

China & India in the Global IT Industry

Jason Dedrick
Personal Computing Industry Center
University of California, Irvine

Based on research by Jason Dedrick and Kenneth L. Kraemer,
supported by the Alfred P. Sloan Foundation and the National
Science Foundation.

Agenda

- Market opportunities in China and India
- China's computer challenge
- India's software challenge
- Implications for U.S. firms and workers
- Policy issues

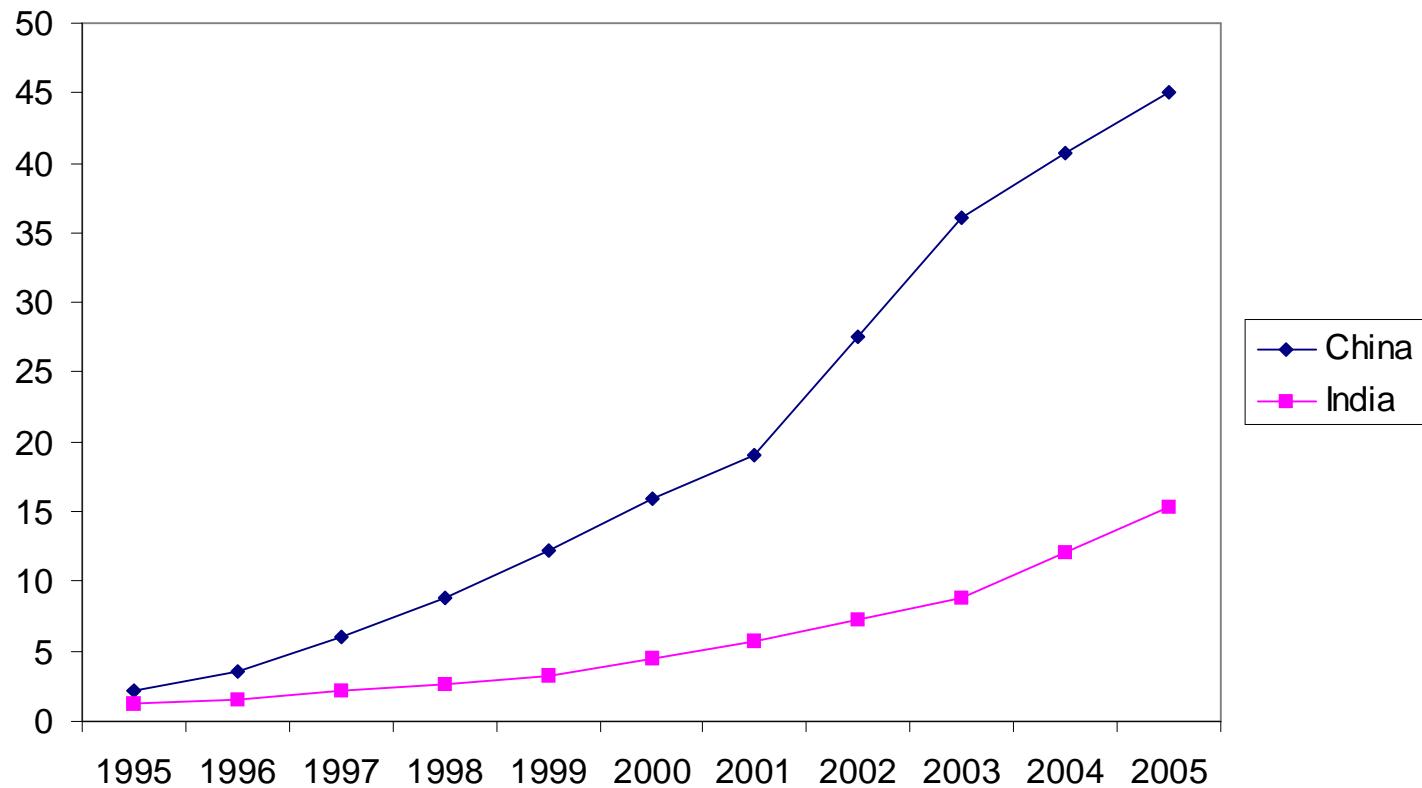
Emerging Market Opportunities

	China	India
Installed PC base, 2005	54 million	15 million
PC shipments in 2006	28 million	7.5 million
Domestic software market	\$3.9 billion	\$1.4 billion
Domestic IT services mkt.	\$6.2 billion	\$3.7 billion
Cell phones in use, 2006	415 million	150 million
Cell phone shipments 2006	130 million	75 million*

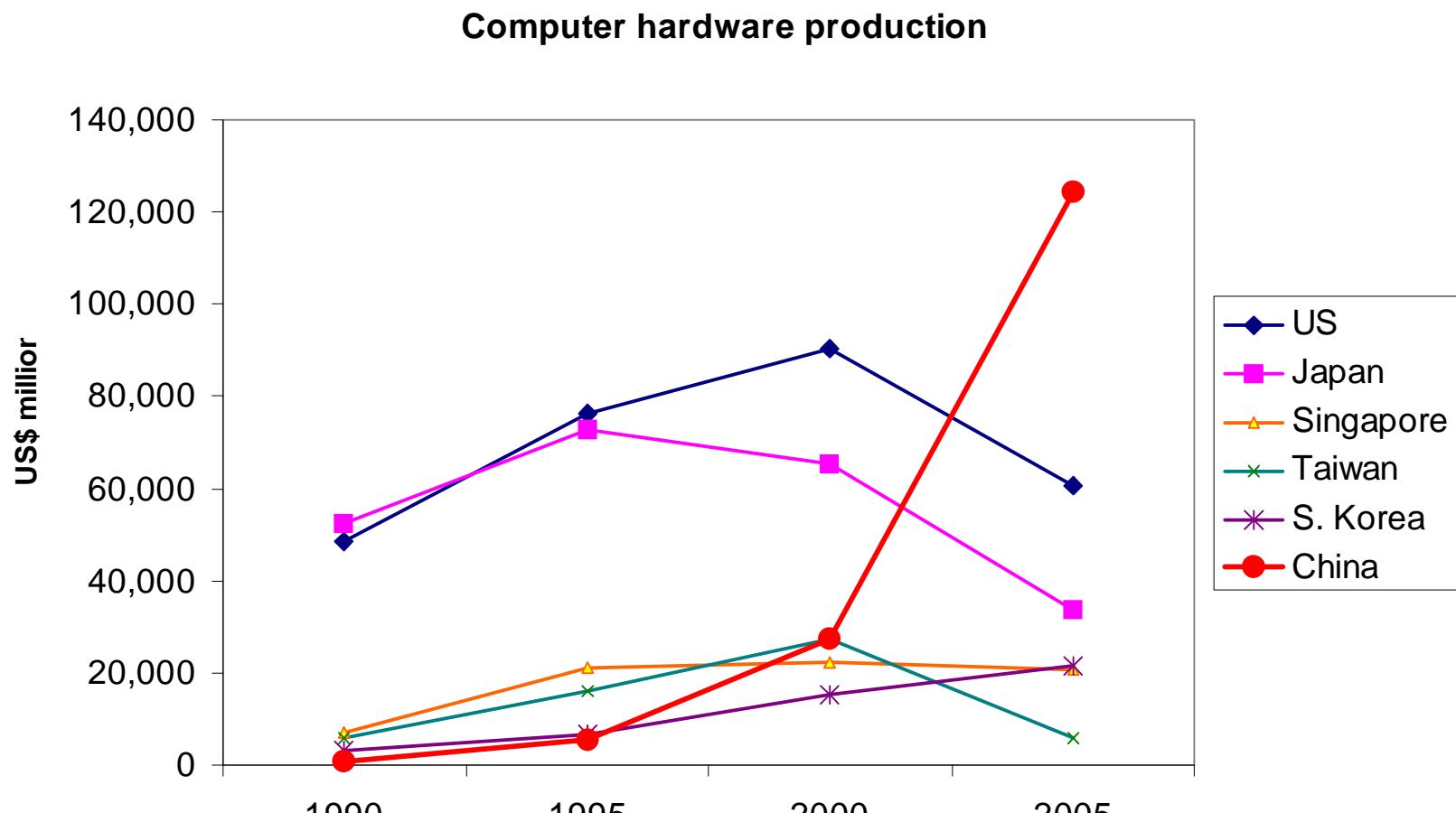
* number of new subscribers

Market growth in China and India

PCs per 1000 population



China's Computer Challenge



China as export platform

- Driven by foreign and Taiwanese investment.
 - Taiwanese firms make 80% of world's notebook PCs in China. Also iPods, handsets, game consoles, motherboards, keyboards...
 - MNCs (e.g. Motorola, Dell, Toshiba, Flextronics) also manufacture in China
- Extensive supply base, good infrastructure in coastal regions
- Government incentives attracted investment

China as domestic and global competitor

- Domestic firms dominate local PC market

PC Market share in 2006

– Lenovo	36%	-Dell	9%
– Founder	13%	-HP	8%

- Domestic market as platform for going global
 - Lenovo: PCs
 - Huawei: network equipment
 - Haier: appliances, electronic

Current trends

- Government policy
 - Remove incentives for low-cost assembly
 - Promote global brands
 - Develop domestic technologies and standards
- Rising labor costs, currency revaluation, environmental problems
- Some production shifting to other parts of China, and to Vietnam

India's software challenge

	Exports (FY 2006-2007)	Employment (2007)
IT services, software	\$23 billion	706,000*
ITES-BPO**	\$6.3 billion	553,000

* Includes R&D and engineering services

**IT-enabled services-business process outsourcing

Source: NASSCOM

68% of exports go to the U.S.

India as offshore partner

- Offshoring to India has benefited users
 - Lowers IT costs (if managed well)
 - Allows U.S. firms to concentrate on new business applications.
- IT companies moving to India.
 - IBM: 58,000 in India
 - EDS: 22,000
 - Accenture: 30,000
 - Oracle: 21,000

India as global competitor

- Indian firms gaining scale and scope.
 - TCS: \$3.1 billion revenues
 - Wipro: \$3.4 billion
 - Infosys: \$3.1 billion
- Moving up to higher value knowledge work
 - Taking over entire projects
 - Gaining skill and experience
- Global ambitions

“Indian firms need to recognize...the importance of innovation for maintaining their competitive edge and fuelling further growth to challenge global players.”

Kiran Karnik, President, NASSCOM

Implications for U.S. IT Industry

- Are U.S. firms nurturing future competitors?
 - Most are careful about protecting IP
 - China and India lack marketing skills
- Are U.S. firms losing vital capabilities?
 - Losing manufacturing and process engineering
 - Focus on marketing, design, integration, and managing global innovation networks
 - Virtual company or hollow shell?

Implications for U.S. workers

- Will jobs continue to be created in the U.S.?
 - Manufacturing jobs declining
 - Knowledge work stable overall, but shifting to new sectors, technologies
- What skills do U.S. knowledge workers need?
 - Project/program management
 - Cross-technology skills, e.g., hardware, software, communications
 - Business and industry knowledge
 - Cross-cultural management

U.S. policy issues

- Promote technology use
 - Technology leadership and jobs depend on U.S. remaining a dynamic market.
 - Some shift of R&D to big emerging markets inevitable
- Ensure market access
 - China's techno-nationalism hurts U.S. companies and is likely counterproductive to China.
 - India's liberalization needs to be reinforced.
- Need for flexible labor force
 - Continuous training
 - Portable benefits