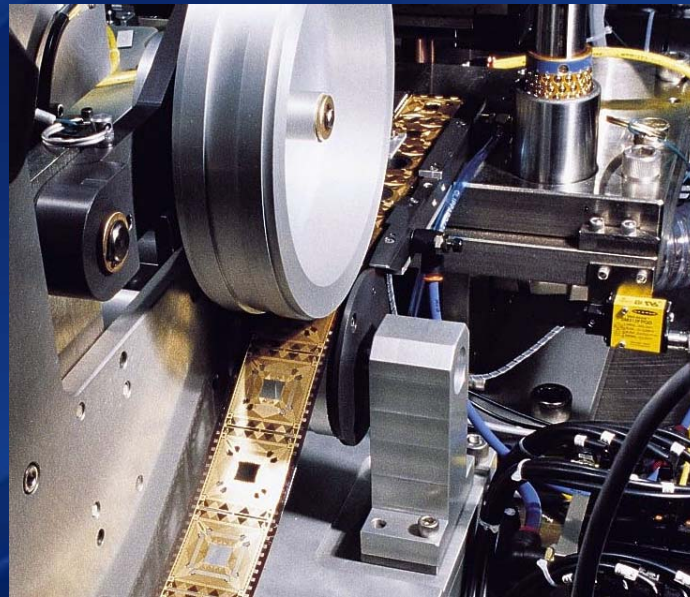


THAILAND OF INVESTMENT

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Electronics & Electrical Products



Integrating Innovation & Technology



THAILAND BOARD OF INVESTMENT
www.boi.go.th

Electronics and Electrical Industry

- ❑ **Export US \$ 41.13 Billion in 2006**
- ❑ **World's largest producer of HDDs**
- ❑ **Major producer of ICs, PCBs, TVs, air conditioners & other white goods**
- ❑ **Strong supporting industries for electrical appliances**
 - ✓ **Compressors, motors, plastic and metal parts**

Exchange rate in 2006: US\$ 1 = Baht 37.9286 (Bank of Thailand)

Major Technology Producing Countries and Market Share in 2005

Rank	Country	Market Share 2005
1	China	11.51
2	Germany	10.67
3	United States	10.60
4	Japan	8.64
5	Hong Kong	5.37
6	Singapore	4.72
7	South Korea	4.25
8	U.K	4.15

Rank	Country	Market Share 2005
12	Taiwan	3.24
14	Malaysia	2.69
17	Thailand	1.43
23	Philippines	1.01
30	Indonesia	0.42
35	India	0.24
52	Cambodia	0.02

E & E Industry Production

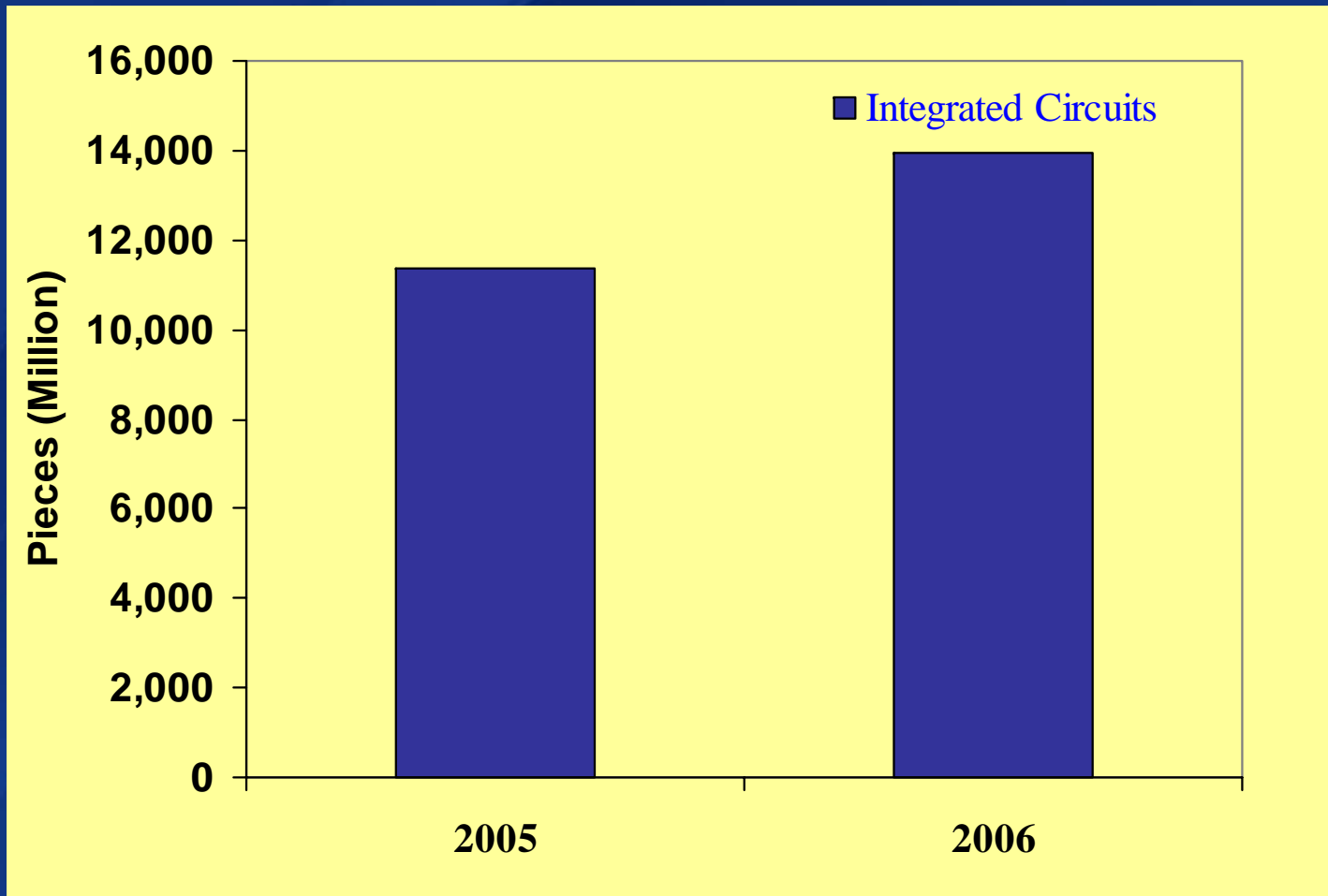
Items	Production		Growth Rate (%)		Average growth (%) between 2004-2006
	2005	2006	2005	2006	
<u>Electronic Products</u>					
Integrated Circuit (million pieces)	11,378	13,954	15.5	22.6	19.3
Monitor (1,000 sets)	2,210	1,380	-50.5	-37.6	-25.3
Computer keyboard (1,000 units)	7,454	958	-47.9	-87.1	-60.9
Hard disk drive (1,000 units)	120,707	153,980	59.5	27.3	42.3
Printer (1,000 units)	19,241	16,577	-9.5	-13.8	6.2

E & E Industry Production

Items	Production		Growth Rate (%)		Average growth (%) between 2004-2006
	2005	2006	2005	2006	
<u>Electrical Appliances</u>					
TV (1,000 units)	6,916	6,255	-0.4	-9.6	-1.3
Fans (1,000 units)	2,438	2,573	-5.4	5.5	-1.8
Rice cooker (1,000 units)	3,455	3,331	-5.6	-3.6	-2.9
Refrigerator (1,000 units)	3,686	3,985	5.7	8.1	9.9
Washing machine (1,000 units)	1,727	1,905	-4.6	10.3	5.6
Air Conditioner (1,000 units)	2,023	1,681	-14.8	-16.9	-8.3

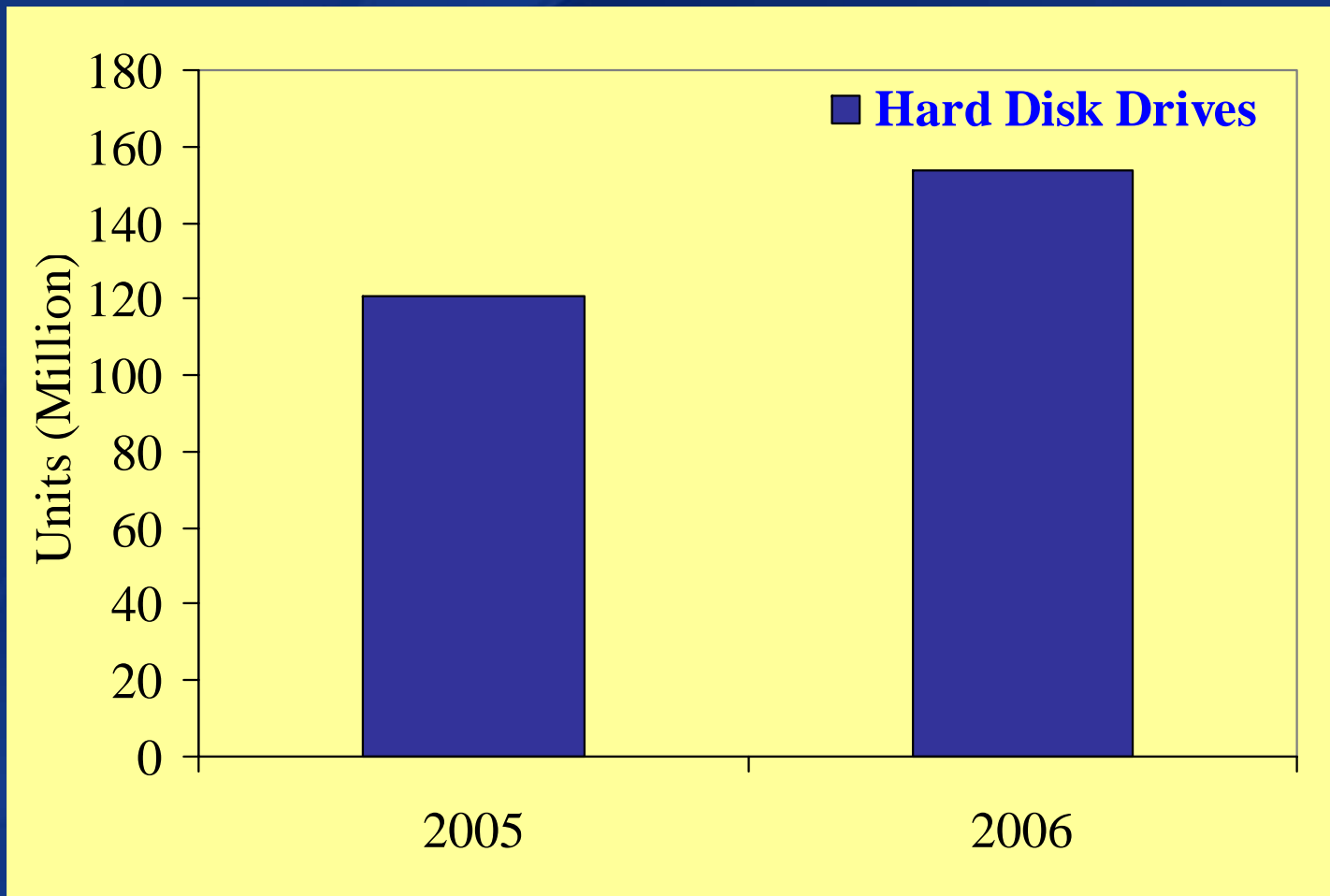


Production of Leading E&E Products



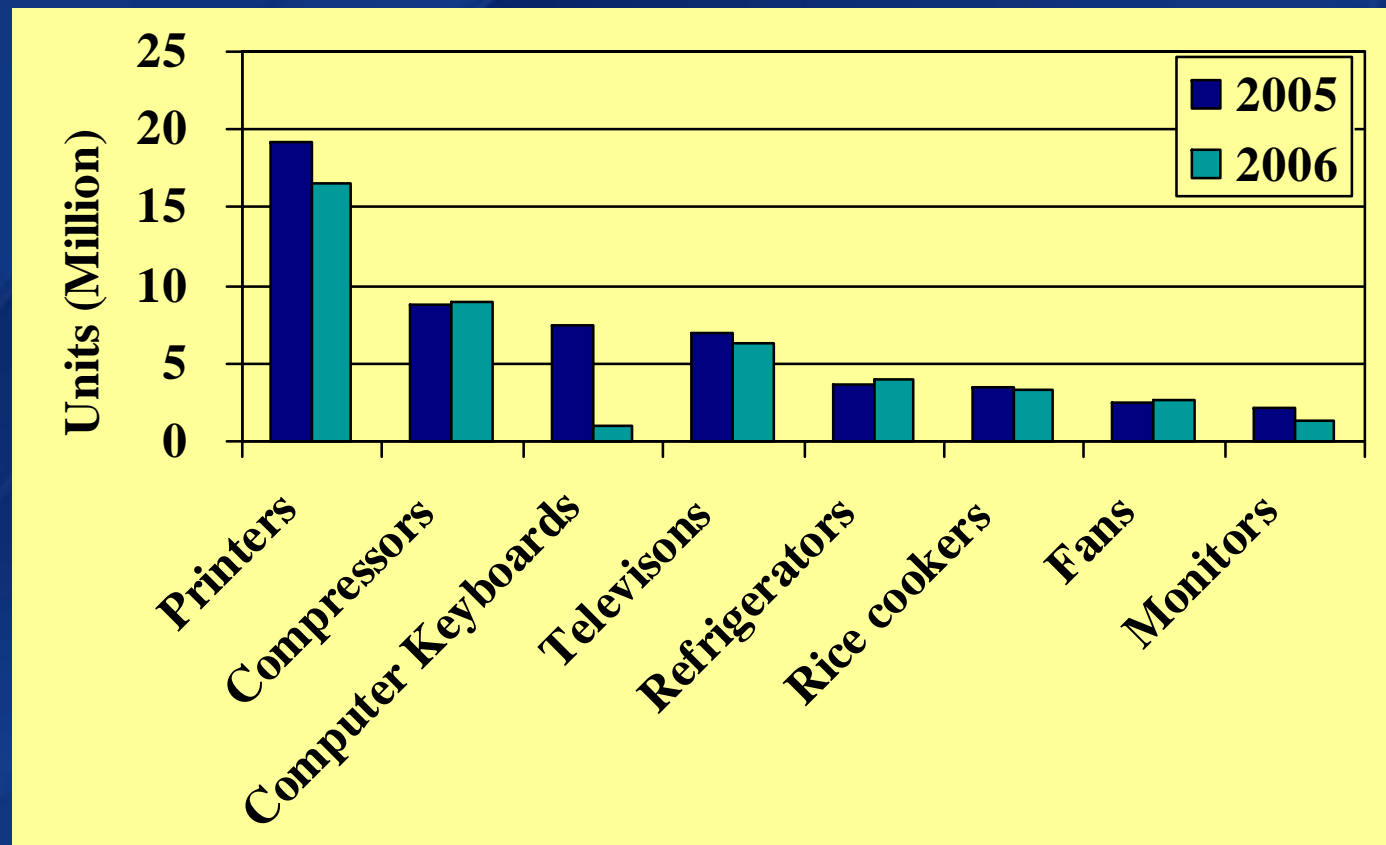
Source: Bank of Thailand

Production of Leading E&E Products



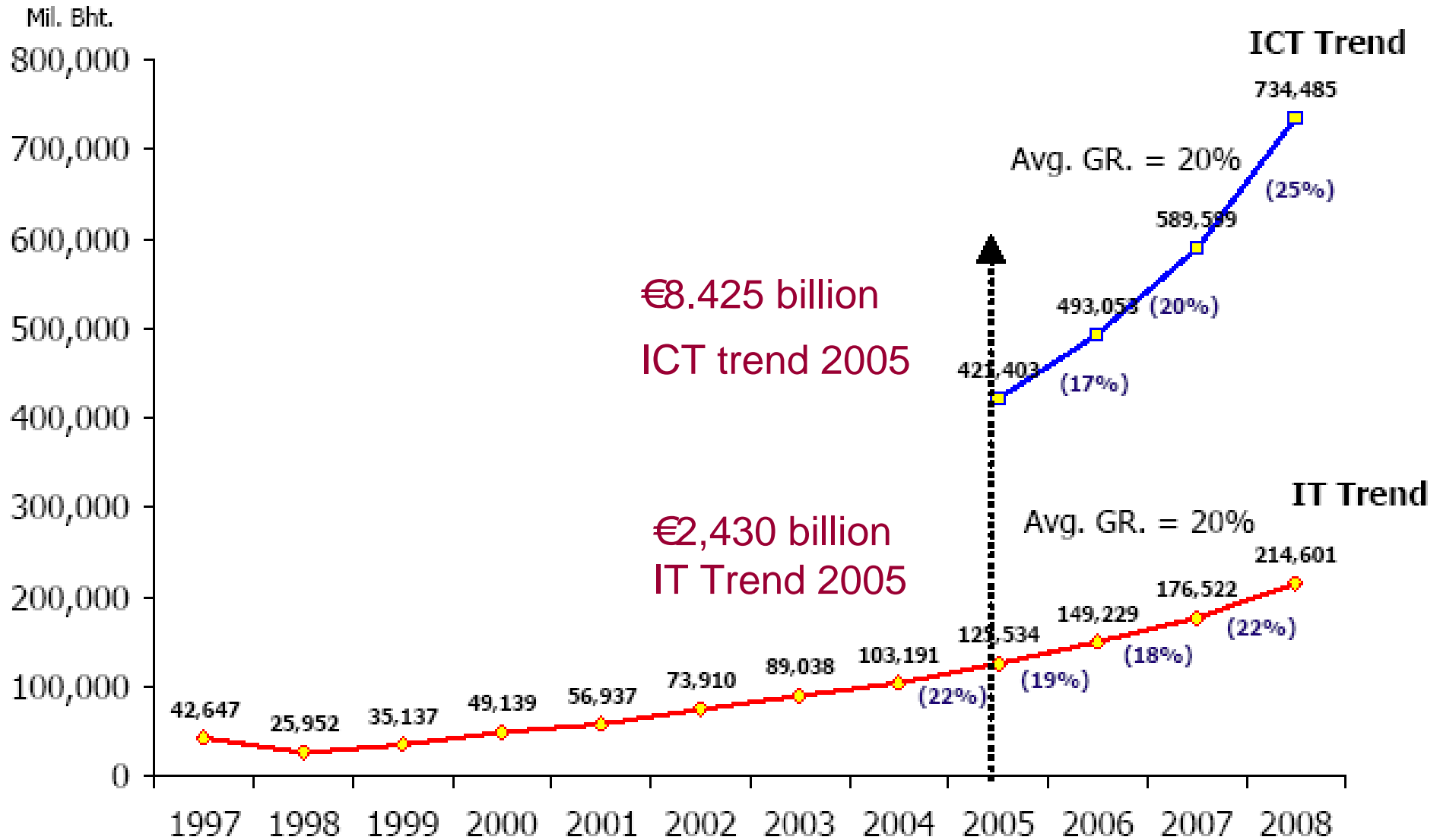
Source: Bank of Thailand

Production of Electric/Electronic Appliances



Source: Bank of Thailand

Thailand's IT & ICT Market Trend



2006 ICT Market

- ❑ **10 Million Internet Users (2005)**
- ❑ **Mobile Telephones: 39 million (2006)**
 - 📄 **Nokia: Survey of six major Asian cities shows organizations in Bangkok and Singapore most ready to mobilize business**
- ❑ **Five million ports for broadband in 2007:**
 - 📄 **Fixed line 3 million, Wireless 2 million**
- ❑ **Promoting 300,000 SMEs to use ICT**



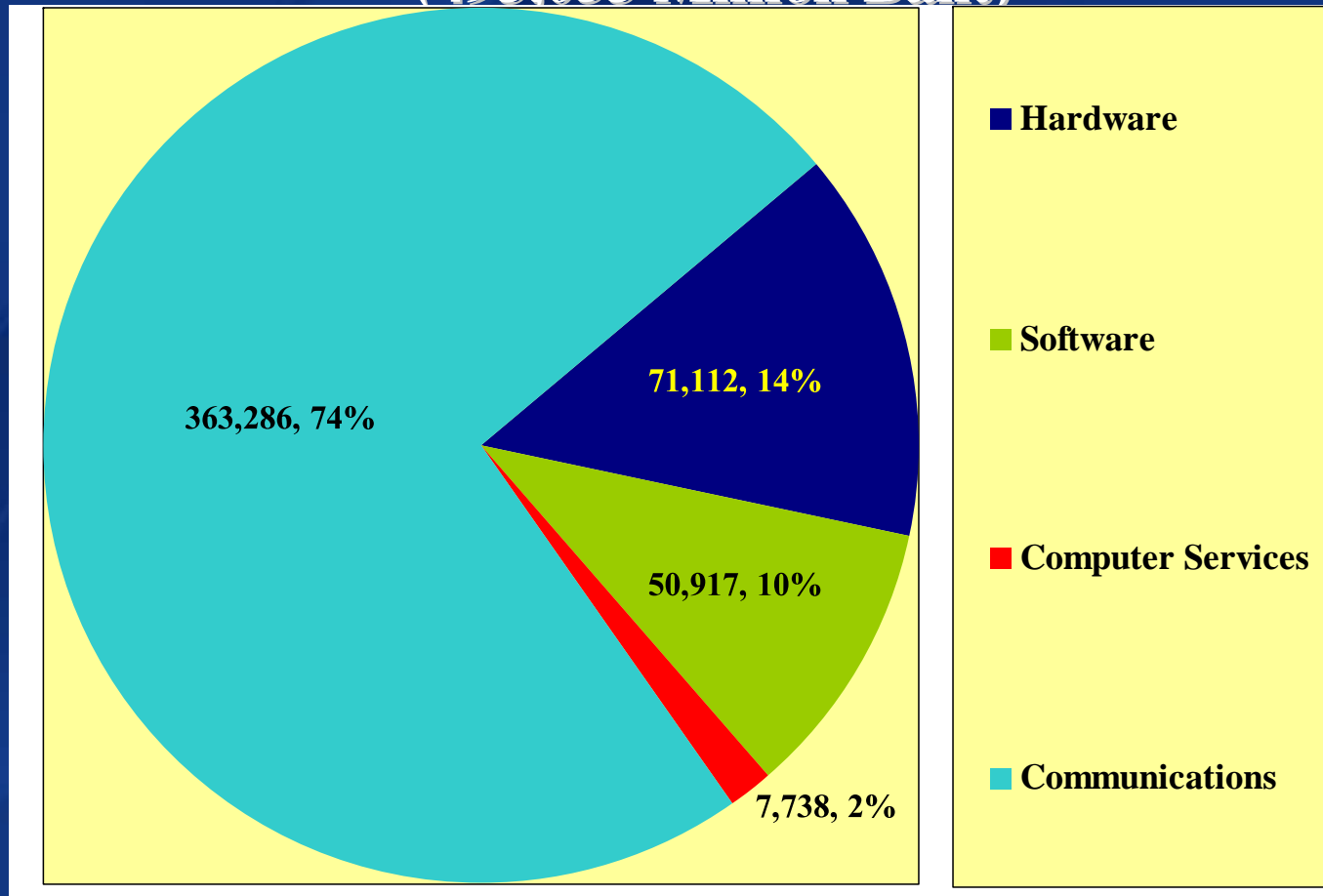
2006 ICT Market

- ❑ **Telecom service market about 217 billion baht**
- ❑ **Internet market value 11.75 billion baht**
 - ✓ **Broadband accounts for 69% market**
- ❑ **Mobile Telephones: 65% market penetration**
 - ✓ **Nokia: Survey of six major Asian cities shows organizations in Bangkok and Singapore most ready to mobilize business**
- ❑ **IT market expanding 17% to 163 billion baht**
 - ✓ **IT spending should overtake Singapore by 2010**

Source: IDC market research

Thailand's ICT Market 2006

(493,053 Million Baht)



Thailand ICT Market

Market	2005 Value	2006 Value	2005/06 Growth
Computer Hardware	63,381	71,112	12%
Computer Software	41,435	50,917	23%
Computer Services	6,729	7,738	15%
Communications	309,858	363,286	17%
Total ICT	421,403	493,053	17%

Source: 2005 SIPA/ATCI Survey



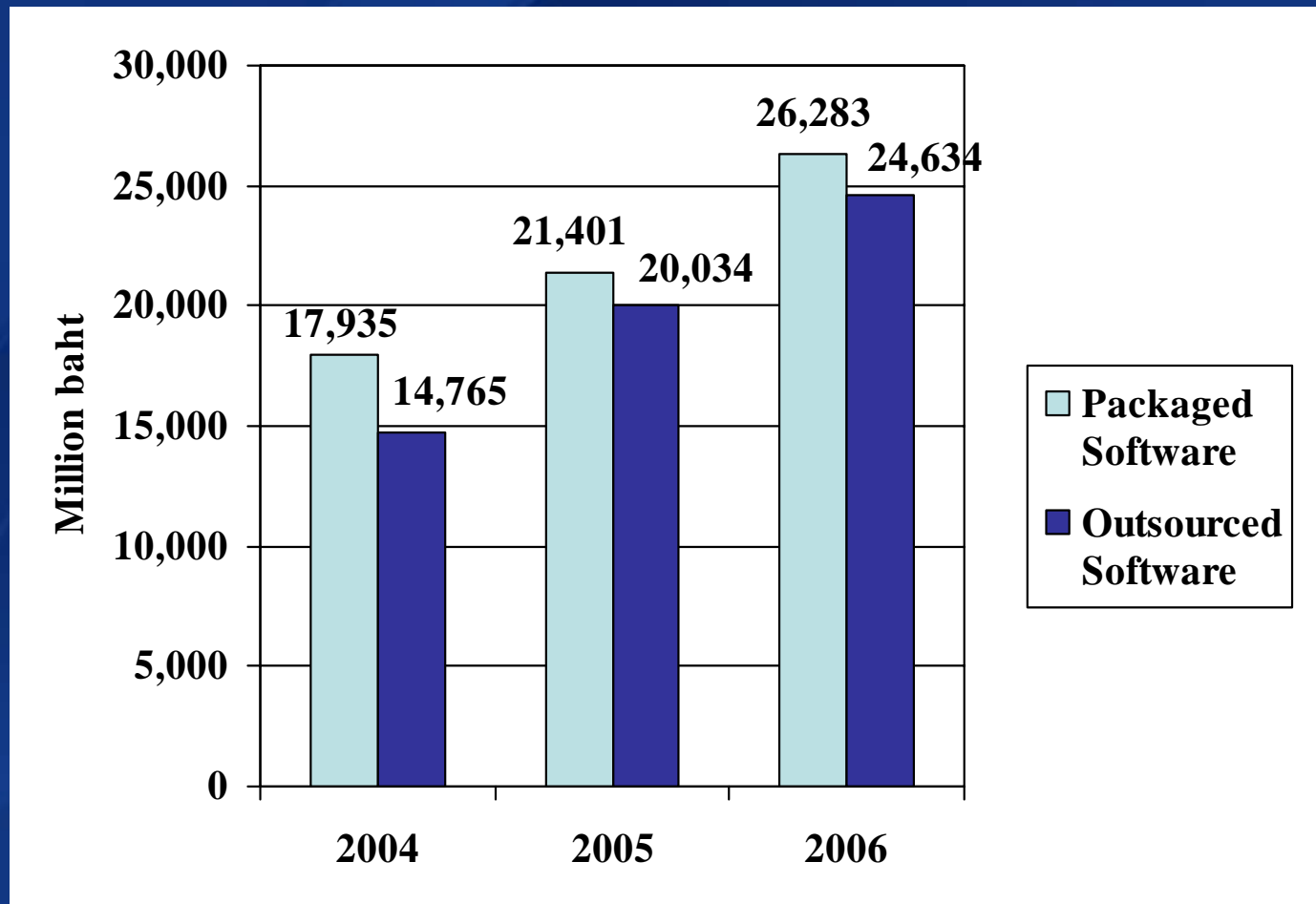
ICT Markets

	2005	2006	2007	2008	Avg. Growth (2005-2008)
Hardware	63,381	71,112	79,737	89,597	12
Software	41,435	50,917	60,795	77,039	23
Services	6,729	7,738	8,889	10,233	15
Communications	309,859	363,286	440,169	557,616	22
Total	431,403	493,053	589,599	734,485	20

Note: Average growth rate has been estimated based on historical data and possibility of the emergence of 3G and Wi-max technology within a 3-year time frame



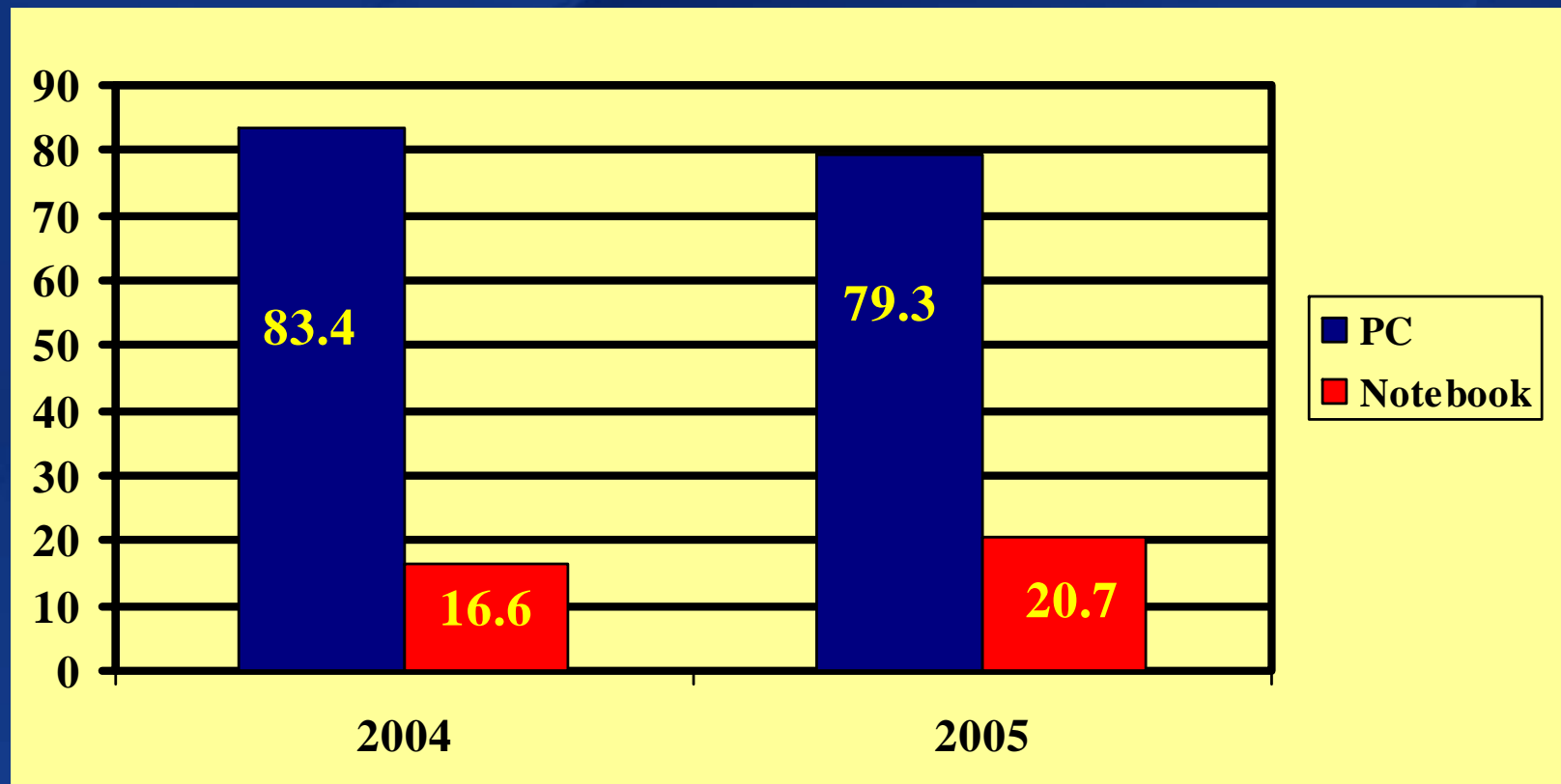
Software Trends



Source: 2005 SIPA/ATCI Survey

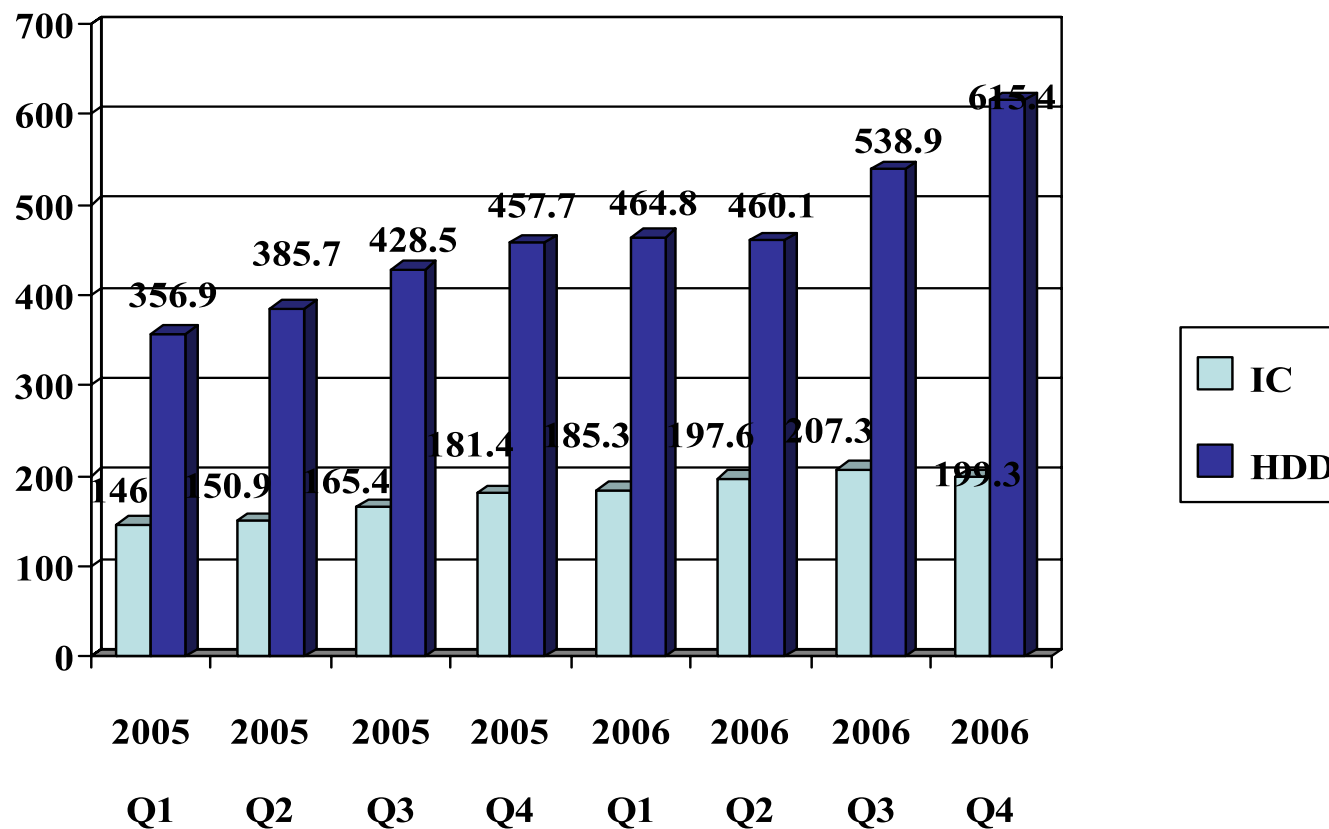


Ratio of PCs to Notebooks (in units)



Source: 2005 SIPA/ATCI Survey

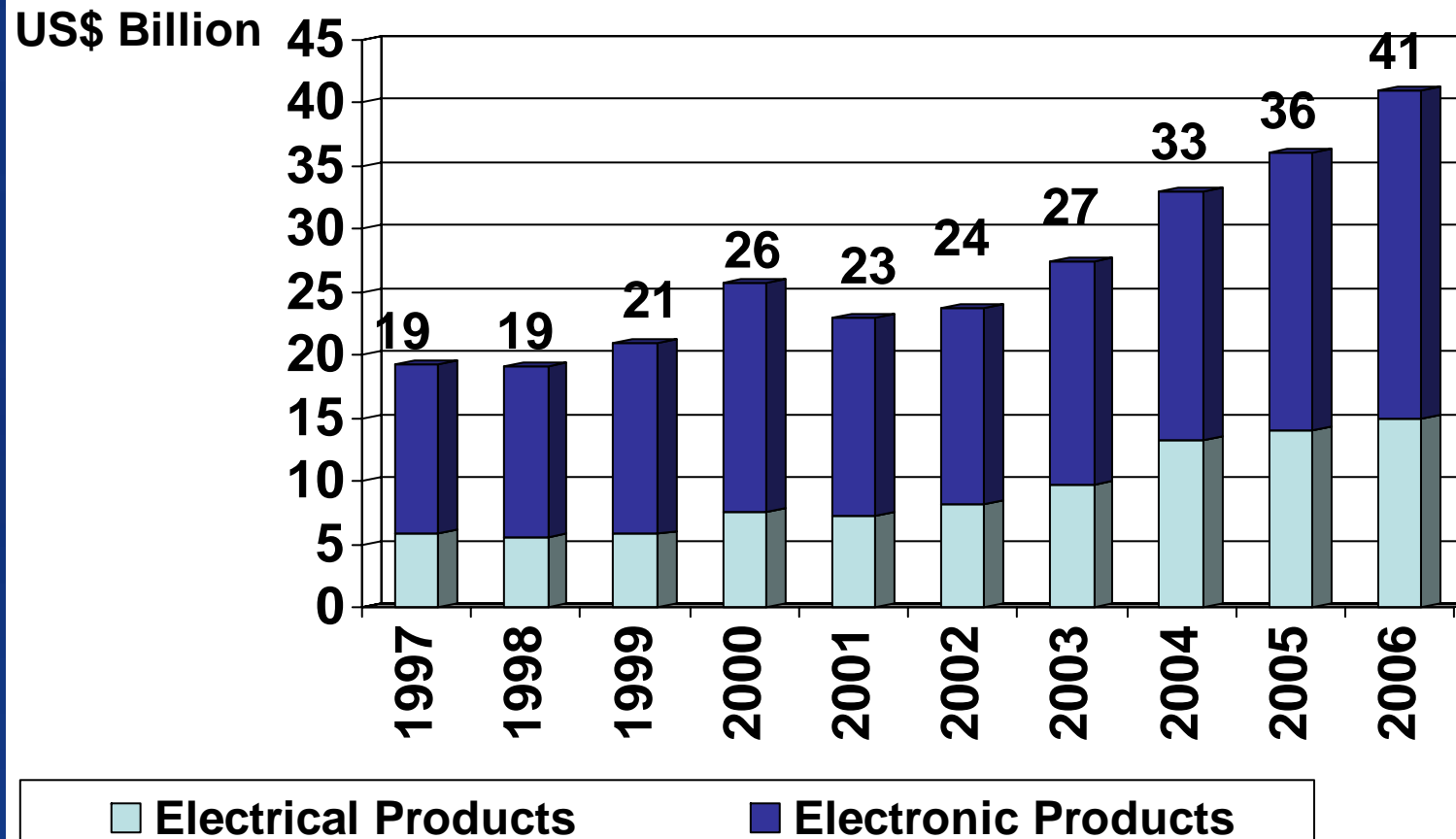
Recent Trend of IC and HDD Production



Source: Bank of Thailand (Manufacturing Production Index; FY 2000 = 100)

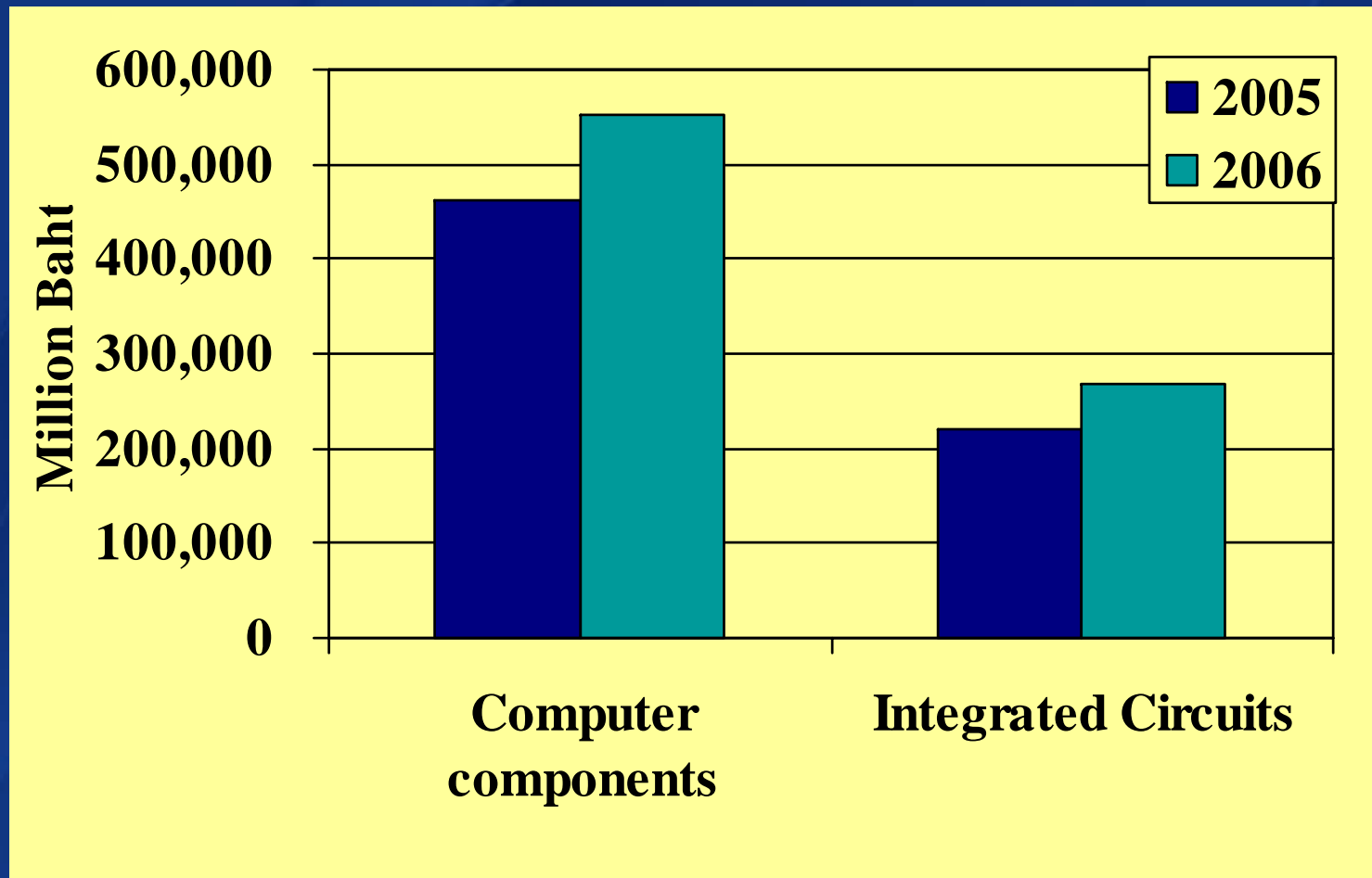


E&E Accounts for 31.6% of Exports:



Exchange rate in 2006: US\$ 1 = Baht 37.9286 (Bank of Thailand)

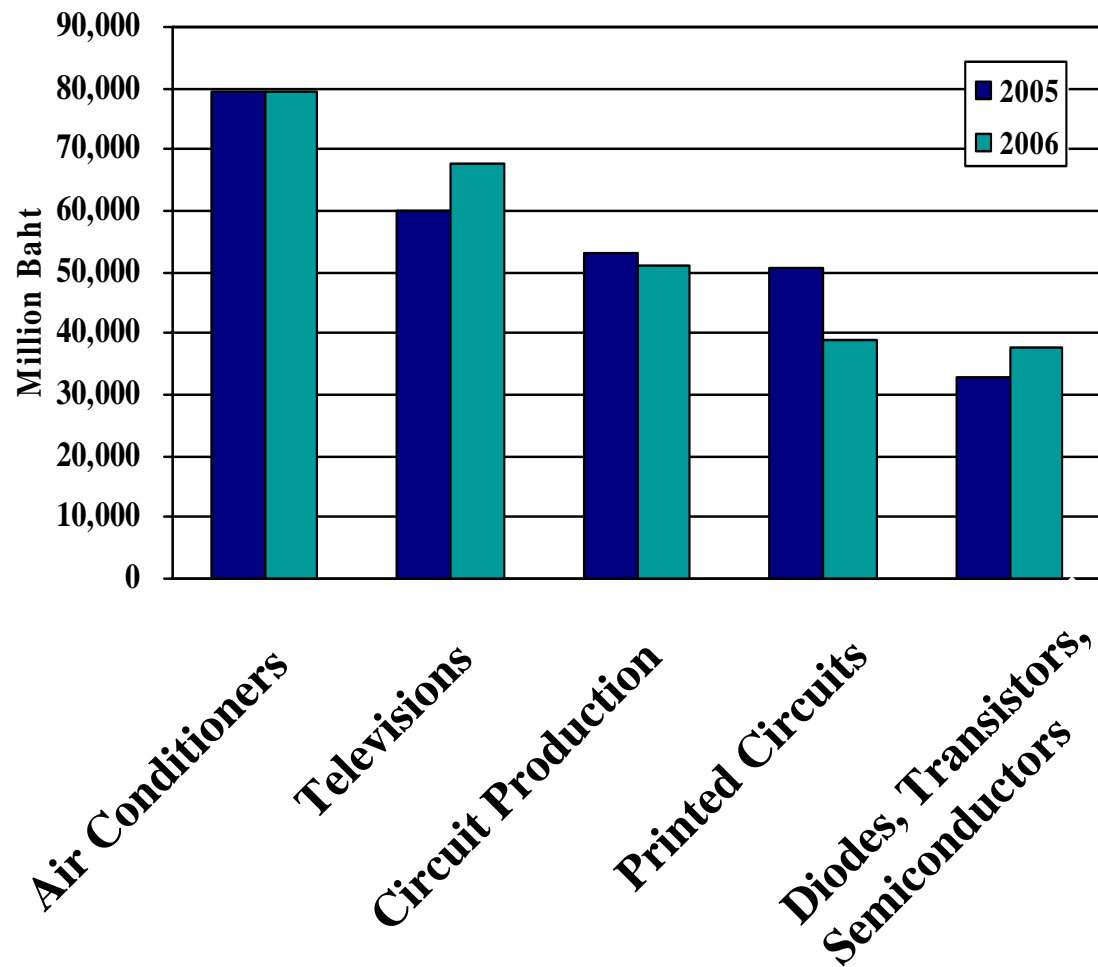
Top E&E Exports



Source: Electrical and Electronics Institute



Export of Electric/Electronic Appliances



Source: Electrical and Electronics Institute

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HDD Manufacturers in Thailand



Seagate

Samut Prakarn and Nakorn Ratchasima



Western Digital

Pathumthani and Ayutthaya



Fujitsu

Pathumthani



Hitachi Global Storage

Prachinburi



Union Technology

Chonburi



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Integrated Circuit Cluster in Thailand

IC Design

- Rohm LSI
- **Silicon Craft Technology**

Wafer

Assembly

- Microchip
- **Philips Semiconductor**
- Spansion
- **Hana Semiconductor**
- Circuit Electronics
- **Millennium Microtech**
- NS Electronics
- Agere
- **Oki**
- Sony Device Technology
- **Sanyo Semiconductor**
- Rohm Integrated
- **Toshiba Semiconductor**
- Thai NJR

Lead Frame

- Sumiko LeadFrame
- **TSP-T**
- Rohm Mechatech
- **Yamakin**

Testing

- Microchip
- **Maxim Integrated**



Investment Opportunity in E&E

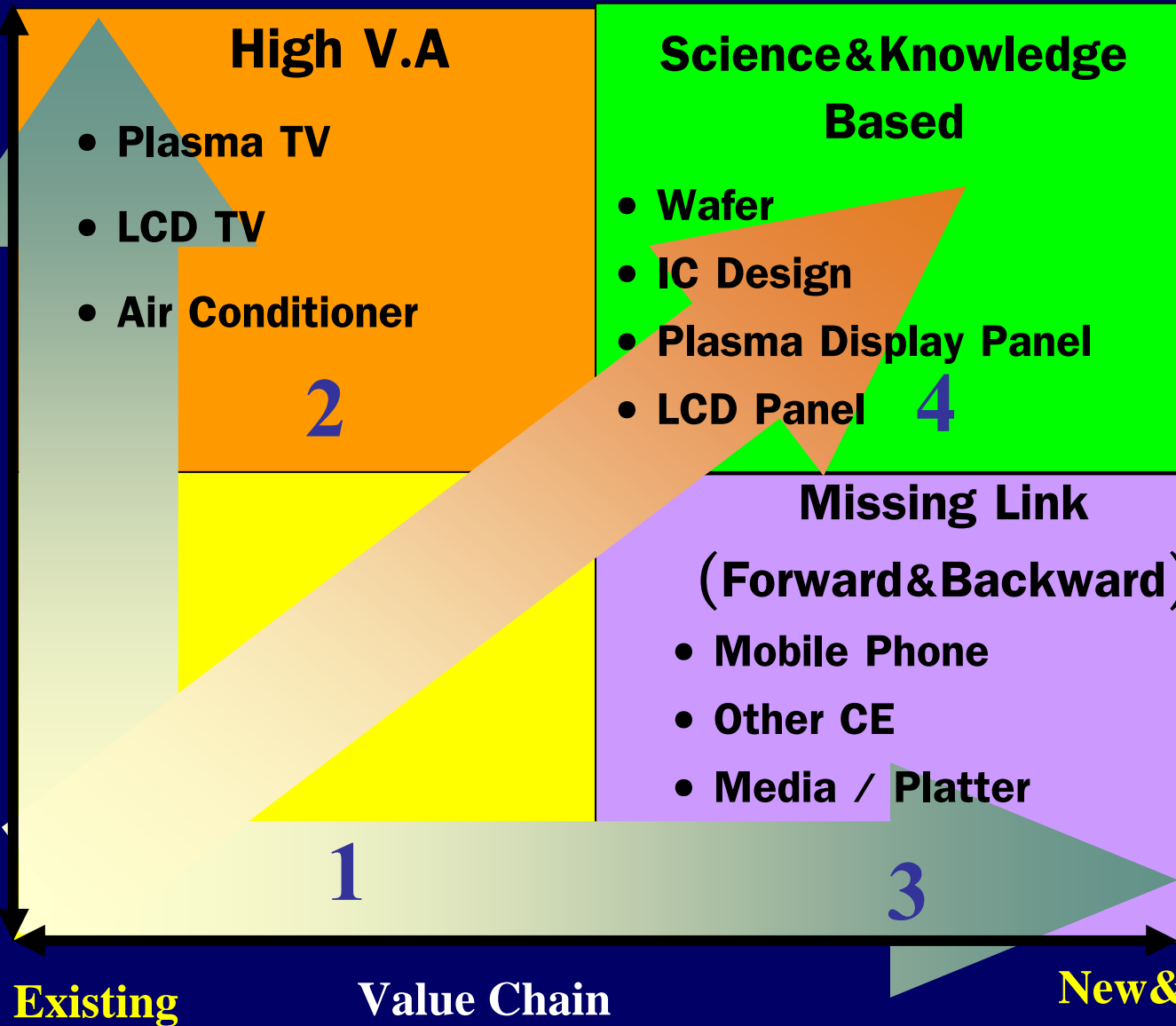


Strategies for Electronics Industry

Strengthening

Industry & Service

Existing



New E&E Investment Incentives

Investment projects are categorized as follows:

- 1. General investment projects**
- 2. High value long-term investment projects**
- 3. Existing projects**



New E&E Investment Incentives (1 of 2)

1. General investment projects:

Incentives = New Basic Incentives

+

STI Incentive (Optional)

*Additional tax holidays

*No limit on tax exemptions



General Investment Projects (2 of 2)

- **Corporate Income Tax Holiday for E&E Industry:**
 - **Zone 1 – Five years, regardless of location**
 - **Zone 2 – Seven years inside industrial estates
– Six years outside industrial estates**
 - **Zone 3 – Eight years, regardless of location**
- **Exemption from import tariffs on machinery without time limit**
- **For wafers, ICs, HDDs and parts, upgraded existing machinery can be utilized in new investment projects with the approval from the BOI**

High-value, Long-term E&E investments

- **Investment plan covering at least 5 years must be submitted**
- **All projects within the plan must be in the same Electrical and Electronics Supply Chain with BOI approval.**
- **All projects/phases in the plan must be submitted by the same legal entity or have the same group of shareholders as approved by the BOI**
- **Total investment value of all projects must be at least 15 billion baht (excluding cost of land and working capital)**



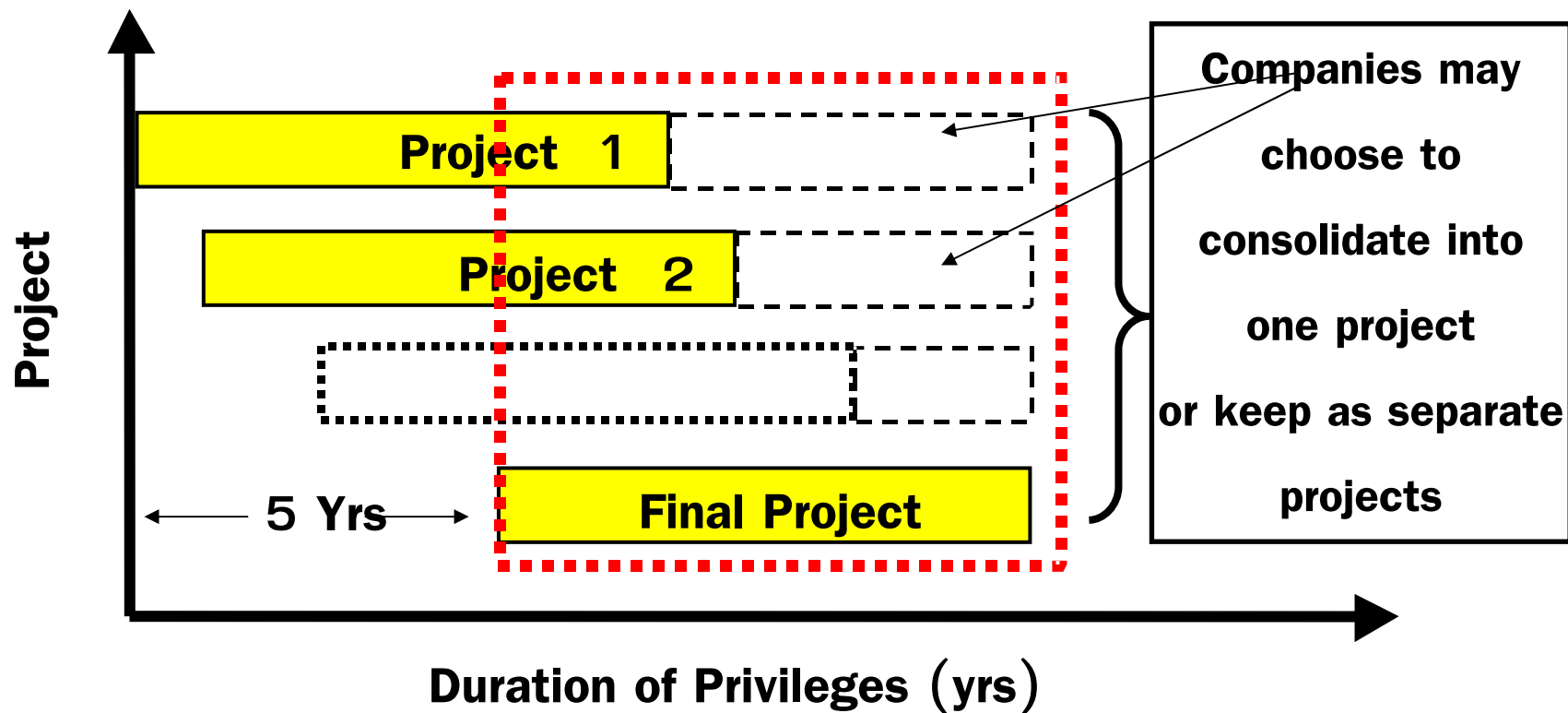
High-value, Long-term E&E Investments (2 of 2)

- Final project under the plan must commence within 5 years from the start of the 1st project
- **Tax exemption period of final project will be 8 years**
- The tax exemption period of earlier projects will be extended to end at the same time as the exemption period of the final project



Privileges for high value long-term E&E Investment projects

Extended duration of corporate income tax holidays



Note: At least 15 billion baht investments (within 5 years)

Compulsory STI expenditures for high-value, long-term E&E investments

High-value, long-term investment projects must meet the following STI criteria during operation of final project:

STI requirements	Zone 1	Zone 2	Zone 3
<ul style="list-style-type: none">•R&D•Advanced Technology Training•Funding of educational/research institutions	2% of total 1 st 3-year sales or a maximum of 500 million baht	1.5% of total 1 st 3-year sales or a maximum of 400 million baht	1% of total 1 st 3-year sales or a maximum of 300 million baht

Required total STI expenditures are calculated from the first 3-year sales of the final project and previous projects combined.

Customized Incentives for *Higher-Value* Investment Projects

- **Pioneer or priority projects with investment value over 25 billion baht may be eligible for a customized tax incentive package**



Objectives of New E&E Investment Policies

- To enhance competitiveness of E&E industry**
- To promote investments along the entire value chain**
- To attract high-value, long-term investments**
- To encourage development of Skills, Technology and Innovation (STI)**



Additional STI Incentives (Optional)

Investment and Expenditures on:

- Research and development or design
- Advanced technology training
- Funding of educational and research institutes

% of First Three Years' Sales	Additional Corporate Income Tax Exemption
1% or at least 150 million baht	1 year
2% or at least 300 million baht	2 years
3% or at least 450 million baht	3 years

Note: Corporate income tax holiday may not exceed eight years.

General Investment Projects (2/3)

New basic incentives for E&E industry are as follows:

Exemption of corporate income tax (years)

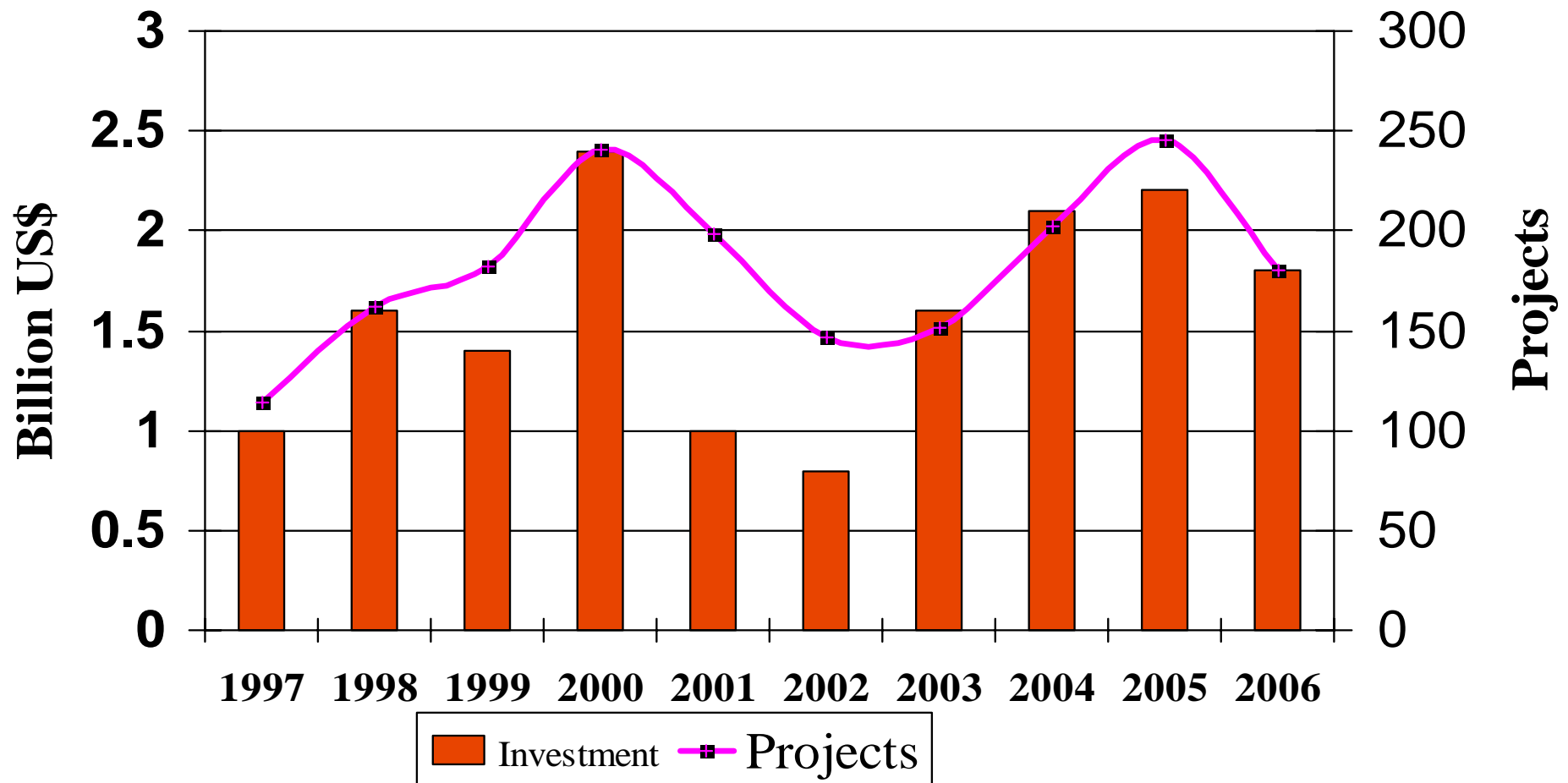
	Zone 1		Zone 2		Zone 3	
	Outside IE	Inside IE	Outside IE	Inside IE	Outside IE	Inside IE
Previous incentive	-	3	3	7	8	8
New incentive	5	5	6	7	8	8

**Remarks: Priority activities such as production of Wafers and Solar Cells still receive maximum 8-year exemptions regardless of location
IE = Industrial Estates/Industrial Zones**

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Net BOI Applications for Electronic & Electrical Projects



BOI Promoted Projects in E & E Industry 2006

Note: THB/USD = 36

Country/Region	The number of BOI promoted projects	Investment (Mill. Baht)	Investment (Mill. US\$)
Japan	69	33,515.9	931.0
ASEAN	23	8,849.8	245.8
EU	10	2,115.4	58.8
United States	10	1,427.5	39.7
China	1	35.3	1
Others	53	11,994.3	333.2
<u>Total</u>	<u>166</u>	<u>57,938.2</u>	<u>1,609.4</u>

ICT Bodies Contact Address

- ❑ Ministry of Information Communications and Technology
 - ✓ www.mict.go.th
- ❑ Software Park Thailand
 - ✓ www.swpark.or.th
- ❑ Software Industry Promotion Agency (SIPA)
 - ✓ www.sipa.or.th
- ❑ National Electronic & Computer Technology Center (NECTEC)
 - ✓ www.nectec.or.th
- ❑ The Association of Thai ICT Industry (ATCI)
 - ✓ www.atci.or.th
- ❑ Association of Thai Software Industry (ATSI)
 - ✓ www.atsi.or.th

