"Global Value Chains, Industrial Upgrading and Jobs in Large Emerging Economies: A Comparison of China, India, and Mexico"

Gary Gereffi
Duke University
Center on Globalization, Governance & Competitiveness
http://www.cggc.duke.edu
ggere@soc.duke.edu

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Agenda

1. Global Value Chain Analysis and Industrial Upgrading
2. Comparing International Upgrading Trajectories
3. Case Studies: China Vs Mexico
4. IT in India
5. Challenges and Opportunities
1. Global Value Chain Analysis and Industrial Upgrading
North Carolina, with its unique mix of industries, from information technology, biotech, and banking, to the traditional sectors of textiles & apparel, furniture, tobacco, and hog farming, is a microcosm of trends observed elsewhere in the United States. This website presents and analyzes up-to-date information about how industrial restructuring in an era of globalization is impacting North Carolina’s key industries.
A value chain describes the full range of activities that firms and workers carry out to bring a product from its conception to its end use and beyond.

This includes activities such as design, production, marketing, distribution and support to the final consumer.

The activities that comprise a value chain can be contained within a single firm or divided among different firms.

Value chain activities can produce goods or services, and can be contained within a single geographical location or spread over wider areas.
What is Global Value Chain Analysis?

- **Actors** in global industries, and how their roles are changing (lead firms plus supply chains)
- **Power** in the chain (brands, global buyers)
- **Linkages** – between GVC activities (firms, intra-firm, networks)
- **Geography** – locate domestic and national industries in their global context
- **Institutions** – Government, unions, trade associations, NGOs, multi-lateral agencies and regulations

Global Value Chains

- Global perspective – not just US-centric
- Organization of entire industries: raw materials to production to retail
- Linkages across firms and countries – coordination and integration
- Upgrading, especially for developing countries
- Power in the chain (drivers)
Upgrading refers to the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities. Analyses of upgrading from a value chain perspective pay particular attention to the ways in which value chain linkages facilitate or obstruct upgrading.

- Product and Process Upgrading
- Functional Upgrading
- Inter–Chain Upgrading
2. Comparing International Upgrading Trajectories
Composition of Mexico’s Exports to the World Market, 1986–2006

Source: UN Comtrade.

Source: UN Comtrade.

Source: UN Comtrade.
Composition of India’s Exports to the World Market, 1985–2006

Source: UN Comtrade.
Composition of South Korea’s Exports to the World Market, 1985–2006

Source: UN Comtrade.
3. Case Studies: China Vs Mexico
Mexico vs. China

- Head-to-head competition in U.S. market
- China is world’s leading exporter of many manufactures, esp. consumer goods
- China and Mexico are typically among the top three exporters to the U.S. market in many product categories
- China is moving ahead of Mexico with dominant market shares in the United States, especially in 2000–2005 period
### Top US Imports in which Mexico and/or China hold 40% or more of the US market, 2007

<table>
<thead>
<tr>
<th>Product</th>
<th>(SITC categories)</th>
<th>% Market Share in USA</th>
<th>Change in % Market Share 2000-2007</th>
<th>Product</th>
<th>(SITC categories)</th>
<th>% Market Share in USA</th>
<th>Change in % Market Share 2000-2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>054</td>
<td>Vegetables, fresh, chilled, frozen, roots, tubers and other edible vegs</td>
<td>59.9</td>
<td>-1.0</td>
<td>894</td>
<td>Baby carriages, toys, games and sporting goods</td>
<td>83.9</td>
<td>19.3</td>
</tr>
<tr>
<td>773</td>
<td>Equipment for distributing electricity, n.e.s.</td>
<td>50.8</td>
<td>-9.9</td>
<td>763</td>
<td>Sound recorders; television image and sound recorders</td>
<td>76.1</td>
<td>53.9</td>
</tr>
<tr>
<td>761</td>
<td>TV receivers (including video monitors &amp; projectors)</td>
<td>48.0</td>
<td>-15.6</td>
<td>831</td>
<td>Trunks, suitcases, vanity cases, binocular, camera cases, handbags, wallets, etc.</td>
<td>74.2</td>
<td>24.3</td>
</tr>
<tr>
<td>782</td>
<td>Motor vehicles for the transport of goods</td>
<td>46.6</td>
<td>15.0</td>
<td>851</td>
<td>Footwear</td>
<td>72.8</td>
<td>10.9</td>
</tr>
<tr>
<td>772</td>
<td>Electrical apparatus for switching or protecting electrical circuits</td>
<td>28.3</td>
<td>3.9</td>
<td>697</td>
<td>Household equipment of base metal, n.e.s.</td>
<td>66.4</td>
<td>30.7</td>
</tr>
<tr>
<td>872</td>
<td>Instruments and appliances for medical, surgical, dental or veterinary purposes</td>
<td>26.9</td>
<td>6.7</td>
<td>813</td>
<td>Lighting fixtures and fittings, n.e.s.</td>
<td>65.5</td>
<td>7.1</td>
</tr>
<tr>
<td>741</td>
<td>Heating and cooling equipment and parts thereof, n.e.s</td>
<td>25.8</td>
<td>1.5</td>
<td>848</td>
<td>Articles of apparel and clothing accessories; non-textile fabrics</td>
<td>56.2</td>
<td>11.4</td>
</tr>
<tr>
<td>775</td>
<td>Household type electrical and nonelectrical equip.</td>
<td>25.6</td>
<td>5.9</td>
<td>752</td>
<td>Automatic data processing machines; magnetic or optical readers</td>
<td>49.3</td>
<td>38.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>658</td>
<td>Made-up articles of textile</td>
<td>48.8</td>
<td>24.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>821</td>
<td>Furniture and parts; bedding, mattresses, supports, cushions</td>
<td>47.7</td>
<td>24.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>762</td>
<td>Radio-broadcast receivers</td>
<td>45.4</td>
<td>10.0</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>759</td>
<td>Parts and accessories for use office machines</td>
<td>44.5</td>
<td>33.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>775</td>
<td>Household type electrical and nonelectrical equip.</td>
<td>44.2</td>
<td>7.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>893</td>
<td>Articles, n.e.s. of plastics</td>
<td>42.8</td>
<td>11.9</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>842</td>
<td>Women's or girls' coats, capes, jackets, suits, trousers, dresses, skirts, underwear, etc. of woven textiles</td>
<td>42.4</td>
<td>26.6</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>751</td>
<td>Office machines</td>
<td>41.9</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>761</td>
<td>TV receivers (including video monitors &amp; projectors)</td>
<td>38.7</td>
<td>36.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>764</td>
<td>Telecommunications equipment, n.e.s. and telecommunications accessories</td>
<td>37.3</td>
<td>27.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>771</td>
<td>Electric power machinery</td>
<td>32.6</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>888</td>
<td>Miscellaneous manufactured articles</td>
<td>31.8</td>
<td>-11.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>699</td>
<td>Manufactures of base metal, n.e.s.</td>
<td>31.2</td>
<td>17.6</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>845</td>
<td>Articles of apparel, of textile fabrics, whether or not knitted or crocheted</td>
<td>31.2</td>
<td>20.4</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>778</td>
<td>Electrical machinery and apparatus</td>
<td>26.6</td>
<td>14.7</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>844</td>
<td>Women's or Girls' Coats, Capes, Jackets, Suits, Trousers, Dresses, Underwear, etc. (except swimwear and coated etc. apparel), knitted or crocheted</td>
<td>29.3</td>
<td>25.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>625</td>
<td>Rubber Tires, Interchangeable Tire Treads, Tire Flaps and Inner Tubes</td>
<td>26.0</td>
<td>19.4</td>
</tr>
</tbody>
</table>

Criteria: Over 2 Billion in US Imports from China or Mexico in 2007 at the 3 digit SITC level
### Mexico's and China's Competing Exports to the United States, 2000–2007

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
</tr>
<tr>
<td>752</td>
<td>Automatic Data Processing Machines and Units</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>6.4</td>
<td>11.5</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>6.3</td>
<td>11.3</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>US Total</td>
<td>55.9</td>
<td>57.9</td>
<td></td>
</tr>
<tr>
<td>764</td>
<td>Telecommunications Equipments and Parts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>9.1</td>
<td>20.6</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>4.6</td>
<td>10.3</td>
<td>29.6</td>
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<tr>
<td></td>
<td>US Total</td>
<td>44.3</td>
<td>79.5</td>
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<tr>
<td>778</td>
<td>Electrical Machinery and Apparatus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>3.1</td>
<td>18.3</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>2.0</td>
<td>11.9</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>US Total</td>
<td>17.1</td>
<td>23.1</td>
<td></td>
</tr>
<tr>
<td>784</td>
<td>Auto Parts and Accessories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>4.6</td>
<td>16.3</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>0.4</td>
<td>1.5</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>US Total</td>
<td>28.4</td>
<td>46.2</td>
<td></td>
</tr>
<tr>
<td>821</td>
<td>Furniture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>3.2</td>
<td>16.9</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>4.5</td>
<td>23.6</td>
<td>16.2</td>
</tr>
<tr>
<td></td>
<td>US Total</td>
<td>18.9</td>
<td>33.9</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Articles of Apparel and Clothing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>8.7</td>
<td>13.6</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>China</td>
<td>8.5</td>
<td>13.2</td>
<td>27.1</td>
</tr>
<tr>
<td></td>
<td>US Total</td>
<td>64.3</td>
<td>81.2</td>
<td></td>
</tr>
</tbody>
</table>

Source: US Department of Commerce (http://dataweb.usitc.gov), Downloaded Feb 21, 2008
Main Competitors in the U.S. Market for Automatic Data Processing Machines and Units (SITC 752)

Main Competitors in the U.S. Market for Telecommunication Equipment and Parts (SITC 764)

- China
- Mexico
- Korea
- Japan
- Malaysia
- Canada

Main Competitors in the U.S. Market for Furniture and Parts
(SITC 821)

Main Competitors in the U.S. Market for Articles of Apparel and Clothing (SITC 84)

Why is China gaining U.S. market share over Mexico?

- China is a lower-cost producer overall (labor costs lower, but not transport & tariffs)
- China has huge scale economies
- China has a coherent and multidimensional upgrading strategy – diversify and add high value activities
- China is using direct foreign investment to promote “fast learning” in new industries
- China uses access to its domestic market to attract TNCs and promote knowledge spillovers
China’s Supply Chain Cities in Apparel

Made in China, Shipped Worldwide

The factory towns on the coast of China manufacture clothing to keep America’s closets full, making everything to wear from head to toe.

![Map of China showing supply chain cities in apparel]

**Factory orders, 2003**

<table>
<thead>
<tr>
<th>Category</th>
<th>City</th>
<th>Factory orders, 2003</th>
<th>Production</th>
<th>Total Sales</th>
<th>U.S. Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s Wear</td>
<td>Zhucheng</td>
<td>100 million pieces</td>
<td>$800 million</td>
<td>$100 million</td>
<td></td>
</tr>
<tr>
<td>Casual Wear</td>
<td>Haiyu, Changshu</td>
<td>160 million pieces</td>
<td>$260 million</td>
<td>$58 million</td>
<td></td>
</tr>
<tr>
<td>Down-filled Products</td>
<td>Xintang, Hangzhou, Xiaoshan</td>
<td>26 million pieces</td>
<td>$470 million</td>
<td>$290 million</td>
<td></td>
</tr>
<tr>
<td>Ties</td>
<td>Shengzhou</td>
<td>300 million pieces</td>
<td>$1.21 billion</td>
<td>$384 million</td>
<td></td>
</tr>
<tr>
<td>Socks</td>
<td>Datang, Zhiji</td>
<td>9 billion pairs</td>
<td>$1.57 billion</td>
<td>$240 million</td>
<td></td>
</tr>
<tr>
<td>Underwear</td>
<td>Jinheng, Shenhu</td>
<td>969 million pieces</td>
<td>$360 million</td>
<td>$290 million</td>
<td></td>
</tr>
<tr>
<td>Wedding dresses,</td>
<td>Chaozhou</td>
<td>510 million pieces</td>
<td>$950 million*</td>
<td>$640 million†</td>
<td></td>
</tr>
<tr>
<td>Evenings gowns</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeans</td>
<td>Xintang, Zengcheng</td>
<td>225 million pieces</td>
<td>$1.04 billion</td>
<td>$480 million</td>
<td></td>
</tr>
</tbody>
</table>

*Includes all textiles made in the city.
†Wedding dress and evening gown exports only.

Source: China National Textile Council; Shenu Underwear Association; Datang Town Government

MNC R&D Centers in China: How are engineers being used?

- What kinds of work are Chinese, Indian, and American engineers actually doing?
  - Answer: Not just product adaptation, but cutting-edge research & commercialization

- China: More than 1,000 MNC R&D Centers
  - GE’s China Technology Center: Advanced research in energy storage, environmental management
  - Microsoft Research Asia: Cutting-edge graphics & multimedia research
4. Textiles & Apparel and IT in India
Tiruppur Knitwear Cluster

- Dramatic increase in sales & employment
- 85% of India’s cotton knitwear exports, ~ 4% of total exports
- Transformed from basic knit garments for lower end of domestic market to a diversified production range, especially fashion basics/casual wear for exports
- 5,000 firms (few lead firms directly linked to global buyers)
- 15 active industry associations, Knit Fair Complex, logistics, fashion institute in collaboration with NIFT

**Labor Market Conditions***:

- 96% of workers are casual employees
- Mostly migrant women from backward castes
- Vast majority of women are ‘flexible’ seasonal workers
- 92% of women surveyed were paid on piece-rate (though time-rate is increasing)

Textiles & Apparel Value Chain
Upgrading Categories

- Assembly
- OEM (Full-Package)
- ODM
- OBM

- Small Firms/Intermediaries
- Subcontractors

Internationalization
Domestic vs. Exports

Informality

Decent Work (Quality of Work)

Employment Relationship
India: The Offshoring of IT Services

- India employs about 650,000 professionals in IT services, and this figure is expected to more than triple in the next five years.

- General Electric’s “70–70–70” outsourcing rule of thumb: about one-third of GE’s IT work will be done in India.

- A strong nucleus of domestic IT service providers has emerged:
  - Tata Consultancy Services – 23,400 employees and over $1 billion in revenues (as of March 2003)
  - Wipro Technologies – 19,800 employees and $690 million in revenues
  - Infosys Technologies – 15,500 workers, over $750 million in revenues
  - Satyam Computer Services and HCL Technologies – close to 10,000 employees each and $460 million and over $330 million in revenues

- Indian programmers make only 1/9 of their US counterparts, but in the domestic setting the Indian programmers are earning more than 16 times the min wage, while the average US programmer earns only twice the min wage.
Bangalore Software Cluster: ‘India’s Silicon City’

- Tremendous growth in software exports since the late 1980s
- Largest centre for software exports in India – 40% of India’s total exports
- 140 TNC development centers, 750 large and small domestic IT firms
- Movement from on-site to offshore projects, increasing customized services
- A degree of upgrading from labor-intensive (coding, testing and maintenance) to skill-intensive & high value-adding (design and requirement analyses)
The Next Wave of Globalization in India

- India as a center of research, design and innovation
- Pharmaceutical
  - Drug discovery, specialty pharmaceuticals, biologics, high value, bulk manufacturing, advanced intermediate manufacturing
- Aerospace
  - In-flight entertainment, airline seat design, collision control systems, navigation control systems, fuel inverting controls, first-class cabin design
- Consumer Appliances/Semiconductors, etc.
  - Design of next generation washing machines, dryers, refrigerators, digital TV, cell phones – base stations, automobiles, tractors, locomotive motors
5. Challenges and Opportunities
Where we are today

- New actors (global buyers, global suppliers, and global intermediaries)
- Rapid rise of new production centers (Taiwan, Korea, China, Mexico, India)
- Higher capabilities required to enter chains (health and safety, speed, quality, responsiveness, IT)
- Widening gap between connected and disconnected in developing world
- Growing global consolidation (supply chains, countries)
Challenges and Opportunities

- Commodity export boom (L. America, Africa)
- Find GVC niches (specialization, high value products, local sourcing, fresh produce)
- Take advantage of regional integration
- Differentiated global services (tourism, finance, IT)
- Invest in R&D
- Go “green” with environmentally friendly goods and services (corporate sustainability)
Thank you for your attention!

Gary Gereffi, Director, CGGC
Duke University
Center on Globalization, Governance & Competitiveness
ggere@soc.duke.edu