually applicable to this form of trade because tasks undertaken by each country in the value chain normally generate rather small domestic value addition.
- The only viable option is to go for ‘change in tariff line’-based (HS-sifting) RoOs, but in most cases trade in final goods and parts and components belong to the same tariff codes even at the HS-6 digit level.
- These administrative problems could result in unnecessary delays in customs clearance and also open up opportunities for rent seeking through tweaking of RoOs.

4. Measurement of bilateral trade imbalances

Conventional trade records (measured in gross value) could depict a distorted picture of bilateral trade imbalances given the possibility of shifting trade among countries within production networks.

US – China trade imbalance reflects to a significant extent shifting final assembly activities from Japan, Korea, Taiwan and Southeast Asian to China.

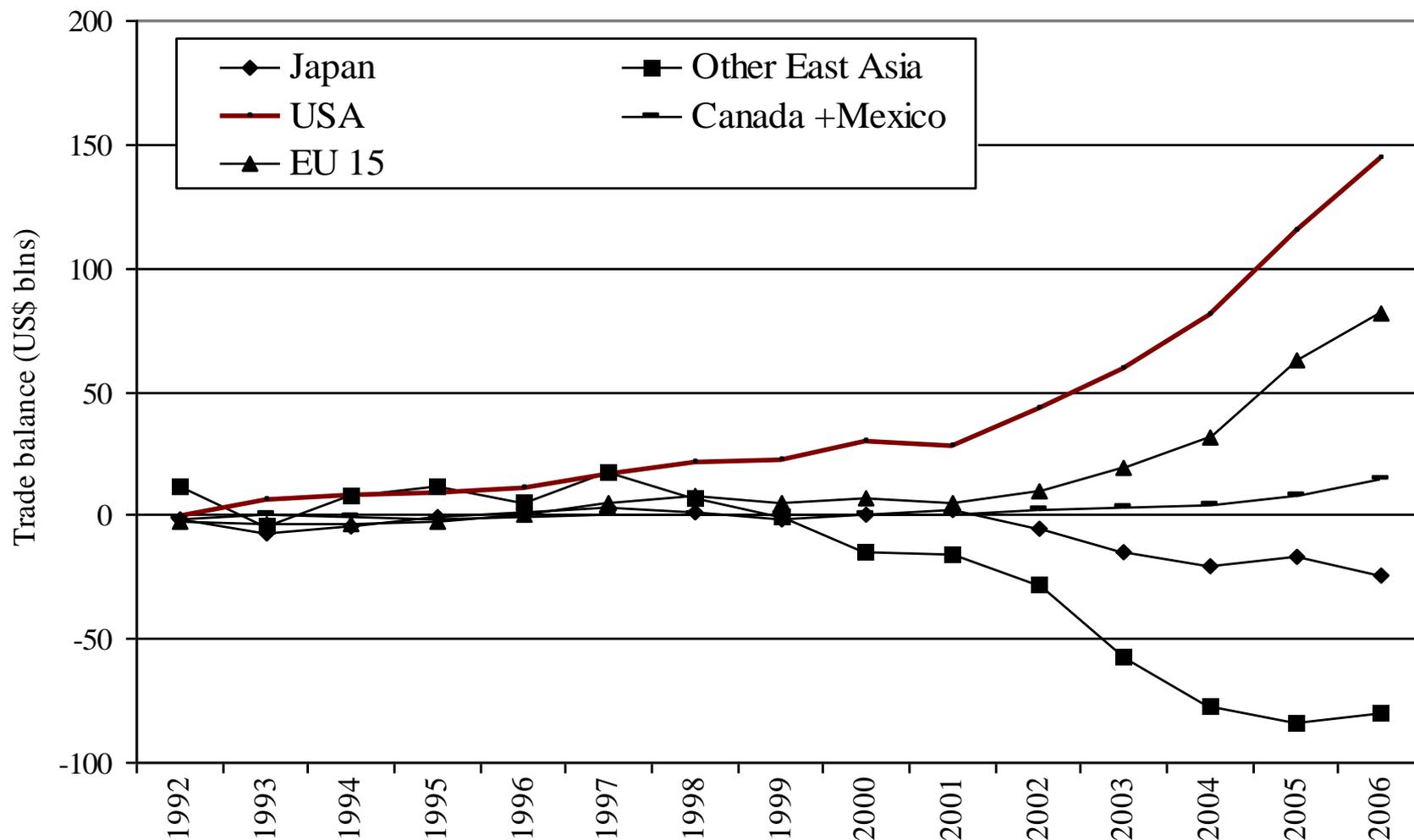
“Made in China’ tells us little about global trade”

Pascal Lamy, Director-General of WTO

Financial Times, 24, January 2011

Widening of the US trade deficit with China has been accompanied by narrowing of US’s trade deficits with Japan, Korea, Taiwan and China.
(Athukorala P. and N. Yamashita (2009), Global production sharing and Sino-US trade relations’, *China & World Economy*, 17(1), 39-56)

Figure 1: China's Bilateral Trade Balances (US\$ billions), 1992-2007



5. Efficacy of exchange rate policy

Global production sharing weakens the link between price and volume of parts and component trade

- Within production networks, production units located in different countries specialise in specific tasks which are not directly substitutable for tasks undertaken elsewhere
- Inter-country price/cost differentials are only one consideration in production location/procurement decisions of firms within production networks (importance of sunk fixed cost and the related ‘service-link’ costs)
- Production sharing weakens the link between domestic cost of production and export competitiveness
- Changes in exchange rates affect imports and exports differently at different stages of the production process in a given country

Price elasticity of import demand in the USA

(Preliminary estimates)

	P&C	Final
Total manufacturing (SITC 5 to 8)	-0.86	-2.84
Machinery and transport equipment (SITC 7)	-0.72	-3.04
ICT products (SITC 75 + 76 +772 + 776)	-0.53	-3.30
Electrical goods (SITC 77 – 772 – 776)	-0.43	-3.42

Thank you