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CENTER on
GLOBALIZATION,
GOVERNANCE &
COMPETITIVENESS

GLOBAL VALUE CHAINS AND THE ANALYSIS OF INTERNATIONAL BUSINESS OPERATIONS

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Friends of the Chair group on Internationalization

UN/DESA, Statistics Division, New York, NY

AGENDA

- 1. FRAMEWORK: GVCs and Development**
- 2. USE OF EXISTING TRADE STATISTICS:**
 - **Industrial Upgrading: Cases of Mexico and China**
- 3. TRADE STATISTICS + FIRM LEVEL SURVEYS:**
 - **Medical Devices GVC in Costa Rica & Brazil**
 - **Offshore Services Global Value Chain**
- 4. GVC MAPPING + EXISTING BLS DATA:**
 - **North Carolina in the Global Economy**

GLOBAL VALUE CHAINS AND DEVELOPMENT

Globalization & Development – Key Trends

- **Post-Washington Consensus world** – Global economic recession of 2008-09 and rise of “middle powers” has changed export-oriented model
- **Large emerging economies** like China, India and Brazil are both export platforms and turning inward
- **Small economies** are seeking specialized niches in the global economy and regional economic blocs
- **Lead firms in global value chains** are streamlining and consolidating their sourcing and production networks

The Global Value Chain Approach

Global value chain framework developed over the past decade by a diverse **interdisciplinary and international group of researchers** who have tracked the global spread of industries and their implications for both corporations and countries

- Global value chain analysis provides both conceptual and methodological tools for looking at 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 and social “upgrading” or “downgrading”

DIMENSIONS OF GLOBAL VALUE CHAIN ANALYSIS

1. Value Chain Mapping

2. Geographic Scope

3. Governance Structure (Lead Firms & Industry Organization)

4. Upgrading Trajectories

5. Local Institutional Context

6. Industry Stakeholders



GLOBAL



LOCAL

Key GVC Research Objectives

1. A detailed **mapping of the actors** in specific value chains in particular countries or regions
2. An assessment of the **upgrading (or downgrading) trajectories** in the value chain with regard to multiple analytical dimensions
3. The identification of **constraints and opportunities for value chain development** leading to strategies to drive industry growth

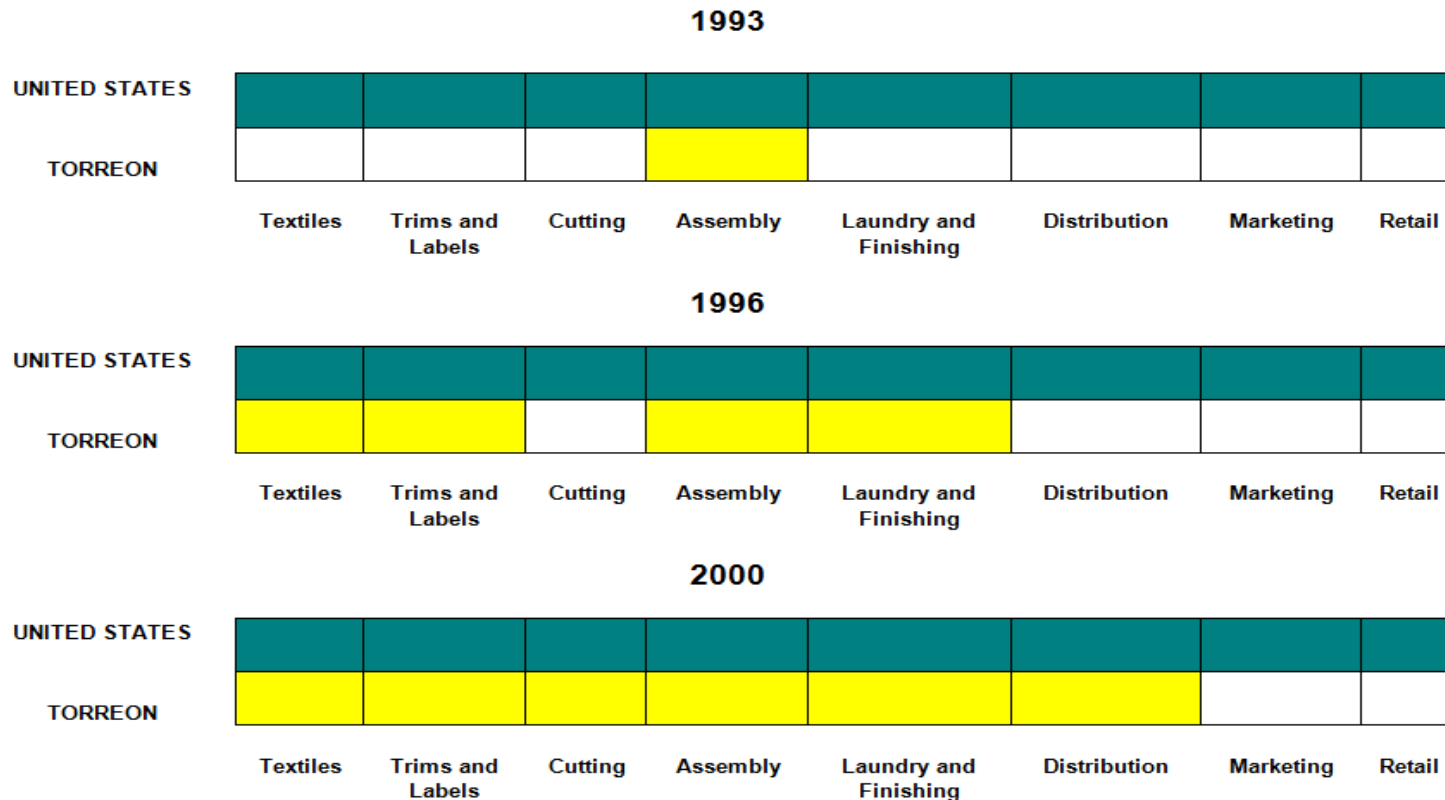
Industrial Upgrading: Cases of Mexico and China

UPGRADING: ADDING VALUE TO INDUSTRIES

- **Market entry** - when a new actor begins to participate in the value chain
- **Product upgrading** - moving into more sophisticated product lines
- **Process upgrading** – increase efficiency by reorganizing the production system or introducing superior technology
- **Functional upgrading** - acquiring new functions (or abandoning existing ones) to increase the overall skill content of the activities
- **Chain upgrading** - entry into a new chain by leveraging the knowledge and skills acquired in current chain

FUNCTIONAL UPGRADING IN GVCS: Adding Capabilities – Mexican Blue Jeans Chain

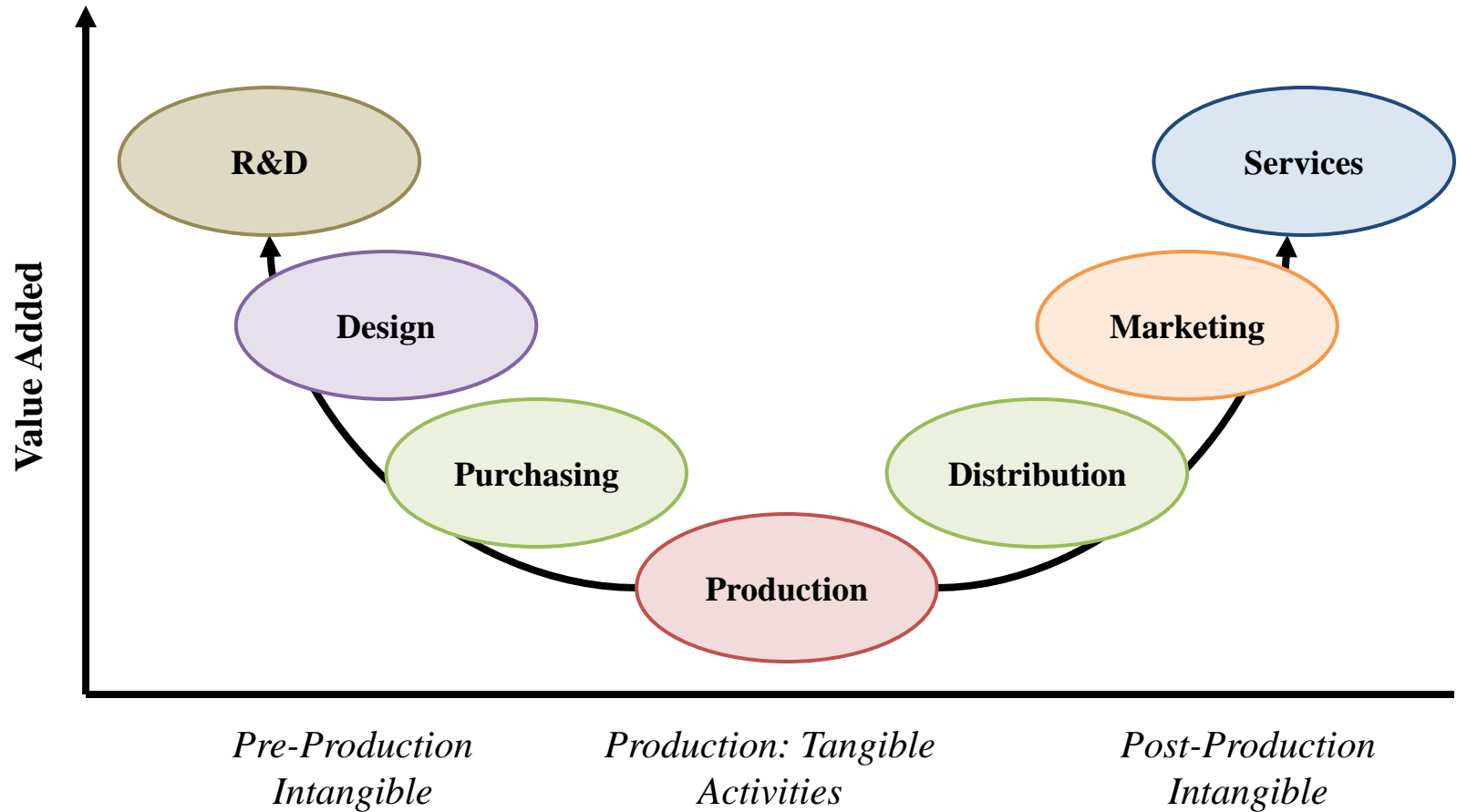
U.S.-TORREON APPAREL COMMODITY CHAIN



Upgrading refers to the strategies that stakeholders (countries, regions and firms) can take to improve their position within the global economy.

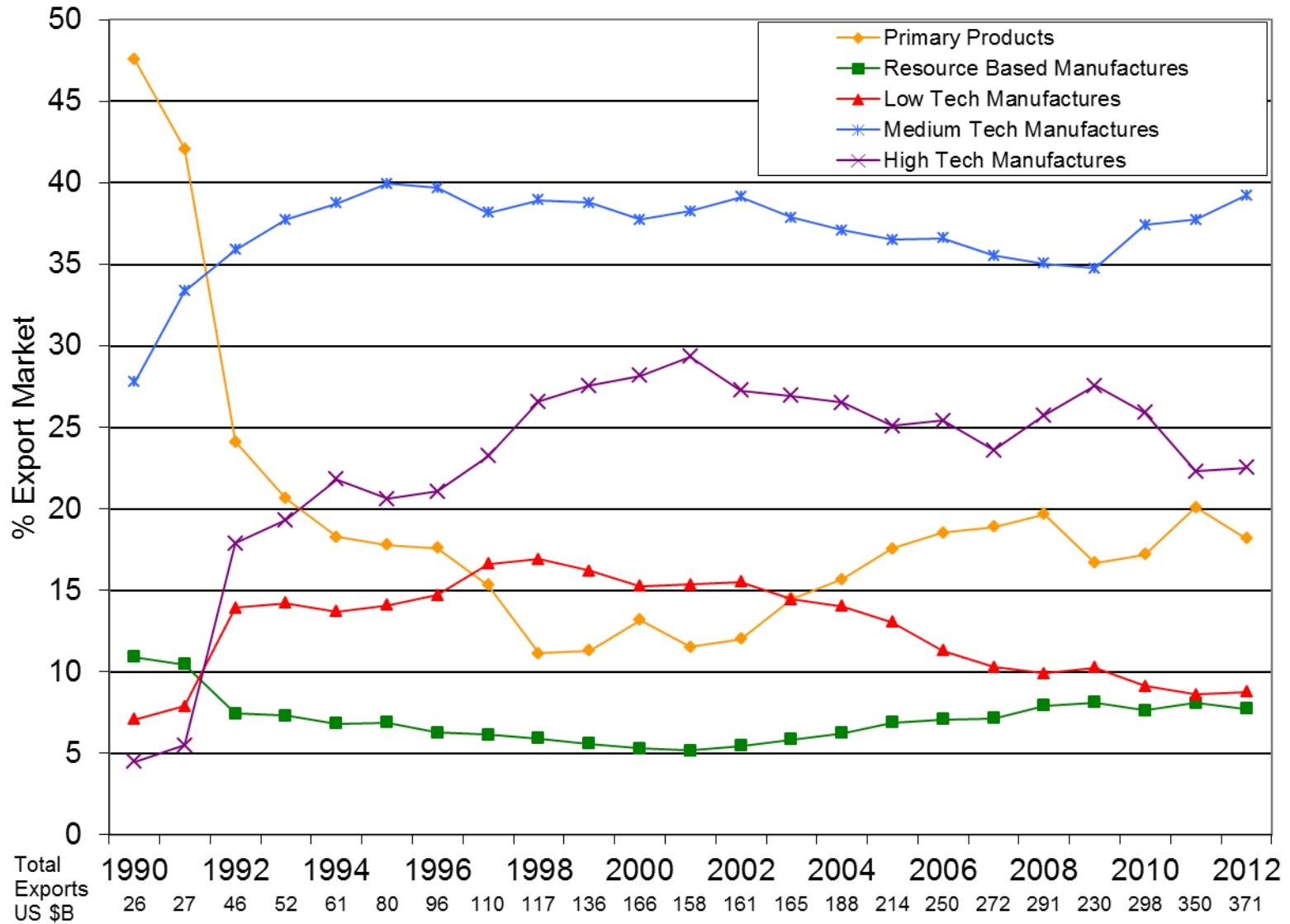


Dynamic Value Added -- “Smile” Curve: The Apparel Global Value Chain



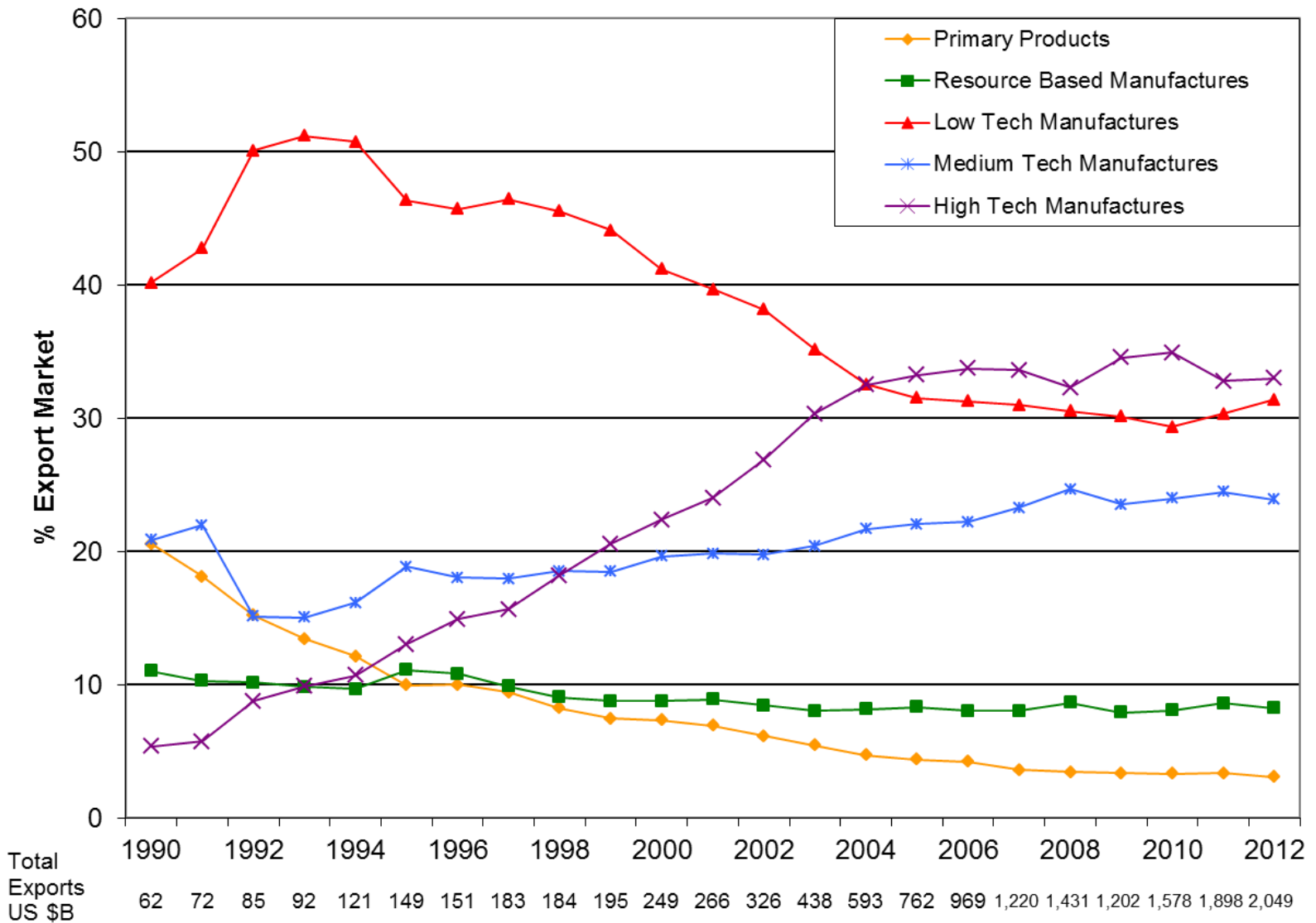
Source: Duke CGGC, “Skills for Upgrading” -- <http://www.cggc.duke.edu/gvc/workforce-development/>

Composition of Mexico's Exports to the World Market, 1990-2012



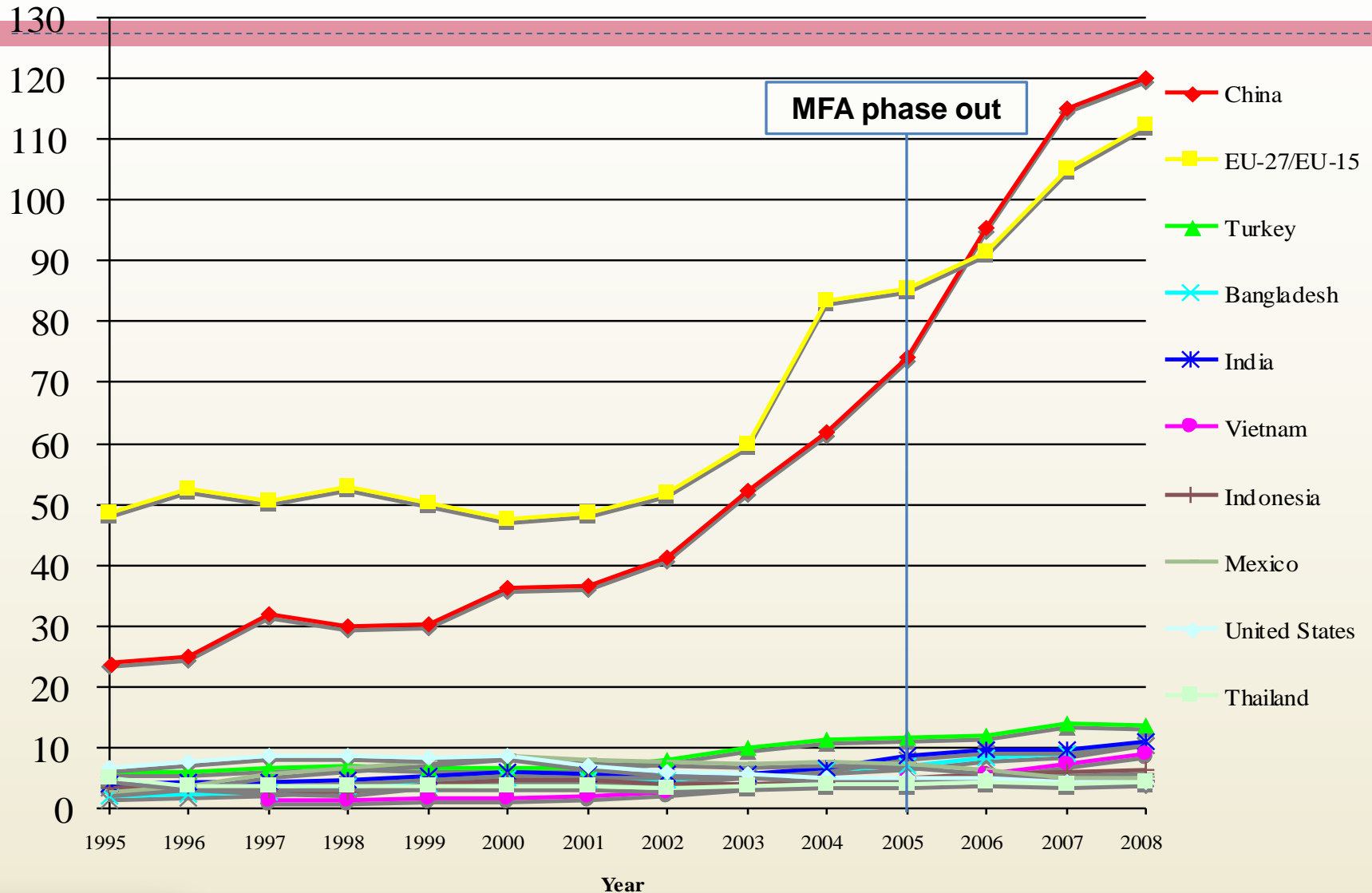
Source: UN Comtrade.

Composition of China's Exports to the World Market, 1990-2012



Source: UN Comtrade.

Shifts in Top 10 Apparel Exporters: 1995-2008



Source: WTO Interactive International Trade Statistics; Top 10 based on 2008 statistics (US\$ billions).

EU values represent EU-15: 1995-2003; EU-27: 2004-08

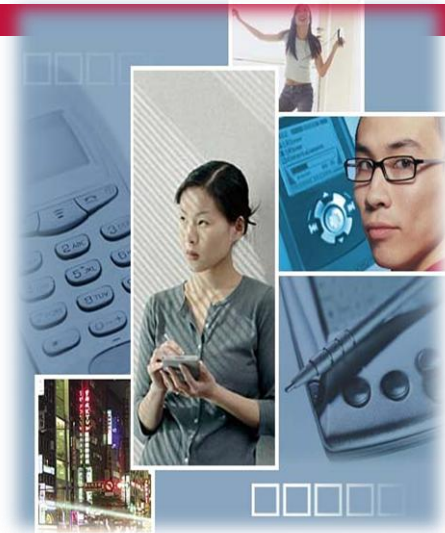
Mexico's and China's Competing Exports to the United States, 2000-2011

Table. Mexico's and China's Competing Exports to the US, 2000-2011							
SITC Product			2000		2011		Change in Market Share 2000-2011
			Value (billions)	Share of US market	Value (billions)	Share of US market	
752	Automatic Data Processing Machines and Units	Mexico	6.4	11.2	13.8	17.0	5.8
		China	6.5	11.4	54.2	66.7	55.4
		US Total	57.1		81.2		
764	Telecommunications Equipments and Parts	Mexico	9.2	20.4	13.0	12.9	-7.5
		China	4.8	10.6	46.2	45.9	35.3
		US Total	45.1		100.6		
778	Electrical Machinery and Apparatus	Mexico	3.2	18.2	5.3	18.0	-0.2
		China	2.1	11.9	10.9	36.9	25.0
		US Total	17.6		29.5		
784	Auto Parts and Accessories	Mexico	4.7	16.1	14.0	27.5	11.4
		China	0.5	1.7	5.9	11.6	9.9
		US Total	29.2		51.0		
821	Furniture	Mexico	3.2	15.5	5.2	14.8	-0.8
		China	5.3	25.7	17.8	50.6	24.8
		US Total	20.6		35.2		
84	Articles of Apparel and Clothing	Mexico	8.8	13.1	4.1	4.6	-8.5
		China	8.9	13.3	34.9	39.4	26.1
		US Total	67.1		88.6		

Source: U.S. Department of Commerce (<http://dataweb.usitc.gov>), Downloaded Feb 13, 2012
U.S. General Imports, CIF Value

Why is China gaining global market share?

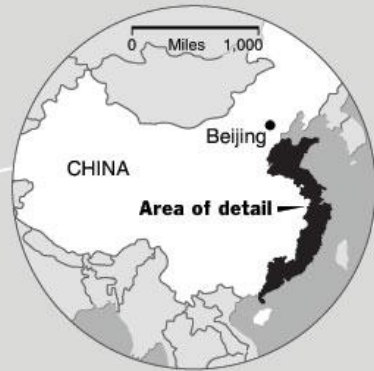
- China is a **lower-cost producer** overall (labor costs lower, but not transport & tariffs)
- China has huge **scale and scope economies** (supply-chain cities)
- China has **a coherent and multidimensional upgrading strategy** – diversify and add high value activities
- China is using **direct foreign 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.



Factory orders, 2003	PRODUCTION	TOTAL SALES	U.S. EXPORTS
MEN'S WEAR <i>Zhucheng</i>	100 MILLION PIECES	\$600 MILLION	\$100 MILLION
CASUAL WEAR <i>Haiyu, Changshu</i>	160 MILLION PIECES	\$260 MILLION	\$ 58 MILLION
DOWN-FILLED PRODUCTS <i>Xintang, Hangzhou, Xiaoshan</i>	26 MILLION PIECES	\$470 MILLION	\$290 MILLION
TIES <i>Shengzhou</i>	300 MILLION PIECES	\$1.21 BILLION	\$384 MILLION
SOCKS <i>Datang, Zhuji</i>	9 billion PAIRS	\$1.57 BILLION	\$240 MILLION
UNDERWEAR <i>Jinjiang, Shenhu</i>	969 million PIECES	\$360 MILLION	\$290 MILLION
WEDDING DRESSES, EVENING GOWNS <i>Chaozhou</i>	510 million PIECES	\$950 MILLION*	\$640 MILLION†
JEANS <i>Xintang, Zengcheng</i>	225 million PIECES	\$1.04 BILLION	\$480 MILLION

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

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

Source: David Barboza, "In roaring China, sweaters are west of socks city," *New York Times*, Dec. 24, 2004.

MNC R&D Centers in China

- ❑ 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**



ORACLE



China Is Climbing the Value Chain

- Moving from low-technology to **high-technology manufactured goods**
- Moving from manufacturing to **high value services**
 - R&D, design, marketing of national brands (autos, appliances, telecom), 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
 - CASE: China and the iPod
- Export dependence has economic growth and employment risks

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

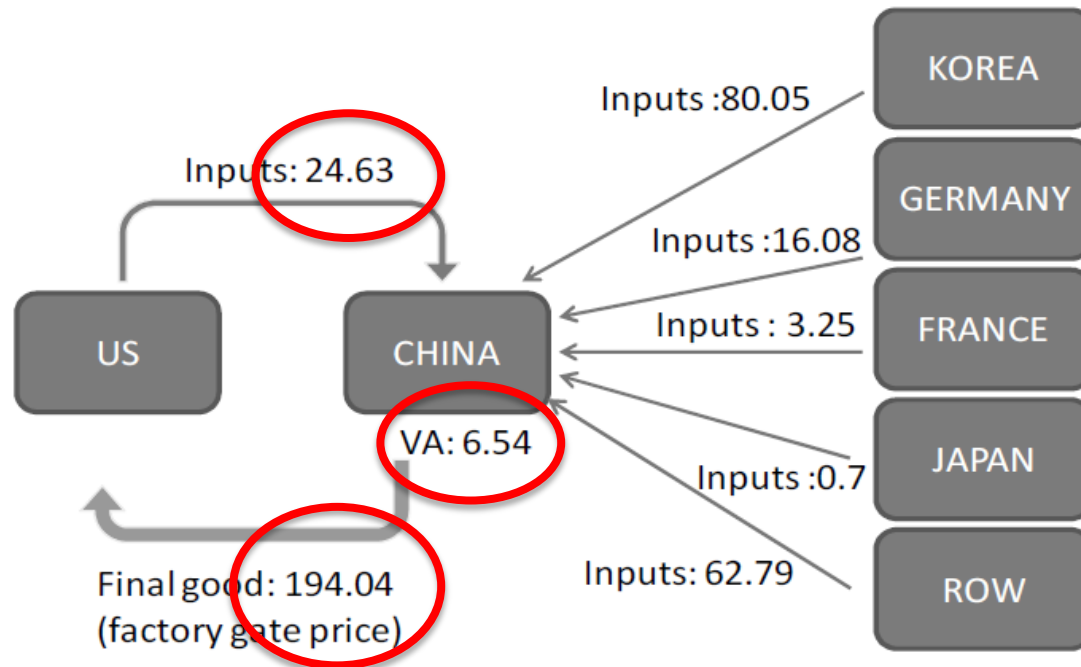
The largest share of the value added in the iPod goes to enterprises in the United States → \$163 of the iPod's \$299 retail value in the United States was captured by American companies and workers, breaking it down to \$75 for distribution and retail costs, \$80 to Apple, and \$8 to various domestic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

The retail value of the 30-gigabyte video iPod that the authors examined was \$299 in June, 2007



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. Bilateral Trade Balance with China for One Unit of iPhone 4 (US\$)



US trade balance with	CHINA	KOREA	GERMANY	FRANCE	JAPAN	ROW	WORLD
Gross	-169.41	0	0	0	0	0	-169.41
Value added	-6.54	-80.05	-16.08	-3.25	-0.7	-62.79	-169.41

Source: OECD ([2011: 40](#))

China's Dual Challenge

- China wants to capture **more value added in manufacturing**
 - Many opportunities in domestic market & South-South trade
- China is trying to shift its growth model from making tangible goods to providing **high value-added services**
 - New option: Shanghai FTZ

Shanghai Pilot Free Trade Zone (FTZ)

- Opening date: Sept. 29, 2013
- Expected year of completion: 2020
- 18 industries granted approval for FTZ liberalization, including:
 - Banking & financial services
 - Customs brokerage
 - Value-added telecom & video games
 - Customer-facing services (health insurance, travel)
 - Employment agencies, construction services, etc.

Global Hubs for International Trade & Finance

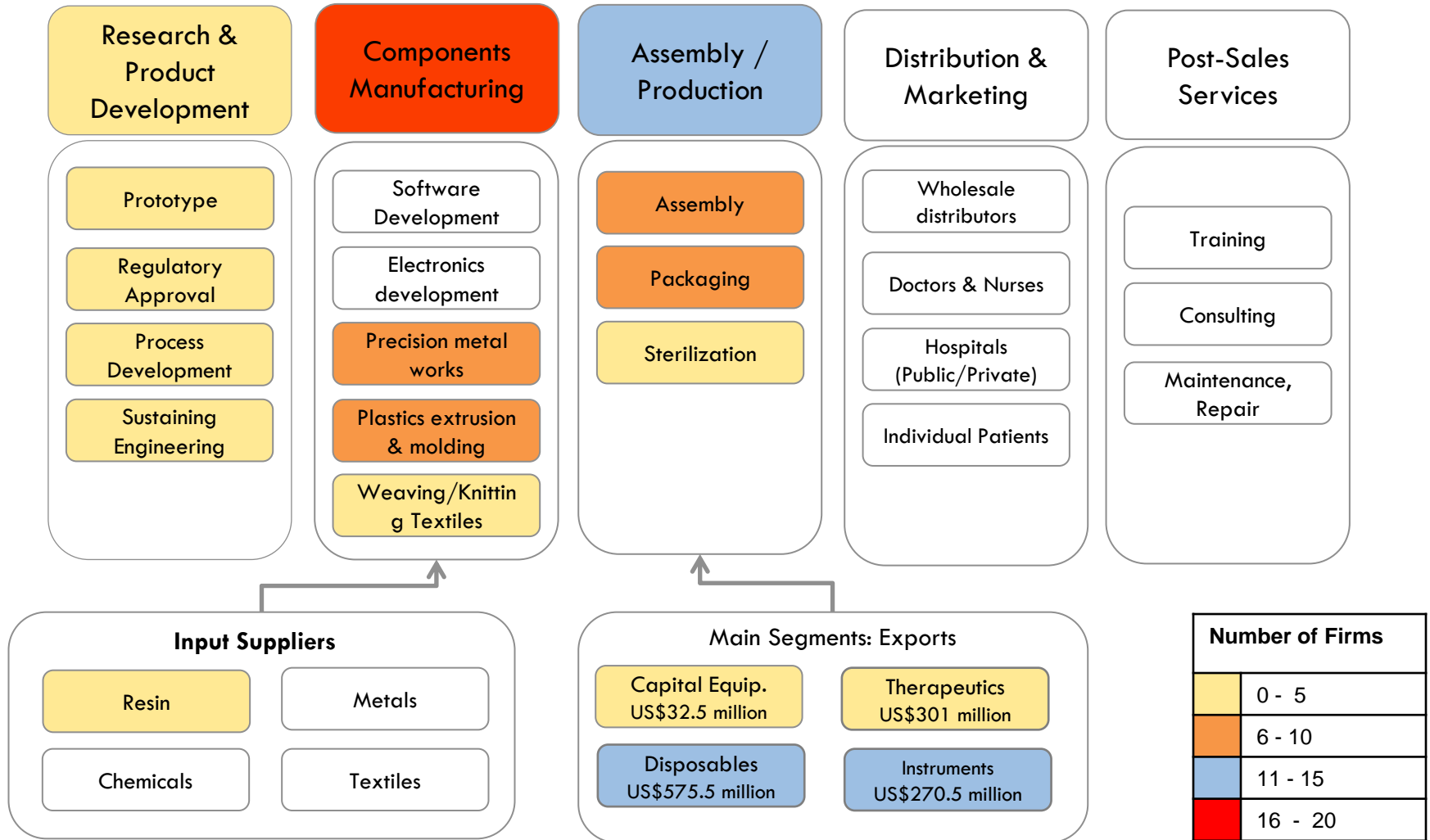
- **Lots of competition:** Hong Kong, Singapore & Tokyo in Asia; New York and London
- **Major reforms in China will be required** to open the banking system
 - E.g., liberalization of RMB; free interest rate; full convertibility of RMB; offshore finance
- **Shanghai FTZ can be an important “pilot”** to facilitate goods and services trade (simpler) as well as deeper financial reforms (more difficult)

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MEDICAL DEVICES GLOBAL VALUE CHAIN

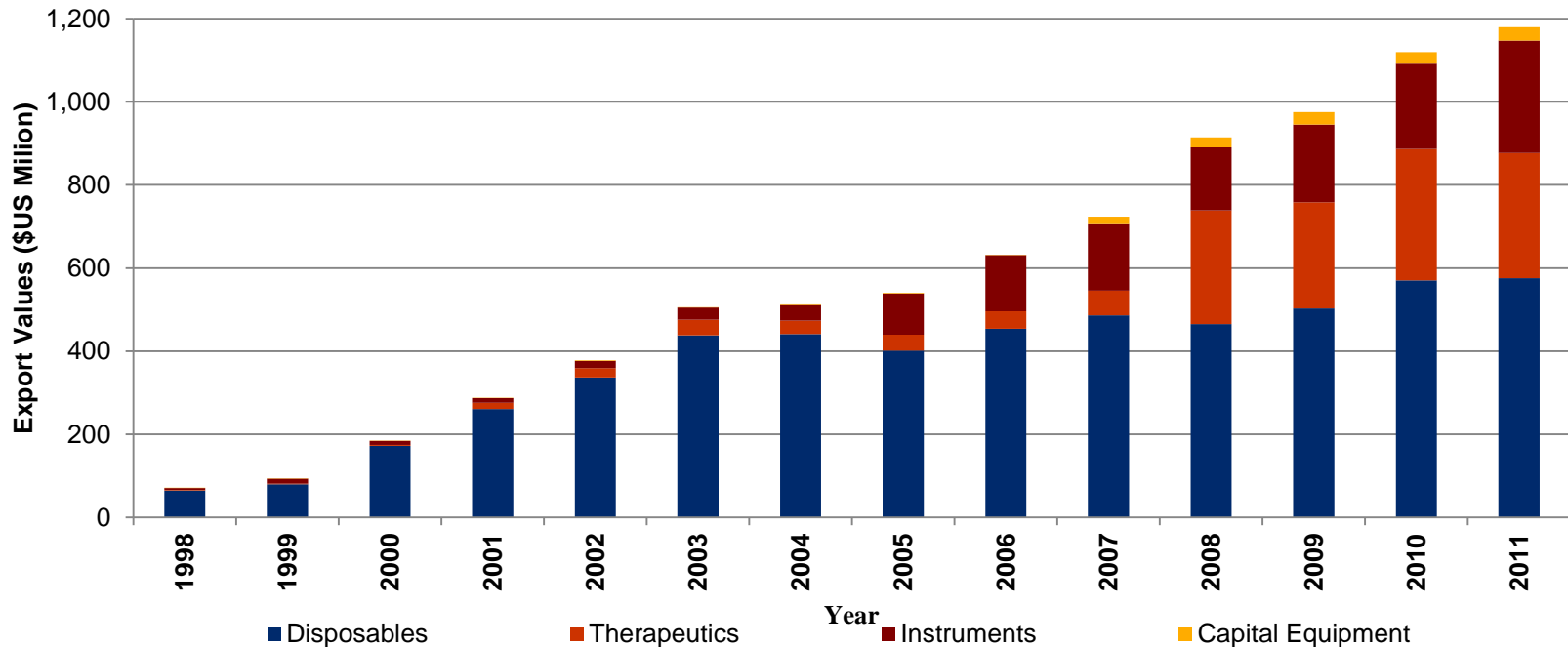
COSTA RICA IN THE MEDICAL DEVICES GVC



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.

EVOLUTION OF COSTA RICAN MEDICAL DEVICE EXPORTS

Costa Rica's Medical Exports by Product Category: 1998-2011

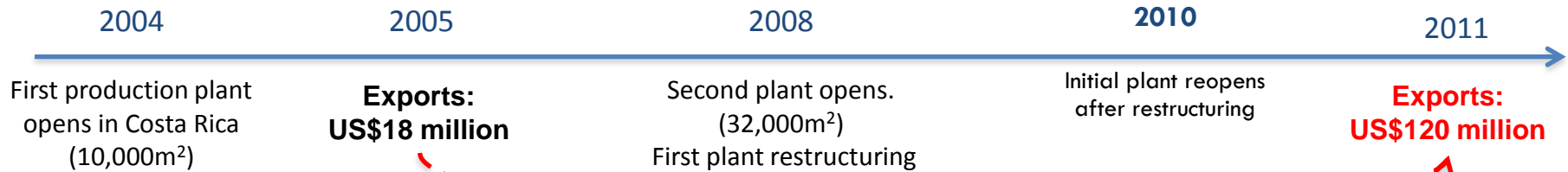


- **Disposables** still the largest product category exported, but no longer a strong growth area.
- Exports in **surgical instruments** have grown steadily since 2005.
- **Therapeutics** has become 2nd largest category since 2008; likely to increase as newly established firms complete transfer of new product lines.
- Limited export of highest value **capital equipment** (eg. Electronic/software devices)

FIRMS IN COSTA RICA MEDICAL DEVICES SECTOR

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

UPGRADING SUCCESS: A LEADING MEDICAL DEVICES MNC IN COSTA RICA



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.
- Guide Wires → Sophisticated Laser cutting & welding.
- Today – CR facilities cover 42 manufacturing processes.

Market Diversification

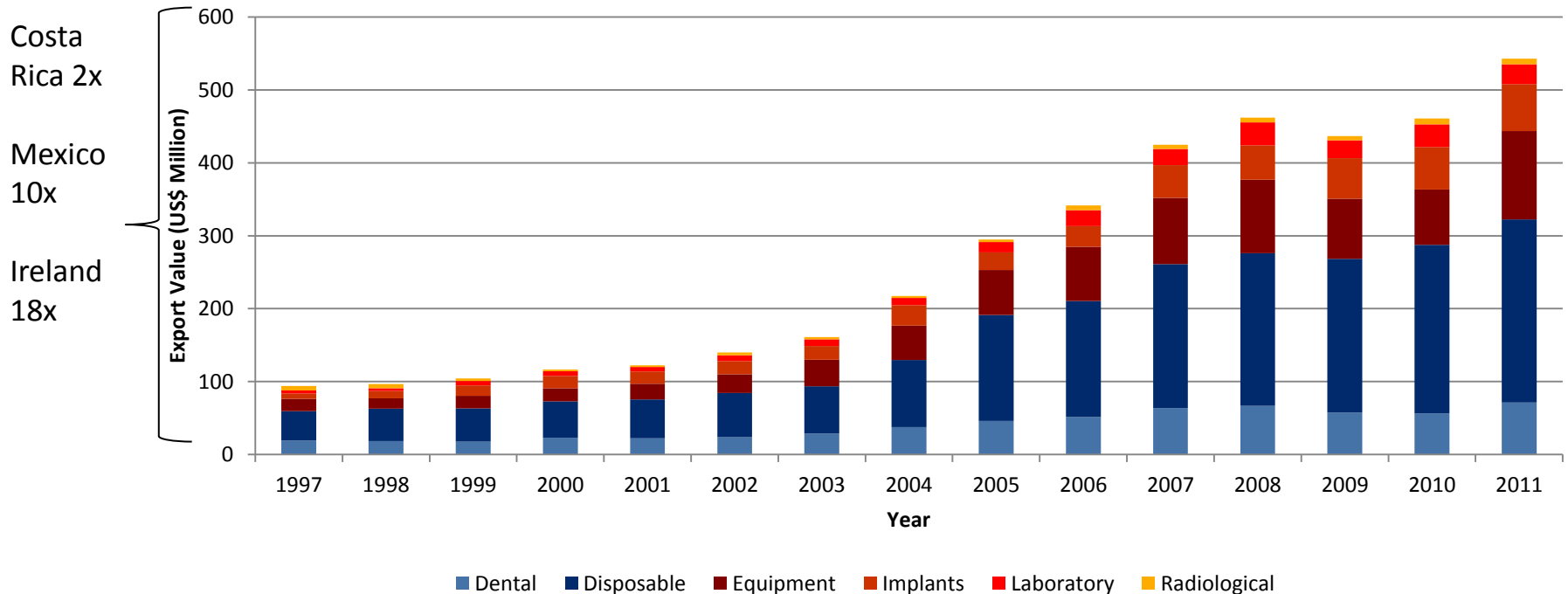
- Gastroenterology segment → Urology → Cardiovascular

Forward Linkages

- Recent co-location of **sterilization** vendors will allow the firm to export directly to global distribution centers

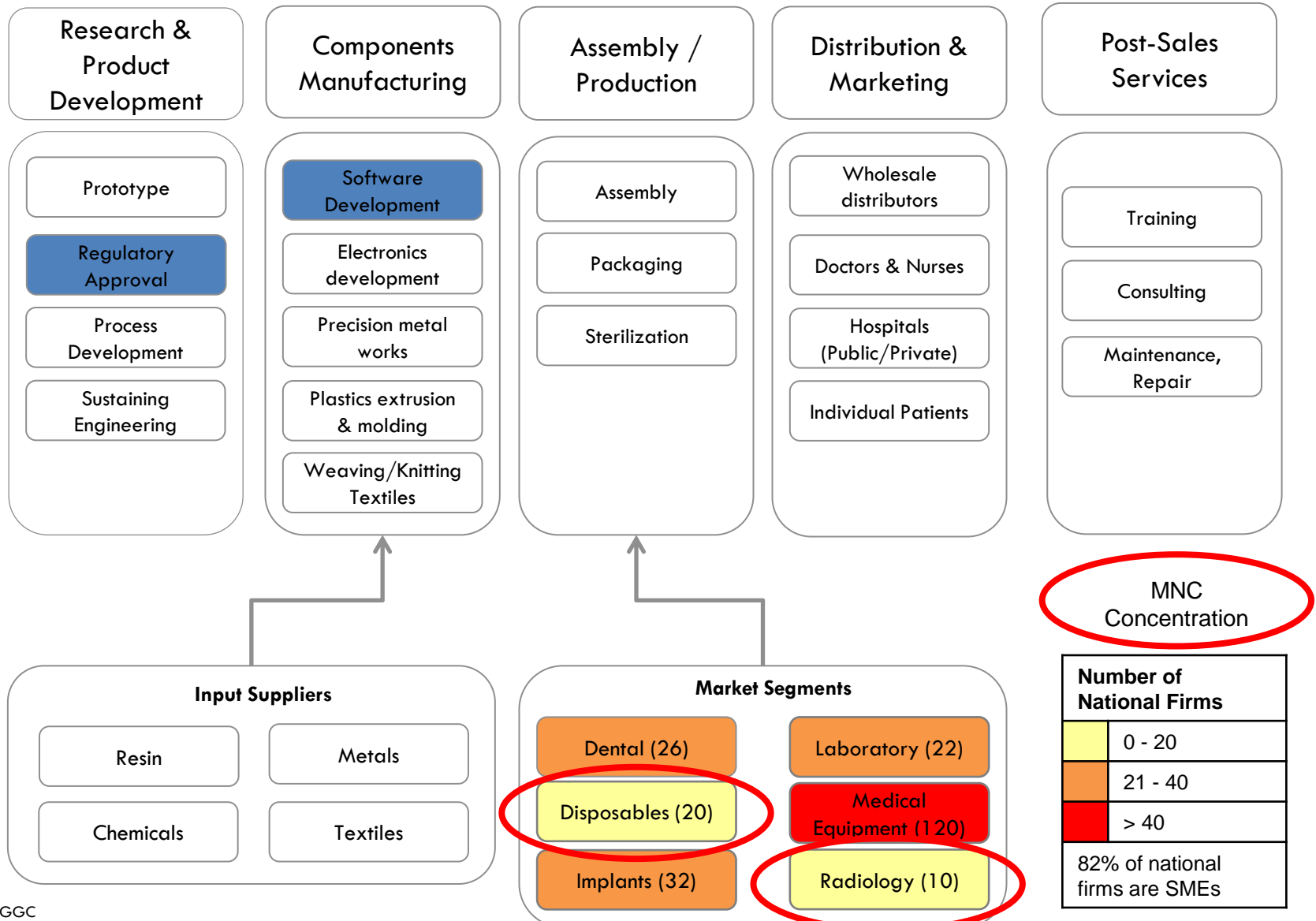
EVOLUTION OF BRAZILIAN MEDICAL DEVICE EXPORTS

Brazil's Medical Device Exports by Product Category, 1997-2011

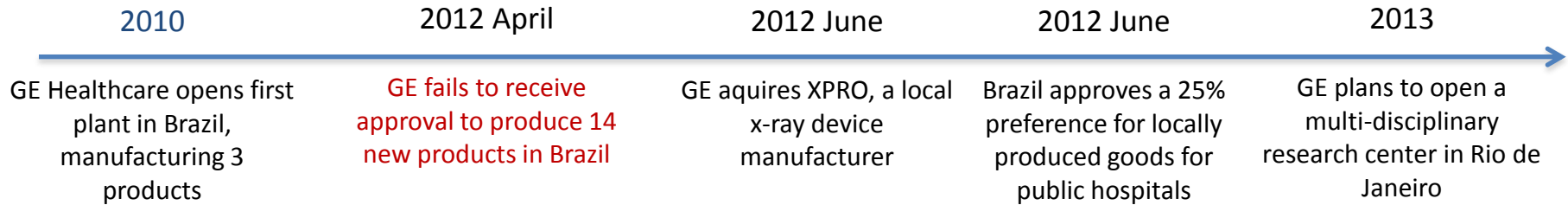


- **Disposables** are both the largest product category exported and an area of growing exports.
- **Medical equipment** surpassed **dental products** as the second largest export category in 2002.
- Export statistics hide the sectors of greatest importance, since the main export items tend to be low-tech. Brazilian government and private sector actors are working to promote price-competitive, mid-tech exports.

Brazil's Position in the Medical Devices GVC



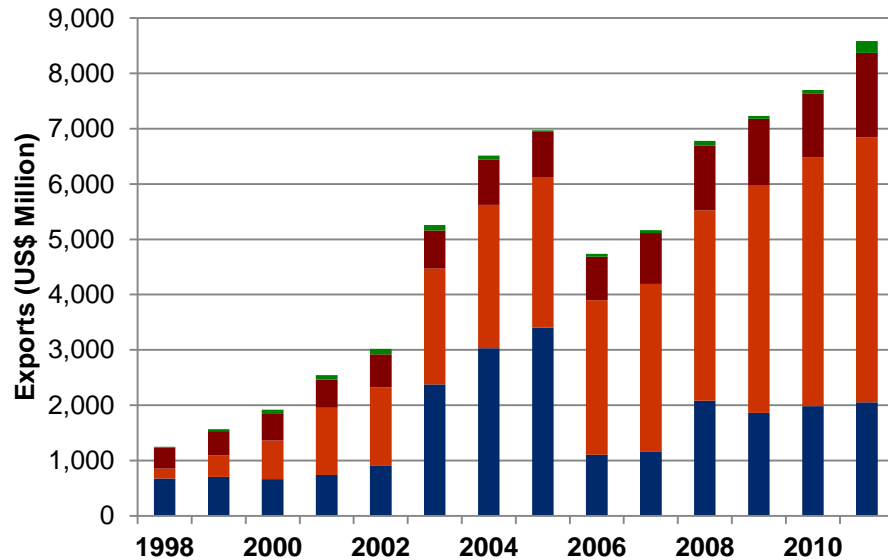
GE Healthcare



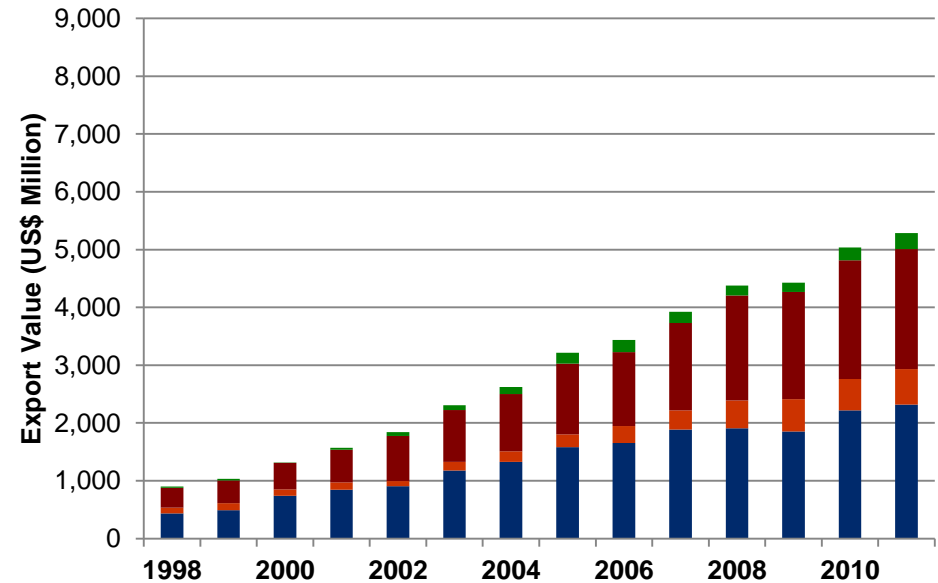
- GE seeks to gain access to Brazil's rapidly growing healthcare market. **Industrial policy tools** create further incentives for local production.
 - The Brazilian informatics law creates offers **tax incentives for local production and R&D** on medical devices and other electronics.
 - The Dilma administration recently approved of a **25% preference** for the national healthcare system **to purchase locally manufactured medical devices** (Law 12349, Decree 7767).
 - Certification by ANVISA, the regulatory arm of the Ministry of Health, is required to distribute medical devices in Brazil. **ANVISA certification is very difficult and time-consuming** (1 year on average), so MNCs frequently find it easiest to acquire local companies.
- GE is pushing for relaxed ANVISA requirements, but through its control of **the largest public healthcare system in the world**, the Brazilian government is in a strong bargaining position.

IRELAND AND MEXICO: MEDICAL DEVICE EXPORTS 1998-2011

IRELAND



MEXICO



- Most mature of the three locations
- 2005 shock forced upgrading strategy
- Significant growth in **therapeutics** & entry into **capital equipment** production

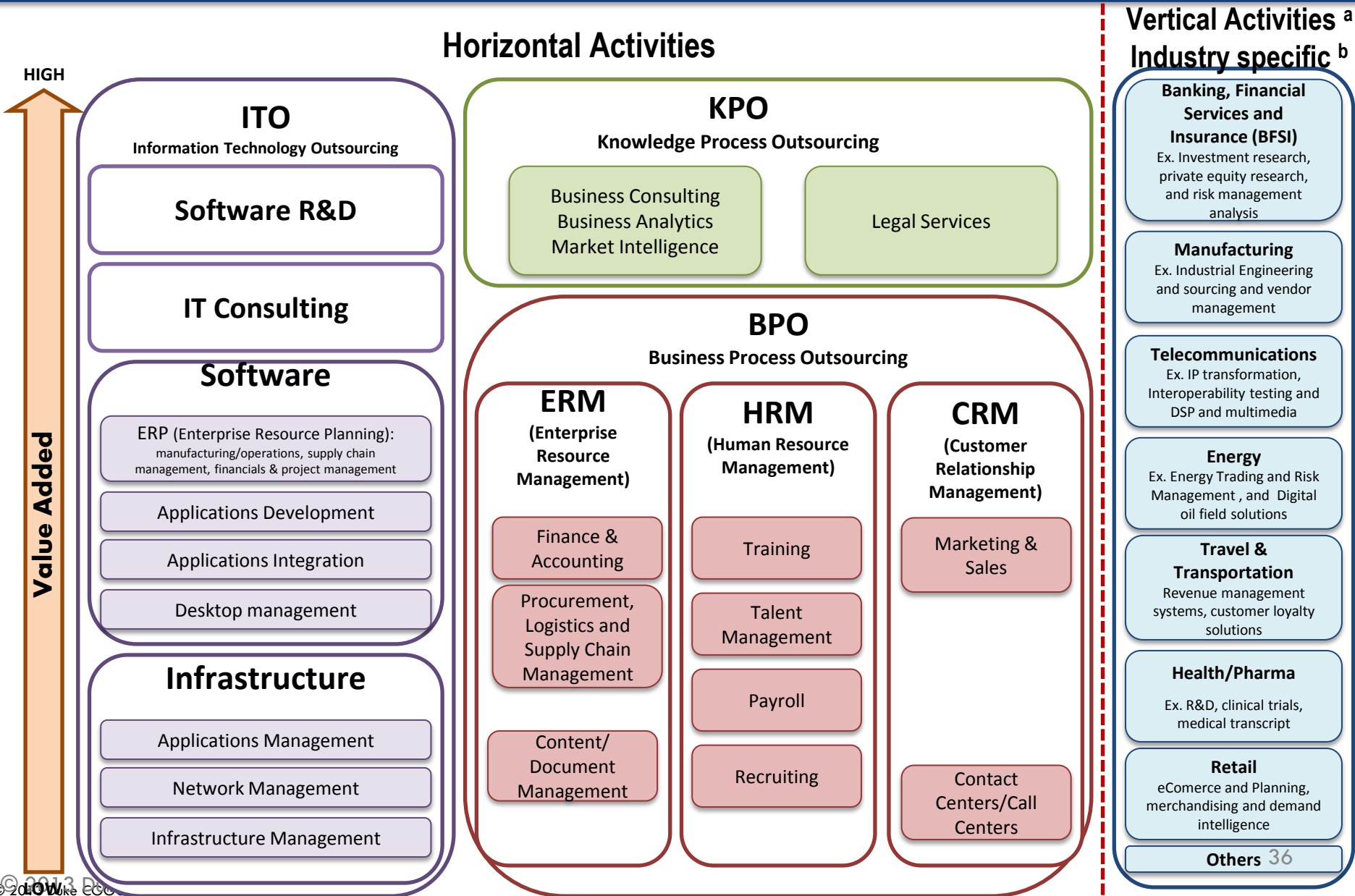
- Stabilizing **disposables** exports
- Strong focus in **instruments**
- Growing gains in **capital equipment** → participation in electronics value chains

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OFFSHORE SERVICES GLOBAL VALUE CHAIN

OFFSHORE SERVICES GLOBAL VALUE CHAIN



LEAD OFFSHORE SERVICES COMPANIES IN COSTA RICA

General Business Activities

Industry Specific Activities

Value Added

ITO



Broad Spectrum
(ITO, BPO & KPO)



KPO



BPO



Back Office

Call Centers IT

Call & Contact Centers



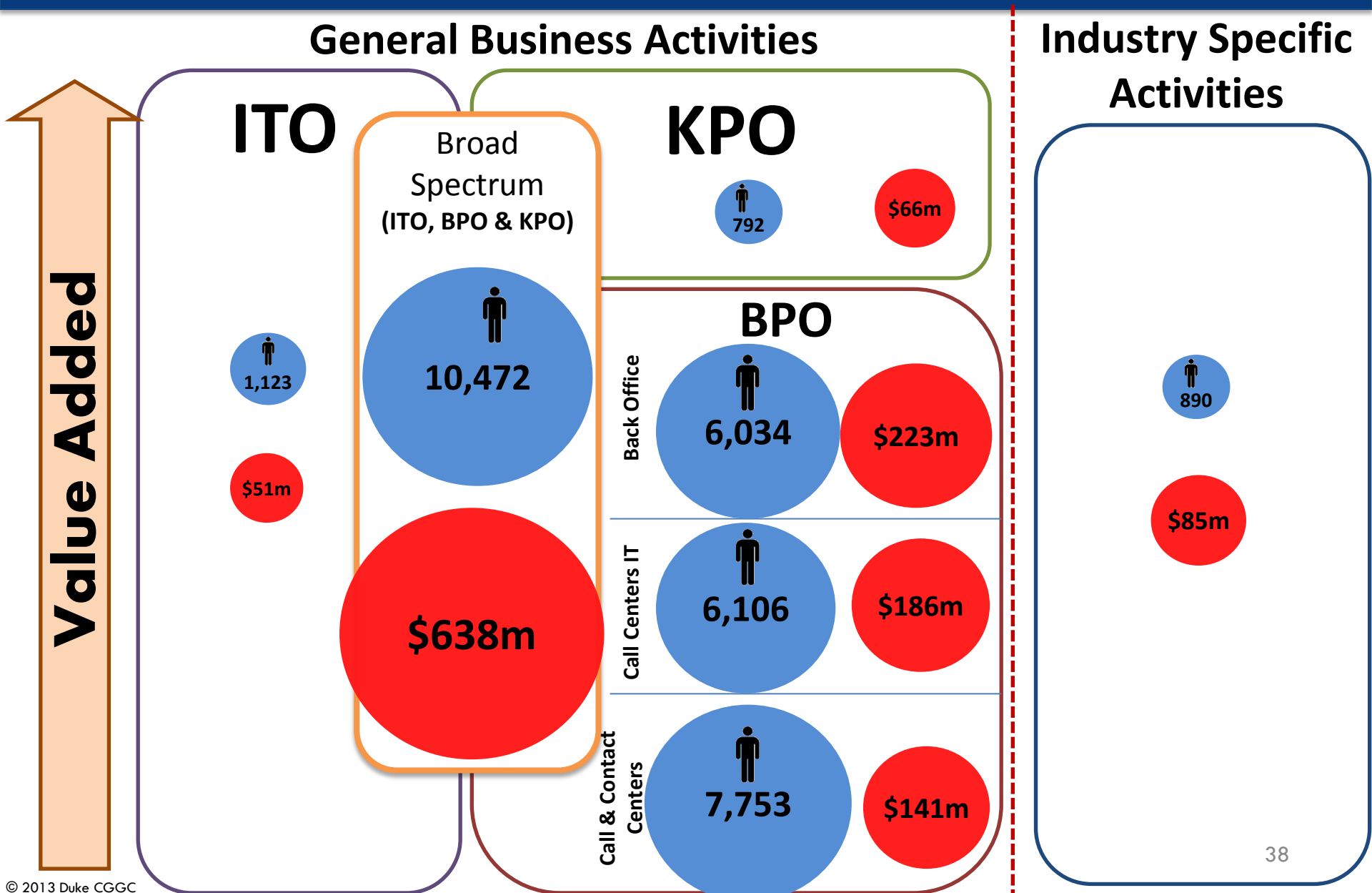
ALIGN
ALIGN TECHNOLOGY, INC.



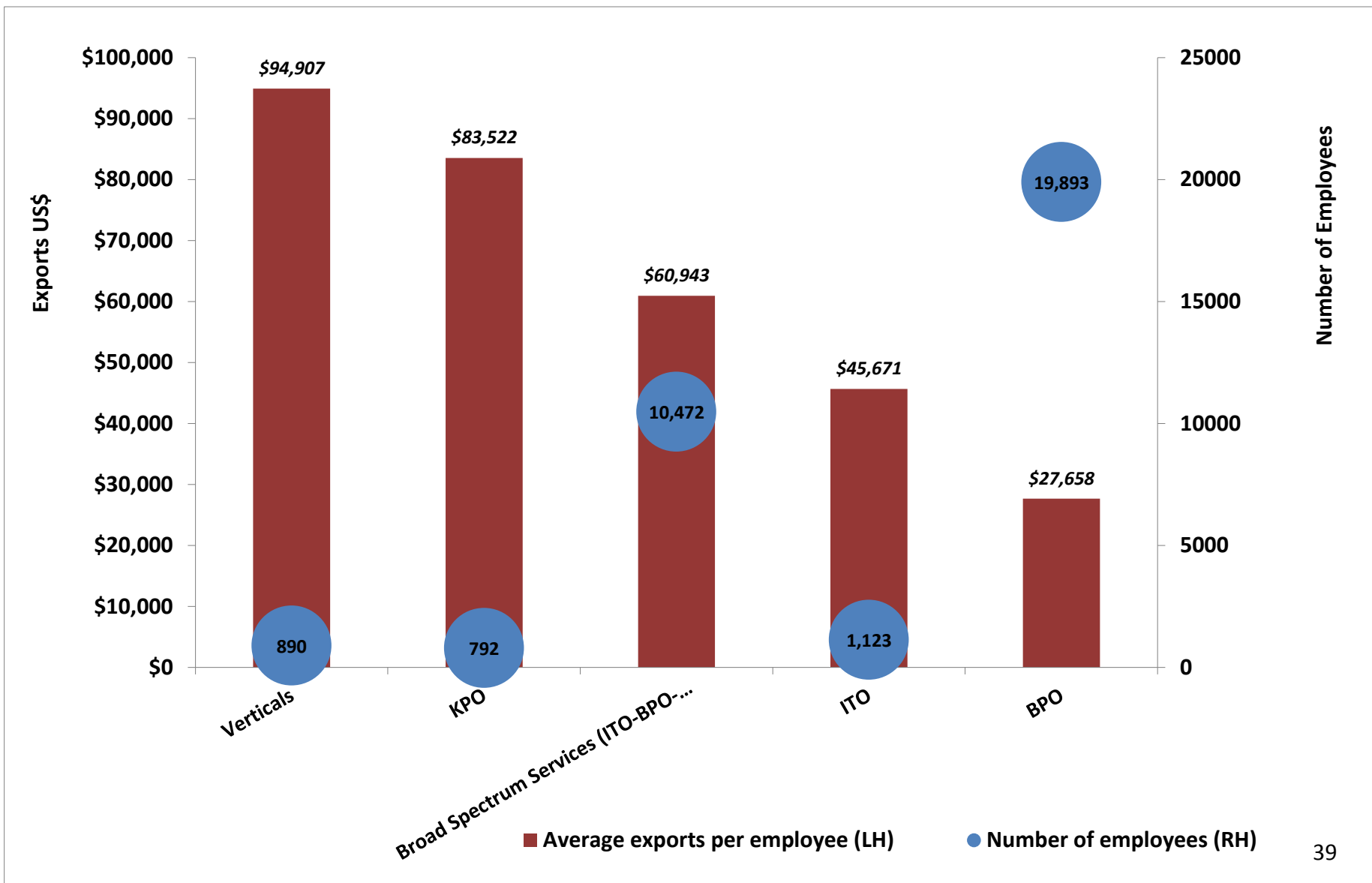
Gensler



COSTA RICA IN THE OFFSHORE SERVICES GVC, 2011



COSTA RICA: AVERAGE EXPORTS PER EMPLOYEE BY VALUE CHAIN SEGMENT, 2011



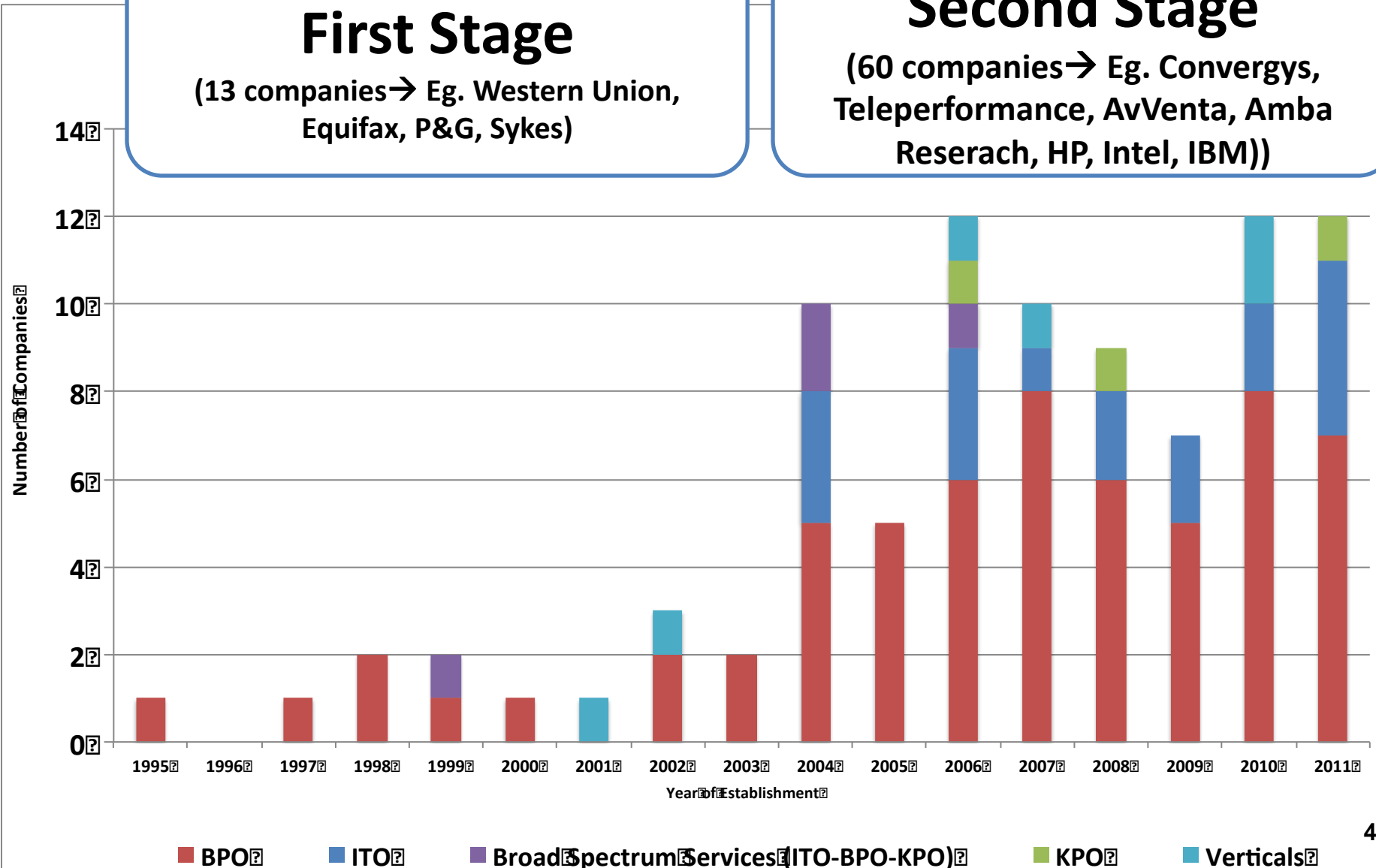
FIRMS IN COSTA RICA'S OFFSHORE SERVICES SECTOR

First Stage

(13 companies → Eg. Western Union, Equifax, P&G, Sykes)

Second Stage

(60 companies → Eg. Convergys, Teleperformance, AvVenta, Amba Reserach, HP, Intel, IBM))



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NORTH CAROLINA IN THE GLOBAL ECONOMY

North Carolina

IN THE GLOBAL ECONOMY



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.

Banks & Finance

Biotechnology

Information Technology

Furniture

Textiles & Apparel

Tobacco

Hog Farming



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Value Chains

Users now have the ability to interact with the value chains.
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Google Maps

Users can now see an interactive google map of company locations for each industry.
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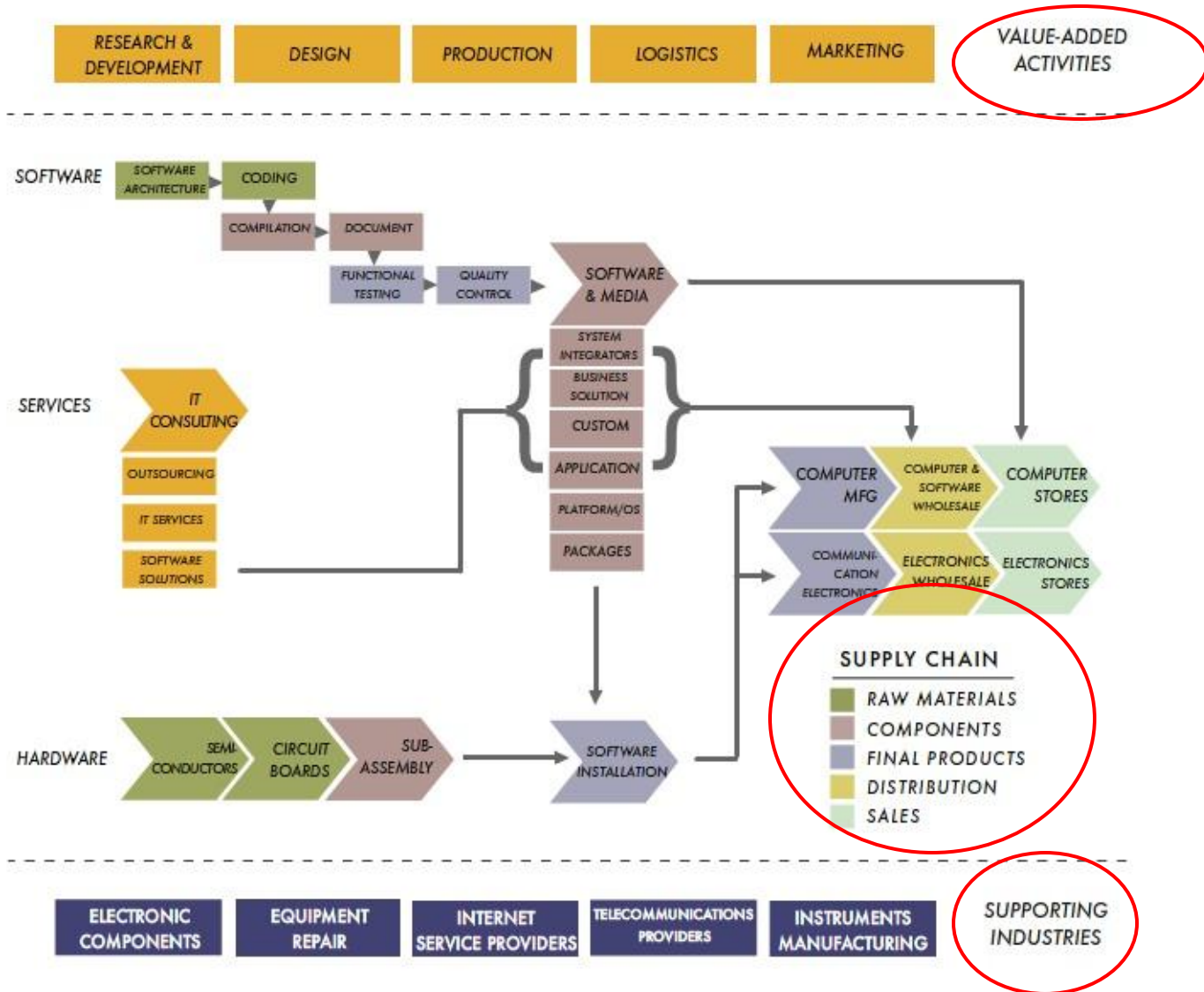
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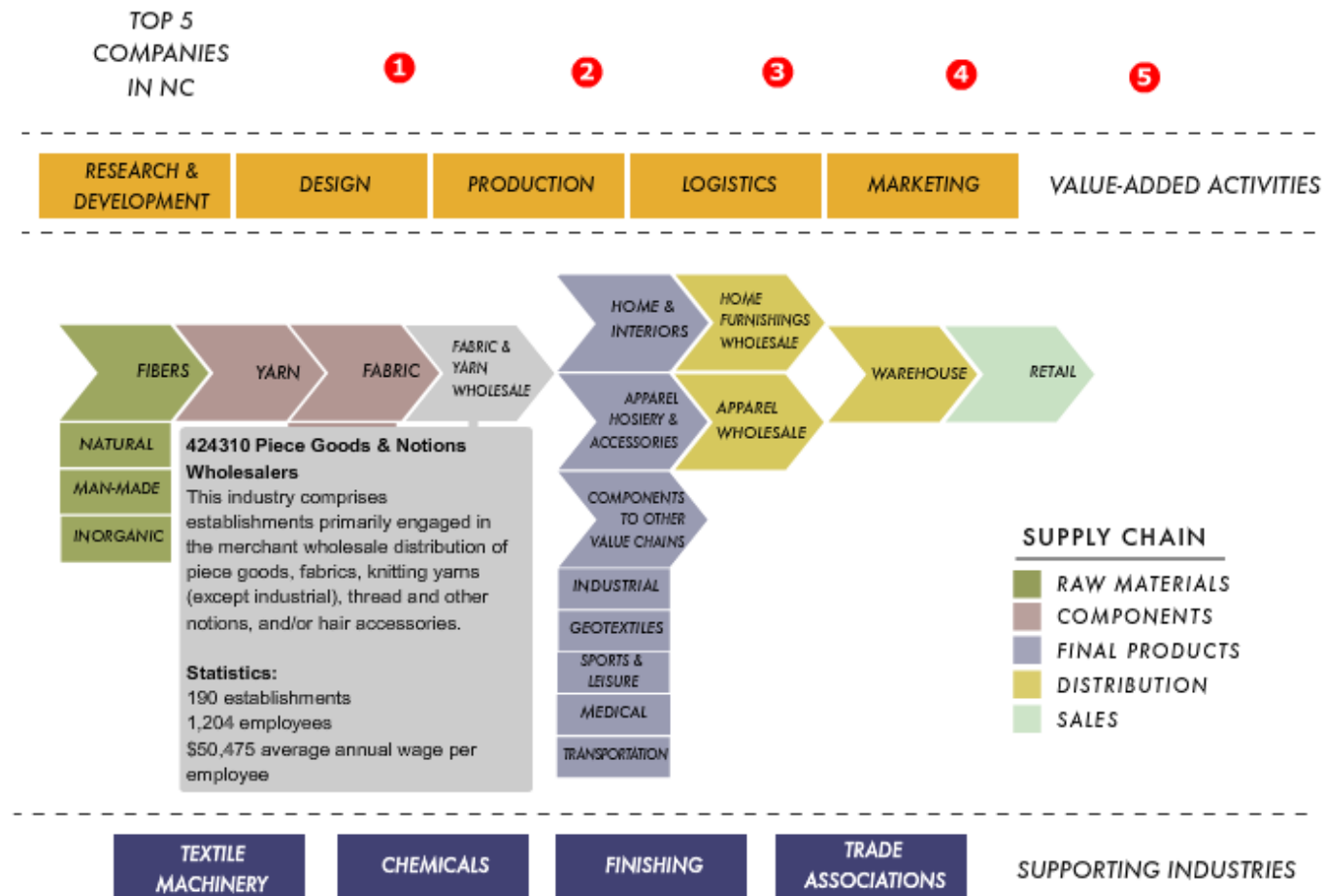


What is a value chain?



Textiles & Apparel: Value Chain with Supporting Industries

The Textile Value Chain



Data Sources



Types of Data

- General Employment Levels
- Export \$ and Top Destinations
- Top Employers of an Industry
- Value-Chain linkages of Activities

Data Analysis

- Inter-state Comparisons of Data
- Change over time
- Data Overlay onto Maps for inter-county comparisons

Bureau of Labor Statistics

National database with employment information by NAICS code. Data also available on a county-level. This will allow inter-state comparisons

<http://www.bls.gov>

TradeStats Express

National data on US imports, exports, and trade balances. State-level data on merchandise exports by NAICS code.

<http://tse.export.gov>

Selectory, Hoovers, OneSource

Company level information about employees and sales. Can be used to get an idea of a company's footprint in a state.

www.selectory.com
www.hoovers.com
www.onesource.com

Trends in Employment Across Industries

INDUSTRY (NAICS)	NUMBER OF PEOPLE EMPLOYED (1996-2006)		
	1996	2001	2006
TEXTILES AND APPAREL (313)	140,703	92,706	49,110
FURNITURE (3371)	63,355	59,576	42,612
BANKS AND FINANCE (523)	7,114	11,256	15,267

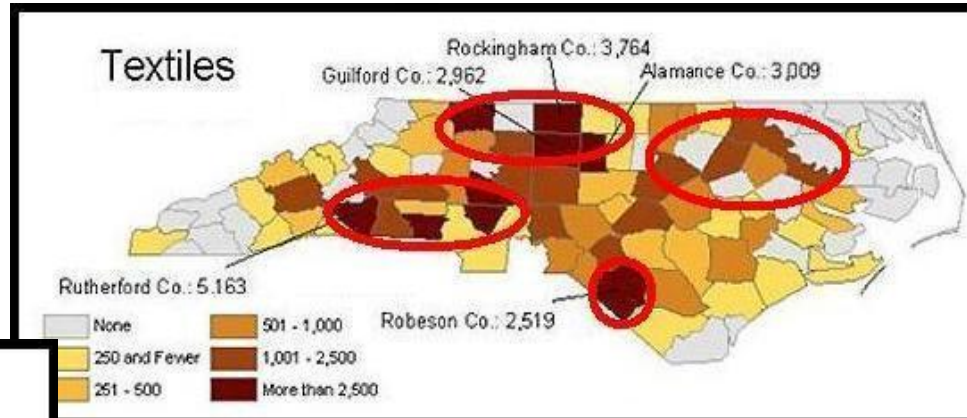
- Employment over the past ten years in industries such as textiles and apparel has decreased by 65%
- Furniture industries have seen decreases in employment by almost 33%
- Banks and Finance industries, meanwhile, have increased employment by nearly 115%

Source: Employment Security Commission of North Carolina <https://www.ncesc.com/default.aspx>

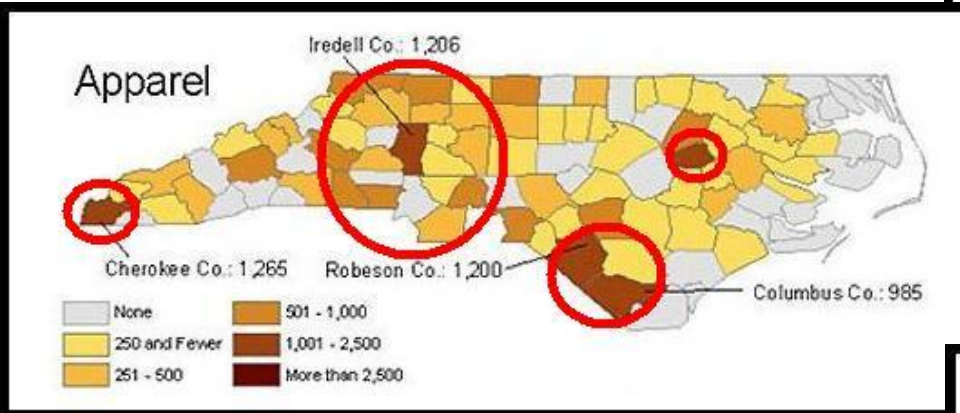
Job Losses by Industry and County

Maps 1d-1f: Job Losses by Industry and County (2006)

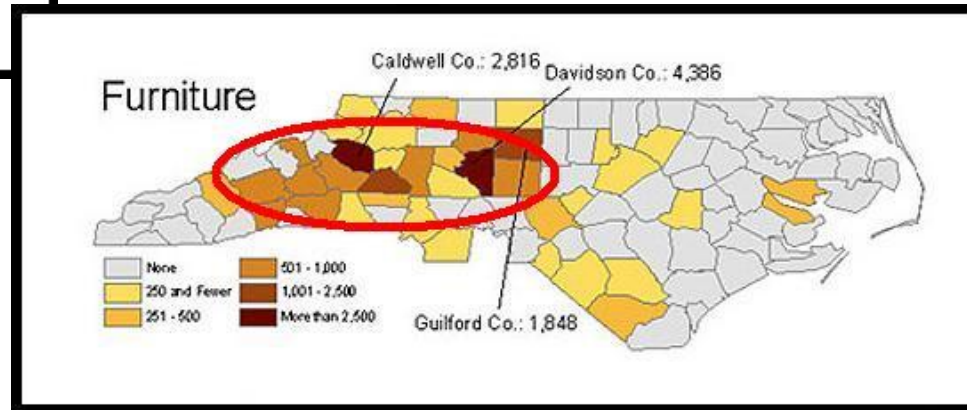
- Textile job losses have been seen most in the Piedmont Triad Region, the northern/western Charlotte metro, eastern NC, and Robeson County (Southeastern NC).



- Apparel job losses have been seen most in Charlotte/Piedmont Triad corridor, Southeastern NC, and in Cherokee and Wilson counties.



- Furniture job losses have been seen most along the Greensboro-Asheville corridor (I-40).



Mapping the Supply Chain

Google maps Search Maps [Show search options](#)
Find businesses, addresses and places of interest.

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textiles_tb1.kml
 [Table 1 - North Carolina's Top 50 Textile & Apparel](#)
[Employers, 2007](#)
 [components](#)
 [finishing](#)
 [final products](#)

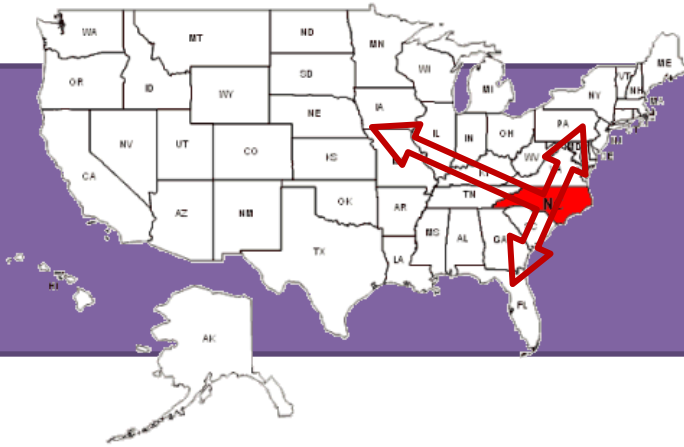
- [Mortex Apparel](#)
Company_Name = Mortex ApparelSubsidiaries
- [Ronile, Inc.](#)
Company_Name = Ronile, Inc.Subsidiaries =
- [Mc Creary Modern Inc](#)
Company_Name = Mc Creary Modern
- [Collins & Aikman Corp.](#)
Company_Name = Collins & Aikman
- [Phantom USA Inc](#)
Company_Name = Phantom USA
- [Cluett American Corp.](#)
Company_Name = Cluett American

Dak Americas LLC
Company_Name = Dak Americas LLC
Subsidiaries = 0
LATITUDE = 34.255
LONGITUDE = -78.0516
Primary_NAIC_code = 313113
Plants = 1
NC_Employment = 700
Total_Sales = 300
[Search nearby](#) - [Zoom here](#) - [Save to My Maps](#)

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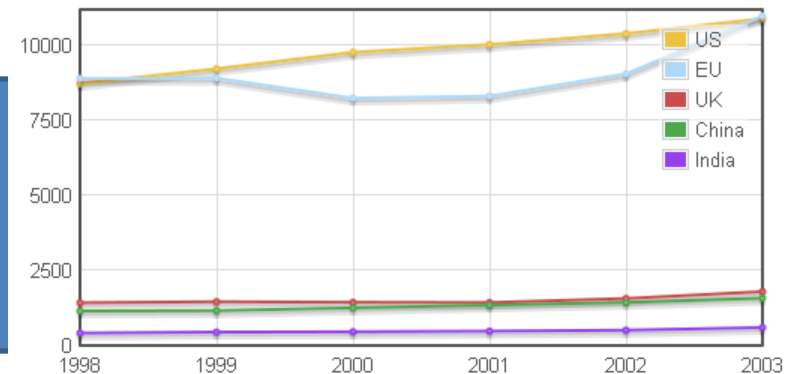
Thursday, February 04, 2010

NCGE: Upcoming Enhancements



Create a platform for conducting similar analyses for other states or in a comparative manner by automating and standardizing data collection

Enable interactive data access / manipulation for customizable research and a more in-depth understanding



GDP, based on exchange rates, over time. Values in billion USDs.



Reorganize presentation of website to cater to users and prompt them for feedback to drive improvement

Thank you!
QUESTIONS?



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