GLOBAL VALUE CHAINS AND DEVELOPMENT: Governance, Upgrading & Local Economies

Gary Gereffi
Director, Duke CGGC
Duke University
Roma Tre University
Rome, Italy
April 21, 2016
AGENDA

1. Origins of the GVC Framework

2. Clarifying Concepts: GVCs, Governance & Upgrading

3. Small Countries and High Tech: Medical Devices GVC in Costa Rica

4. GVC Competition for US Market: China vs. Mexico

5. GVCs and Emerging Economies
WHERE DO GVCS COME FROM?
The New Global Economy

Old World of Trade (pre-1980)
- Countries trade finished goods
- Build national industries (ISI)

New World of Trade
- Countries trade intermediate goods; imports needed to export
- Join global industries (EOI)

Trends
- **GVCs** → 80% of world trade (UNCTAD, WIR 2013)
- **Rise of intermediate goods trade** (import content of exports): 20% in 1990; 40% in 2010; 60% in 2030 (P. Lamy, WTO)
- **Consolidation** within GVCs in fewer, larger suppliers
- **Concentration** of production and consumption in relatively few large emerging economies

© 2016 Duke CGGC
Where does the idea of Value Chains come from?

**Development Theories**
- **Modernization** - Walt Rostow
- **Dependency** - F.H. Cardoso
- **World Systems** - P. Wallerstein

**Development Strategies**
- **ISI** Import-Substituting Industrialization
- **ECLAC** - R. Prebisch, P. Saul
- **EOI** Export-Oriented Industrialization

**Chain Theories**
- **GCCs** - 1994 Global Commodity Chains
- **GVCs** - 2001 Global Value Chains
- **GPNs** - 2002 Global Production Networks

**Post-Washington Consensus**
- World Bank + IMF
- 2008-09 Global Economic Crisis

**Trends**
- a) BRIC - emerging economies (1990 - “great doubling”)
- b) 10s
- c) Big countries
- d) Small countries

**Time Periods**
- 1950s – 1960s
- 1970s – 1980s
- 1990s – 2000s
- *mid 2000s – present*
MAJOR STEPPING STONES

- GCCs (global commodity chains) → GVCs (global value chains) (1990s-2000s)


- Adoption and Elaboration by International Organizations of GVC Approach to Development (ca. 2010-2016) -- https://dukegvcsummit.org/

LANDMARK PUBLICATIONS

  – 2491 google scholar citations*

• “International trade and industrial upgrading in the apparel commodity chain,” Gereffi (J of Internat’l Economics, 1999)
  – 3185 google scholar citations*

• “The governance of global value chains,” Gereffi, Humphrey & Sturgeon (Review of Internat’l Political Economy, 2005)
  – 4122 google scholar citations*

*As of 04/21/2016.
CLARIFYING GVC CONCEPTS
Global value chain analysis provides both conceptual and methodological tools for examining the global economy

**Top-down**: a focus on lead firms and inter-firm networks, using varied typologies of industrial “governance”

**Bottom-up**: a focus on countries and regions, which are analyzed in terms of various trajectories of economic, social and environmental “upgrading” (or “downgrading”)
LINKING GLOBAL CHAINS AND LOCAL CLUSTERS
TYPES OF CHAINS

• **Global Supply Chains**
  – Logistics (transportation focus: reduce time + costs)
  – Trade Facilitation (lower barriers at the border)

• **Global Commodity Chains**
  – Producer-driven chains: Trade + FDI (e.g., aircraft, autos, mining, oil)
  – Buyer-driven chains: Trade w/o FDI (e.g., consumer goods); global subcontracting by retailers, brands & supermarkets

• **Global Value Chains**
  – Rise of intermediate goods trade (import content of exports: 20% in 1990; 40% in 2010; 60% in 2030 – P. Lamy)
  – Create, capture & sustain domestic value added (e.g., Chinese i-Phone example; build capabilities of domestic suppliers)

• **Regional Value Chains**
  – Growing in importance, esp. since 2008-09 and in emerging economies; beyond fragmentation and EOI development model.
PRODUCER-DRIVEN AND BUYER-DRIVEN GLOBAL COMMODITY CHAINS

Producer-driven Commodity Chains

Manufacturers

Distributors

Retailers and Dealers

Domestic and Foreign Subsidiaries and Subcontractors

Buyer-driven Commodity Chains

OVERSEAS

Factories

Traders

Overseas Buyers

U.S. MARKET

Branded Marketers

Retailers

Branded Manufacturers

Notes: Solid arrows are primary relationships; dashed arrows are secondary relationships.

Retailers, branded marketers, and traders require full-package supply from overseas factories.

Branded manufacturers ship parts for overseas assembly and re-export to the manufacturer’s home market.

Five GVC Governance Types

1. **Transaction Costs Economics**
   Key concept: Asset specificity
   *Academic field: Institutional economics*

2. **Production Network Theory**
   Key concepts: Trust, reputation, repeat transactions, social networks, geographic proximity, power
   *Academic fields: Economic sociology, economic geography*

3. **Firm-Based Competencies**
   Key concepts: Resource view of the firm, learning, core competence, co-evolution (buyer-supplier and industry)
   *Academic fields: Strategic management, operations management, evolutionary economics*
A Parsimonious Model:
Three Explanatory Variables

1. **Complexity** of information required for a transaction

2. **Extent to which this information can be codified**

3. **Supplier capabilities** in relation to a transaction’s requirements
## Determinants of GVC Governance

<table>
<thead>
<tr>
<th>Governance Type</th>
<th>Complexity of transactions</th>
<th>Ability to codify transactions</th>
<th>Capabilities in the supply-base</th>
<th>Degree of explicit coordination and power asymmetry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Modular</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Relational</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Captive</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

# Dynamics in Global Value Chain Governance

<table>
<thead>
<tr>
<th>Governance Type</th>
<th>Complexity of transactions</th>
<th>Ability to codify transactions</th>
<th>Capabilities in the supply-base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Modular</td>
<td>① High ② High</td>
<td>① High</td>
<td>① High</td>
</tr>
<tr>
<td>Relational</td>
<td>High</td>
<td>③ Low</td>
<td>⑤ High ⑥ High</td>
</tr>
<tr>
<td>Captive</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

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)

Giant Retailers: Wal-Mart
- Largest retailer in the world directs the biggest supply chain
- > 60,000 suppliers worldwide and over 80% are in China

Global Brands: Nike
- Nike, the largest sportswear company in the world, does not own any factories.
- Nike products made in 930 factories (subcontractors) in 50 countries
- >1 million workers in supply chain, but just 38,000 direct employees in U.S.

Manufacturers w/o Factories: Apple
- Apple, the top smartphone company in the world, designs and markets its products but owns no factories
- Foxconn, the largest electronics contract manufacturer in the world, makes Apple products and employs >1 million workers in mainland China
WHERE ARE THE HIGH-VALUE ACTIVITIES IN GVCS?

There has been a tendency for developed countries to concentrate in higher value activities while developing countries are generally concentrated in lower value activities.

Value Chain – Types of Upgrading

1. Fabrication (Value chain entry)
   - Focus on fabrication; suppliers assemble inputs, following buyers’ specifications.
   - Inputs may be imported due to limited availability and quality concerns over local inputs.
   - Product focus may be relatively narrow.

2. Supply Chain (Functional upgrading)
   - Broader range of manufacturing-related functions, such as sourcing inputs and inbound logistics as well as fabrication.
   - The supplier may also take on outbound distribution activities.

3. Product Design (Functional upgrading)
   - Supplier carries out part of the pre-production processes such as design or product development.
   - Design may be in collaboration with the buyer, or the buyer may attach its brand to a product designed by the supplier.

4. Product Brand (Functional upgrading)
   - Supplier acquires post-production capabilities and is able to fully develop products under its own brand names.
   - Can be in collaboration with the buyer or by establishing a new market channel.

Product upgrading
   - Increase unit value by producing more complex products, which requires increasing the capabilities of the firm.
   - Countries must move from low-cost commodities to higher value goods that warrant higher returns as labour costs increase.

Process upgrading
   - Improving productivity through new capital investments.
   - Improving IT and logistics.
   - Reducing lead time and increasing the flexibility of the supply chain process.

Source: UNIDO, 2014
The Smile Curve in GVCs: Variations
COSTA RICA IN THE MEDICAL DEVICES GVC
Local firms are mainly in packaging & support services (12 of 19) versus 4 in limited role in plastics molding & metal finishing and 1 OEM with exports under $2 million.
• **Disposables** still the largest product category exported, but no longer a strong growth area.
• Exports in **surgical instruments** have grown steadily since 2005.
• **Therapeutics** has become 2nd largest category since 2008; likely to increase as newly established firms complete transfer of new product lines.
• Limited export of highest value **capital equipment** (eg. Electronic/software devices)
### FIRMS IN THE COSTA RICA MEDICAL DEVICES SECTOR

<table>
<thead>
<tr>
<th>Entry Year</th>
<th>Firm Characteristics</th>
<th>Main Product Export Category</th>
<th>Core Market Segments</th>
<th>Product Examples</th>
<th>Select Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Up to 2000</strong>&lt;br&gt;24 firms:&lt;br&gt;8 US&lt;br&gt;15 CR&lt;br&gt;1 German</td>
<td>4 OEMs&lt;br&gt;8 Components&lt;br&gt;1 Input distributor&lt;br&gt;7 Packaging&lt;br&gt;1 Finishing&lt;br&gt;3 Support services</td>
<td>Disposables</td>
<td>Drug delivery; Women’s health</td>
<td>Intravenous tubing (I)&lt;br&gt;Mastectomy bra (I)</td>
<td>Hospira; Baxter; Amoena; Corbel</td>
</tr>
<tr>
<td><strong>2001–2004</strong>&lt;br&gt;13 firms:&lt;br&gt;9 US&lt;br&gt;3 CR&lt;br&gt;1 Colombian</td>
<td>3 OEMs&lt;br&gt;6 Components&lt;br&gt;1 Finishing&lt;br&gt;1 Logistics provider&lt;br&gt;2 Support services</td>
<td>Instruments</td>
<td>Endoscopic surgery</td>
<td>Biopsy forceps (II)</td>
<td>Arthrocare; Boston Scientific; Oberg Industries</td>
</tr>
<tr>
<td><strong>2005–2008</strong>&lt;br&gt;8 firms:&lt;br&gt;7 US&lt;br&gt;1 Puerto Rico</td>
<td>2 OEM&lt;br&gt;4 Components&lt;br&gt;1 Packaging&lt;br&gt;1 Finishing</td>
<td>Therapeutics</td>
<td>Cosmetic surgery; Women’s health &amp; urology</td>
<td>Breast implants (III)&lt;br&gt;Minimally invasive devices for uterine surgery (II)</td>
<td>Allergan; Tegra Medical; Specialty Coating Systems</td>
</tr>
<tr>
<td><strong>2009–2012</strong>&lt;br&gt;21 firms:&lt;br&gt;16 US&lt;br&gt;1 CR&lt;br&gt;1 Ireland&lt;br&gt;1 Japan&lt;br&gt;2 Joint ventures (US-CR)</td>
<td>5 OEMs&lt;br&gt;7 Components&lt;br&gt;2 Non-OEM assemblers&lt;br&gt;1 Input Distributor&lt;br&gt;2 Sterilization&lt;br&gt;2 Packaging</td>
<td>Therapeutics&lt;br&gt;Disposables&lt;br&gt;Instruments</td>
<td>Cardiovascular Drug delivery</td>
<td>Heart valves (III)&lt;br&gt;Dialysis catheters (III)&lt;br&gt;Guide wires (III)&lt;br&gt;Compression socks (I)</td>
<td>Abbott Vascular&lt;br&gt;St. Jude Medical&lt;br&gt;Covidien&lt;br&gt;Moog&lt;br&gt;Synergy Health&lt;br&gt;Volcano Corp.</td>
</tr>
</tbody>
</table>
UPGRADING SUCCESS: A LEADING MEDICAL DEVICES MNC

2004
- First production plant opens in Costa Rica (10,000m²)

2005
- Exports: US$18 million

2008
- Second plant opens. (32,000m²)
- Initial plant restructuring

2010
- First plant restructuring
- Exports: US$120 million

Functional Upgrading
- 2004: Manufacturing functions
- 2012: Engineering for process improvements → Focused on cardiology segment; strategy – to alleviate R&D costs in the US.

Product & Process Upgrading
- Biopsy forceps → Labor intensive, basic metal works & extrusion.
- Urethral stent → Thermoforming, laser marking, coating capabilities.
- Today – CR facilities cover 42 manufacturing processes.

Market Diversification
- Gastroenterology segment → Urology → Cardiovascular

Forward Linkages
- Recent co-location of sterilization vendors will allow the firm to export directly to global distribution centers
BRAZIL Y MEXICO: EXPORTACIONES DE DISPOSITIVOS MEDICOS
1998-2011

**BRAZIL**

- Disposables: largest product category & growing
- Brazilian government & private sector actors working to promote price-competitive, mid-tech exports.

**MEXICO**

- Stabilizing disposables exports
- Strong focus in instruments
- Growing gains in capital equipment ➔ participation in electronics value chains
GVC BATTLE FOR THE U.S. MARKET:
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
## Mexico's and China's Competing Exports to US Market

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>752</td>
<td>Automatic Data Processing Machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>6.4</td>
<td>11.5</td>
<td>5.6</td>
<td>9.6</td>
<td>13.5</td>
<td>16.6</td>
</tr>
<tr>
<td>China</td>
<td>6.3</td>
<td>11.3</td>
<td>28.6</td>
<td>49.3</td>
<td>53.3</td>
<td>65.7</td>
</tr>
<tr>
<td>US Total</td>
<td>55.9</td>
<td>57.9</td>
<td>81.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>764</td>
<td>Telecom Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>9.1</td>
<td>20.6</td>
<td>10.8</td>
<td>13.6</td>
<td>12.1</td>
<td>10.2</td>
</tr>
<tr>
<td>China</td>
<td>4.6</td>
<td>10.3</td>
<td>29.6</td>
<td>37.3</td>
<td>68.7</td>
<td>58.0</td>
</tr>
<tr>
<td>US Total</td>
<td>44.3</td>
<td>79.5</td>
<td>118.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>778</td>
<td>Electrical Machinery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>3.1</td>
<td>18.3</td>
<td>5.0</td>
<td>21.8</td>
<td>7.2</td>
<td>21.4</td>
</tr>
<tr>
<td>China</td>
<td>2.0</td>
<td>11.9</td>
<td>6.1</td>
<td>26.6</td>
<td>11.2</td>
<td>33.2</td>
</tr>
<tr>
<td>US Total</td>
<td>17.1</td>
<td>23.1</td>
<td>33.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>784</td>
<td>Auto Parts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>4.6</td>
<td>16.3</td>
<td>10.2</td>
<td>22.2</td>
<td>19.1</td>
<td>30.4</td>
</tr>
<tr>
<td>China</td>
<td>0.4</td>
<td>1.5</td>
<td>3.6</td>
<td>7.8</td>
<td>8.3</td>
<td>13.2</td>
</tr>
<tr>
<td>US Total</td>
<td>28.4</td>
<td>46.2</td>
<td>62.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>821</td>
<td>Furniture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>3.2</td>
<td>16.9</td>
<td>4.6</td>
<td>13.6</td>
<td>7.6</td>
<td>18.3</td>
</tr>
<tr>
<td>China</td>
<td>4.5</td>
<td>23.6</td>
<td>16.2</td>
<td>47.7</td>
<td>19.2</td>
<td>46.3</td>
</tr>
<tr>
<td>US Total</td>
<td>18.9</td>
<td>33.9</td>
<td>41.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Apparel and Clothing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
<td>Value (billions)</td>
<td>Share of US market</td>
</tr>
<tr>
<td></td>
<td>8.7</td>
<td>13.6</td>
<td>4.7</td>
<td>5.8</td>
<td>4.0</td>
<td>4.4</td>
</tr>
<tr>
<td>China</td>
<td>8.5</td>
<td>13.2</td>
<td>27.1</td>
<td>33.4</td>
<td>34.2</td>
<td>37.9</td>
</tr>
<tr>
<td>US Total</td>
<td>64.3</td>
<td>81.2</td>
<td>90.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
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 1,200 MNC R&D Centers
  - GE’s China Technology Center: Advanced research in energy storage, environmental management
  - Microsoft Research Asia: Cutting-edge graphics & multimedia research
China Is Climbing the Value Chain…

- Moving from low-tech to high-tech manufactured goods
- Moving from manufacturing to high value services
  - R&D, design, marketing of national brands, logistics, finance
- Moving from inward FDI (joint ventures & technology transfer) to outward FDI (primary commodities, computers, shipping)
- **BUT BEWARE**…High tech exports don’t necessarily mean high value added production → e.g., China’s iPod
China assembles all iPods, but it only gets about $4 per unit – or just over 1% of the US retail price of $300

451 parts that go into the iPod

Hard Drive by Toshiba → Japanese company, most of its hard drives made in the Philippines and China; it costs about $73 - $54 in parts and labor -- so the value that Toshiba added to the hard drive was $19 plus its own direct labor costs.

Video/multimedia processor chip by Broadcom → American company with manufactures facilities in Taiwan. This component costs $8.

Controller chip by Portal Player → American company with manufactures. This component costs $5.

Final assembly → done in China, costs only about $4 a unit.

The unaccounted-for parts and labor costs involved in making the iPod came to about $110.

The largest share of the value added in the iPod goes to enterprises in the United States → $163 of the iPod’s $299 retail value in the United States was captured by American companies and workers, breaking it down to $75 for distribution and retail costs, $80 to Apple, and $8 to various domestic component makers.

The bulk of the iPod’s value is in the conception and design of the iPod. That is why Apple gets $80 for each of these video iPods it sells, which is by far the largest piece of value added in the entire supply chain. Apple figured out how to combine 451 mostly generic parts into a valuable product.

U.S. Trade Balance with China for iPhone 4 (US$, 1 unit)

THE ROLE OF EMERGING ECONOMIES IN GVCs
### Seven Selected Emerging Economies in Comparative Perspective, 2013

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (Millions)¹</th>
<th>Exports ($Billions)²</th>
<th>GDP ($Billions)¹</th>
<th>GDP/capita (USD)¹</th>
<th>GDP/capita (PPP)¹</th>
<th>GDP growth YoY (%)¹</th>
<th>Percent of GDP³</th>
<th>Agriculture</th>
<th>Industry</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,357</td>
<td>$2,209</td>
<td>$9,240</td>
<td>$6,807</td>
<td>$11,906</td>
<td>7.7</td>
<td>10</td>
<td>44</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>South Korea</td>
<td>50</td>
<td>$560</td>
<td>$1,305</td>
<td>$25,977</td>
<td>$33,140</td>
<td>3.0</td>
<td>3</td>
<td>39</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>143</td>
<td>$527</td>
<td>$2,096</td>
<td>$14,611</td>
<td>$24,114</td>
<td>1.3</td>
<td>4</td>
<td>38</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>122</td>
<td>$380</td>
<td>$1,261</td>
<td>$10,307</td>
<td>$16,463</td>
<td>1.1</td>
<td>4</td>
<td>36</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>1,252</td>
<td>$337</td>
<td>$1,877</td>
<td>$1,498</td>
<td>$5,412</td>
<td>5.0</td>
<td>17</td>
<td>26</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>200</td>
<td>$242</td>
<td>$2,246</td>
<td>$11,208</td>
<td>$15,038</td>
<td>2.5</td>
<td>6</td>
<td>26</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>53</td>
<td>$95</td>
<td>$351</td>
<td>$6,618</td>
<td>$12,507</td>
<td>1.9</td>
<td>3</td>
<td>29</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Total or Avg.</td>
<td>3,177</td>
<td>$4,350</td>
<td>$18,376</td>
<td>$11,004</td>
<td>$16,940</td>
<td>3.2</td>
<td>7</td>
<td>34</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>World Total</td>
<td>7,125</td>
<td>$17,635</td>
<td>$75,593</td>
<td>$10,610</td>
<td>$14,397</td>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of World Total</td>
<td></td>
<td>45%</td>
<td>25%</td>
<td>24%</td>
<td>104%</td>
<td>118%</td>
<td>146%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources:
## Emerging Economy Export Profiles
(Percentages of total exports: 2013)

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of exports by sector in 2013*</th>
<th>Total Export Value ($Billions)</th>
<th>Change in total export value, 2000-2013</th>
<th>Percentage point change in share of exports by sector, 2000-2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary Products</td>
<td>Resource Based</td>
<td>Low-Tech</td>
<td>Medium-Tech</td>
</tr>
<tr>
<td>China</td>
<td>3%</td>
<td>8%</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>South Korea</td>
<td>2%</td>
<td>17%</td>
<td>9%</td>
<td>43%</td>
</tr>
<tr>
<td>Russia</td>
<td>55%</td>
<td>29%</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>Mexico</td>
<td>16%</td>
<td>8%</td>
<td>9%</td>
<td>42%</td>
</tr>
<tr>
<td>India</td>
<td>14%</td>
<td>38%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>Brazil</td>
<td>33%</td>
<td>33%</td>
<td>5%</td>
<td>21%</td>
</tr>
<tr>
<td>South Africa</td>
<td>25%</td>
<td>31%</td>
<td>6%</td>
<td>27%</td>
</tr>
</tbody>
</table>

*Exports totals do not include uncategorized exports, and therefore they may not equal 100%.

Legend:
- $x \leq -6$
- $-5 \leq x < 0$
- $0 \leq x < 9$
- $x \geq 10$
Emerging Economies: Development Strategies in Conflict

**China**: Combining labor-intensive, technology-intensive and knowledge-intensive GVCs
  - iPhone case: East Asian regional ecosystem
  - Innovation & MNC R&D centers; joint-ventures

**Brazil**
  - Soybean value chain
  - Electronics & Foxconn

**South Africa**
  - Climbing natural resource GVCs in Africa
Main Competitors in the U.S. Market for Telecom Equipment (SITC 764)

IMPLICATIONS OF C.R. MEDICAL DEVICES CASE FOR GVC UPGRADE AND INDUSTRIAL POLICY

- **GVC upgrading** is broader than innovation systems
  - Use high-value activities to diversify and climb GVCs
  - Move to **profitable niches** in GVCs (diverse “rents”)
  - Downgrading outcomes are a recurrent issue in GVCs
- **GVC lead firms** were drivers of upgrading (FDI & trade to enter high-tech niches of medical devices GVC)
- **Innovation bottlenecks** require strengthening of NIS (e.g., sterilization and creation of Masters in Med Device Engineering)
- **Target MNCs** that will strengthen country’s GVCs and find ways to diminish size of low-tech segments
- **Strengthen the role of domestic suppliers** and use TNCs as learning platforms
- **Explore international partnerships** to expand country’s capabilities and footprint in GVCs
GVC-oriented Industrial Policies

The GVC framework suggests ways to enhance the competitiveness of local economic clusters:

• **Focus on quality and high-value activities** in order to move up global value chains
• **Target MNCs** that will strengthen country’s GVCs and create dynamic local linkages
• **Strengthen the role of domestic suppliers** and use TNCs as learning platforms
• **Explore international partnerships** to expand country’s capabilities and footprint in GVCs
The New Global Economy

Trends

– **GVCs** as 80% of world trade (UNCTAD, WIR 2013)
– **Concentration** of production and consumption in relatively few large emerging economies
– **Consolidation** within GVCs in fewer, larger suppliers
– More South-South trade = **shifting end markets**

Implications

– **More opportunities** for connection and upgrading in large emerging economies
– **Challenges** for small countries and firms on the periphery
– Economic upgrading ≠ Social upgrading