

What Happened and Who Did It Happen To?

WALT CUSTER
CUSTER CONSULTING GROUP
www.custerconsulting.com
October 2001

Continuous Improvement

News = New (a number of updated slides)

New color scheme, better B&W printing

IPC staff expose'

Updated presentation available on request

**Whom Did It
Affect?**

EVERYONE

Quadruple Whammy

Inventory Correction

**Lower Electronic Equipment
Demand**

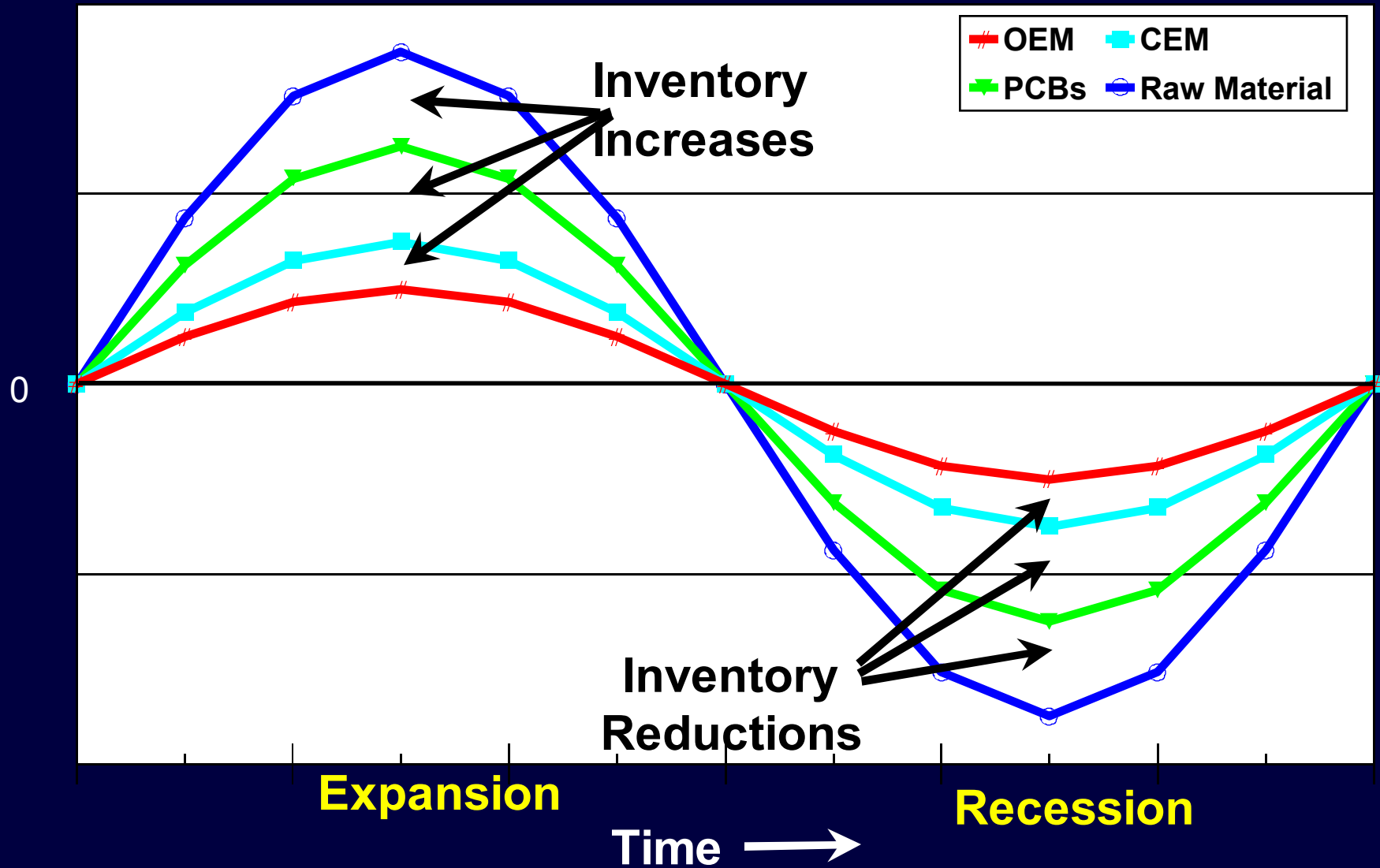
Economic Downturn

September 11 attacks

BUSINESS CYCLE

SUPPLY CHAIN EFFECT

%Growth



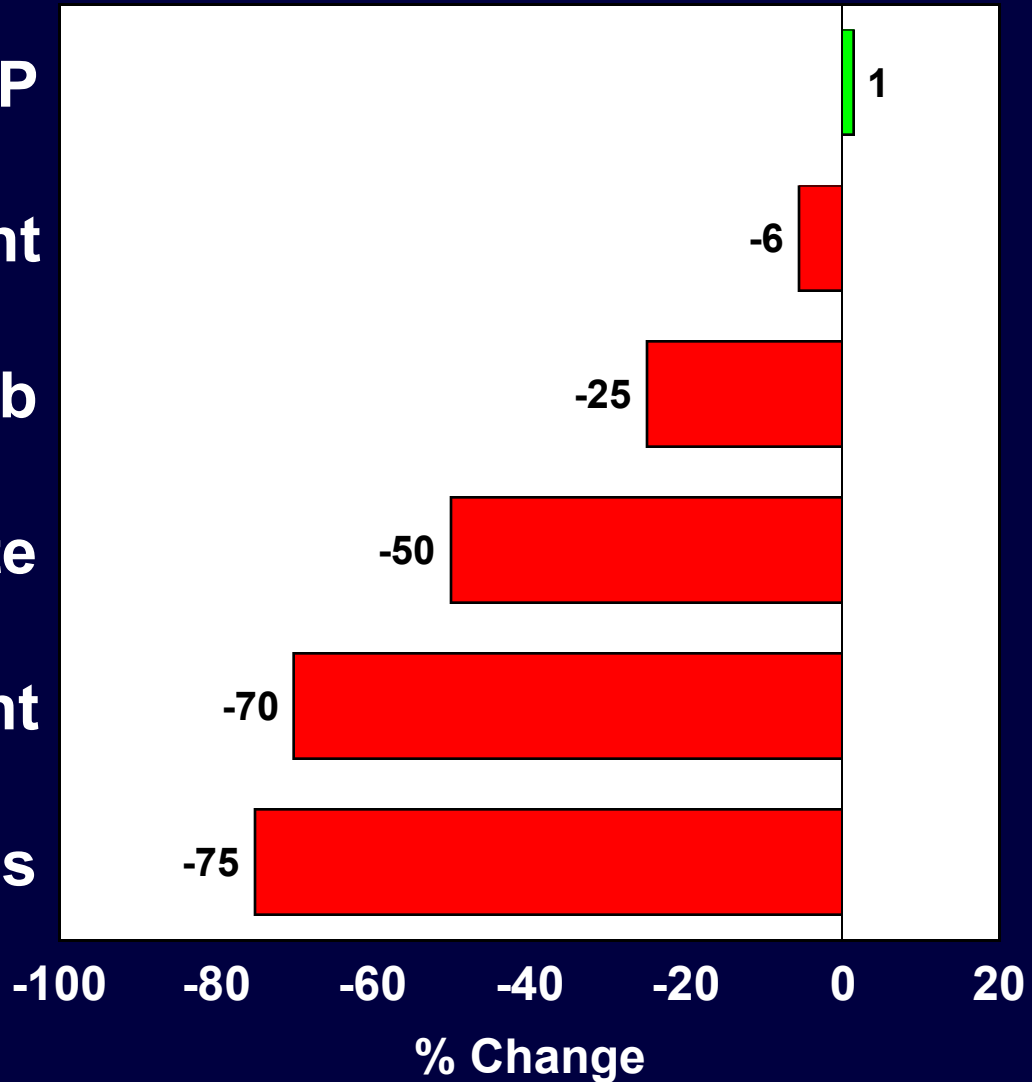
INDUSTRIAL PRODUCTION - WORLD

% CHANGE vs ONE YEAR EARLIER

| | |
|-------------|-----------|
| BRITAIN | -3.2 July |
| FRANCE | +2.3 June |
| GERMANY | -1.5 July |
| ITALY | +1.7 July |
| NETHERLANDS | +0.7 June |
| SPAIN | -1.6 July |
| EURO area | -1.1 July |
| RUSSIA | +5.1 Aug |
| | |
| CANADA | -3.6 July |
| USA | -4.8 Aug |
| | |
| CHINA | +8.1 Aug |
| MALAYSIA | -5.9 July |
| SINGAPORE | -21.4 Aug |
| S KOREA | -5.9 July |
| TAIWAN | -8.2 Aug |
| THAILAND | +2.1 July |
| JAPAN | -11.7 Aug |

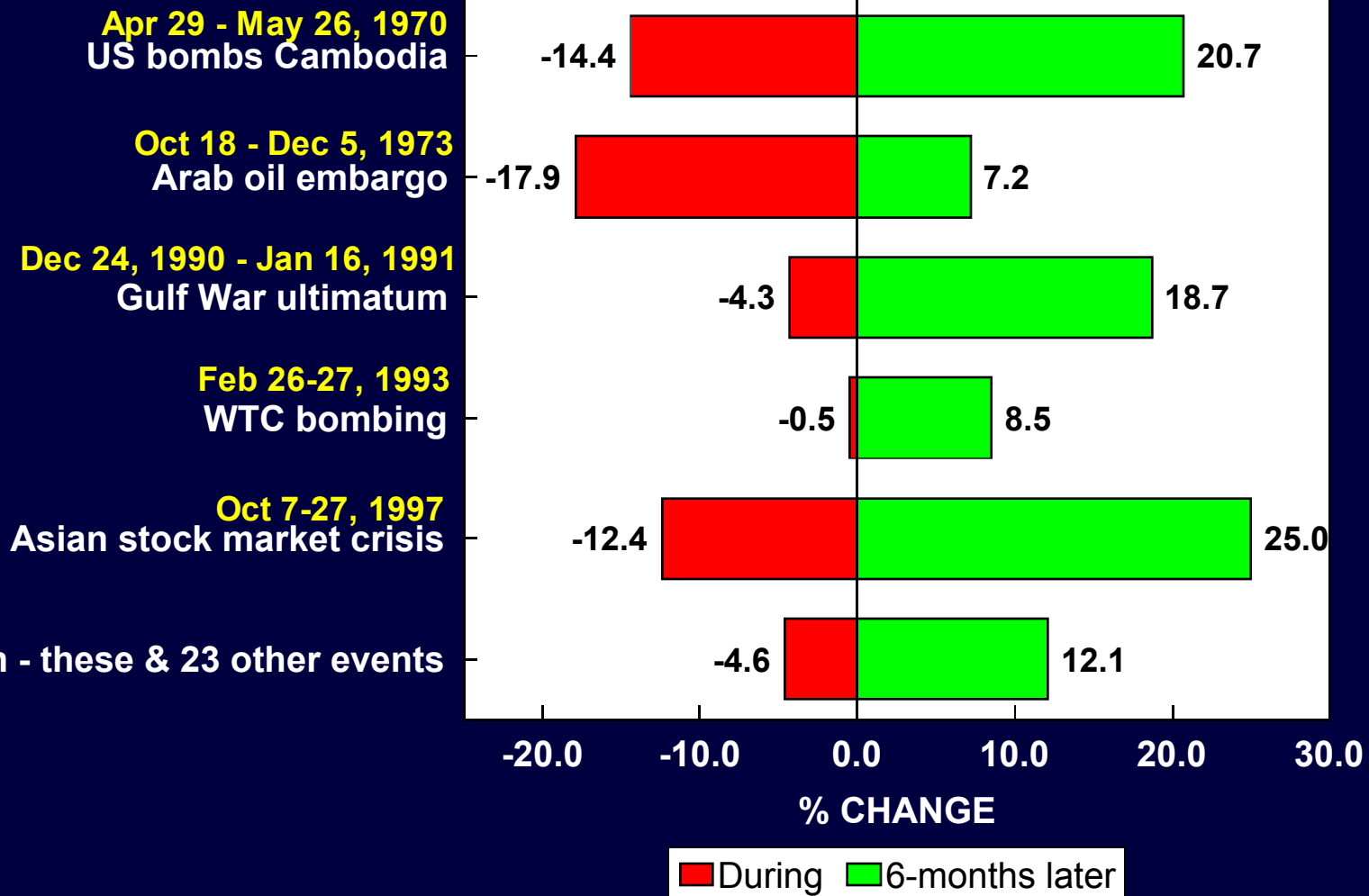
Global Impact 2001 vs 2000

Combined GDP
Electronic Equipment
PCB Fab
Laminate
Process Equipment
DRAMs

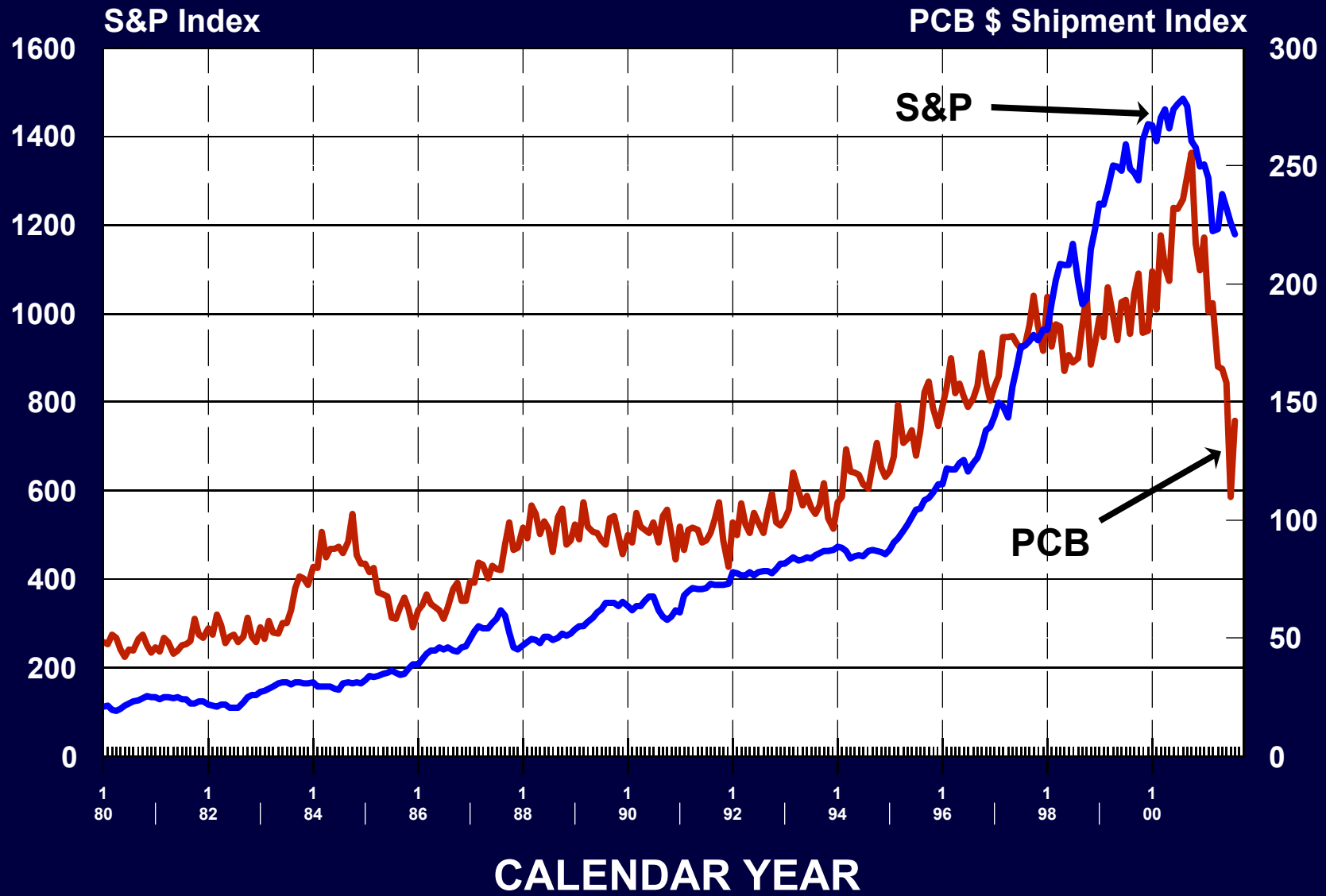


How Markets Bounce Back

% Change in DJIA during crisis & 6 months later



S&P 500 Stock Index vs PCB Shipments



GDP Growth

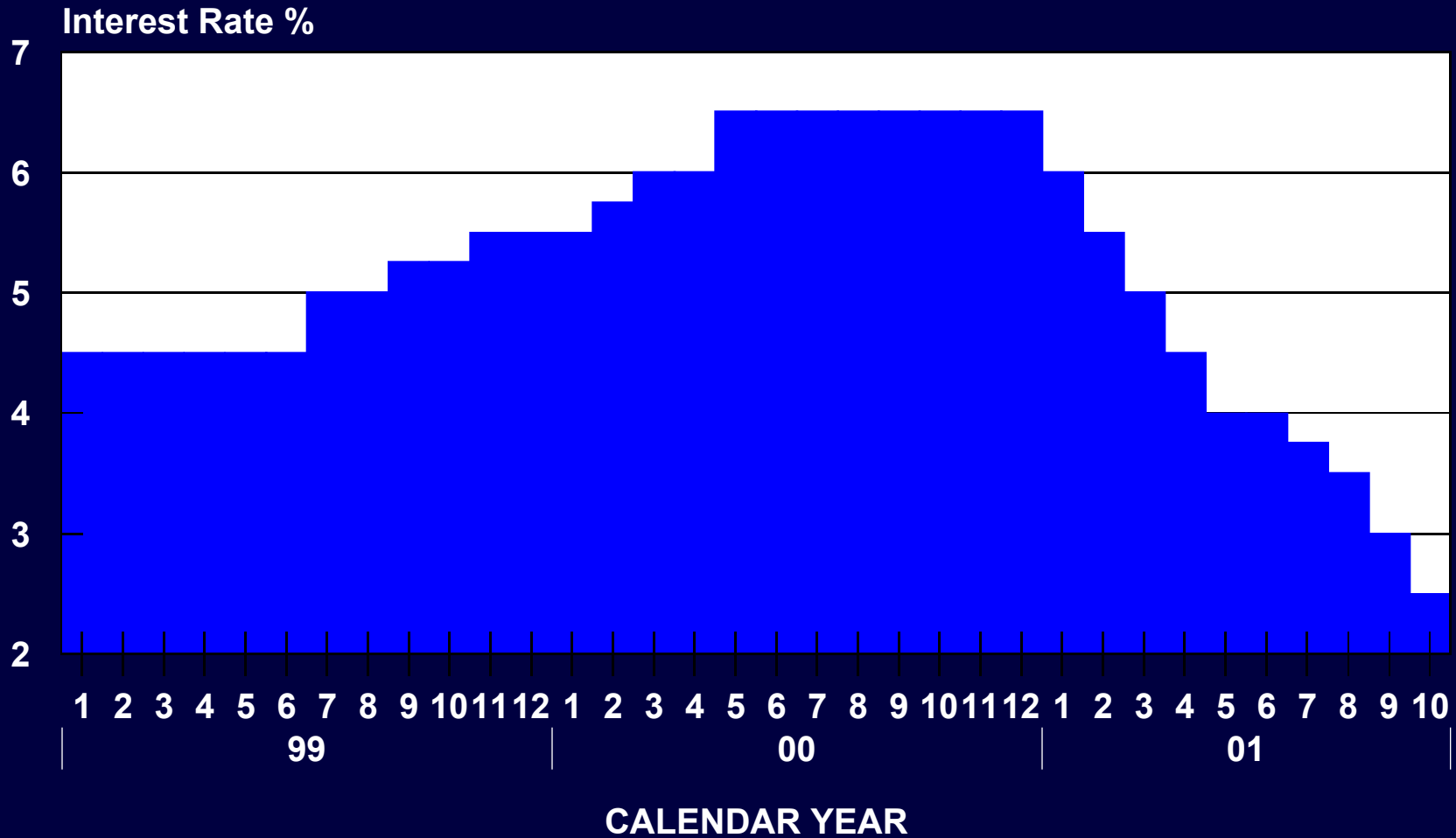
Constant \$ Growth Rates Converted @ Constant Exchange Rates

| | <u>1999</u> | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| World | 3.3 | 4.1 | 1.4 | 2.2 | 3.8 |
| USA | 4.1 | 4.1 | 0.9 | 2.2 | 4.2 |
| W Europe | 2.3 | 3.5 | 1.7 | 1.9 | 3.2 |
| Japan | 0.8 | 1.5 | -0.8 | 0.4 | 1.5 |
| Four Tigers | 7.8 | 8.2 | 2.4 | 4.4 | 6.0 |

Leading Indicators

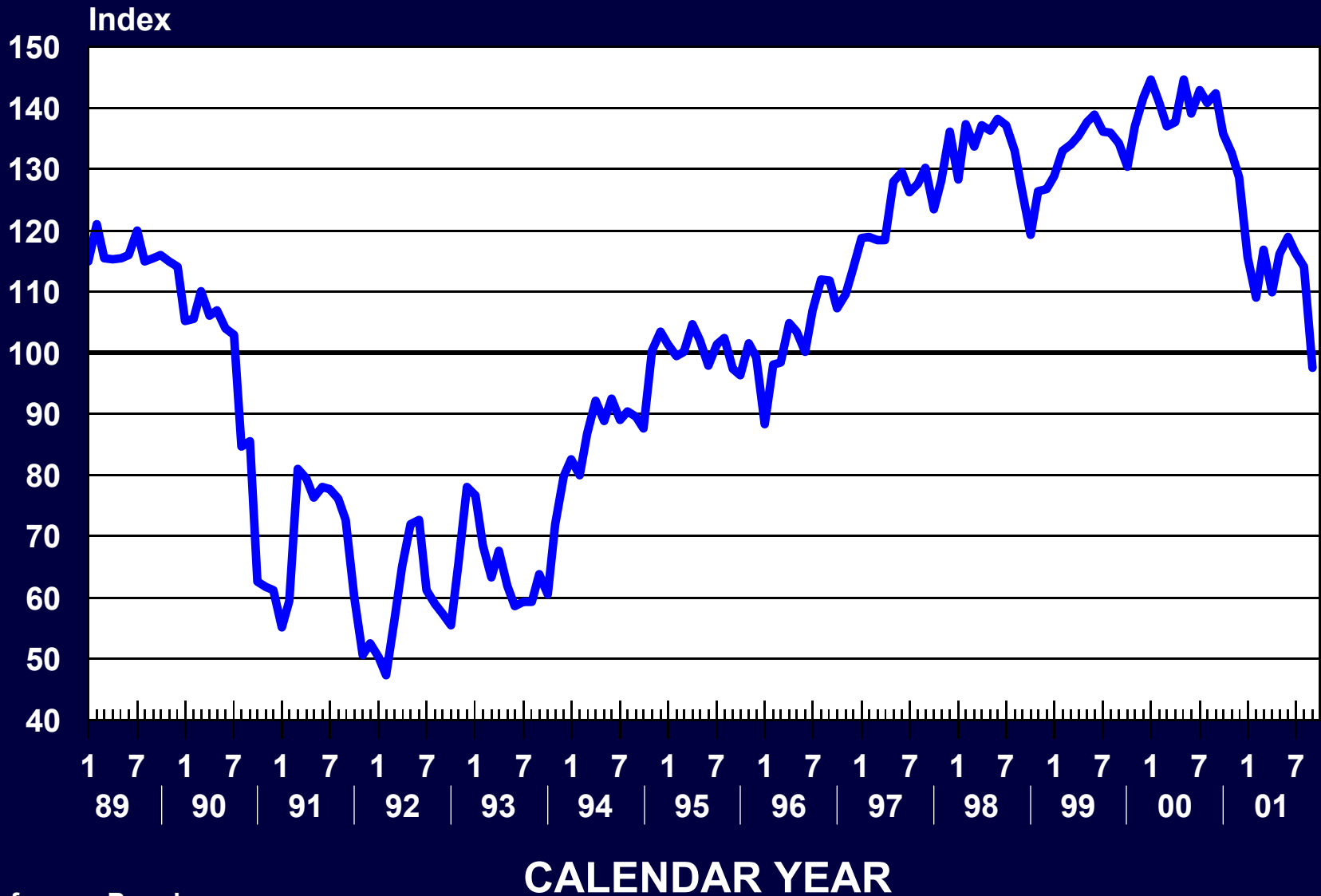
Interest Rates

U.S. FEDERAL FUNDS RATE



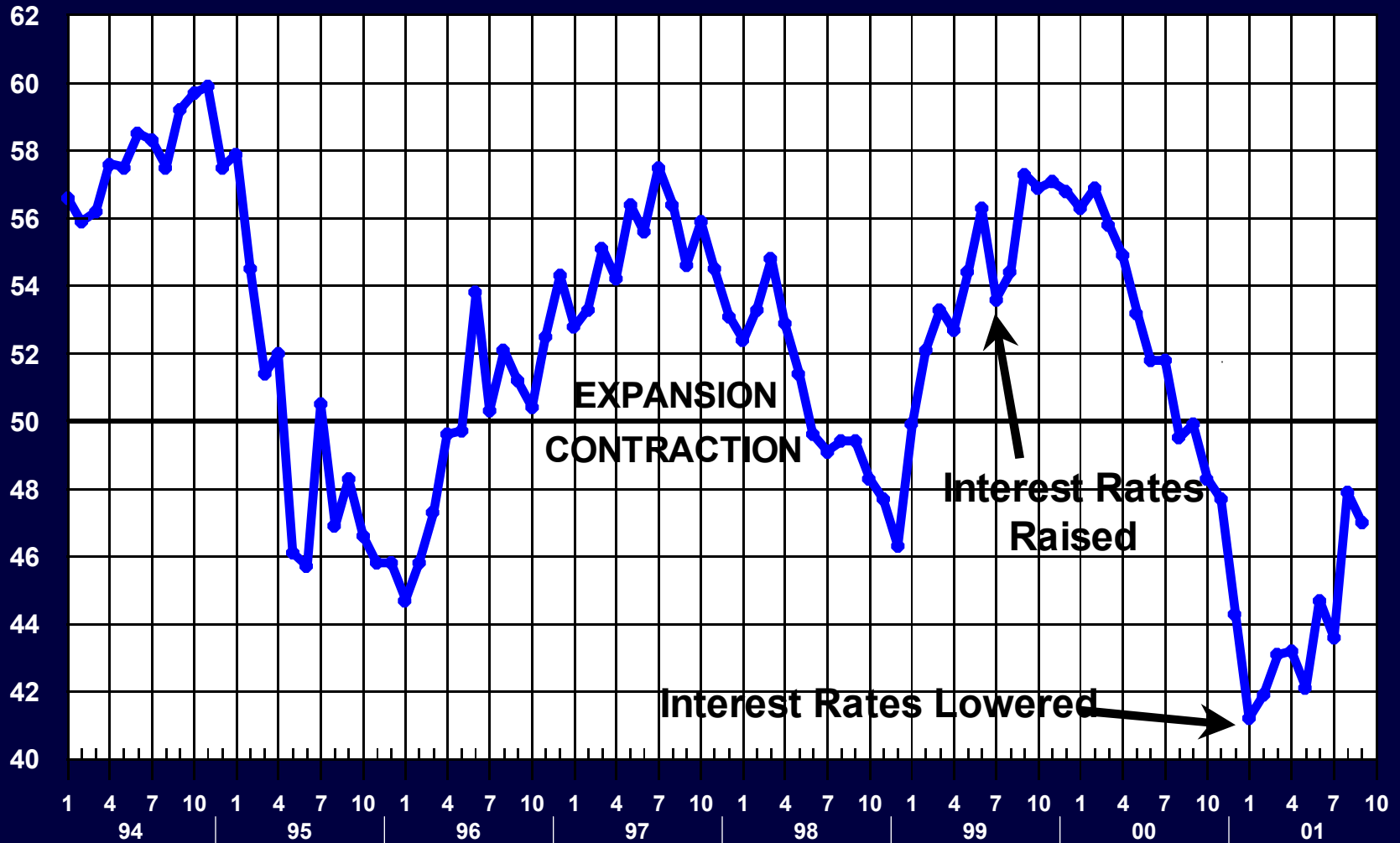
Current Situation

Consumer Confidence



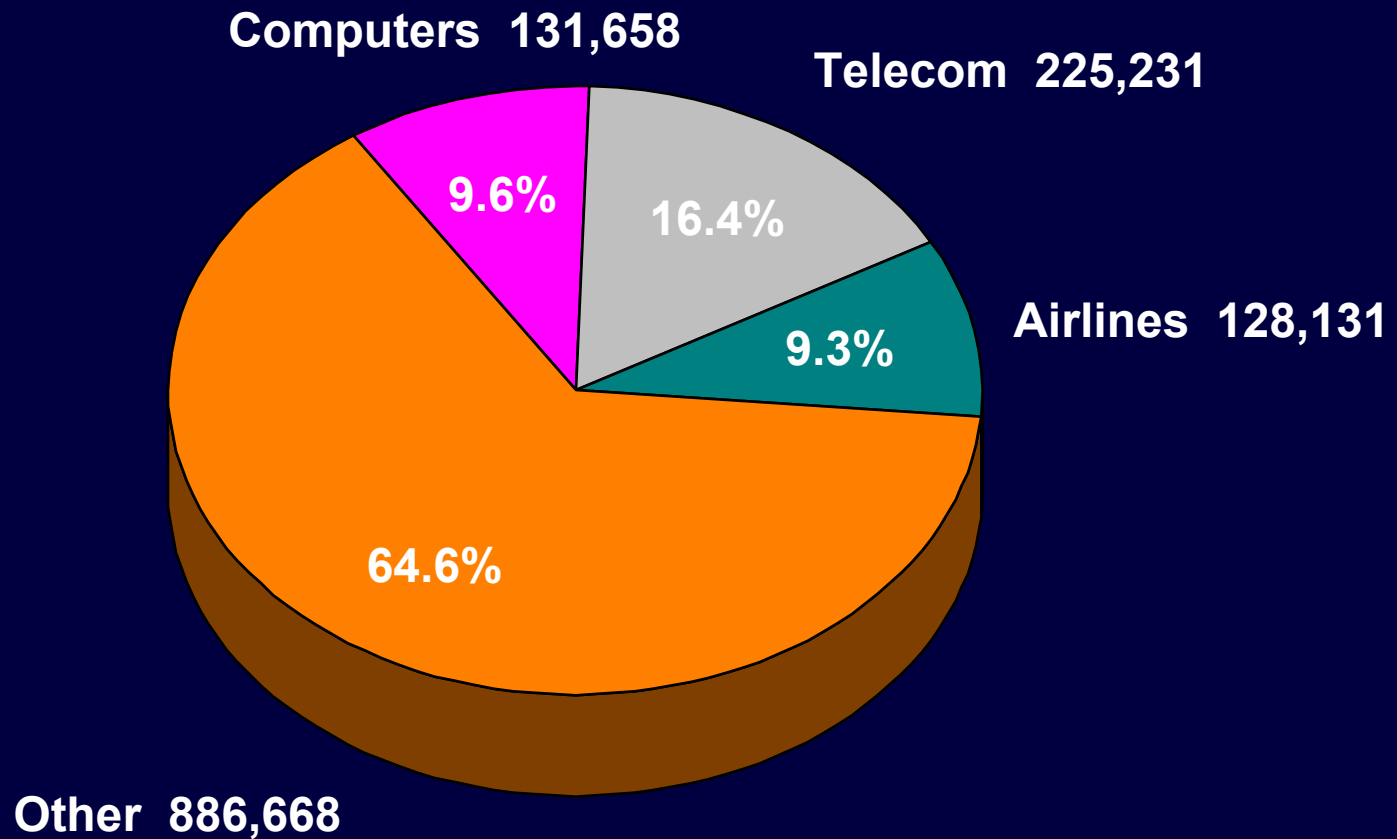
U.S. "Purchasing Managers" Index

DIFFUSION INDEX



NATIONAL ASSOC of PURCHASING MANAGERS

U.S. Job Cuts Jan - Sept 2001



TOTAL: 1,372,000

2001 Global Sales Declines

\$ Billions

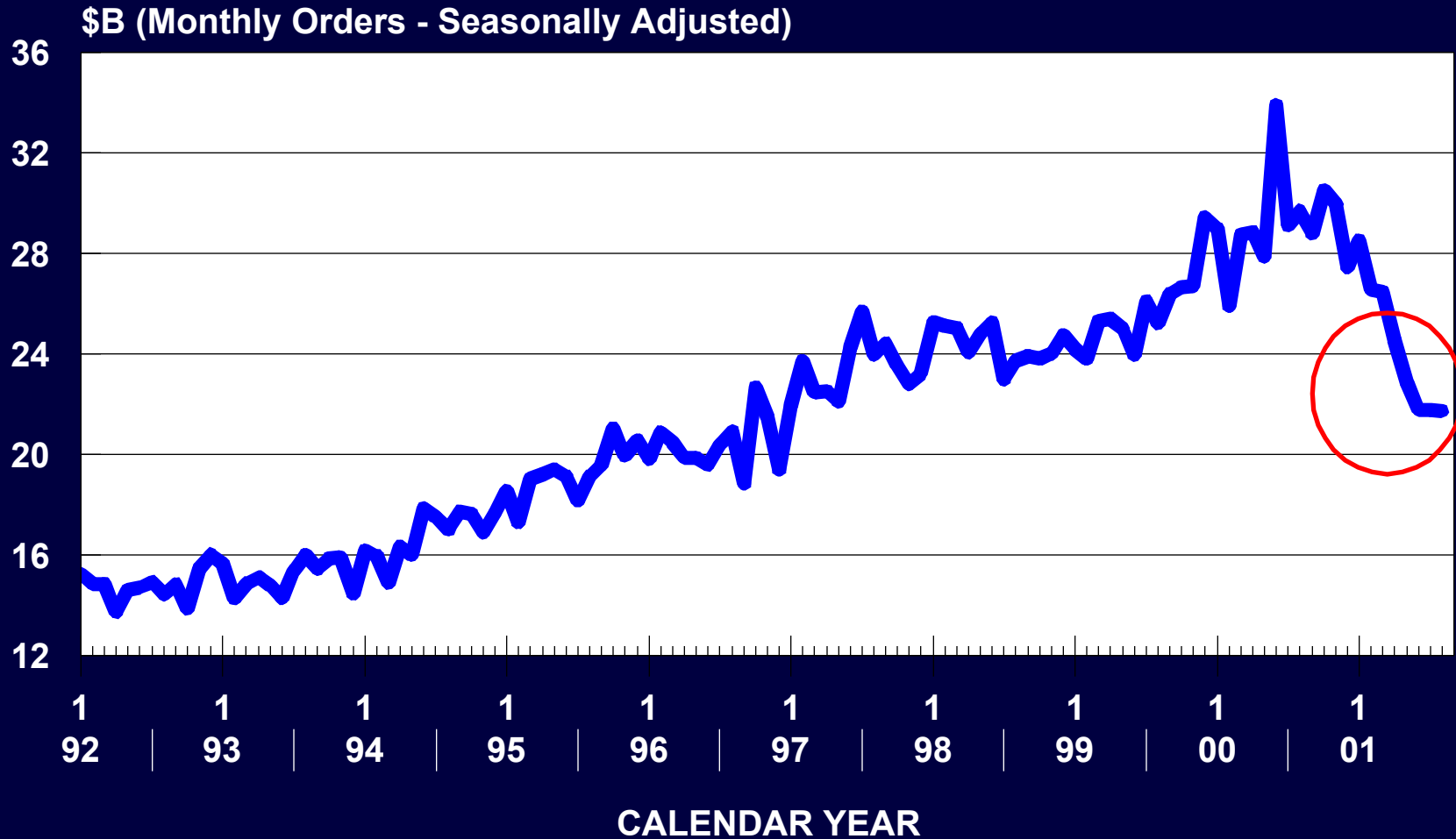
| | <u>2000</u> | <u>2001</u> |
|----------------------------------|-------------|-------------|
| Personal Computers | 50.3 | 38.0 |
| Desktop PC Semiconductors | 38.6 | 27.3 |
| Microprocessors | 27.1 | 22.2 |
| PC DRAM | 12.4 | 6.6 |

IDC 8/2001

Electronic Equipment

US ELECTRONIC EQUIPMENT ORDERS

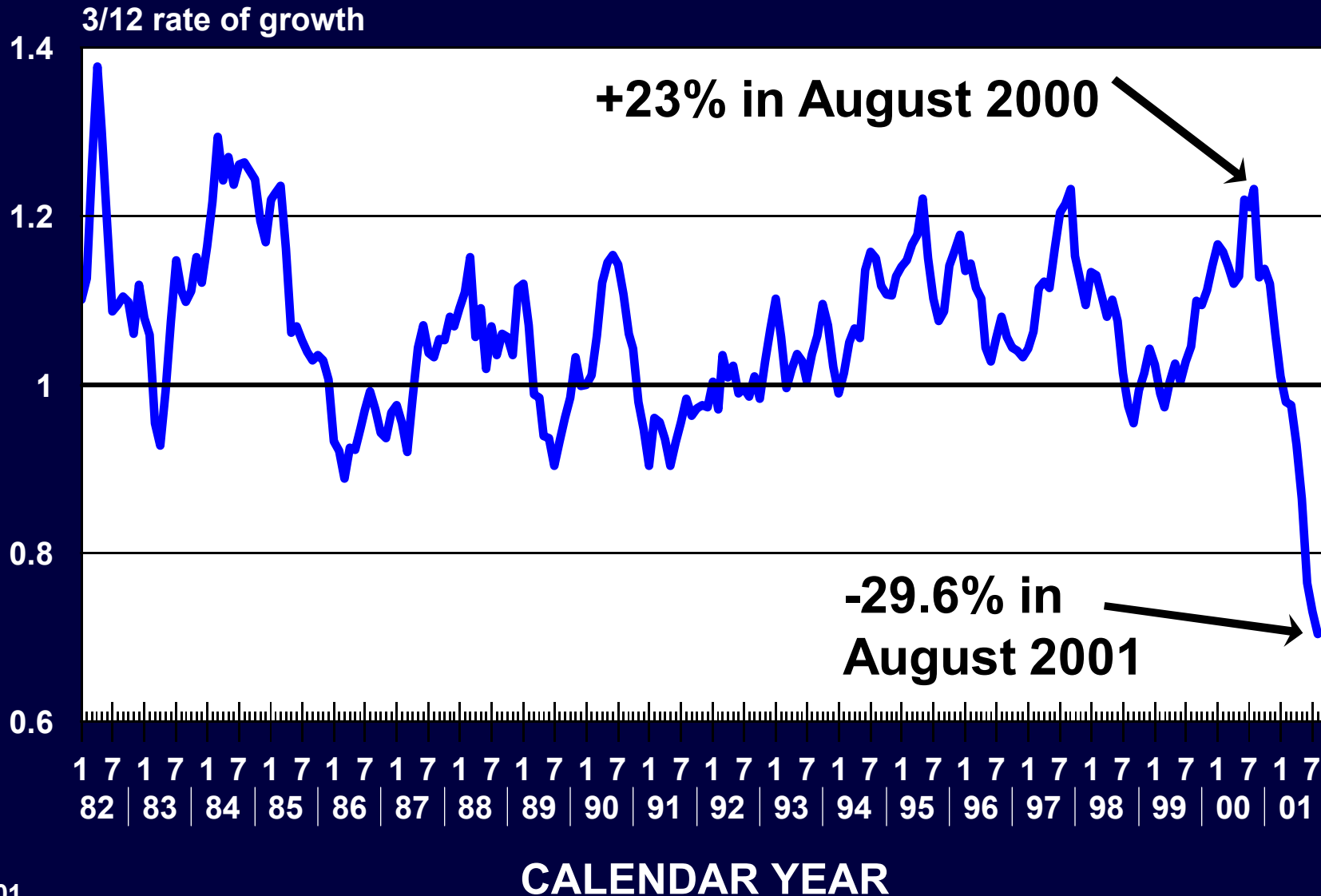
COMMUNICATION, COMPUTER & OFFICE,
MILITARY, INSTRUMENTS



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

Electronic Equipment Order Growth

Computer, Communications, Measurement & Control and Military



10/2001

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

"Post-September 11" Growth Markets

MILITARY ELECTRONICS

VIDEO & TELECONFERENCING

MOBILE (incl SATELLITE) PHONES

COMPUTERS - INTELLIGENCE GATHERING & STORAGE

BIOMETRICS - FINGERPRINT, RETINAL, VOICE, FACIAL RECOGNITION

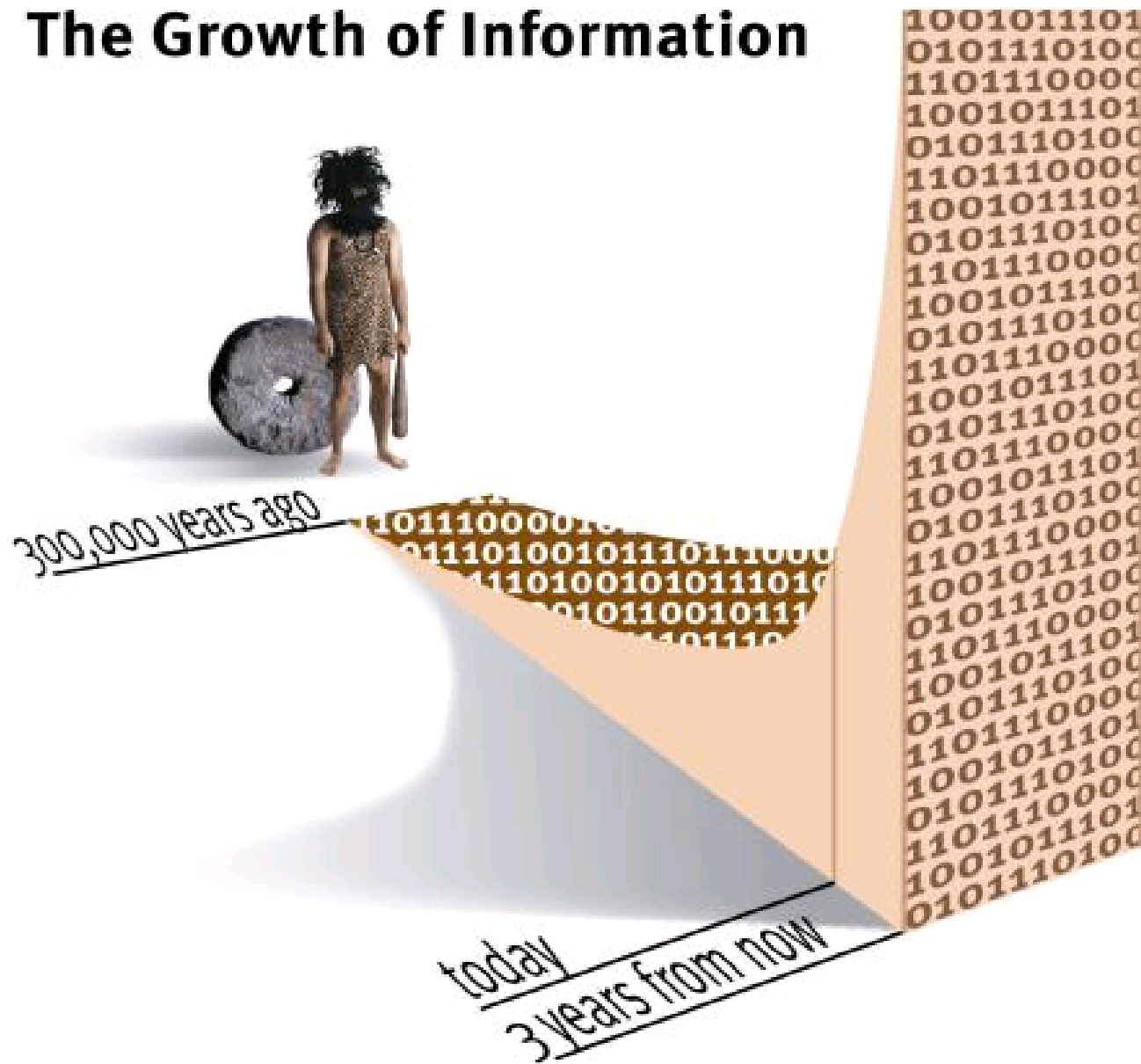
SMART / PERSONAL IDENTIFICATION CARDS

SECURITY ENHANCED INTERNET EQUIPMENT - ROUTERS, SWITCHES & HUBS

SAFETY & SURVEILLANCE - SCANNERS, DETECTION, ETC

PUBLIC HEALTH MONITORS

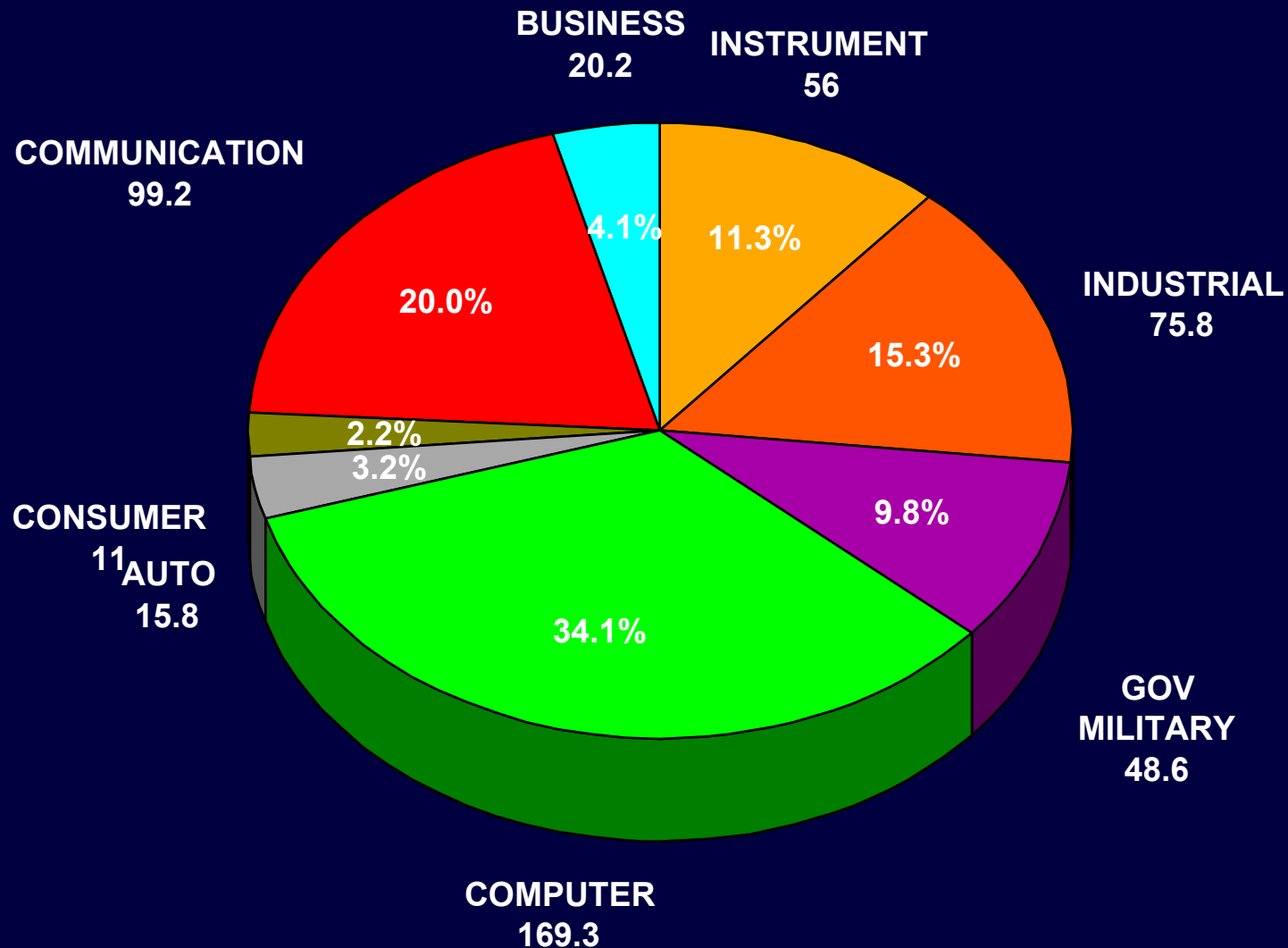
The Growth of Information



Source: UC Berkeley study sponsored by EMC Corporation

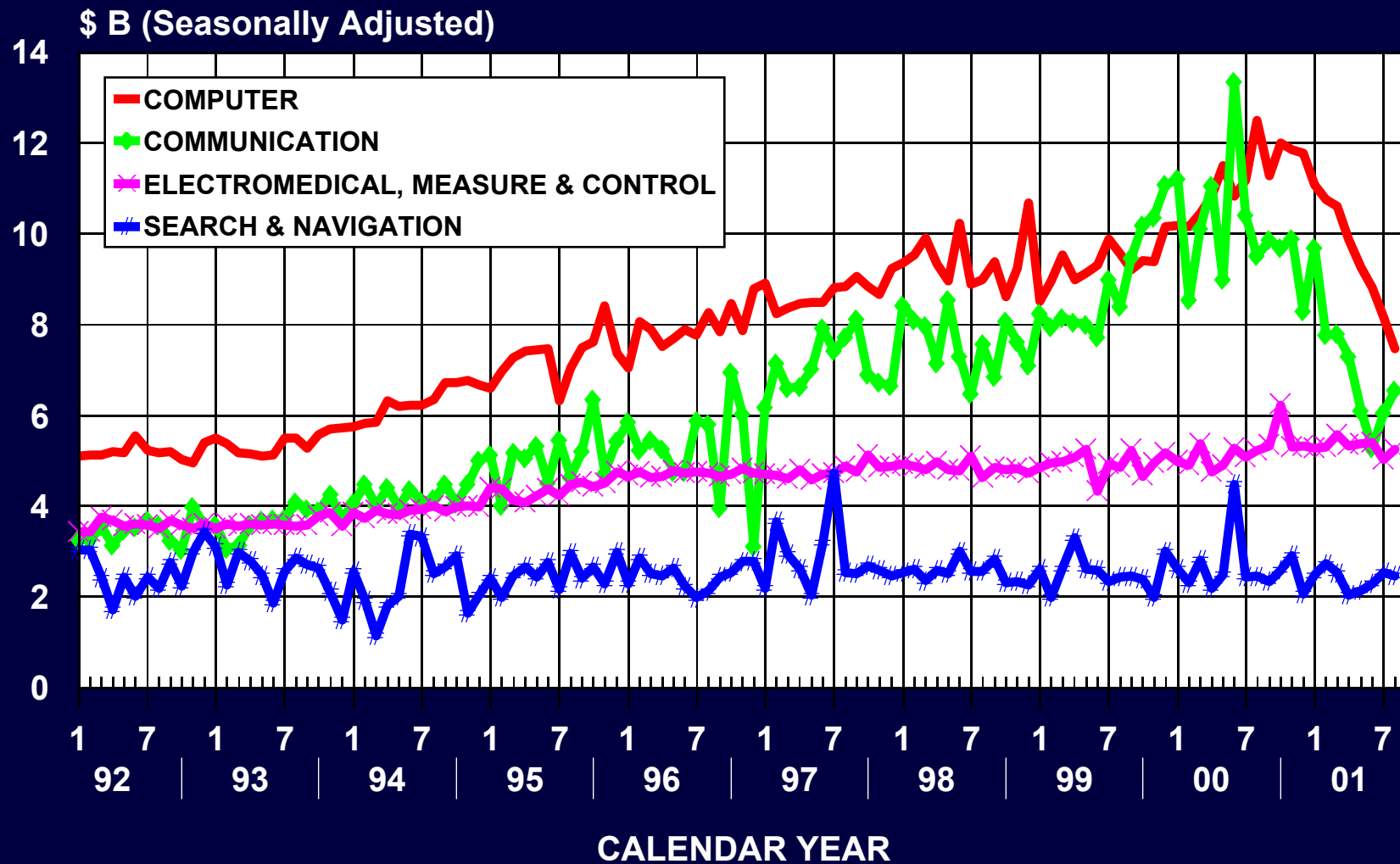
ELECTRONIC EQUIPMENT PRODUCTION

USA - 2000 ESTIMATE (\$B)



US ELECTRONIC EQUIPMENT ORDERS

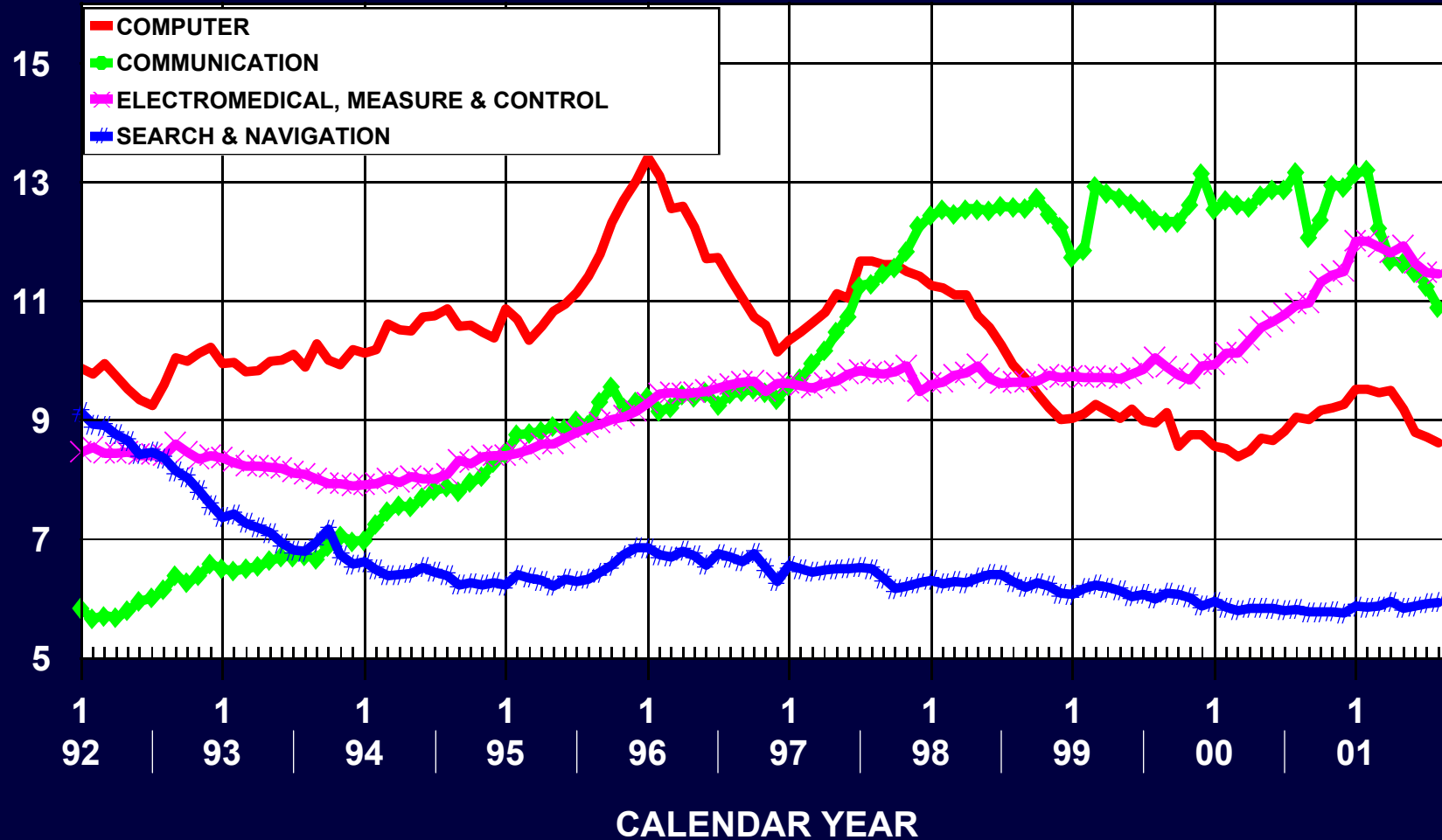
Monthly Data



US ELECTRONIC EQUIPMENT INVENTORIES

Monthly Data

\$ B (Seasonally Adjusted)

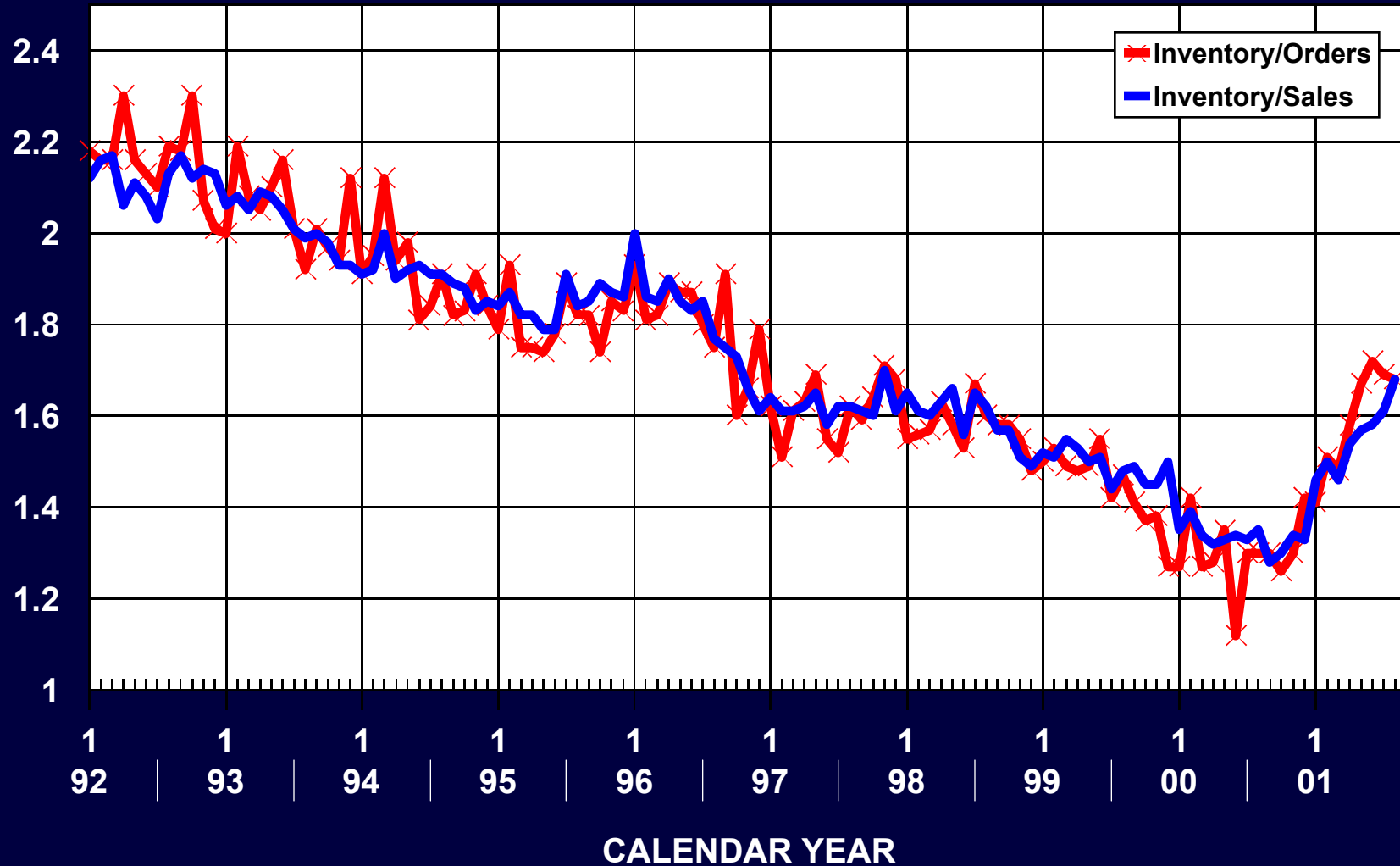


<http://www.census.gov/indicator/www/m3/>

10/01

US TOTAL ELECTRONIC EQUIPMENT INVENTORIES

Inventory vs. Sales and Orders

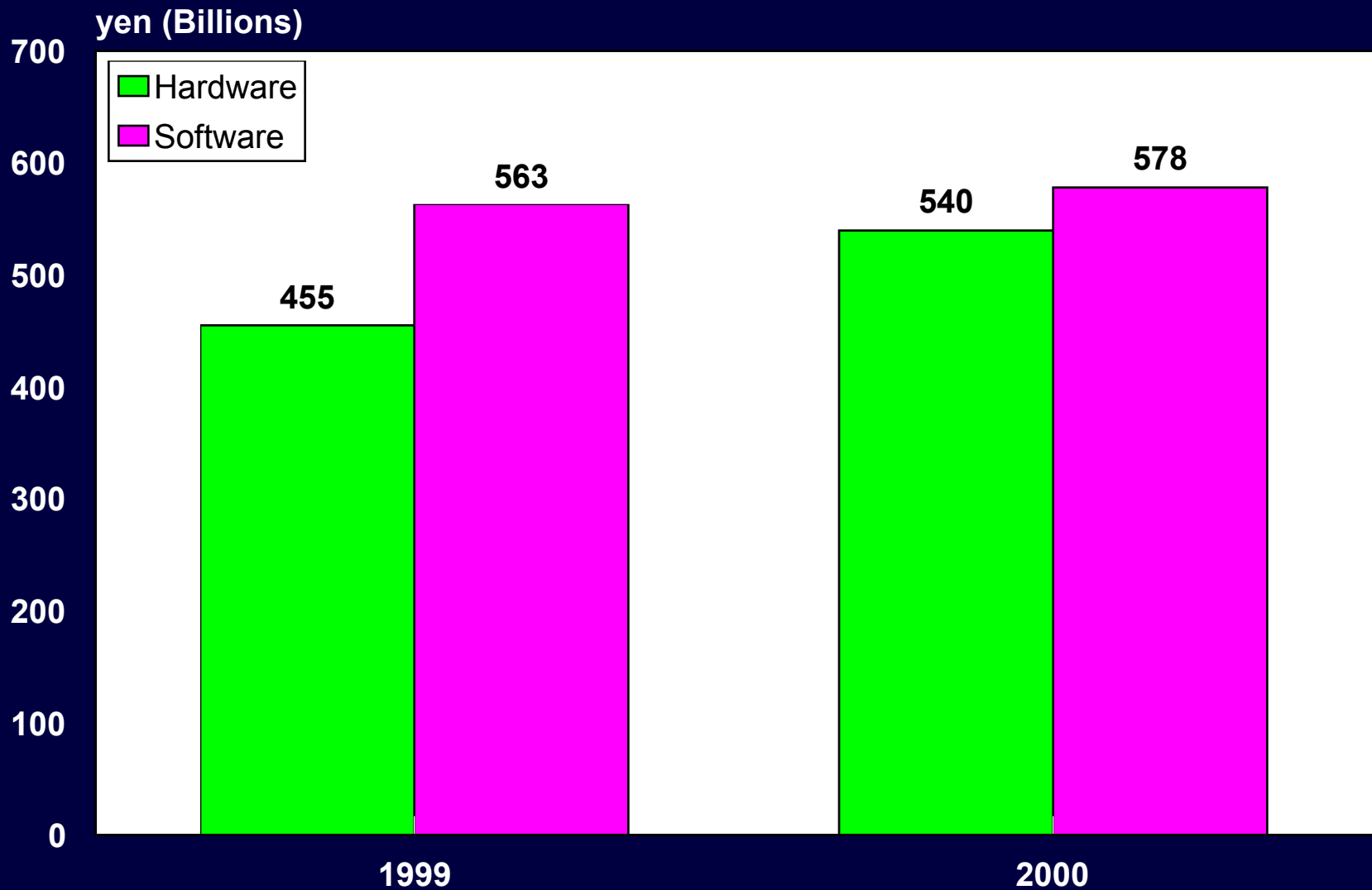


<http://www.census.gov/indicator/www/m3/>

10/01

Consumer Electronics

Value of worldwide game shipments



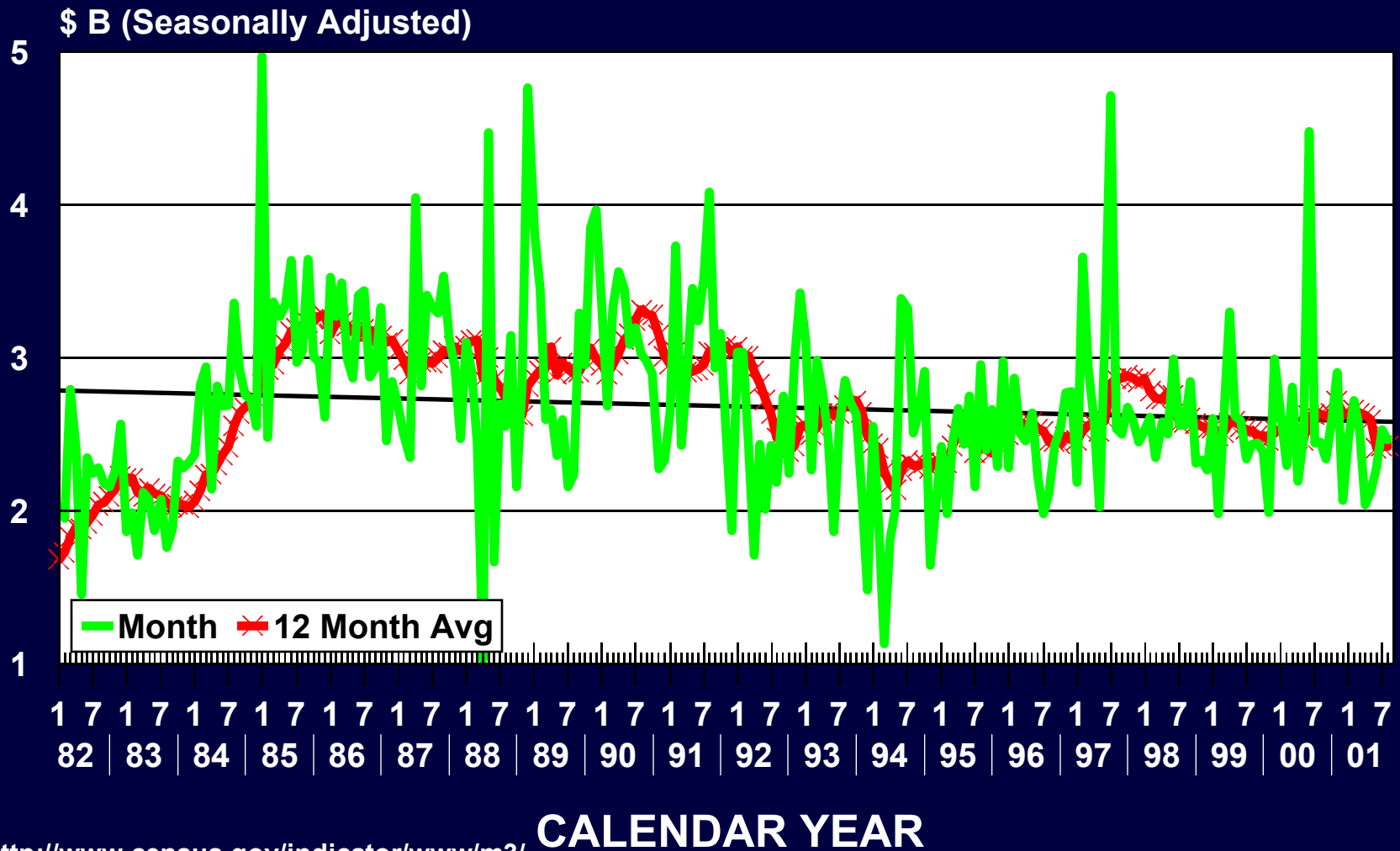
Computer Entertainment Software
Association 7/01

Government & Military Electronics

SEARCH & NAVIGATION EQUIPMENT

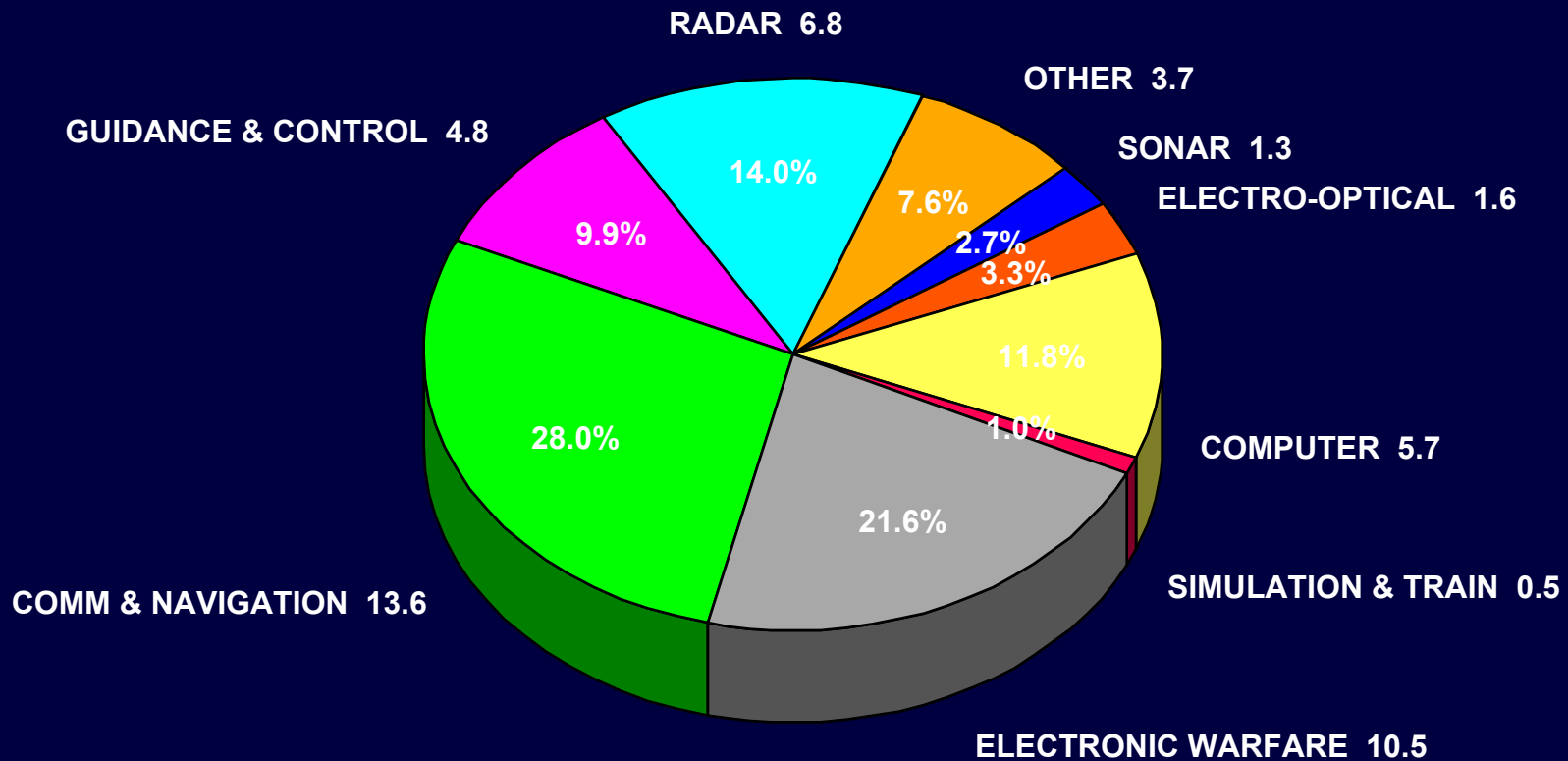
BOOKINGS

PRIMARILY MILITARY ELECTRONICS



GOVERNMENT & MILITARY ELECTRONICS PRODUCTION

U.S. - 2000



TOTAL: \$48.6 Billion

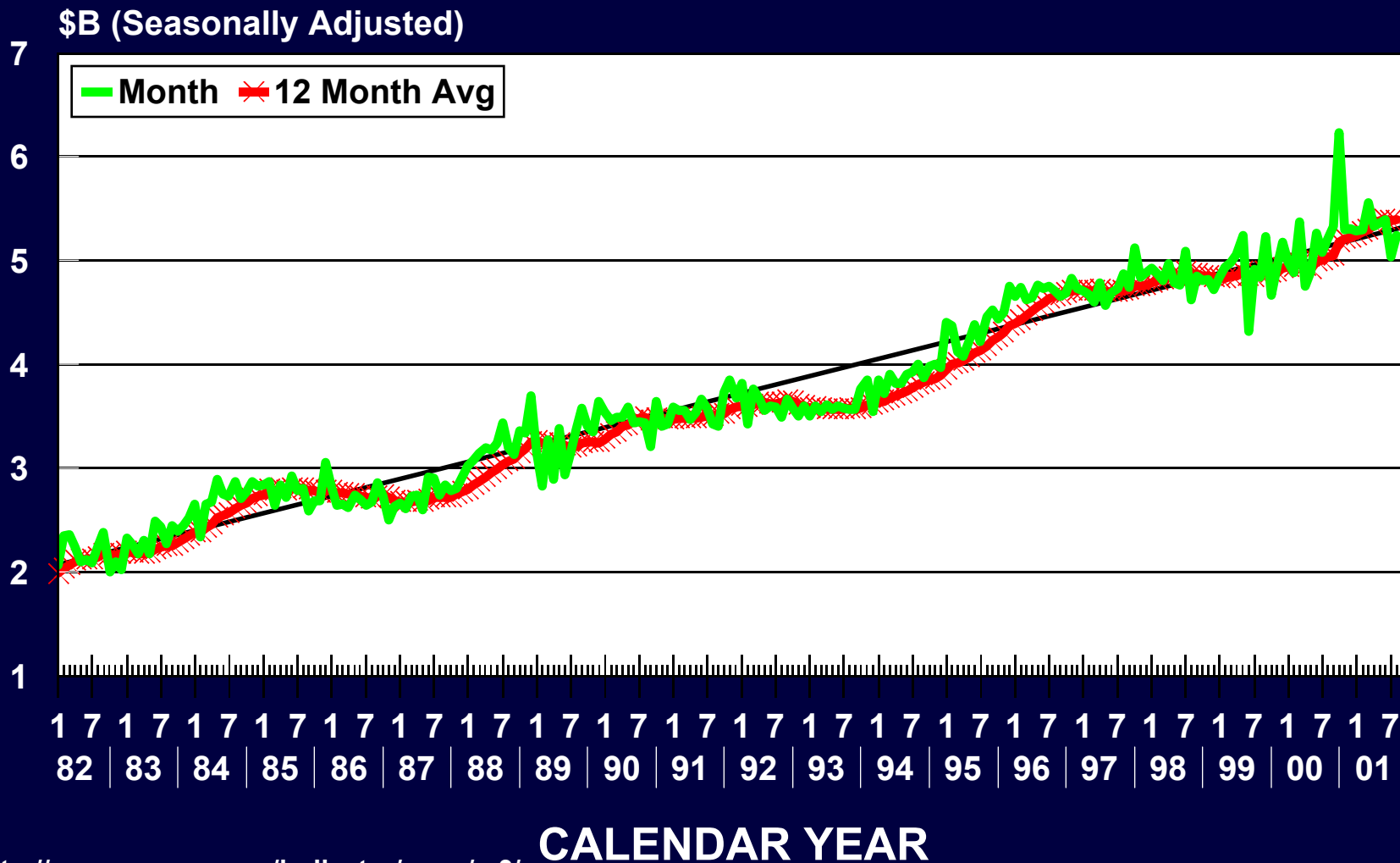
Electronic Outlook 9/2001

Note: Similar data available for other electronic equipment sectors

Instruments & Control Equipment

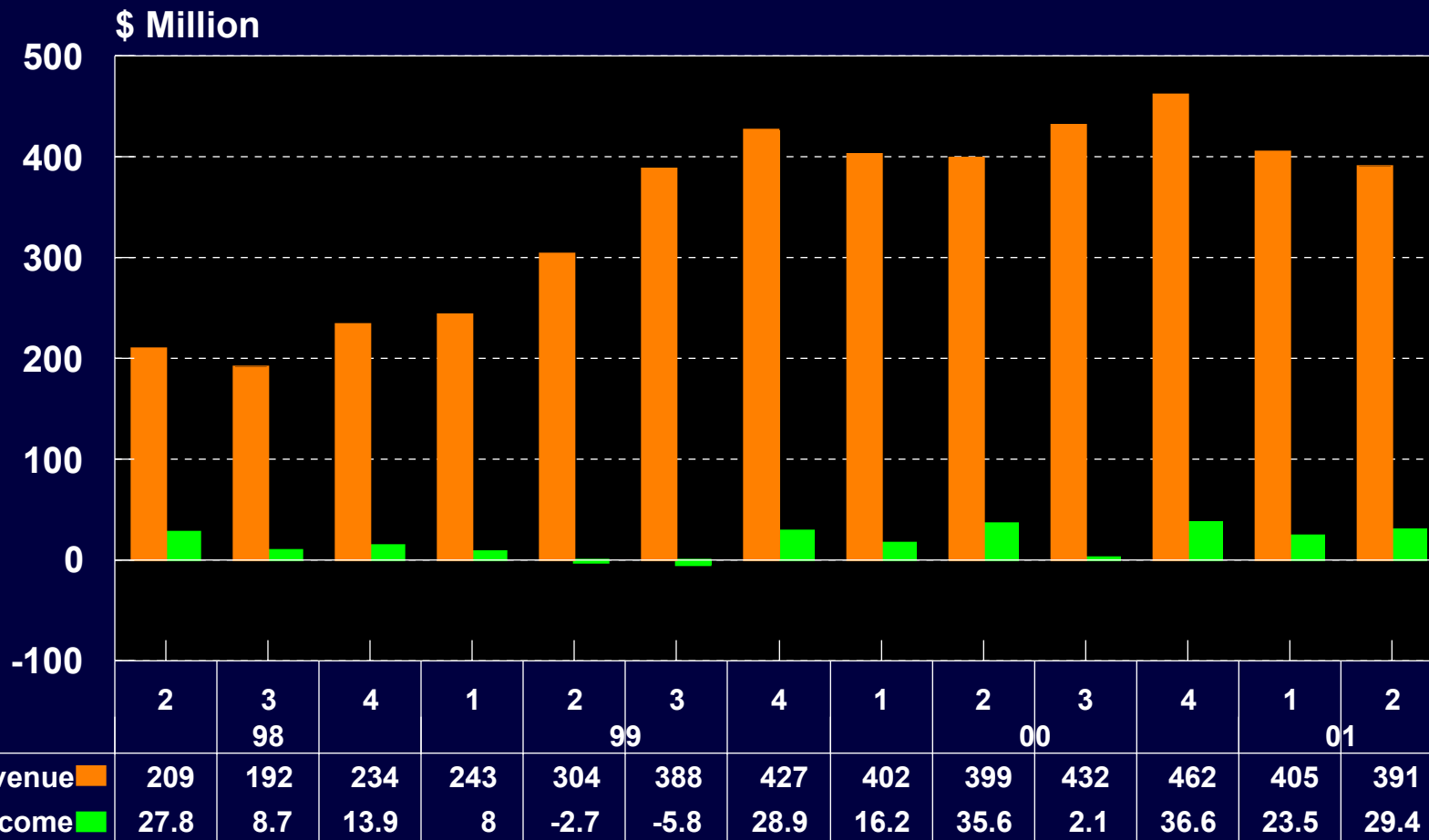
ELECTROMEDICAL, MEASUREMENT & CONTROL EQUIPMENT

BOOKINGS



PerkinElmer Inc

Revenue & Net Income



CY

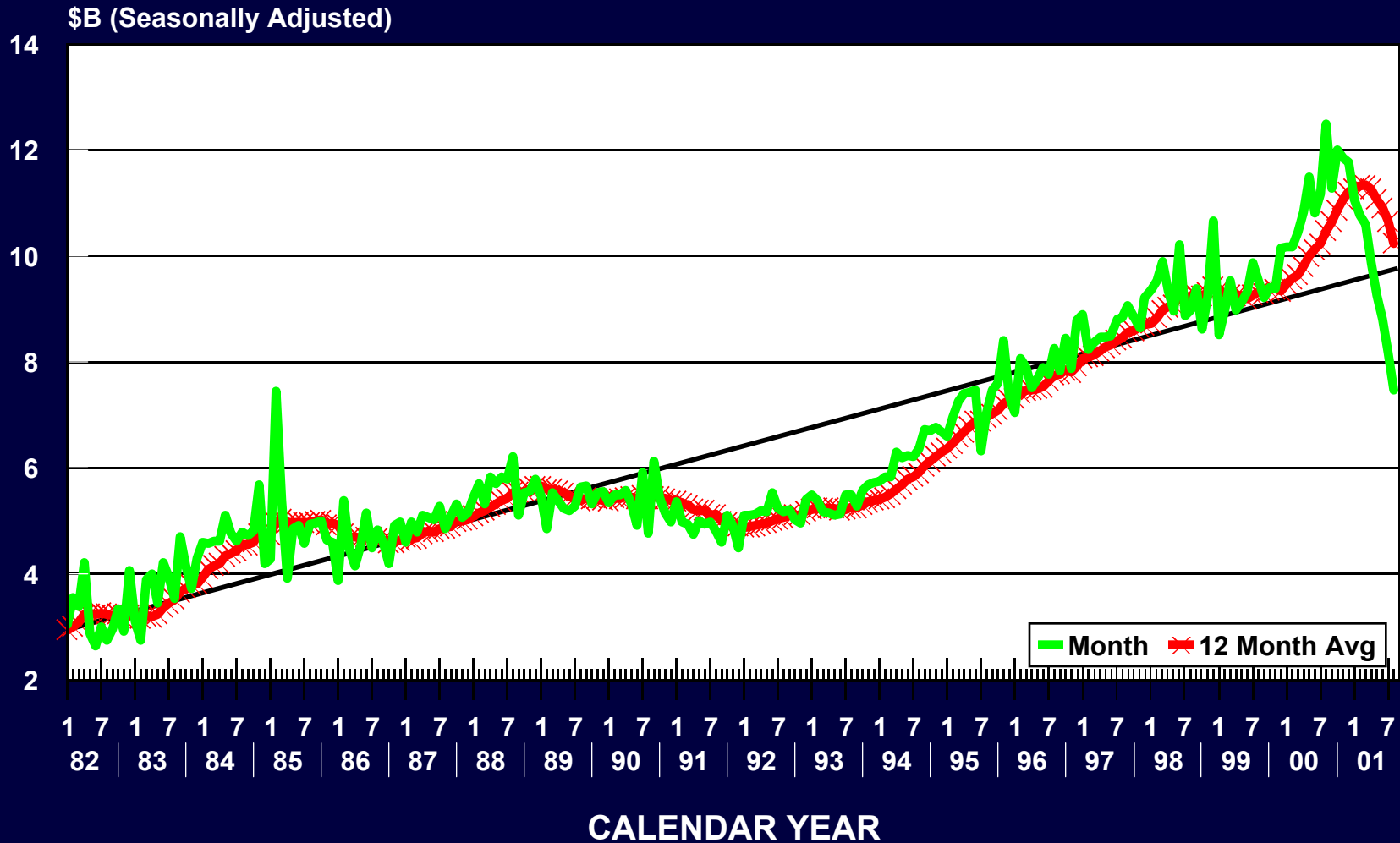
PKI

FY = CY

Communications Equipment

COMPUTERS & RELATED PRODUCTS

BOOKINGS



Top Eight Worldwide Telecommunications Equipment Manufacturers (\$B)

| | 2000 Revenue | 1999 Revenue | Constant \$ Growth (%) | Local Currency Growth (%) |
|--------------------|-----------------|-----------------|---------------------------|------------------------------|
| Nortel | 29.8 | 21.0 | 41.6 | 41.6 |
| Ericsson | 27.7 | 24.0 | 15.4 | 28.1 |
| Nokia | 27.2 | 20.1 | 35.4 | 57.0 |
| Lucent* | 25.8 | 33.8 | -23.5 | -23.5 |
| Cisco | 23.9 | 15.0 | 59.3 | 59.3 |
| Siemens** | 22.8 | 20.0 | 14.5 | 32.5 |
| Motorola | 22.8 | 19.7 | 15.3 | 15.3 |
| Alcatel*** | 21.6 | 17.1 | 26.6 | 46.8 |
| Top 8 Total | 201.6 | 170.7 | 18.1 | - |

* Lucent 2000 figures exclude Avaya; combined figure would be \$33.2 billion

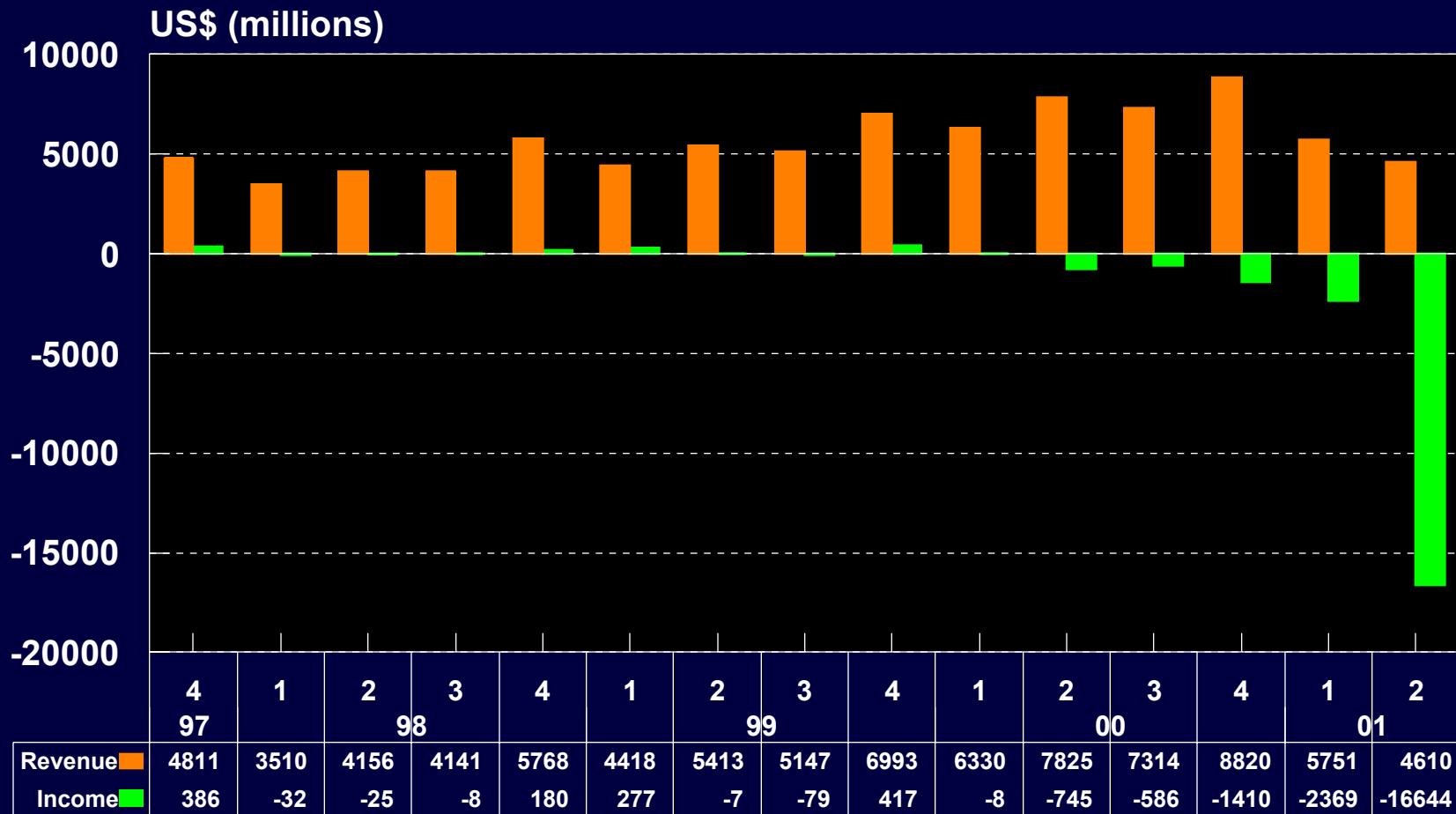
** Siemens 1999 figure re-estimated because of exchange rate updates

*** Alcatel 1999 figure re-established to exclude components business

Dataquest 4/2001

Nortel Networks

Revenue & Net Income



CY

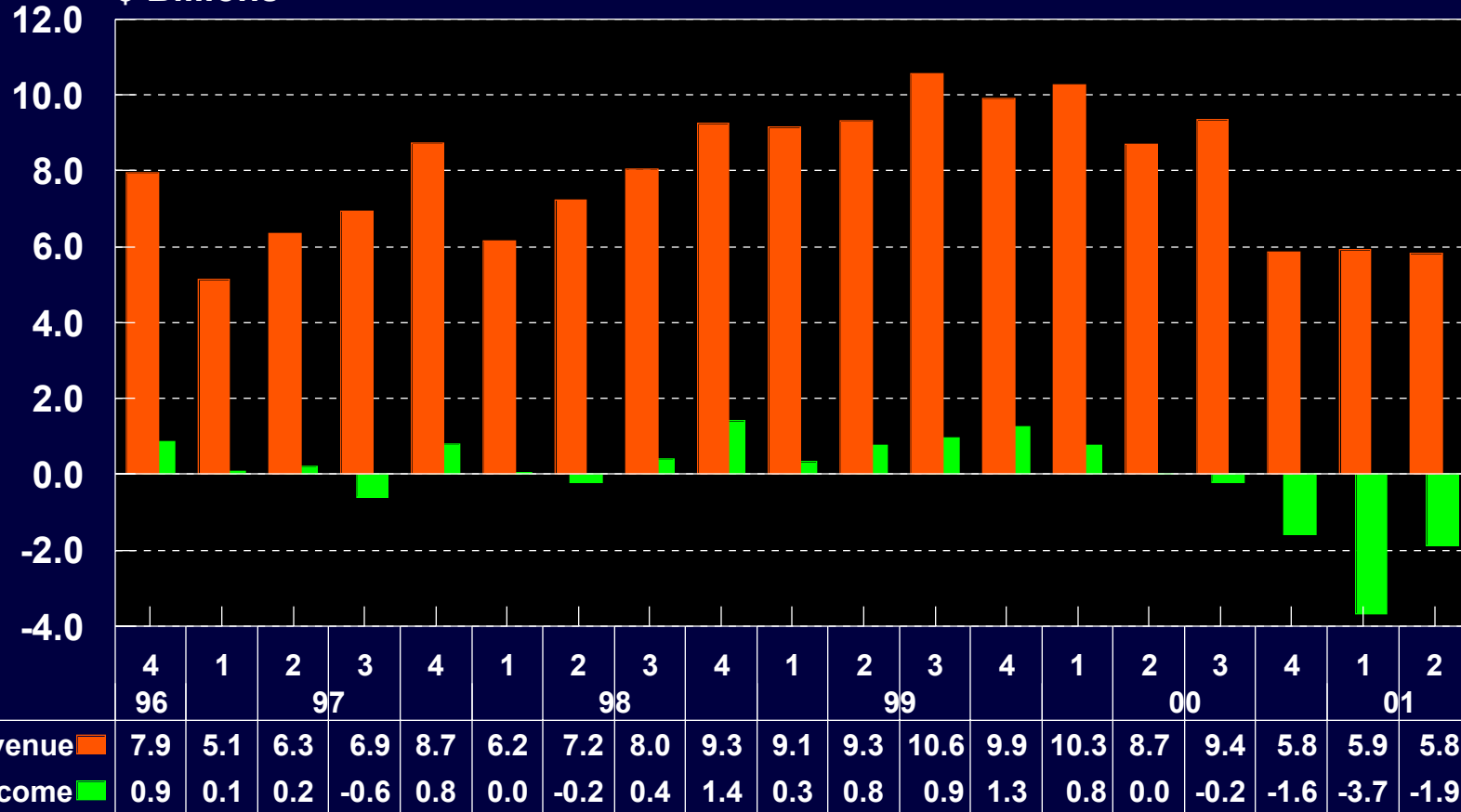
NT

FY=CY

Lucent Technologies

Revenue & Net Income

\$ Billions



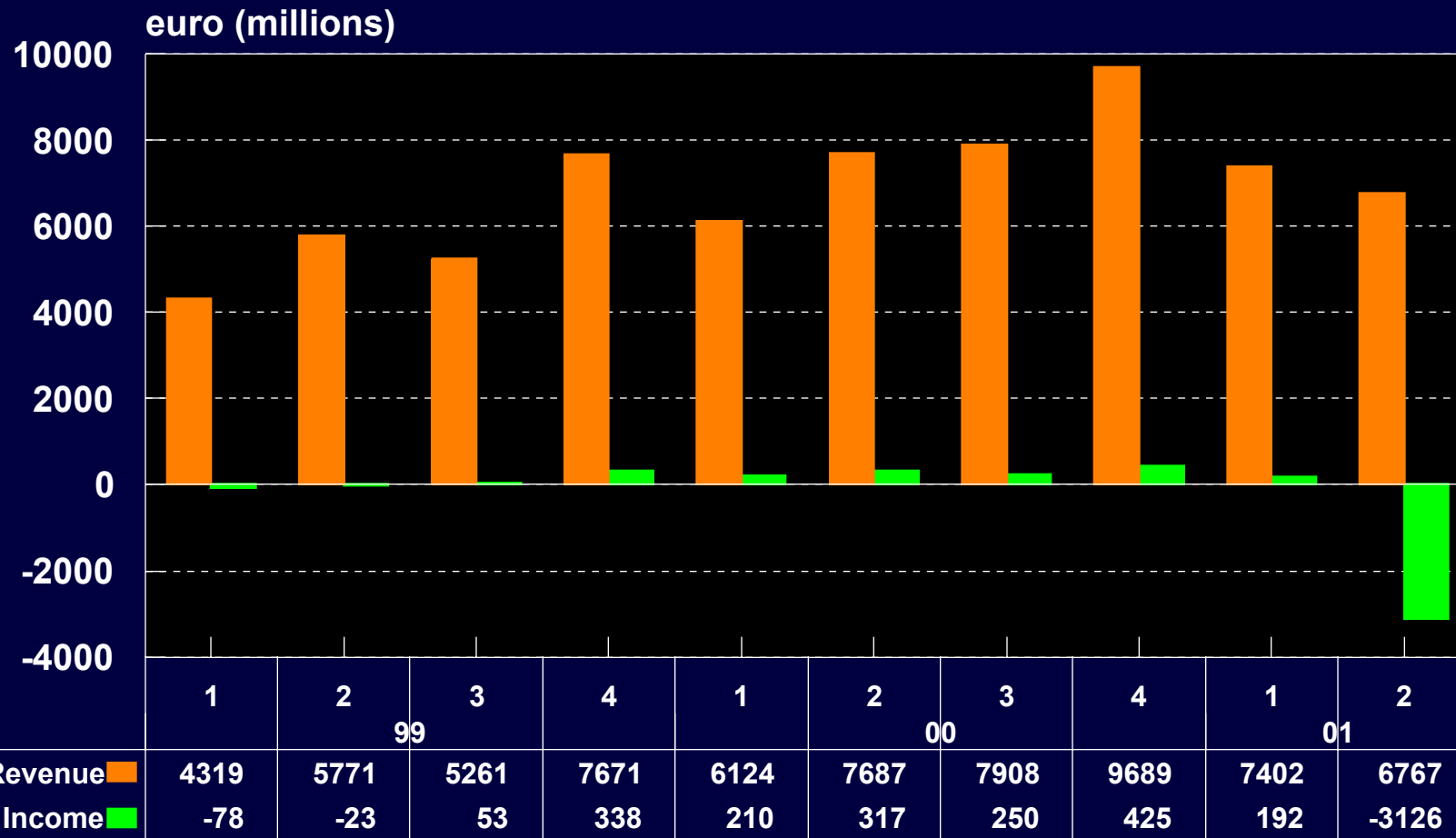
CY

FY ends September

LU

Alcatel Alsthom

Revenue & Net Income



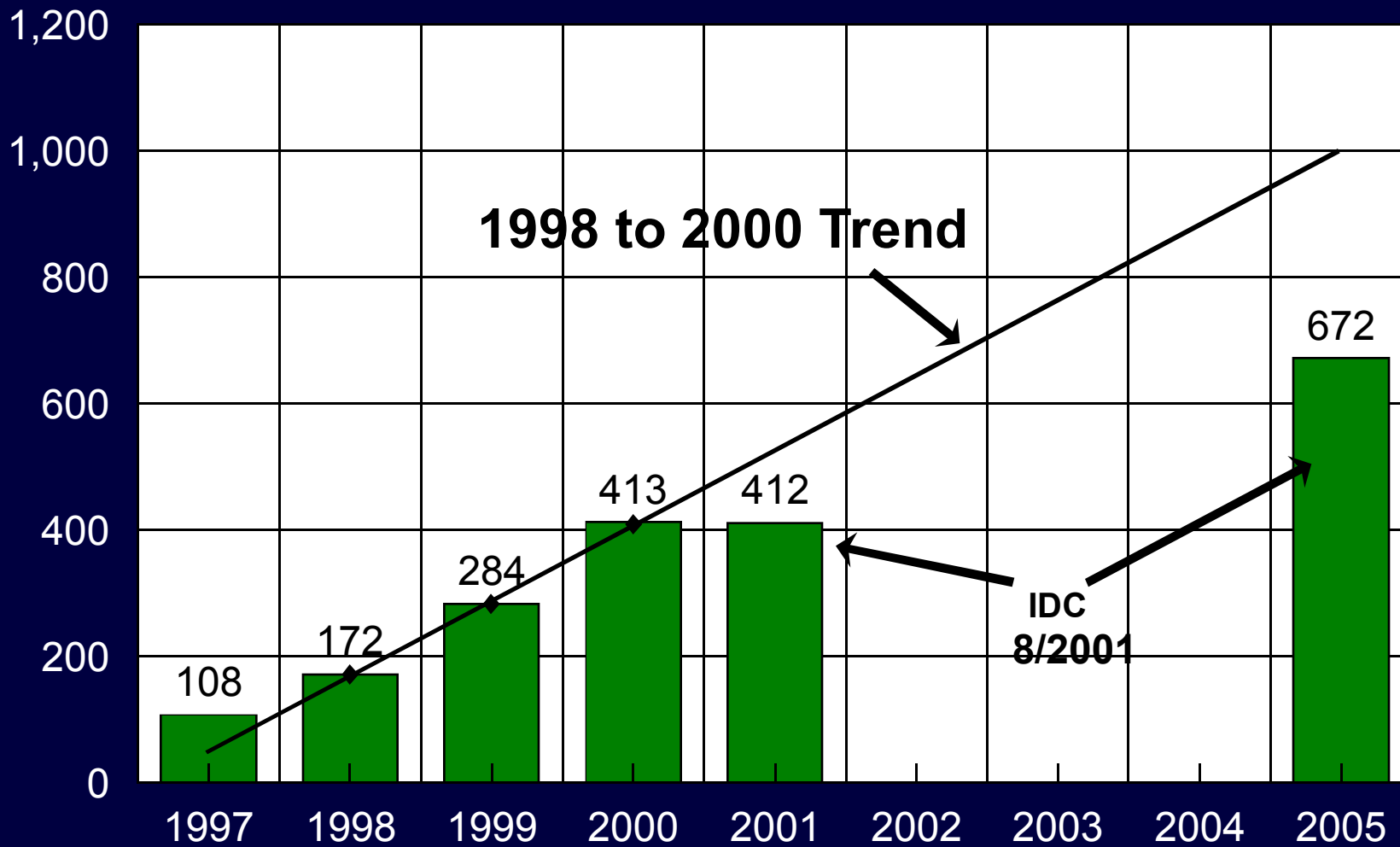
CY

ALA

FY=CY

WORLD CELLULAR PHONE GROWTH

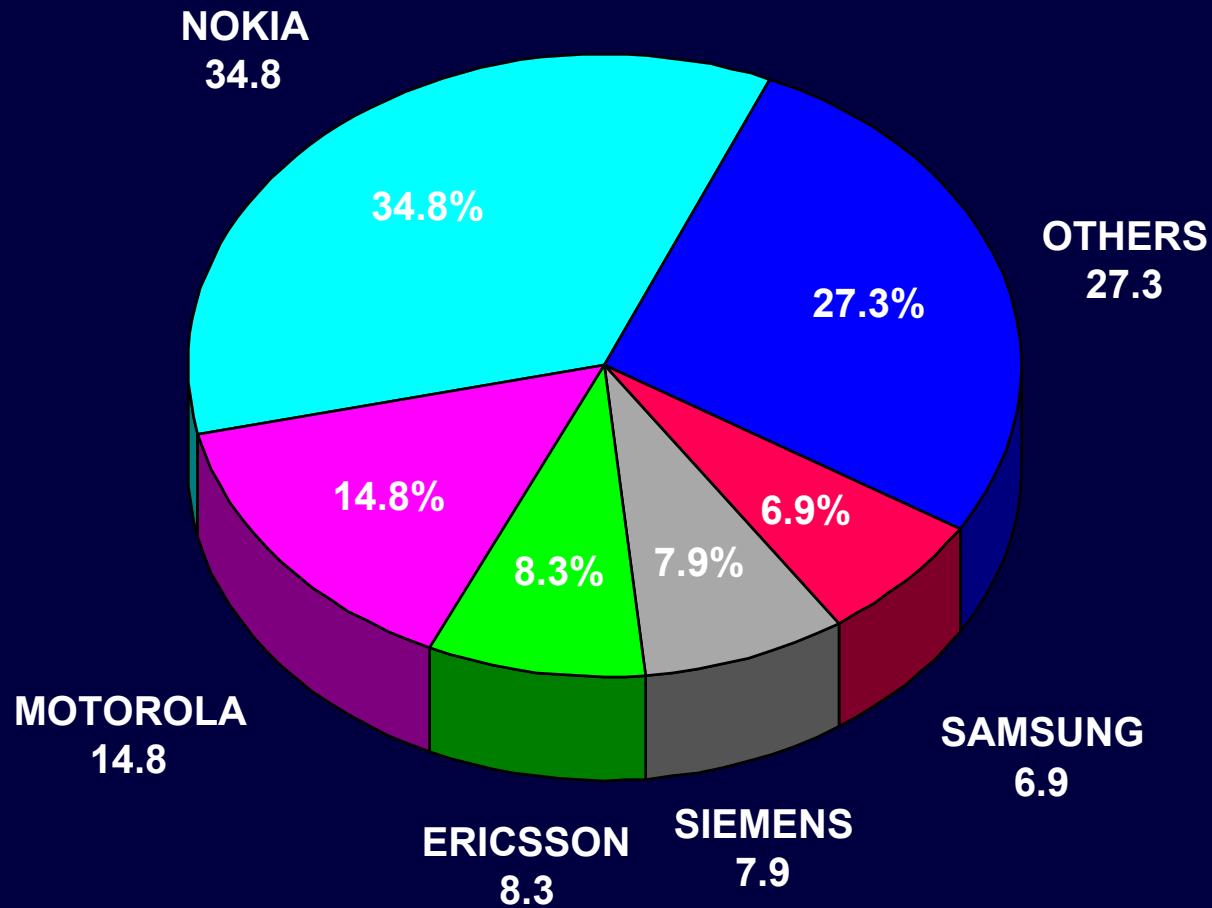
TOTAL SALES - ANALOG & DIGITAL



IDC 8/2001

WORLD CELLULAR PHONE SALES

2Q 2001

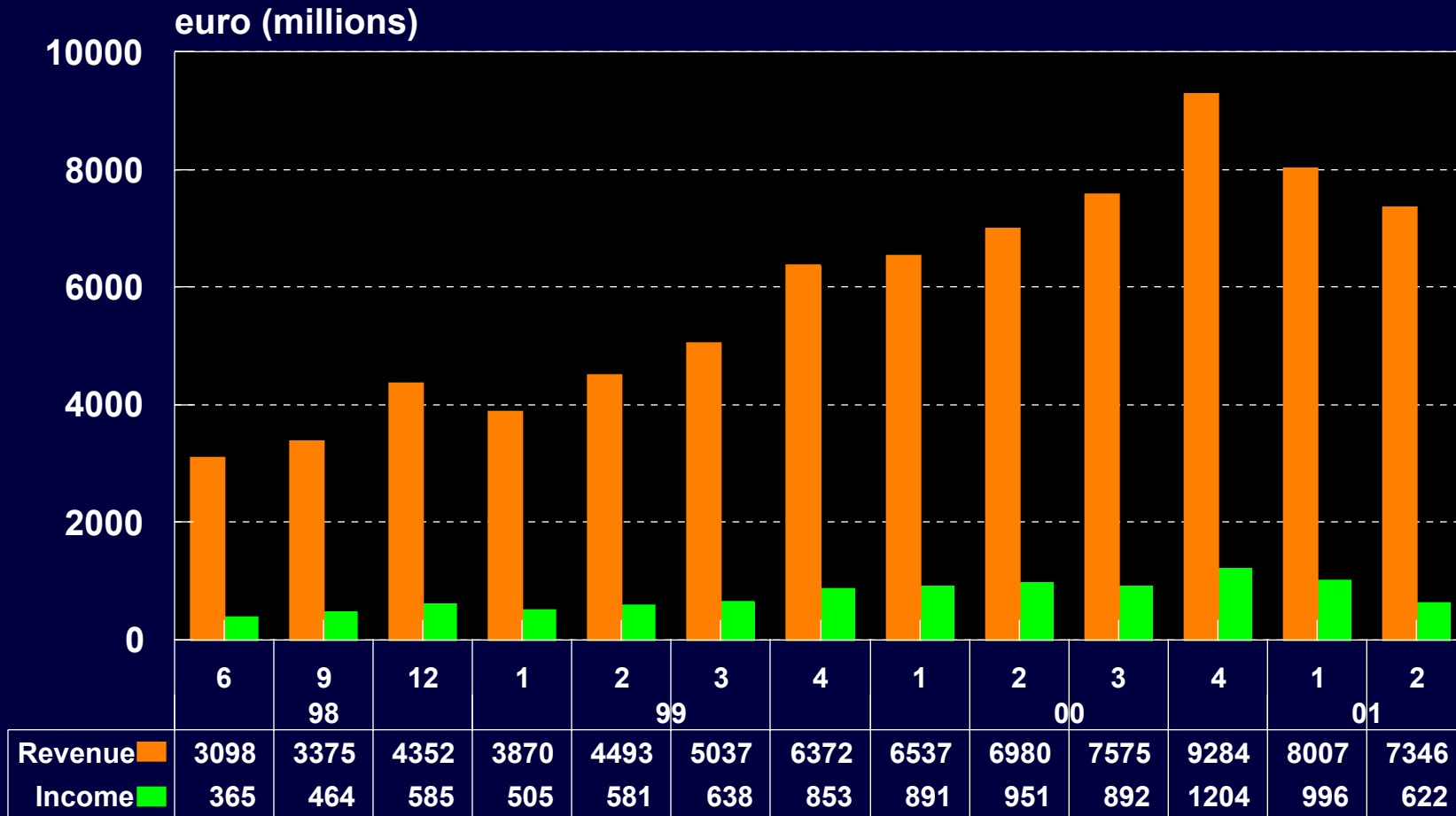


Dataquest 8/2001

TOTAL: 89.8 MILLION UNITS

Nokia

Revenue & Net Income



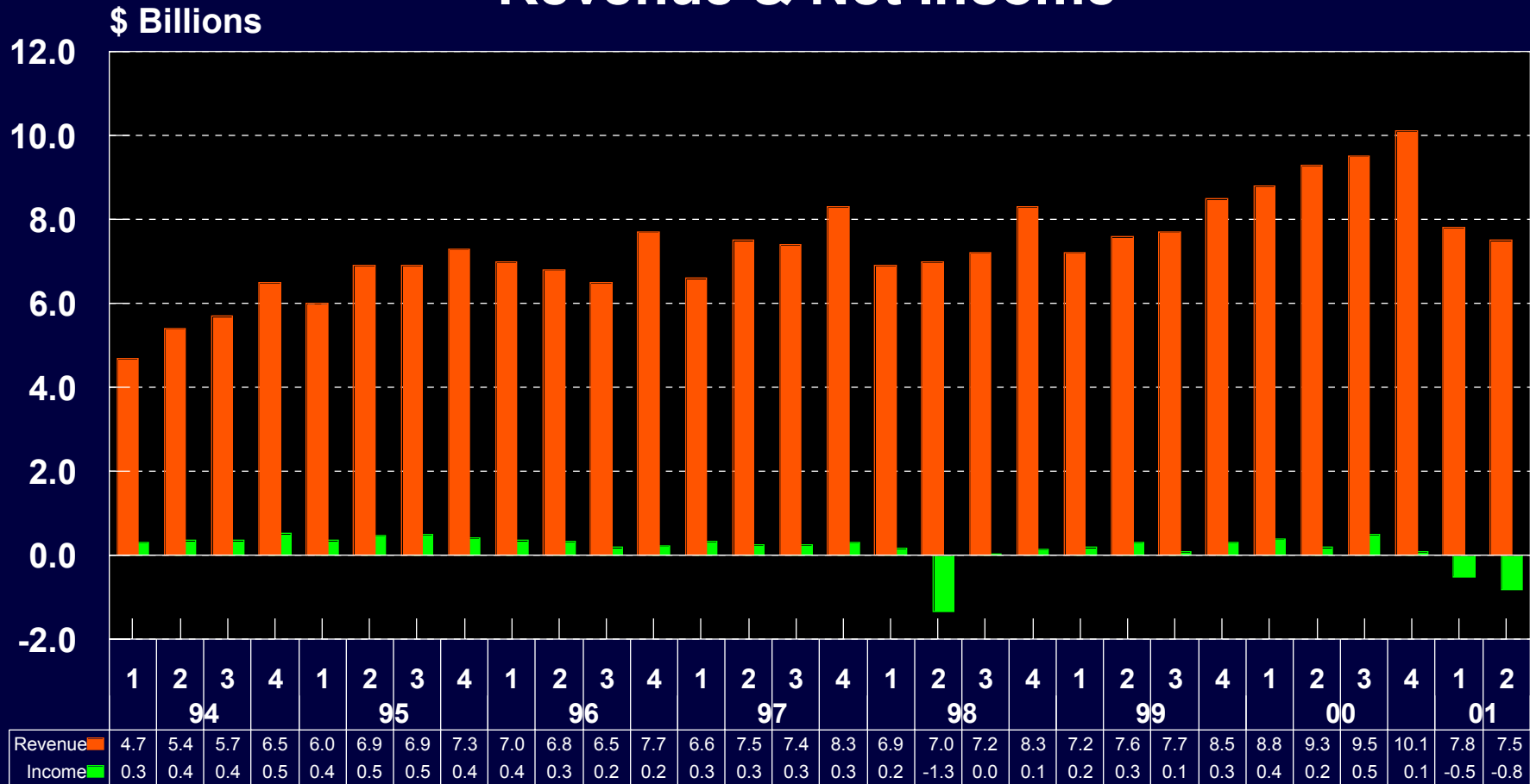
CY

NOK

FY=CY

Motorola

Revenue & Net Income



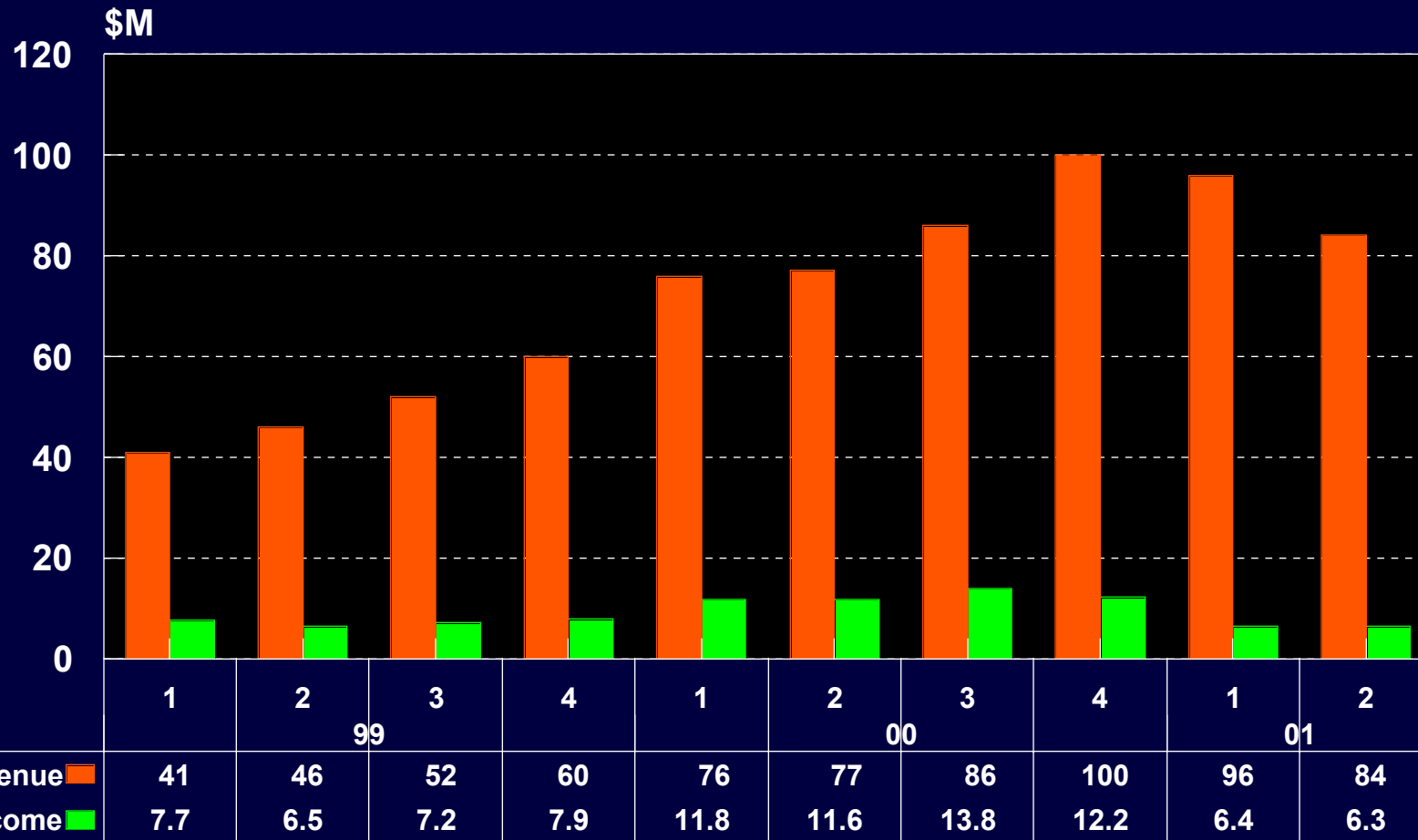
CY

FY=CY

MOT

Polycom

Revenue & Net Income



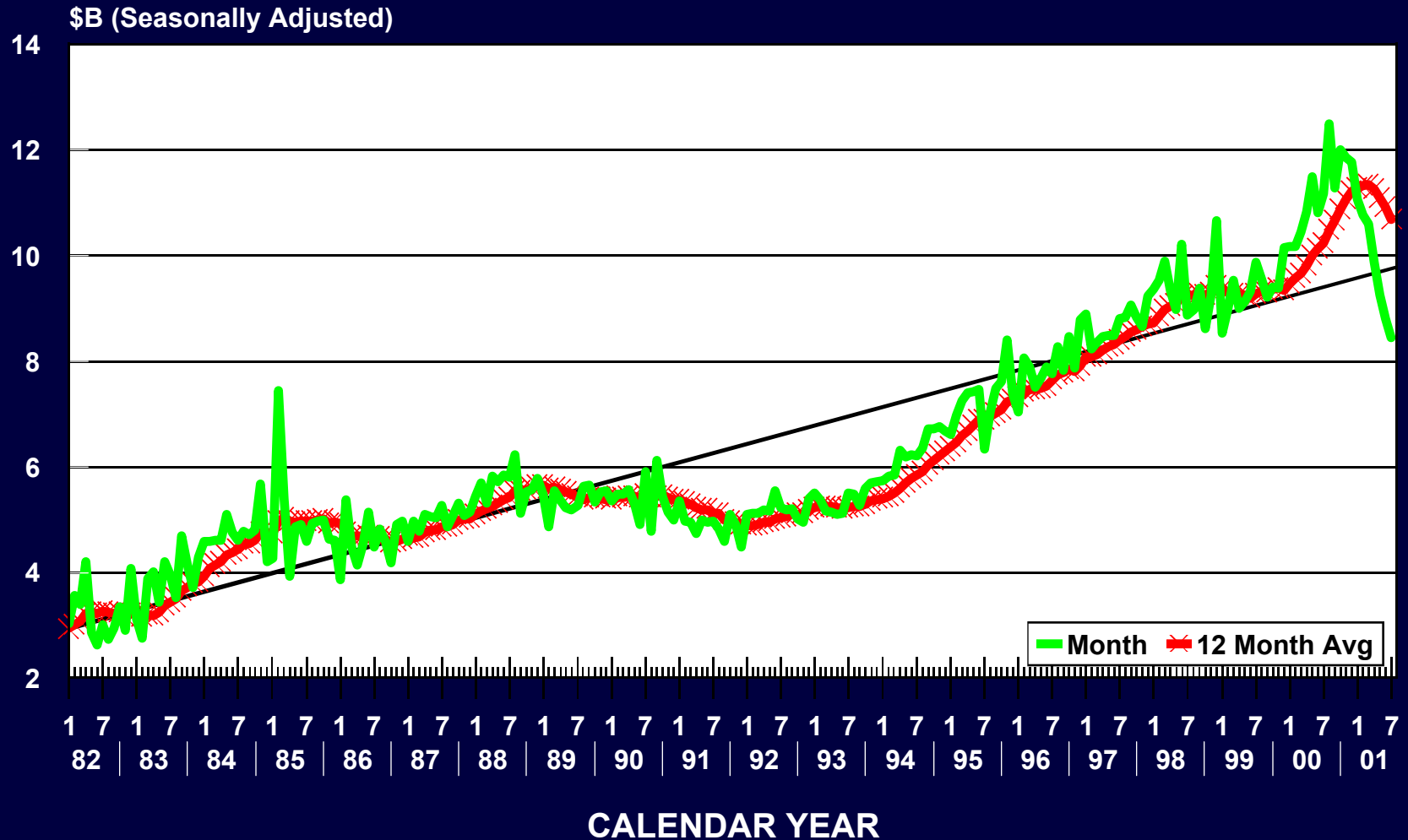
CY

PLCM

Computer & Office Equipment

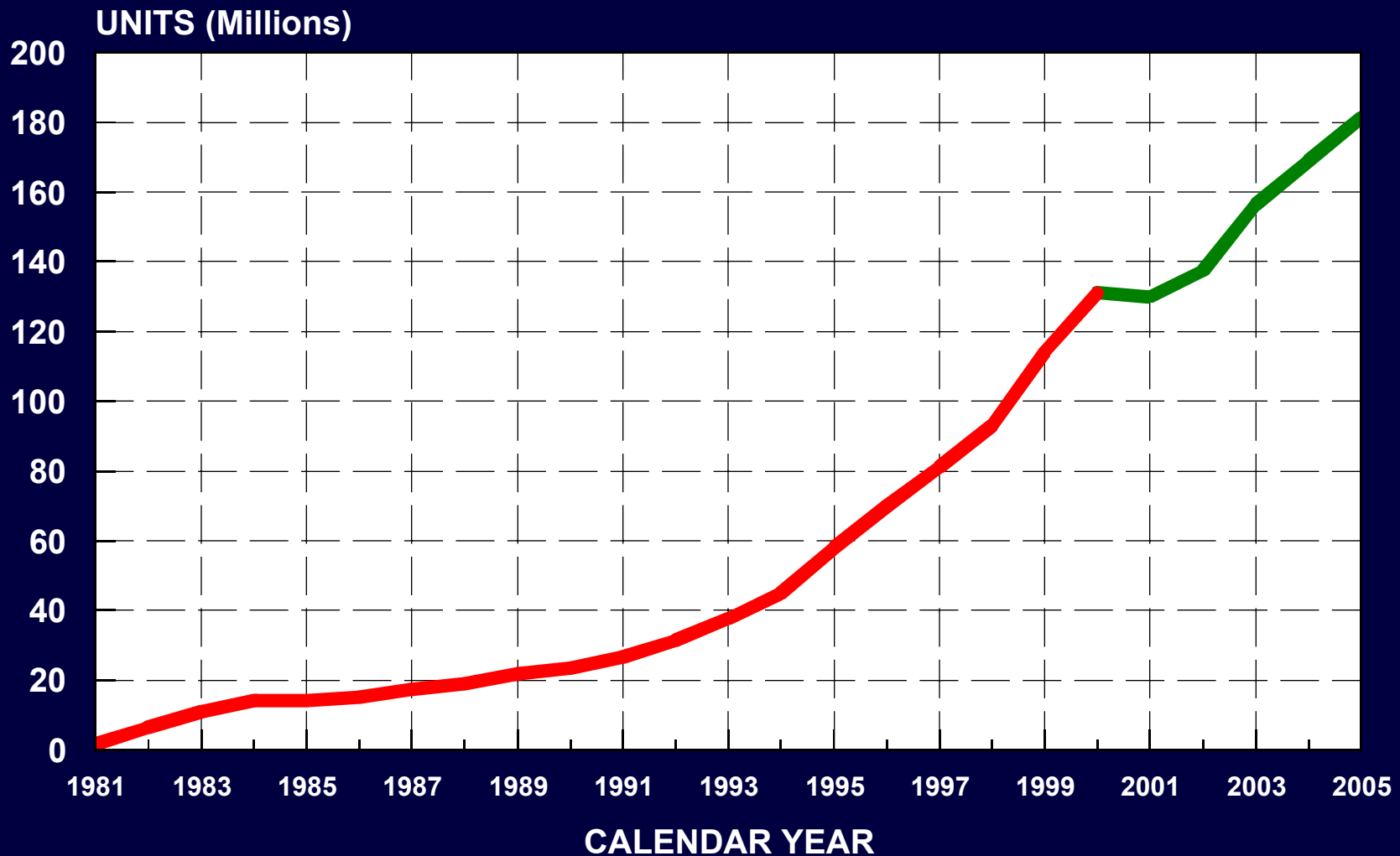
COMPUTERS & RELATED PRODUCTS

BOOKINGS



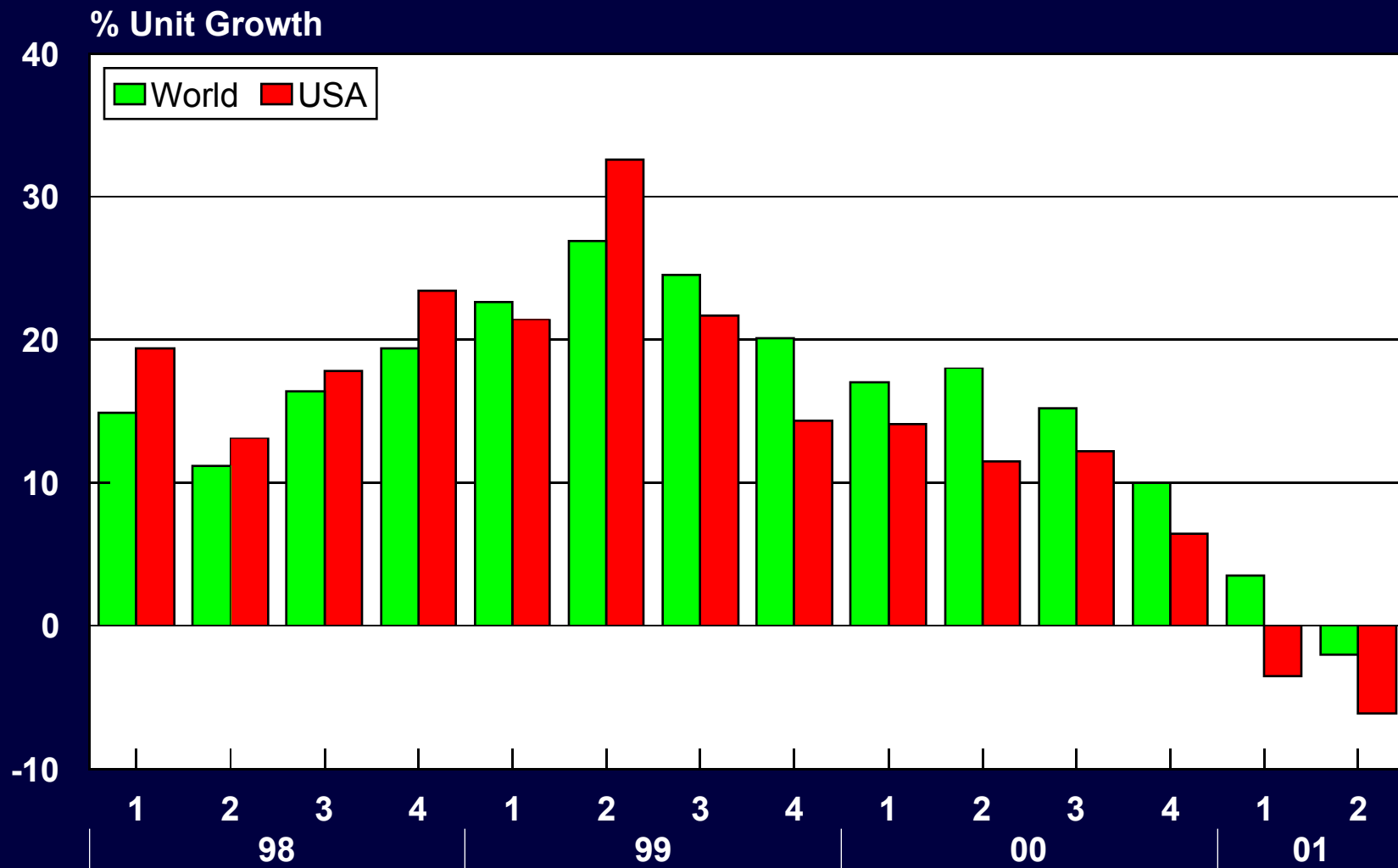
PERSONAL COMPUTER GROWTH

GLOBAL SALES



USA: Gartner Dataquest - historical data 8/2001, Custer forecast 9/2001
Desktops, Notebooks, Ultraportables - does not include Servers

Personal Computer Market Growth World & USA

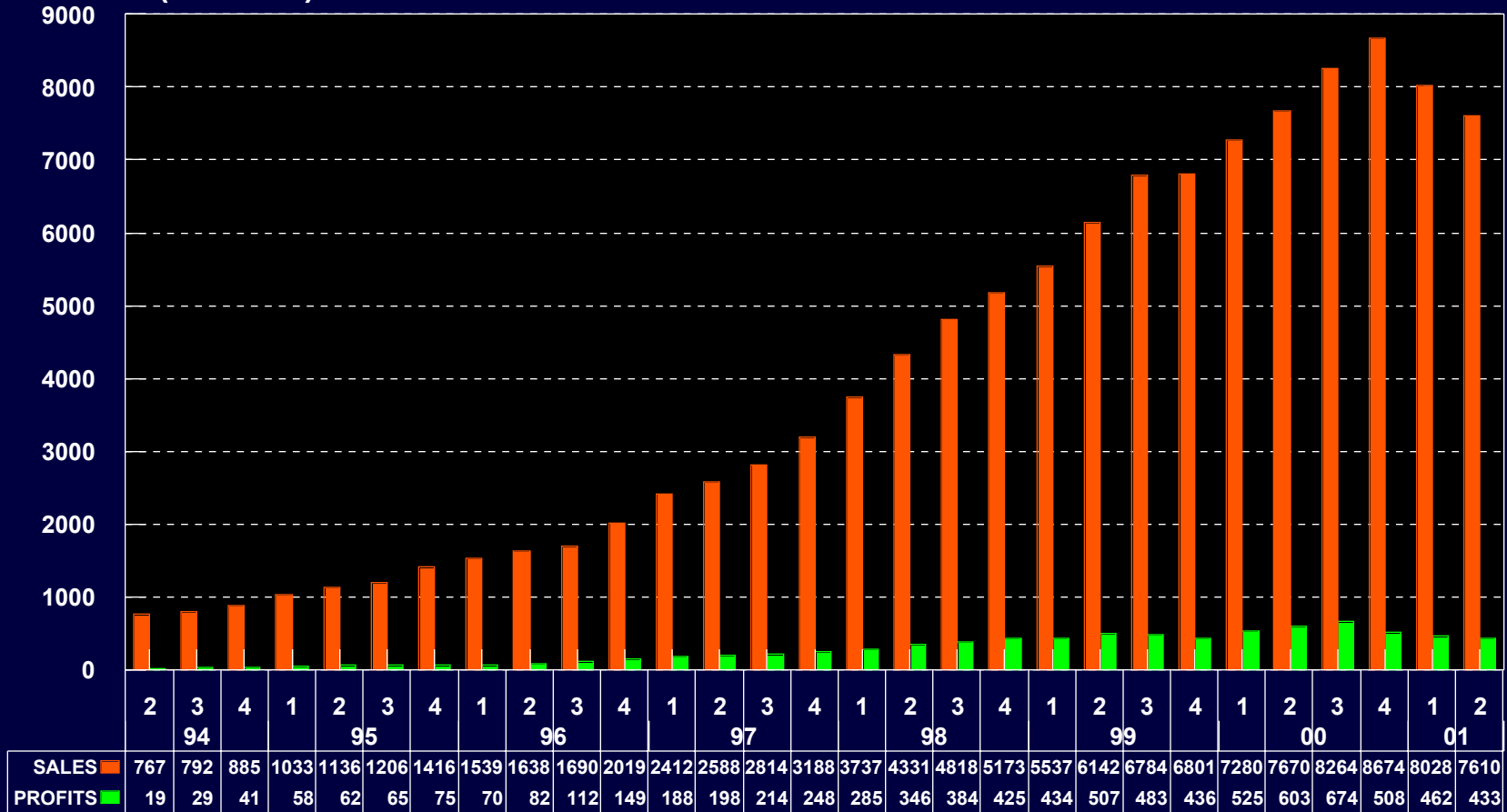


DataQuest 7/2001

DELL COMPUTER

Revenue & Net Income

\$ (Millions)

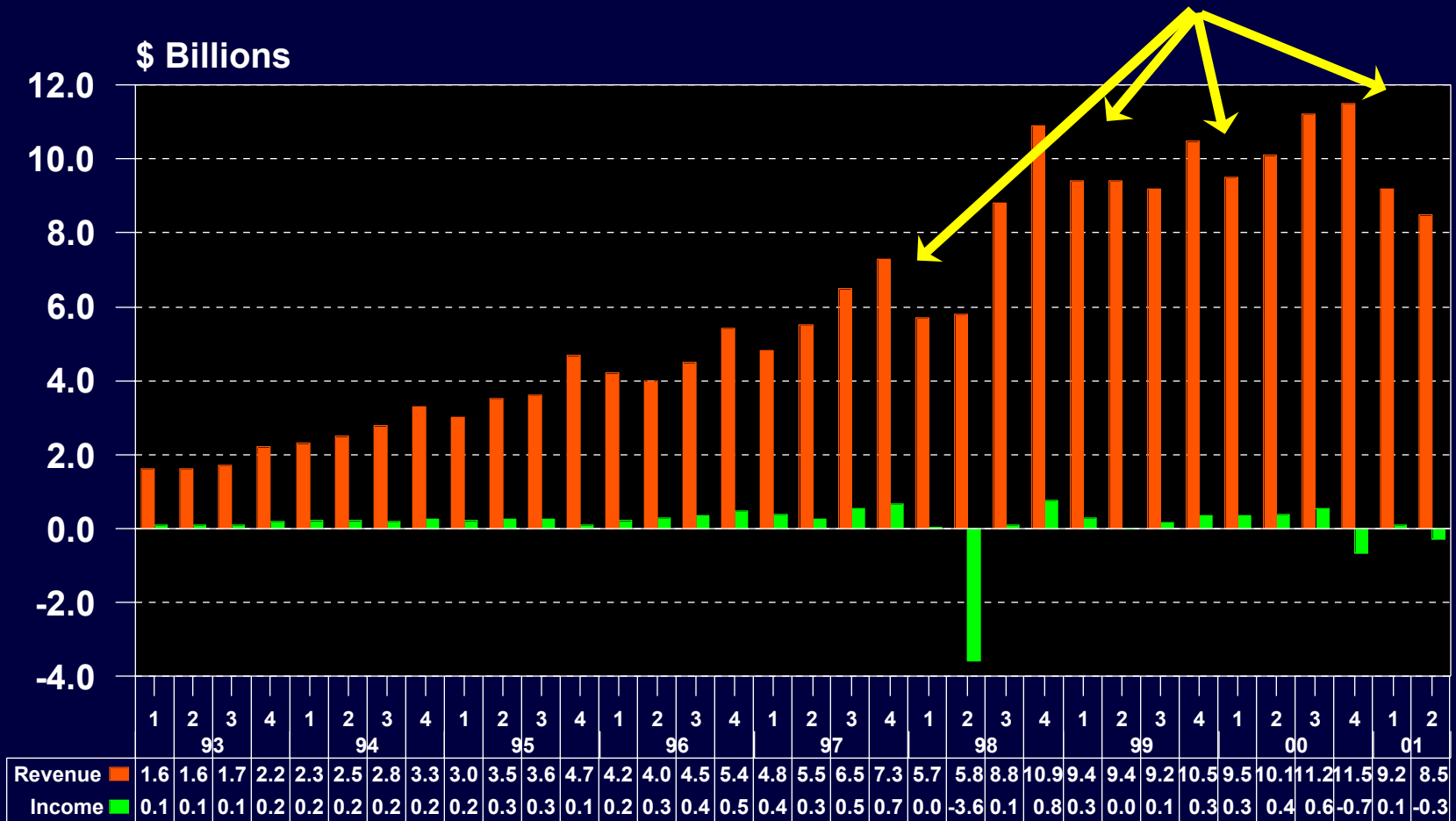


CY

DELL

FY ends October

Compaq Computer Revenue & Net Income



CY

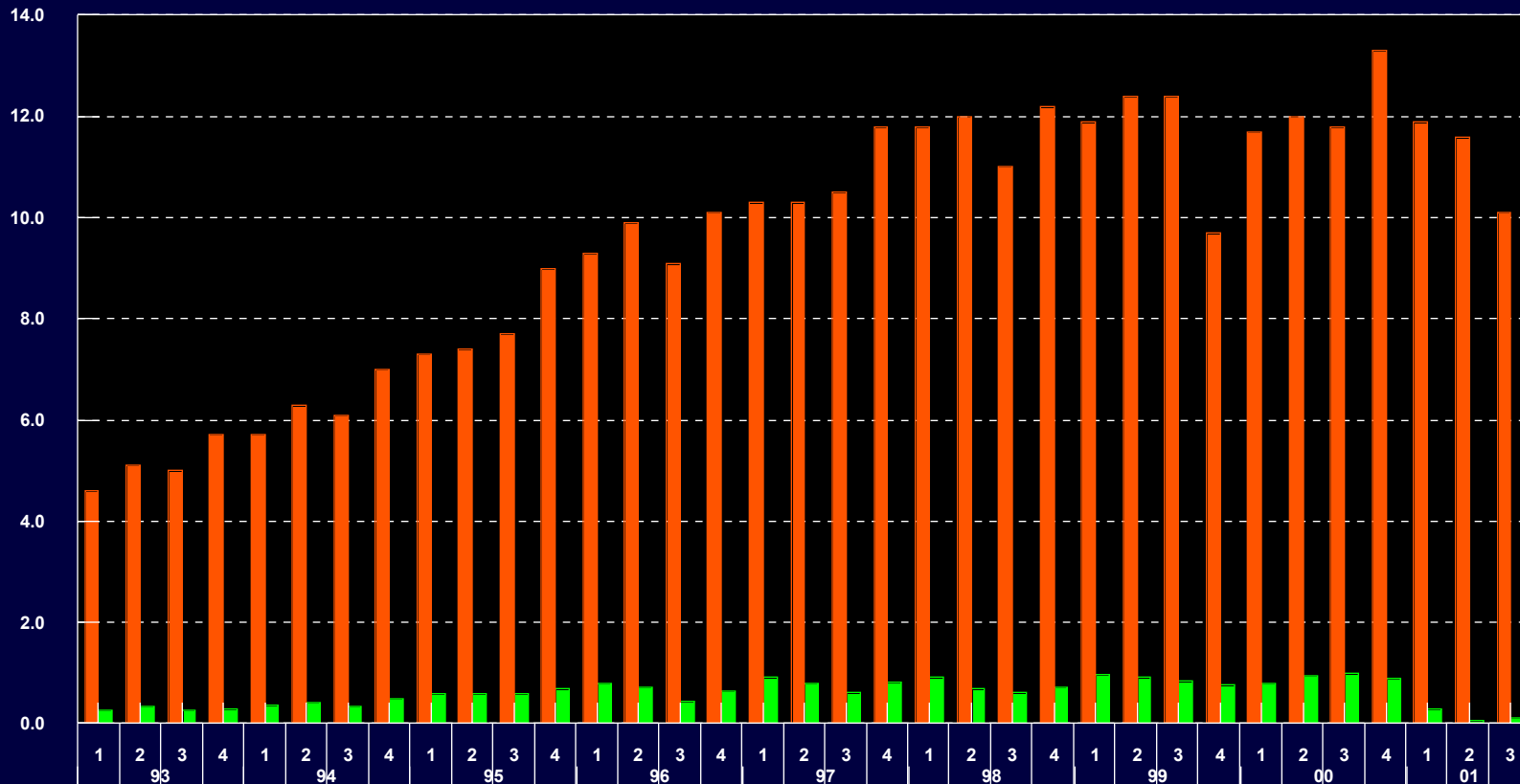
FY=CY

CPQ

Hewlett-Packard

Revenue & Net Income

\$ Billions



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|------|
| Revenue | 4.6 | 5.1 | 5.0 | 5.7 | 5.7 | 6.3 | 6.1 | 7.0 | 7.3 | 7.4 | 7.7 | 9.0 | 9.3 | 9.9 | 9.1 | 10.1 | 10.3 | 10.3 | 10.5 | 11.8 | 11.8 | 12.0 | 11.0 | 12.2 | 11.9 | 12.4 | 12.4 | 9.7 | 11.7 | 12.0 | 11.8 | 13.3 | 11.9 | 11.6 | 10.1 |
| Income | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.7 | 0.4 | 0.7 | 0.9 | 0.8 | 0.6 | 0.8 | 0.9 | 0.7 | 0.6 | 0.7 | 1.0 | 0.9 | 0.9 | 0.8 | 0.8 | 0.9 | 1.0 | 0.9 | 0.3 | 0.1 | 0.1 |

CY

FY ends October

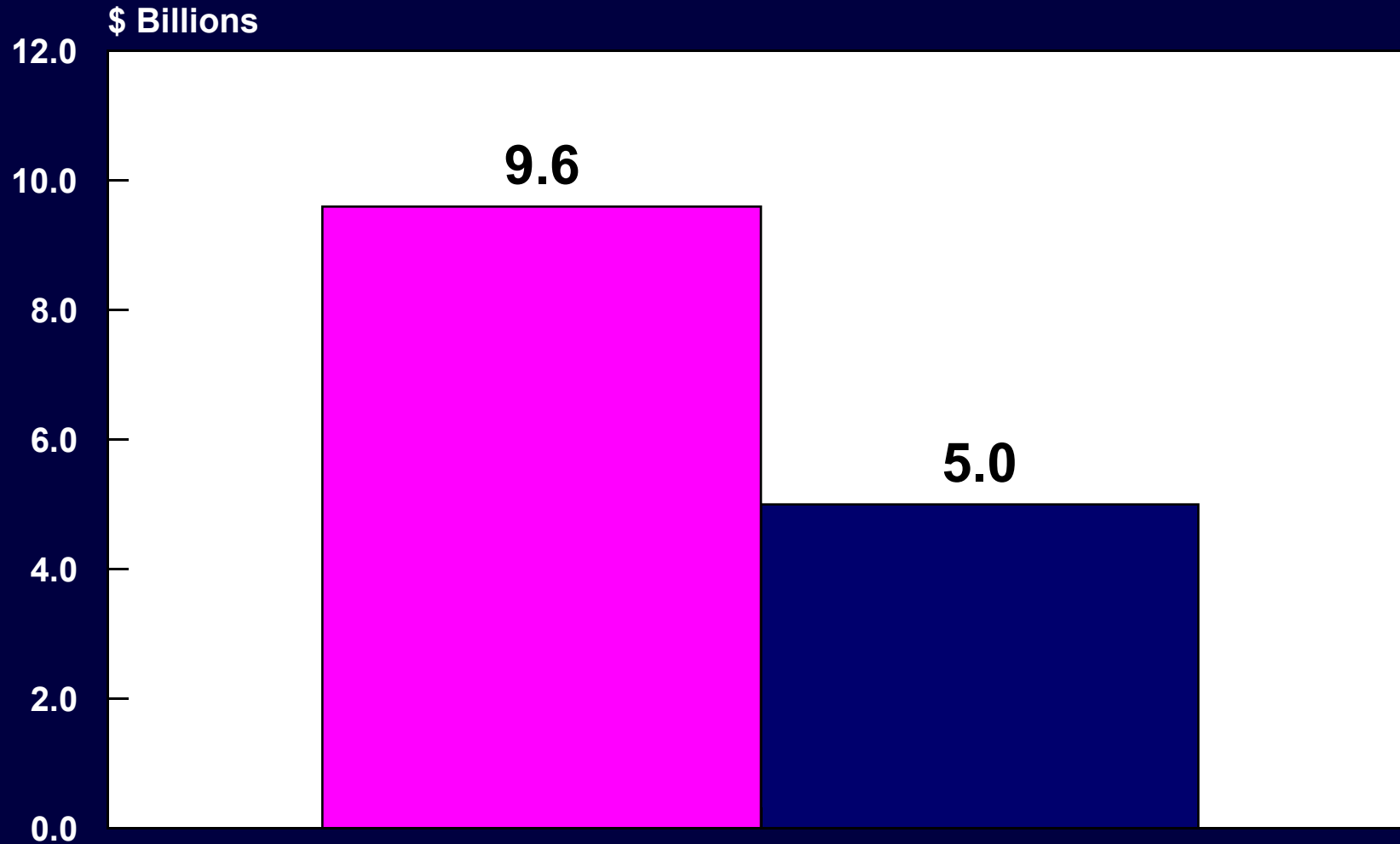
HWP

How HP & Compaq Compare

| | Annual | | |
|---------------------------|--------------|----------------|-----------------------|
| | Sales \$B | Net Inc \$B | Employees thousand |
| Hewlett-Packard | 47 | 1.4 | 89 |
| Compaq | 40 | -.3 | 65 |
| HP/Compaq Combined | 87 | 1.1 | 145 |
| IBM | 90 | 8.4 | 325 |
| Dell | 33 | 1.5 | 35 |
| Sun Microsystems | 18 | 1.0 | 43 |

9/2001

Compaq & Hewlett-Packard Purchases from Taiwan - 2000

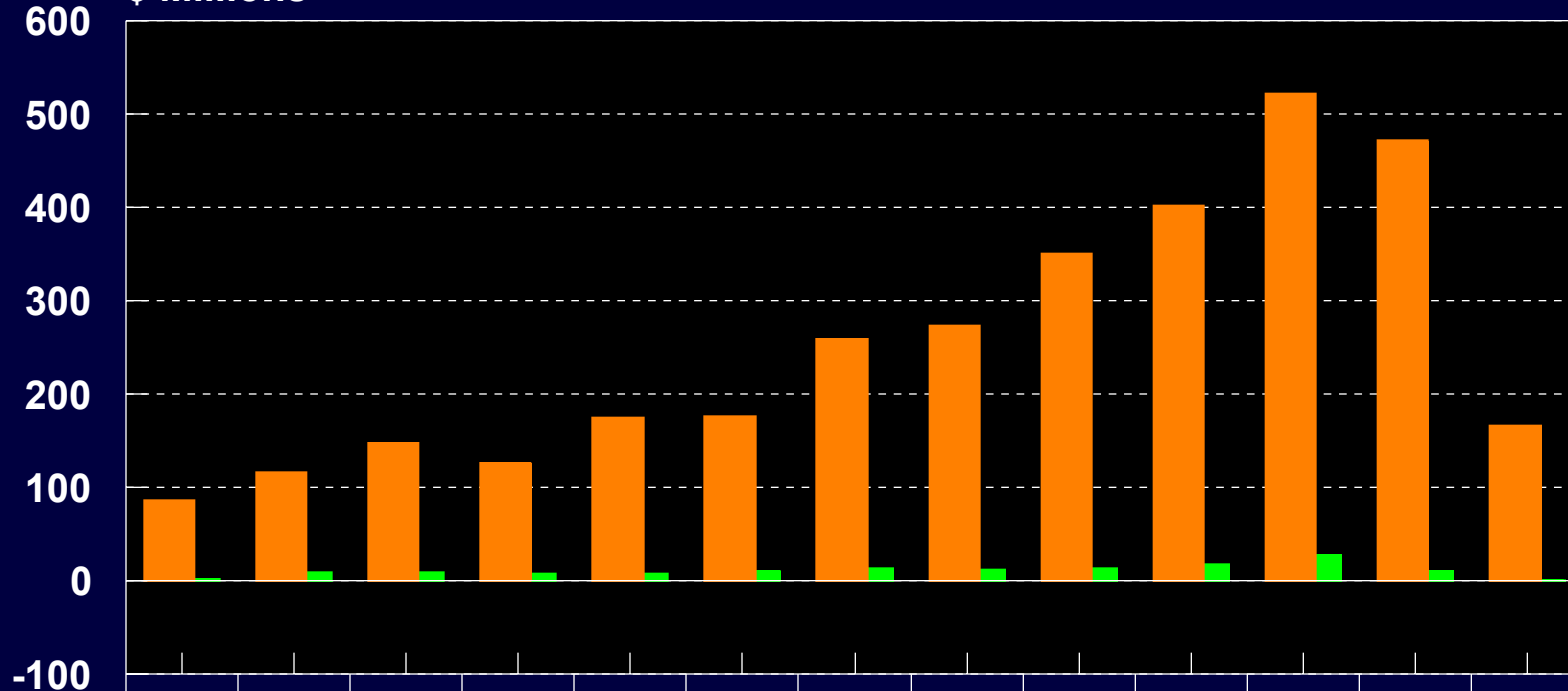


Reuters 9/2001

Palm Inc

Revenue & Net Income

\$ Millions



-100

2 3 4 1 2 3 4 1 2 3 4 1 2

| | | | | | | | | | | | | | |
|---------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Revenue | 85 | 116 | 147 | 126 | 174 | 176 | 259 | 272 | 350 | 401 | 522 | 471 | 165 |
| Income | 1 | 8 | 8 | 7 | 7 | 10 | 13 | 11 | 12 | 17 | 28 | 9 | -0 |

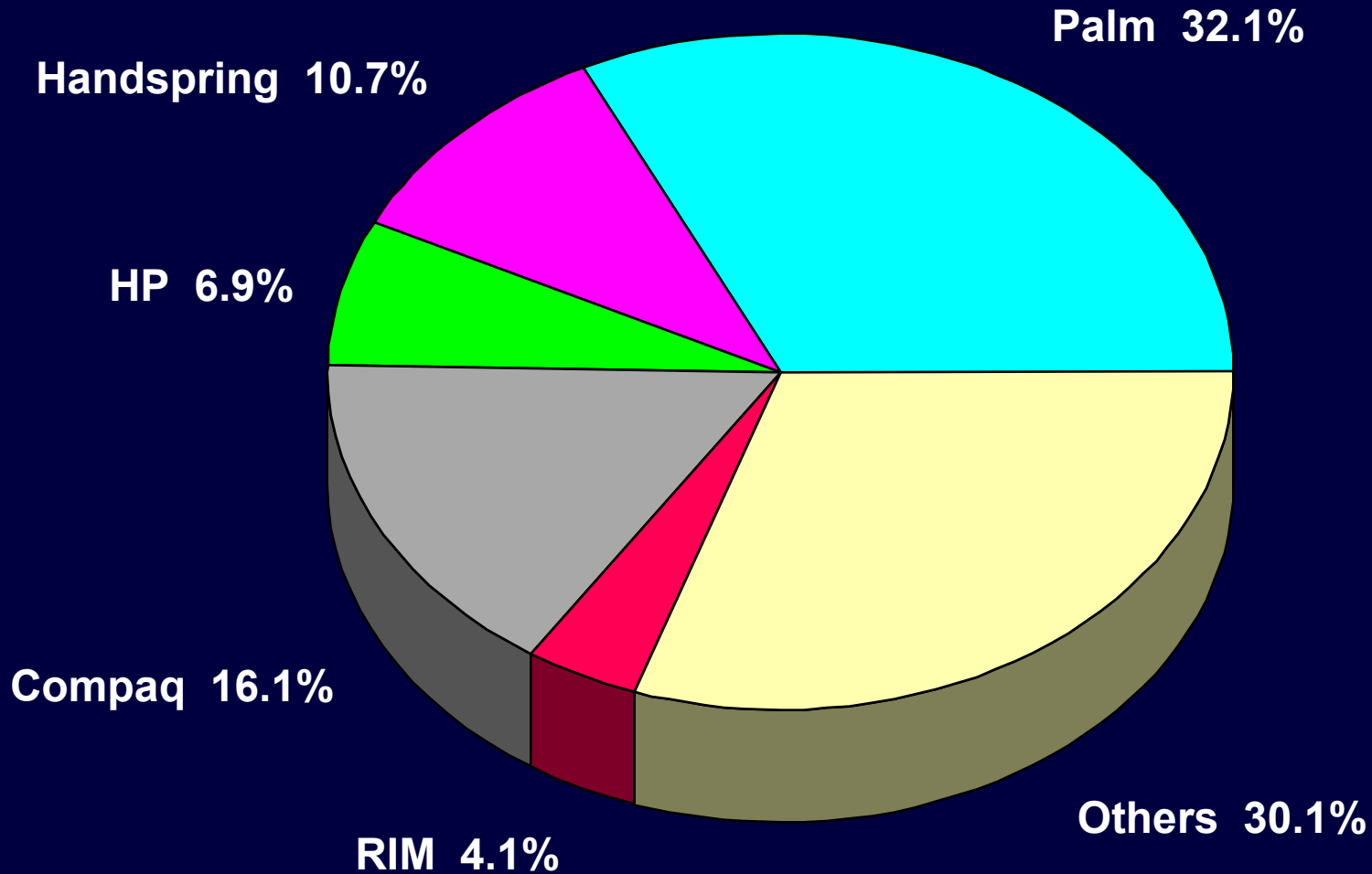
CY

FY ends May

PALM

World Handheld Market Share

Top PDA Brands by Units Sold - 2Q'01



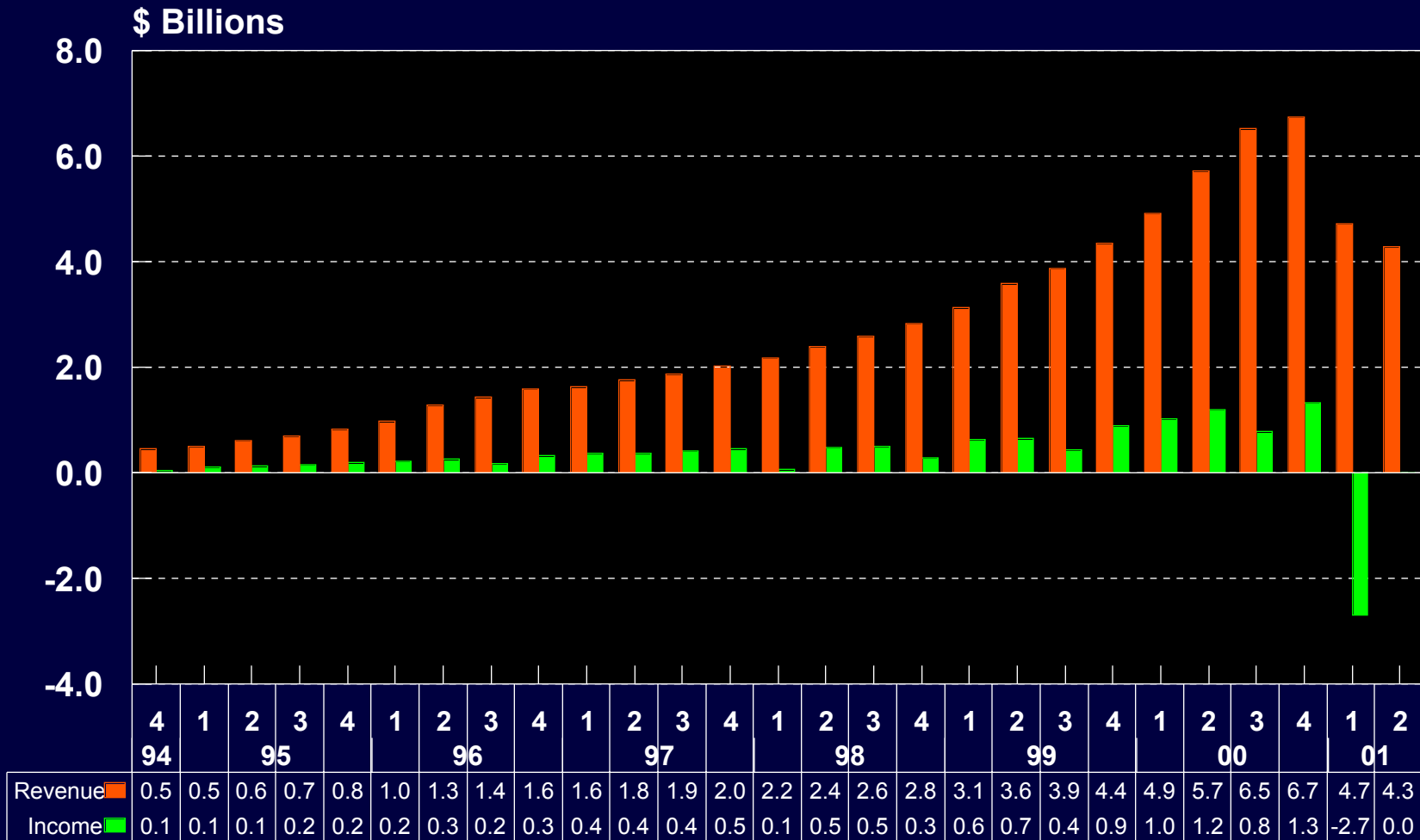
Total 2.8 Million Units

Worldwide Server Factory Revenues Decline 16% in 2Q'01

| | |
|-----------------------|-------------|
| United States | -25% |
| Western Europe | -8% |
| Japan | -20% |
| Asia/Pacific | -3% |
| Canada | -13% |
| Rest of World | -11% |

CISCO SYSTEMS

Revenue & Net Income



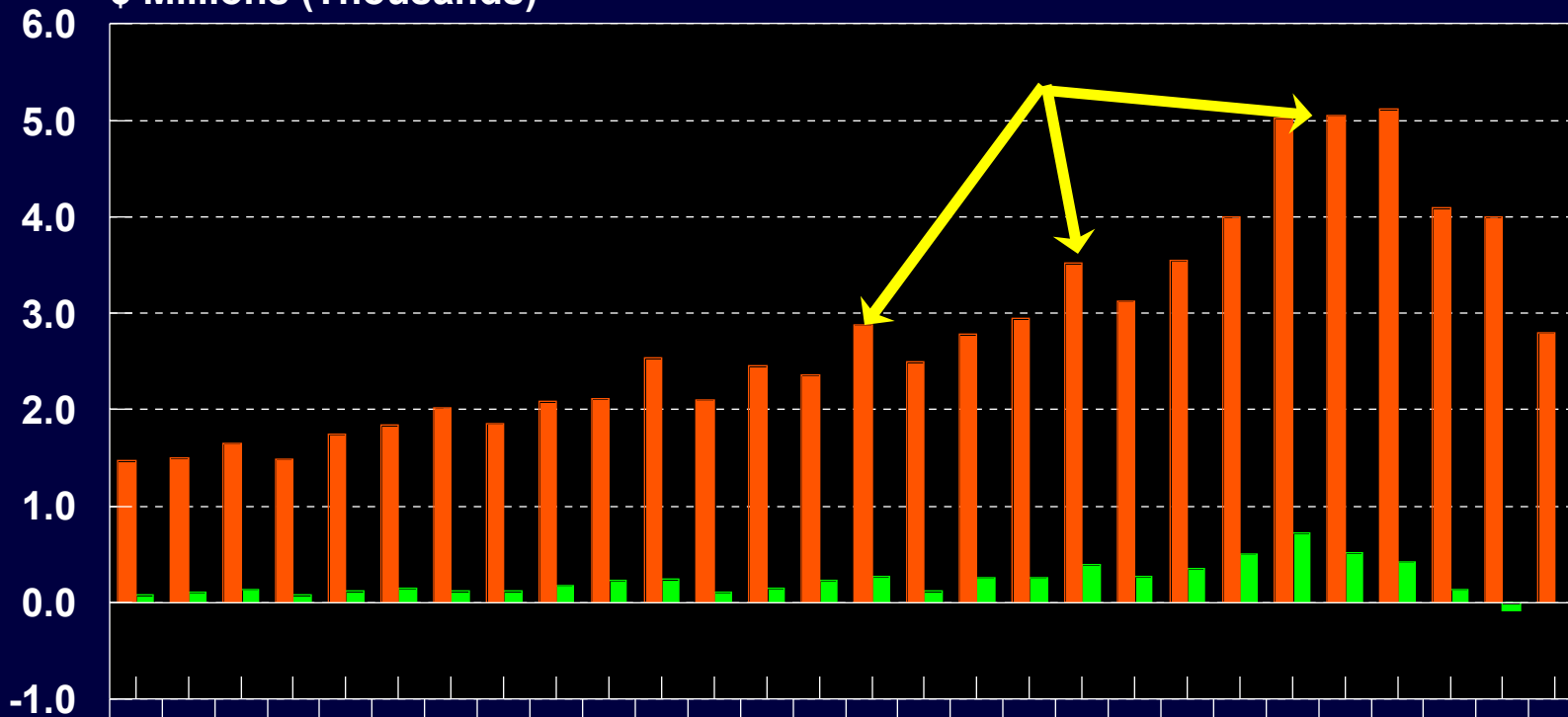
CY

CSCO

Sun Microsystems

Revenue & Net Income

\$ Millions (Thousands)



Prelim

| | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
| | 94 | | 95 | | | 96 | | | 97 | | | | 98 | | | 99 | | | | 00 | | | | 01 | 3 | | | |
| Revenue | 1.5 | 1.5 | 1.6 | 1.5 | 1.8 | 1.8 | 2.0 | 1.9 | 2.1 | 2.1 | 2.5 | 2.1 | 2.5 | 2.4 | 2.9 | 2.5 | 2.8 | 2.9 | 3.5 | 3.1 | 3.6 | 4.0 | 5.0 | 5.0 | 5.1 | 4.1 | 4.0 | 2.8 |
| Income | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.1 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.5 | 0.7 | 0.5 | 0.4 | 0.1 | -0.1 | |

CY

FY ENDS 6/30

SUNW

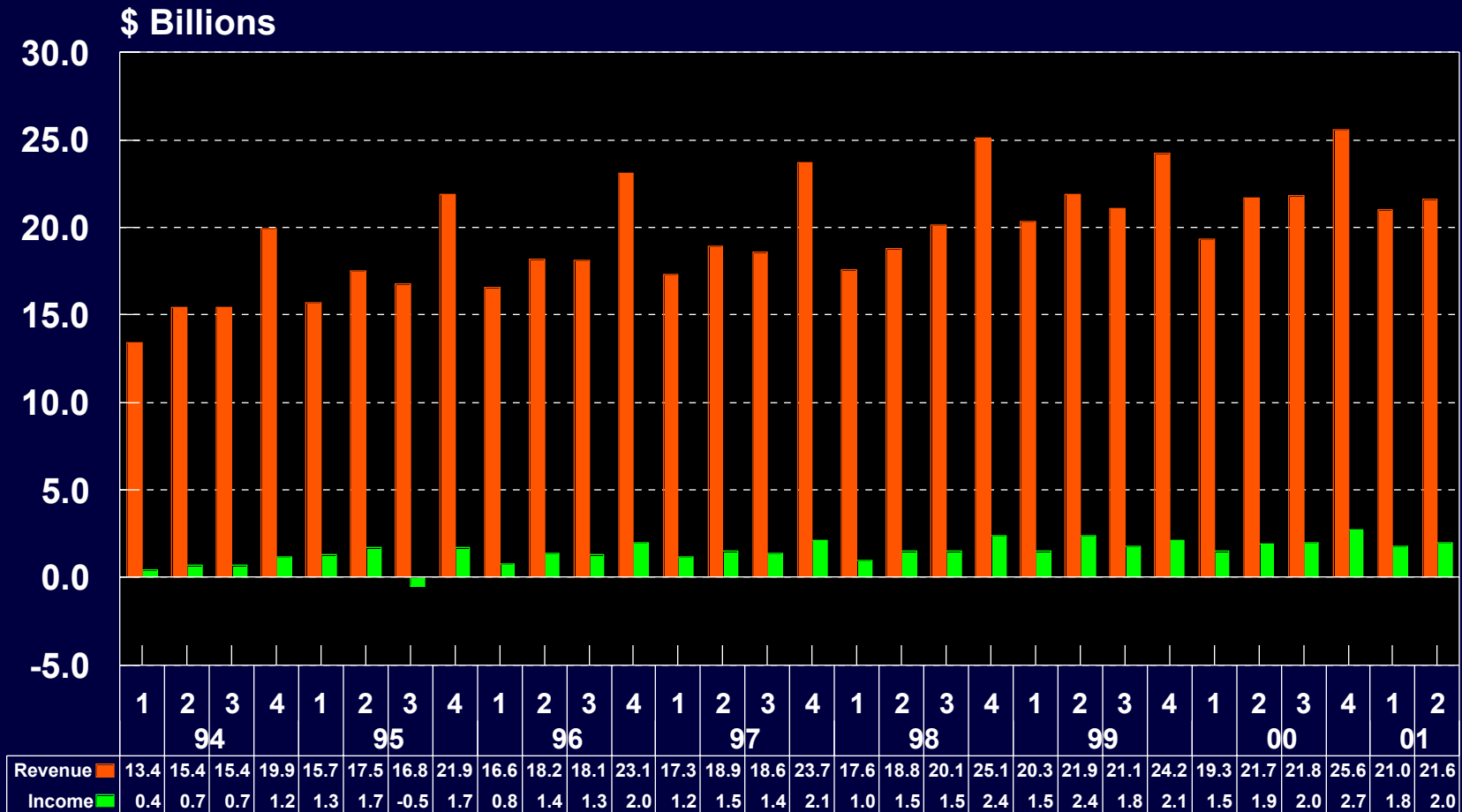
The Internet will be 2000 times larger in five years.

All of the servers in the market today represent less than 4% of the Internet's expected capacity in five years.

John Shoemaker, Exec VP, Sun Microsystems 11/2000

IBM

Revenue & Net Income



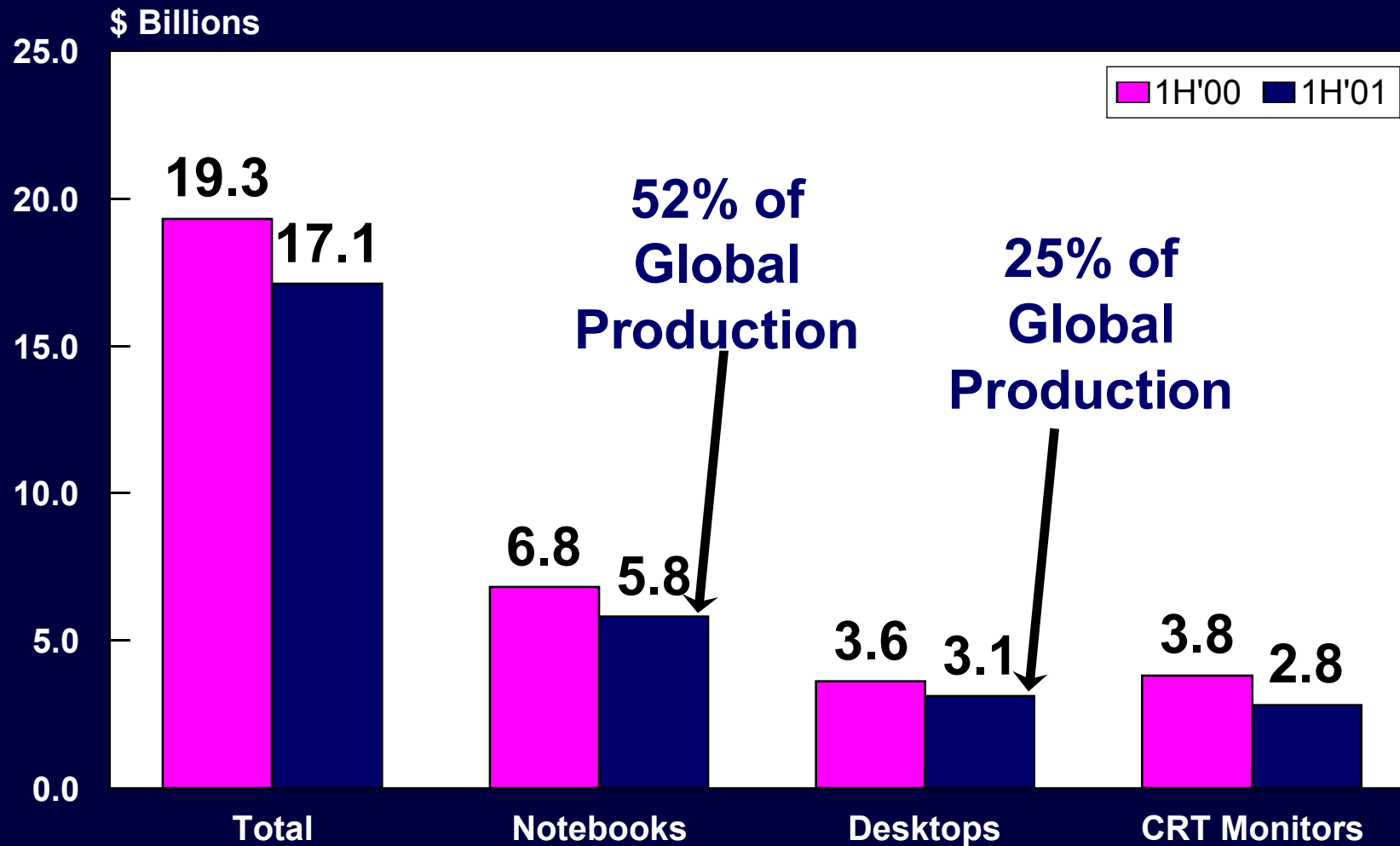
CY

FY=CY

IBM

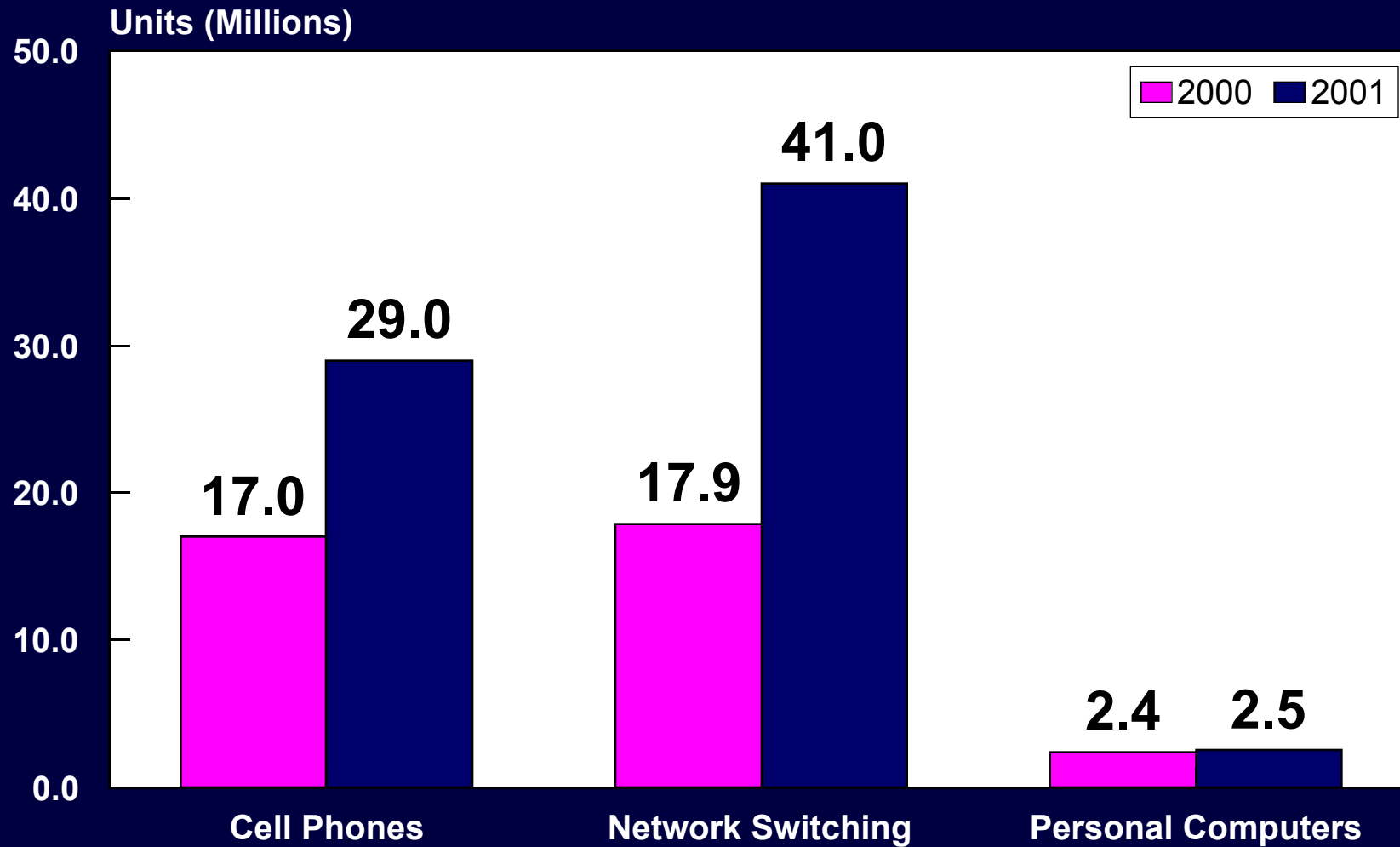
Taiwan Computer Production

1H'001 vs 1H'01



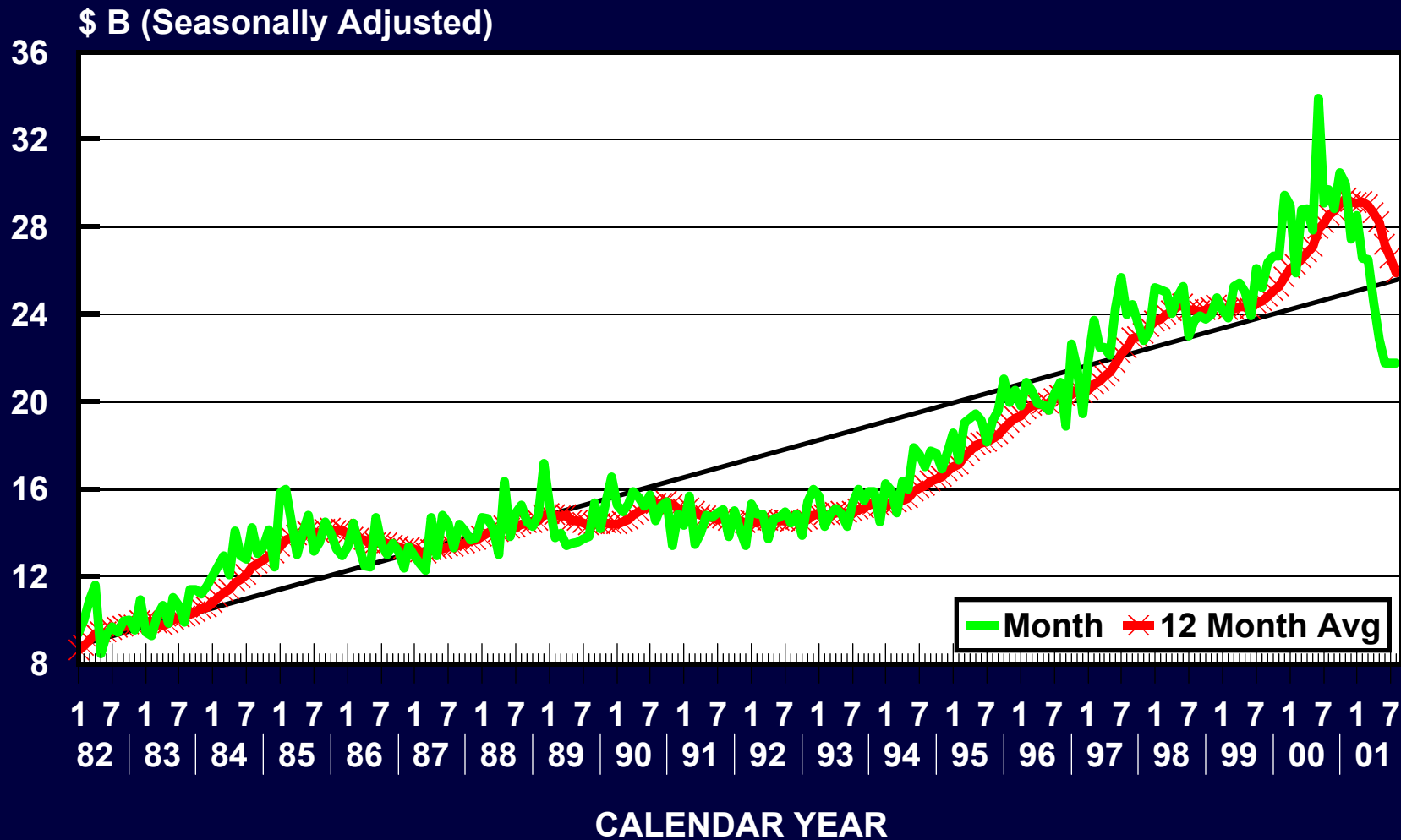
China Electronics Production

First 5 Months 2000 vs 2001



Electronic Equipment Summary

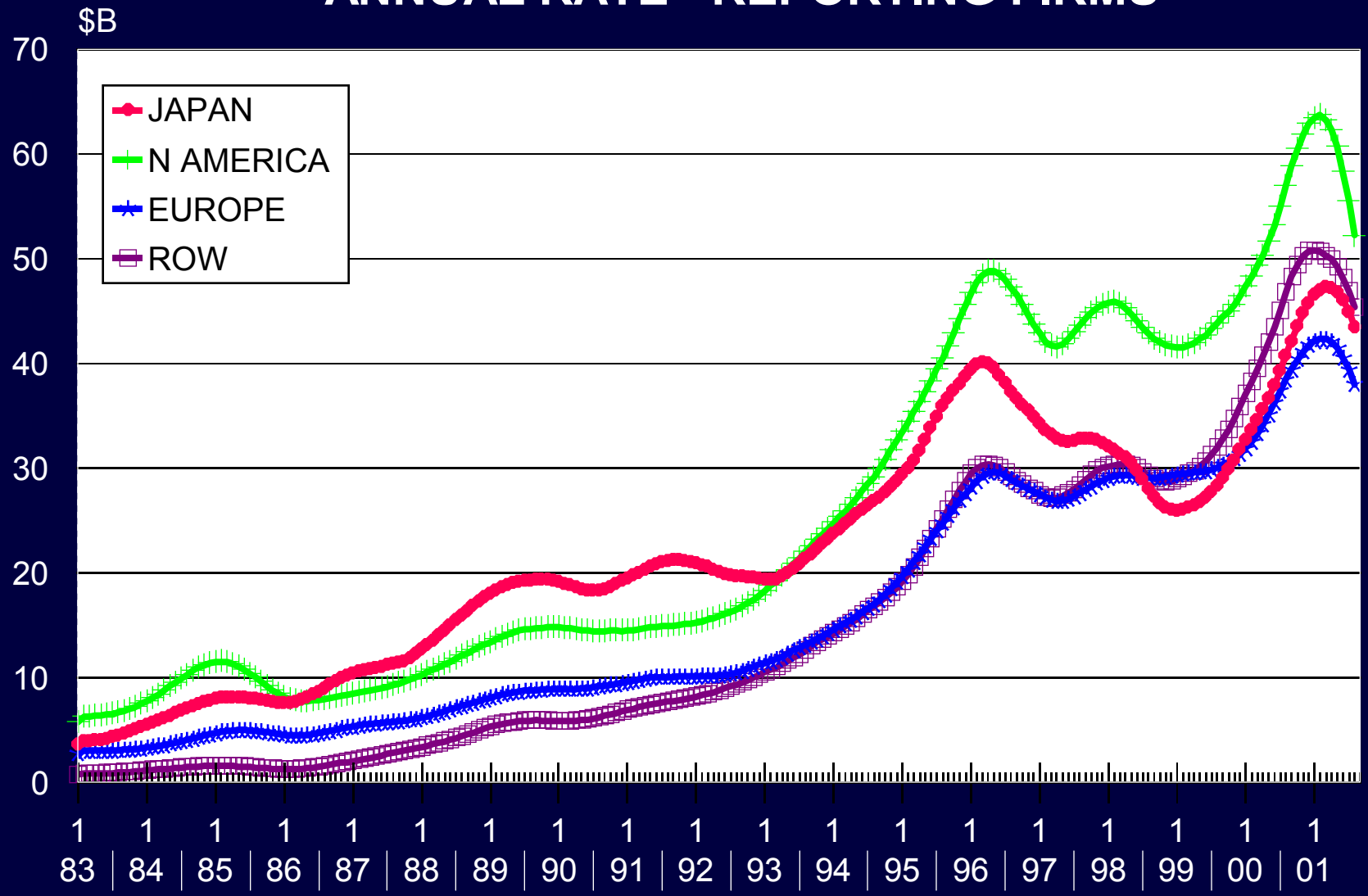
TOTAL ELECTRONIC EQUIPMENT BOOKINGS



Semiconductors

TOTAL SEMICONDUCTOR \$ SHIPMENTS TO AREA

ANNUAL RATE - REPORTING FIRMS



SIA website: www.semichips.org/

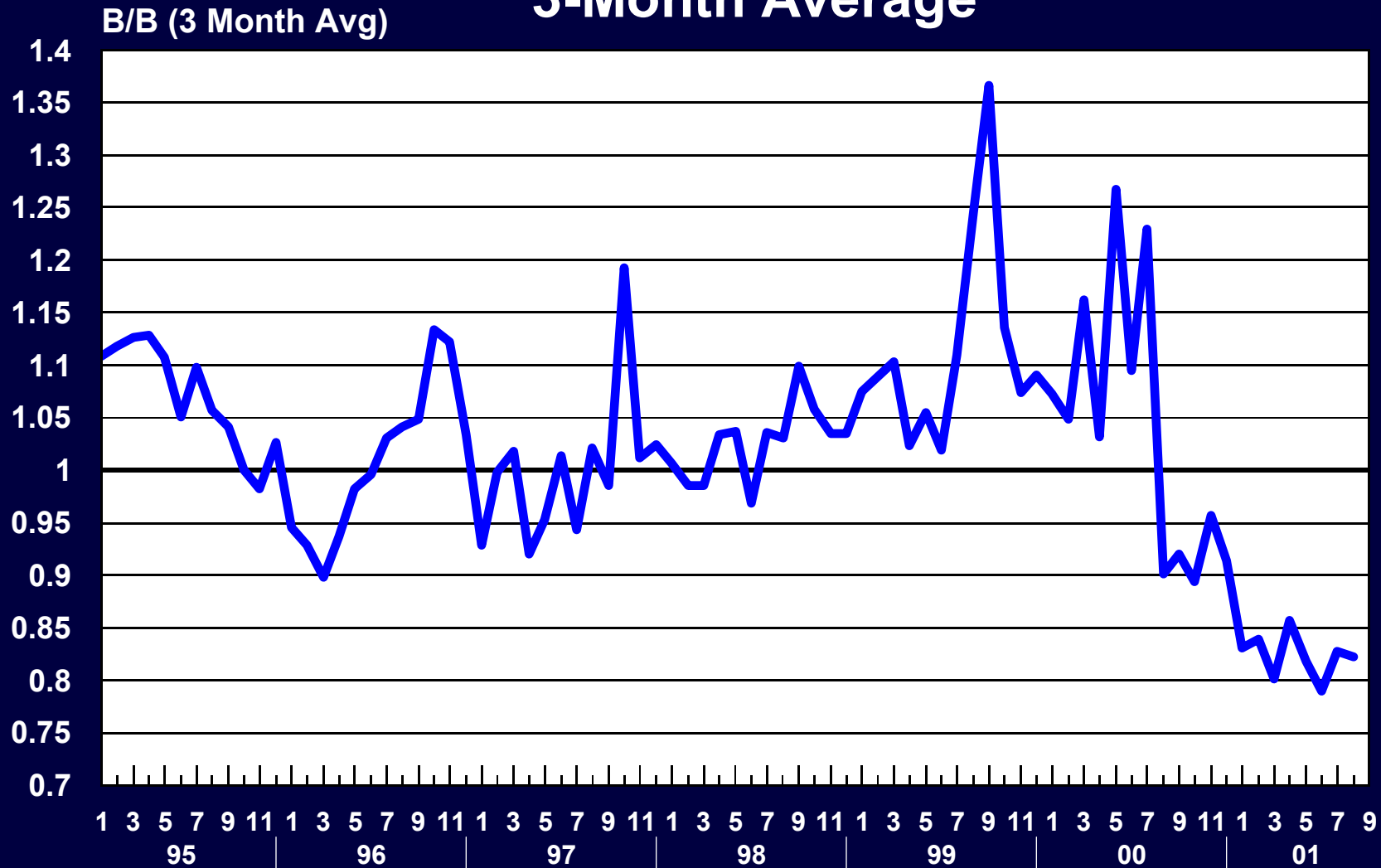
MONTHLY SEMICONDUCTOR SHIPMENTS

\$ Billions

| | <u>8/00</u> | <u>8/01</u> | <u>% CH</u> |
|--------------|-------------|-------------|-------------|
| Americas | 5.84 | 2.61 | -55.3 % |
| Europe | 3.55 | 2.13 | -40.0 % |
| Japan | 4.05 | 2.58 | -36.3 % |
| Asia Pacific | 4.64 | 3.17 | - 31.7 % |
| Total | 18.08 | 10.49 | -42.0 % |

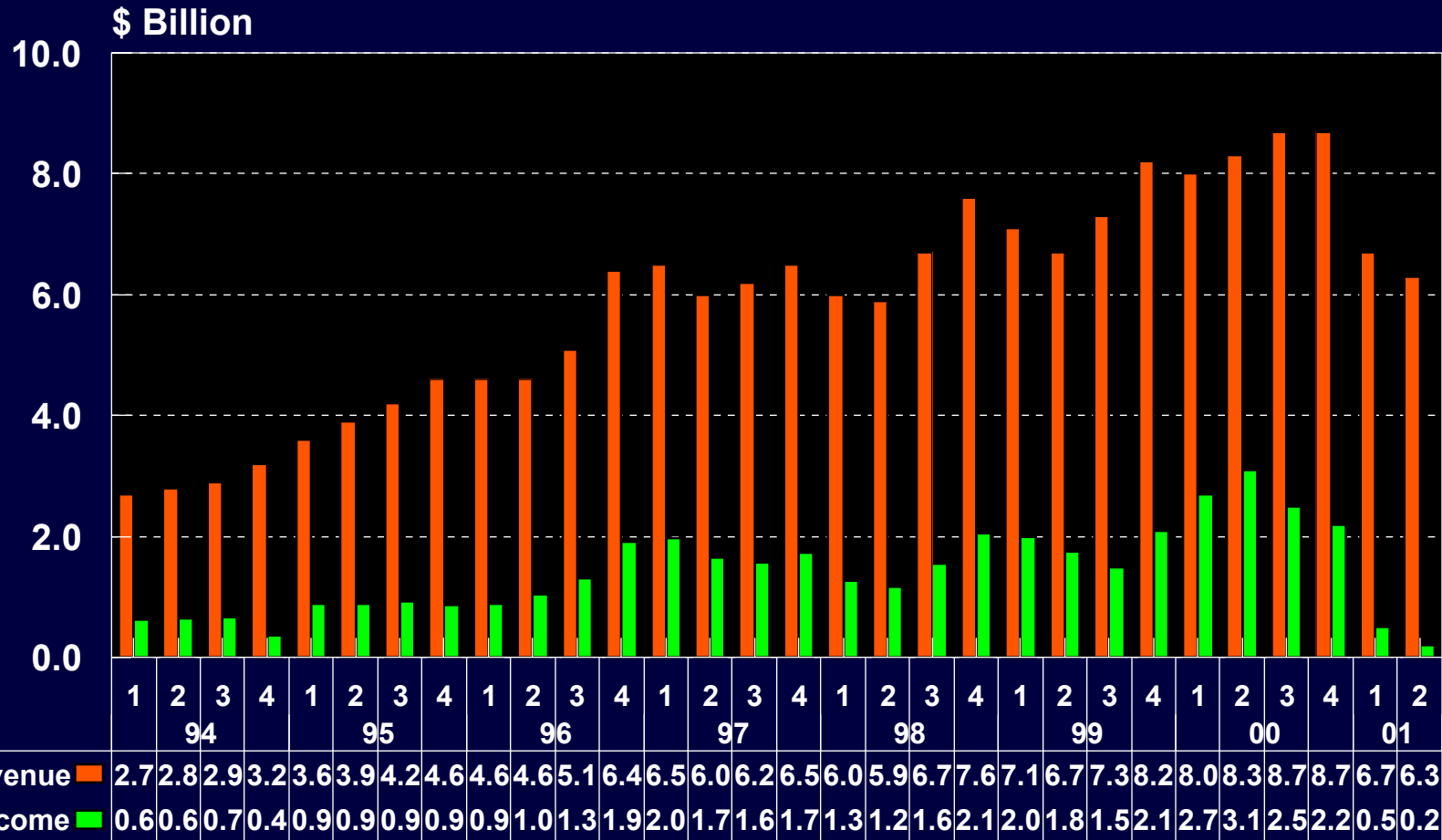
U.S. "Semiconductor & Related Devices" Book/Bill Ratio

3-Month Average



Intel

Revenue & Net Income



CY

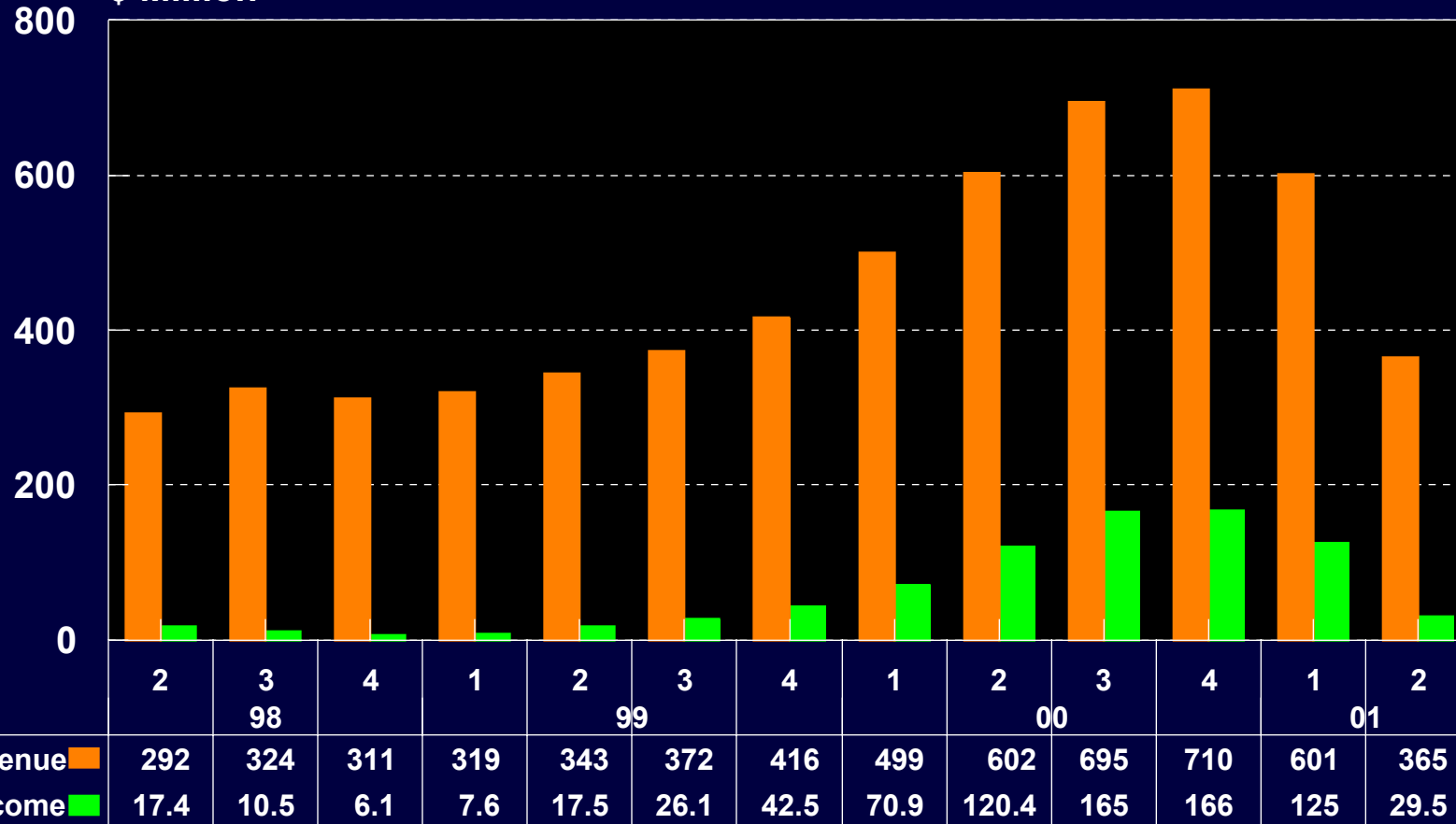
INTC

FY=CY

AVX Corp

Revenue & Net Income

\$ Million



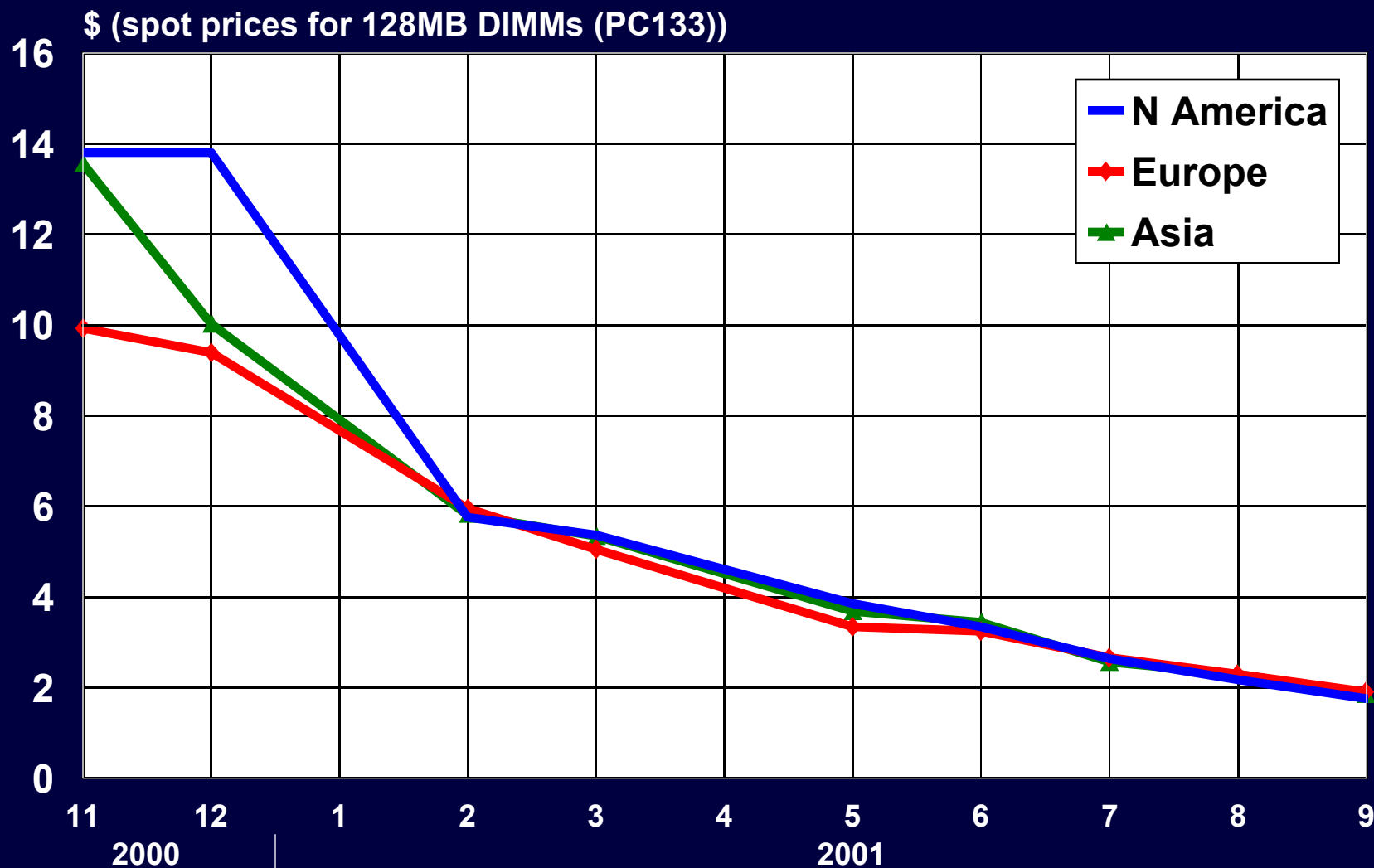
CY

AVX

FY = CY

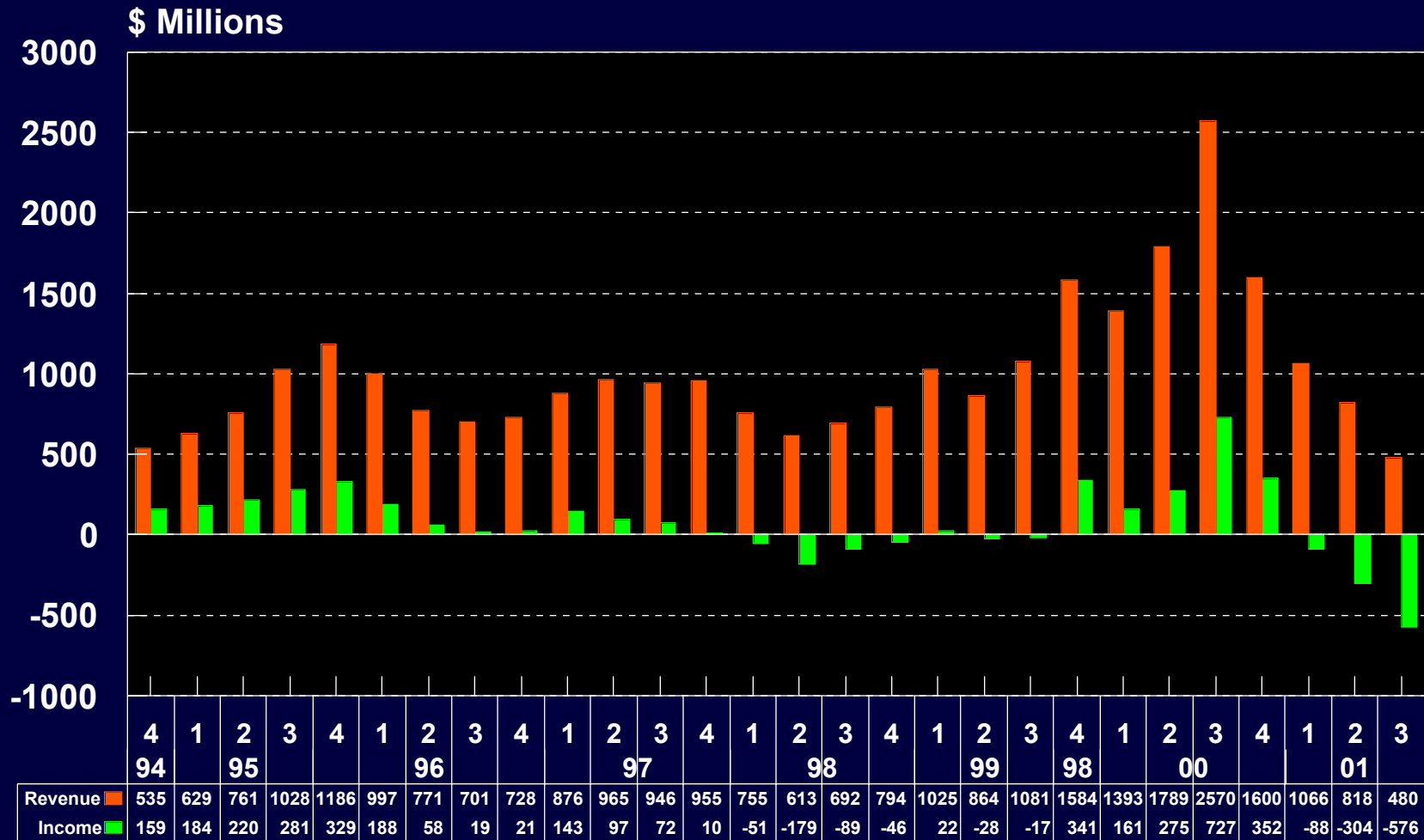
DRAM Prices

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



MICRON TECHNOLOGY

Revenue & Net Income



CY

MU

**Semiconductor
Fab
Materials &
Equipment**

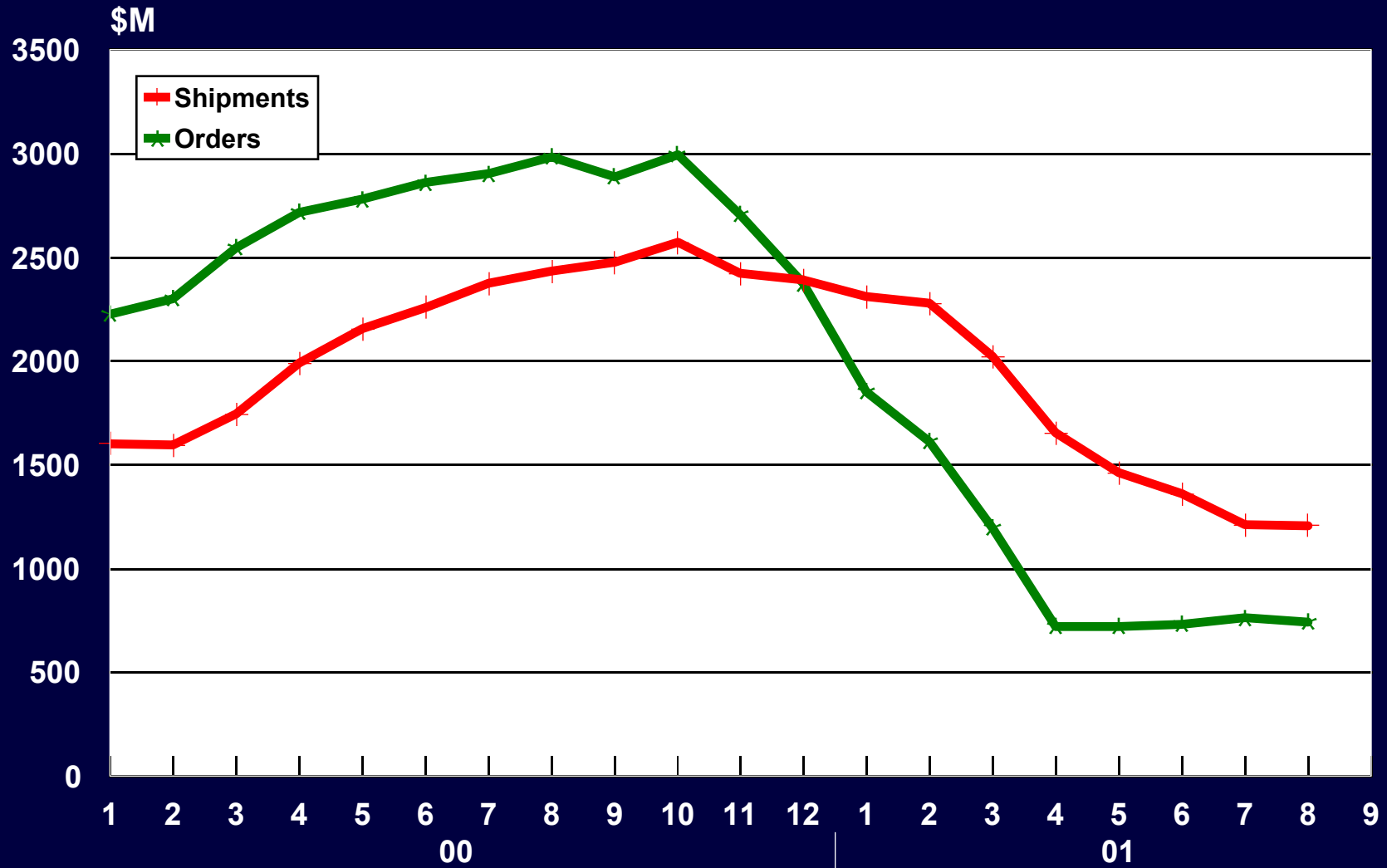
Top 10 Semiconductor Equipment Suppliers

2000 Sales in \$Billion

| | | <u>2000/1999</u> <u>% Growth</u> |
|---------------------|--------|-------------------------------------|
| Applied Materials | 10.460 | 89% |
| Tokyo Electron Ltd. | 5.142 | 89% |
| Nikon | 2.432 | 70% |
| Teradyne | 2.044 | 69% |
| ASM Lithography | 2.016 | 58% |
| KLA-Tencor | 2.003 | 91% |
| Advantest | 1.865 | 95% |
| Lam Research | 1.627 | 82% |
| Canon | 1.418 | 90% |
| Dainippon Screen | 1.390 | 115% |

Source: VLSI Research Inc. 2/2001

N American Semiconductor Equipment Industry Shipments & Orders

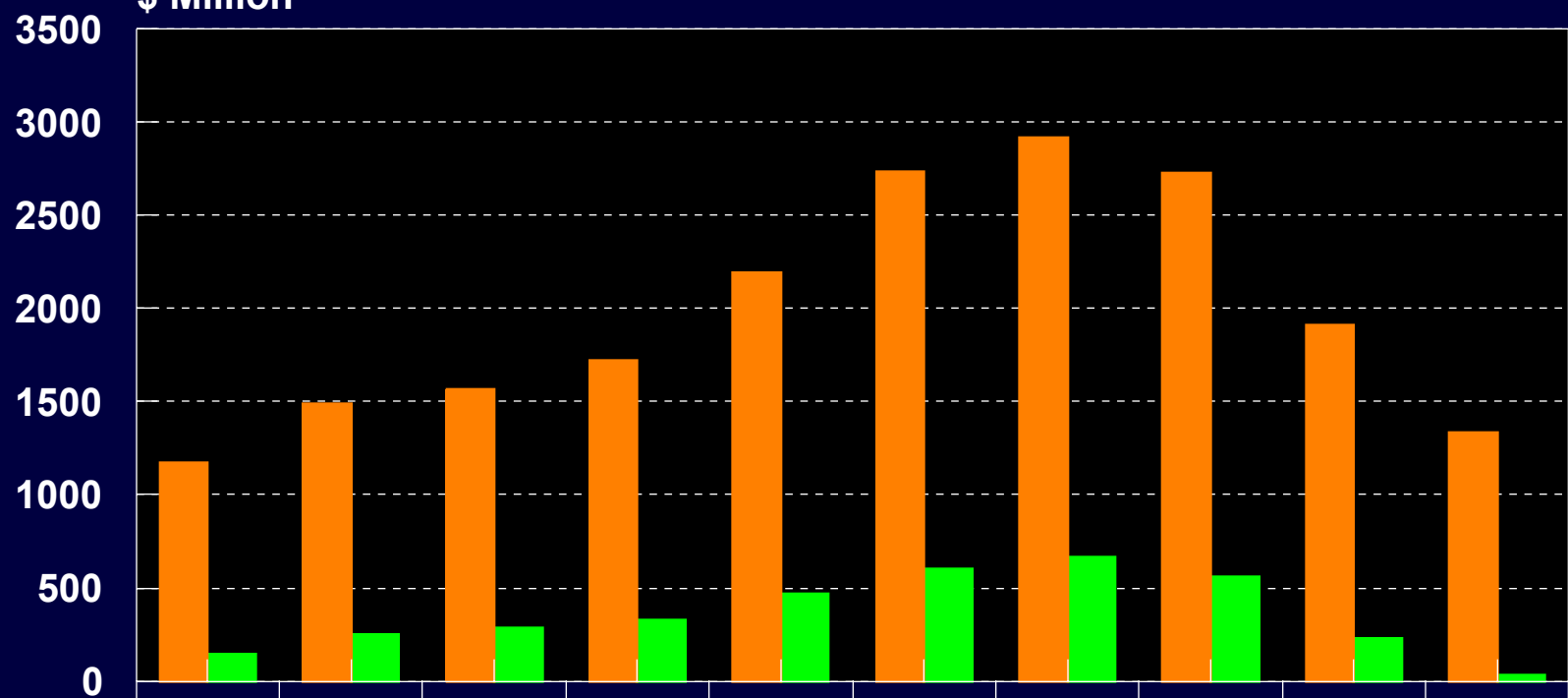


SOURCE Semiconductor Equipment and Materials International
<http://www.semi.org>

Applied Materials

Revenue & Net Income

\$ Million



| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |
|---------|------|------|------|------|------|------|------|------|------|------|
| Revenue | 1171 | 1491 | 1566 | 1722 | 2190 | 2732 | 2920 | 2731 | 1909 | 1334 |
| Income | 142 | 248 | 287 | 327 | 469 | 604 | 664 | 558 | 227 | 29 |

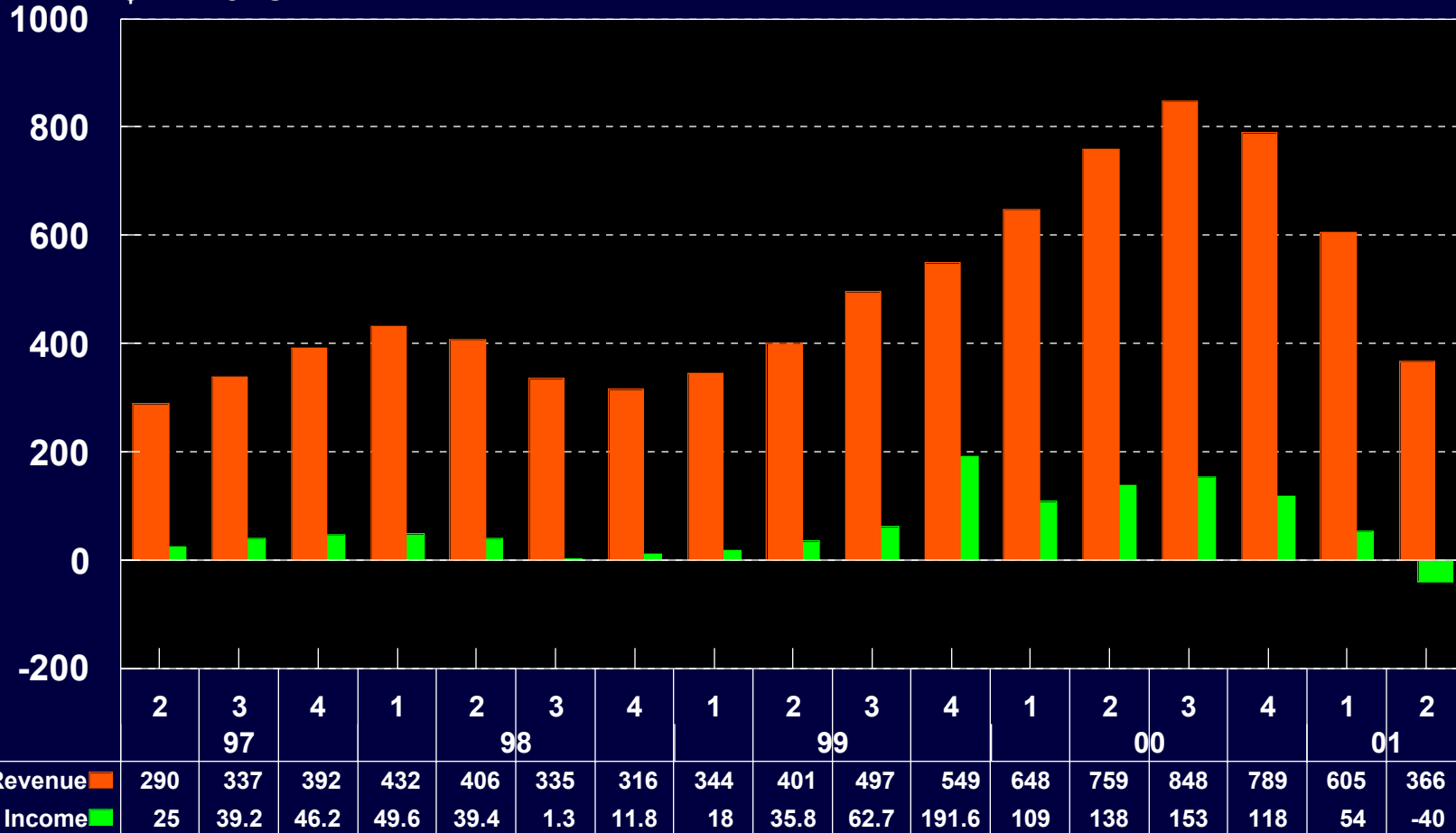
CY

AMAT

Teradyne

Revenue & Net Income

\$ Millions



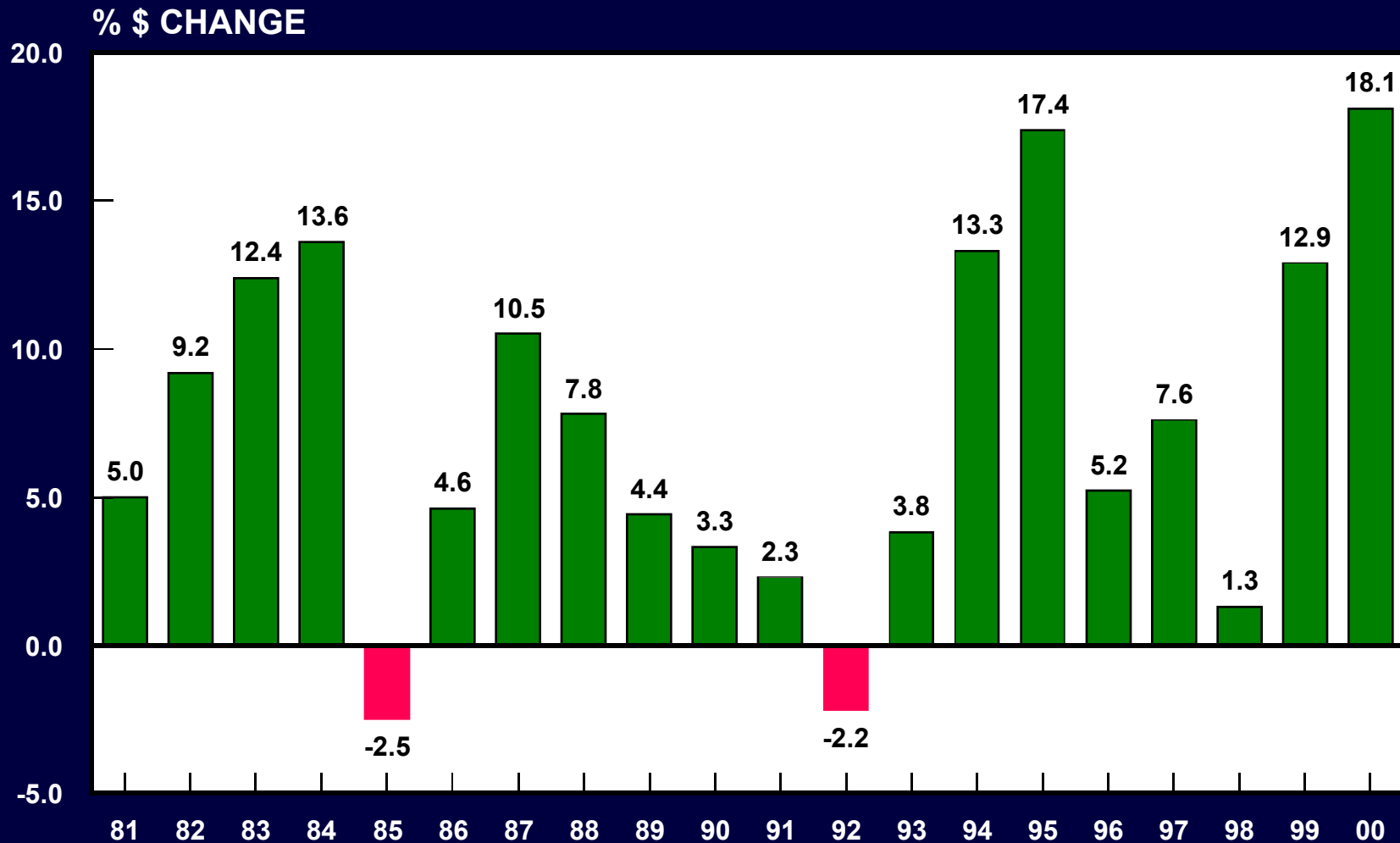
CY

TER

Connectors

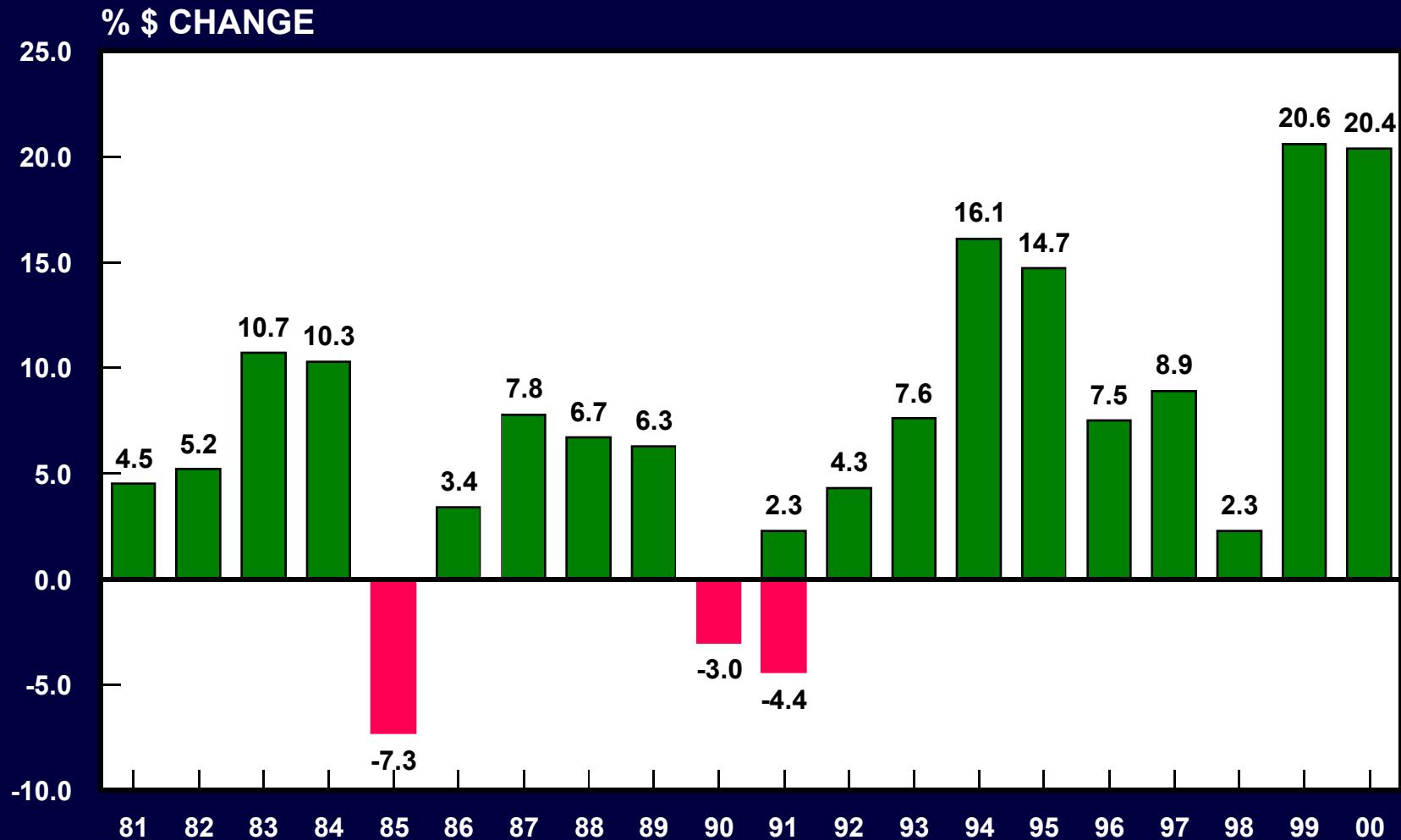
WORLD CONNECTOR MARKET

YEAR-TO-YEAR % CHANGE



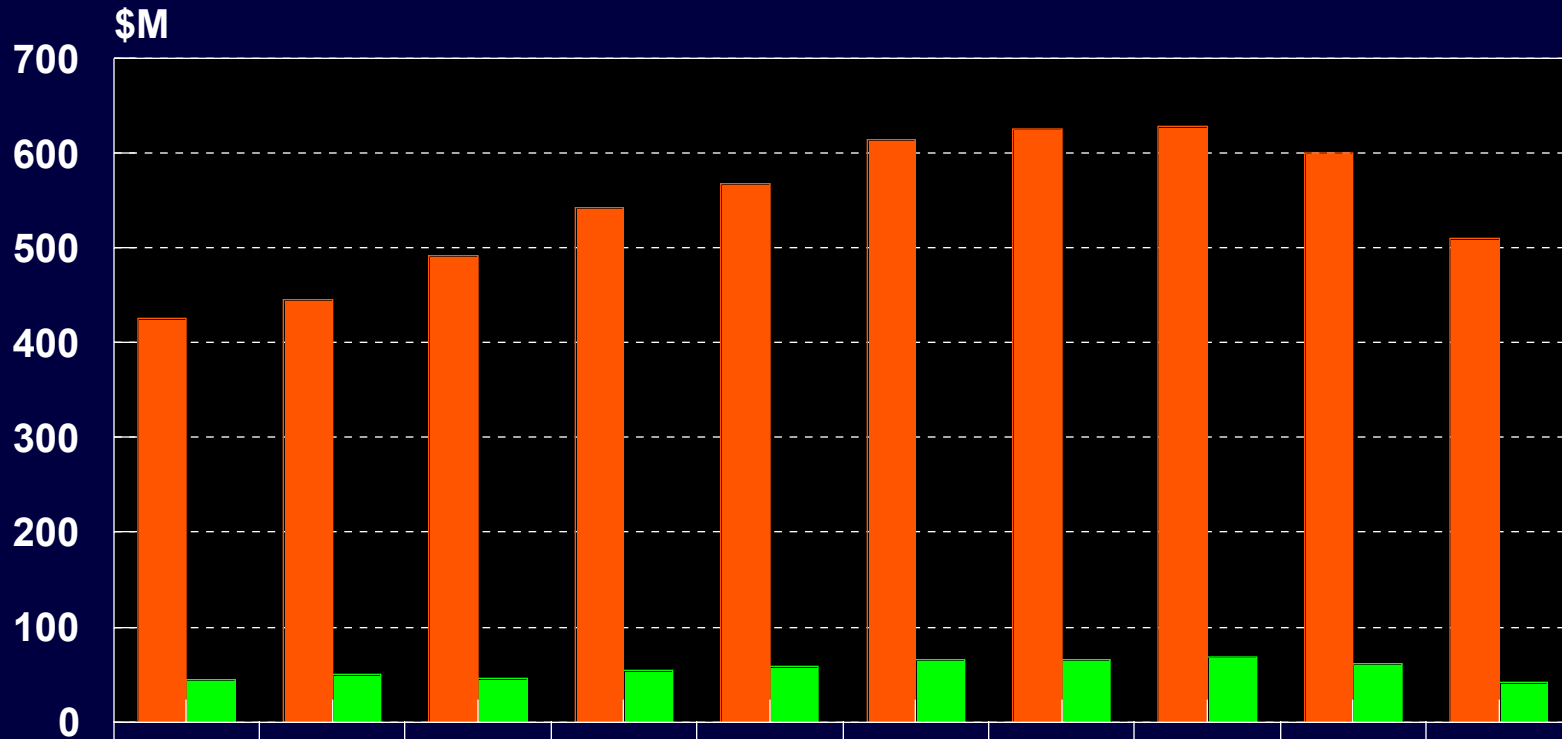
N AMERICAN CONNECTOR MARKET

YEAR-TO-YEAR % CHANGE



Molex

Revenue & Net Income



| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| | 99 | | | | 00 | | | | 01 | |
| Revenue | 426 | 446 | 492 | 543 | 568 | 615 | 626 | 629 | 600 | 510.5 |
| Income | 45 | 50 | 46 | 54 | 58 | 65 | 65 | 68 | 61 | 41.1 |

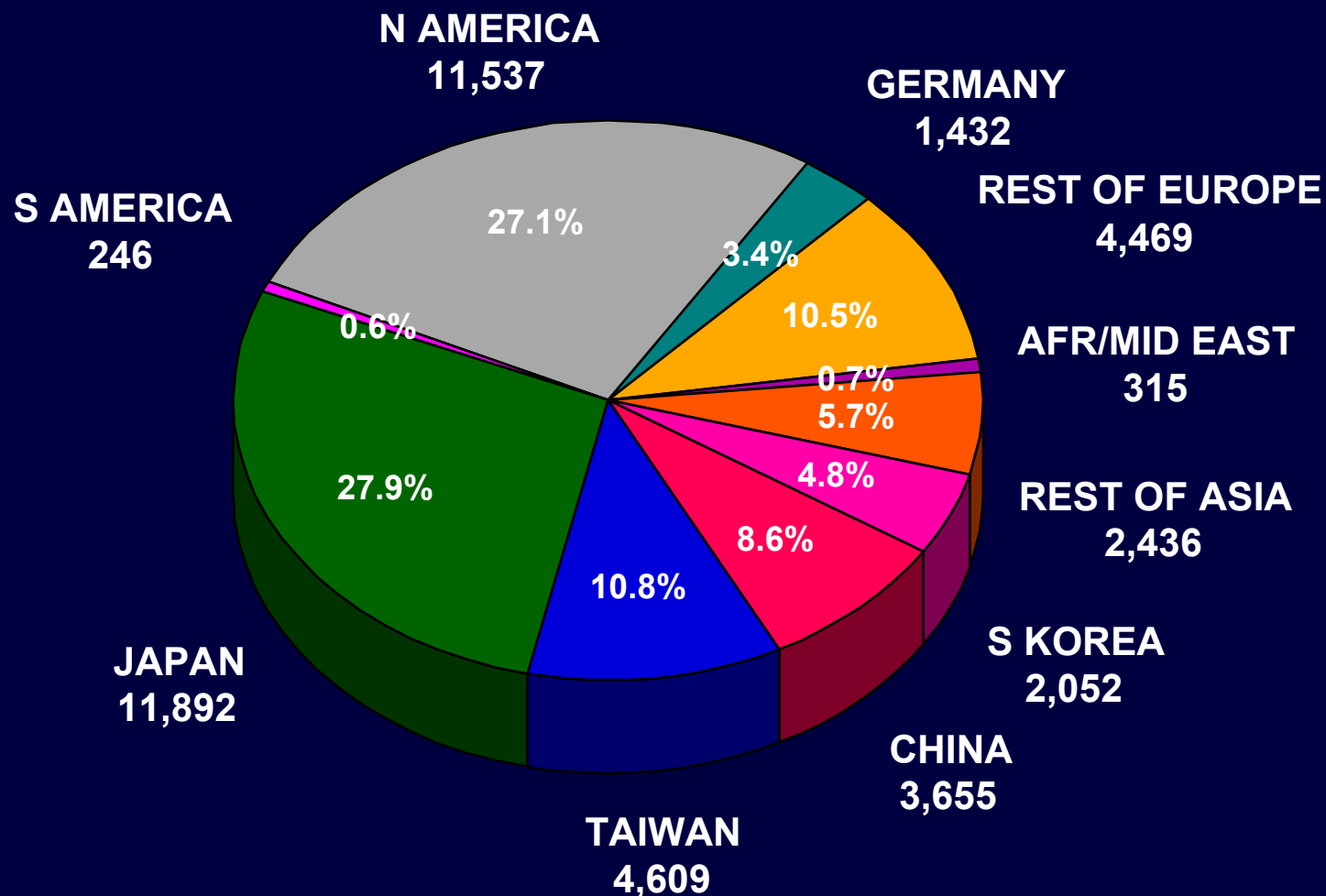
CY

MOLX

Printed Circuits

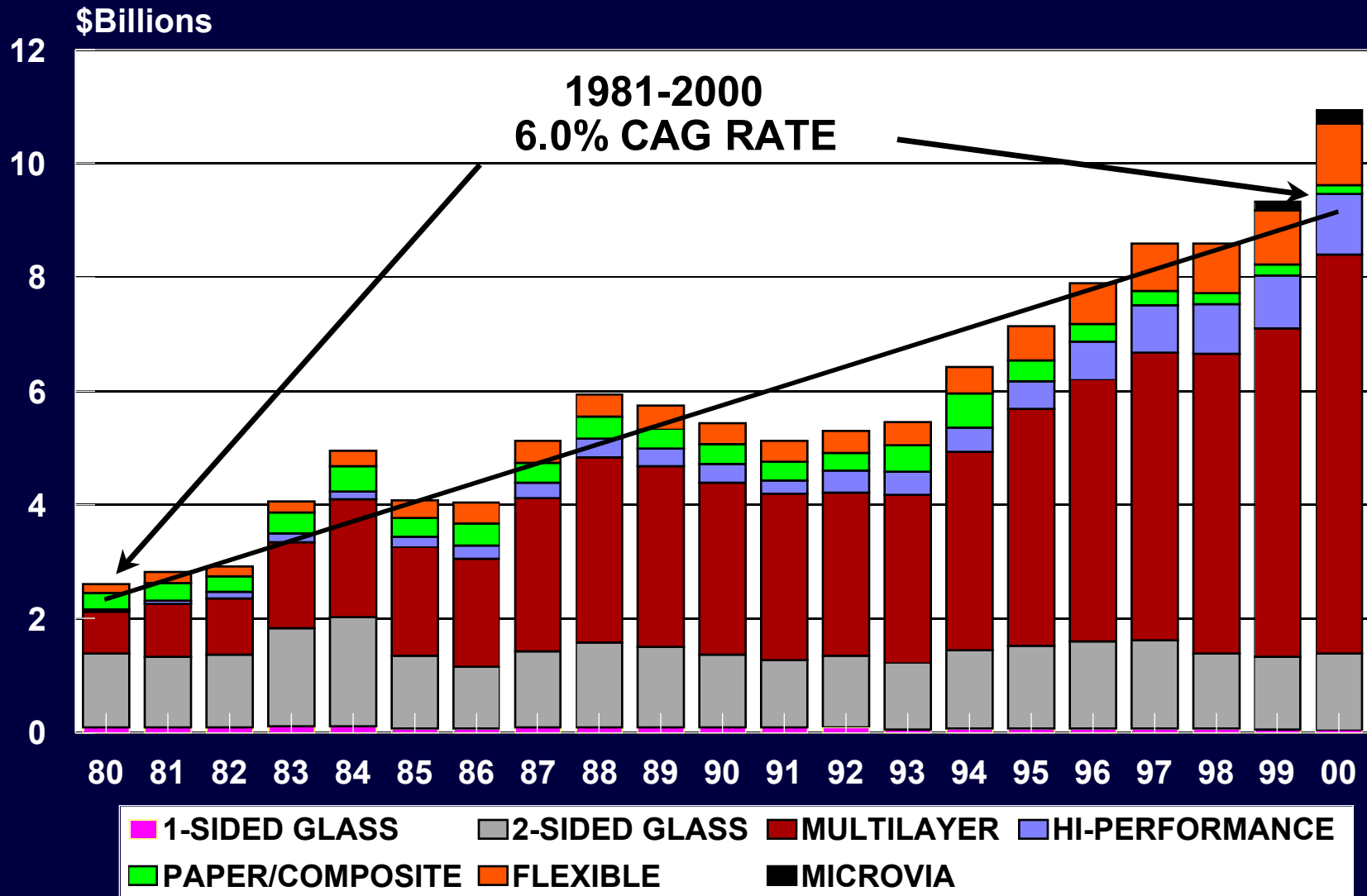
2000 WORLD RIGID & FLEX PCB PRODUCTION

BY GEOGRAPHICAL AREA (\$M)



Total: \$42.6 Billion

N. AMERICAN PCB SHIPMENTS



PCB ASSEMBLY

Top World Contract Electronic Manufacturers 1999 vs 2000

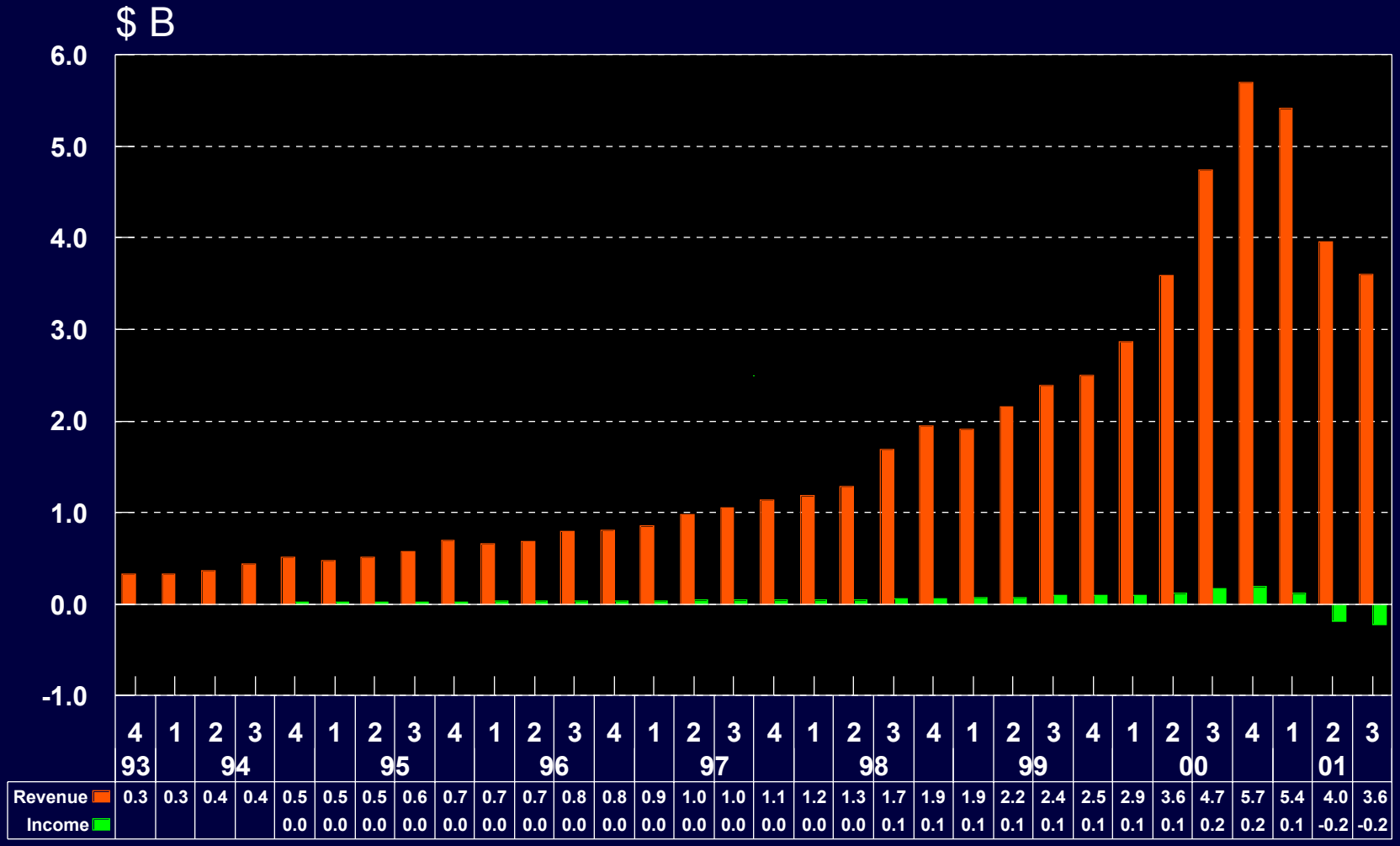
| | | | <u>1999</u> | <u>2000</u> | <u>Grow %</u> |
|-----------------------------|-------|-----------|---------------|---------------|---------------|
| Solectron | SLR | USA | 8,948 | 16,884 | 89 |
| Flextronics | FLEX | Singapore | 3,089 | 10,369 | 236 |
| Celestica | CLS | Canada | 5,298 | 9,752 | 84 |
| SCI Systems | SCI | USA | 7,175 | 9,146 | 28 |
| Sanmina | SANM | USA | 1,400 | 4,218 | 201 |
| Jabil Circuit | JBL | USA | 2,242 | 3,998 | 78 |
| Elcoteq Network | Y.ELC | Finland | 803 | 2,050 | 155 |
| Manufacturers' Services Ltd | MSV | USA | 921 | 1,757 | 91 |
| C-MAC Industries | T:CMS | Canada | 791 | 1,715 | 117 |
| Benchmark Electronics | BHE | USA | 879 | 1,706 | 94 |
| Total Top 10 | | | 31,546 | 61,595 | 95% |

Sources: Company Data

\$US Millions converted at fluctuating exchange

SOLECTRON

Revenue & Net Income

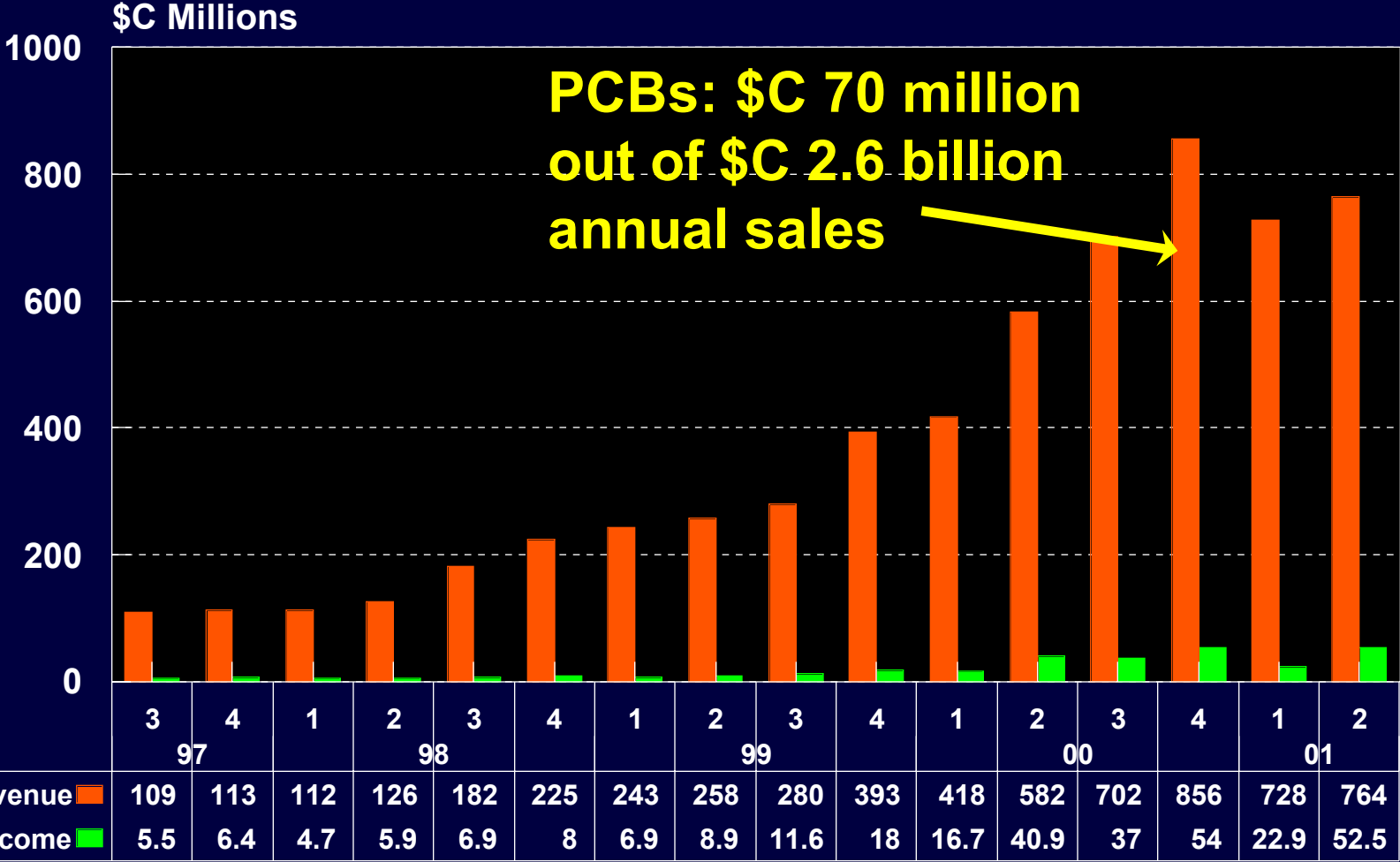


FY ends in August

SLR

C-MAC INDUSTRIES

Revenue & Net Income



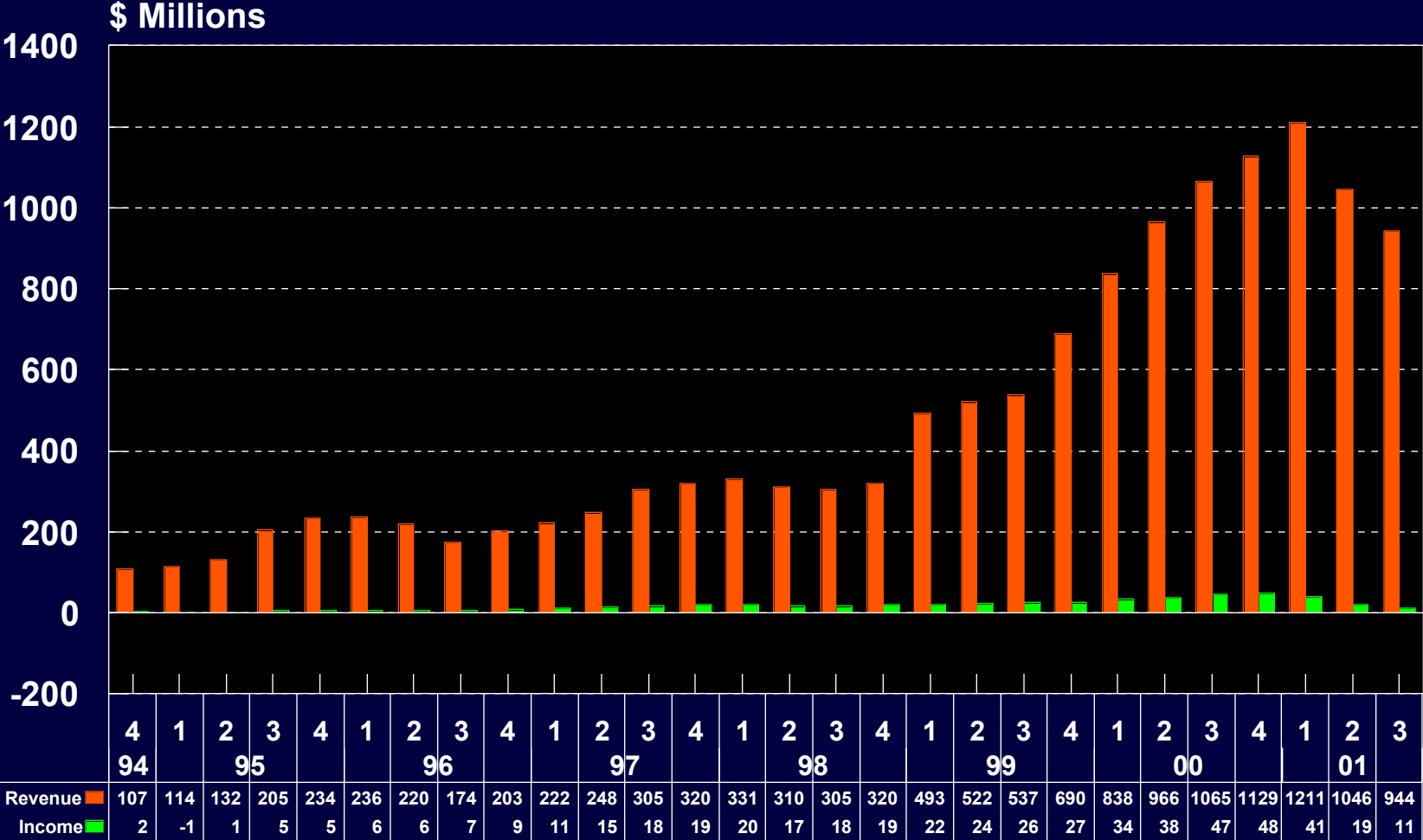
FY=CY

CY

T:CMS

JABIL CIRCUIT INC

Revenue & Net Income



CY

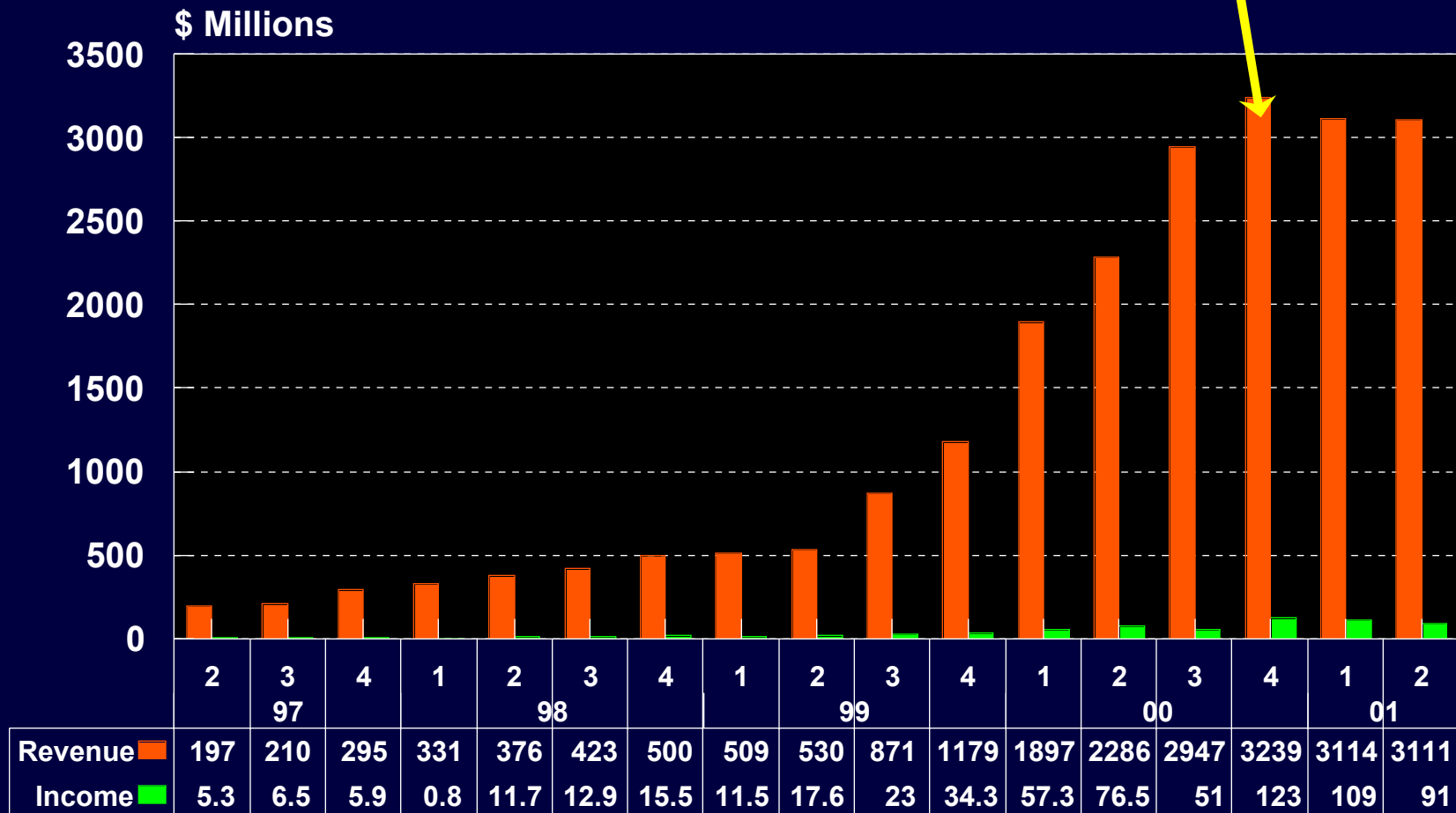
FY ends August

JBL

Flextronics

Revenue & Net Income

PCBs: \$750 million out of \$12 billion annualized sales



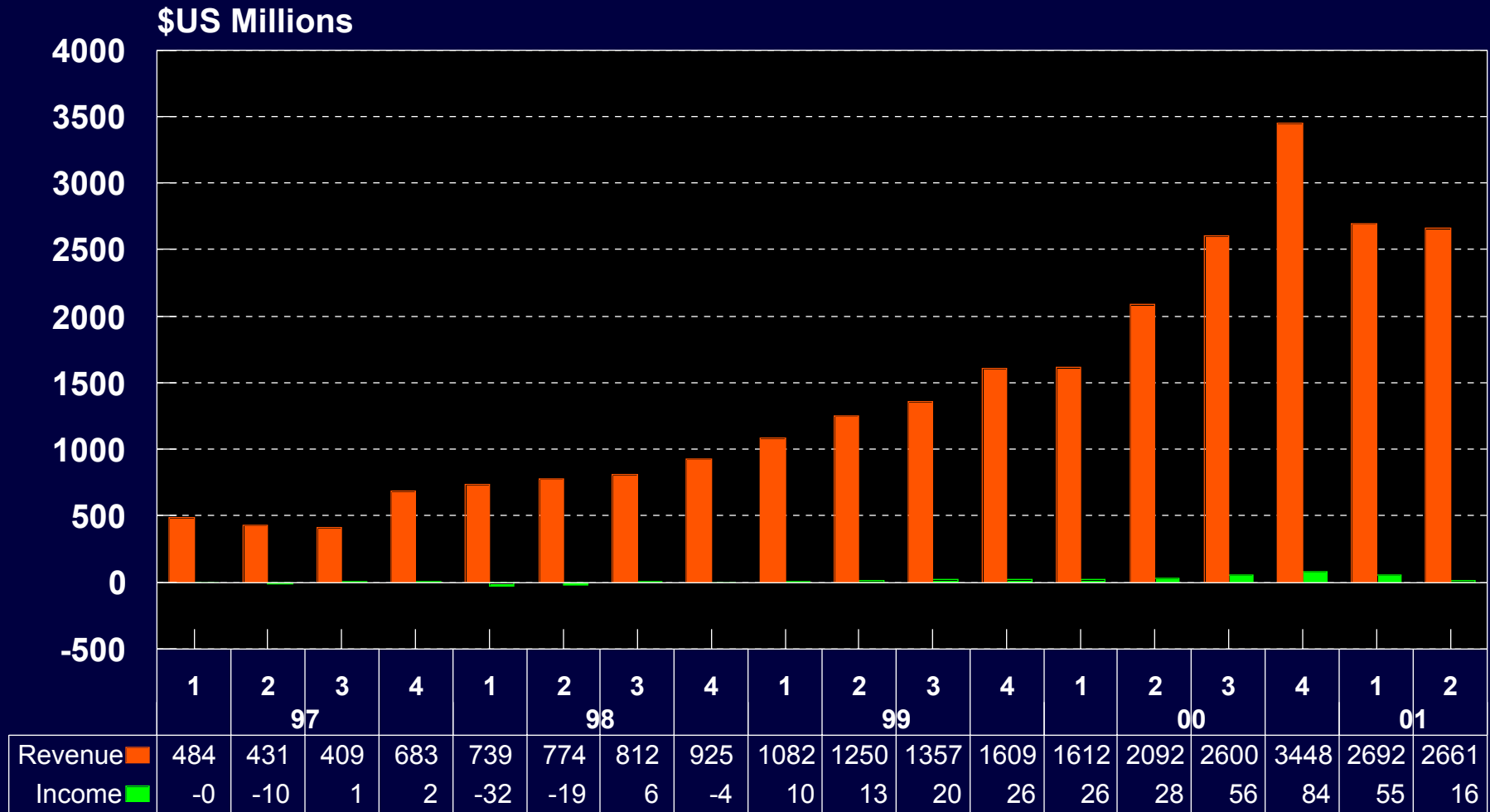
FY ends 3/31

CY

FLEX

Celestica

Revenue & Net Income



FY=CY

CY

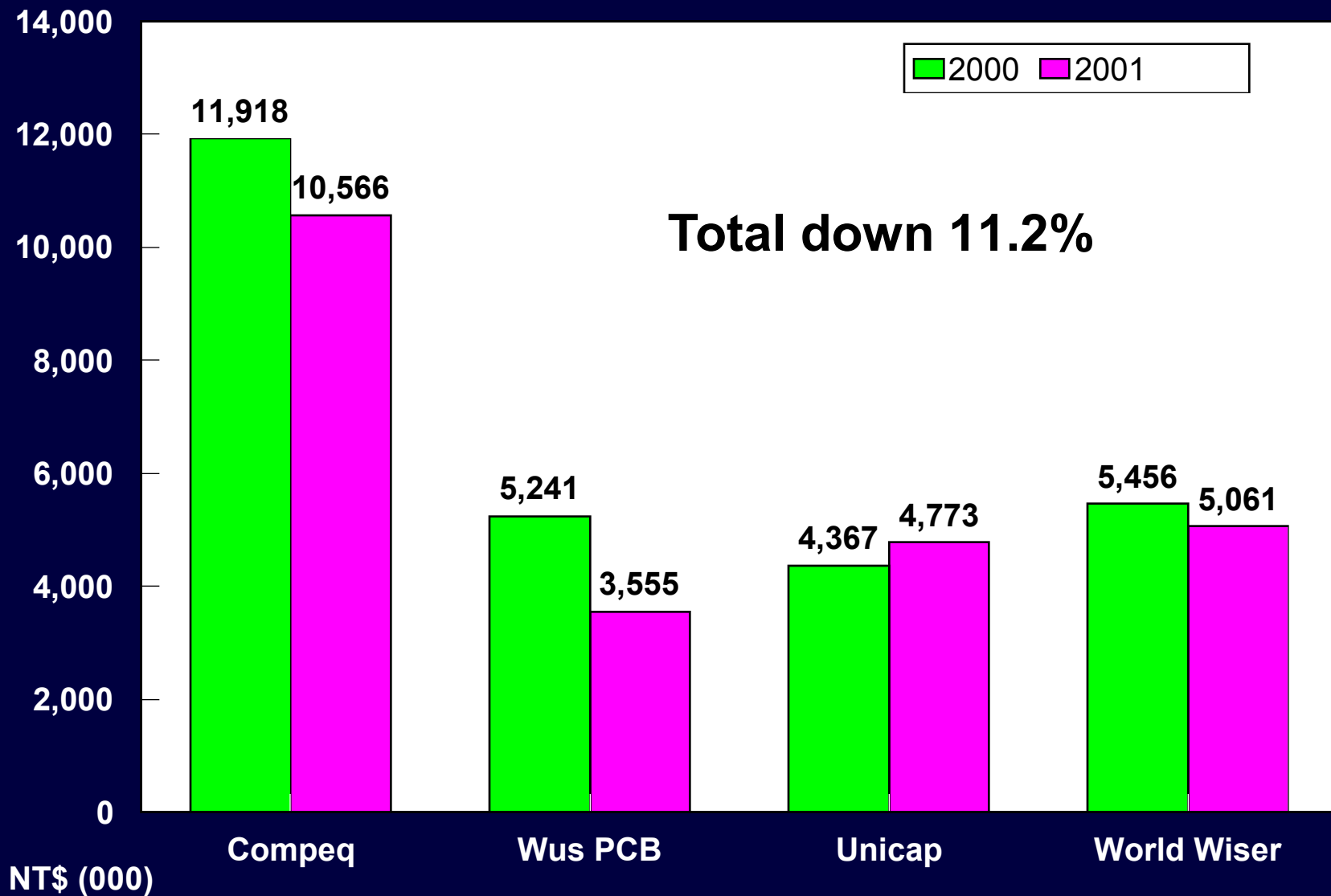
CLS

PCB Fabrication

(more info)

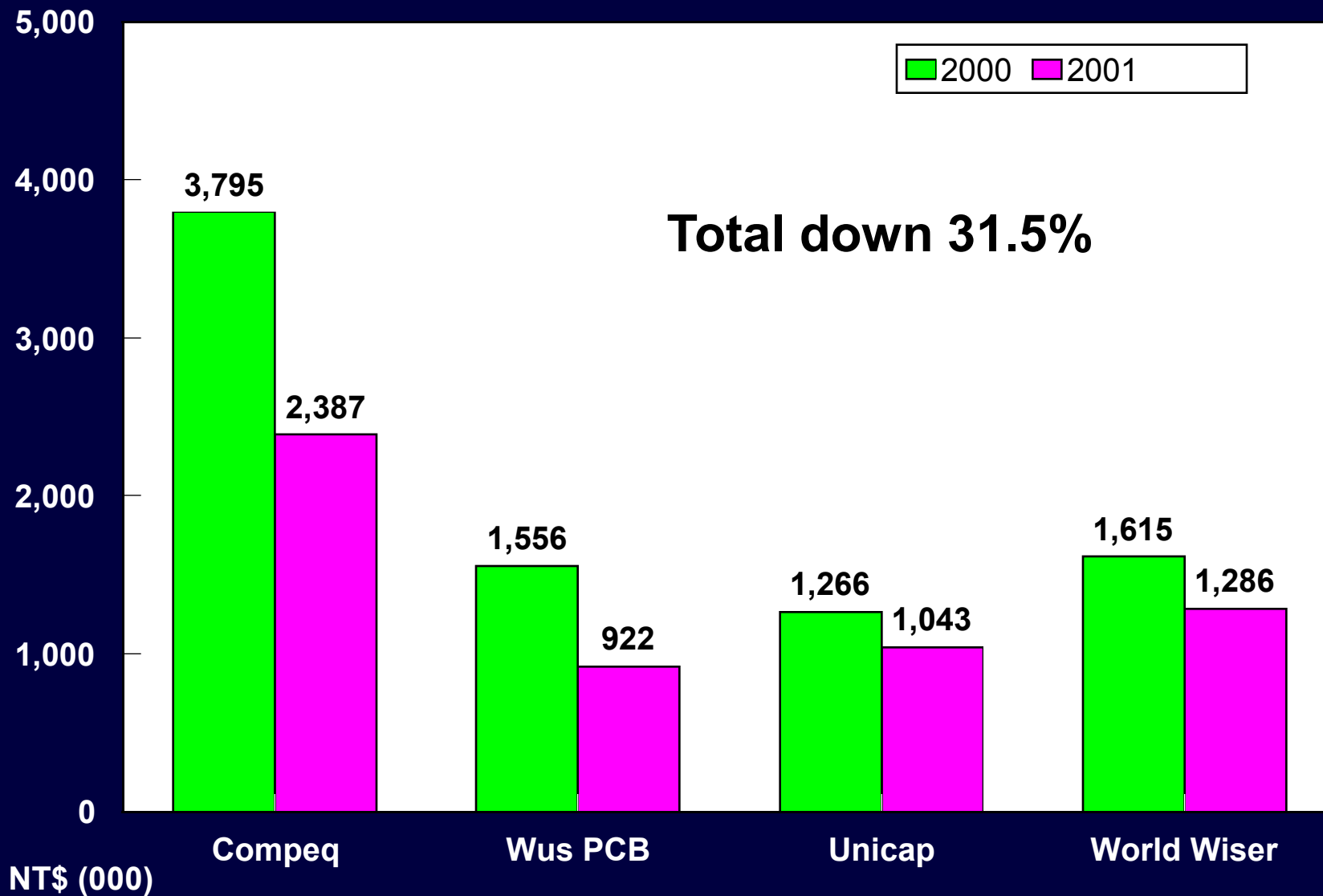
Taiwan PCB Company Sales

January - August 2000 vs 2001



Taiwan PCB Company Sales

July - August 2000 vs 2001



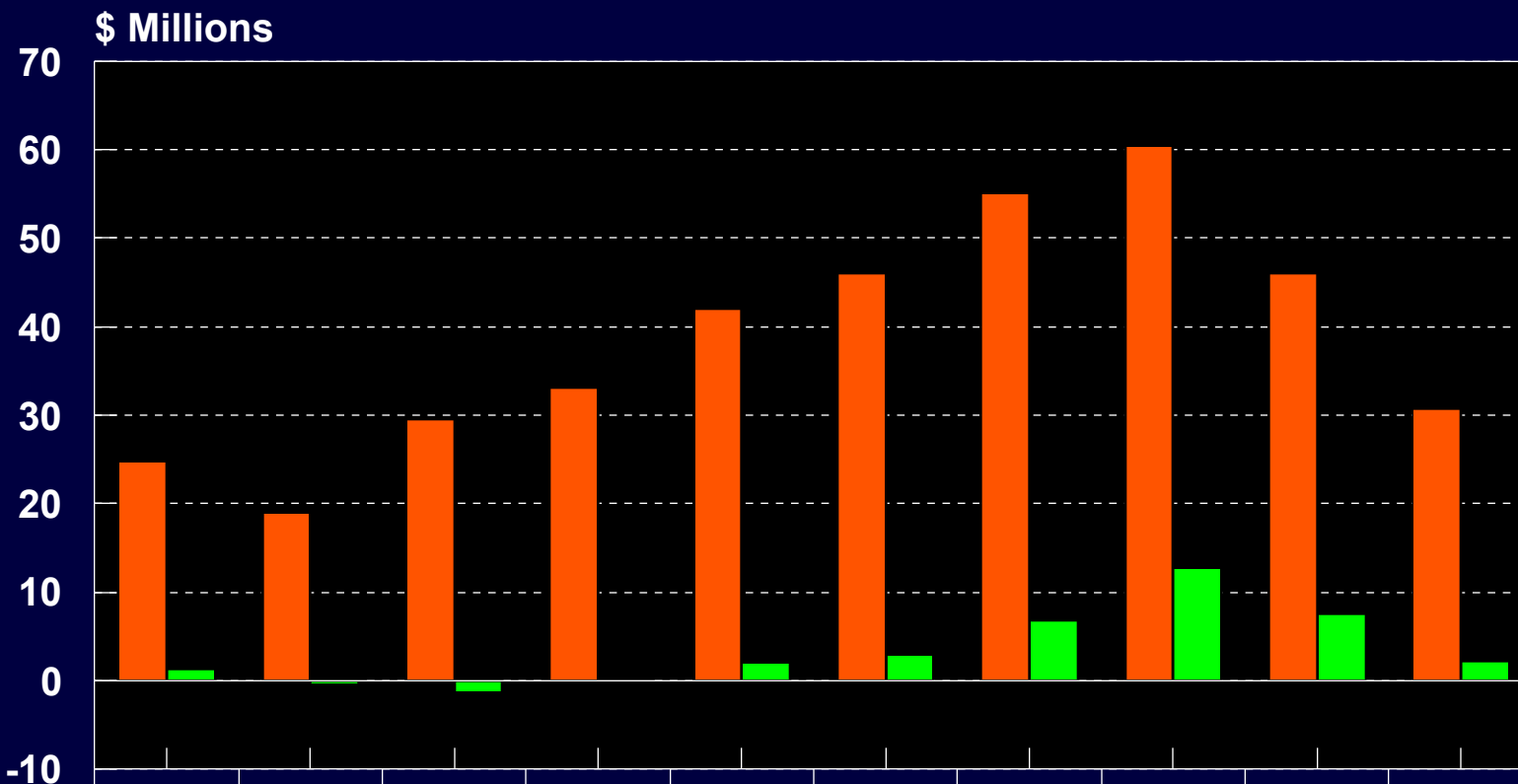
PCB "Growth" 2001

| | |
|--------|------|
| USA | -35% |
| Japan | -35% |
| Taiwan | -20% |
| Korea | -20% |
| China | -10% |
| Europe | -30% |
| World | -30% |

H Nakahara 10/2001 (constant US\$)

TTM Technologies

Revenue & Net Income



Revenue █
Income █

| | 99 | | | | 00 | | | | 01 | |
|---------|------|------|------|------|------|------|------|------|-----|------|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |
| Revenue | 24.8 | 19 | 29.6 | 33.1 | 42.1 | 46.1 | 55.1 | 60.5 | 46 | 30.7 |
| Income | 1.3 | -0.4 | -1.3 | 0.1 | 2.1 | 3 | 6.8 | 12.7 | 7.6 | 2.2 |

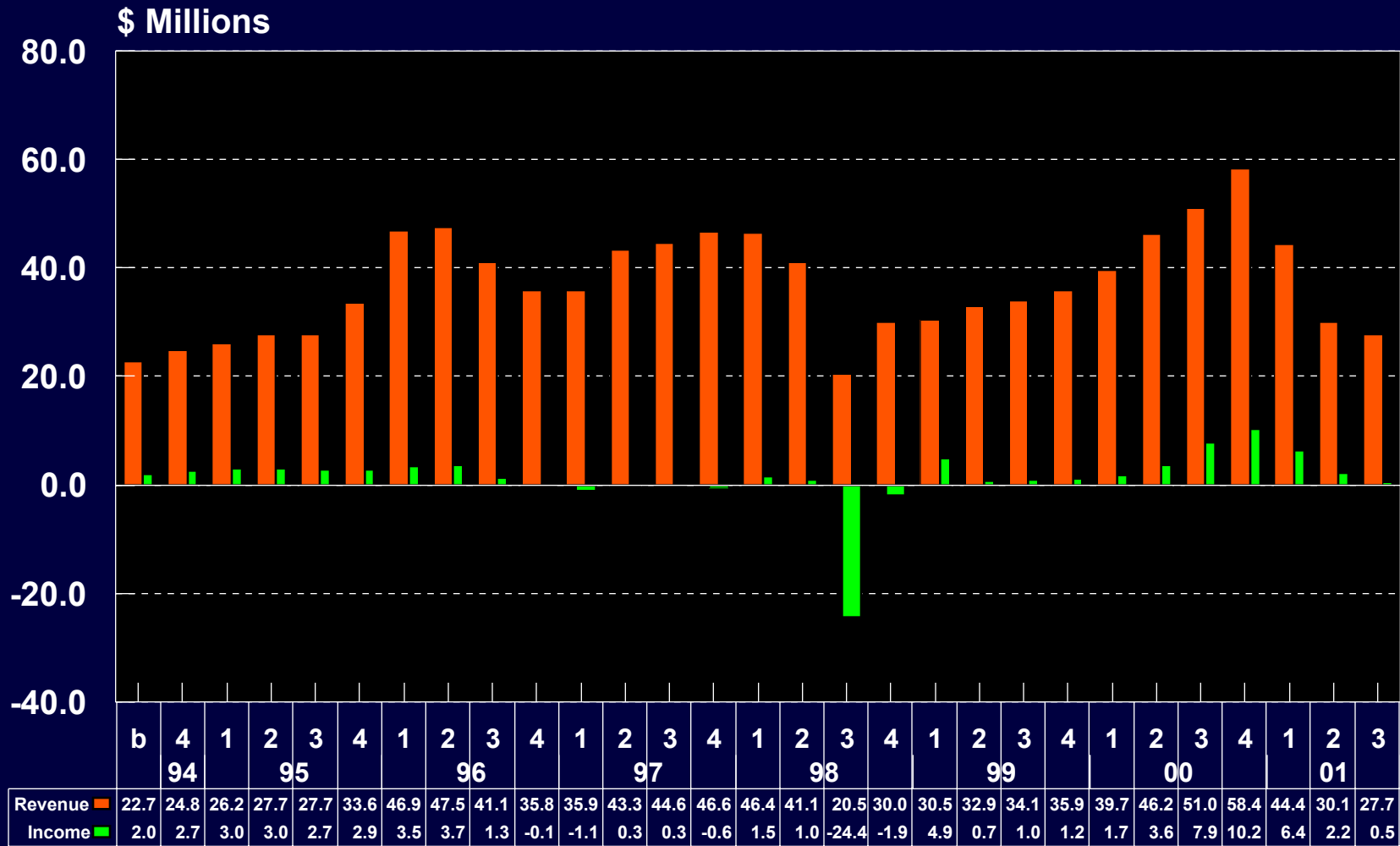
CY

TTM

FY=CY

MERIX

Revenue & Net Income



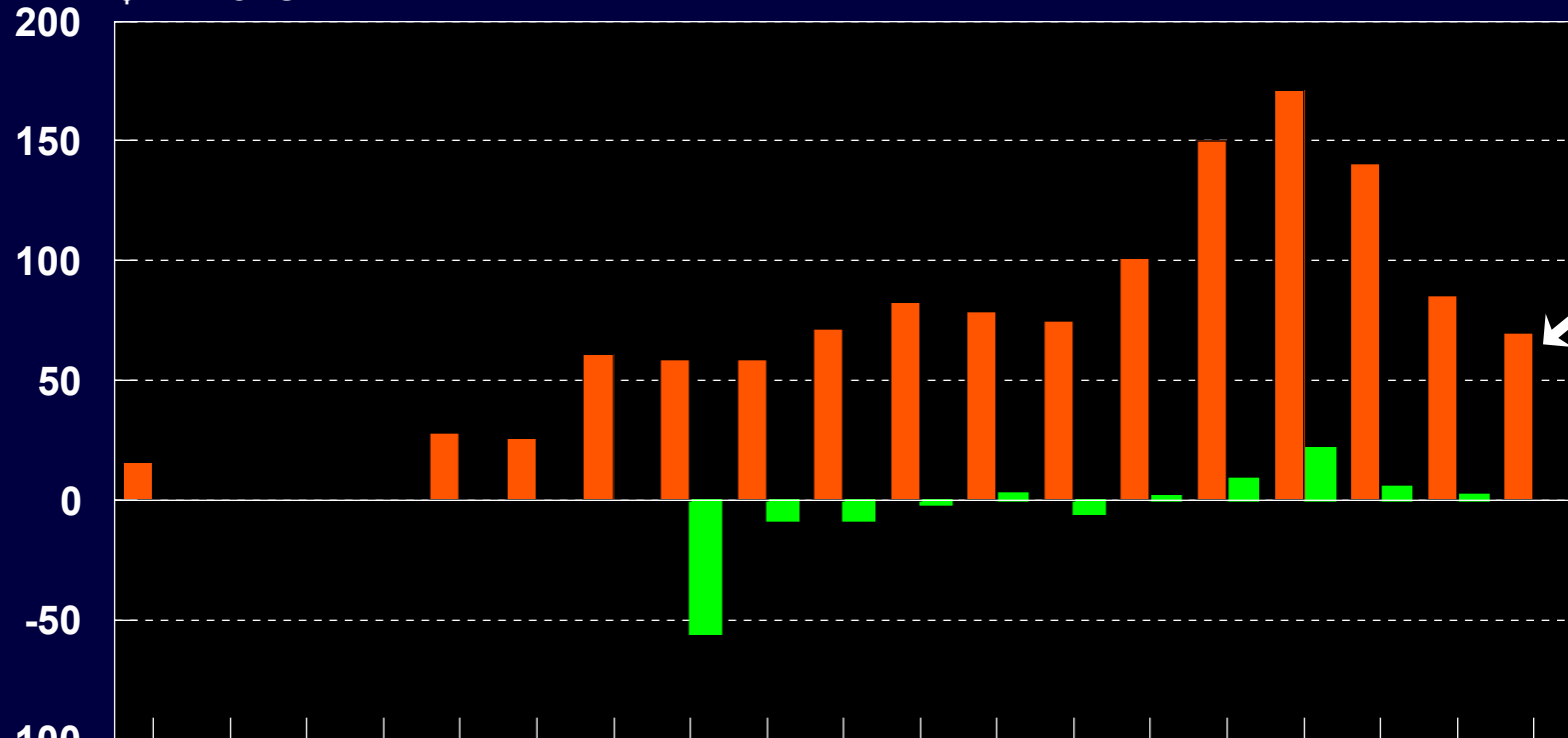
MERIX

FY ends May

DDi Corp

Revenue & Net Income

\$ Millions



10/9/2001 advisory

| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 |
|---------|------|---|---|---|------|------|-------|------|------|------|------|------|------|-------|------|-------|-------|------|----|
| | 97 | | | | 98 | | | | 99 | | | | 00 | | | | 01 | | |
| Revenue | 16.3 | | | | 28.2 | 26.3 | 61.2 | 59.1 | 59.2 | 71.7 | 82.9 | 78.7 | 75.3 | 101.5 | 150 | 171.3 | 140.7 | 85.8 | 70 |
| Income | | | | | | | -55.6 | -8.6 | -8.4 | -1.9 | 2.5 | -5.7 | 1.8 | 9 | 21.8 | 5.7 | 2.4 | | |

FY=CY

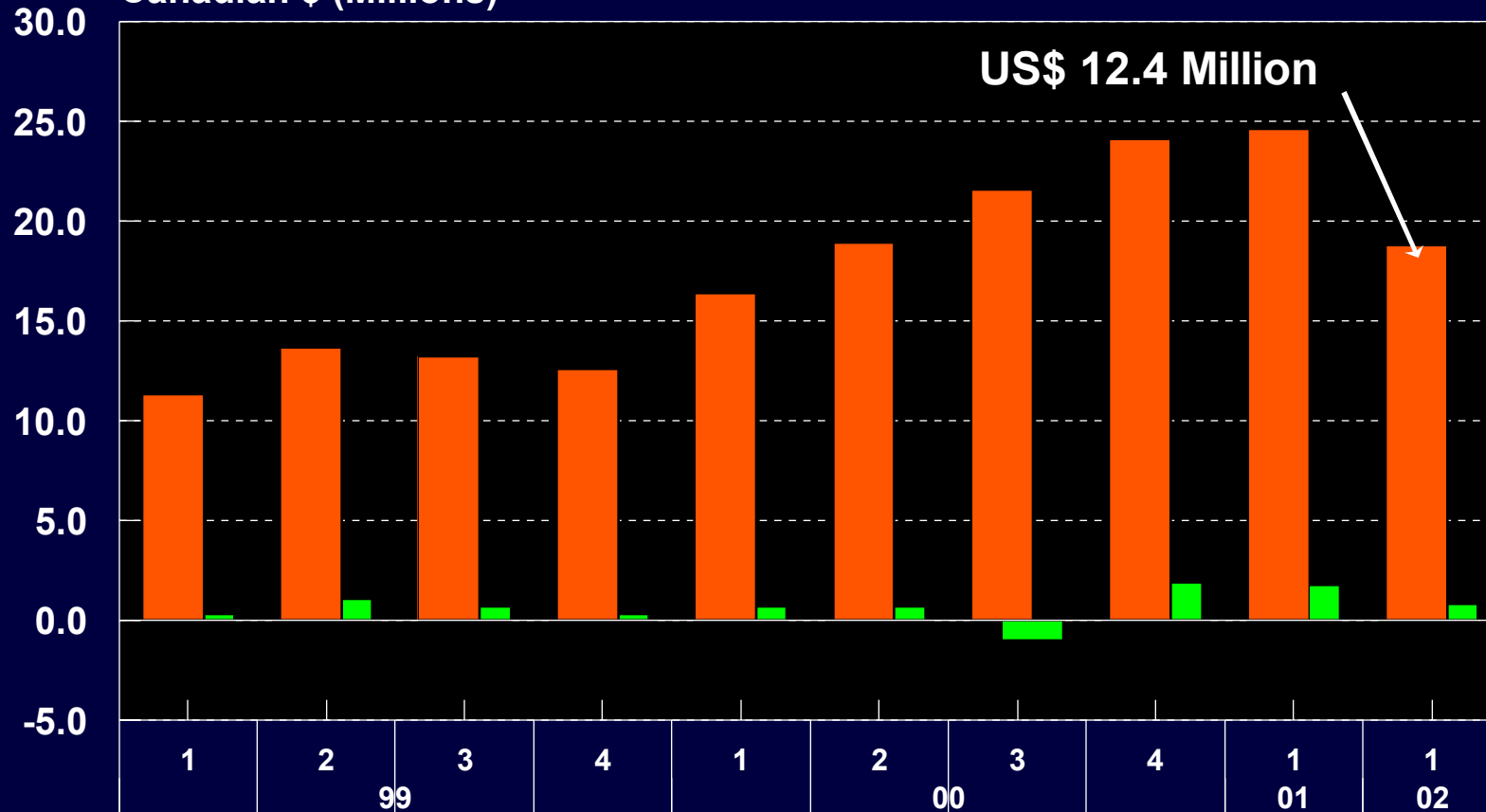
CY

DDIC

Coretec Inc

Revenue & Net Income

Canadian \$ (Millions)



| | | | | | | | | | | |
|---------|------|------|------|------|------|------|------|------|------|------|
| Revenue | 11.3 | 13.7 | 13.2 | 12.6 | 16.4 | 18.9 | 21.6 | 24.1 | 24.6 | 18.8 |
| Income | 0.3 | 1.1 | 0.7 | 0.3 | 0.7 | 0.7 | -1.0 | 1.9 | 1.8 | 0.8 |

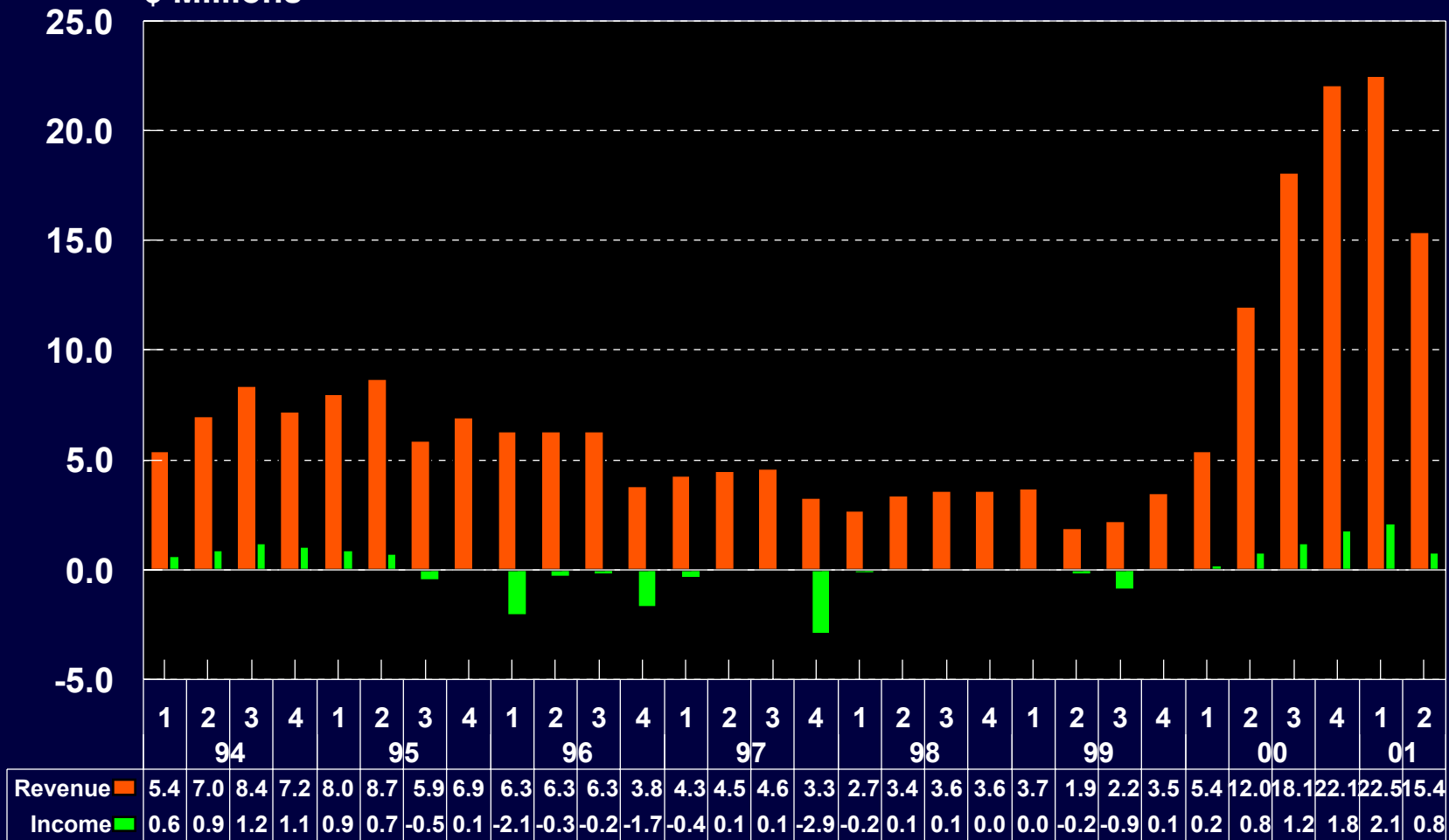
FY=CY

T.C.Y.

M-WAV

Revenue & Net Income

\$ Millions

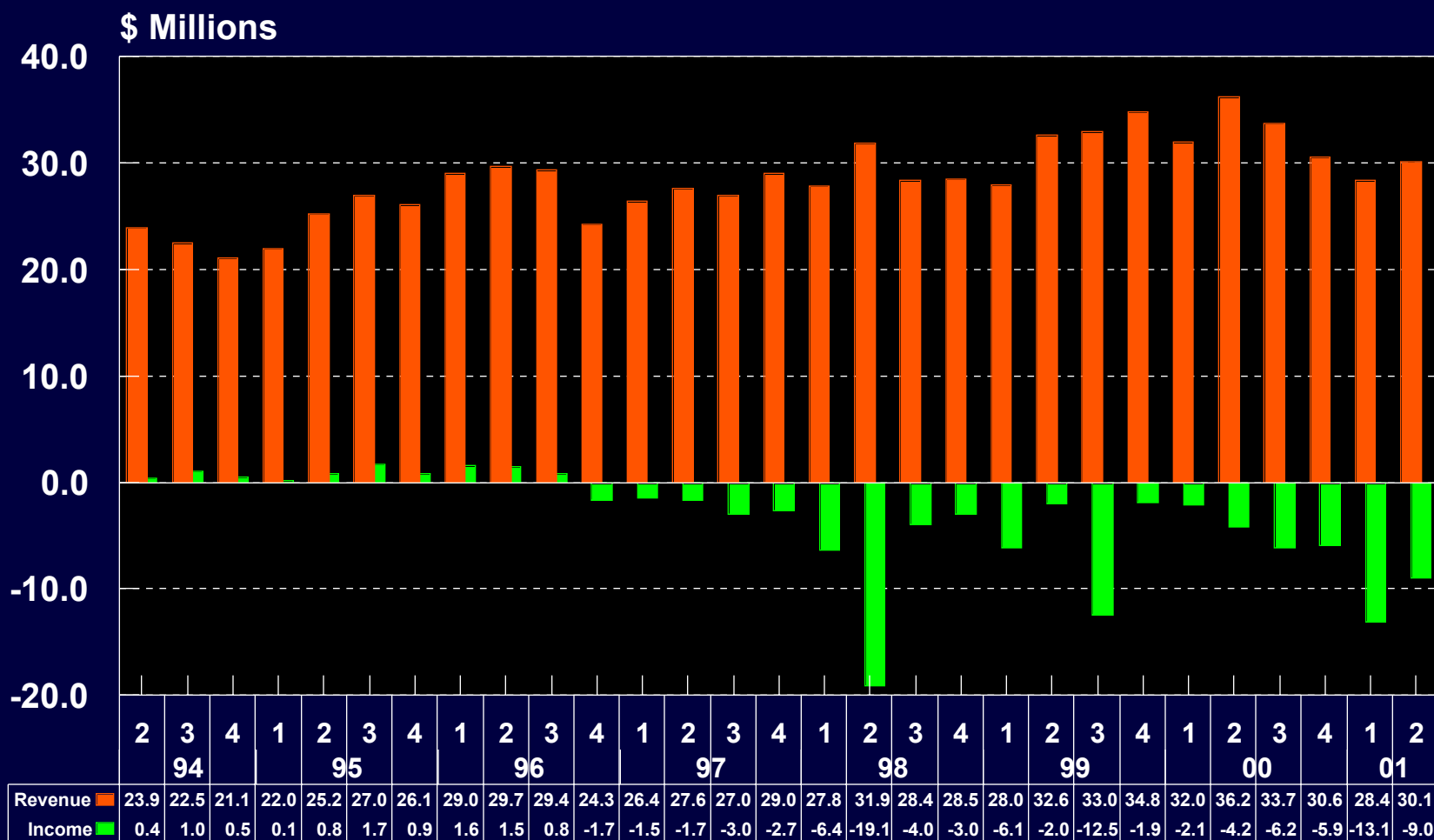


FY = CY

MWAV

SHELD AHL

Revenue & Net Income

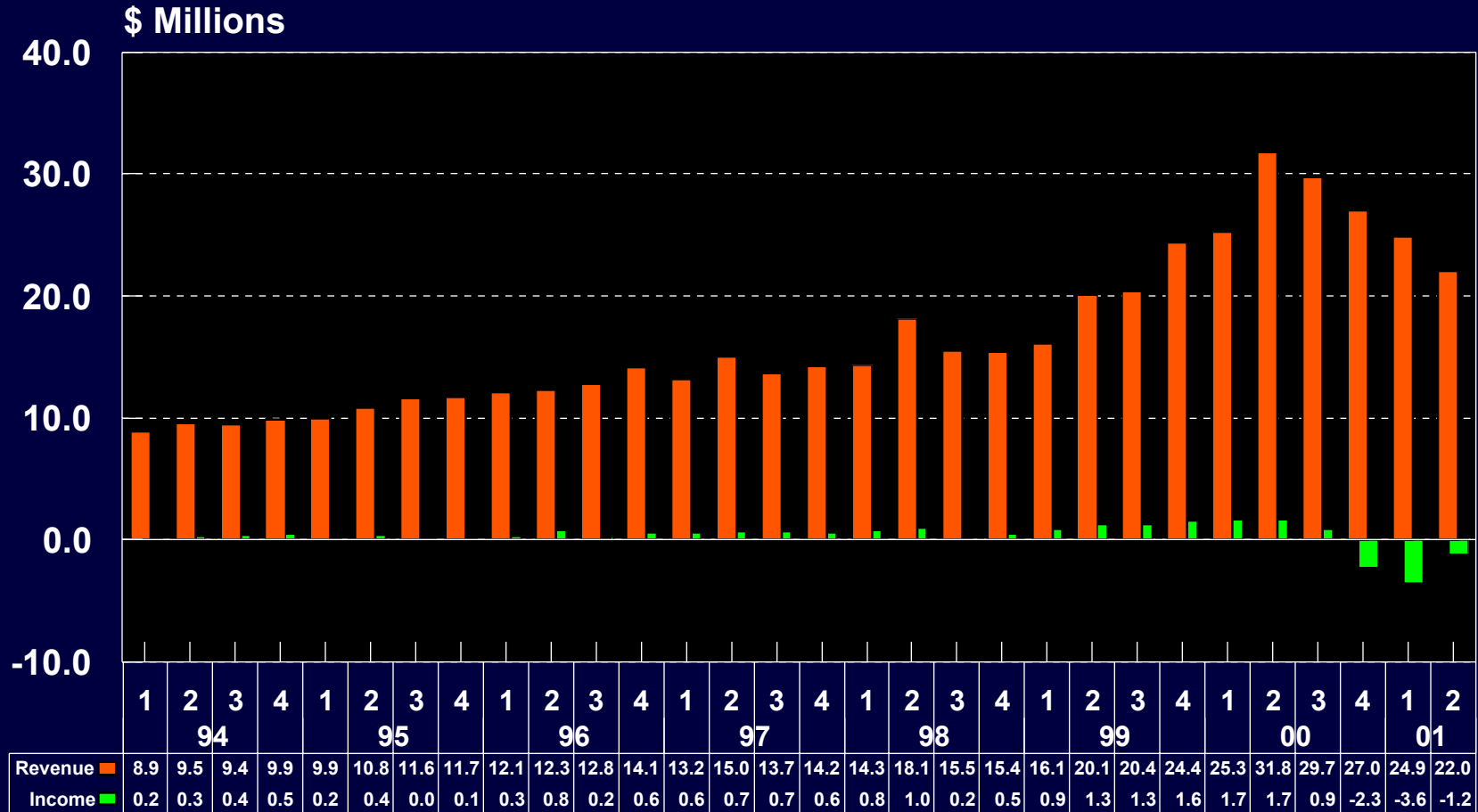


CY

SHEL

PARLEX

Revenue & Net Income



CY

FY ends June 30

PRLX

N. AMERICAN PCB MANUFACTURERS - PUBLIC DATA

QUARTERLY SALES & NET INCOME (\$M)

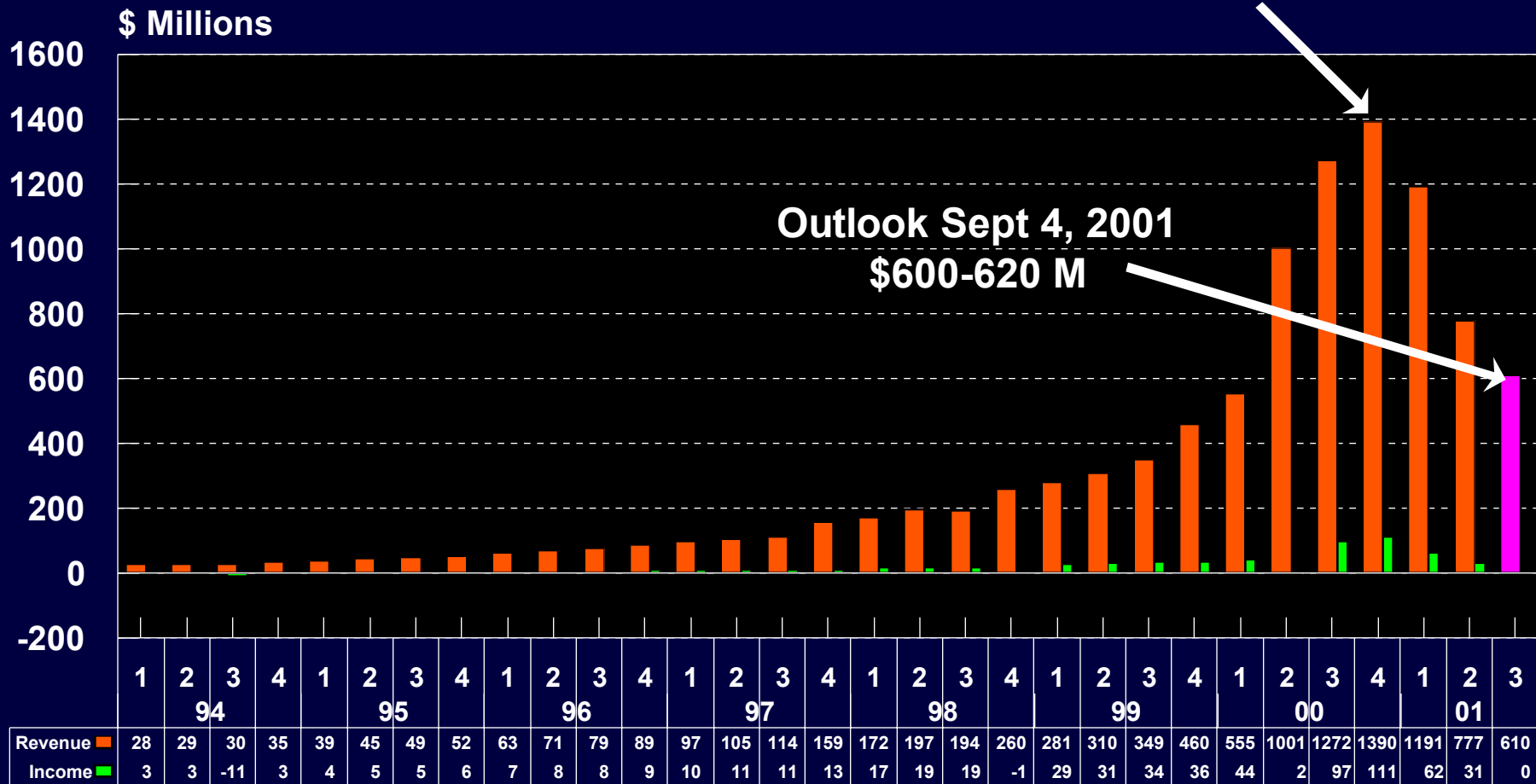
| | | LAST YEAR | | THIS YEAR | | QUARTER |
|-----------------|---------|--------------|-------------|--------------|--------------|---------|
| | | SALES | INC | SALES | INC | ENDING |
| CIRCUIT WORLD | TSE:CCW | 5.3 | 0.3 | 5.0 | 0.2 | 6/01 |
| CORETEC | TSE:CYY | 16.1 | 1.3 | 12.5 | 0.5 | 6/01 |
| DDi | DDIC | 101.5 | 1.8 | 85.8 | 2.4 | 6/01 |
| INNOVEX | INVX | 31.7 | 0.4 | 36.3 | -2.9 | 6/01 |
| MERIX | MERX | 51.0 | 7.9 | 27.7 | 0.5 | 8/01 |
| M-WAV | MWAV | 12.0 | 0.8 | 15.4 | 0.8 | 6/01 |
| PARLEX | PRLX | 31.8 | 1.7 | 22.0 | -1.2 | 6/01 |
| SHELDAHL | SHEL | 36.2 | -4.2 | 30.1 | -9.0 | 6/01 |
| TTM | TTMI | 46.1 | 3.0 | 30.7 | 2.2 | 6/01 |
| TOTAL | | 331.6 | 13.0 | 265.5 | -6.5 | |
| INCOME % | | | 3.9% | | -2.5% | |

Includes foreign sales

SANMINA

Revenue & Net Income

**PCBs: \$1.5 billion
out of \$ 5.6 billion
annualized sales**



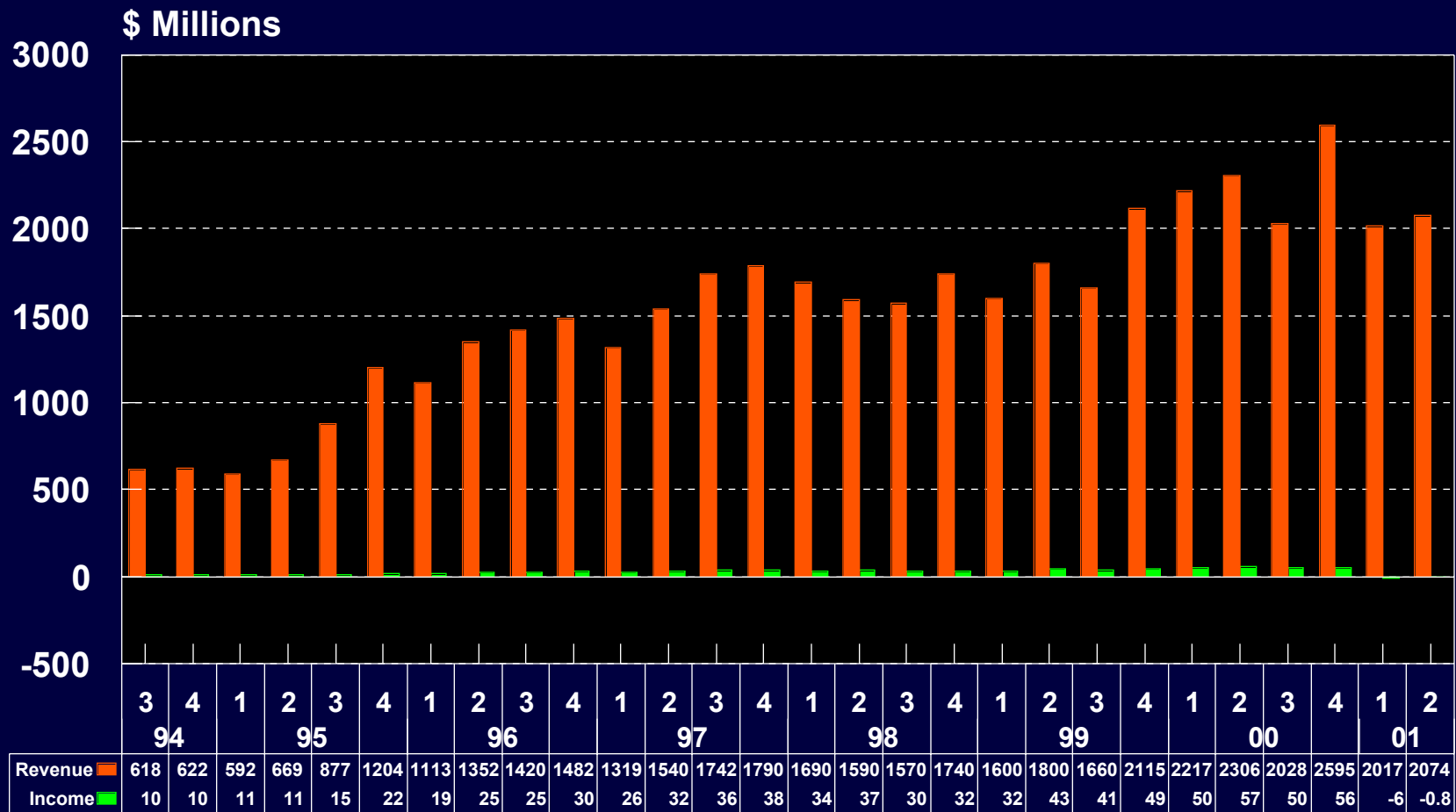
CY

FY ends September 30

SANM

SCI Systems

Revenue & Net Income



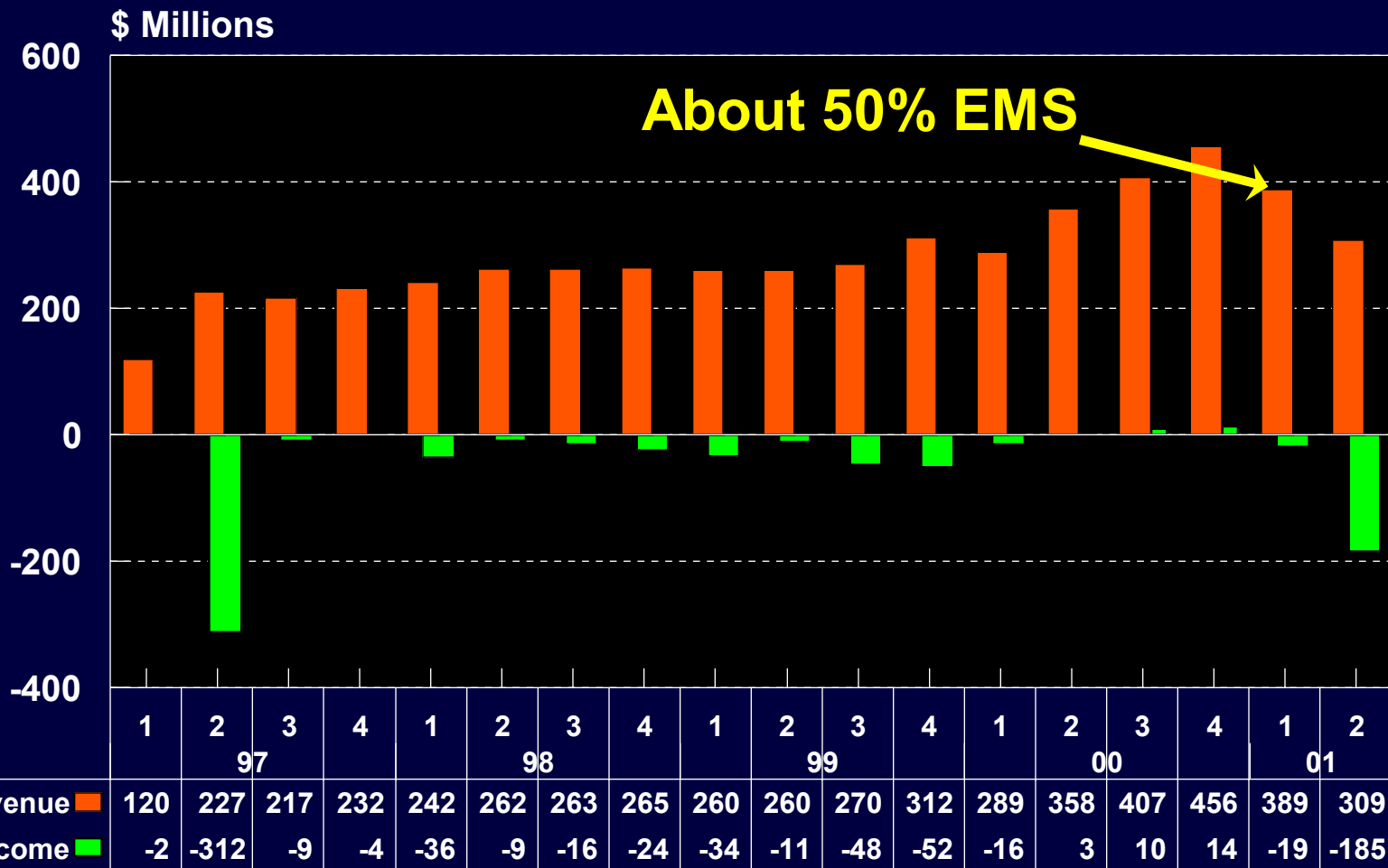
FY ends 6/30

CY

SCI

VIASYSTEMS

Revenue & Income



CY

VG

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

N. AMERICAN CEMs WITH PCB FABs - PUBLIC DATA

QUARTERLY SALES & NET INCOME (\$M)

| | | LAST YEAR | | THIS YEAR | | QUARTER |
|-----------------|---------|-------------|-------------|-------------|--------------|---------|
| | | SALES | INC | SALES | INC | ENDING |
| C-MAC | TSE:CMS | 378 | 27 | 499 | 34 | 6/01 |
| FLEXTRONICS | FLEX | 2677 | 80 | 3111 | 91 | 6/01 |
| SANMINA | SANM | 1086 | 7 | 777 | 30 | 6/01 |
| VIASYSTEMS | VG | 358 | 3 | 309 | -185 | 6/01 |
| TOTAL | | 4500 | 116 | 4696 | -30 | |
| INCOME % | | | 2.6% | | -0.6% | |

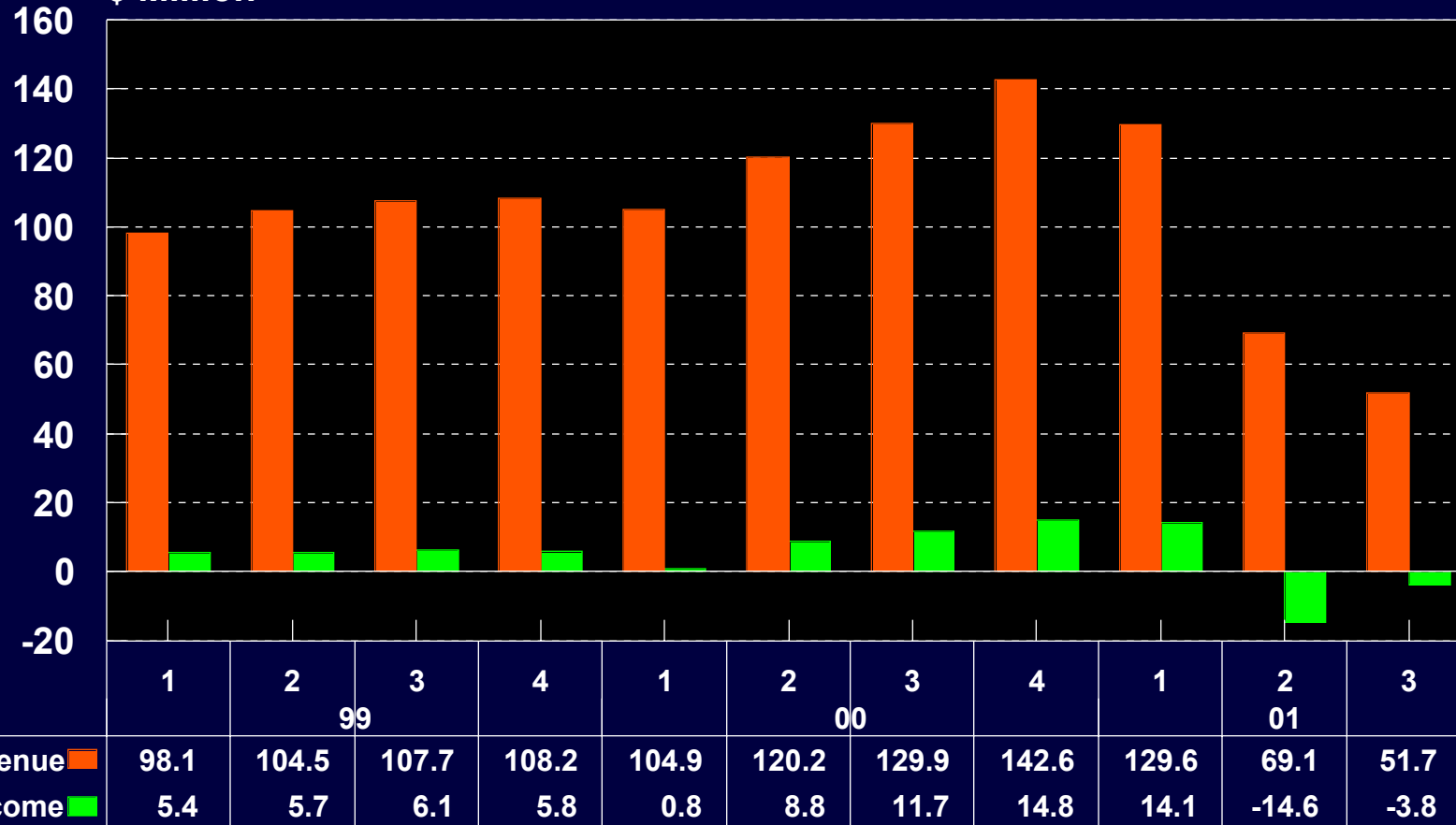
Includes foreign sales

**PCB
Materials
&
Process
Equipment**

Park Electrochemical Corp

Revenue & Net Income

\$ Million



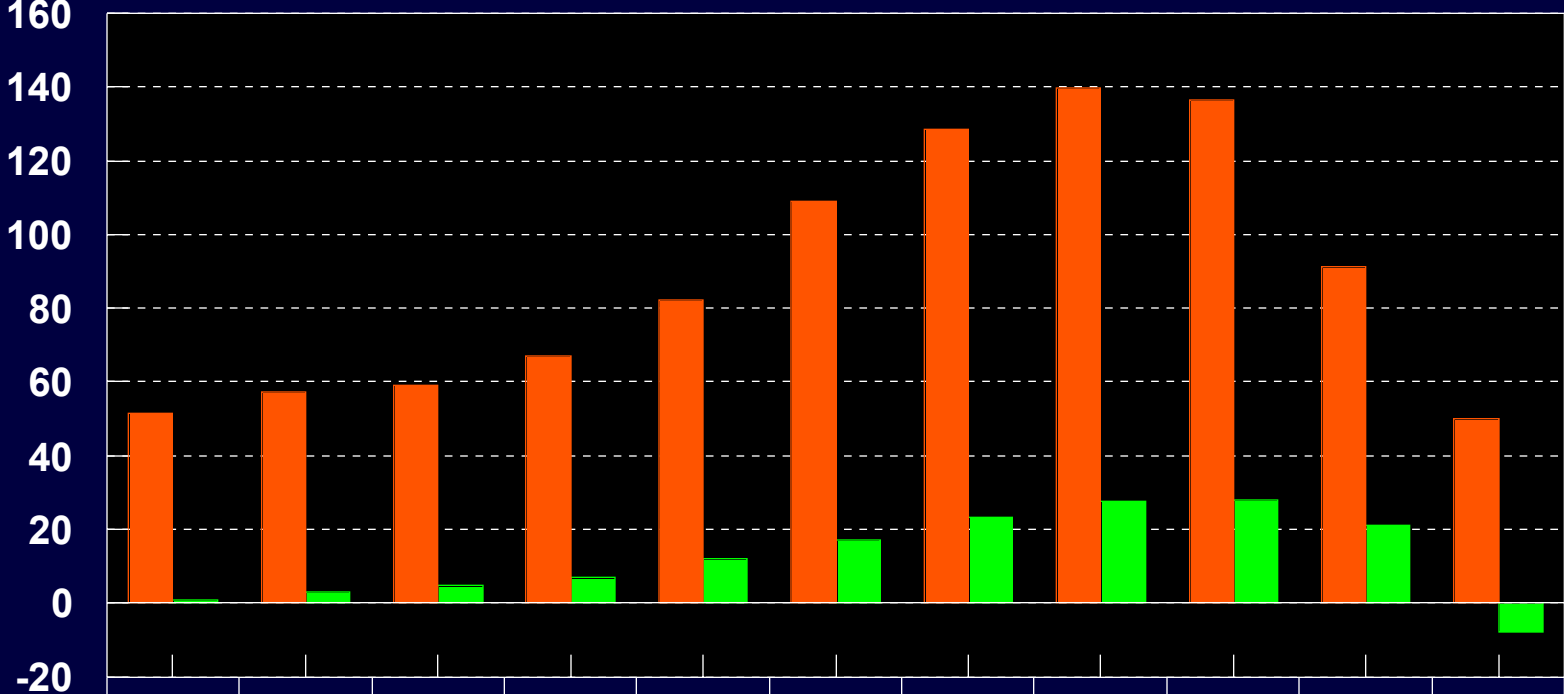
CY

PKE

Electro Scientific Industries

Revenue & Net Income

\$ Million



| | | | | | | | | | | | |
|---------|------|------|-----|------|------|-------|-------|-------|-------|------|----|
| Revenue | 51.5 | 57.3 | 59 | 66.9 | 82.1 | 108.9 | 128.5 | 139.6 | 136.6 | 91.4 | 50 |
| Income | 0.9 | 2.9 | 4.8 | 6.9 | 11.9 | 17.2 | 23.3 | 27.7 | 27.8 | 21.1 | -8 |

CY

ESIO

AUGUST N AMERICAN PCB GROWTH INDICATORS

% GROWTH - Aug 2001 vs Aug 2000

RIGID PCB \$ SHIPMENTS

DOWN 39.7%

RIGID PCB \$ BOOKINGS

DOWN 54.0%

RIGID PCB BOOK/BILL RATIO

3-MONTH AVG 0.90

1-MONTH 0.76

LAMINATE+PREPREG SQ FT SHIPMENTS

DOWN

LAMINATE+PREPREG SQ FT BOOKINGS

DOWN

FLEX CIRCUIT \$ SHIPMENTS

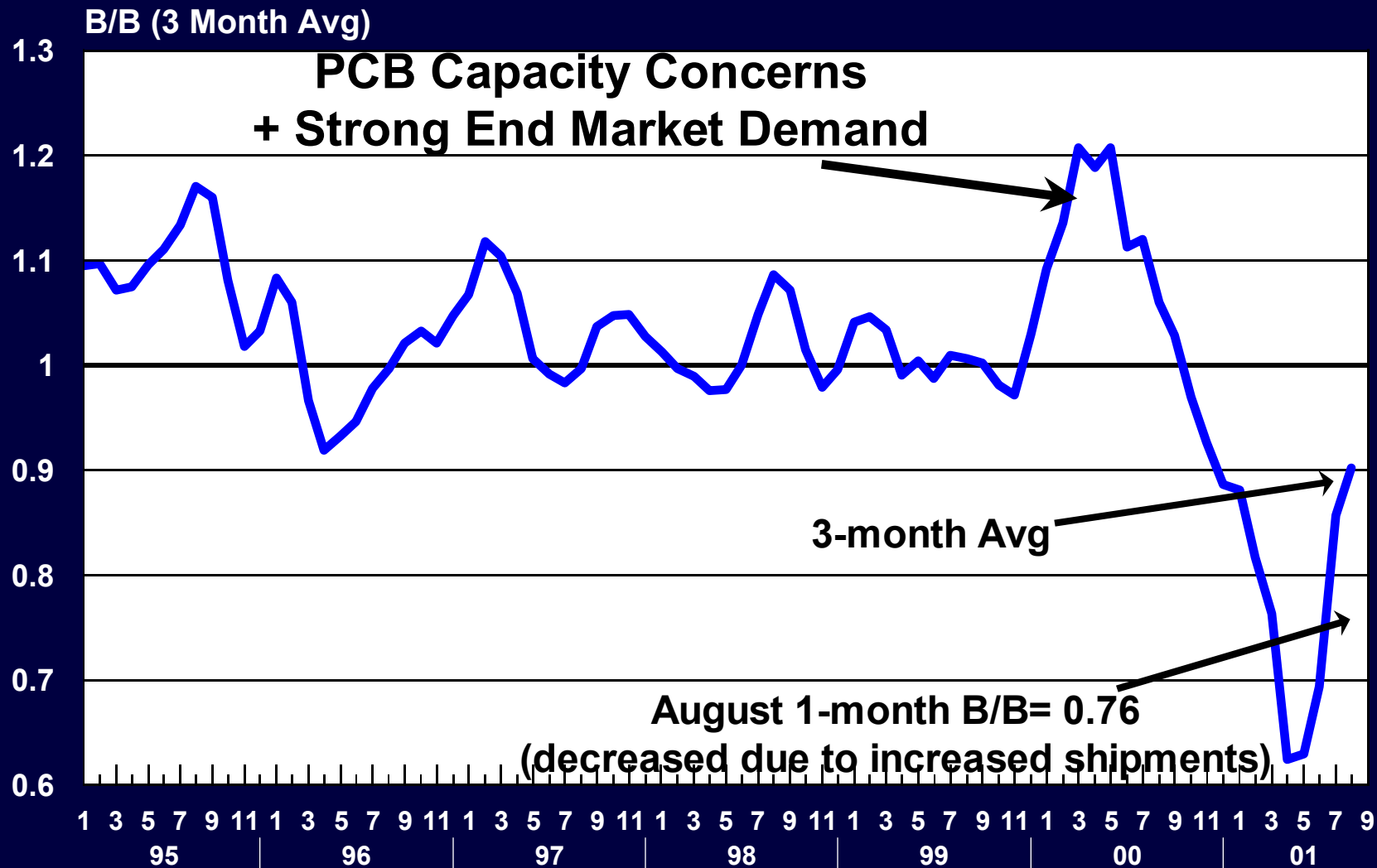
UP 7.7%

FLEX CIRCUIT \$ BOOKINGS

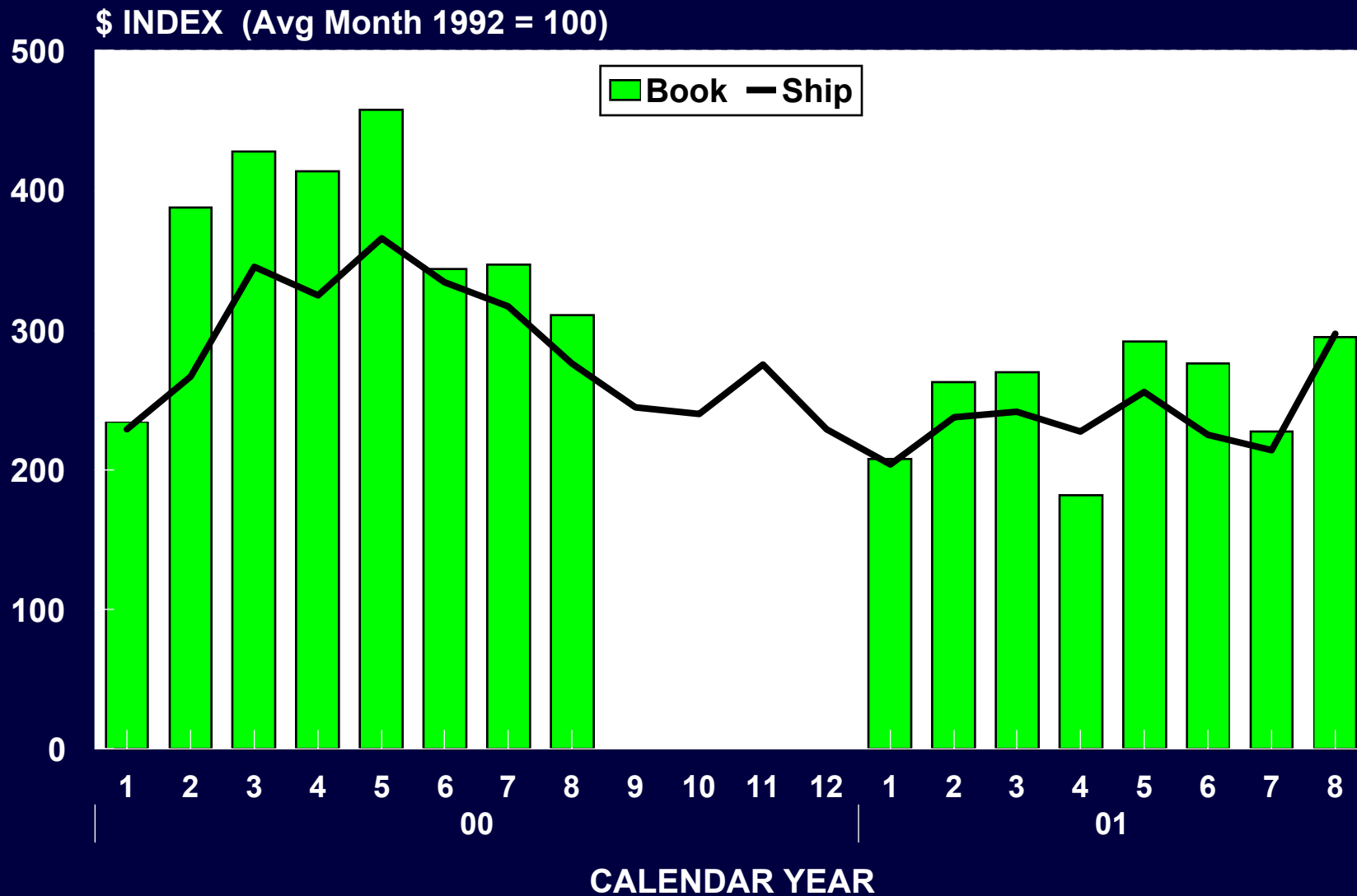
DOWN 5.2%

Rigid PCB Book/Bill

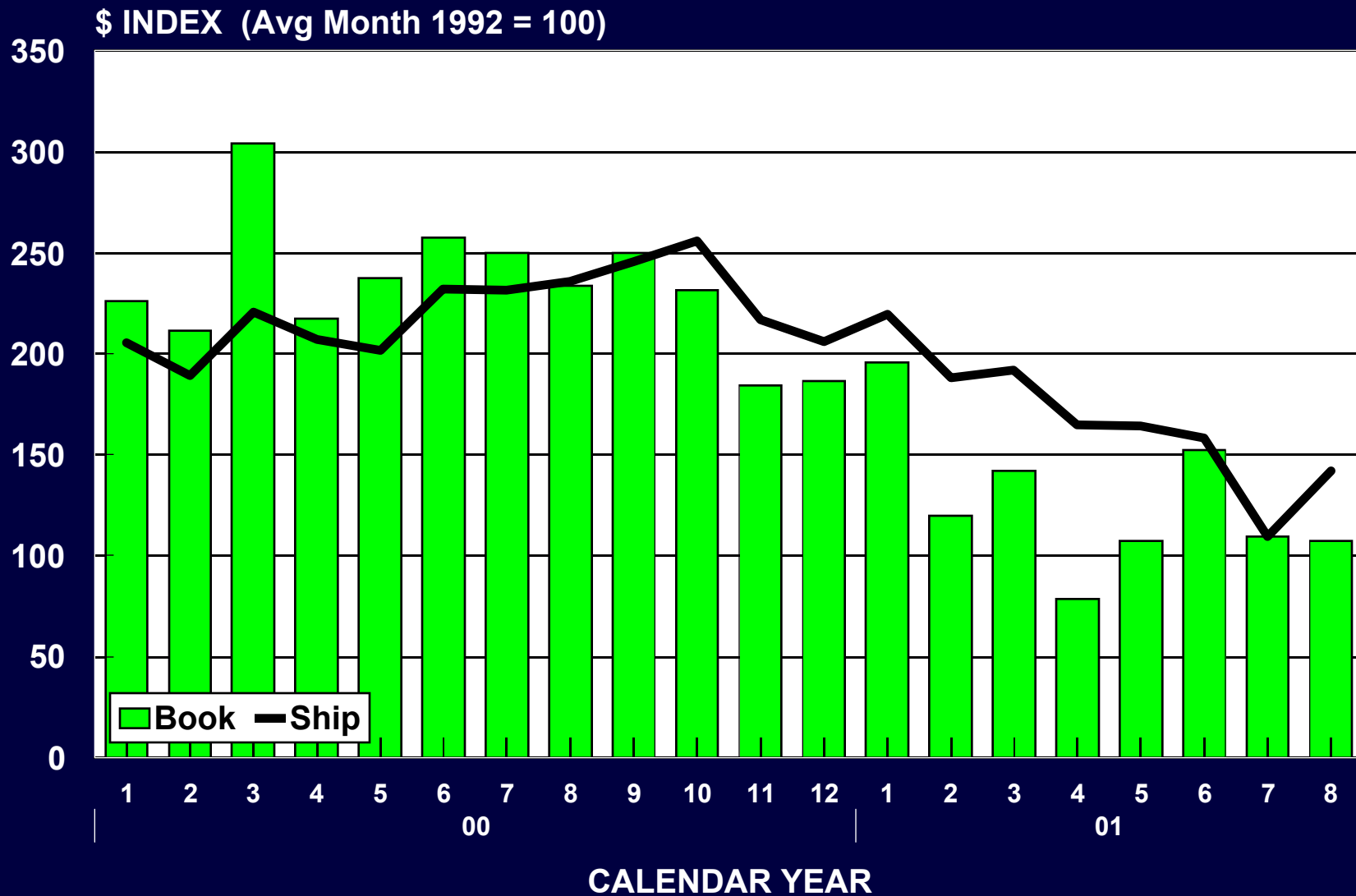
N. America



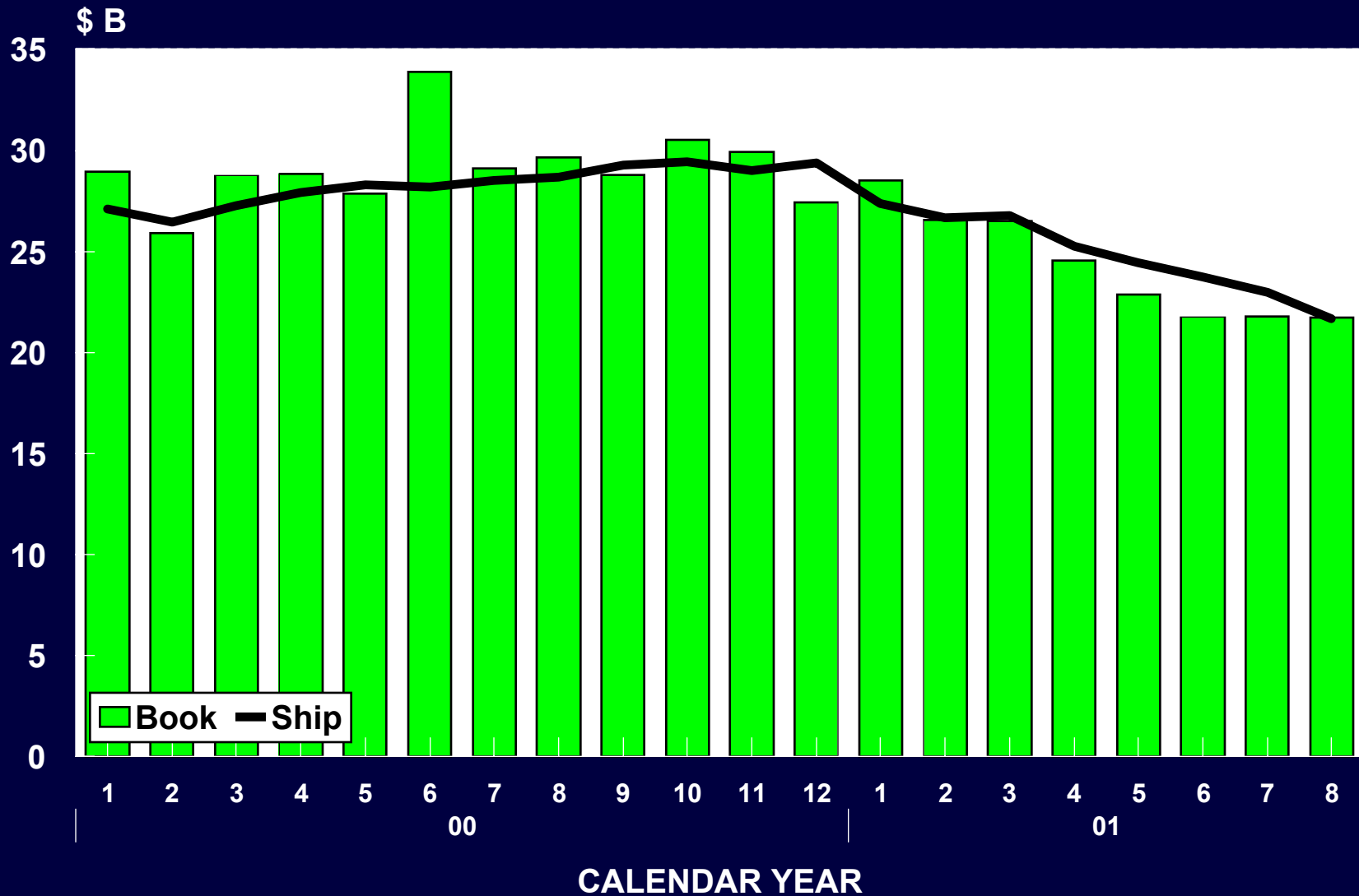
U.S. FLEX CIRCUITS BOOKINGS & SHIPMENTS



U.S. RIGID PCB BOOKINGS & SHIPMENTS



U.S. ELECTRONIC EQUIPMENT BOOKINGS & SHIPMENTS



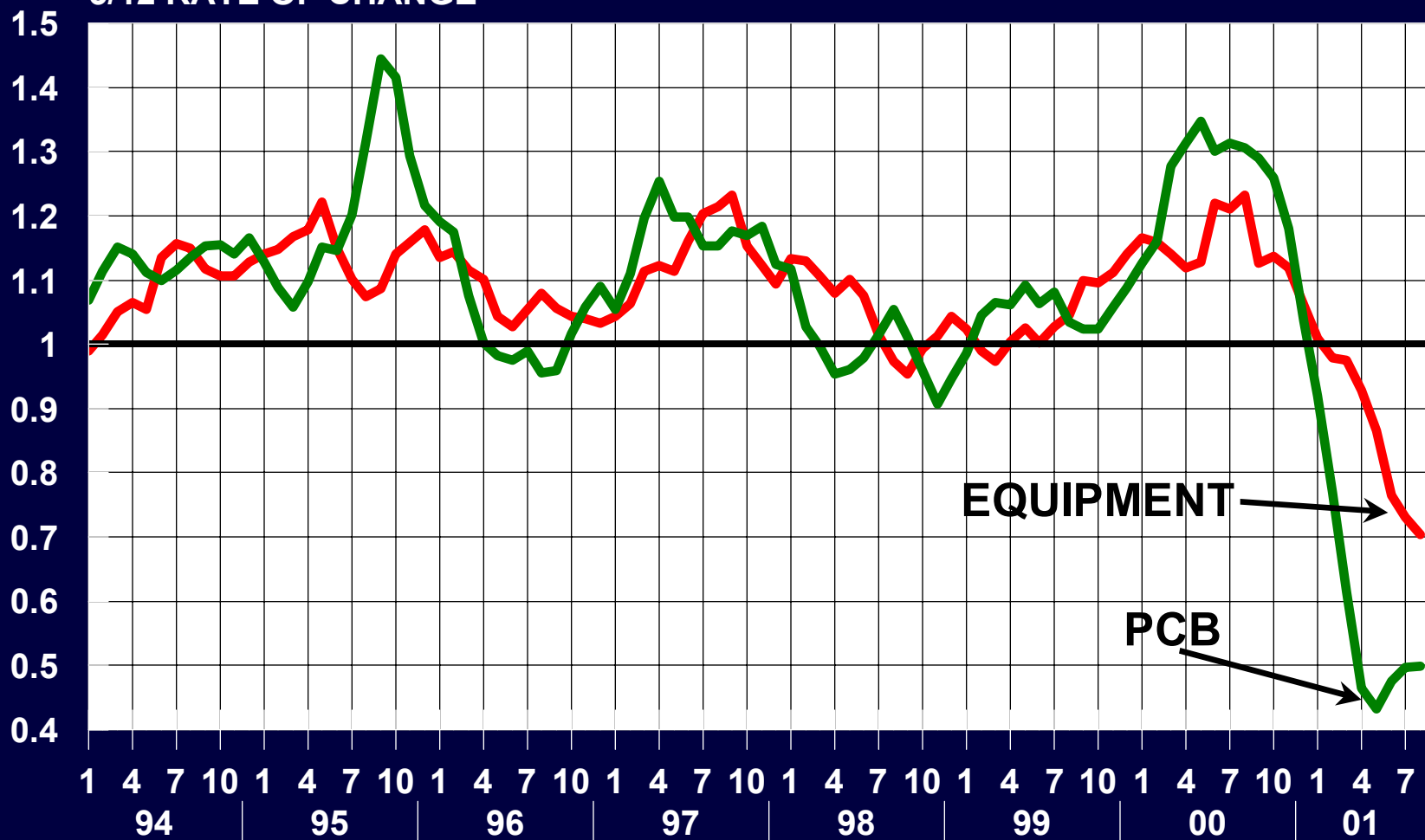
Dept of Commerce

Growth Rates & Future Outlook

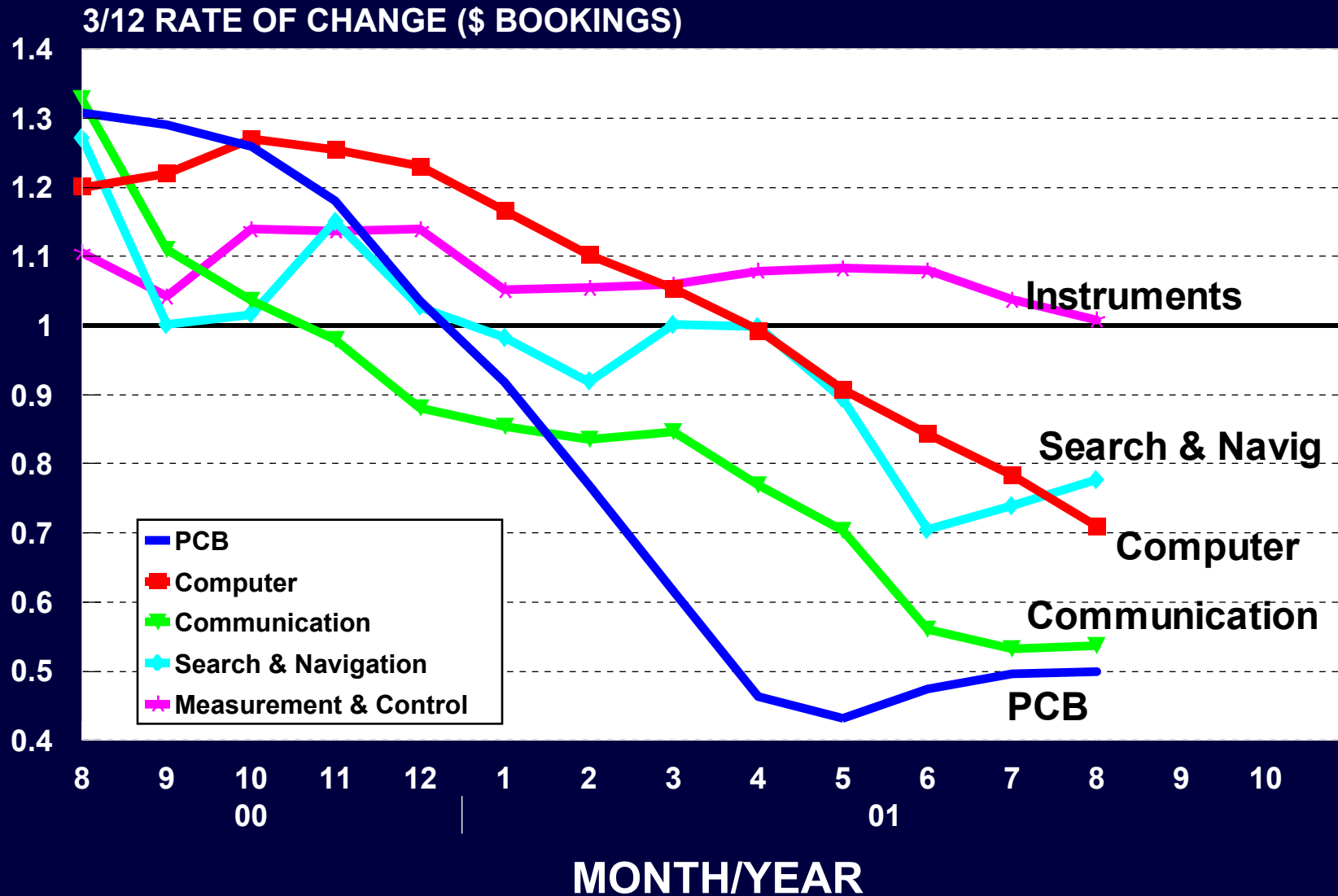
U.S. ELECTRONIC EQUIPMENT vs PCBs

\$ BOOKINGS GROWTH

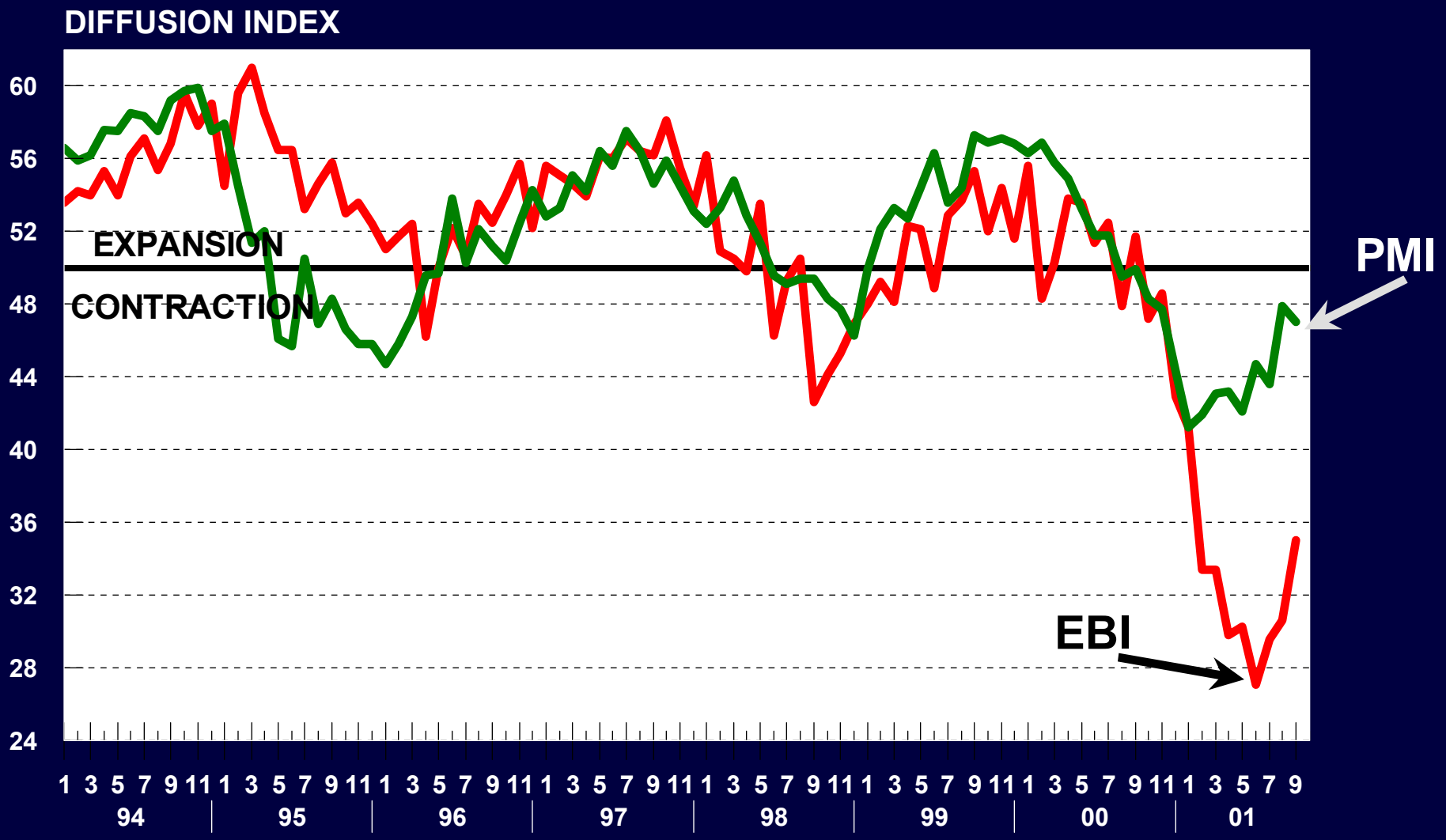
3/12 RATE OF CHANGE



US RIGID PCB vs ELECTRONIC EQUIPMENT BOOKINGS



PMI vs EBI "QUEST" ELECTRONIC BUYERS' INDEX



NATIONAL ASSOC of PURCHASING MANAGERS
ELECTRONIC BUYERS NEWS www.ebnonline.com

Summary & Conclusions

**Whom Did It
Affect?**

EVERYONE

PRESENT GROWTH RATES (%)

U.S. ECONOMY & ELECTRONICS INDUSTRY

| | LATEST MONTH | ANNUAL GROWTH RATE | 3-MONTH GROWTH RATE |
|--------------------------------------|--------------|--------------------|---------------------|
| RIGID PCB ORDERS \$ | 8/01 | 68.6 | 49.9 |
| RIGID PCB SHIPMENTS \$ | 8/01 | 91.2 | 58.6 |
| LAMINATE+PREPREG ORDERS SF | 8/01 | 73.2 | 38.4 |
| SEMICONDUCTOR ORDERS \$ | 8/01 | 83.5 | 63.7 |
| ELECTRONIC EQUIPMENT ORDER \$ | | | |
| COMPUTER & RELATED | 8/01 | 97.7 | 70.9 |
| COMMUNICATIONS | 8/01 | 75.8 | 53.7 |
| MEDICAL, MEASUREMENT & CONTROL | 8/01 | 100.7 | 100.8 |
| SEARCH & NAVIGATION | 8/01 | 92.1 | 77.7 |
| TOTAL ELECTRONIC EQUIPMENT | 8/01 | 90.9 | 70.4 |
| INDUSTRIAL PRODUCTION | 7/01 | 101.4 | 97.1 |

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

Summary

- **The boom of 2000 was driven by very strong communications equipment and Internet infrastructure demand. Double ordering of components and inventory building were common throughout the supply chain.**
- **2001 saw a massive slowdown. PCB orders plummeted due to both inventory reduction efforts and a sharp drop in electronic equipment demand.**
- **Hopes of a modest recovery were dashed by the terrorist attacks of September 11.**
- **While some endmarkets (military electronics and security devices) will grow, a recession is now likely for the volume electronic equipment markets.**

Summary

- **2001 saw about a 15% reduction N American PCB capacity. Major multinationals shifted U.S. capacity to China.**
- **Following the Sept 11 terrorist activities international trade has become more difficult.**
- **Assuming a resurgence in military electronics, increased nationalism and concerns with offshore PCB supply, U.S. PCB makers may see opportunities for higher margin PCB sales.**
- **2001 has been disastrous and a recession is likely short term. PCB growth opportunities if any will be in new markets - military & security.**

Electronic Equipment Production Growth

Constant \$ Growth Rates Converted @ Constant Exchange Rates

| | <u>1999</u> | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> |
|--------------------|-------------|-------------|-------------|-------------|-------------|
| World | 7.3 | 12.0 | -7.1 | -0.4 | 9.9 |
| USA | 8.5 | 12.9 | -12.5 | -0.9 | 10.1 |
| W Europe | 8.5 | 11.4 | -6.7 | -1.5 | 9.6 |
| Japan | -3.0 | 7.5 | -4.4 | -3.7 | 5.5 |
| Four Tigers | 6.9 | 17.8 | -3.2 | 1.9 | 9.1 |
| Others | 17.3 | 12.0 | 3.0 | 5.0 | 14.5 |