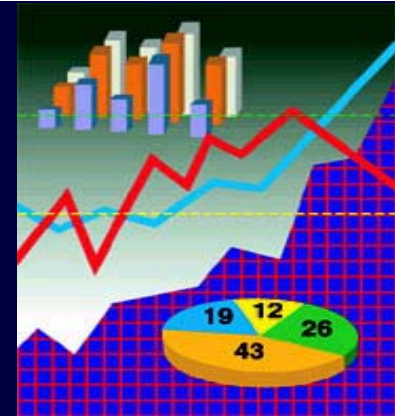


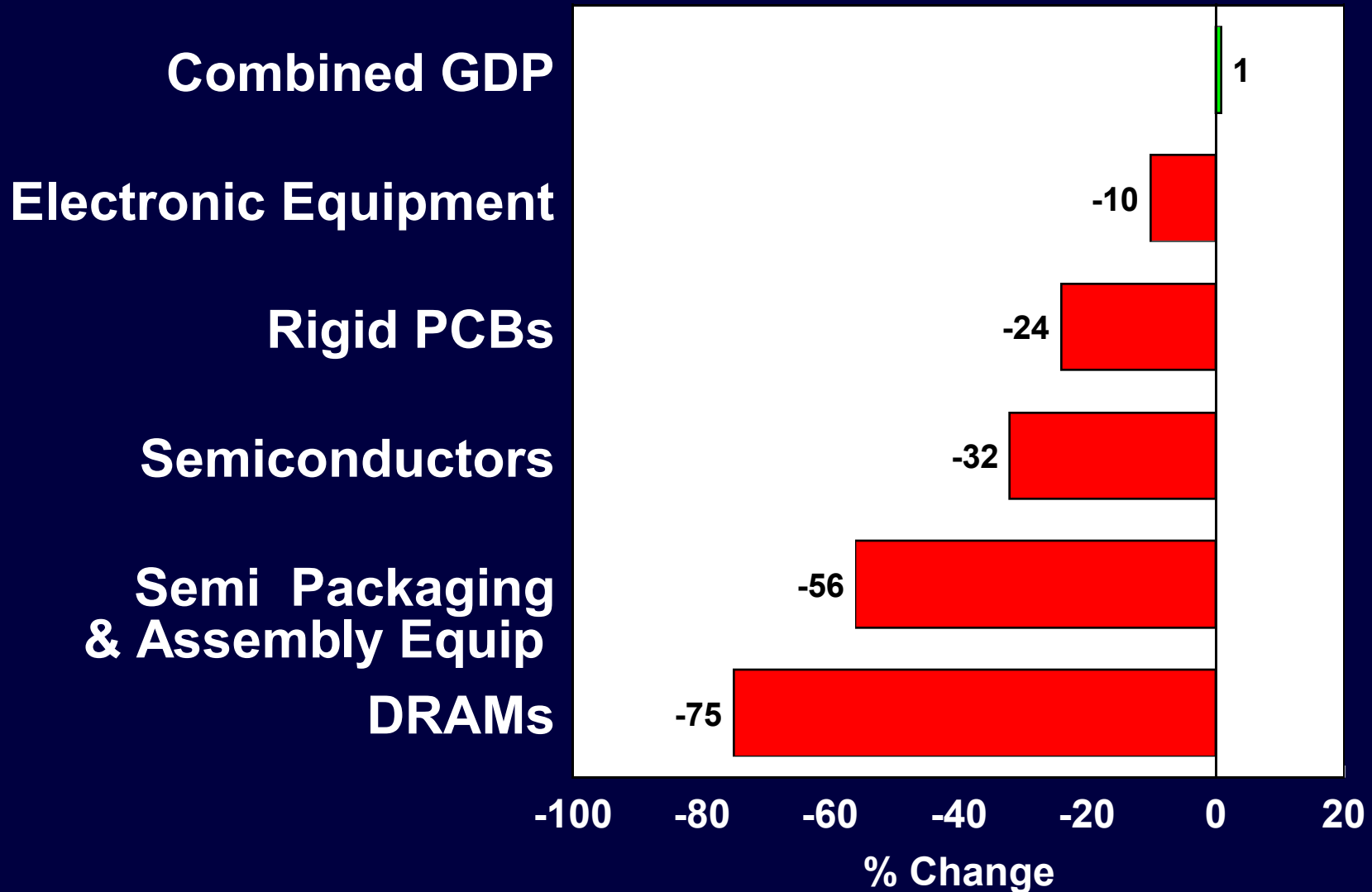
Business Outlook...



Bumpy (but improving) Recovery

WALT CUSTER
CUSTER CONSULTING GROUP
www.custerconsulting.com
November 2002

Global Impact 2001 vs 2000



Causes of Recession

Inventory corrections

Collapse in demand for Fixed Telecom & Internet Infrastructure equipment

Overcapacity/Price Degradation

Economic downturn

Manufacturing shifts to lower cost areas

September 11 attacks

Accounting scandals

Current Situation

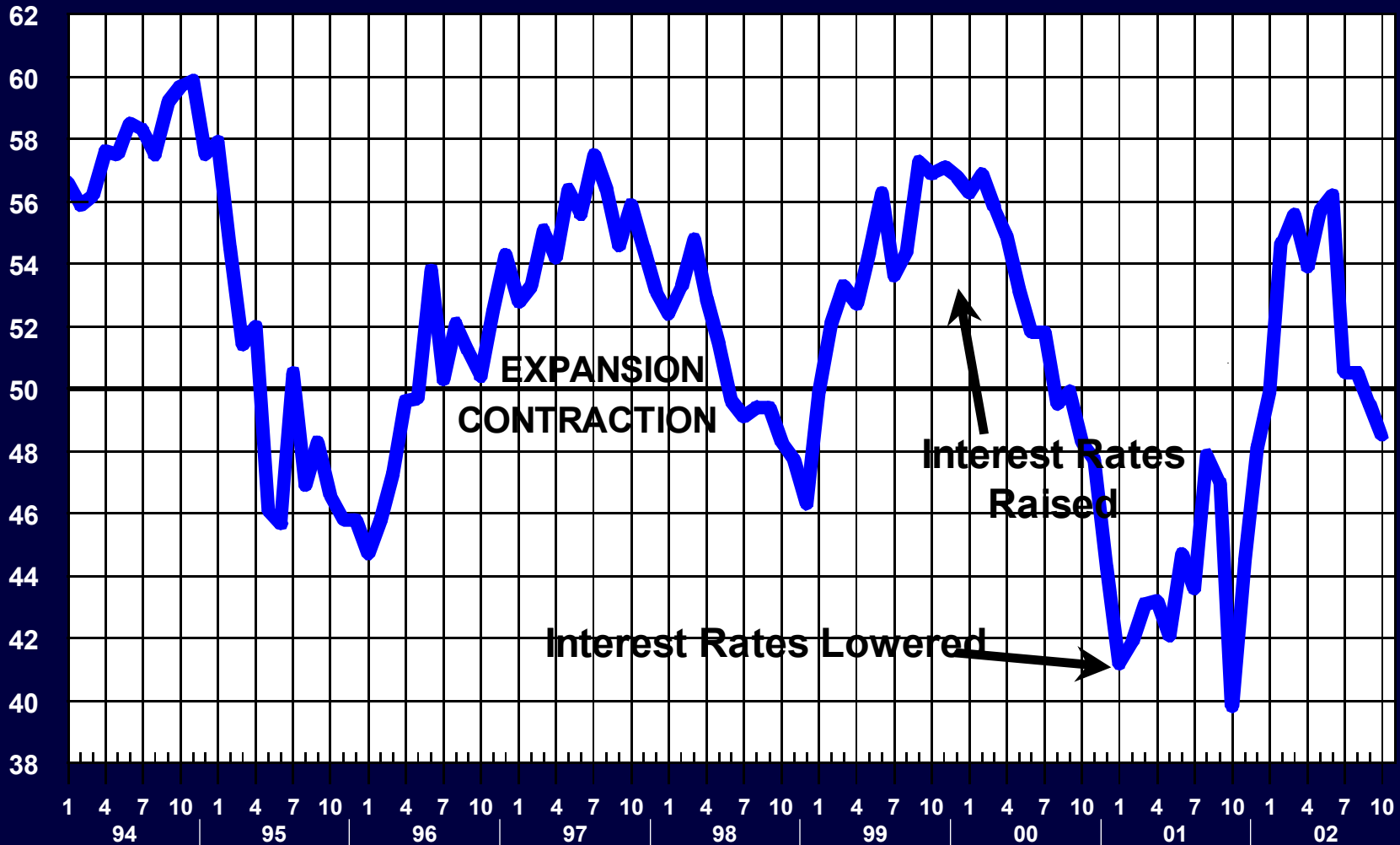
INDUSTRIAL PRODUCTION - WORLD

% CHANGE vs ONE YEAR EARLIER

| | |
|--------------|-----------|
| BRITAIN | -3.5 Aug |
| FRANCE | -1.1 Aug |
| GERMANY | -1.4 Aug |
| ITALY | -7.0 Aug |
| NETHERLANDS | -2.0 Aug |
| SPAIN | -3.9 Aug |
| EURO area | -0.8 Aug |
| RUSSIA | +5.5 Sep |
| | |
| CANADA | +3.3 July |
| USA | +1.5 Sep |
| | |
| CHINA | +13.8 Sep |
| MALAYSIA | +5.9 Aug |
| PHILLIPPINES | -12.0 Aug |
| SINGAPORE | +10.4 Sep |
| S KOREA | +3.4 Sep |
| TAIWAN | +12.5 Sep |
| THAILAND | +9.8 Sep |
| JAPAN | +4.9 Sep |

U.S. "Purchasing Managers" Index

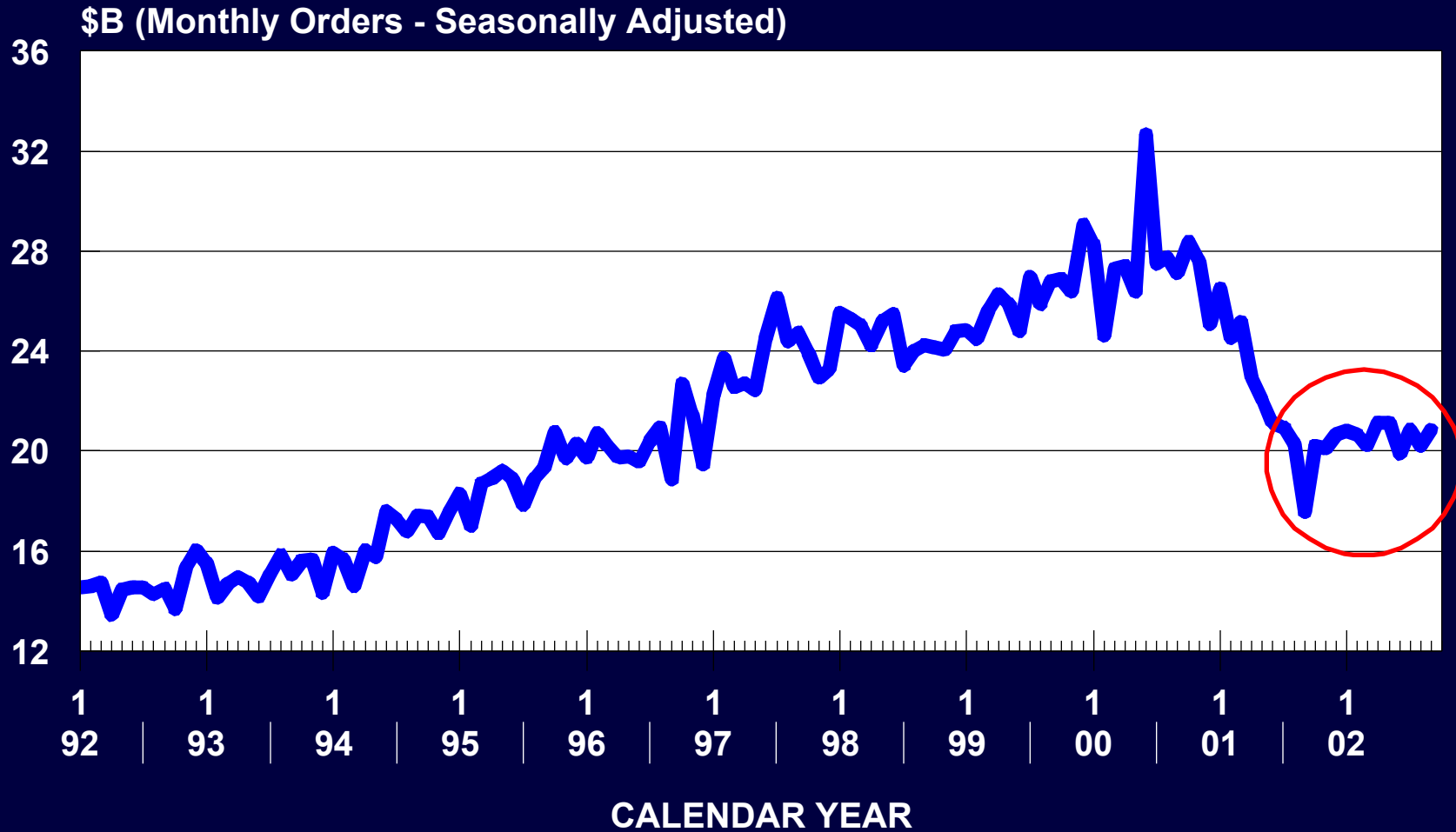
DIFFUSION INDEX



NATIONAL ASSOC of PURCHASING MANAGERS

US ELECTRONIC EQUIPMENT ORDERS

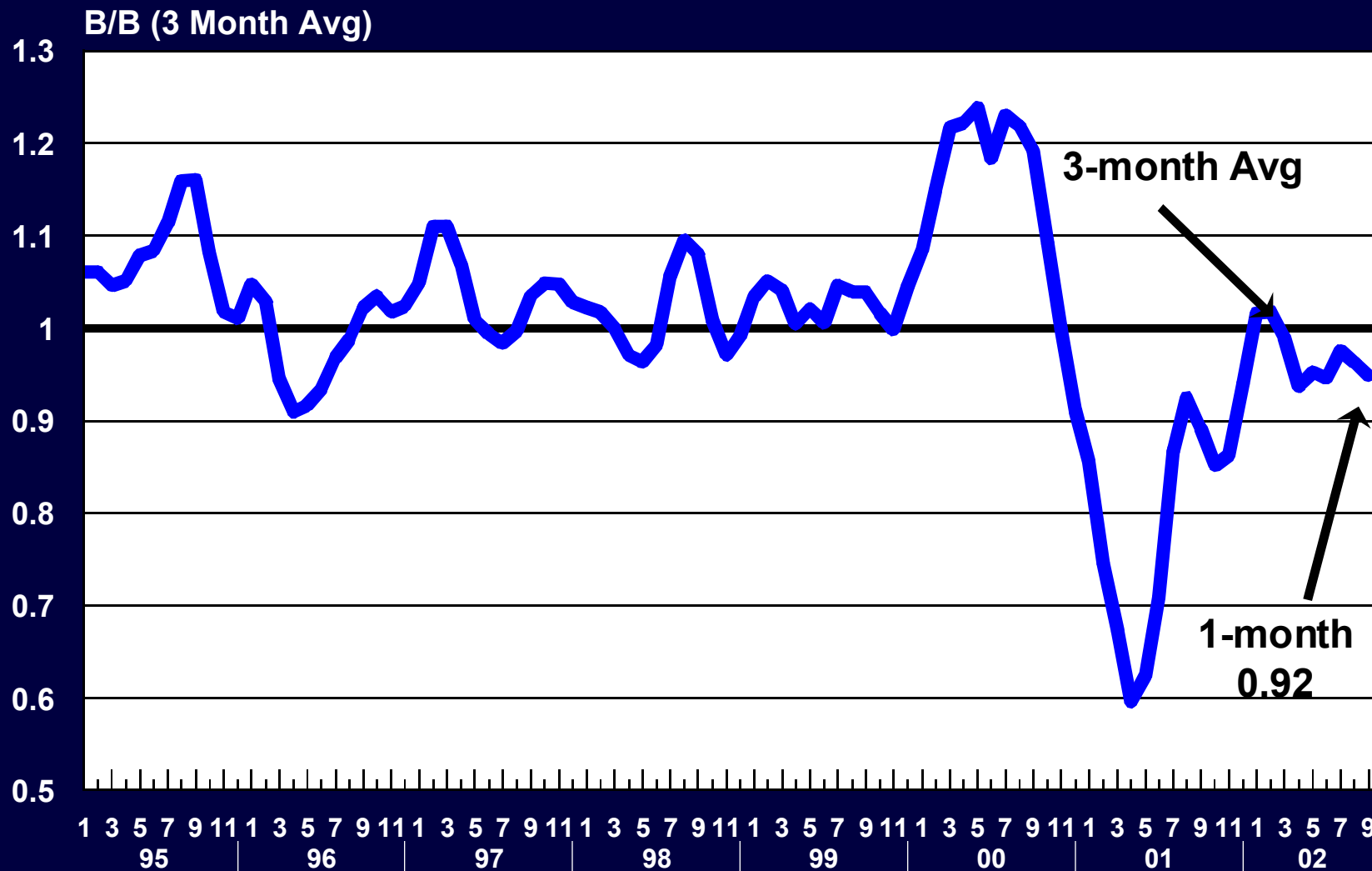
COMMUNICATION, COMPUTER & OFFICE,
MILITARY, INSTRUMENTS



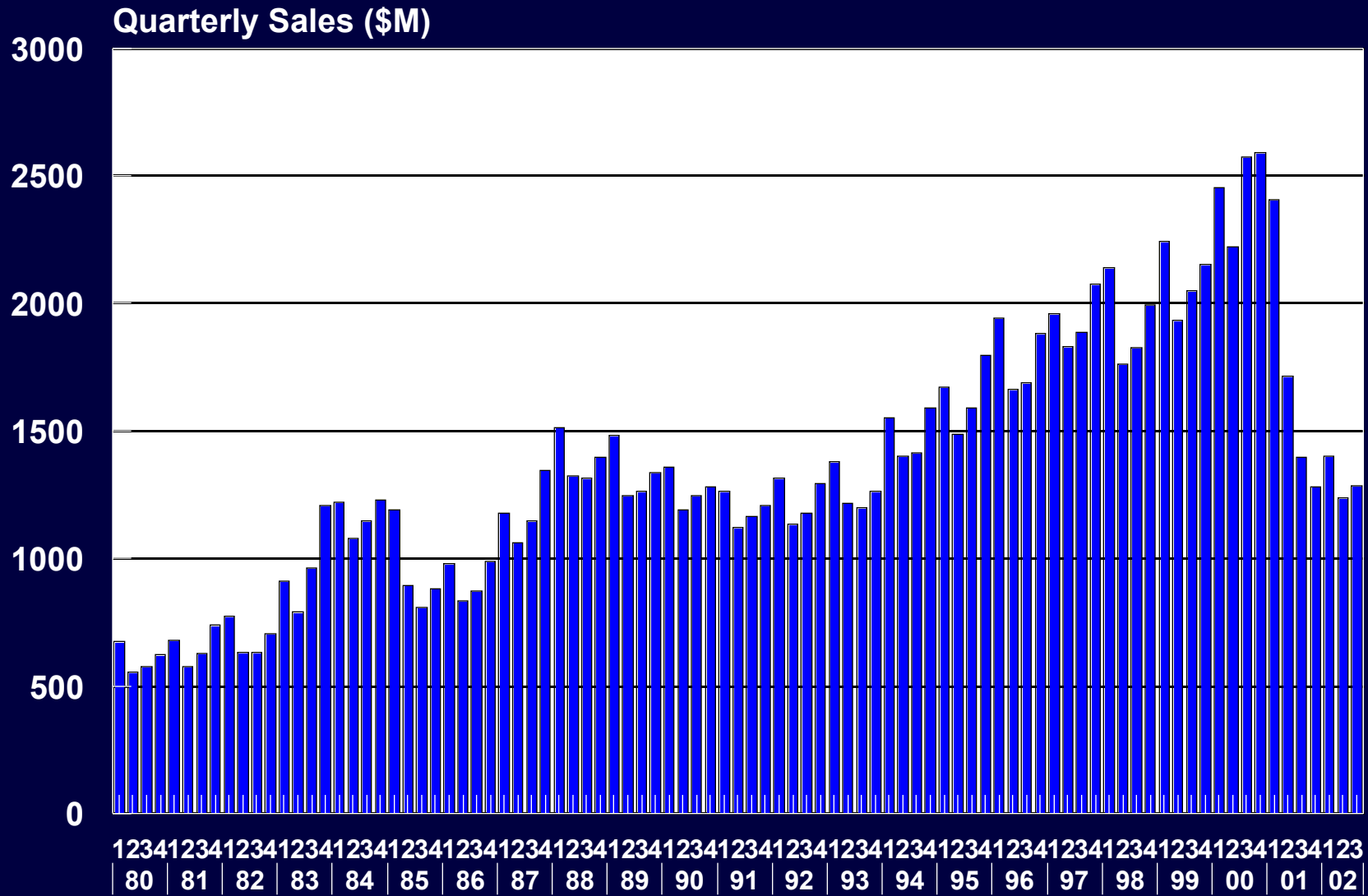
<http://www.census.gov/indicator/www/m3/>

Rigid PCB Book/Bill

N. America



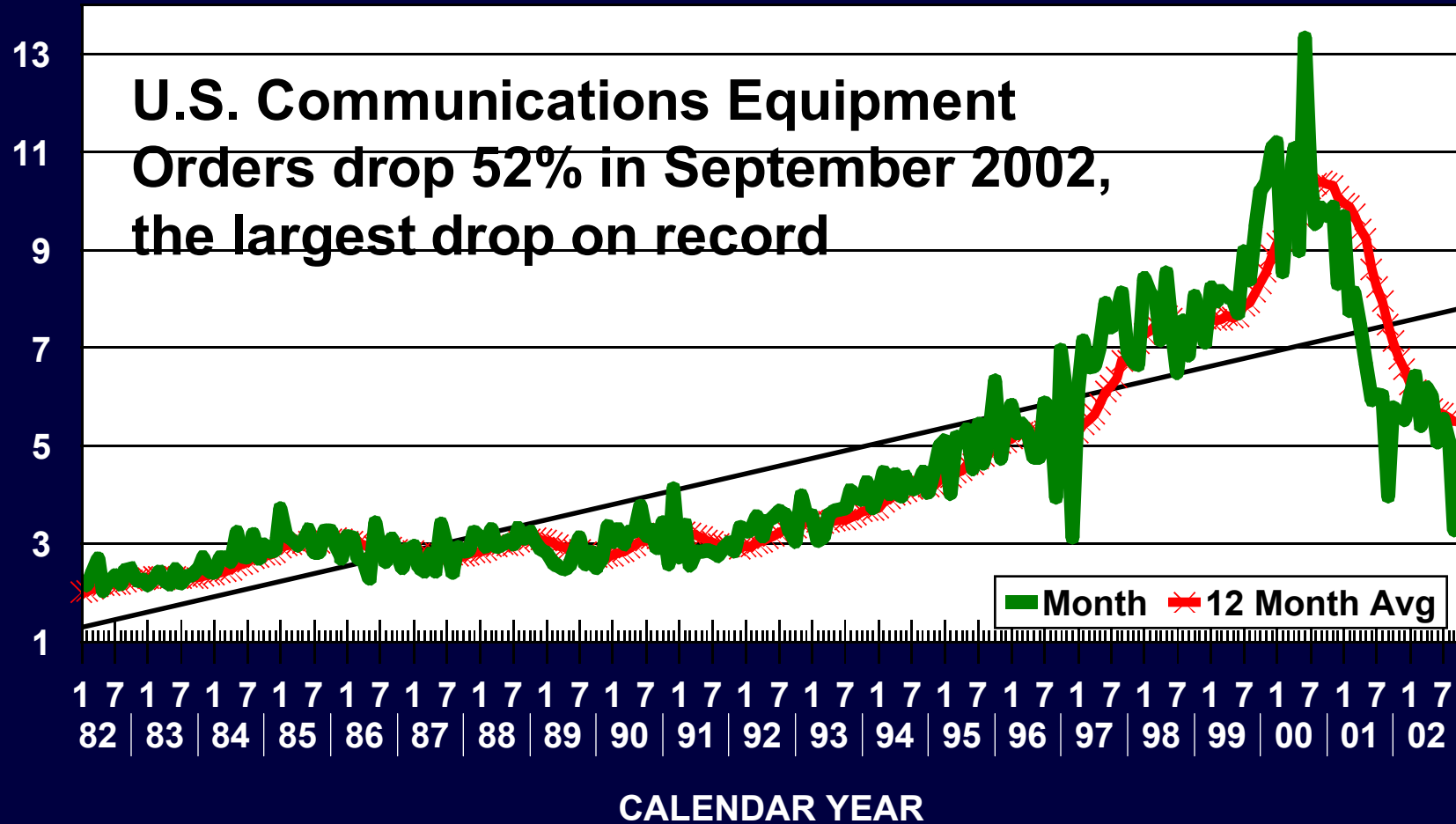
N. AMERICAN RIGID PCB SHIPMENTS



IPC T/MRC data with Custer interpretation

COMMUNICATIONS EQUIPMENT BOOKINGS

\$ B (Seasonally Adjusted)



The Future?

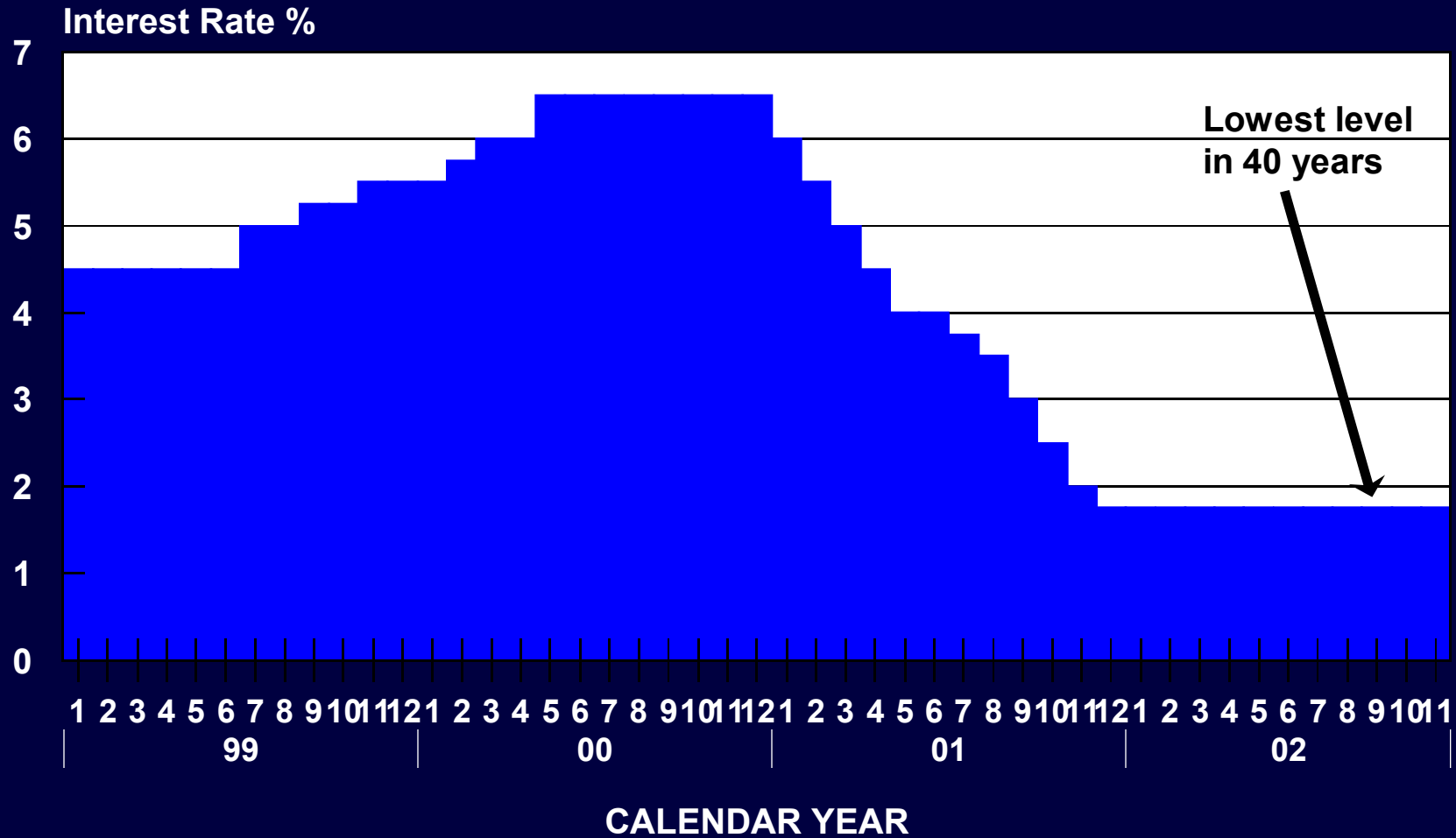
Forecasting Tools

Multiple Approaches Needed

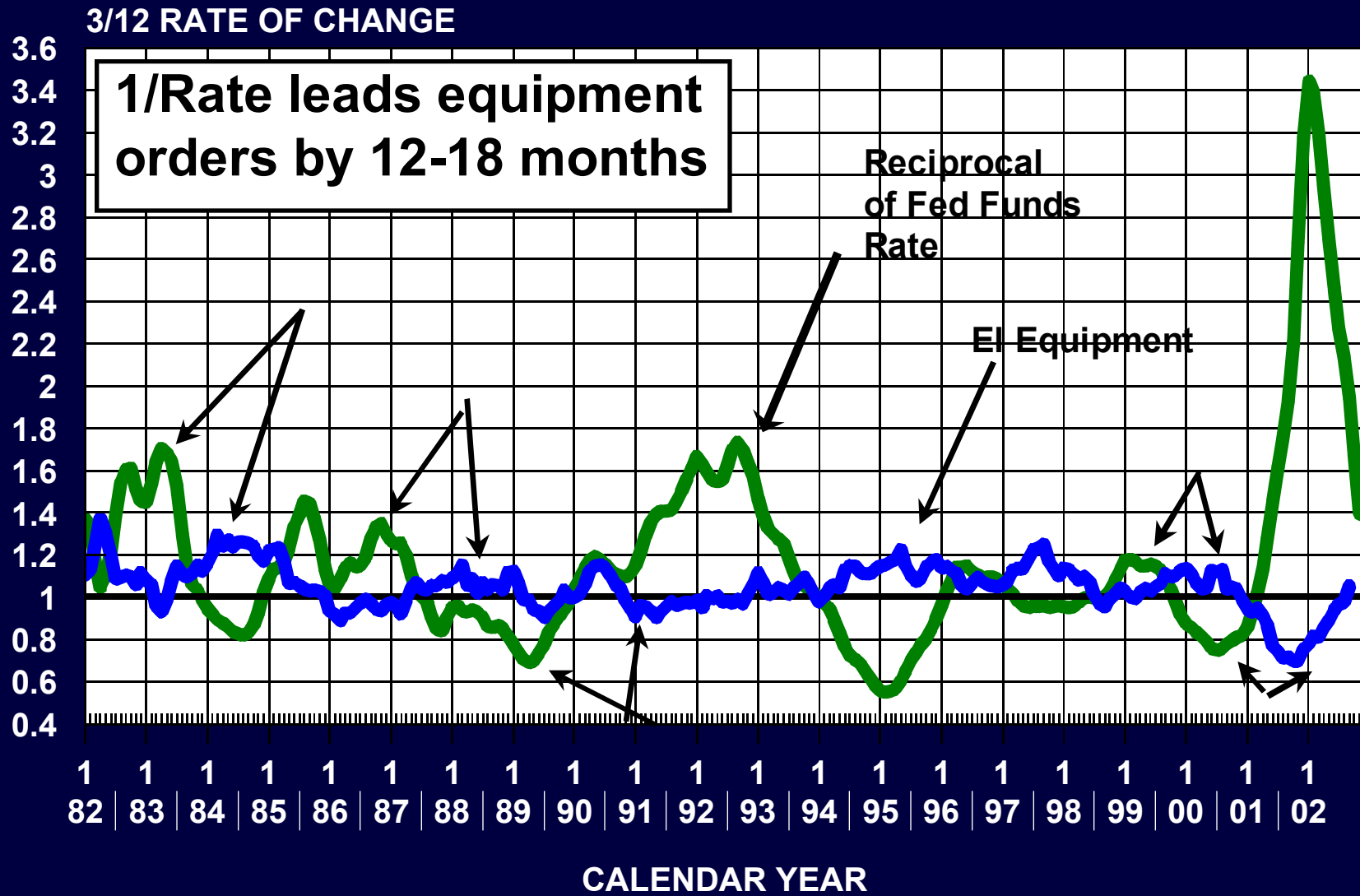
- Global Economic Growth
- Leading indicators
- Electronic equipment orders & inventories
- Company guidance
- Global semiconductor shipments
- PCB shipments & orders
- Future IT spending

Leading Indicators

U.S. FEDERAL FUNDS RATE

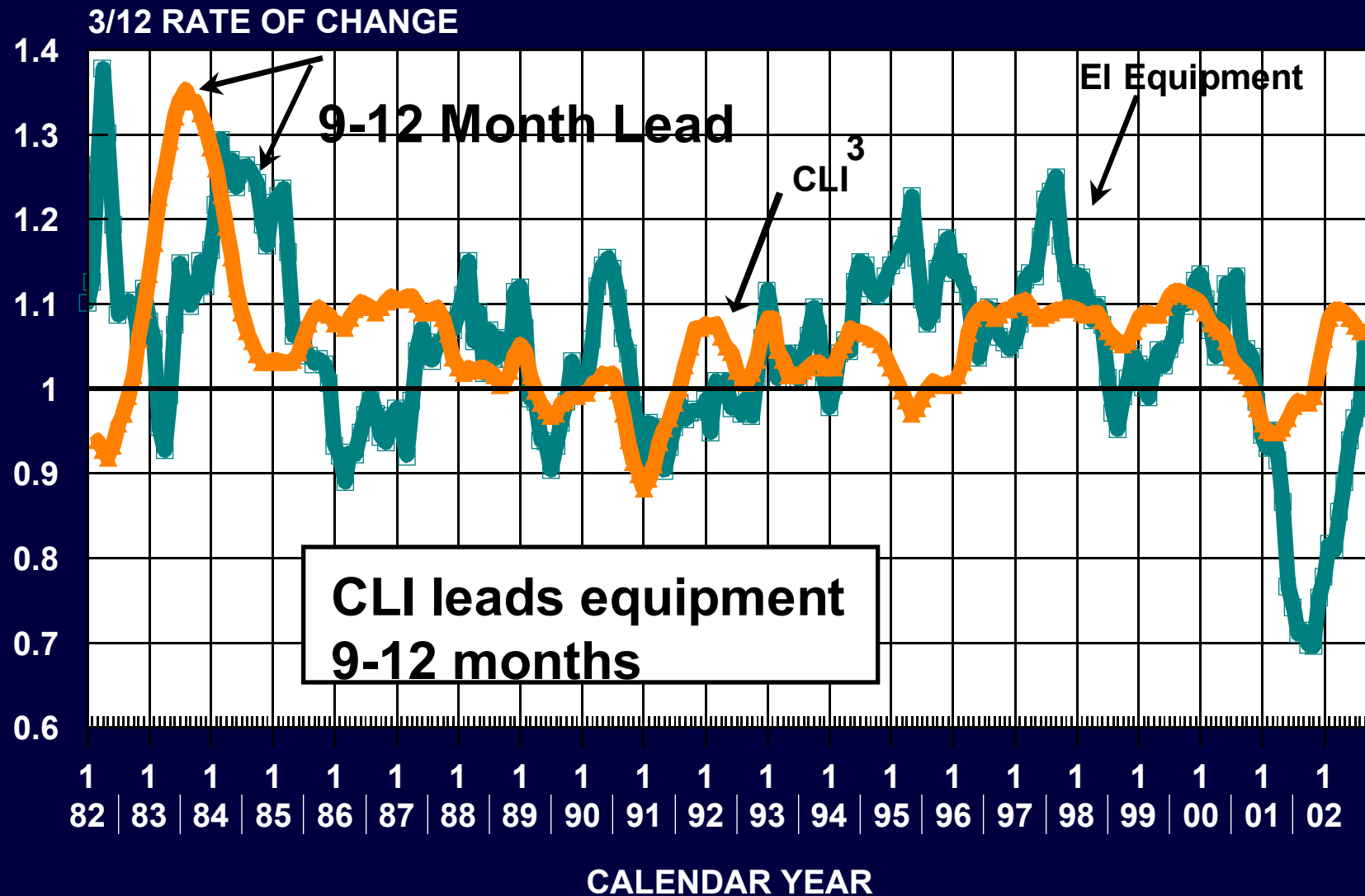


Electronic Equipment Orders vs Interest Rates



Data: Dept of Commerce & U.S. Federal Reserve Board
<http://www.federalreserve.gov/releases/h15/data.htm>

Electronic Equipment Orders vs Conference Board Composite Leading Indicator

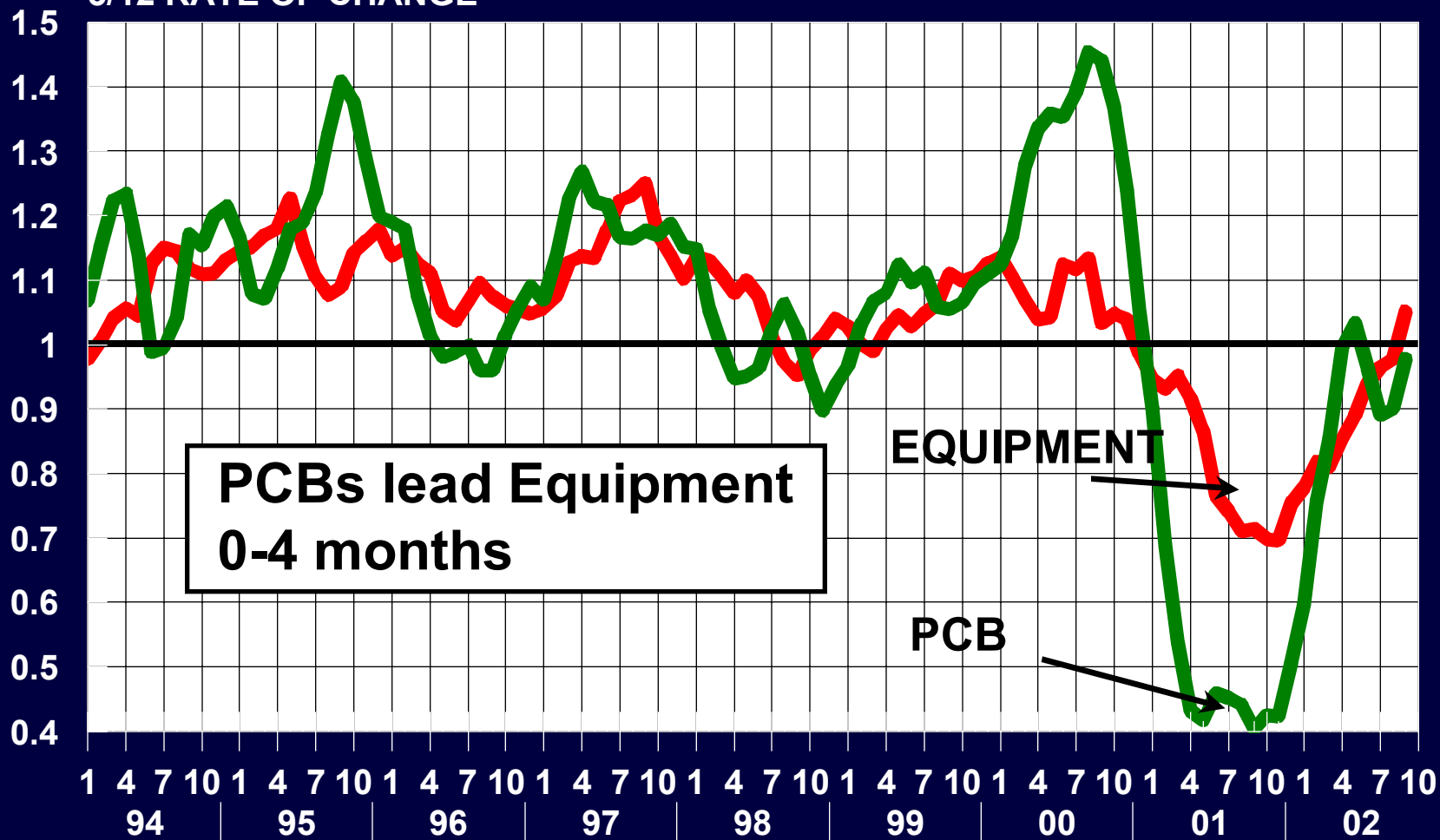


Data: Dept of Commerce & Conference Board
<http://www.tcb-indicators.org/>

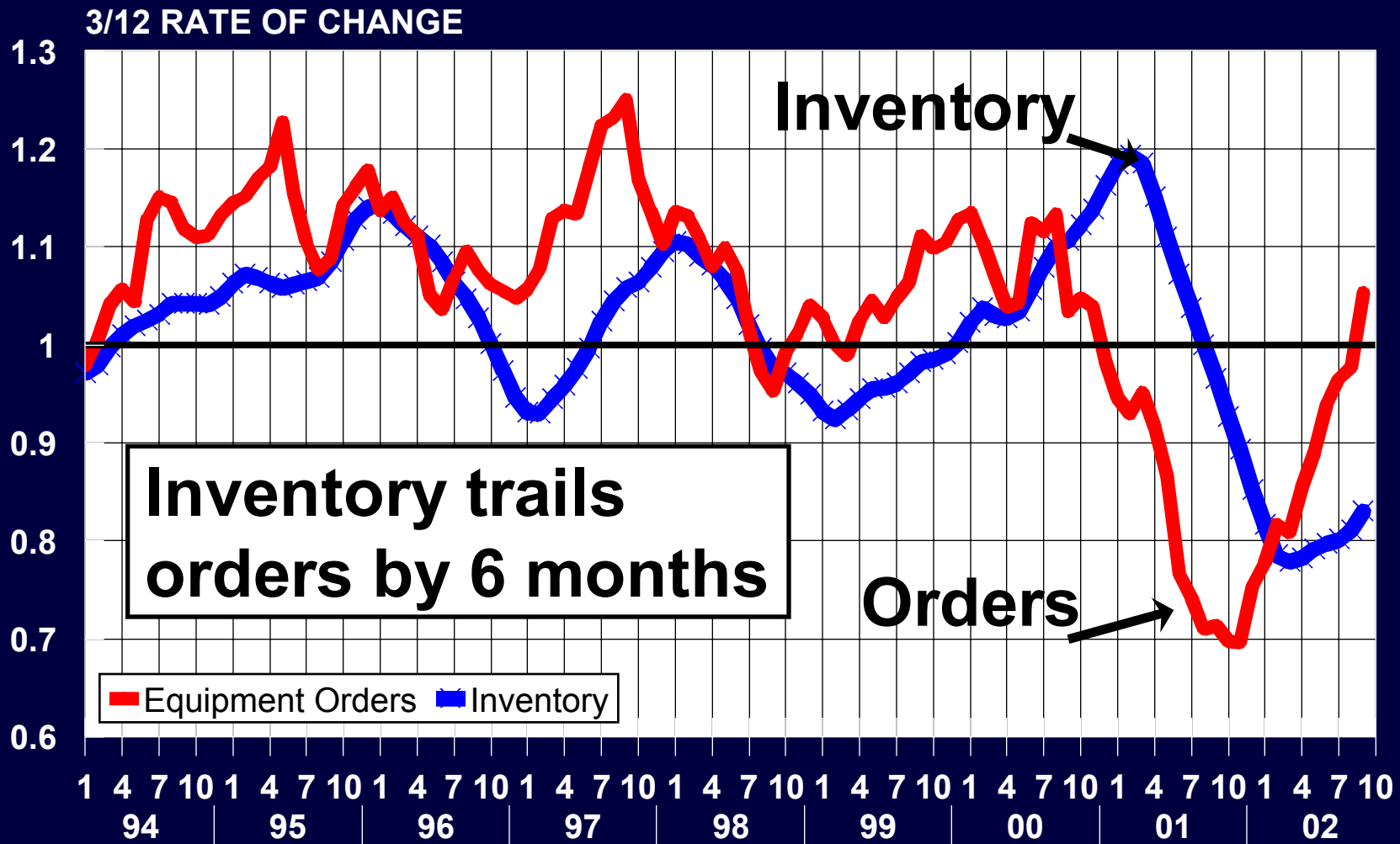
U.S. ELECTRONIC EQUIPMENT vs PCBs

\$ BOOKINGS GROWTH

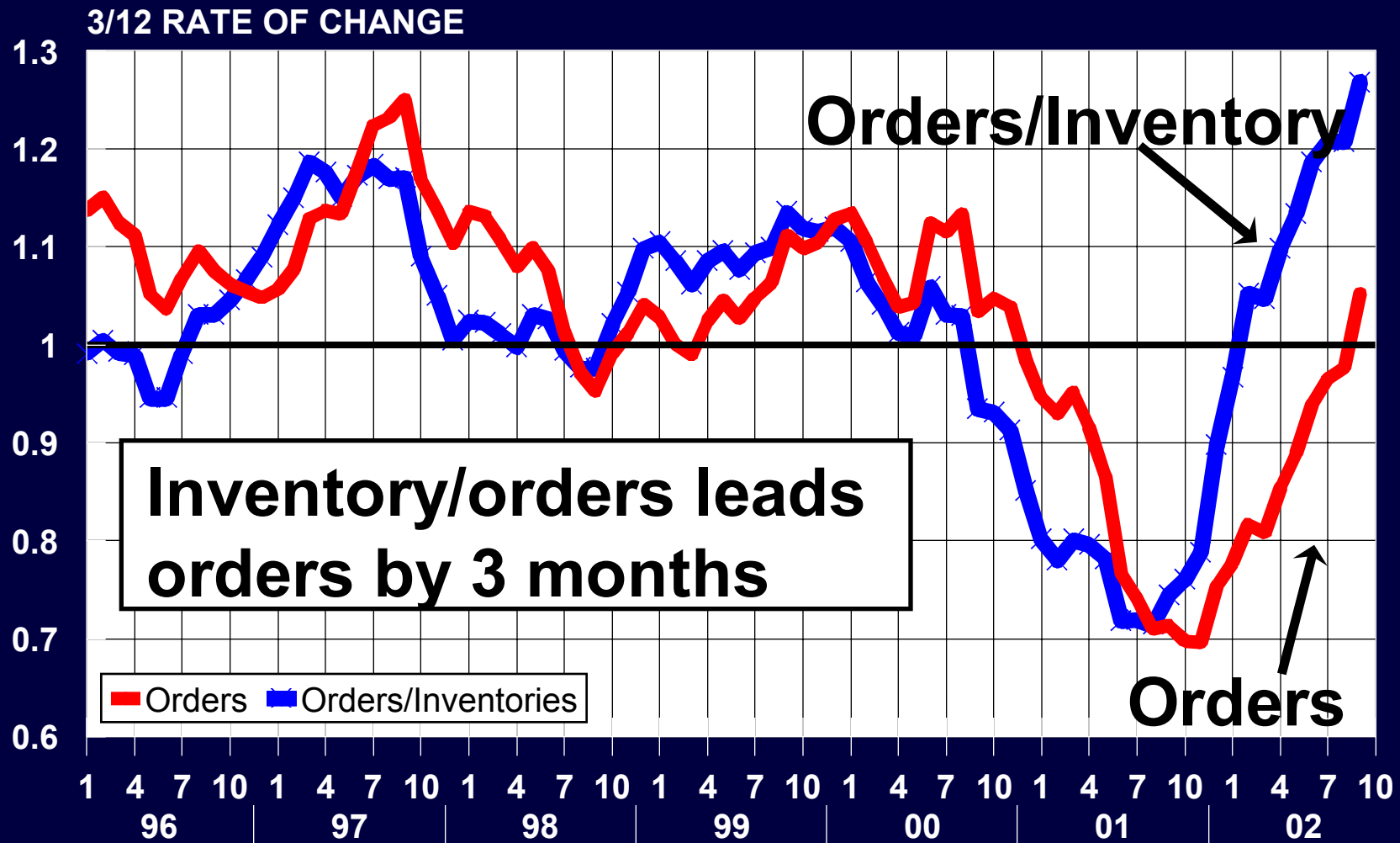
3/12 RATE OF CHANGE



U.S. ELECTRONIC EQUIPMENT Orders vs Inventories



U.S. ELECTRONIC EQUIPMENT Orders vs Orders/Inventories



Leading Indicator "Lead Times" vs Electronic Equipment Orders

3/12 lead
(Months)

Interest Rates

12-18

Conference Board Composite

9-12

Equipment Orders/Inventories

3

PCB Orders

0-4

Equipment Inventories

6 (lag)

"Non-Forecastable" Events

Terrorist Activities - Sept 11

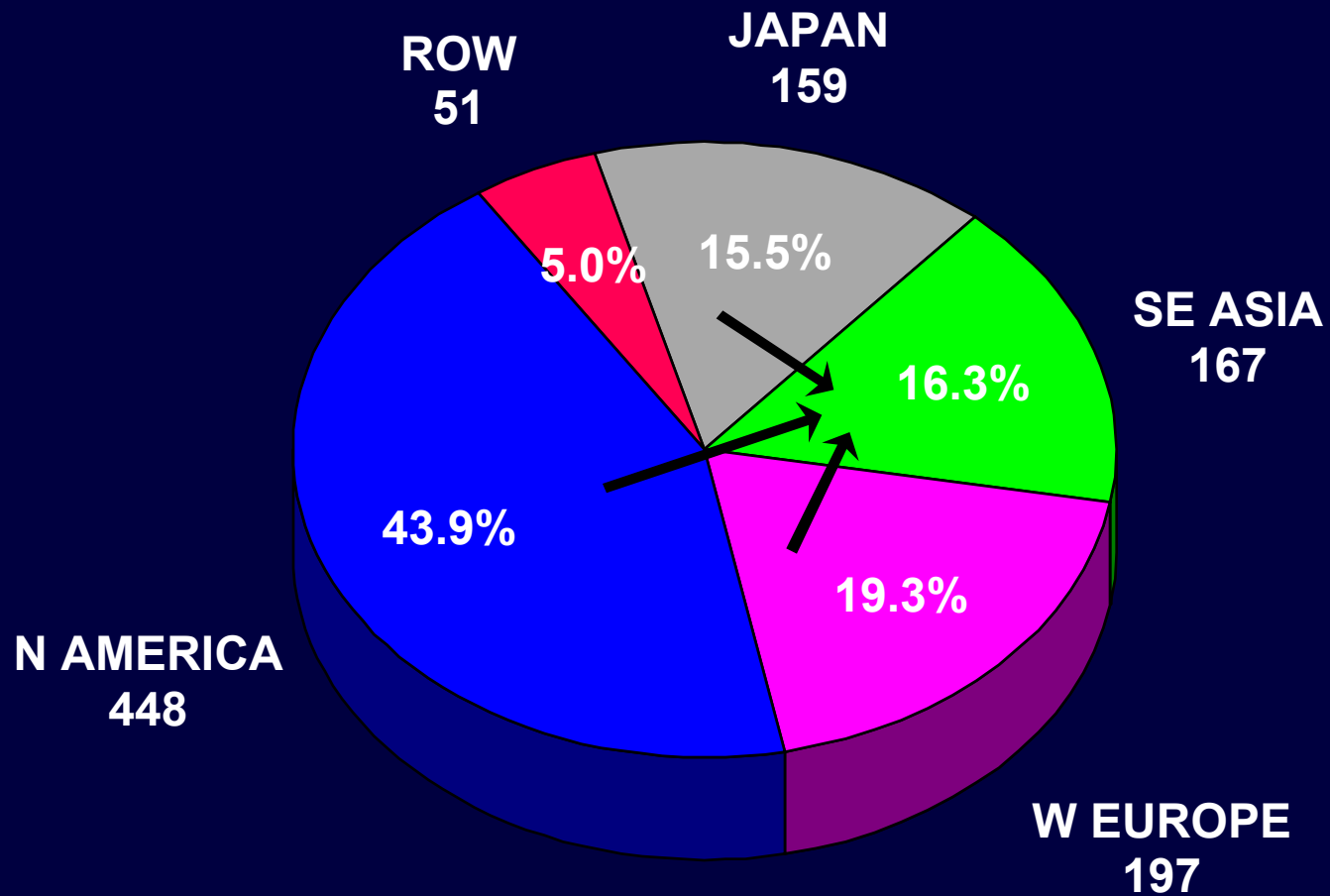
Natural Disasters

Accounting Scandals

Electronic Equipment

WORLD ELECTRONIC EQUIPMENT PRODUCTION

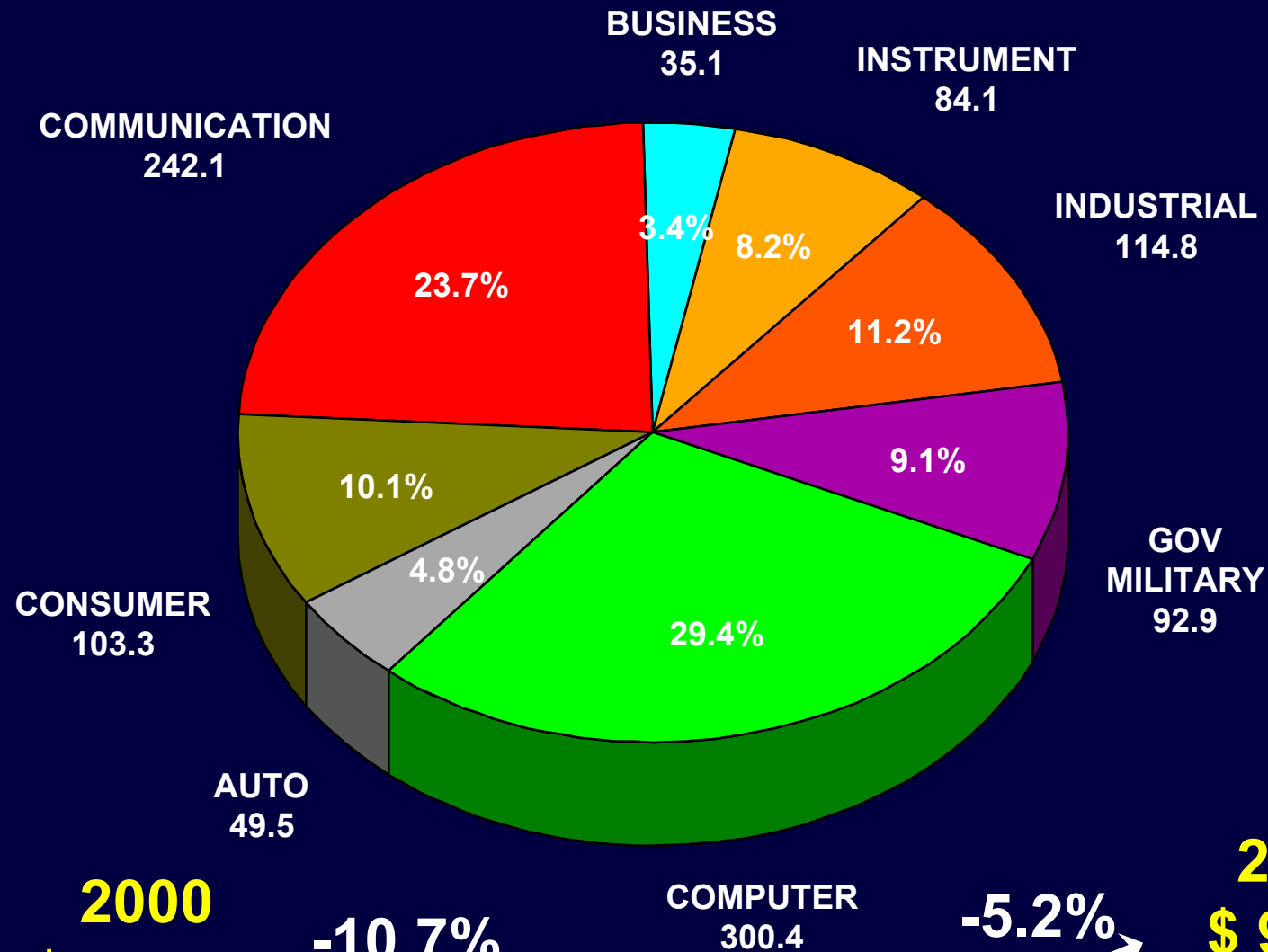
2001



TOTAL \$1,021 Billion

WORLD EQUIPMENT PRODUCTION

2001 ESTIMATE (\$B)



2000
\$1130 B

-10.7%

COMPUTER
300.4

-5.2%

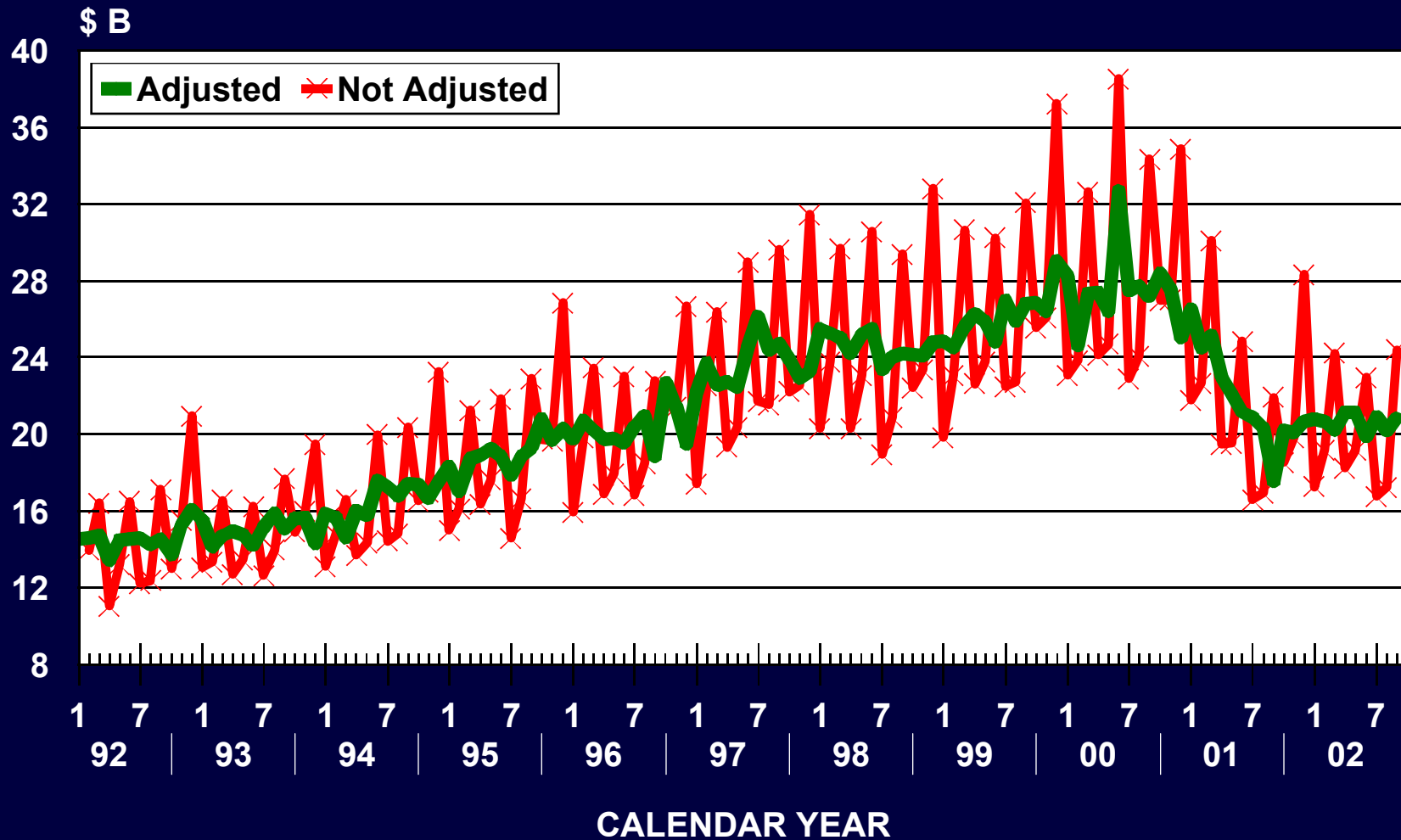
2002
\$ 970B

TOTAL \$1020 B

Electronic Equipment Orders & Inventories

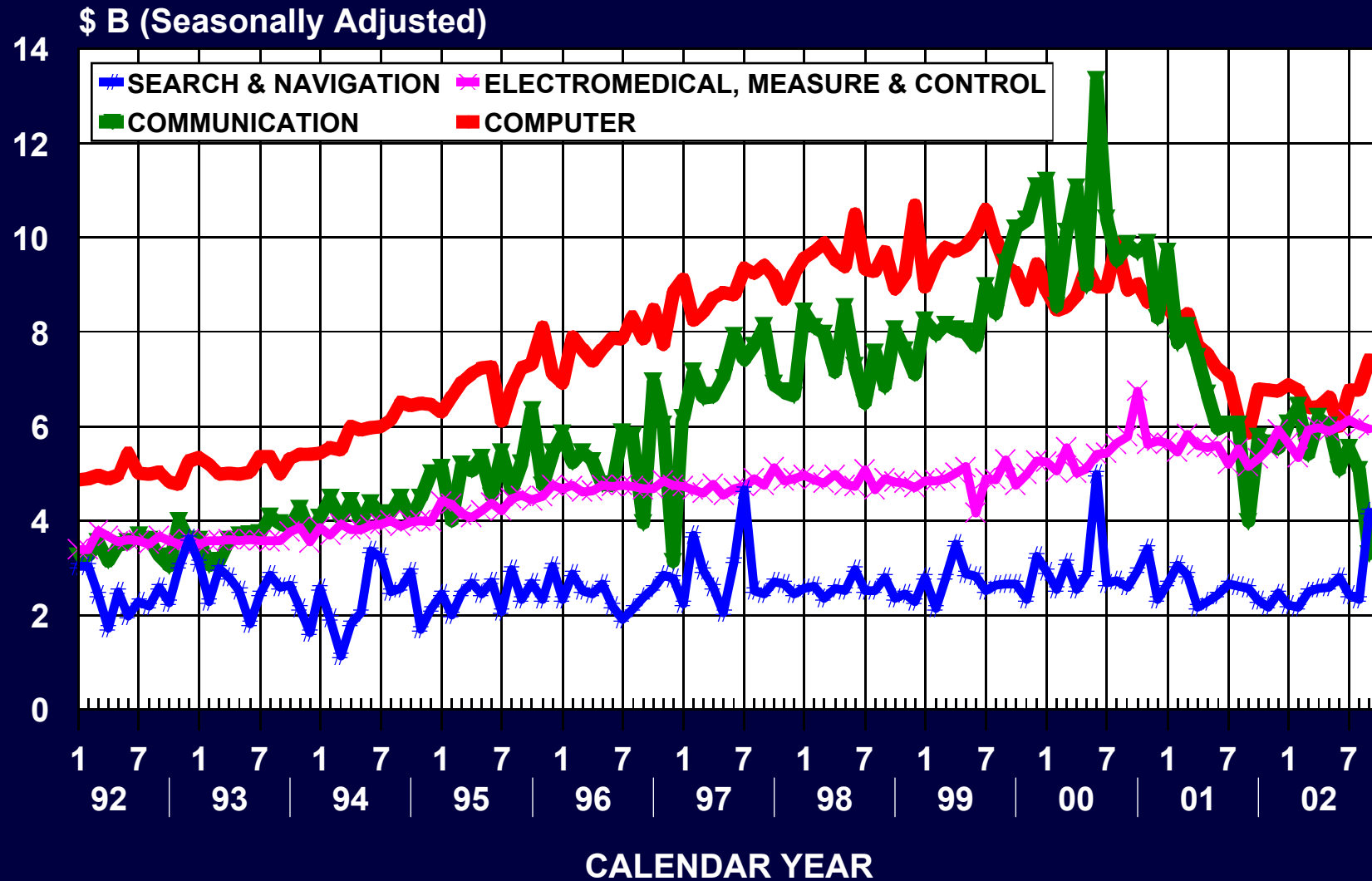
US ELECTRONIC EQUIPMENT ORDERS

Adjusted vs Non Seasonally Adjusted



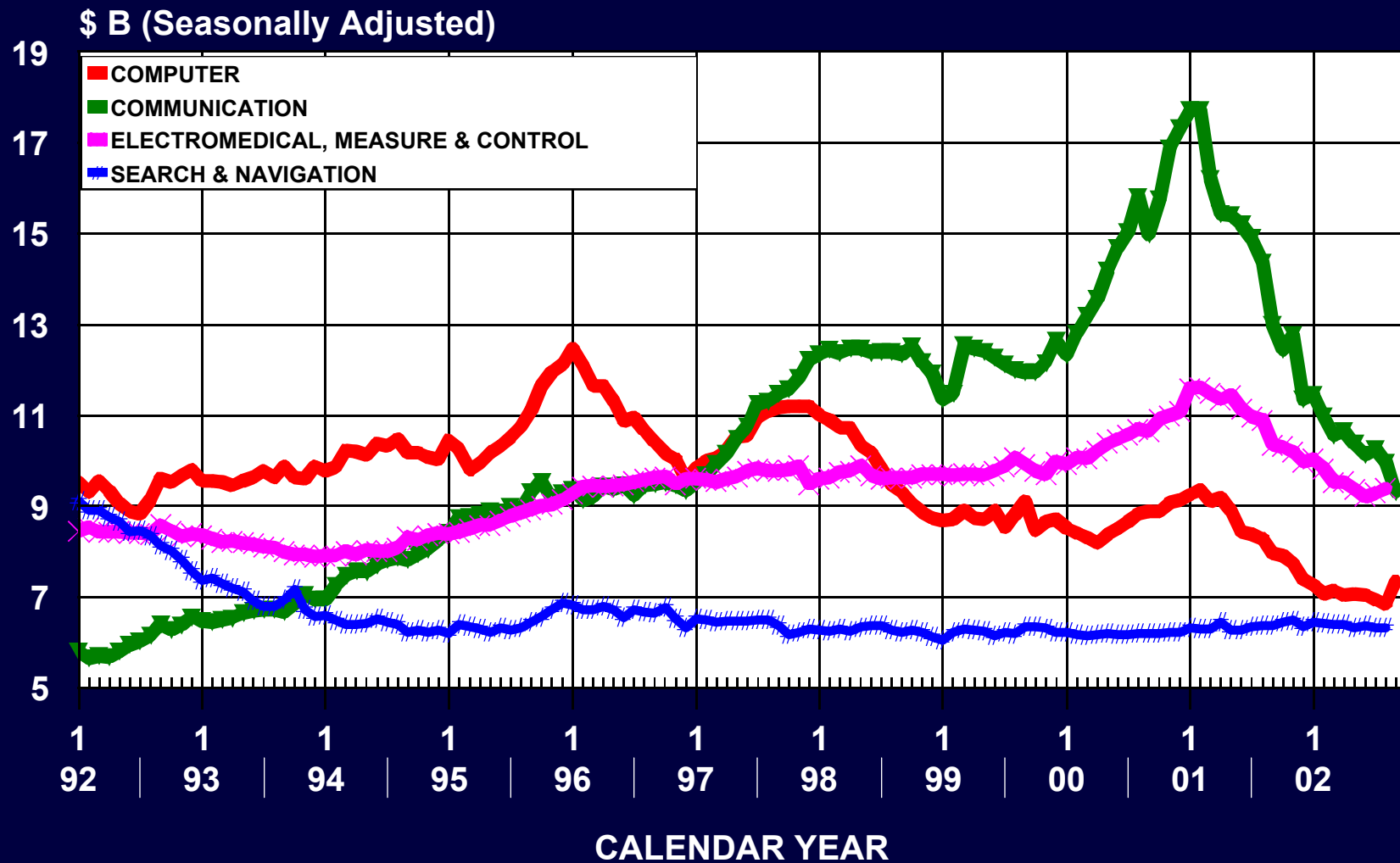
US ELECTRONIC EQUIPMENT ORDERS

Monthly Data



US ELECTRONIC EQUIPMENT INVENTORIES

Monthly Data

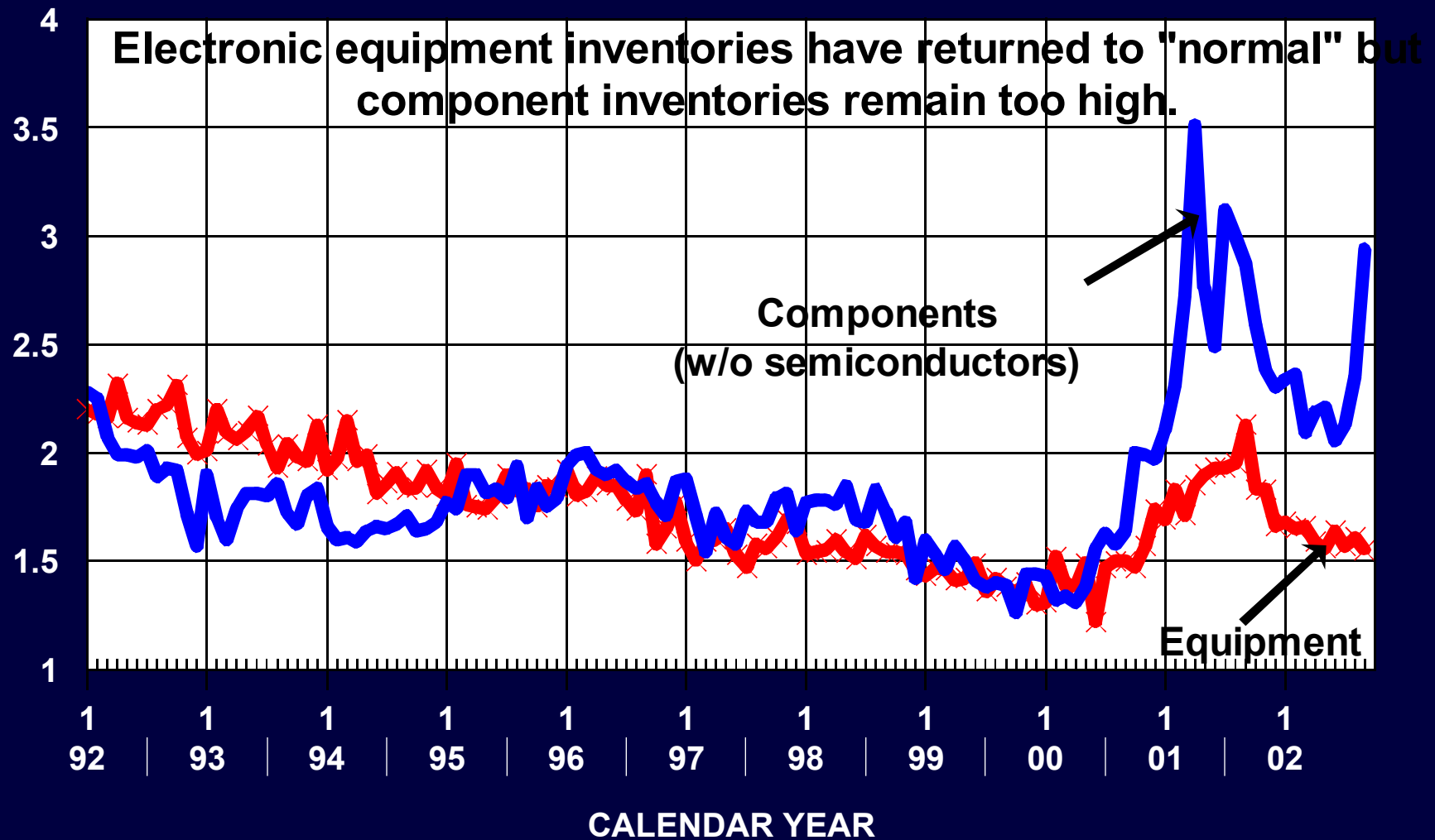


<http://www.census.gov/indicator/www/m3/>

10/02

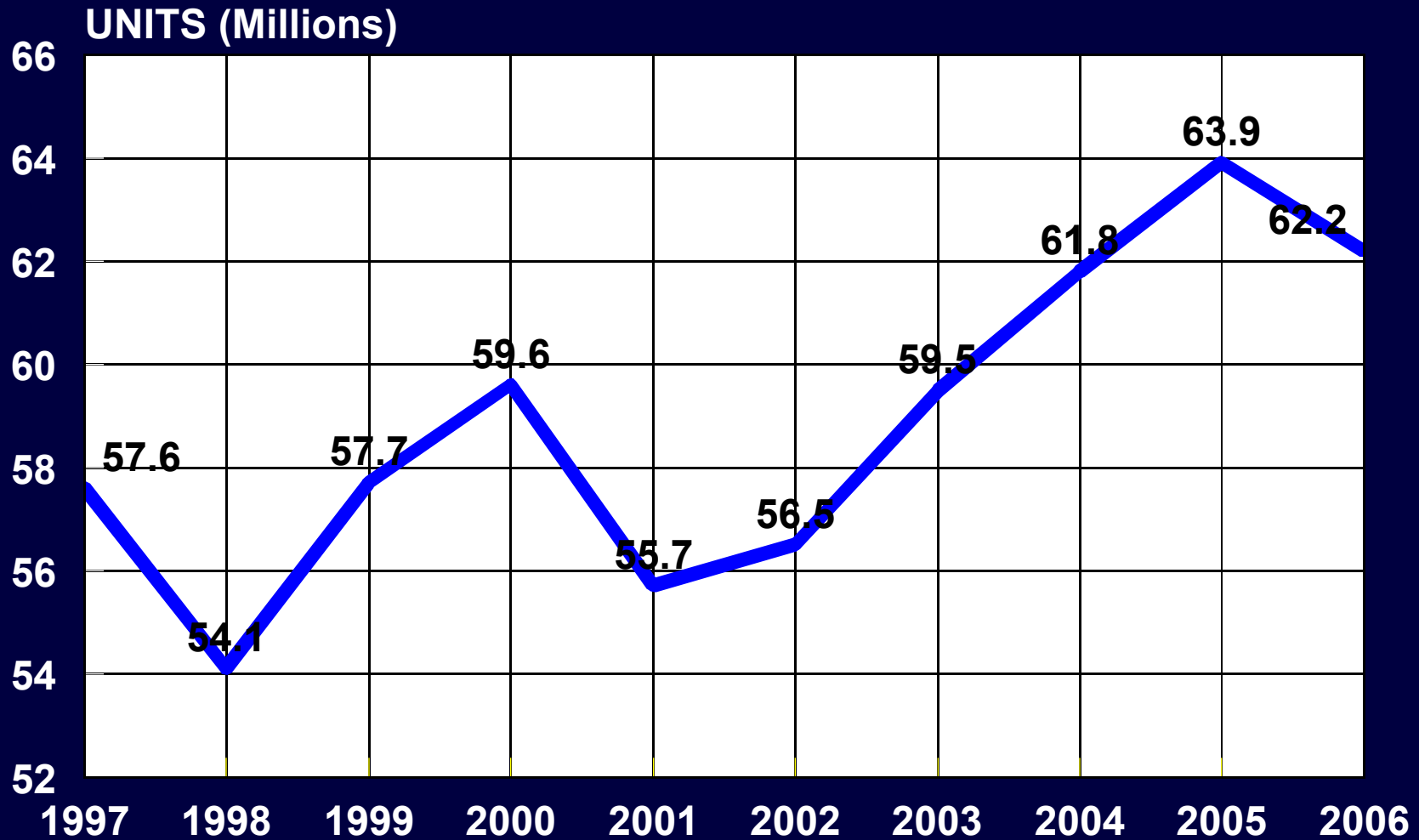
US Electronic Equipment & Component Inventories

Inventories vs. Orders



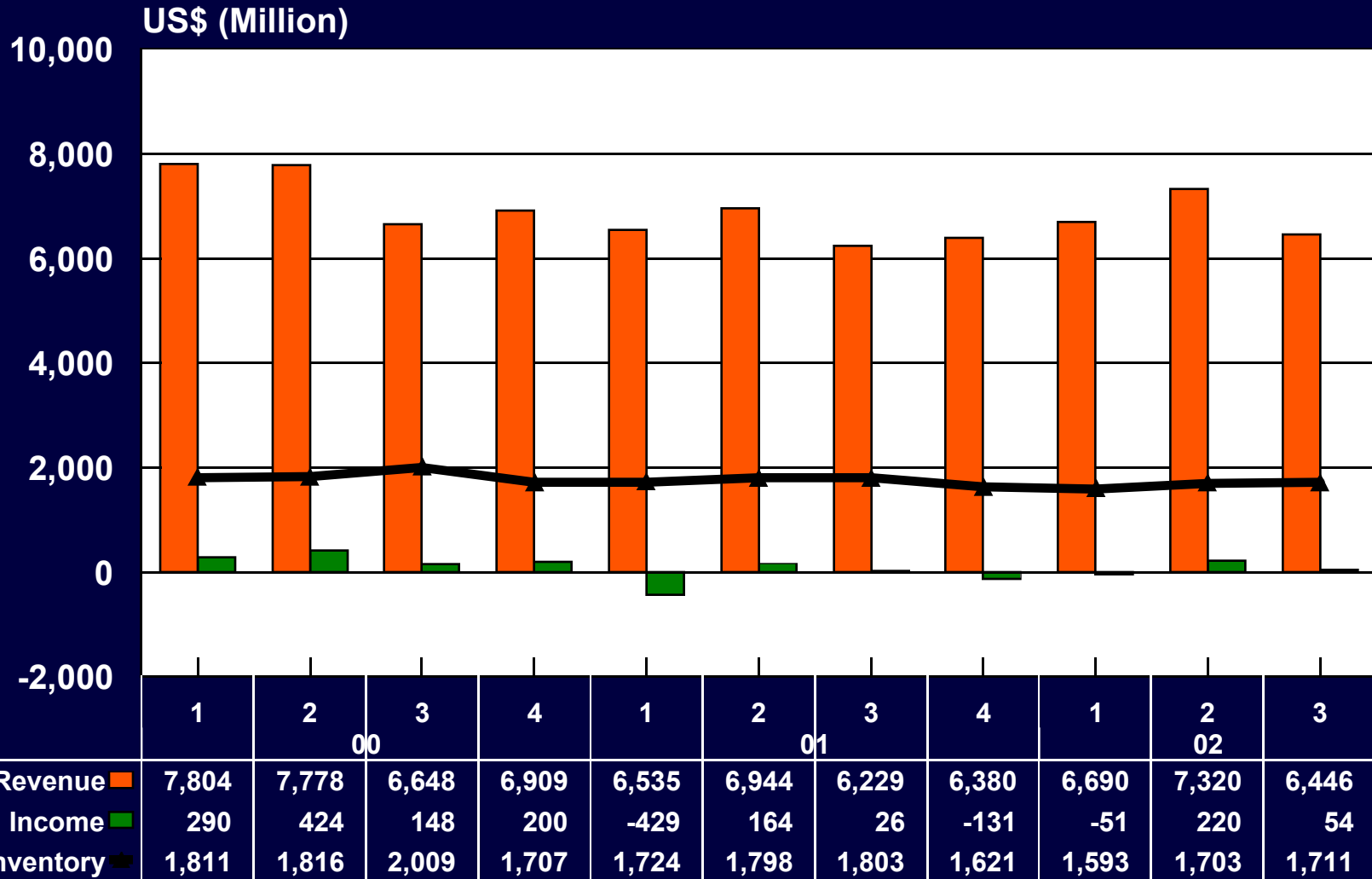
Automotive Electronics

World Motor Vehicle & Automotive Electronics Production



Delphi Corp

Revenue, Net Income & Inventory



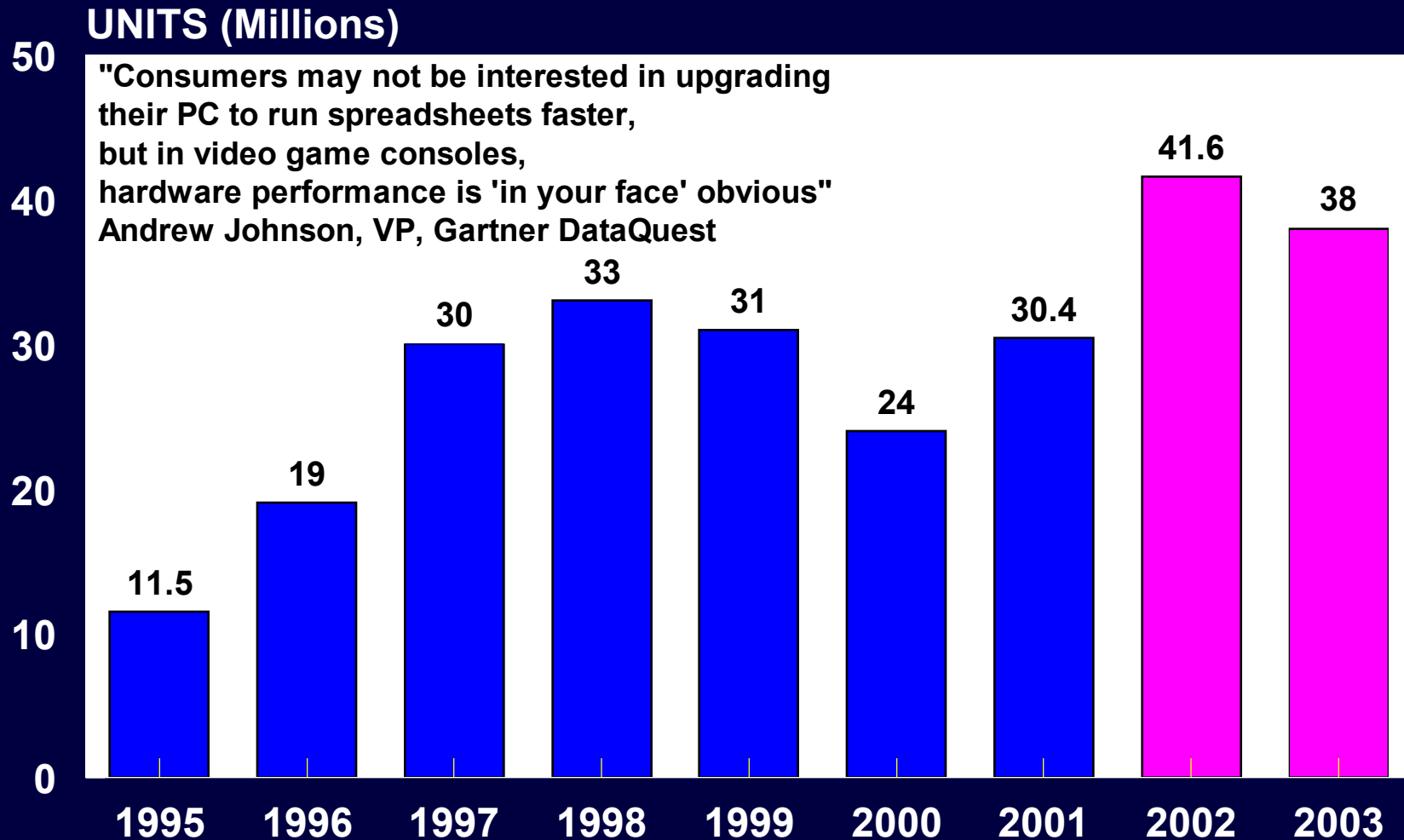
CY

DPH

Consumer Electronics

Home Video Game Market

World Shipments

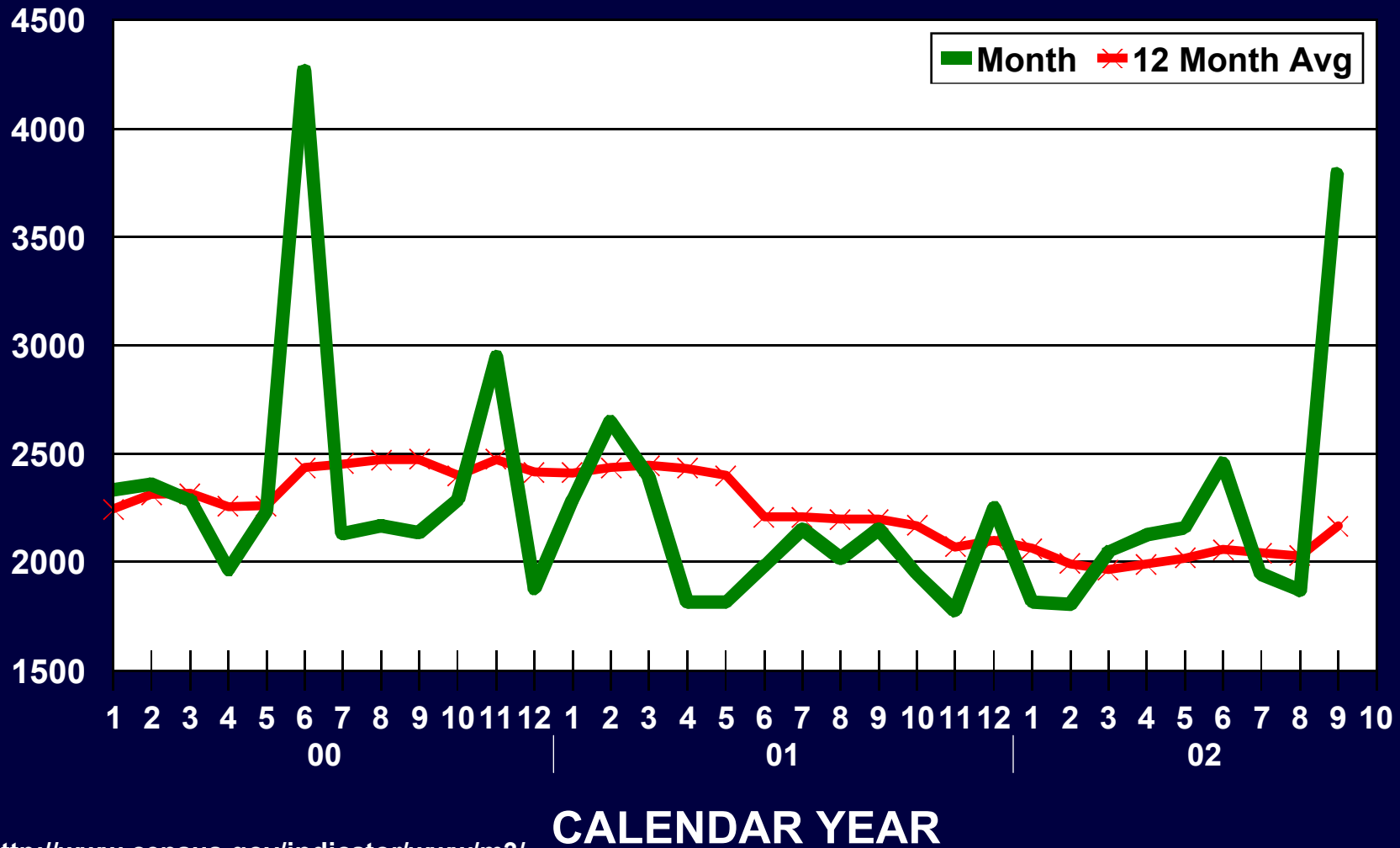


Government & Military Electronics

MILITARY ELECTRONICS

BOOKINGS

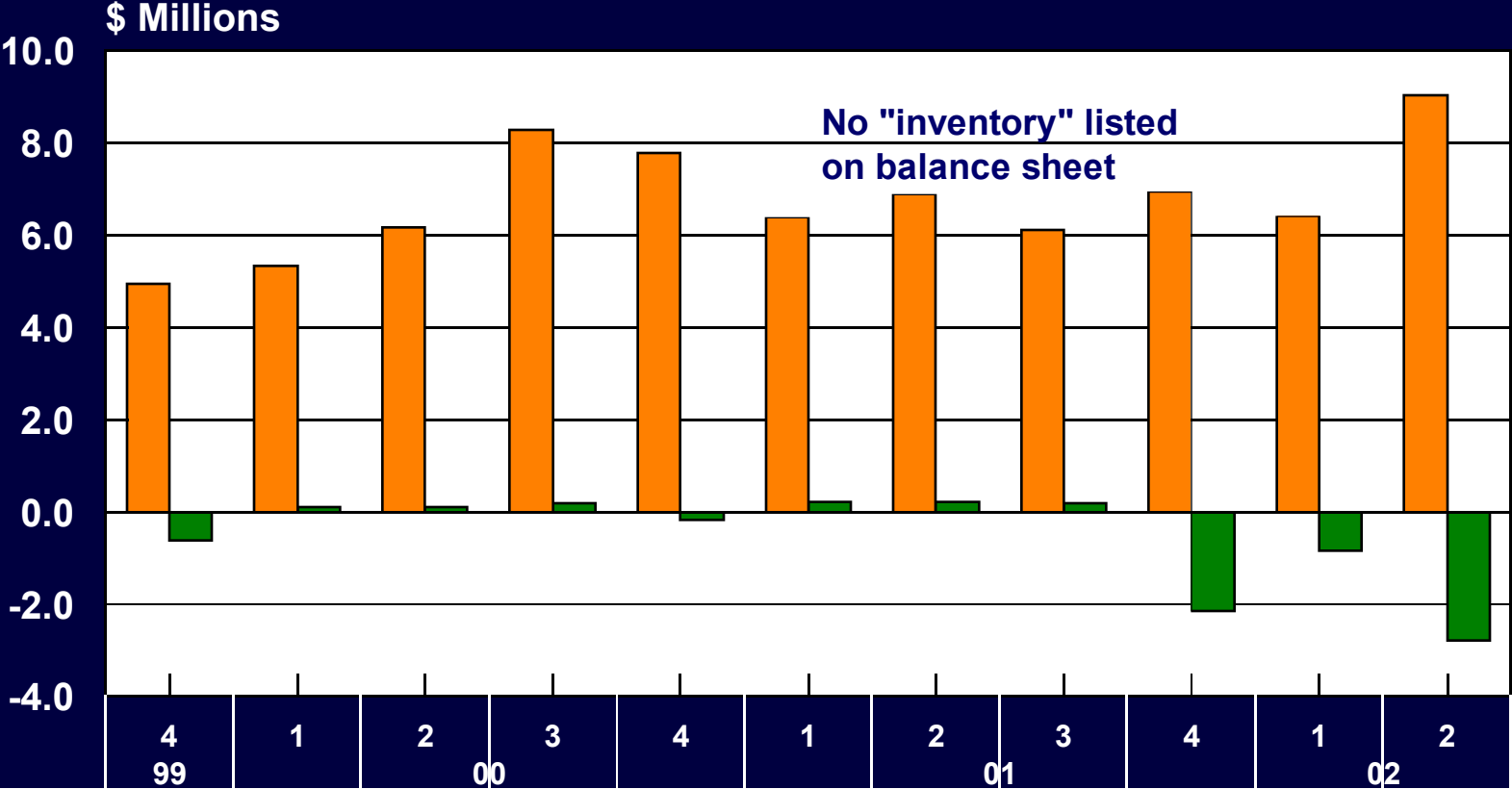
Defense Search & Navigation and Communications Equipment



Safety & Security

Viisage Technology

Revenue & Net Income



| | | | | | | | | | | | |
|---------|------|-----|-----|-----|------|-----|-----|-----|------|------|------|
| Revenue | 4.9 | 5.3 | 6.2 | 8.3 | 7.8 | 6.4 | 6.9 | 6.1 | 6.9 | 6.4 | 9.0 |
| Income | -0.6 | 0.1 | 0.1 | 0.2 | -0.2 | 0.2 | 0.2 | 0.2 | -2.2 | -0.9 | -2.8 |

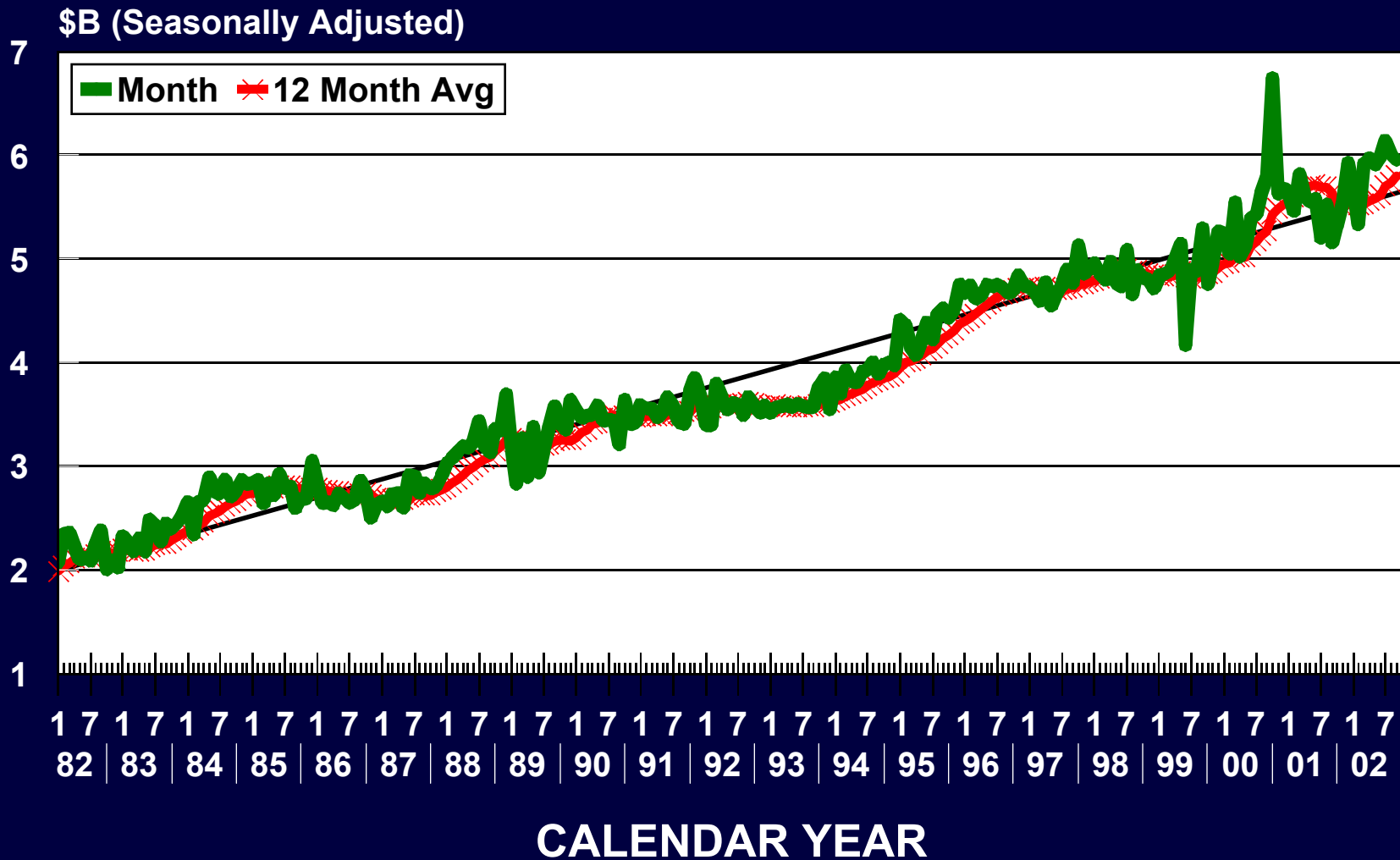
CY

Visg

Instruments & Control Equipment

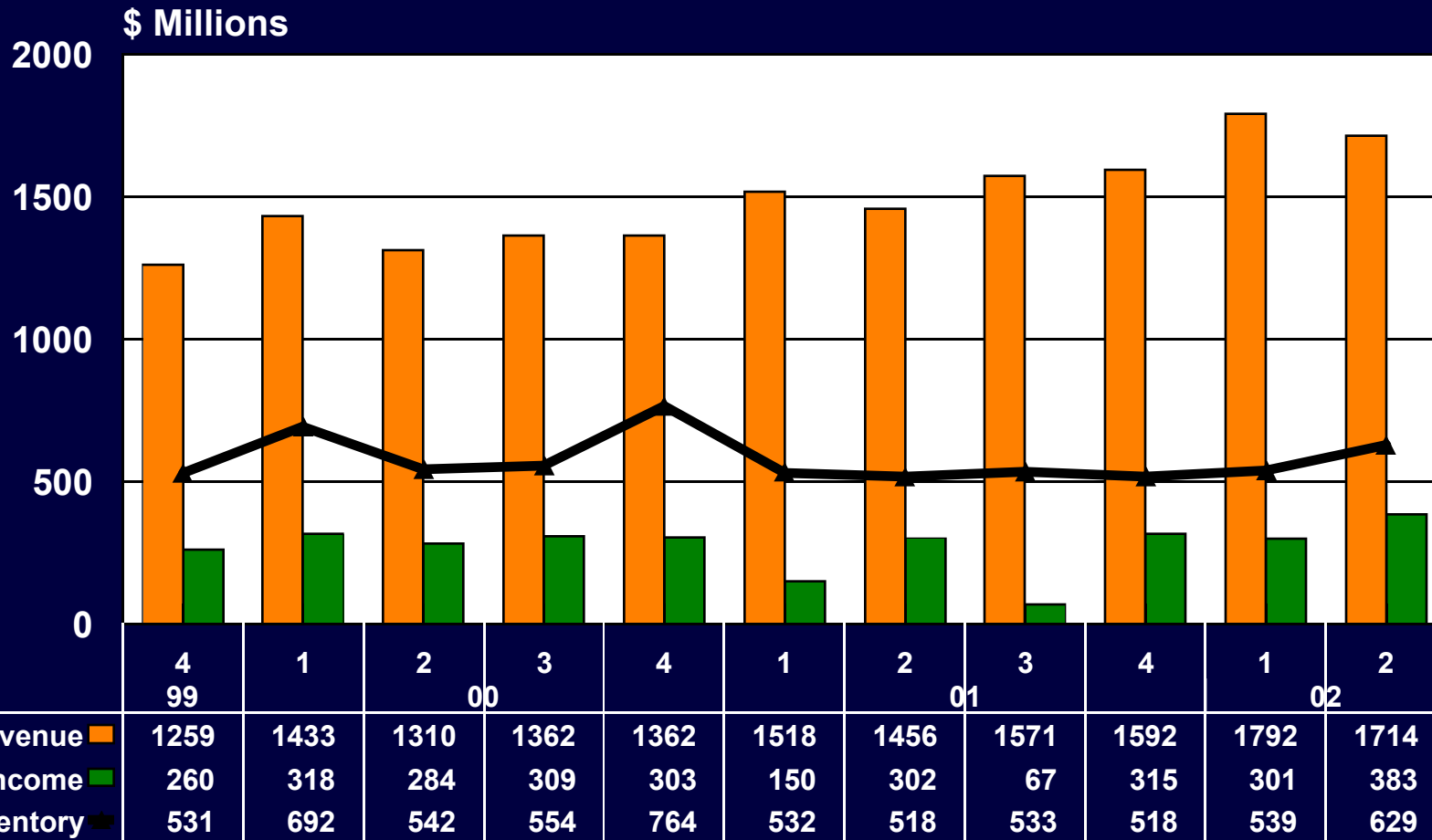
ELECTROMEDICAL, MEASUREMENT & CONTROL EQUIPMENT

BOOKINGS



Medtronic Inc

Revenue, Net Income & Inventory

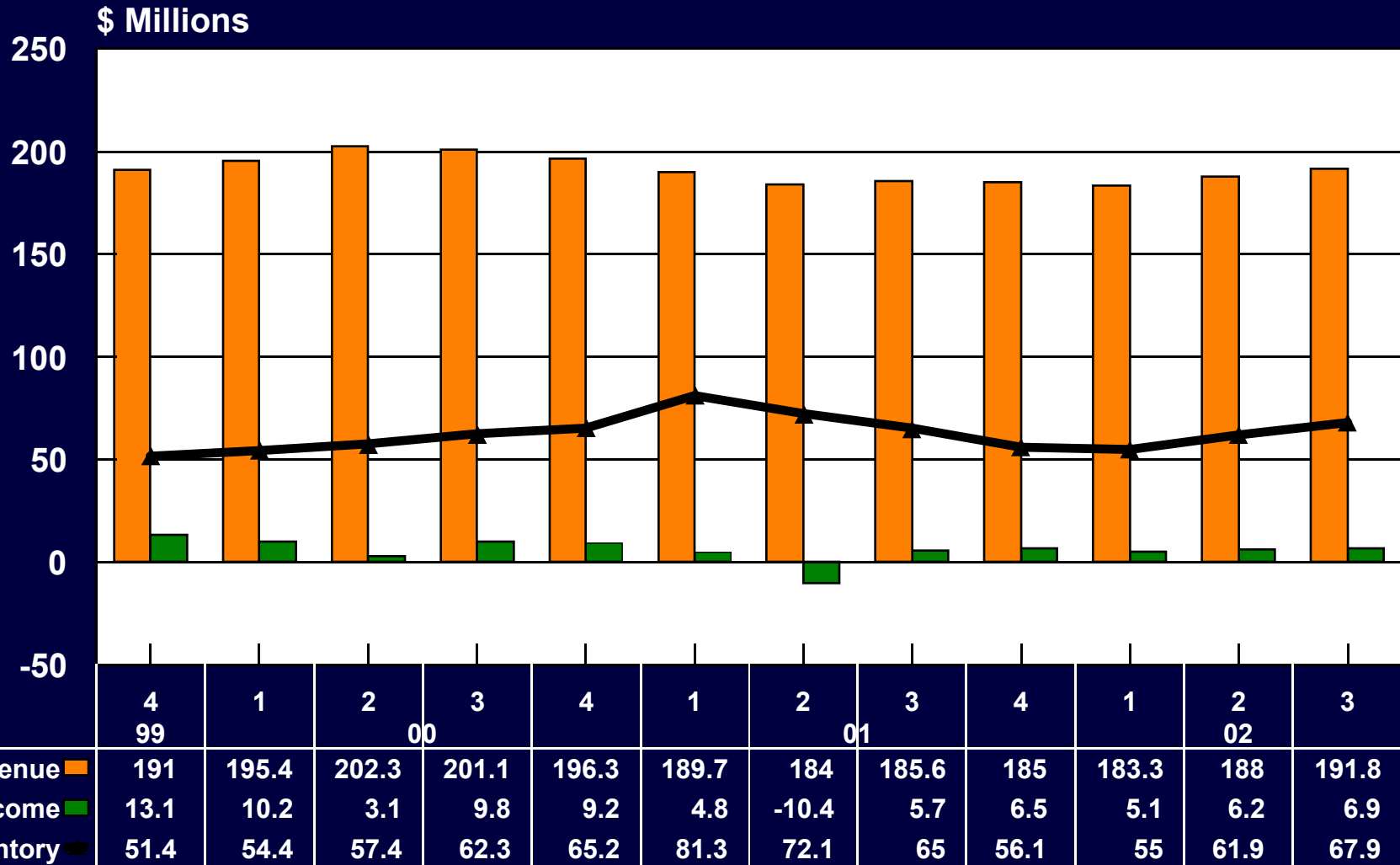


CY

MDT

Teledyne Technologies

Revenue & Net Income

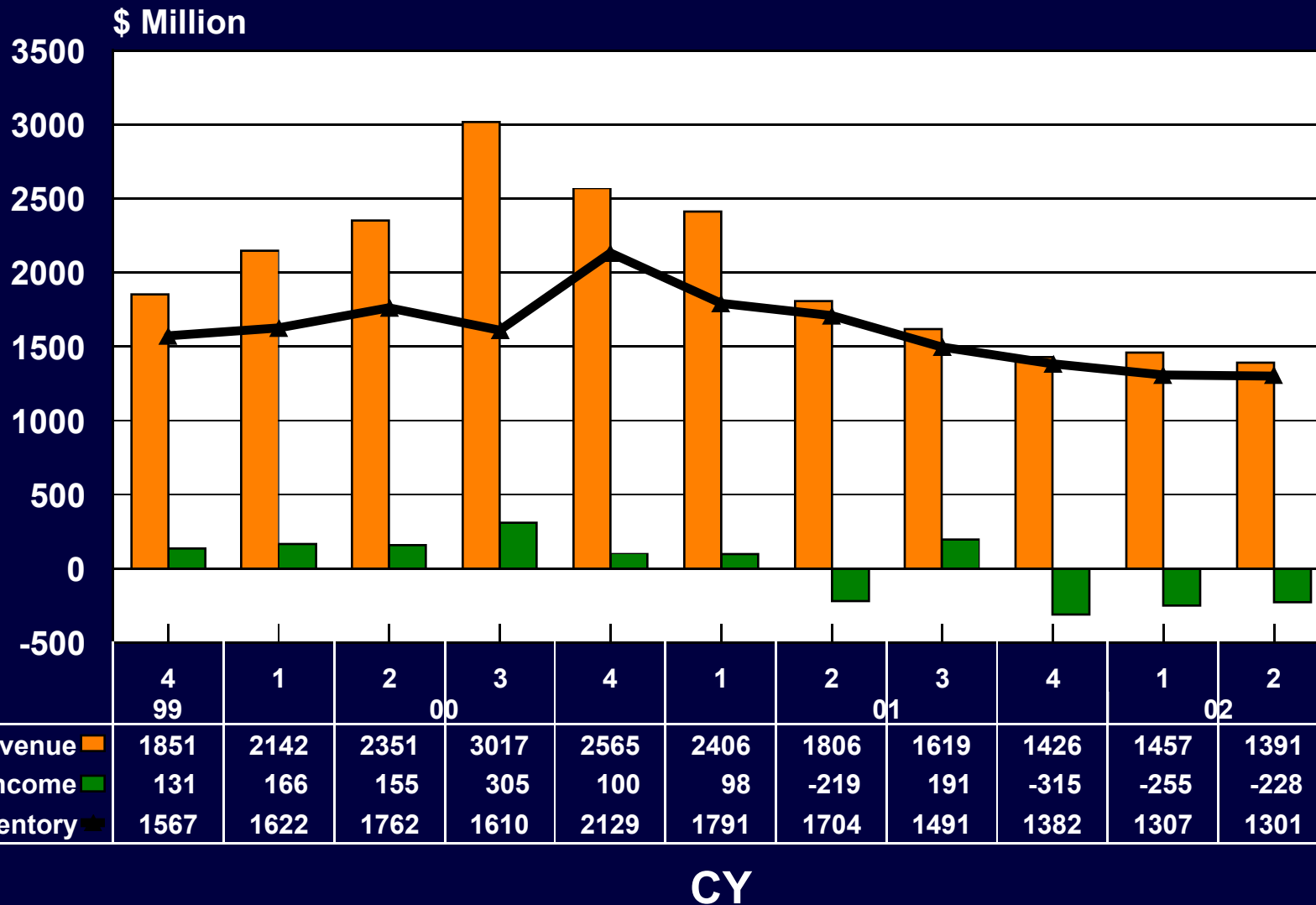


CY

TDY

Agilent Technologies

Revenue, Net Income & Inventory



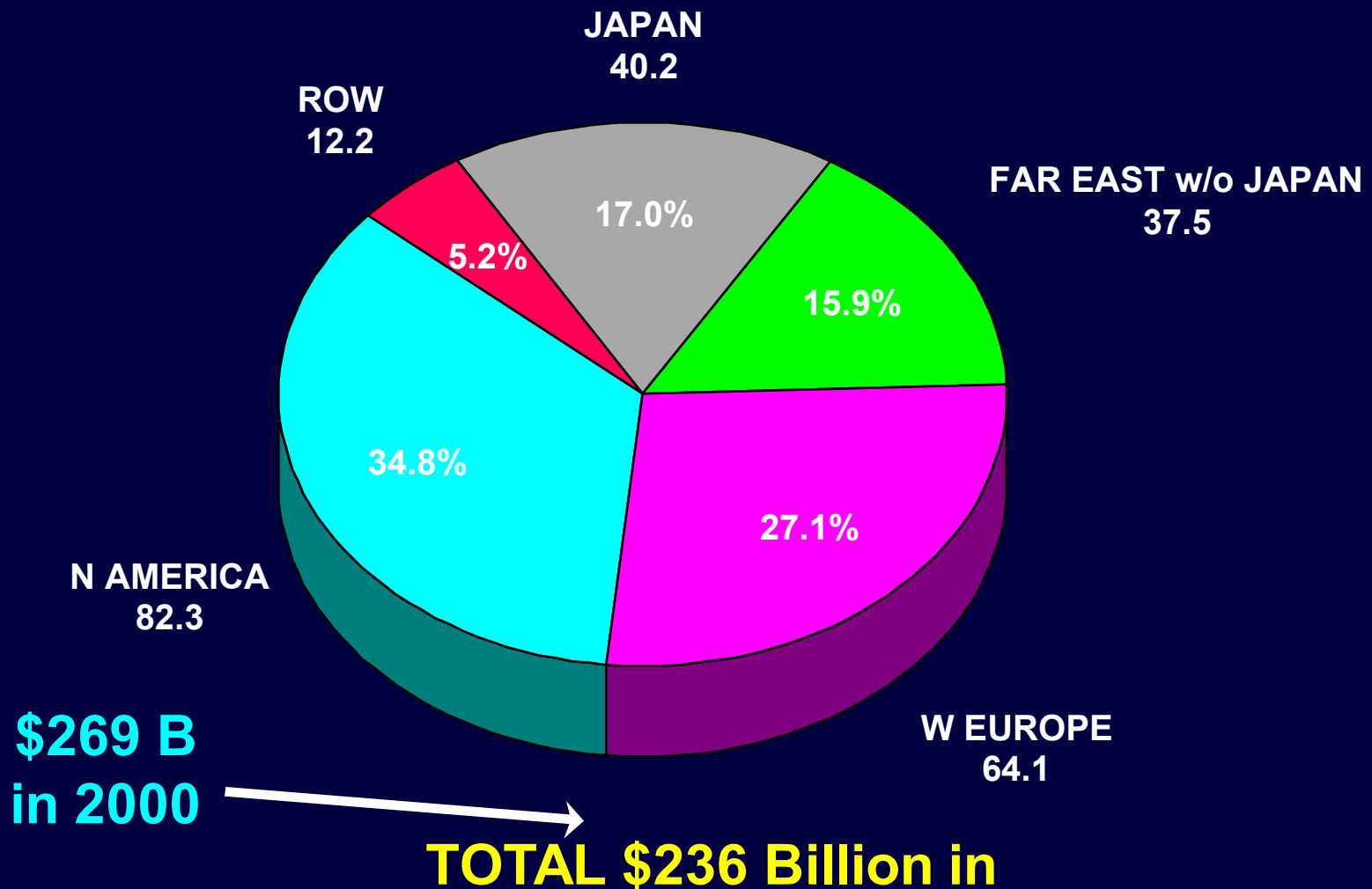
FY ends Oct31

A

Communications Equipment

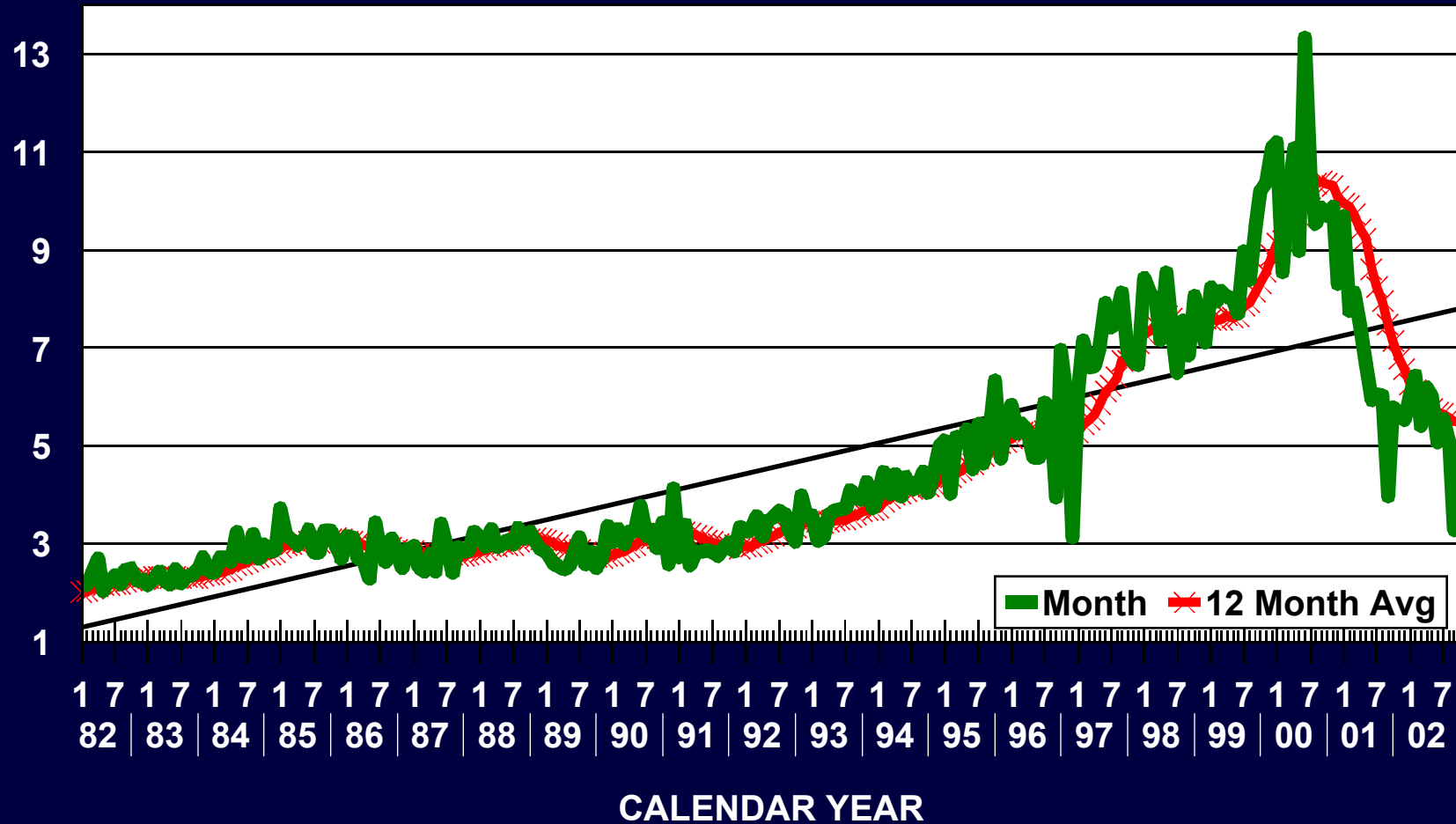
WORLD COMMUNICATIONS EQUIPMENT PRODUCTION

2001



COMMUNICATIONS EQUIPMENT BOOKINGS

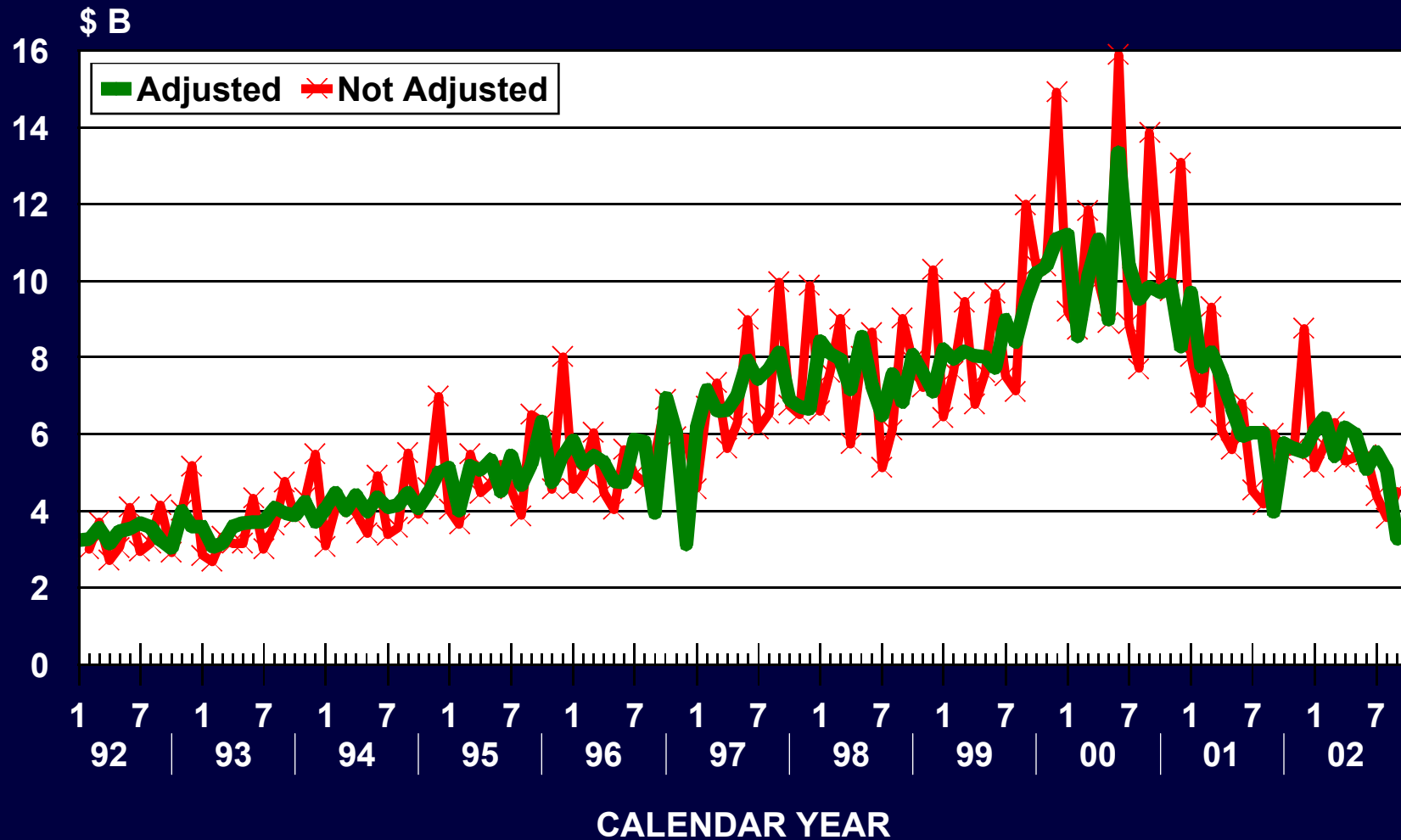
\$ B (Seasonally Adjusted)



<http://www.census.gov/indicator/www/m3/>
11/2002

COMMUNICATIONS EQUIPMENT ORDERS

Adjusted vs Non Seasonally Adjusted

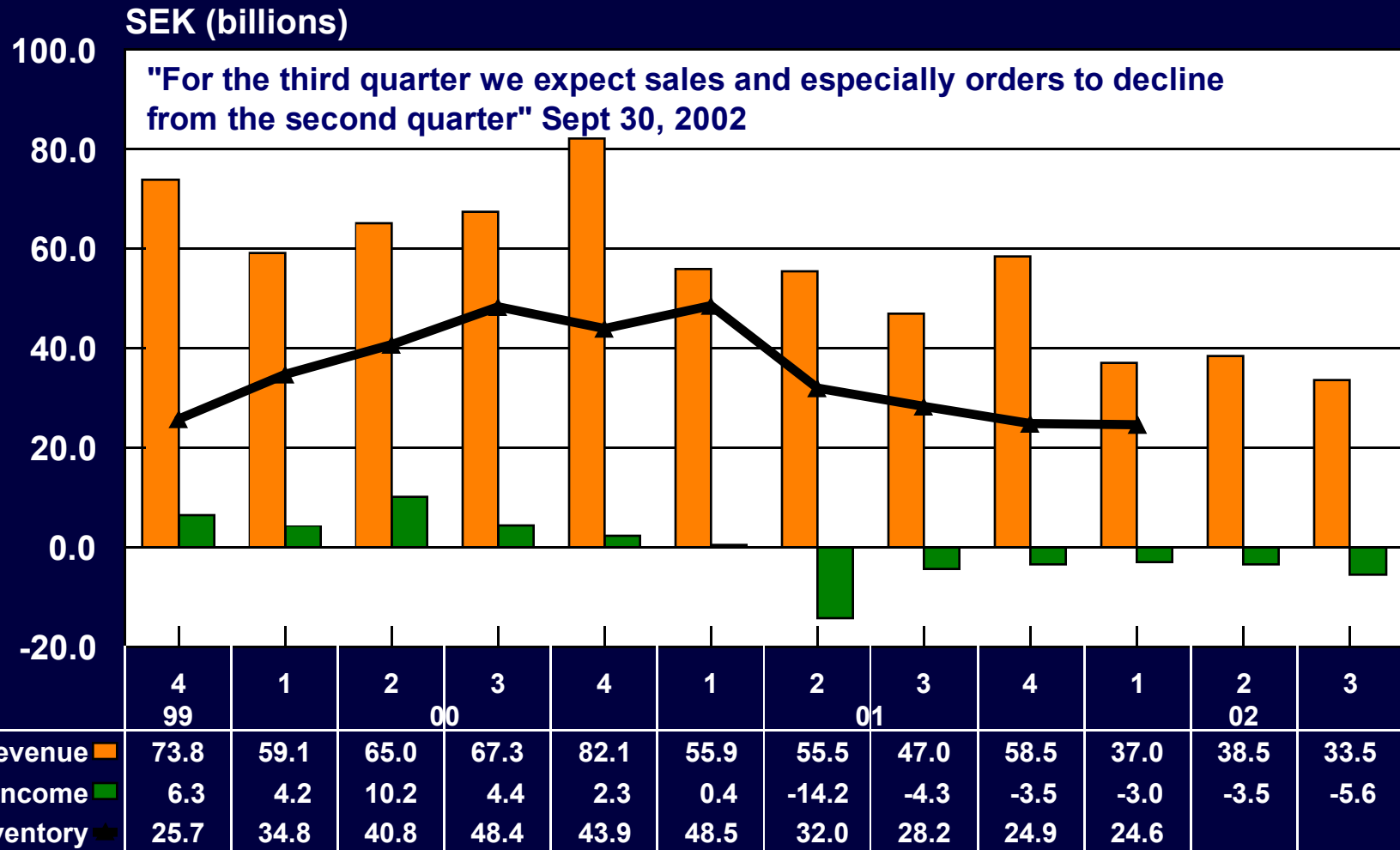


Worldwide Telecommunications Market Shares

| | <u>Q2 2002</u> | <u>YE 2001</u> |
|-----------------|----------------|----------------|
| Cisco | 14.6% | 10.1% |
| Siemens | 11.7% | 9.9% |
| Ericsson | 11.3% | 11.9% |
| Alcatel | 10.2% | 11.8% |
| Nortel | 9.8% | 11.2% |
| Lucent | 7.8% | 9.1% |

L.M. Ericsson

Revenue, Net Income & Inventory



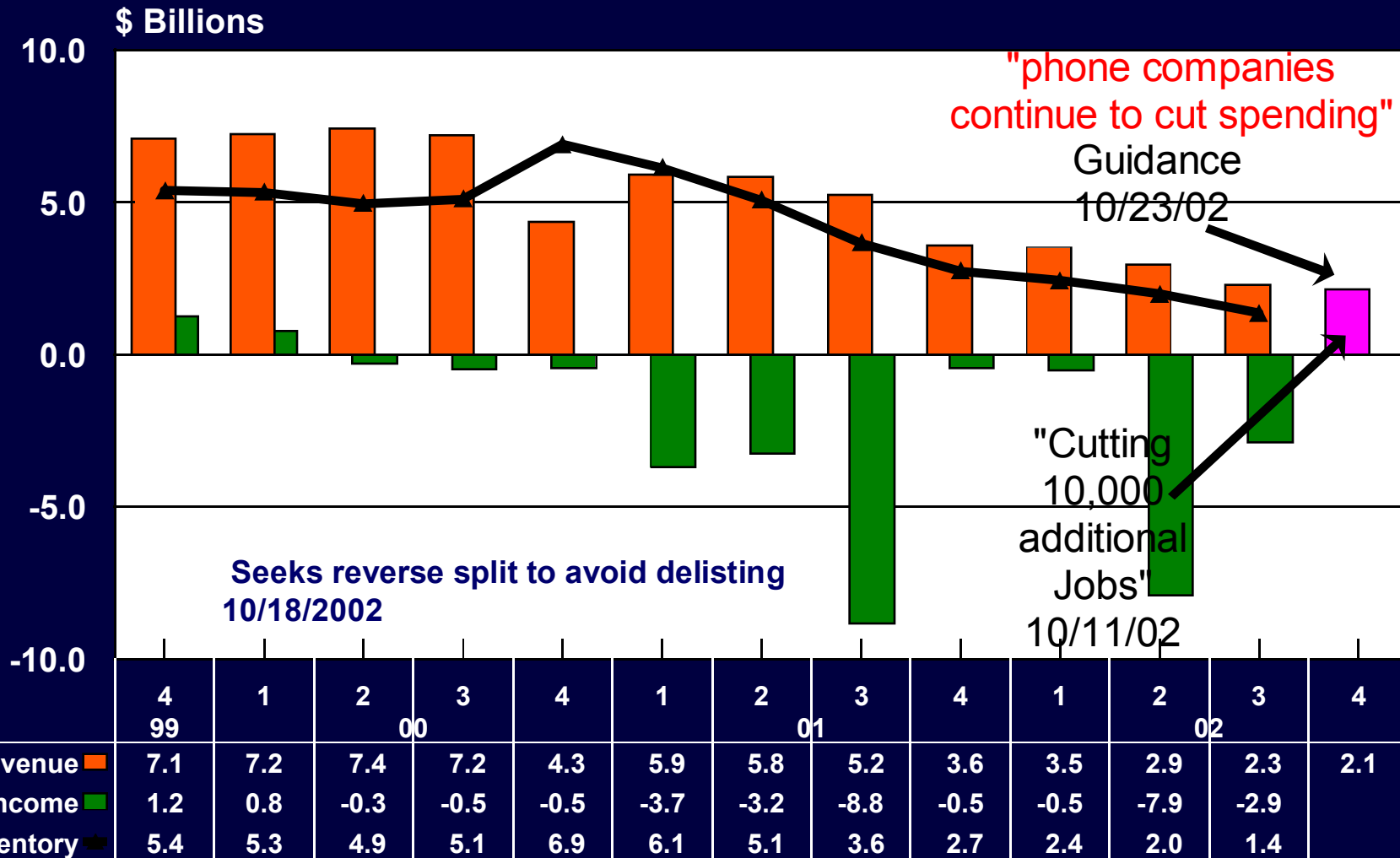
CY

FY=CY

ERICSSON

Lucent Technologies

Revenue, Net Income & Inventory



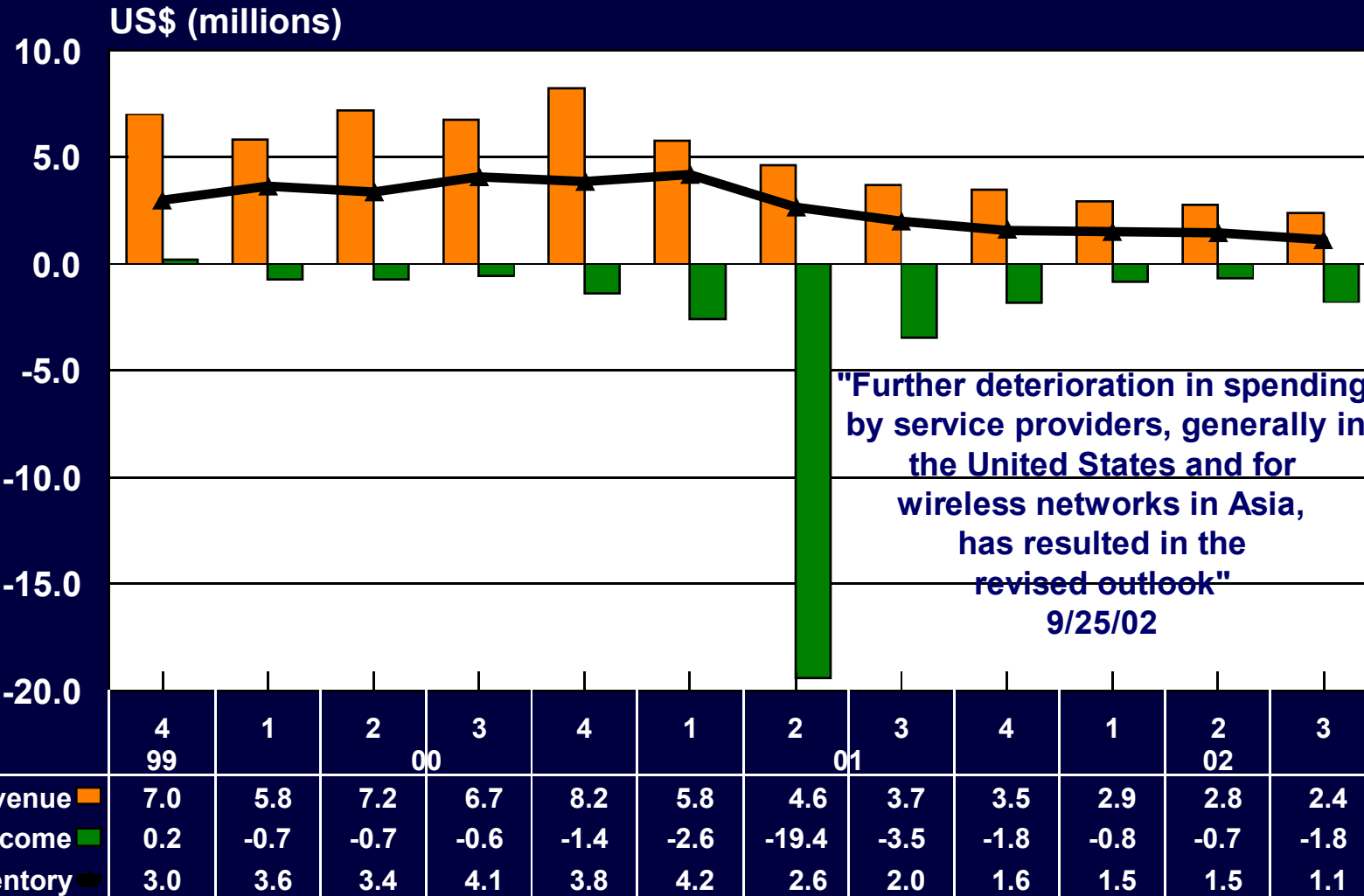
FY ends September

CY

LU

Nortel Networks

Revenue, Net Income & Inventory



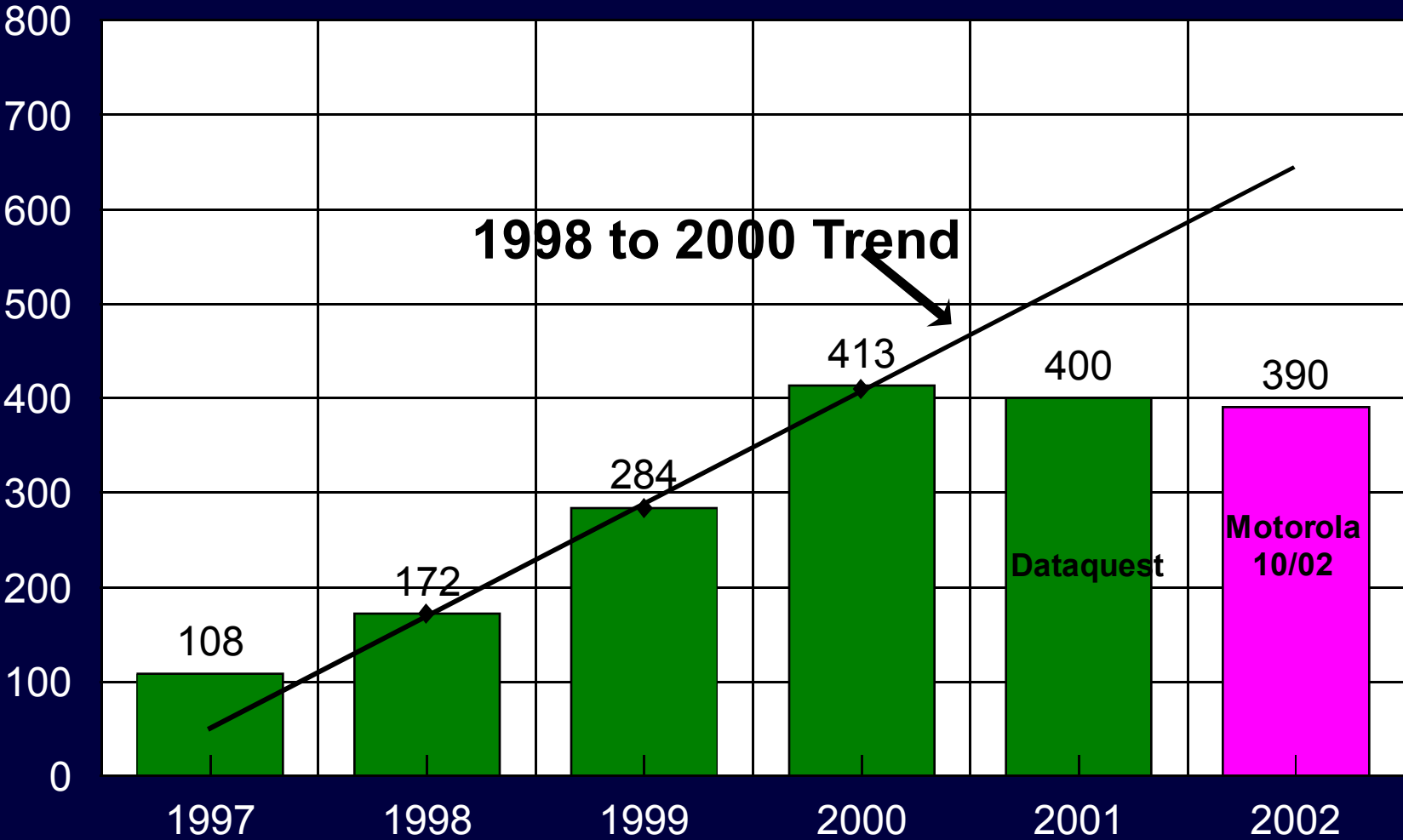
CY

FY=CY

NT

WORLD CELLULAR PHONE GROWTH

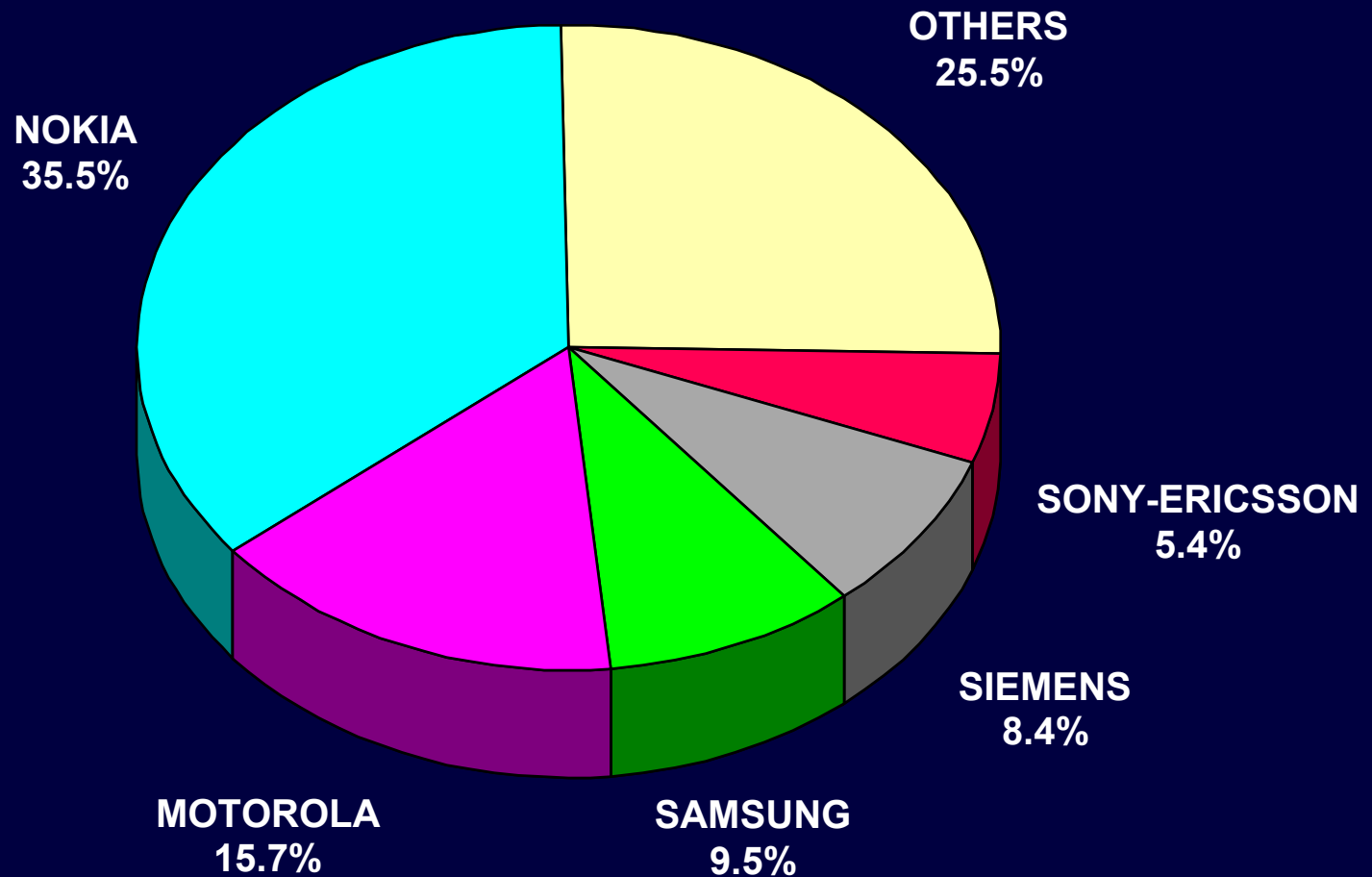
TOTAL SALES - ANALOG & DIGITAL



IDC 8/2001, Dataquest 8/2002, Motorola 10/02

WORLD CELLULAR PHONE SALES

2Q 2002

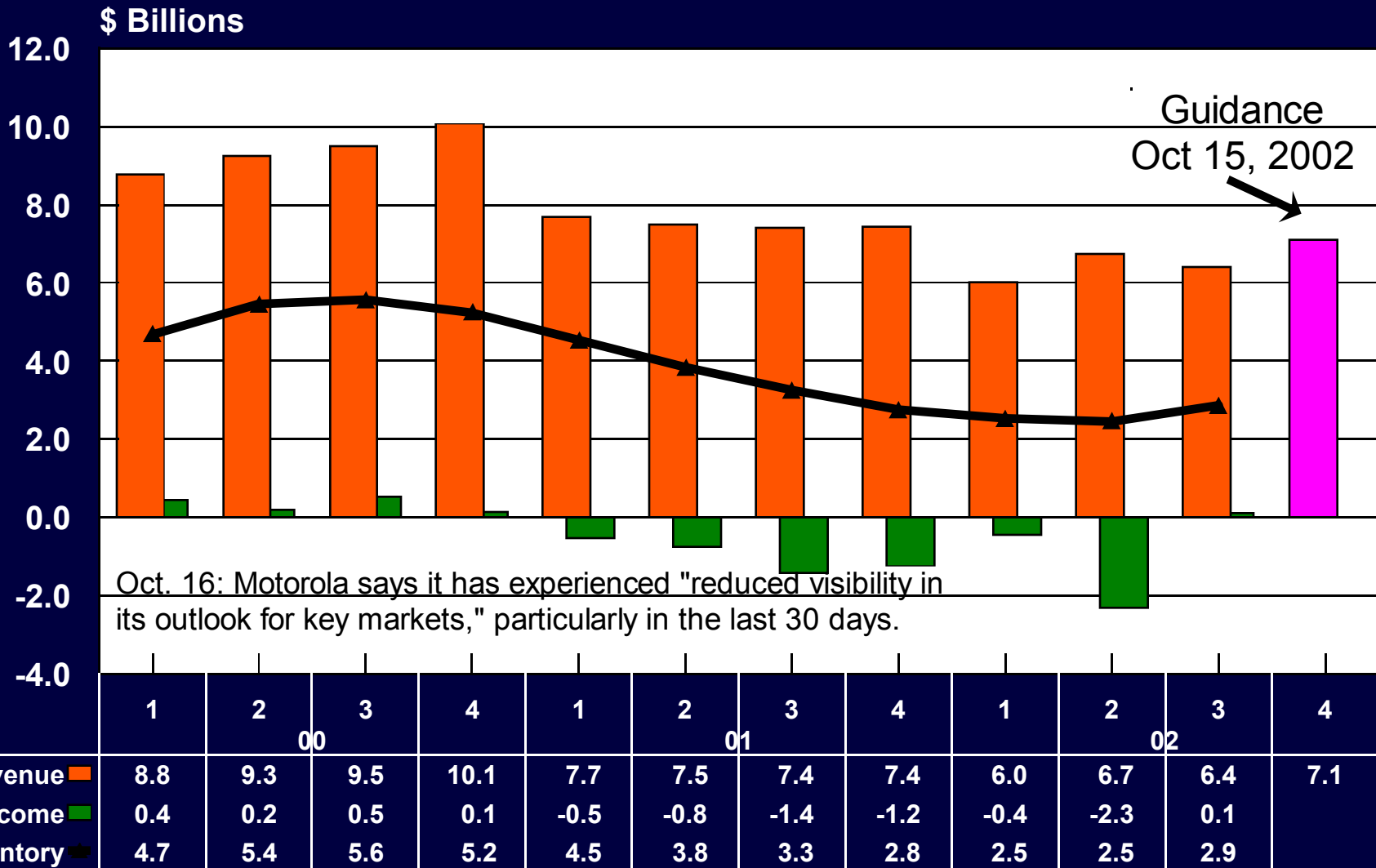


Gartner Dataquest 8/2002

TOTAL: 98.7 MILLION UNITS

Motorola

Revenue, Net Income & Inventory



CY

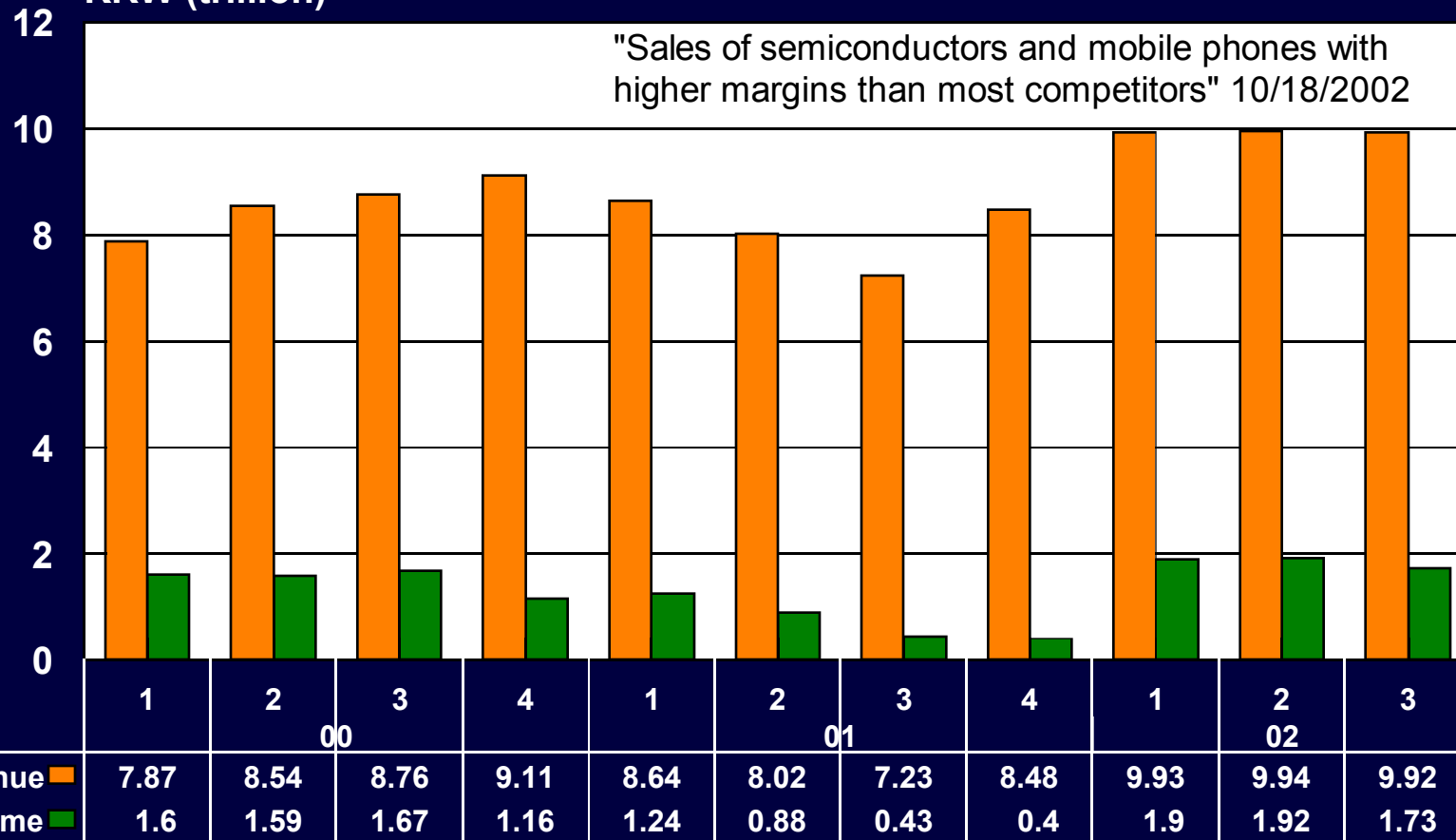
FY=CY

MOT

Samsung Electronics Co.

Revenue & Net Income

KRW (trillion)



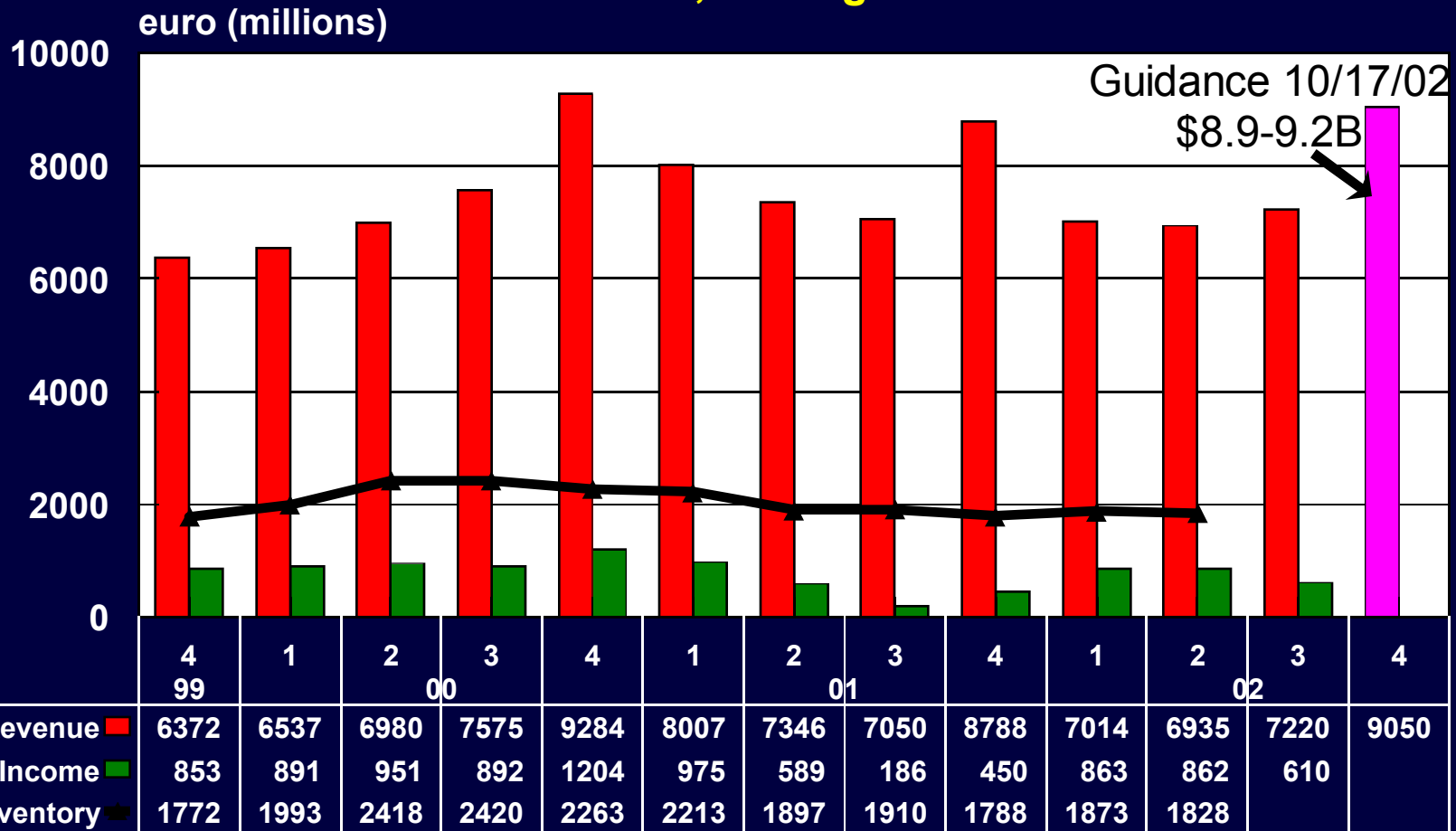
CY

Q.SSE

Nokia

Revenue, Net Income & Inventory

"In the fourth quarter, we expect a substantial increase in our market share, leading to a new record level" 10/17/02

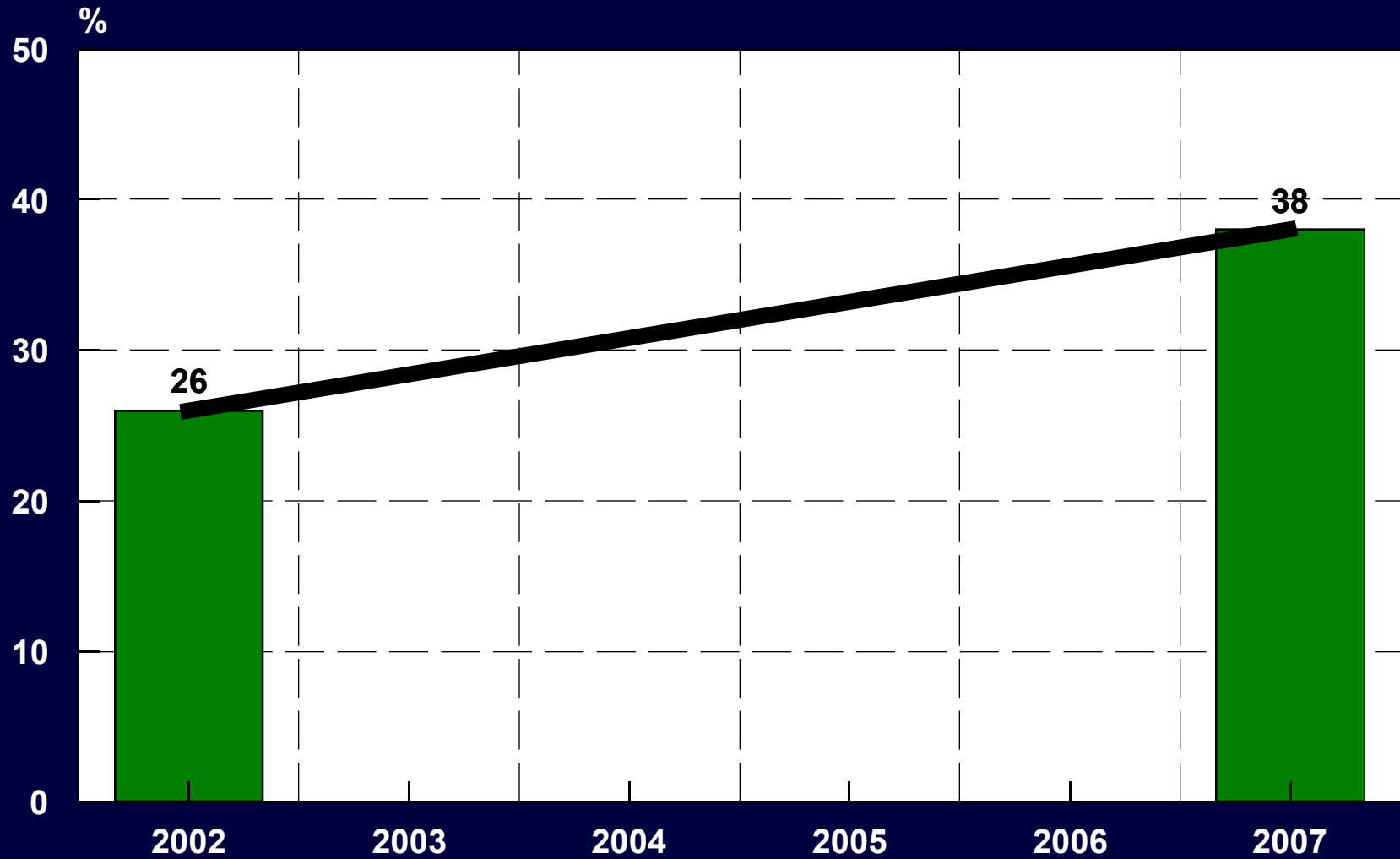


CY

NOK

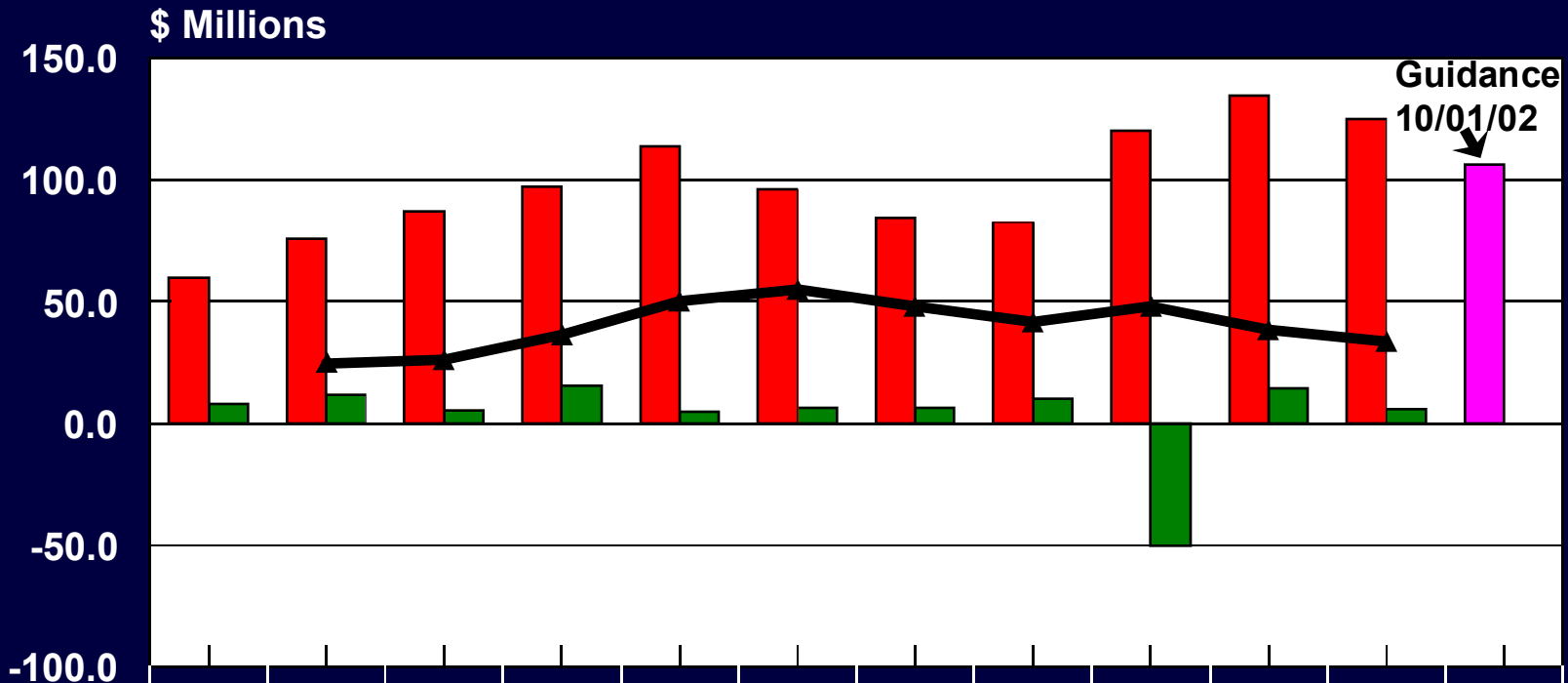
FY=CY

% of Mobile Phones made by Contract Manufacturers



Polycom

Revenue, Net Income & Inventory



| | 4 99 | 1 | 2 00 | 3 | 4 | 1 | 2 01 | 3 | 4 | 1 | 2 02 | 3 |
|--|---------|------|---------|------|-------|------|---------|------|-------|-------|---------|-------|
| Revenue ■ | 60.0 | 75.6 | 87.1 | 97.4 | 113.6 | 96.2 | 84.5 | 82.5 | 120.0 | 134.5 | 125.0 | 106.0 |
| Income ■ | 7.9 | 11.8 | 5.5 | 15.2 | 4.9 | 6.4 | 6.3 | 9.9 | -50.4 | 14.5 | 5.6 | |
| Inventory ▲ | | 24.7 | 26.2 | 36.1 | 50.0 | 54.9 | 48.2 | 41.9 | 48.2 | 38.2 | 33.5 | |

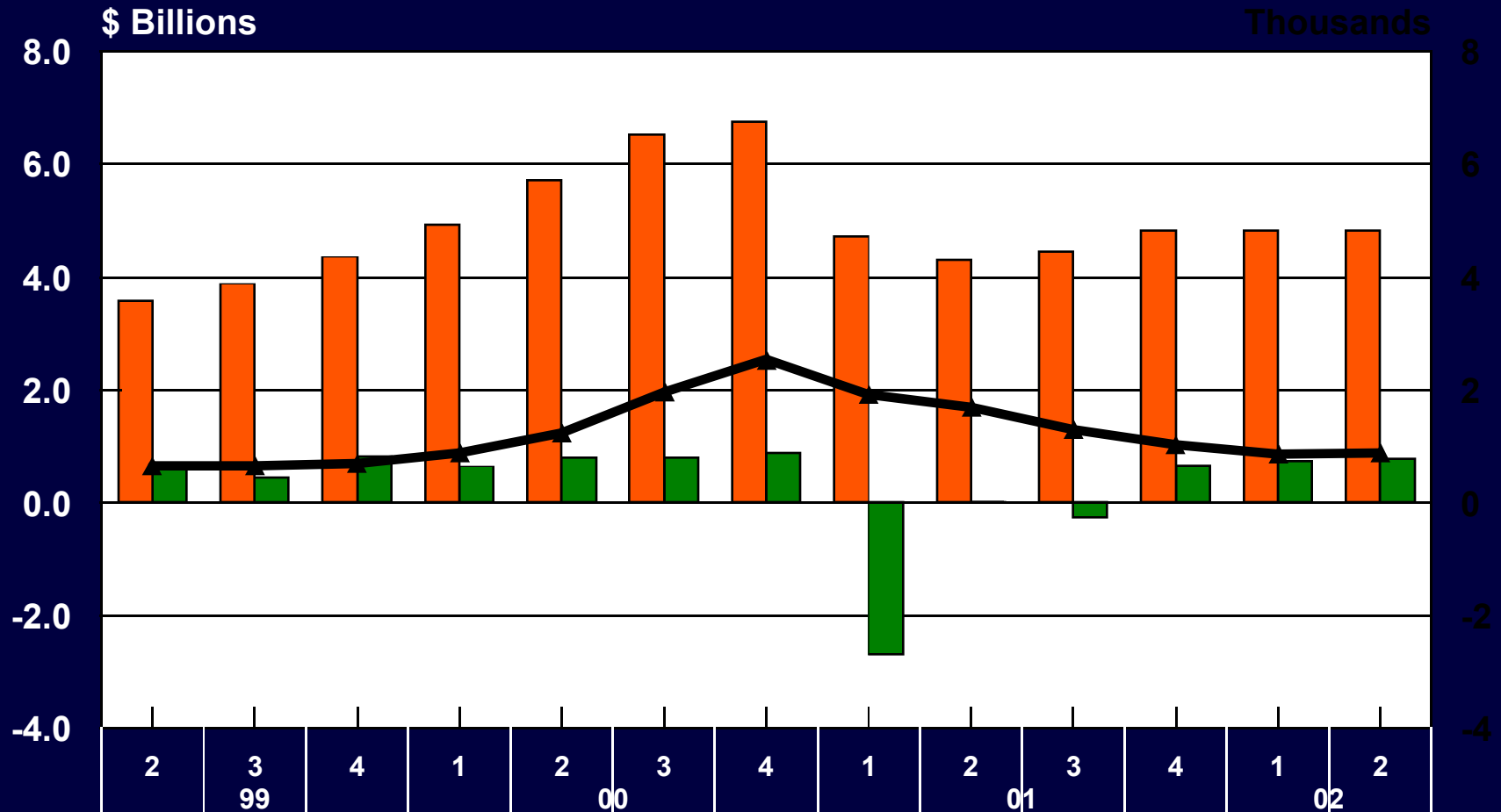
CY

PLCM

Internet Infrastrucure

CISCO SYSTEMS

Revenue, Net Income & Inventory



| | | | | | | | | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|-----|------|-----|------|-----|-----|-----|
| 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 |
| 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 |
| 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 |

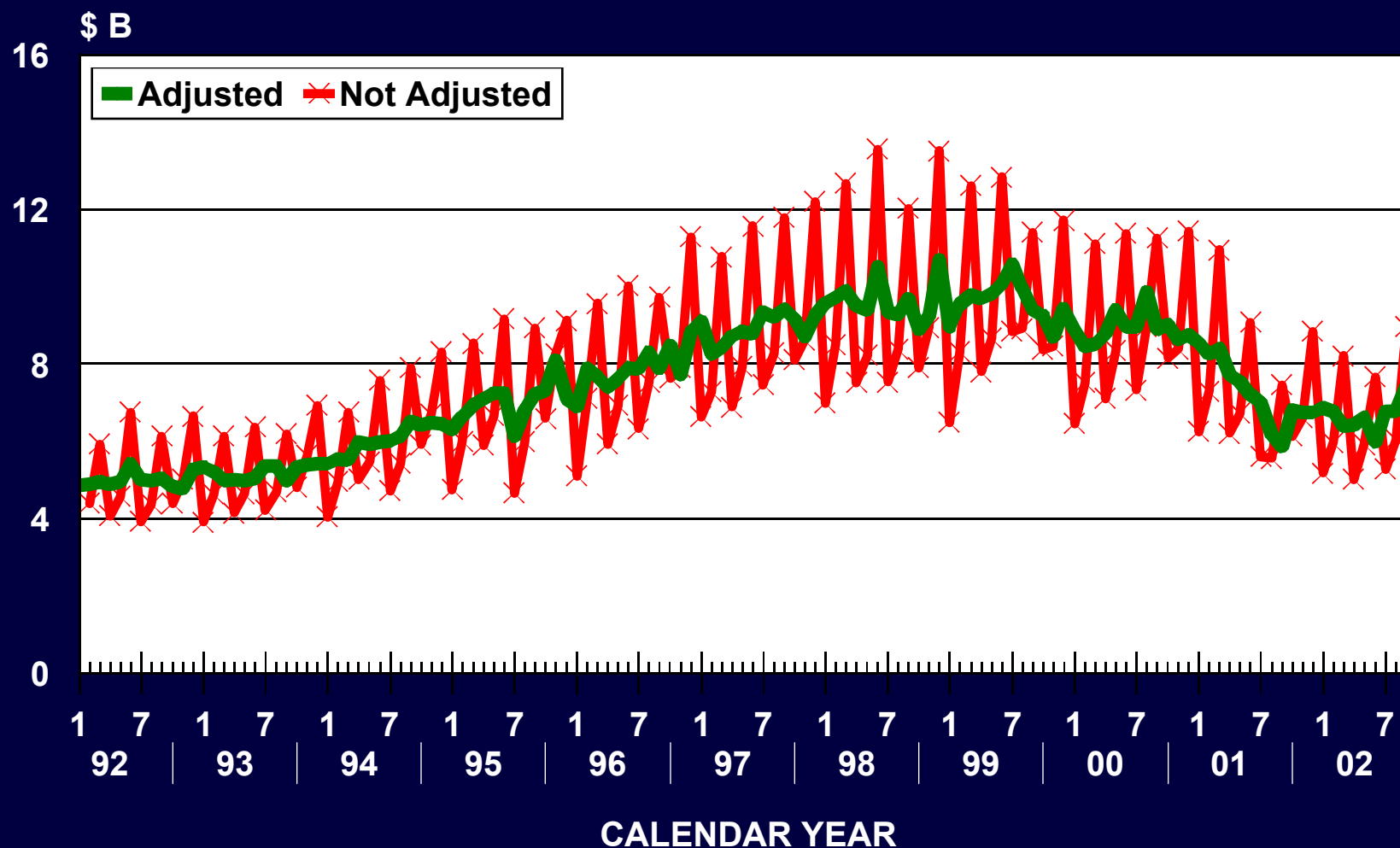
CY

CSCO

**Computers
&
Related
Products**

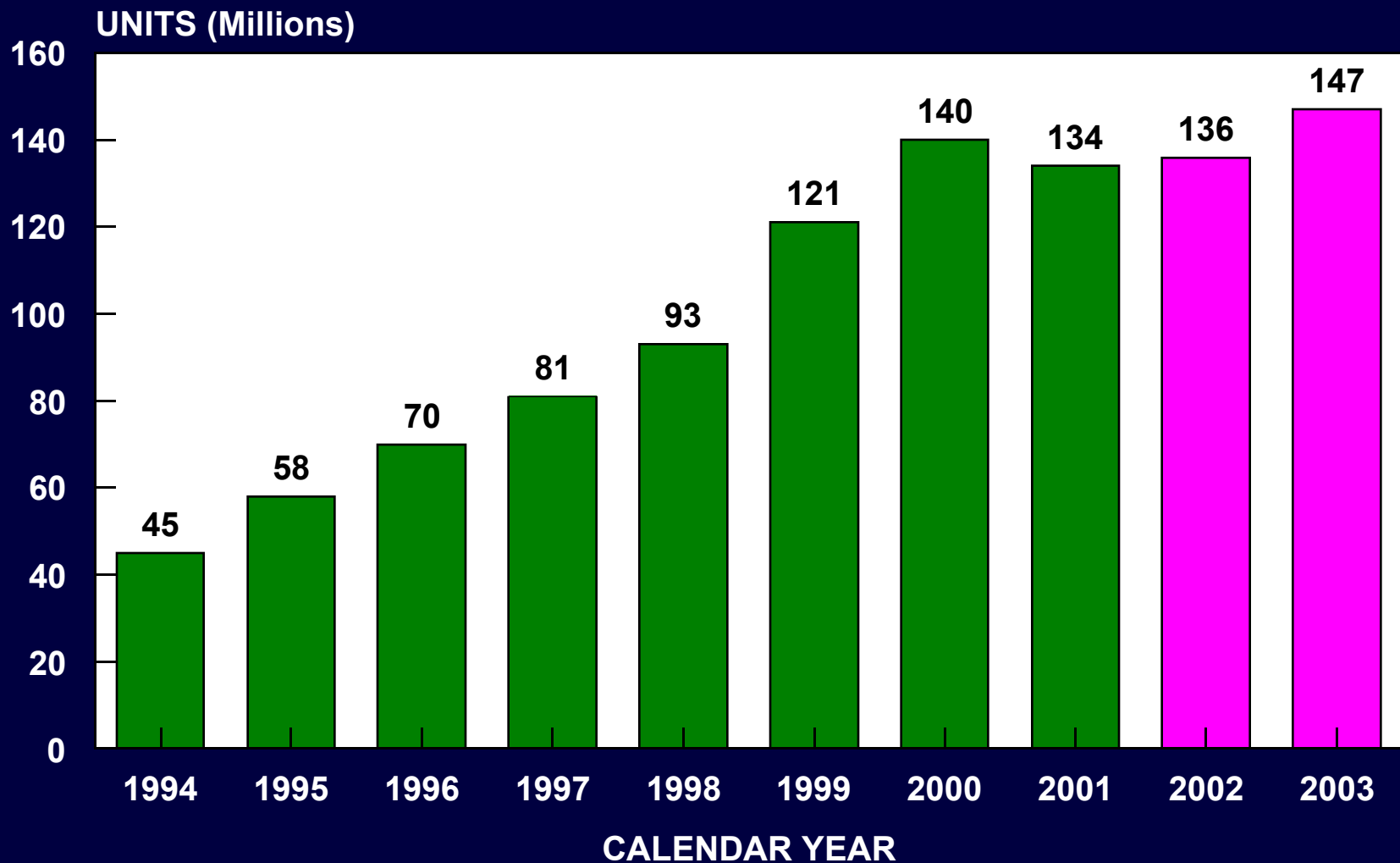
COMPUTERS & RELATED PRODUCT ORDERS

Adjusted vs Non Seasonally Adjusted



PERSONAL COMPUTER GROWTH

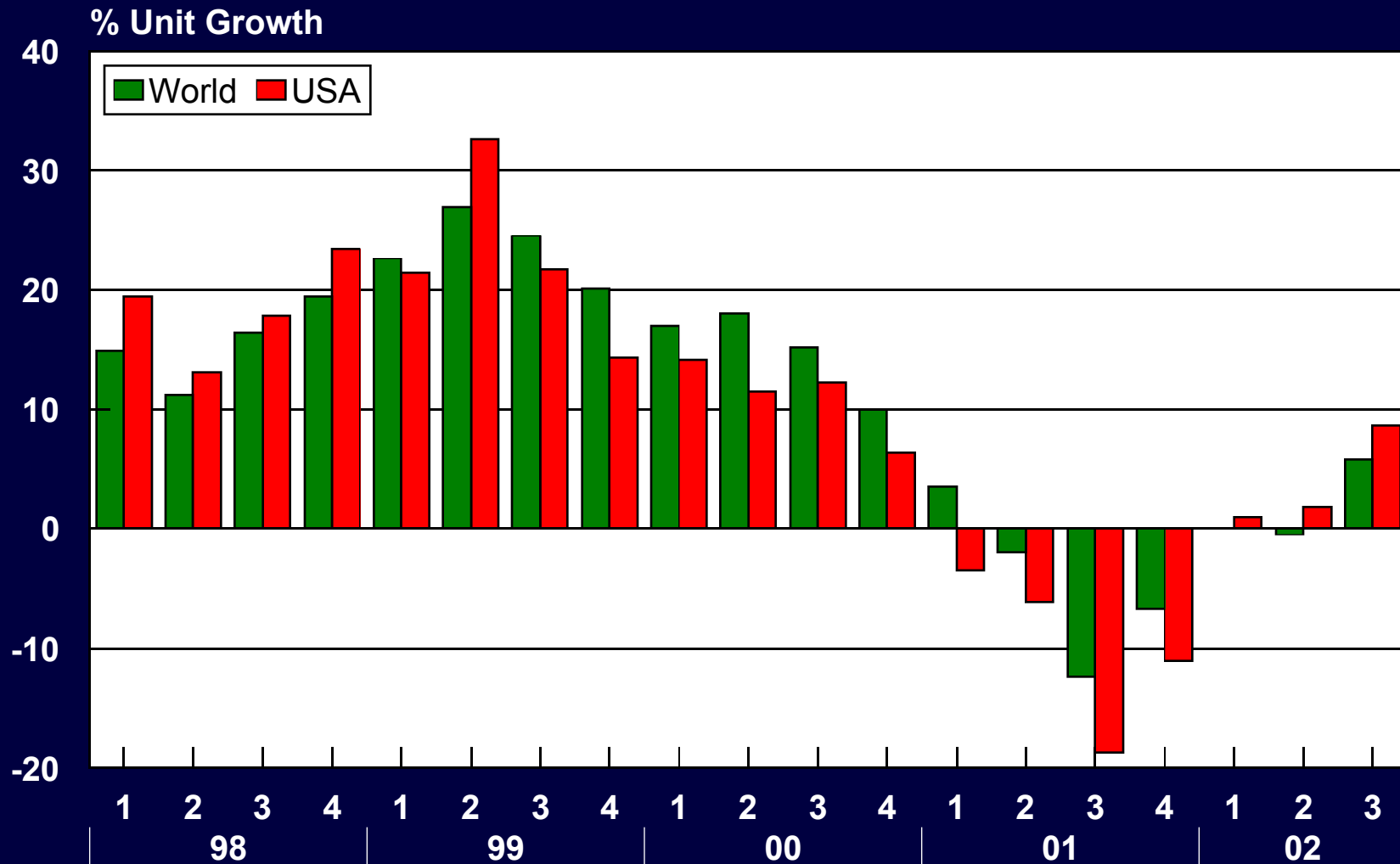
GLOBAL SALES



Gartner Dataquest 1/2002, IDC 9/2002

Desktops, Notebooks, Ultraportables - does not include Servers

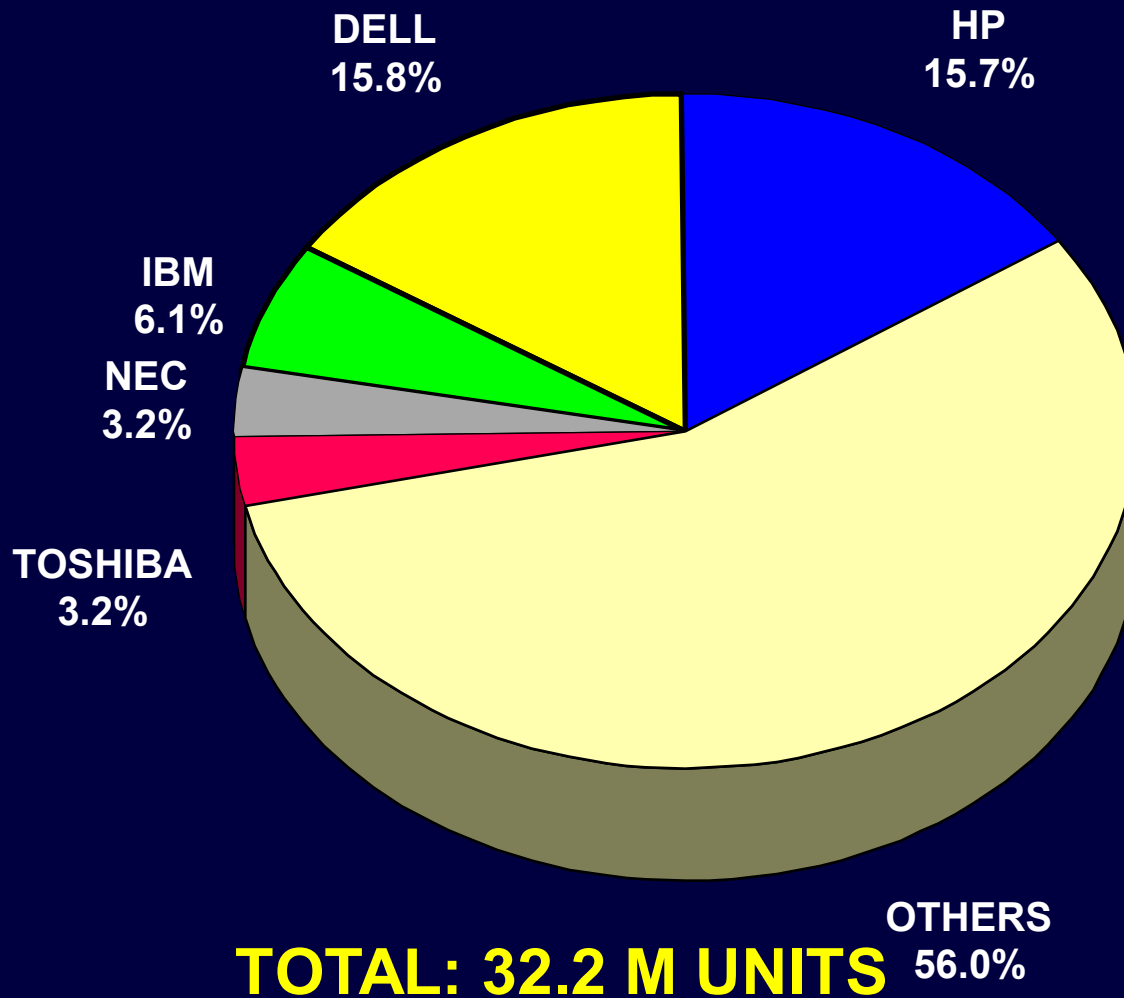
Personal Computer Market Growth World & USA



DataQuest 10/02

WORLD PC VENDOR UNIT SHIPMENTS

3Q 2002



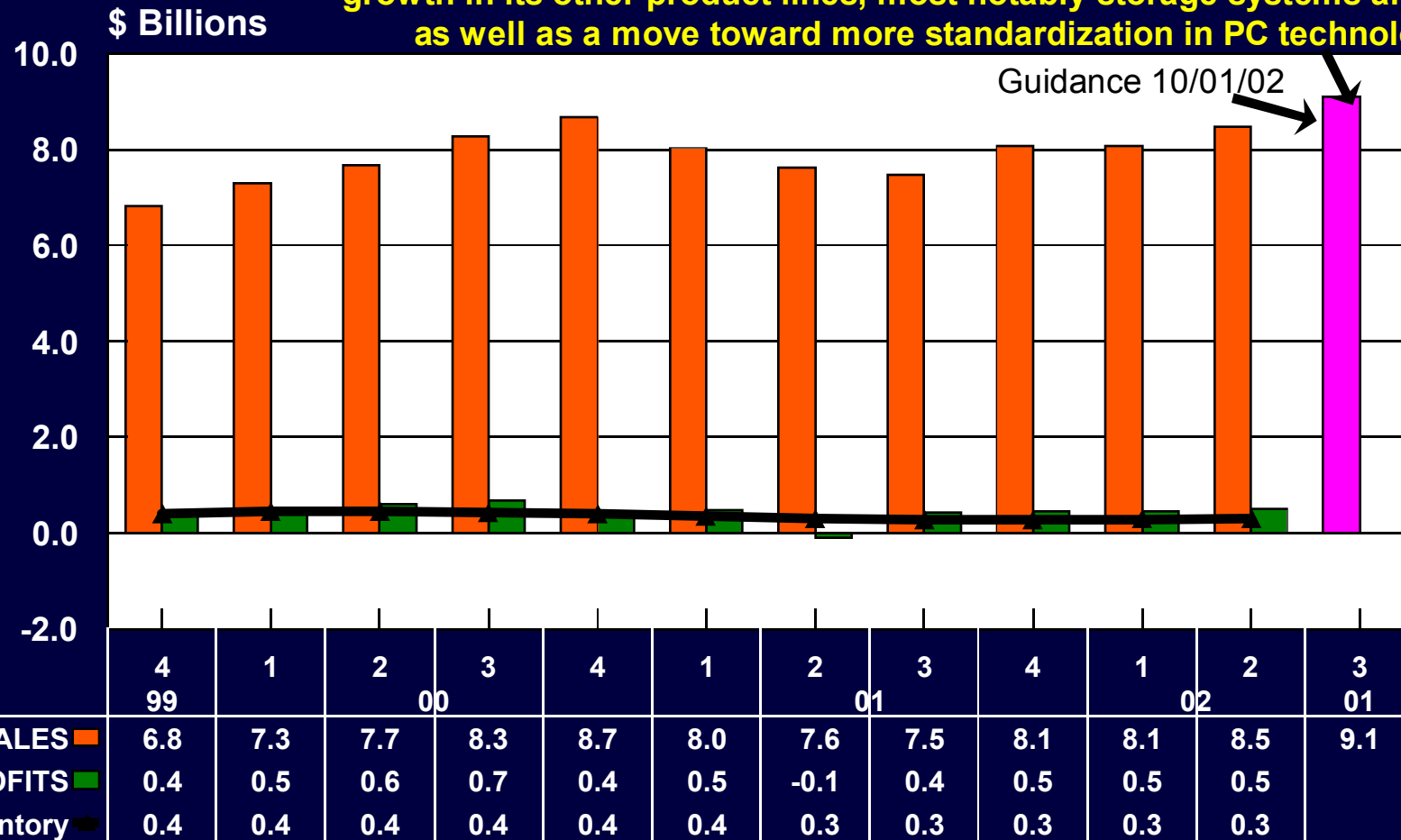
DATAQUEST 10/2002

Preliminary: Data includes desk-based PCs, mobile PCs & IA32 servers

DELL COMPUTER

Revenue, Net Income & Inventory

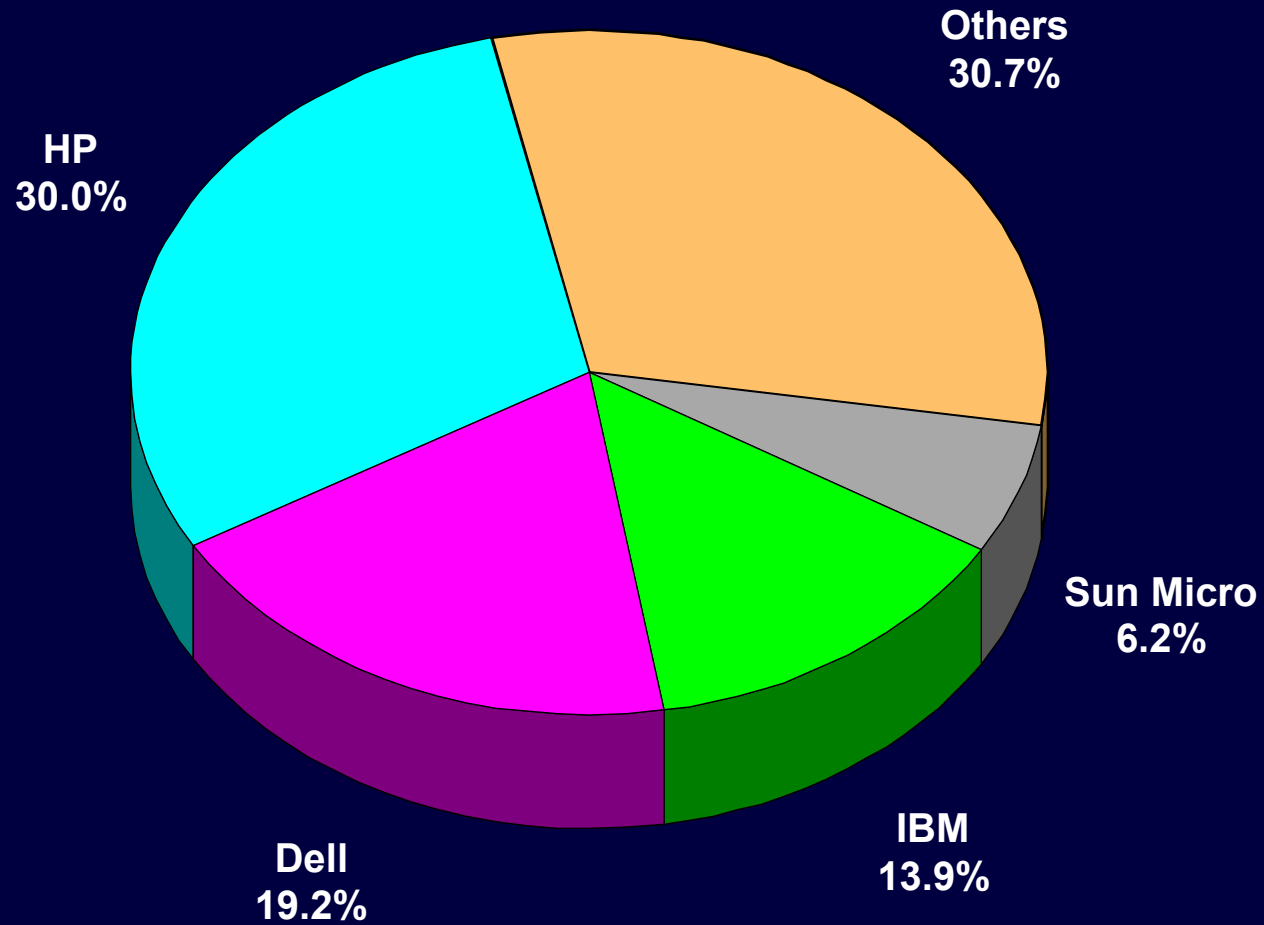
growth in its other product lines, most notably storage systems and servers, as well as a move toward more standardization in PC technologies.



FY ends October

DELL

SERVER WORLD MARKET 3Q'02



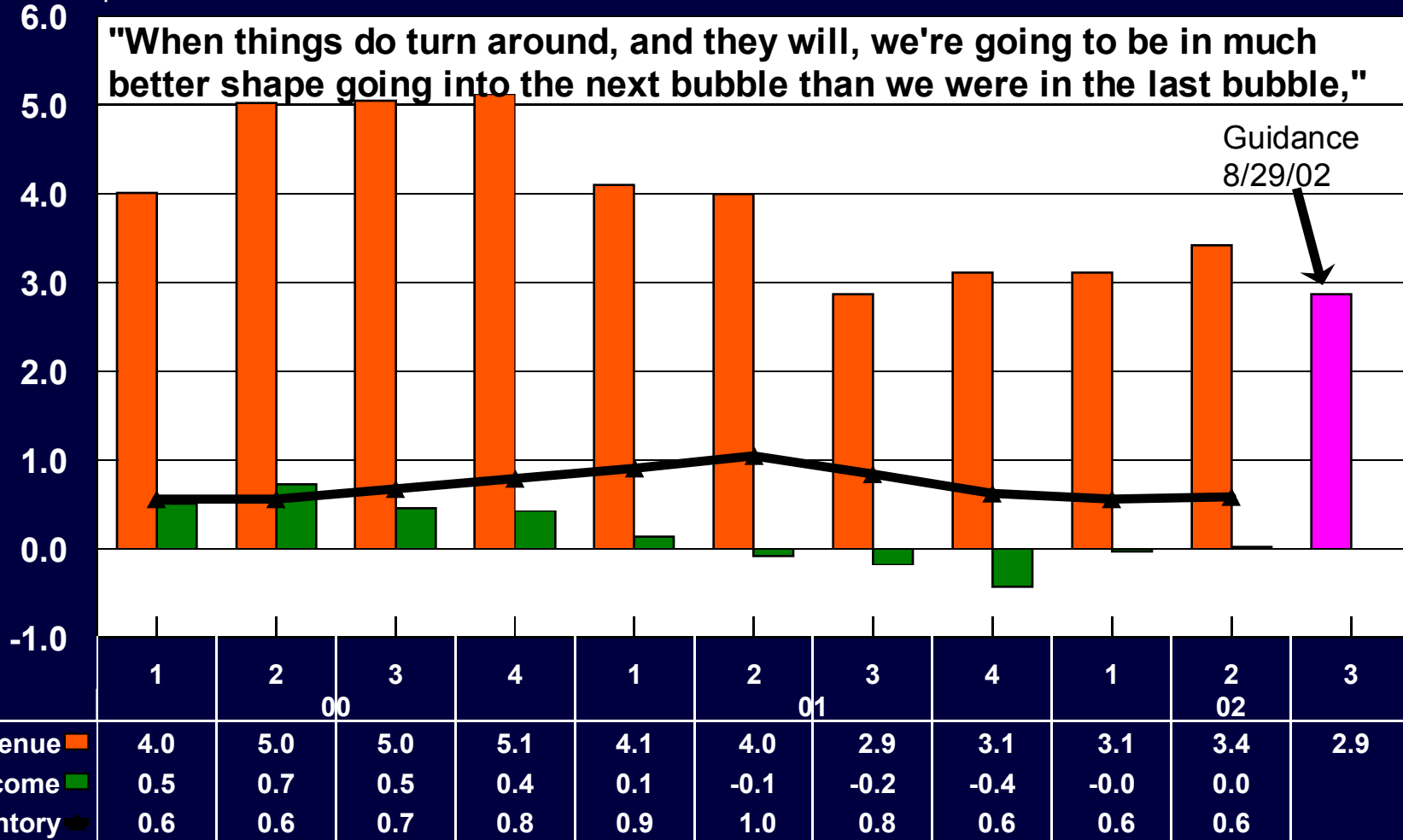
3Q'02 Total: 1.1 M Units

Sun Microsystems

Revenue, Net Income & Inventory

\$ Billions

"When things do turn around, and they will, we're going to be in much better shape going into the next bubble than we were in the last bubble,"



CY

SUNW

FY ENDS 6/30

Computer Peripherals

Wireless LAN-802.11b Market

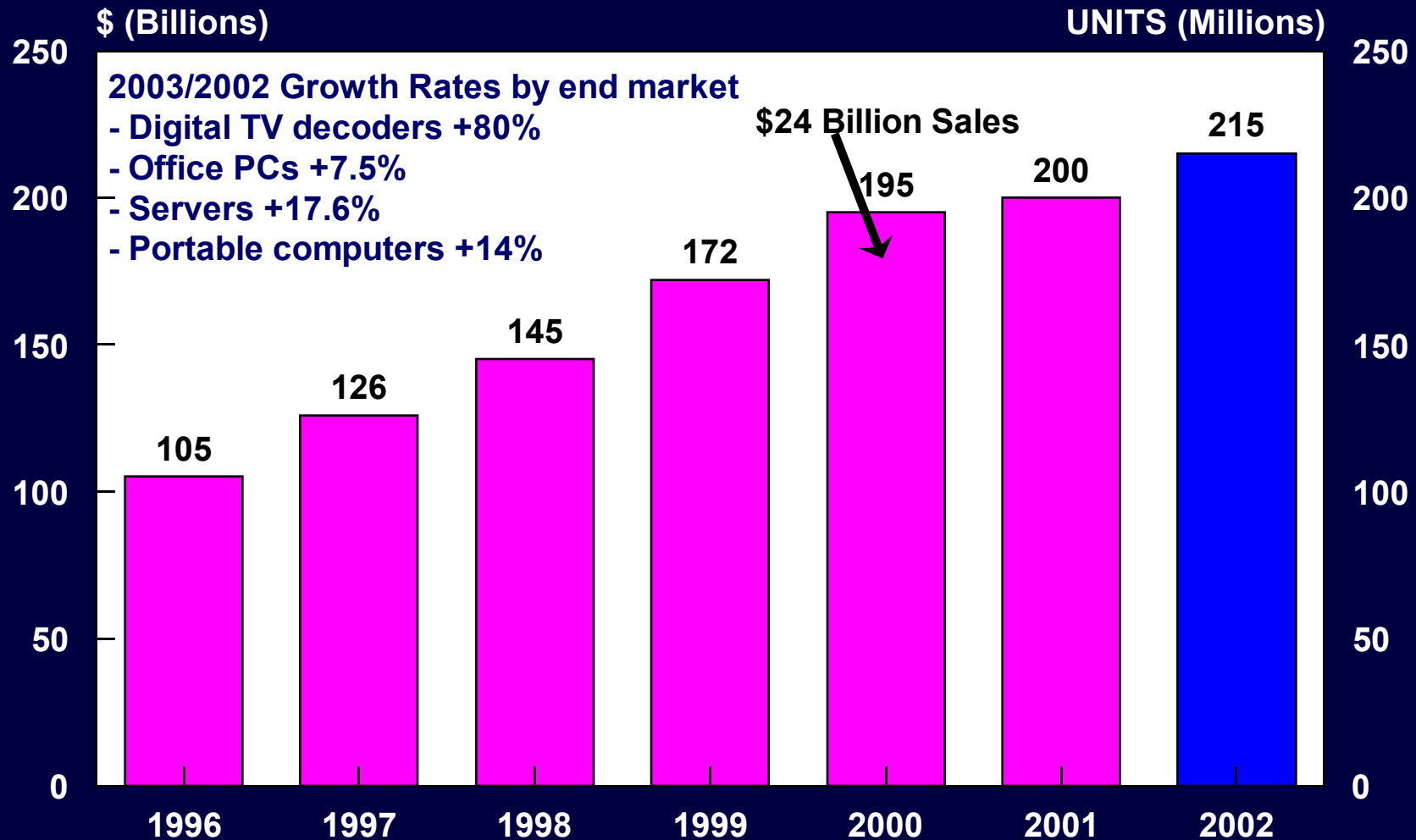
Access Points/Bridges, Broadband Gateways & NICs

| <u>Rank</u> | <u>Company</u> | <u>Quarterly Growth</u> |
|-------------|----------------|-------------------------|
| 1 | Cisco | +68% |
| 2 | Agere | -7% |
| 3 | Linksys | +6% |
| 4 | Buffalo/Melco | +16% |
| 5 | Enterasys | +18% |

**3Q'01 Manufacturing Revenue:
\$310 million, up 9% over 2Q'01**

RIGID DISK DRIVES

WORLDWIDE UNIT SHIPMENTS



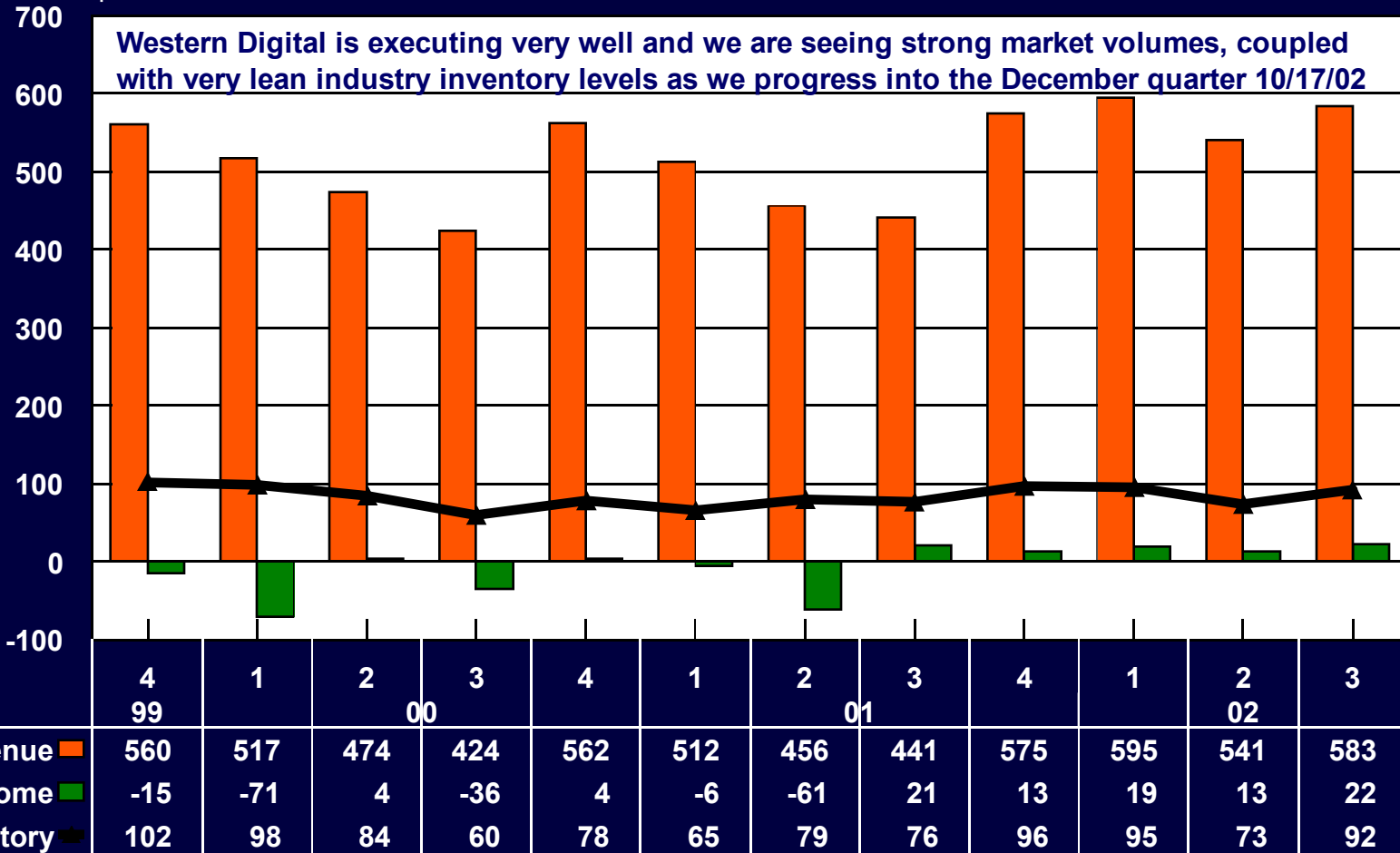
IDC 11/2000, JEI 9/2001, Maxtor 1/2002, Custer forecast 6/2002

Western Digital

Revenue, Net Income & Inventory

\$ Millions

Western Digital is executing very well and we are seeing strong market volumes, coupled with very lean industry inventory levels as we progress into the December quarter 10/17/02



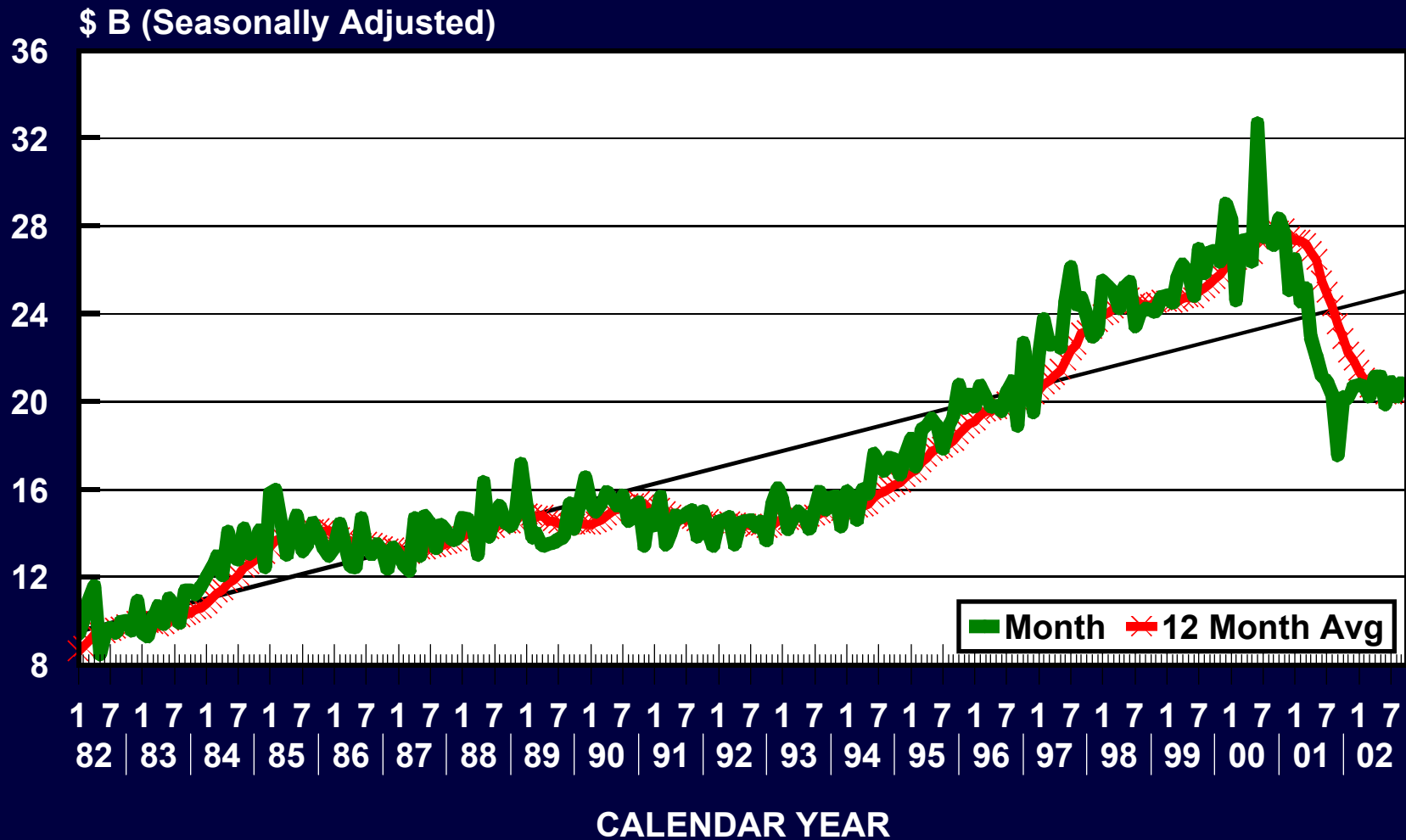
CY

FY ends June

WDC

Electronic Equipment Summary

TOTAL ELECTRONIC EQUIPMENT BOOKINGS



Wealthiest Industry Executives

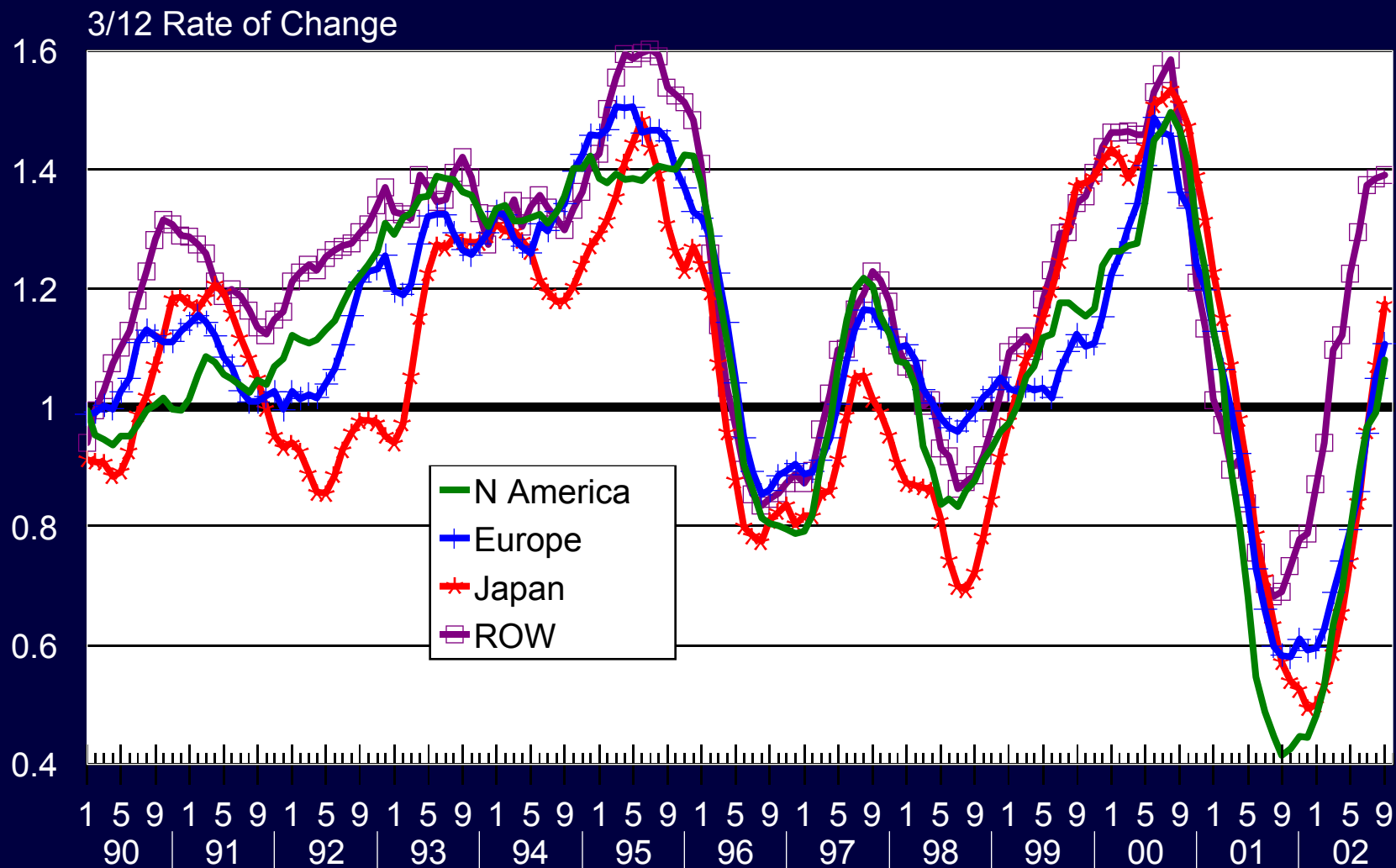
| | | Stock Value |
|-----------------------|----------------|-------------|
| | | <u>\$B</u> |
| Bill Gates | Microsoft | 34.5 |
| Steve Ballmer | Microsoft | 12.5 |
| Larry Ellison | Oracle | 12.2 |
| Robert Shrouds | DuPont | 10.9 |
| Michael Dell | Dell Computer | 8.3 |
| Gordon Moore | Intel | 5.2 |
| Tom Siebel | Siebel Systems | 1.4 |
| Rob Burgess | Macromedia | 1.4 |
| Michael Krasny | CDW | 1.4 |
| John Morgridge | Cisco | 1.4 |
| Martha Ingram | Ingram Micro | 0.8 |
| Henry Nicholas | Broadcom | 0.8 |
| Henry Samueli | Broadcom | 0.8 |

Source:CRN 6/24/2002

Semiconductors

SEMICONDUCTOR GROWTH RATES

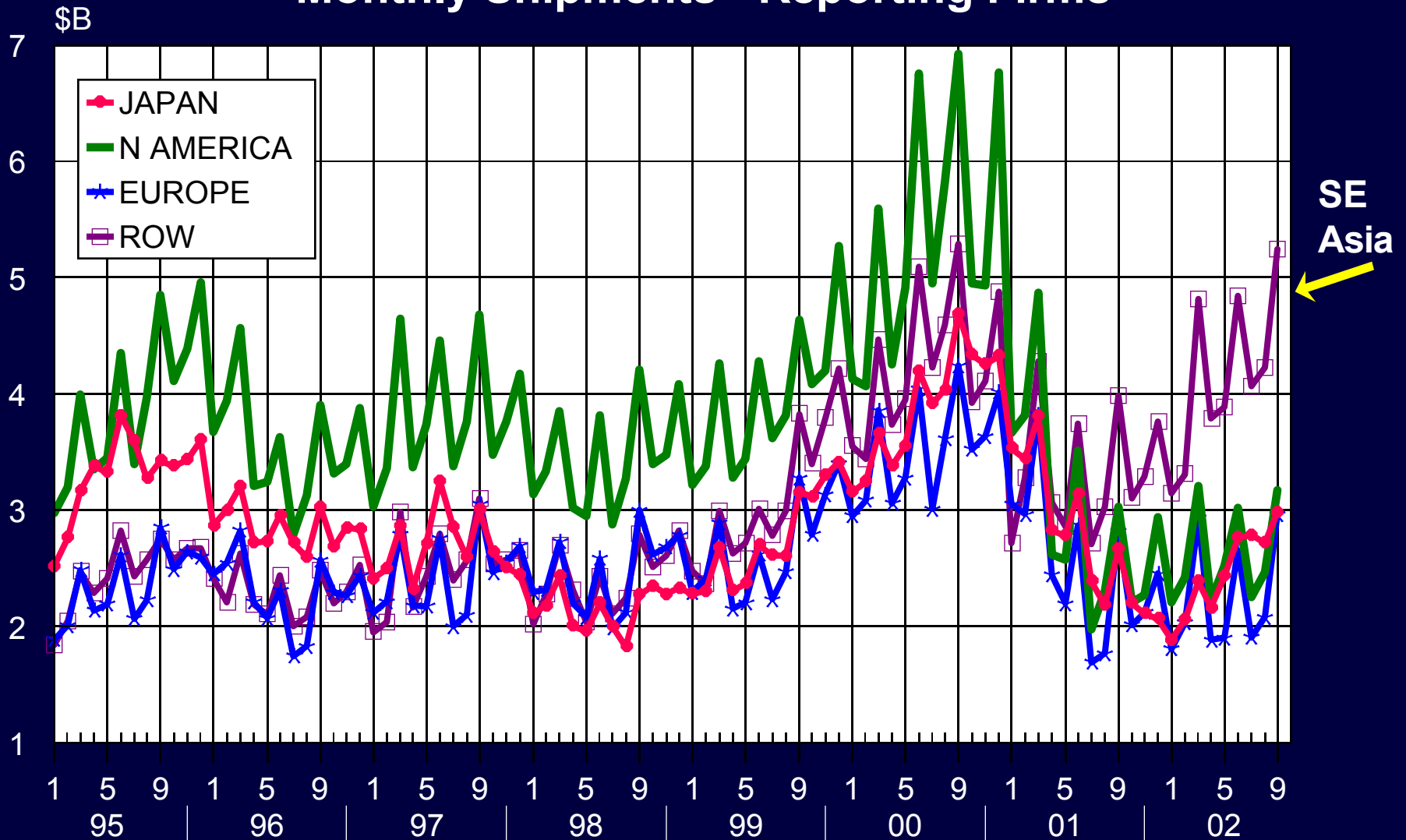
TOTAL \$ SHIPMENTS TO AN AREA



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

TOTAL SEMICONDUCTOR \$ SHIPMENTS TO AREA

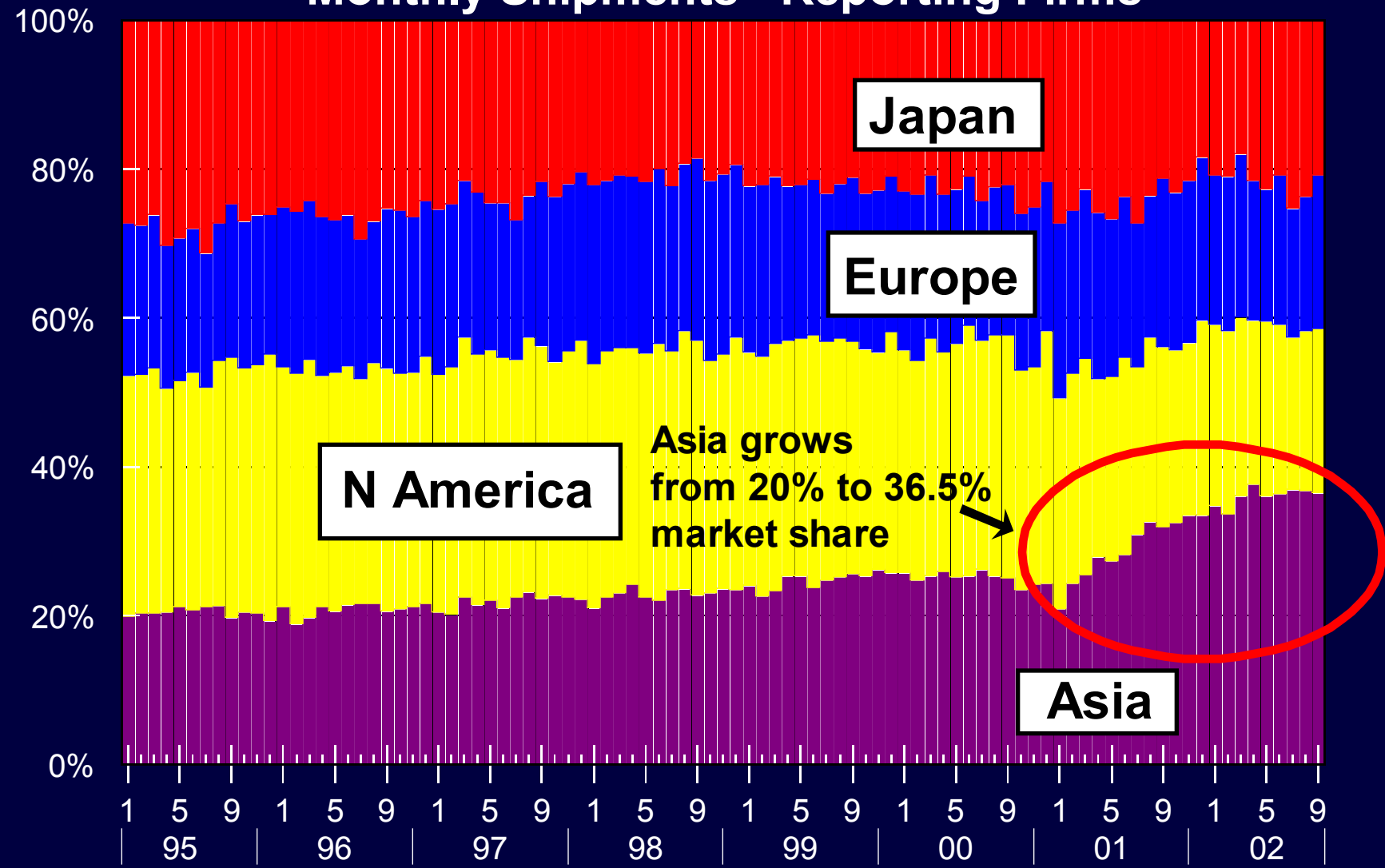
Monthly Shipments - Reporting Firms



SIA website: www.semichips.org/

TOTAL SEMICONDUCTOR \$ SHIPMENTS TO AREA

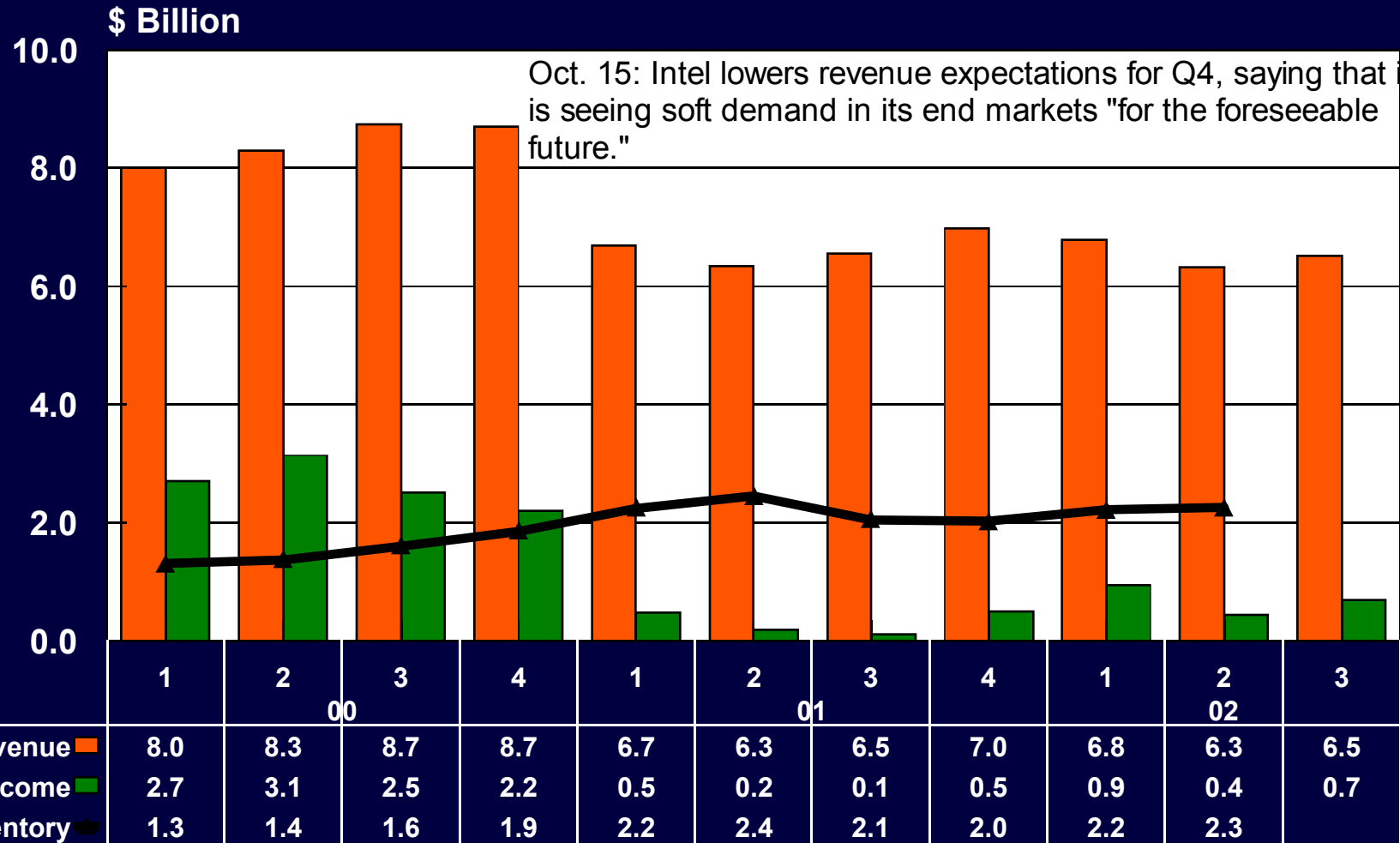
Monthly Shipments - Reporting Firms



Intel

Revenue, Net Income & Inventory

"a turnaround will happen when there is corporate purchases of IT infrastructure and that cannot happen until there is corporate profitability in the United States, Japan and Western Europe... It is very difficult to predict when that will happen." Craig Barrett Sept 30, 2002



FY=CY

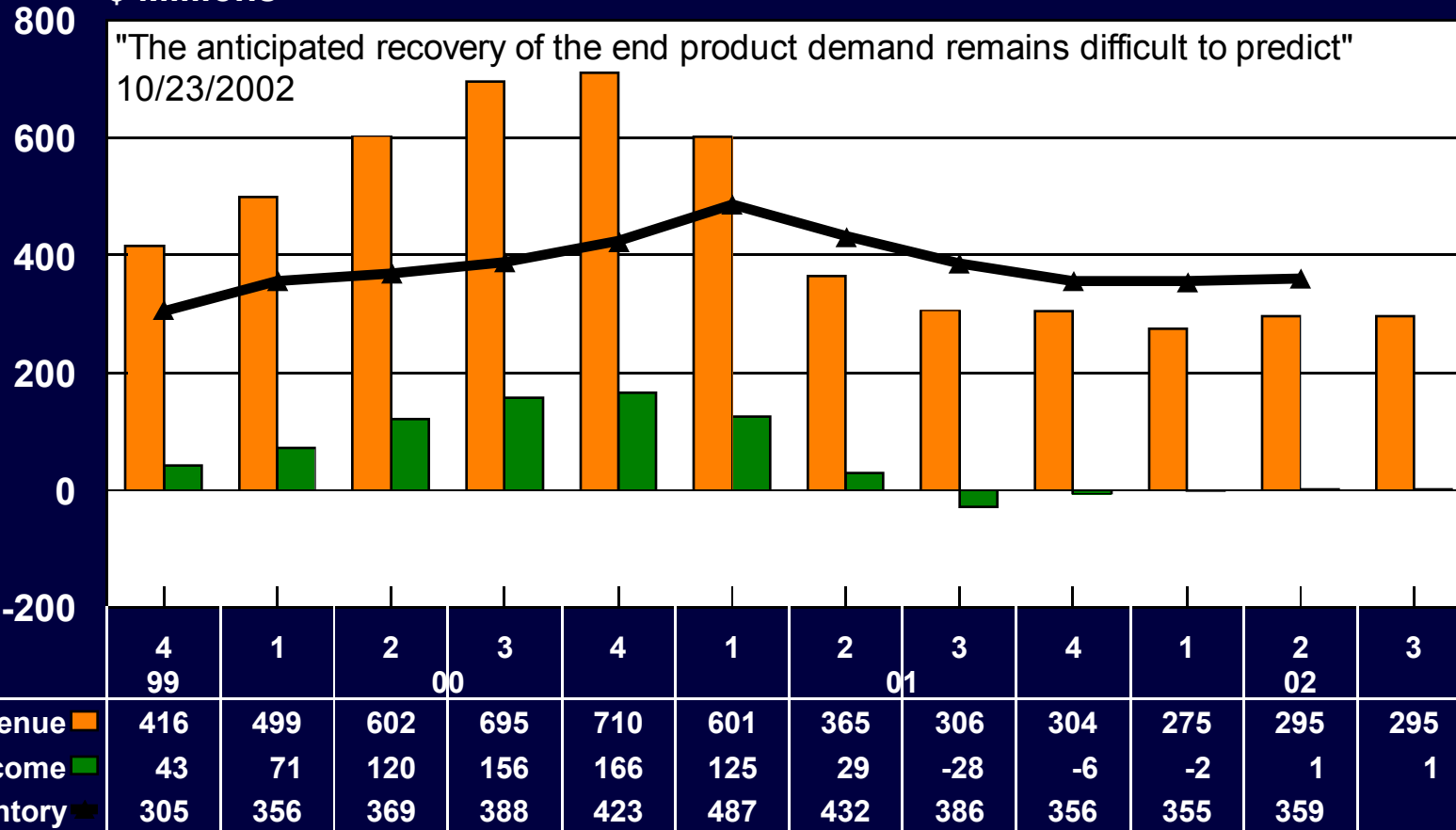
CY

INTC

AVX Corp

Revenue, Net Income & Inventory

\$ Millions



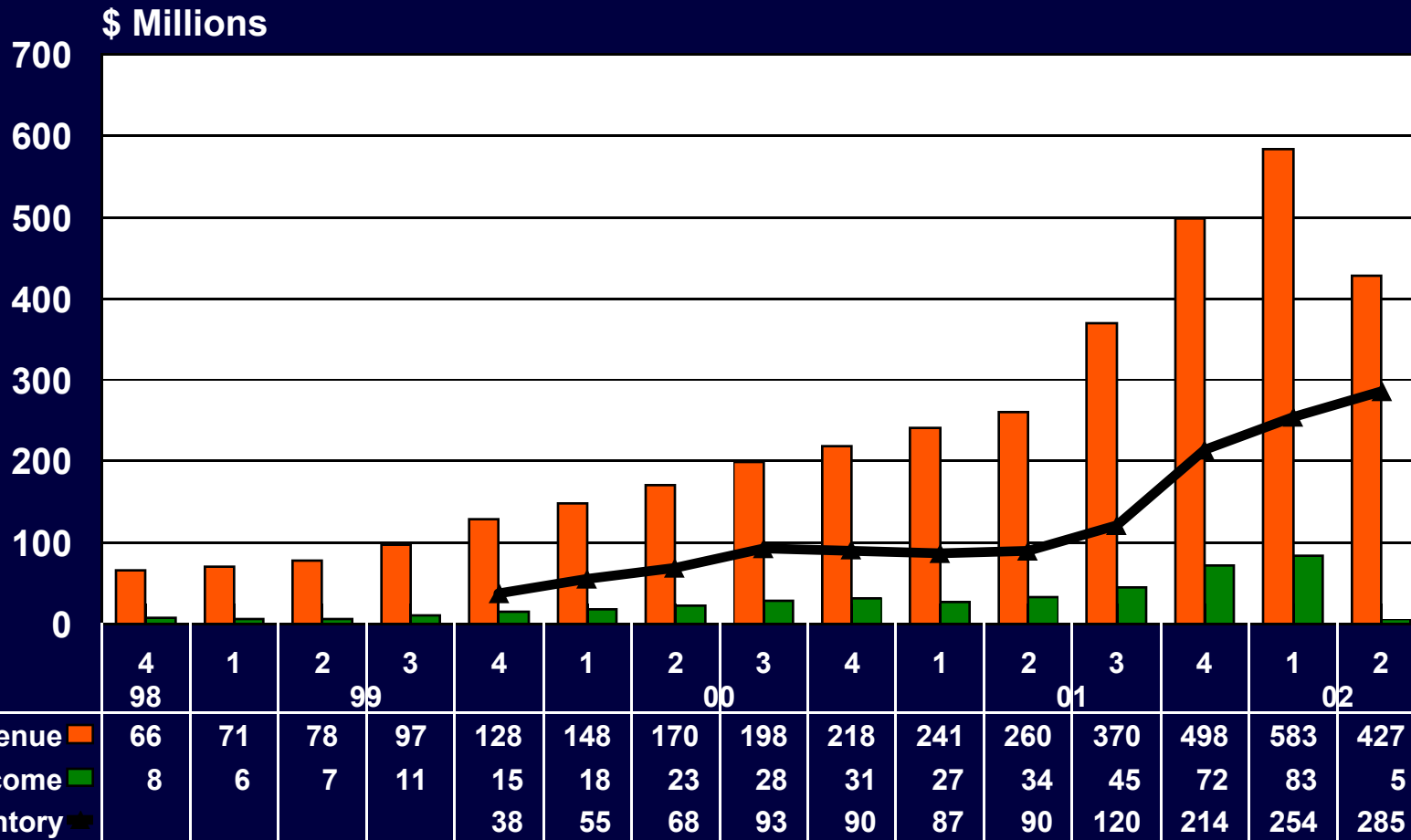
CY

AVX

FY = CY

NVIDIA Corp

Revenue, Net Income & Inventory



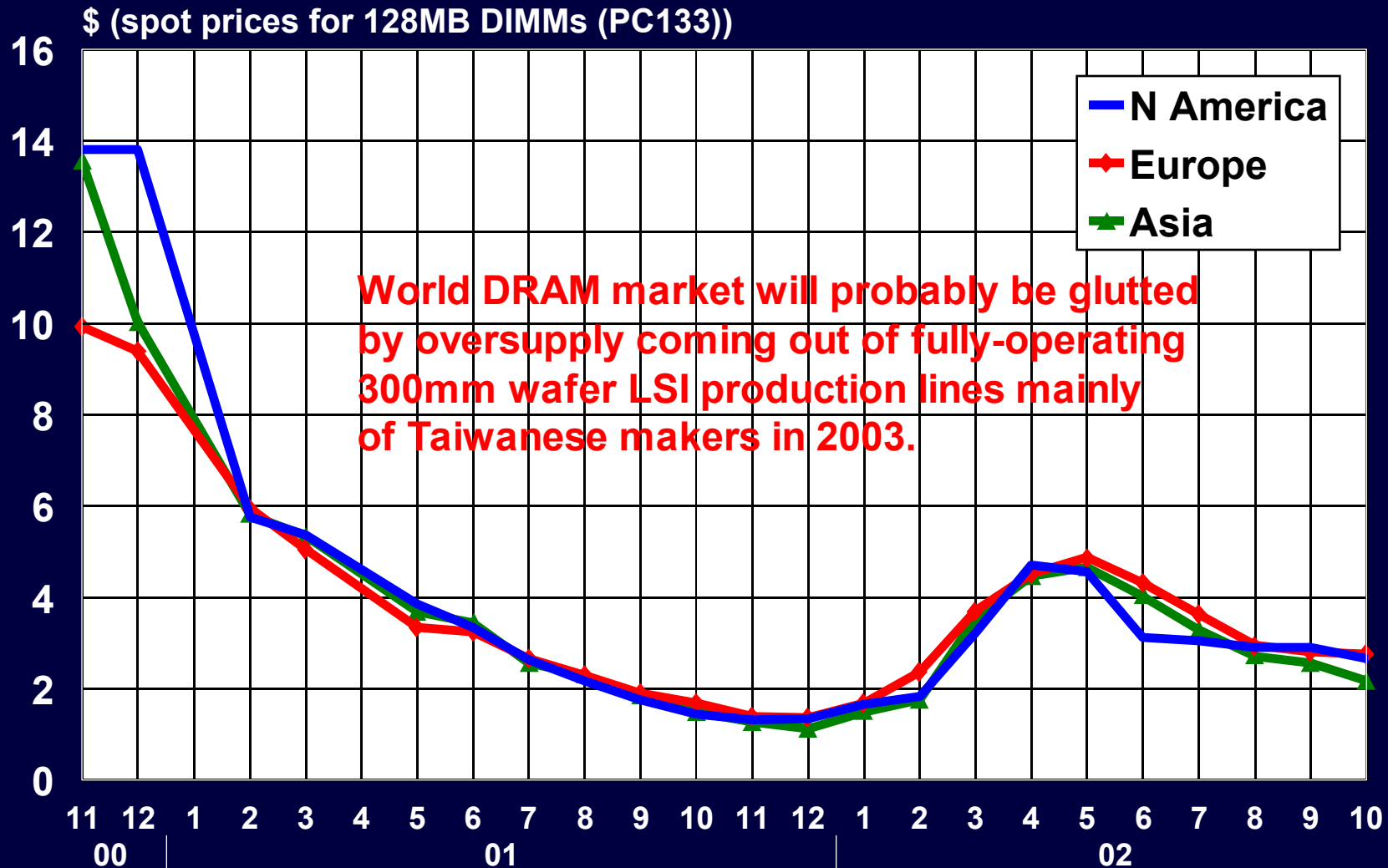
CY

NVDA

FY ends January

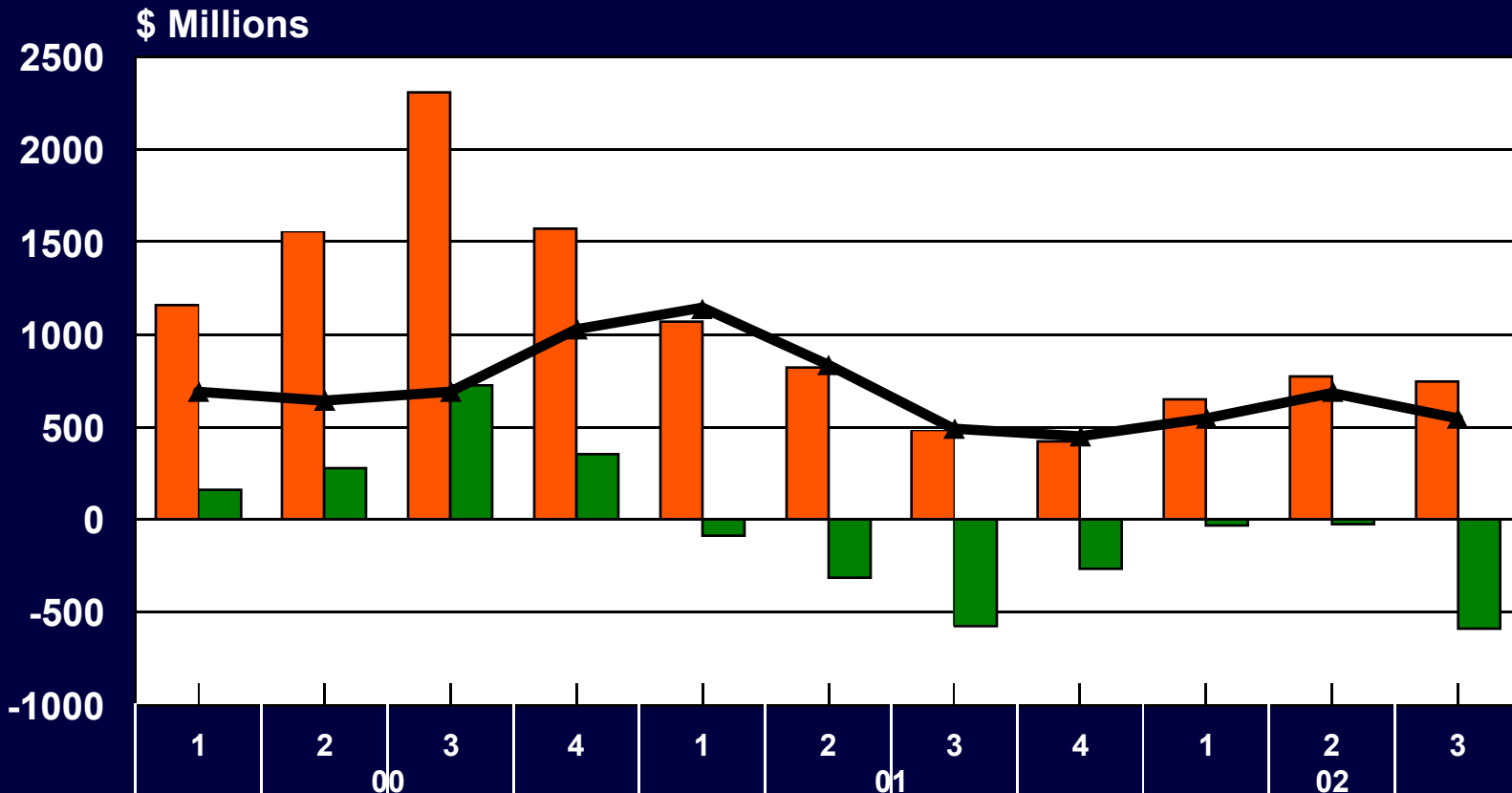
DRAM Prices (large volume users)

30-Day Rolling Averages of 128Mb DRAMs (PC133, 16M x 8)



MICRON TECHNOLOGY

Revenue & Net Income

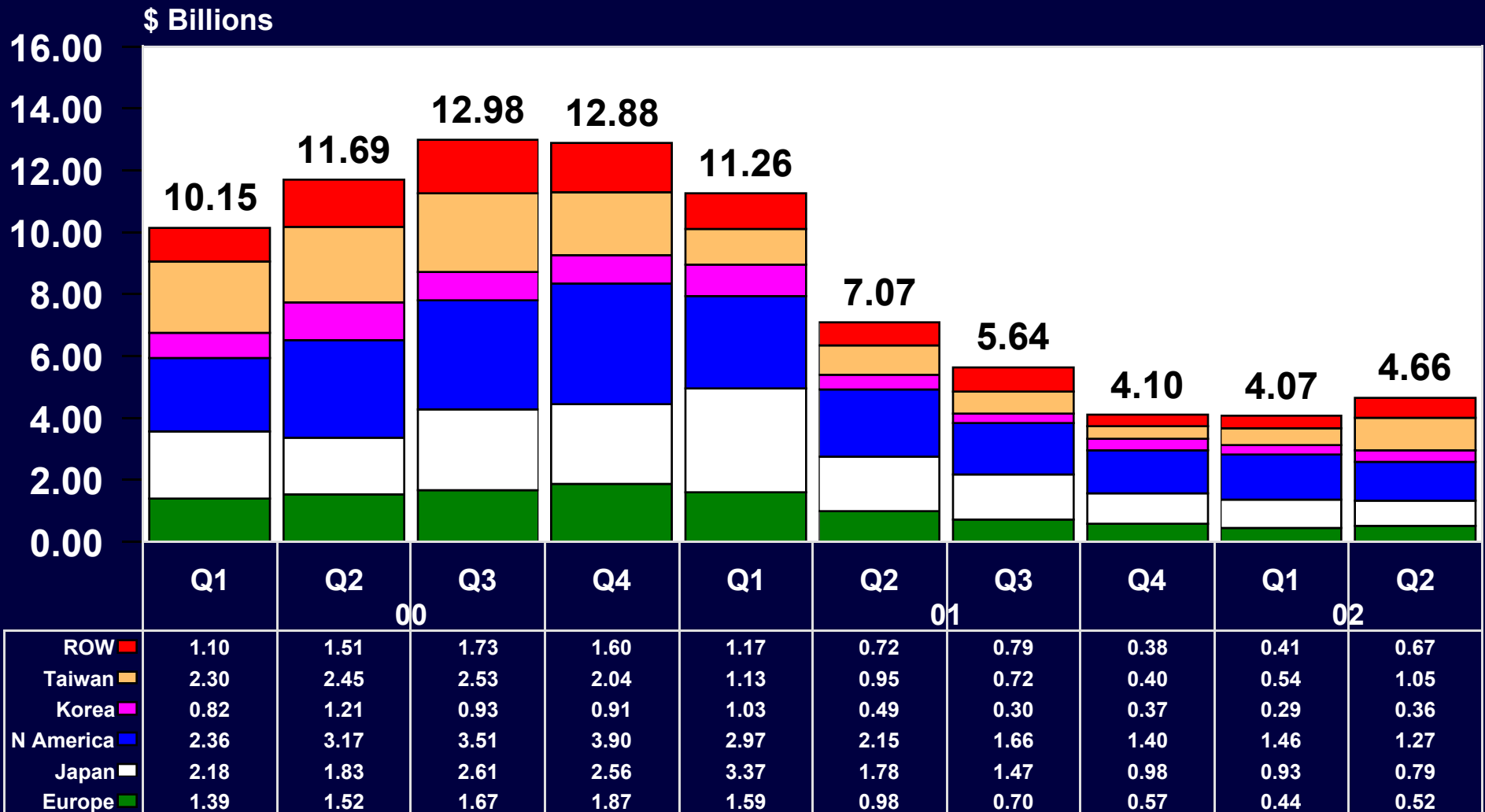


| | | | | | | | | | | | |
|-----------|------|------|------|------|------|------|------|------|-----|-----|------|
| Revenue | 1159 | 1554 | 2306 | 1572 | 1066 | 818 | 480 | 424 | 646 | 771 | 748 |
| Income | 161 | 275 | 727 | 352 | -88 | -313 | -576 | -266 | -30 | -24 | -587 |
| Inventory | 690 | 642 | 689 | 1026 | 1141 | 837 | 491 | 451 | 548 | 687 | 545 |

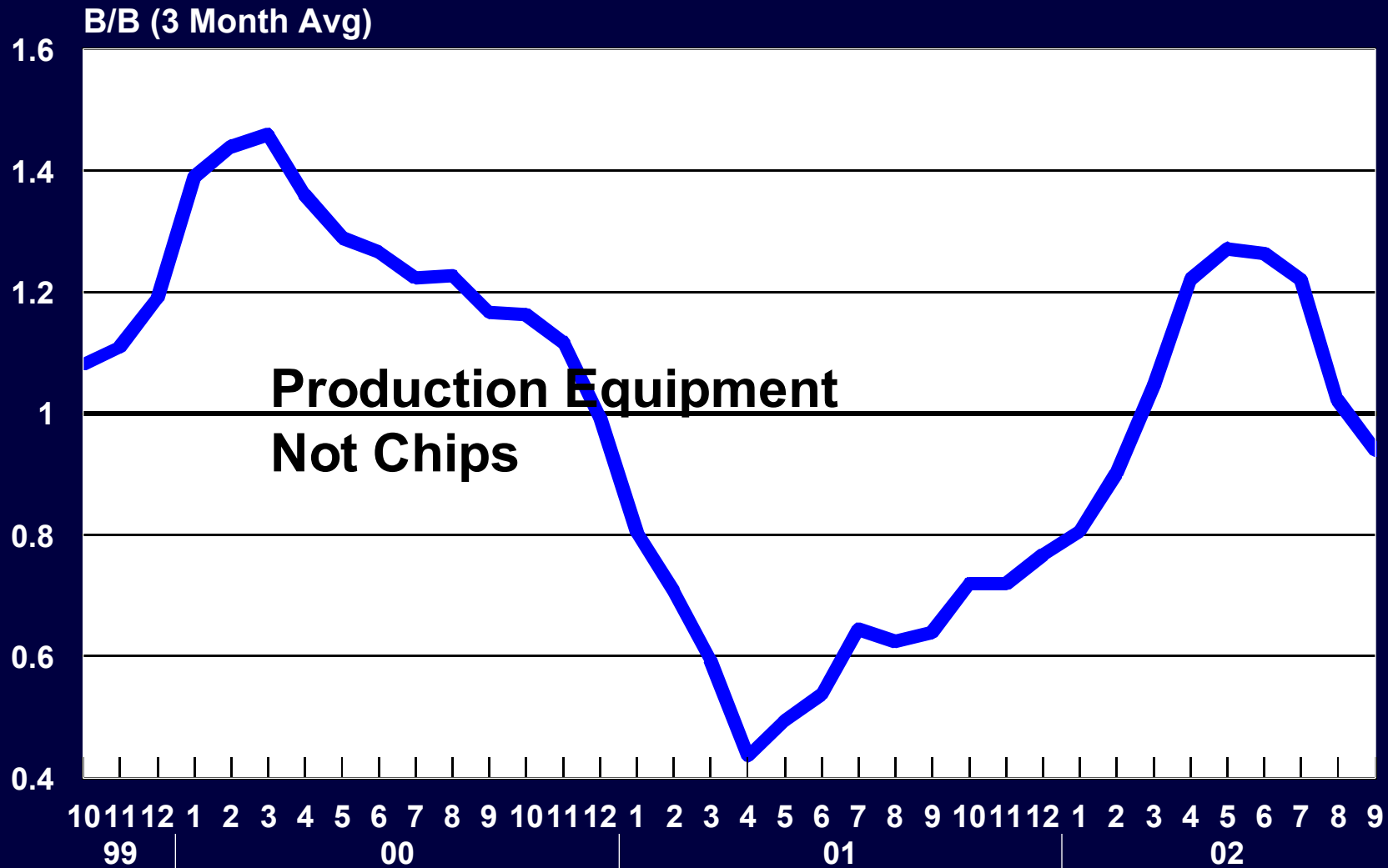
CY

MU

Semiconductor Capital Equipment Shipments by Area

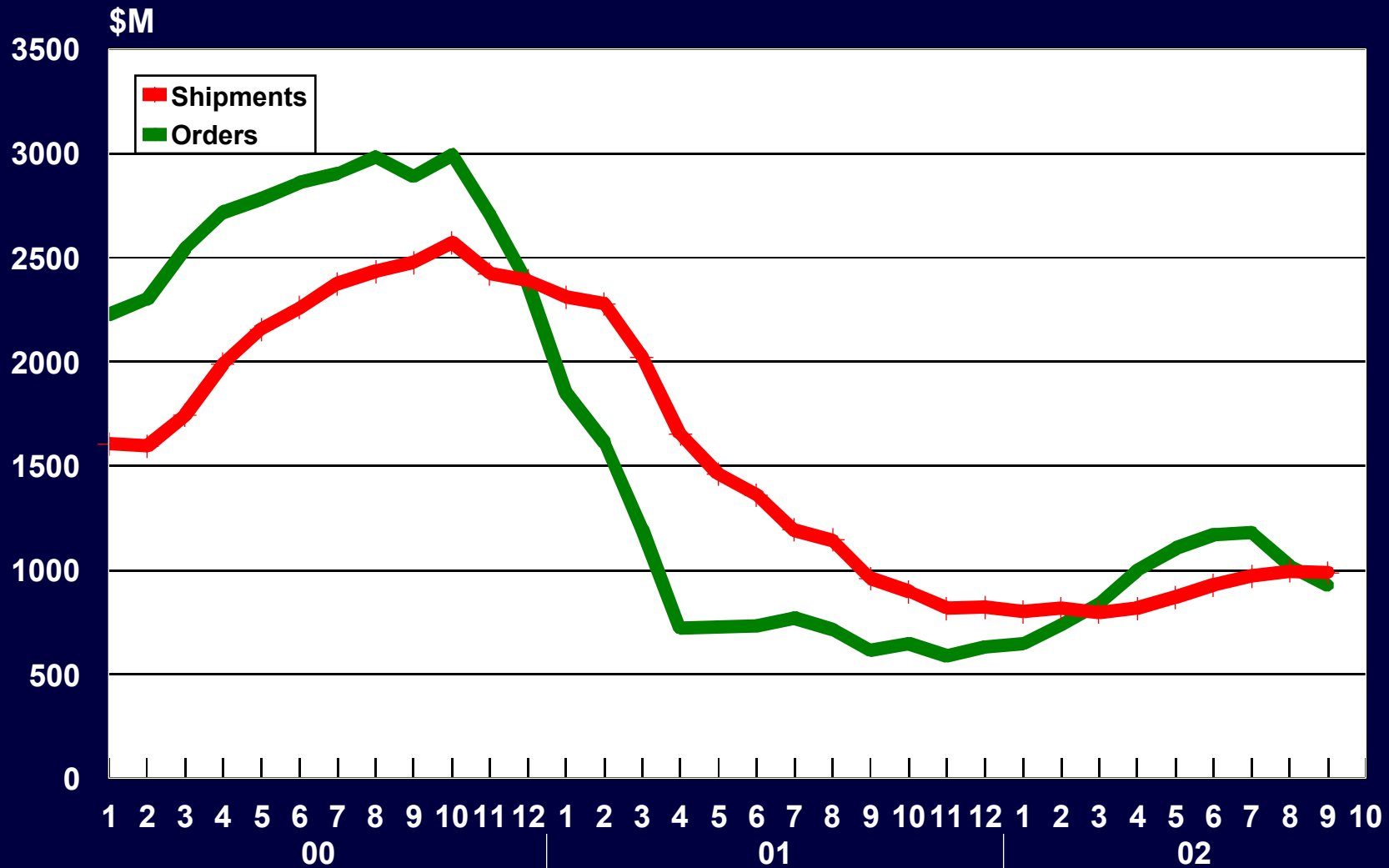


N American Semiconductor Equipment Industry Book/Bill Ratio



SOURCE Semiconductor Equipment and Materials International
<http://www.semi.org>

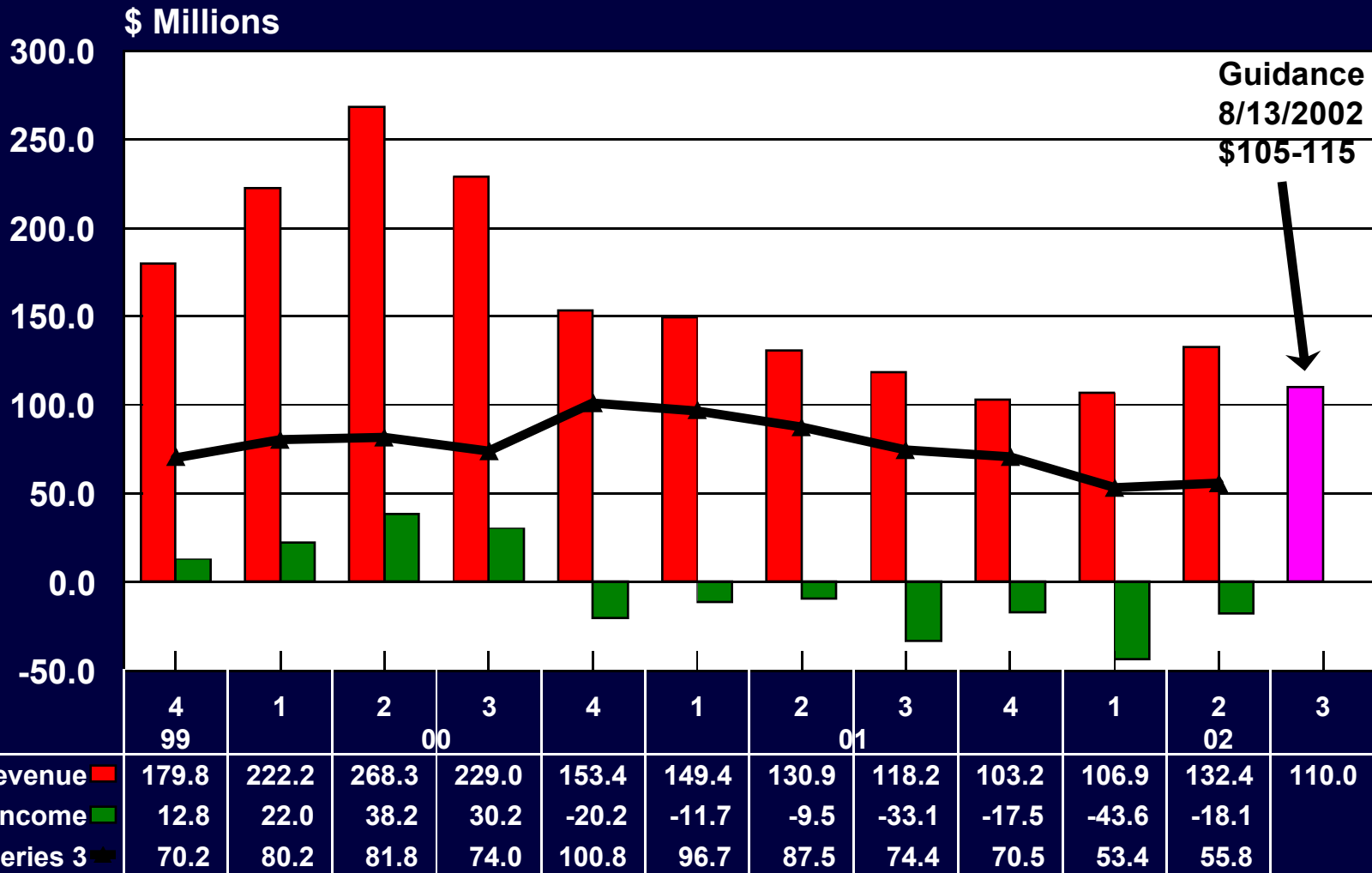
N American Semiconductor Equipment Industry Shipments & Orders



SOURCE Semiconductor Equipment and Materials International
<http://www.semi.org>

Kulicke & Sofa

Revenue, Net Income & Inventory



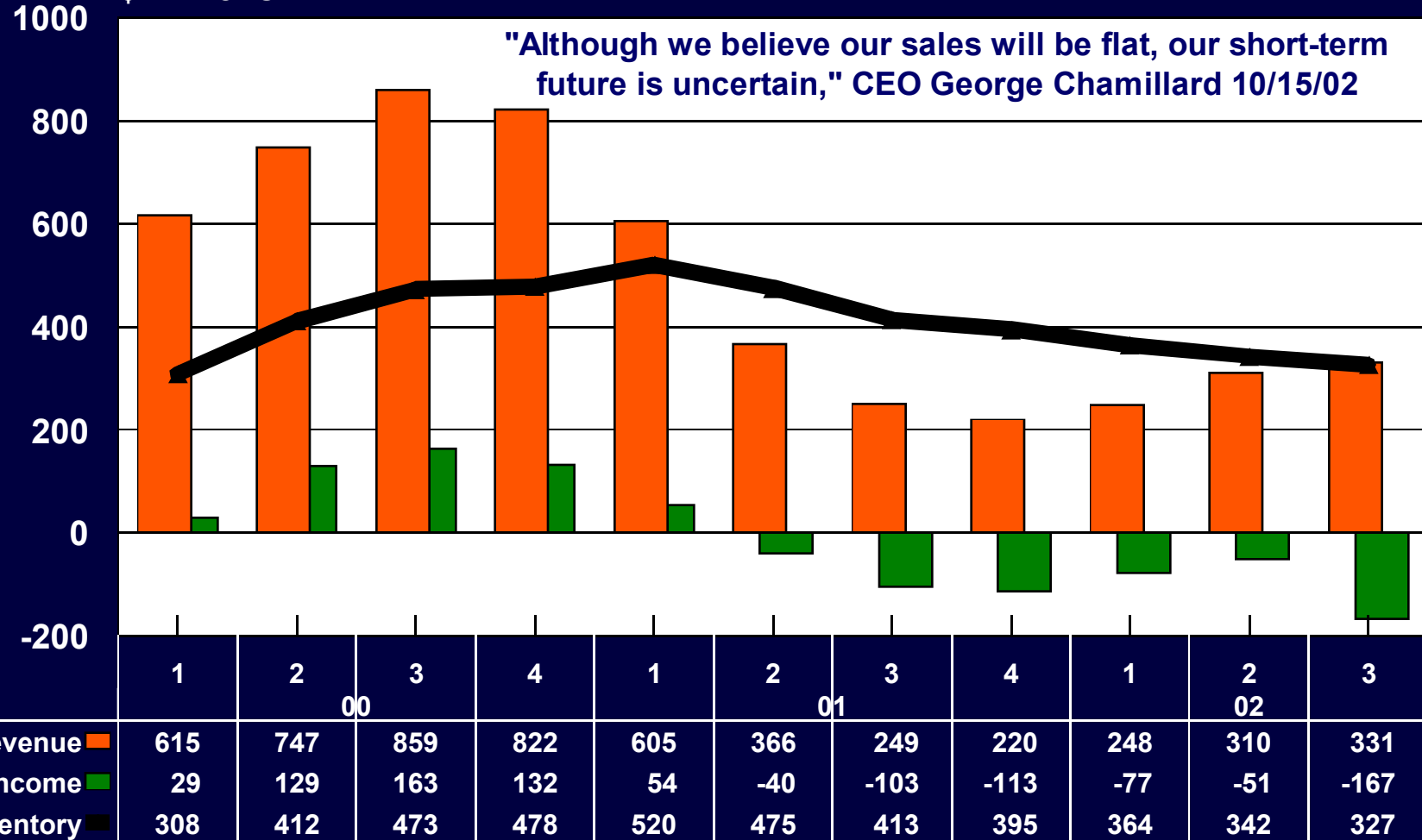
CY

KLIC

Teradyne

Revenue, Net Income & Inventory

\$ Millions

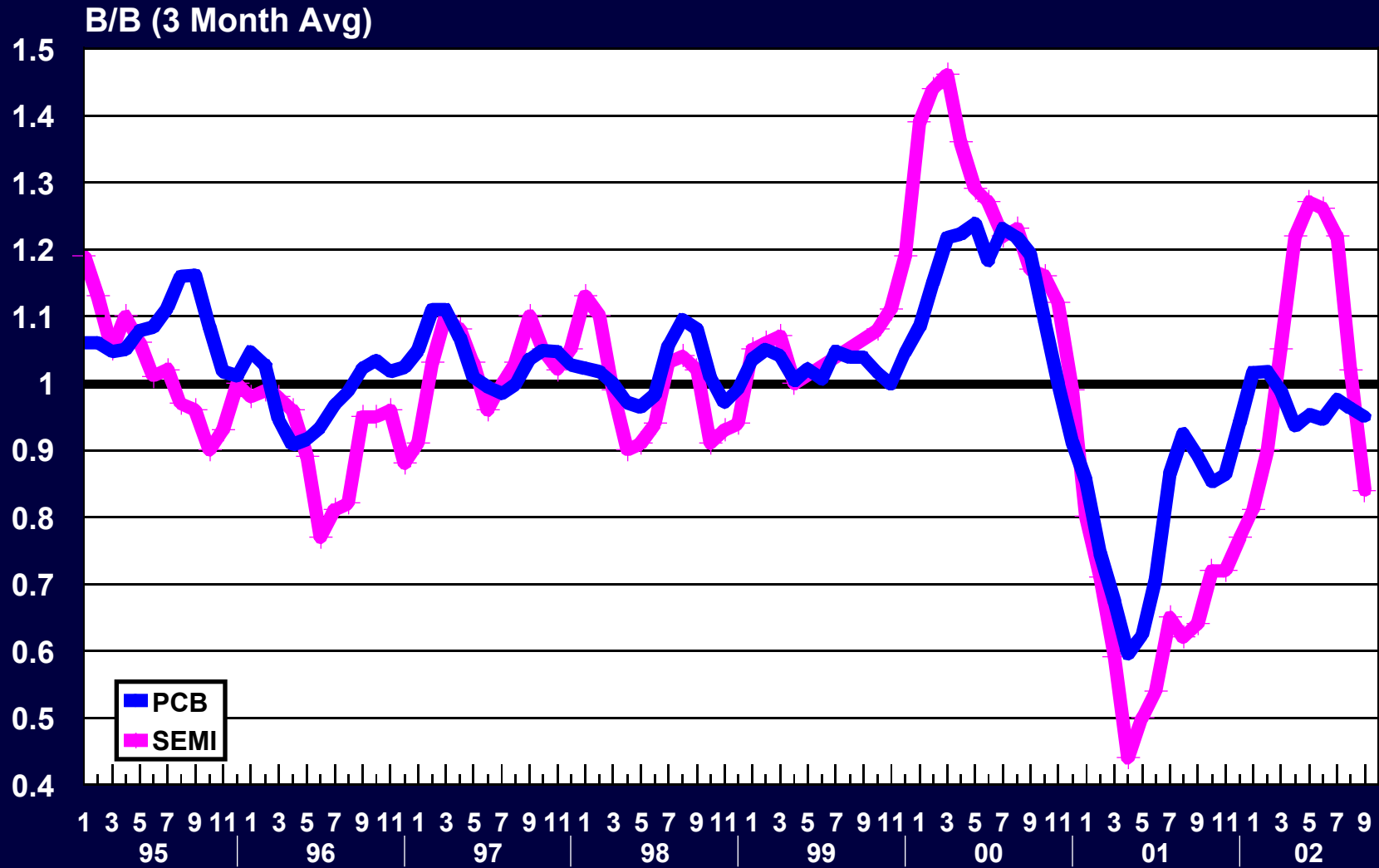


CY

TER

Rigid PCB vs SEMI Book/Bill

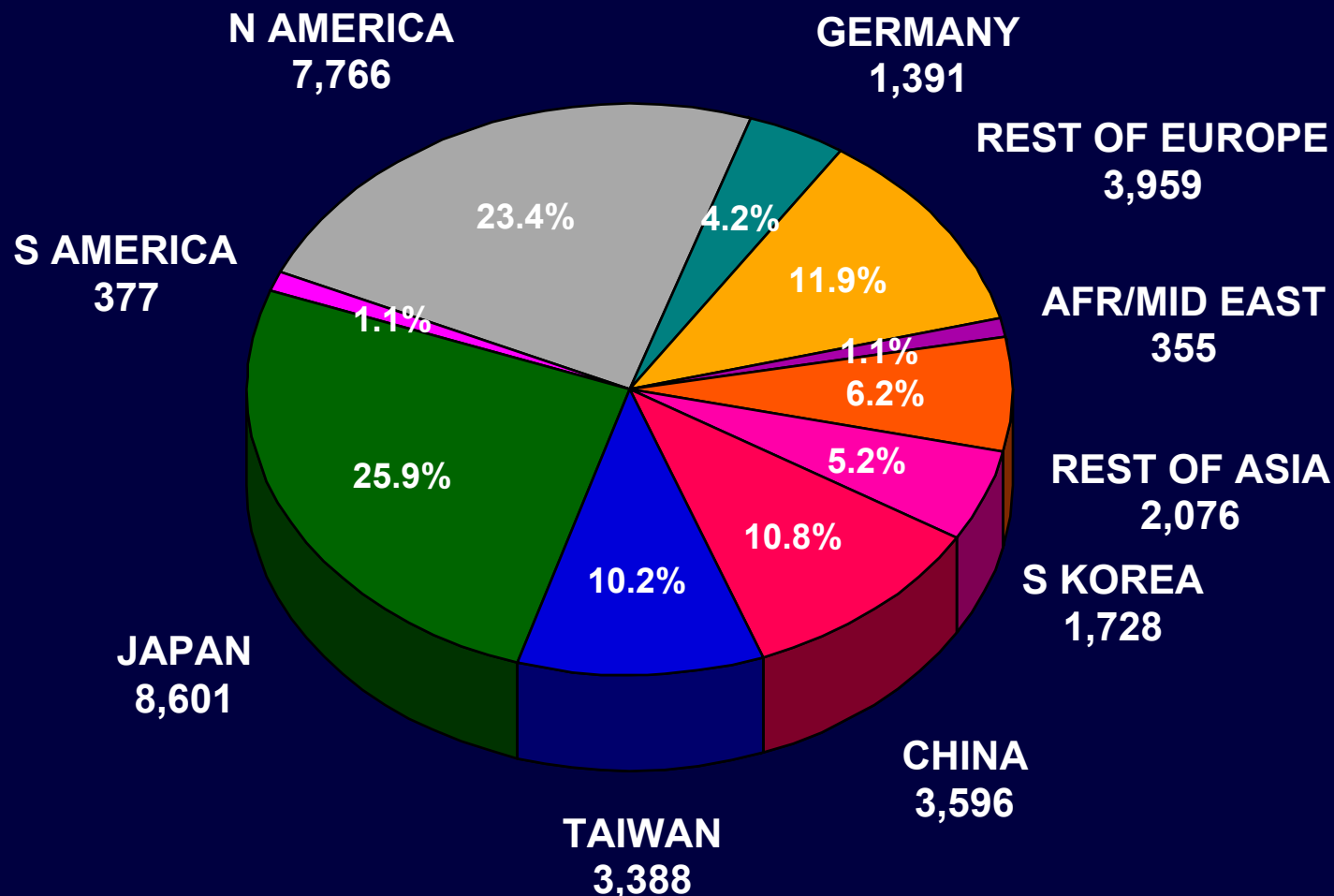
N. America



PCB Fabrication

2001 WORLD RIGID & FLEX PCB PRODUCTION

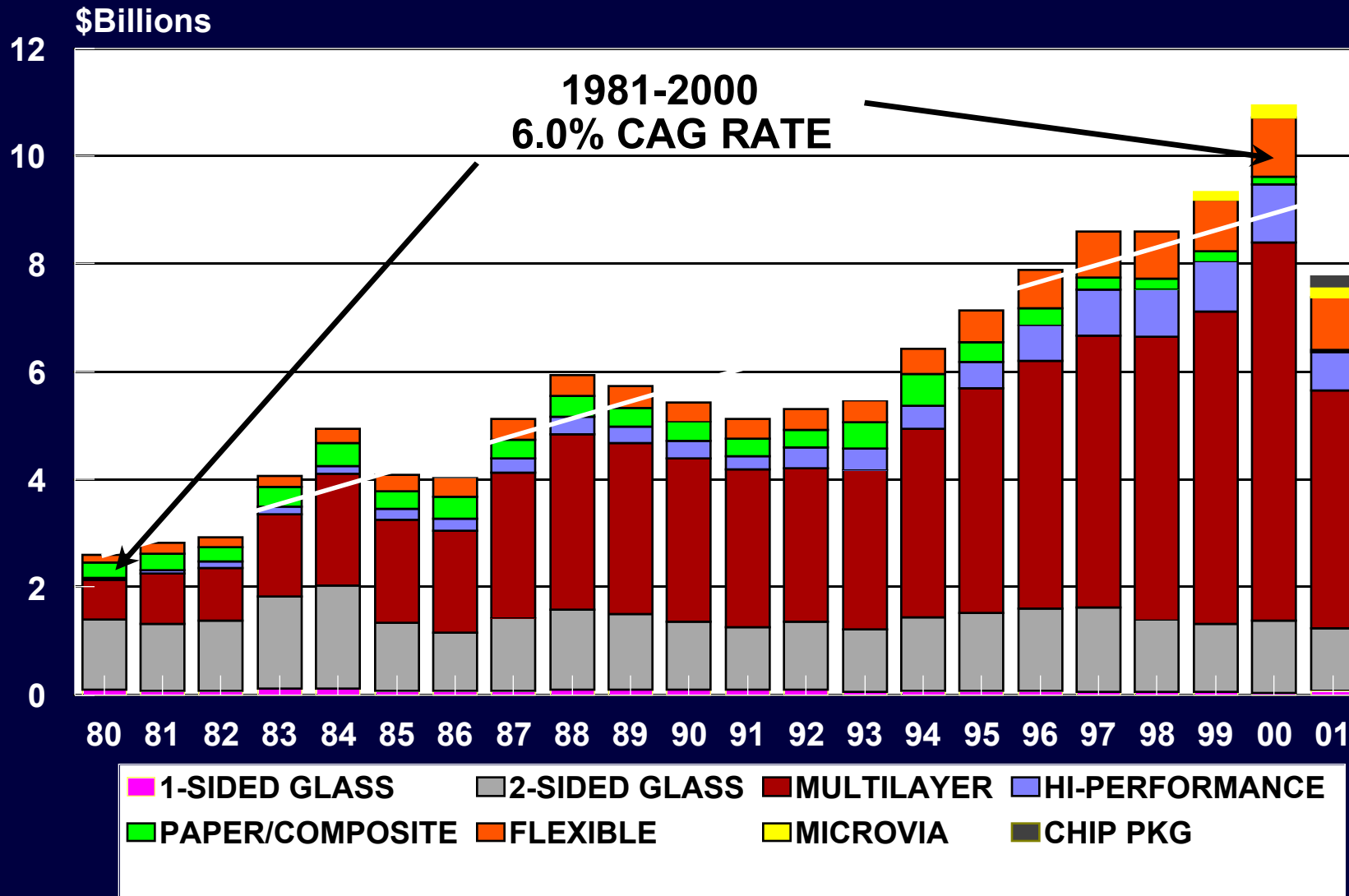
BY GEOGRAPHICAL AREA (\$M)



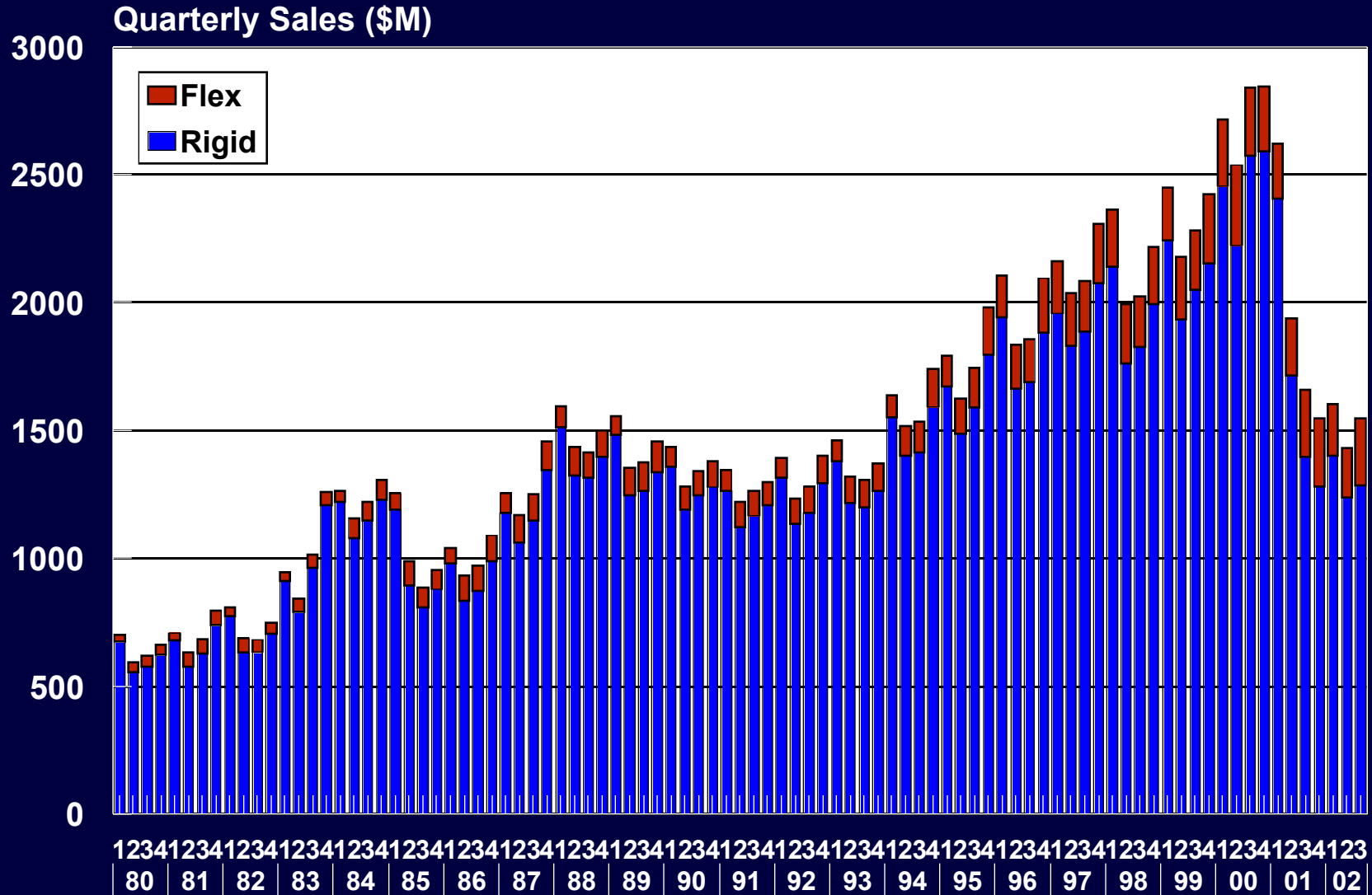
Total: \$33.2 Billion

IPC T/MRC 5/2002 (includes microvia PCBs & chip packaging substrates)

N. AMERICAN PCB SHIPMENTS



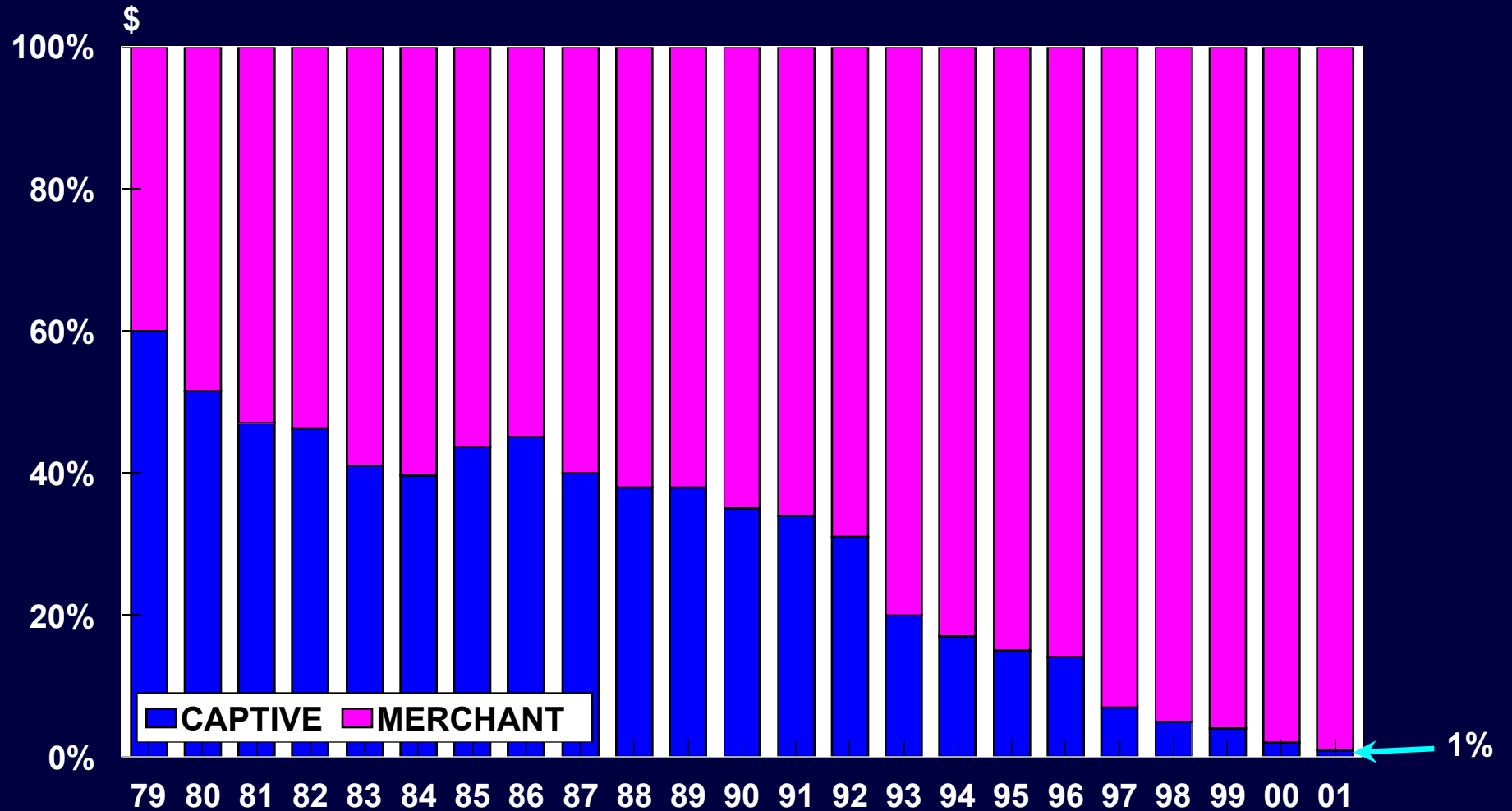
N. AMERICAN TOTAL PCB SHIPMENTS



IPC T/MRC data with Custer interpretation

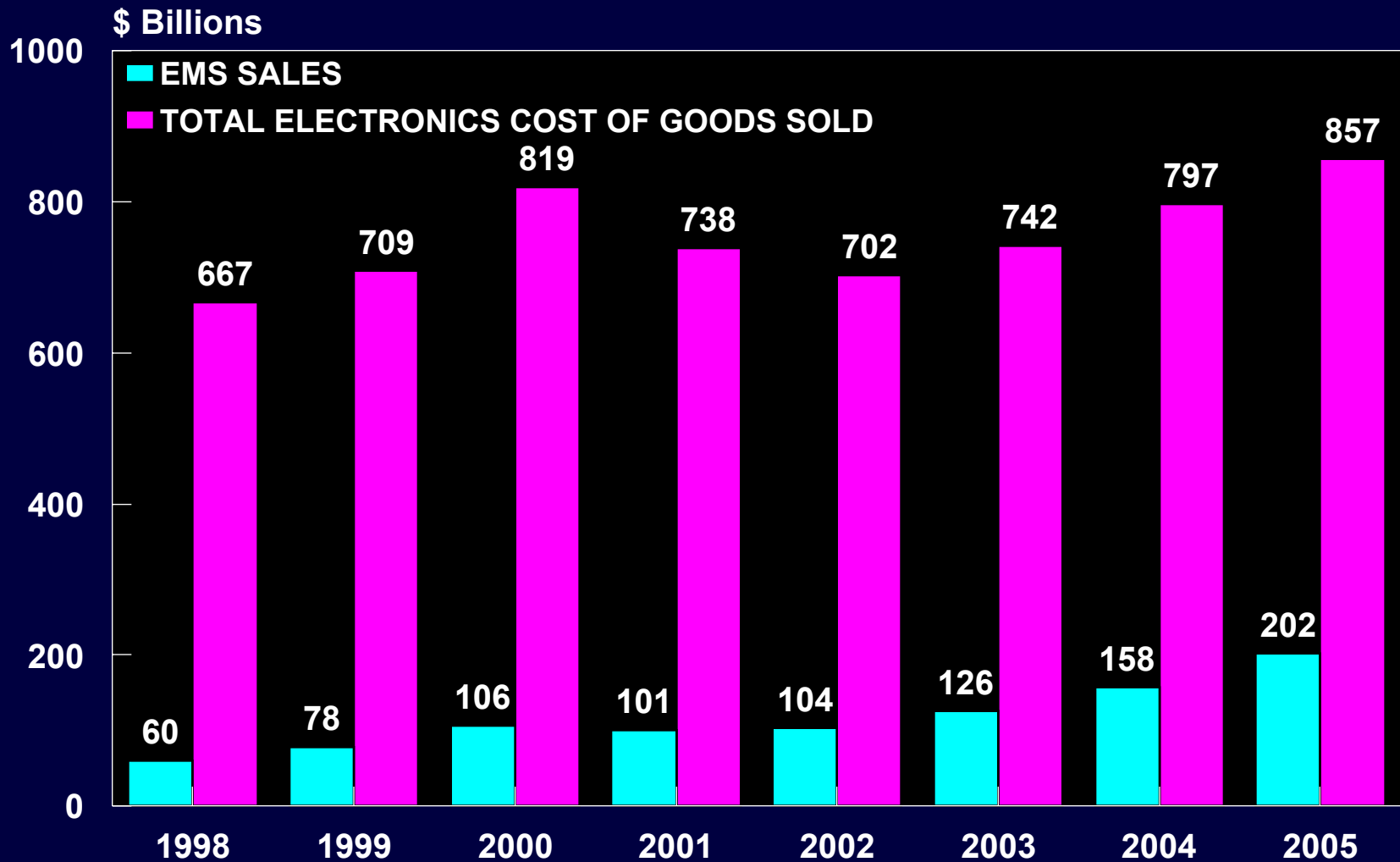
RIGID PCBs - MAKE OR BUY

U.S. CAPTIVE vs MERCHANT PRODUCTION



Electronic Manufacturing Services

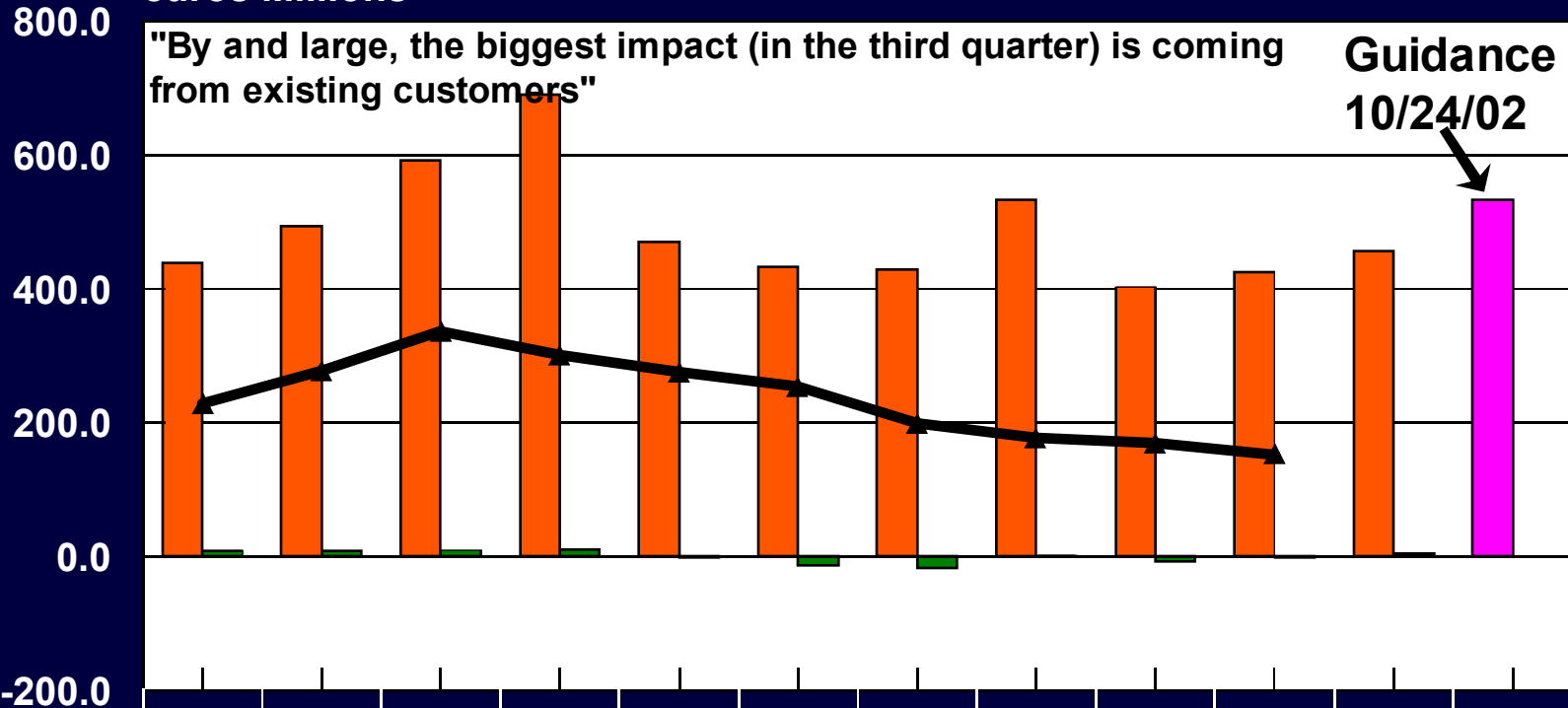
EMS Estimated Revenue & OEM Penetration Rate



Elcoteq, Finland

Revenue, Net Income & Inventory

euros Millions



| | 00 | | | | 01 | | | | 02 | | | |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Revenue | 438.2 | 494.1 | 591.4 | 690.0 | 470.0 | 433.0 | 428.0 | 532.0 | 402.0 | 425.0 | 456.1 | 532.0 |
| Income | 8.8 | 8.9 | 9.1 | 10.4 | -2.0 | -13.1 | -17.0 | 0.1 | -7.6 | -2.4 | 4.6 | |
| Inventory | 227.6 | 277.6 | 335.9 | 300.5 | 275.1 | 253.4 | 198.6 | 177.8 | 169.2 | 152.2 | | |

CY

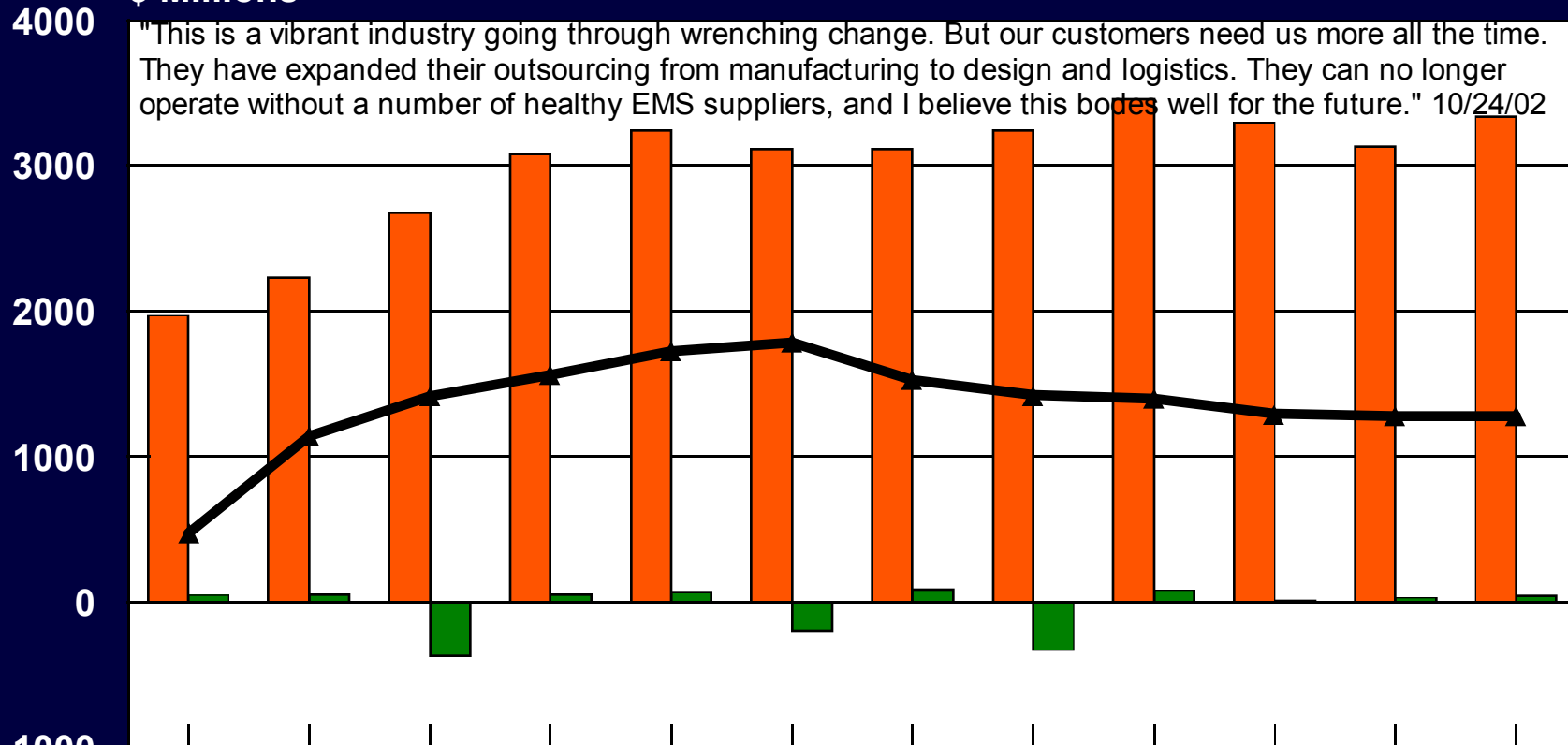
Y.ELQ

Flextronics

Revenue, Net Income & Inventory

\$ Millions

"This is a vibrant industry going through wrenching change. But our customers need us more all the time. They have expanded their outsourcing from manufacturing to design and logistics. They can no longer operate without a number of healthy EMS suppliers, and I believe this bodes well for the future." 10/24/02



| | 4 99 | 1 | 2 00 | 3 | 4 | 1 | 2 01 | 3 | 4 | 1 | 2 02 | 3 |
|-----------|---------|------|---------|------|------|------|---------|------|------|------|---------|------|
| Revenue | 1968 | 2229 | 2677 | 3079 | 3239 | 3114 | 3111 | 3245 | 3453 | 3296 | 3127 | 3341 |
| Income | 48 | 53 | -371 | 50 | 68 | -193 | 88 | -330 | 82 | 6 | 30 | 40 |
| Inventory | 470 | 1143 | 1415 | 1564 | 1728 | 1787 | 1526 | 1420 | 1401 | 1292 | 1282 | 1280 |

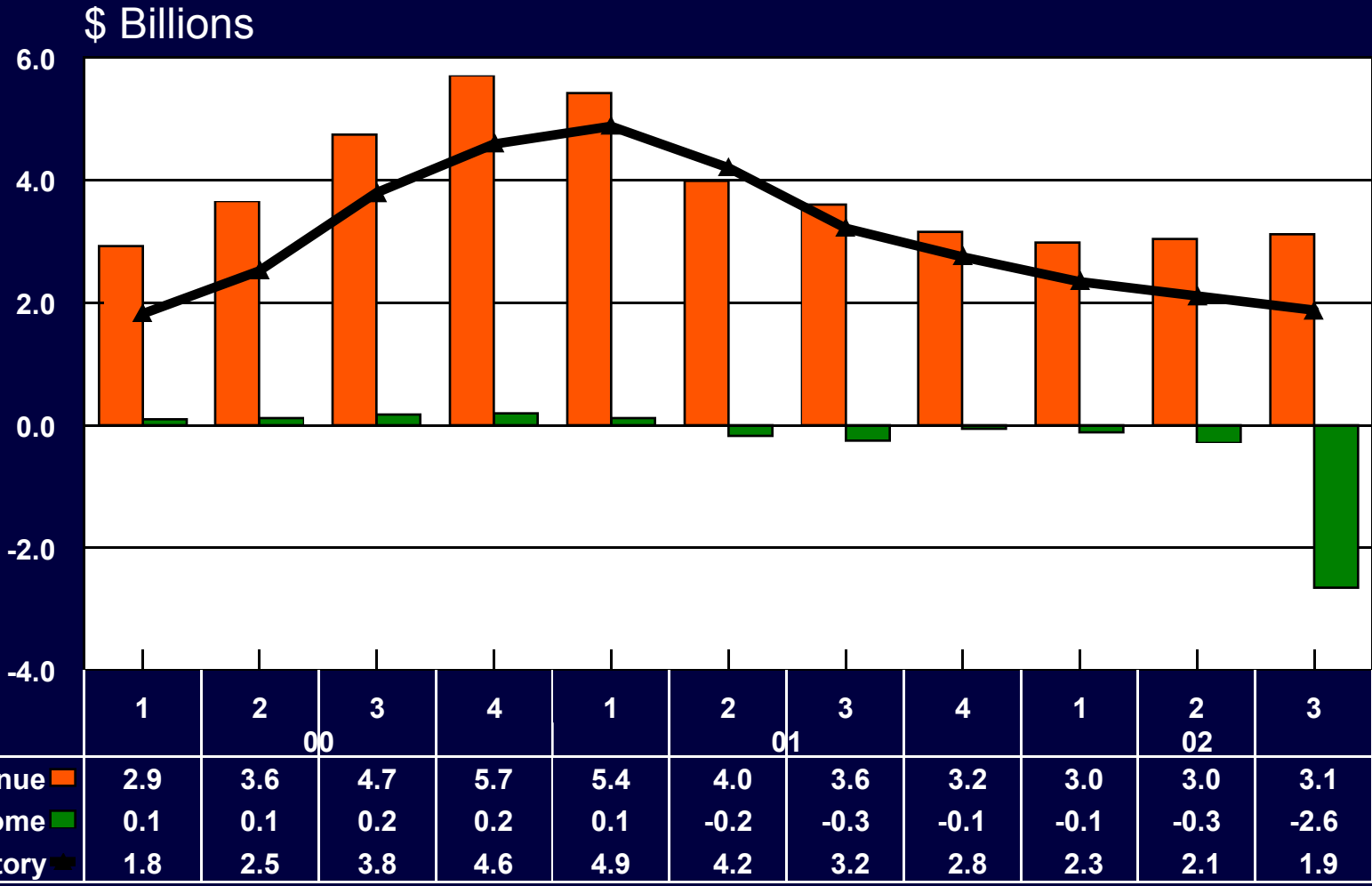
FY ends 3/31

CY

FLEX

SOLELECTRON

Revenue, Net Income & Inventory

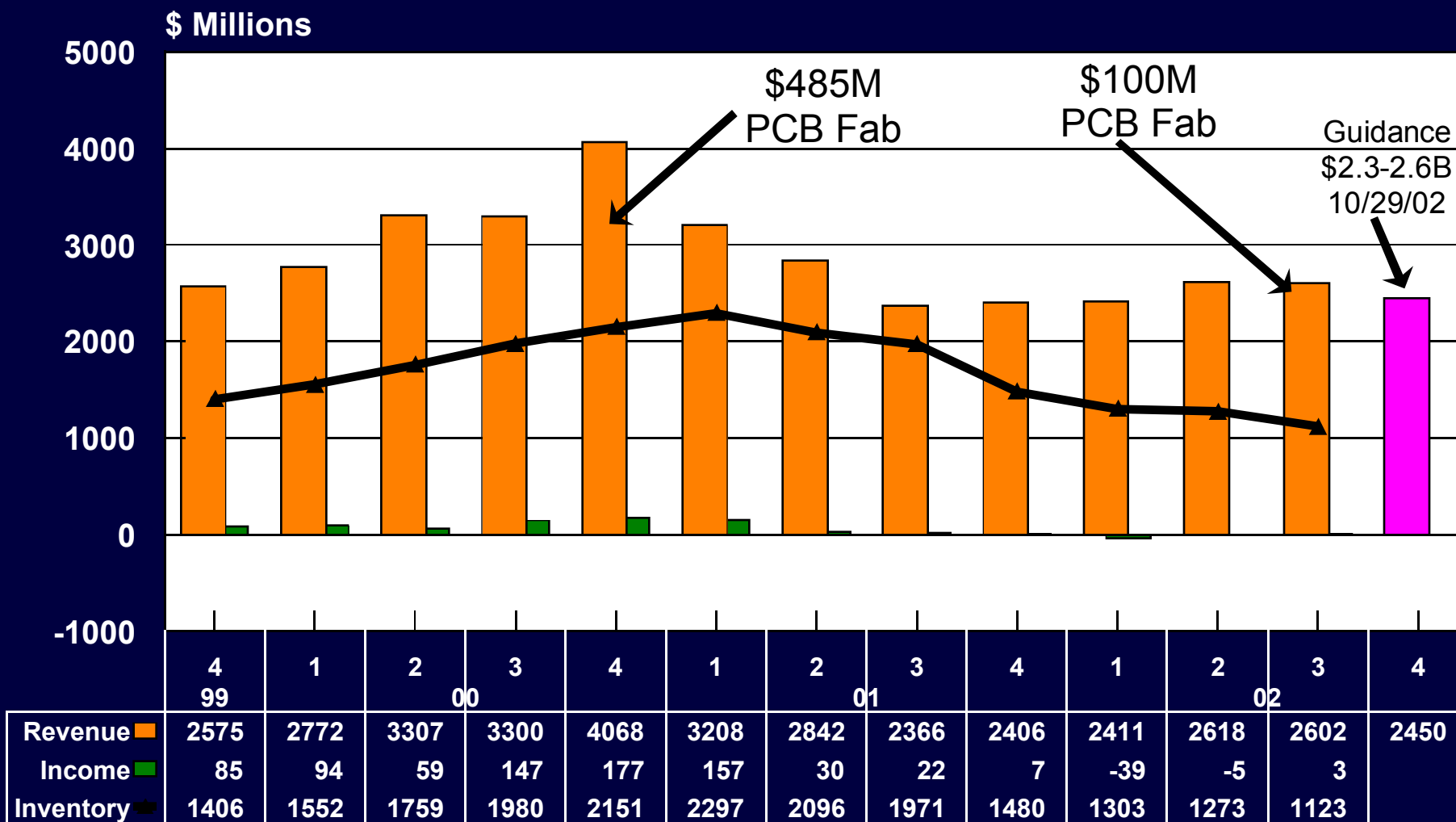


SLR

FY ends in August

SANMINA-SCI CORP

Revenue, Net Income & Inventory



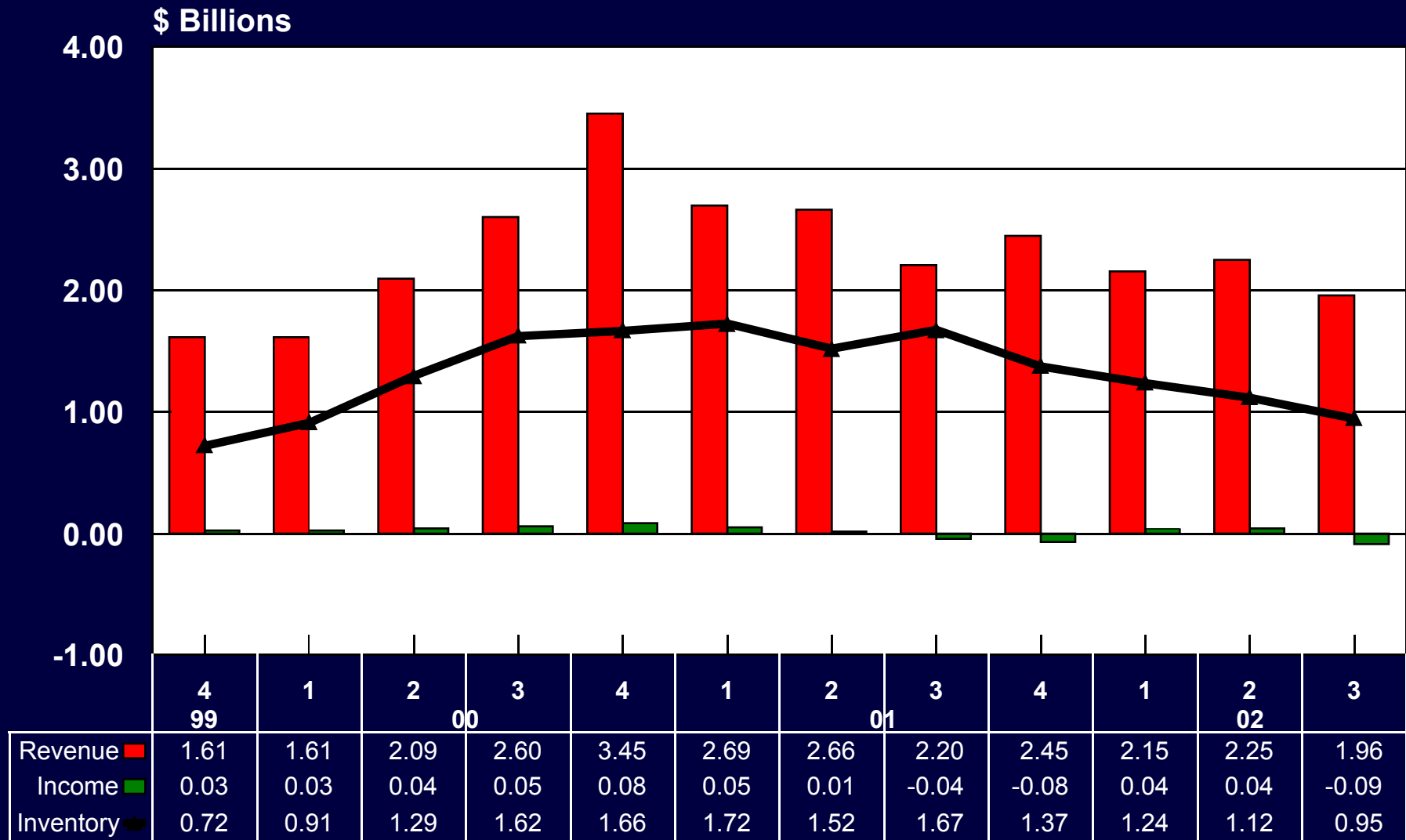
CY

FY ends September 30
(historical data = combined Sanmina & SCI)

SANM

Celestica

Revenue, Net Income & Inventory



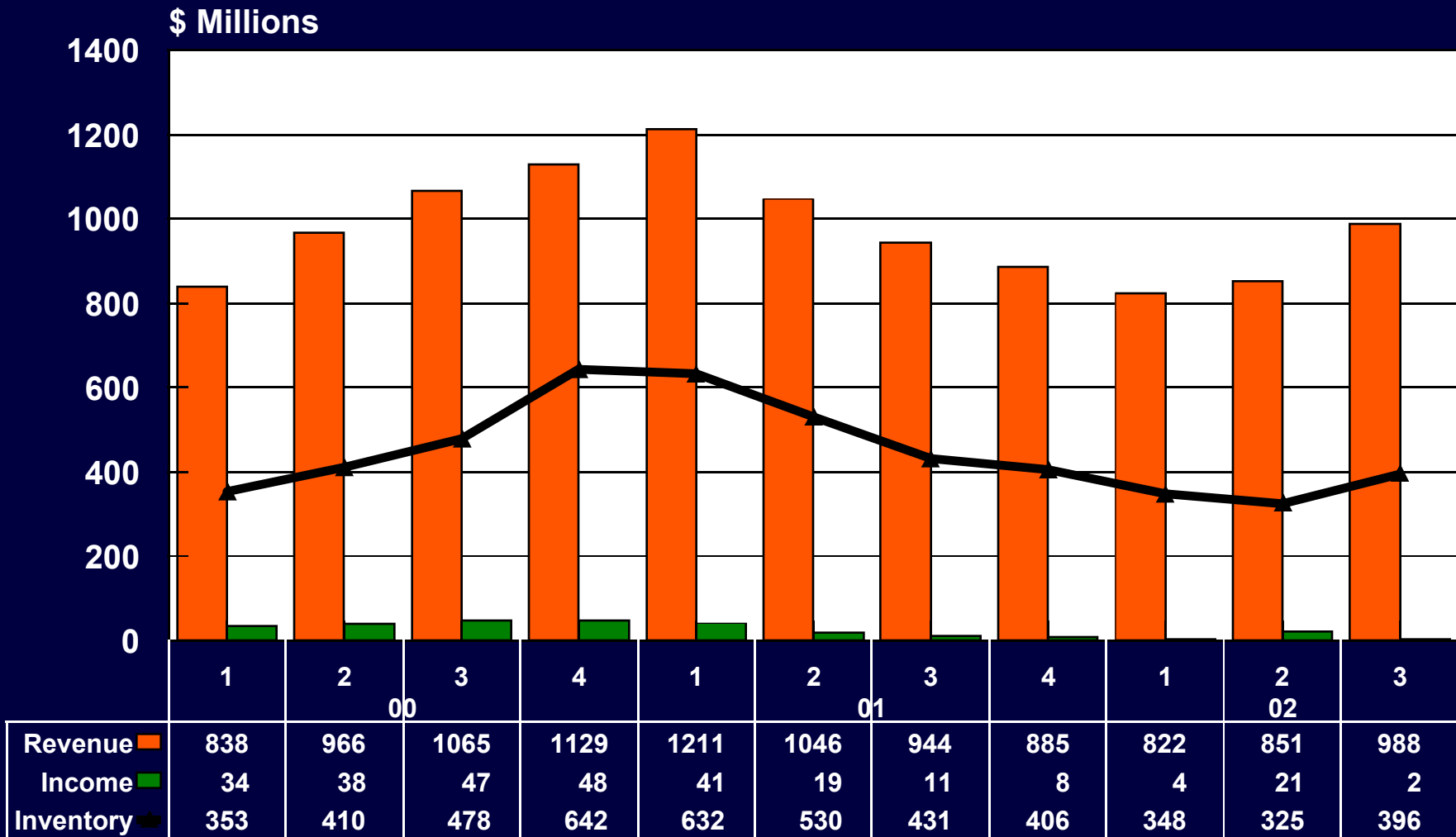
FY=CY

CY

CLS

JABIL CIRCUIT INC

Revenue & Net Income



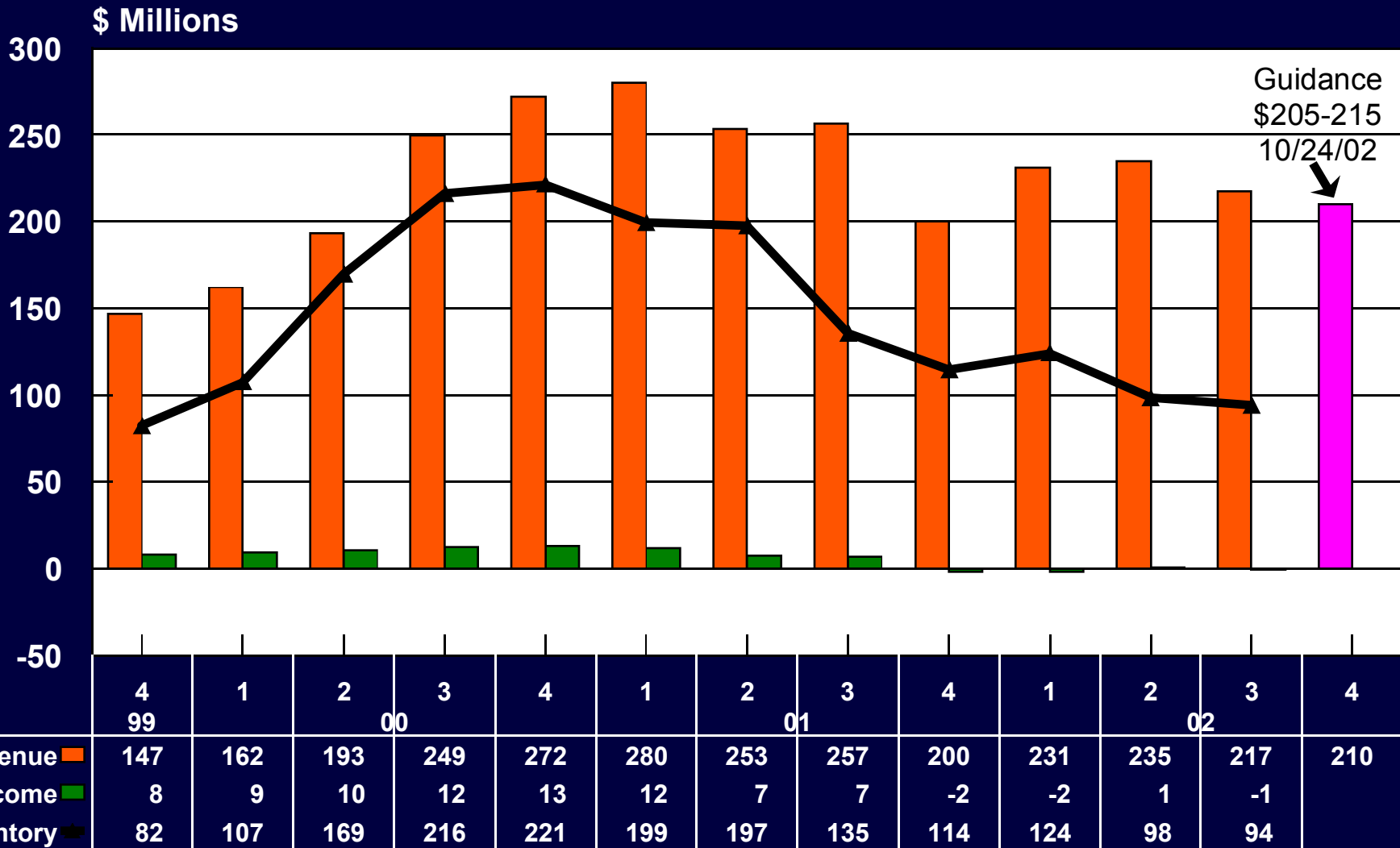
CY

FY ends August

JBL

PLEXUS CORP

Revenue, Net Income & Inventory



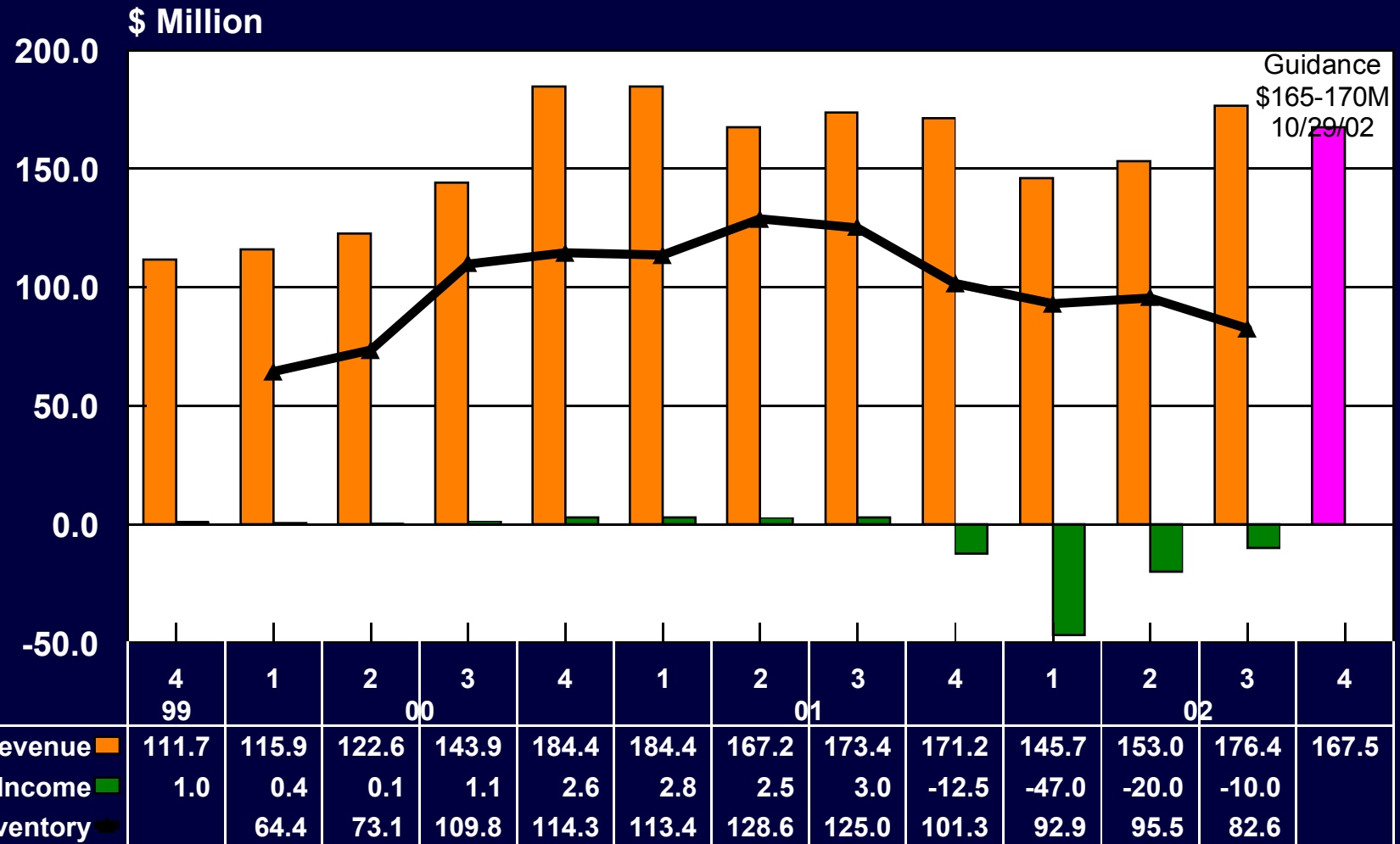
FY ends September

CY

PLXS

Pemstar Inc

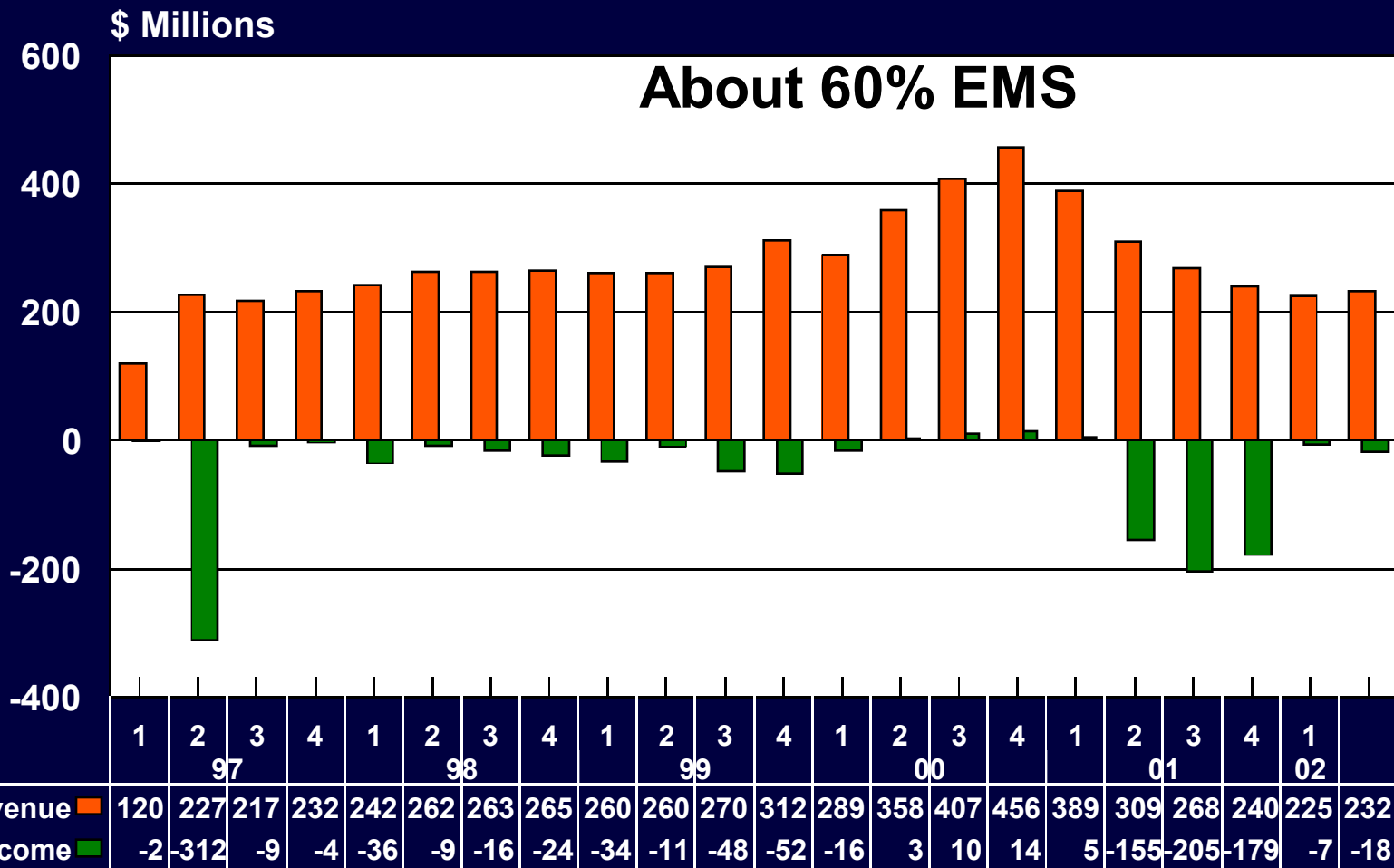
Revenue, Net Income & Inventory



CY

VIASYSTEMS

Revenue & Income

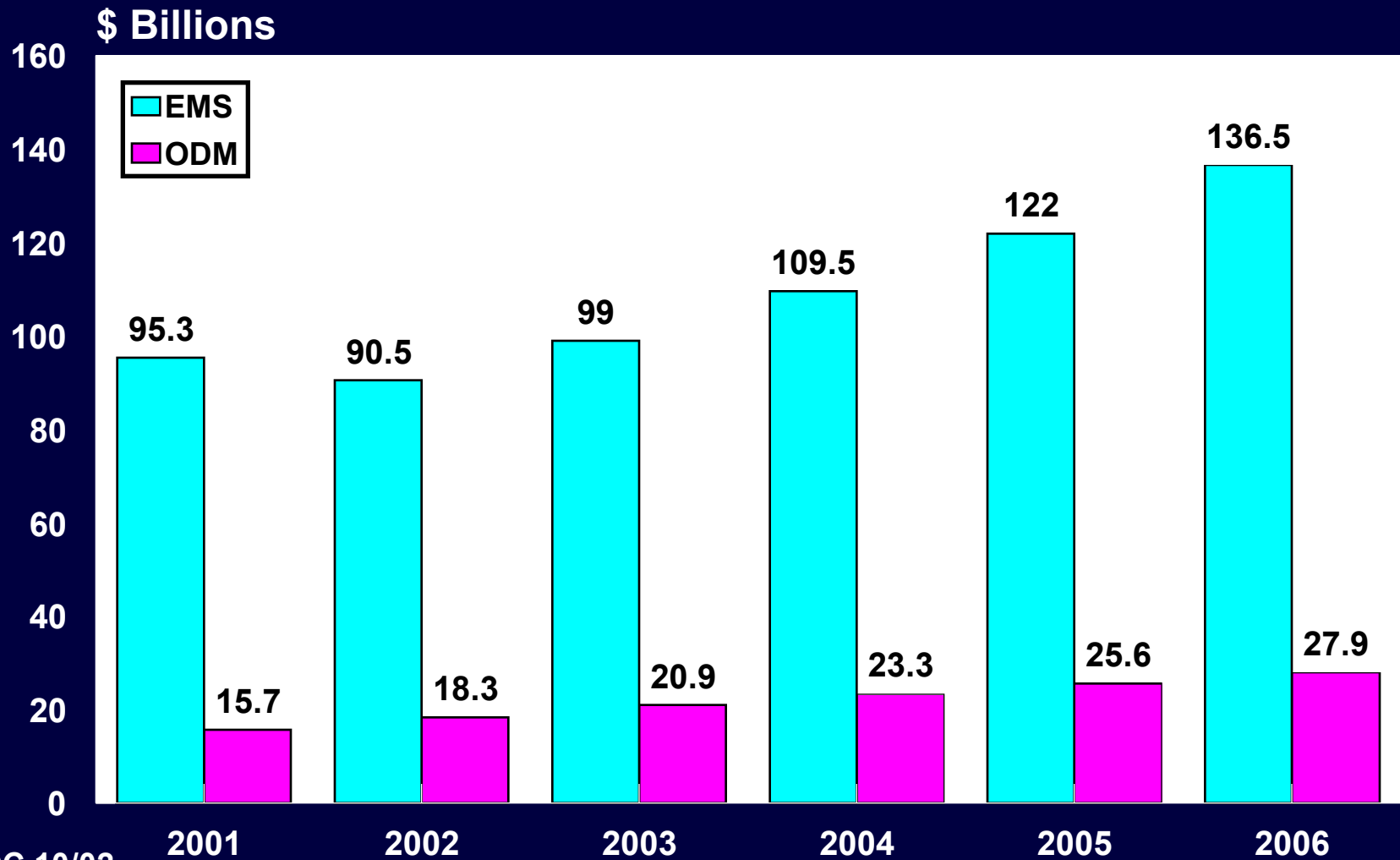


CY

VSGI

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

EMS & ODM Estimated Global Revenue

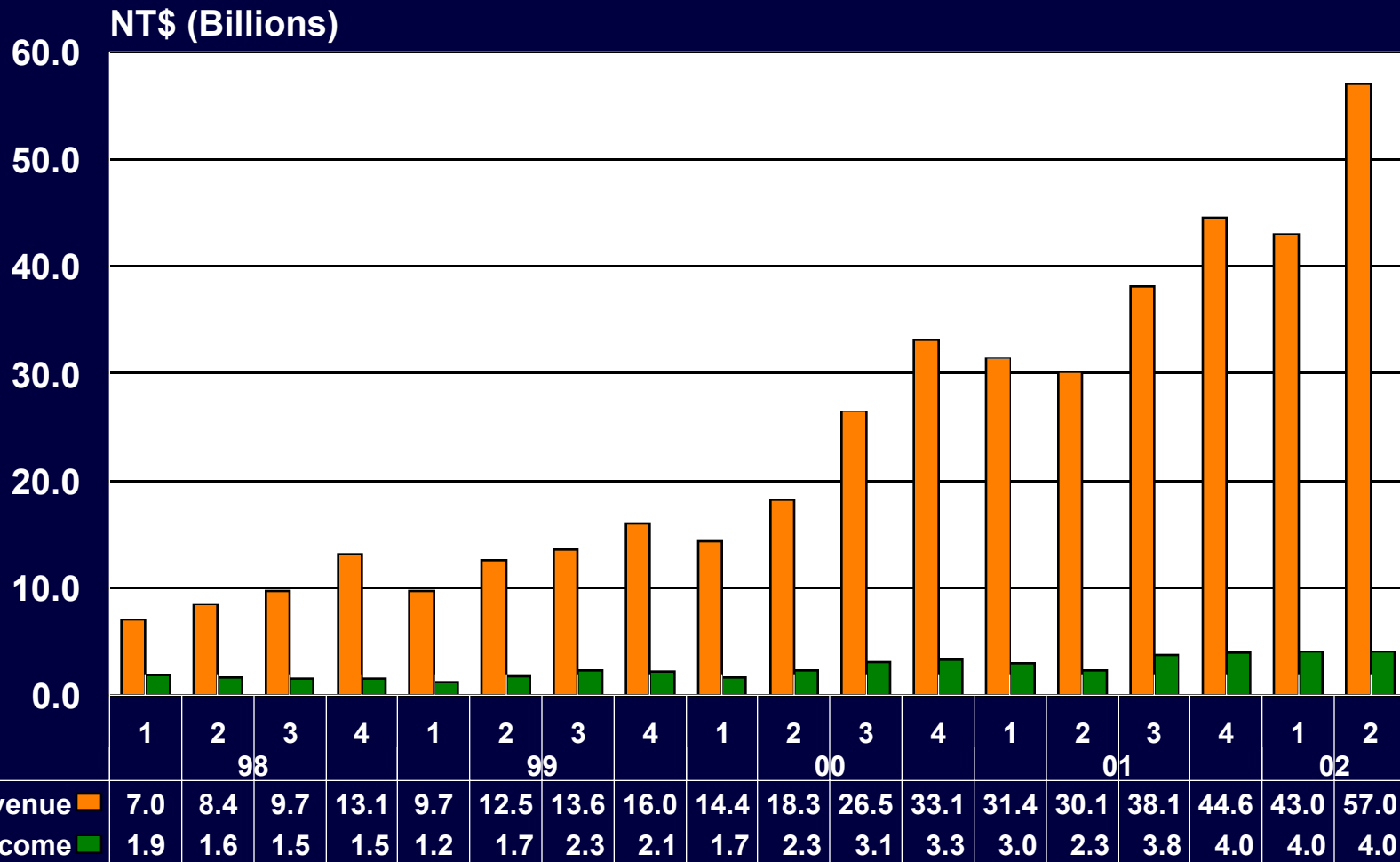


IDC 10/02

EMS includes Foxconn

Foxconn Electronics (Hon Hai), Taiwan

Revenue & Net Income



CY

PCB Fabrication

(more info)

TOP WORLD PCB MANUFACTURERS

PCB Fab - 2001 ESTIMATE (\$M)

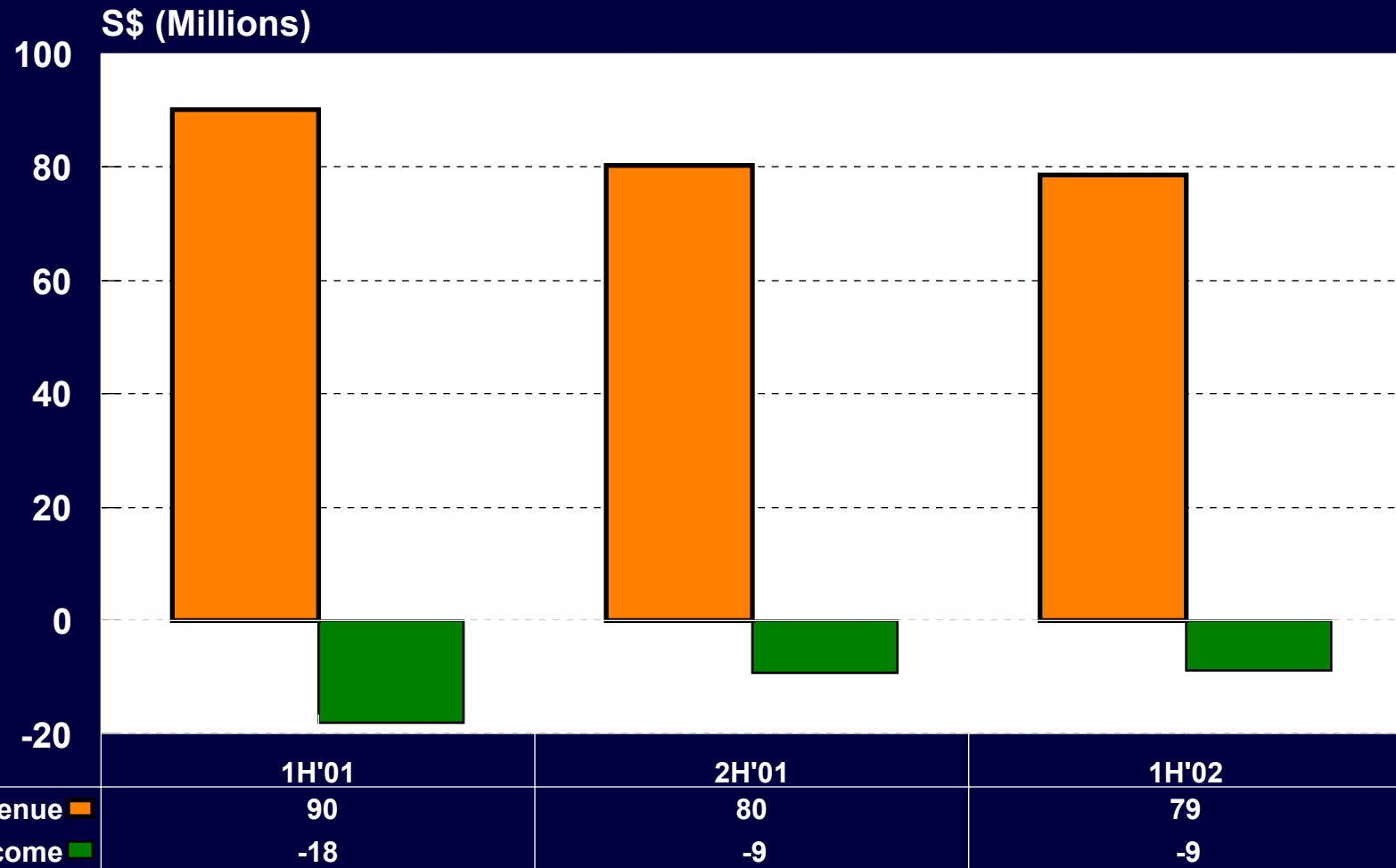
| | | |
|------------------|-----------|-----|
| Ibiden | Japan | 909 |
| CMK | Japan | 836 |
| Sanmina-SCI | USA | 750 |
| Mektron | Japan | 680 |
| Hitachi Group | Japan | 642 |
| Compeq | Taiwan | 597 |
| Viasystems Group | USA | 560 |
| Tyco | USA | 550 |
| Unimicron | Taiwan | 410 |
| Daeduck Group | Korea | 410 |
| Shinko Denki | Japan | 400 |
| Multek | USA | 400 |
| Samsung E-M | Korea | 368 |
| Fujitsu | Japan | 336 |
| IBM | USA | 315 |
| Matsushita EC | Japan | 296 |
| Sony Group | Japan | 296 |
| Nan Ya PCB | Taiwan | 296 |
| Photocircuits | USA | 294 |
| Elec & Eltek | Hong Kong | 280 |
| AT&S | Austria | 279 |
| DDi | USA | 270 |
| Korea Circuit | Korea | 270 |

TOP ASIAN PCB MANUFACTURERS 2001

| | <u>\$ (Millions)</u> |
|-----------------------|----------------------|
| COMPEQ | 597 |
| DAEDUCK GROUP | 410 |
| UNIMICRON | 410 |
| SAMSUNG E-M | 368 |
| NAN YA PCB | 296 |
| ELEC & ELTEK | 280 |
| KOREA CIRCUIT | 270 |
| WUS GROUP | 268 |
| MEADVILLE GROUP (OPC) | 180 |
| GOLD CIRCUIT | 174 |
| TOPSEARCH | 157 |
| CHIN-POON | 155 |
| WONGS CIRCUITS | 138 |
| LG ELECTRONICS | 138 |

GUL Technologies, Singapore

Revenue & Net Income



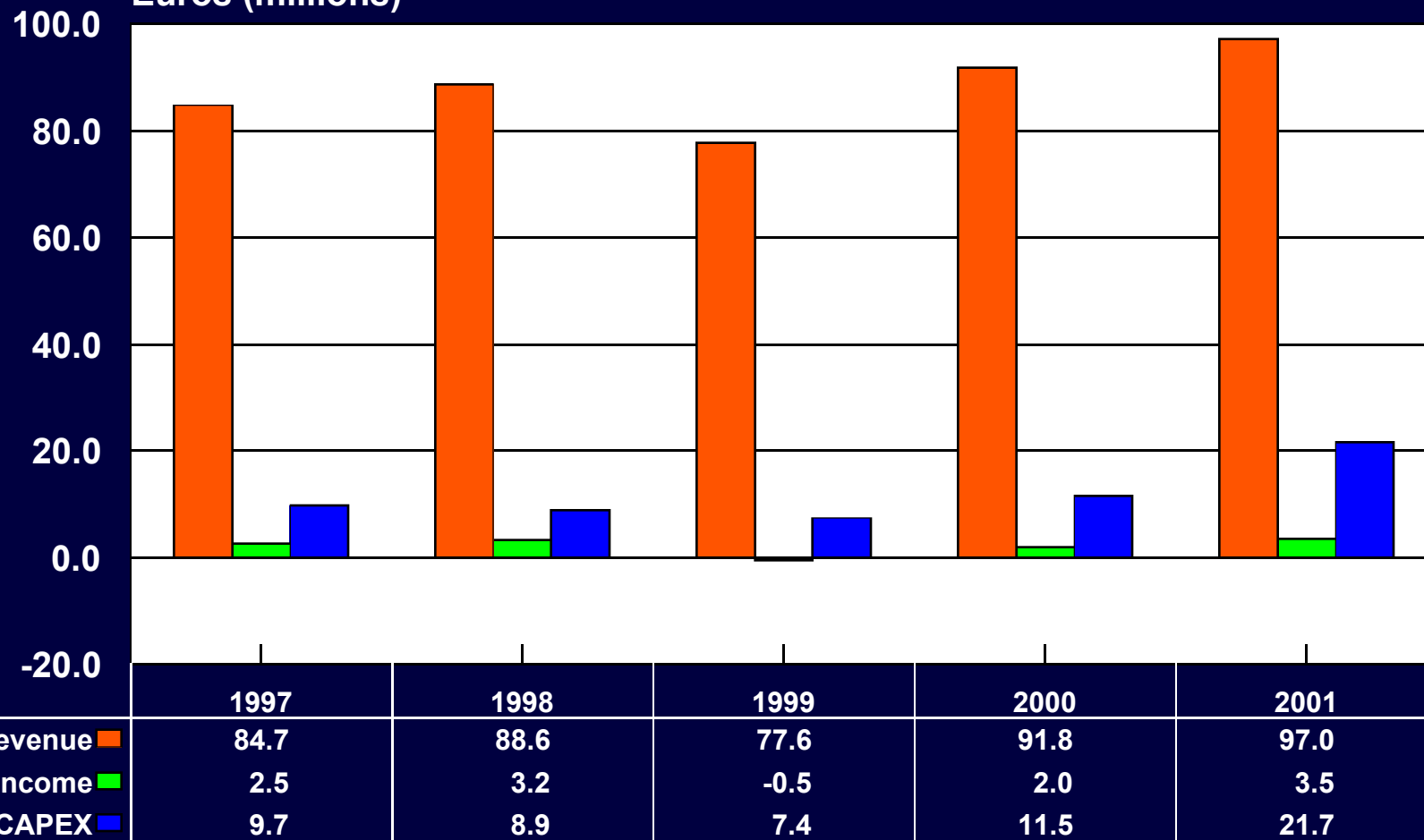
CY

1.8 S\$ = 1 US\$

Schweizer Electronic AG

Revenue, Net Income & Capital Expenditure

Euros (millions)

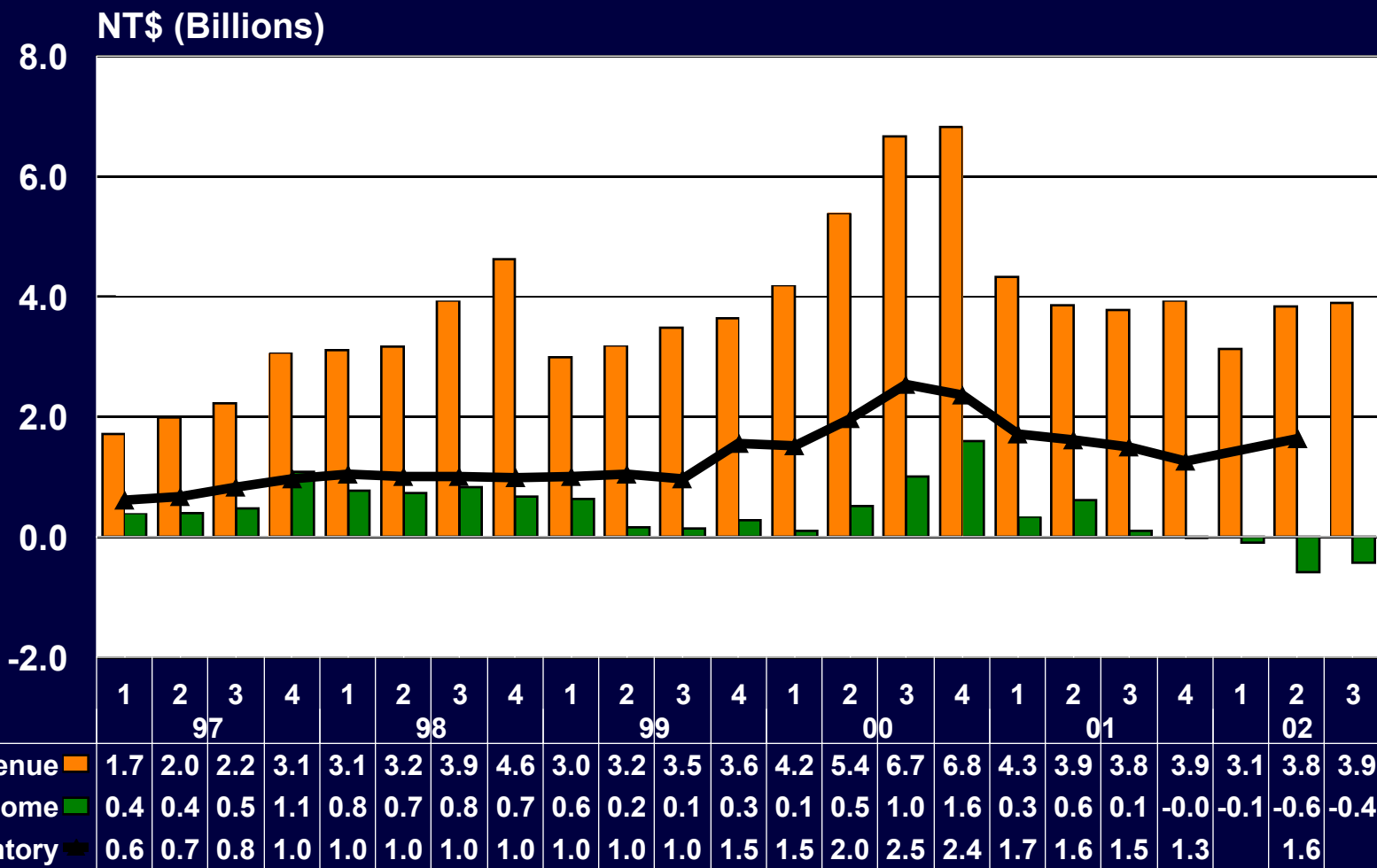


CY

SEAG

Compeq, Taiwan

Revenue & Net Income

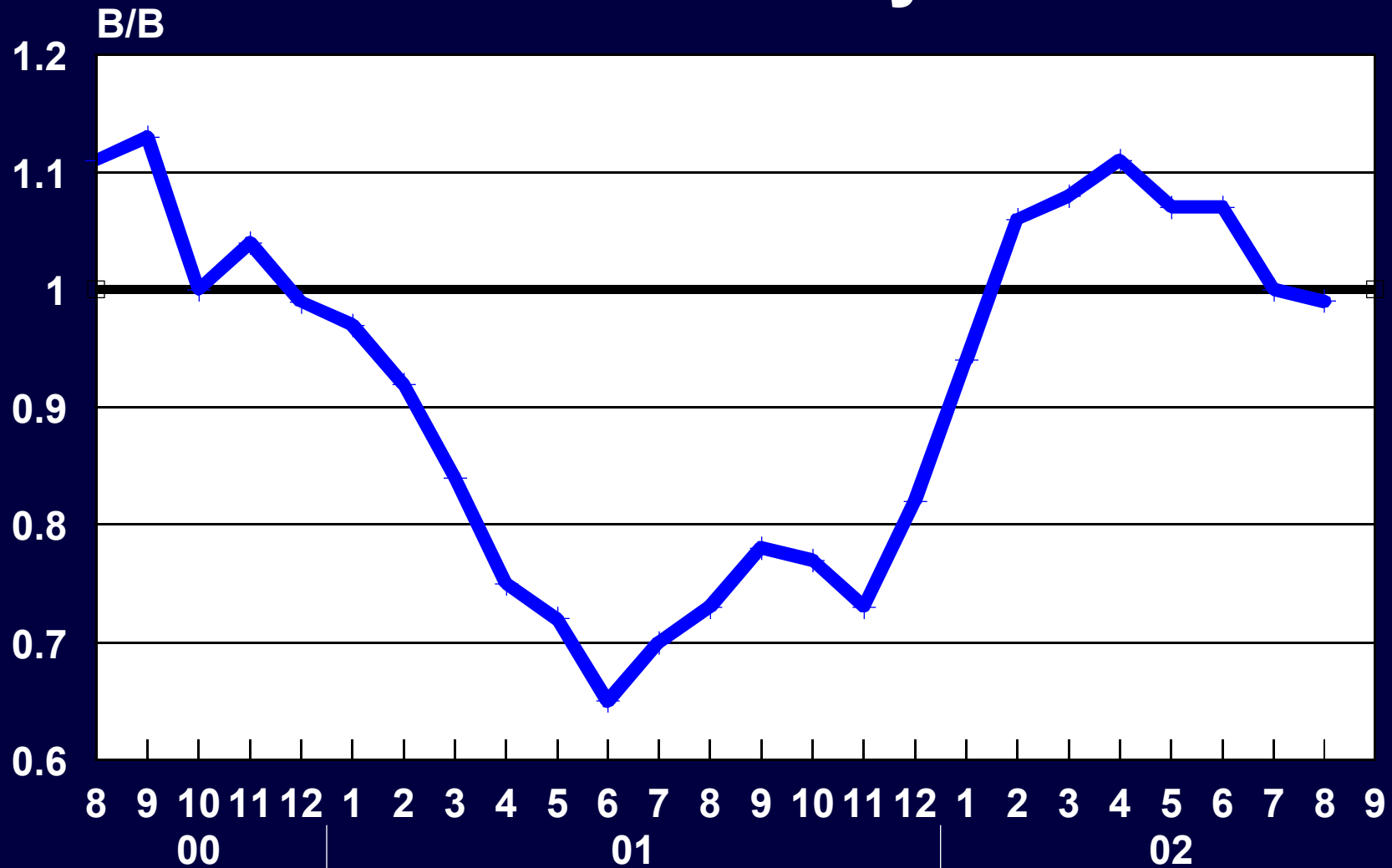


CY

TOP EUROPEAN PCB MANUFACTURERS 2001

| | <u>\$ (Millions)</u> |
|------------------|----------------------|
| AT&S-GROUP | 279 |
| RUWEL-GROUP | 208 |
| ASPOCOMP | 170 |
| VOGT-FUBA | 133 |
| ALCATEL-GROUP | 127 |
| EUROCIR | 100 |
| SEAG (Schweizer) | 89 |
| CIRCATEX | 83 |
| CIRE GROUP | 70 |
| STP | 64 |
| WURTH | 63 |
| LARES-COZZI | 60 |
| PPC | 54 |

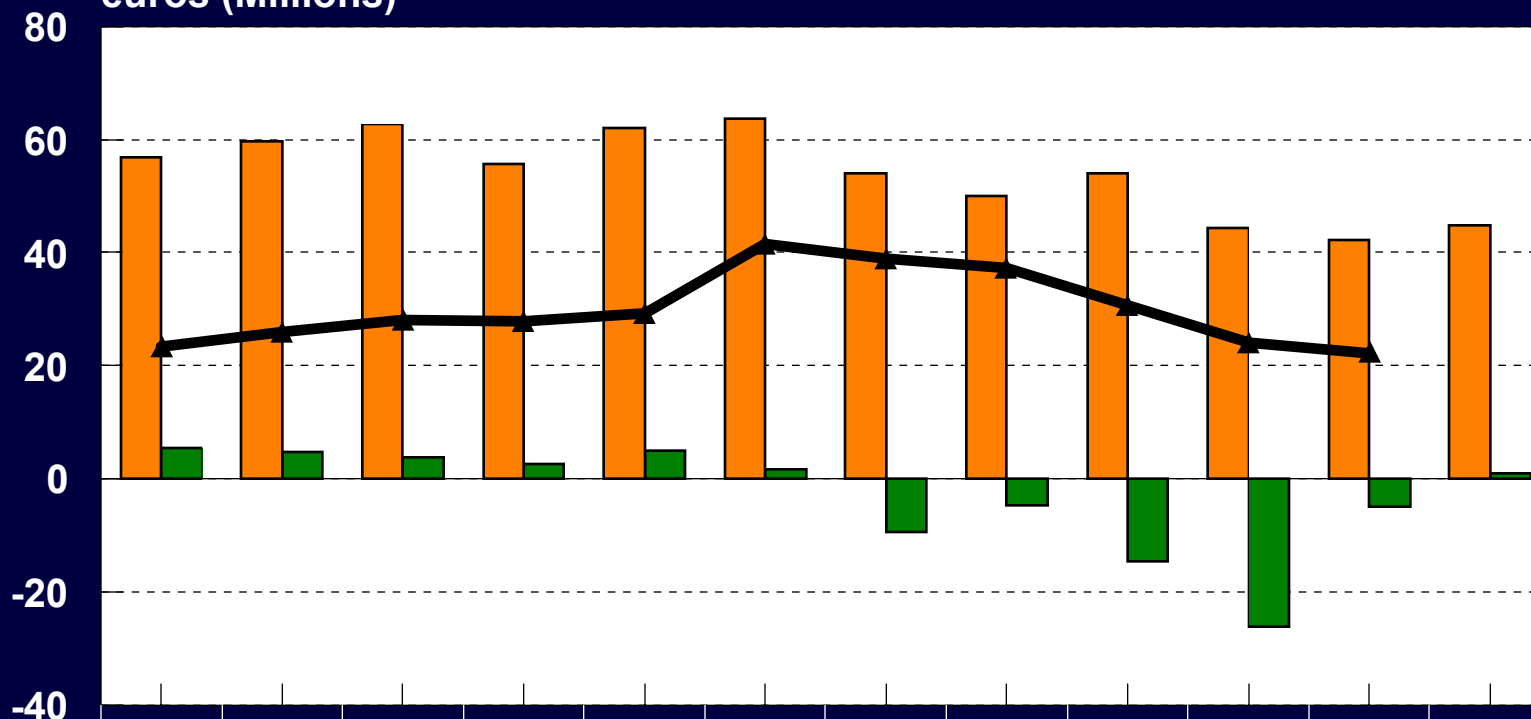
PCB Book/Bill Germany



Aspocomp, Finland

Revenue, Net Income & Inventory

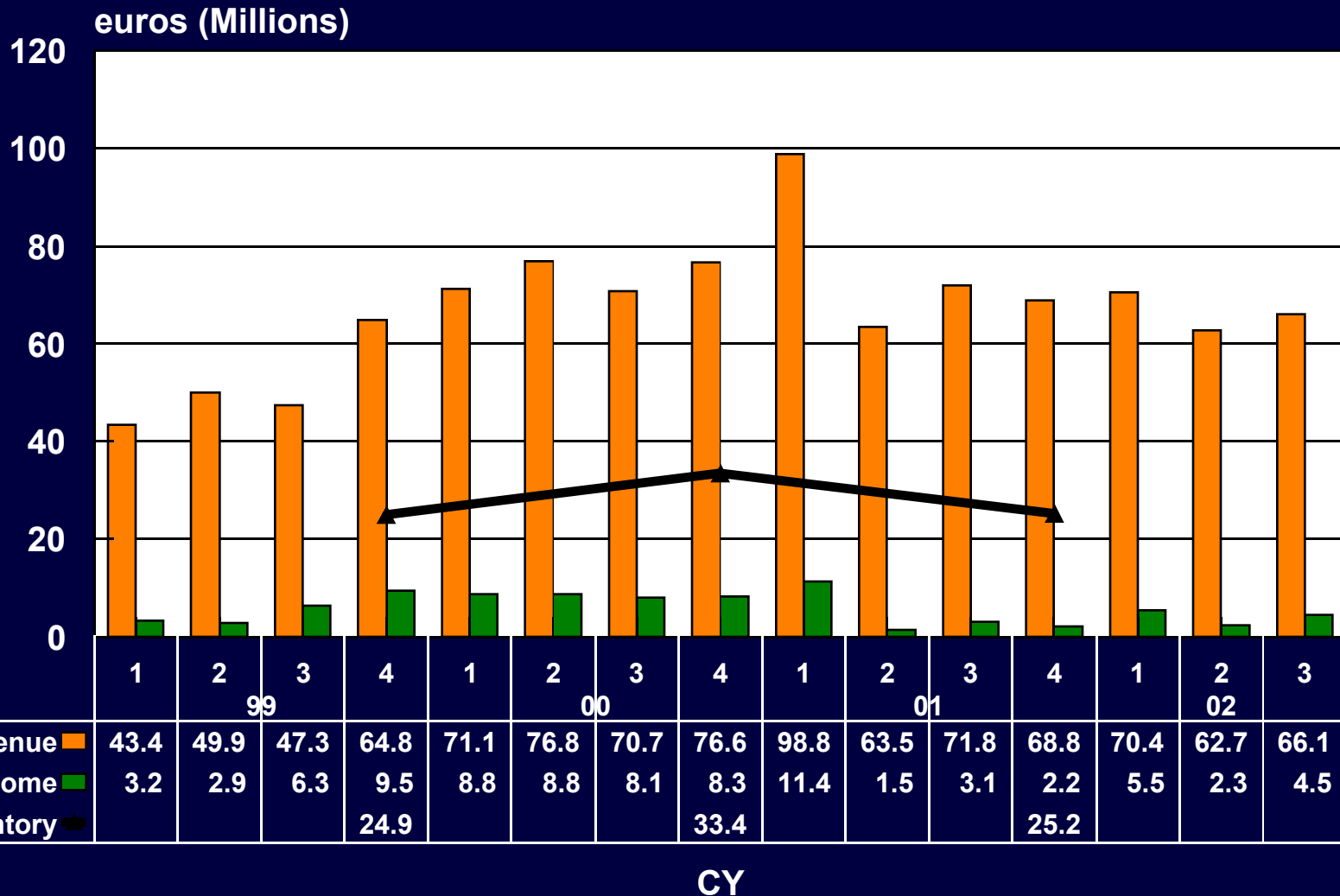
euros (Millions)



| | 4 99 | 1 | 2 00 | 3 | 4 | 1 | 2 01 | 3 | 4 | 1 | 2 02 | 3 |
|-----------|------|------|------|------|------|------|------|------|-------|-------|------|------|
| Revenue | 56.9 | 59.6 | 62.6 | 55.6 | 62 | 63.7 | 54 | 50.1 | 54 | 44.3 | 42.2 | 44.8 |
| Income | 5.4 | 4.7 | 3.9 | 2.7 | 4.9 | 1.8 | -9.5 | -4.6 | -14.6 | -26.2 | -5 | 0.9 |
| Inventory | 23.4 | 26 | 28.2 | 27.9 | 29.3 | 41.5 | 39 | 37.2 | 30.7 | 24.1 | 22.3 | |

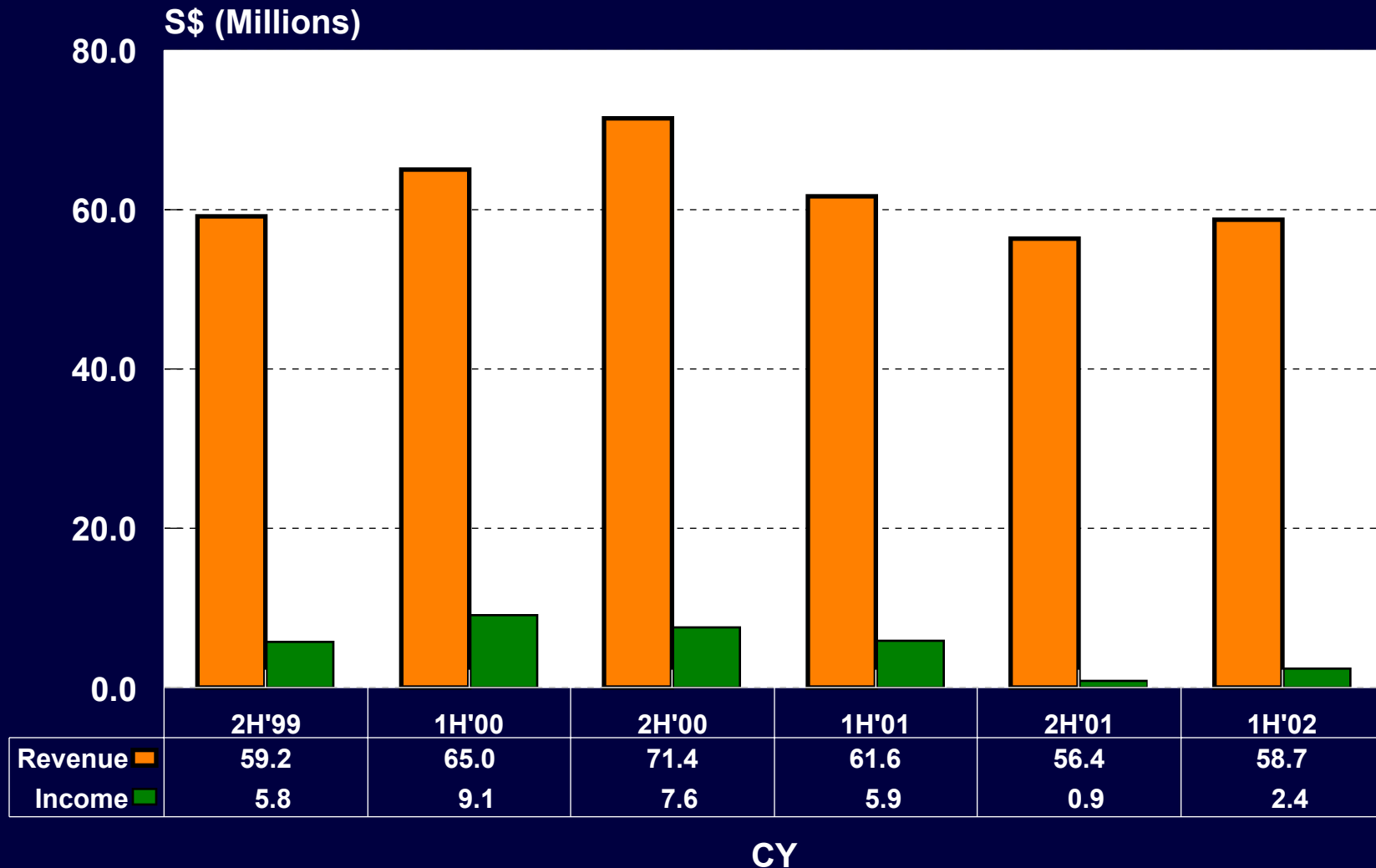
AT&S, Austria

Revenue, Net Income & Inventory



Pentex-Schweizer Circuits Ltd

Revenue & Net Income



1.8 S\$ = 1 US\$

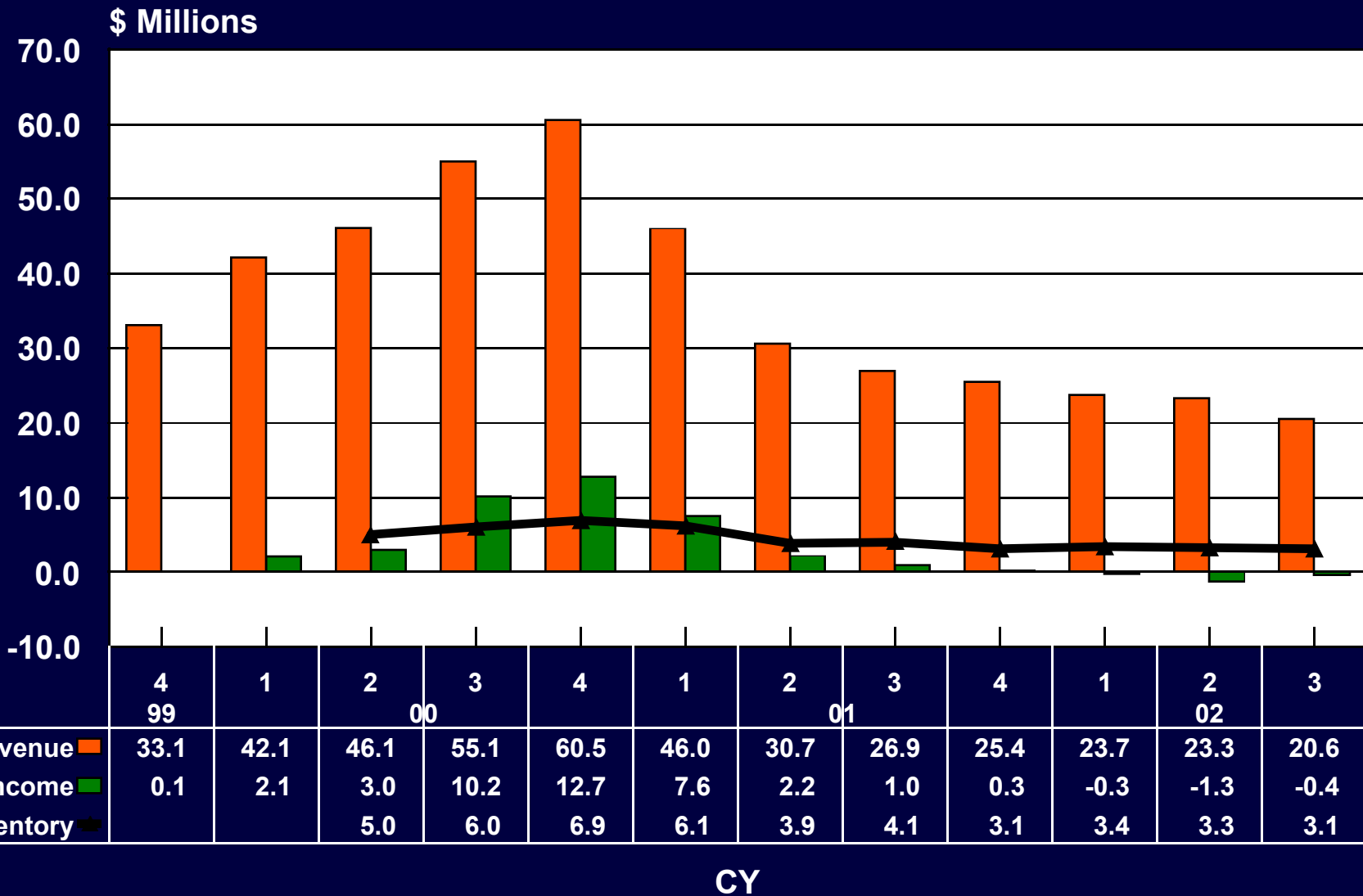
TOP N AMERICAN PCB MANUFACTURERS

PCB FAB - 2001 ESTIMATE (\$M)

| | PCB \$M |
|--------------------|---------|
| SANMINA-SCI | 750 |
| VIASYSTEMS GROUP | 560 |
| TYCO | 550 |
| MULTEK | 400 |
| IBM | 315 |
| DDi | 300 |
| PHOTOCIRCUITS | 294 |
| HONEYWELL (ACI) | 250 |
| 3M | 200 |
| TTM TECHNOLOGIES | 133 |
| MERIX | 121 |
| INNOVEX | 120 |
| SHELDAHL | 106 |
| TERADYNE | 90 |
| PARLEX | 86 |
| BUREAU ELECTRONICS | 70 |
| AMBITECH | 61 |
| M-FLEX | 55 |
| NORTHROP (Litton) | 50 |

TTM Technologies

Revenue & Net Income

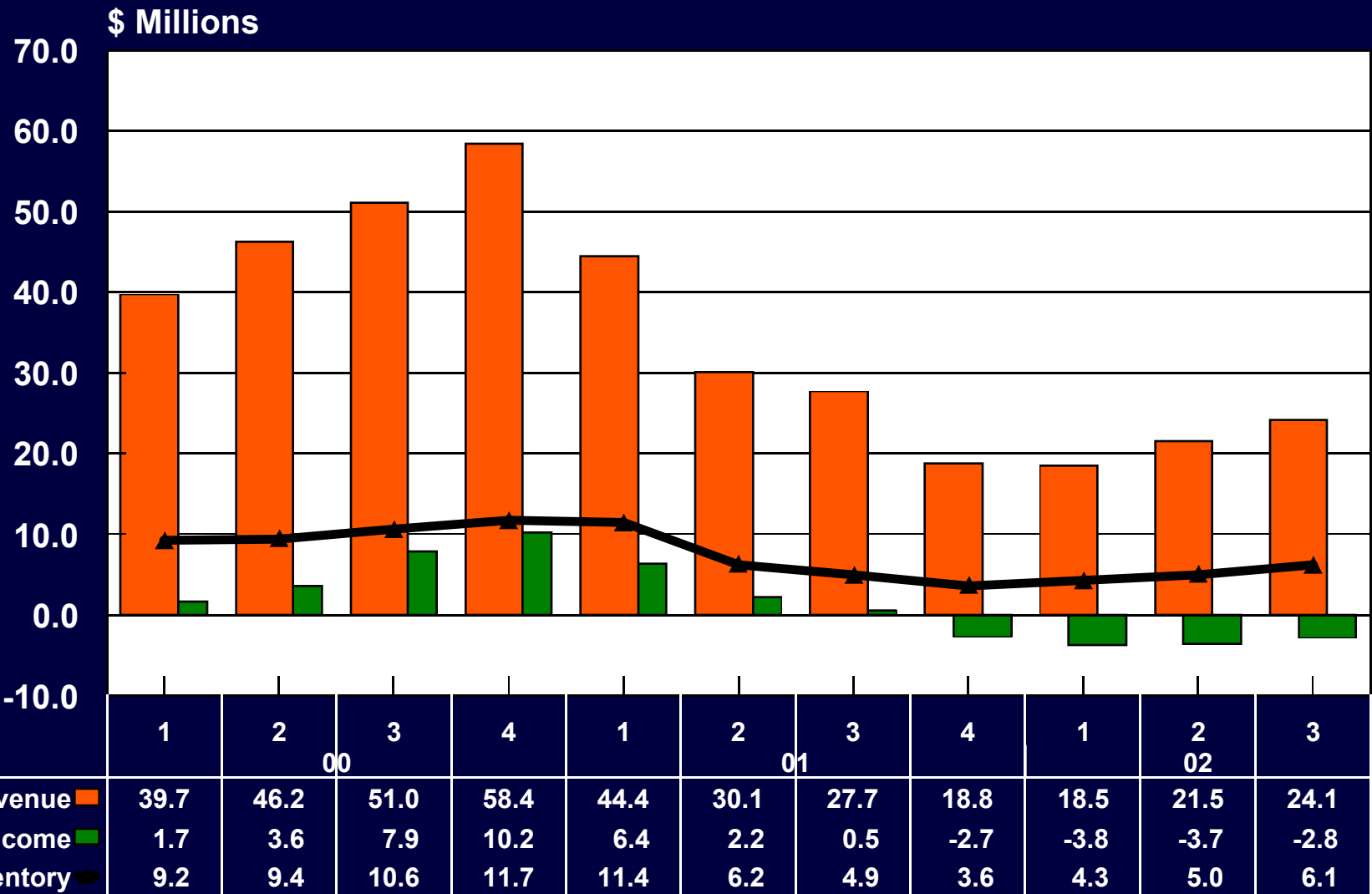


FY=CY

TTMI

MERIX

Revenue, Net Income & Inventory

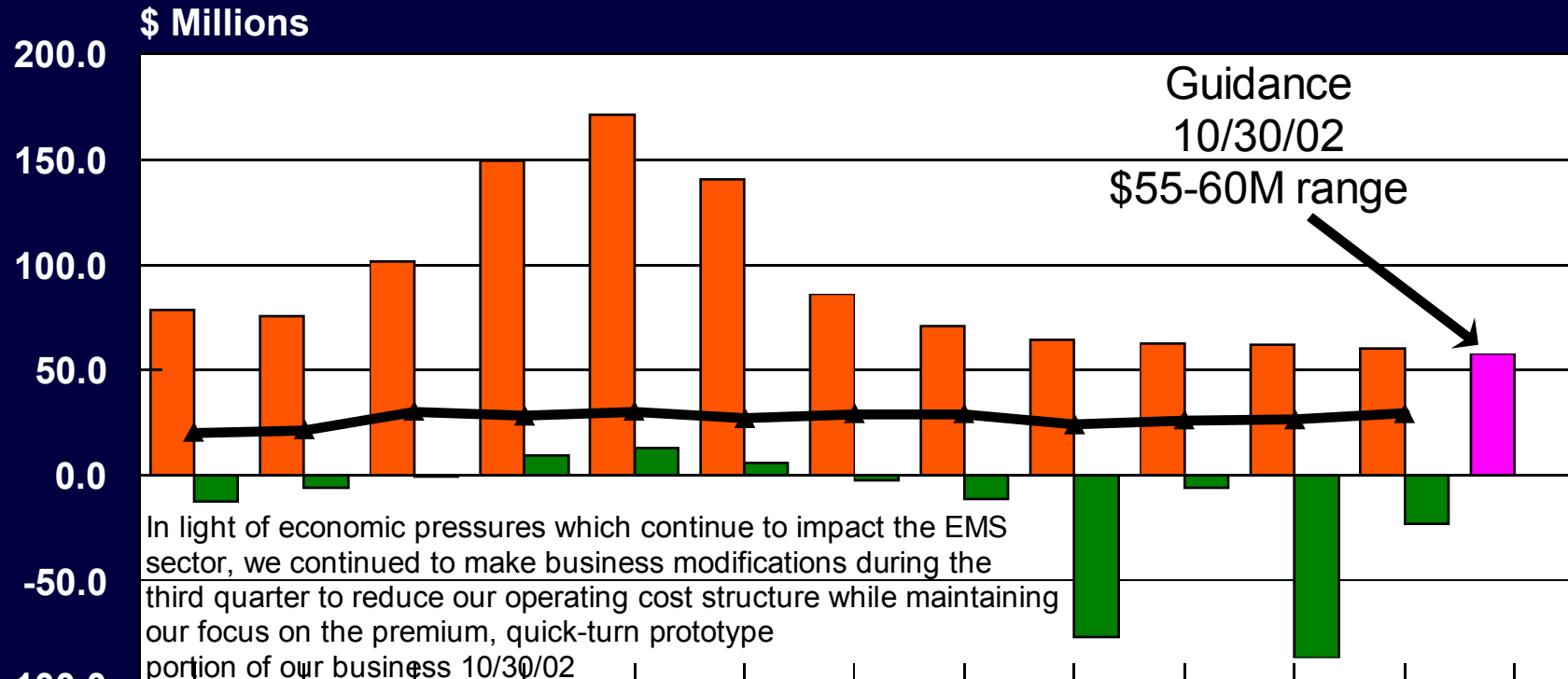


MERIX

FY ends May

DDi Corp

Revenue, Net Income & Inventory



| | 4 99 | 1 | 2 00 | 3 | 4 | 1 | 2 01 | 3 | 4 | 1 | 2 02 | 3 | 4 |
|-----------|---------|------|---------|-------|-------|-------|---------|-------|-------|------|---------|-------|------|
| Revenue | 78.7 | 75.3 | 101.5 | 149.6 | 171.3 | 140.7 | 85.8 | 70.6 | 64.5 | 62.5 | 62.1 | 60.3 | 57.5 |
| Income | -12.5 | -5.7 | -0.7 | 9.4 | 12.9 | 5.7 | -2.5 | -11.5 | -76.7 | -5.9 | -86.6 | -23.4 | |
| Inventory | 20.2 | 21.4 | 30.3 | 28.1 | 30.3 | 26.8 | 29.1 | 29.0 | 24.0 | 26.1 | 26.3 | 29.3 | |

CY

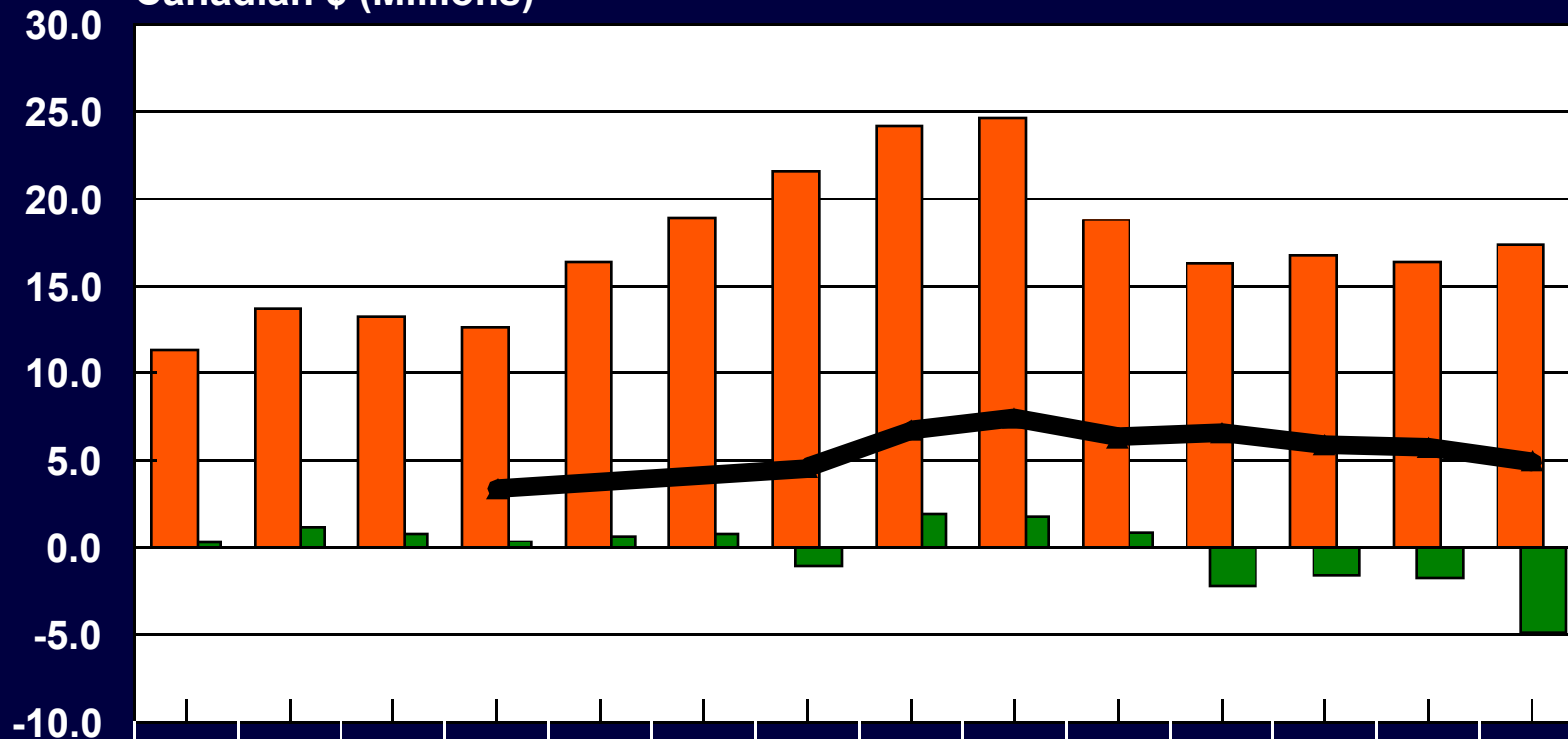
FY=CY

DDIC

Coretec Inc

Revenue, Net Income & Inventory

Canadian \$ (Millions)



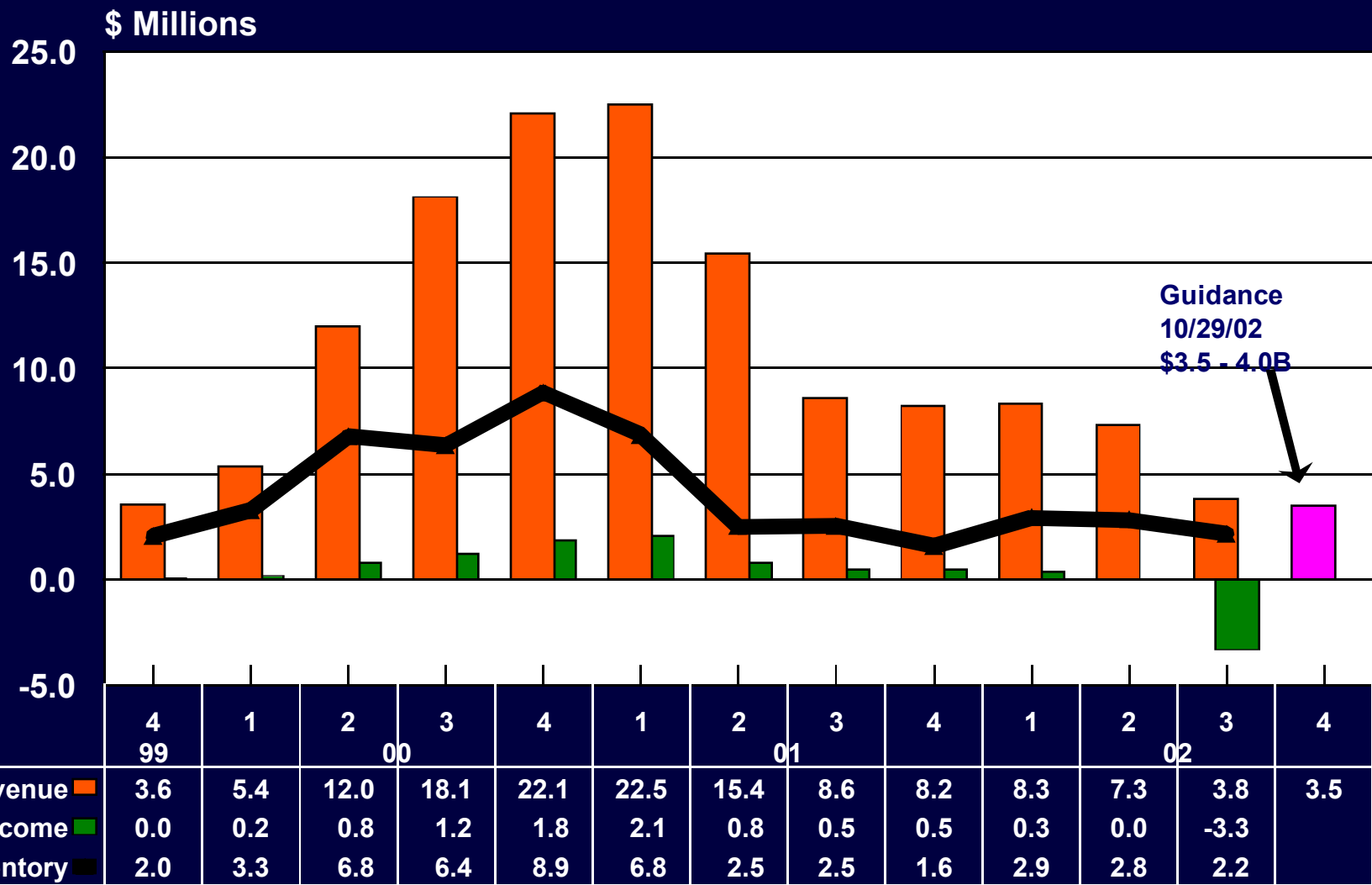
| | 99 | | | | 00 | | | | 01 | | | | 02 | |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |
| Revenue | 11.3 | 13.7 | 13.2 | 12.6 | 16.4 | 18.9 | 21.6 | 24.1 | 24.6 | 18.8 | 16.3 | 16.7 | 16.3 | 17.3 |
| 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 | -4.9 |
| Inventory | | | | 3.3 | | | 4.6 | 6.7 | 7.4 | 6.3 | 6.6 | 5.9 | 5.7 | 4.9 |

FY=CY

T.C.YY

M-WAV

Revenue & Net Income



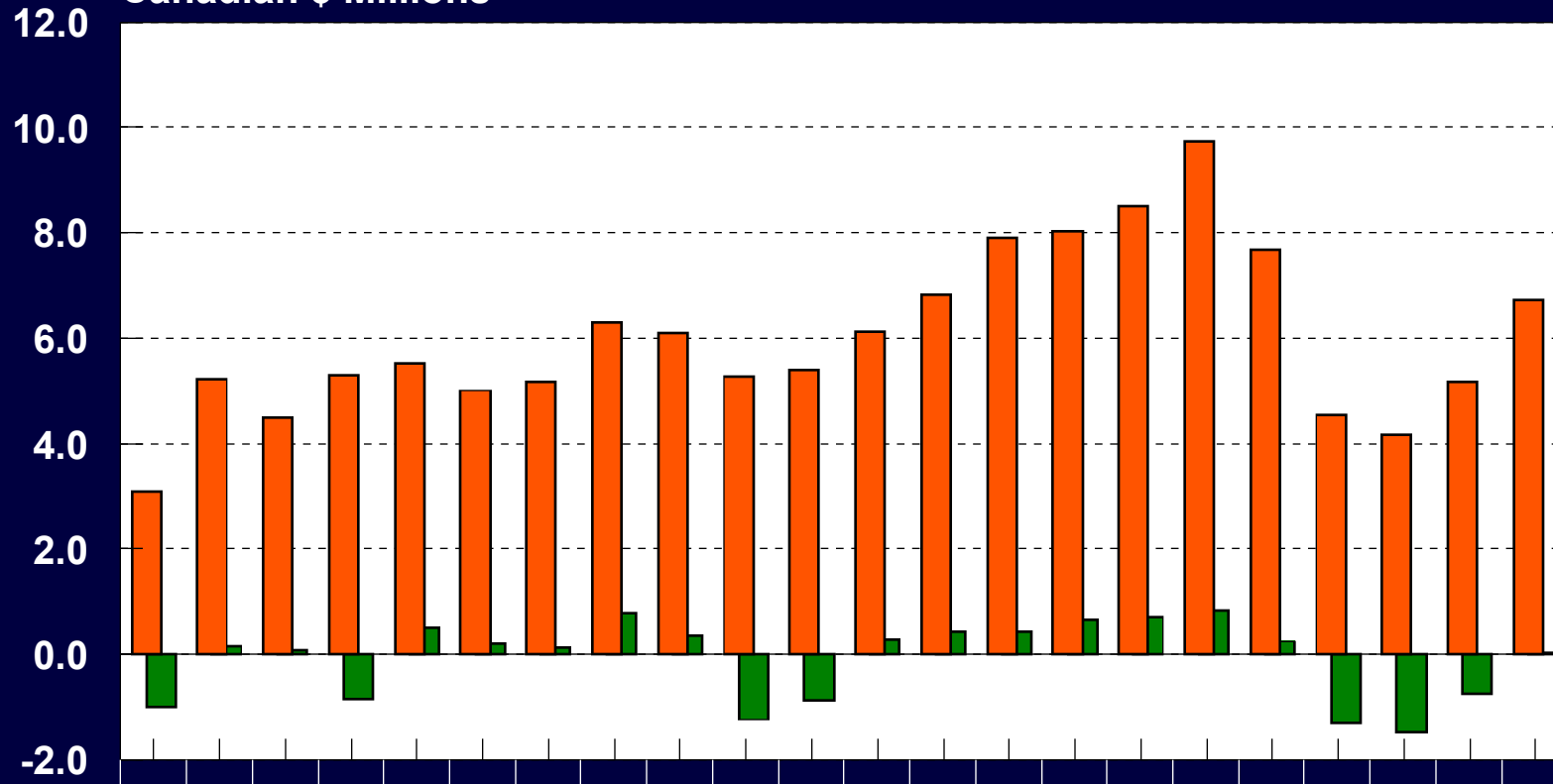
FY = CY

MWAV

Circuit World

Revenue & Net Income

Canadian \$ Millions



| | | | | | | | | | | | | | | | | | | | | | | |
|---------|------|-----|-----|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|
| Revenue | 3.1 | 5.2 | 4.5 | 5.3 | 5.5 | 5.0 | 5.2 | 6.3 | 6.1 | 5.3 | 5.4 | 6.1 | 6.8 | 7.9 | 8.0 | 8.5 | 9.7 | 7.7 | 4.5 | 4.2 | 5.2 | 6.7 |
| Income | -1.0 | 0.2 | 0.1 | -0.8 | 0.5 | 0.2 | 0.1 | 0.8 | 0.3 | -1.2 | -0.9 | 0.3 | 0.4 | 0.4 | 0.7 | 0.7 | 0.8 | 0.2 | -1.3 | -1.5 | -0.7 | 0.0 |

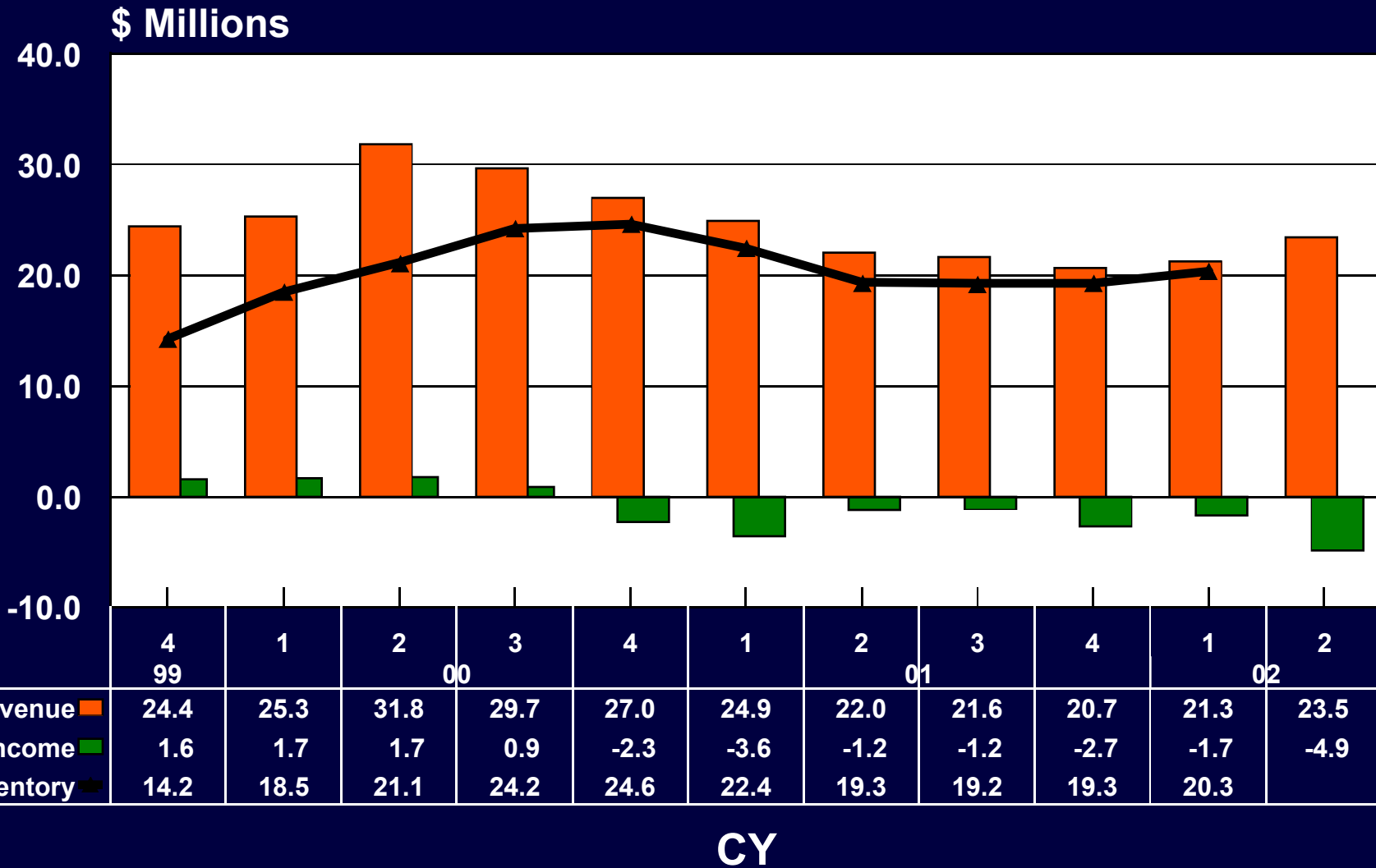
FY=CY

1 US\$ = 1.54 Cn \$

T:CCW

PARLEX

Revenue, Net Income & Inventory

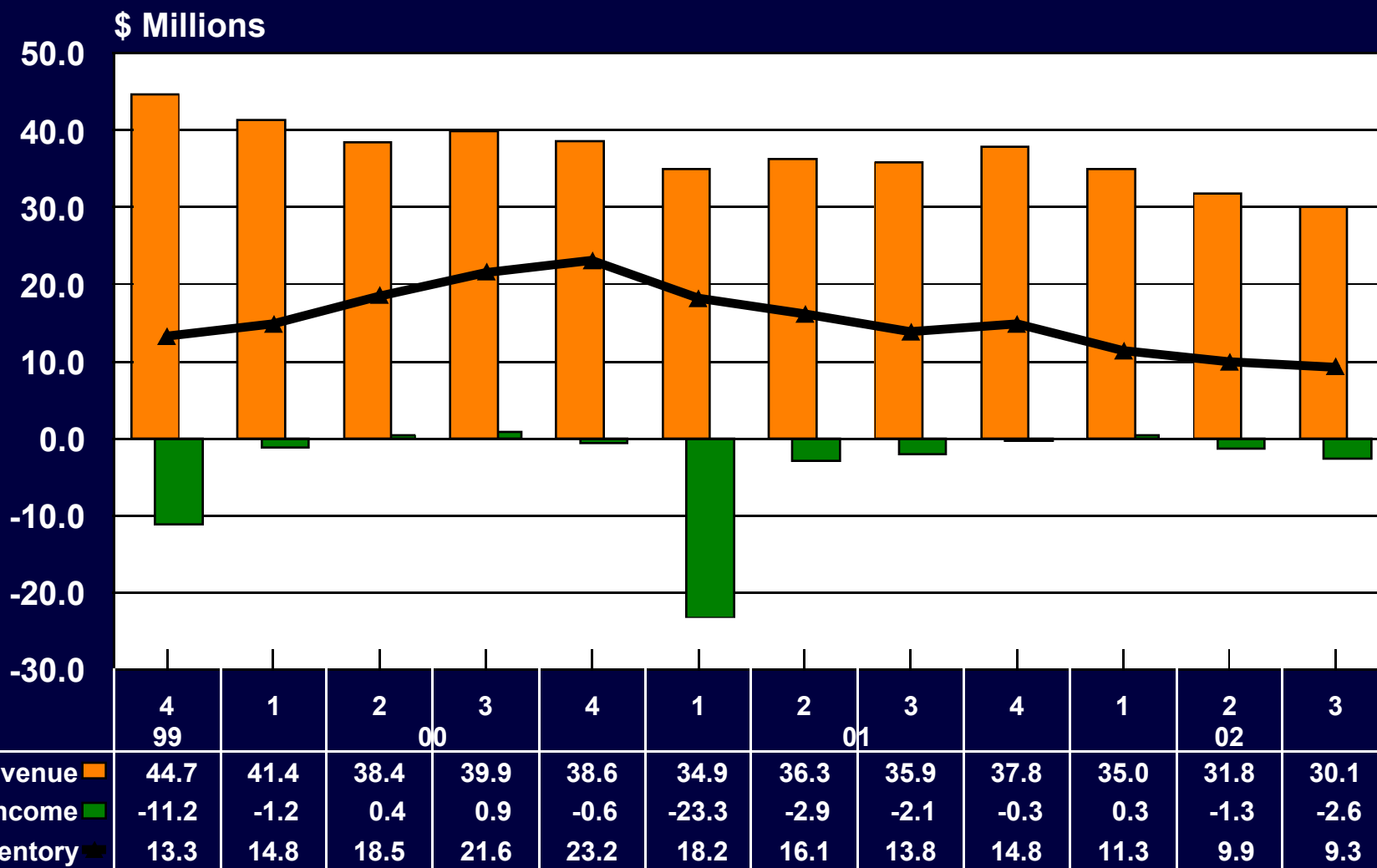


FY ends June 30

PRLX

INNOVEX

Revenue, Net Income & Inventory



CY

FY ends September

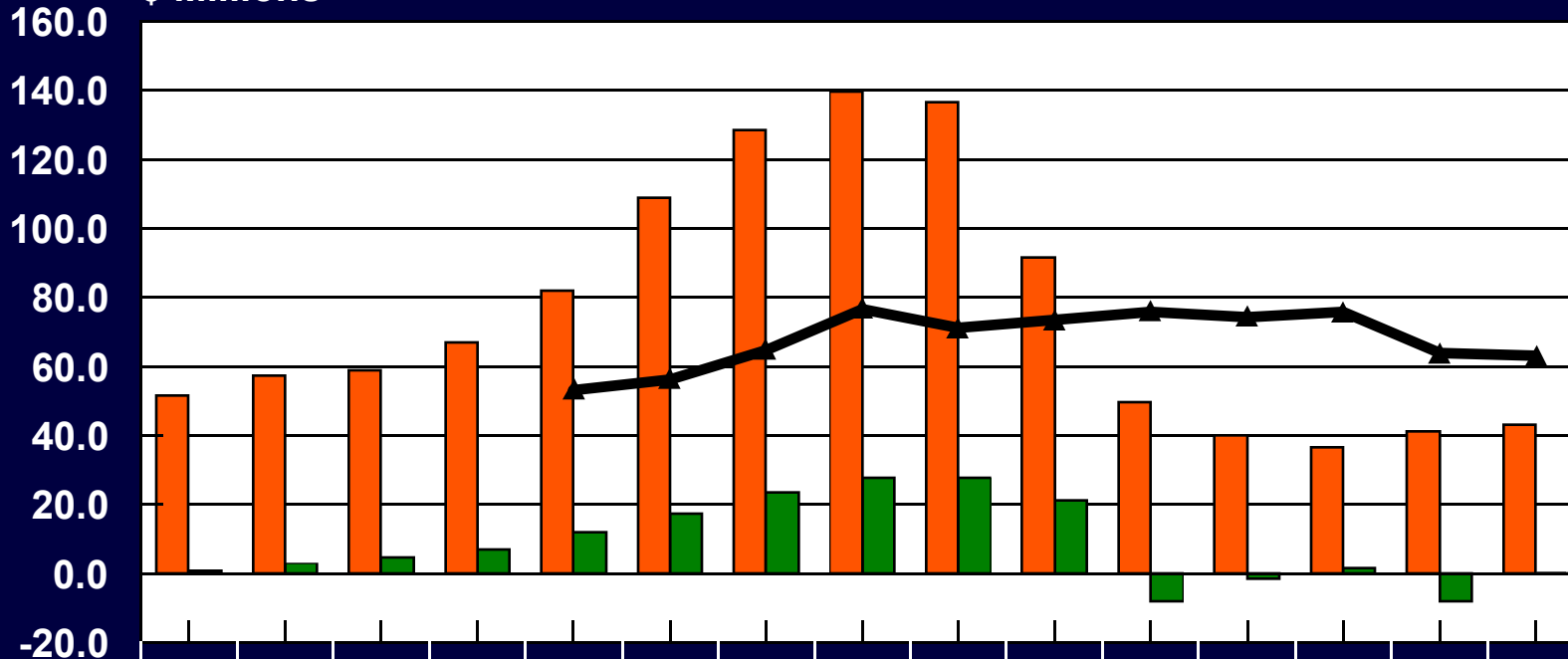
INVX

**PCB Materials
&
Process
Equipment
Suppliers**

Electro Scientific Industries

Revenue, Net Income & Inventory

\$ Millions



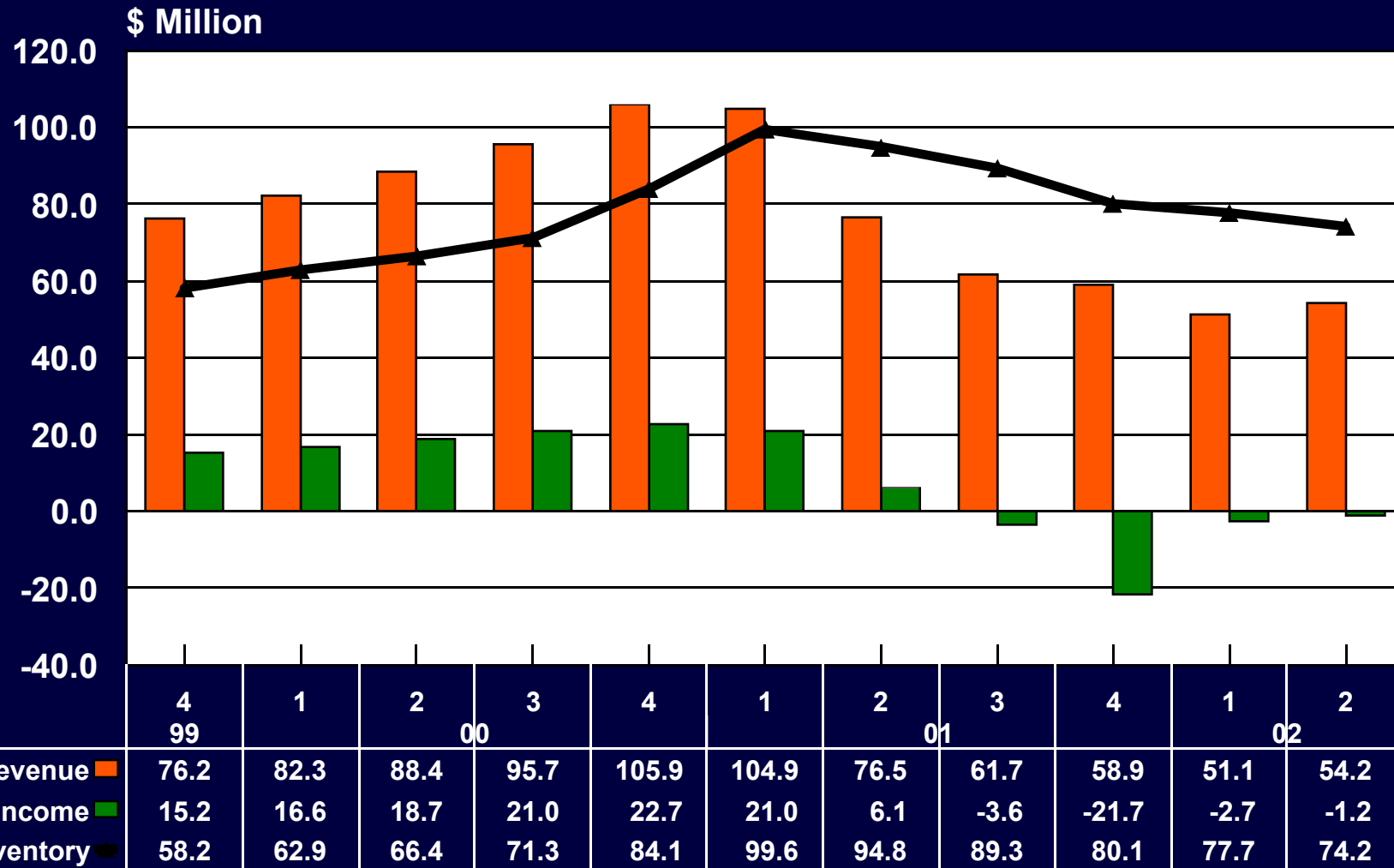
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 |
|-----------|------|------|------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|
| | 99 | | | | 00 | | | | 01 | | | | 02 | | |
| Revenue | 51.5 | 57.3 | 59.0 | 66.9 | 82.1 | 108.9 | 128.5 | 139.6 | 136.6 | 91.4 | 49.5 | 40.2 | 36.4 | 41.1 | 43.0 |
| Income | 0.9 | 2.9 | 4.8 | 6.9 | 11.9 | 17.2 | 23.3 | 27.7 | 27.8 | 21.1 | -8.0 | -1.5 | 1.7 | -8.2 | 0.2 |
| Inventory | | | | | 53.2 | 56.3 | 64.7 | 76.7 | 71.1 | 73.3 | 75.9 | 74.3 | 75.7 | 63.7 | 63.0 |

CY

ESIO

Orbotech

Revenue, Net Income & Inventory

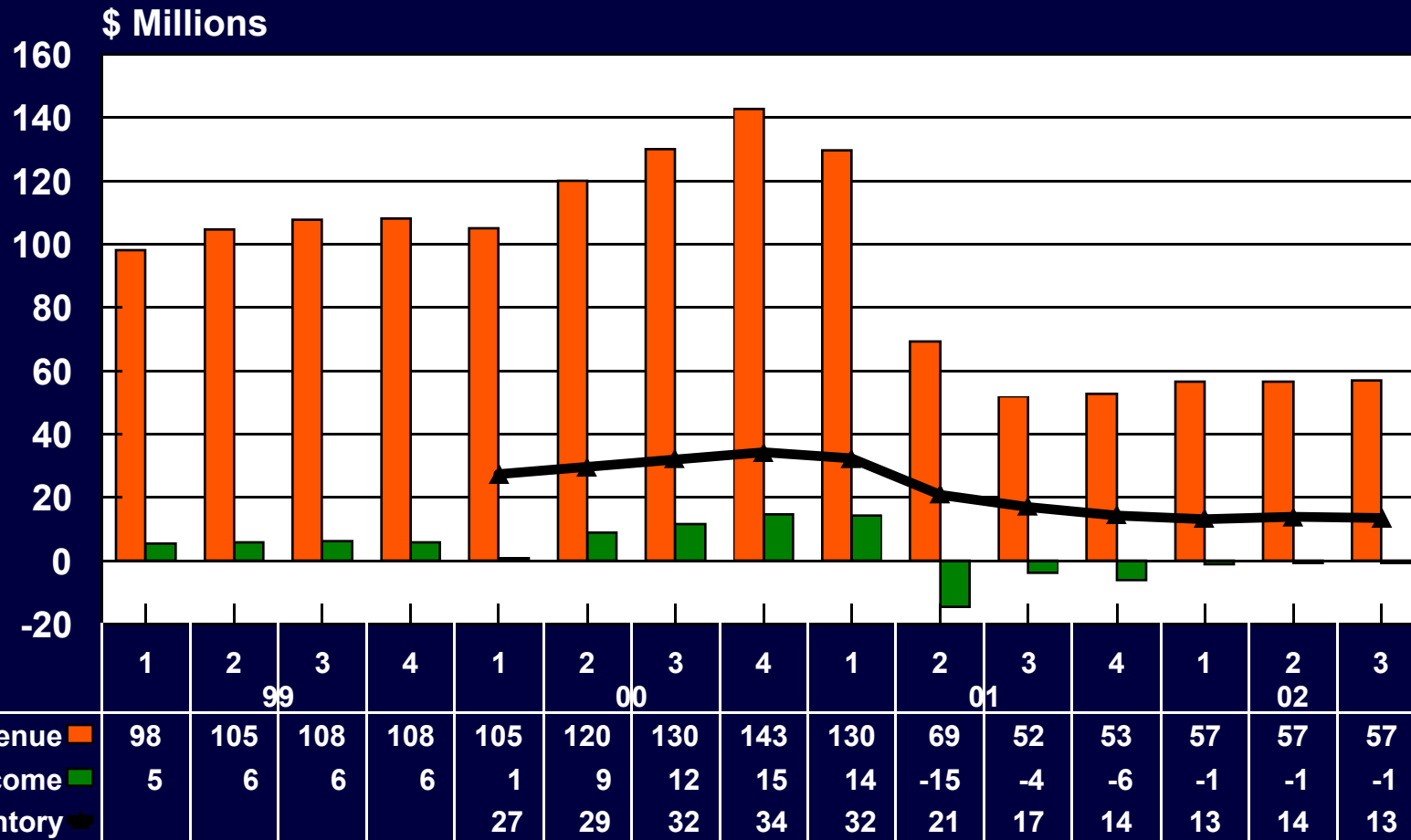


CY

ORBK

Park Electrochemical Corp

Revenue, Net Income & Inventory



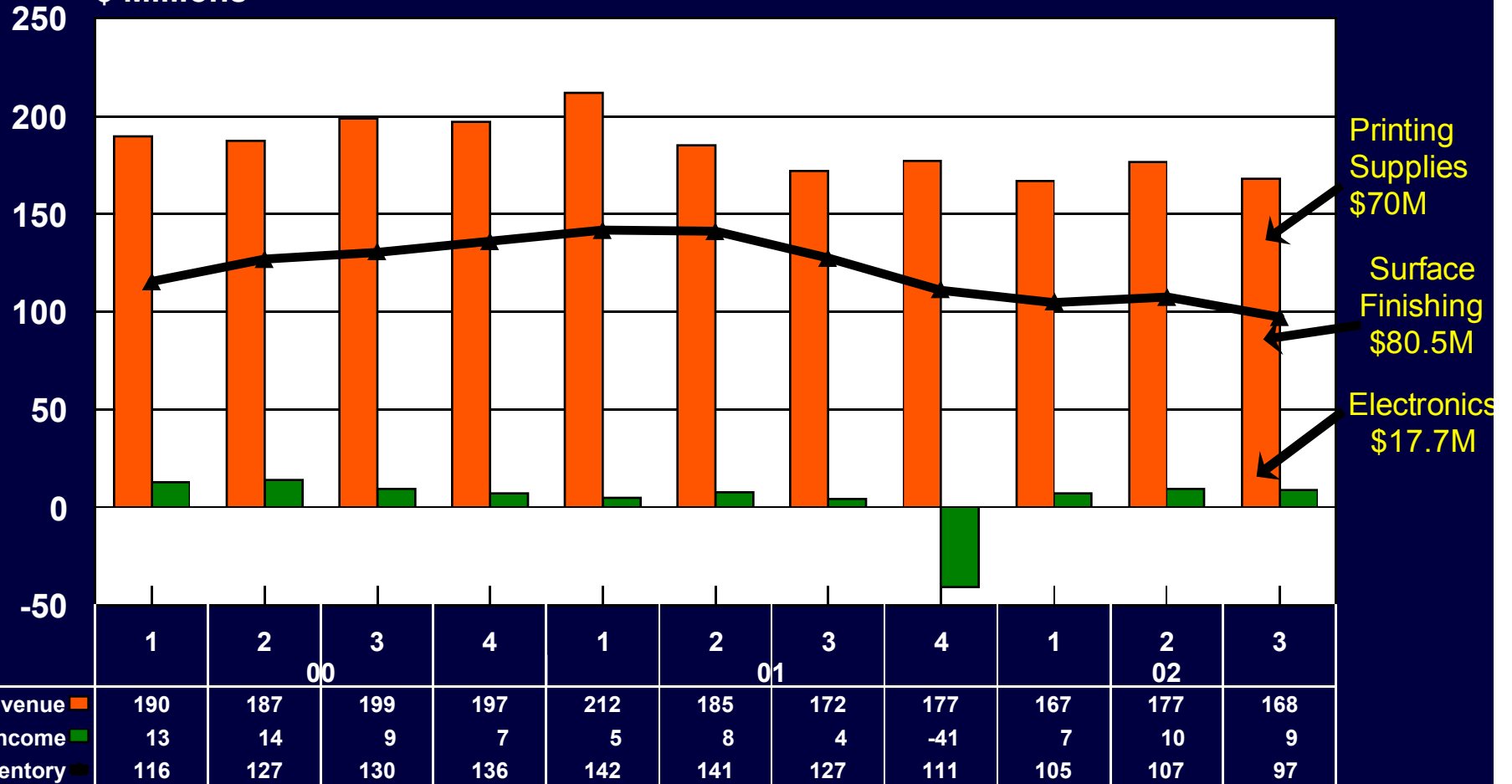
CY

PKE

MacDermid Inc

Revenue, Net Income & Inventory

\$ Millions



CY

MRD

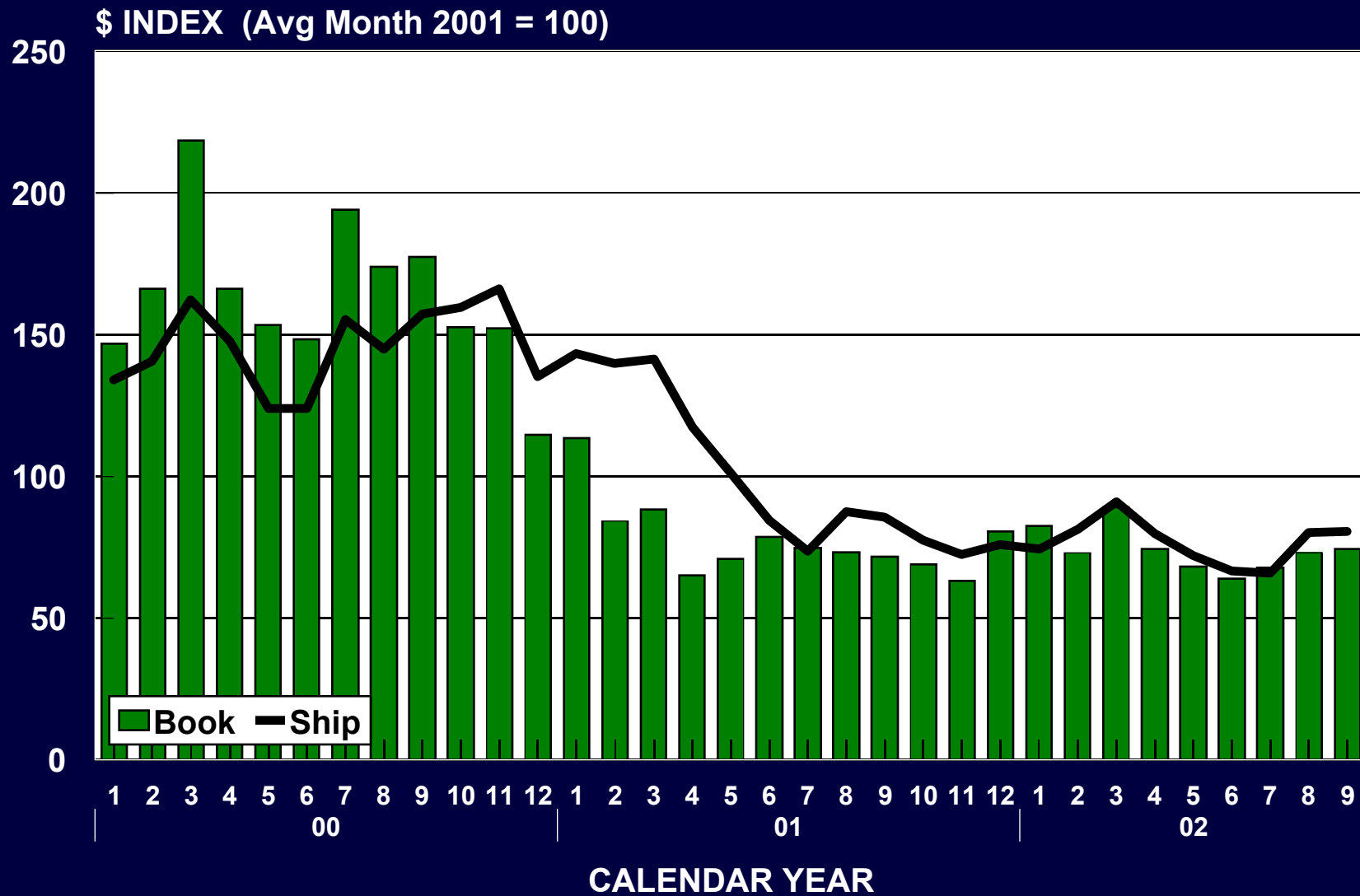
N. AMERICAN PCB MANUFACTURERS - PUBLIC DATA

QUARTERLY SALES & NET INCOME (\$M)

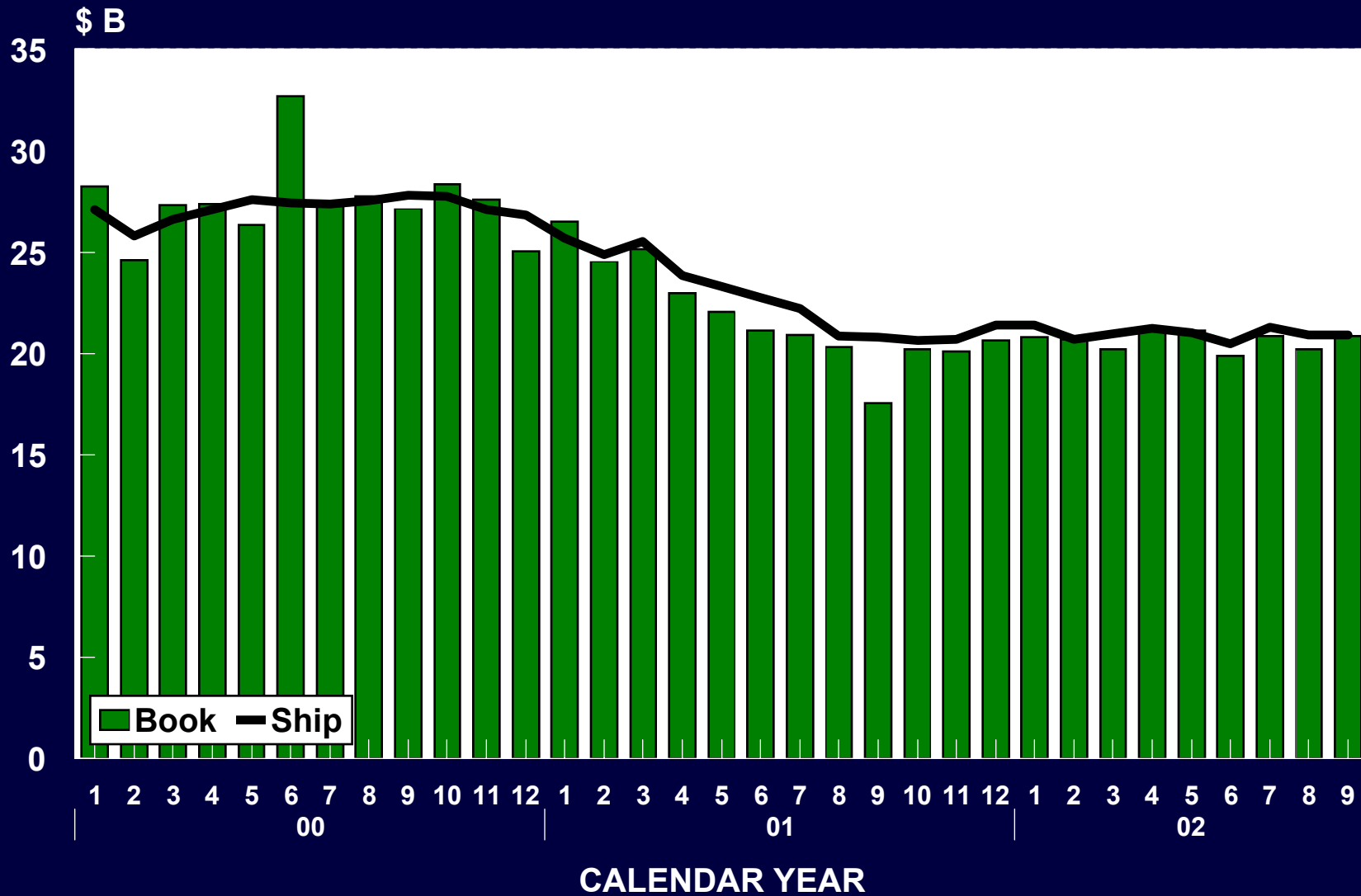
| | | LAST YEAR | | THIS YEAR | | QUARTER |
|-----------------|---------|--------------|--------------|--------------|---------------|---------|
| | | SALES | INC | SALES | INC | ENDING |
| CIRCUIT WORLD | TSE:CCW | 5.1 | 0.2 | 4.5 | 0.0 | 6/02 |
| CORETEC | TSE:CYY | 12.5 | 0.6 | 11.6 | -3.3 | 6/02 |
| DDi | DDIC | 70.6 | -11.5 | 60.3 | -23.4 | 9/02 |
| INNOVEX | INVX | 35.9 | -2.1 | 30.1 | -2.6 | 9/02 |
| MERIX | MERX | 27.7 | 0.5 | 24.1 | -2.8 | 8/02 |
| M-WAV | MWAV | 8.6 | 0.5 | 3.8 | -3.3 | 9/02 |
| PARLEX | PRLX | 22.0 | -1.2 | 23.5 | -4.9 | 6/02 |
| TTM | TTMI | 26.9 | 1.0 | 20.6 | -0.4 | 9/02 |
| TOTAL | | 209.3 | -12.1 | 178.4 | -40.6 | |
| INCOME % | | | -5.8% | | -22.8% | |

Includes foreign sales

U.S. RIGID PCB BOOKINGS & SHIPMENTS

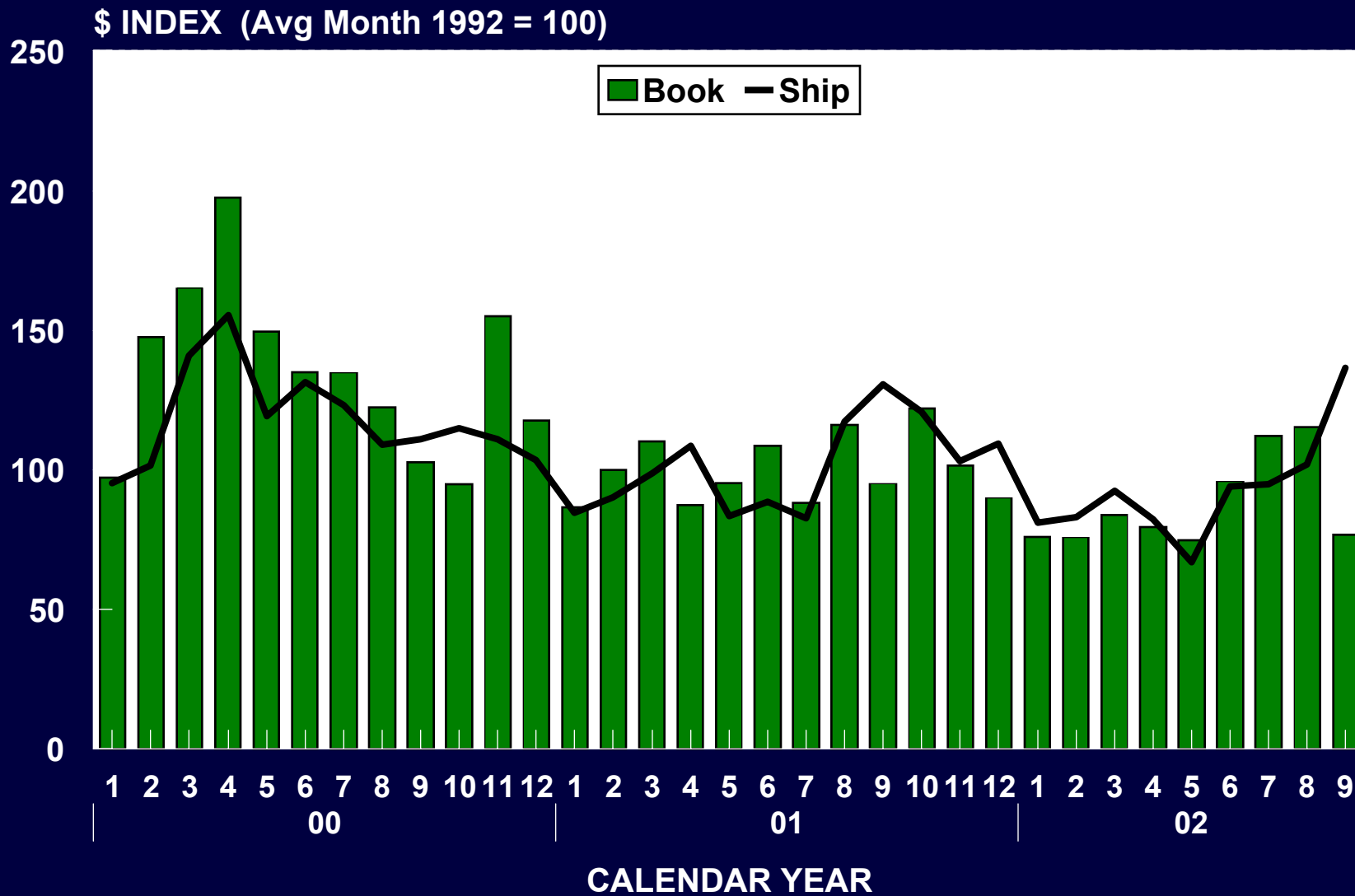


U.S. ELECTRONIC EQUIPMENT BOOKINGS & SHIPMENTS



Dept of Commerce

U.S. FLEX CIRCUITS BOOKINGS & SHIPMENTS

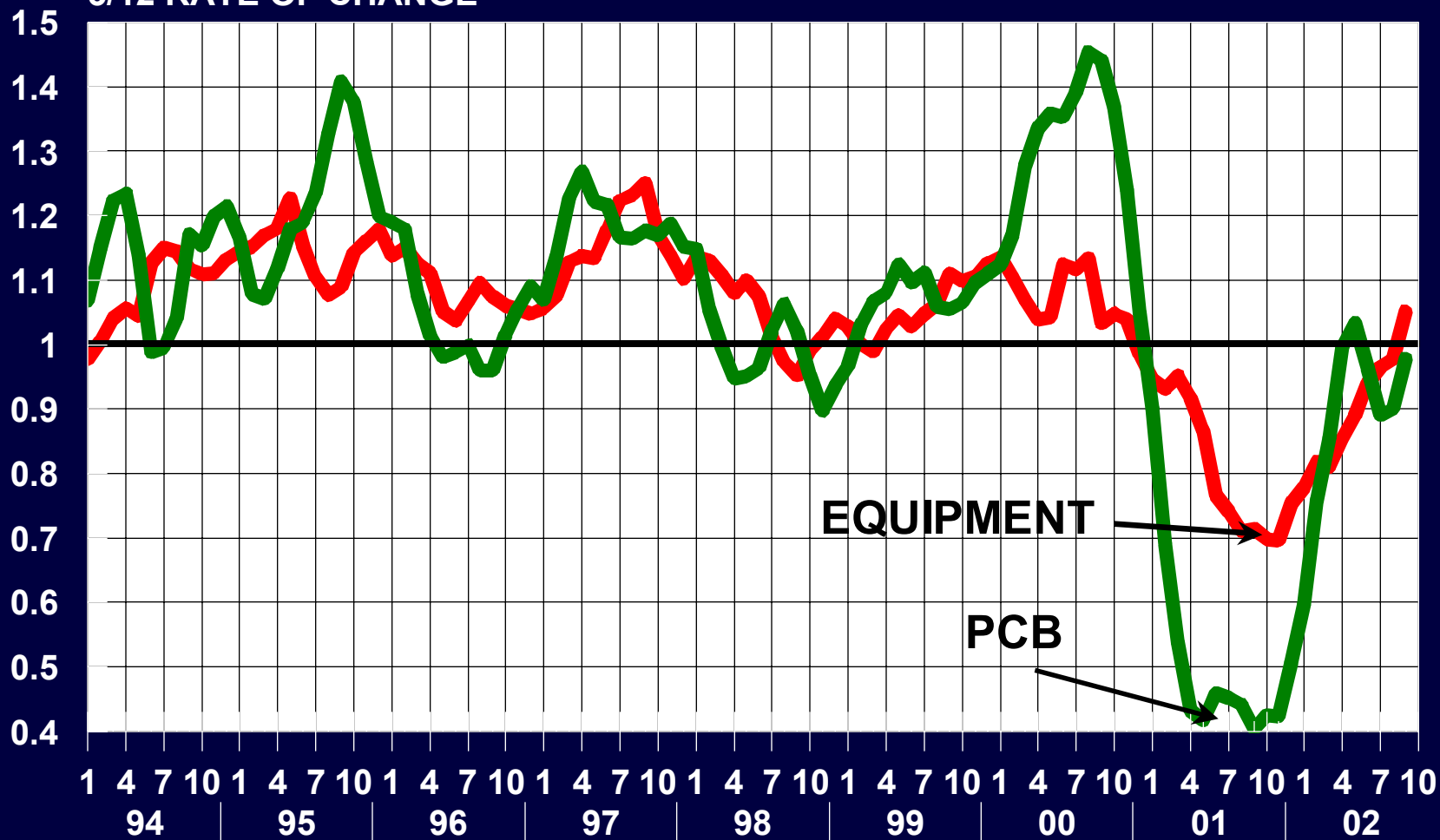


Growth Rates & Future Outlook

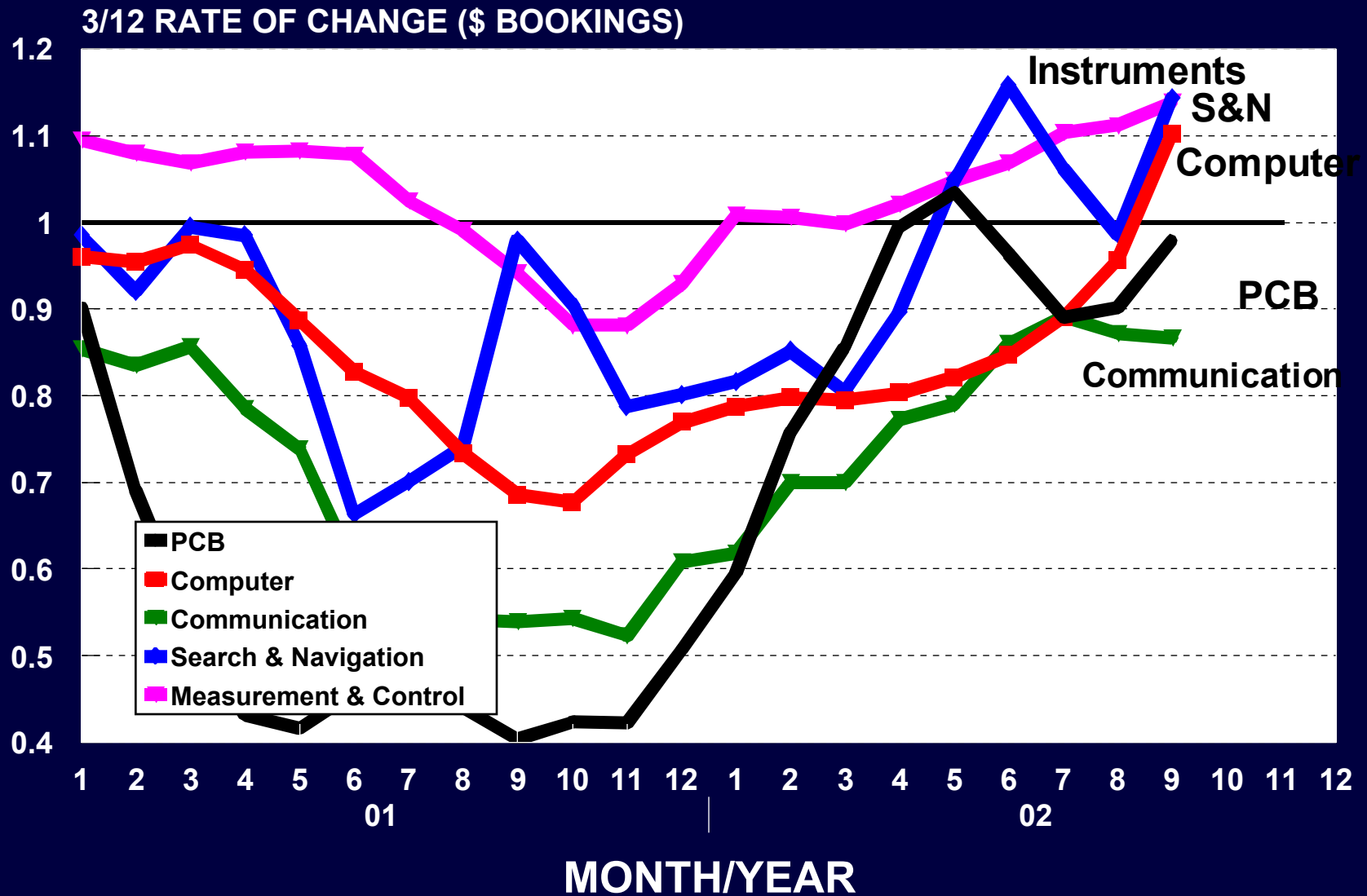
U.S. ELECTRONIC EQUIPMENT vs PCBs

\$ BOOKINGS GROWTH

3/12 RATE OF CHANGE



US RIGID PCB vs ELECTRONIC EQUIPMENT BOOKINGS



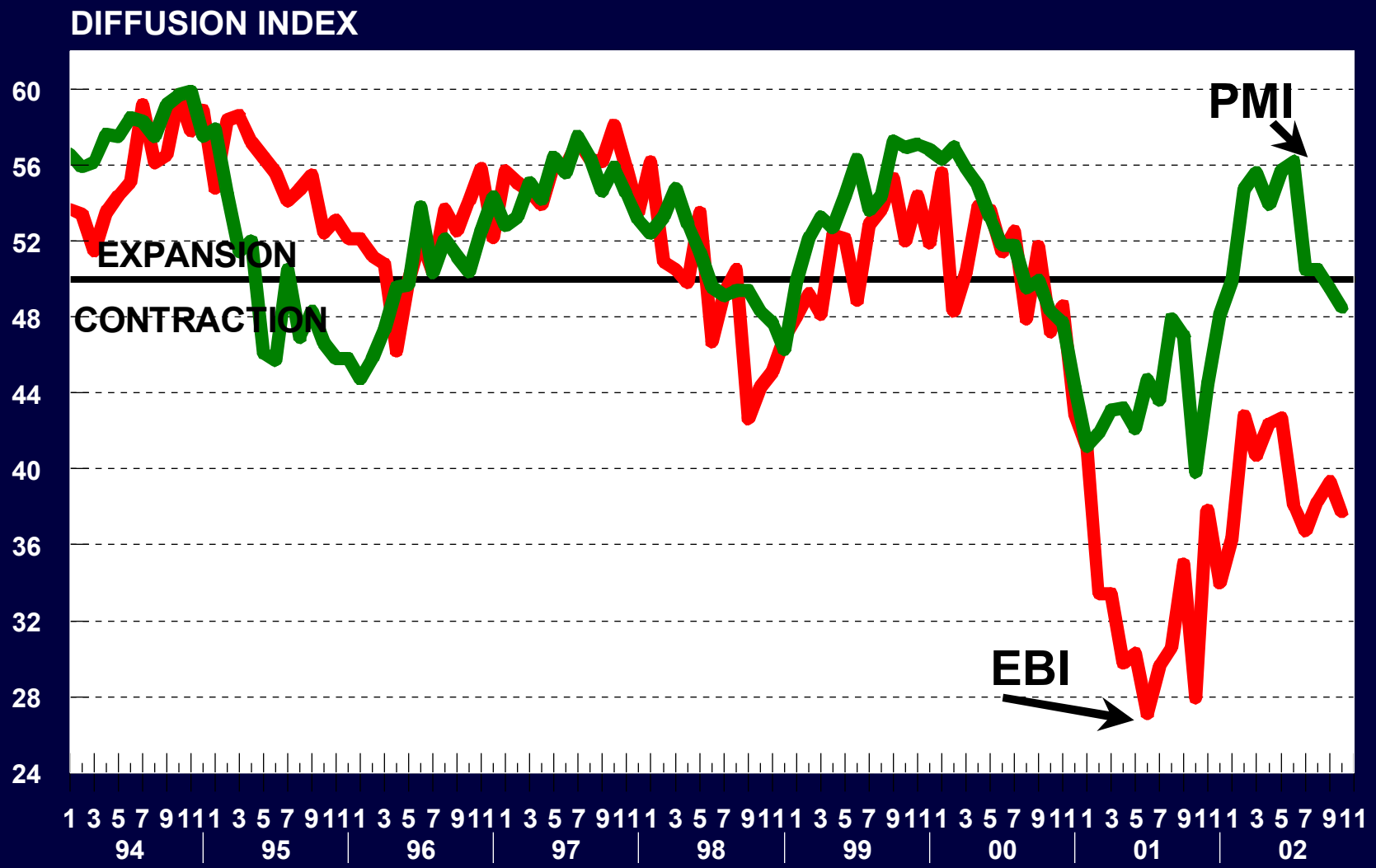
PRESENT GROWTH RATES (%)

U.S. ECONOMY & ELECTRONICS INDUSTRY

| | LATEST MONTH | ANNUAL GROWTH RATE | 3-MONTH GROWTH RATE |
|--------------------------------------|--------------|--------------------|---------------------|
| RIGID PCB ORDERS \$ | 9/02 | 77.1 | 97.9 |
| RIGID PCB SHIPMENTS \$ | 9/02 | 64.0 | 91.9 |
| LAMINATE+PREPREG ORDERS SF | 9/02 | 55.8 | 93.7 |
| ELECTRONIC EQUIPMENT ORDER \$ | | | |
| COMPUTER & RELATED | 9/02 | 86.3 | 110.2 |
| COMMUNICATIONS | 9/02 | 73.7 | 86.6 |
| MEDICAL, MEASUREMENT & CONTROL | 9/02 | 103.0 | 113.9 |
| SEARCH & NAVIGATION | 9/02 | 96.3 | 114.4 |
| TOTAL ELECTRONIC EQUIPMENT | 9/02 | 87.4 | 105.3 |
| INDUSTRIAL PRODUCTION | 9/02 | 97.4 | 100.8 |

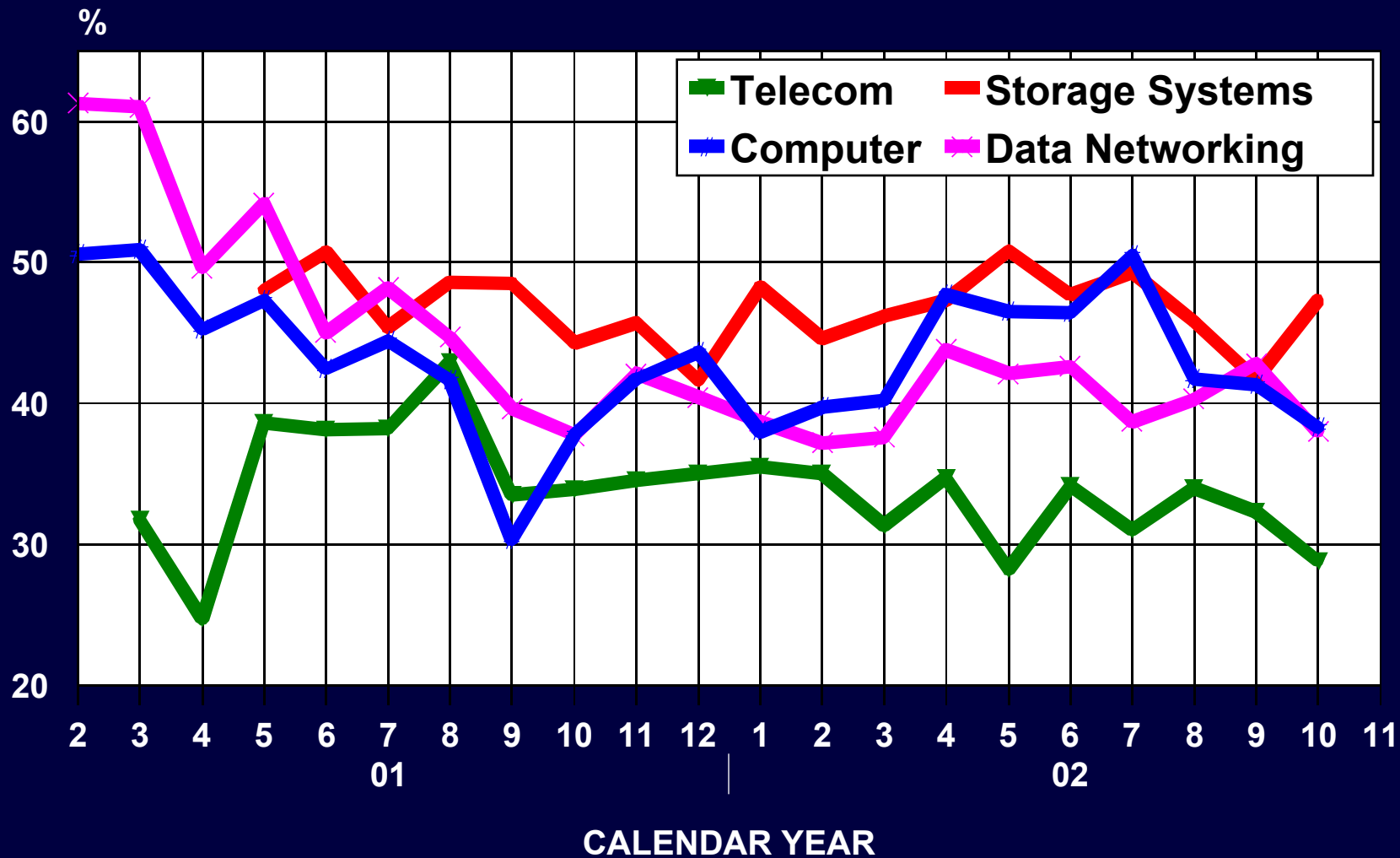
NOTE: 3 month growth rates compare most recent 3 months to same 3 months one year earlier

PMI vs EBI "QUEST" ELECTRONIC BUYERS' INDEX



IT Future Hardware Spending

% of Companies That Plan to Increase Spending



CIO Magazine Tech Poll
www.cio.com/info/releases

Summary & Conclusions

Summary

- **The Boom of 2000 was followed by a massive slowdown in 2001. Electronic component orders plummeted due to inventory reduction efforts, a sharp drop in electronic equipment demand & Sept 11 effects.**
- **The "Food Chain" has shifted significant production to China, Eastern Europe and other "low cost" areas.**
- **OEM & CEM inventory levels continue to decline however component inventories remain high.**

Summary

- **Wired Telecom recovery will be delayed to 2004.**
- **Military electronics and security devices are USA niche growth markets. Automotive has remained relatively stable.**
- **The massive PCB capacity buildup in China continues**
- **PCB & material prices are severely depressed**
- **N American & Europe companies have shut down substantial excess PCB capacity. Used PCB process equipment is plentiful.**

Summary

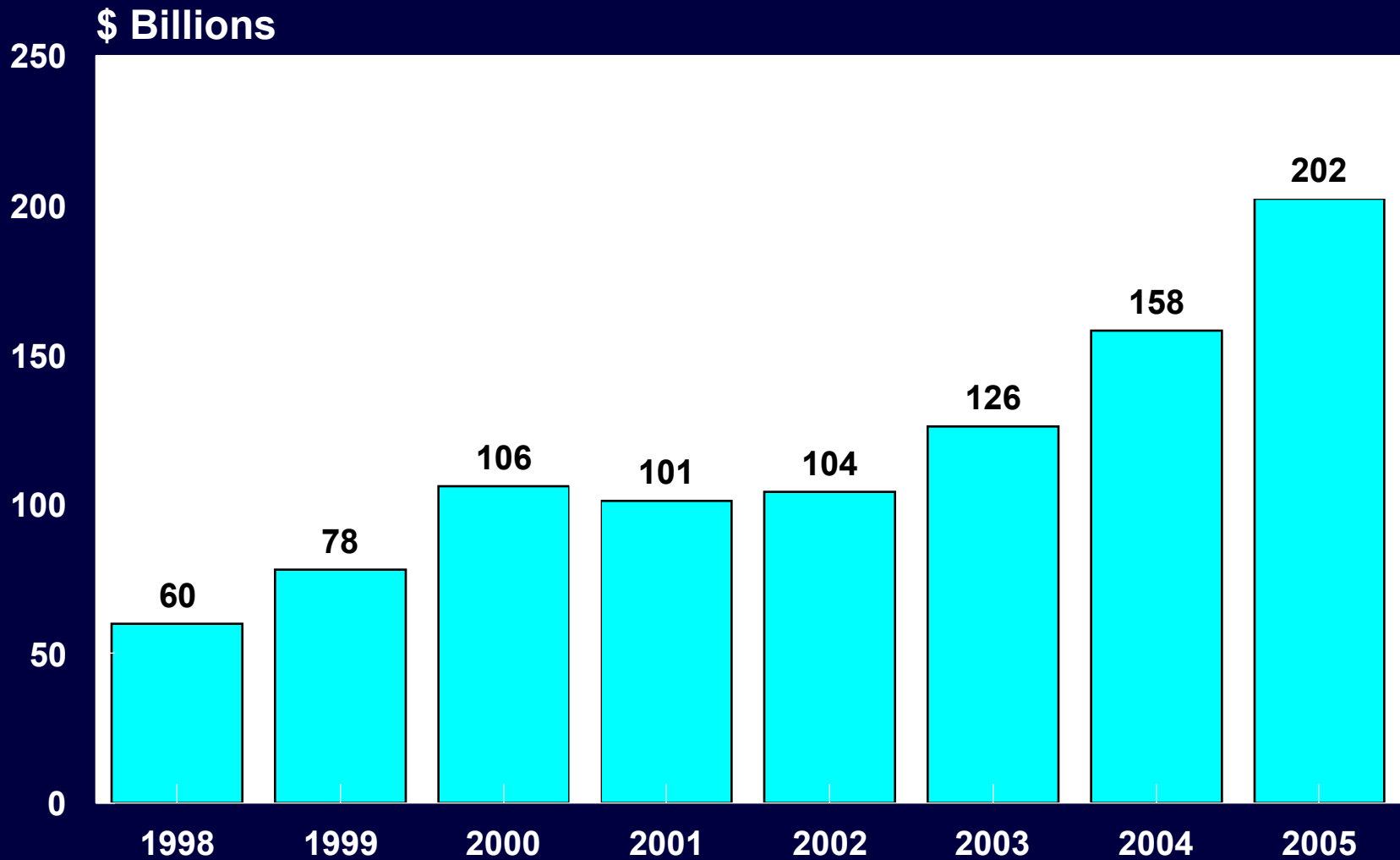
- **The future is clouded. Although PCB & electronic equipment orders are now growing vs. the trough of 2001, substantial "negative guidance" exists**
- **The N American equipment end markets have shifted significantly**
- **Lower consumer & business confidence & uncertainties including the mid-east situation & accounting scandals are all limiting economic growth.**
- **An abrupt recovery looks unlikely & a "double-dip" recession could even occur.**
- **The financially stronger N American PCB makers will survive, capturing a larger share of a smaller available market**

Electronic Equipment Production Growth

Current \$ Growth Rates Converted @ Constant 2001 Exchange Rates

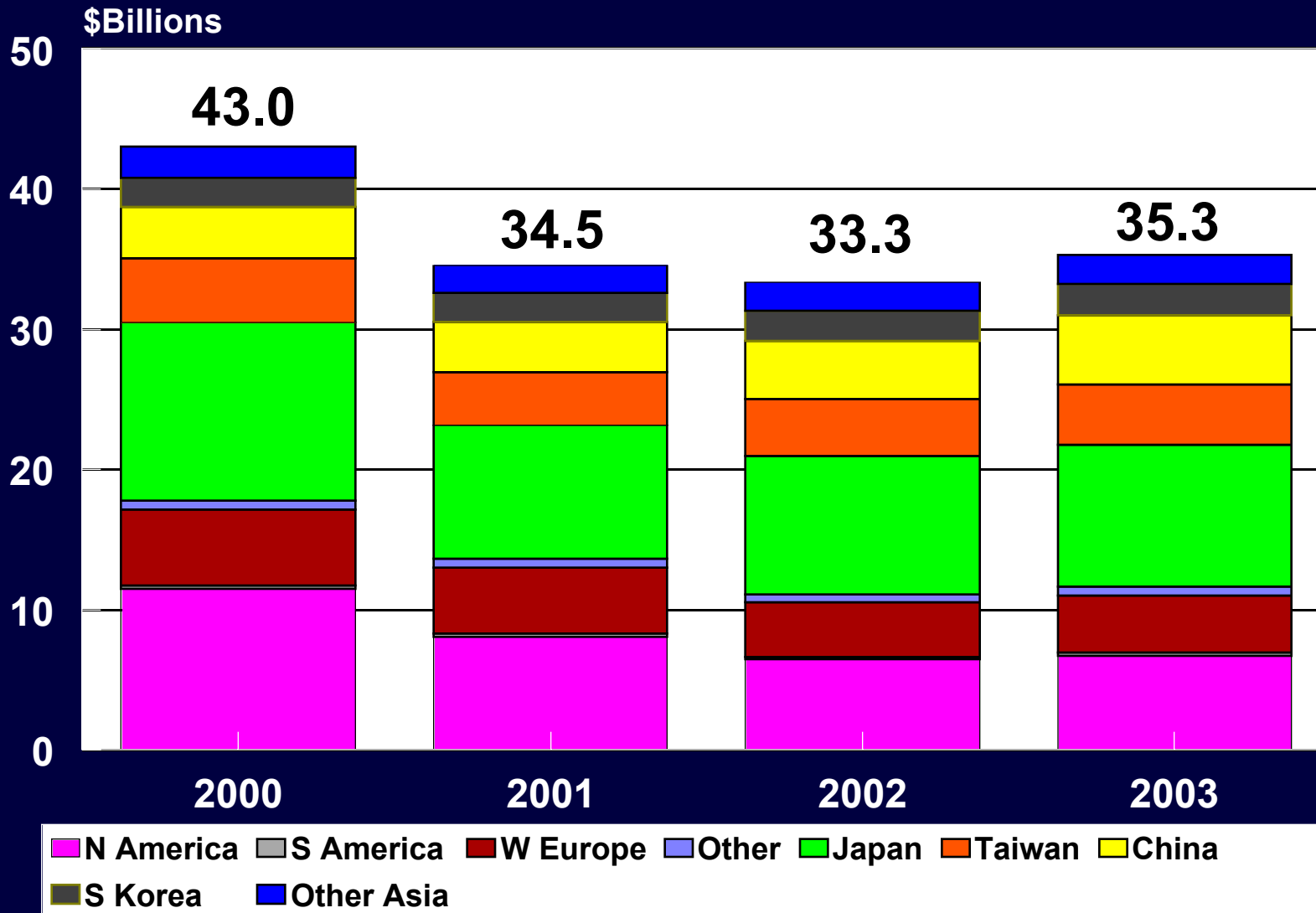
| | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> |
|-------------|-------------|-------------|-------------|-------------|-------------|
| World | 12.0 | -10.7 | -5.1 | 6.9 | 10.7 |
| USA | 10.2 | -14.2 | -6.4 | 5.7 | 9.7 |
| W Europe | 11.9 | -8.1 | -8.8 | 3.7 | 8.1 |
| Japan | 7.6 | -10.9 | -14.5 | 2.7 | 9.1 |
| Four Tigers | 18.2 | -9.6 | 4.7 | 7.8 | 9.7 |
| China | 15.1 | 5.7 | 7.8 | 15.6 | 17.5 |

EMS Estimated Global Revenue



Technology Forecasters 8/02

World PCB Output



NT Information 9/02 (constant 2000 exchange rates)

World PWB Output (% \$ Growth)

| <u>Region</u> | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> |
|-------------------|-------------|--------------|--------------|-------------|
| N.America | 17.6 | -30.0 | -20.0 | 4.0 |
| S.America | 6.5 | - 9.5 | 2.0 | 5.0 |
| W.Europe | 4.6 | -11.3 | -18.0 | 5.0 |
| <u>Others</u> | <u>5.0</u> | <u>-11.9</u> | <u>- 5.0</u> | <u>5.0</u> |
| Subtotal | 12.7 | -23.4 | -18.3 | 4.4 |
| Japan | 2.3 | -24.6 | 3.2 | 3.0 |
| Taiwan | 23.0 | -17.4 | 6.5 | 6.0 |
| China | 25.5 | - 1.1 | 15.0 | 18.0 |
| S.Korea | 18.9 | - 0.5 | 7.0 | 7.0 |
| <u>Other Asia</u> | <u>15.1</u> | <u>-14.4</u> | <u>3.0</u> | <u>3.0</u> |
| Asia Total | 12.6 | -17.0 | 7.3 | 6.3 |
| World Total | 12.7 | -19.7 | - 3.5 | 5.9 |

NT Information 9/02 (constant 2000 exchange rates)

But . . .

Don't confuse the temporary downturn in some key electronic end markets with the "Asian Shift." These events may overlap but are different.

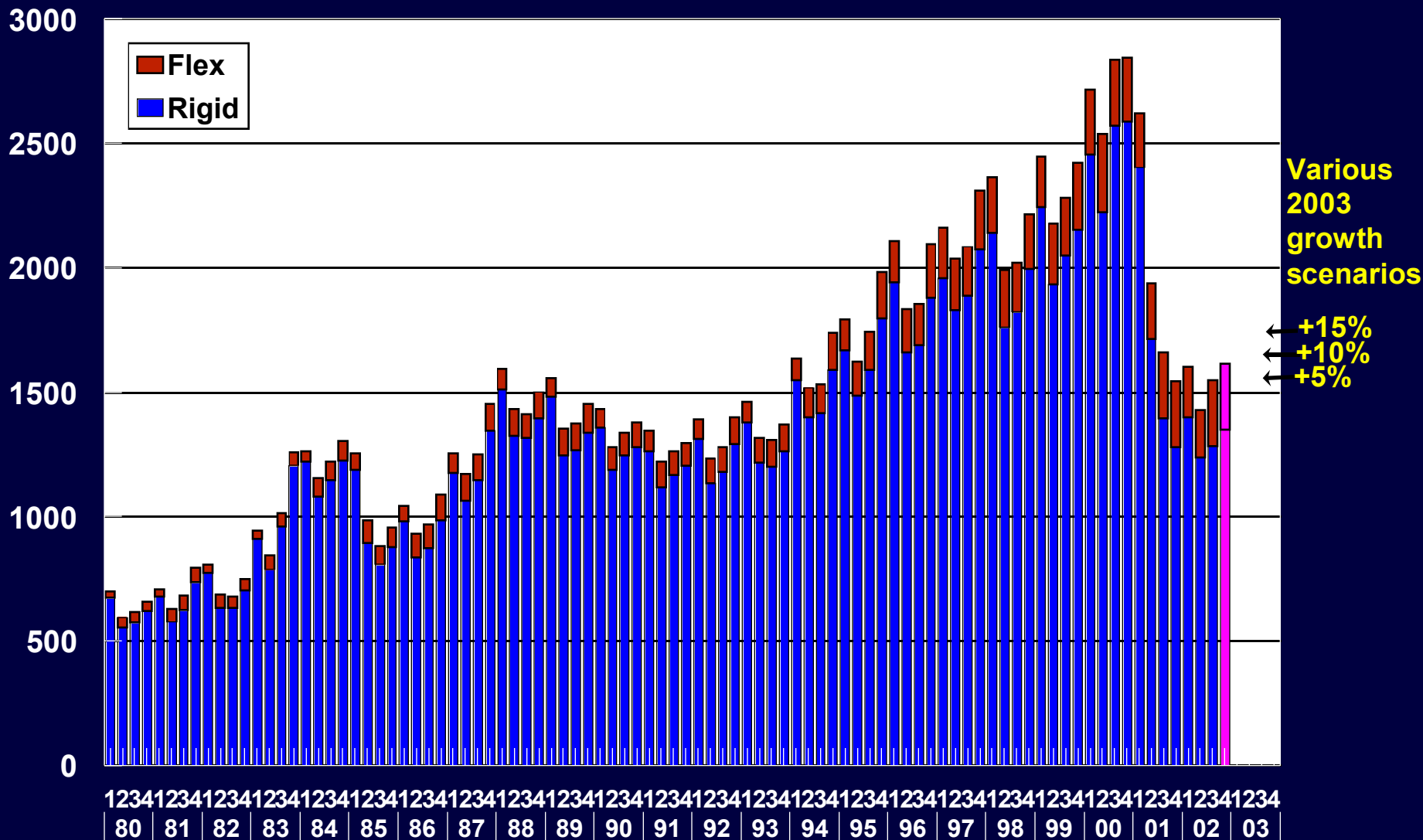
Our current long term views are negatively colored by the present recession

Major innovations are difficult to forecast. Bill Gates played "catch up" with first Internet browser!

New growth often comes from unexpected sources

We live in an electronic age. The landscape has changed but the fundamental markets will rebound and new sets of opportunities will exist.

N. AMERICAN TOTAL PCB SHIPMENTS



IPC T/MRC data with Custer interpretation