

How North Carolina Can Compete with China and India in the Contemporary Global Knowledge Economy

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Agenda

2

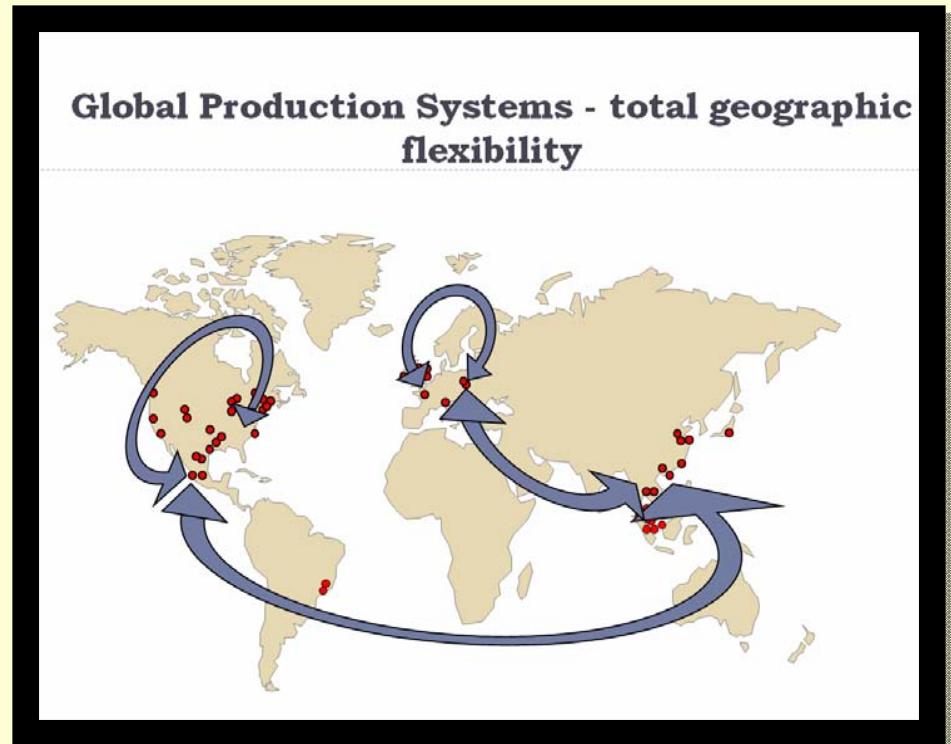
- Global Value Chains and Industrial Upgrading
- China as a Global Manufacturing Hub
- India's Surge in Global Services
- North Carolina in the Global Economy
- Challenges and Opportunities

Global Value Chains and Industrial Upgrading

Global Value Chains

4

- ▶ 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)



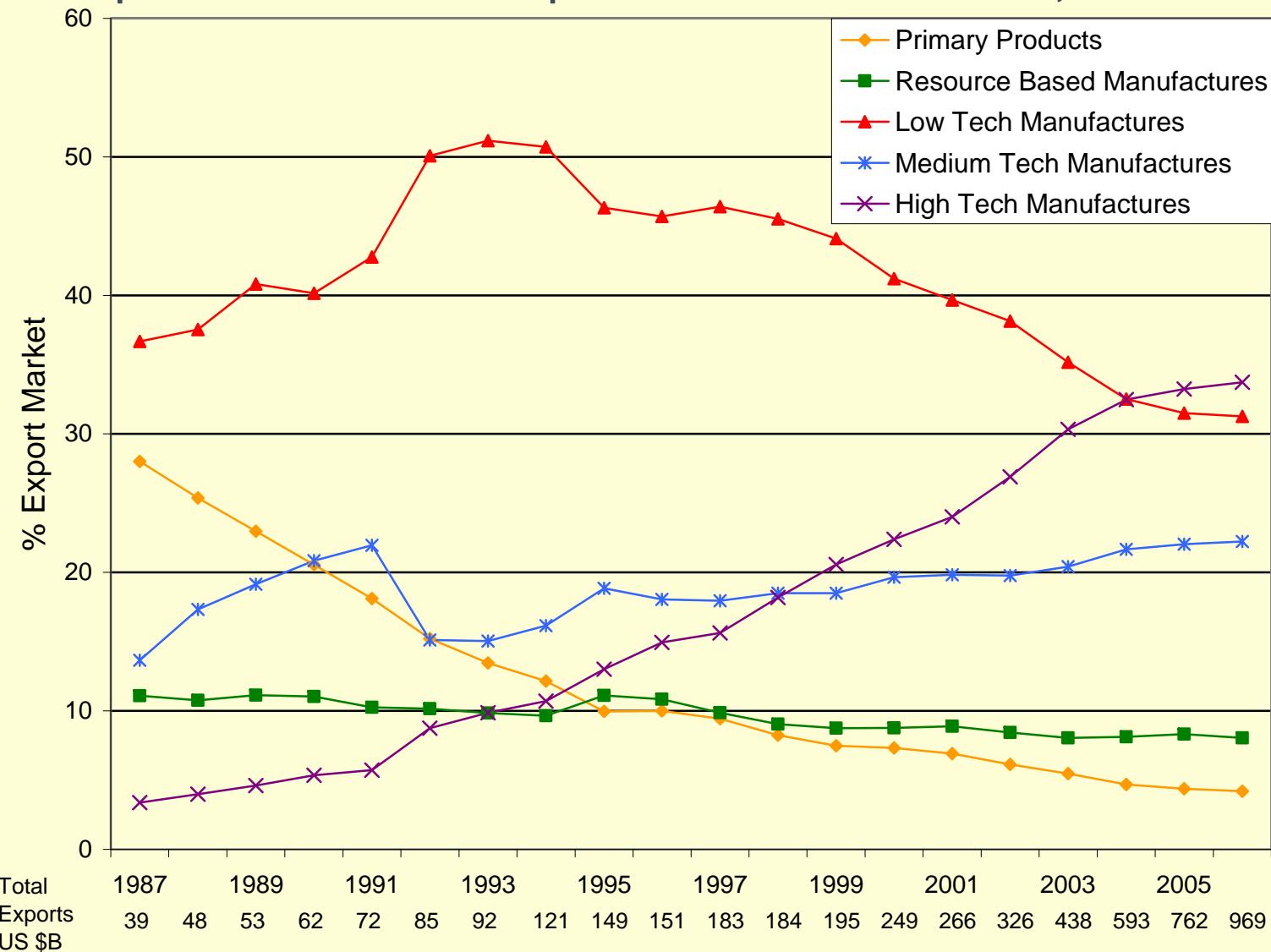
Industrial Upgrading

5

- **PRODUCTS:** Moving to higher value niches in GVCs (goods and services)
- **INDUSTRIES:** Moving from labor-intensive to capital-intensive to technology- and knowledge-intensive industries
- **ROLES:** Assembly → OEM → OBM → ODM
- **CAPABILITIES:** Production to Design to Commercialization to Innovation

China as a Global Manufacturing Hub

Composition of China's Exports to the World Market, 1987–2006





8

China vs. Mexico



- 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 the United States, 2000–2007

| SITC category | | Product | 2000 | | 2007 | | Change in Market Share 2000-2007 |
|---------------|--|----------|------------------|--------------------|------------------|--------------------|----------------------------------|
| | | | Value (billions) | Share of US market | Value (billions) | Share of US market | |
| 752 | Automatic Data Processing Machines and Units | Mexico | 6.4 | 11.5 | 5.6 | 9.6 | -1.9 |
| | | China | 6.3 | 11.3 | 28.6 | 49.3 | 38.0 |
| | | US Total | 55.9 | | 57.9 | | |
| 764 | Telecommunications Equipments and Parts | Mexico | 9.1 | 20.6 | 10.8 | 13.6 | -7.0 |
| | | China | 4.6 | 10.3 | 29.6 | 37.3 | 26.9 |
| | | US Total | 44.3 | | 79.5 | | |
| 778 | Electrical Machinery and Apparatus | Mexico | 3.1 | 18.3 | 5.0 | 21.8 | 3.5 |
| | | China | 2.0 | 11.9 | 6.1 | 26.6 | 14.7 |
| | | US Total | 17.1 | | 23.1 | | |
| 784 | Auto Parts and Accessories | Mexico | 4.6 | 16.3 | 10.2 | 22.2 | 5.8 |
| | | China | 0.4 | 1.5 | 3.6 | 7.8 | 6.2 |
| | | US Total | 28.4 | | 46.2 | | |
| 821 | Furniture | Mexico | 3.2 | 16.9 | 4.6 | 13.6 | -3.3 |
| | | China | 4.5 | 23.6 | 16.2 | 47.7 | 24.1 |
| | | US Total | 18.9 | | 33.9 | | |
| 84 | Articles of Apparel and Clothing | Mexico | 8.7 | 13.6 | 4.7 | 5.8 | -7.8 |
| | | China | 8.5 | 13.2 | 27.1 | 33.4 | 20.2 |
| | | US Total | 64.3 | | 81.2 | | |

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

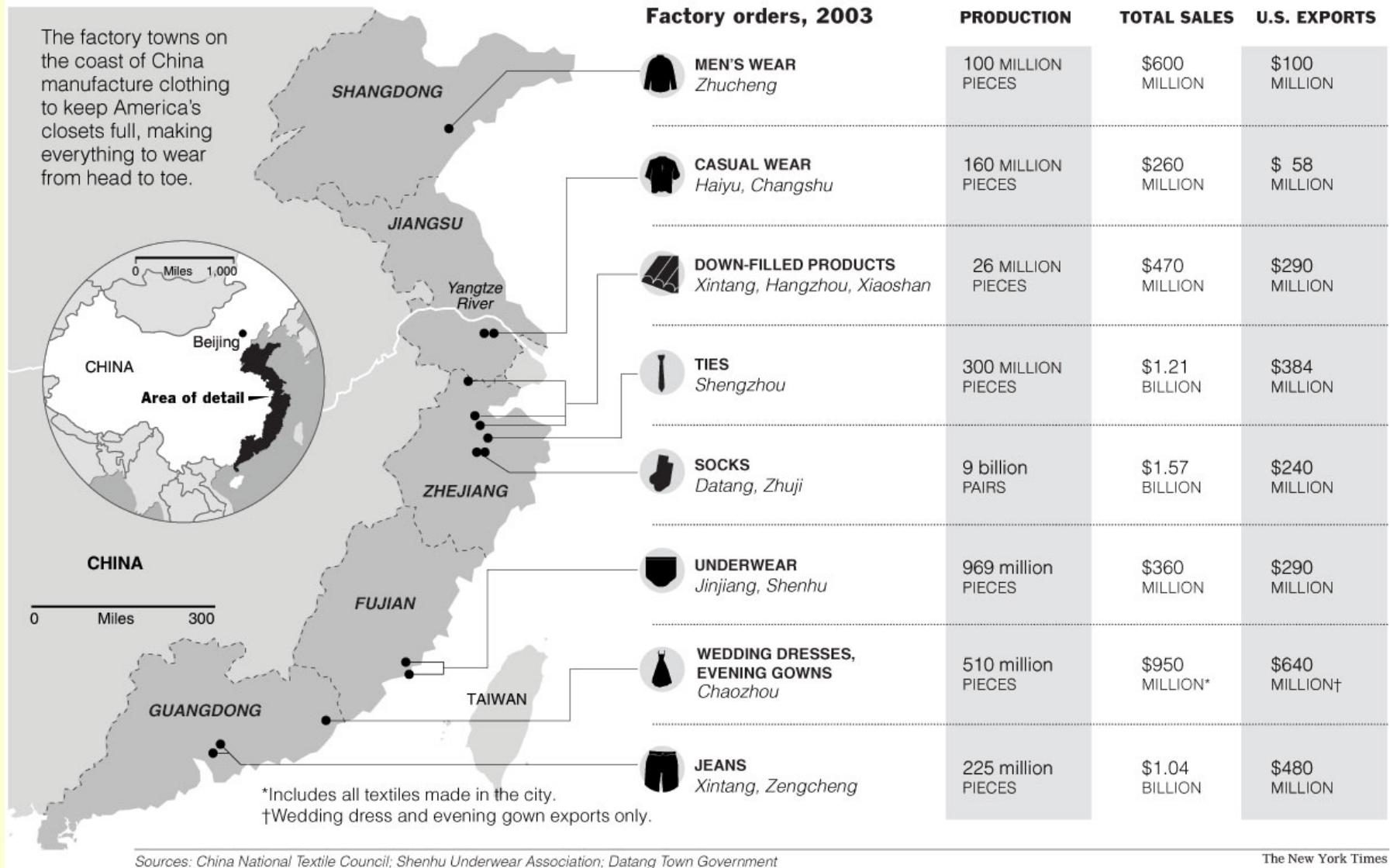
10

- 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



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

The New York Times

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

12

- 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



**Rockwell
Automation**

Microsoft

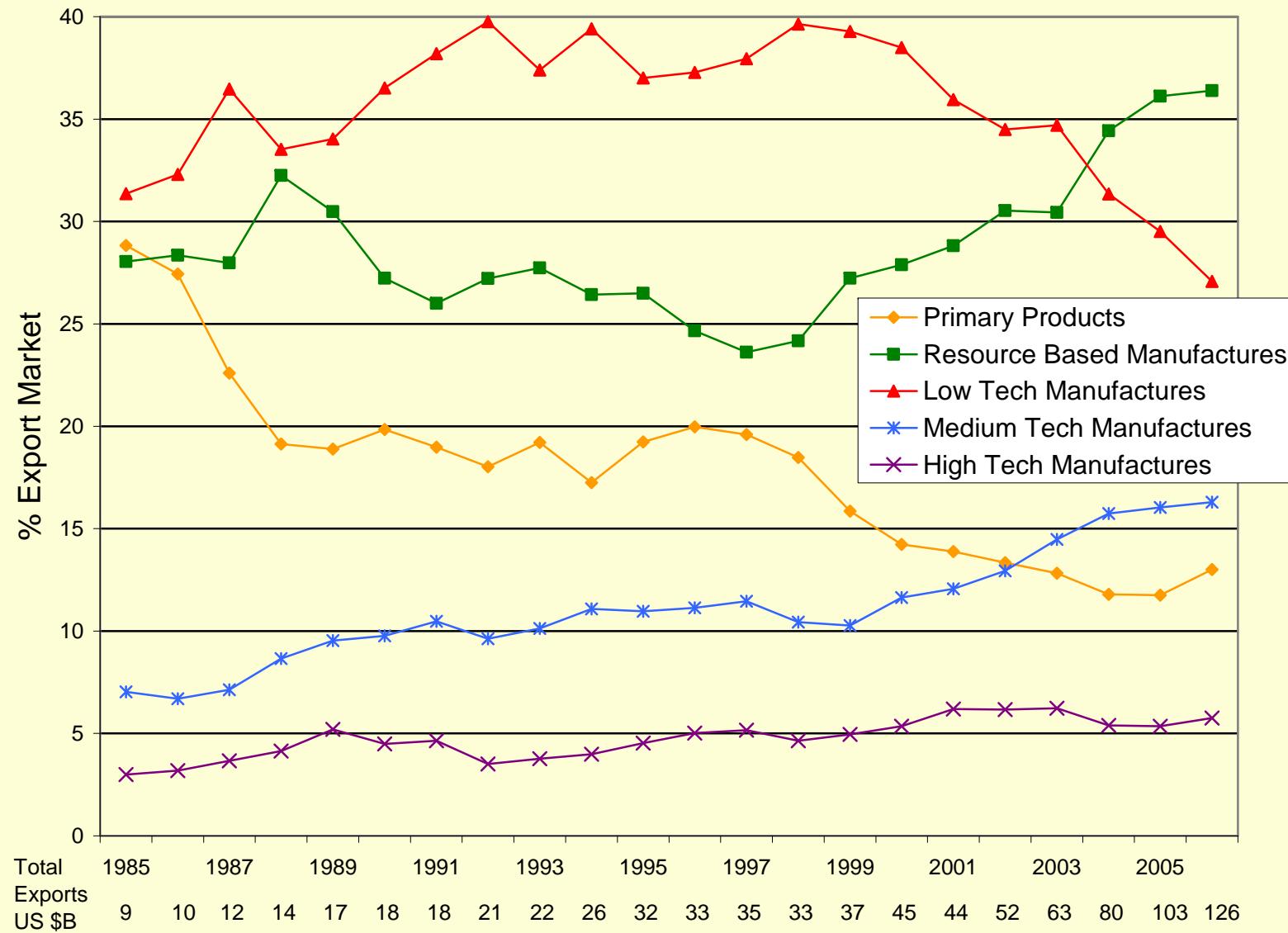


ORACLE



India's Surge in Global Services

Composition of India's Exports to the World Market, 1985–2006



India: The Offshoring of IT Services

15

- ❑ 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 (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 typical US programmer earned only twice the US GDP per capita in 2003

Bangalore Software Cluster: ‘India’s Silicon City’

16

- 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

17

- 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

North Carolina in the Global Economy

North Carolina IN THE GLOBAL ECONOMY



- Banks & Finance
- Biotechnology
- Information Technology
- Furniture
- Textiles & Apparel
- Tobacco
- Hog Farming



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.

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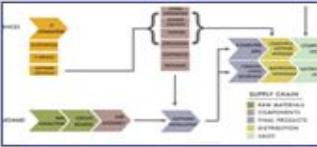
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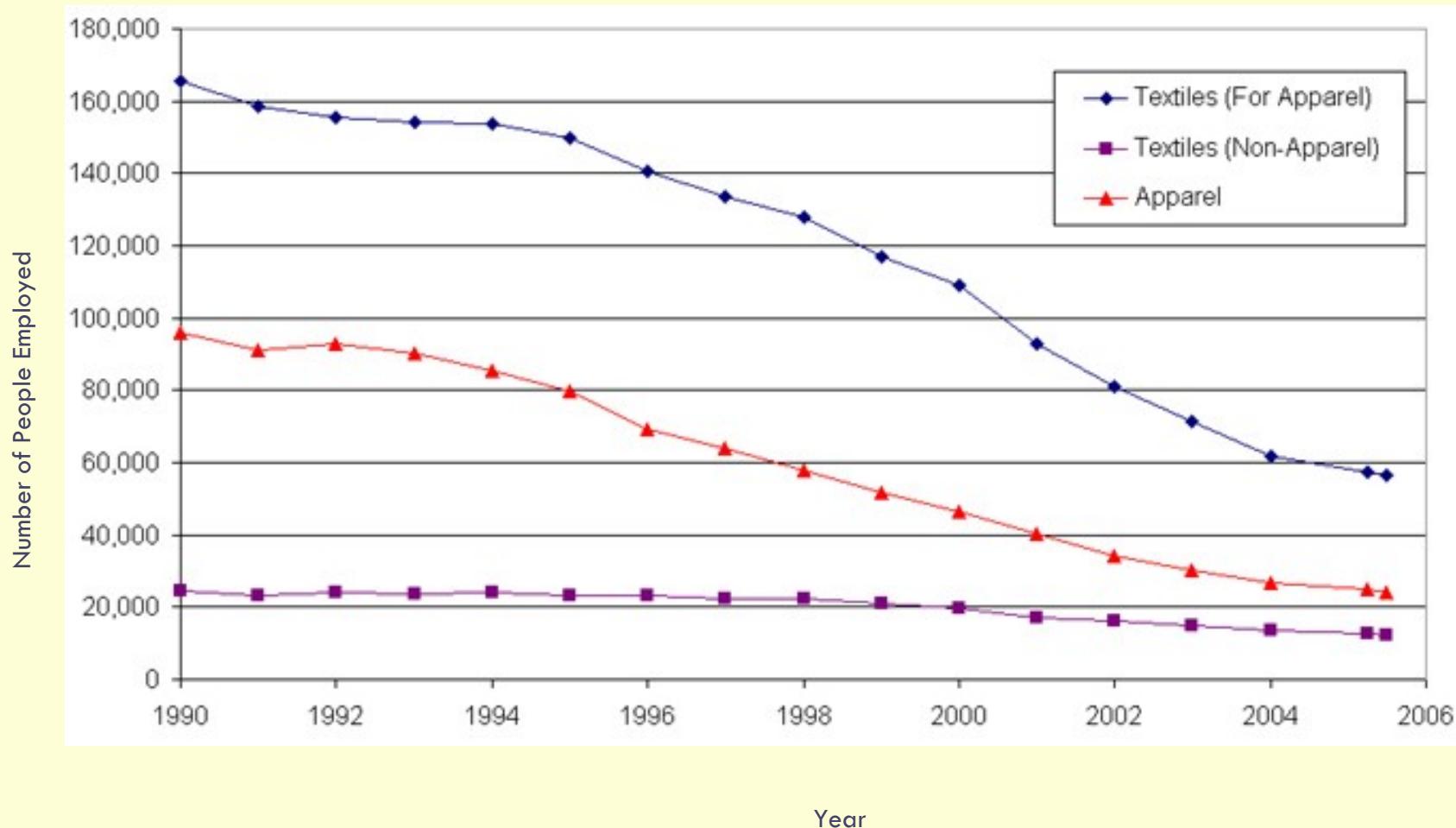
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North Carolina's Textiles/Apparel Industry

Graph 1: North Carolina Employment in the Textile & Apparel Industries, 1990-2006



Innovative Solutions: High-Tech Textiles

21

- North Carolina firms and universities are working together to develop *high-tech textiles*, a new breed of technology-intensive textile products.
 - These products use new, innovative materials and processes to create products with a wide array of uses...
 - Medical devices
 - Construction materials
 - Automotive industry
 - High-performance sporting equipment
 - Raleigh's North Carolina State University has taken the lead on this, and major firms like Freudenberg (German) and Nano-Tex (USA) are playing active roles.
- This sector tends to have fewer jobs, but jobs have higher pay and have greater productivity.

N.C. Research Campus in Kannapolis

22



PERSPECTIVE OF CENTRAL CAMPUS
NORTH CAROLINA RESEARCH CAMPUS
KANNAPOLIS, NORTH CAROLINA

- Research at the Campus will focus on **health and nutrition**, with much of it conducted by seven N.C. universities and private companies that are still being recruited.
- Long-range plans call for **35,000 jobs** on or near the campus, potentially a major economic boost to a region hit hard by the decline in textile manufacturing.
 - PPD Inc., A medical research company will hire several hundred people in the next three years for positions such as clinical research associates, clinical project managers and others.
 - Red Hat of Raleigh announced last year that it would open an office at the research campus.
 - Several smaller companies have also agreed to work at the campus, which is still under construction.

Source: The News & Observer, April 10, 2008 (<http://www.newsobserver.com/business/story/1031732.html>).

How North Carolina Can Compete in Global Industries

Global Opportunities for North Carolina

24

- Invest in high-value niches in “traditional industries”(e.g., smart textiles, high-end furniture)
- Invest in R&D-intensive industries (IT, biotech, nanotechnology)
- Invest in skills training (NC community colleges)
- Global services (tourism, finance, CROs)
- Go “green” with environmentally friendly goods and services (including alternative energy)

**Thank you
for your attention!**