

BUSINESS OUTLOOK

GLOBAL ELECTRONICS

INDUSTRY

WALT CUSTER
CUSTER CONSULTING GROUP
www.custerconsulting.com
August 2005

Topics

- **World economy**
- **Electronic equipment - size, scope and end-market drivers by sector**
- **Active and passive components (including semiconductors and PCBs)**
- **Global electronic assembly markets (OEM, EMS and ODM)**
- **Related materials and process equipment**
- **Status and economic performance of key companies serving each sector**

Historical Review

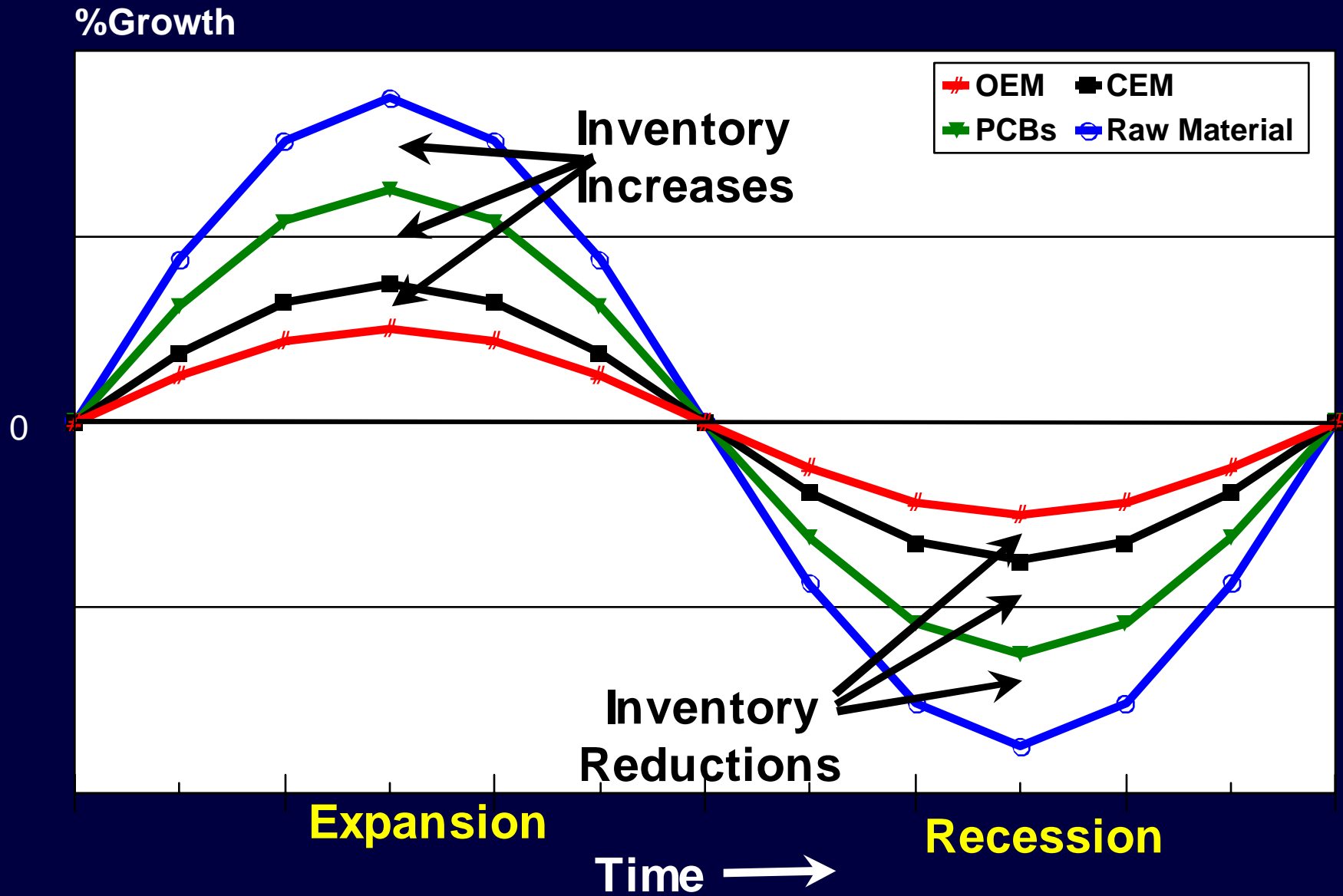
2000 - Dot.com and telecom "bubble demand", double ordering & inventory building

2001-2003 - Electronic recession in USA & Europe; shift to "low cost" SE Asian manufacturing

2004 - Strong 1Q'04 in USA & Europe with over-ordering & inventory building; Asian growth continues

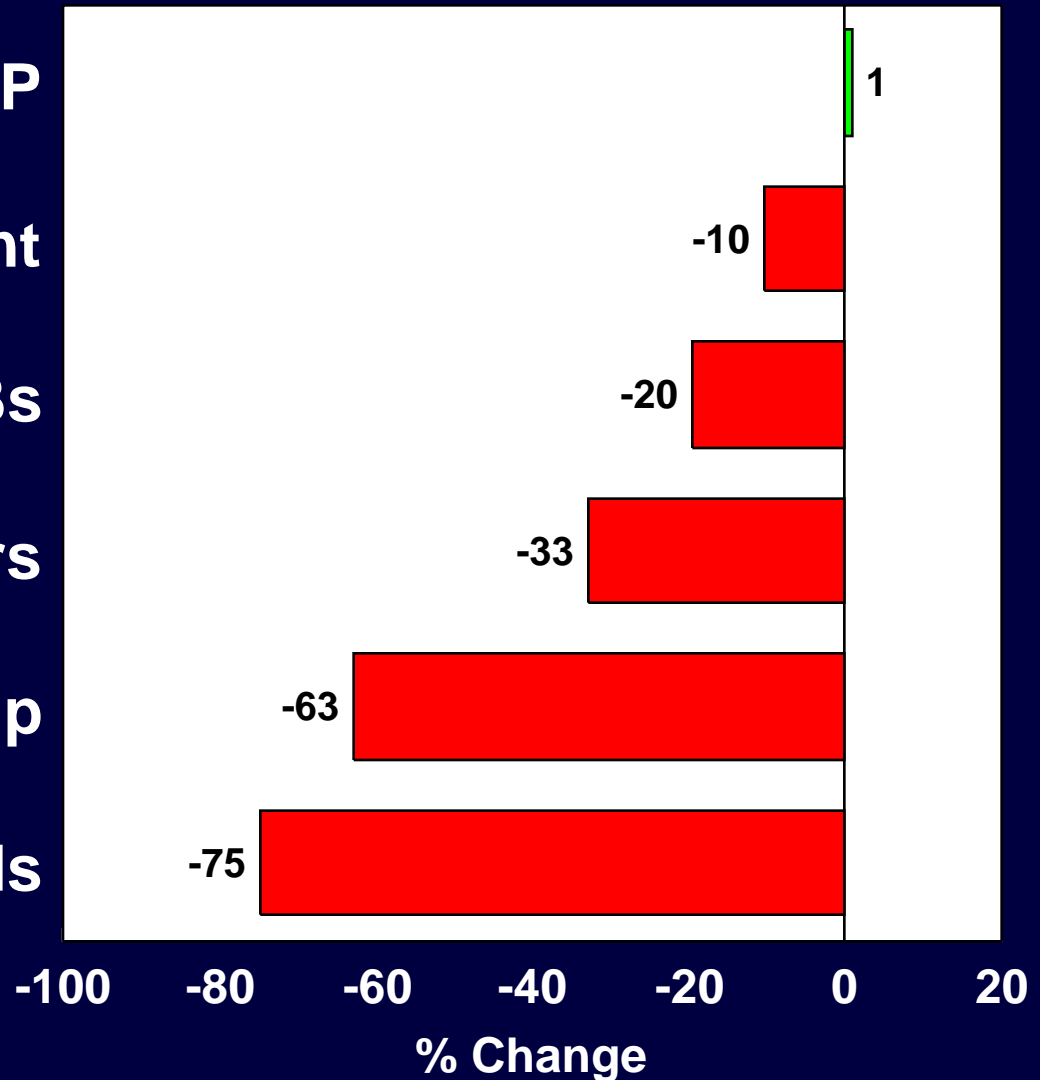
2005 - "Flat demand" domestically in 1H'05; pick up in second half

BUSINESS CYCLE Supply Chain Effect

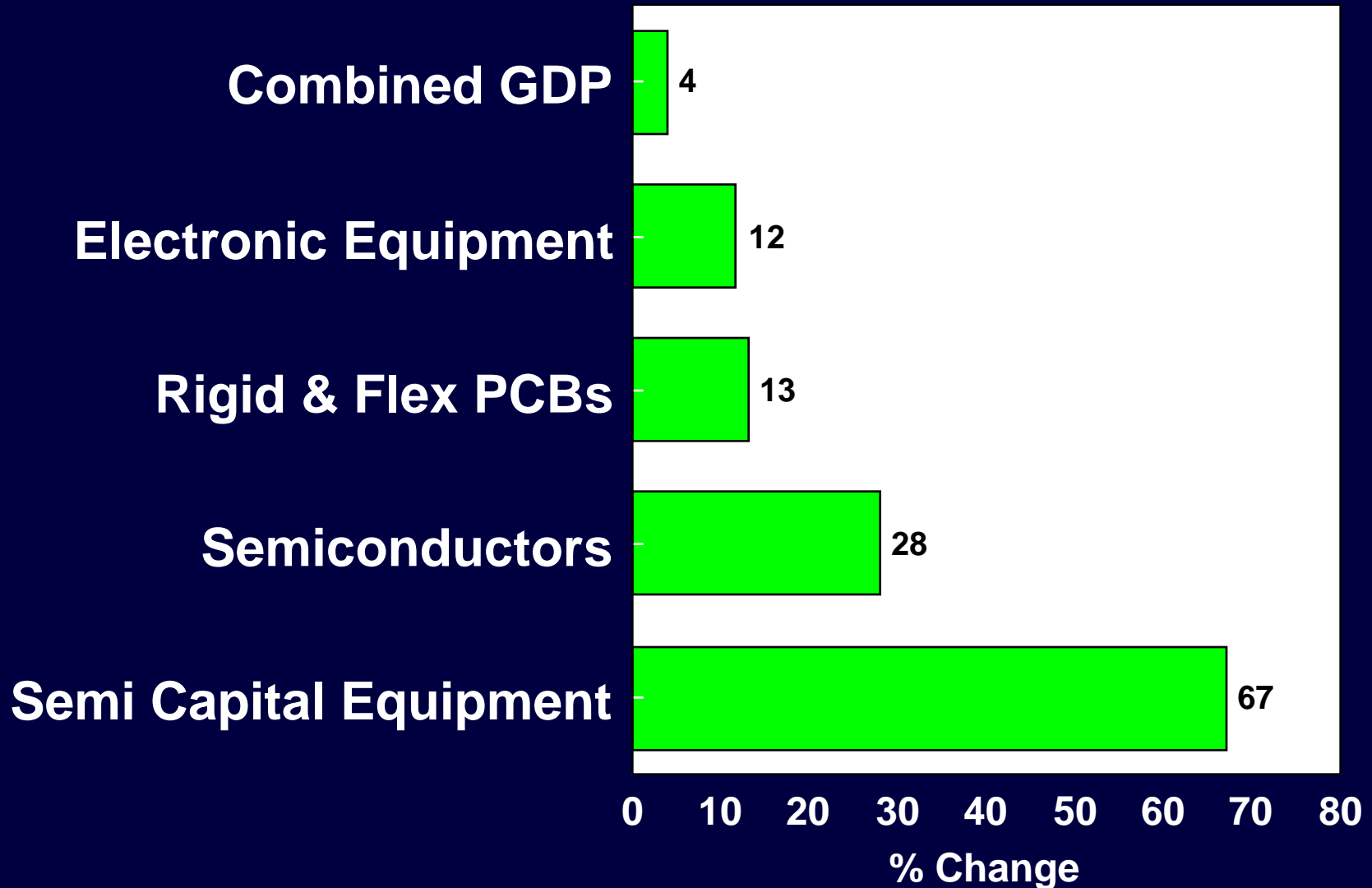


Global Impact - 2001 vs 2000

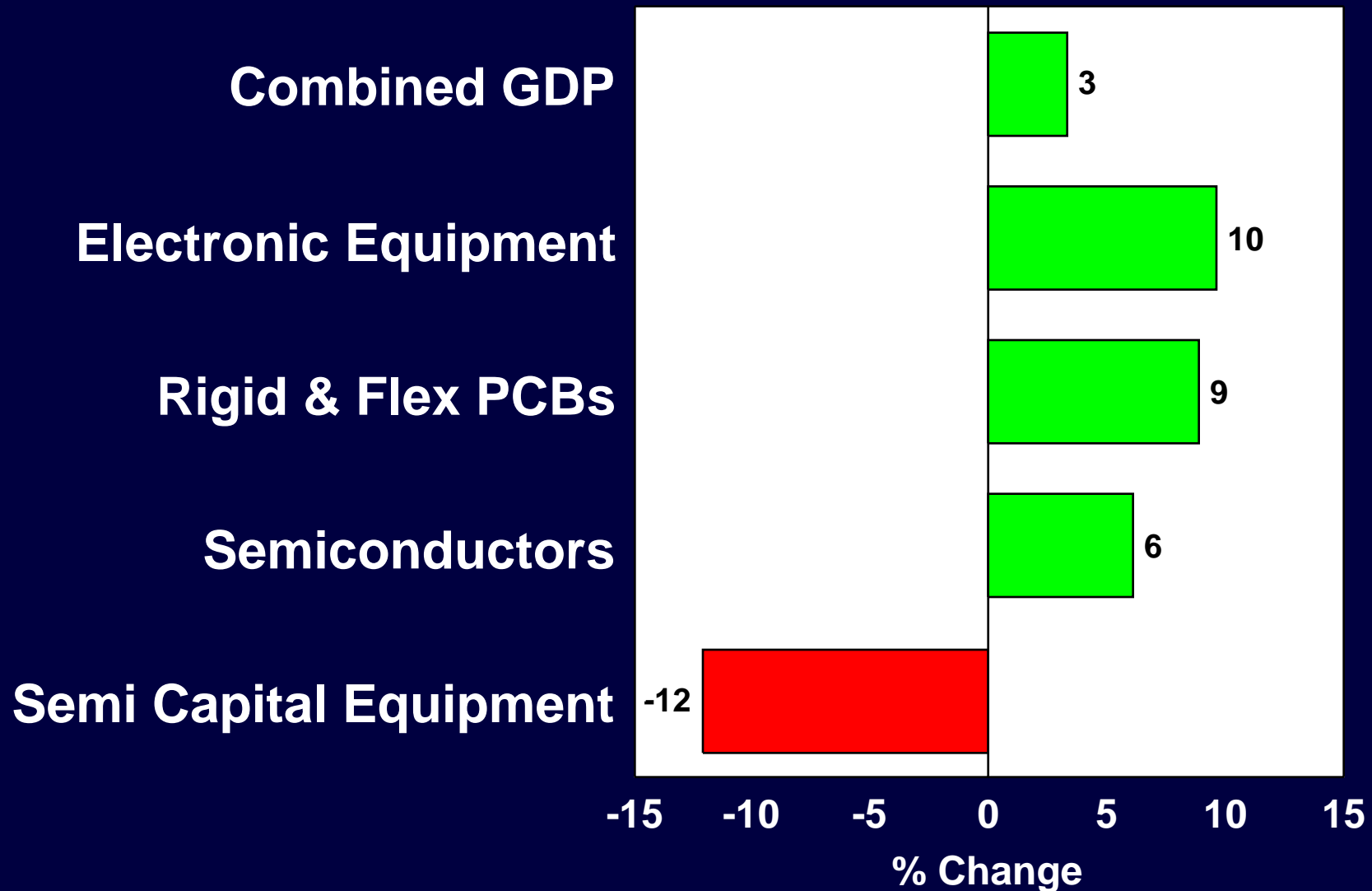
Combined GDP
Electronic Equipment
Rigid & Flex PCBs
Semiconductors
Semi Capital Equip
DRAMs



Global Impact - 2004 vs 2003



Global "Electronic Foodchain" Outlook 2005 vs 2004



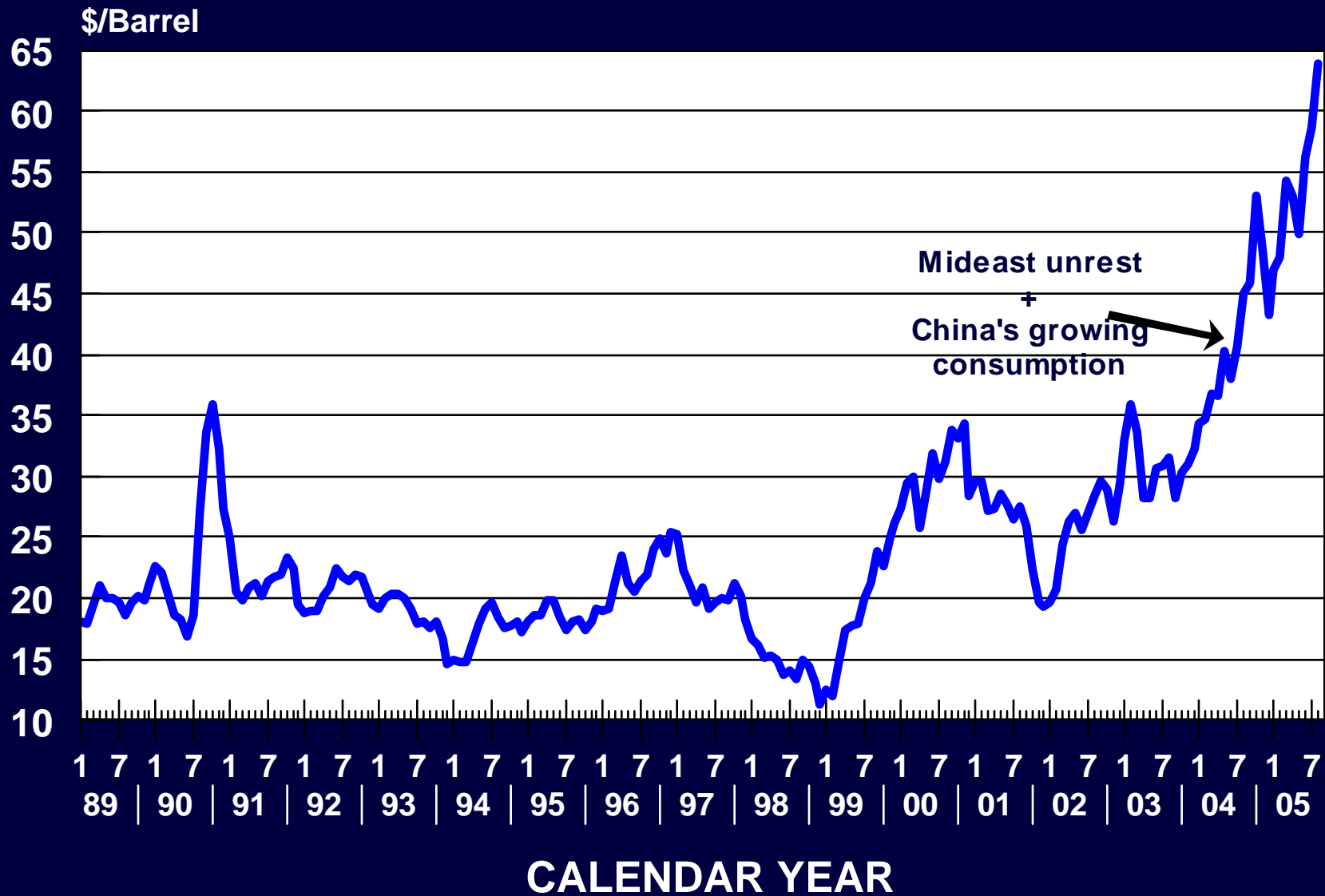
Global Economy

Concerns

- **High energy costs; increasing oil consumption and depleting reserves**
- **Mid East unrest and resulting global impact**
- **Increasing dependence on SE Asian made components and electronic assemblies**
- **"Fair" currency exchange values**
- **Rising interest rates**

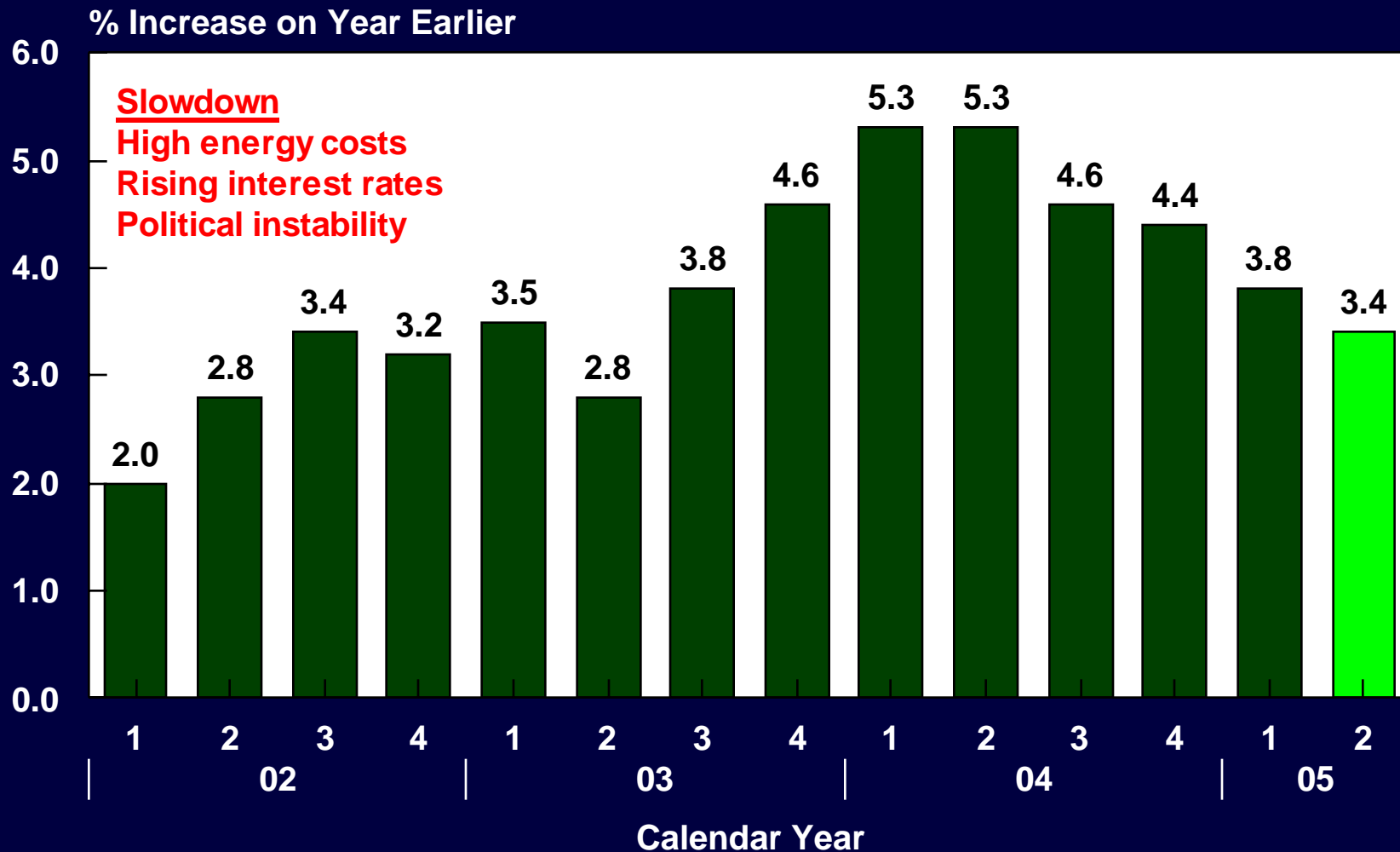
Spot Oil Prices

W Texas Intermediate Crude



World Gross Domestic Product

QUARTERLY CHANGE (1987 \$)



Economist 6/2005, Custer 2Q'05 estimate 6/05

INDUSTRIAL PRODUCTION - WORLD

% CHANGE vs ONE YEAR EARLIER

BRITAIN	-1.9 May
CZECH REPUBLIC	+4.0 May
FRANCE	-0.2 May
GERMANY	+0.8 May
ITALY	-2.1 May
NETHERLANDS	-1.0 May
RUSSIA	+6.9 June
SPAIN	+0.5 May
EURO area	+0.1 May
CANADA	+1.8 May
USA	+3.9 June
CHINA	+16.8 June
MALAYSIA	-0.4 May
PHILLIPPINES	+5.4 May
SINGAPORE	+11.1 June
S KOREA	+4.1 June
TAIWAN	+1.3 June
THAILAND	+8.8 June
JAPAN	+0.1 June

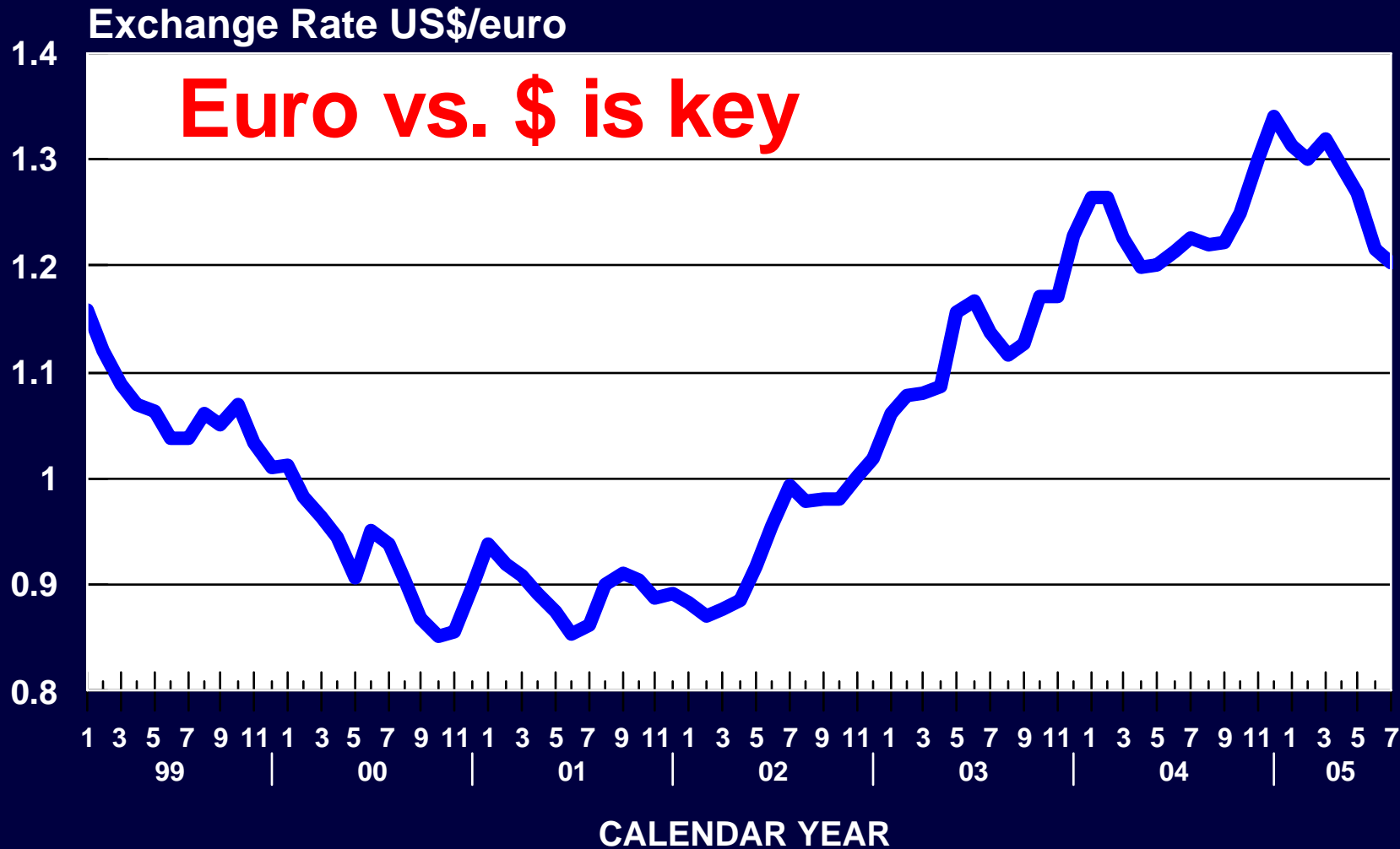
Exchange Rates

Trade-Weighted Exchange Value of U.S. Dollar vs of a broad group of major U.S. trading partners



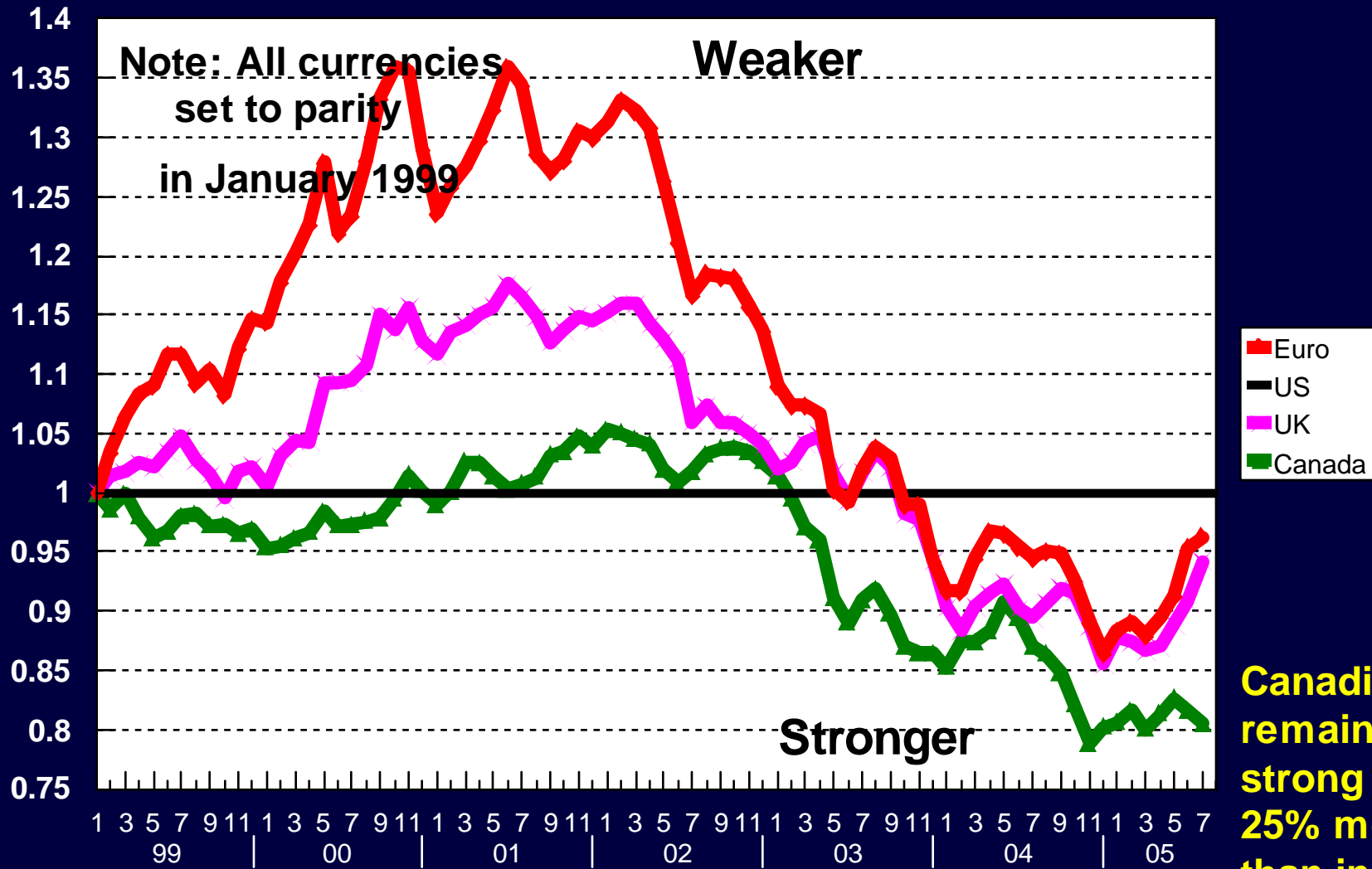
<http://research.stlouisfed.org/fred2/series/TWEXBMTH/15>

Euro vs. U.S. Dollar



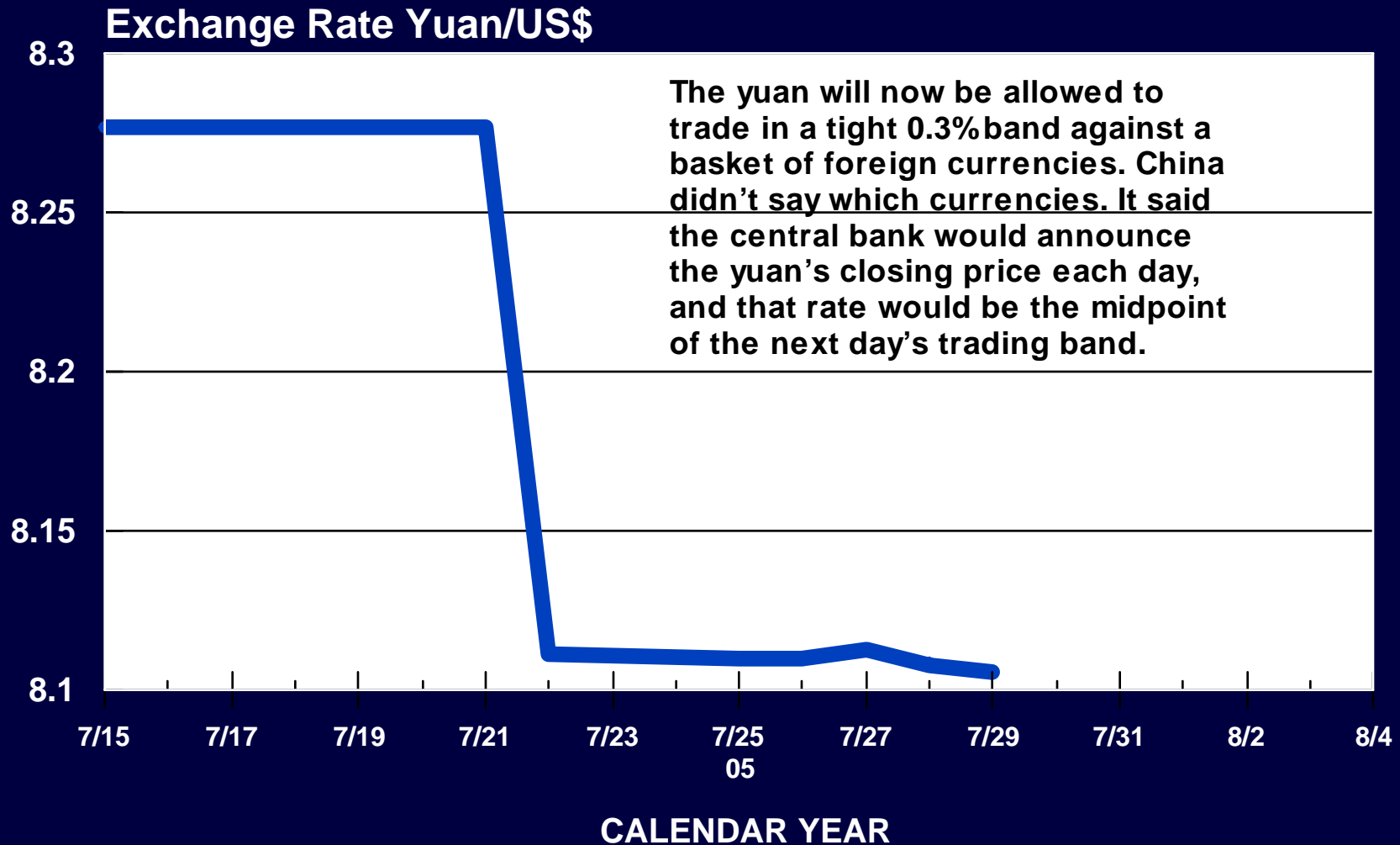
EUROPEAN EXCHANGE RATES vs US & CANADA

1/99 = 1.00



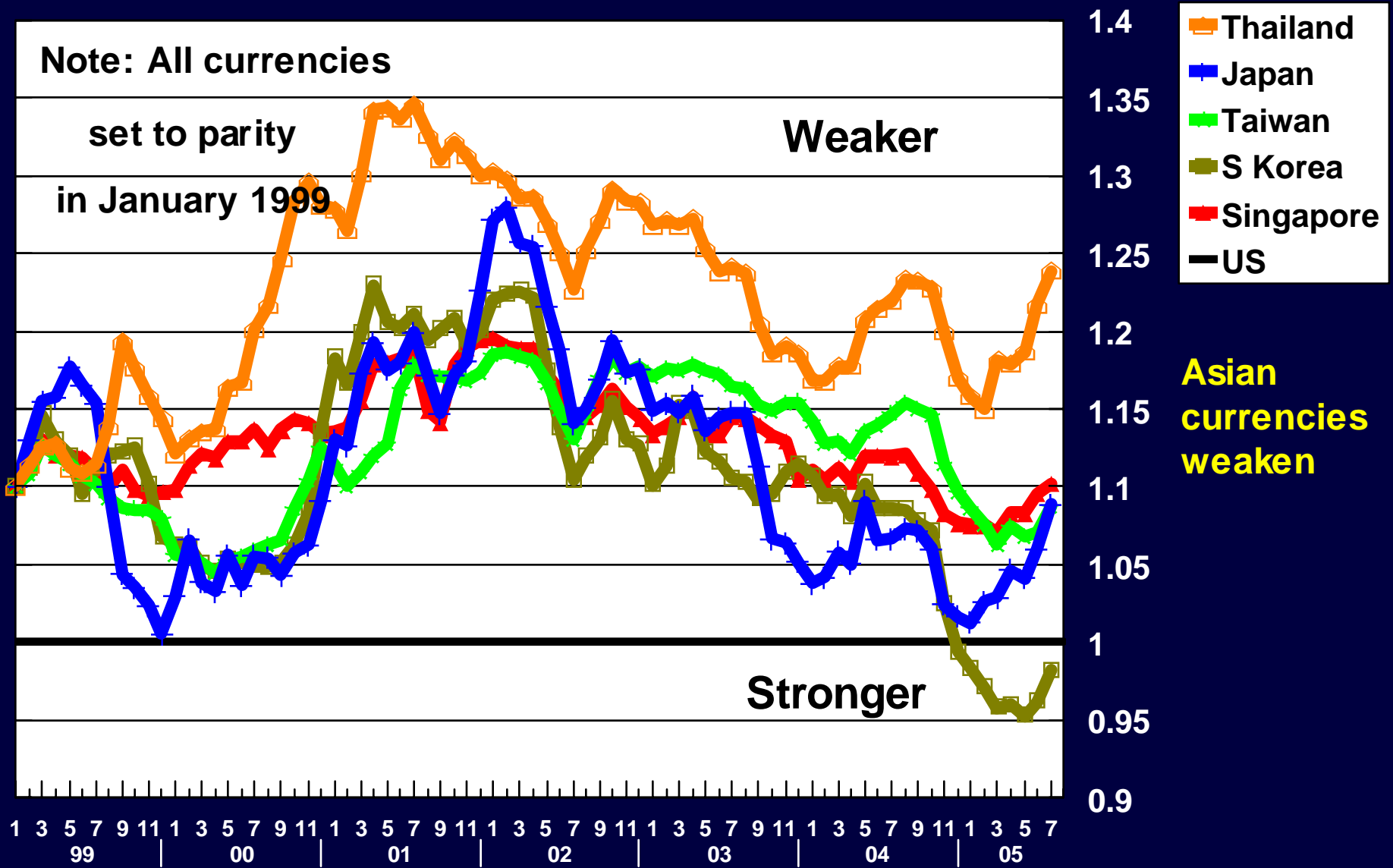
Canadian \$ remains strong . . . 25% more than in 2002

China Yuan vs. U.S. Dollar



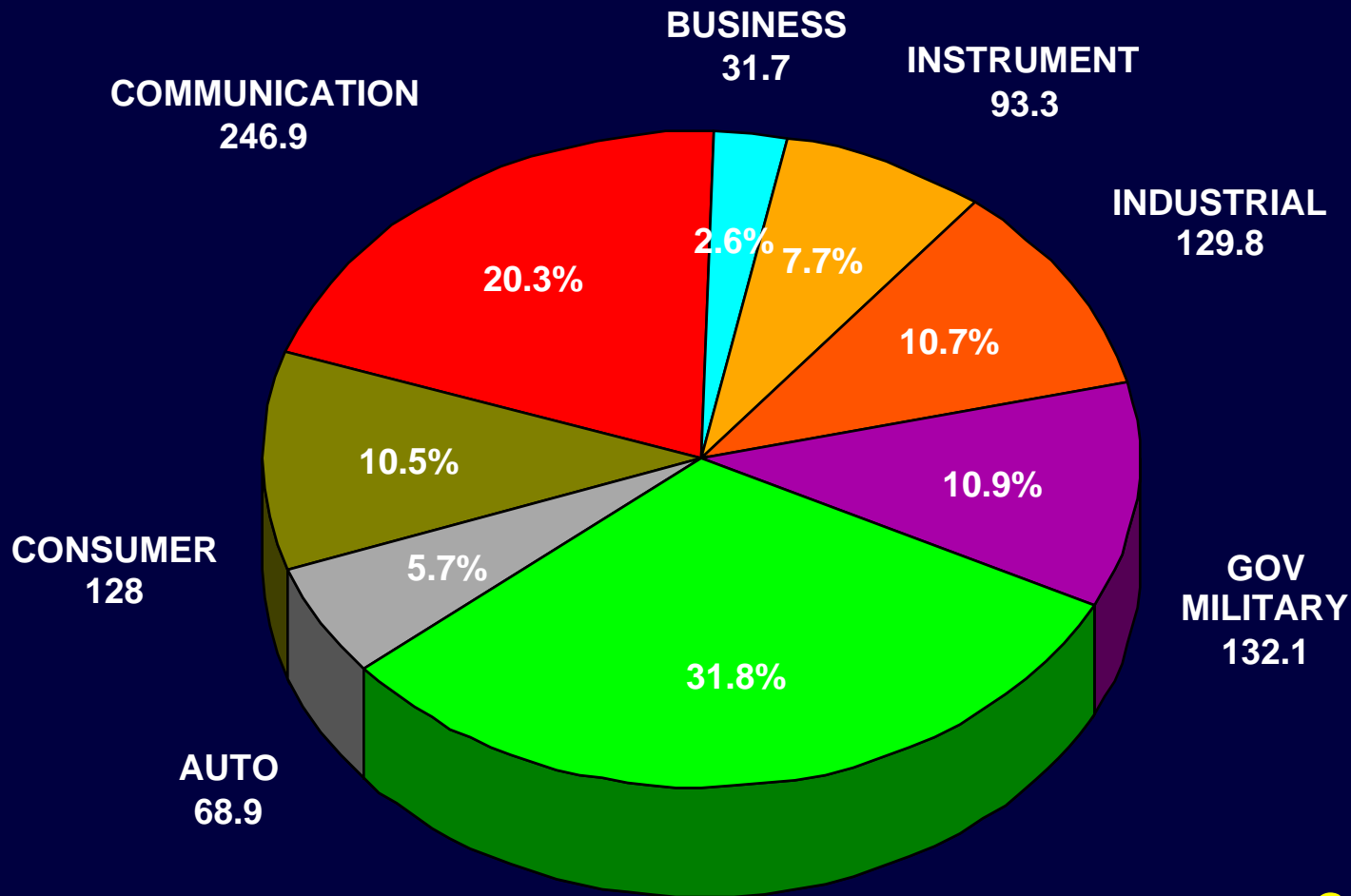
ASIAN EXCHANGE RATES vs US \$

1/99 = 1.00



Electronic Equipment

World Electronic Equipment by Type 2004



2003
\$1106 B

Electronic Outlook 9/04

10%

COMPUTER
386.6

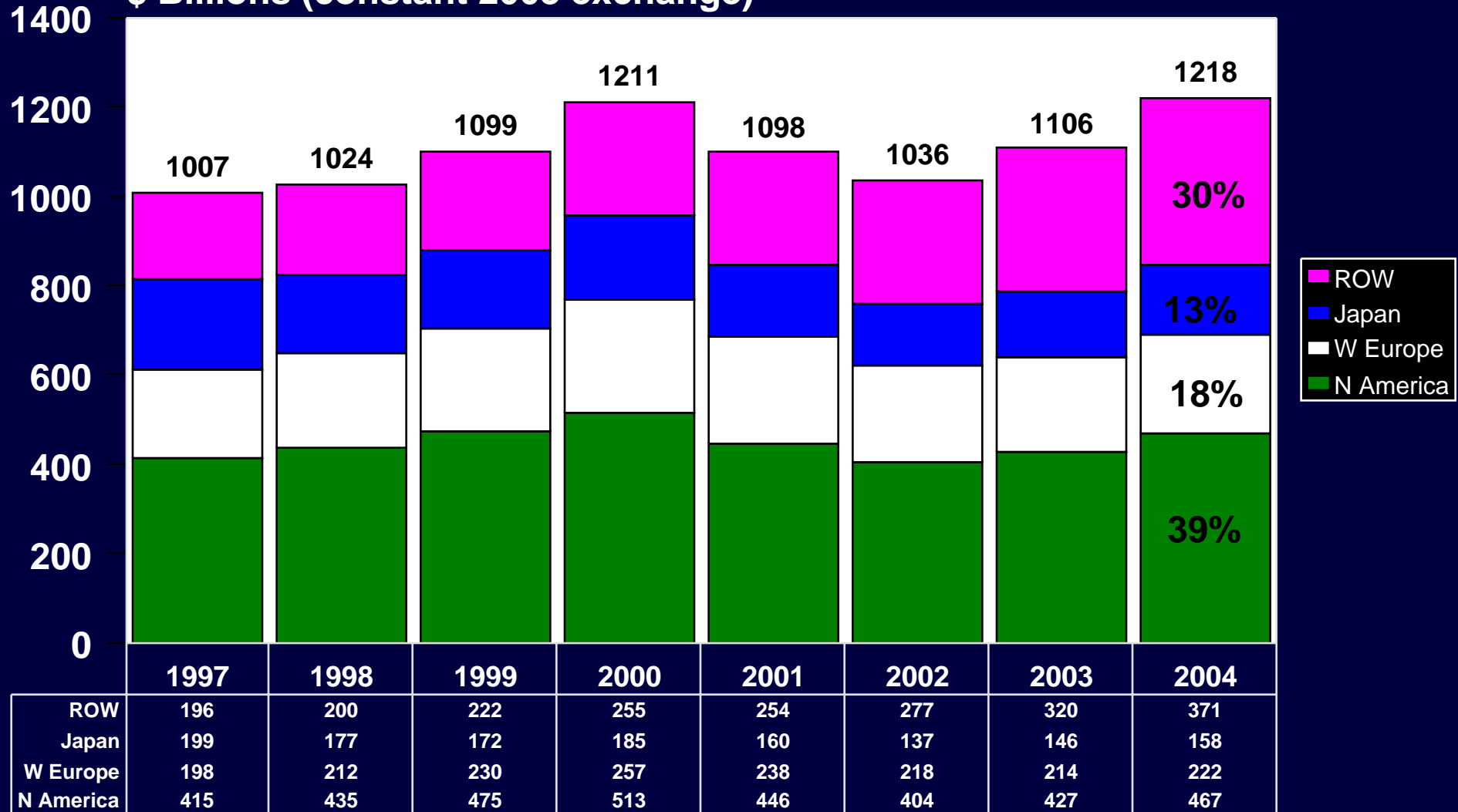
+7.8%

2005
\$1369B

Total Production: \$1218 Billion @2003 exchange

World Electronic Equipment Production by Area Final Assembly

\$ Billions (constant 2003 exchange)

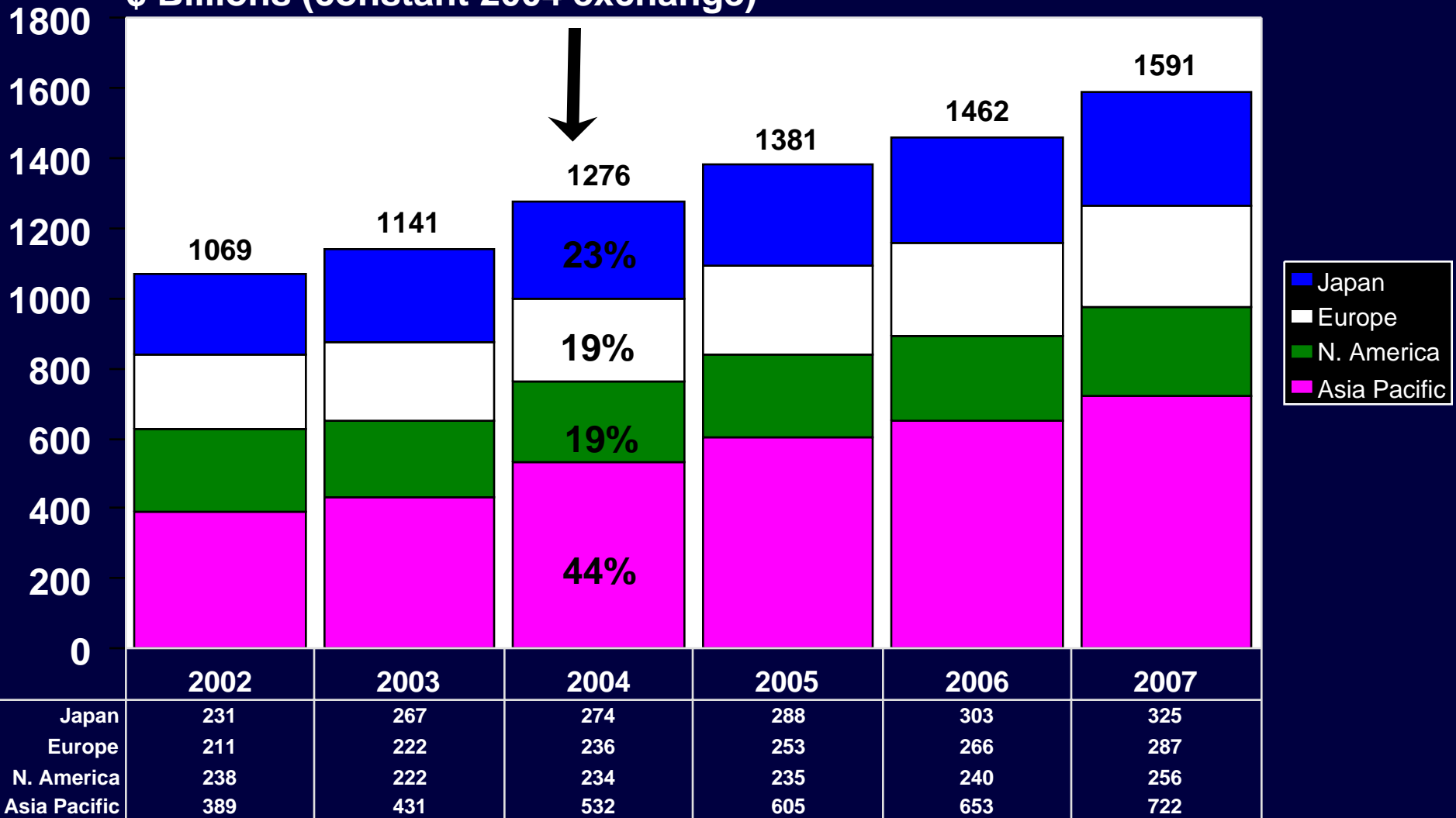


Electronic Outlook Corp 9/04 with Custer Consulting Group Interpretation

World Electronic Equipment Production by Area

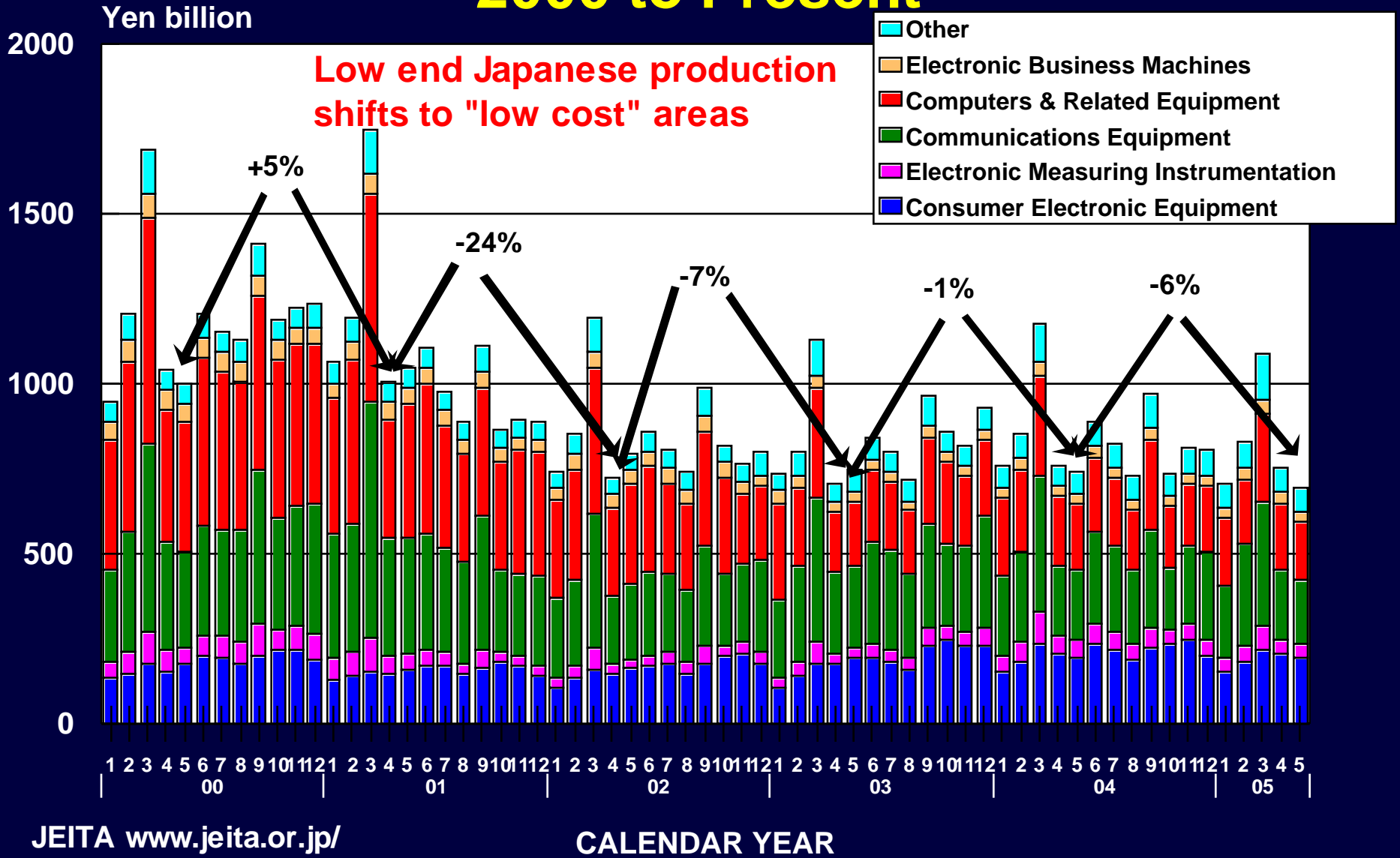
Electronic Assembly

\$ Billions (constant 2004 exchange)



Based upon SIA chip shipments

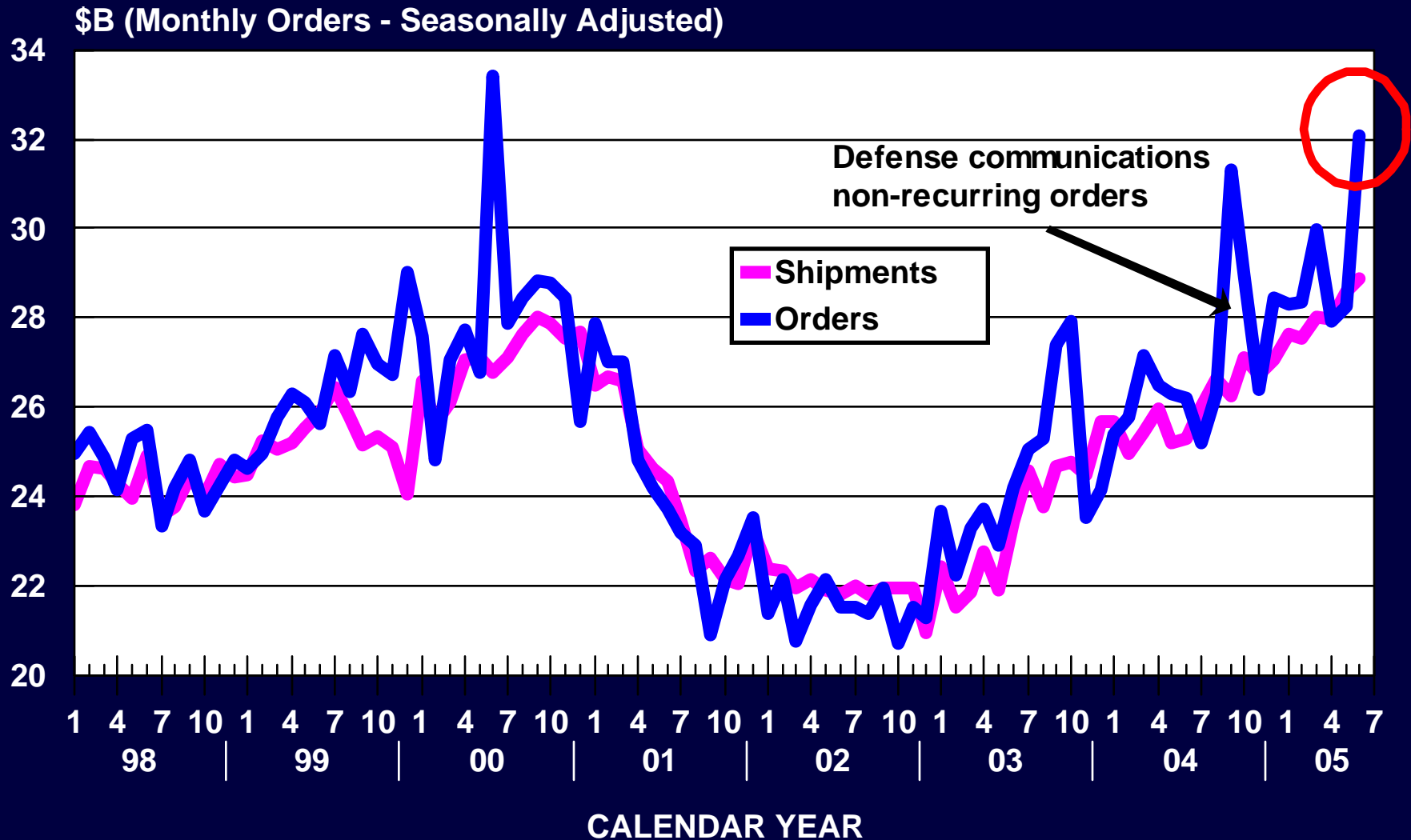
Japan Electronic Equipment Production 2000 to Present



**U.S. Electronic
Equipment
Orders & Inventories**

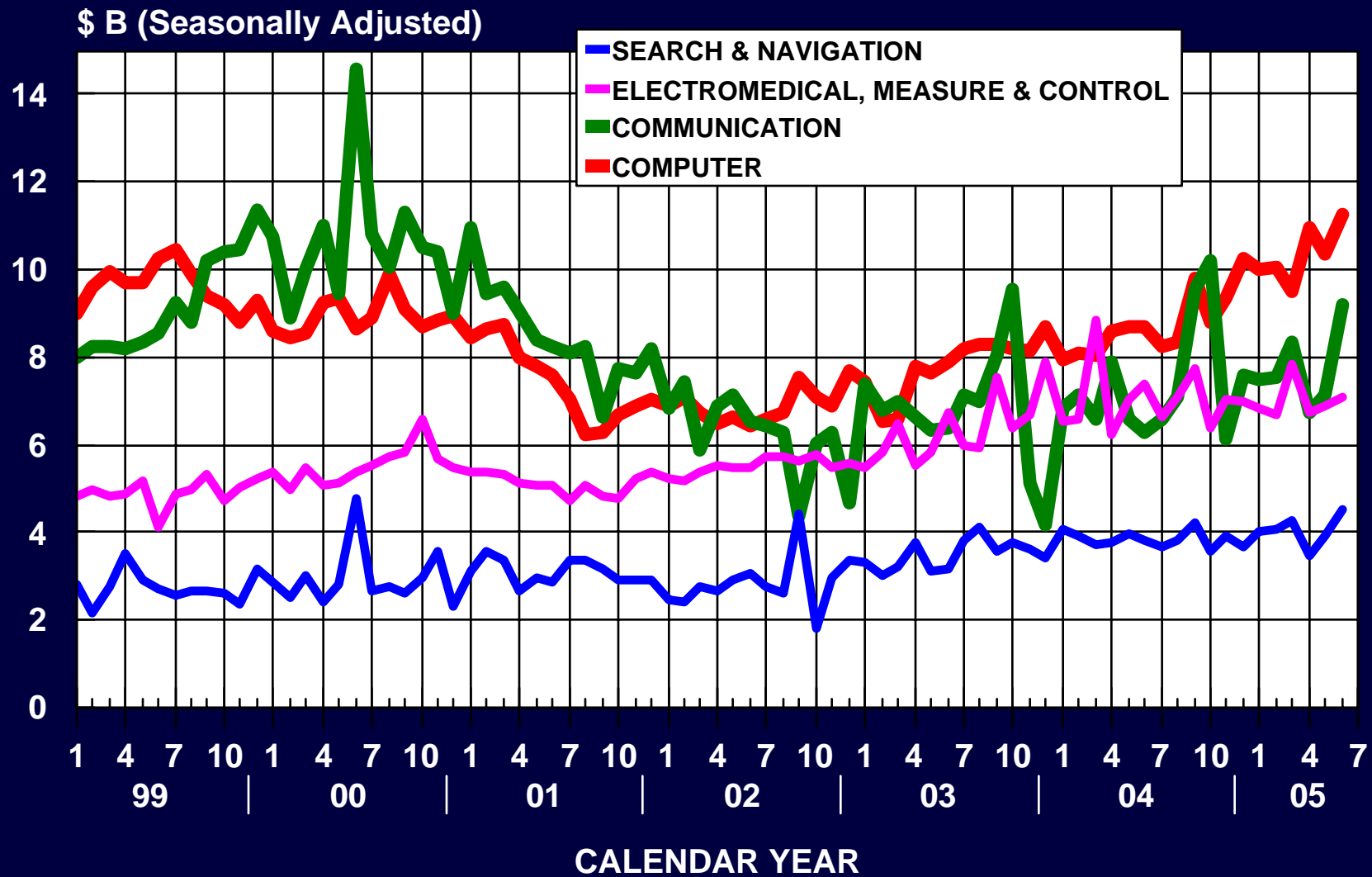
US Electronic Equipment Orders & Shipments

Communications, Computer, Military, Instruments

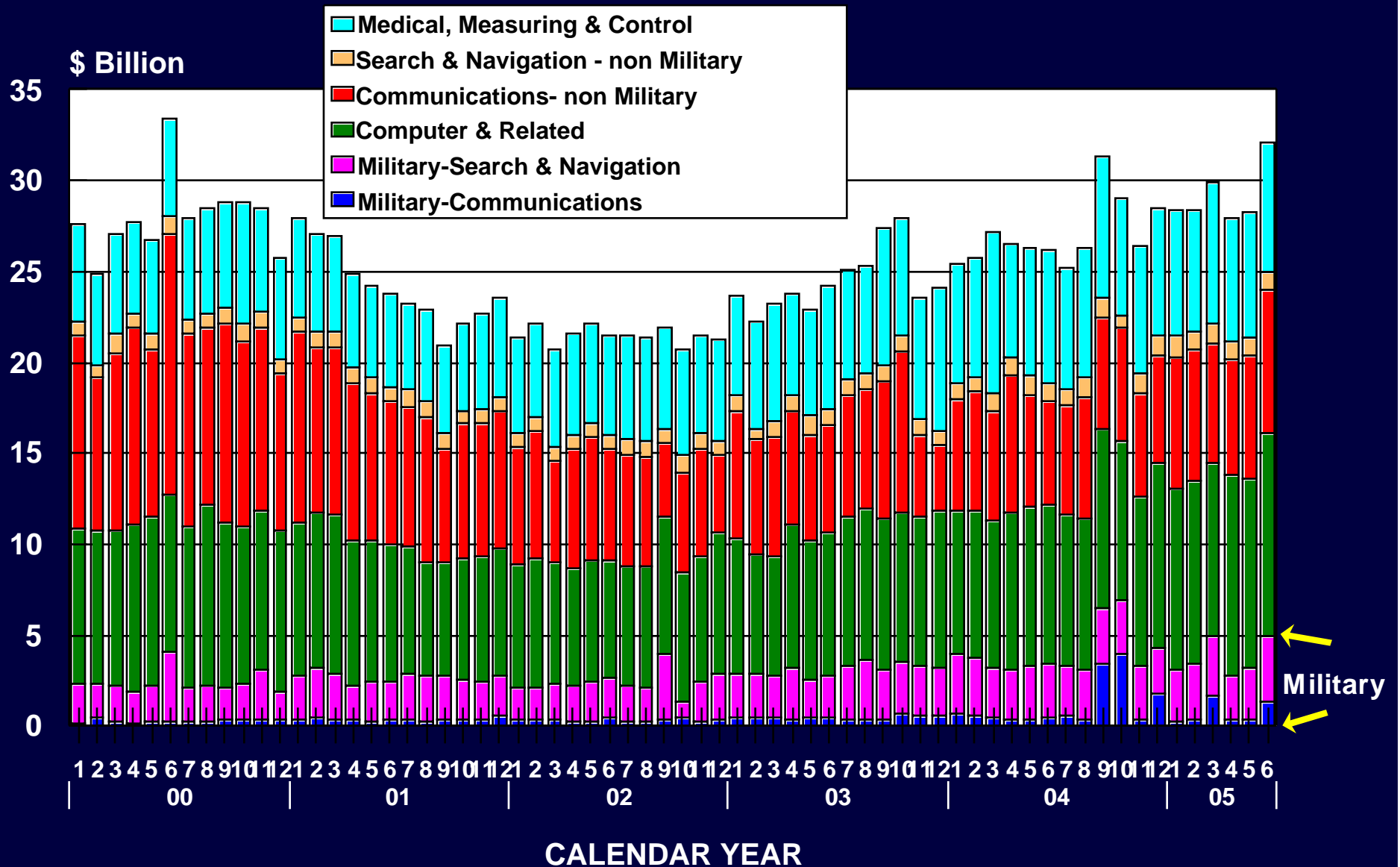


US Electronic Equipment Orders

Monthly Data

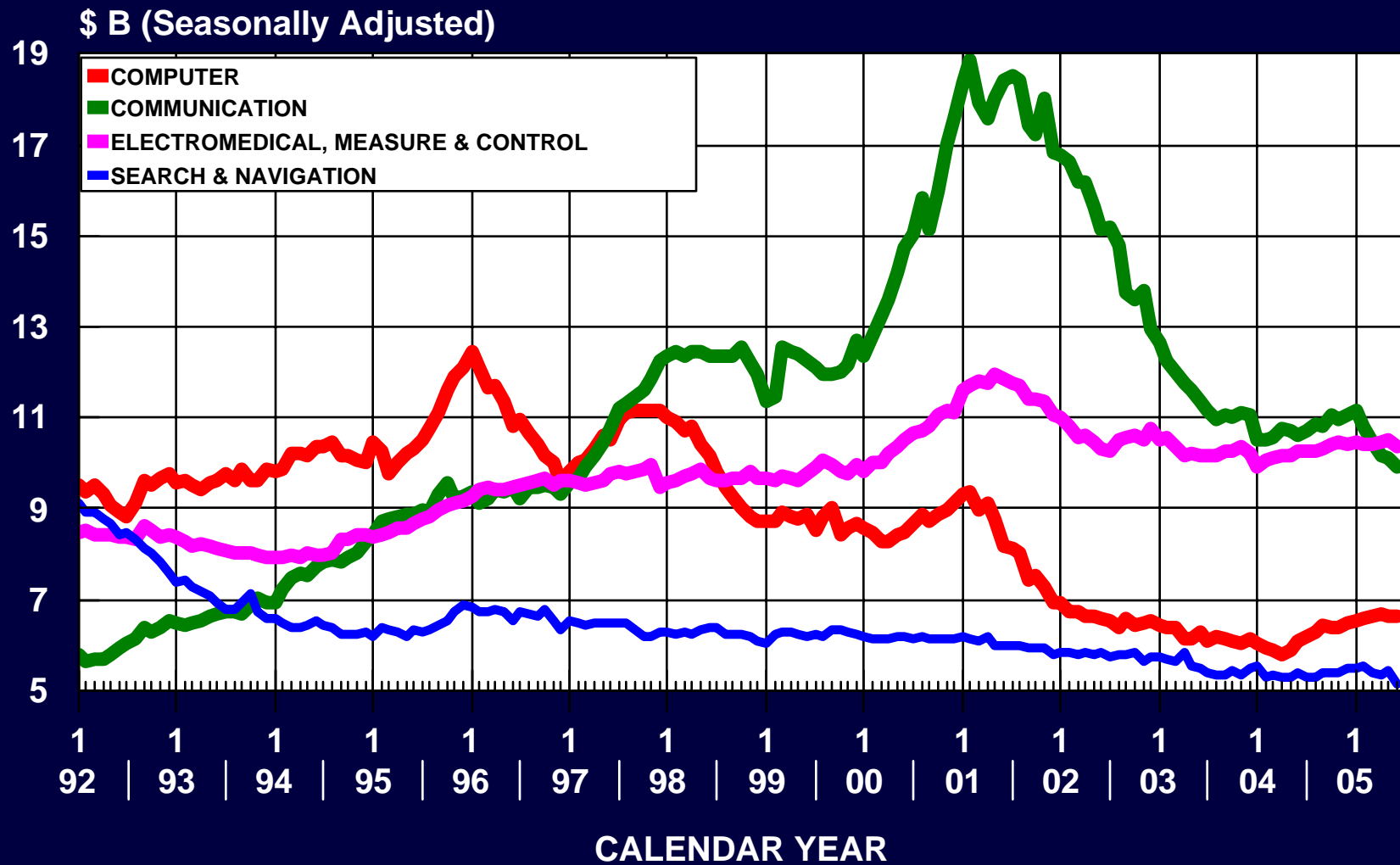


U.S. Electronic Equipment Orders



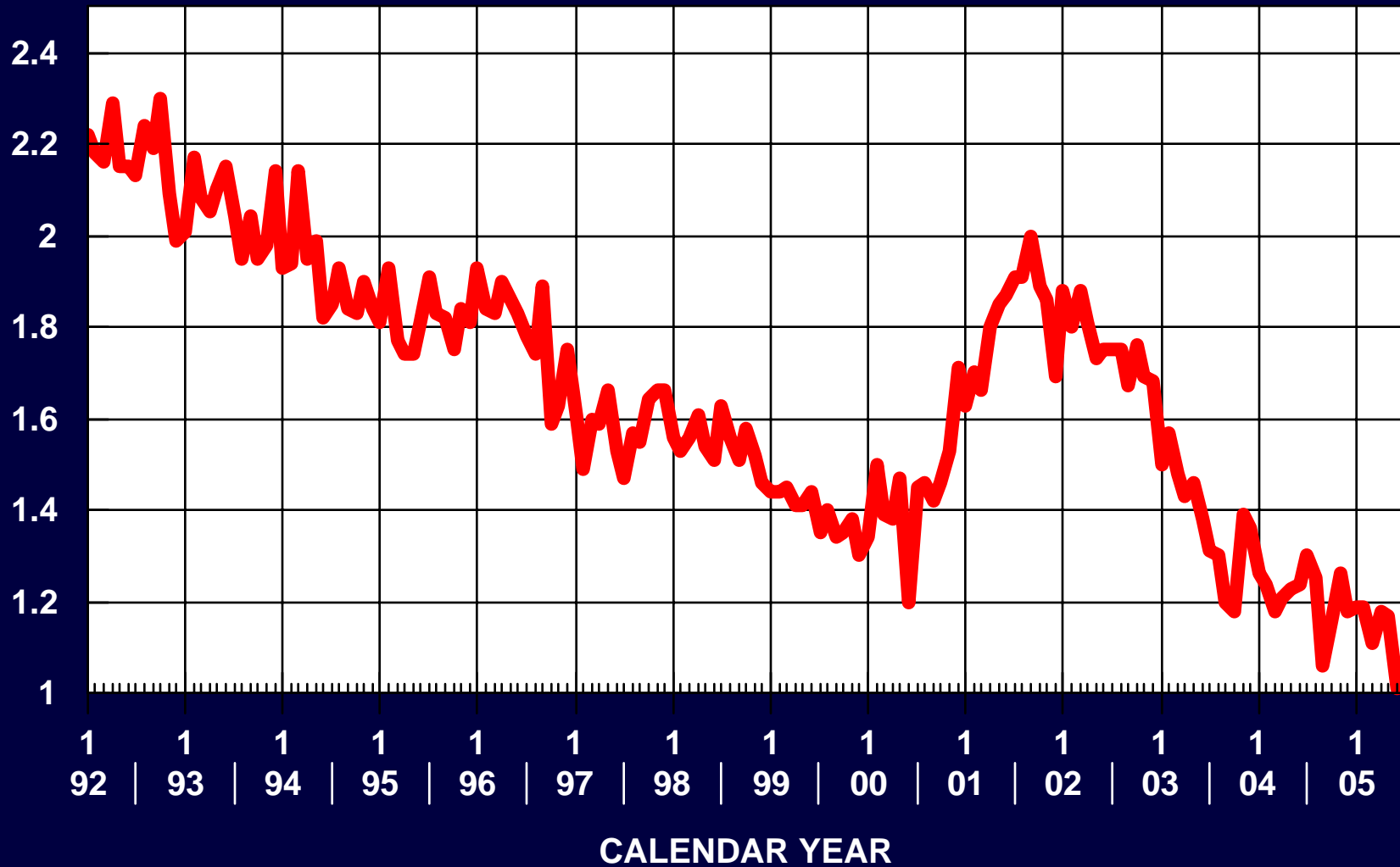
<http://www.census.gov/indicator/www/m3/>

US Electronic Equipment Inventories Monthly Data



US Electronic Equipment Inventories

Inventories vs. Orders

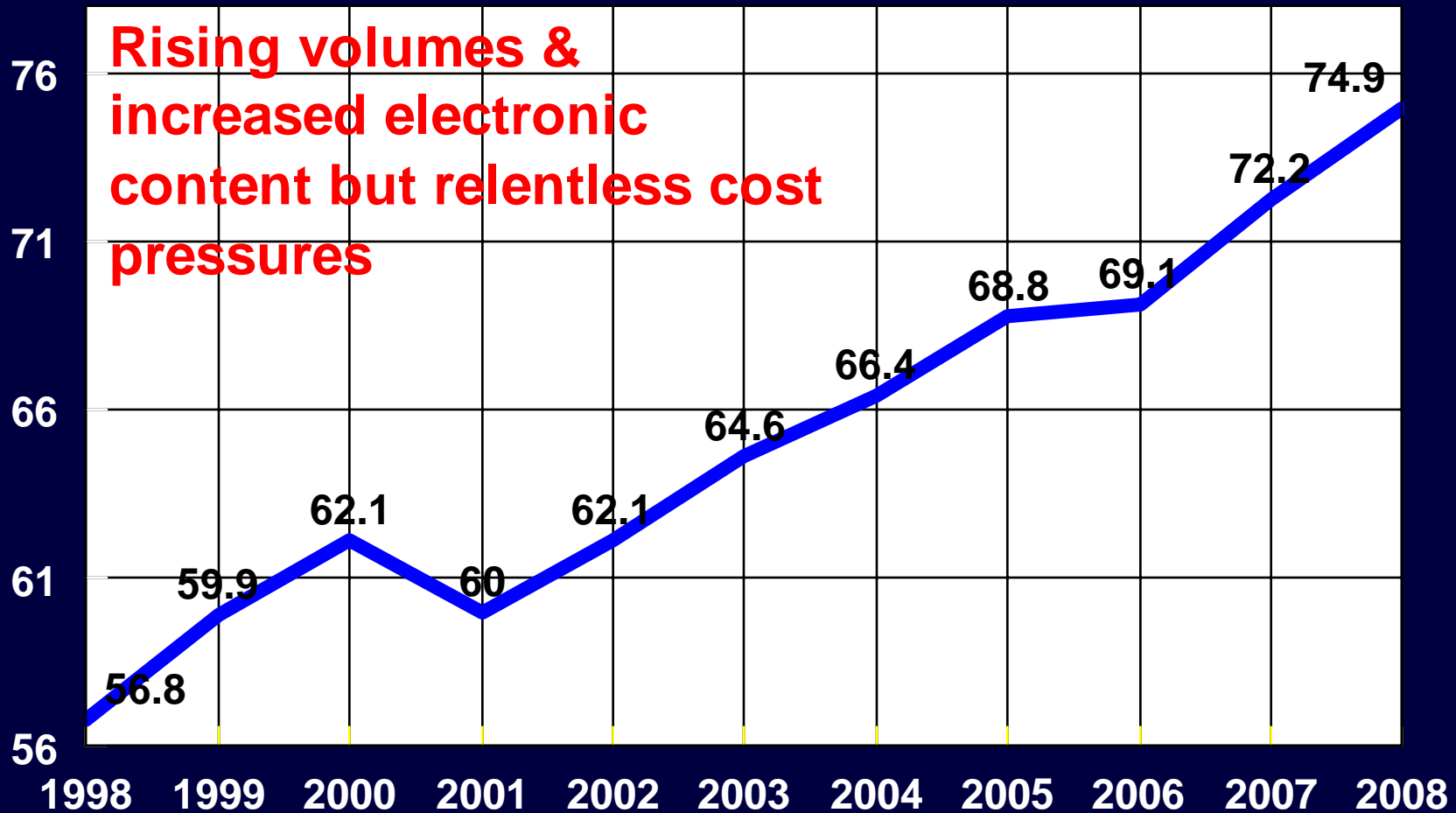


www.census.gov/indicator/www/m3/

Automotive Electronics

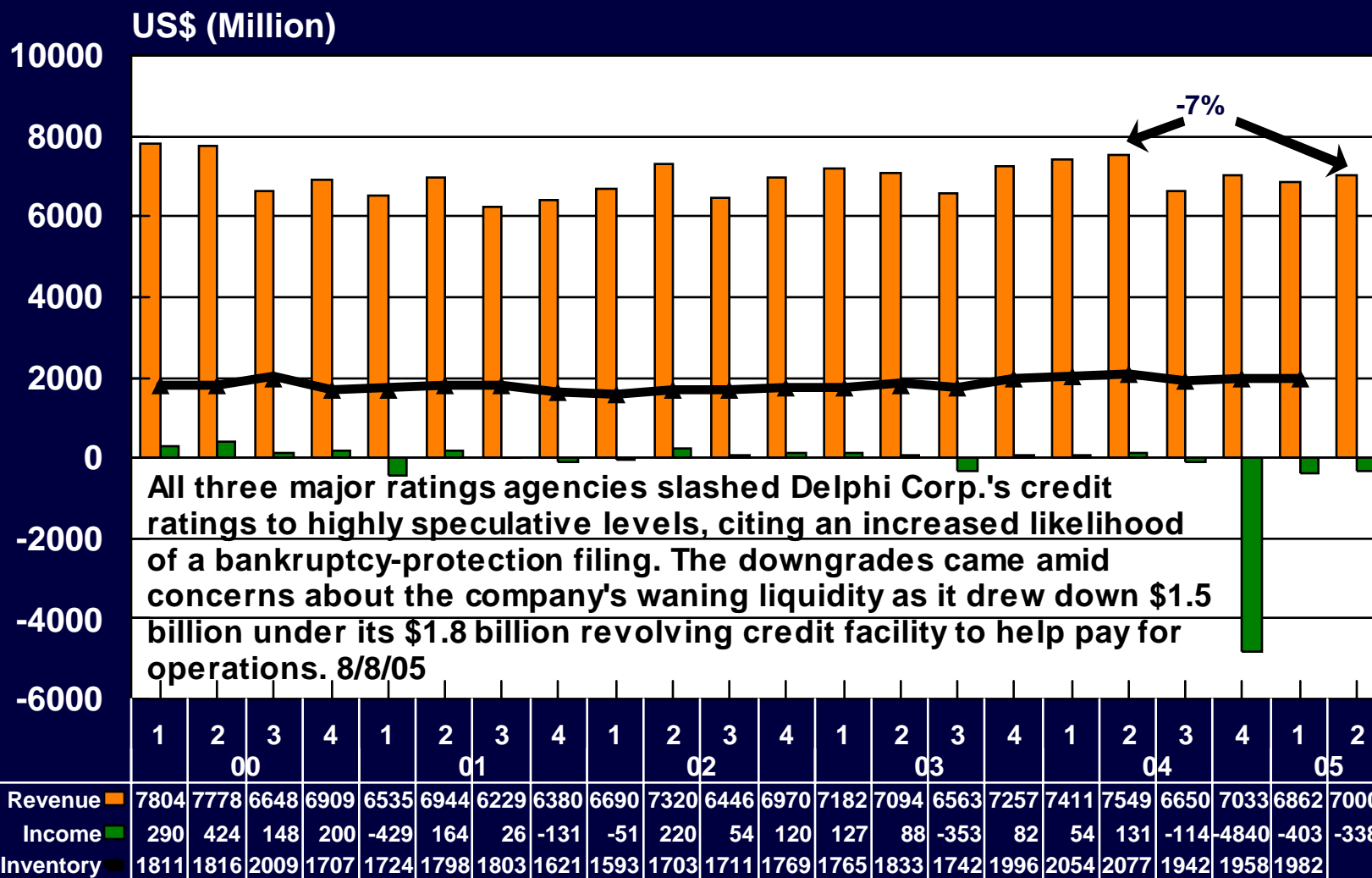
World Motor Vehicle & Automotive Production

UNITS (Millions)



Delphi Corp

Revenue, Net Income & Inventory



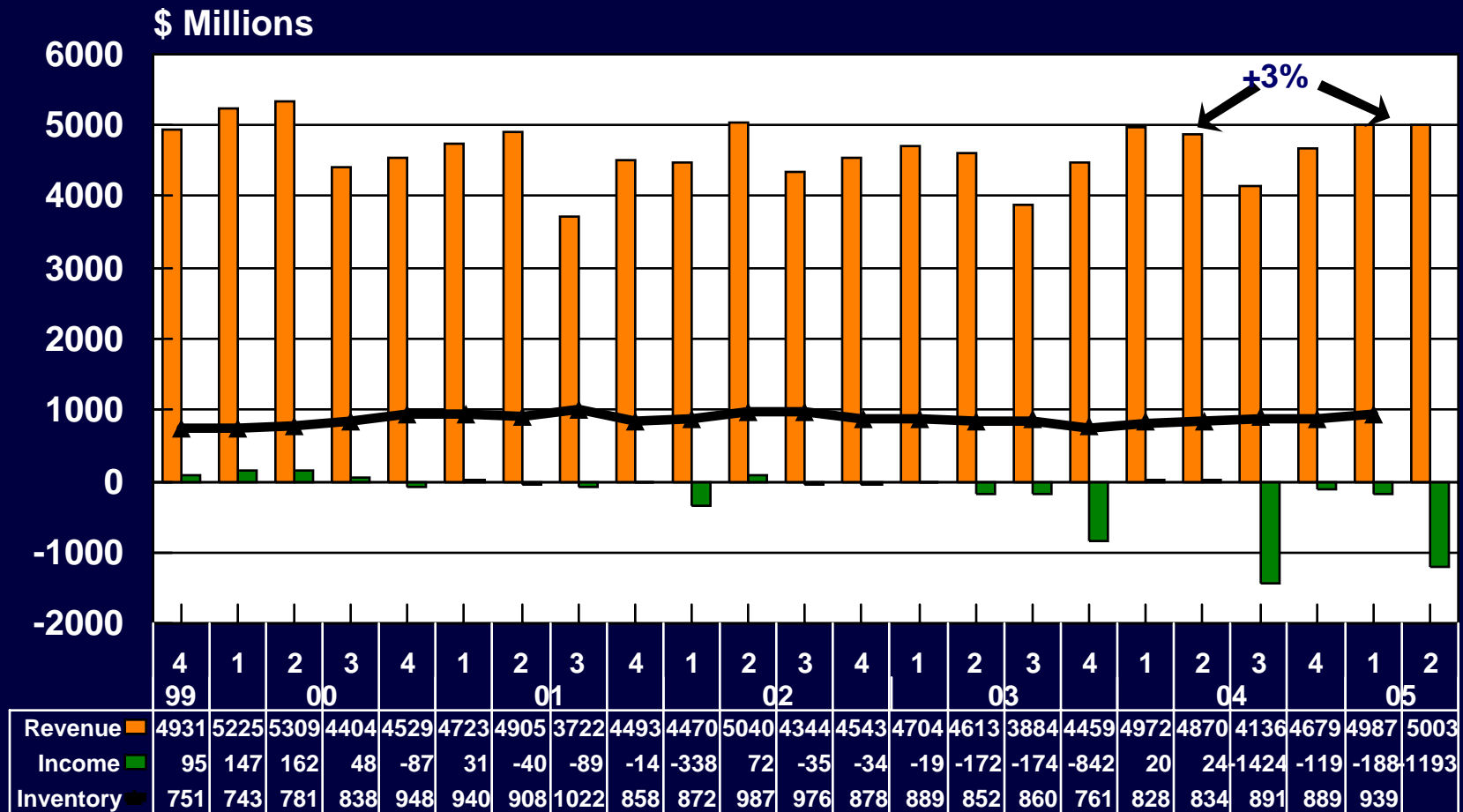
CY

DPH

Visteon

Revenue, Net Income & Inventory

"On May 25, 2005, Visteon and Ford announced that they had entered into a memorandum of understanding to transfer 24 North American facilities to a Ford-managed entity." 8/8/05



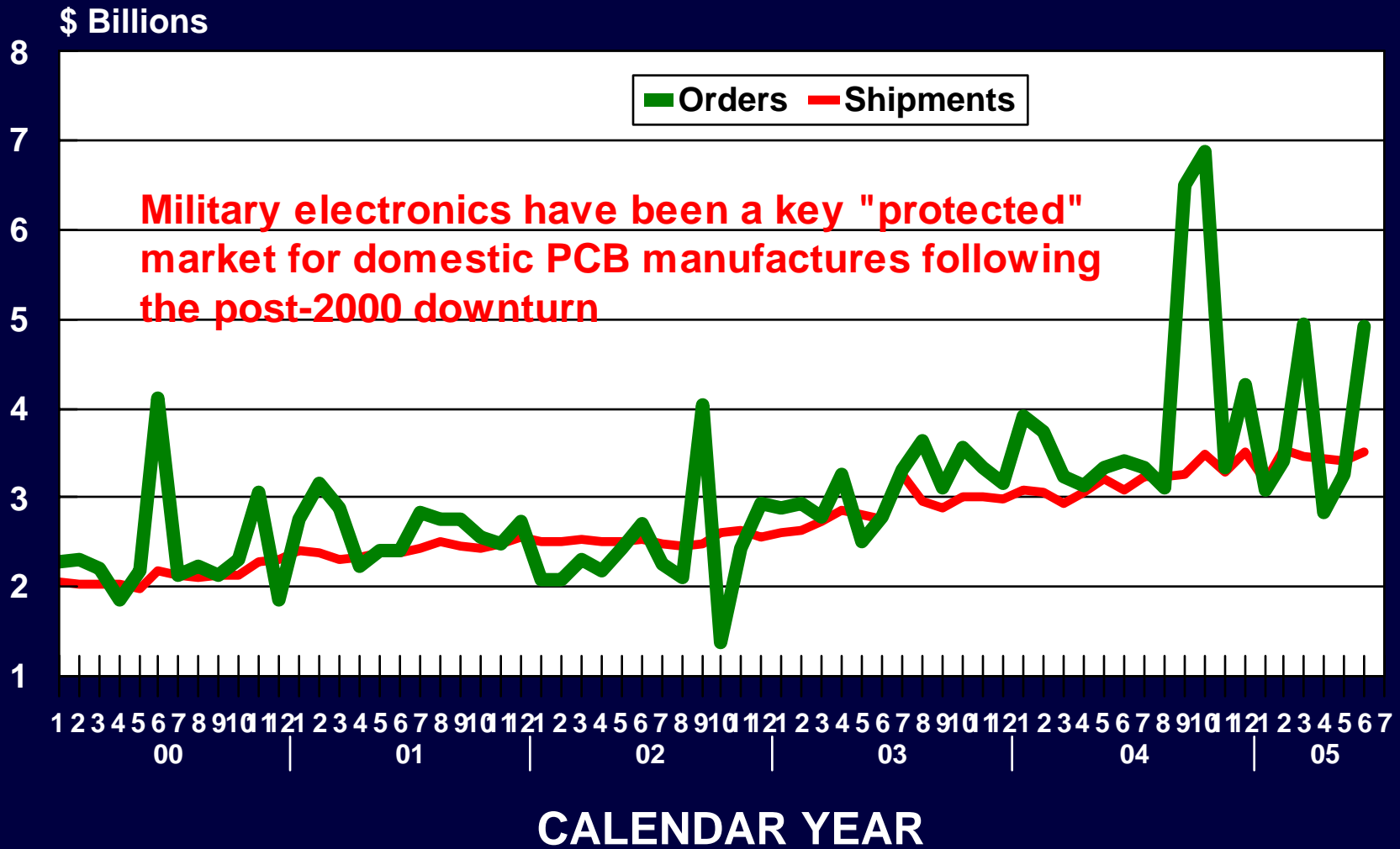
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VC

Government & Military Electronics

U.S. Military Electronics Orders & Shipments

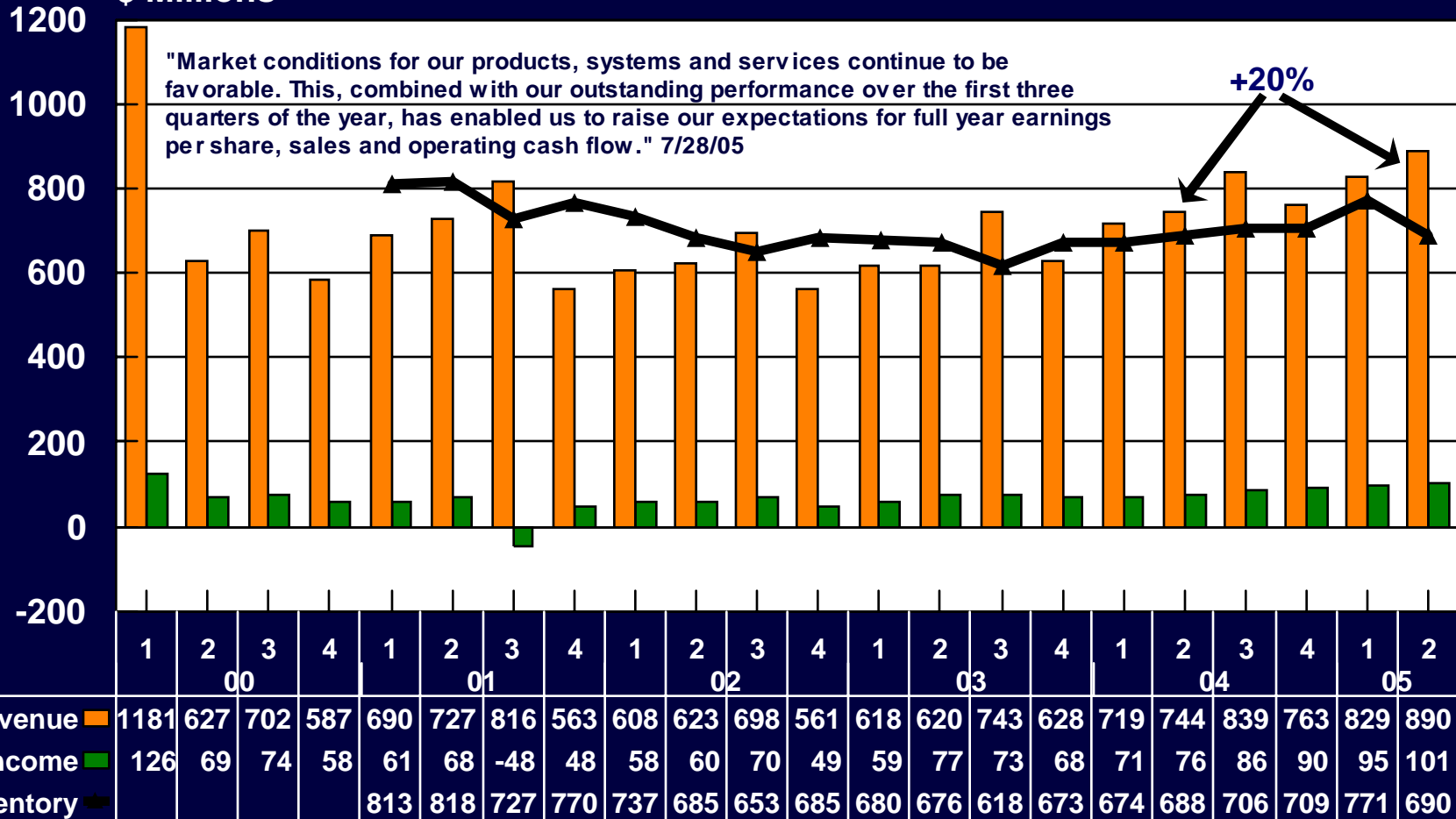
Defense Search & Navigation and Communications Equipment



Rockwell Collins

Revenue, Net Income & Inventory

\$ Millions



CY

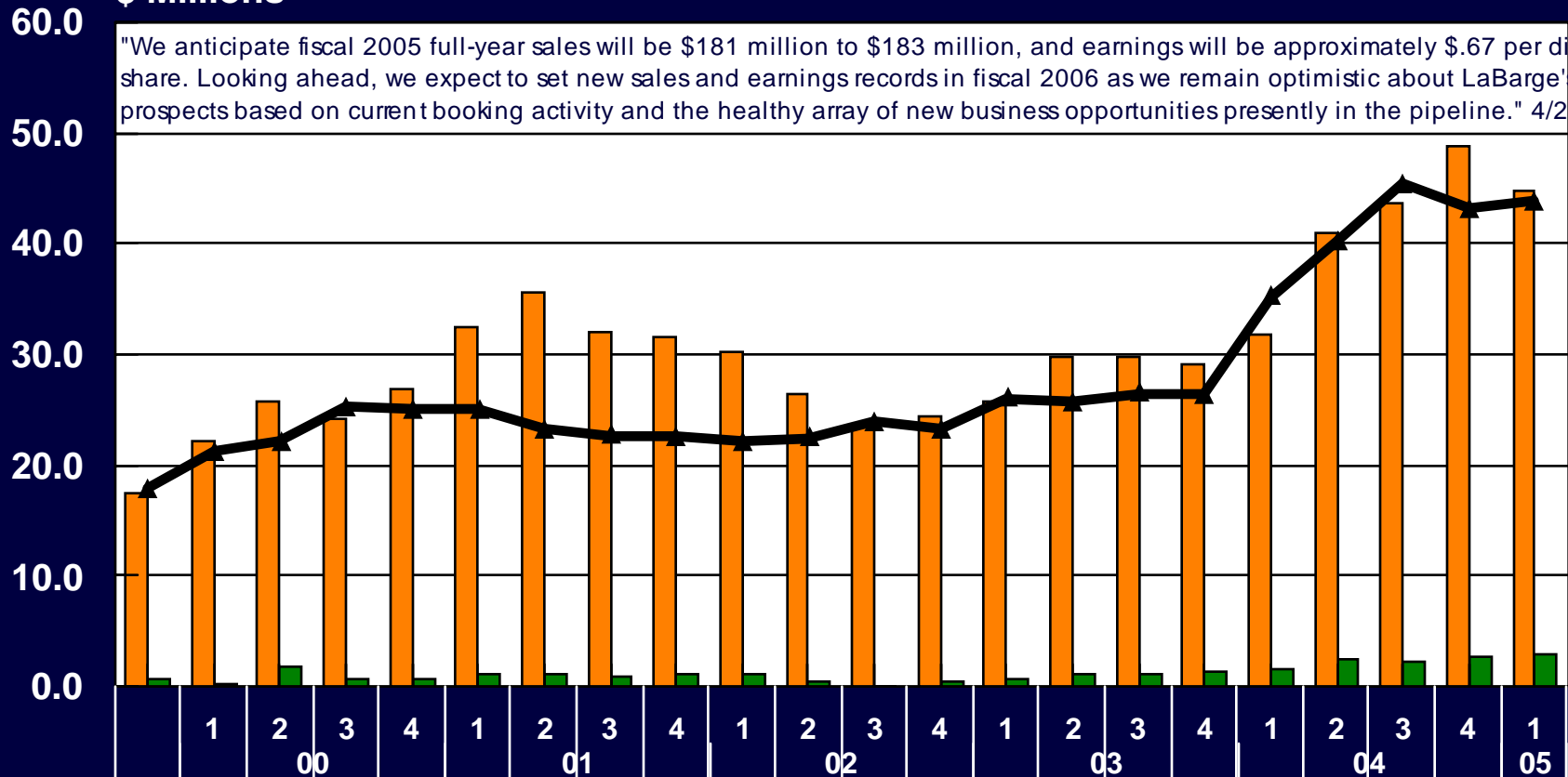
COL

LaBarge, Inc

Revenue, Net Income & Inventory

\$ Millions

"We anticipate fiscal 2005 full-year sales will be \$181 million to \$183 million, and earnings will be approximately \$.67 per share. Looking ahead, we expect to set new sales and earnings records in fiscal 2006 as we remain optimistic about LaBarge's prospects based on current booking activity and the healthy array of new business opportunities presently in the pipeline." 4/2



Revenue	17.6	22.1	25.8	24.3	26.9	32.4	35.6	32.1	31.5	30.2	26.4	23.6	24.4	25.8	29.7	29.7	29.1	31.8	40.9	43.6	48.7	44.8
Income	0.7	0.3	1.9	0.6	0.7	1.2	1.3	1.0	1.2	1.3	0.4	0.1	0.4	0.7	1.1	1.3	1.4	1.7	2.5	2.3	2.7	3.0
Inventory	17.9	21.2	22.2	25.3	25.0	25.1	23.2	22.7	22.7	22.1	22.5	23.9	23.2	26.1	25.7	26.5	26.4	35.3	40.2	45.5	43.2	43.8

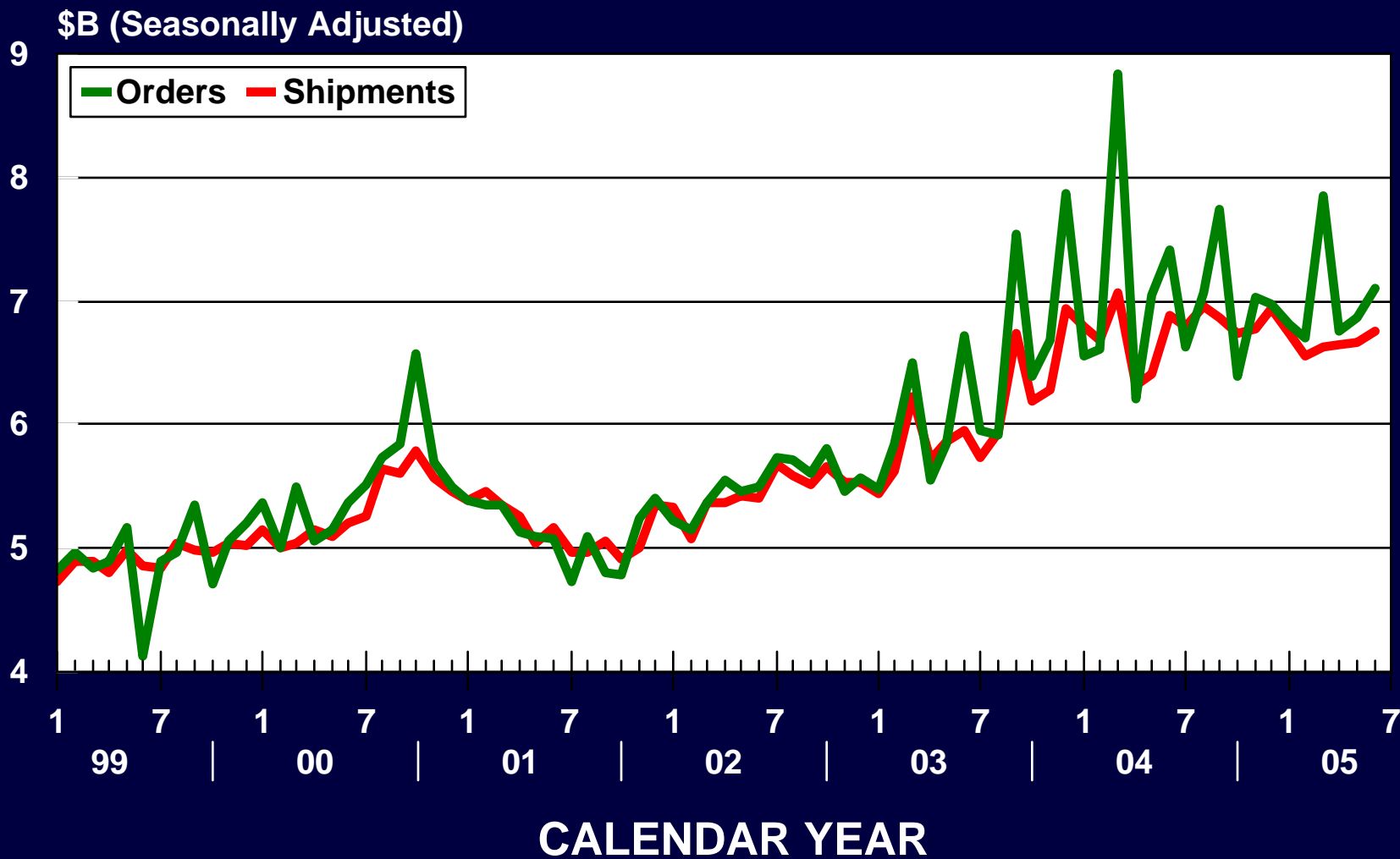
CY

LB

Instruments & Control Equipment

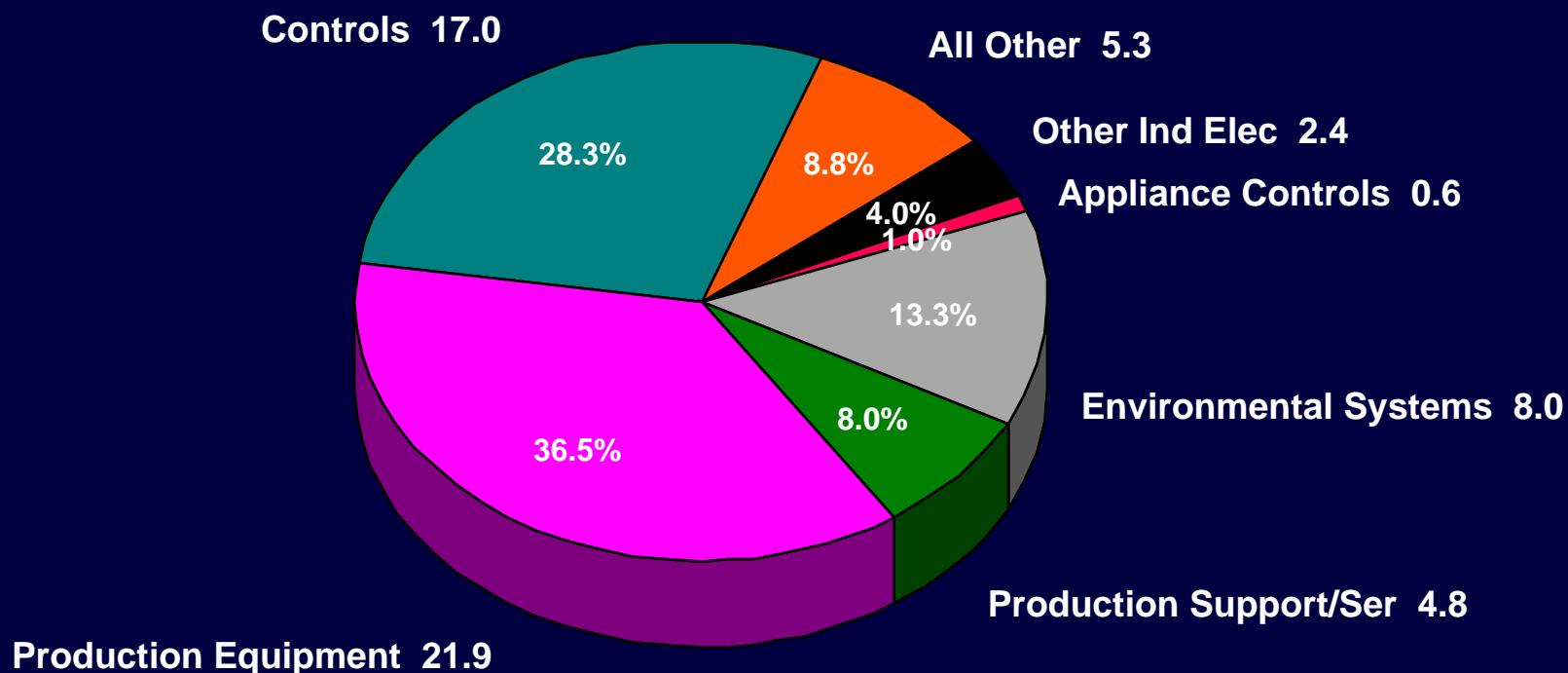
ELECTROMEDICAL, MEASUREMENT & CONTROL EQUIPMENT

Orders & Shipments



INDUSTRIAL ELECTRONICS PRODUCTION

U.S. - 2004



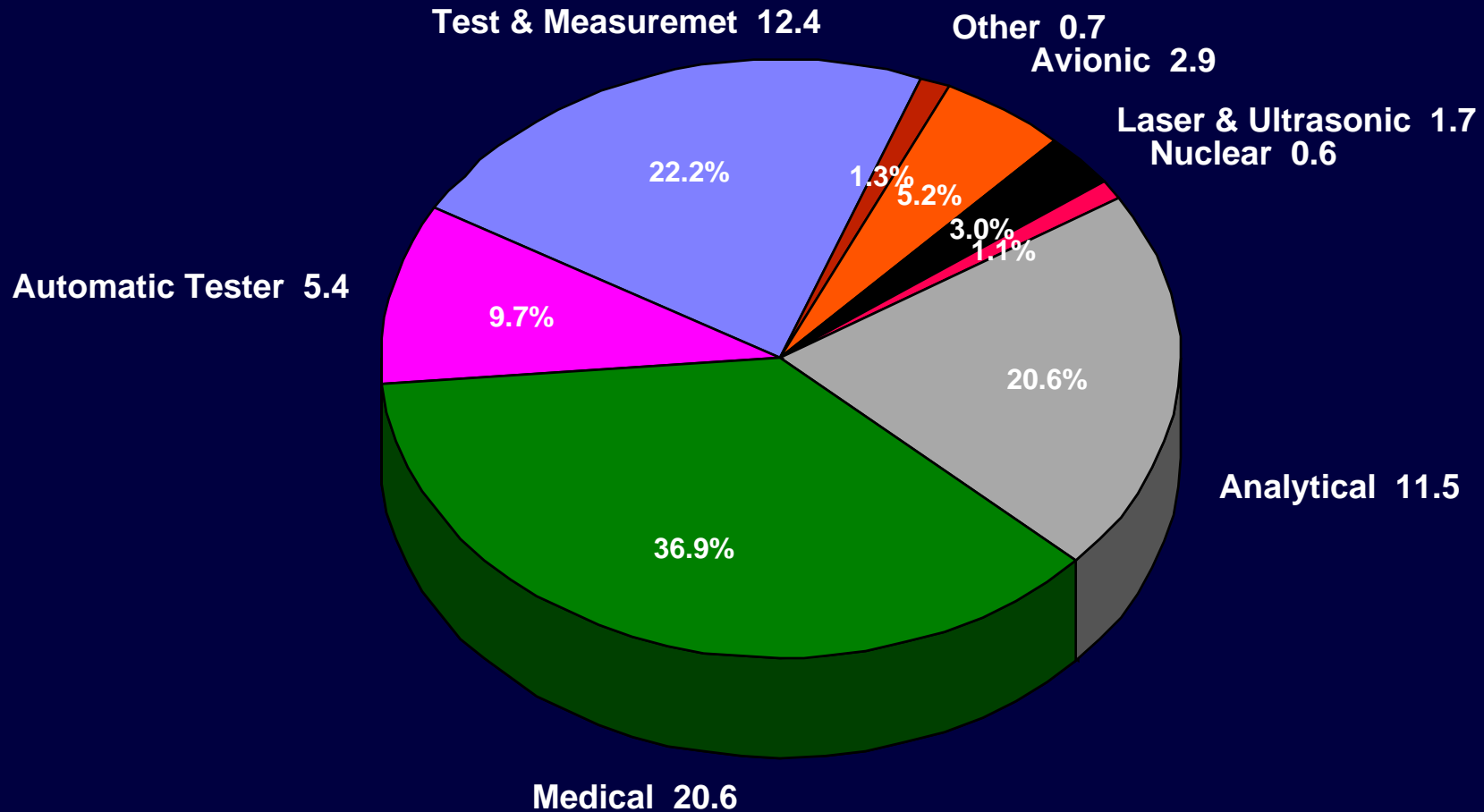
TOTAL: \$60.0 Billion

Electronic Outlook 9/2004

Note: Similar data available for other electronic equipment sectors

INSTRUMENTATION EQUIPMENT PRODUCTION

U.S. - 2004



TOTAL: \$56.2 Billion

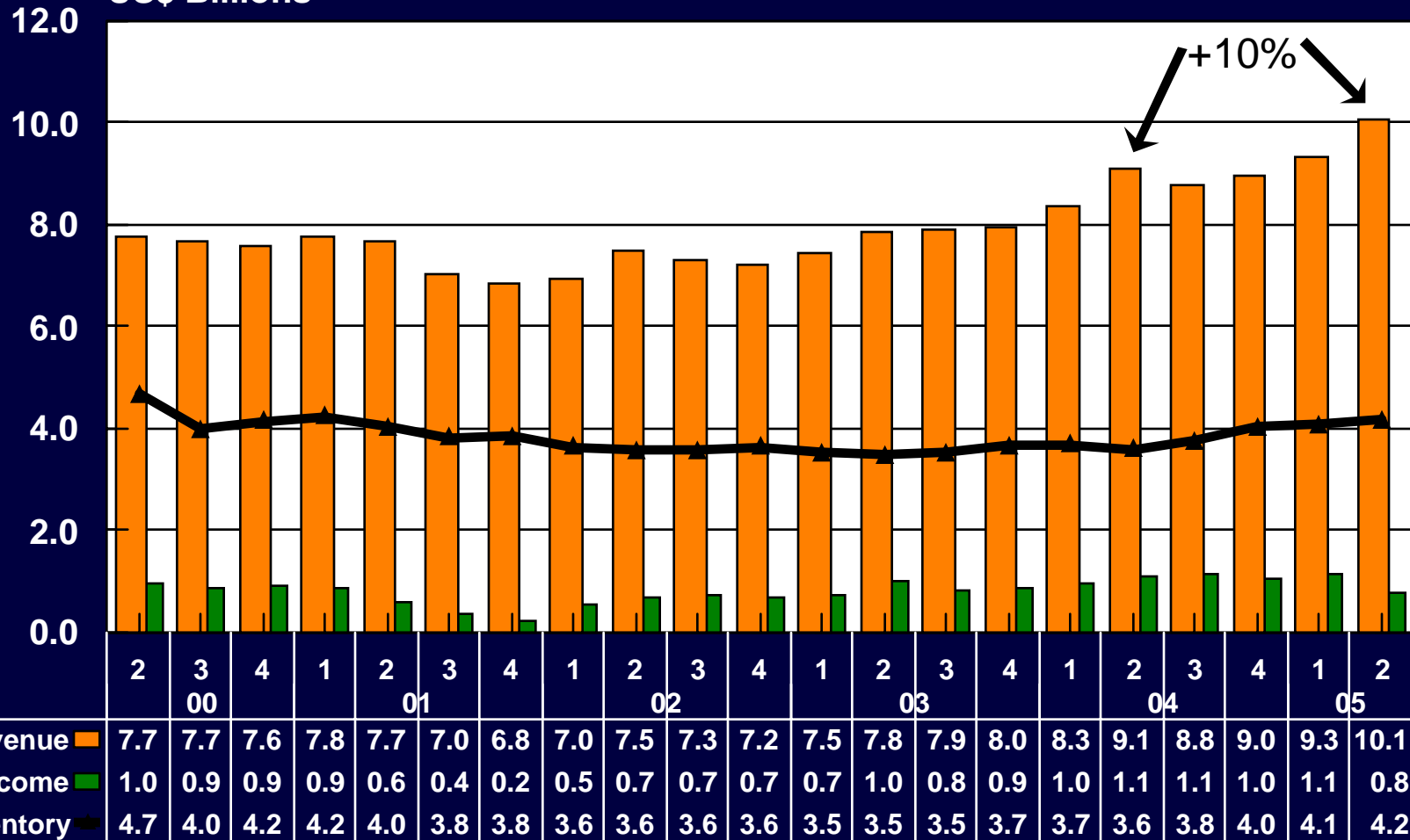
Electronic Outlook 9/2004

Note: Similar data available for other electronic equipment sectors

Instruments & Control Equipment Composite of 8 Public Companies

Revenue, Net Income & Inventory

US\$ Billions

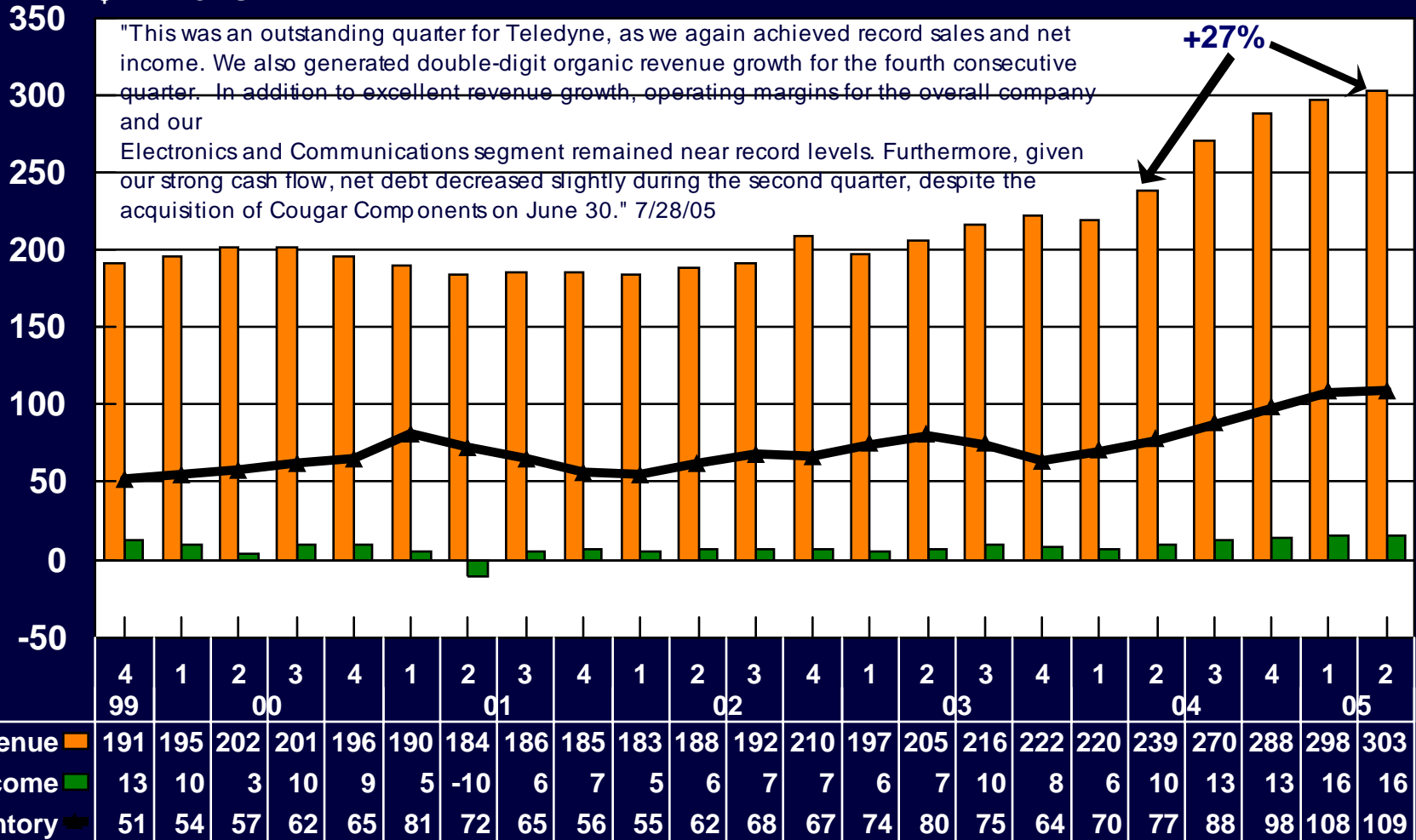


Ametek, Emerson Electric, Keithley Instruments, Medtronic, PerkinElmer, Rockwell Automation, Tektronix, Teledyne

Teledyne Technologies

Revenue & Net Income

\$ Millions

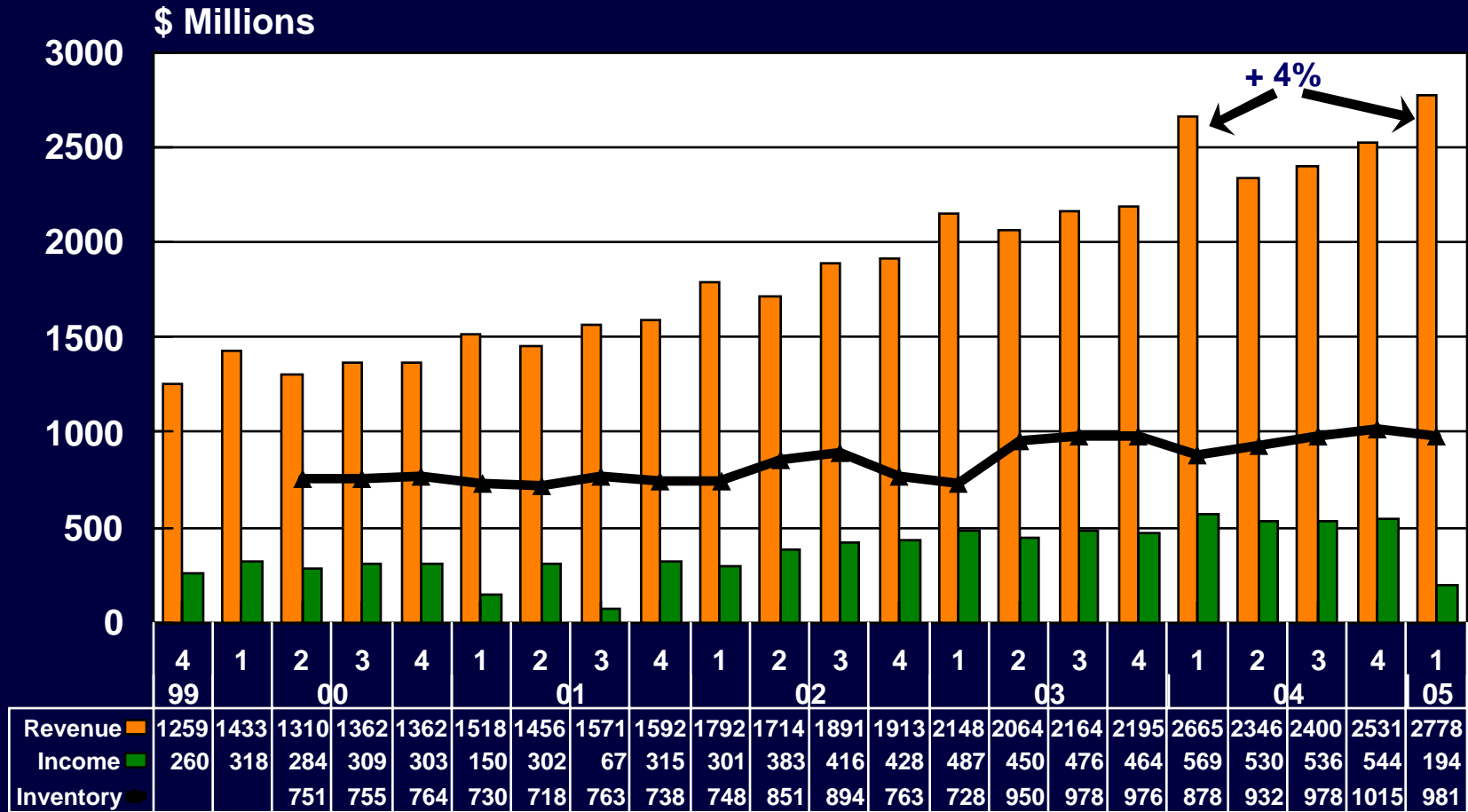


CY

TDY

Medtronic Inc

Revenue, Net Income & Inventory



CY

MDT

Communications Equipment

COMMUNICATIONS EQUIPMENT

Orders & Shipments

\$ B (Seasonally Adjusted)



<http://www.census.gov/indicator/www/m3/>

Worldwide Telecommunications Equipment Manufacturers (\$B)

	2000	2001	2002	2003	2004	'04/'03 <u>% Change</u>
Nokia	27.9	28.0	28.9	34.0	36.6	+7.6
Motorola	37.6	30.0	26.7	27.1	34.7	+28.0
Ericsson	29.7	20.7	15.3	14.9	18.1	+21.5
Alcatel	28.4	22.7	15.6	14.2	14.0	-0.9
Nortel	27.9	17.5	10.6	10.3	9.9	-2.5
Lucent	26.2	20.5	10.8	8.7	9.1	+4.6
Top 6 Total	153.3	121.6	87.8	88.4	98.8	+11.8

- Siemens not included due to multiple product lines

**Growth
Resumes**

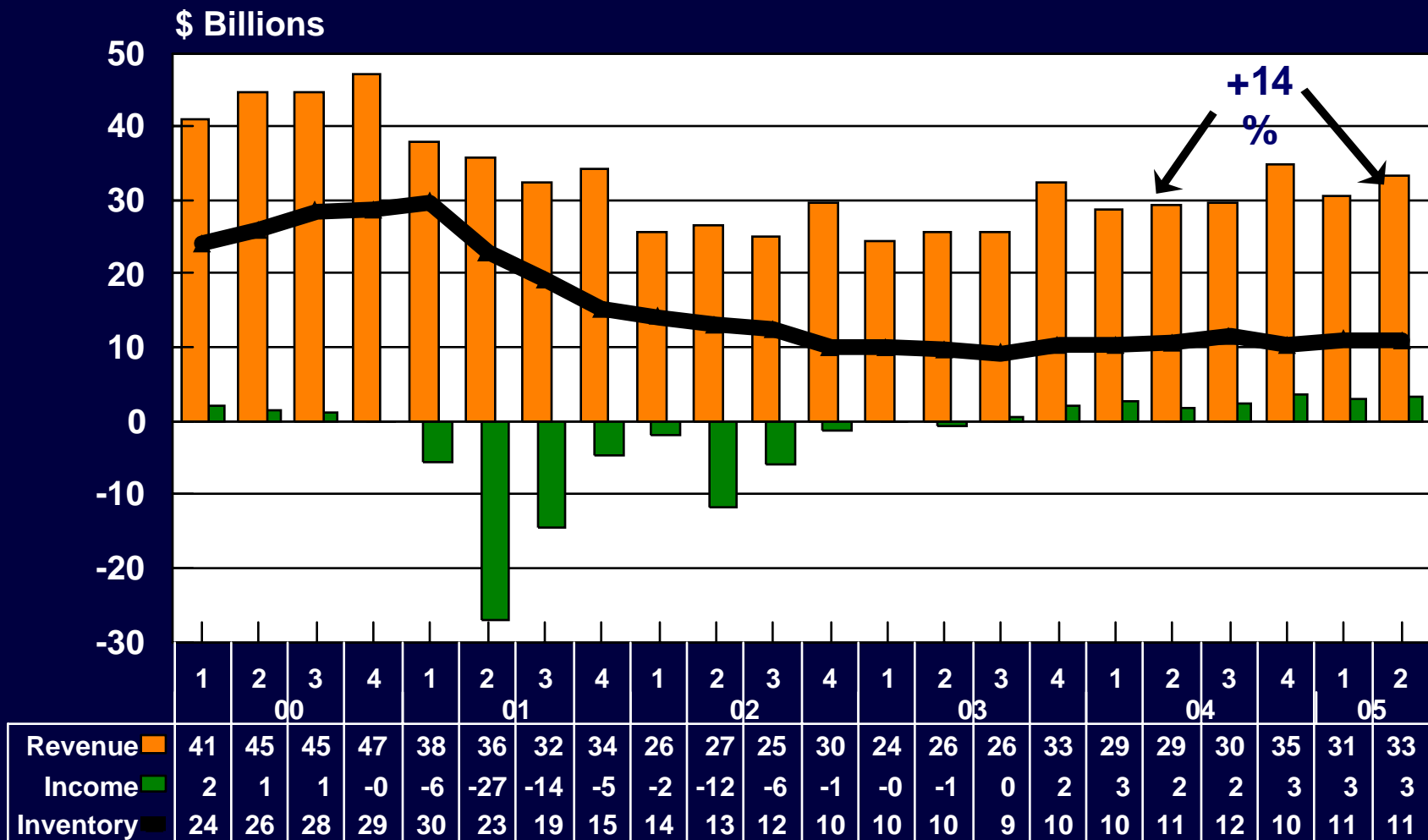
Source: Company financial statements

Alcatel & Ericsson calculated @ fluctuating exchange

Large "Communications" Equipment Suppliers

Composite of 6 Public Companies

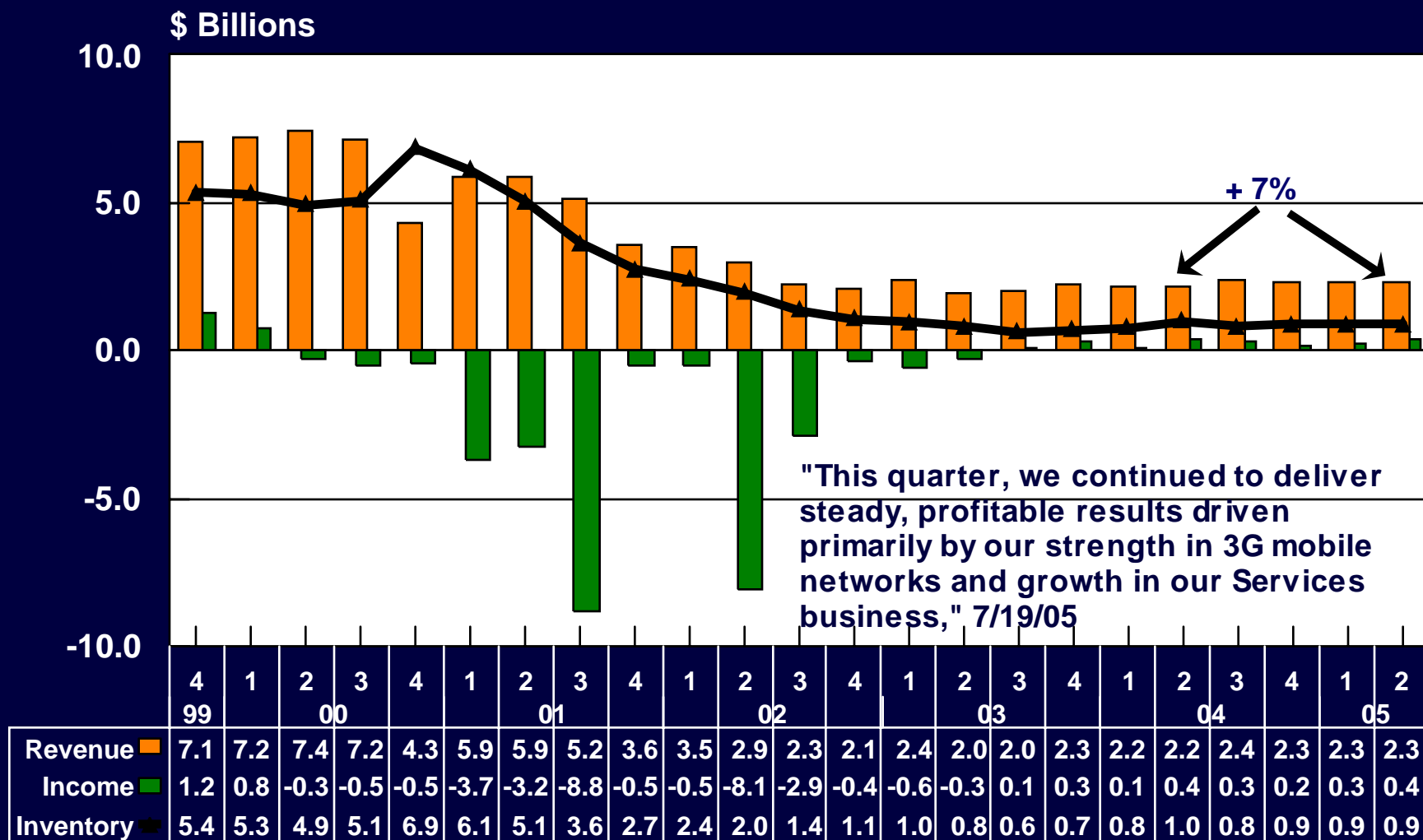
Revenue, Net Income & Inventory



Alcatel, Ericsson, Lucent, Motorola, Nokia, Nortel
Euros & Krona converted at fluctuating exchange

Lucent Technologies

Revenue, Net Income & Inventory



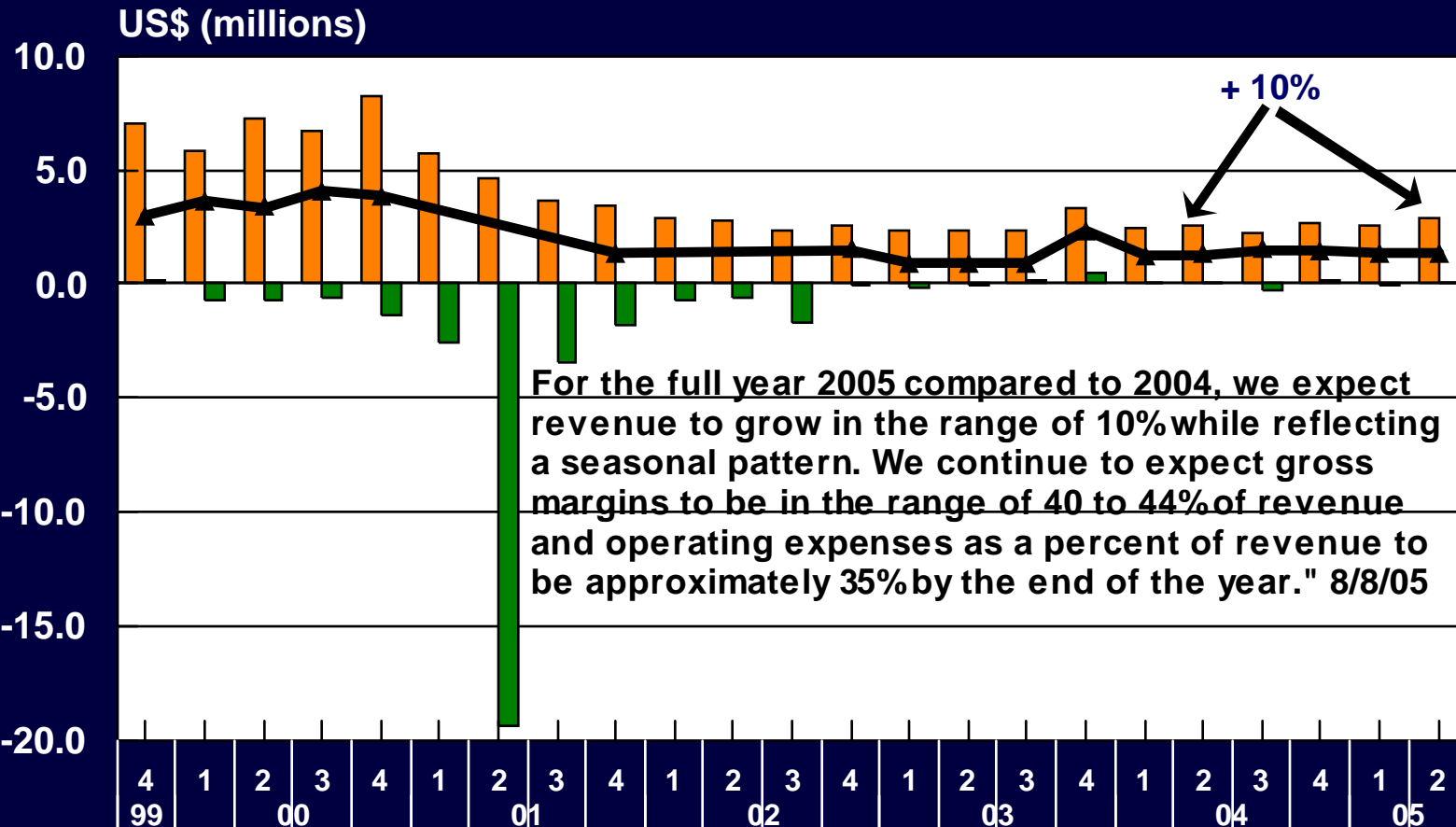
CY

FY ends September

LU

Nortel Networks

Revenue, Net Income & Inventory



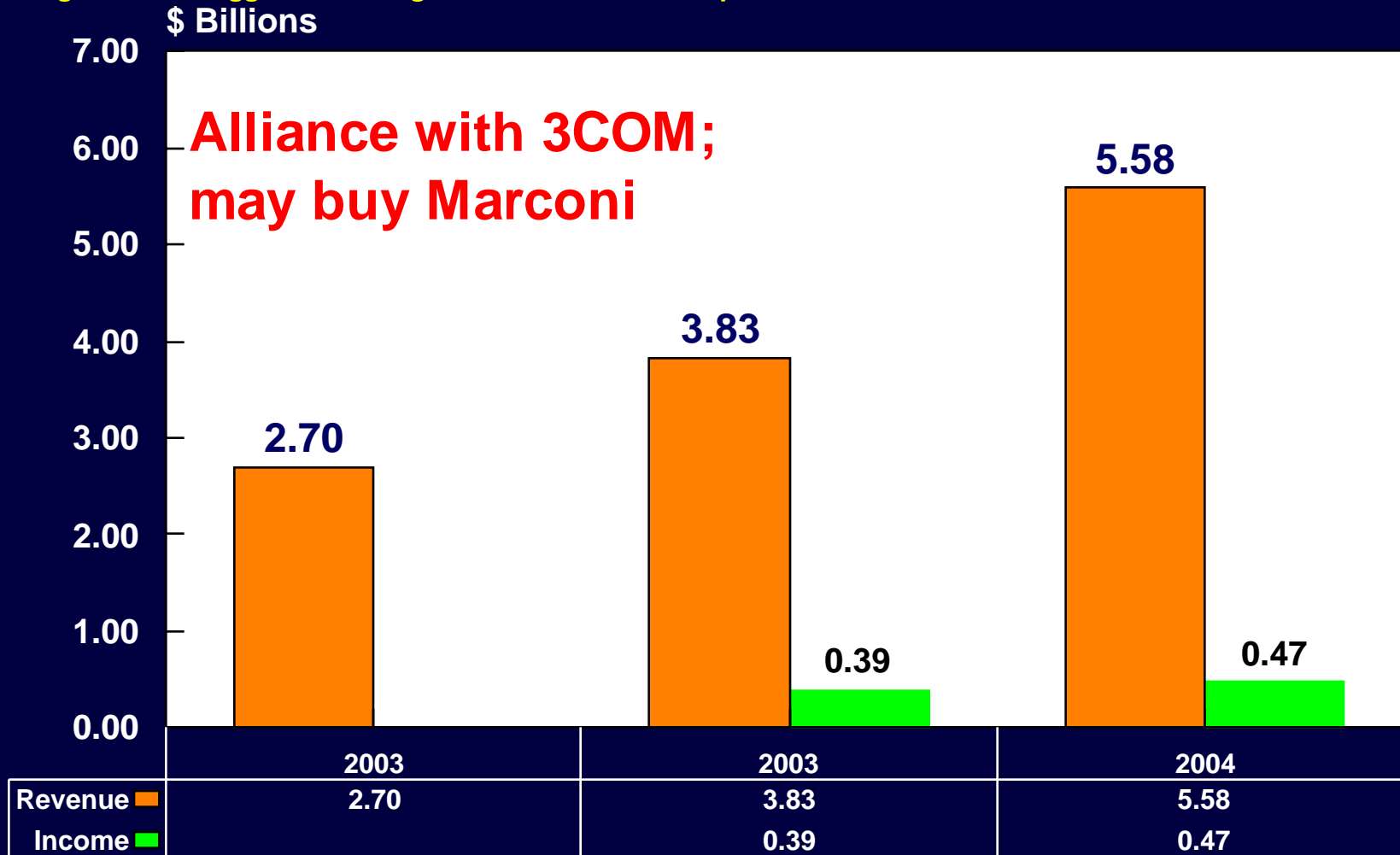
CY

NT

FY=CY

Huawei Technologies Revenue

"We have adopted a different strategy from Lenovo and TCL (the leading Chinese personal computer and consumer electronics companies)," Xu Zhijun, executive vice-president, told the FT. "We want to analyze what is China's advantage. China's biggest advantage is its low-cost development." 2/9/05

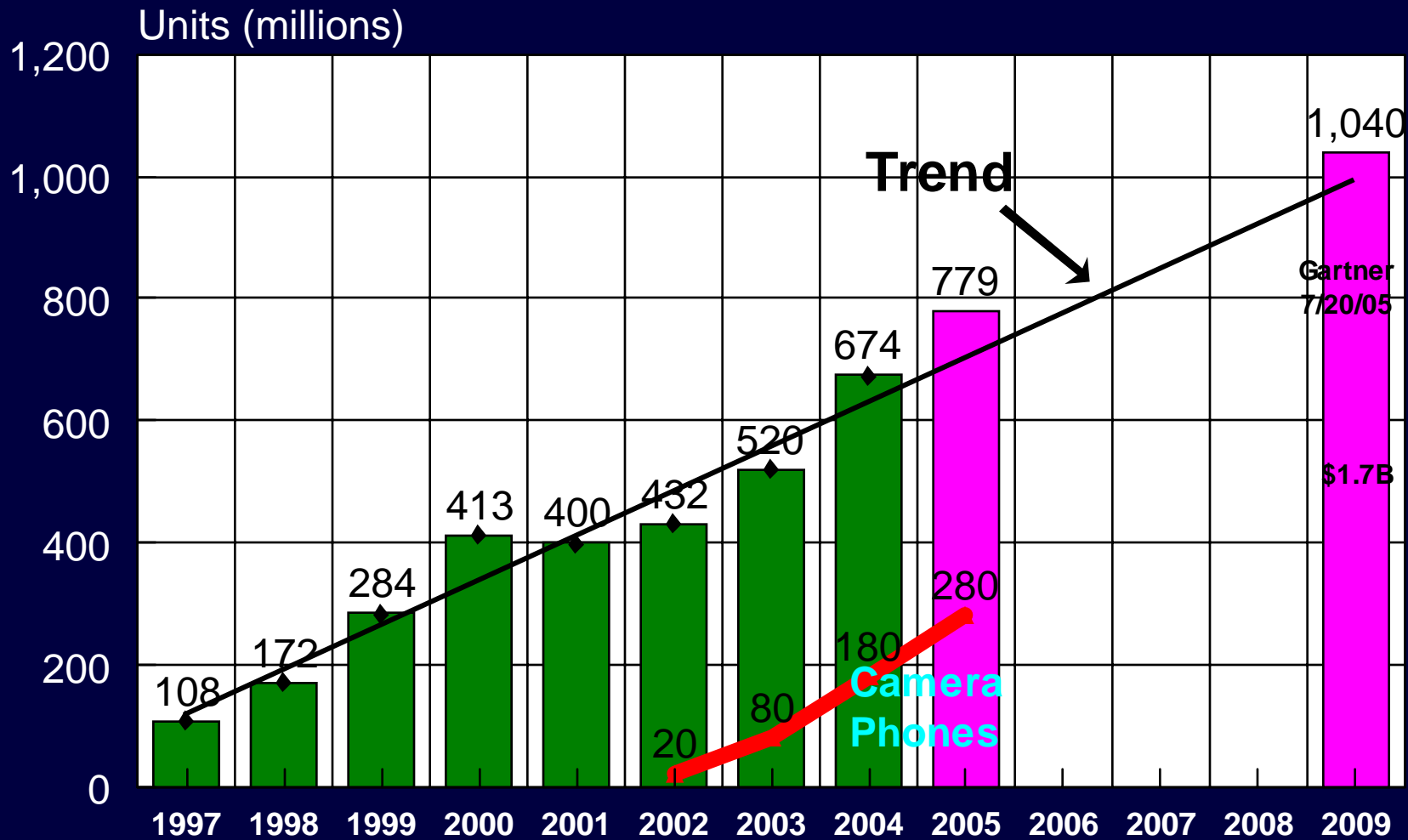


CY

not publicly traded

World Mobile Phone Unit Shipments

Total Sales - Analog & Digital

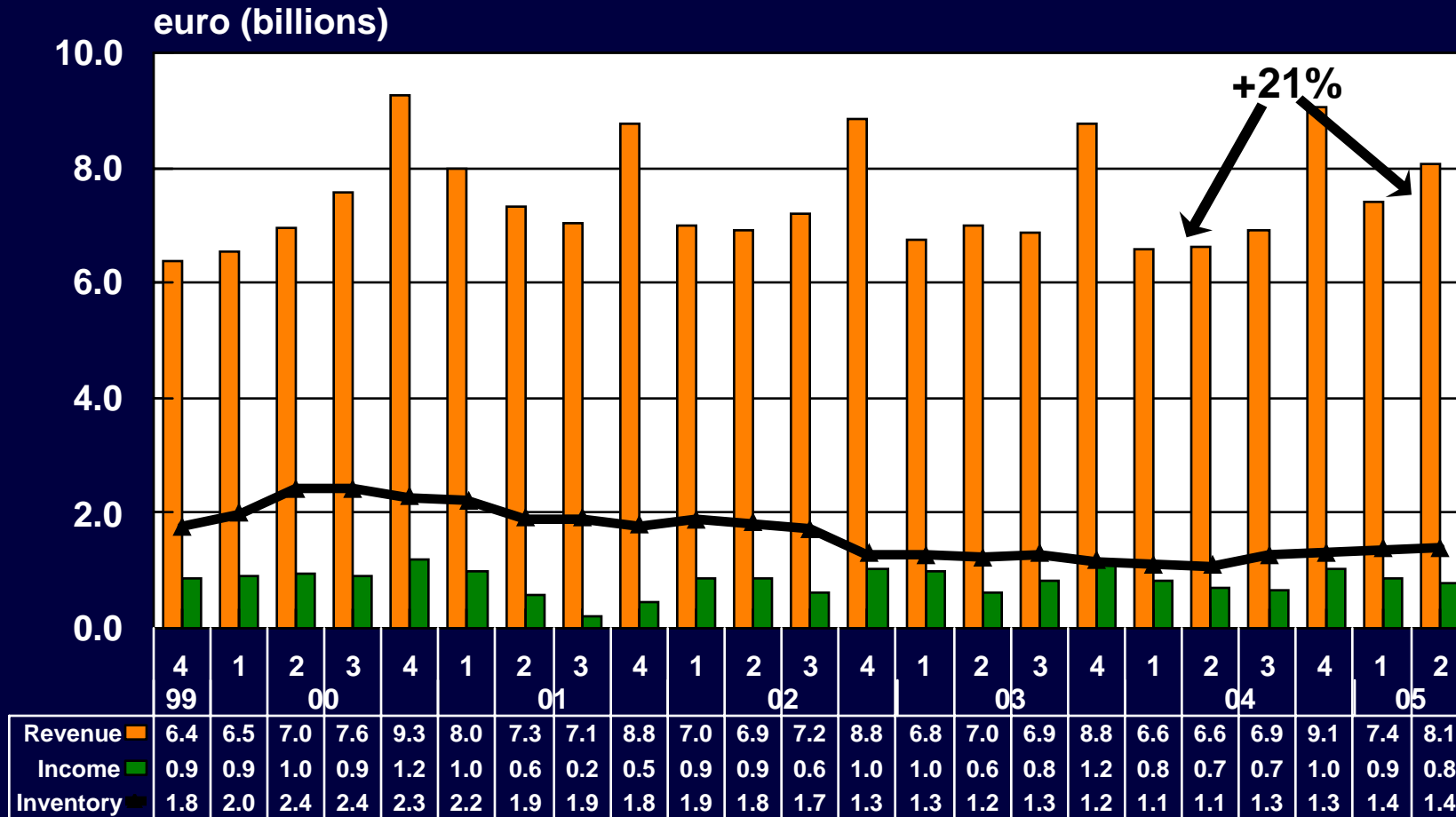


Gartner Dataquest 7/2005, Kodak 3/05 (camera phone 2004 & 2005 data)

Nokia

Revenue, Net Income & Inventory

"In our mobile devices, we also saw year-on-year growth of 34%, which pushed our market share in mobile devices up to an estimated 33%." 7/21/05



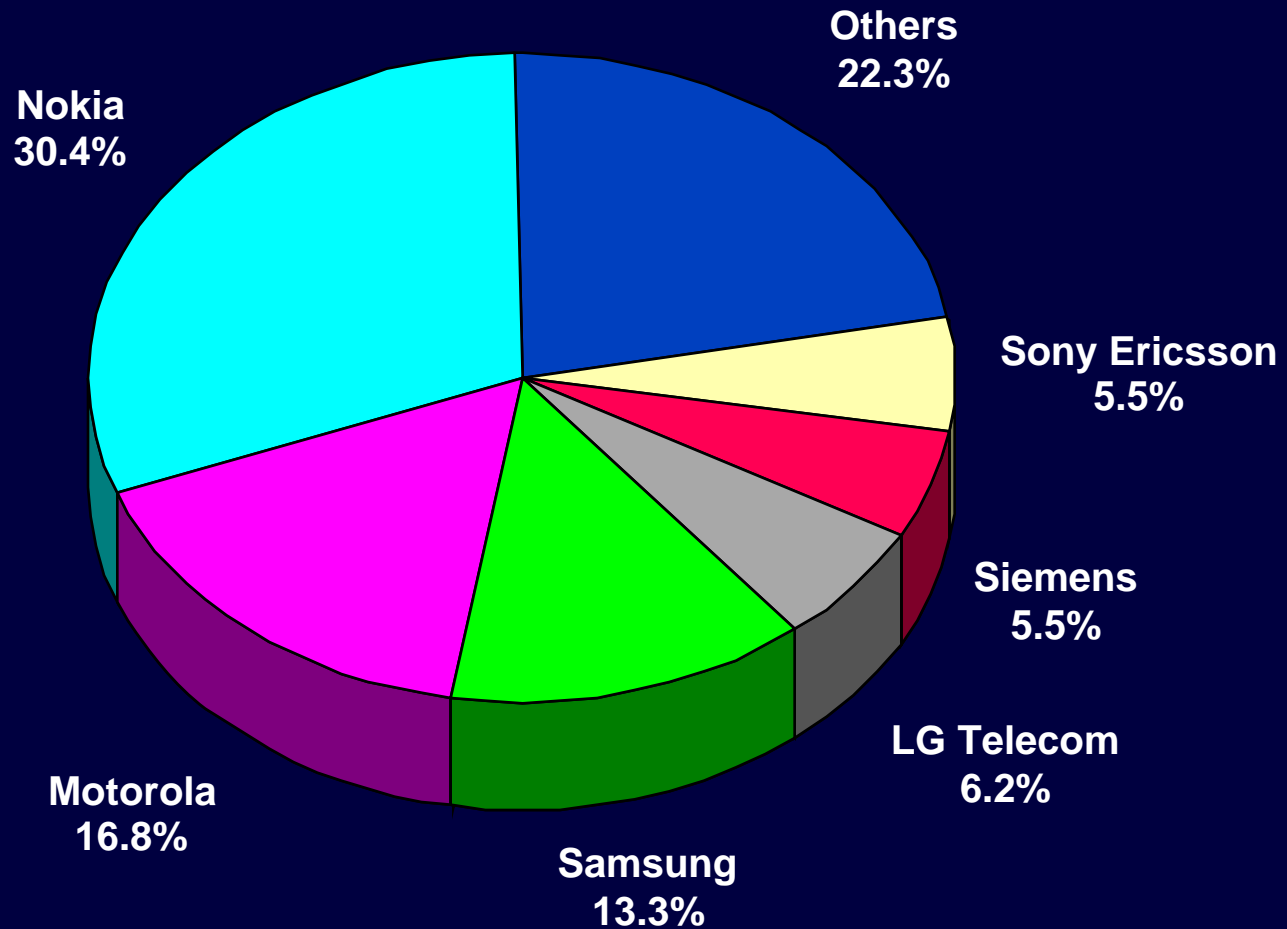
CY

NOK

FY=CY

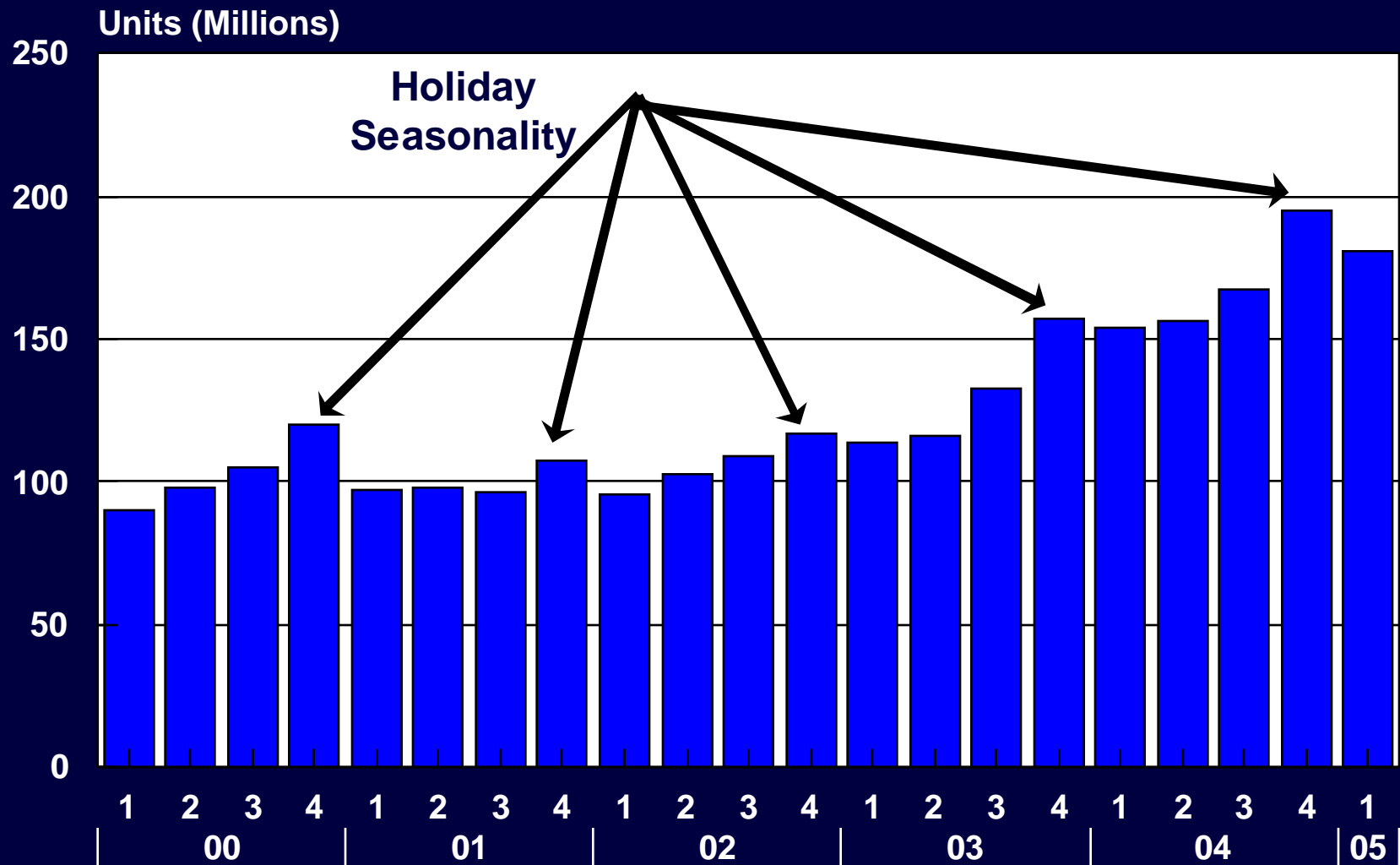
WORLD CELLULAR PHONE SALES

1Q'05



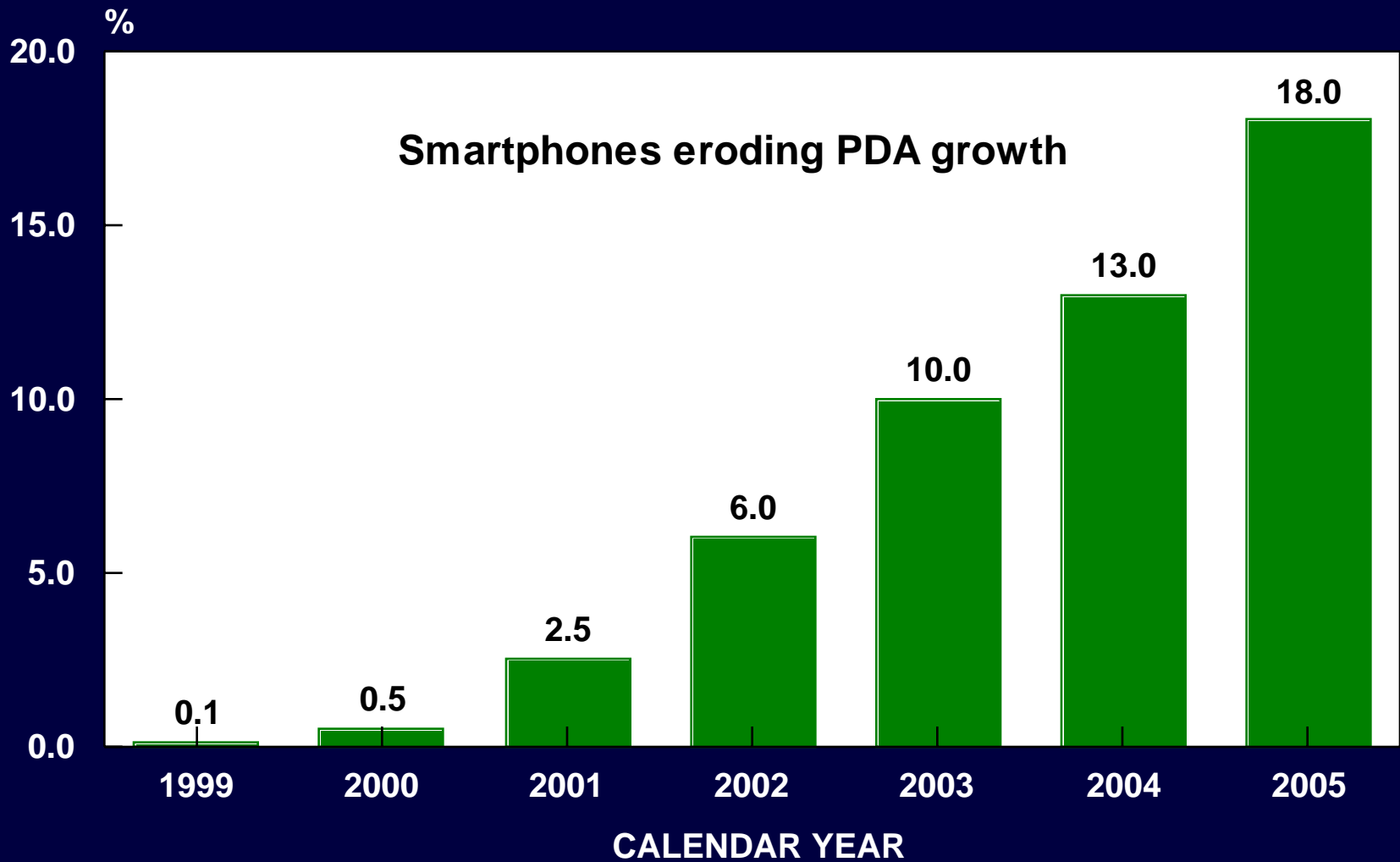
TOTAL: 181 MILLION UNITS

Mobile Phone Unit Shipments World



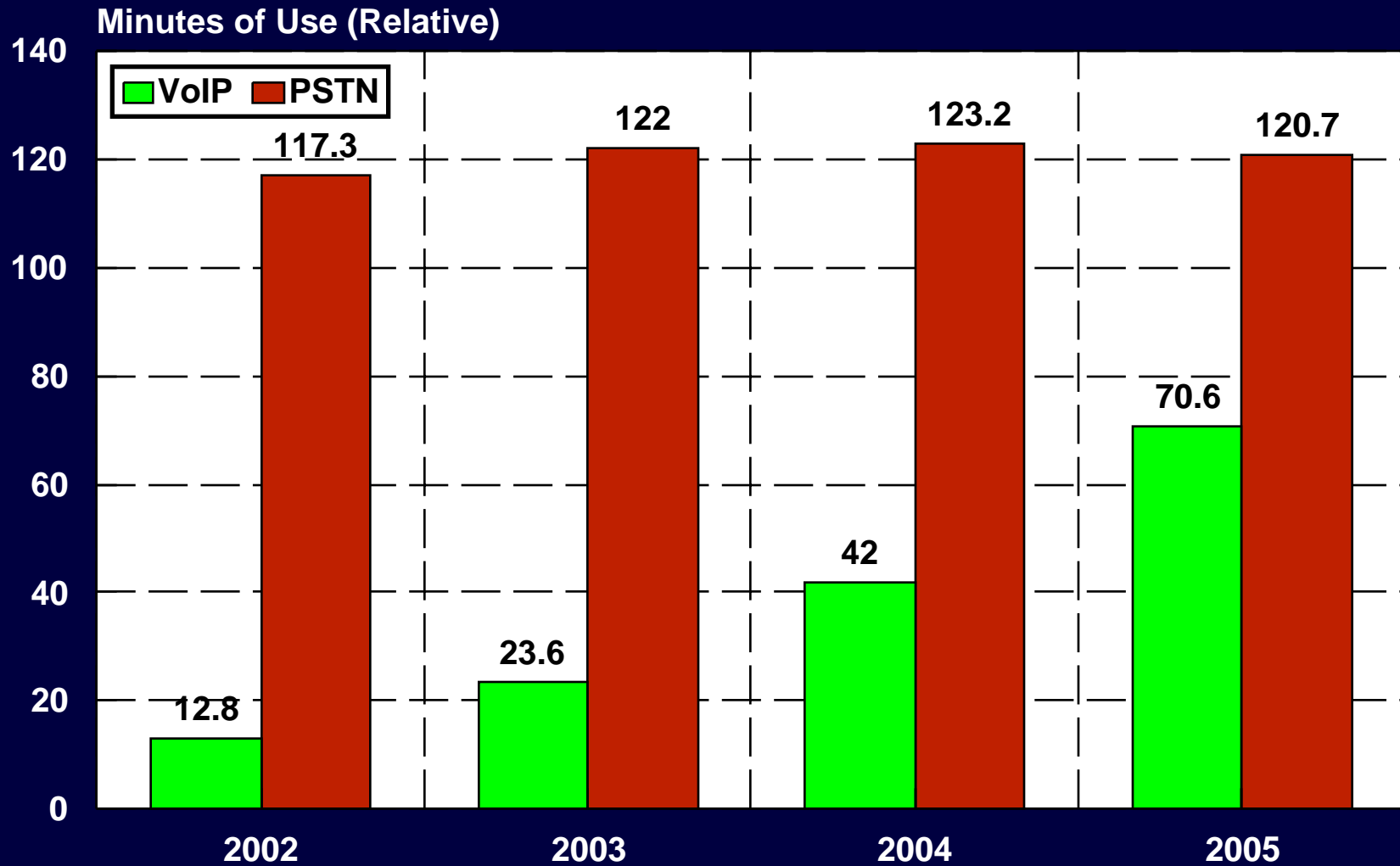
Gartner DataQuest 5/05

Smartphone Market Share of Mobile Phone Market



Internet Infrastructure

Voice over IP vs. Public Switched Telephone Network



Wireless Group Standards

Technology	Speed (bit/sec)	Status
UMTS	up to 384 K (burst)	Available
OFDM	up to 1.5 M	Available
EV-DO	up to 2.4 M (burst)	Available
HSDPA	up to 14.4 M	In trials
4G	up to 300 M	In trials

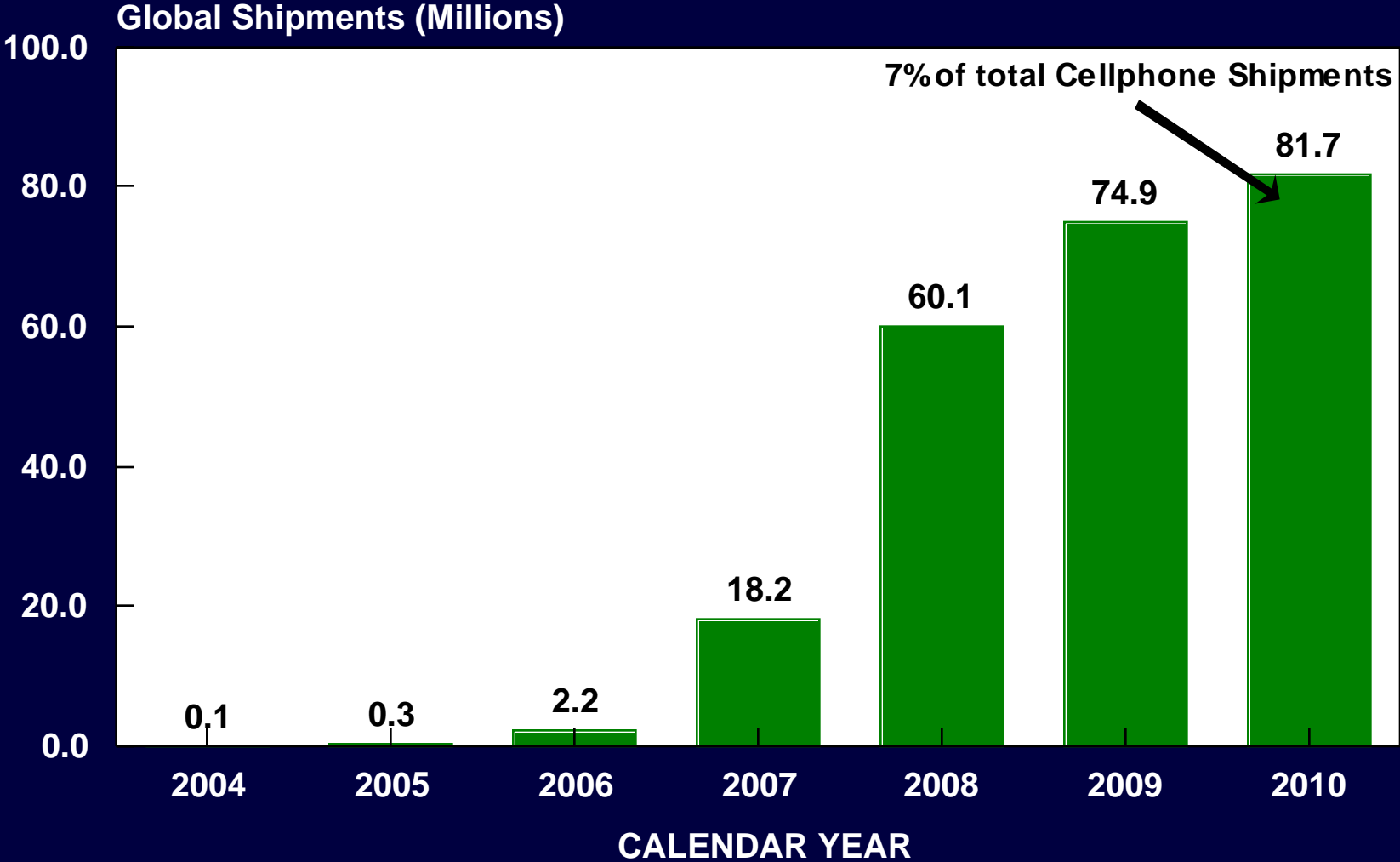
UMTS= Universal Mobile Telecommunications System

OFDM=Orthogonal Frequency Division Multiplexing

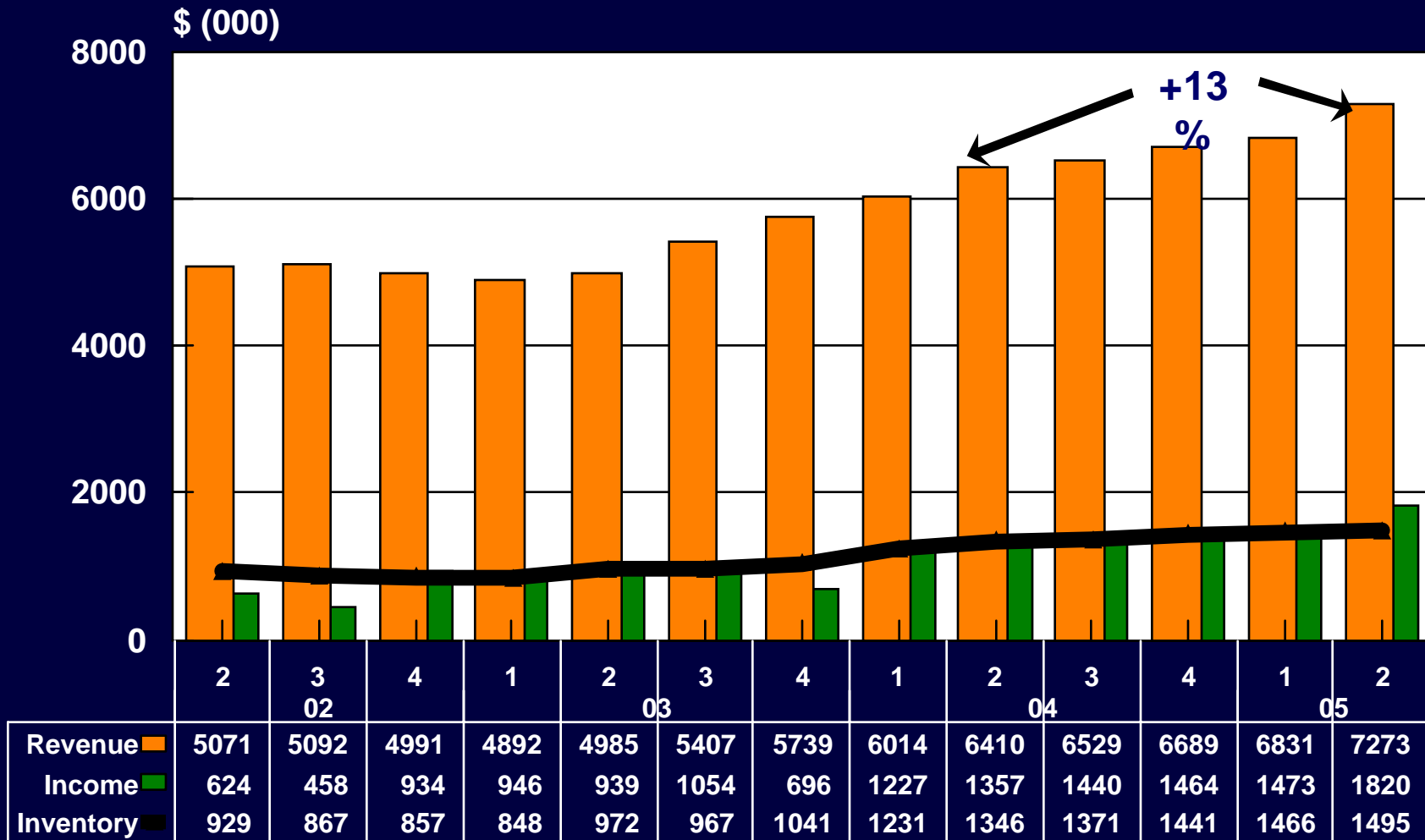
EV-DO=Evolution-Data Only

HSDPA= High-speed Download Packet Access

Cellphone TV Forecast



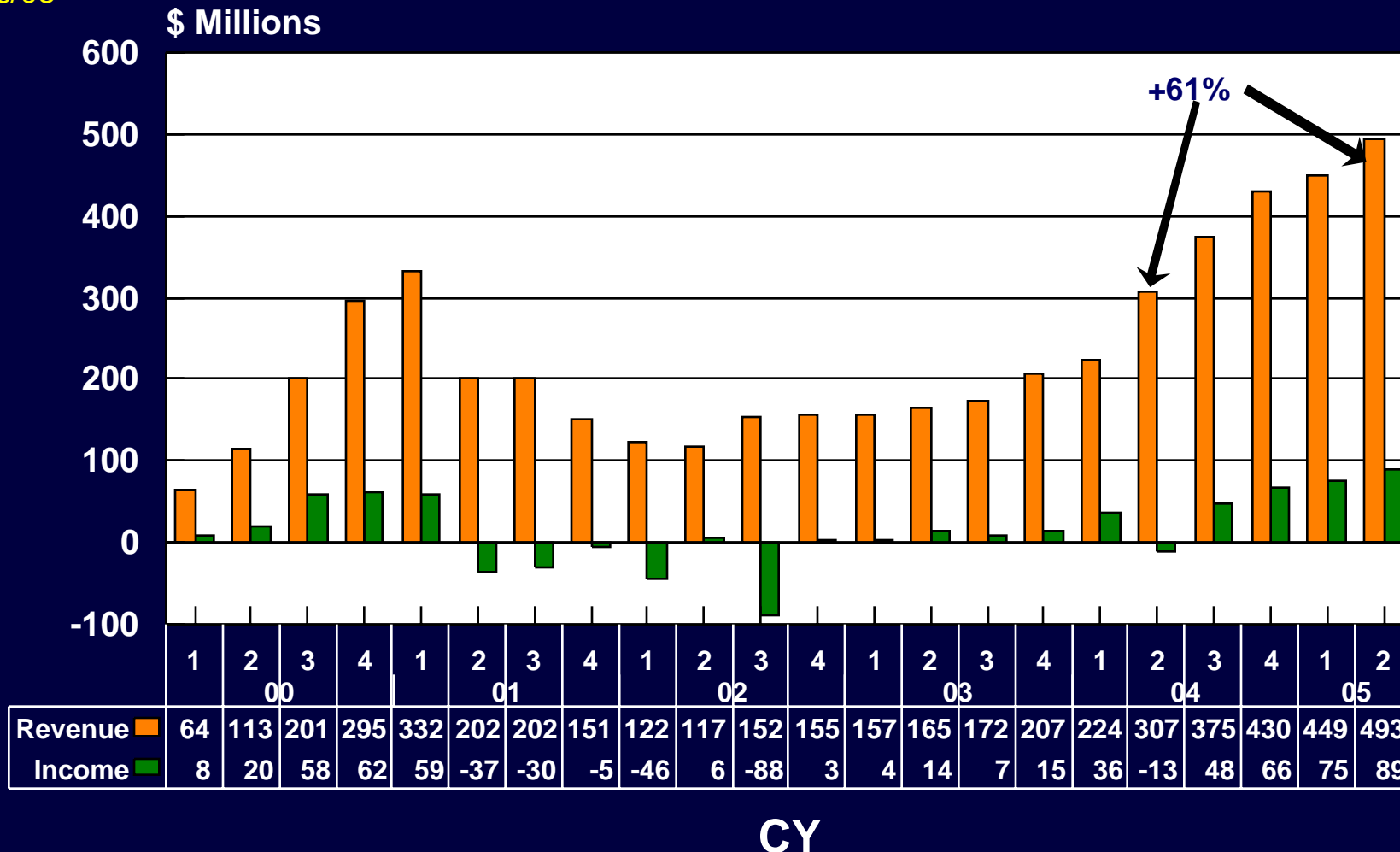
"Internet" Equipment Suppliers Composite of 6 Public Companies Revenue, Net Income & Inventory



Cisco Systems, Juniper Networks, Netgear, Redback Networks, Sonus Networks, Sycamore Networks

Juniper Networks Revenue & Net Income

"The momentum we are enjoying in our brand, our portfolio and the corresponding market opportunity continues to be fueled by the confidence of our customers and the strong demand for the value we bring to the network"
7/19/05



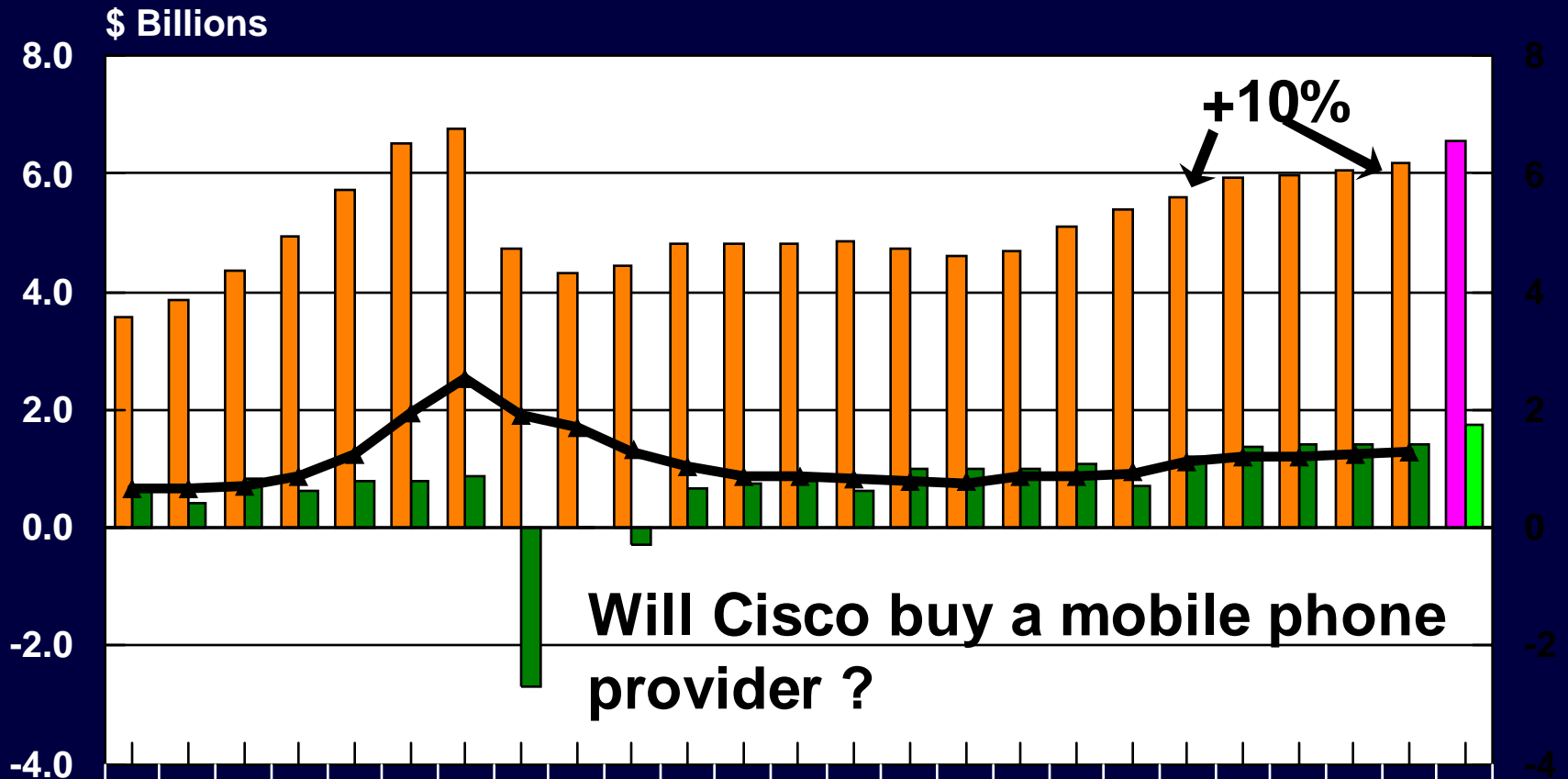
FY = CY

JNPR

"Inventory" not listed on Balance Sheet

Cisco Systems

Revenue, Net Income & Inventory



	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
	99				00				01				02				03				04				05	
Revenue	3.6	3.9	4.4	4.9	5.7	6.5	6.7	4.7	4.3	4.4	4.8	4.8	4.8	4.8	4.7	4.6	4.7	5.1	5.4	5.6	5.9	6.0	6.1	6.2	6.6	
Income	0.7	0.4	0.8	0.6	0.8	0.8	0.9	-2.7	0.0	-0.3	0.7	0.7	0.8	0.6	1.0	1.0	1.0	1.1	0.7	1.2	1.4	1.4	1.4	1.4	1.7	
Inventory	0.7	0.7	0.7	0.9	1.2	2.0	2.5	1.9	1.7	1.3	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.2	1.2	1.3	1.3		

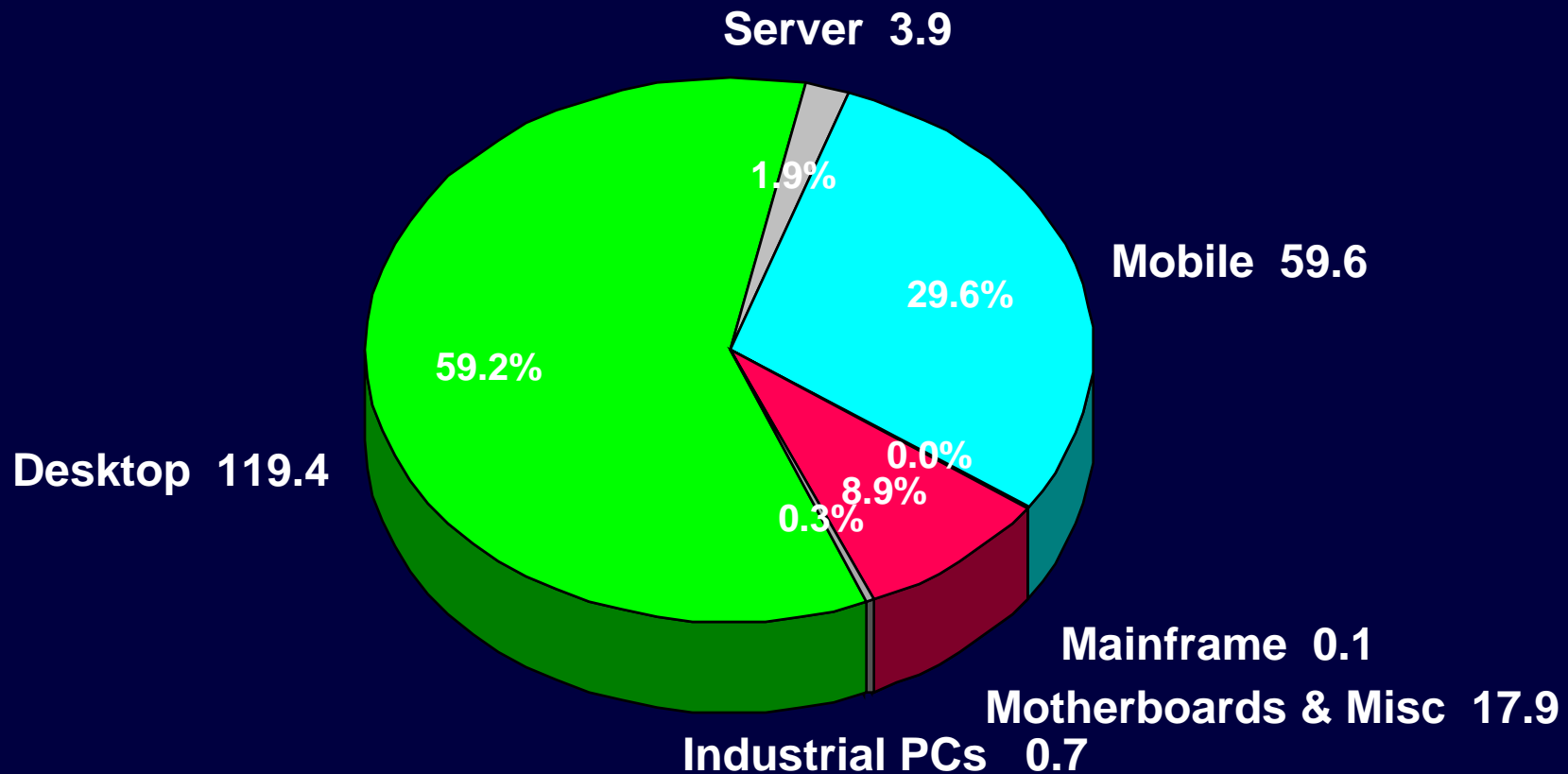
CY

CSCO

**Computers
&
Related
Products**

World Computer Equipment Market

2004



Total: 201 Million Units

Current Situation

PCs/Notebooks are 90% of unit volume

Trend to smaller motherboards

Games (Playstation, X-box are computers)

Changes

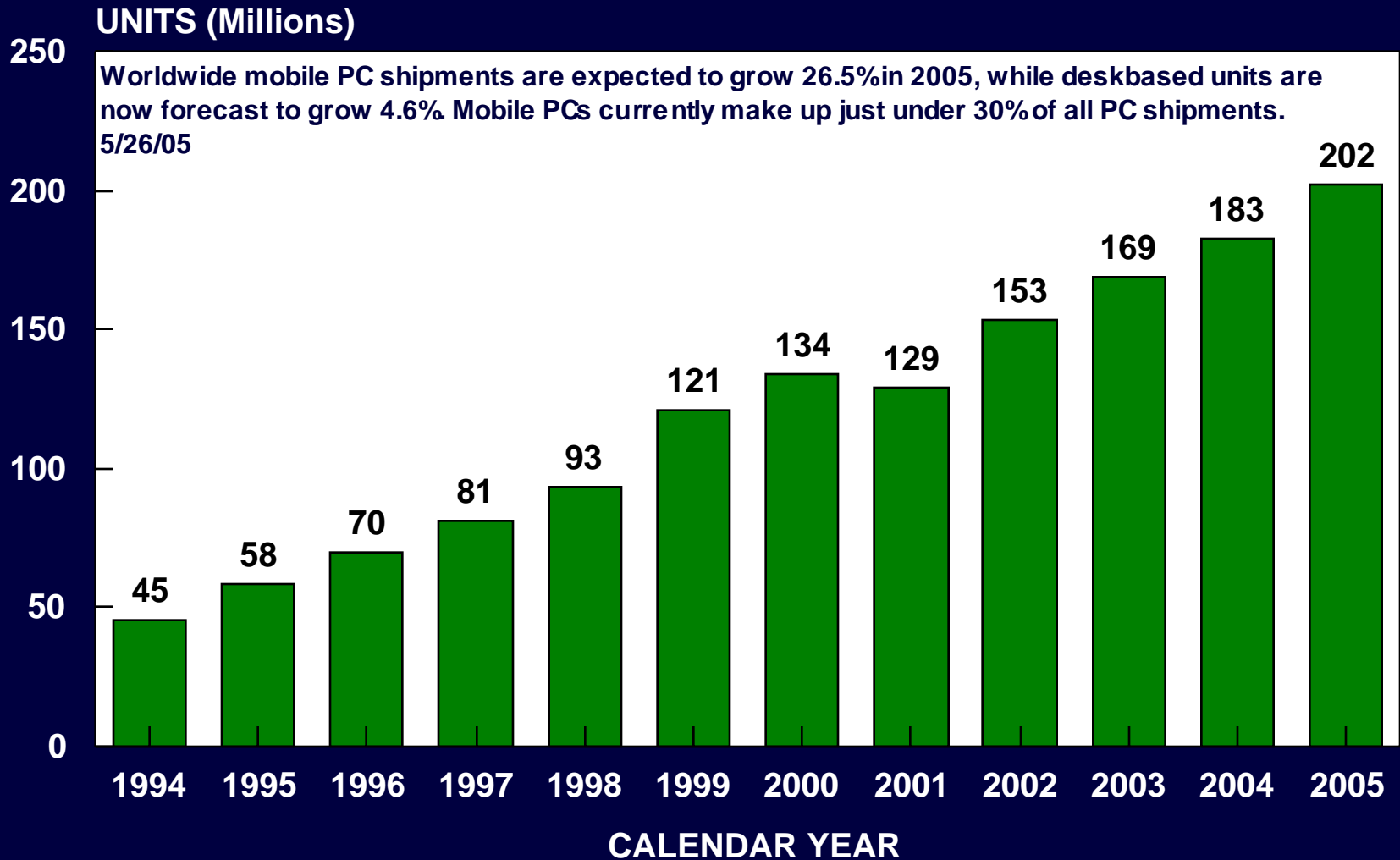
- IBM sells PCs & notebooks to Lenovo**
- Apple MacIntel**
- HP splits PCs from printers; precursor to sale?**

RIM type handhelds dominating older Palm PDAs

Servers flat; Dell & IBM taking share from Sun

PERSONAL COMPUTER GROWTH

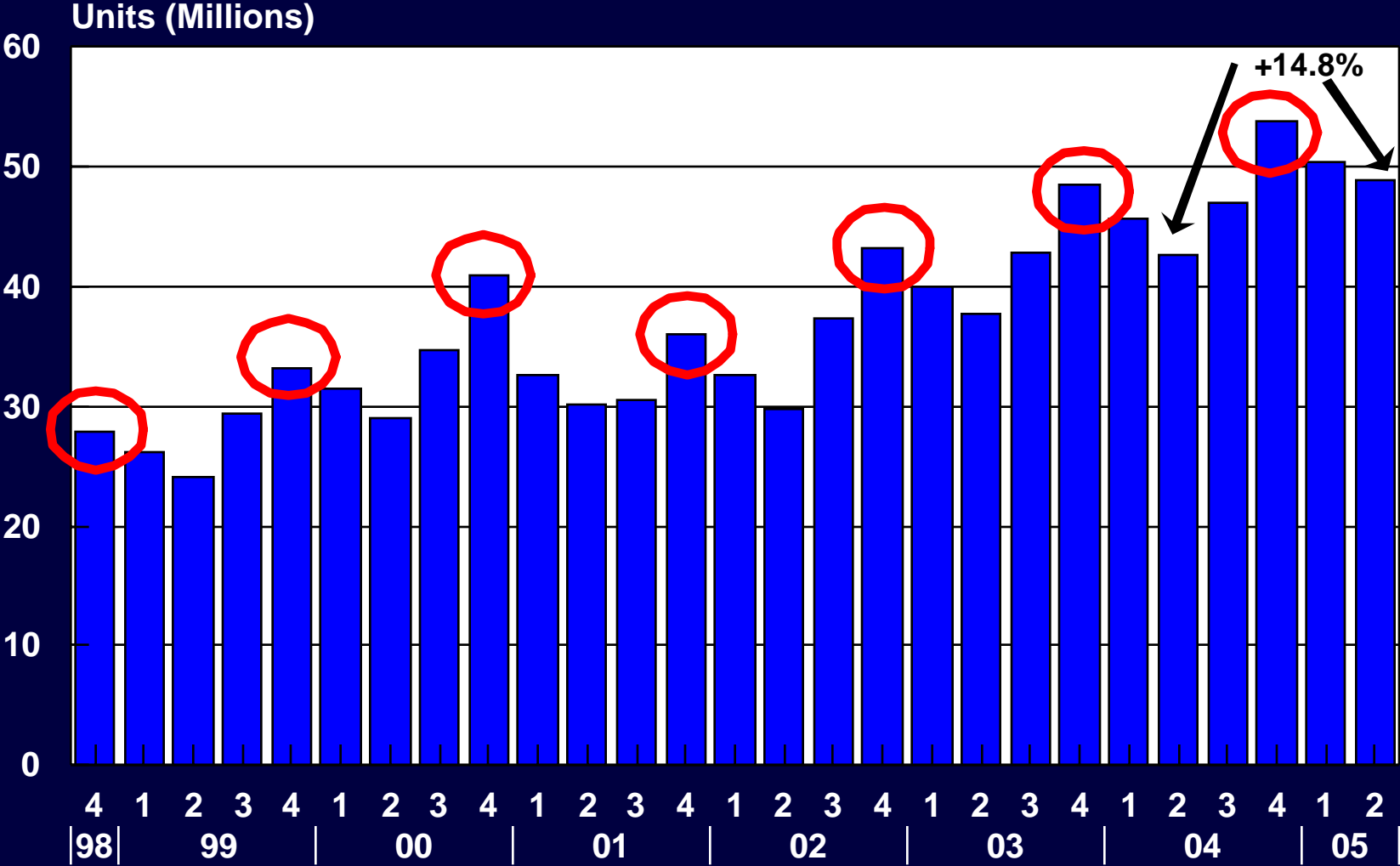
GLOBAL SALES



Gartner Dataquest 5/2005

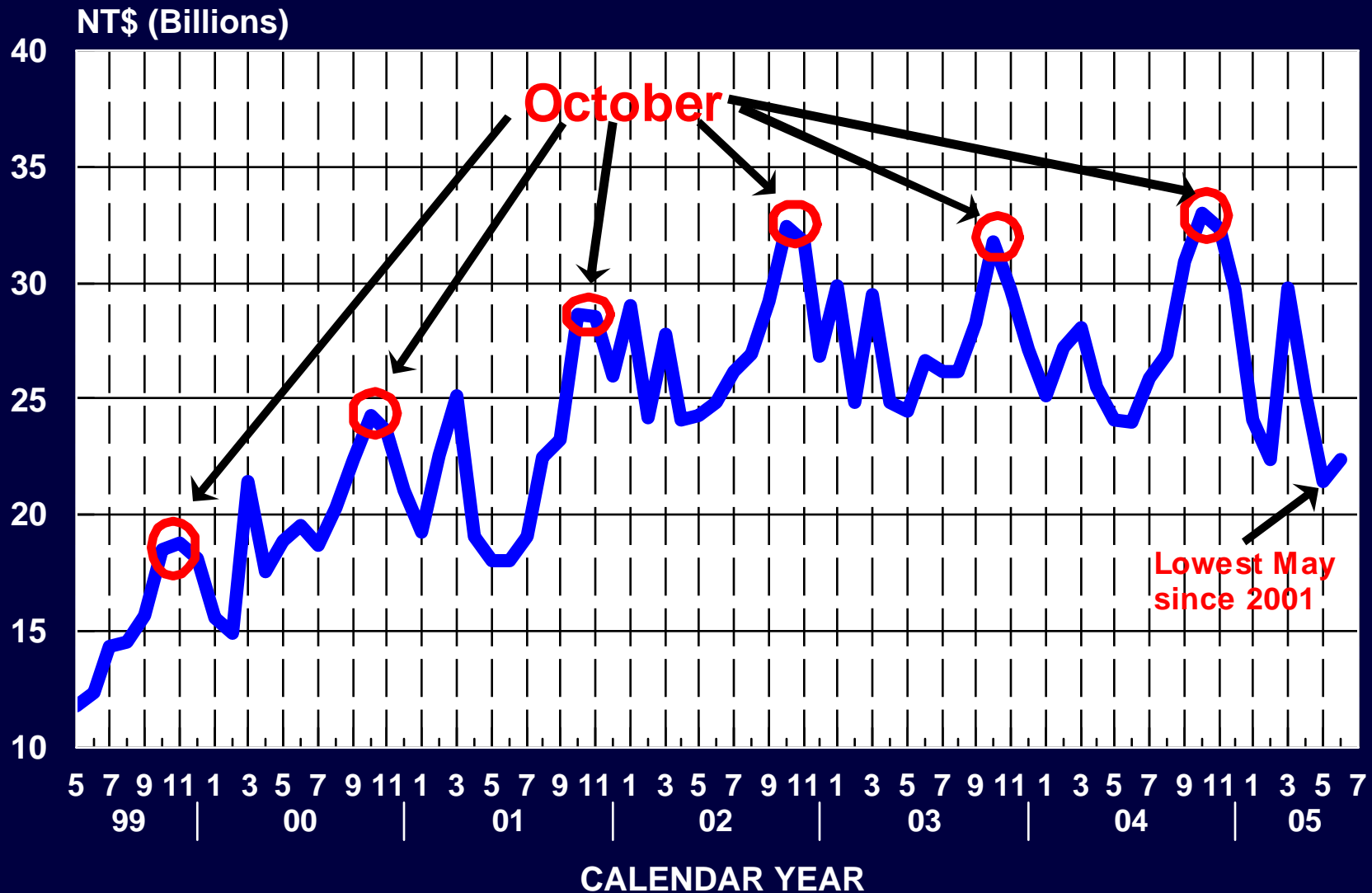
Desktops, Notebooks, Ultratables, IA-32 Servers

Personal Computer Unit Shipments World



Gartner 7/05
Servers not included

Taiwan Motherboard Vendor Sales Composite of 18 Large Manufacturers

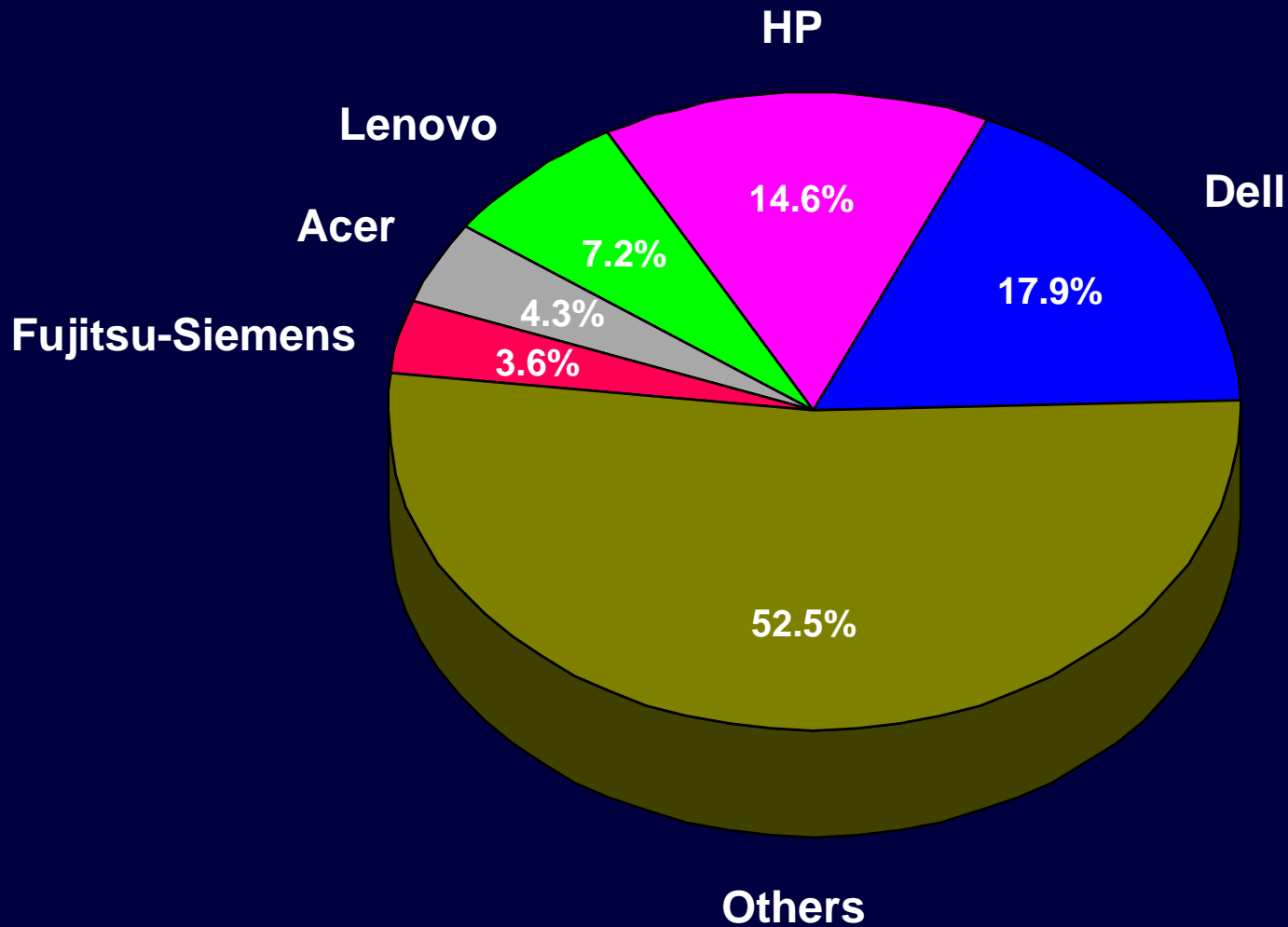


Company Financial Releases

ABIT, Acorp, Albatron, AOpen, Asustek, Biostar, Chaintech, Diamond Flower, Elite Group, Epox, Giga-Byte, Jetway, Leadtek, Microstar Intl, Shuttle, Soyo, Tul, Universal Scientific

WORLD PERSONAL COMPUTER MARKET

2Q'05



DATAQUEST 7/18/2005

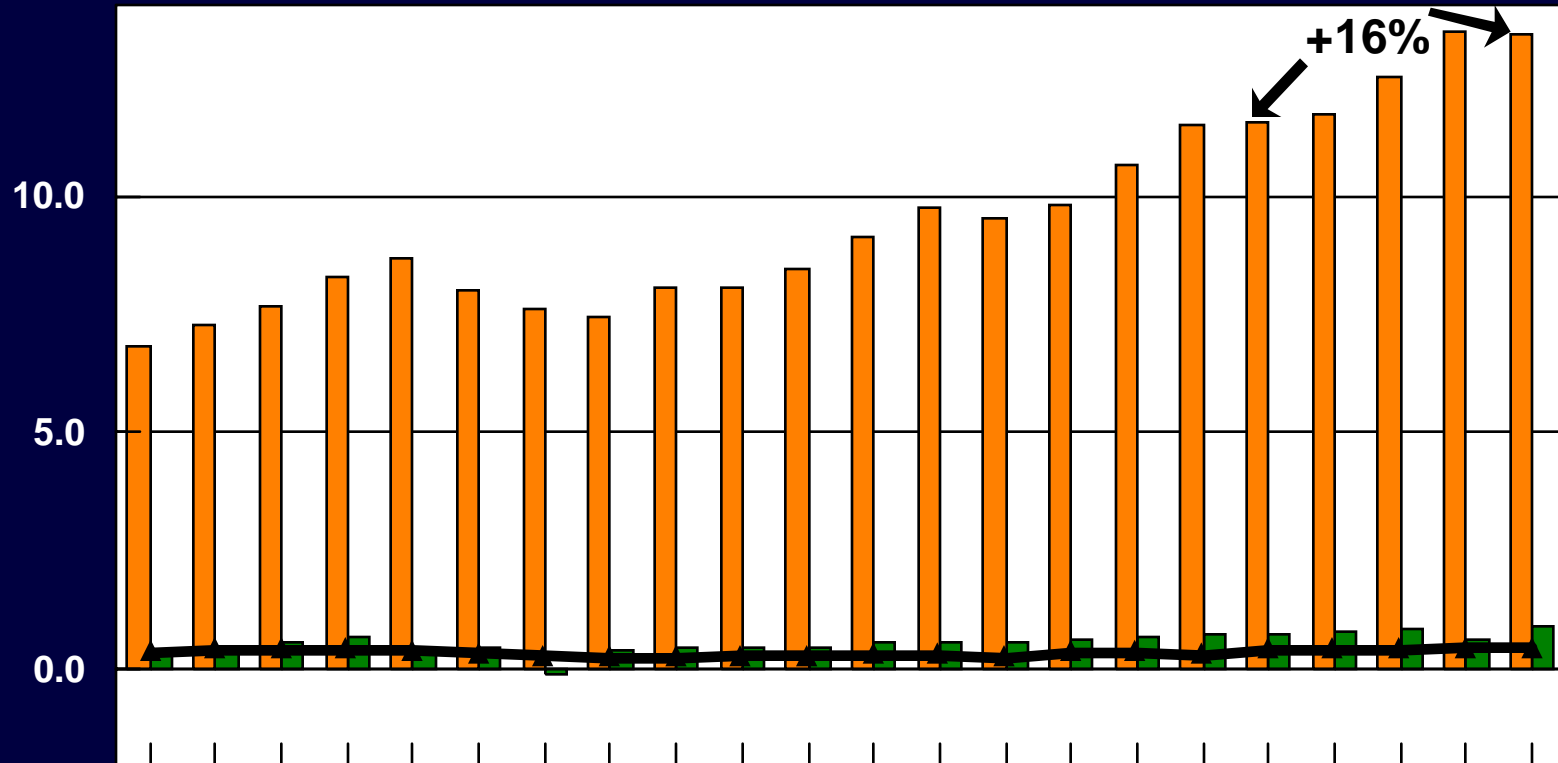
TOTAL: 48.9 M UNITS

Preliminary, includes desk-based PCs, mobile PCs and IA-32 servers

Dell Computer

Revenue, Net Income & Inventory

\$ Billions



	4 99	1	2 00	3	4	1	2 01	3	4	1	2 02	3	4	1	2 03	3	4	1	2 04	3	4	1 05
SALES	6.8	7.3	7.7	8.3	8.7	8.0	7.6	7.5	8.1	8.1	8.5	9.1	9.7	9.5	9.8	10.6	11.5	11.5	11.7	12.5	13.5	13.4
PROFITS	0.4	0.5	0.6	0.7	0.4	0.5	-0.1	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.7	0.9
Inventory	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5

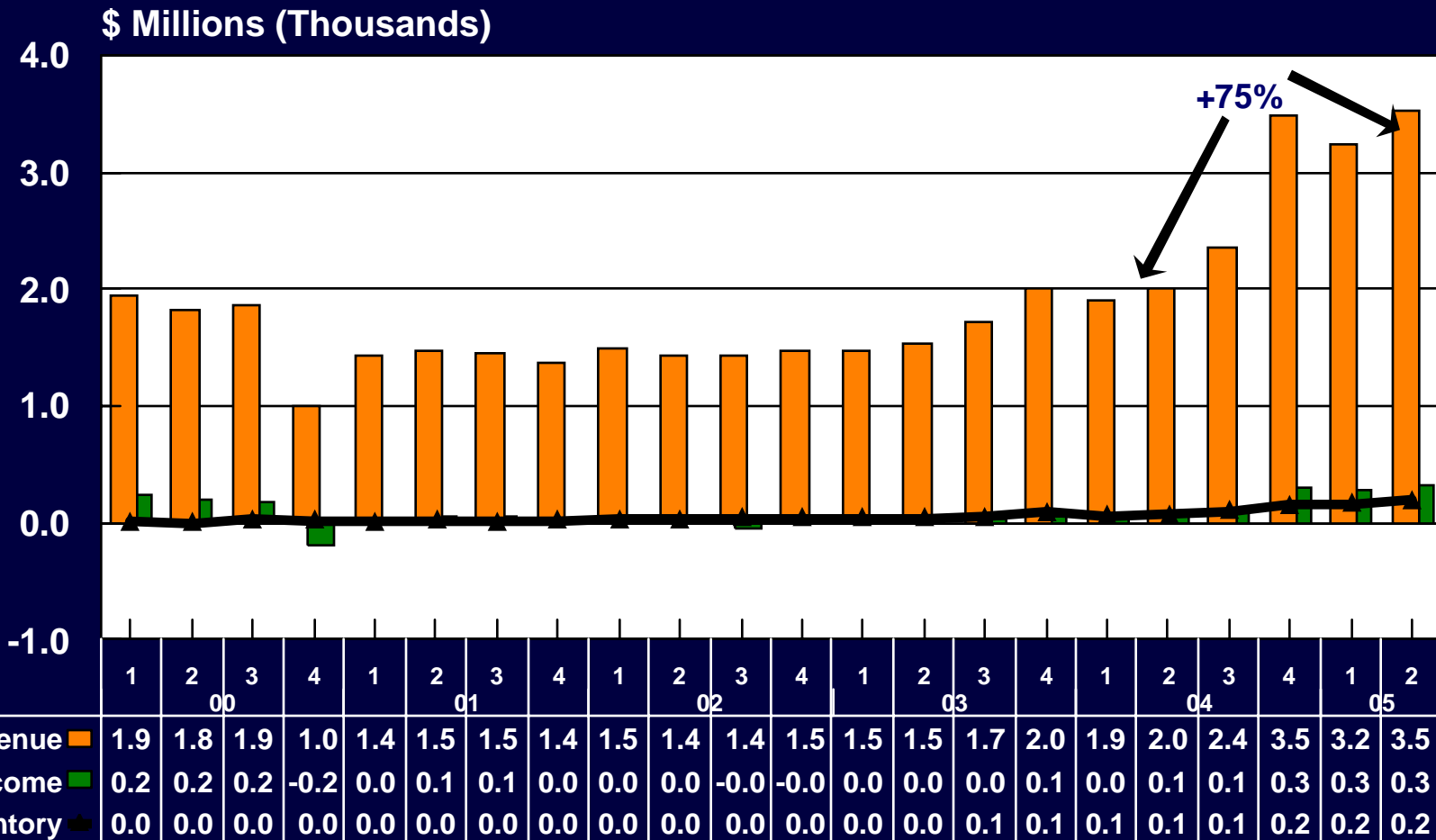
CY

FY ends October

DELL

Apple Computer

Revenue & Net Income



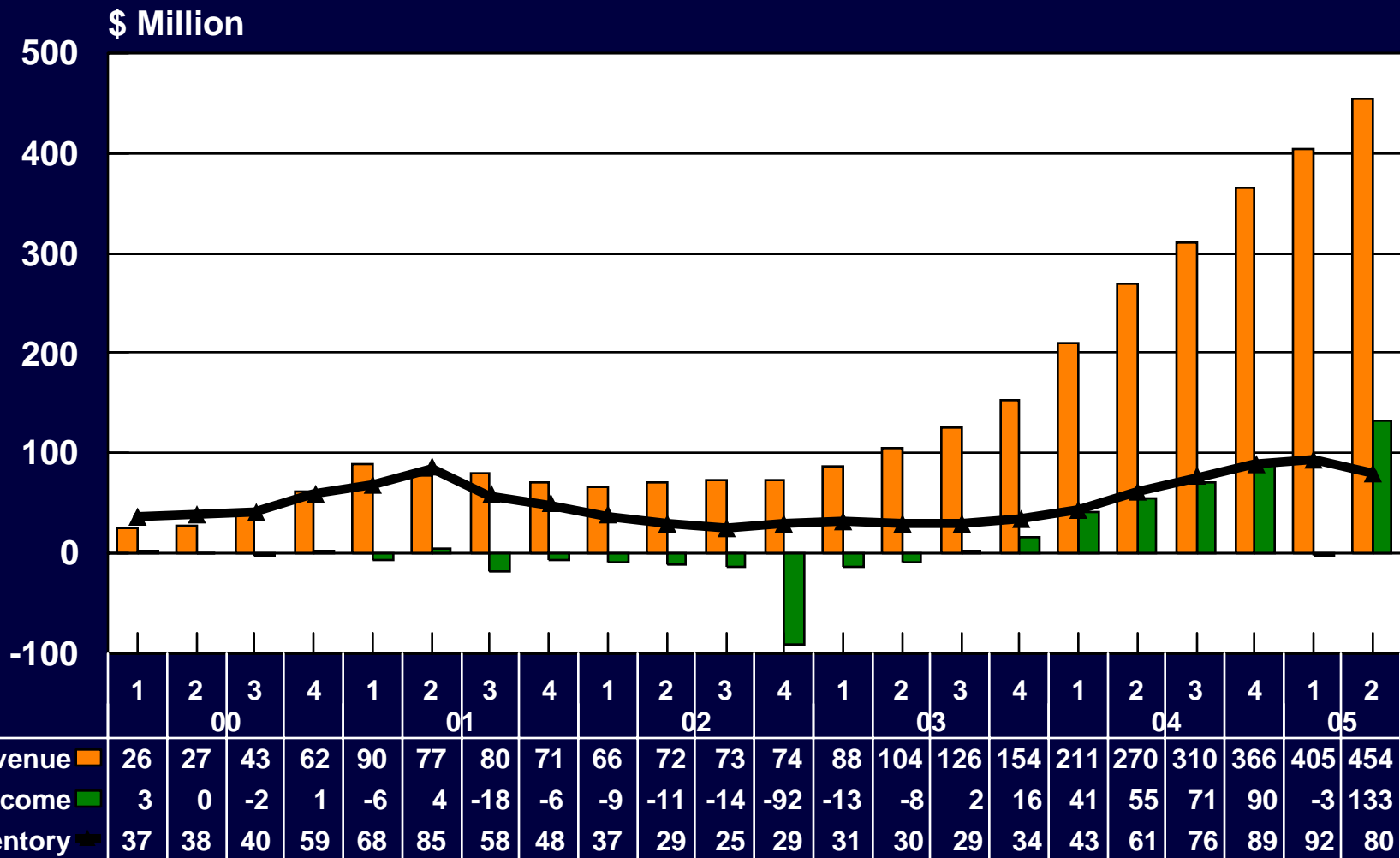
CY

FY ends September

AAPL

Research in Motion (RIM)

Revenue, Net Income & Inventory

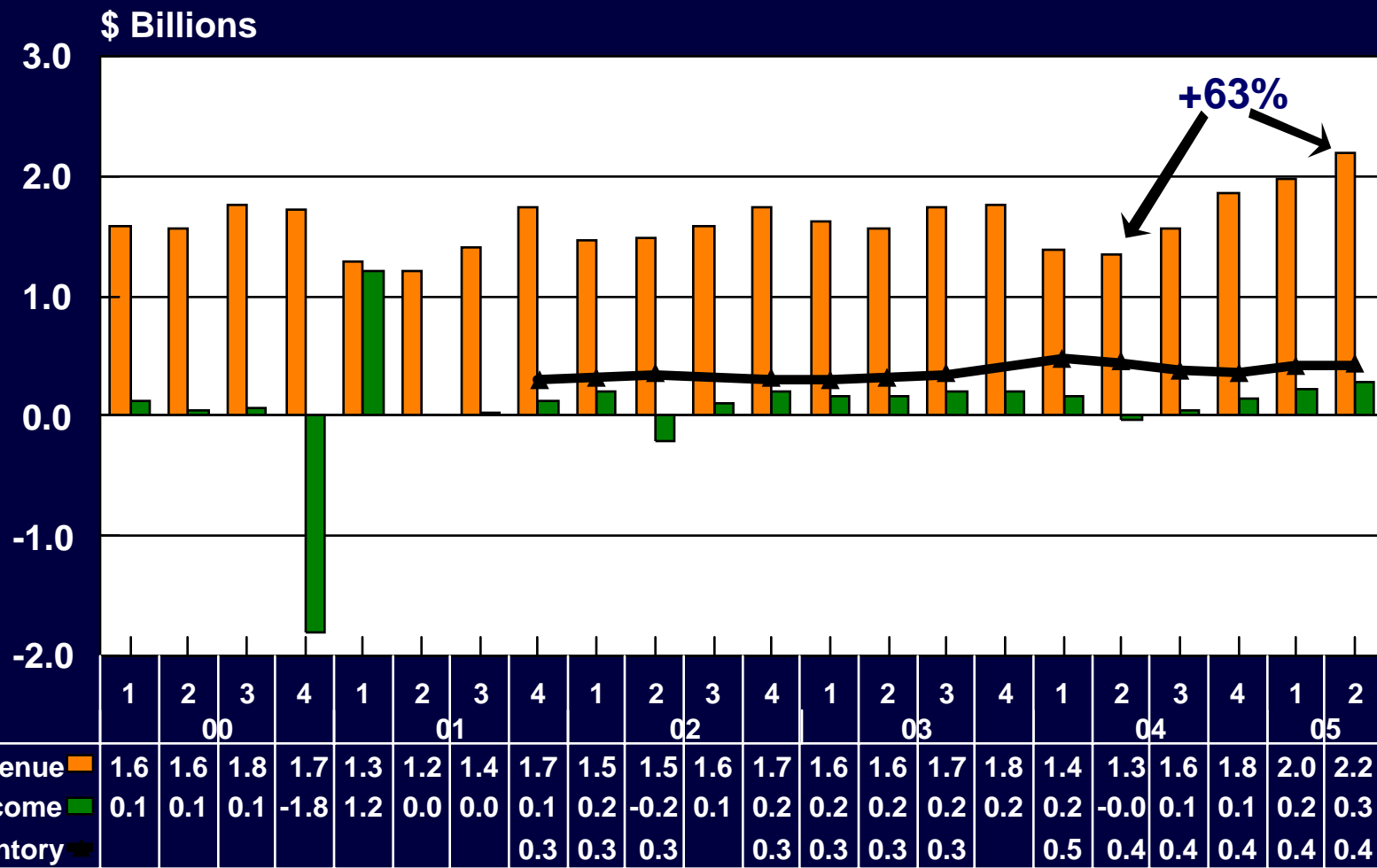


CY

RIMM

Seagate Technology HDD

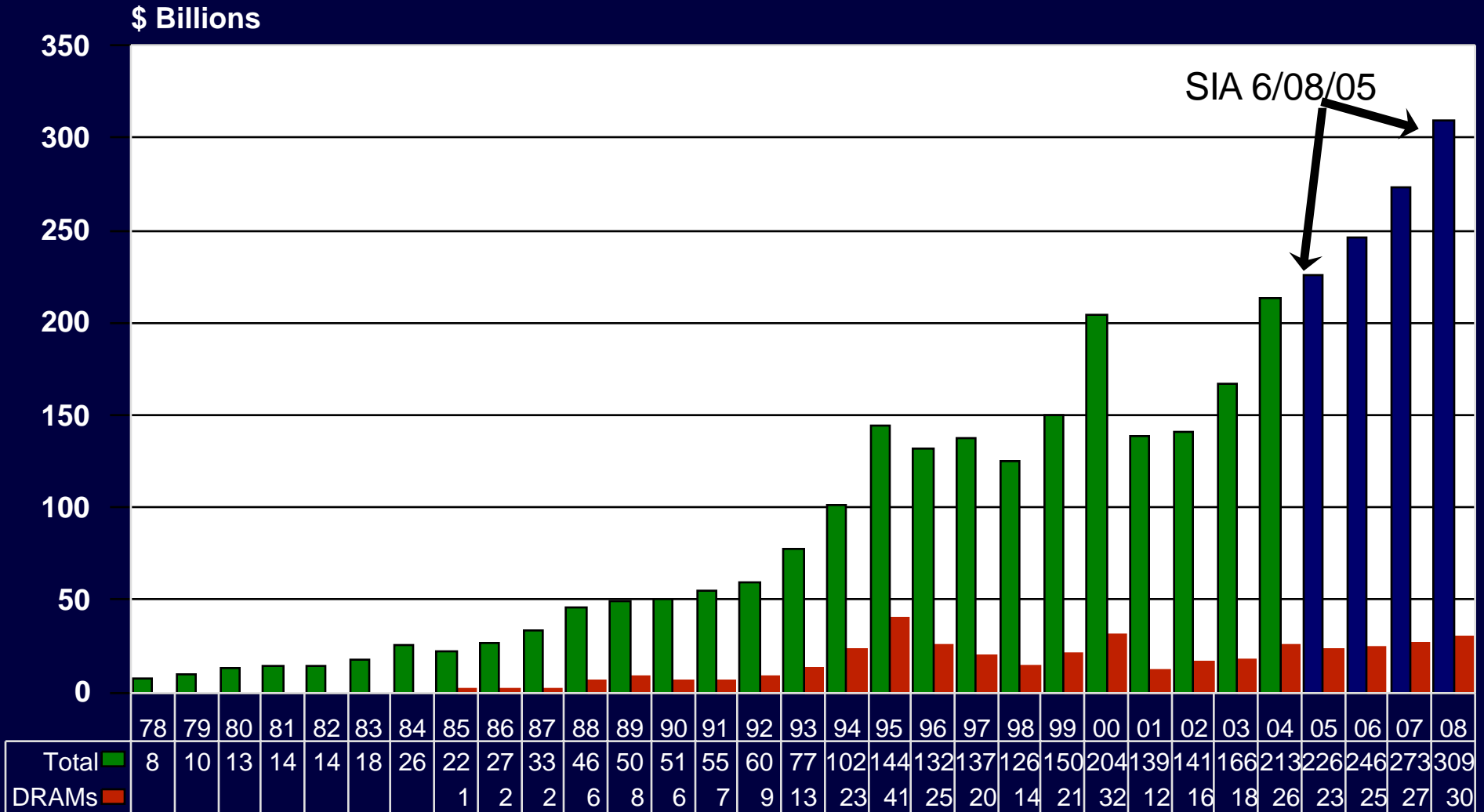
Revenue, Net Income & Inventory



CY

Semiconductors

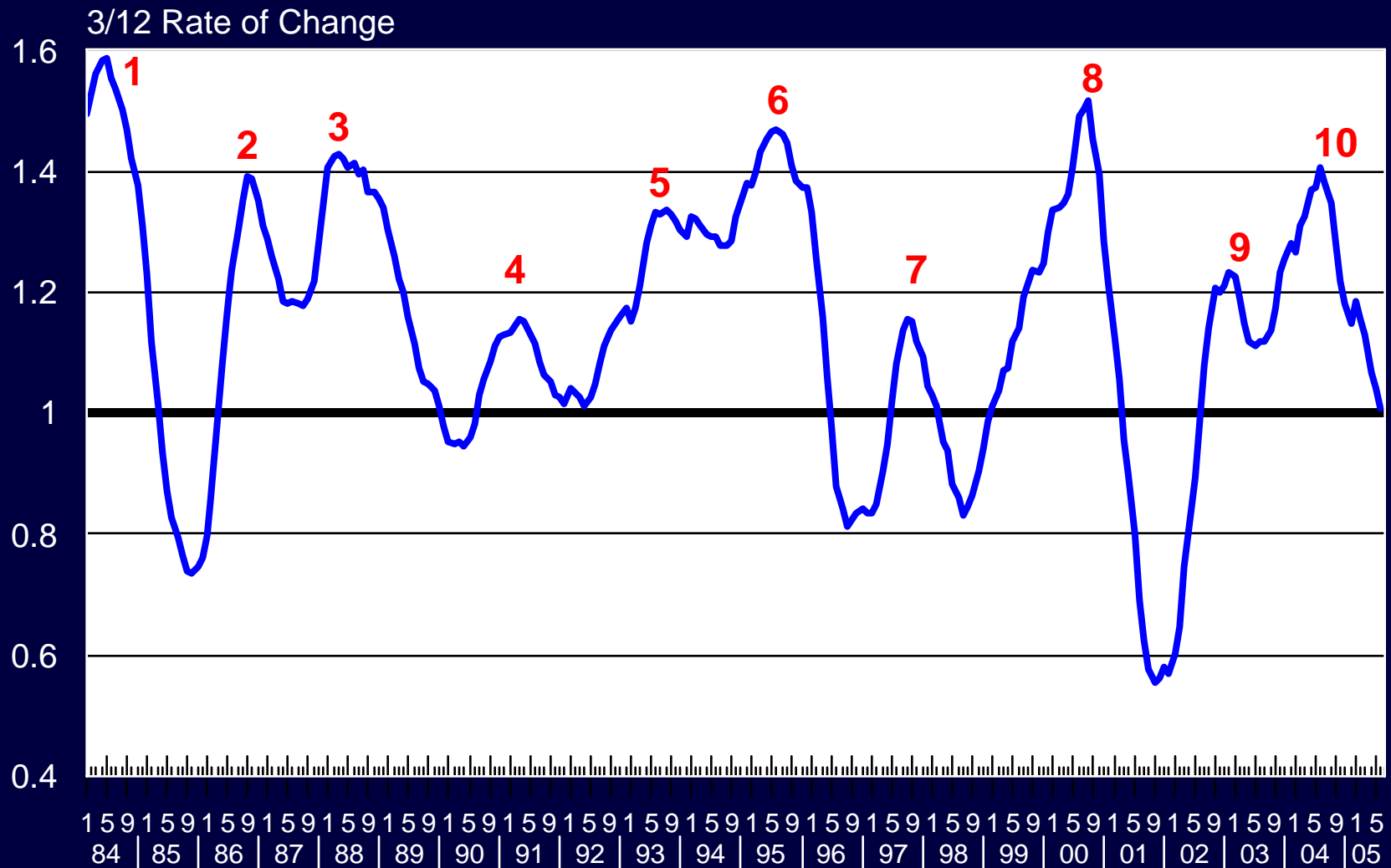
World Semiconductor Sales Total & Memory



SIA & ESIA 6/2005 - www.sia-online.org & www.eeca.org/esia.htm

Global Semiconductor Shipments

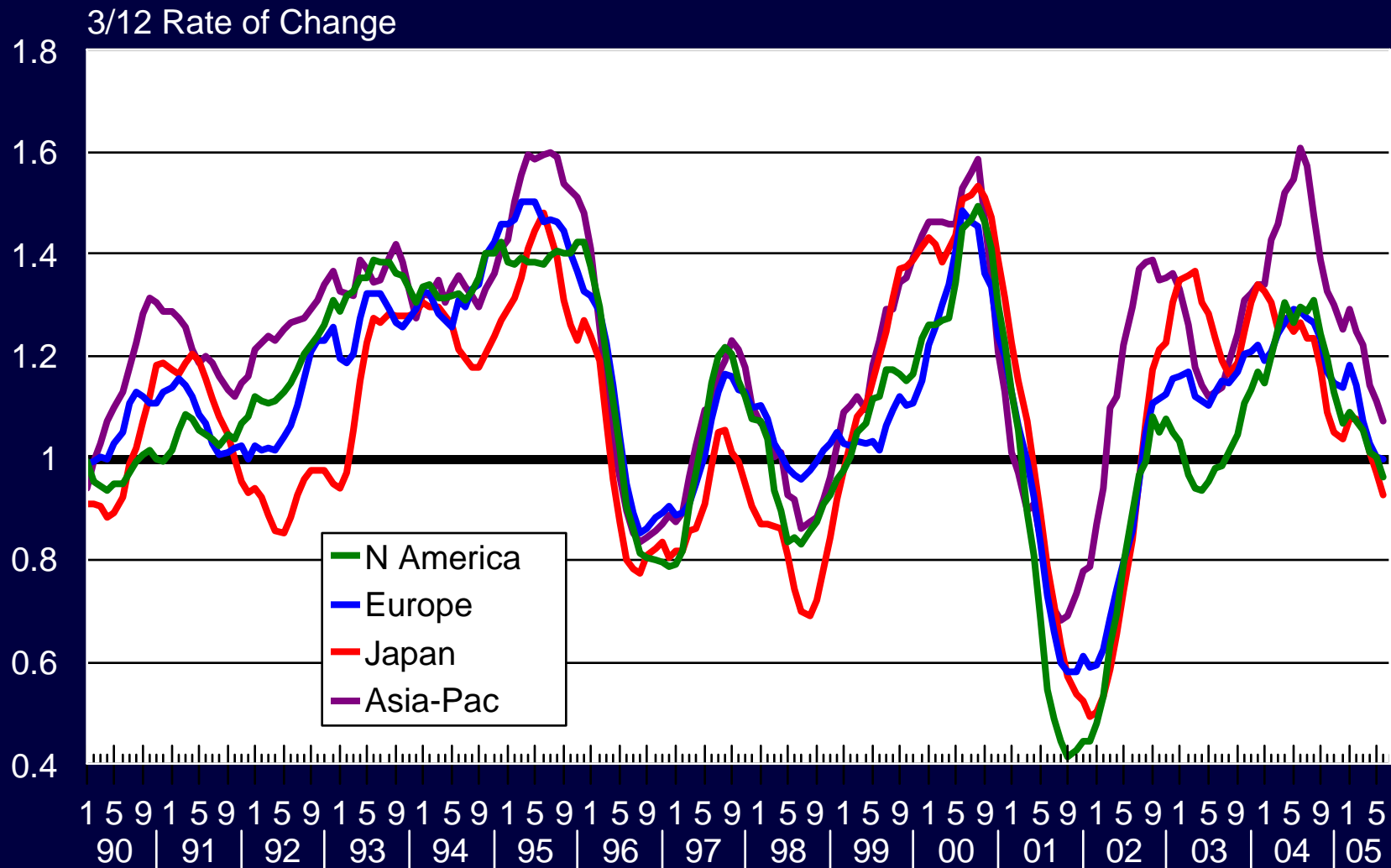
3-Month Growth Rates on \$ Basis



Total \$ Shipments from All Countries to an Area
SIA website: www.sia-online.org/

Semiconductor Growth Rates

Total \$ Shipments to an Area

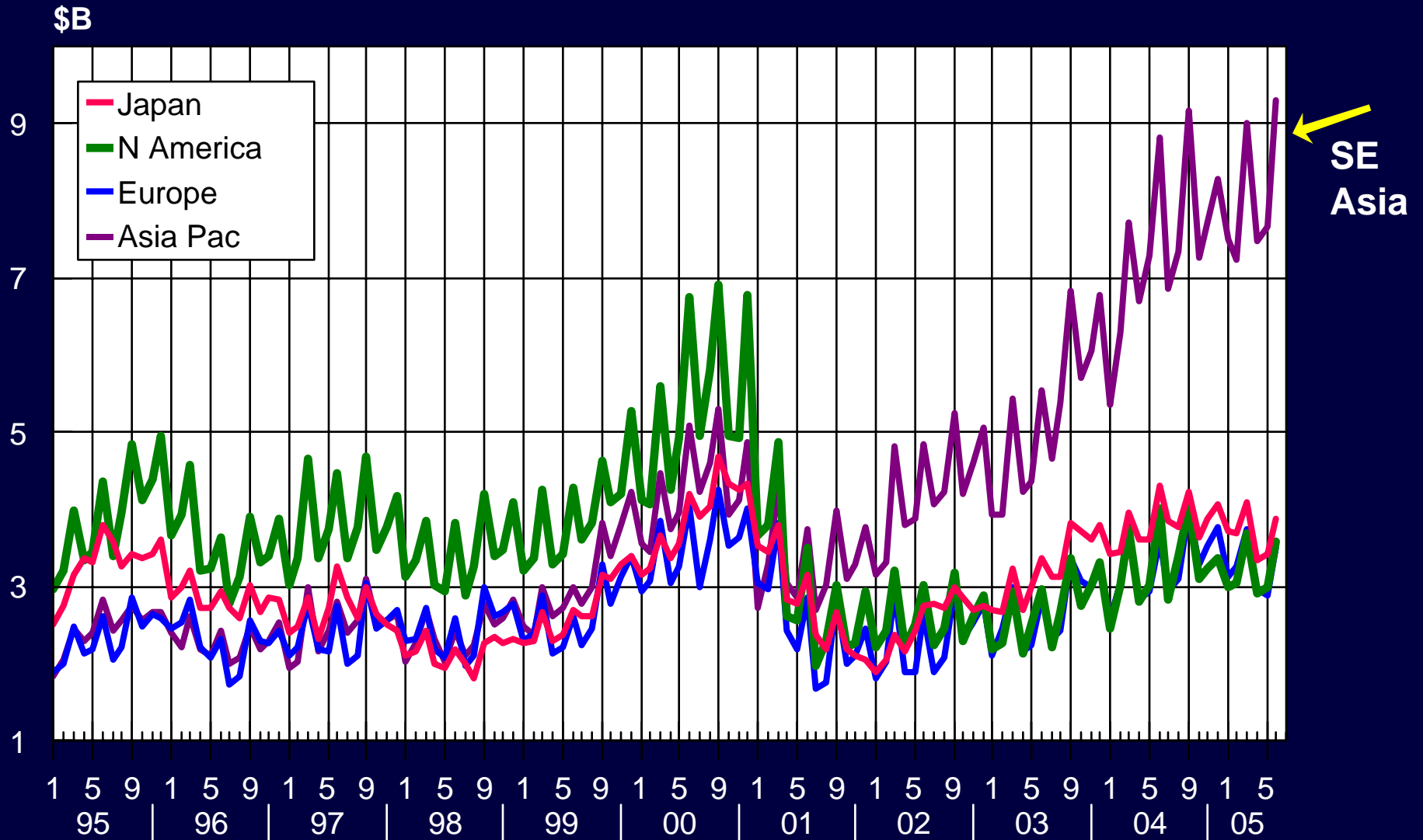


Total \$ Shipments from All Countries to an Area

SIA website: www.sia-online.org/

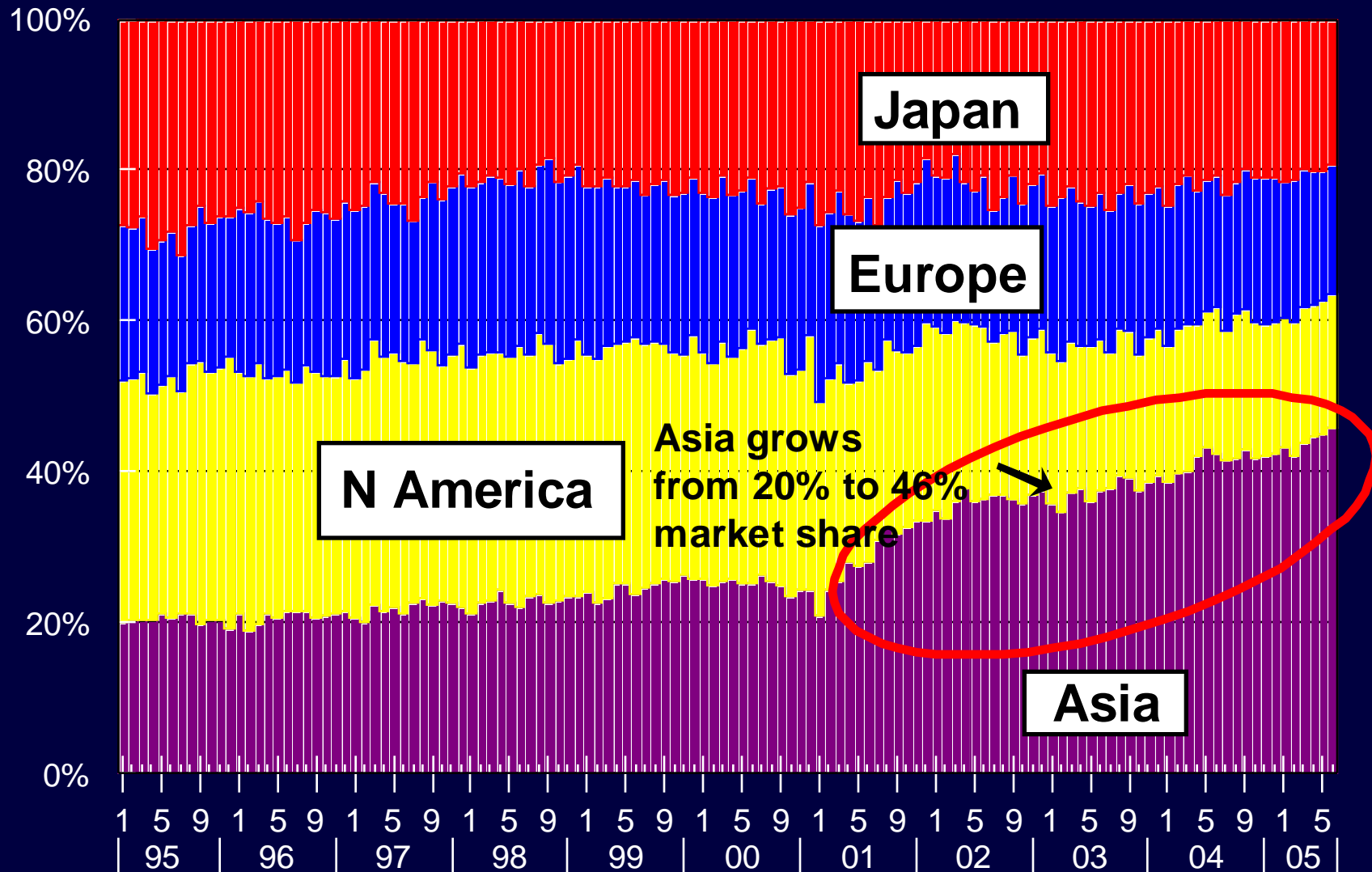
Total Semiconductor Shipments to an Area

Monthly Shipments - Reporting Firms



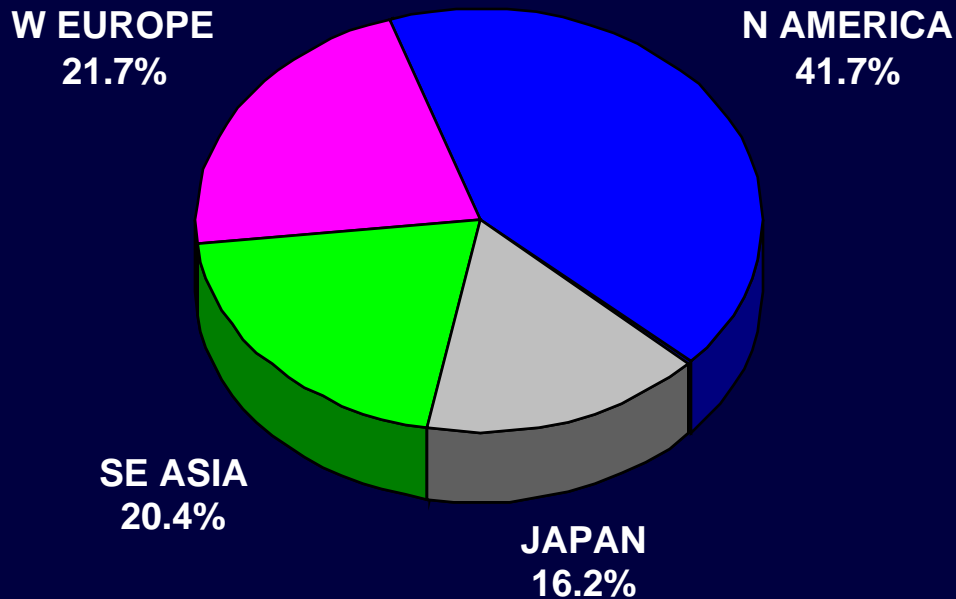
Total Semiconductor Shipments to an Area

Monthly Shipments - Reporting Firms

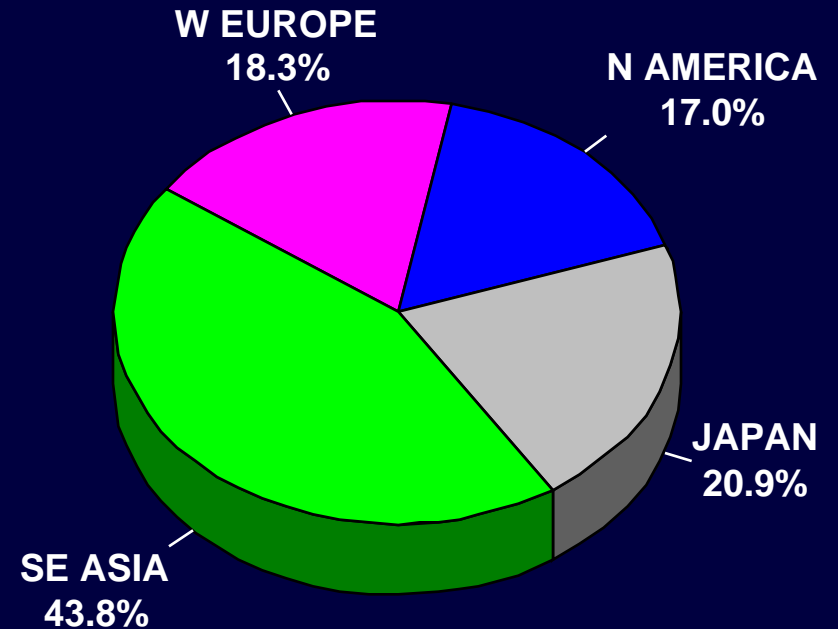


World Electronic Equipment Production 2005

Final Assembly



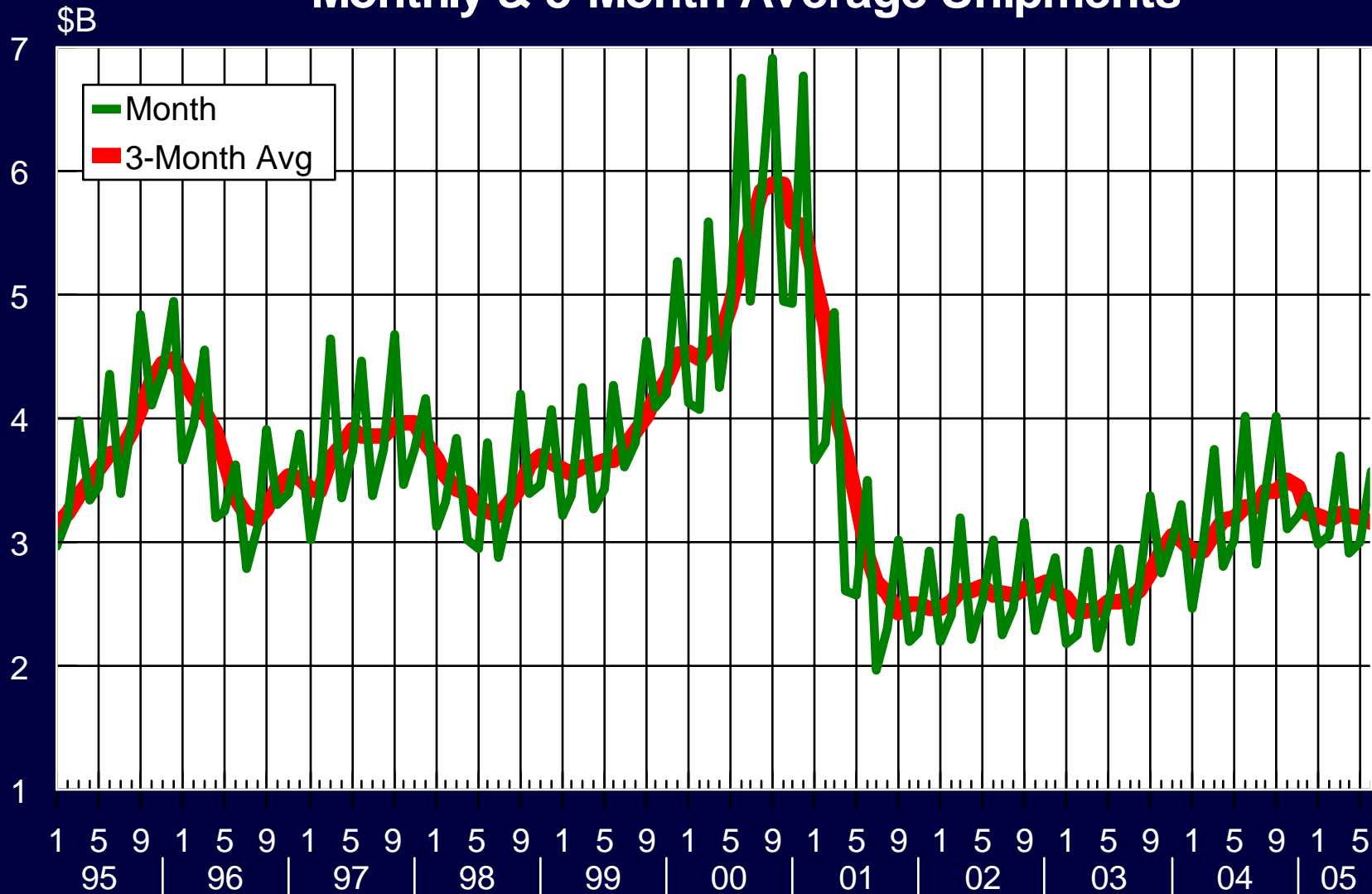
Electronic Assembly



TOTAL \$1381 Billion @2004 Exchange

N American Semiconductor Shipments

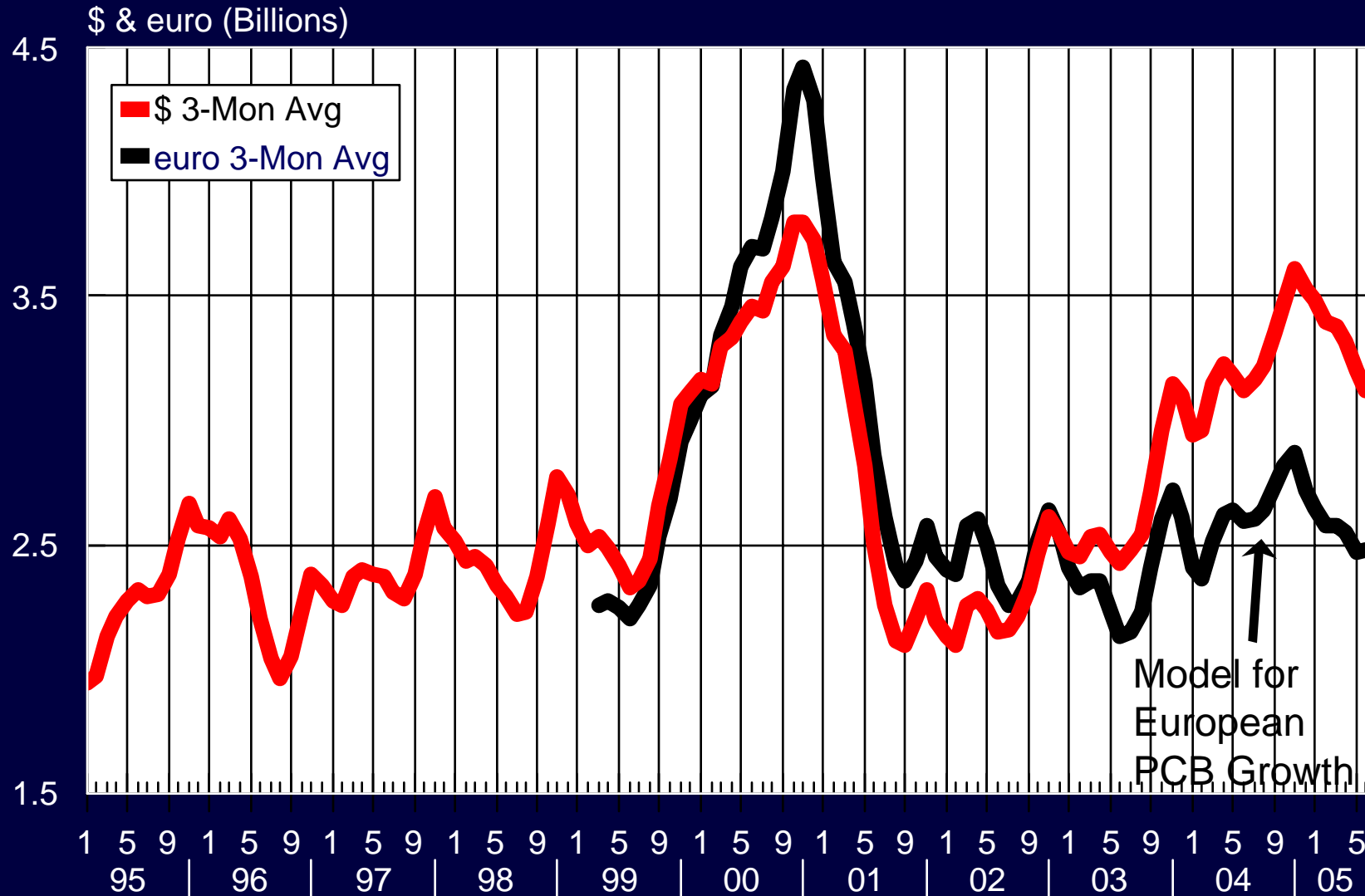
Monthly & 3-Month Average Shipments



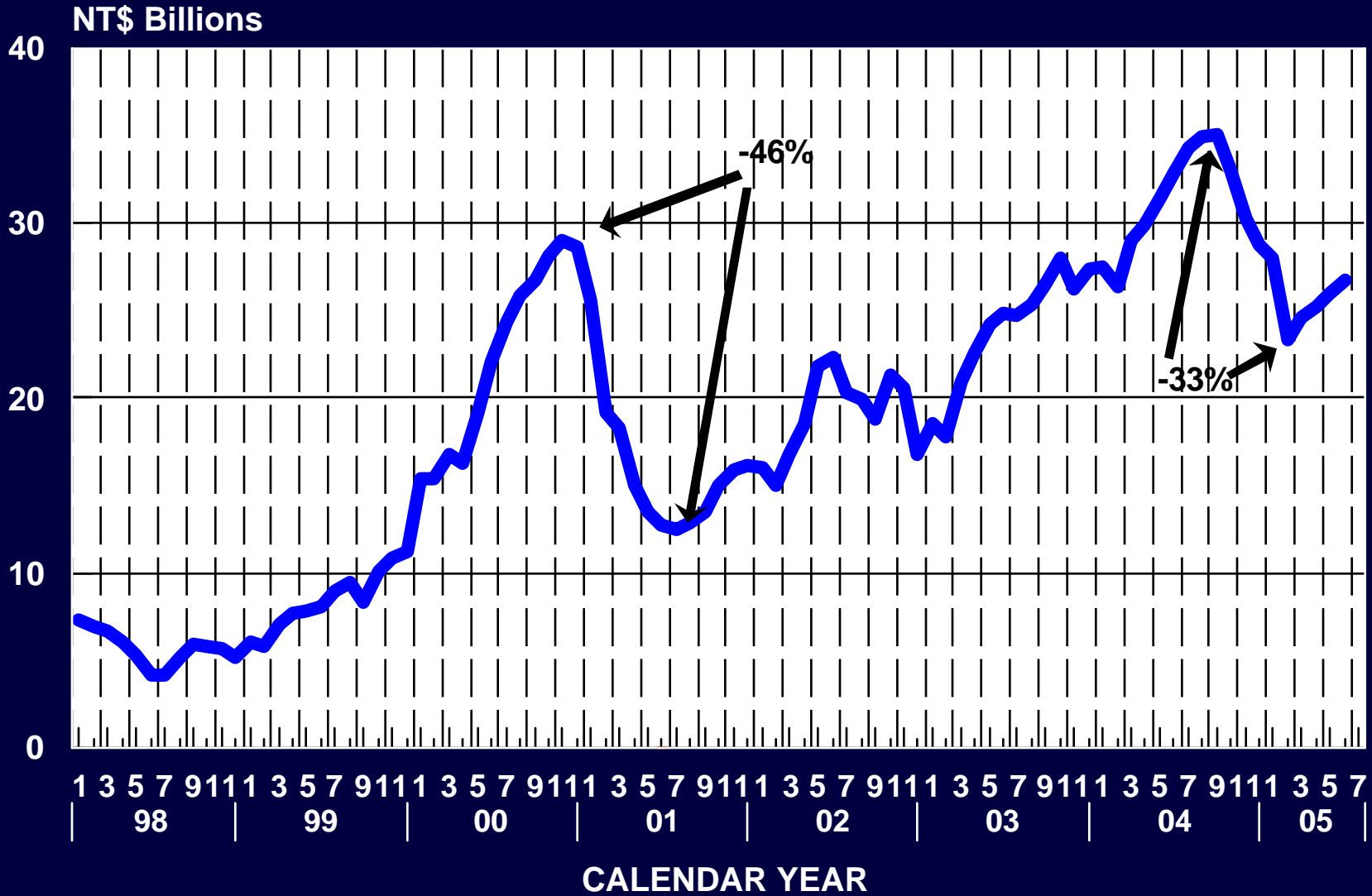
SIA website: www.sia-online.org/

Europe Semiconductor Shipments

3-Month Average Shipments (US\$ vs euro denominated)



Taiwan Chip Foundry Revenues Composite of TSMC & UMC



Company Financial Releases

Taiwan Semiconductor Manufacturing Company & United Microelectronics

**Semiconductor
Fab, Assembly,
Packaging, Test & Measurement
Equipment**

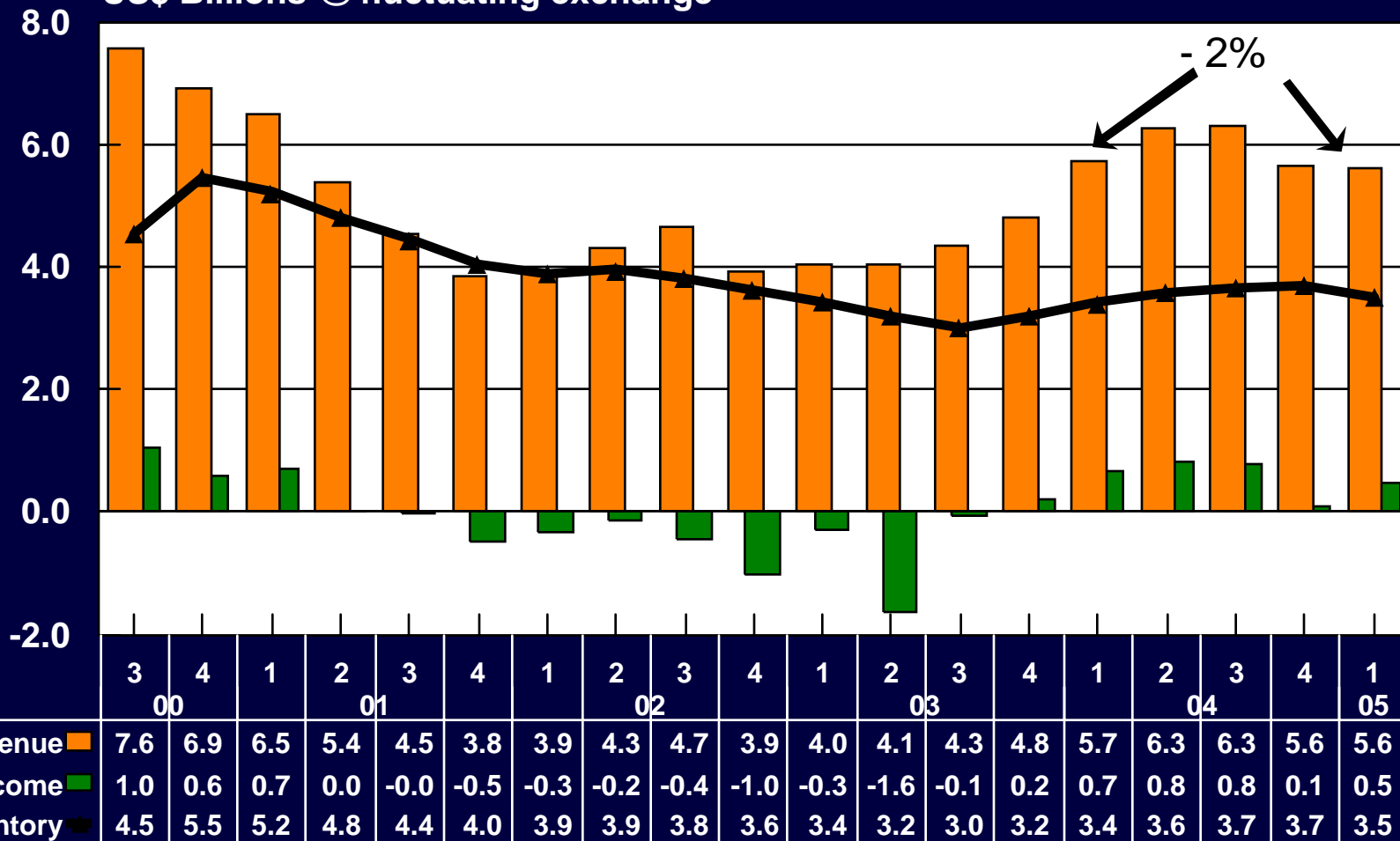
Top 10 Semiconductor Equipment Suppliers to N. America - 2004 Sales (\$M)

Applied Materials	1,412
Tokyo Electron	636
ASML	618
KLA-Tencor	464
Novellus Systems	312
Hitachi High-Technologies	214
Lam Research	201
Advantest	198
Teradyne	188
Nikon	175
Subtotal	4,417
Others	3,905
Total Market Size	\$ 8,322 million

Semiconductor Fab, Test & Measurement Composite of 14 Public Companies

Revenue, Net Income & Inventory

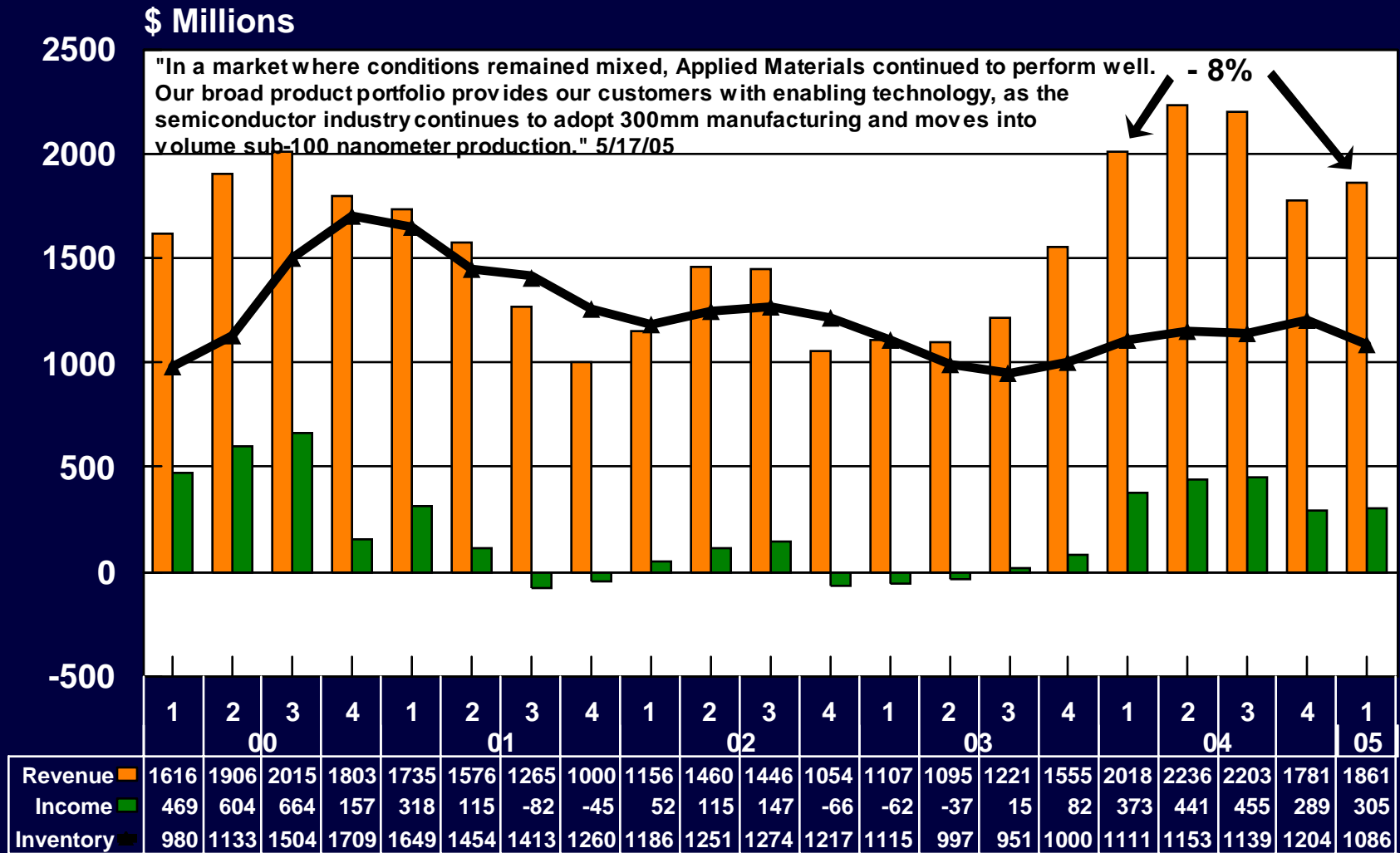
US\$ Billions @ fluctuating exchange



Applied Materials, KLA-Tencor, Novellus Systems, Agilent Technologies, BTU International, FEI Co, IBIS Tech, Kulicke & Soffa, MKS Instruments, ST Assembly Test Services, Teradyne, Ultratech Stepper,

Applied Materials

Revenue, Net Income & Inventory



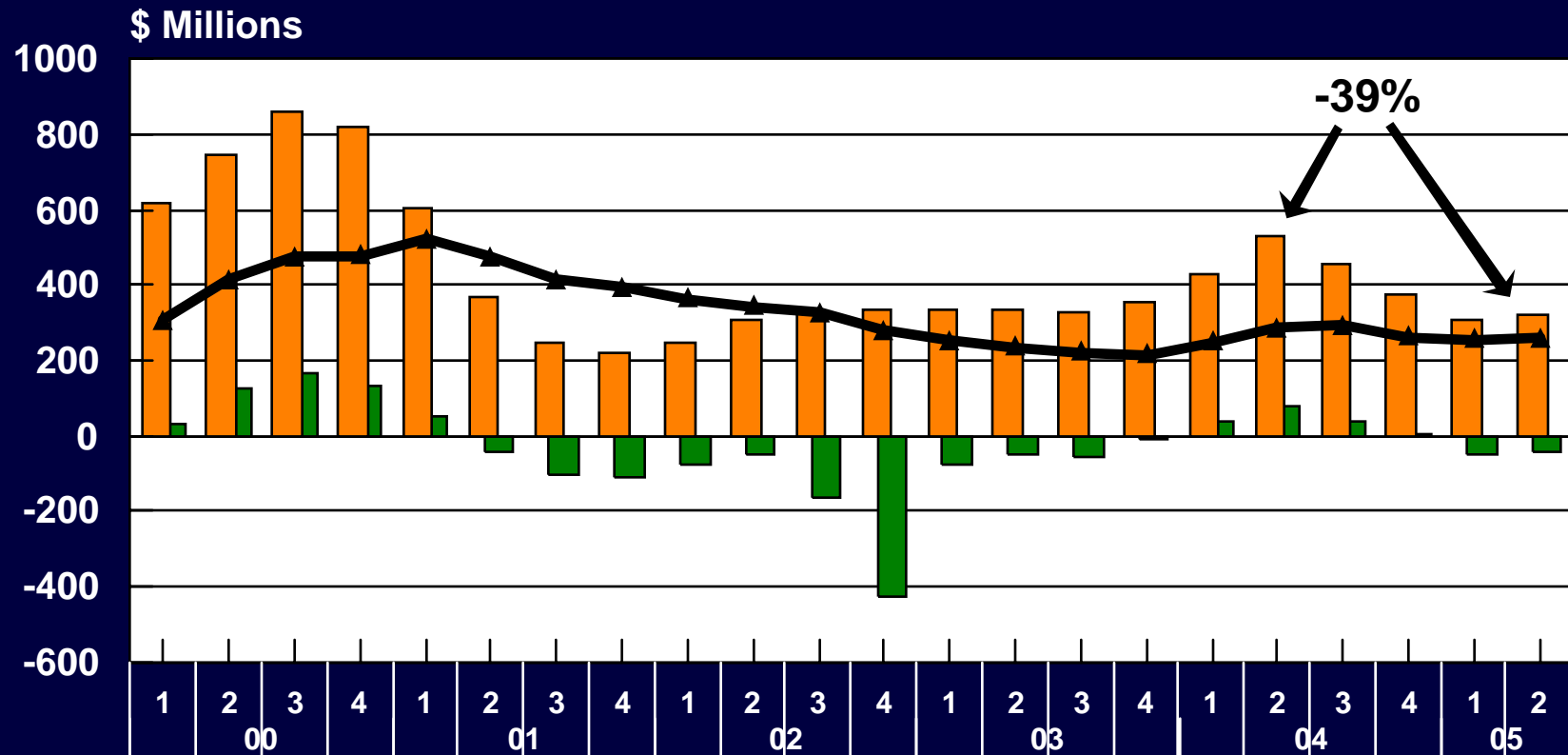
CY

AMAT

Teradyne

Revenue, Net Income & Inventory

"In the second quarter, our FLEX System-On-a-Chip (SOC) semiconductor tester continued to gather momentum... with a broadening of customers and applications driving record orders for the system." 7/19/05



Revenue	615	747	859	822	605	366	249	220	248	310	331	334	335	332	329	358	431	526	458	377	306	320
Income	29	129	163	132	54	-40	-103	-113	-77	-51	-167	-424	-76	-52	-54	-11	40	80	41	3	-53	-45
Inventory	308	412	473	478	520	475	413	395	364	342	327	280	252	234	221	215	248	284	292	263	257	258

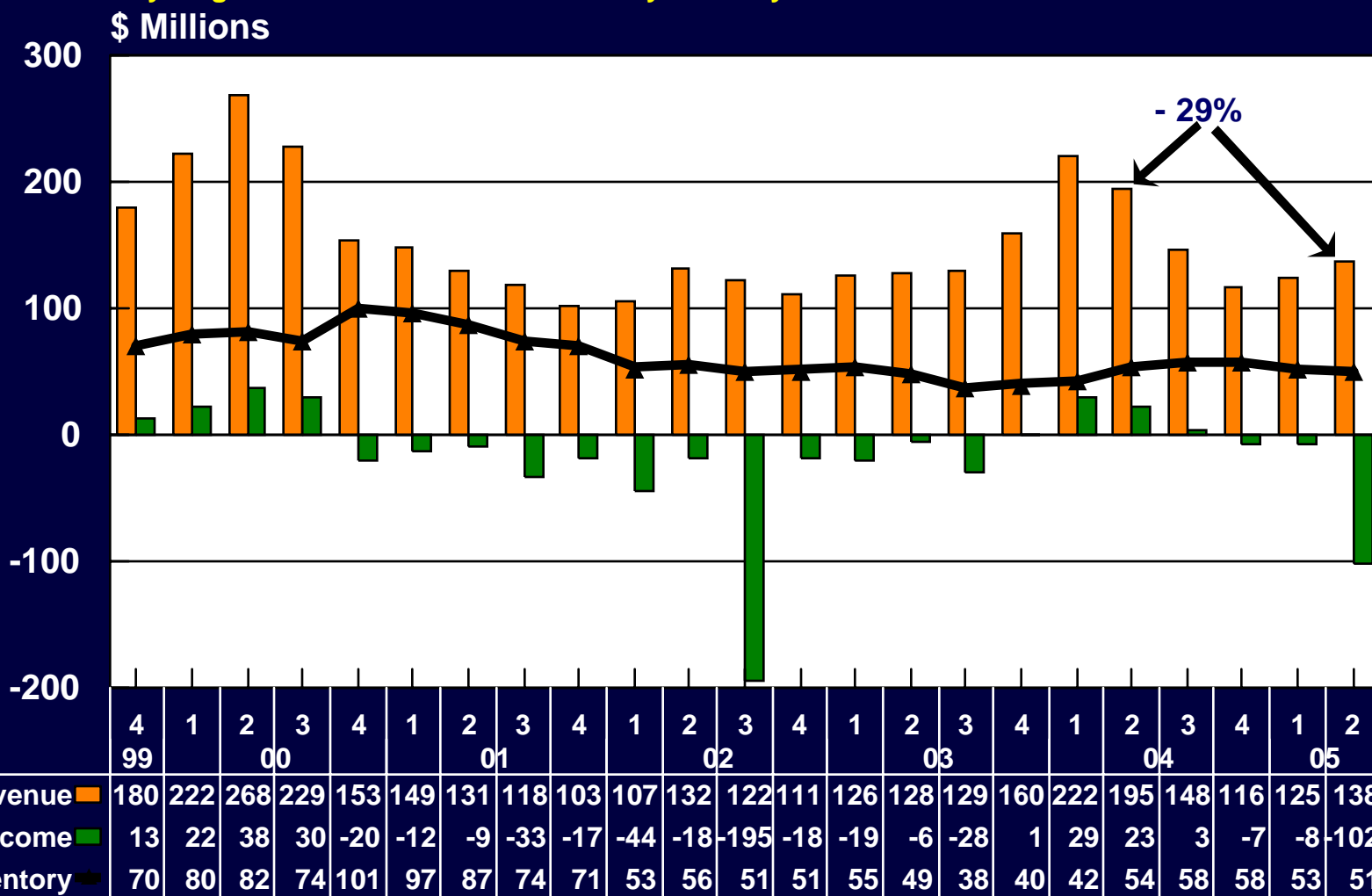
CY

TER

Kulicke & Soffa

Revenue, Net Income & Inventory

"We achieved sequentially increasing equipment revenue for the second and third fiscal quarters and we believe revenue for the fourth fiscal quarter will also increase sequentially. We believe that this pattern of growing demand for our equipment is indicative of the early stages of a semiconductor assembly recovery." 7/28/05



FY ends September

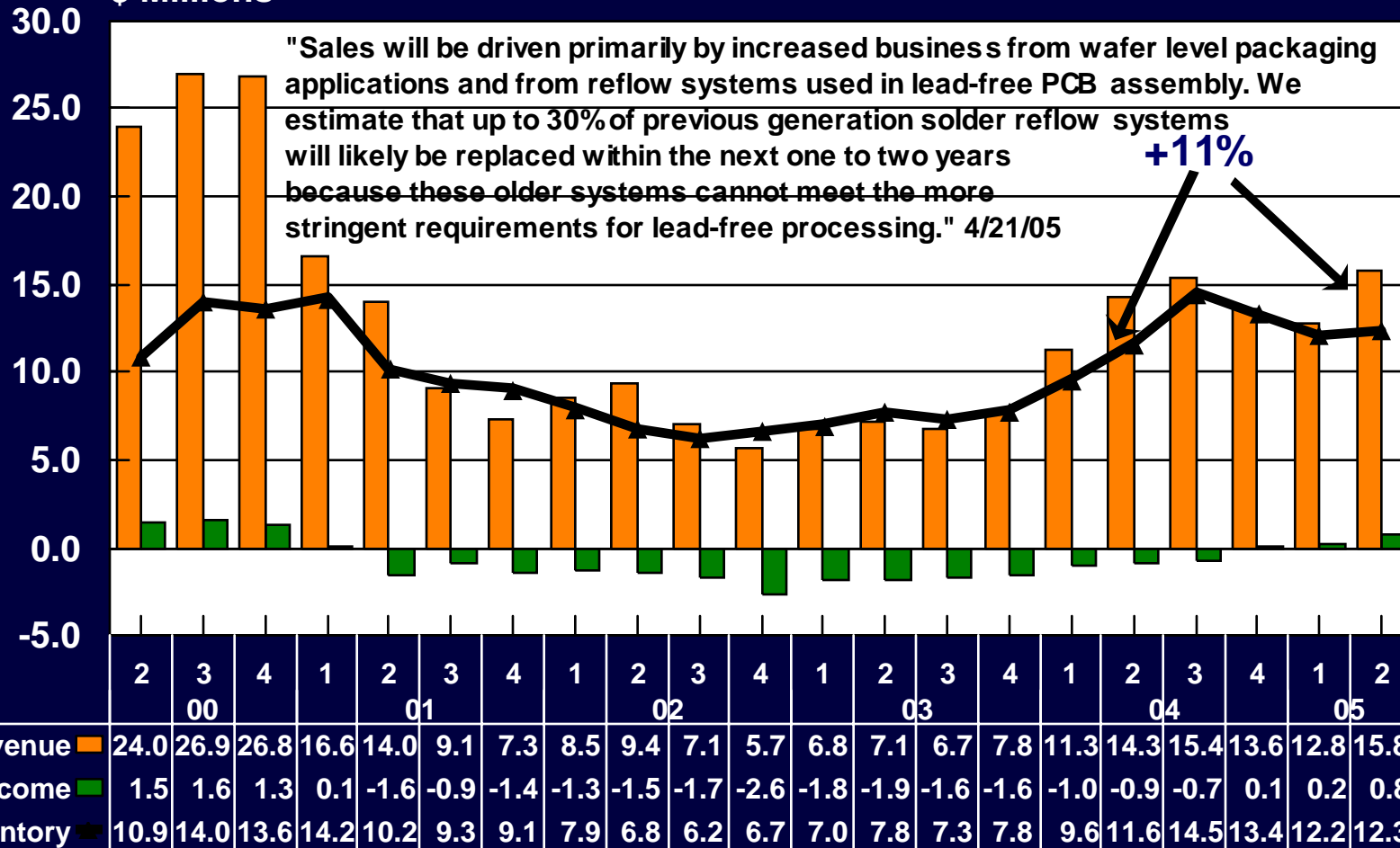
CY

KLIC

BTU International

Revenue, Net Income & Inventory

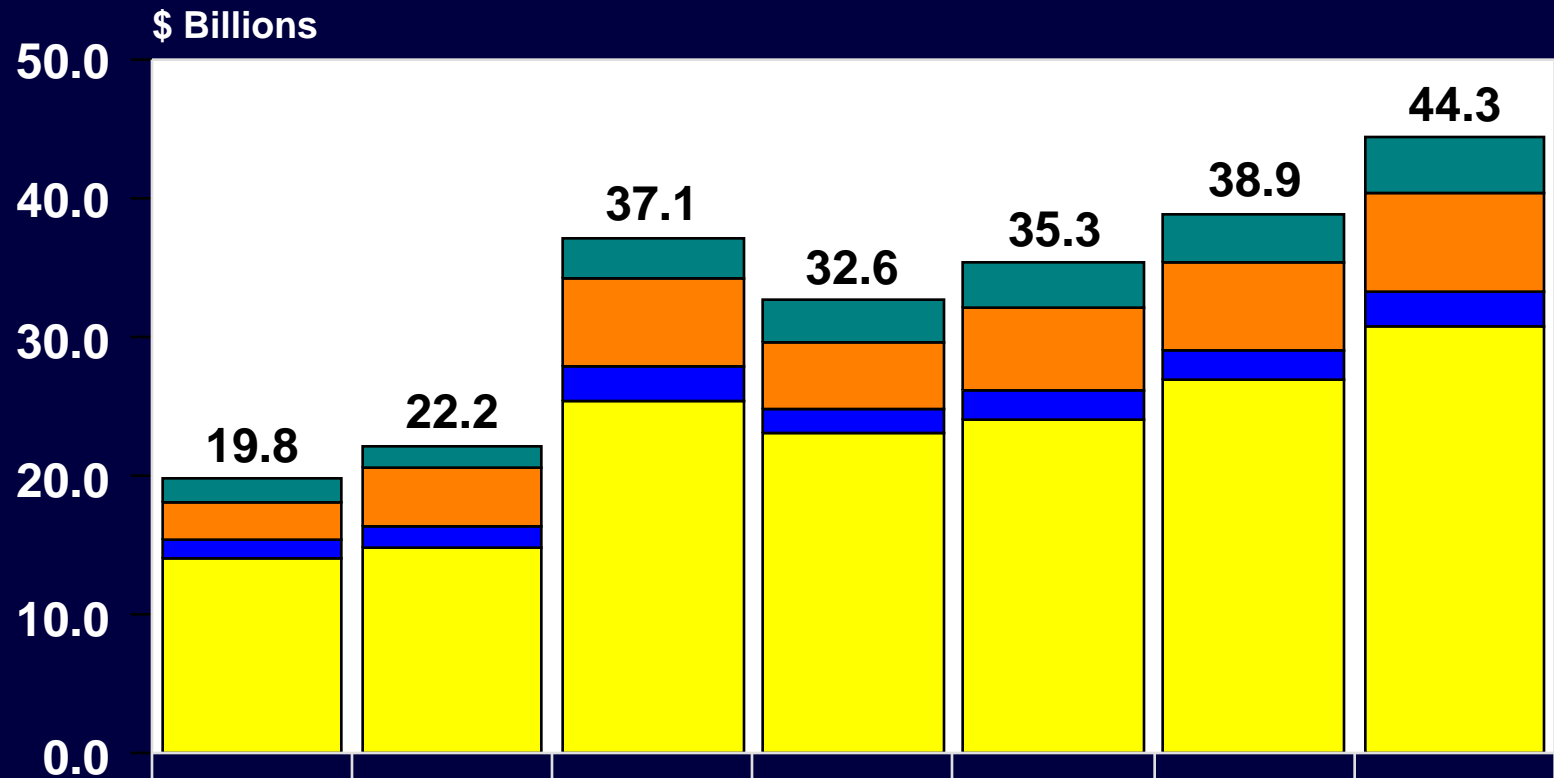
\$ Millions



CY

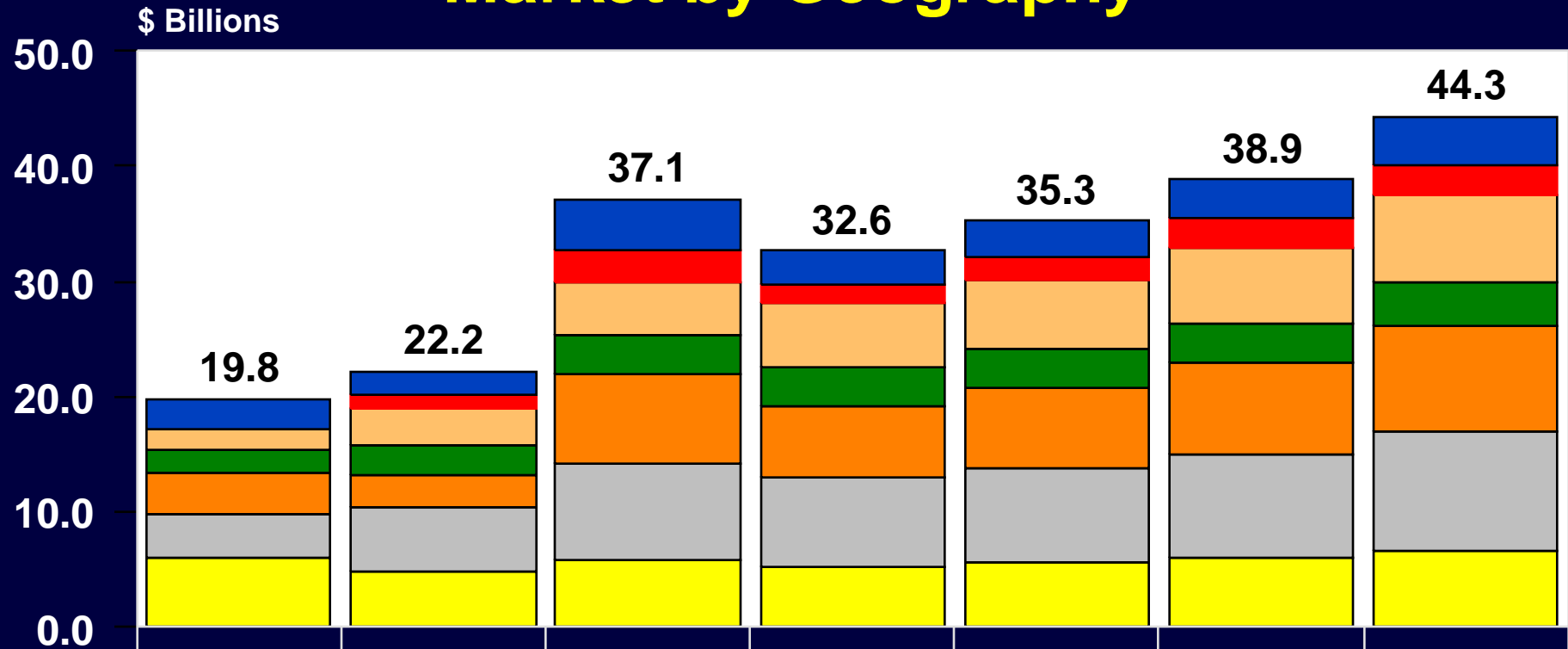
BTUI

Worldwide Semiconductor Capital Equipment Market by Equipment Segment



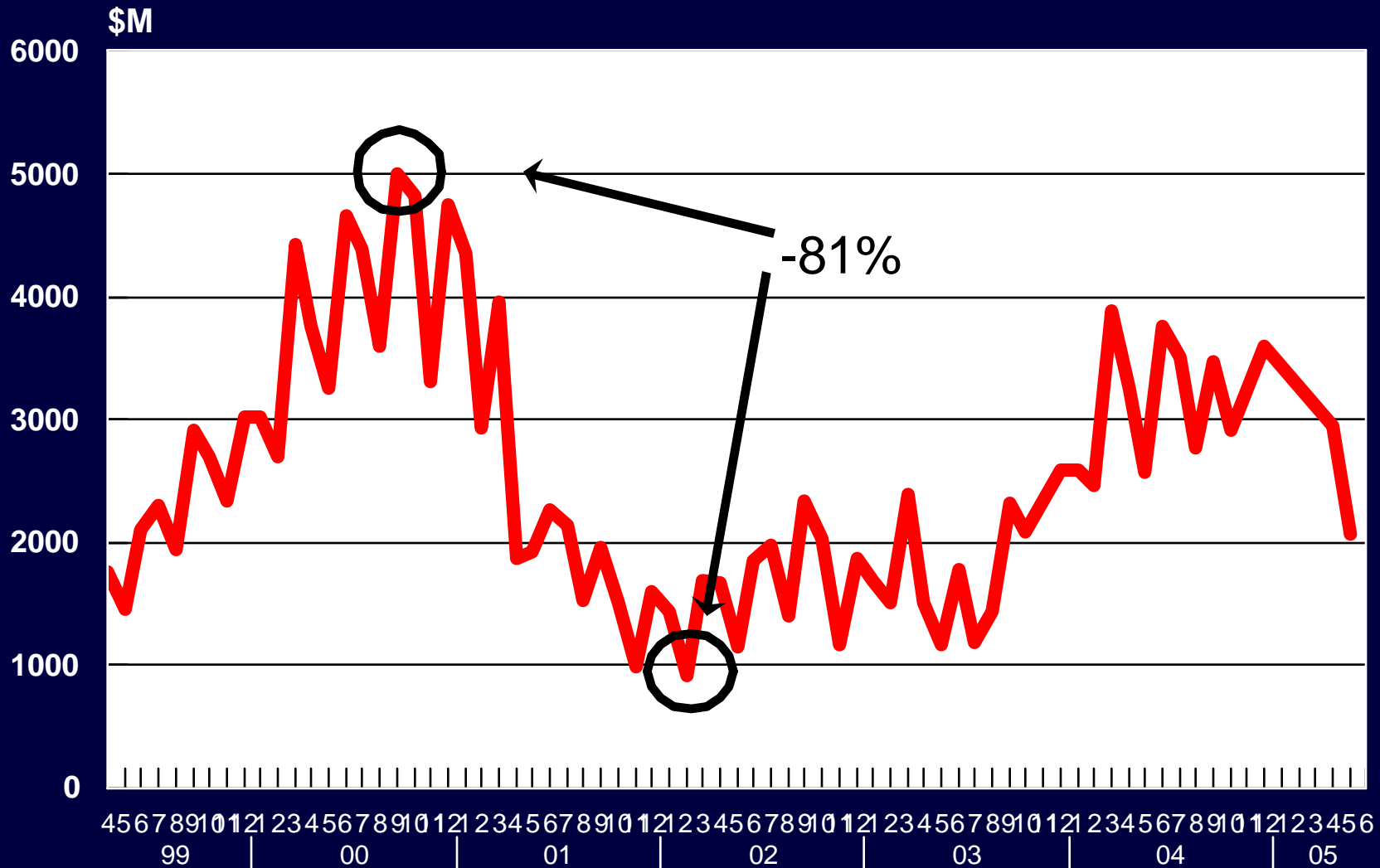
	2002	2003	2004	2005	2006	2007	2008
Other	1.7	1.7	2.8	2.9	3.1	3.4	3.9
Test	2.7	4.1	6.4	4.9	6.0	6.3	7.1
Assembly & Packaging	1.2	1.7	2.5	1.8	2.1	2.3	2.5
Wafer Process	14.2	14.8	25.5	23.1	24.1	26.9	30.8

Worldwide Semiconductor Capital Equipment Market by Geography



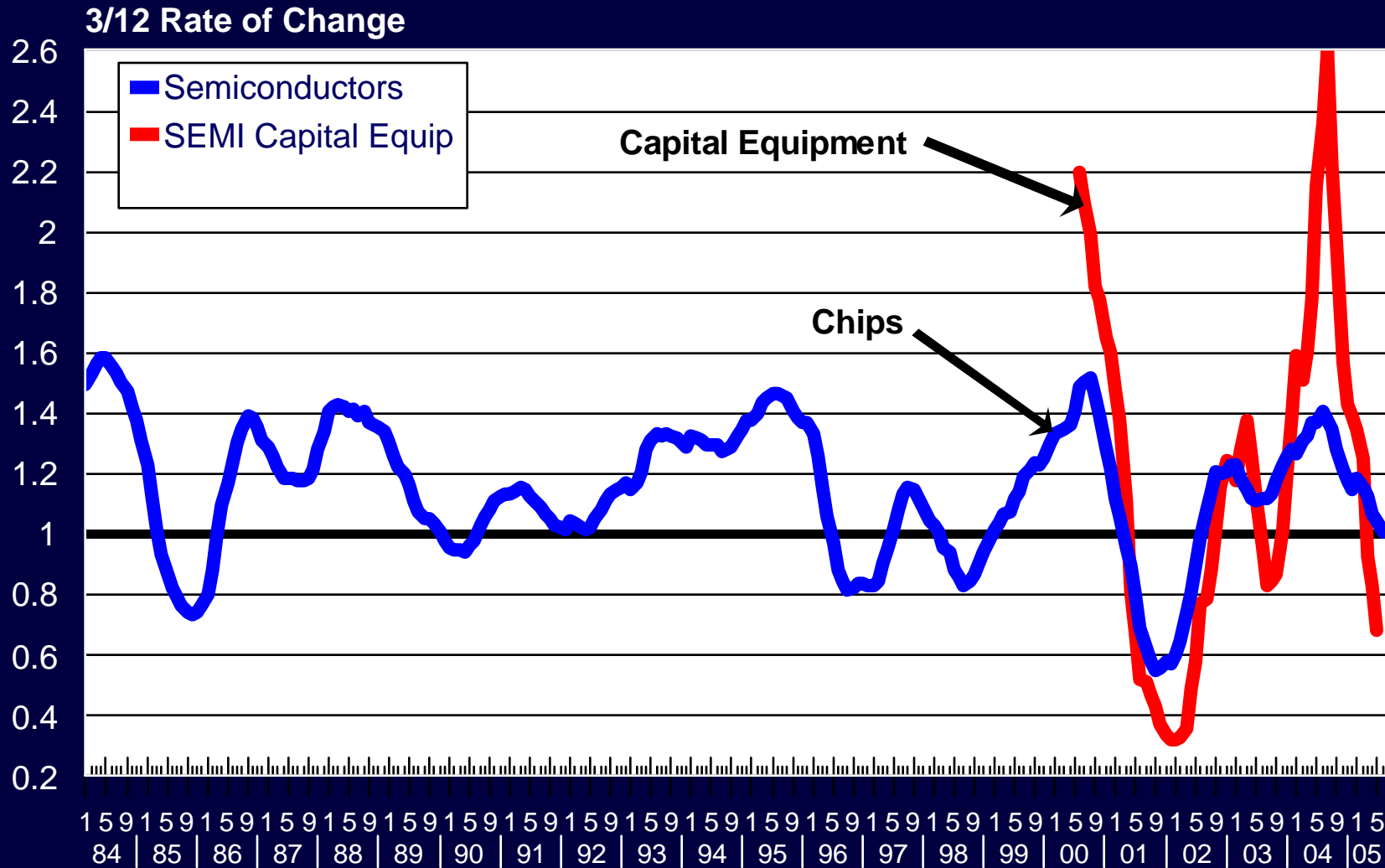
	2002	2003	2004	2005	2006	2007	2008
ROW	2.7	2.1	4.5	2.9	3.1	3.5	4.2
China		1.2	2.7	1.6	2.1	2.5	2.5
S Korea	1.7	3.2	4.6	5.6	6.0	6.6	7.7
Europe	2.1	2.6	3.4	3.3	3.4	3.5	3.8
Taiwan	3.5	2.9	7.8	6.2	6.9	7.9	9.1
Japan	3.9	5.6	8.3	7.8	8.2	9.0	10.4
N America	5.9	4.7	5.8	5.2	5.6	6.0	6.6

World Semiconductor Equipment Industry Shipments



SOURCE Semiconductor Equipment Association of Japan
www.seaj.or.jp/english/

Global Semiconductor & Semiconductor Capital Equipment 3-Month Shipment Growth Rates on \$ Basis

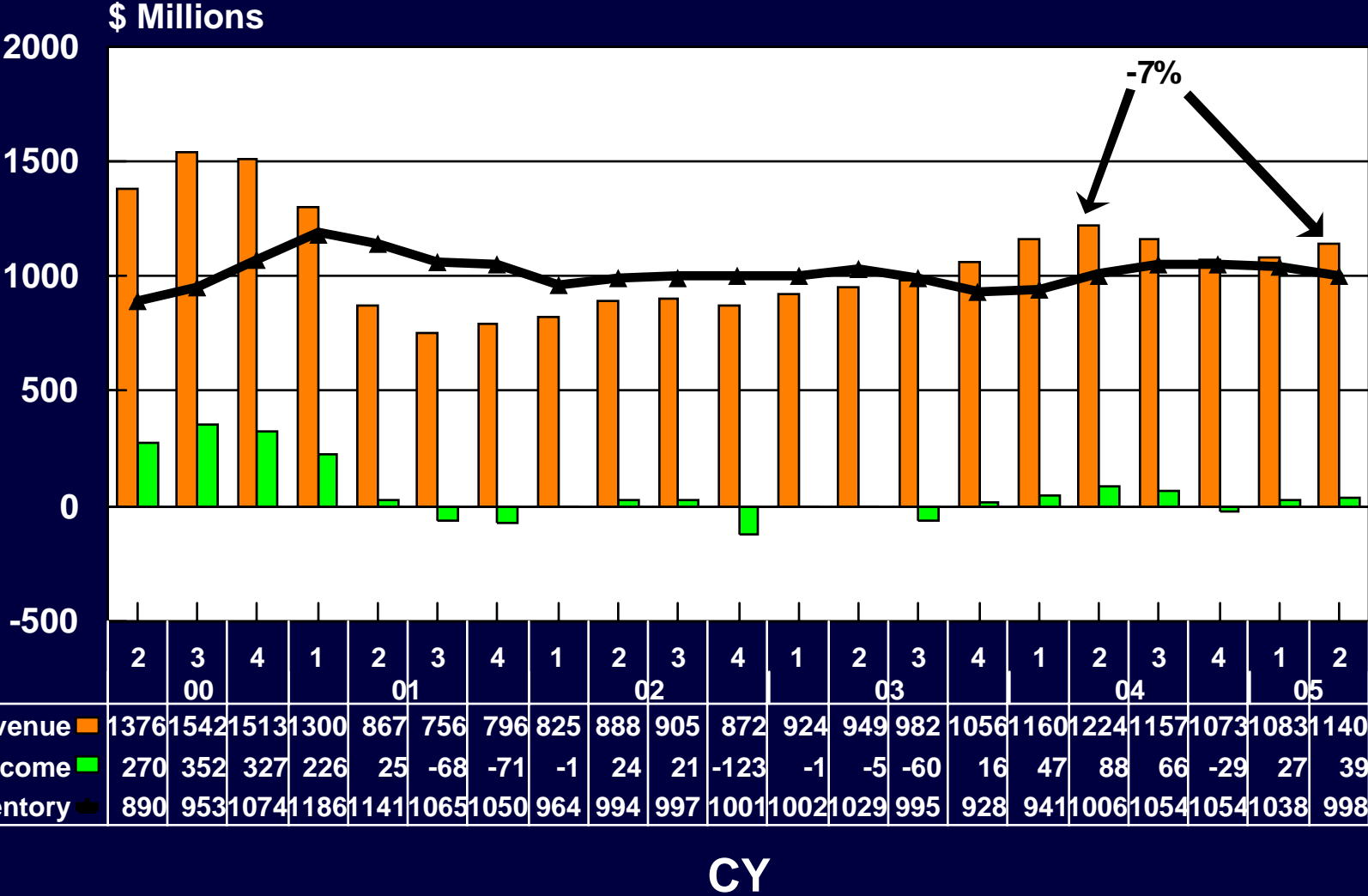


Sources: SIA; Semiconductor Equipment Association of Japan

**"Other" Electronic Components
(excludes Semiconductors)**

Passive Components

Composite of 6 Companies

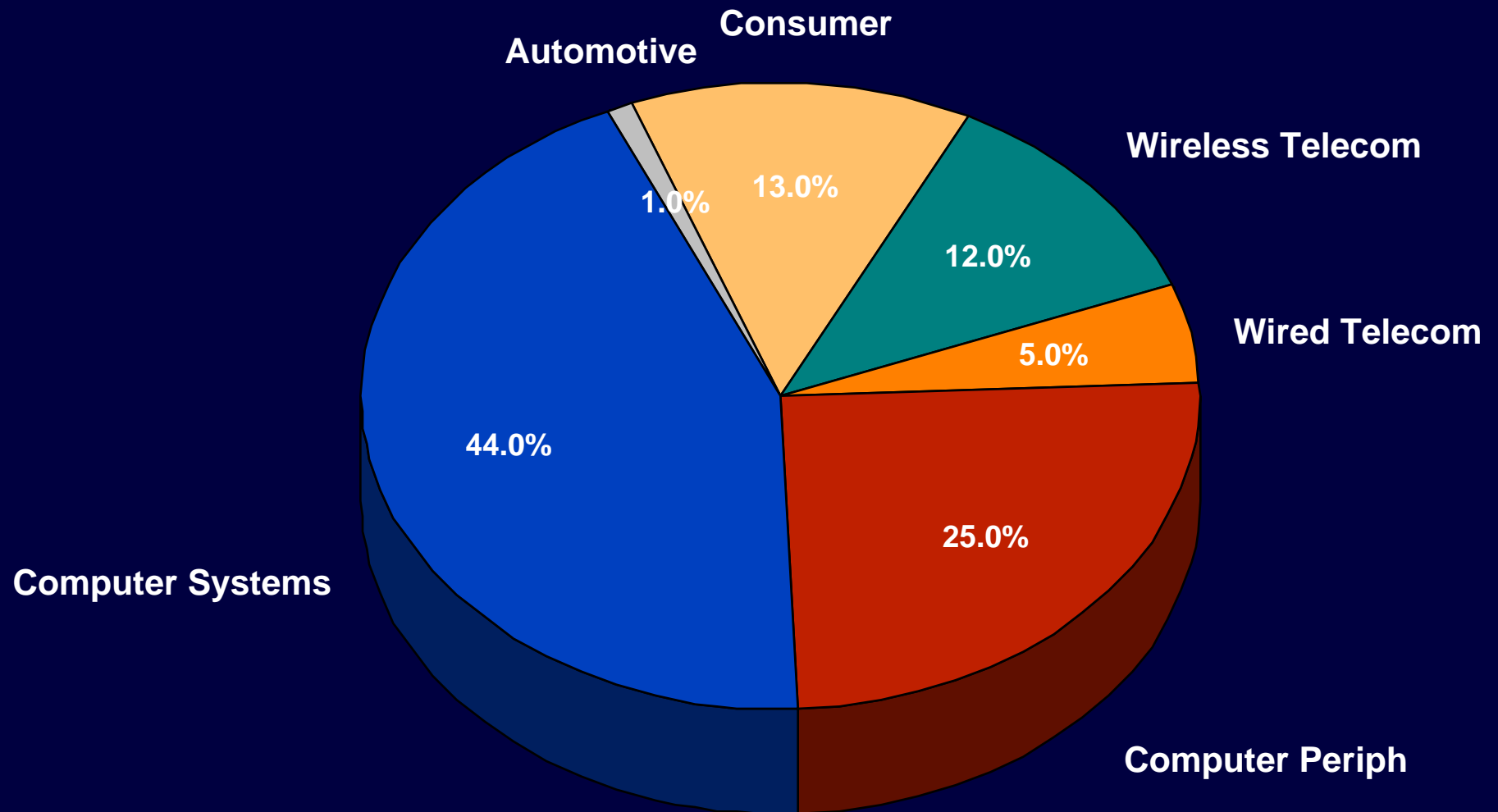


AVX, Bel Fuse, Diodes, Littlefuse, Merrimac Industries, Vishay

EMS, ODM & Motherboard Companies

ODM Segment by Revenue

2003



Top Original Design Manufacturers

2002 - 2003

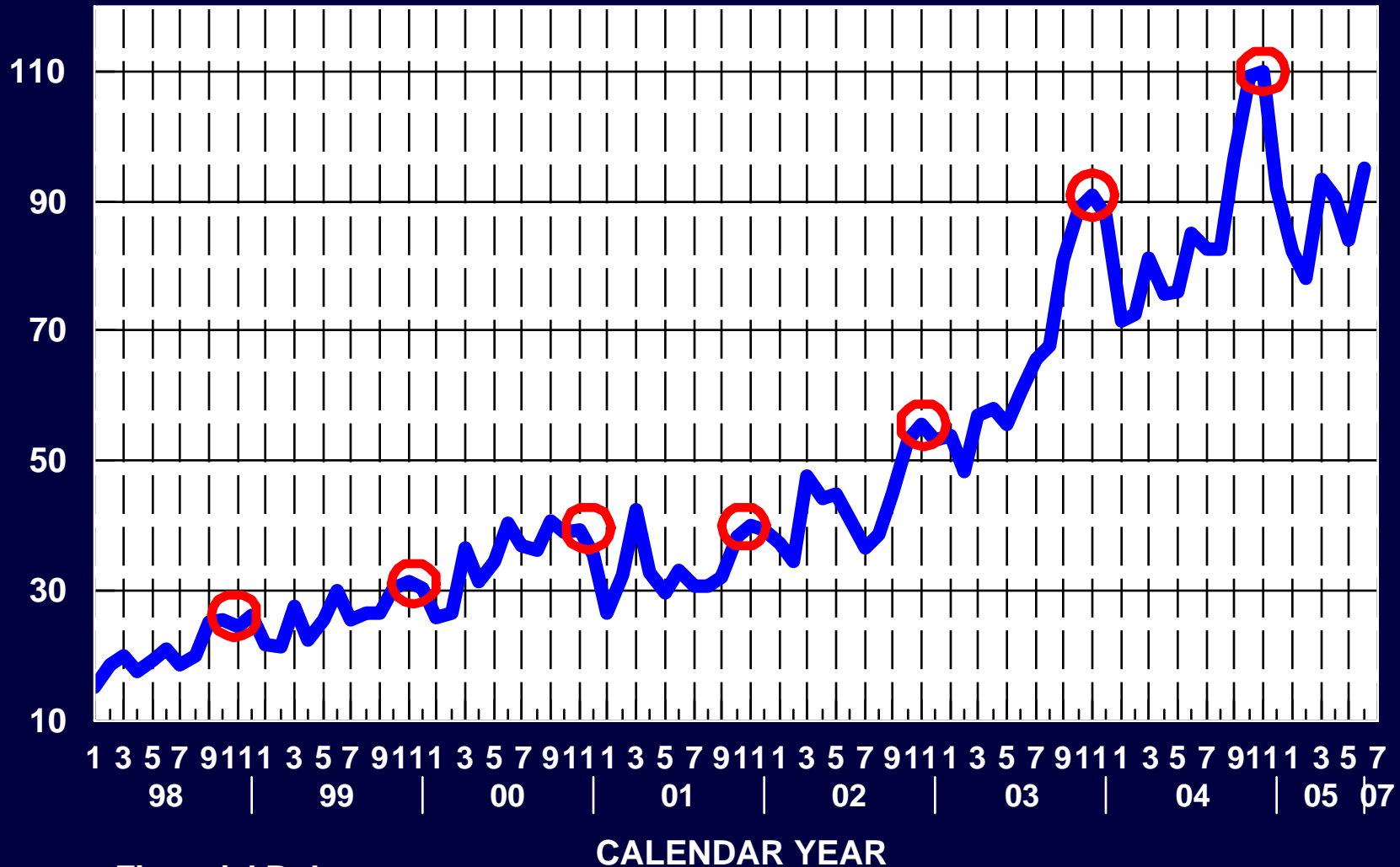
	<u>2002</u>	<u>2003</u>	<u>2003/2002 Growth %</u>
Quanta Computer	4,197	8,596	105%
Asustek	3,373	5,761	71%
Compal Electronics	3,447	4,842	40%
Inventec	2,441	3,820	58%
BenQ	3,244	3,552	9%
Lite On Technology	2,850	3,173	11%
Wistron	2,367	2,286	-3%
MicroStar	1,640	1,878	15%
FIC	1,135	1,440	27%
EliteGroup	1,830	1,322	-28%
Total Top 10	26,494	36,670	+38%

Sources: Company Data

\$US Millions converted at fluctuating exchange

Taiwan Electronic Equipment/ODM Manufacturers Composite Sales of 7 Large Manufacturers

NT\$ (Billions)

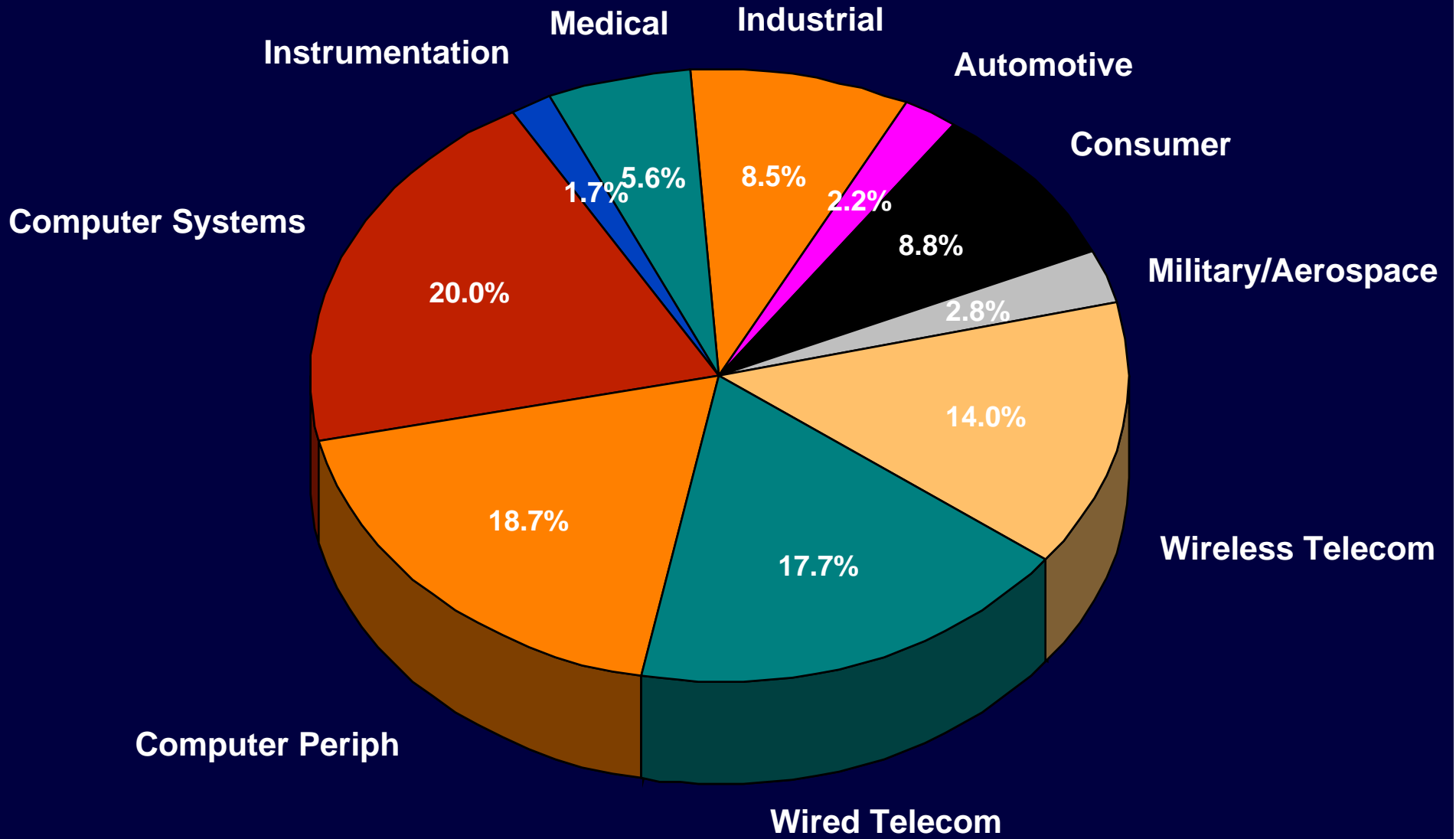


Company Financial Releases

Acer, BenQ, Compal, First Intl Computer, Inventec, Mitac, Quanta

EMS Segment by Revenue

2003



Large World EMS Providers

2002 - 2004

		<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2004/2003</u> <u>Growth %</u>
Flextronics	Singapore	13,615	13,822	16,063	16%
Sanmina-SCI	USA	10,168	10,795	12,486	16%
Hon Hai (Foxconn)	Taiwan	7,251	9,705	12,319	23%
Solectron	USA	12,261	11,144	11,632	4%
Celestica	Canada	8,272	6,736	8,840	31%
Jabil Circuit	USA	3,729	5,170	6,477	27%
Elcoteq Network	Finland	1,749	2,564	3,690	46%
Benchmark Electronics	USA	1,630	1,840	2,001	9%
Venture	Singapore	1,333	1,829	1,753	-4%
Universal Scientific	Taiwan	820	1,011	1,362	35%
Plexus	USA	889	841	1,090	30%
Total		61,717	65,457	75,860	+18%

Sources: Company Data

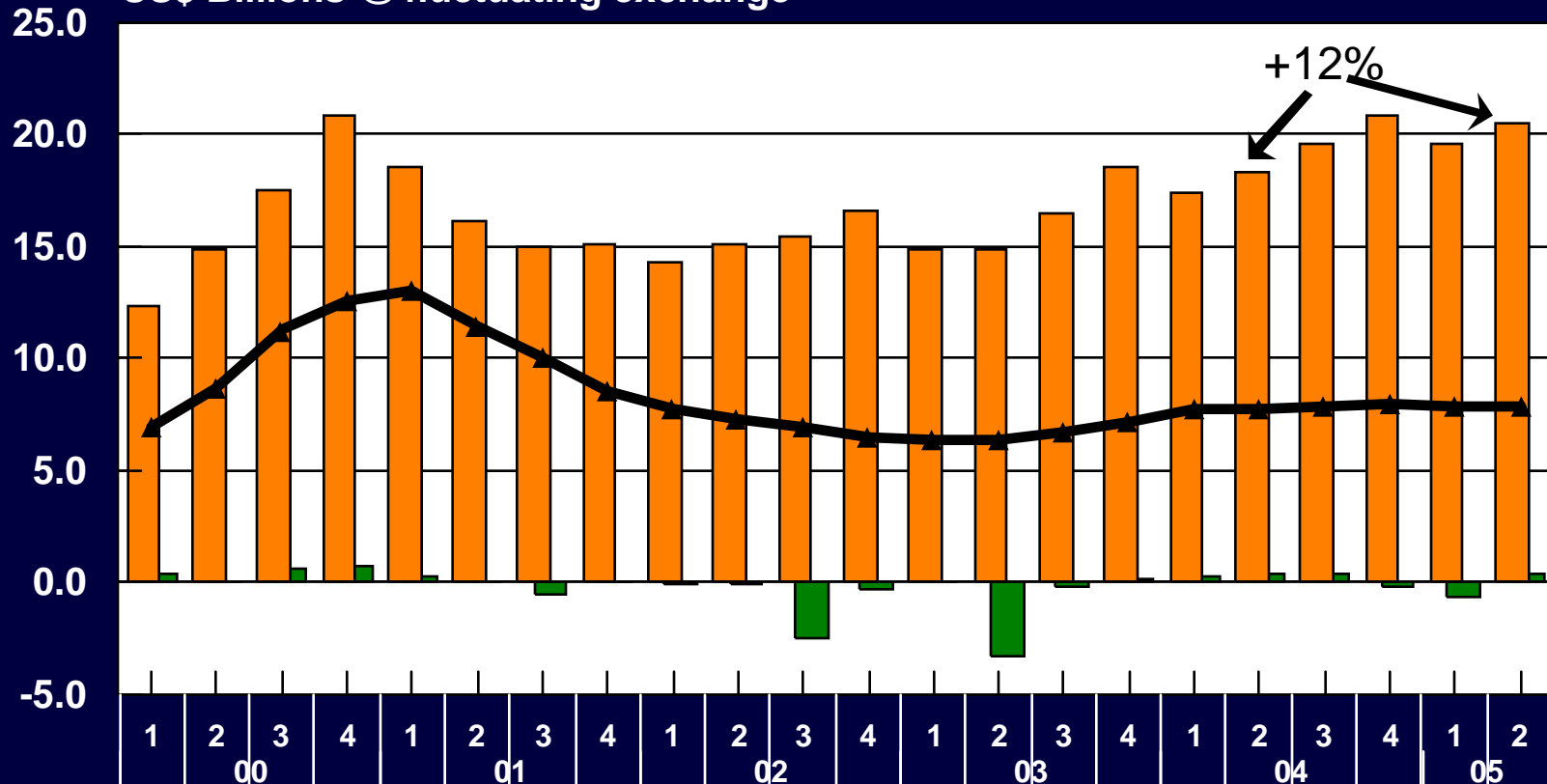
\$US Millions converted at fluctuating exchange

Large EMS Providers

Composite of 12 Public Companies

Revenue, Net Income & Inventory

US\$ Billions @ fluctuating exchange



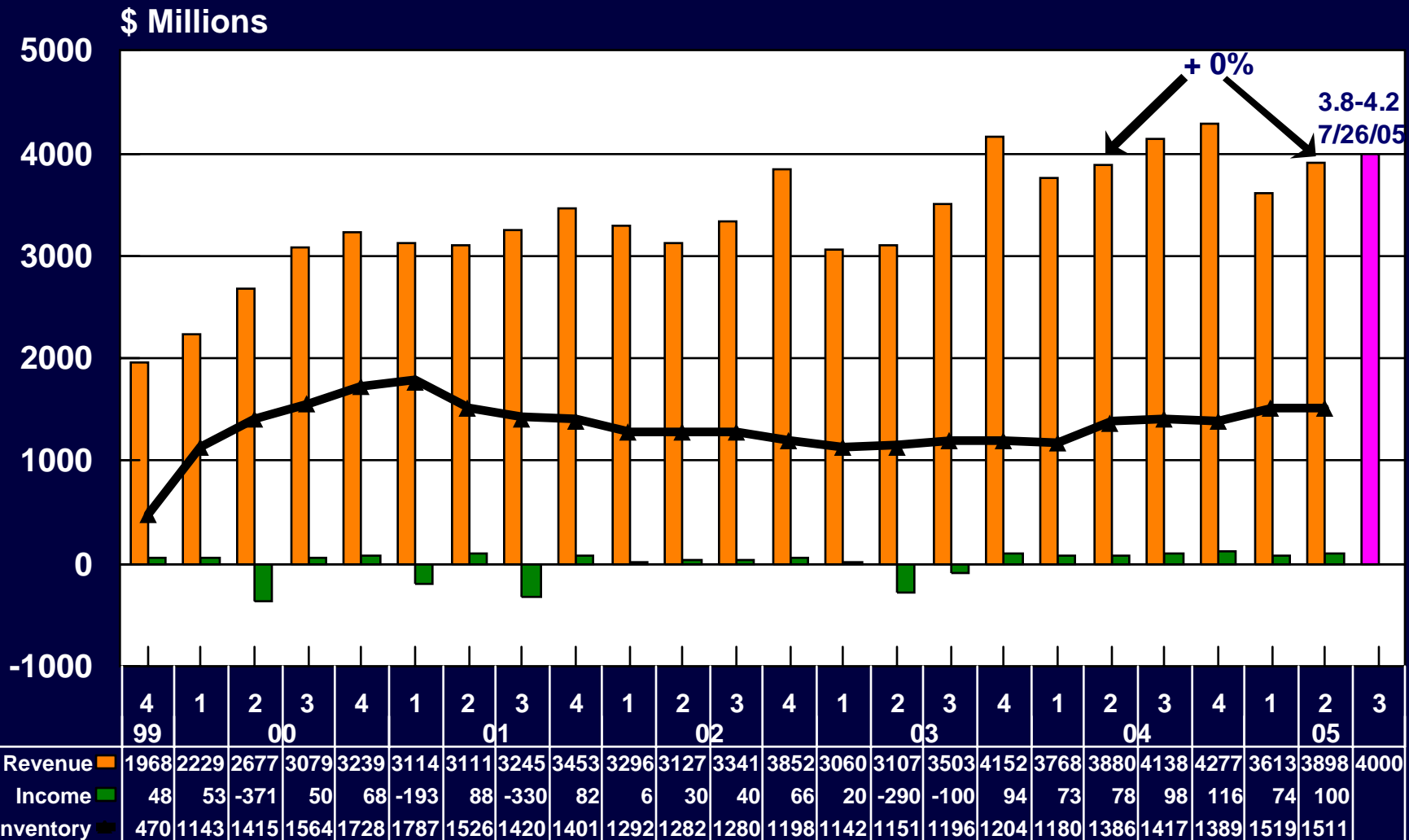
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	
			00				01				02				03				04			05	
Revenue	12.3	14.9	17.5	20.8	18.5	16.1	14.9	15.1	14.2	15.0	15.4	16.5	14.9	14.8	16.5	18.5	17.4	18.3	19.6	20.8	19.5	20.5	
Income	0.4	-0.0	0.6	0.7	0.3	0.0	-0.6	0.0	-0.1	-0.1	-2.6	-0.3	0.1	-3.3	-0.2	0.1	0.3	0.4	0.3	-0.3	-0.7	0.3	
Inventory	6.9	8.6	11.2	12.5	13.0	11.4	10.0	8.5	7.7	7.2	6.9	6.4	6.4	6.4	6.7	7.1	7.7	7.8	7.9	7.9	7.8	7.8	

Benchmark, Celestica, Elcoteq, Flextronics, Foxconn, Jabil, MSL, Pemstar, Plexus, Sanmina-SCI, Solectron, Sypris

Flextronics

Revenue, Net Income & Inventory

"We remain focused on achieving our goal of Return on Invested Capital of 15% through improving profitability, asset utilization and cash flow." 7/26/05



FY ends 3/31

CY

FLEX

Foxconn Electronics (Hon Hai), Taiwan

Revenue, Net Income & Inventory

NT\$ (Billions)

160

140

120

100

80

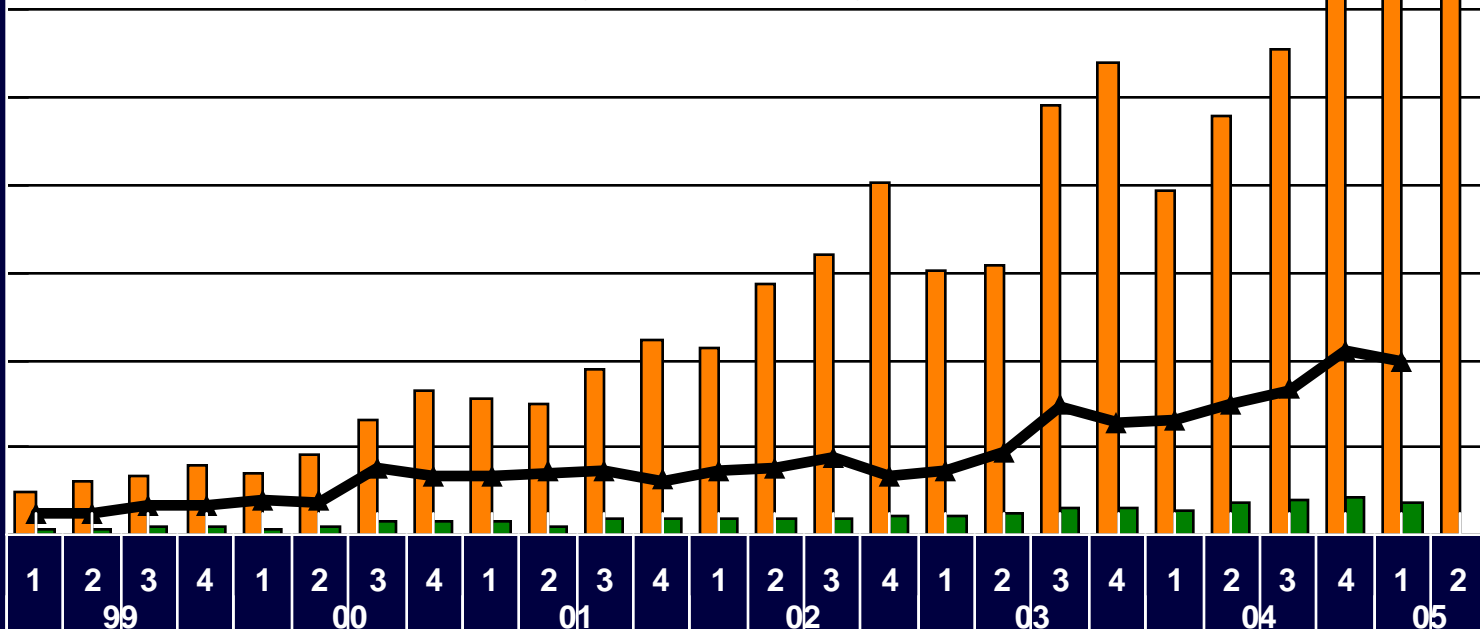
60

40

20

0

The parent of Hon Hai had revenues of NT\$413.4 billion (US\$13 billion) in revenue last year. If the revenue of over NT\$100 billion (US\$3.1 billion) posted by its subsidiary Foxconn International Holding is added, then Hon Hai would see combined sales break the NT\$500 billion (US\$15.7 billion) mark last year, ranking as the world's largest EMS provider. 1/24/05

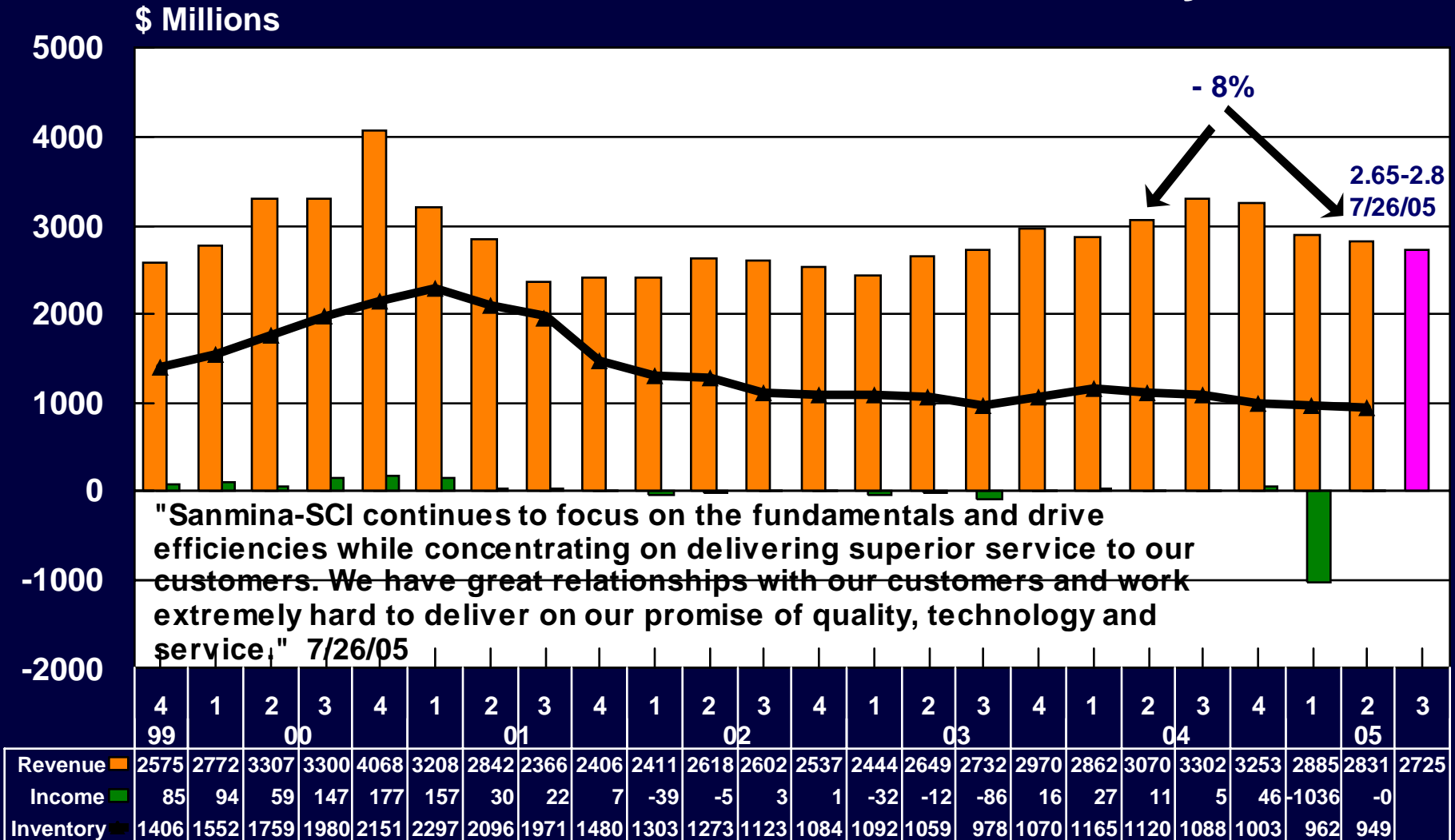


Revenue	10	13	14	16	14	18	26	33	31	30	38	44	43	58	64	80	60	61	98	108	79	96	111	137	135	142
Income	1	2	2	2	2	3	3	3	3	2	4	4	4	4	4	5	5	5	6	7	6	8	8	9	7	
Inventory	5	5	7	7	8	8	15	14	14	14	15	13	15	16	18	14	15	19	30	26	26	30	33	42	40	

CY

Sanmina-SCI Corp

Revenue, Net Income & Inventory



CY

SANM

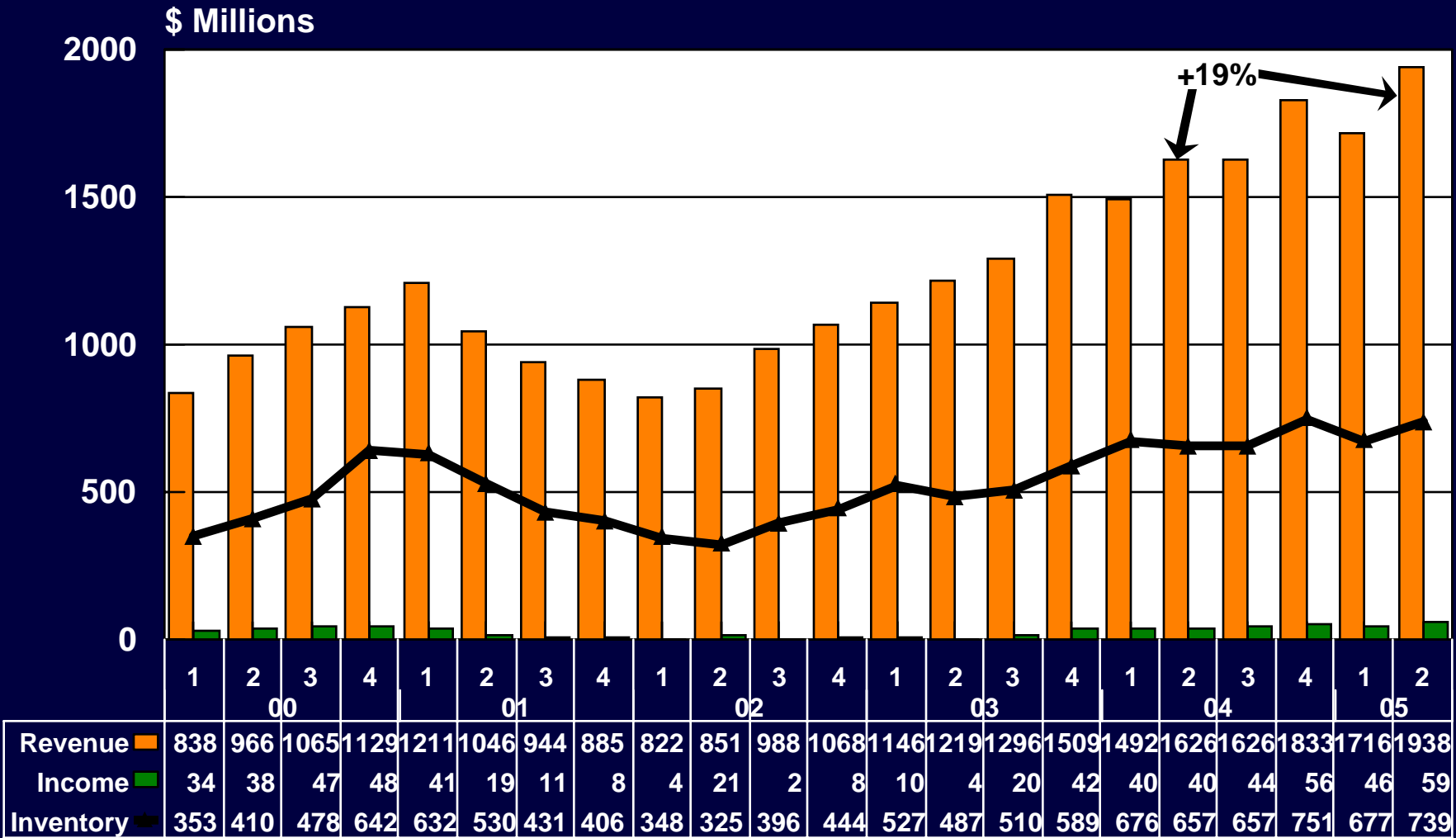
FY ends 9/30

(historical data = combined Sanmina & SCI)

Jabil Circuit Inc

Revenue & Net Income

"We expect our growth momentum to continue in our fourth fiscal quarter of 2005 and as we move into fiscal 2006" 6/21/05



CY

JBL

FY ends August

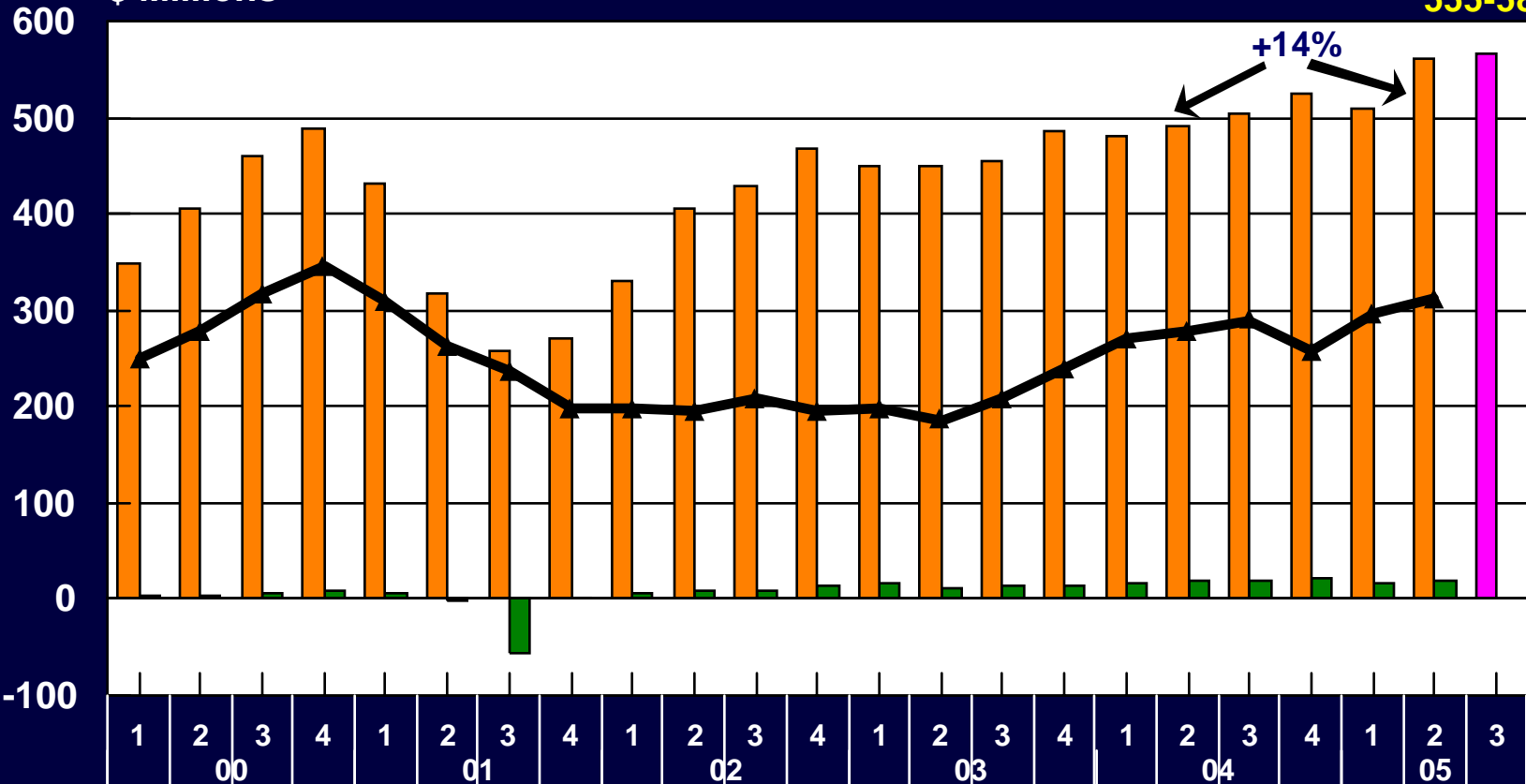
Benchmark Electronics

Revenue, Net Income & Inventory

"Our second quarter results reflect revenue growth of 14% driven by the significant level of new program production." 7/21/05

7/21/05
555-580

\$ Millions



	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
	00				01				02				03				04				05		
Revenue	349	407	460	490	432	317	258	270	329	404	428	468	448	449	455	487	481	491	505	524	510	561	568
Income	2	4	6	8	5	-2	-57	-0	5	8	10	13	17	12	13	13	15	18	18	20	17	19	
Inventory	250	278	317	346	310	263	237	197	197	196	209	196	197	186	209	239	270	277	290	257	295	313	

FY=CY

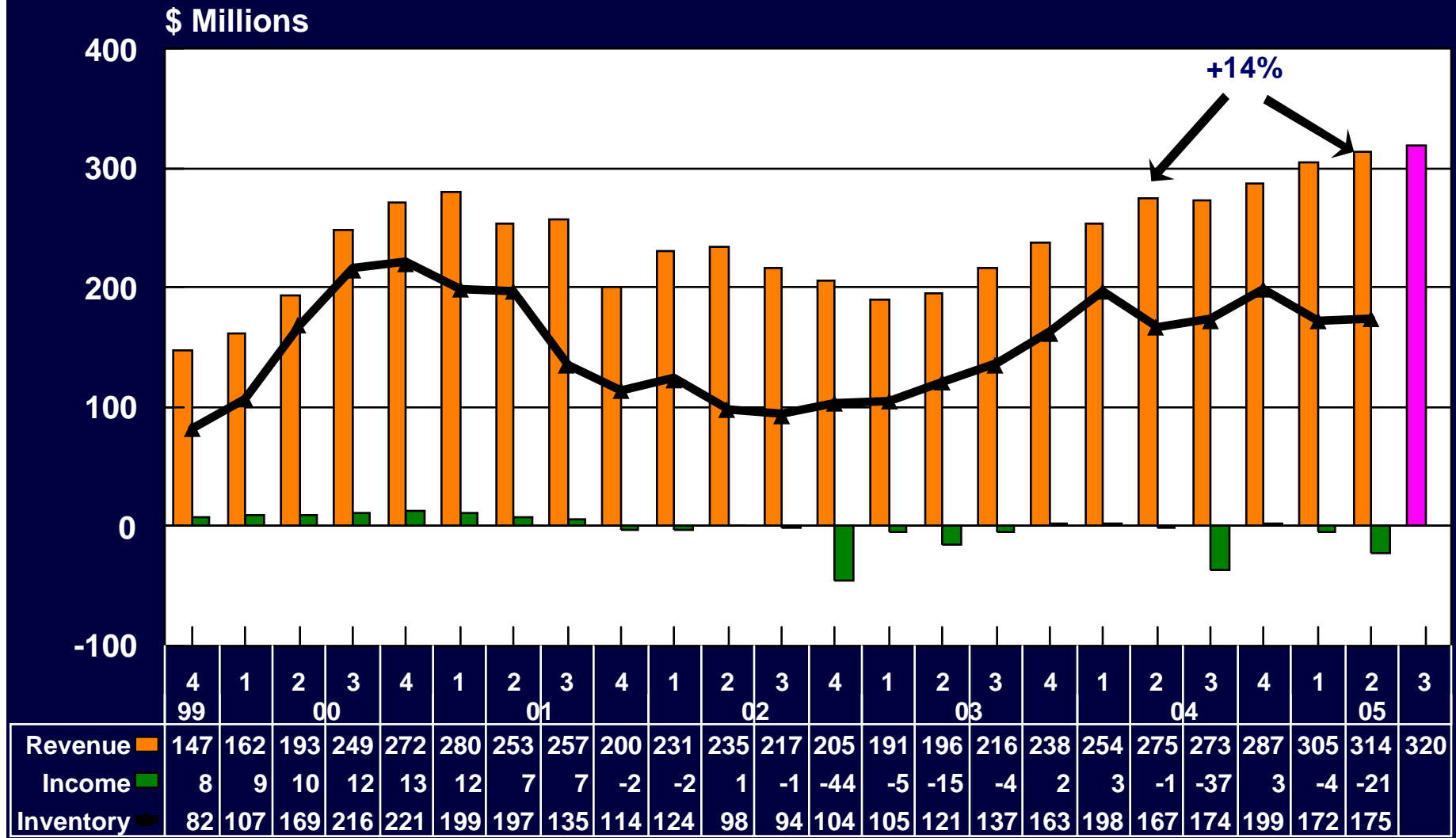
CY

BHE

Plexus Corp

Revenue, Net Income & Inventory

"Looking ahead, we anticipate revenues in the final fiscal quarter to be in the range of \$315 to \$325 million, and on these revenues we would anticipate fully diluted earnings per share before special items of \$0.16 to \$0.18." 7/27/05

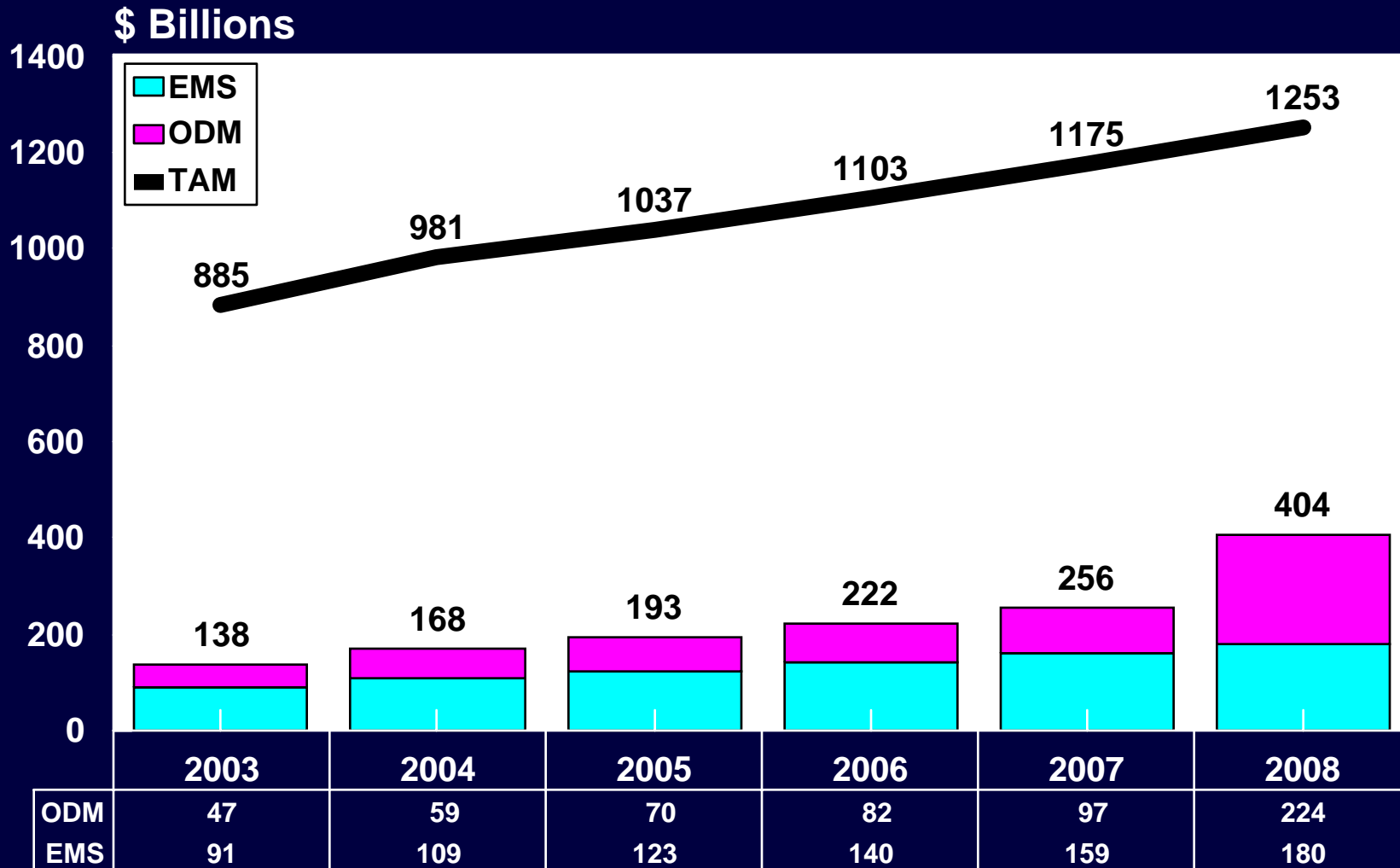


FY ends September

CY

PLXS

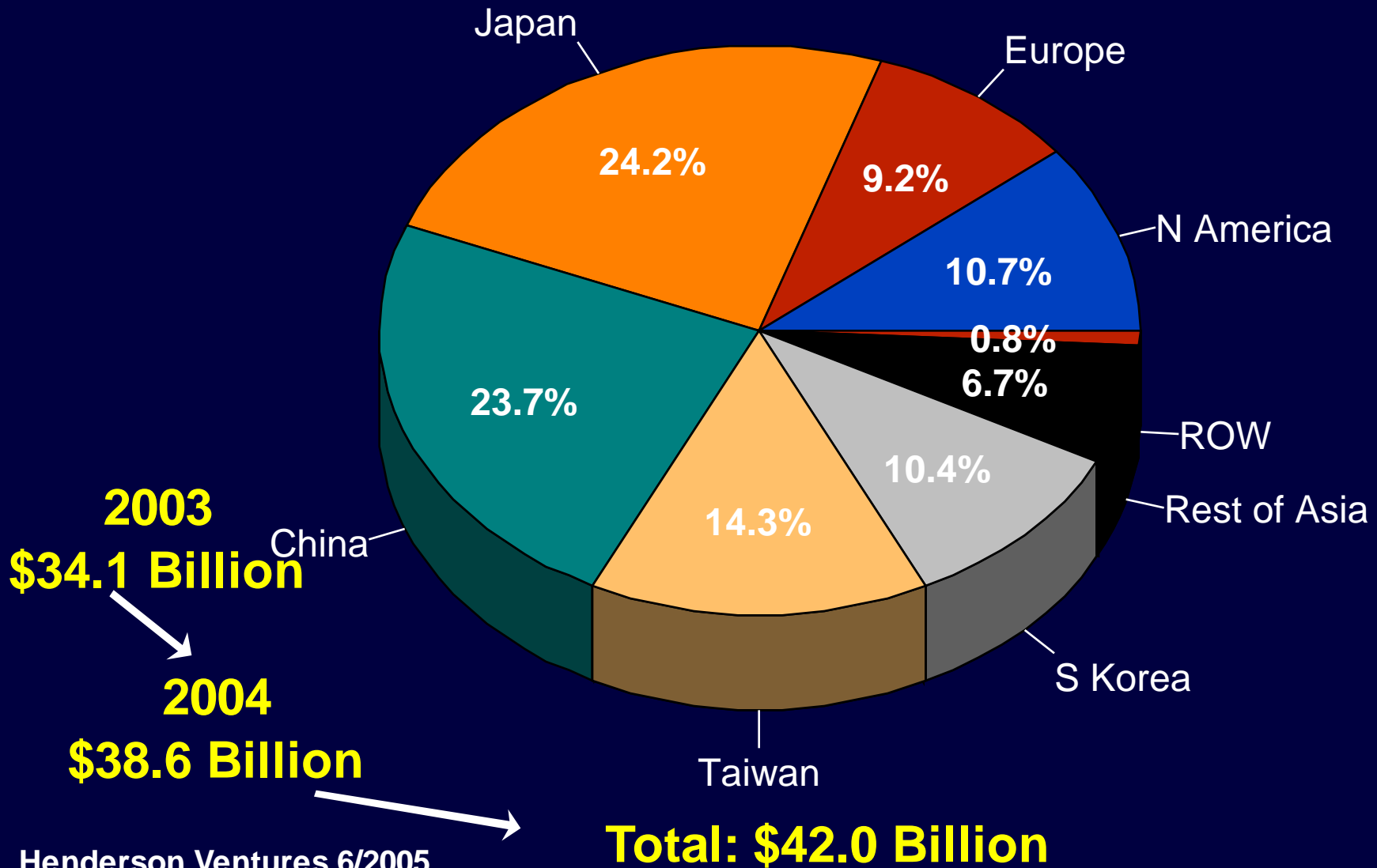
EMS & ODM Estimated Global Revenue vs. Total Available Market



PCB Fabrication

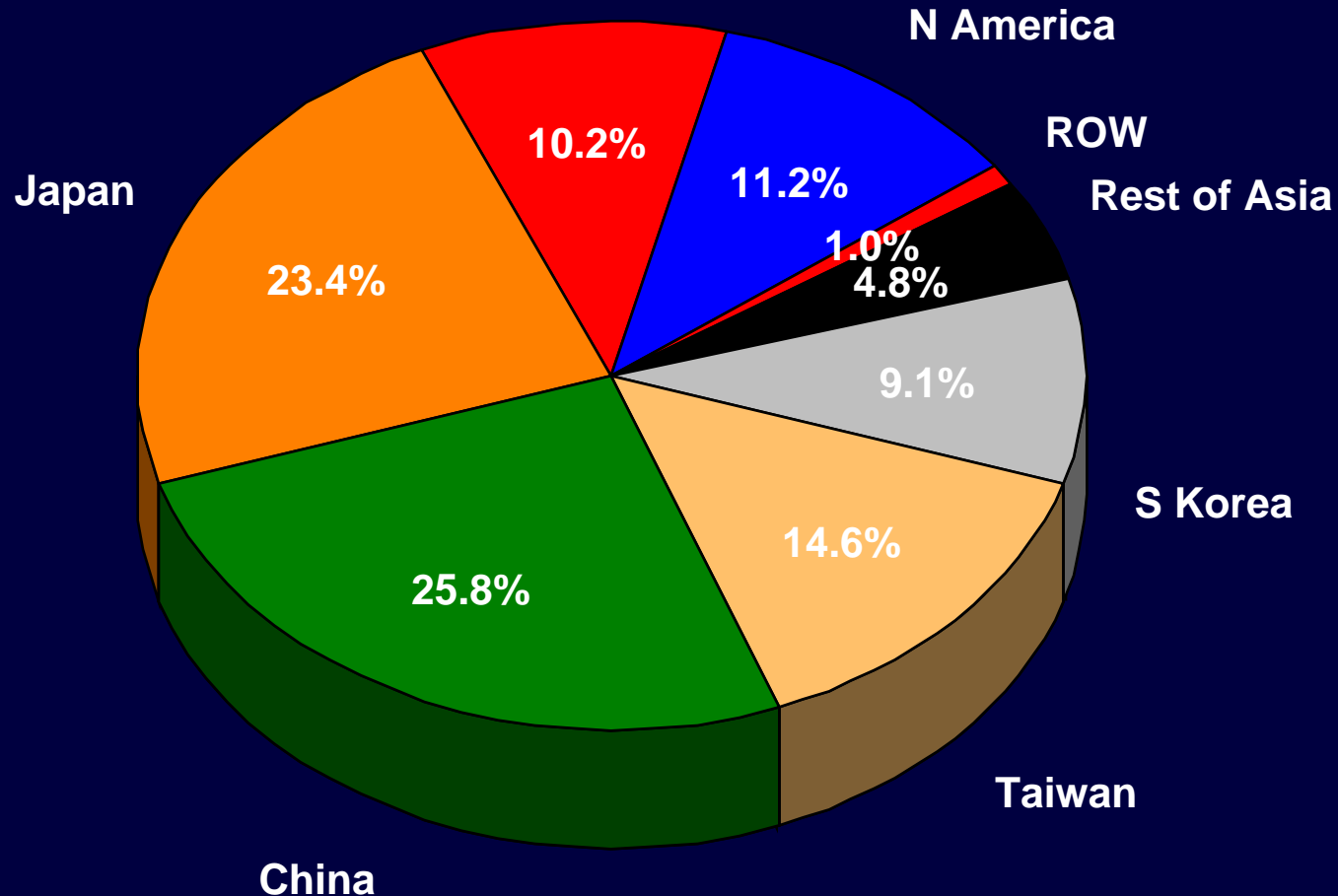
2005 World Rigid & Flex PCB Production by Geographical Area

(US\$ M @ Constant 2004 Exchange)



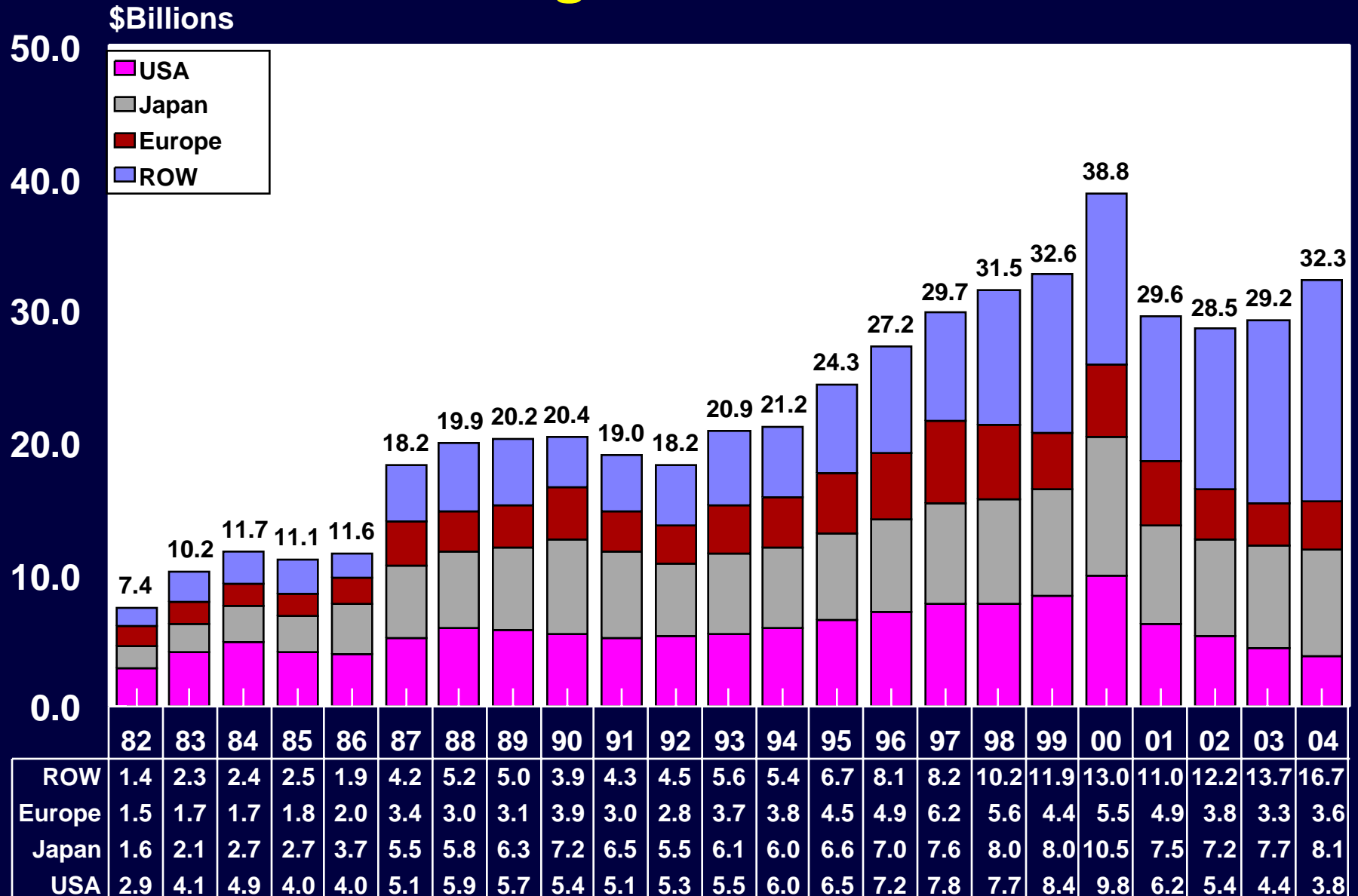
2005 World Rigid PCB Production by Geographical Area

(US\$ M @ Constant 2004 Exchange)
Europe



Total: \$34.8 Billion

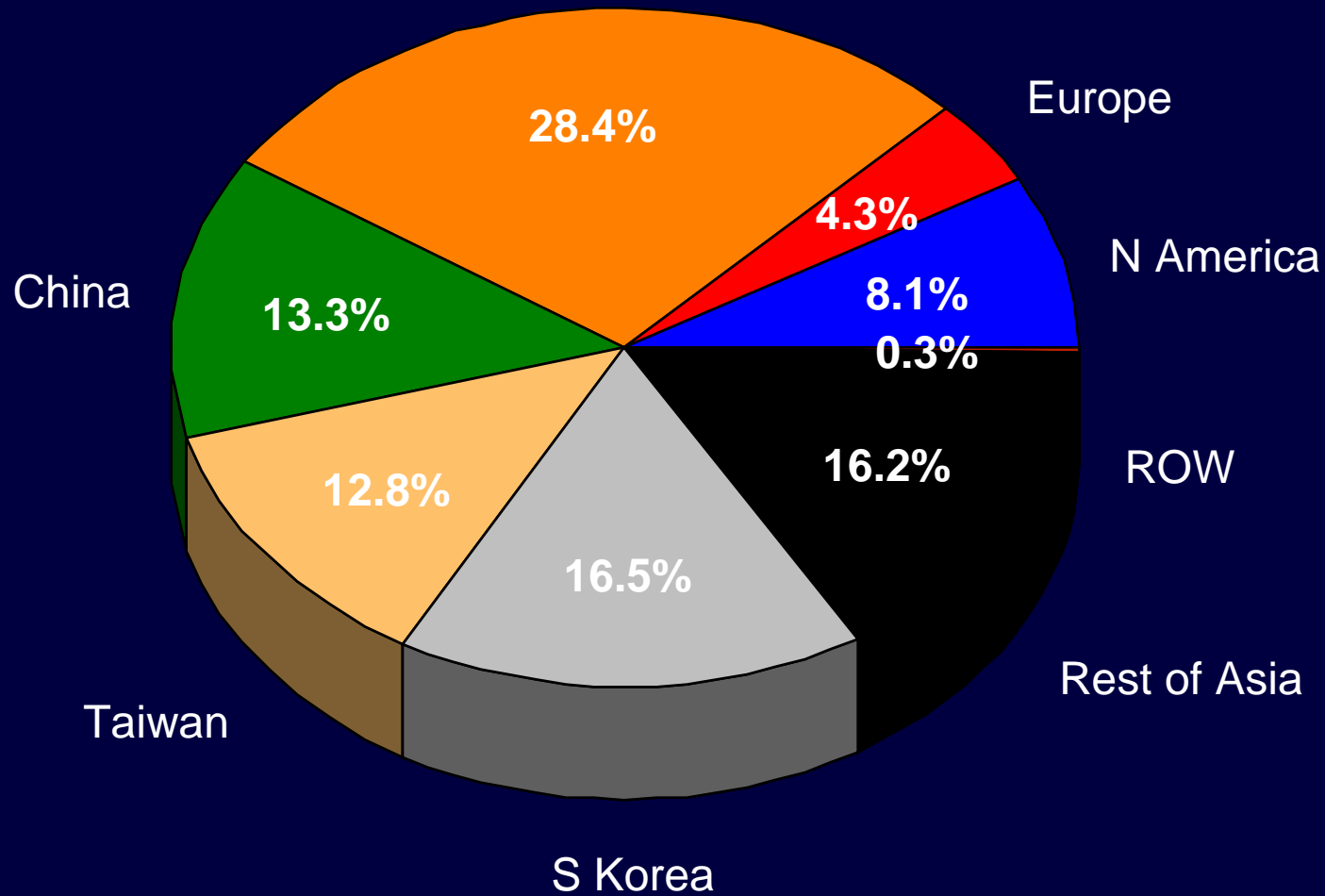
World Rigid PCB Production



IPC 5/05 (converted @ fluctuating exchange)

2005 World Flexible PCB Production by Geographical Area

(US\$ M @ Constant 2004 Exchange)
Japan



Total: \$7.2 Billion

2004 World PCB Production

Companies, Revenues, Employees

Country	# of Companies	Revenue US\$ M	# of Employees
China	1,000	8,053	200,000
US	530	5,850	48,000
W. Europe	400	3,917	29,000
Japan	300	10,327	46,000
Taiwan	140	5,340	50,000
S. Korea	120	3,711	35,000
India	120	200	8,000
ROW	250	2,774	80,000
Total World	2,860	40,172	496,000

2004 World PCB Production

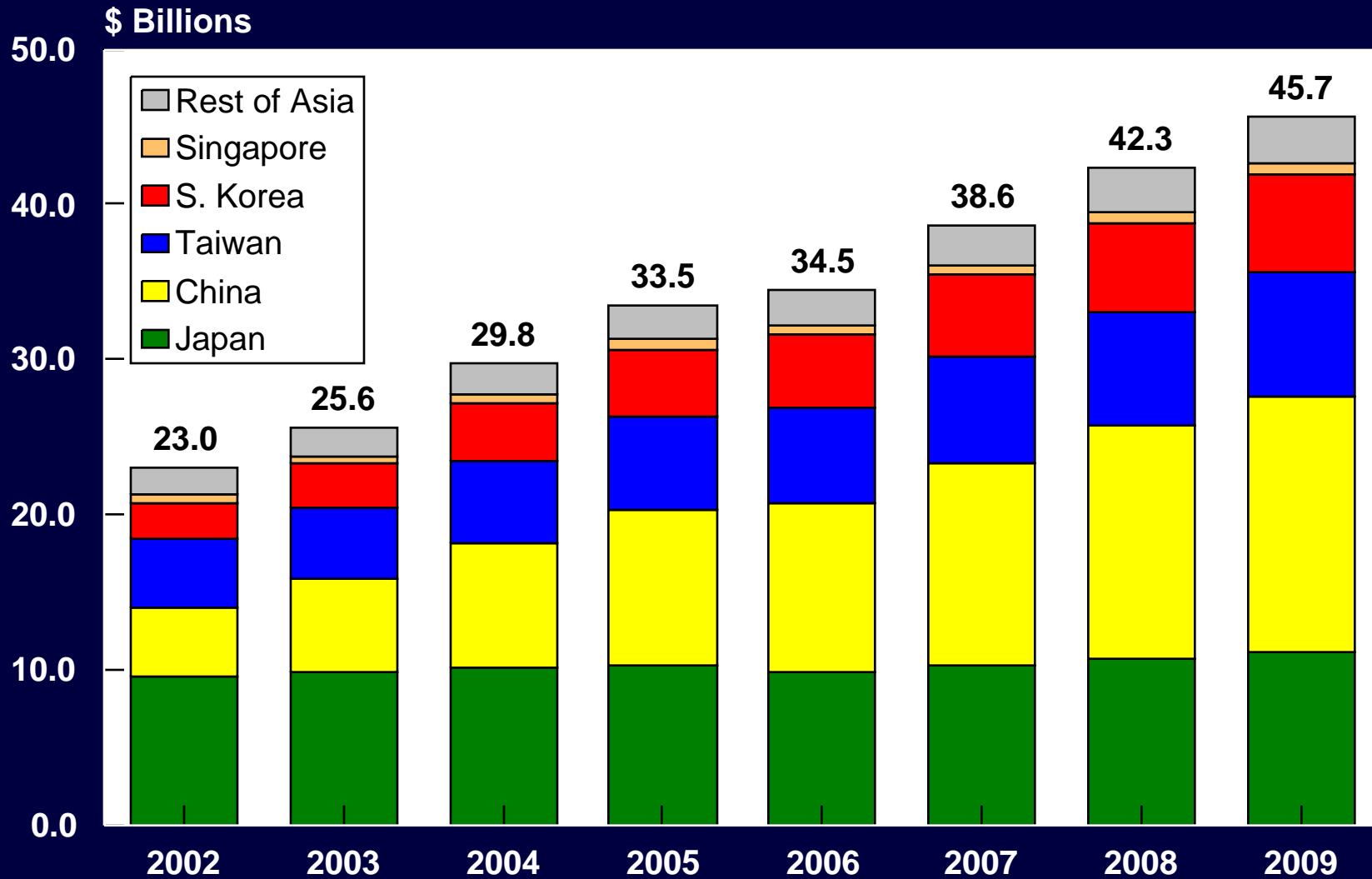
Top 10 Companies

<u>Rank</u>	<u>Maker</u>	<u>Country</u>	<u>US\$M</u>
1	Nippon Mektron	Japan	1,213
2	Ibiden	Japan	1,170
3	CMK	Japan	1,105
4	Samsung EM	S. Korea	850
5	Unimicron	Taiwan	767
6	Shinko Denki	Japan	730
7	Hitachi Chem	Japan	680
8	King Board	Hong Kong	600
9	Compeq	Taiwan	595
10	Daeduck Group	S. Korea	585
			8,295

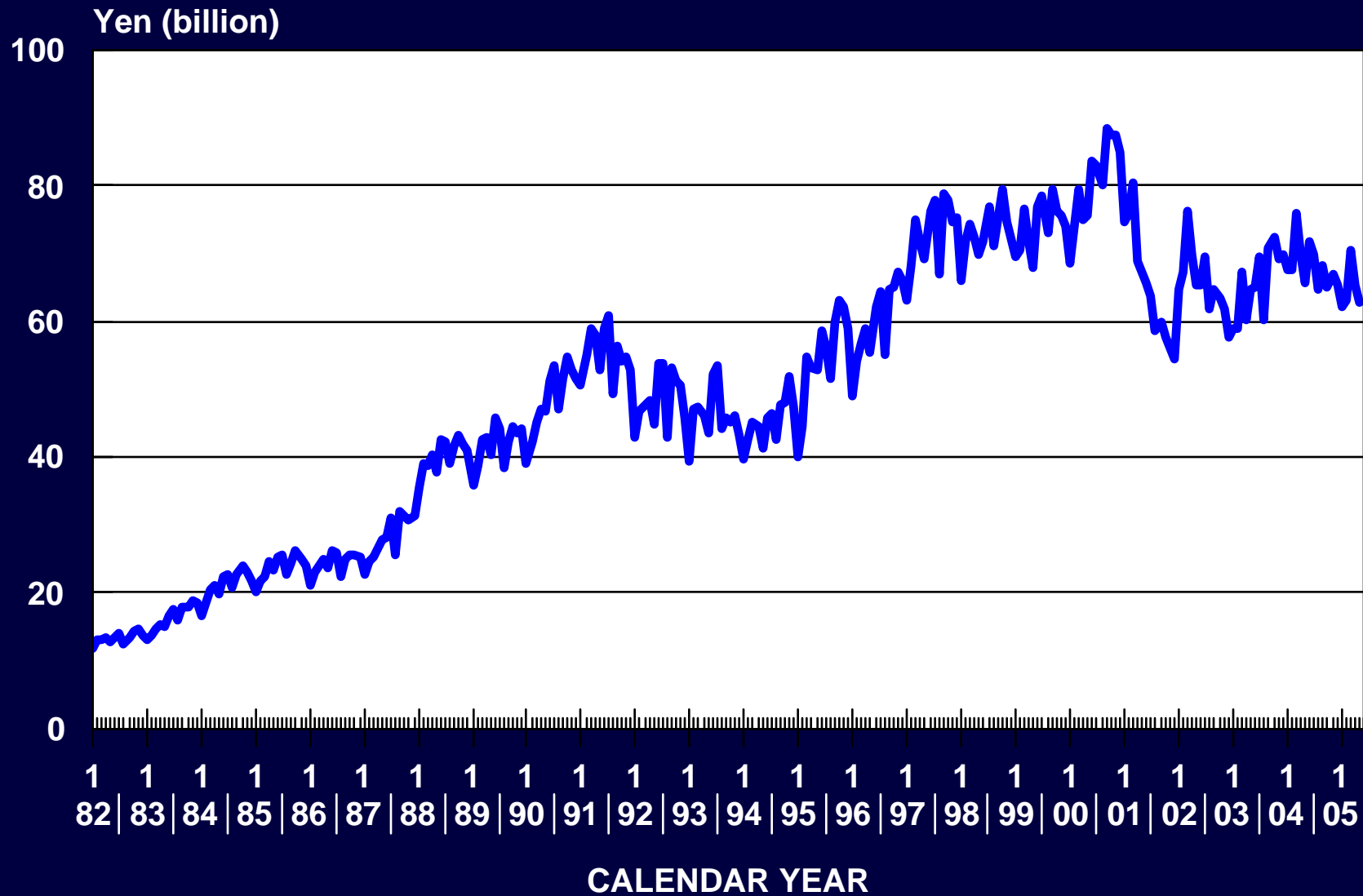
Dr Hayao Nakahara, N.T. Information Ltd

Asian PCB Production

Current \$ converted @ 2004 Exchange Rates



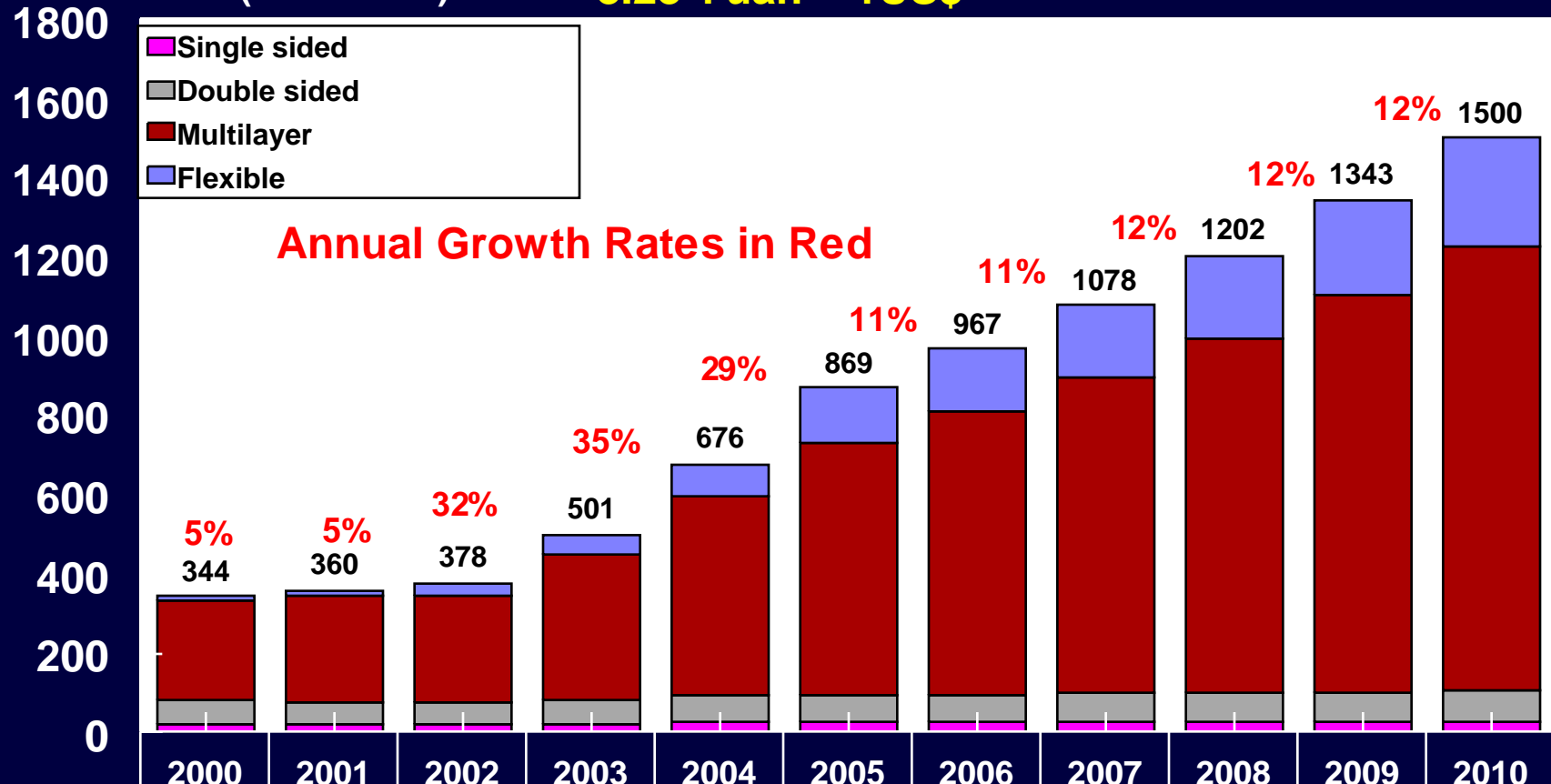
Japan PCB Shipments



Chinese PCB Industry Production

Yuan (100 Million)

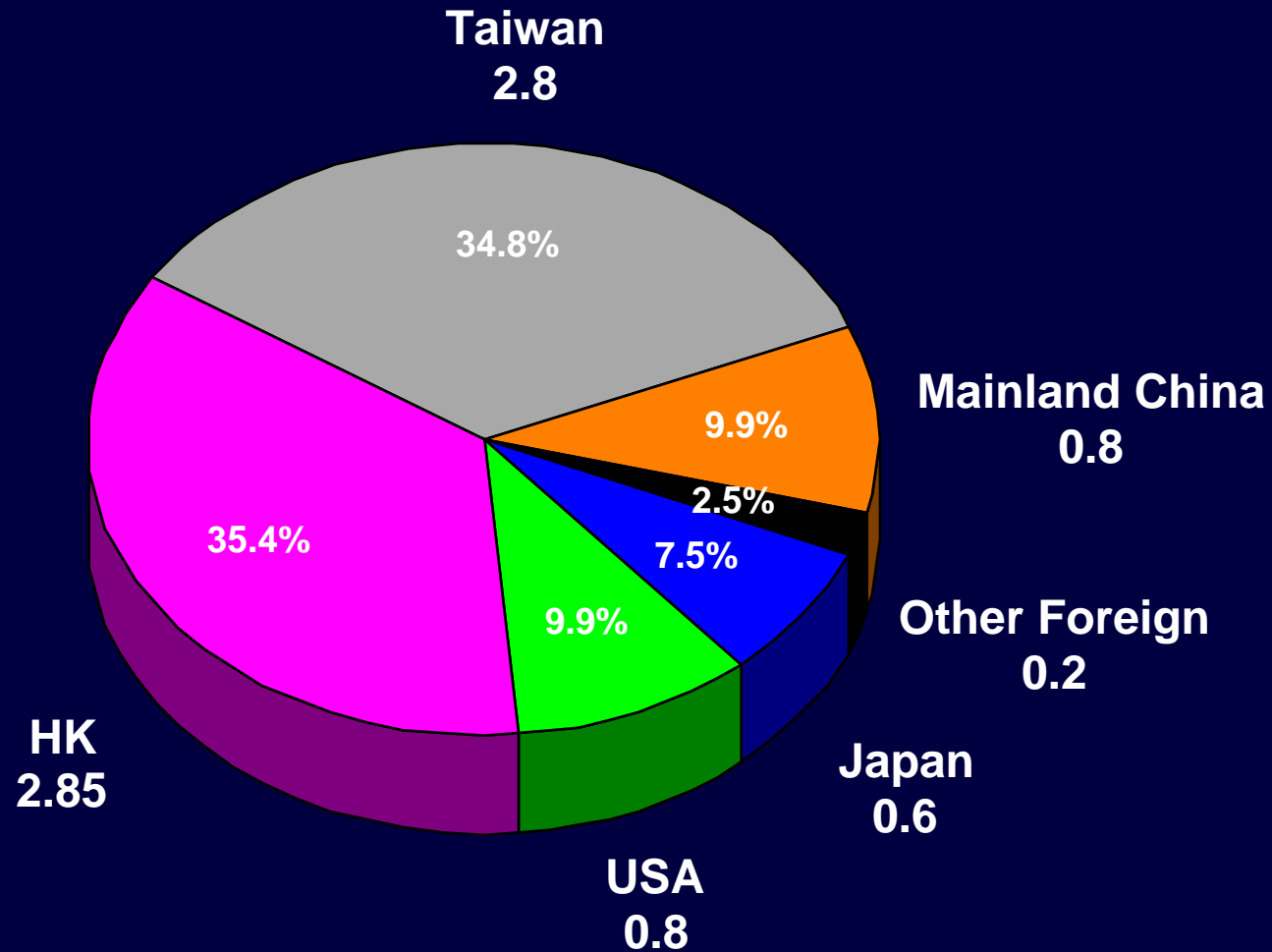
8.28 Yuan = 1US\$



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Flexible	10	18	30	51	82	136	156	180	207	238	273
Multilayer	252	265	271	366	502	637	713	799	895	1002	1122
Double sided	59	56	57	61	67	69	71	72	74	75	77
Single sided	22	21	20	22	25	26	27	27	27	27	28

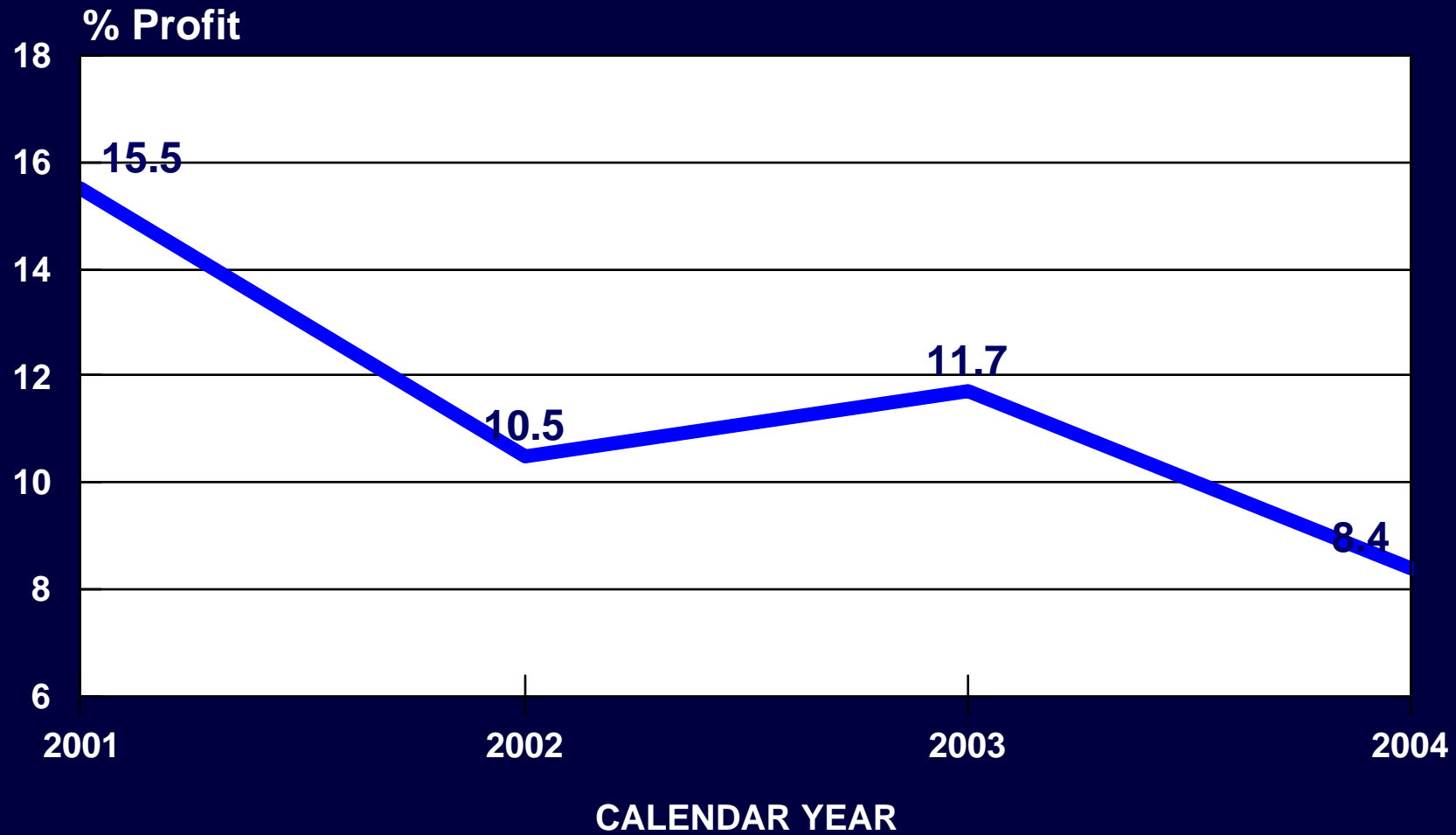
China PWB Production - 2004

Company Ownership Nationality

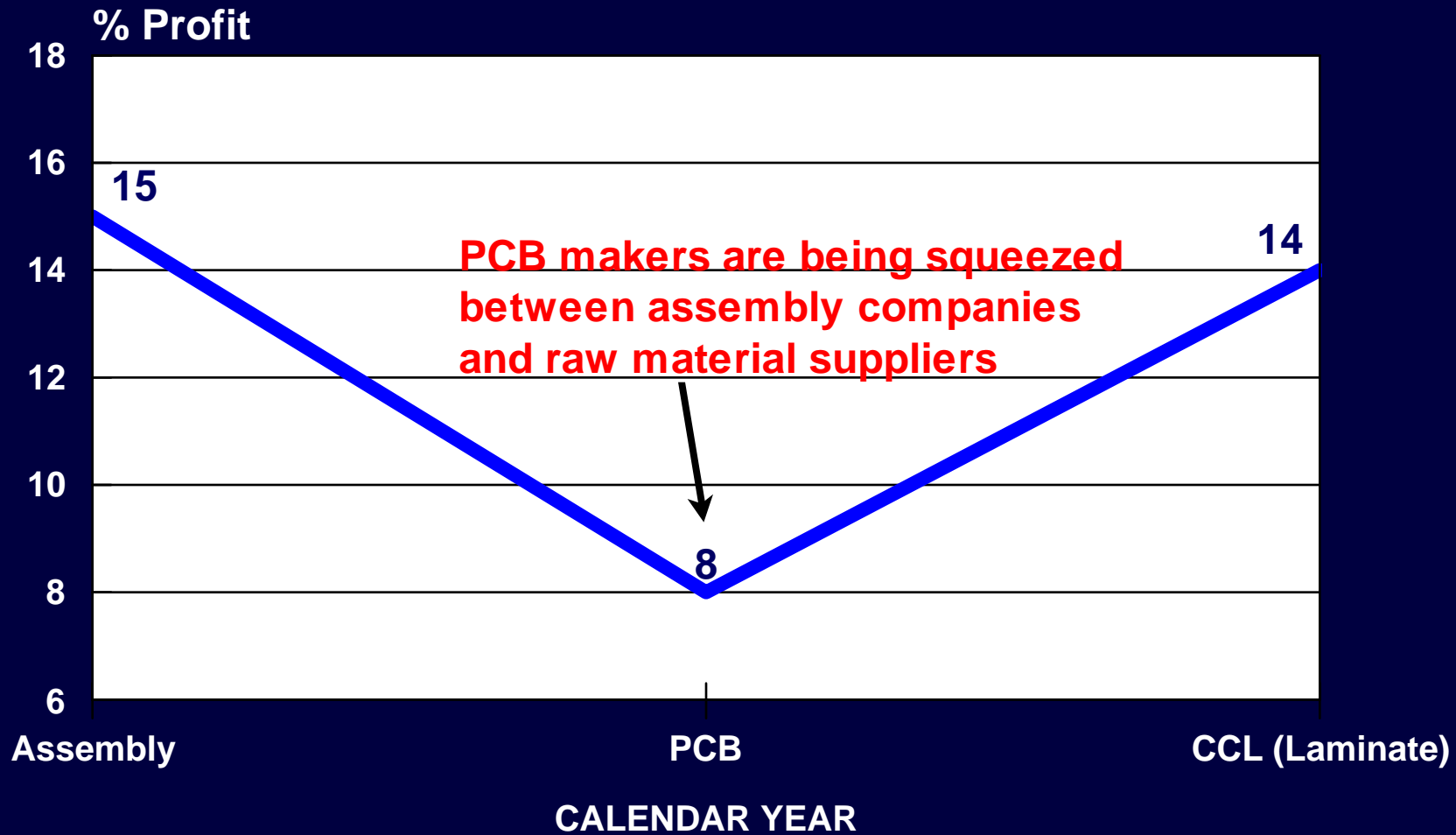


Total: US\$ 8.05 Billion

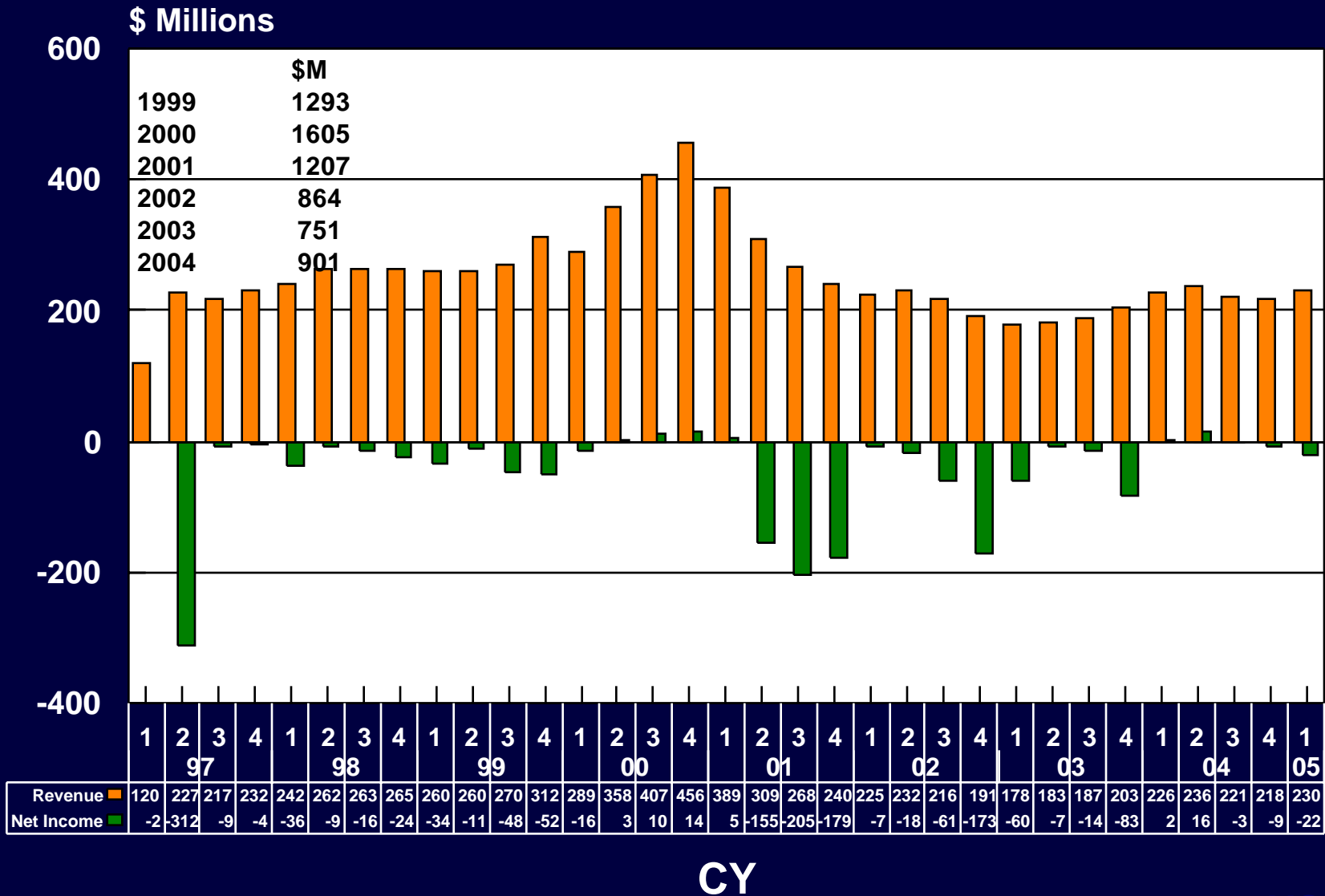
China PCB Profit



China PCB "Food Chain" Profit 2004



Viasystems Revenue & Income

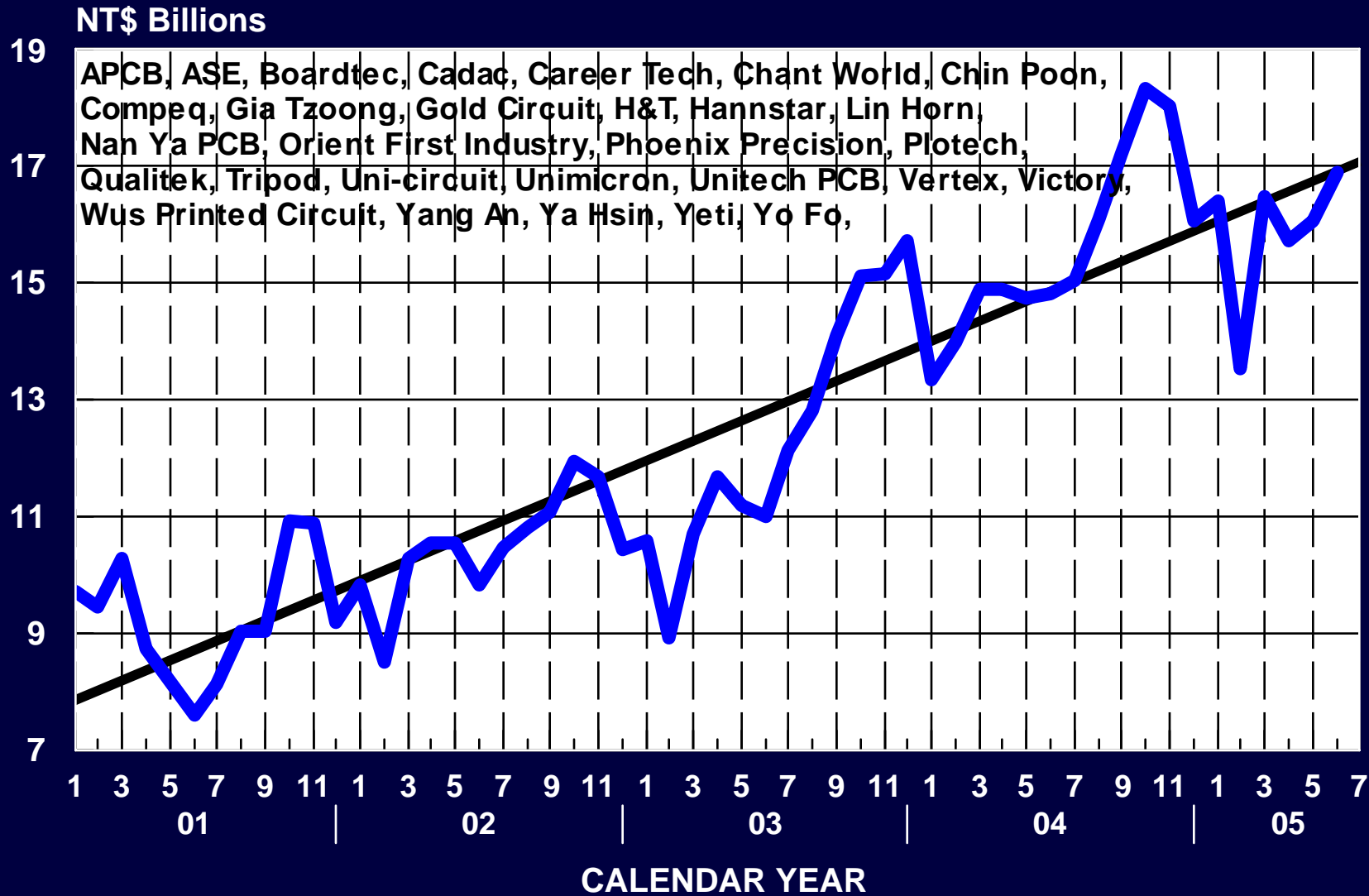


CY

Sources: 10Q & 10K reports and company press releases

VSGI

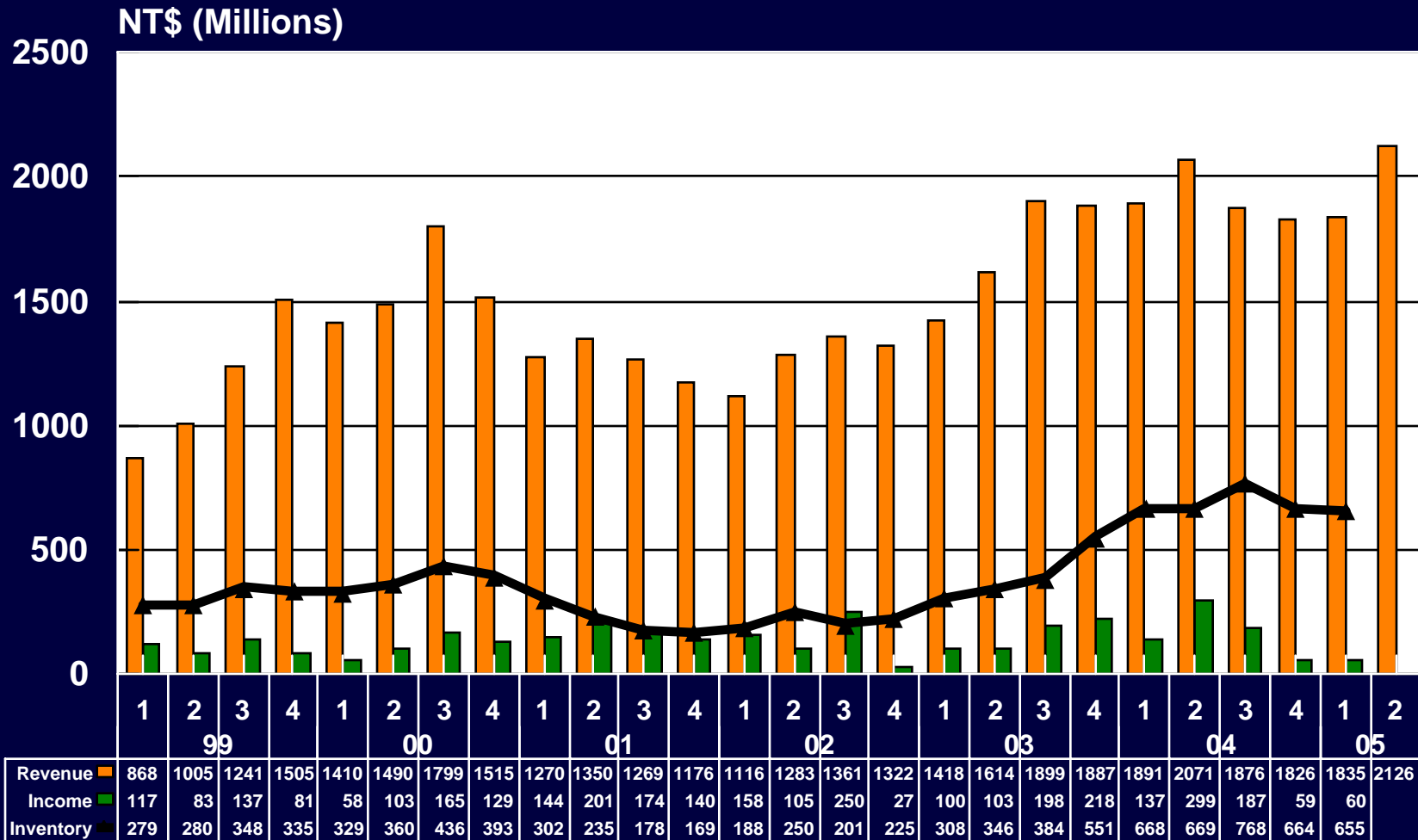
Taiwan Rigid PCB Shipments Composite of 28 Manufacturers



Company Financial Releases

Chin-Poon Industrial, Taiwan

Revenue, Net Income & Inventory



CY

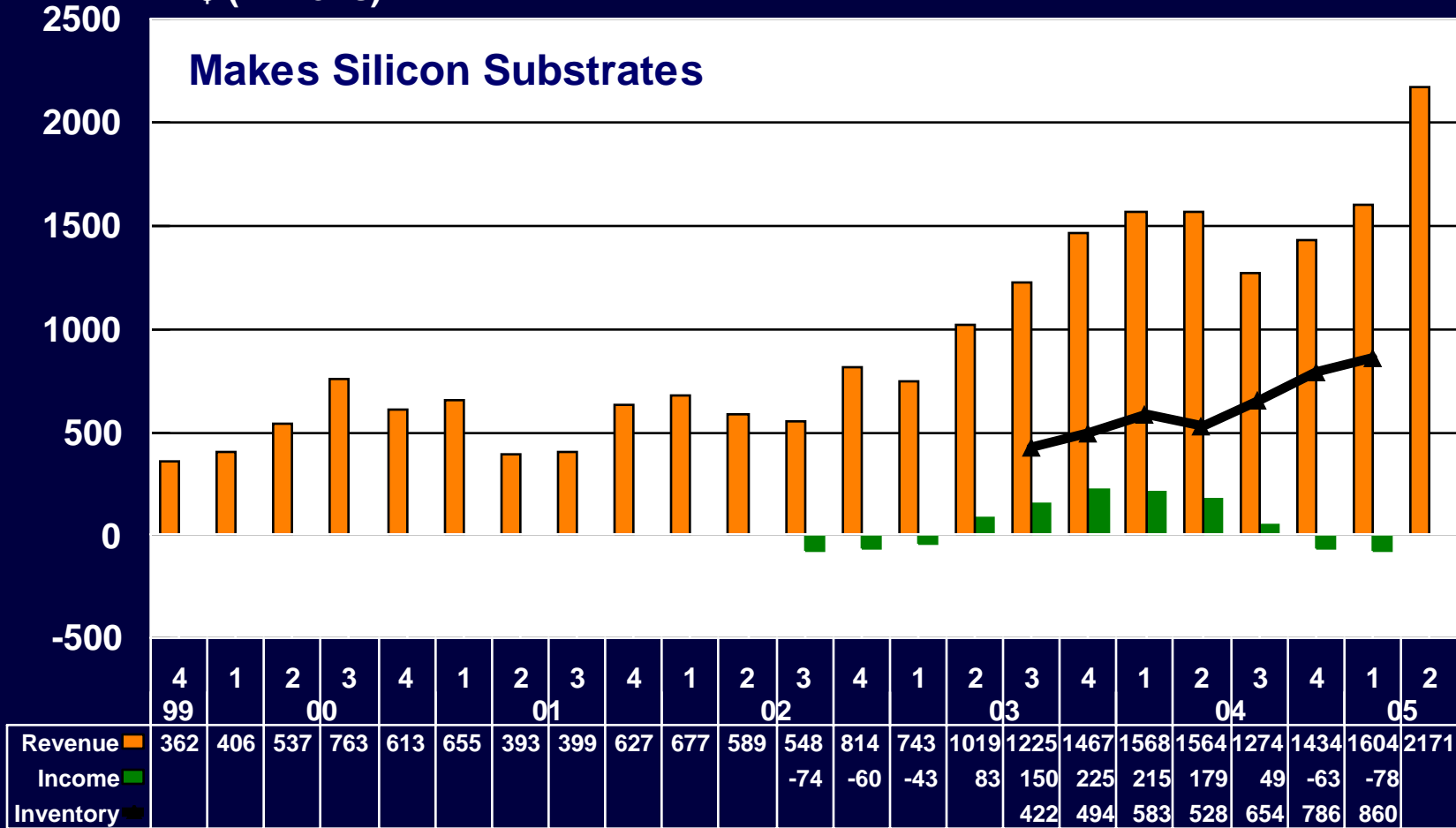
2355

Phoenix Precision Technology, Taiwan

Revenue, Net Income & Inventory

NT\$ (Millions)

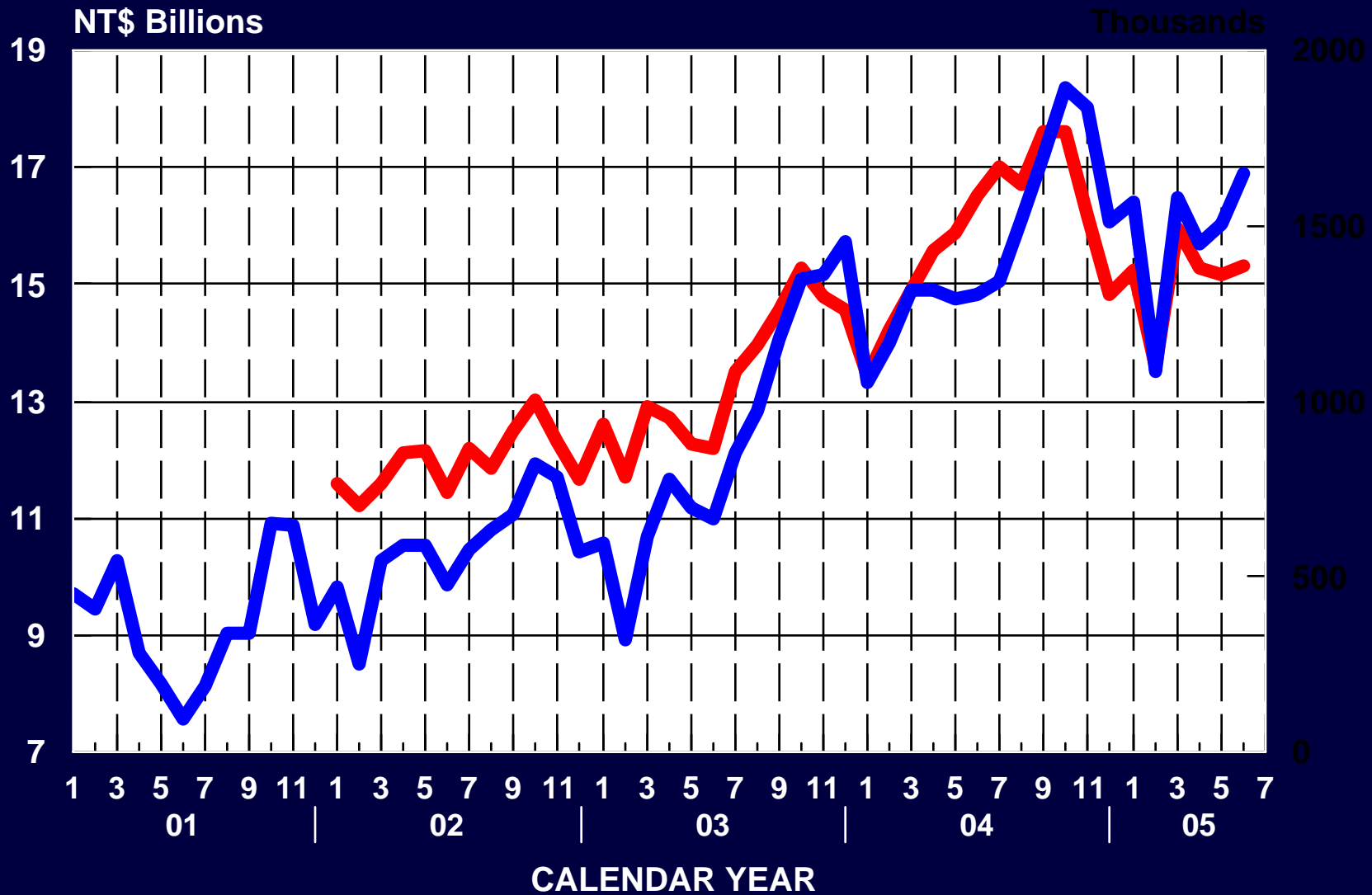
Makes Silicon Substrates



CY

Taiwan Shipments

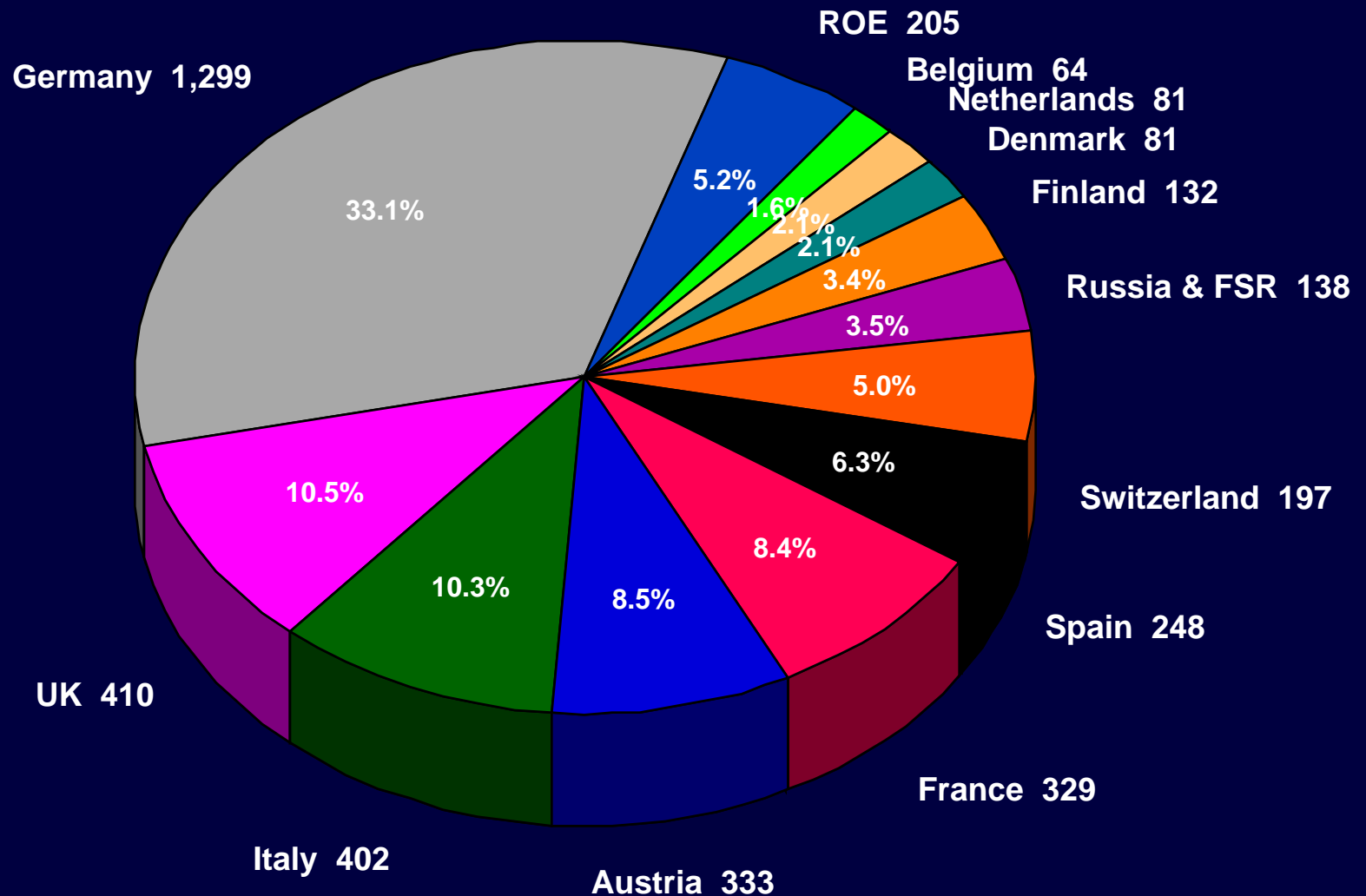
28 Rigid PCB & 6 Laminate Manufacturers



Company Financial Releases

2004 European Rigid & Flex PCB Production

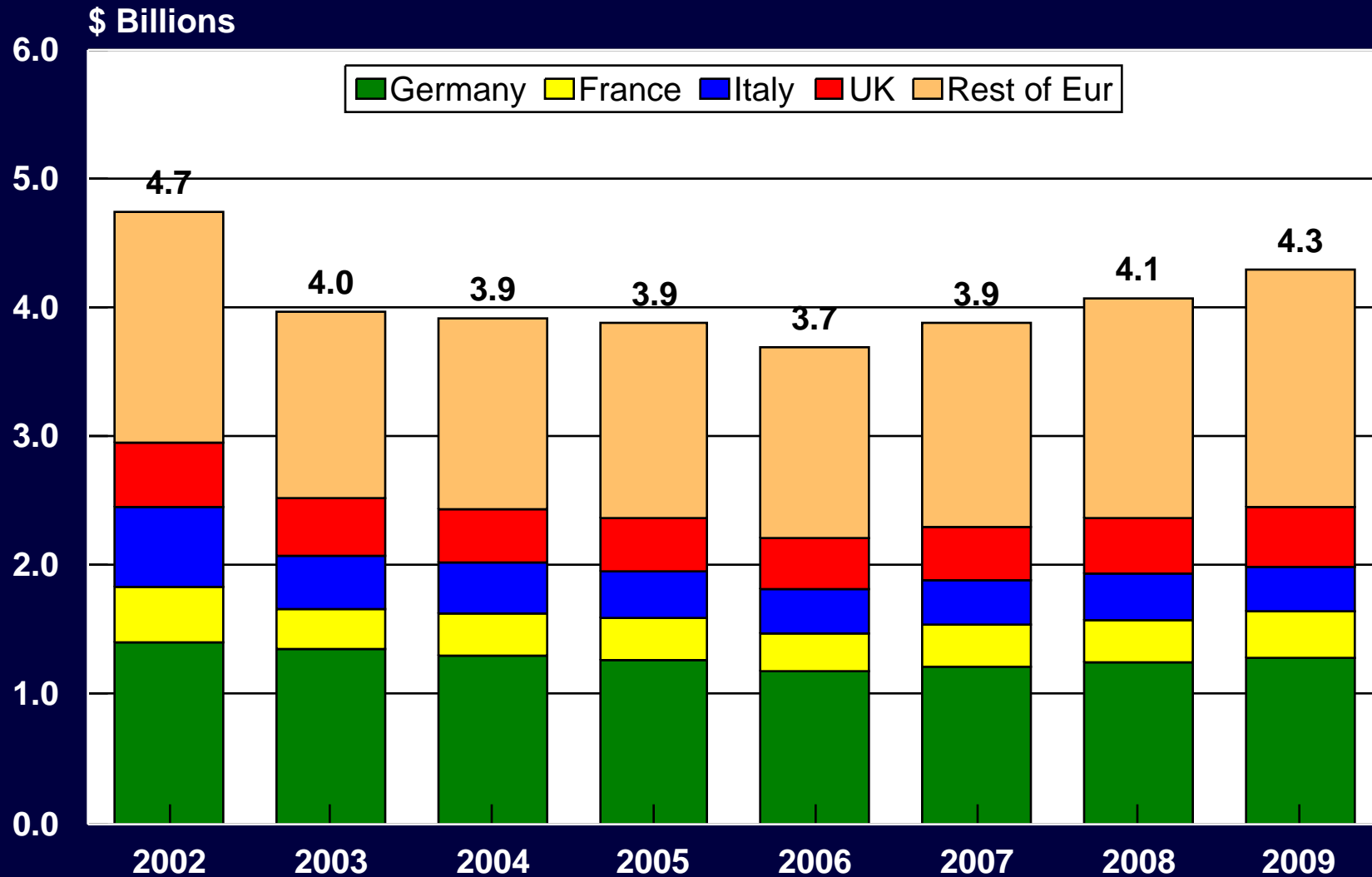
(US\$ M @ 2004 Exchange)



Total: \$3,919 Million

European PCB Production

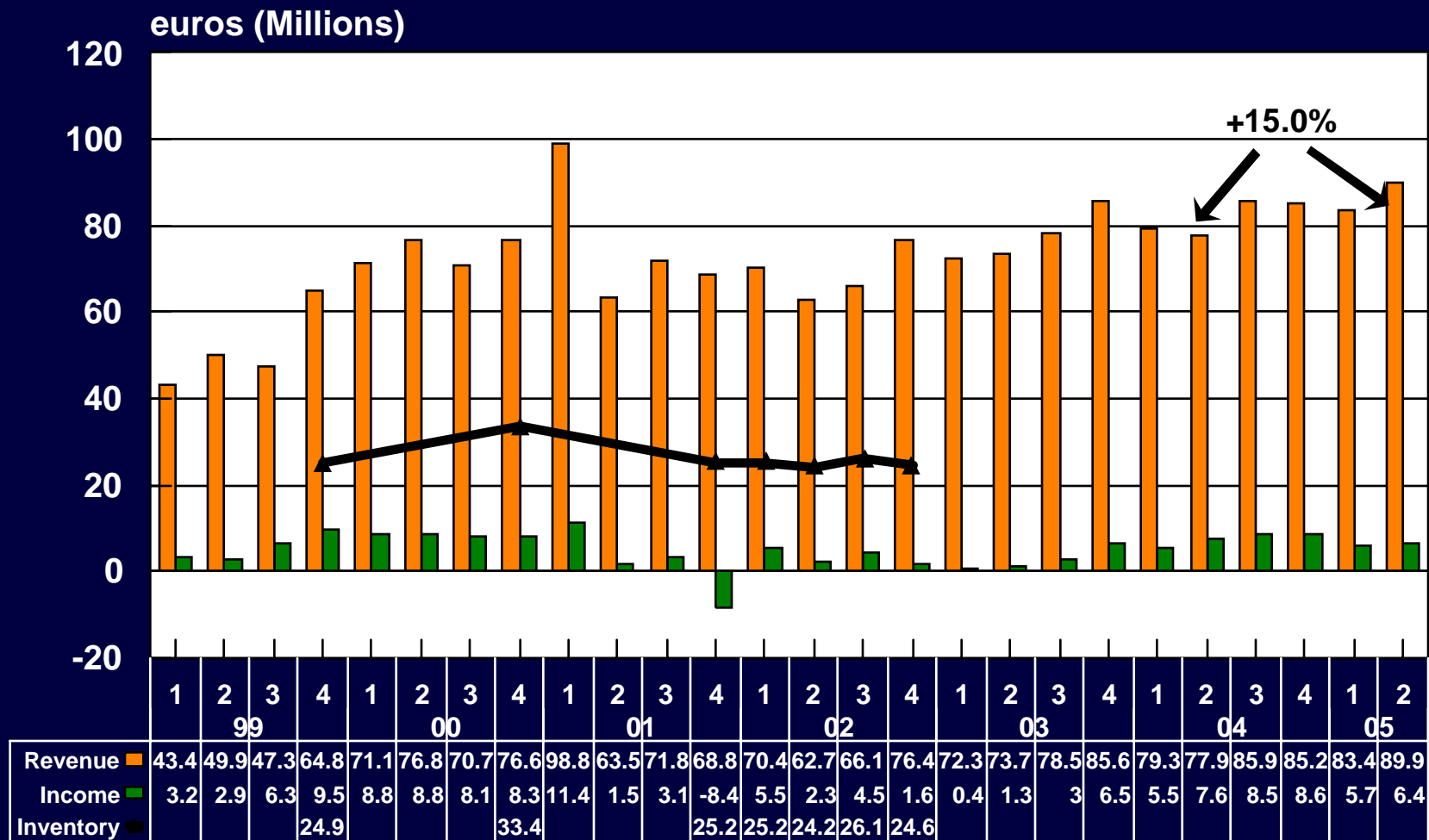
Current \$ converted @ 2004 Exchange Rates



AT&S, Austria

Revenue, Income & Inventory

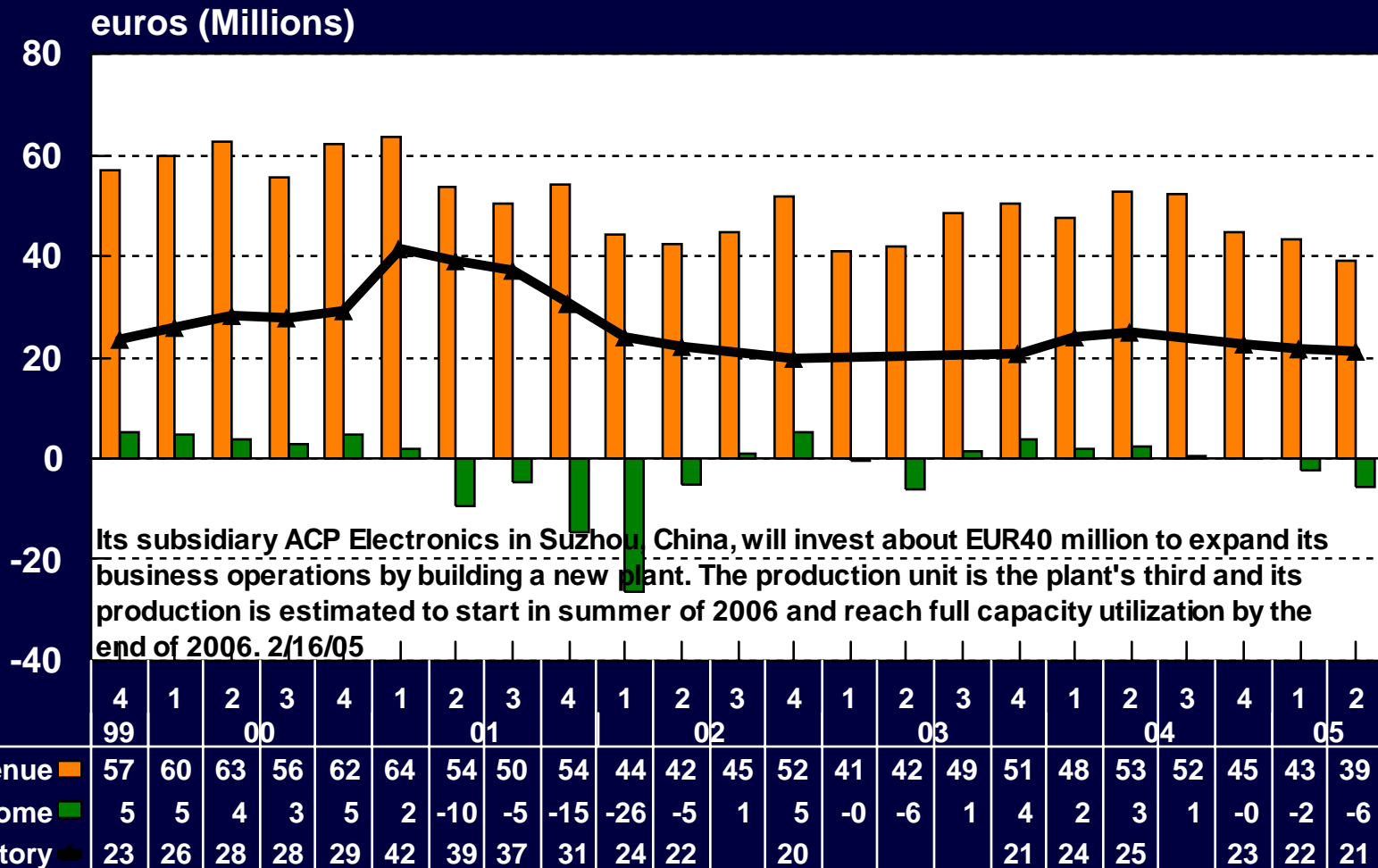
"Good loading, profitable product mix and US Dollar bring AT&S a record quarter Turnover, profit margin and EBIT were obviously positively influenced in the last quarter by a very good work load at all plants on the one hand, by a profitable product mix on the other hand and finally by a stronger US Dollar. " 7/28/05



Aspocomp, Finland

Revenue, Net Income & Inventory

"Aspocomp estimates that the Q2 2005 net sales will be more than 10% lower than the Q1 2005 net sales. The reason ... is mainly the present product mix of Aspocomp's Finnish PCB (printed circuit board) and Modules plants and lower delivery volumes compared to Q1 2005." 6/17/05



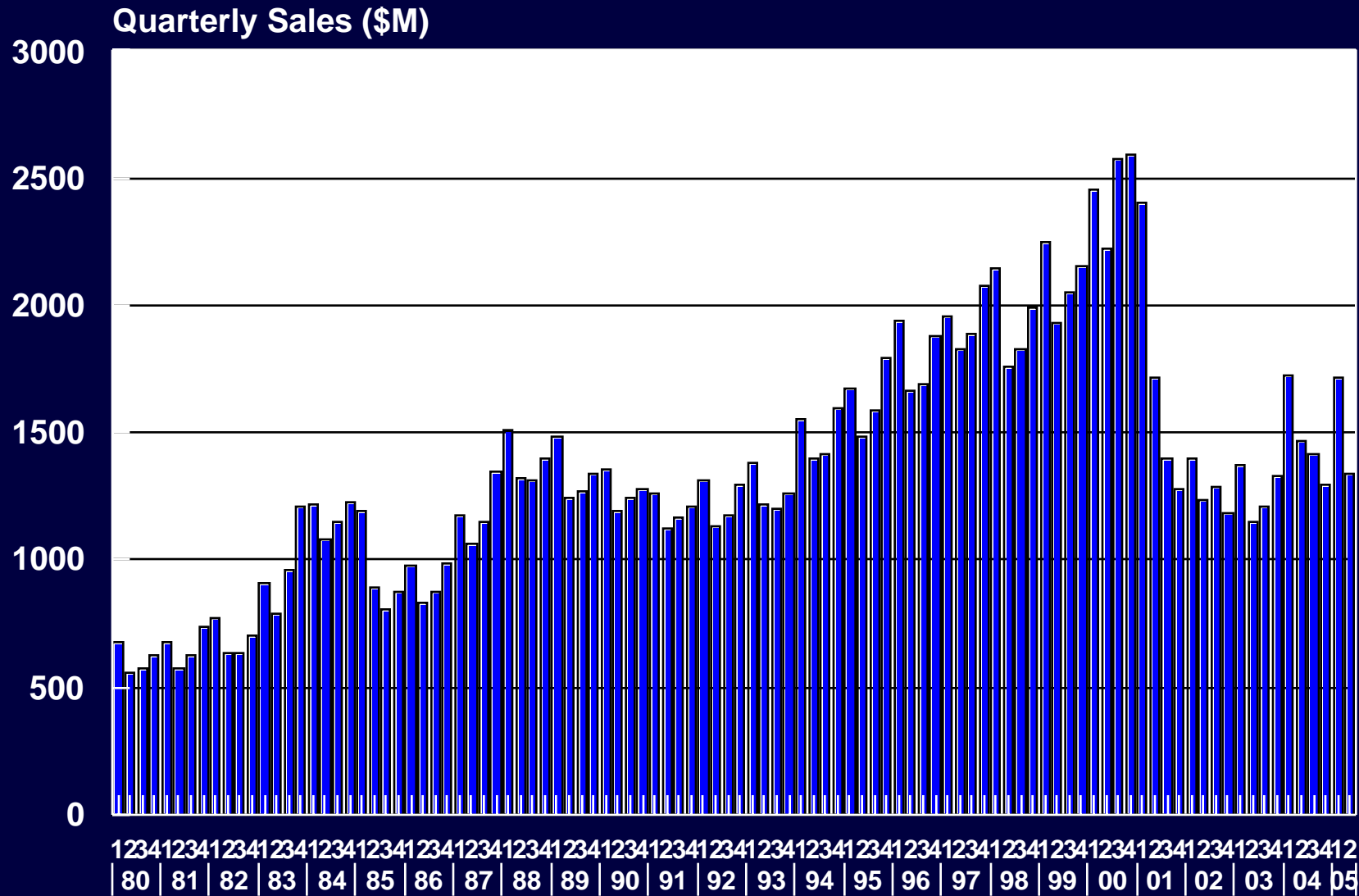
TOP N AMERICAN PCB MANUFACTURERS

2004

PCB \$M

	PCB \$M	
VIASYSTEMS	482	
MULTEK	450	
SANMINA-SCI	420	
MMM-3M	390	Sales in blue include significant offshore production in 2004
TYCO	375	
TTM	242	
PHOTOCIRCUITS	220	
DDi	195	
MERIX	174	
EIT (Endicott Interconnect Tech)	173	
HUTCHINSON	155	
M-FLEX	130	
INNOVEX	90	
PARLEX	86	
CORETEC	70	
SHELDAHL (Multek)	65	
TERADYNE	63	

N. AMERICAN RIGID PCB SHIPMENTS

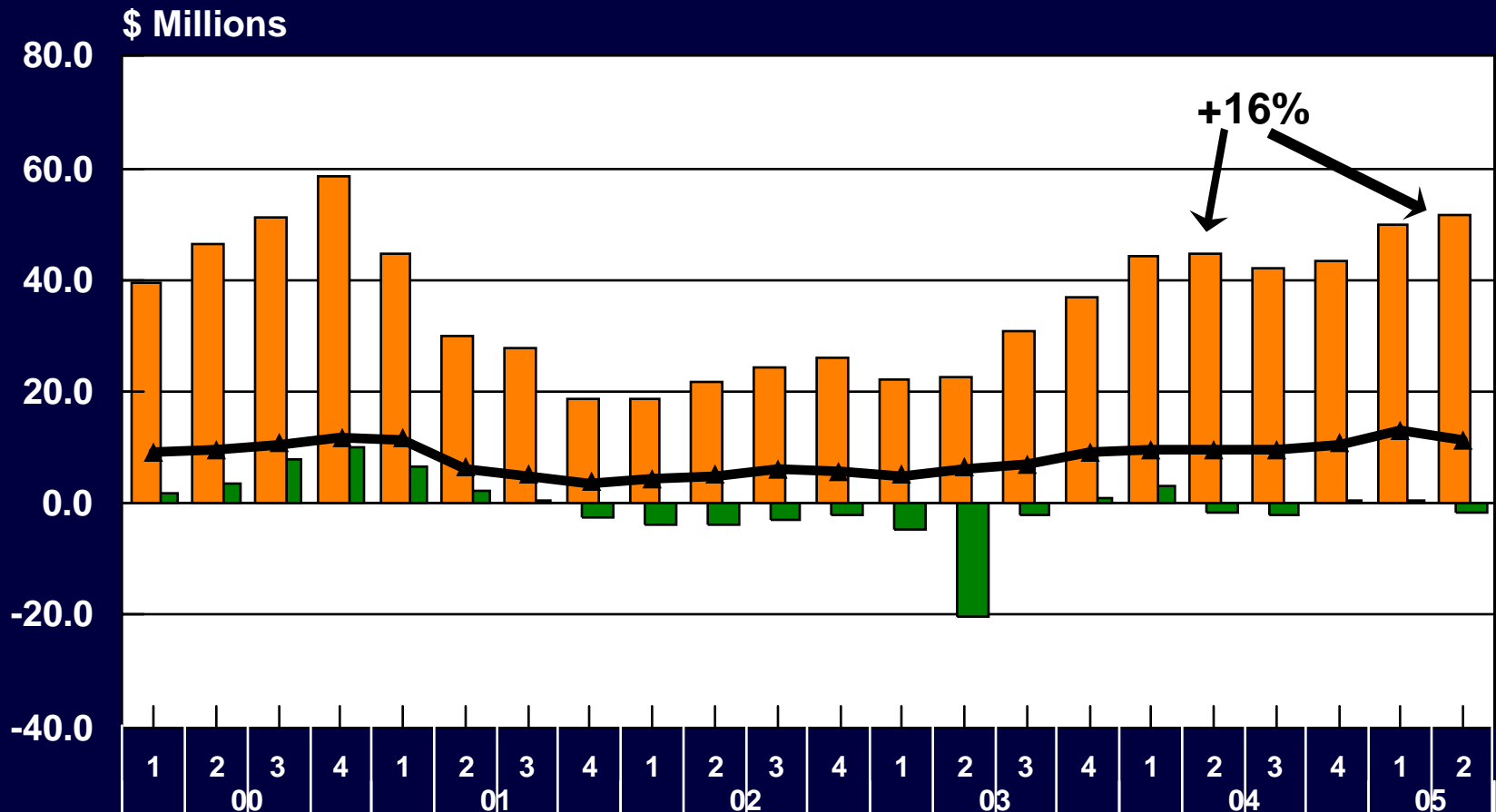


IPC T/MRC data with Custer interpretation

Merix

Revenue, Net Income & Inventory

"Our financial results for fiscal 2005 are not acceptable and we are taking actions that will further reduce our cost structure and improve our operating efficiency.." 6/29/05



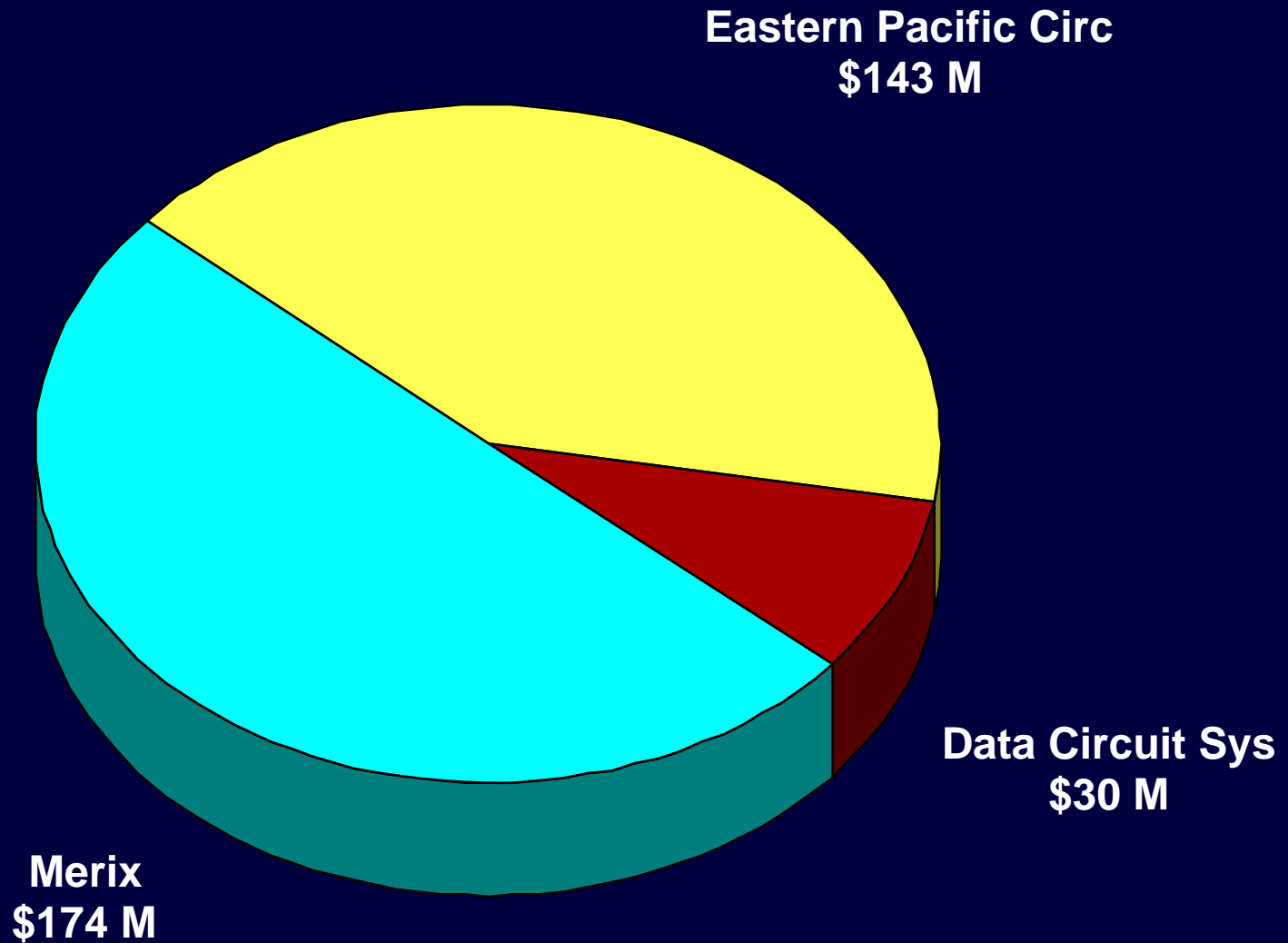
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
	00				01				02				03				04				05	
Revenue	39.7	46.2	51.0	58.4	44.4	30.1	27.7	18.8	18.5	21.5	24.1	25.9	22.1	22.5	30.7	37.0	44.1	44.5	42.1	43.2	50.0	51.6
Income	1.7	3.6	7.9	10.2	6.4	2.2	0.5	-2.7	-3.8	-3.7	-2.8	-2.1	-4.9	-20.3	-2.2	0.7	3.2	-1.6	-2.0	0.7	0.4	-1.7
Inventory	9.2	9.4	10.6	11.7	11.4	6.2	4.9	3.6	4.3	5.0	6.1	5.6	5.0	6.2	6.9	9.1	9.4	9.6	9.5	10.6	13.1	11.2

FY ends May

MERX

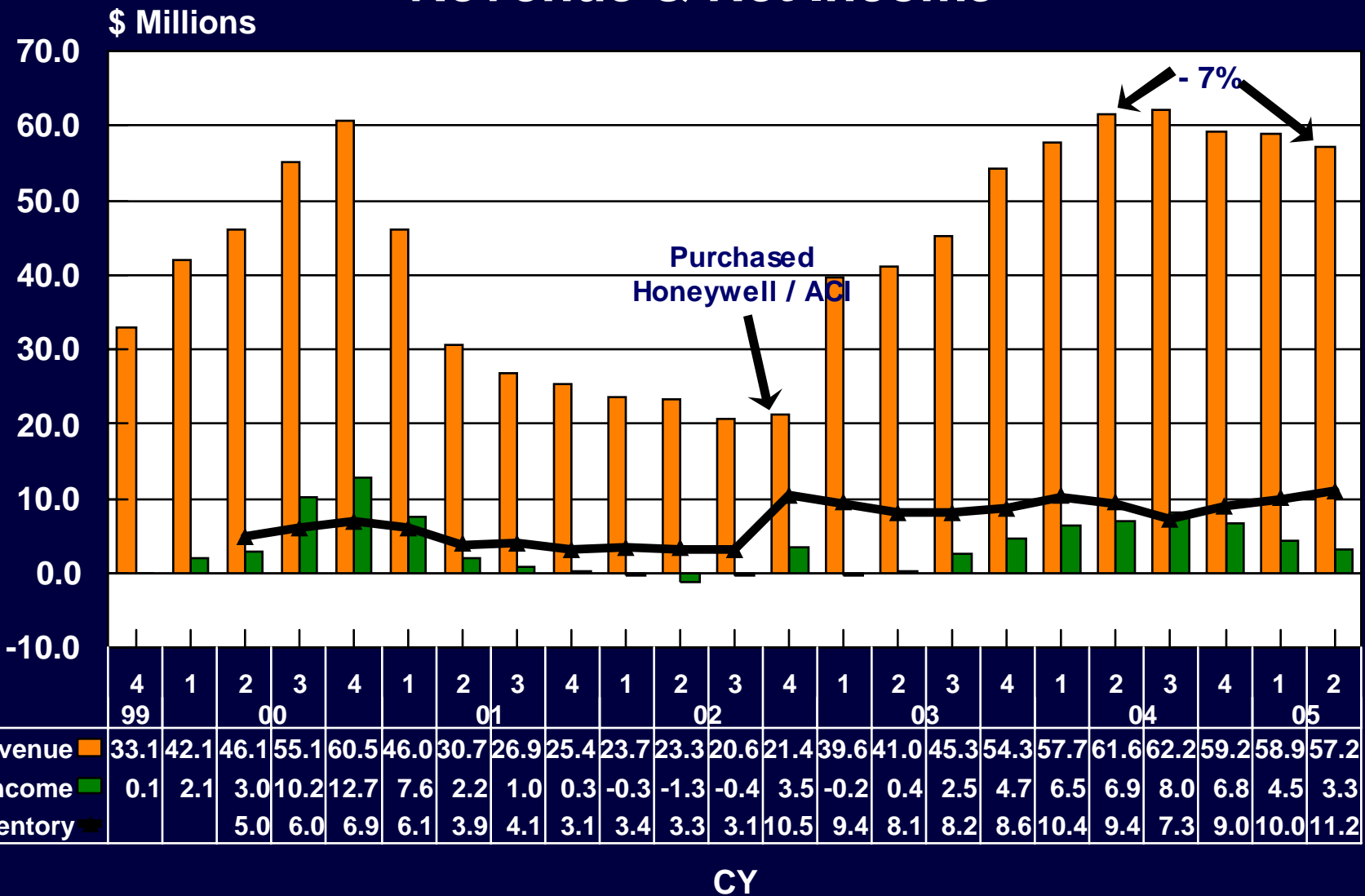
Merix + Recent Acquisitions

Annualized Separate CY 2004 Revenues



TOTAL \$347 Million

TTM Technologies Revenue & Net Income



"Volume remained healthy in the second quarter, increasing 2% from the first quarter of 2005, as order and shipment activity built over the course of the quarter... But the back-end loaded shipment pattern reduced operating efficiency, while pricing was lower than anticipated." 7/27/05

TTMI

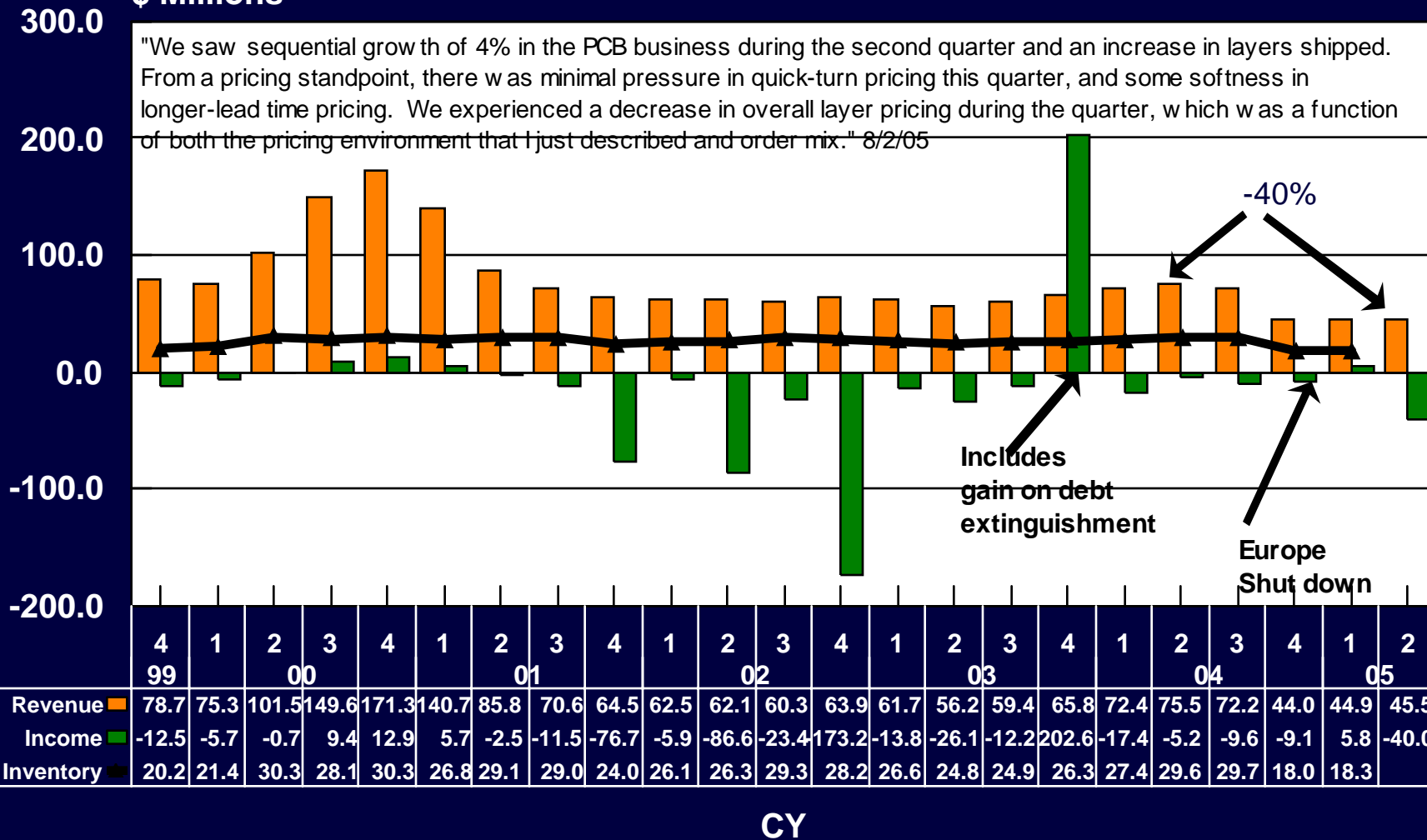
FY=CY

DDi Corp

Revenue, Net Income & Inventory

\$ Millions

"We saw sequential growth of 4% in the PCB business during the second quarter and an increase in layers shipped. From a pricing standpoint, there was minimal pressure in quick-turn pricing this quarter, and some softness in longer-lead time pricing. We experienced a decrease in overall layer pricing during the quarter, which was a function of both the pricing environment that I just described and order mix." 8/2/05



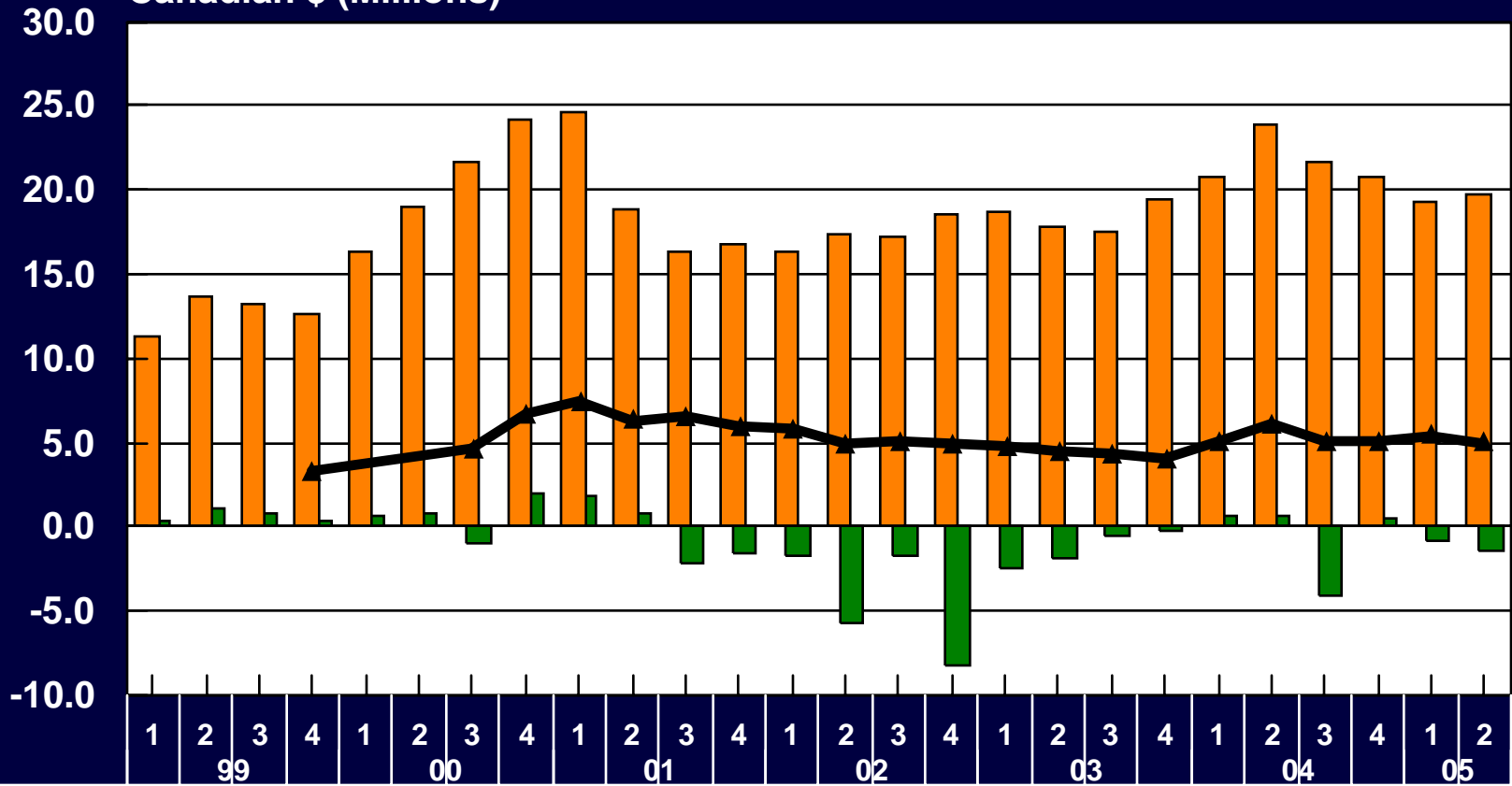
FY=CY

DDIC

Coretec Inc

Revenue, Net Income & Inventory

Canadian \$ (Millions)



Revenue	11.3	13.7	13.2	12.6	16.4	18.9	21.6	24.1	24.6	18.8	16.3	16.7	16.3	17.3	17.2	18.6	18.7	17.7	17.5	19.5	20.8	23.9	21.7	20.8	19.3	19.7
Income	0.3	1.1	0.7	0.3	0.6	0.8	-1.0	1.9	1.8	0.8	-2.2	-1.6	-1.7	-5.7	-1.7	-8.3	-2.5	-1.9	-0.5	-0.2	0.6	0.6	-4.1	0.5	-0.8	-1.4
Inventory				3.3			4.6	6.7	7.4	6.3	6.6	5.9	5.7	4.9	5.1	4.9	4.8	4.4	4.3	4.0	5.1	6.1	5.0	5.0	5.4	5.0

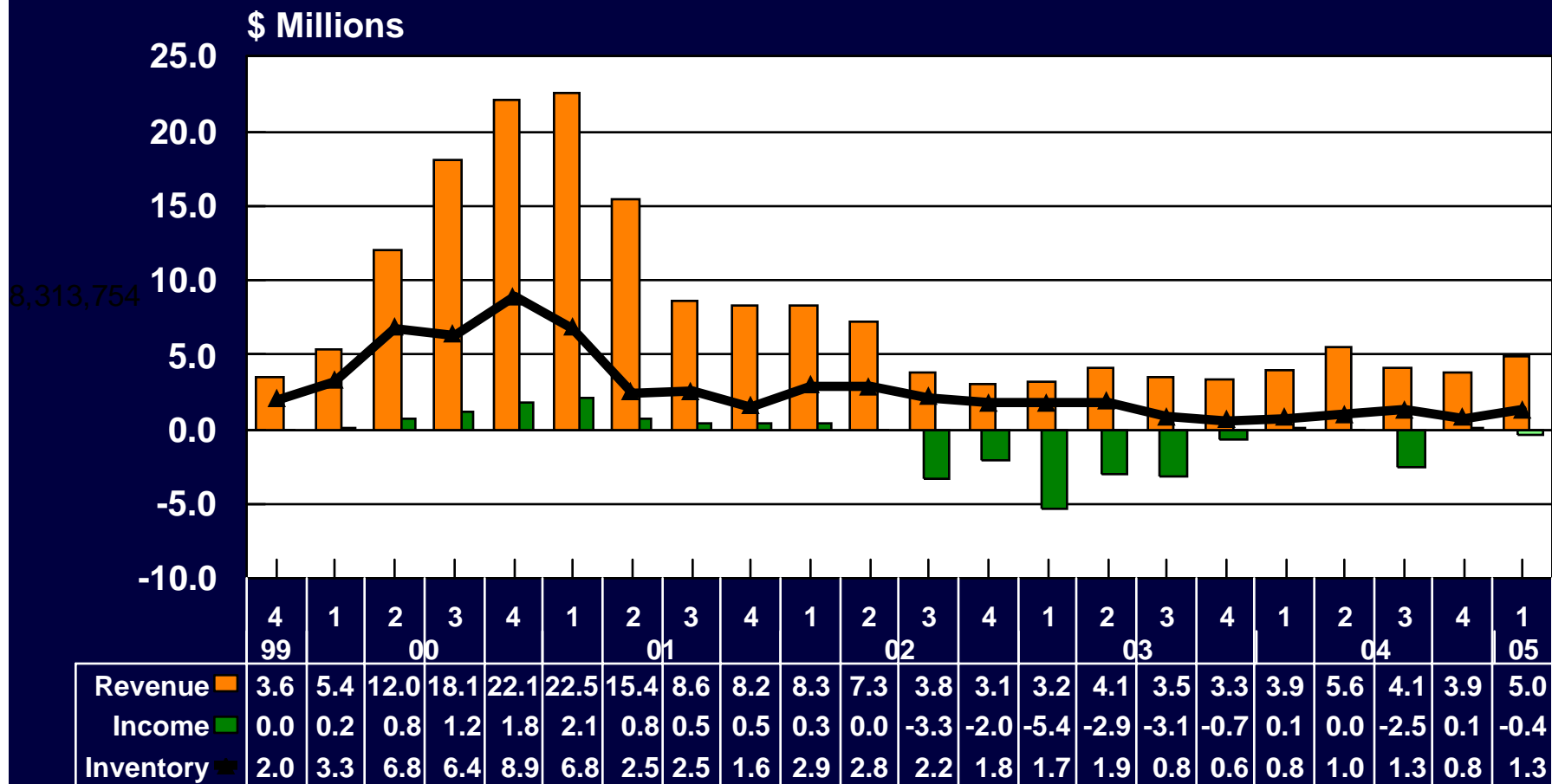
FY=CY

T:CY

M~WAV

Revenue & Net Income

"Acquiring substantially all the assets of Jayco Ventures for approximately \$1.4 million. M-Wave, Inc. forecasts its revenues of \$17.4 million (unaudited) in 2004 that may rise to approximately \$34.6 million for 2005, or nearly double, with the addition of 10 months of JVI projected revenues approximately \$15.3 million. " 2/28/05

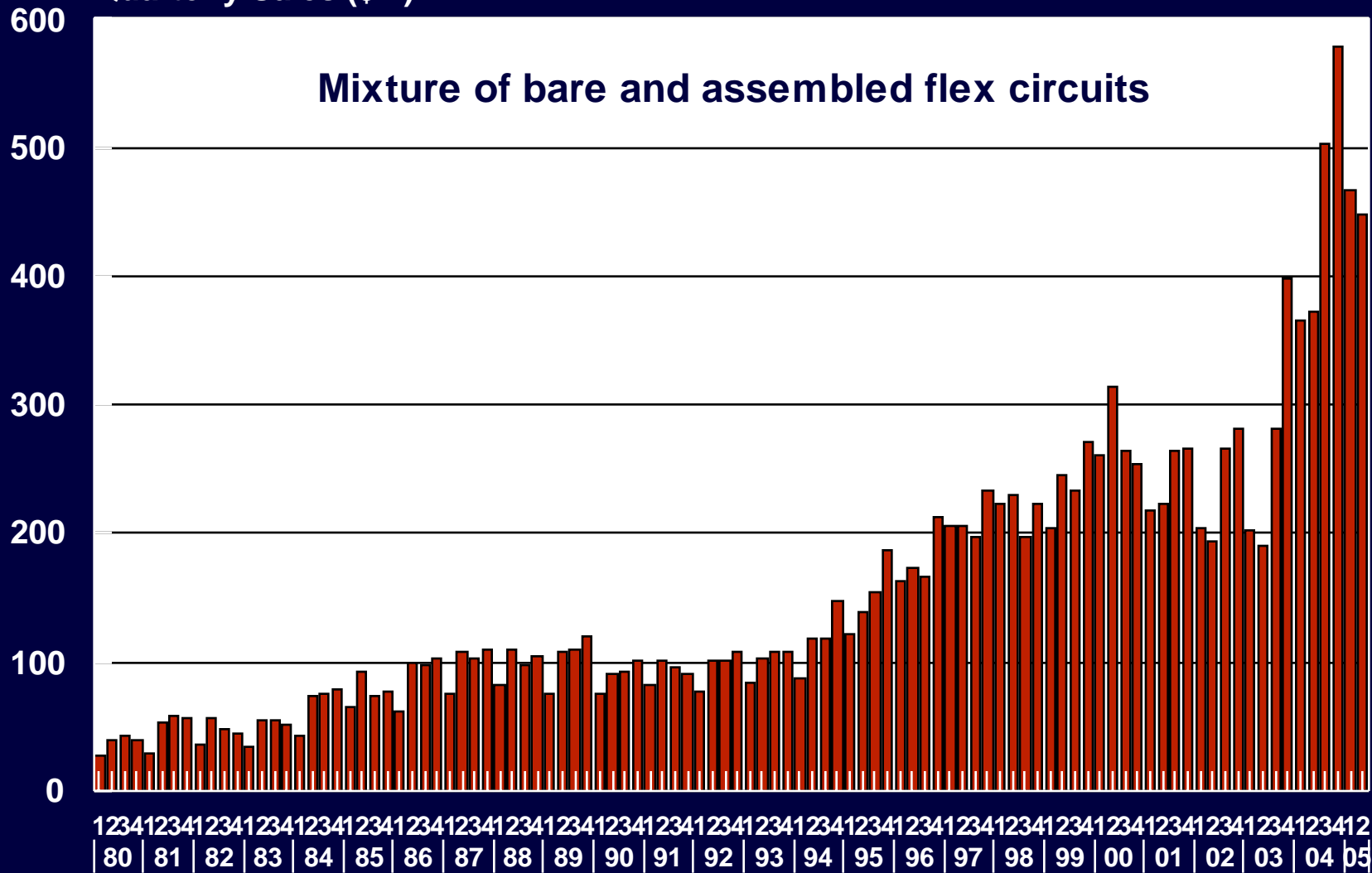


FY = CY

MWAV

N. AMERICAN FLEXIBLE PCB SHIPMENTS

Quarterly Sales (\$M)

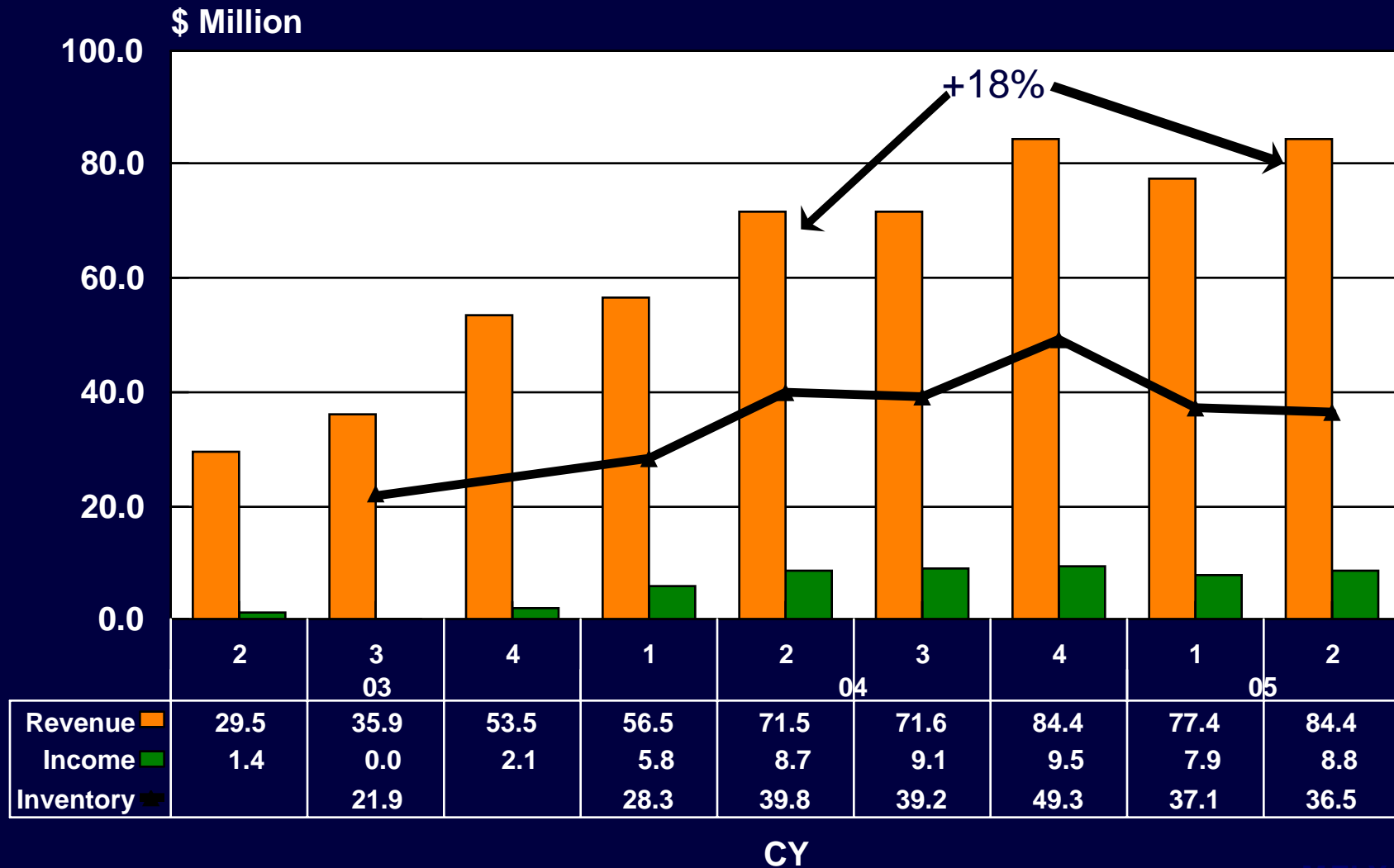


IPC T/MRC data with Custer interpretation

M-FLEX (Multi-Fineline Electronix)

Revenue, Net Income & Inventory

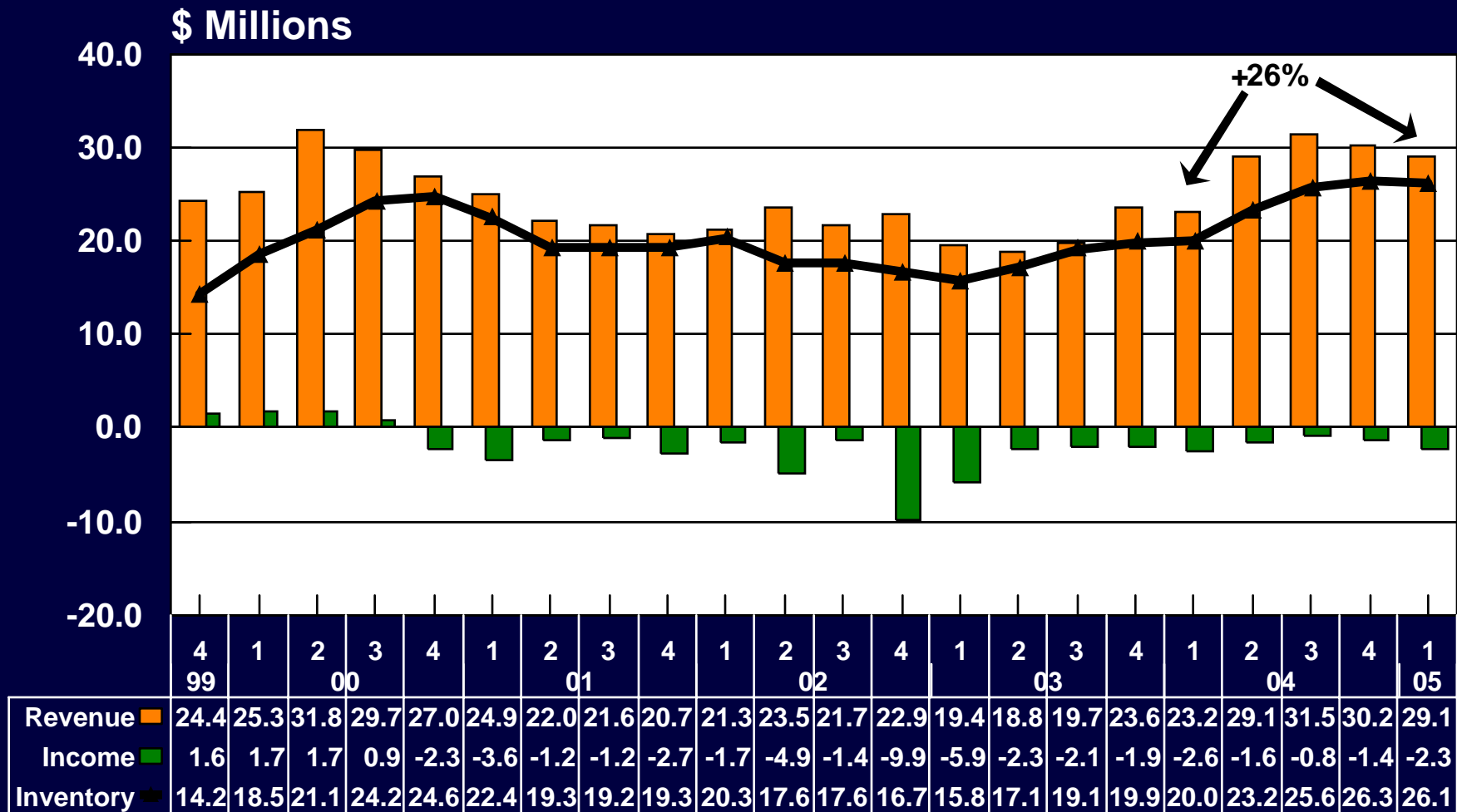
"We are particularly pleased with our success in expanding our customer relationships and sales to a second leading manufacturer in the wireless telecommunications sector while also continuing to grow our business with Motorola. In the near term, we expect our greatest opportunity for growth to be in the wireless telecommunications sector." 5/3/05



Parlex

Revenue, Net Income & Inventory

"The Company continues to add capacity and capability to our China operations where we expect to finish the year with sales topping \$50 million and operating income of approximately \$5 million. This represents growth of approximately 47% in revenues and 85% in operating income. We believe we can replicate this revenue growth in fiscal year 2006." 5/12/05



FY ends June 30

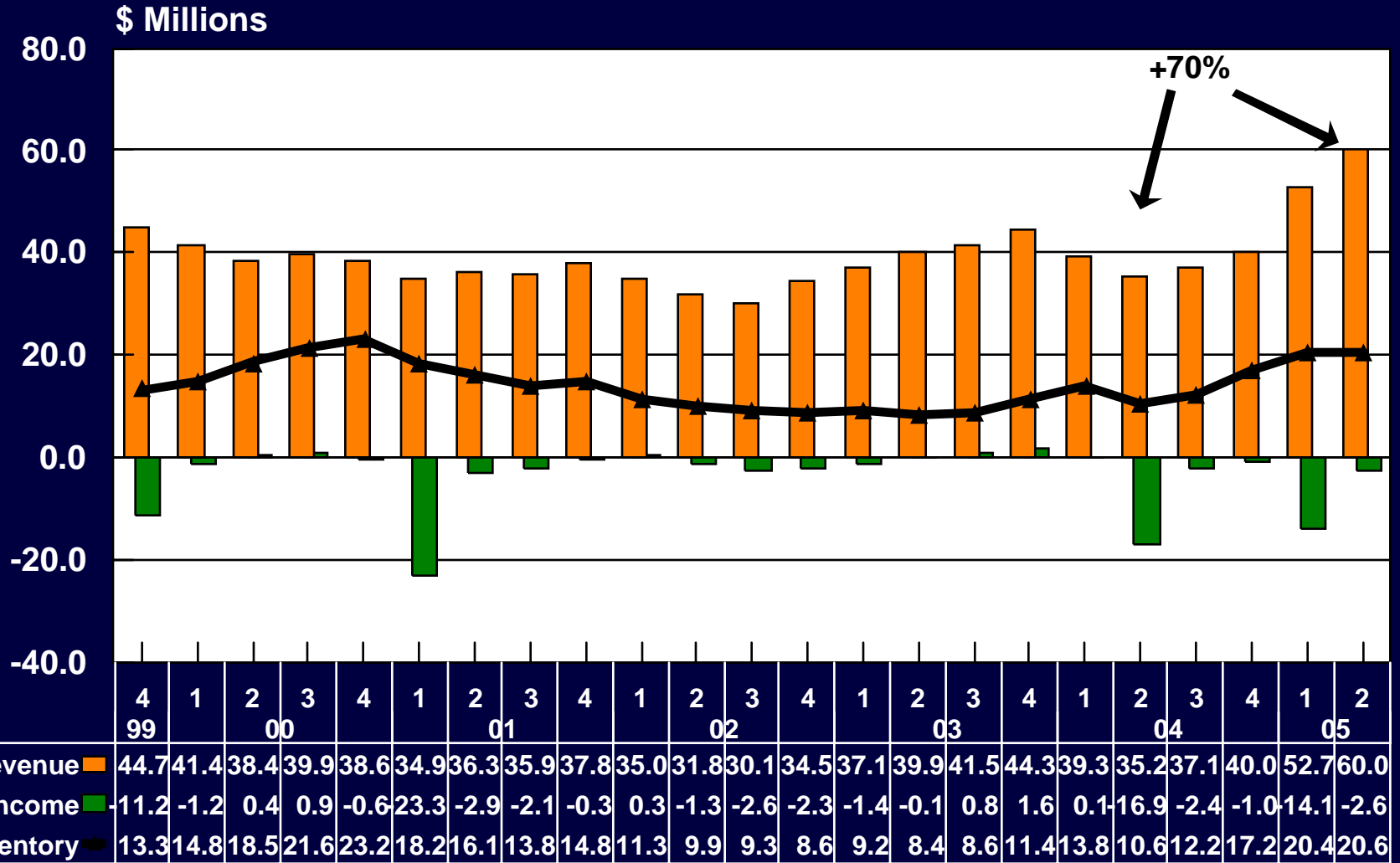
CY

PRLX

Innovex

Revenue, Net Income & Inventory

"Our Thailand facility expansion is complete and we expect product qualifications to be completed and product shipments to begin late in our fiscal 2005 fourth quarter. We should begin seeing cost savings of approximately \$1 million per quarter once the Maple Plain operations have been transferred to Thailand." 7/12/05



FY ends September

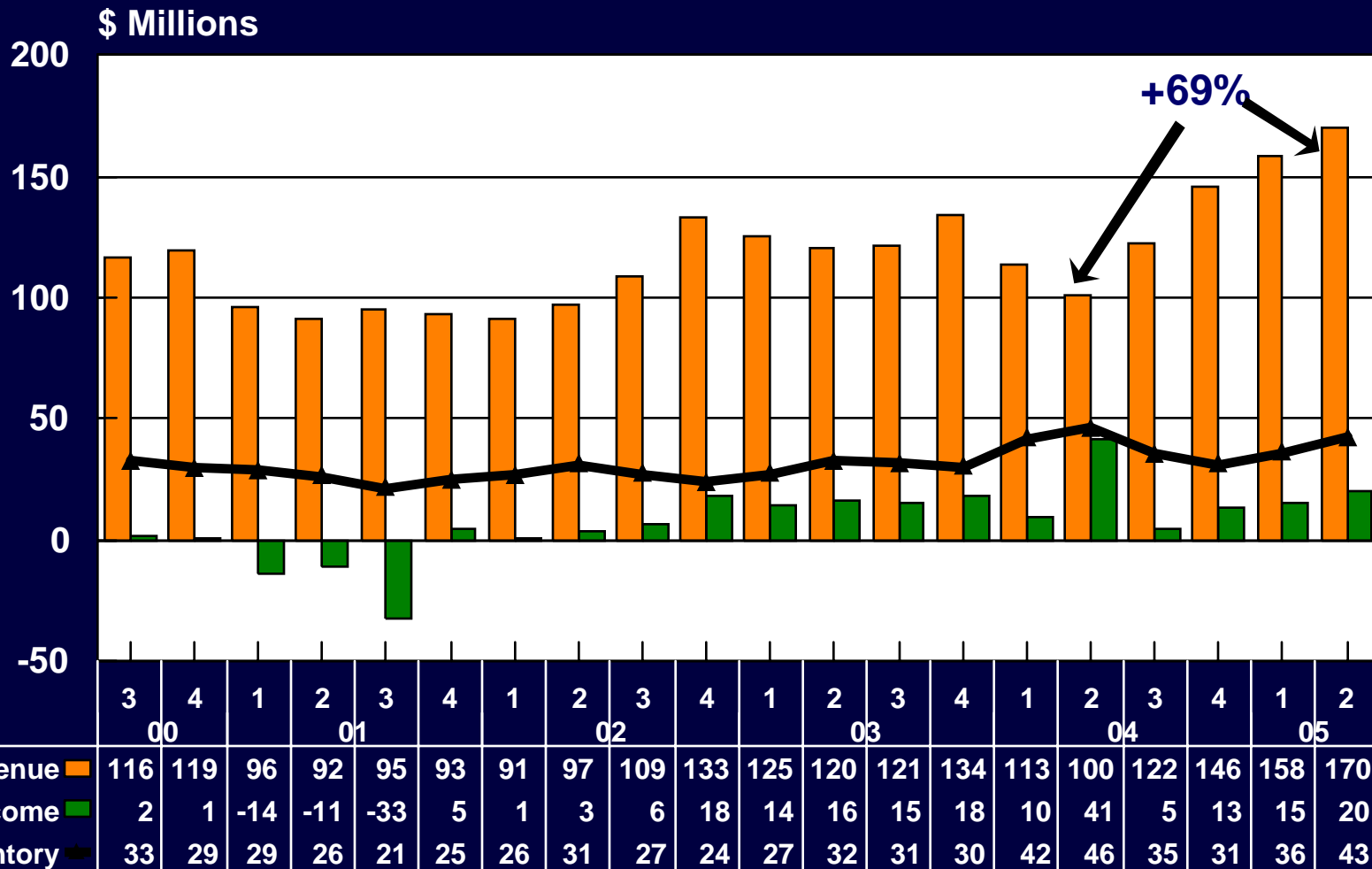
CY

INVX

Hutchinson Technology

Revenue, Net Income & Inventory

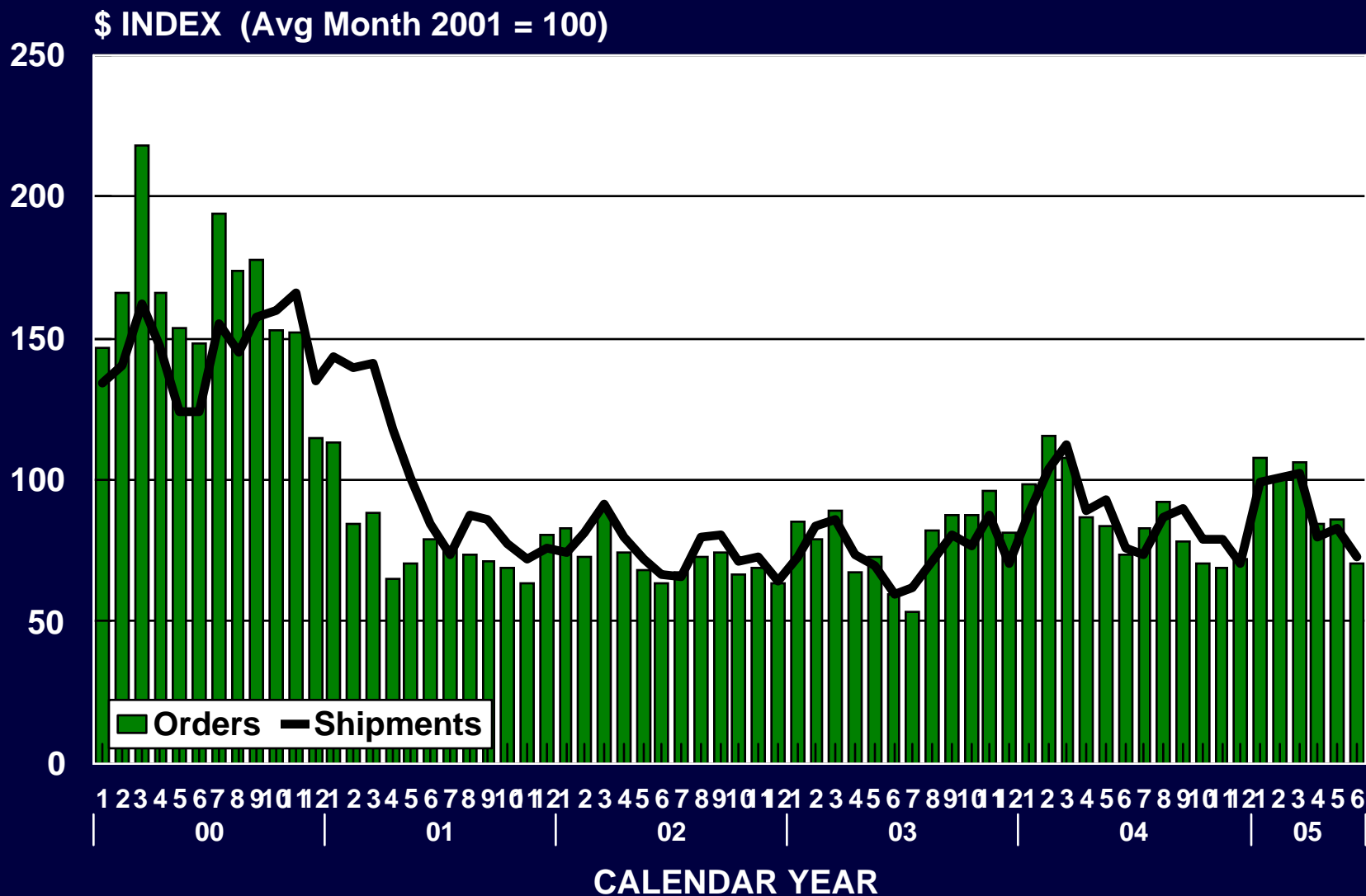
"demand for suspension assemblies remained strong in the third quarter, but that capacity constraints resulted in shipments below the company's initial expectations. "Our shipments increased for the fourth consecutive quarter and our net sales for the period reached a record high. We were however, unable to meet some customers' requirements fully because our additions to capacity for the quarter were short of our goals." 7/21/05



CY

HTCH

U.S. Rigid PCB Orders & Shipments



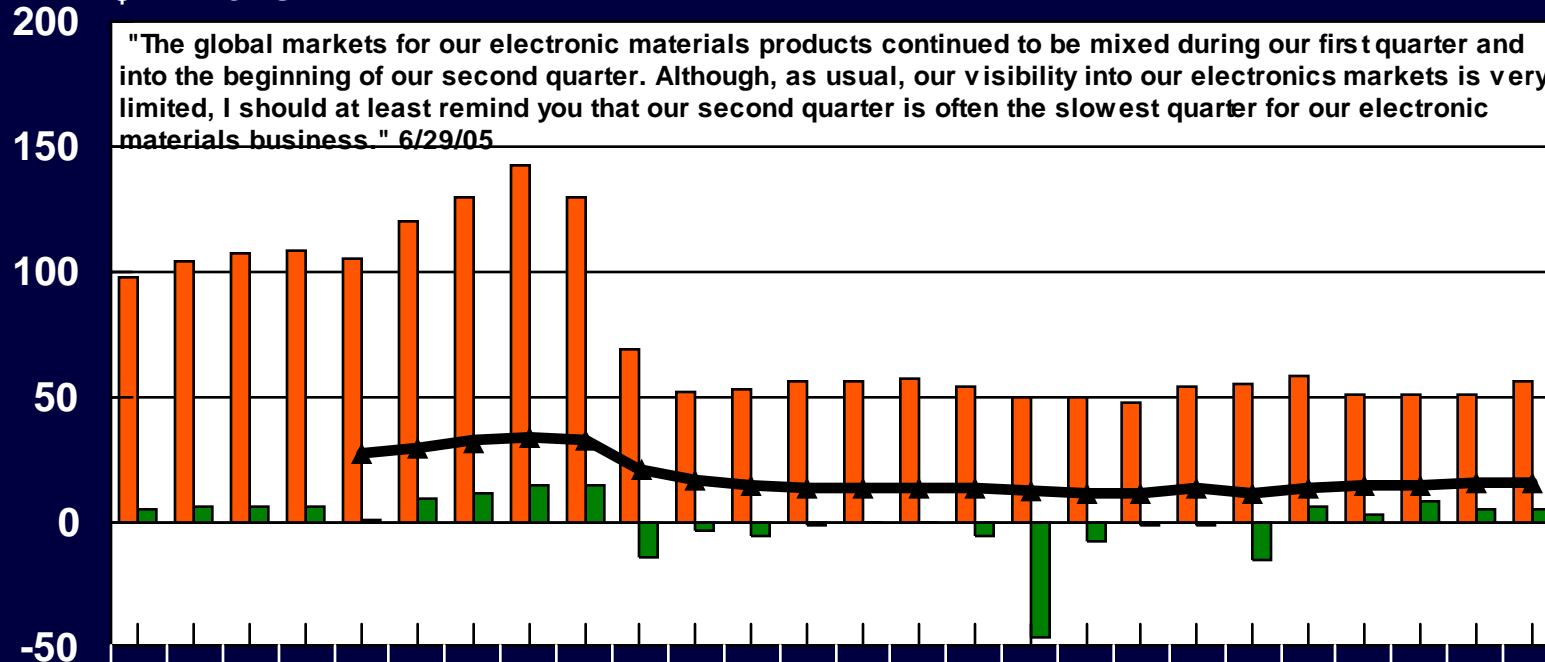
Materials

Park Electrochemical Corp

Revenue, Net Income & Inventory

\$ Millions

"The global markets for our electronic materials products continued to be mixed during our first quarter and into the beginning of our second quarter. Although, as usual, our visibility into our electronics markets is very limited, I should at least remind you that our second quarter is often the slowest quarter for our electronic materials business." 6/29/05



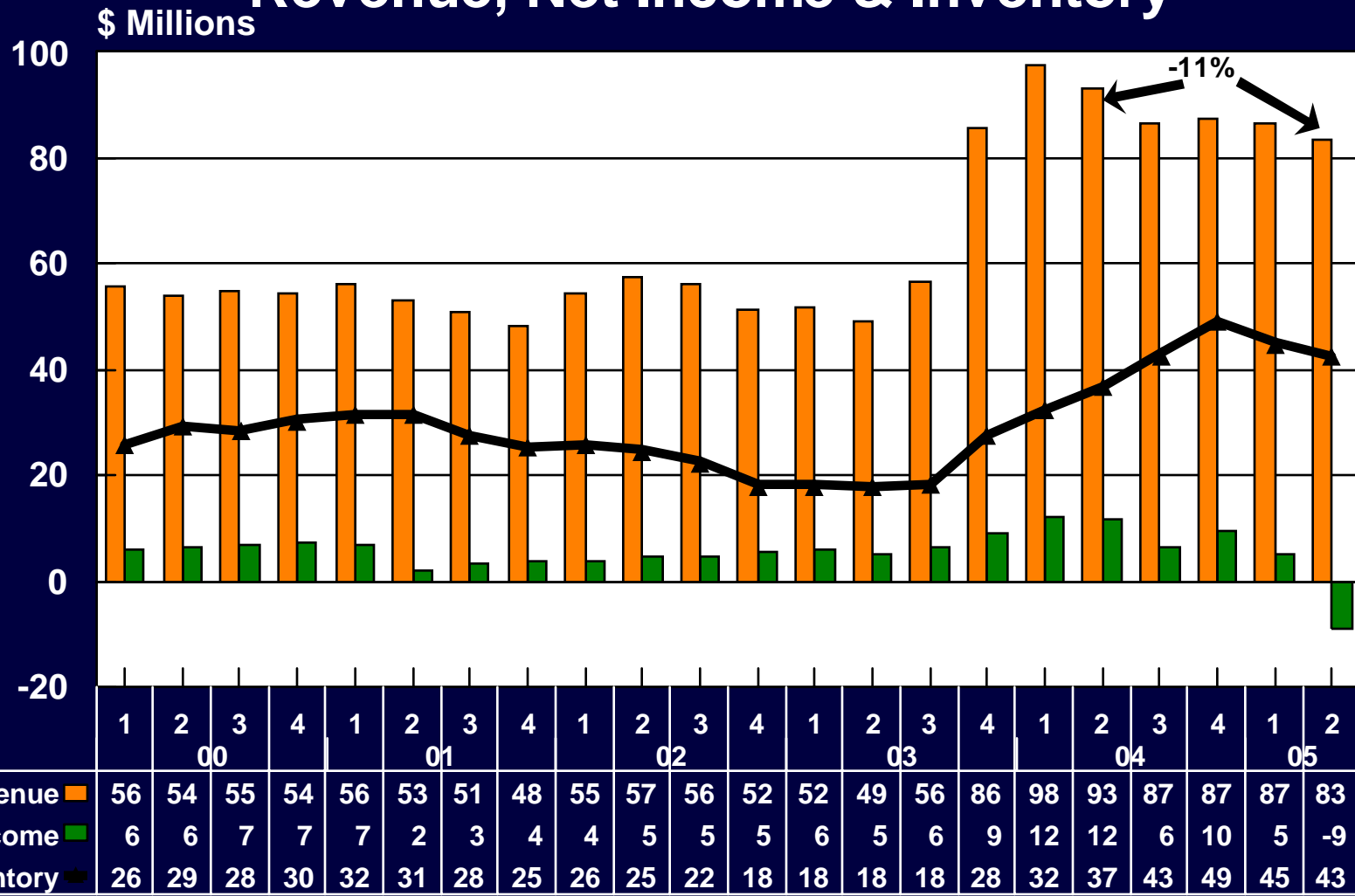
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2				
	99				00				01				02				03				04				05	
Revenue	98	105	108	108	105	120	130	143	130	69	52	53	57	57	57	54	50	50	47	54	55	59	51	50	51	56
Income	5	6	6	6	1	9	12	15	14	-15	-4	-6	-1	-1	-1	-5	-46	-8	-1	-2	-15	6	3	8	5	5
Inventory					27	29	32	34	32	21	17	14	13	14	13	13	13	11	11	13	12	14	14	14	15	15

CY

PKE

Rogers Corp

Revenue, Net Income & Inventory



CY

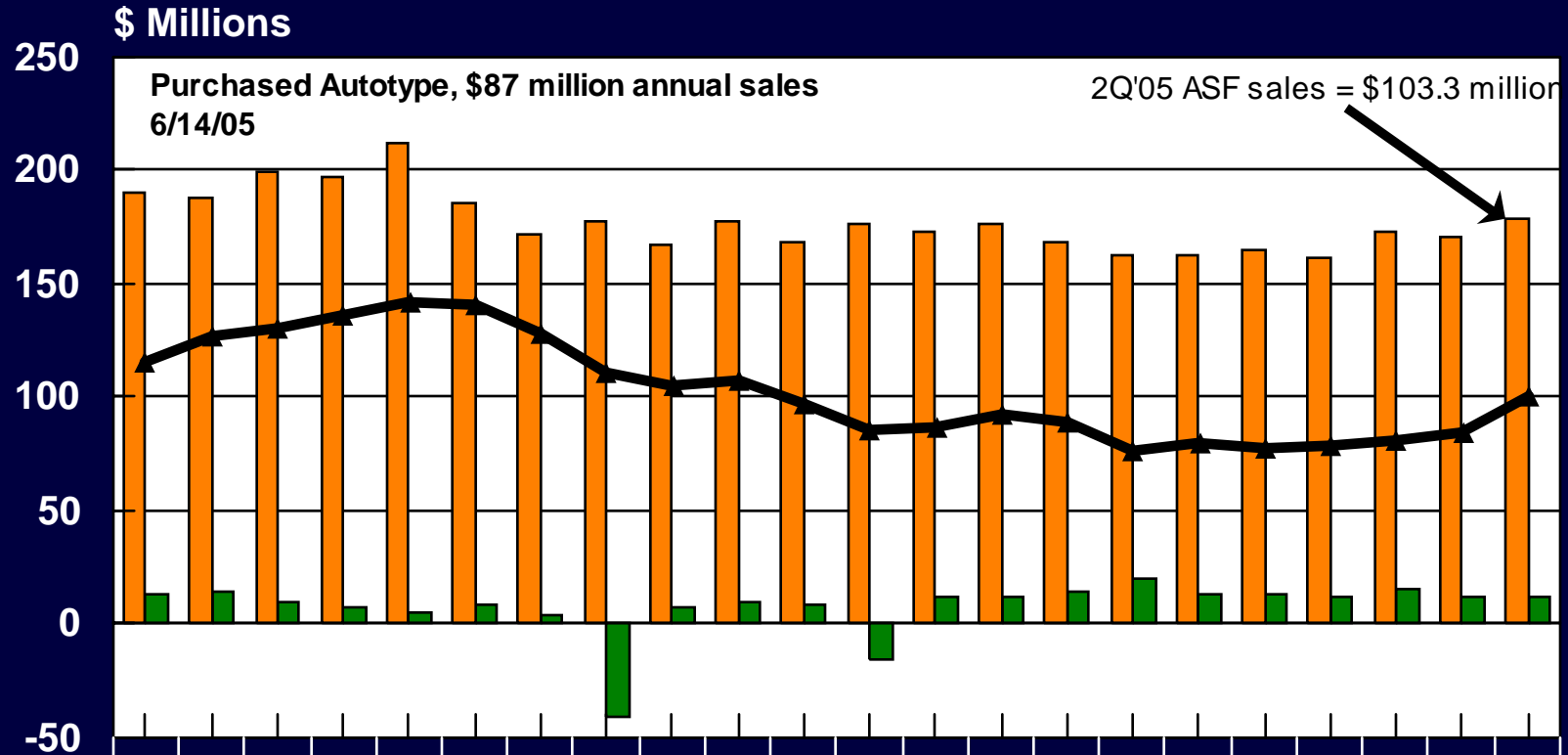
"The Printed Circuits Materials segment, specifically flexible circuits, was the primary cause of our reduced revenues and profits." 7/20/05

ROG

MacDermid Inc

Revenue, Net Income & Inventory

"The Advanced Surface Finishing business performed well. Difficult market conditions in the Americas and Europe were offset by excellent market conditions in Asia." 8/1/05



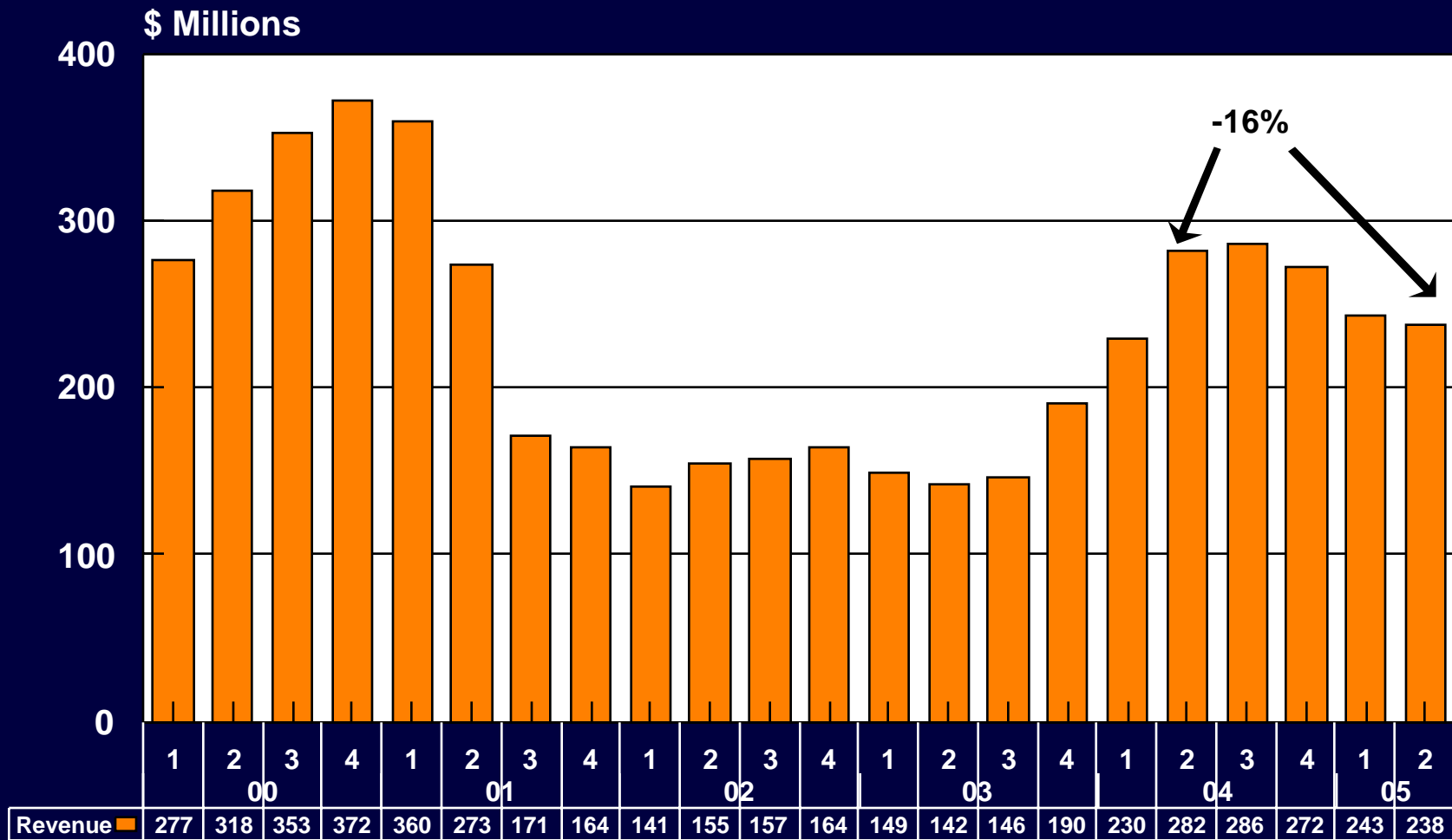
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	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Revenue	190	187	199	197	212	185	172	177	167	177	168	176	172	176	168	162	162	165	162	172	170	178
Income	13	14	9	7	5	8	4	-41	7	10	9	-16	12	12	13	19	13	13	12	15	12	12
Inventory	116	127	130	136	142	141	127	111	105	107	97	86	86	92	88	76	79	77	78	80	84	100

CY

MRD

Process Equipment Related Suppliers

Composite of 6 Companies



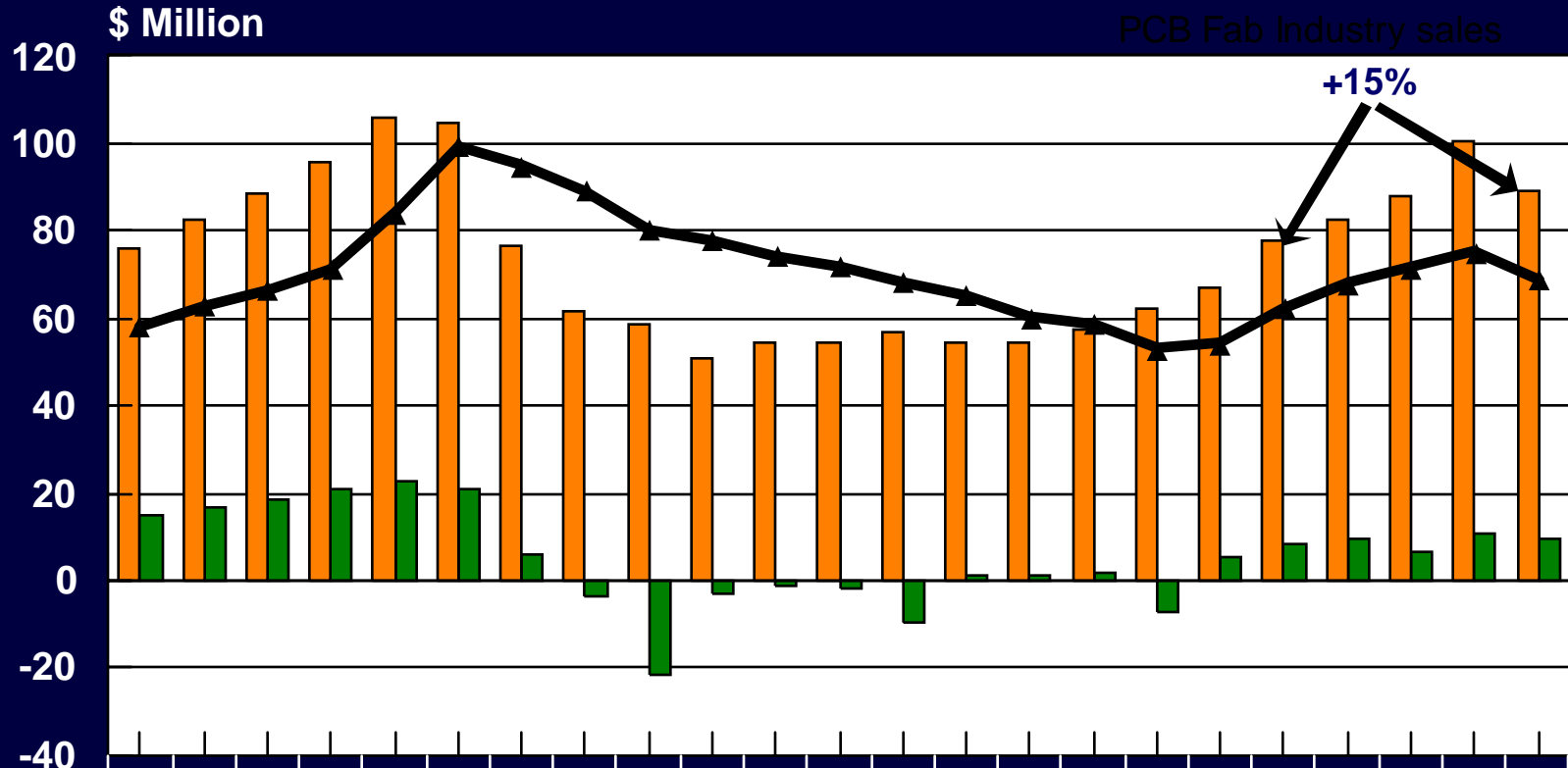
CY

C-Sun, Camtek, ESI, GSI Group, Orbotech, Valor
 NT\$ converted at fluctuating exchange

Orbotech

Revenue, Net Income & Inventory

"We are pleased with our financial results for the quarter, which demonstrate our continuing strategy of selective investments in research and development." 8/1/05



	4 99	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
	00				01				02				03				04				05		
Revenue	76	82	88	96	106	105	76	62	59	51	54	54	57	54	55	57	62	67	78	83	88	101	89
Income	15	17	19	21	23	21	6	-4	-22	-3	-1	-2	-10	1	1	2	-7	5	9	9	6	11	10
Inventory	58	63	66	71	84	100	95	89	80	78	74	72	68	65	60	58	53	54	62	68	72	75	69

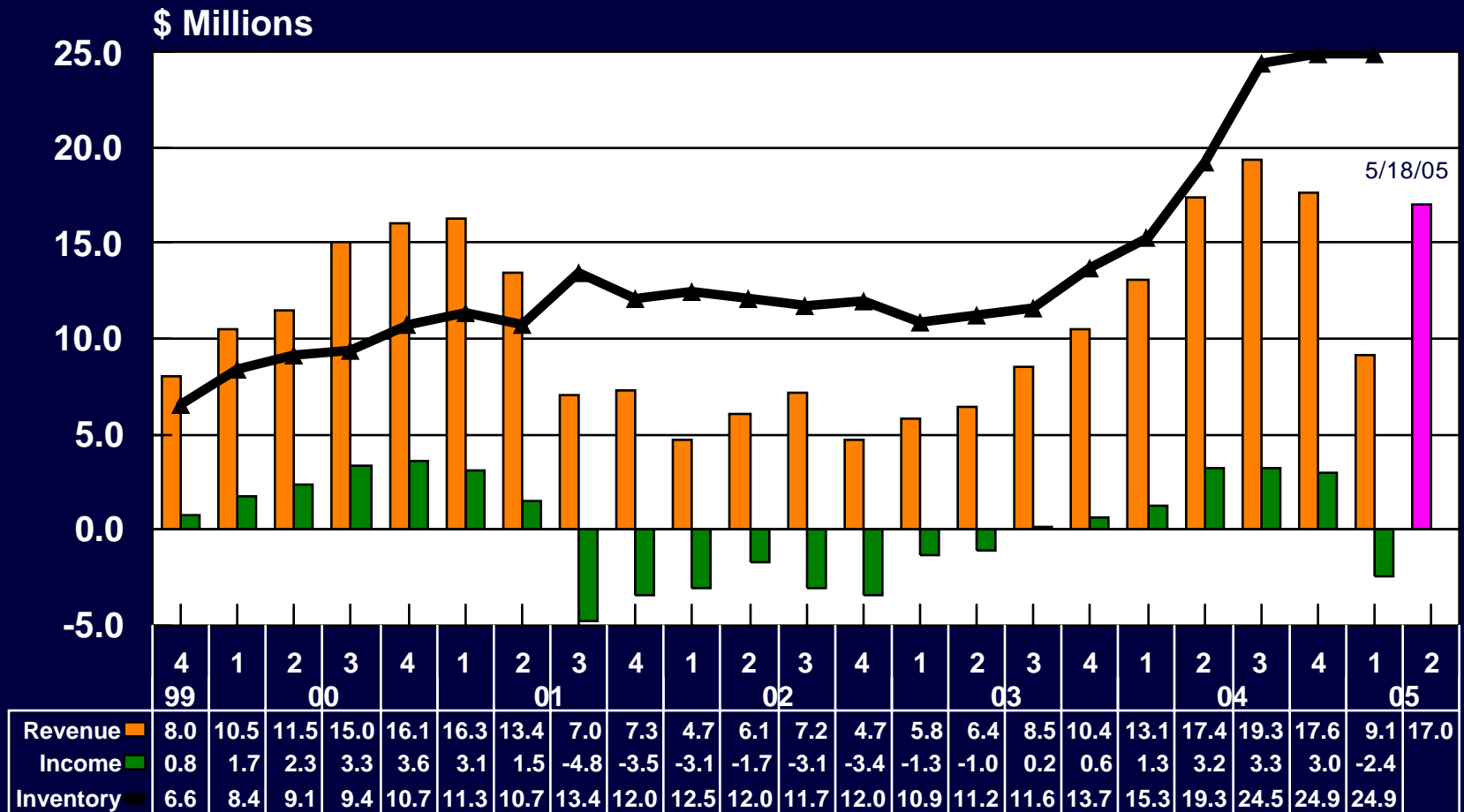
CY

ORBK

Camtek Ltd

Revenue, Net Income & Inventory

"As we previously forecast in our guidance and preliminary results announcement that we issued in April, our revenues this quarter represent a decline in sales to the PCB industry. We attribute this decline to a manufacturing capacity correction after the stellar growth of 2004". We believe that the impact of these negative factors has now passed, and we are already seeing a significant rebound in orders from the PCB industry as well as continued growth in our sales to the semiconductor industry. Therefore, we reiterate our guidance that our revenues will return to the \$16-18 million level for the second quarter." 5/18/05



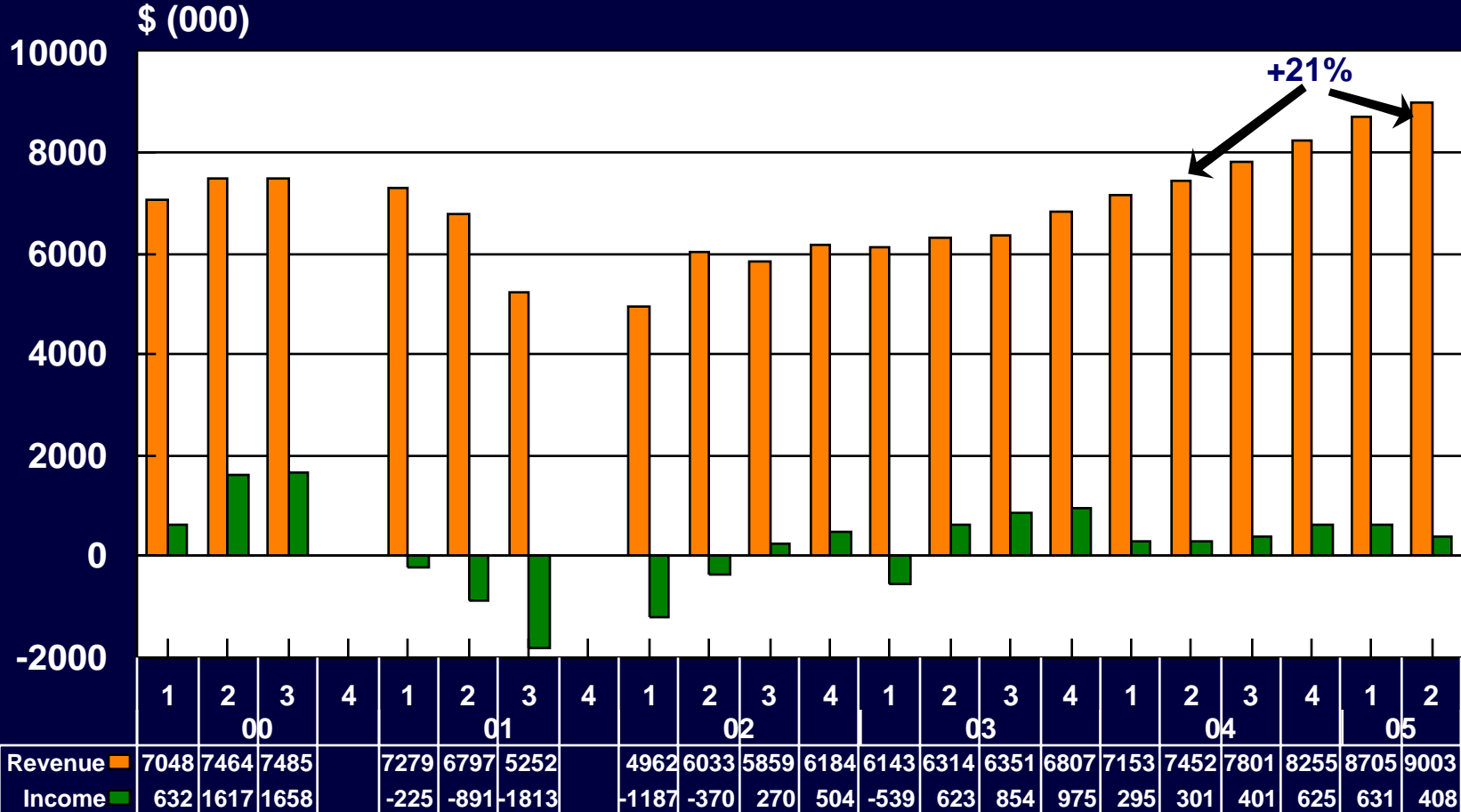
CY

CAMT

Valor Computerized Systems

Revenue & Net Income

"With our current momentum and market position we expect to continue our growth trend and meet our goals during the upcoming quarters" 8/01/05

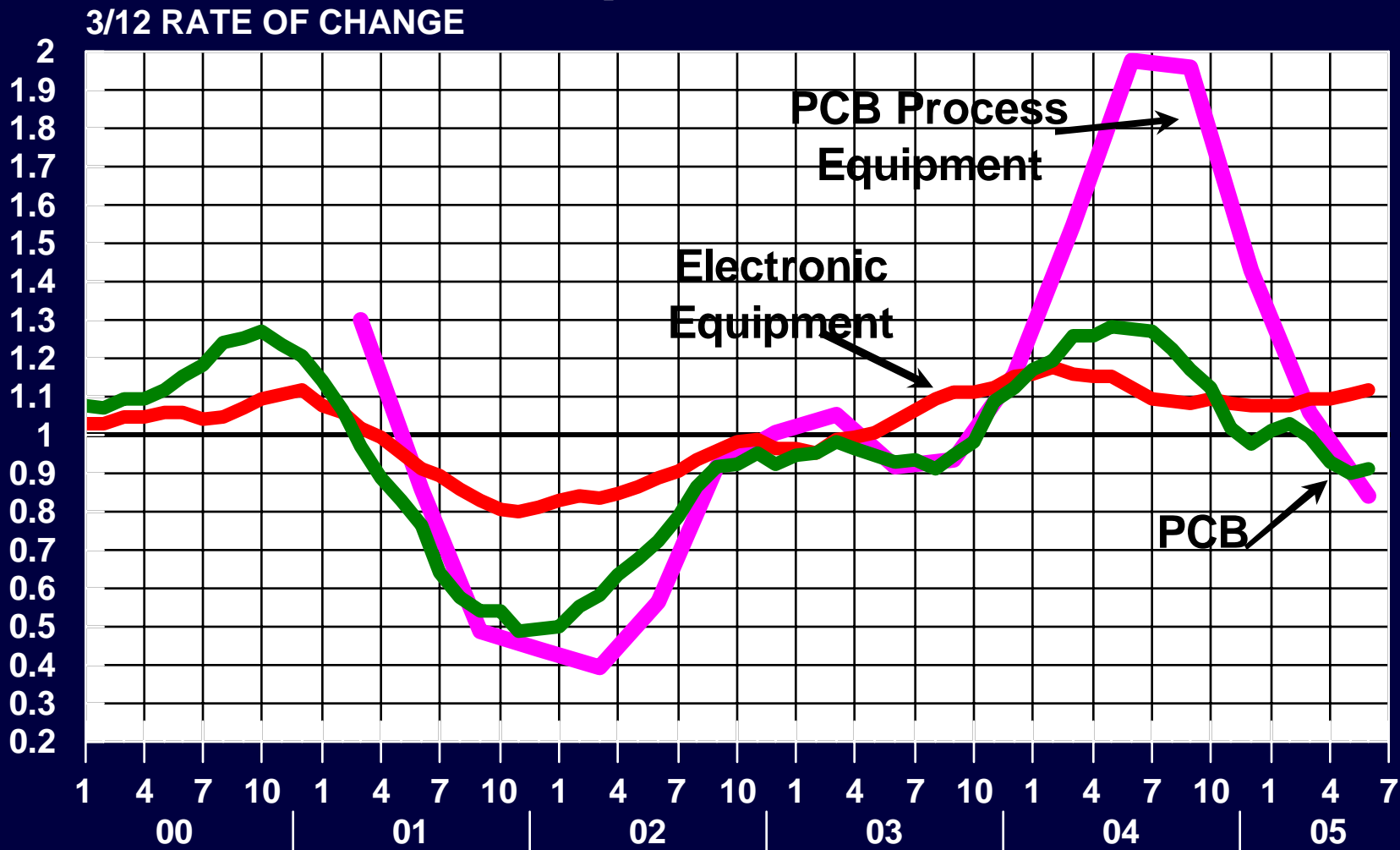


CY

C.VAC

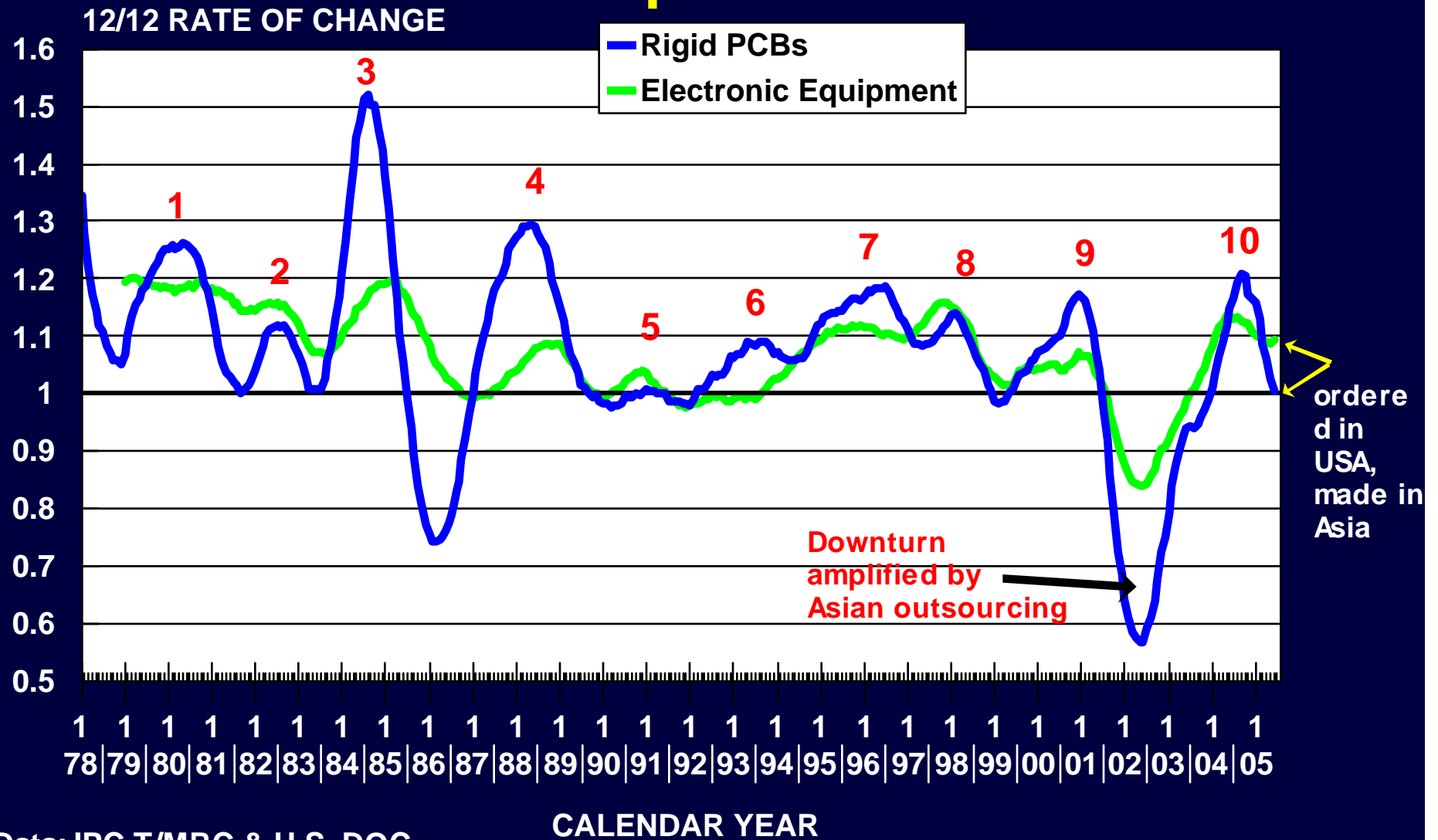
Growth Rates & Future Outlook

U.S. Electronic Equipment, N. American Rigid PCBs & PCB Process Equipment \$ Shipment Growth



IPC, U.S. Dept of Census & Process Equipment Financial Reports

N American PCB vs US Electronic Equipment Shipments



Data: IPC T/MRC & U.S. DOC

PRESENT GROWTH RATES (%)

U.S. ECONOMY & ELECTRONICS INDUSTRY

	LATEST MONTH	ANNUAL GROWTH RATE	3-MONTH GROWTH RATE
RIGID PCB ORDER \$	6/05	96.7	98.2
RIGID PCB SHIPMENT \$	6/05	100.6	91.4
FLEX CIRCUIT ORDER \$	6/05	146.8	116.0
FLEX CIRCUIT SHIPMENT \$	6/05	140.9	120.0
SEMICONDUCTOR SHIPMENT \$	6/05	112.7	100.2
ELECTRONIC EQUIPMENT ORDER \$			
COMPUTER & RELATED	6/05	117.1	125.1
COMMUNICATIONS	6/05	113.7	111.4
MEDICAL, MEASUREMENT & CONTROL	6/05	101.1	100.3
SEARCH & NAVIGATION	6/05	103.4	103.2
TOTAL ELECTRONIC EQUIPMENT	6/05	109.9	111.8
INDUSTRIAL PRODUCTION	6/05	103.9	103.2

NOTE: 3 month growth rates compare most recent 3 months to same 3 months one year earlier

Summary

- **Post-2000 "implosion" is behind us. 2005 began "flat" in N. America. Second half should be seasonally stronger**
- **Electronic component manufacturing "center of gravity" has shifted to SE Asia (Especially China)**
- **Niche and military markets now drive N America**
- **High energy costs, political instability, rising interest rates and trade & currency imbalances are all issues**
- **Excess capacity and price/margin degradation threatens the entire PCB food chain.**
- **Mildly revalued yuan = mixed reaction**

Recent Activities

China/Taiwan seeking global market position & brand identity. Examples: Lenovo/IBM; Huawei/3COM & Marconi, BenQ/Siemens

Taiwan EMS providers moving up food chain

Auto electronics is an Asian focus

Motherboard PCBs & chipset shortages in fall "busy season", RoHS compliance likely will be disruptive.

Energy shortages, rising material costs, excess capacity and declining PCB prices/margins are key issues

Assemblers rethinking China as low cost area - logistics

issues, rising wages & stronger currency are concerns

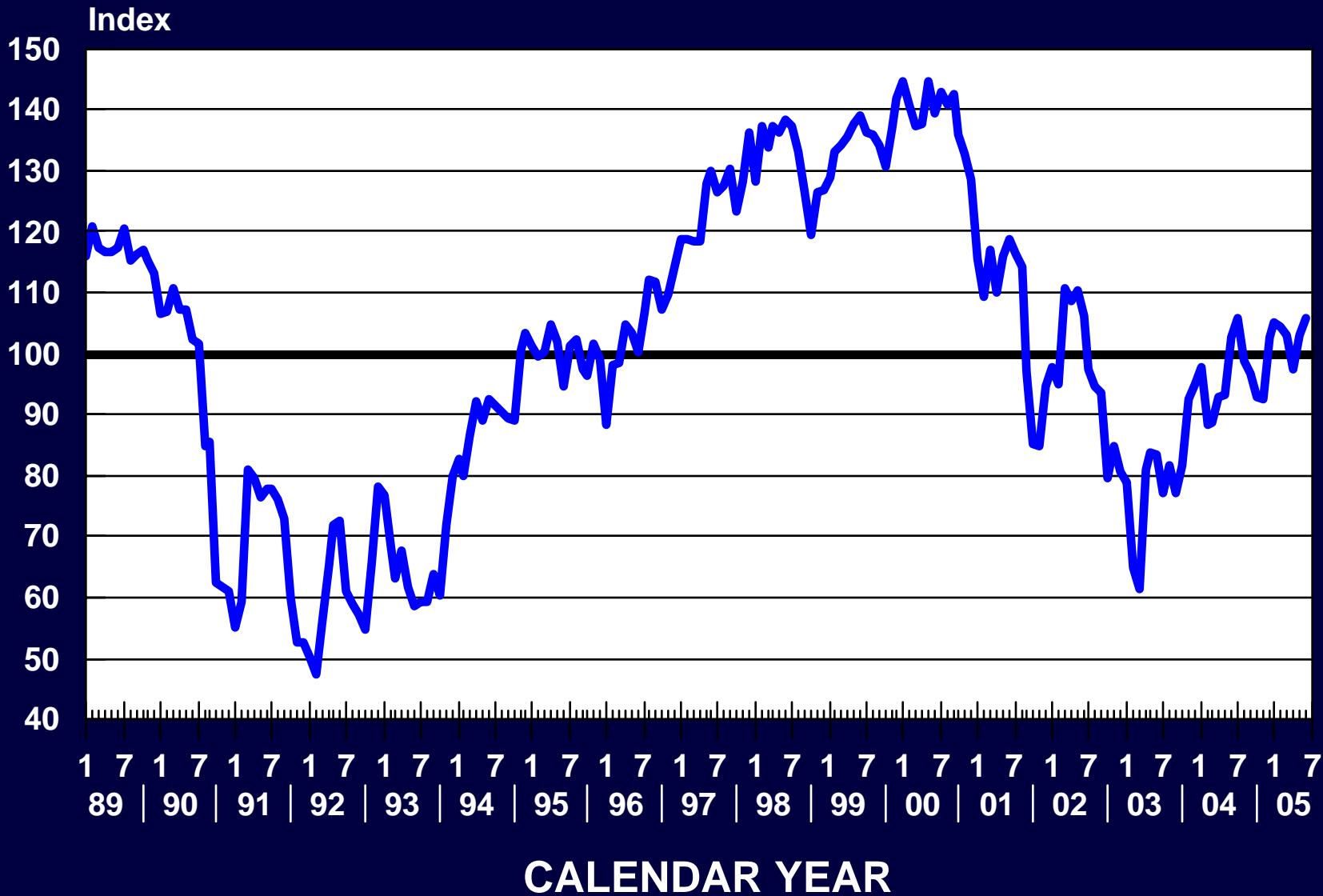
N. American & European Market Strengths

- **Military, security & medical electronics**
- **Intellectual property & "sensitive" content issues**
- **Quick turn & prototype**
- **High product mix; shorter run**
- **Global diversity - spread production over multiple continents**
- **Local support - engineering, collaboration**
- **Assurance of continuity of local suppliers**

It's not all gloom

**U.S. economy is
improving**

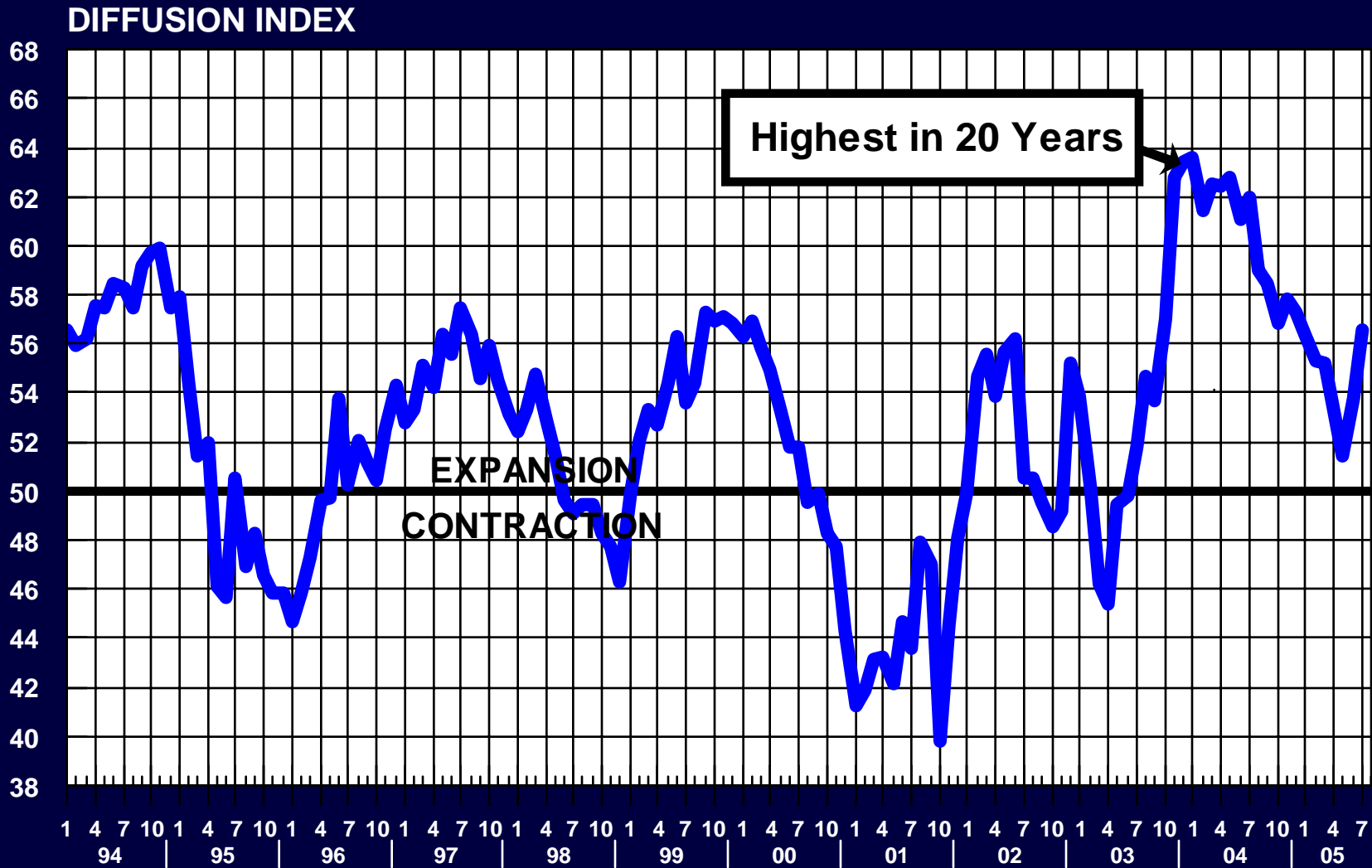
Consumer Confidence



Conference Board

www.conference-board.org/economics/bci/dataseries3.cfm?cid=1

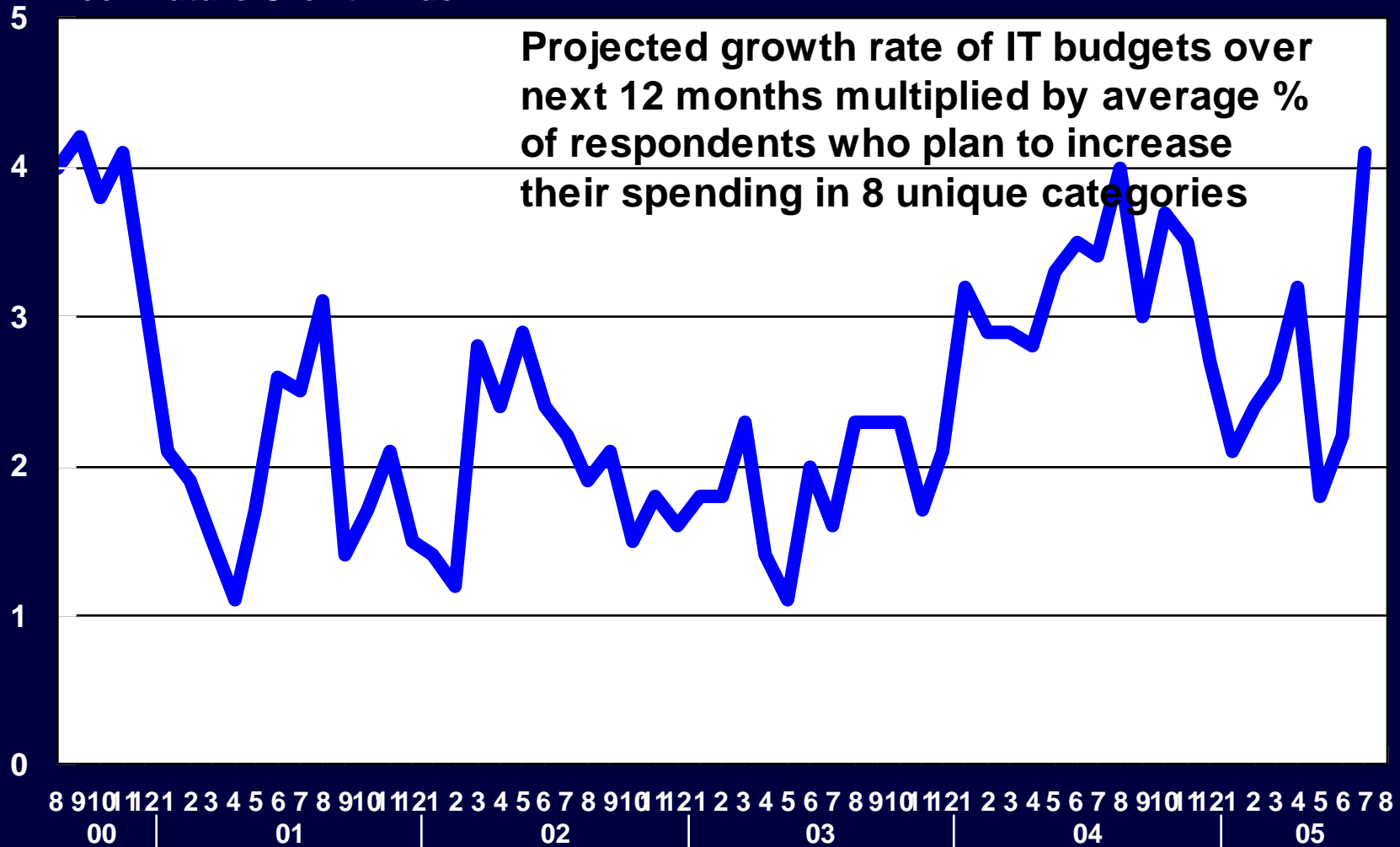
U.S. "Purchasing Managers" Index



CIO Magazine Tech Future Growth Index

Projects IT spending activity over the next 12 months

Tech Future Growth Index



www.cio.com/info/releases/

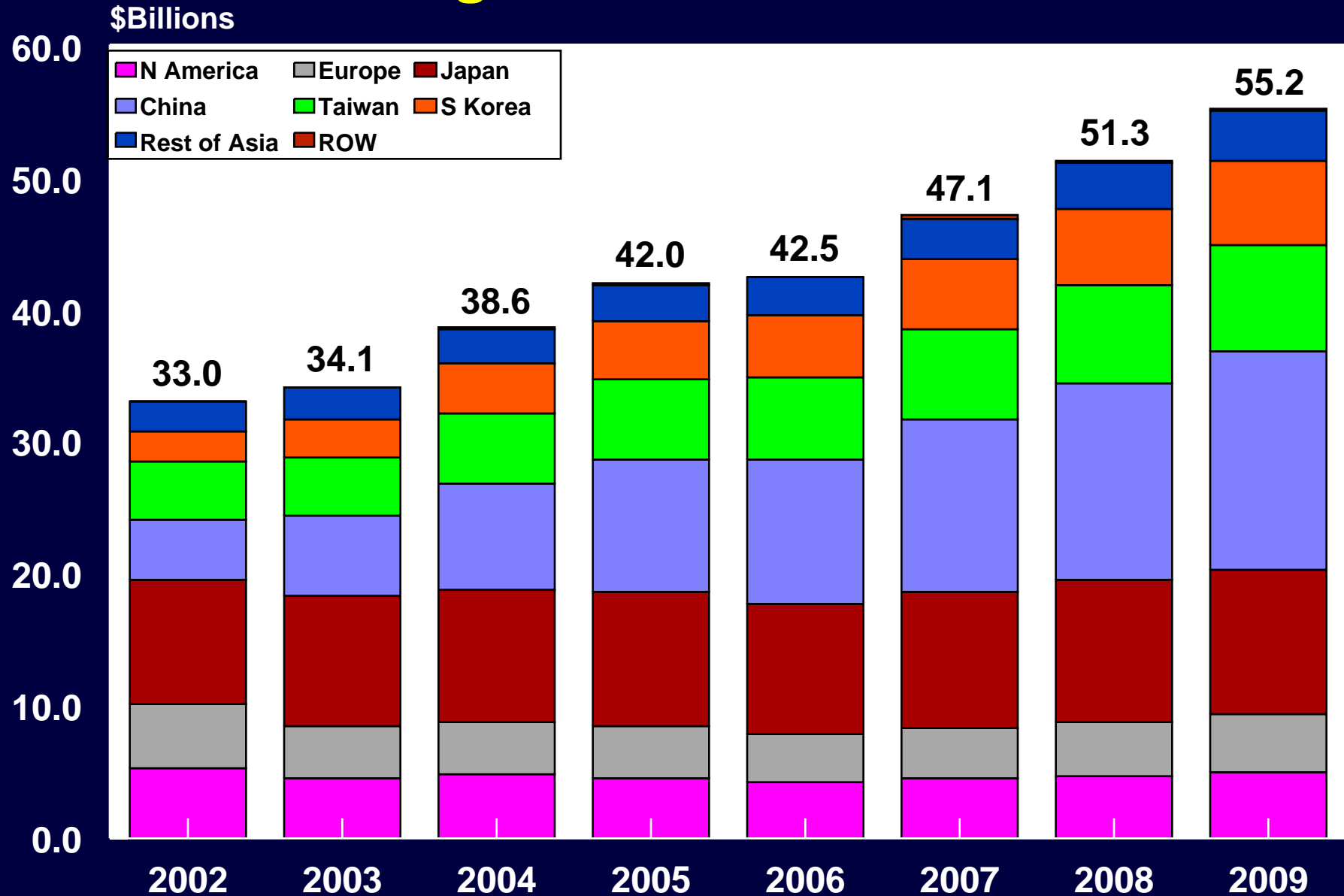
Forecasts

Electronic Equipment Production Growth

Current \$ Growth Rates Converted @ Constant Exchange Rates

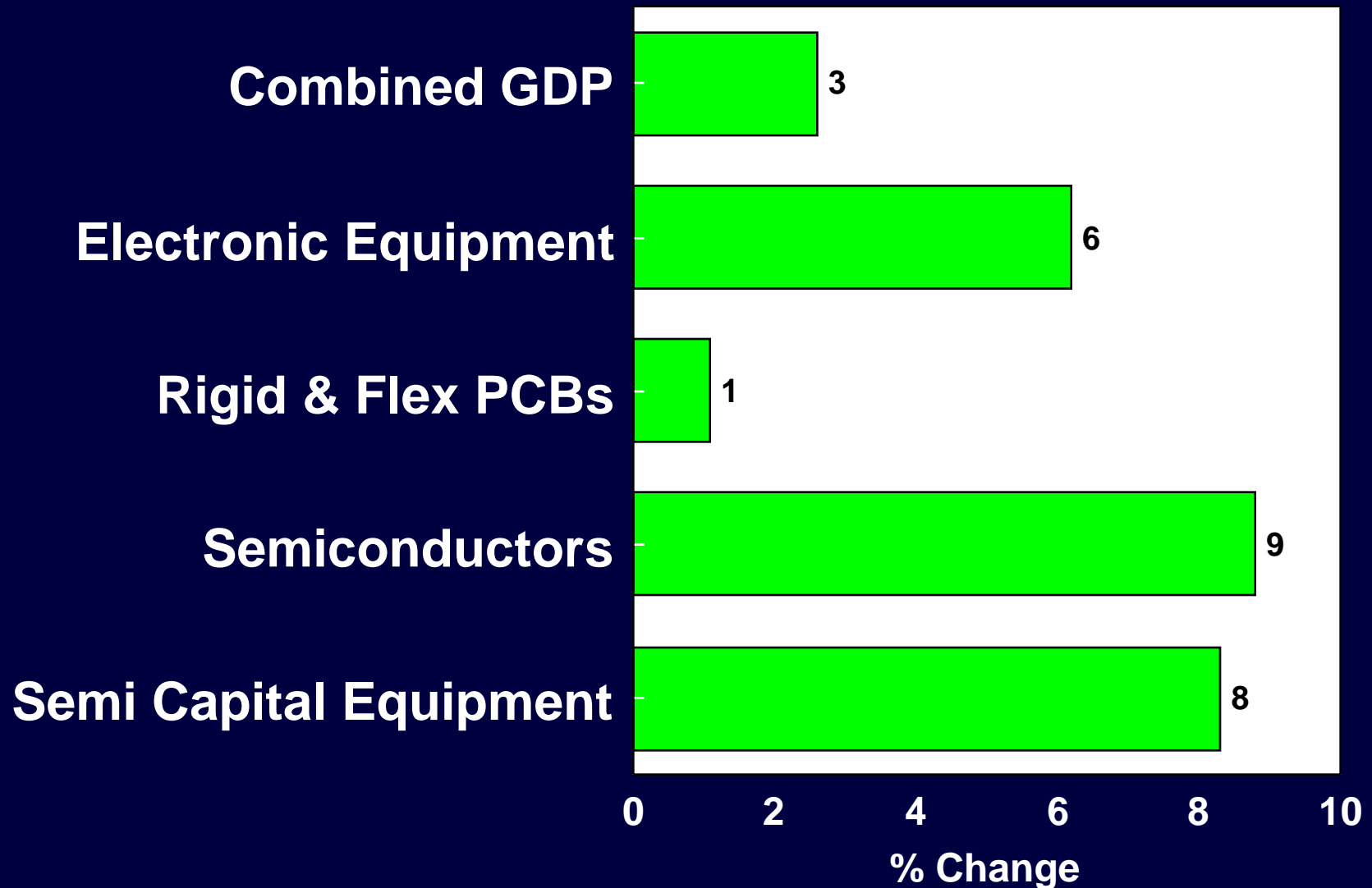
	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
World	6.8	11.8	9.6	6.2	8.9
USA	4.3	10.4	8.0	3.3	5.8
W Europe	-1.5	3.1	2.2	0.9	3.1
Japan	6.9	2.3	-1.7	-2.2	3.7
Four Tigers	5.1	14.1	9.7	5.8	8.8
China	32.6	36.5	30.3	21.3	20.3

World Rigid & Flex PCB Production



Henderson Ventures 6/05 (converted @ constant 2004 exchange)

Global "Electronic Foodchain" Outlook 2006 vs 2005



Thank you

Ed Henderson

www.hendersonventures.com

Dr Hayao Nakara

NT Information Systems

**And special thanks to
our sponsor**

**Siemens
Logistics & Assembly Systems**