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The Emerging Chinese Advanced Technology Superstate

by

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“It is true India has the advantage in software and China in hardware. If India and China cooperate in the IT (ie, information technology) industry, we will be able to lead the world...and it will signify the coming of the Asian century of the IT industry.”

Chinese Prime Minister Wen Jiabao during a visit to India, April 11, 2005

“China will be the IT (ie, Information Technology) Center of the World.”

**John Chamber, CEO, CISCO
Beijing, September 23, 2004**

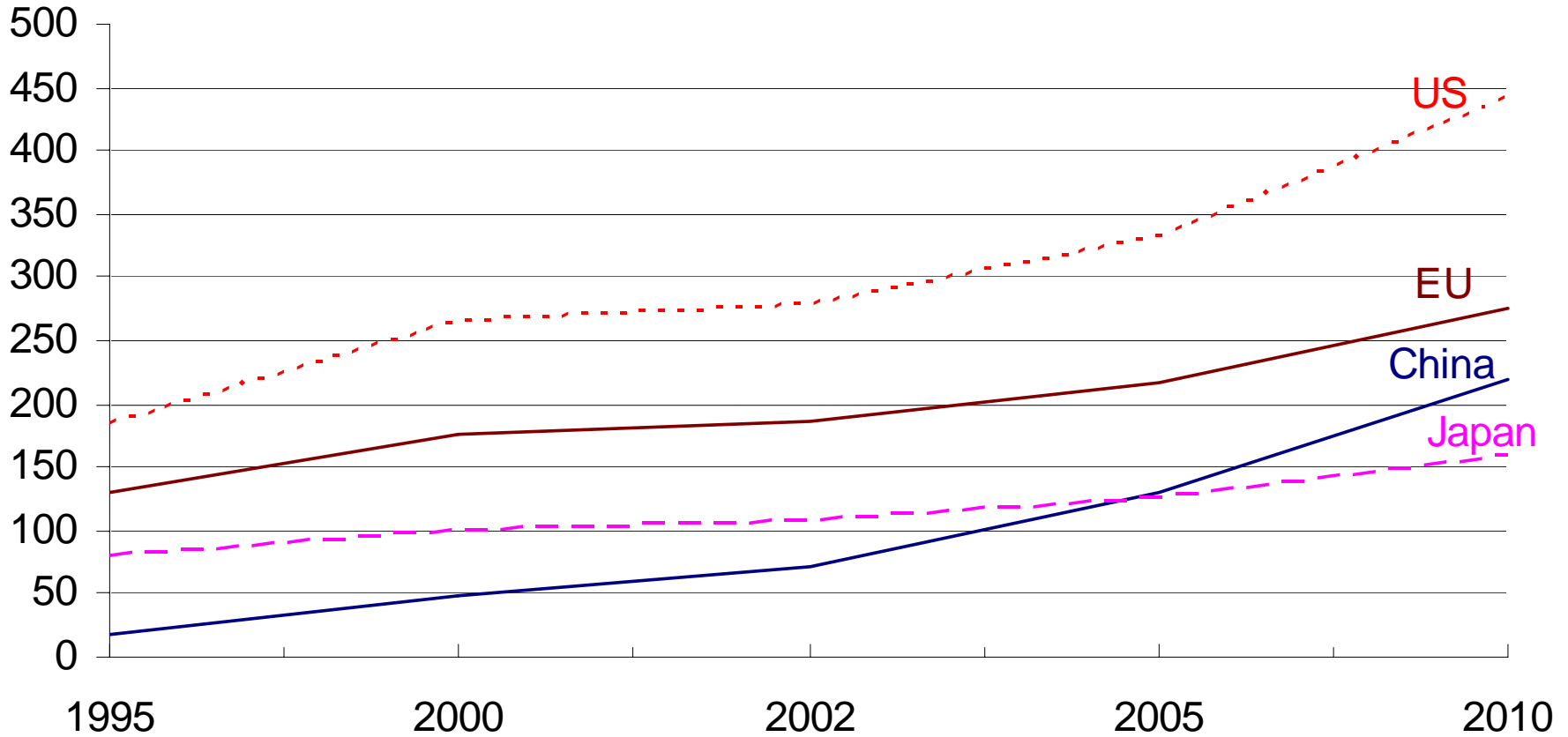
The Chinese Superstate prospect:

China almost inevitably will achieve giant economic, technological, and financial stature, will likewise become financially and politically powerful in international affairs, and, in the not too distant future, will become a military superpower as well.

Four Basic Components of the emerging Chinese advanced technology superstate:

- (1) Research and Development (R & D)
- (2) Scientists and Engineers
- (3) Foreign Direct Investment (FDI)
- (4) Advanced Technology Trade

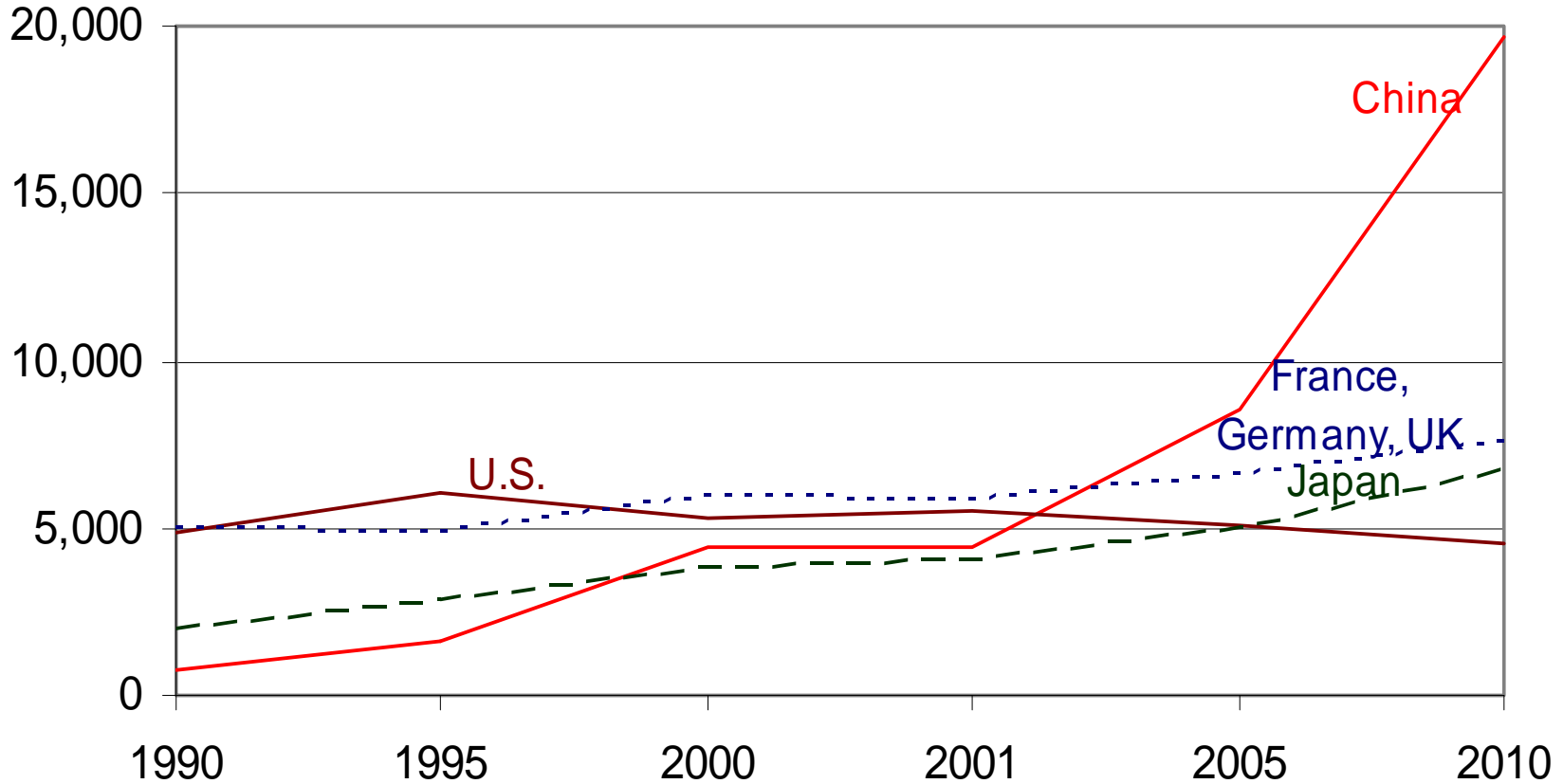
Chart 1
R&D Expenditures
(\$ billions *)



*purchasing power parity

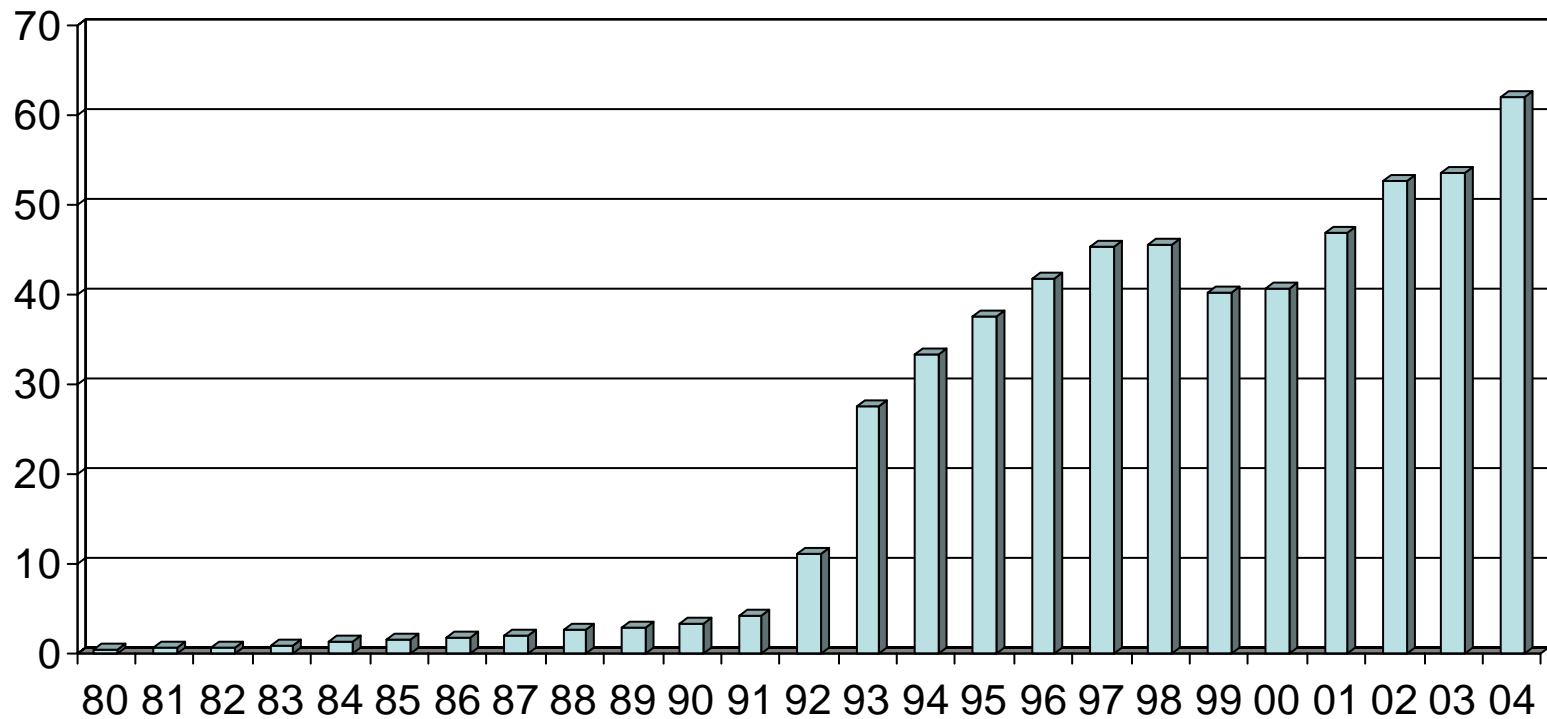
Source: OECD, for 1995-2002; growth projections for 2005 and 2010 at annual rates of China 15 percent, United States 6 percent, European Union 5 percent, and Japan 5 Percent.

Chart 2
Engineering Doctoral Degrees
(thousands)



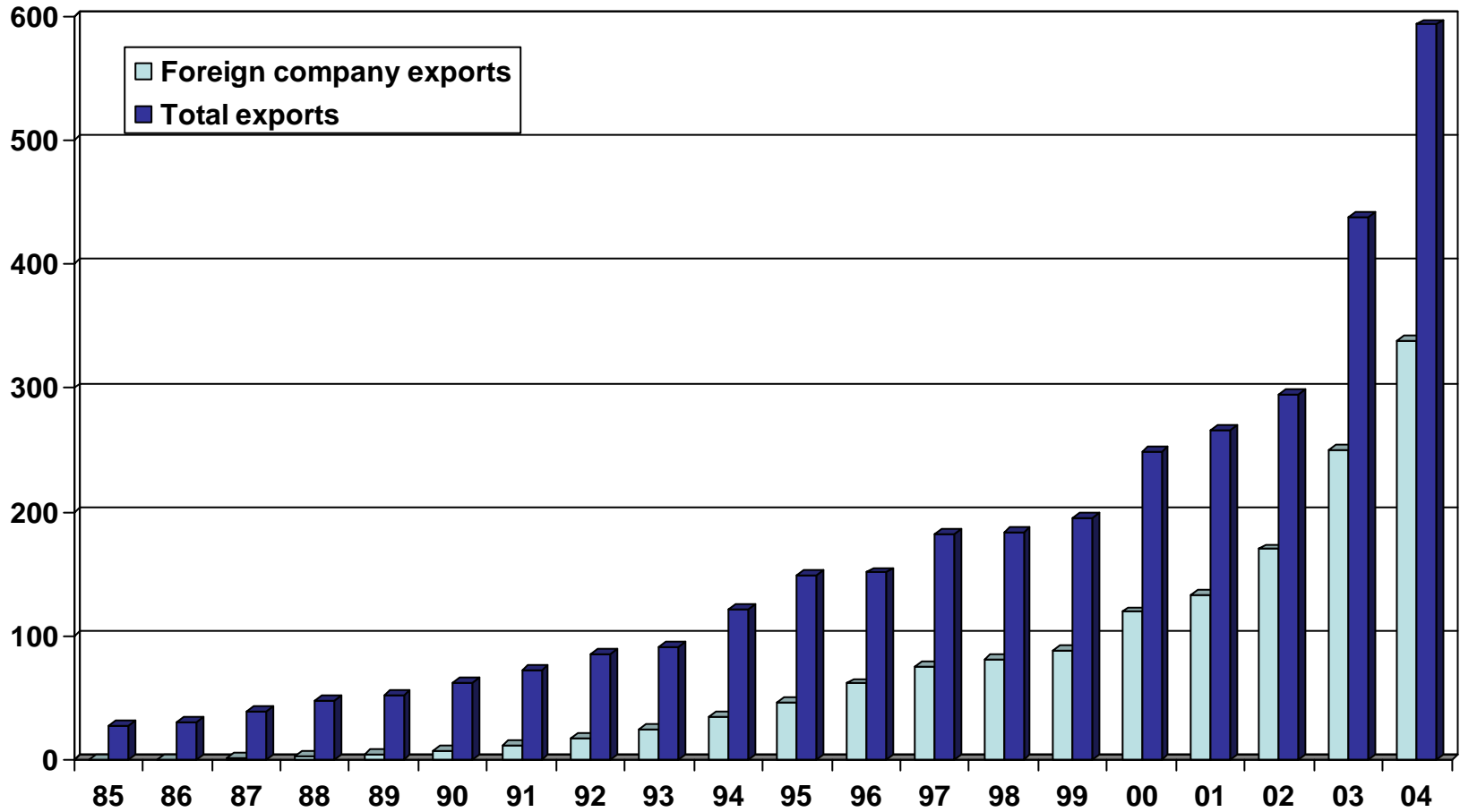
Source: National Science Foundation, 1990-2001; growth projections for 2005 and 2010 at annual rates of China plus 18 percent, the United States minus 2 percent, France, Germany, and the United Kingdom plus 3 percent, and Japan plus 6 percent.

Chart 3
Foreign Direct Investment in China: 1980-2004
(\$billions)



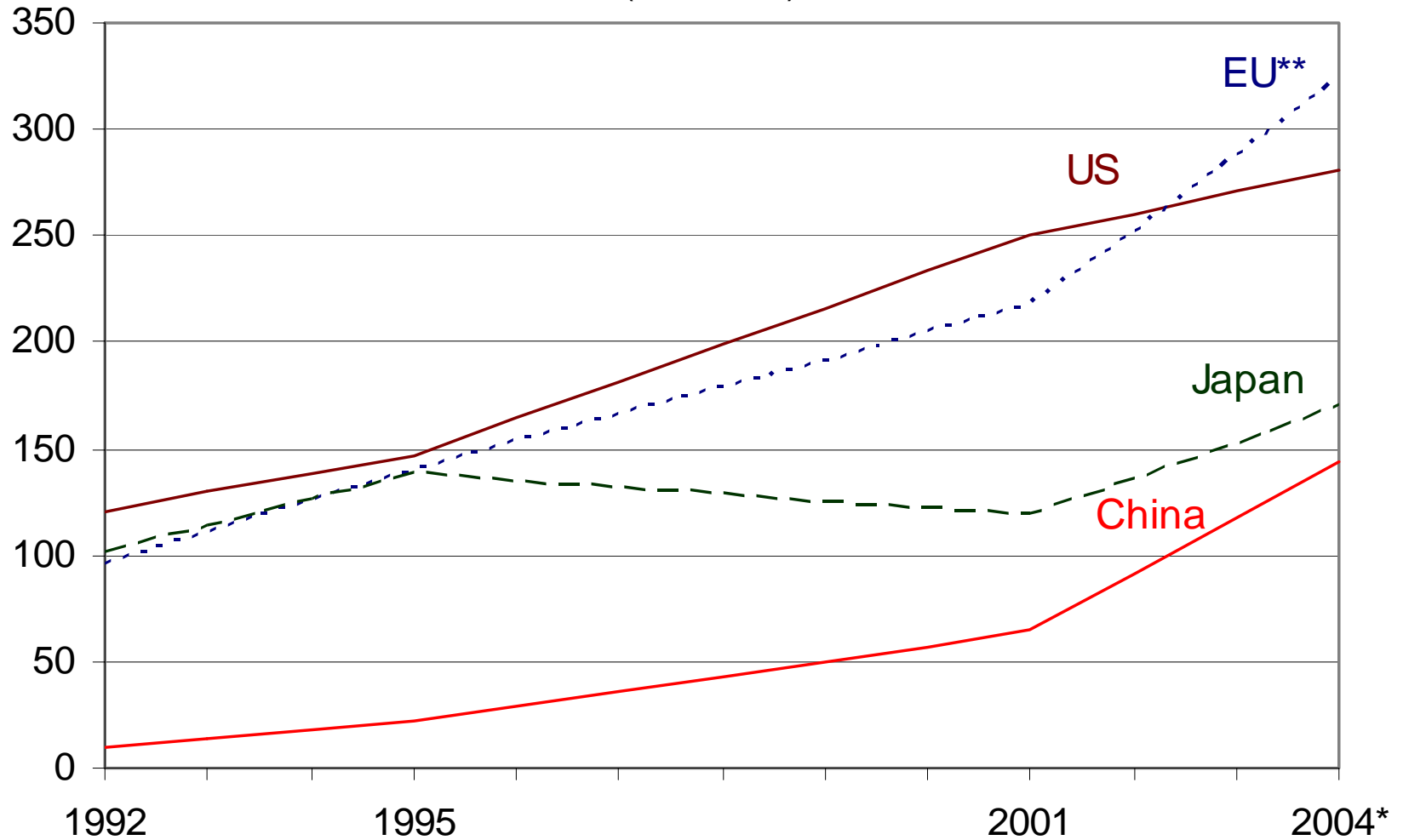
Source: Chinese Ministry of Commerce

Chart 4
Chinese Exports by Foreign Companies: 1985-2004
(\$billions)



Source: Chinese Ministry of Commerce.

Chart 5
High Technology Manufactured Exports
(\$ billions)

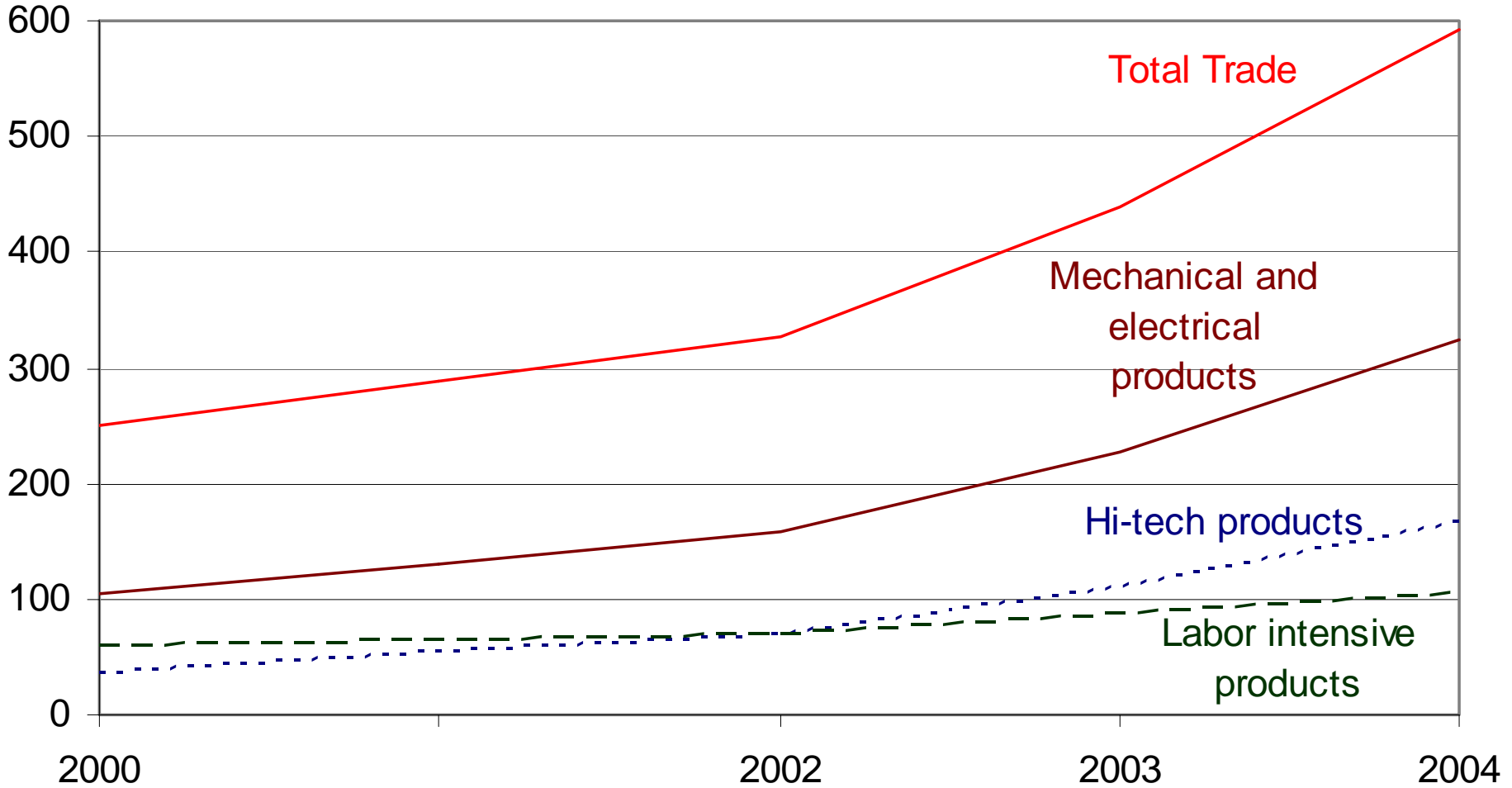


Source: OECD.

*Estimated

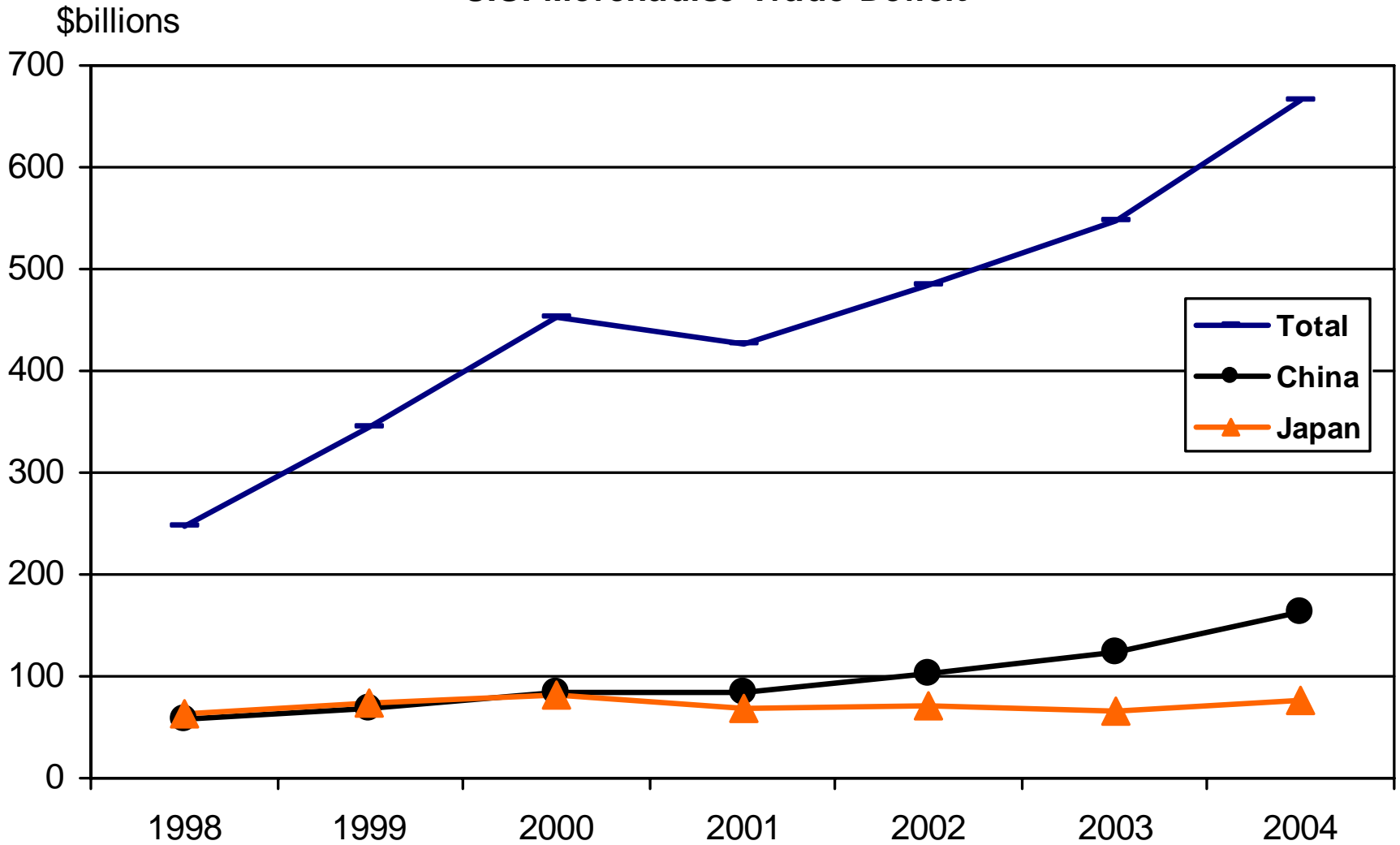
**Excludes intra-EU trade.

Chart 6
Chinese High Technology Exports
(\$ billions)



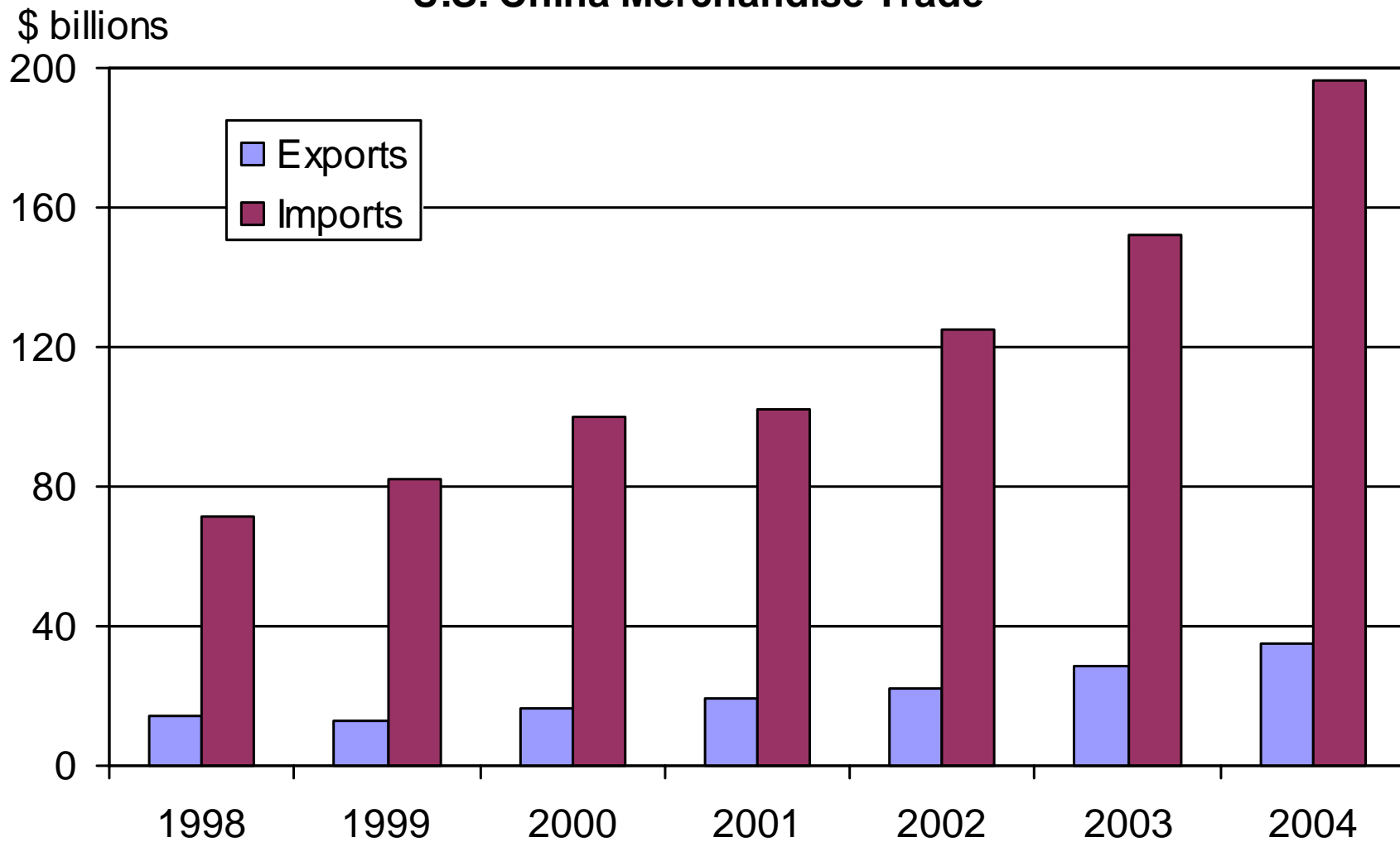
Source: China's Customs Statistics

Chart 7
U.S. Merchandise Trade Deficit



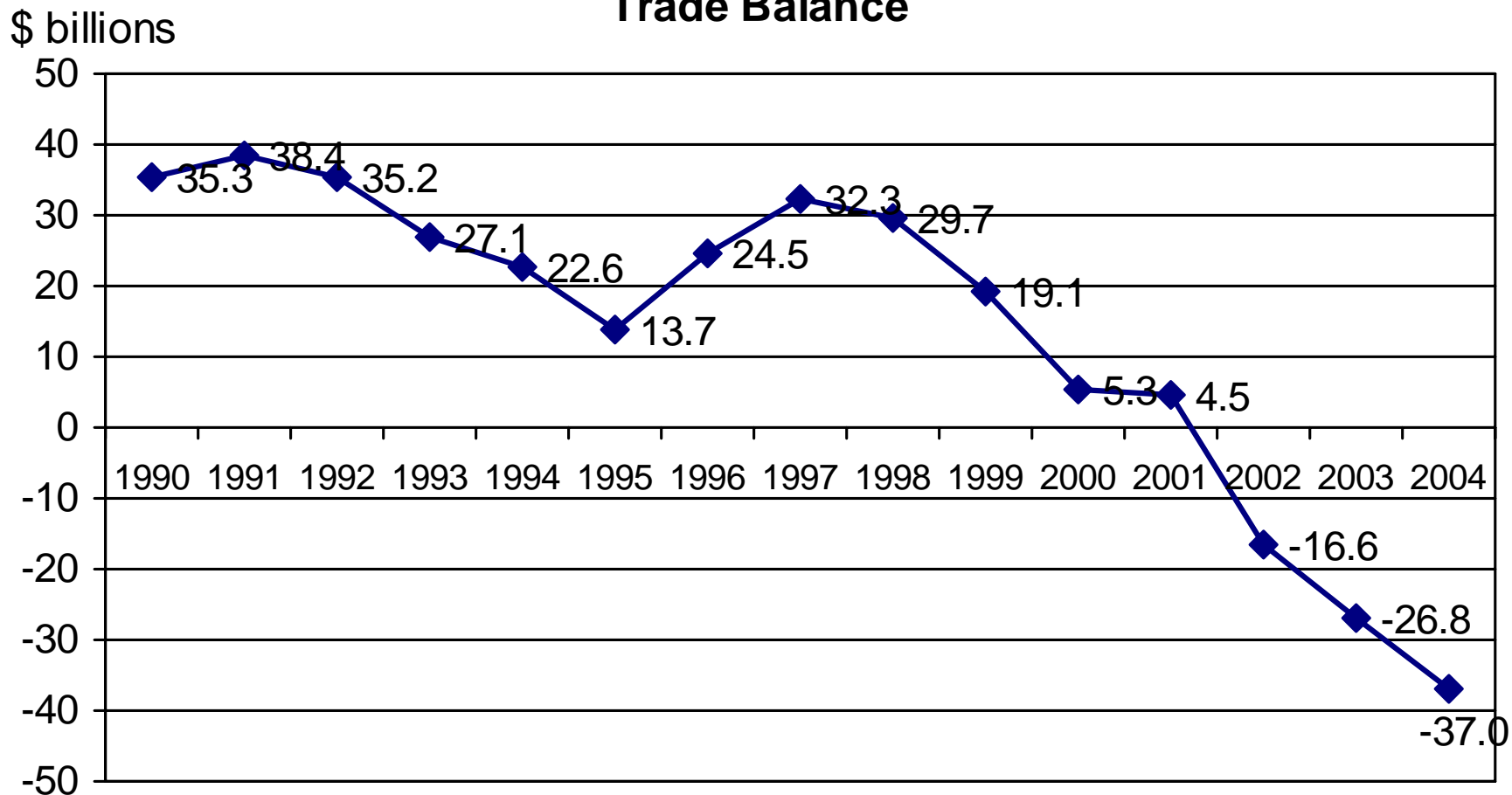
Source: Bureau of Census.

Chart 8
U.S. China Merchandise Trade



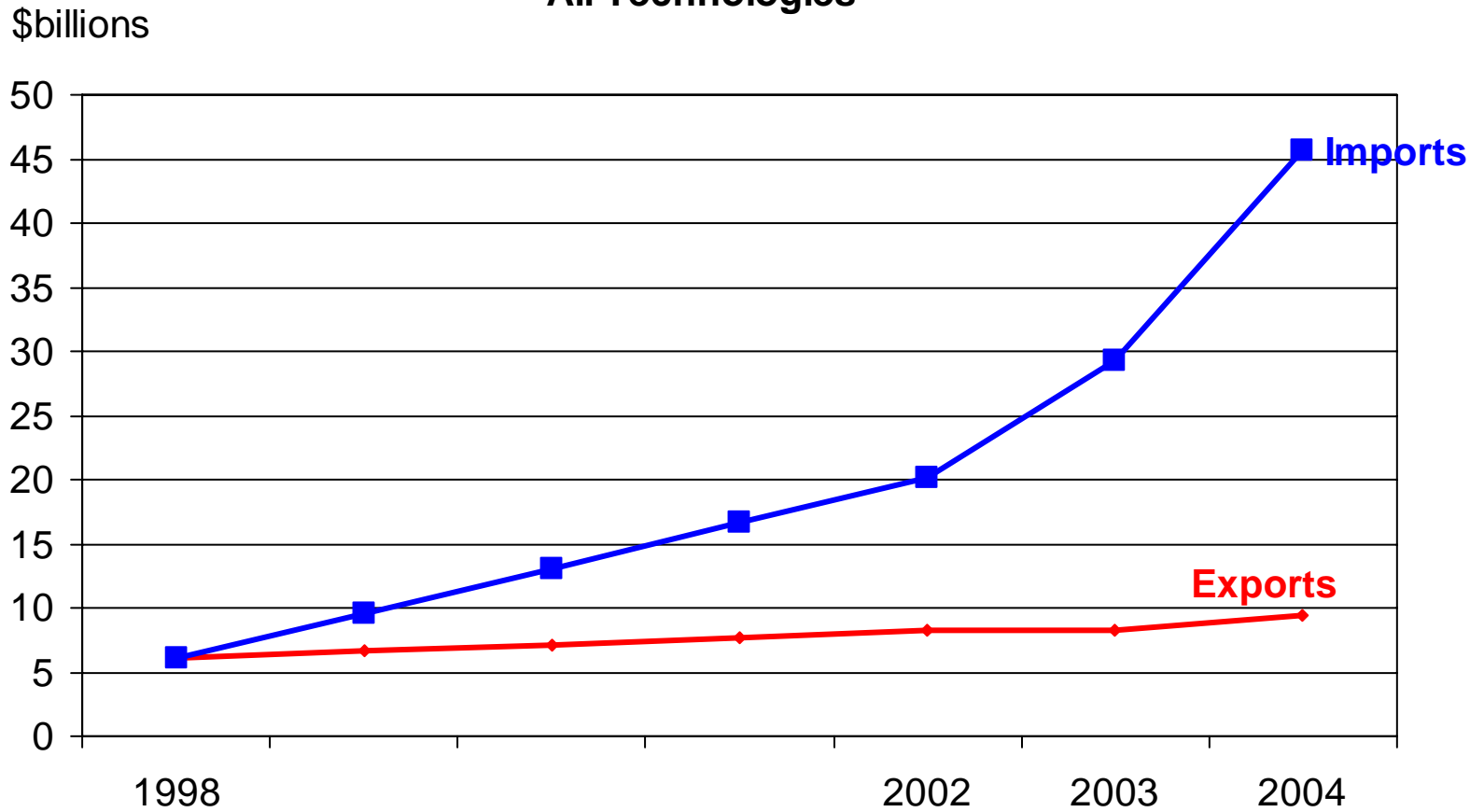
Source: Bureau of Census

Chart 9
The U.S. Advanced Technology Products (ATP)
Trade Balance



Source: U.S. Census Bureau.

Chart 10
U.S. ATP Trade with China:
All Technologies



Source: National Science Foundation and the Bureau of Census.

Three developments to watch:

(1) The export platform issue

- ❖ Primarily Taiwan, South Korea, and Japan;
- ❖ Probably less than half of imported value added on average; and
- ❖ Steadily rising share of value added from Chinese suppliers and an upward technological movement within company.

(2) The participation of Chinese firms:

- ❖ Lenovo – computers
- ❖ Huawei – telecommunications
- ❖ TCL – televisions
- ❖ Haier – consumer white goods
- ❖ Chery – automobiles
- ❖ Shanghai Automotive Industry Corp – automobiles
- ❖ SMIC – semiconductors
- ❖ Harbin Pharmaceutical Group – pharmaceuticals

The common objectives are brand name recognition, quality product reputation, and a leading edge R & D program.

(3) Technology innovation

“Independent innovation is the national strategy”

Premier Wen Jiabao, April 1, 2005

“China has been investing heavily in nanotechnology and already leads the U.S. in some areas...and is making rapid progress in biotechnology.”

The Task Force on the Future of American Innovation, February, 2005

Two additional dimensions of Chinese advanced technology superstate status:

(1) The Geopolitical: China as the East Asia economic hegemon

- ❖ China will have the dominant economic influence in the region, with corresponding growing policy leverage;
- ❖ China is negotiating free trade agreements with ASEAN countries to gain a substantial competitive advantage vis-à-vis the United States and others.

(2) The Geostrategic: Chinese military modernization

- ❖ A 1997-1999 restructuring of defense enterprises from military to civilian control, more integrated with commercial enterprises, has accelerated military modernization;
- ❖ During the 1990s, the DOD assessed the Chinese military as at least 20 years behind the United States; the 2004 assessment was that China would have uneven success in catching up in 5 to 10 years.

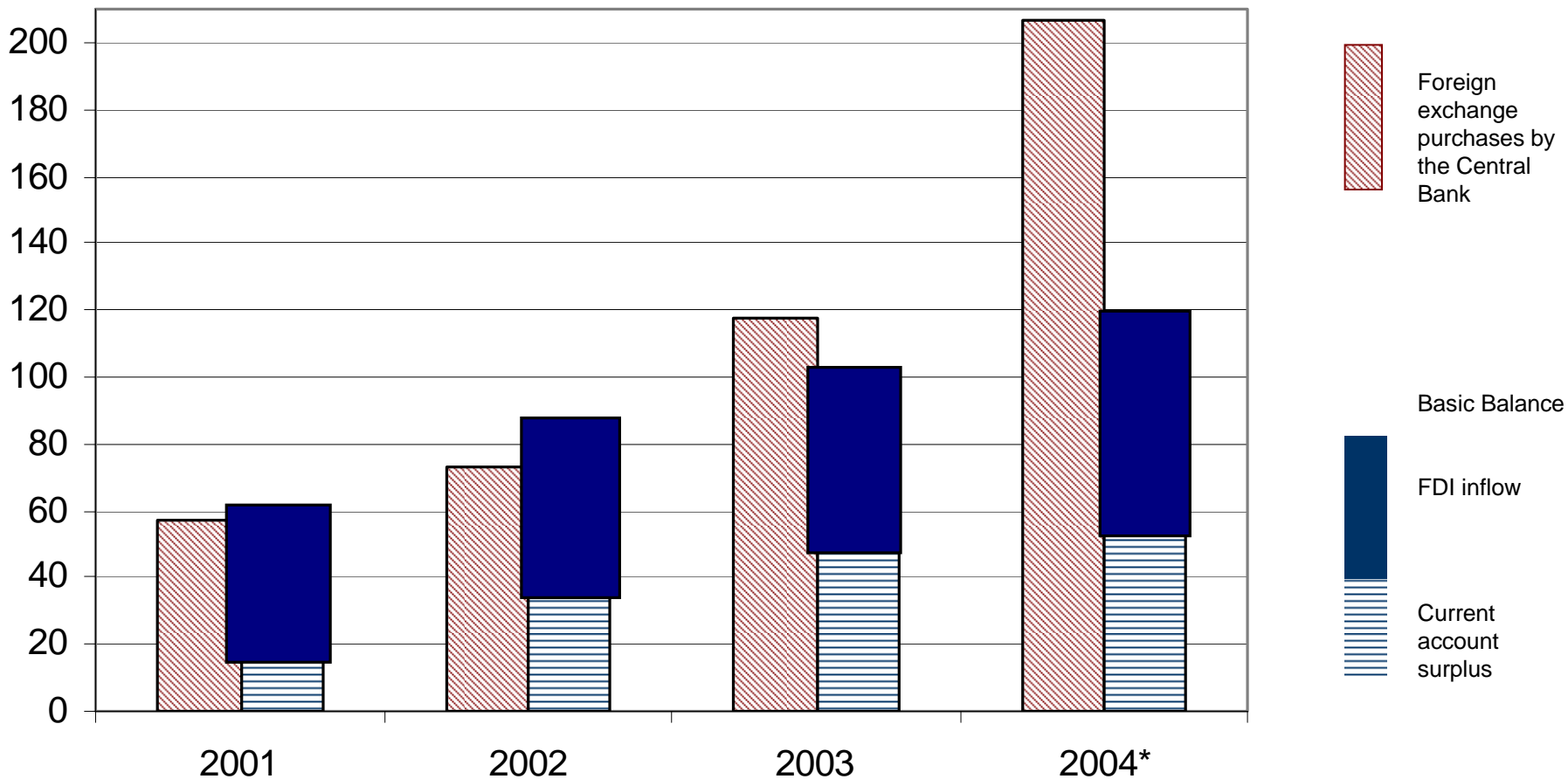
The U.S. policy response for maintaining leadership in advanced technology innovation, production and exports:

(1) International Financial Policy

Currency manipulation is the most urgent and important bilateral problem, with especially adverse impact on U.S. advanced technology industry.

Chart 11
**Chinese Currency Manipulation:
 Central Bank Purchases and the Basic Balance**

\$ billions



Sources: IMF, International Financial Statistics, and Chinese Government sources.

*Current account surplus estimated.

(2) Trade Policy

- ❖ Major bilateral problem issues for advanced technology industries, within the WTO implementation negotiations, are intellectual property rights, technology transfer conditions for investment approval, technical standards, and taxes;

- ❖ The United States should negotiate FTAs across the Pacific to offset Chinese FTAs, next with Thailand, South Korea, and Taiwan, within the APEC free trade framework;
- ❖ In this APEC context, a high level U.S.-China study group should assess the costs and benefits of free trade between the United States and China.

(3) The U.S. domestic economic policy response:

- ❖ A higher U.S. savings rate is top priority in order to reduce the massive U.S. trade deficit, 83 percent in the manufacturing sector, with a growing deficit in advanced technology products centered on China;

- ❖ Other specific policy areas that put American advanced technology companies at a competitive disadvantage vis-à-vis China include weak education performance, stagnant public sector R & D for science and technology, relatively much high corporate taxes, out of control tort litigation, rapidly rising health care costs, and the Sarbanes-Oxley accounting regulations.

The U.S. Policy Response Bottom Line:

What is lacking most within the U.S. government is a sense of national purpose in responding to a rapidly changing world, driven by the development and application of wide-ranging new technologies on a global scale, with China the most challenging globalizer of all.