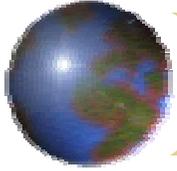


The Rising of China's Electronic Information Industry

Zhong Xiwei

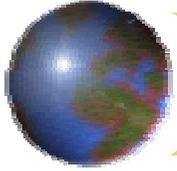
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23-May-2007



Main contents

- ➊ Overview of China's trade in ICT products
- ➋ Foreign investment in China's electronic information industry
- ➌ The rise of China's electronic information companies
- ➍ Government policies and plans
- ➎ Conclusion



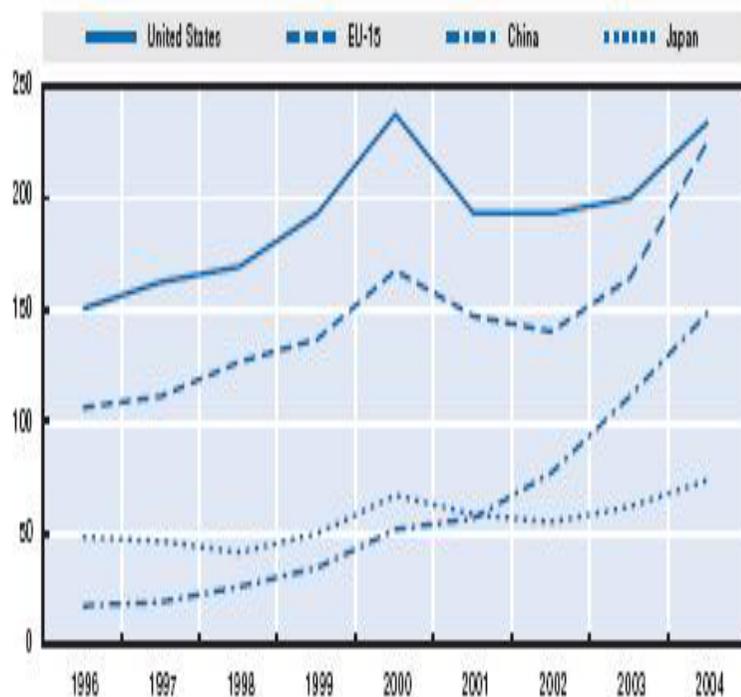
I. Overview of China's Trade in ICT Products

- ❖ China was the No.1 exporter of ICT goods in 2004
- ❖ China largely import electronic components and exports computer and related equipments
- ❖ China's intra-Asia trade is increasing

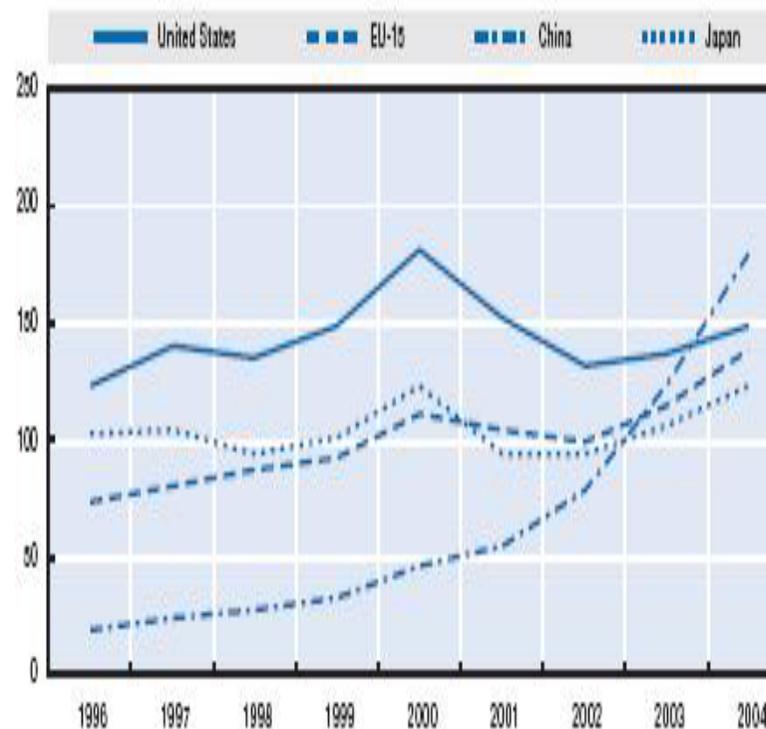


*** In 2004, China's imports of ICT goods USD149 billion, exports USD180 billion; China's ICT goods trade reached almost USD 329 billion in 2004, growing at almost 32% a year since 1996**

Imports of ICT goods

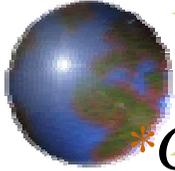


Exports of ICT goods



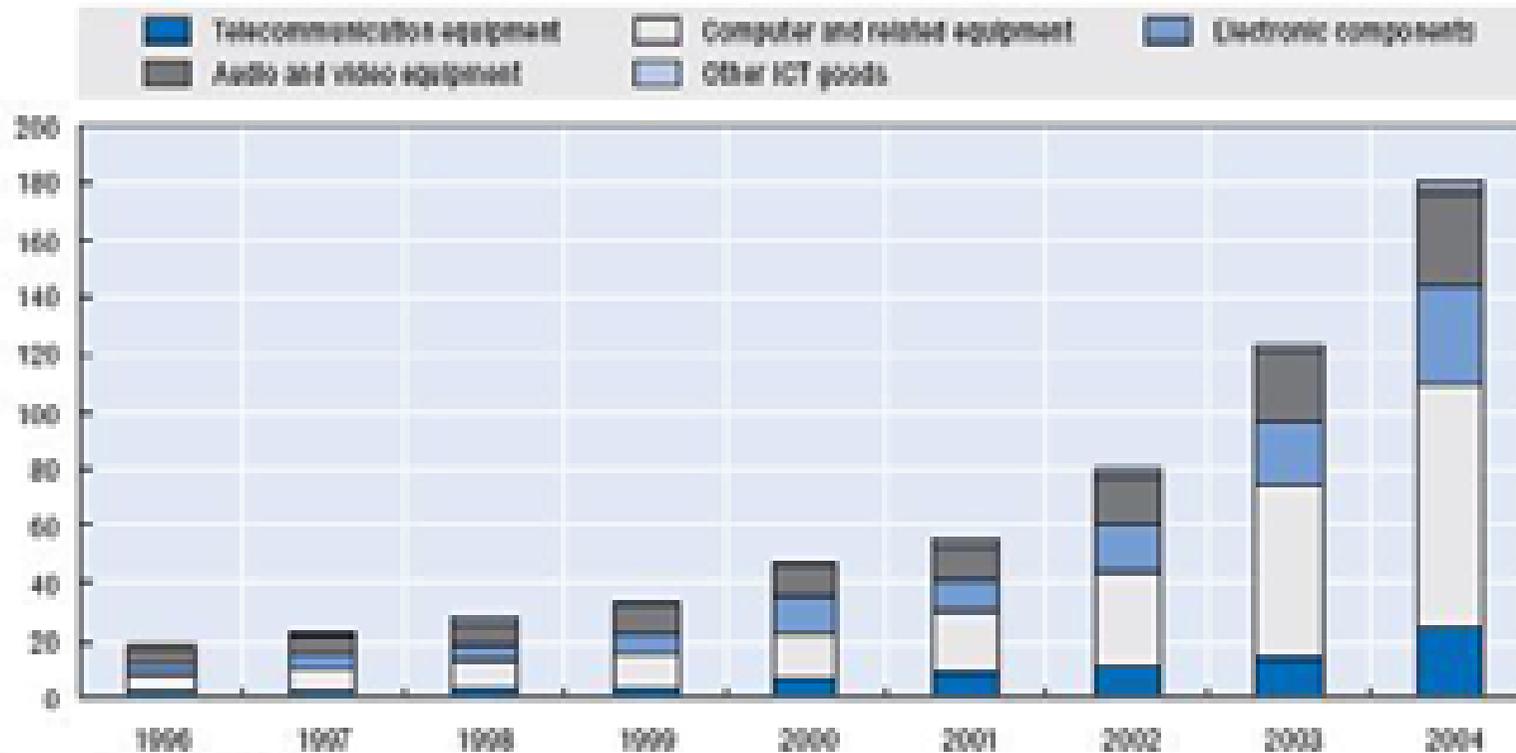
Note: Data for the EU exclude intra-EU trade.

Source: OECD, ITS database.



China largely exports computer and related equipment (80 billion, 46%); strong growth of telecom equipment (34% growth rate, 26 billion in 2004); strong growth in audio and video equipment

China's exports of ICT goods, 1996-2004



Source: OECD ITS database.

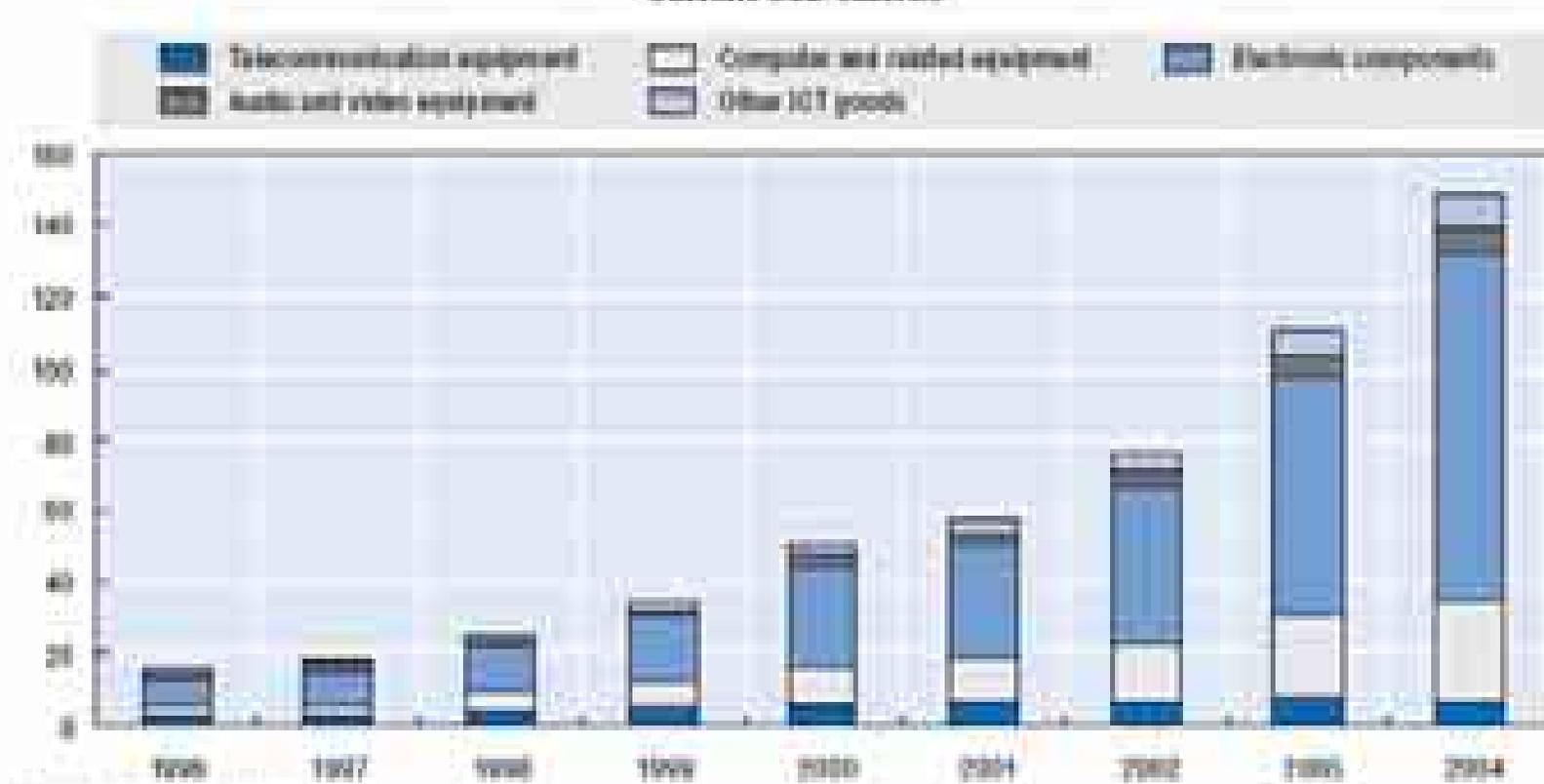
Unit: in US billions

StatLink: <http://dx.doi.org/10.1787/5481710341548>



* *China largely imports electronic components (65% of imports in 2004); electronic components imports grow slower than growth of exports of computer and related equipments*

China's imports of ICT goods, 1996-2004
Current USD billions

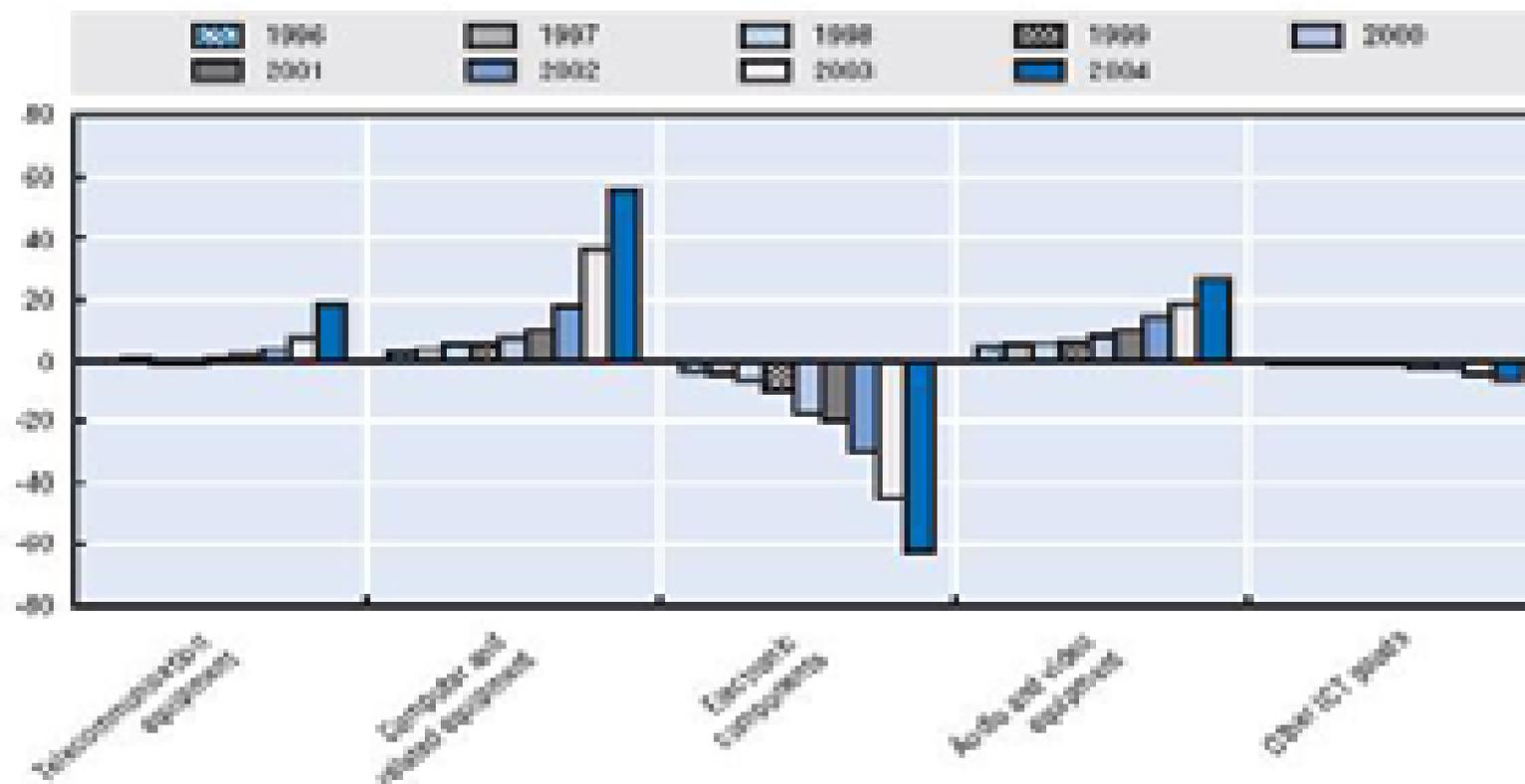


Source: OECD ITI Database



* *Suplus is growing in computer and related equipments, deficit is growing in electronic components*

China's trade balance by ICT goods categories, 1996-2004
Current USD billions

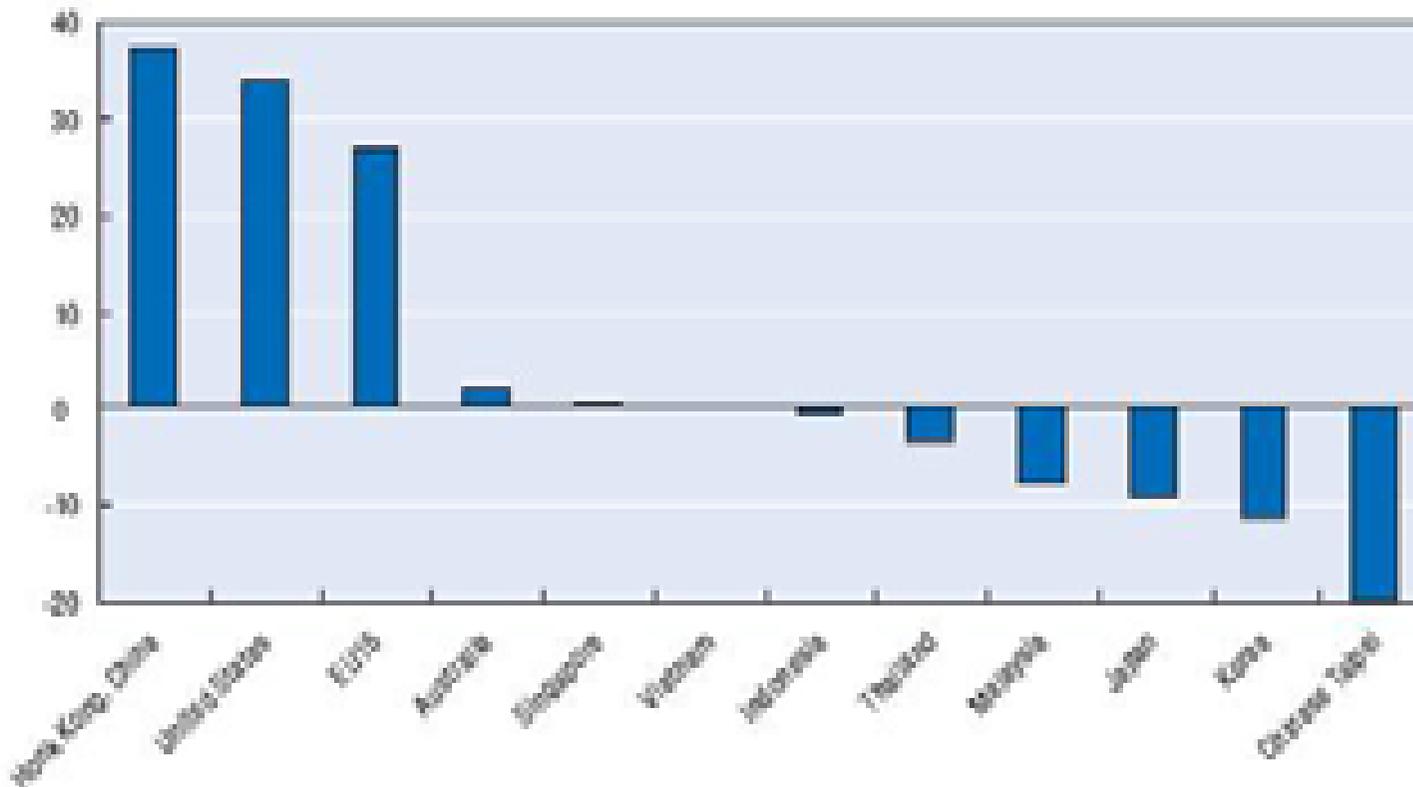


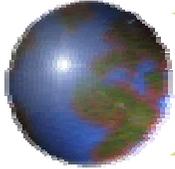
Source: OECD, IIS database.



**Trade surplus USD31billion in total; Surplus:
Hongkong(37billion, US(34billion),EU15(27billion);China's
Asian trade deficit:
Taipei(20billion),Korea(11billion),Japan(6billion)*

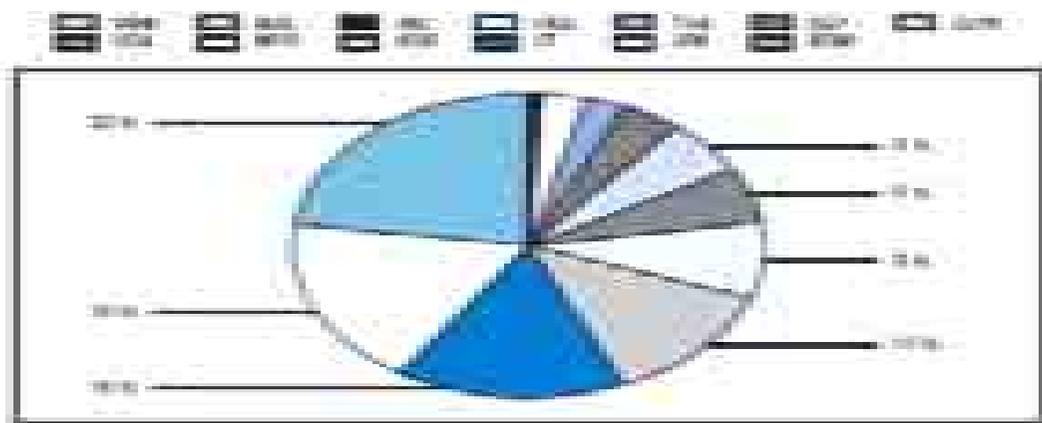
China's trade balance in ICT goods, 2004
Current USD billions



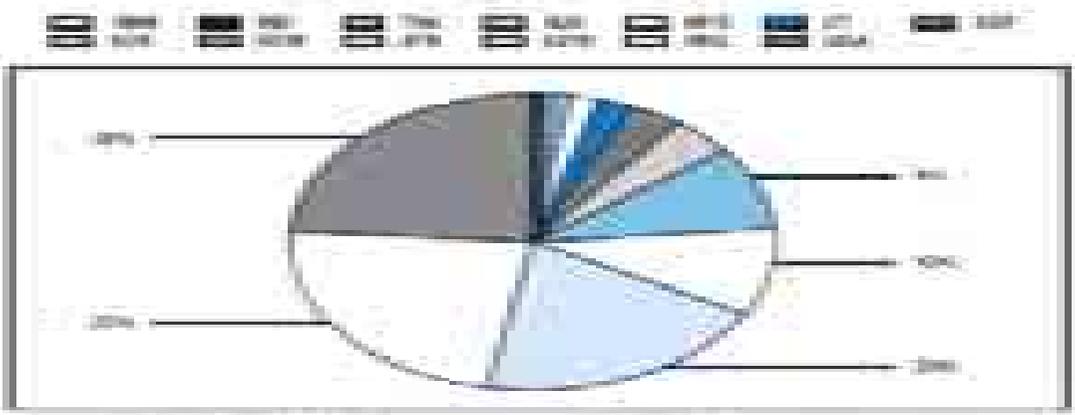


**Main export markets: US(24%), Hongkong(23%), EU15(20%), Japan(10%); main imports: Japan (18%), Taipei(16%), Korea(13%), Malaysia)8%)*

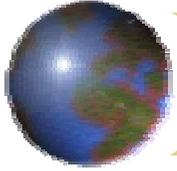
China's ICT goods export and import destinations, 2004
 (Percentage of total imports and exports)
 China imports in 2004



China exports in 2004

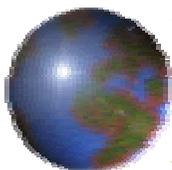


Source: ITIDA Database, IDC India, The Nielsen, and Research, IT Cluster Report, IDC India, ICF Singapore, IFA, Japan, IDC East of World, EU European Union, HGS Hong Kong, USA United States of America.
 Source: ICF, IDC Database.



II. ICT-related FDI

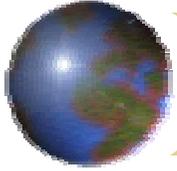
- ✦ China's Inward investment flow is USD72billion in 2005 (UK 165billion, Japan 3billion, India 6.6billion)
- ✦ 3000 instances of new FDI flows in 2005, USD21billion in telecommunication equipment, computer and other electronic components sector
- ✦ Top ten enterprises from abroad mostly consist of firms from Taipei and US
- ✦ ICT-related FDI is strong with investment of Dell, Hewlett Packard, Motorola and Nokia



Eight ICT firms among top ten from abroad in China, by 2003 revenue

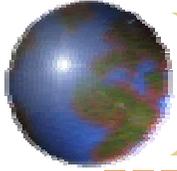
Rank of ICT firms among top ten foreign firms	Name of firm	Country of origin	Revenue in China, USD billions
1	Hon Hai Precision (Foxconn)	Chinese Taipei	6.4
2	Tech-Front Computer	Chinese Taipei	5.2
4	Motorola Electronics	United States	3.0
5	Great Wall International Information Products Fubao	China/United States (Joint Venture between Chinese firm and IBM)	2.6
6	Dell Computer	United States	1.7
7	Benq Corp	Chinese Taipei	1.7
8	Intel Technology	United States	1.5
9	Seagate Technology	United States	1.5

Source: MOFCOM (2004) and MOFCOM (2003). Eight of the top ten investors were ICT firms. Great Wall is now part of Lenovo.



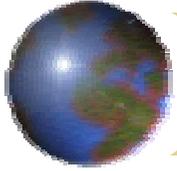
**Characteristics of R&D related FDI*

- *R&D related investment in computer, communications, electronics, chemical and automobile industry is increasing*
- *Over 750 direct-invested R&D centers in China (2006), mainly in ICT sector*
- *Market-driven or adaptive R&D to support local production and sales is predominant*
- *A shift towards initiatives that tap the local skills and knowledge in clusters of scientific institutions and universities*



III. The rise of Chinese electronic information companies

- ⊕ Processing trade of foreign companies represents 90% of Chinese ICT-related exports (MII, 2005), evidence shows those ICT-related foreign affiliates are evolving to more complex original design and production; production of domestic companies are rapidly increasing importance. Hi-tech exports of domestic companies was 12% of the total hi-tech exports (Mofcom, 2006)
- ⊕ Large technological and management gaps between Chinese and foreign firms
- ⊕ The capacity-building has been growing rapidly owing to the improved production and export capacities of ICT-related firms



**Market Share of Chinese Brand in China 2004*

Products	Market Share(100%)
TVs	90
PCs	80
Switching	70
CMOS chips	< 30
Color TV Tubes	< 50
Mobile phones	< 20

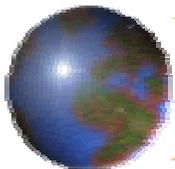


Top 10 Chinese electronic product providers in 2005 Unit: in USD

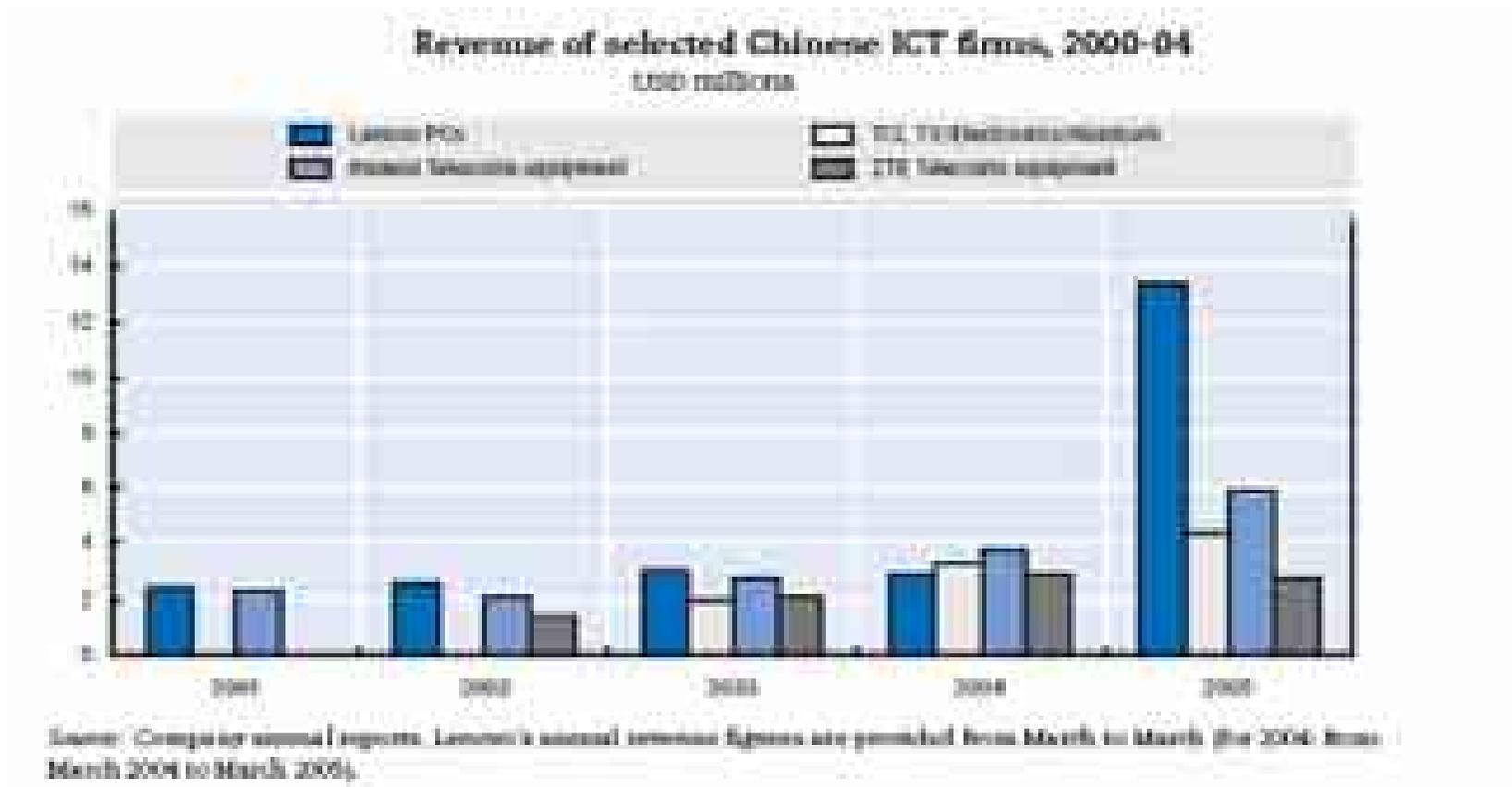
Rank	Name	Revenue	Gross profit	Main products
1	Huawei Group	12,703,419,000	227,428,750	Consumer electronics, electronics equipments (handsets), and IT equipment (computers)
2	BCE Tech Group	5,638,321,250	183,243,750	Electronics and audiovisual products (monitors, TV)
3	TCL	3,240,952,500	72,502,500	Electronics, telecom equipments (handsets), and audiovisual products (TV)
4	Lenovo/Legend	3,240,304,250	185,161,250	IT equipment (PCs and notebooks)
5	Shanghai Video and Audio	4,250,942,500	180,342,500	Audiovisual products, (Telecoms equipment)
6	Huawei Tech	3,240,157,500	627,905,000	Telecoms equipment
7	Midea Holding Co. Ltd	3,230,915,000	69,240,000	Consumer electronics
8	Panda Electronic Group	3,200,495,000	56,422,500	Consumer electronics and Telecoms equipment
9	Haier Group	3,411,648,750	54,007,500	Consumer electronics, Audiovisual products (TV), (Telecoms equipment)
10	ZTE Corporation	2,837,266,750	177,352,500	Telecoms equipment

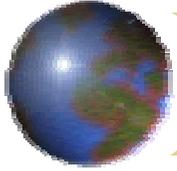
Source: Compiled from <http://www.fgdata.com>

Note: The List promulgated in 06/2005



* *Revenues relatively small compared with top producers in the world, ie HP 80billion, Dell 41billion, Cisco 24.8 billion(2004), but the growth has been rapid*



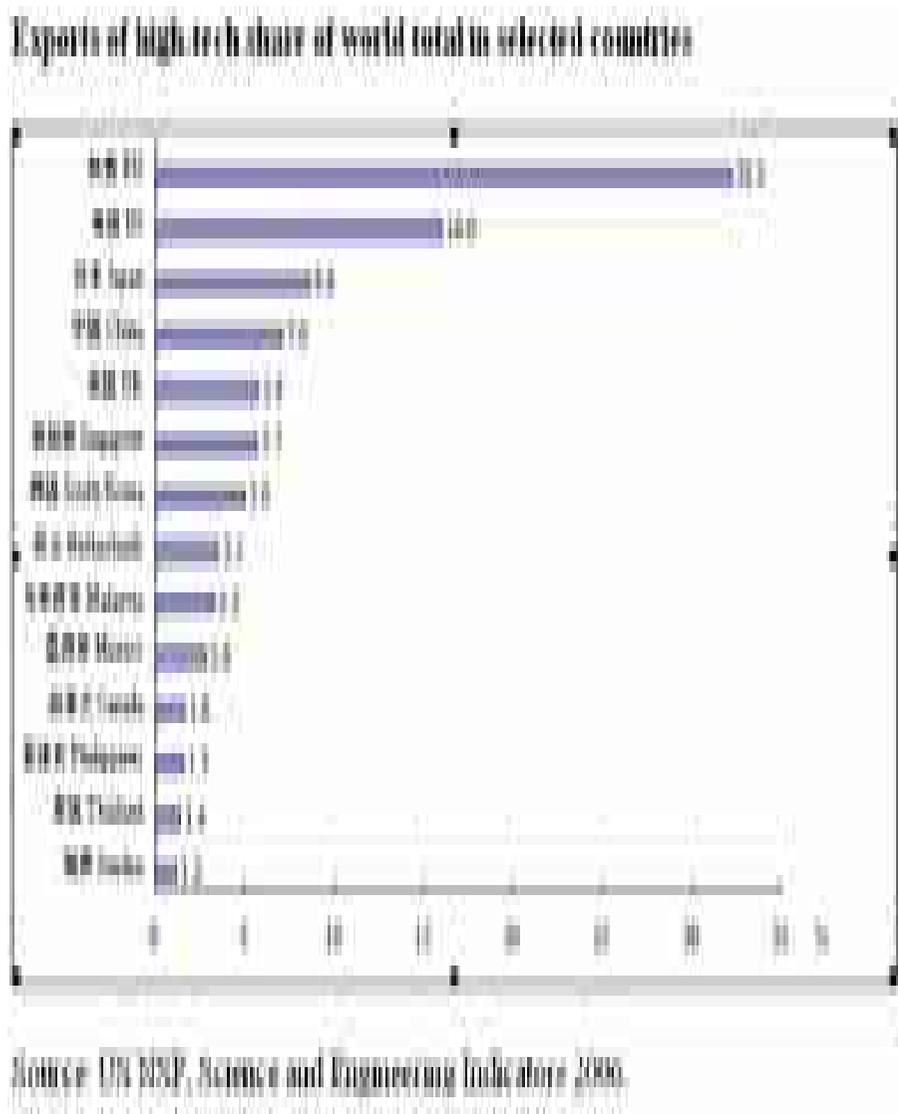


**Domestic companies' increasing trend of expansion abroad*

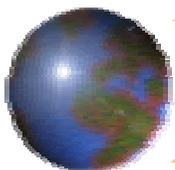
- ⊕ 2005 new equity investment 4.1billion, 1.2billion in manufacturing sector
- ⊕ Lenovo's takeover of IBM's PC unit, revenue increased to 13.3billion in 2005 with 2,1000 employees
- ⊕ TCL's takeover of Thomson's TV business and joint venture with Alcatel
- ⊕ ZTE and Huawei's active expansion abroad; Huawei 6 billion in 2005, 8.4 billion in 2006, estimated contractual revenue 15 billion in 2007



*R&D in Hi-tech sector



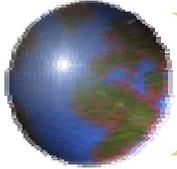
- China's definition of Hi-tech industry: aircraft and spacecraft, pharmaceuticals, computer and office equipment, electronic and telecommunications, medical equipment, etc
- ICT-related exports account for 4/5 of total Hi-tech exports
- Value added in ICT industry account for 4% of GDP.



Overall labor productivity of high-tech industries in selected countries (Value added per capita, USD thousand)

	China	US	Japan	Germany	France	Italy
	2004	2003	2003	2002	2002	2002
Manufacture	9.8	95.7	78.9	51.7	62.4	41.6
High-tech industries	13.0	141.2	100.0	50.7	78.8	56.4
Medical and pharmaceutical products	12.4	285.4	272.0	-	130.8	92.8
Aircraft and spacecraft	6.6	120.7	88.3	-	105.4	81.1
Electronic and telecommunications equipment	13.4	121.7	93.0	52.2	42.0	40.5
Computers and office equipments	17.9	145.2	72.0	62.6	71.0	30.4
Medical equipments and meters	8.8	103.8	63.4	48.2	66.3	44.1

Source: National Bureau of Statistics et al, China Statistics Yearbook on High Technology Industry (2005).

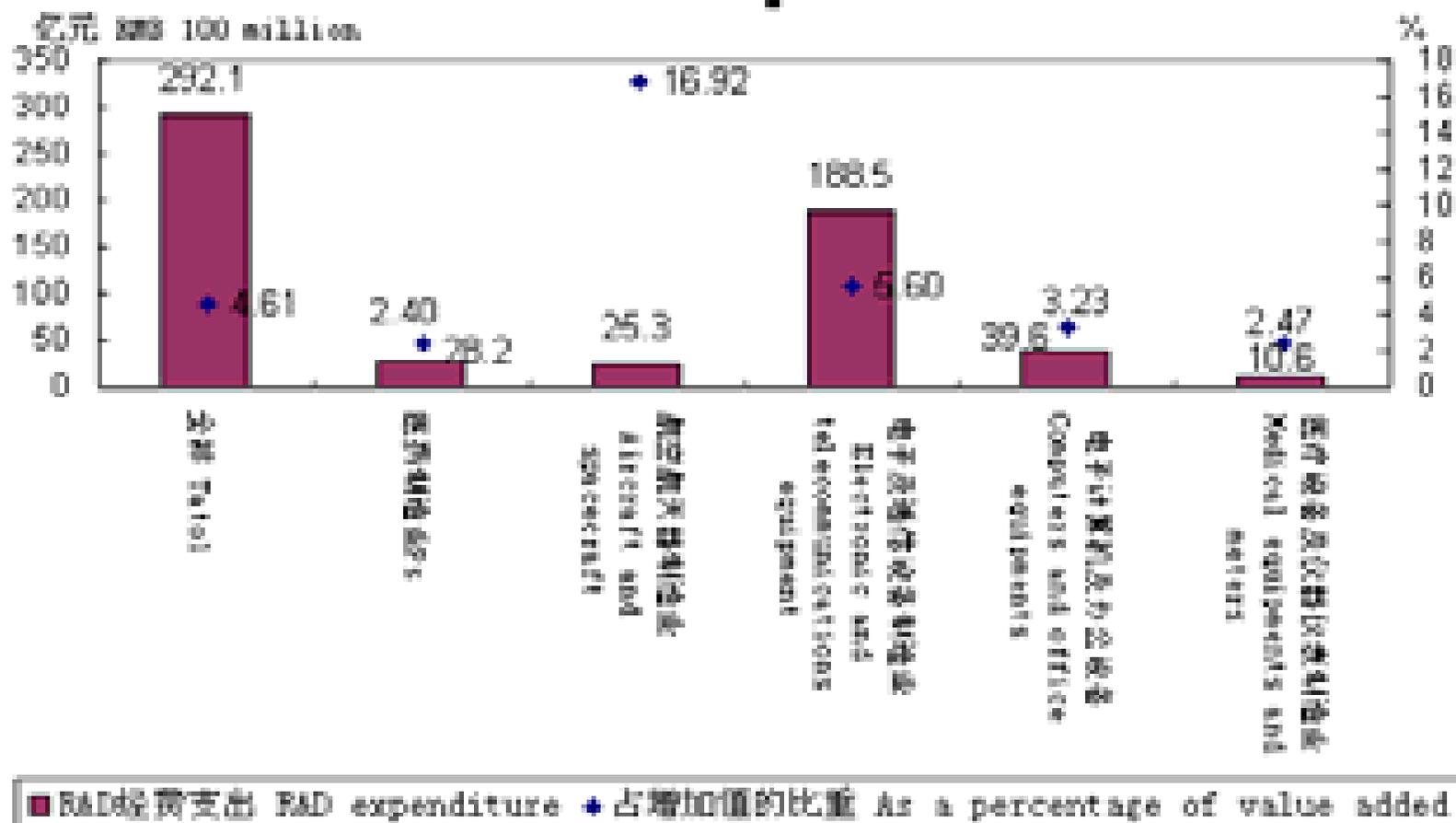
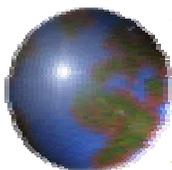


**Note: R&D intensity is calculated as R&D expenditure as a percentage of value added of the corresponding sector.*

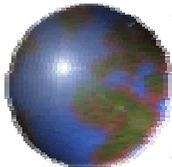
R&D intensity of high-tech industries and total manufacturing in selected countries (%)

	China 2004	US 2002	Japan 2002	Germany 2002	France 2002	UK 2002	Italy 2002	Korea 2003
Manufactures	1.9	7.8	10.4	1.7	7.4	6.9	2.3	7.3
Pharmaceutical products	2.4	21.1	27.0	-	27.2	52.4	6.6	4.4
Aircraft and spacecraft	16.9	18.3	21.6	-	29.4	23.8	23.4	-
Electronic and telecommunications equipment	3.6	25.4	20.4	39.2	37.2	23.6	19.4	23.4
Computers and office equipments	3.2	32.8	30.4	18.1	15.8	5.9	8.8	4.4
Medical equipments and meters	2.3	49.1	30.1	14.0	16.1	8.3	6.4	10.7

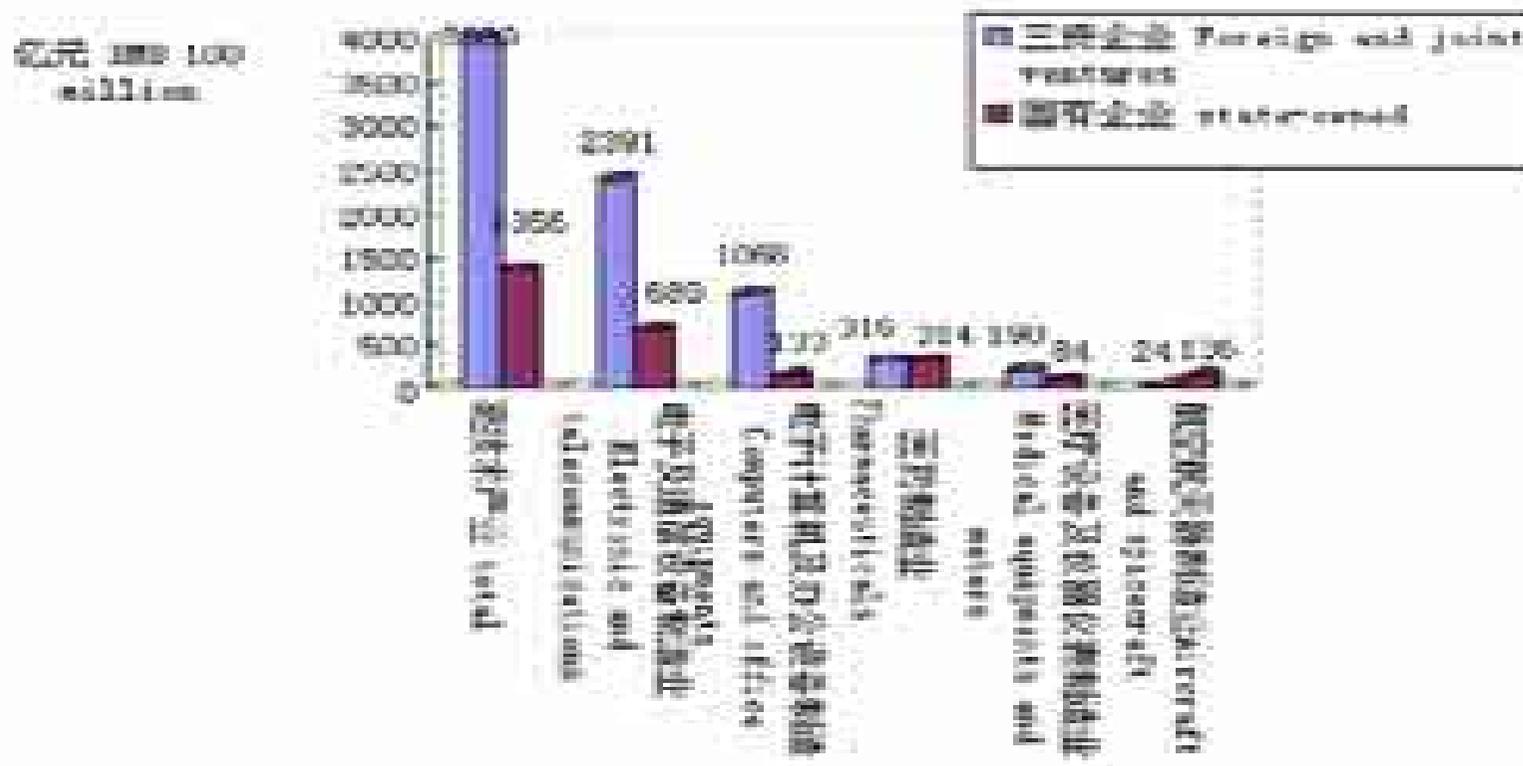
Source: National Bureau of Statistics et al, China Statistics Yearbook_on High Technology Industry (2005); OECD, STAN Database .2005; OECD, Research and Development Statistics. 2005 .



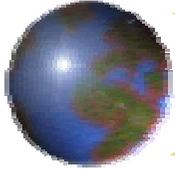
R&D expenditure and it as a percentage of value added of high-tech industries (2004)



Value added of high-tech industries by ownership



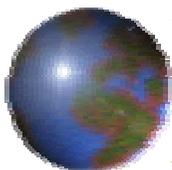
Source: National Bureau of Statistics et al, China Statistics Yearbook on High Technology Industry (2005)



**Case studies of two leading companies of Telecom equipment sector*

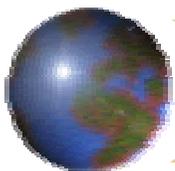
Comparison of the 2 leading companies in telecommunications equipment sector (1)

	Huawei	ZTE
Revenue (2006, US billion)	3.4	3.1
Share of sales income from abroad (%a. 2006)	68%*	44%*
Date and place of establishment	1987	1985
Initial operation	Sales agent of Switch products	Processing with supplied materials
Ownership	Private	State-owned to shareholding, listed in HK in 1997
Employees (till 2006)	61000	36000
Human resource structure	R.&D.48%*, Marketing and after sales 31%*, Management 9%*, Production 12%*	R.&D.34%*, Marketing and after sales 29%*, Management 11%*, Production 26%*
First abroad contract	1996	1998



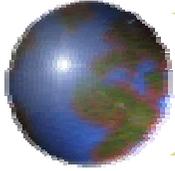
Comparison of the 2 leading companies in telecommunications equipment sector (2)

	Huawei	ZTE
R&D centers	12, in China, India, US, Sweden, and Russia	14, in China, Sweden, France, US, Pakistan and India
R&D share in sales income	10%	10%
Patents (all 2006)	17,000 patent application including 300 UMTS patents, 69 world UMTS essential patents	6700 patent application including international patents
Global operations	>120 countries.	>120 countries
Strategic partnership	Joint laboratories with TL, Motorola, IBM, Intel, Agera, Altera, Sun, HP etc; Joint venture with Siemens	With Telecom France, Hutchison, Cisco, Ericsson, Intel, IBM, Microsoft etc.
Strategic clients	>500 telecom operators, including 31 of top 50 TCOs	>500 telecom operators, including 31 of top 100 TCOs
Leading technology and products	GT800, GSM, CDMA, 3G, NGN, IPTV, optical transport, ADSL, data communication, switch, power etc.	Gota, CDMA, GSM, 3G, NGN, IPTV, 3G terminal, ADSL, optical transport, switch, etc.



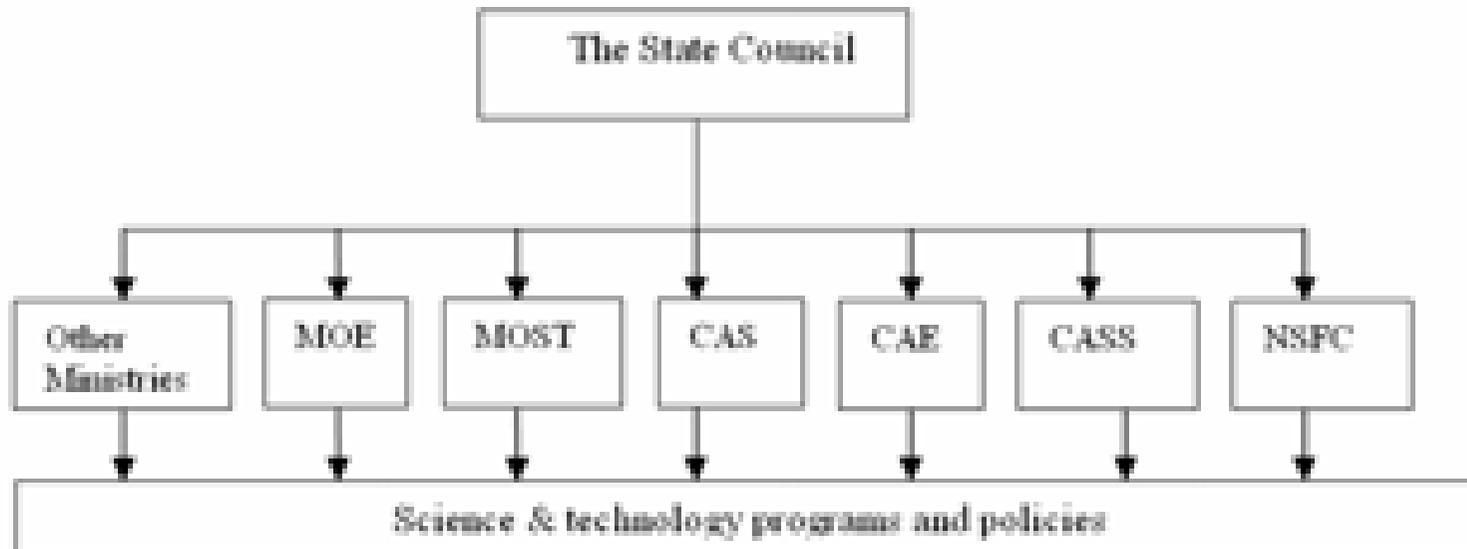
Comparison of the Launch time of key products

Launch time Product	Huawei	ZTE
C&C08 switch	1994	1995
GSM	1995	1995
CDMA	1995	1995
Router	1995	1995
Optical transport	1993	1995
Wired intelligence network	1996	1996
GSM wireless intelligence network	1998	1998



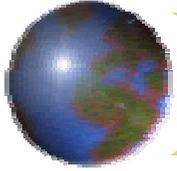
IV. Government policies and plans

Main administrative bodies of China's S&T



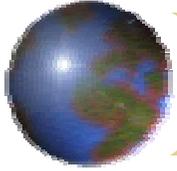


Policies	Dominant features	Year
Key Technology R&D program	Encouraging efforts in key technologies	1982
Resolution on the reform of S&T system (CCCC)	Adopting flexible system on R&D management	1985
The sparkle system	Promoting basic research in agriculture	1985
863 program	High-tech promotion	1986
The Torch Program	High-tech commercialization, high-tech zones establishment	1988
4The National S&T Achievements Spreading Program	Promoting product commercialization	1990
The National Engineering Technology Research Center Program	Technology transfer and commercialization of research products	1991
The Climbing Program	Promoting basic research	1992
Endorsement of <u>UAEs</u> by SSTCC	Promoting university and industry linkage	1992
S&T Progress law	Technology transfer, S&T system reform	1993
Decision on Accelerating S&T Progress (CCCC)	Promoting URI-industry linkage	1995
The Law for Promoting Commercialization of S&T Achievement	Regulating the commercialization of S&T Achievement	1996
Super 863 Program	Commercialization, break-through in key areas	1996
Decision on Developing High-tech and Realizing industrialization(CCCP)	Encouraging technology innovation and commercialization	1999
The Guideline for Developing National University Science Parks	Accelerating the development of university science parks	2000



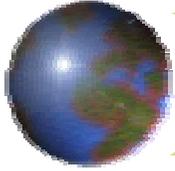
Five-year Plans

- ✚ The ninth five-year plan (1996-2000) put an emphasis on developing indigenous capacity of China's hardware industry to increase domestic components in Chinese-assembled computers and in the production of peripherals; "Golden Projects" initiated, including "Golden Bridge", "Golden Customs", "Golden Card" projects.
- ✚ The tenth five-year plan (2001-2005) focused on enhancing innovation capacities, especially in integrated circuit and software technology.



Future policy trend

- ⊕ Accelerate structural change in the domestic information industry and move away from pure ICT hardware assembly toward higher value-added manufacturing
- ⊕ Increase domestic innovative capabilities in ICT sectors through increased investment in R&D
- ⊕ Government's continuing support, procurement and subsidies in :semiconductors/integrated circuits, photoelectronic displays, advanced computing, Ipv6 and NGN, 3G and domestic software.
- ⊕ Strengthen Chinese ICT-related standards, such as TD-SCDMA, WAPI, DVD, etc
- ⊕ Increase the diffusion and use of ICTs to spur the industrialization and development of non-ICT producing sectors.



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