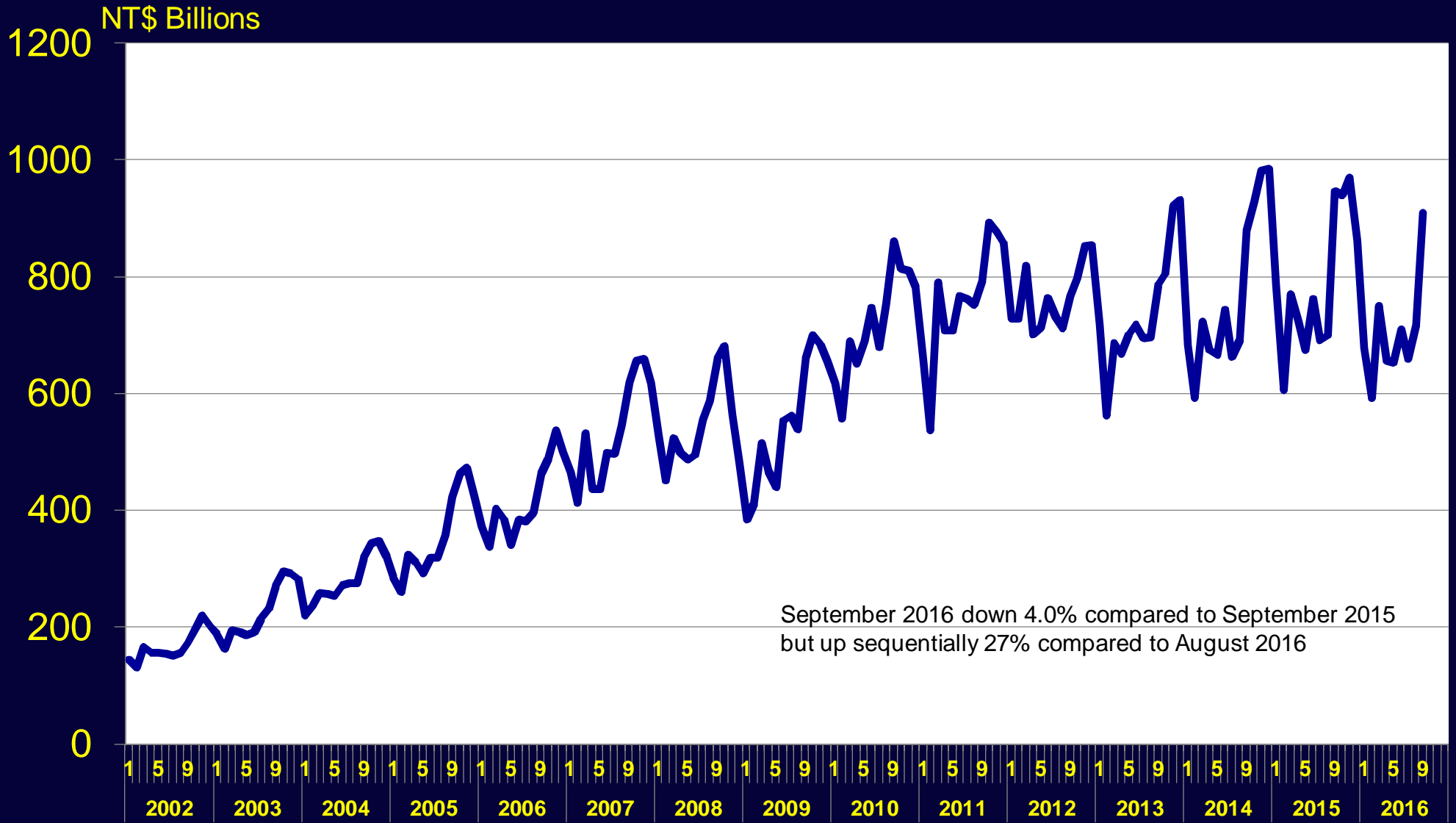


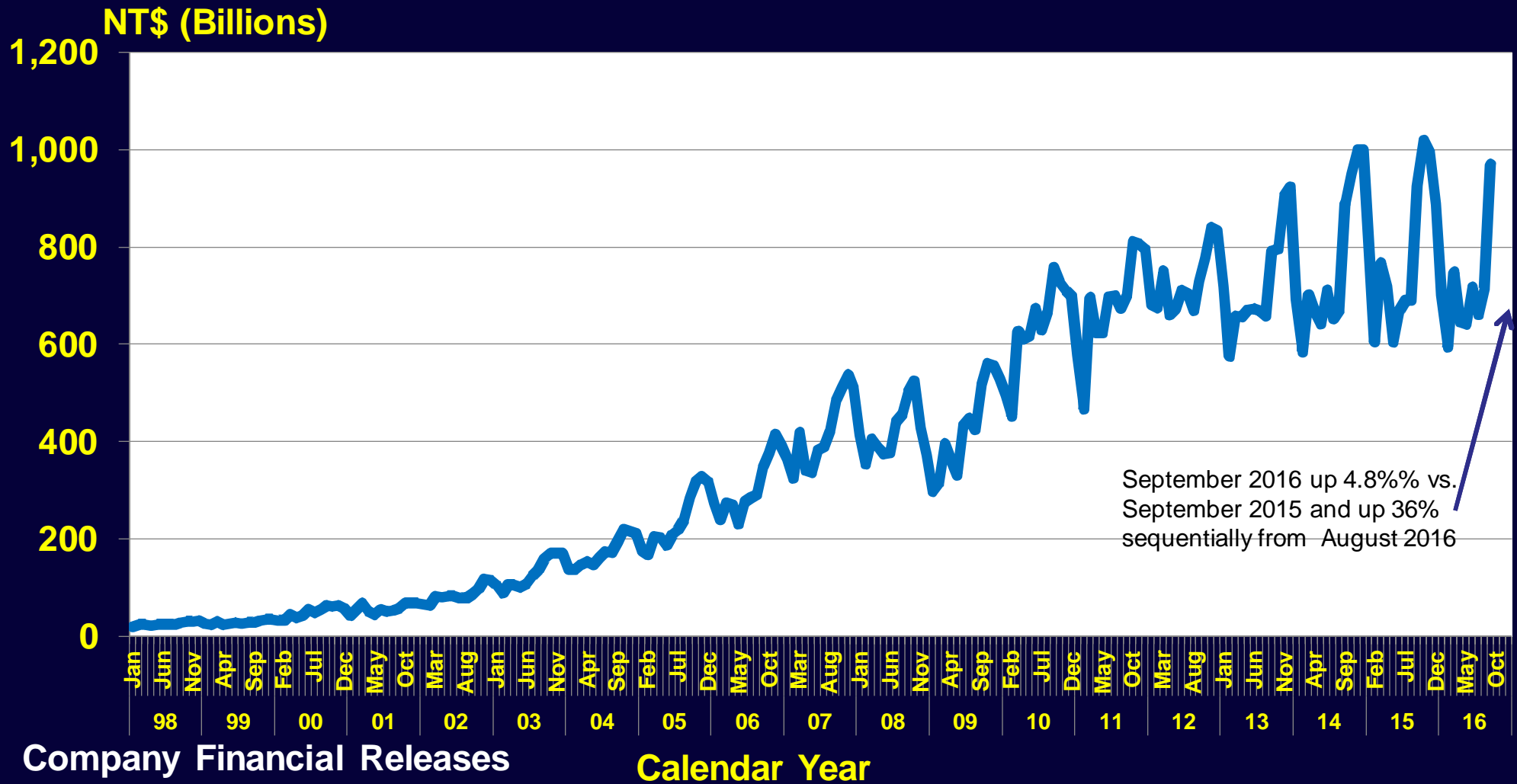
Chart 1

# Taiwan/China Electronic Equipment Producers Composite of 101 Manufacturers Consolidated Revenue



Taiwan listed companies, often with significant manufacturing in China

# Taiwan ODM Companies Composite Sales of 11 Large Manufacturers

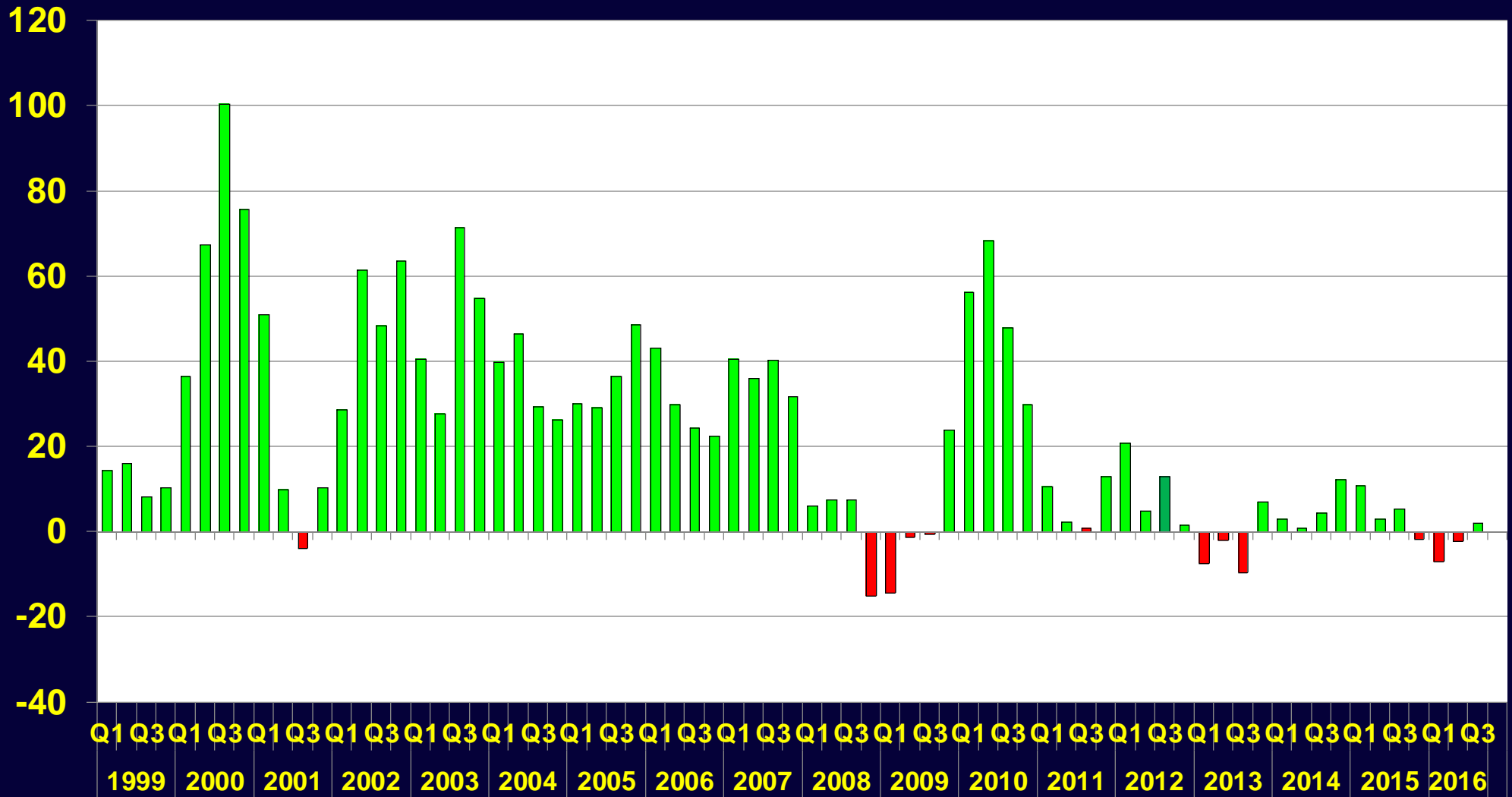


Asustek Computer, Chei Mei, Compal Electronics, Foxconn, Chimei Innolux, Inventec, Inventec Appliance, Lite On Technology, Mitac International, Pegatron, Quanta Computer, Wistron, Chei Mei Display replacing Chei Mei & Innolux Display 3/10 & later

# Large ODM Companies

## Composite of 10 Public Manufacturers

### Quarterly Revenue Growth



Asustek Computer, Compal Electronics, Foxconn, Chimei Innolux, Inventec, Inventec Appliance, Lite On Technology, Mitac International, Pegatron, Quanta Computer, Wistron

Chart 4

# Taiwan Display Producers Composite of 6 TFT-LCD Panel Manufacturers



Taiwan listed companies, often with significant manufacturing in China

# Taiwan Wafer Foundries Composite of 14 Manufacturers



VIA Technologies, Advance Microelectronics, Advance Wireless Semiconductor, Epasil Technologies, Inotera Memories, Macronix Intl, Mosel Vitelic, Powerchip Semi, Precision Silicon, ProMOS Tech, TSMC, United Microelectronics, Vanguard International Semi, Winbond Electronics

Chart 6

# Taiwan Package & Test Companies Composite of 20 Manufacturers



ASE, Ardentec, ChipMOS Tech, Chipbond Tech, E'dale Tech, Formosa, Advance Tech, Fupo Elec, Greatek Elec, International Semiconductor Tech, King Yuan Elec, Lingsen Precision, Orient Semiconductor, Powertech Tech, Signality System, Sigurg Microelectronics, SPIL, Thalín Semiconductor, Vate Tech, Walton Advanced Tech

Chart 7

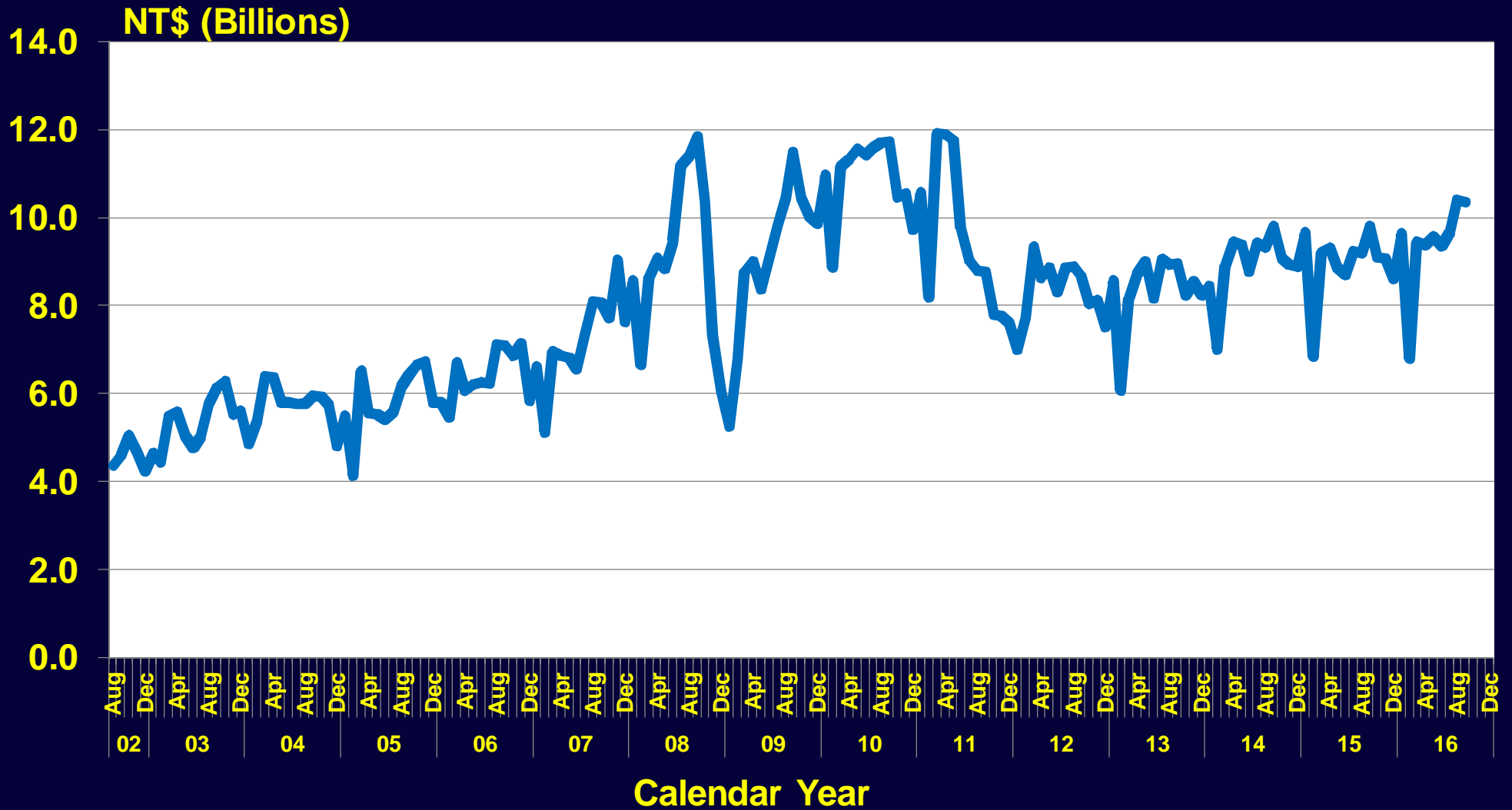
# Taiwan Memory Companies Composite of 8 Manufacturers



Silicon Integrated Systems, Inotera Memories, Macronix Intl, Mosel Vitelic, NanYa Tech, Powerchip Semiconductor, ProMOS, Winbond Elec

Chart 8

# Taiwan Passive Component Companies Composite Sales of 25 Manufacturers



Chilsin Electronics, Cyntec, (FCE) Fei Cheng Enterprise, Holy Stone Enterprise, 3H (Honey Hope Honest Enterprise), HJC (Hua Jung Components), Inpaq, Jaan Chem Technological, Kaimei Electronic, King Core Electronics, Laser Tek, Leatec Fine Ceramics, Lelon Electronics, Linton Technology, PTTC (Polytronics Technology Corp), PDC (Prosperity Dielectrics Co), Ralec Electronic, Ta-I Technology, Taiwan Alpha Electronic, Team Young Advanced Ceramics, Teapo Electronic, Thinking Electronic Industrial, WTC (Walsin Technology Corp), Yageo, YCTC (Yeh-Chiang Technology Corp)



Chart 9

# Taiwan Solar/Photovoltaic Panel Companies Composite of 27 Manufacturers



Acter, Big Sun Energy Technology, Chen Full Intl, Danen Technology, Daxon Technology, DeISolar, Delta Electronics, e\_TON Solar Tec, Invetec Group, Eversol, Gigasolar materials, Gintech, Green Energy Technology (GET), Higher Way Elec, Kenmec Mechanical, Ligitek, Motech, Neo Solar Power, Phoenixtec Power Co (PPC), Powermate, Precision Silicon, Sino-American Silicon Products (SAS), Solar Applied Materials Technology, Solartech Energy Corp, Sunrise Global Solar Energy, Sysgration, Tainenergy Tech, Tera Autotec, Tyntek, Wafer Works, Wholetech System Hitech

# Taiwan Shipments

## 42 Rigid PCB & 8 Laminate Manufacturers

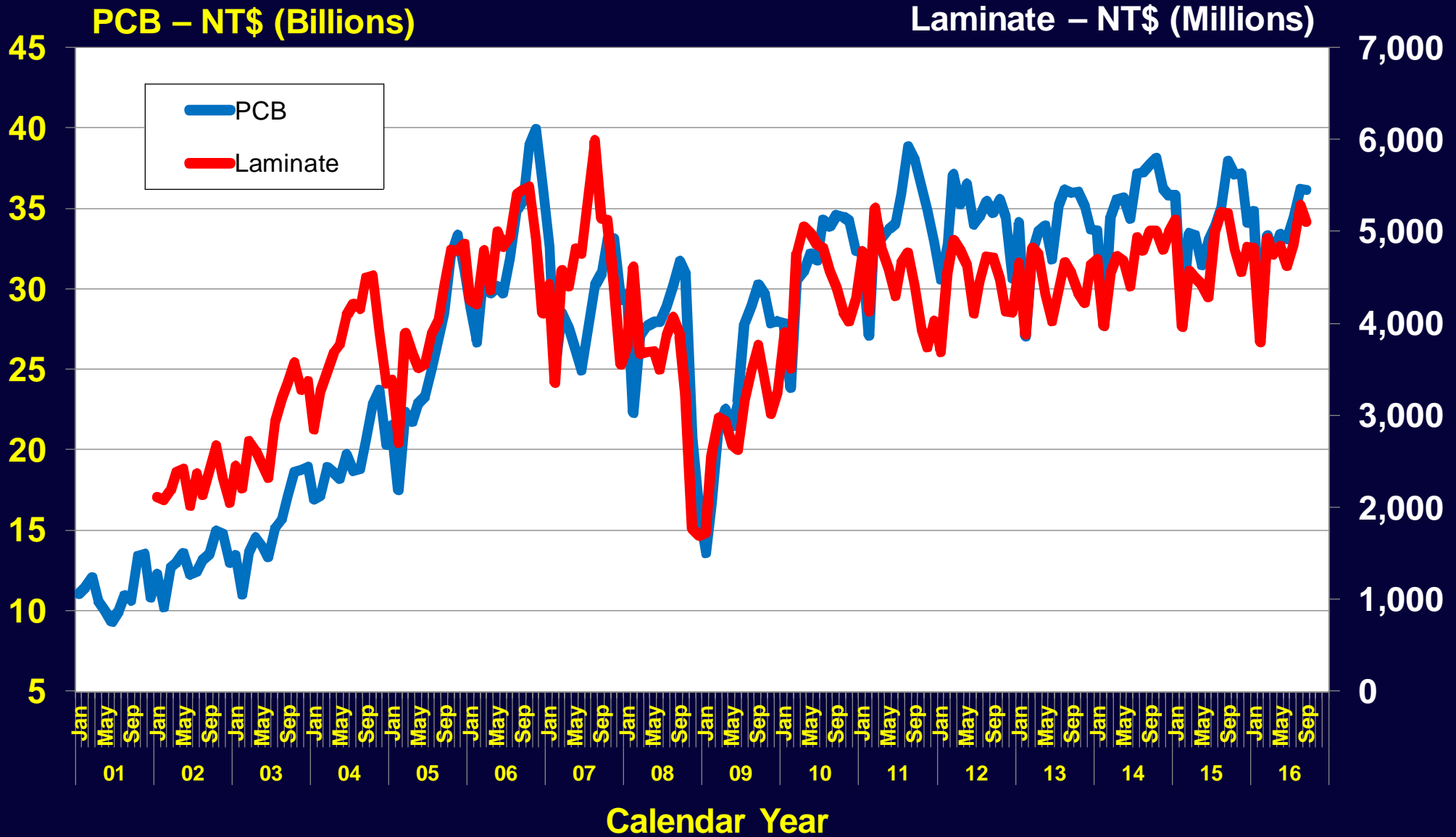


Chart 11

# Asia Pacific CCG PCB Leading Indicator vs. China/Taiwan PCB Shipments @ Fluctuating Exchange



Source: Custer Consulting Group

# European Computer, Electronic & Optical Products Production

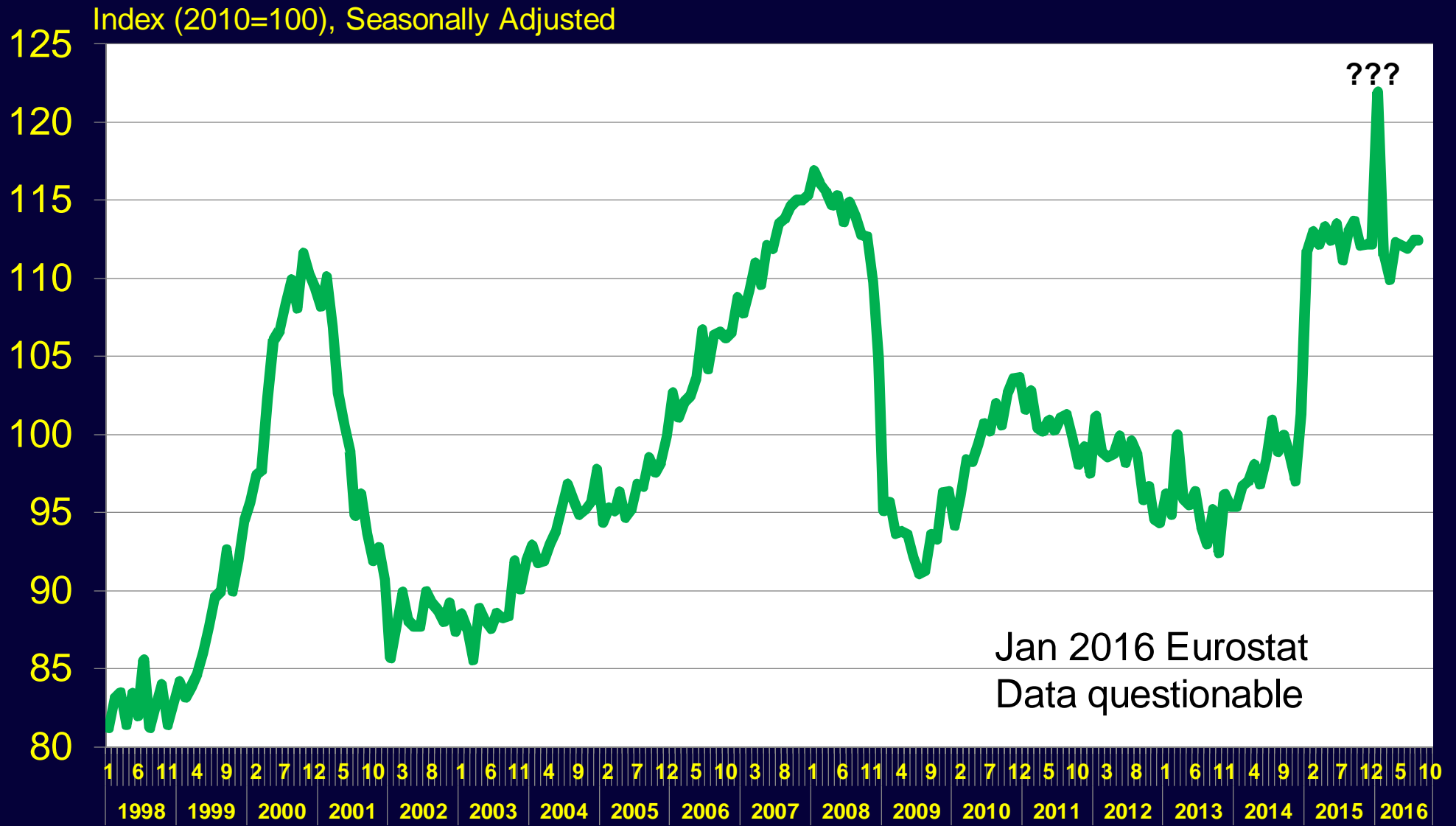


Chart 13

# European Motor Vehicle Production

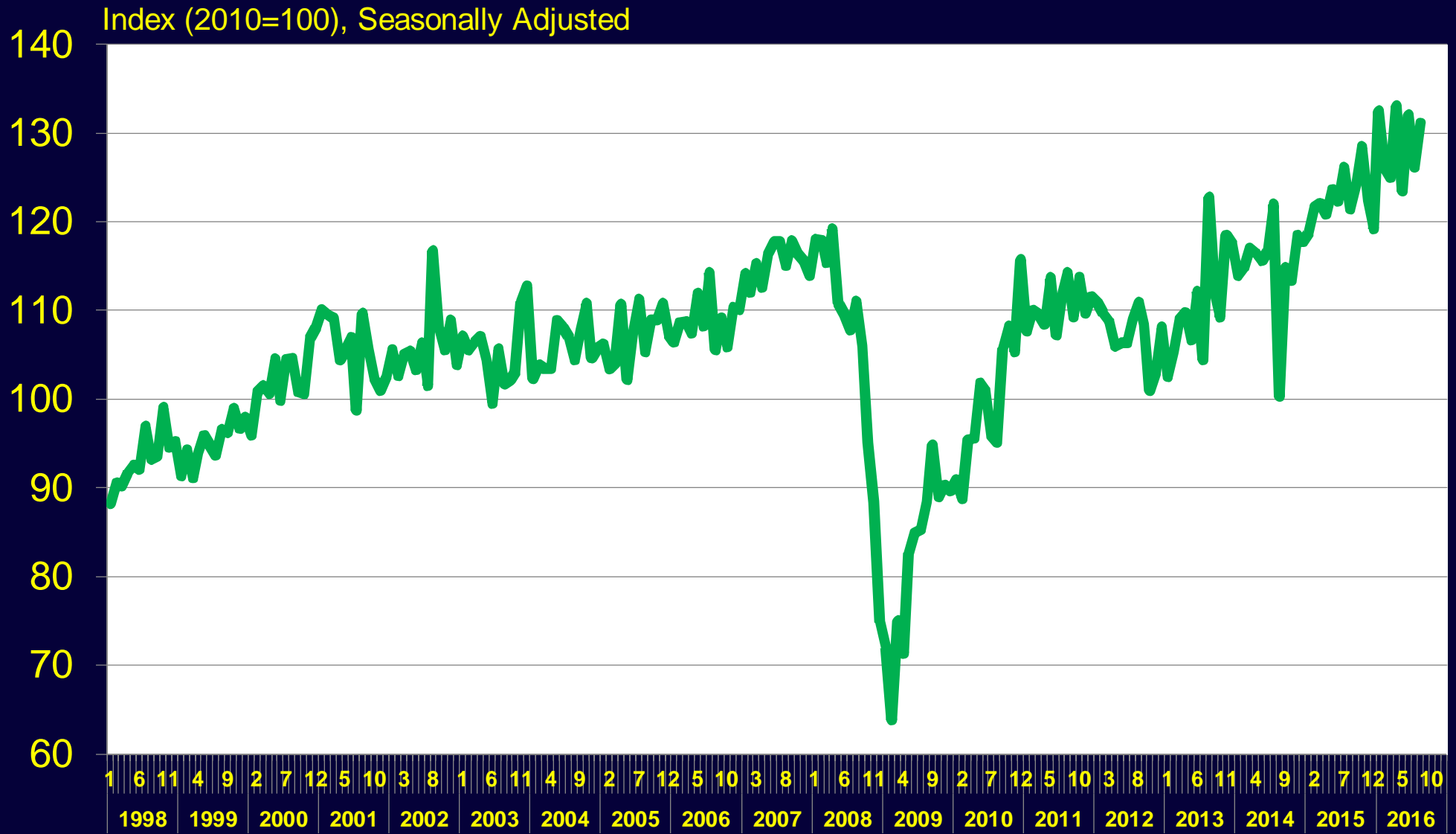


Chart 14

# European Production - Aircraft, Spacecraft & Related Equipment

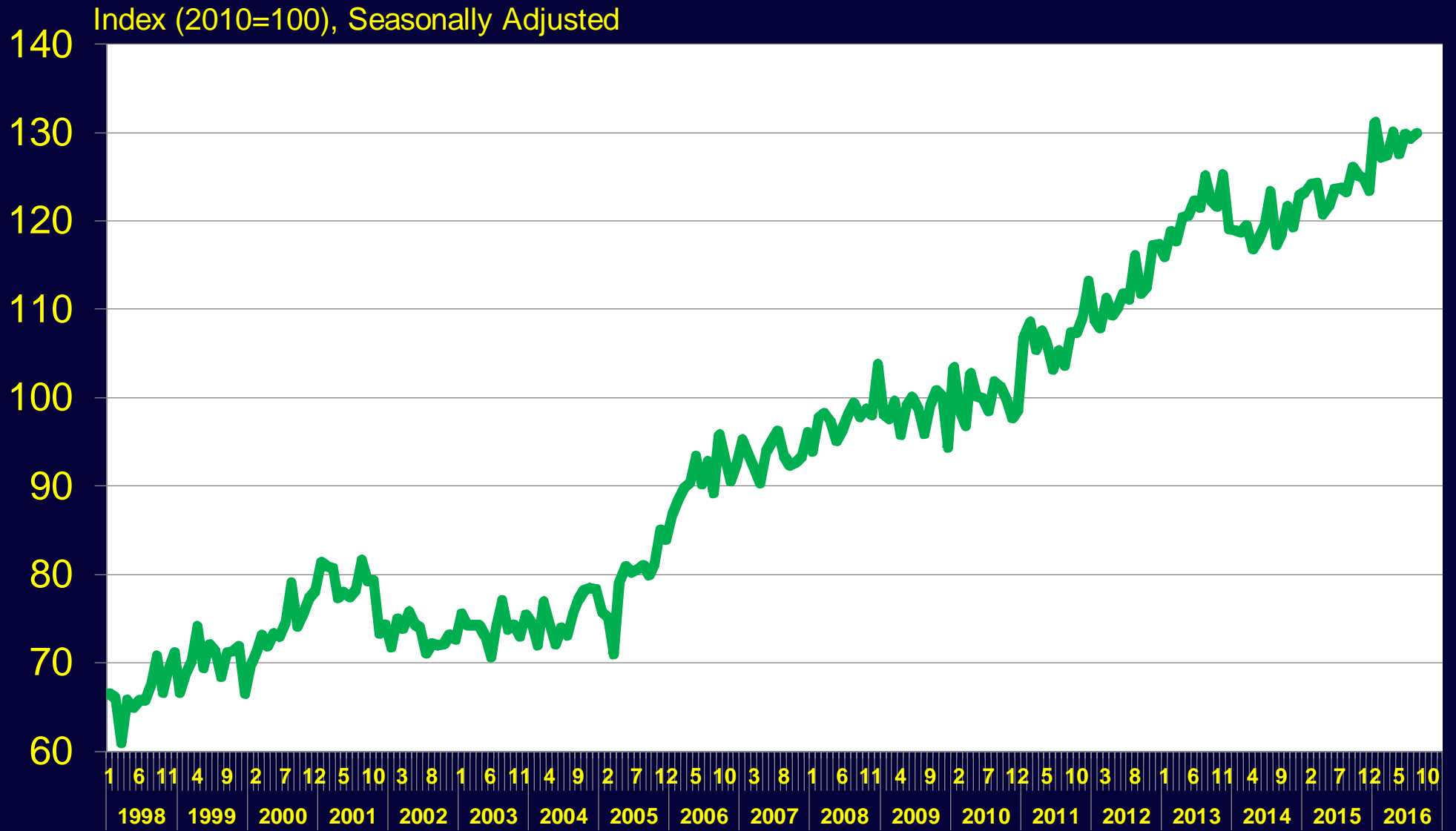


Chart 15

# European Production - Instruments & Appliances for Measuring, Testing & Navigation

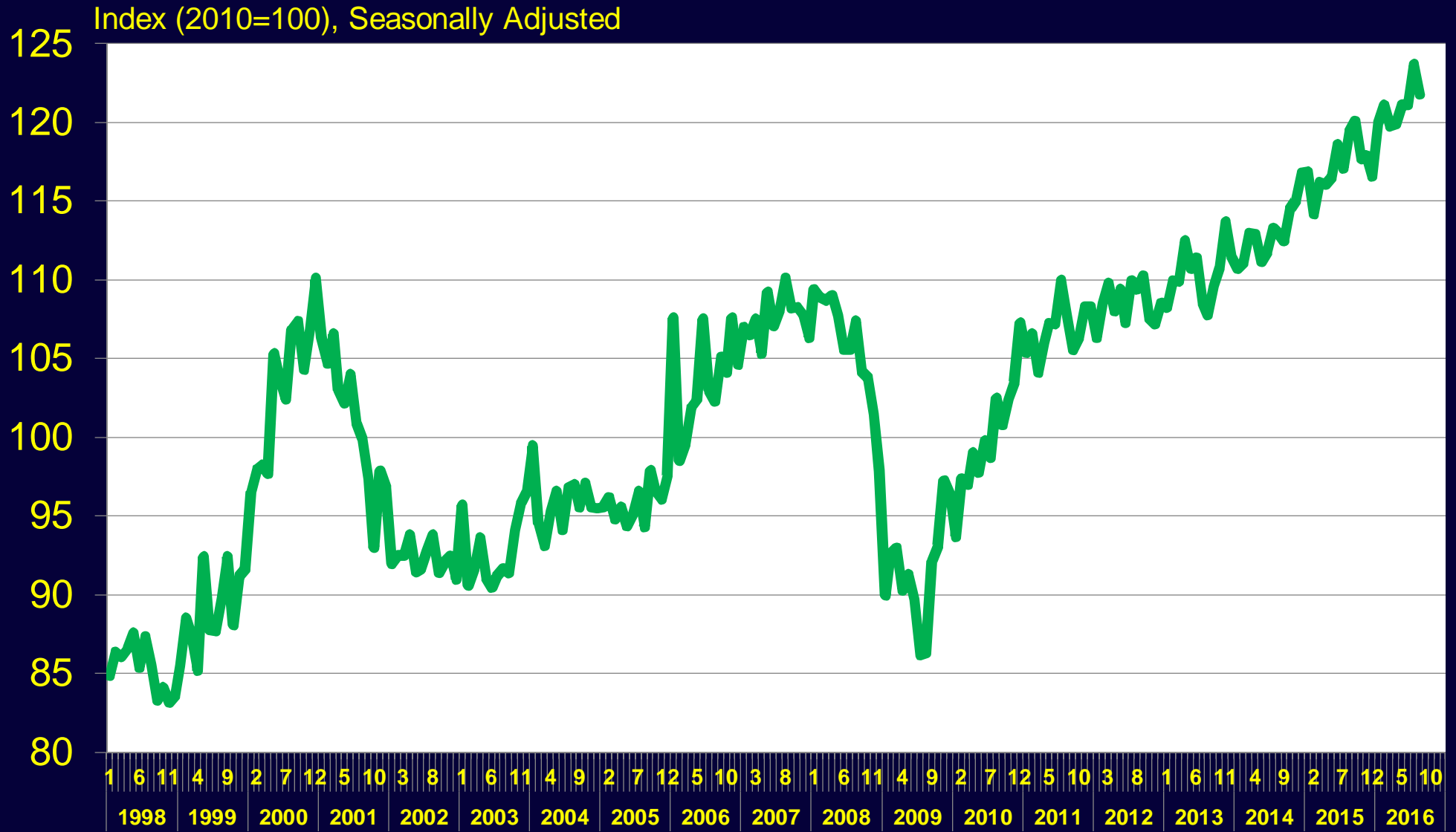
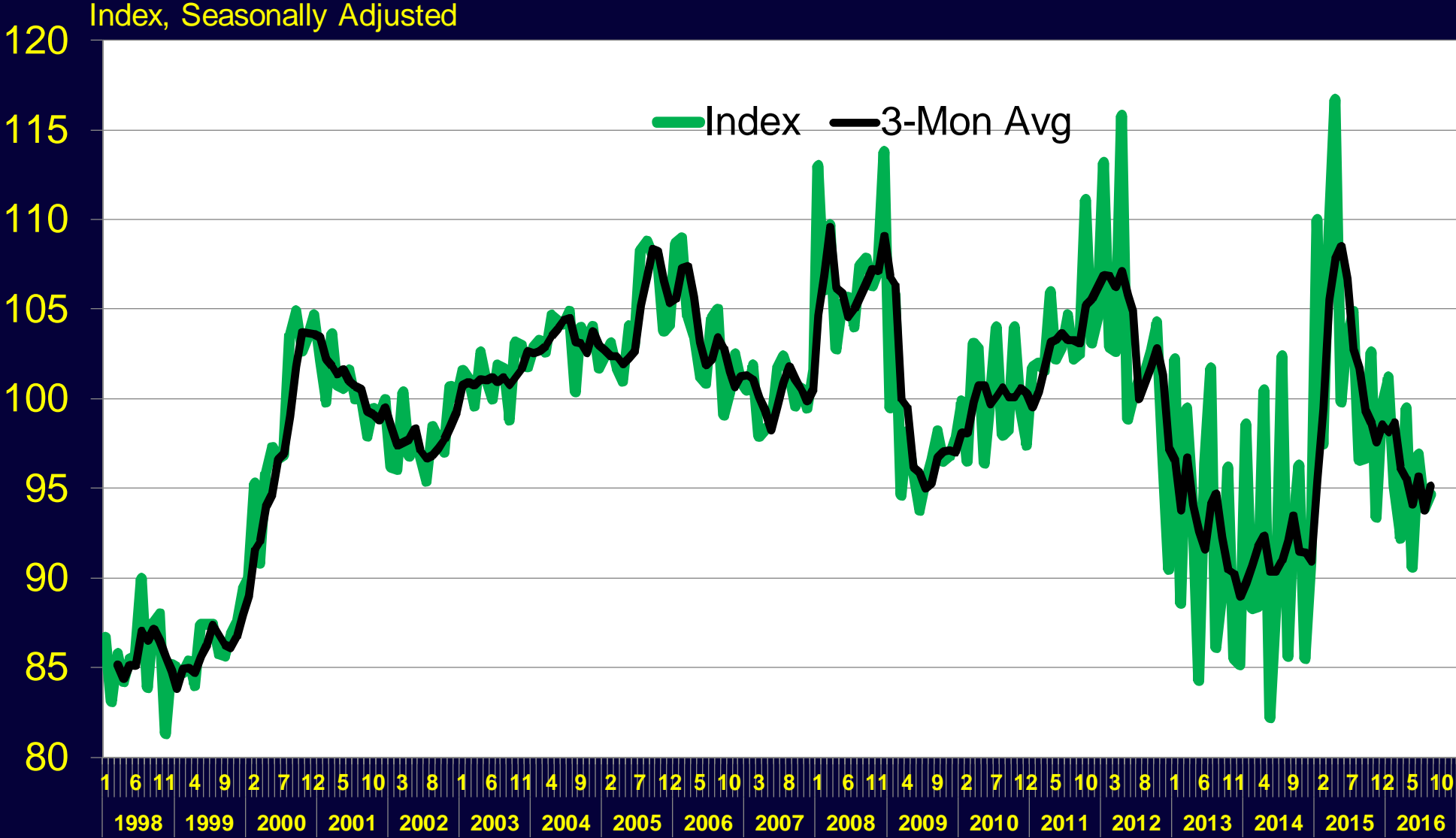


Chart 16

# European Production - Irradiation, Electromedical & Electrotherapeutic Equipment



Eurostat, C266 category, EU 28 countries

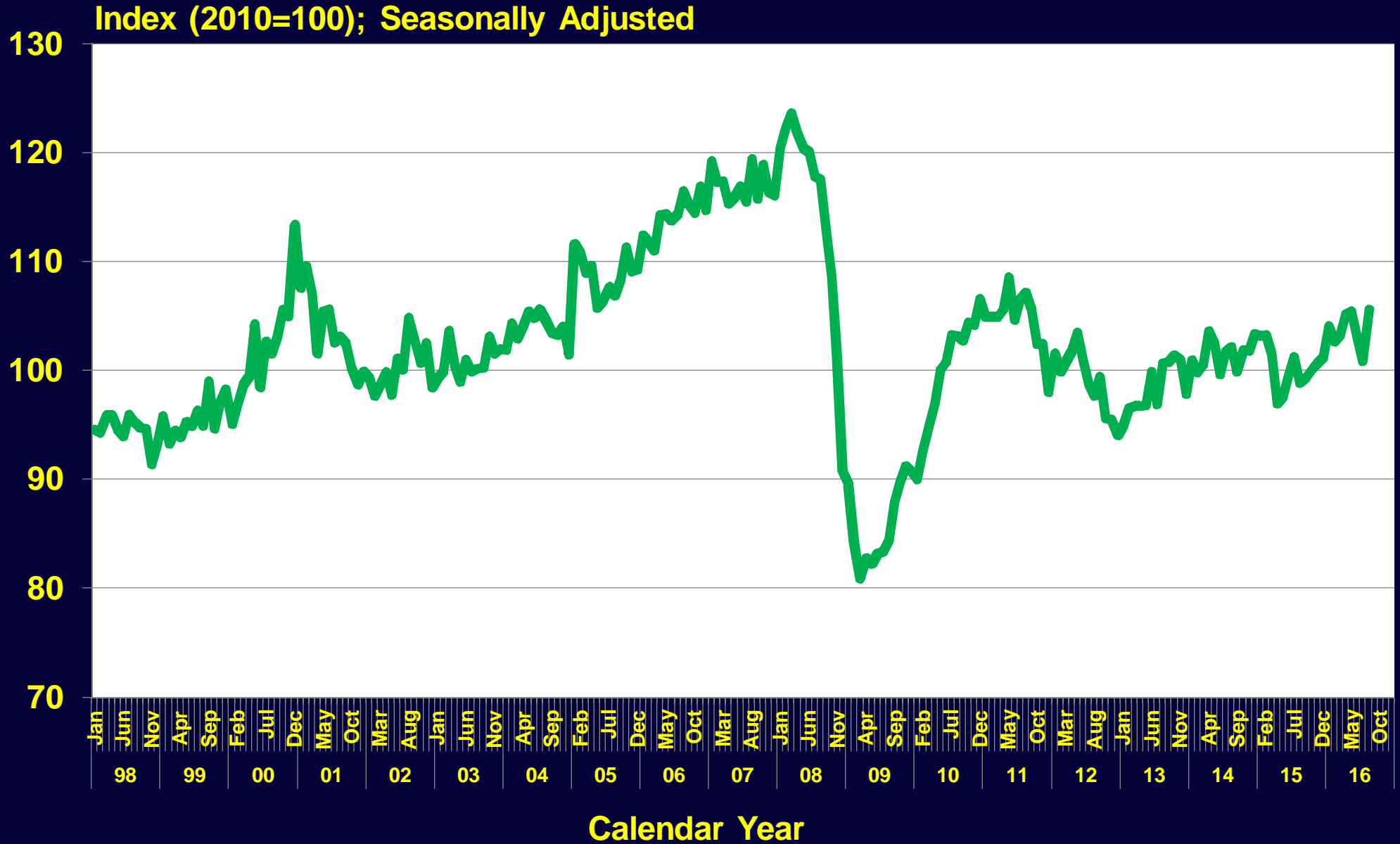


Chart 17

# European Loaded Electronic Board Production



# European Electronic Wiring Devices

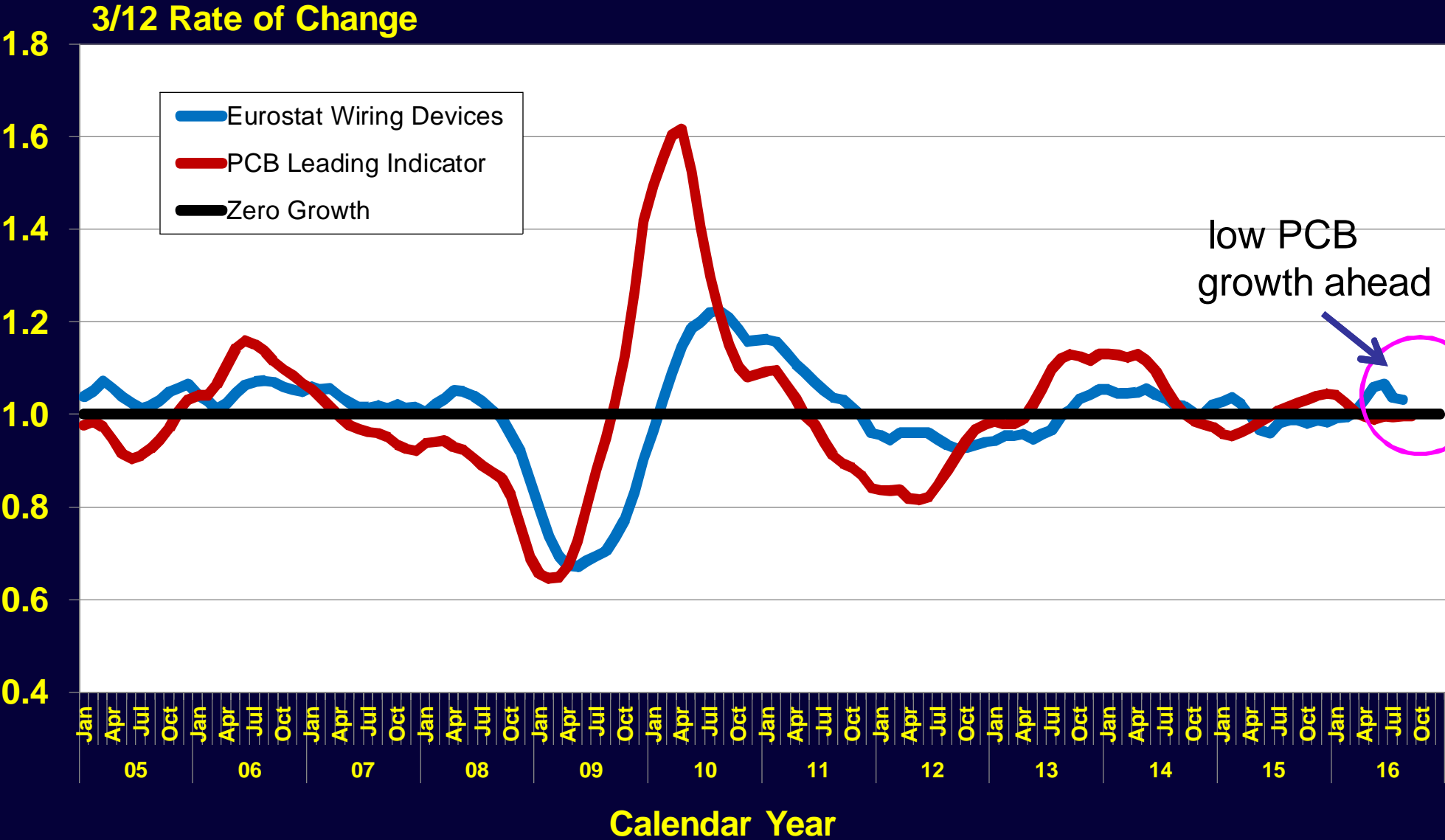


# European PCB Monthly Shipments



Source: Custer Consulting Group estimate based upon industry data

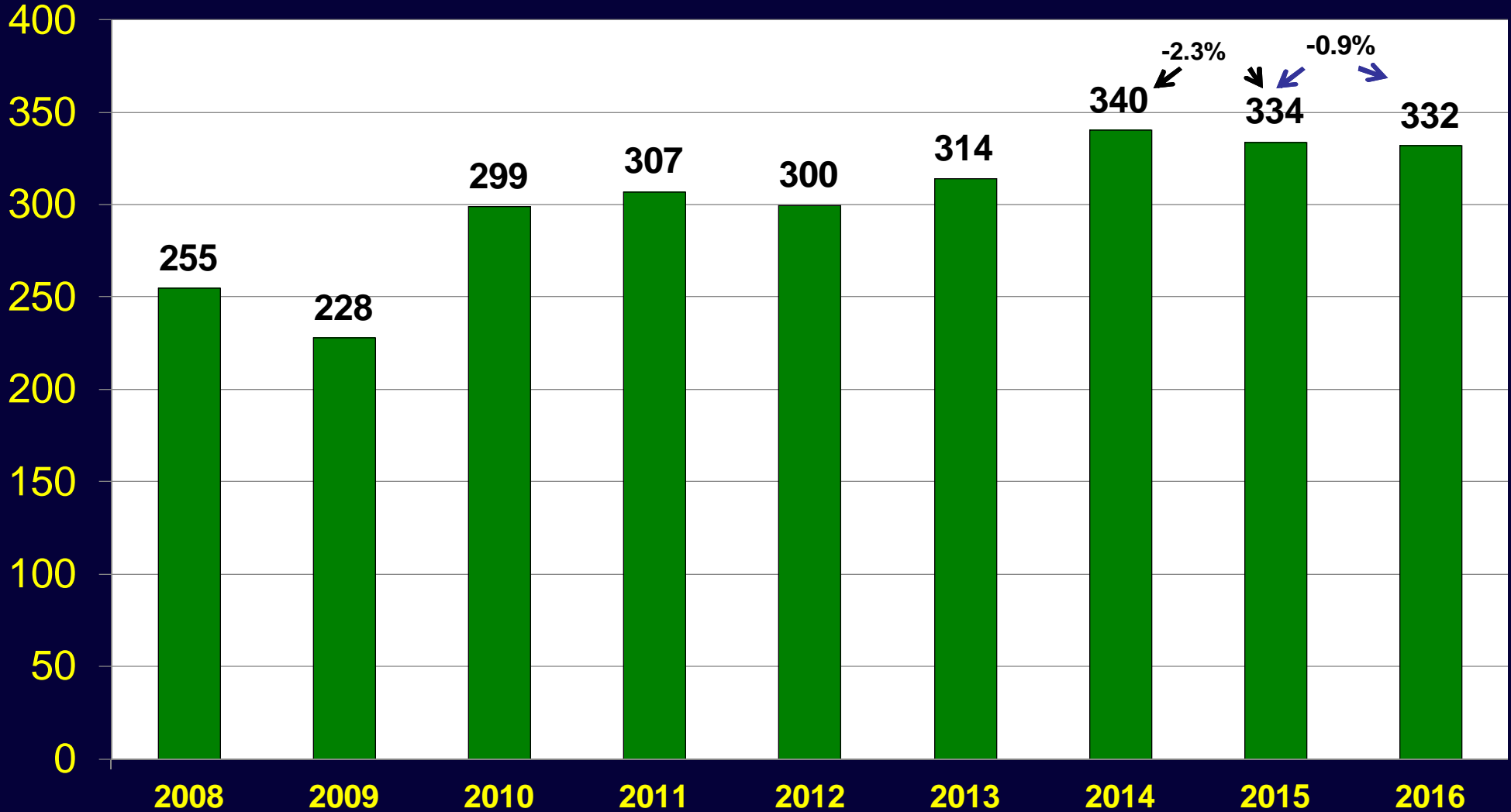
# Europe PMI Leading Indicator vs. Europe Wiring Devices



Source: Custer Consulting Group

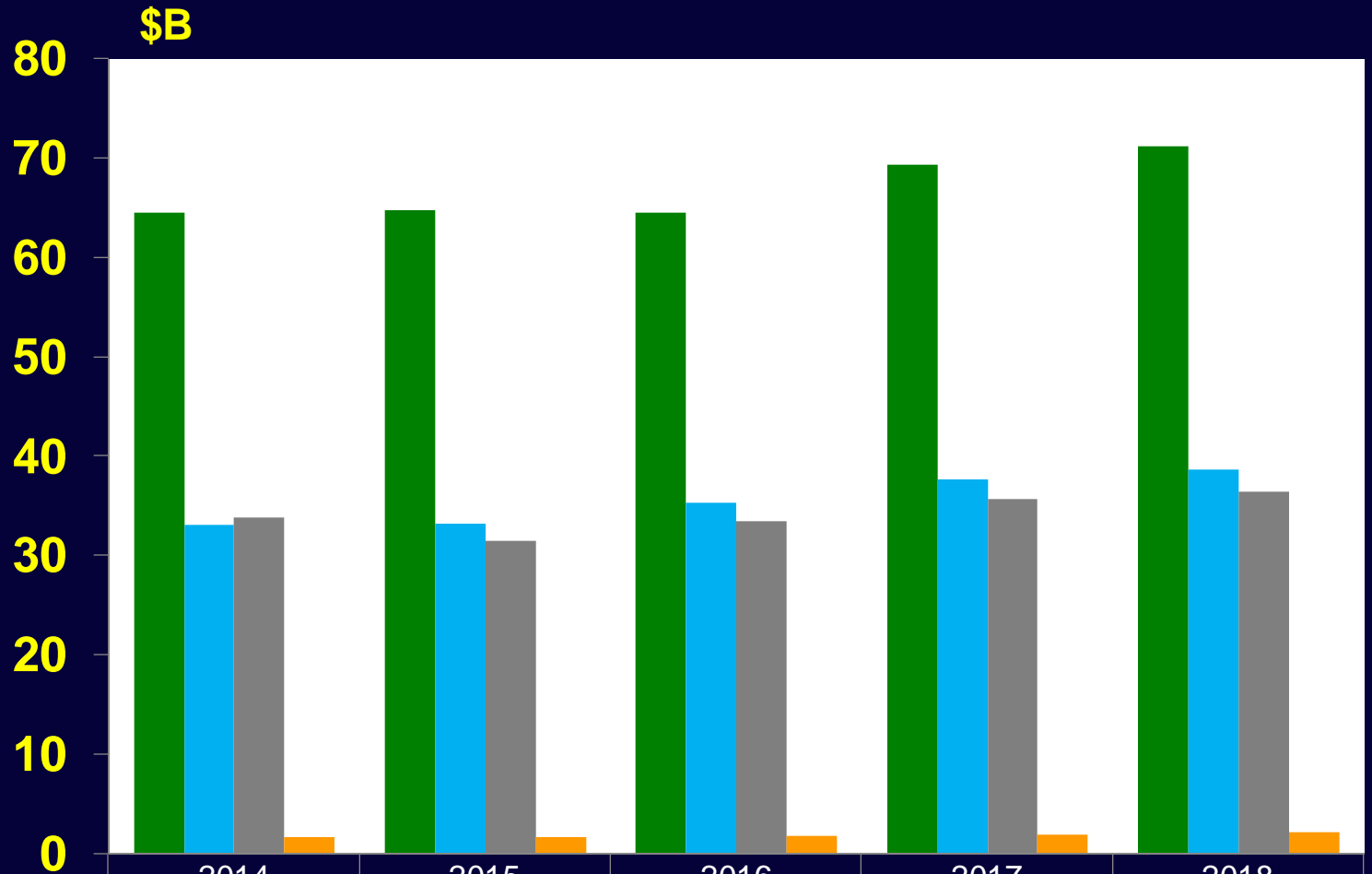
# World Semiconductor Sales Total

\$ Billions



Gartner 10/16 & prior reports

# Worldwide Semiconductor Capital Spending



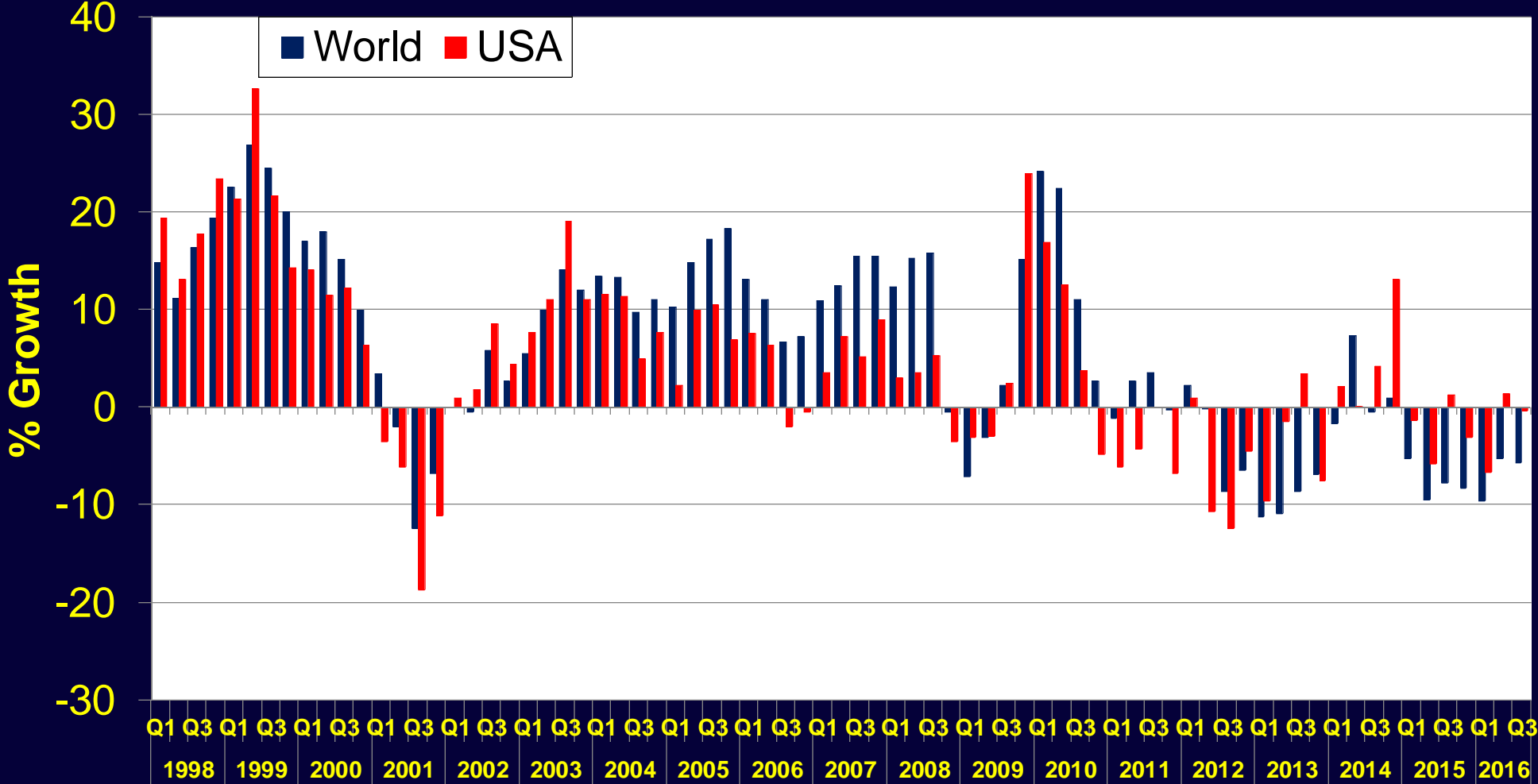
	2014	2015	2016	2017	2018
■ Semiconductor Capital Spending	64.6	64.8	64.6	69.3	71.3
■ Wafer Level Manufacturing	33.1	33.2	35.4	37.7	38.7
■ Wafer Fab Equipment	33.8	31.5	33.6	35.7	36.5
■ Wafer-Level Packaging & Assembly Equipment	1.7	1.8	1.8	2.0	2.2

# Silicon Wafer Shipments



SEMI 10/2016; semiconductors only, does not include solar applications

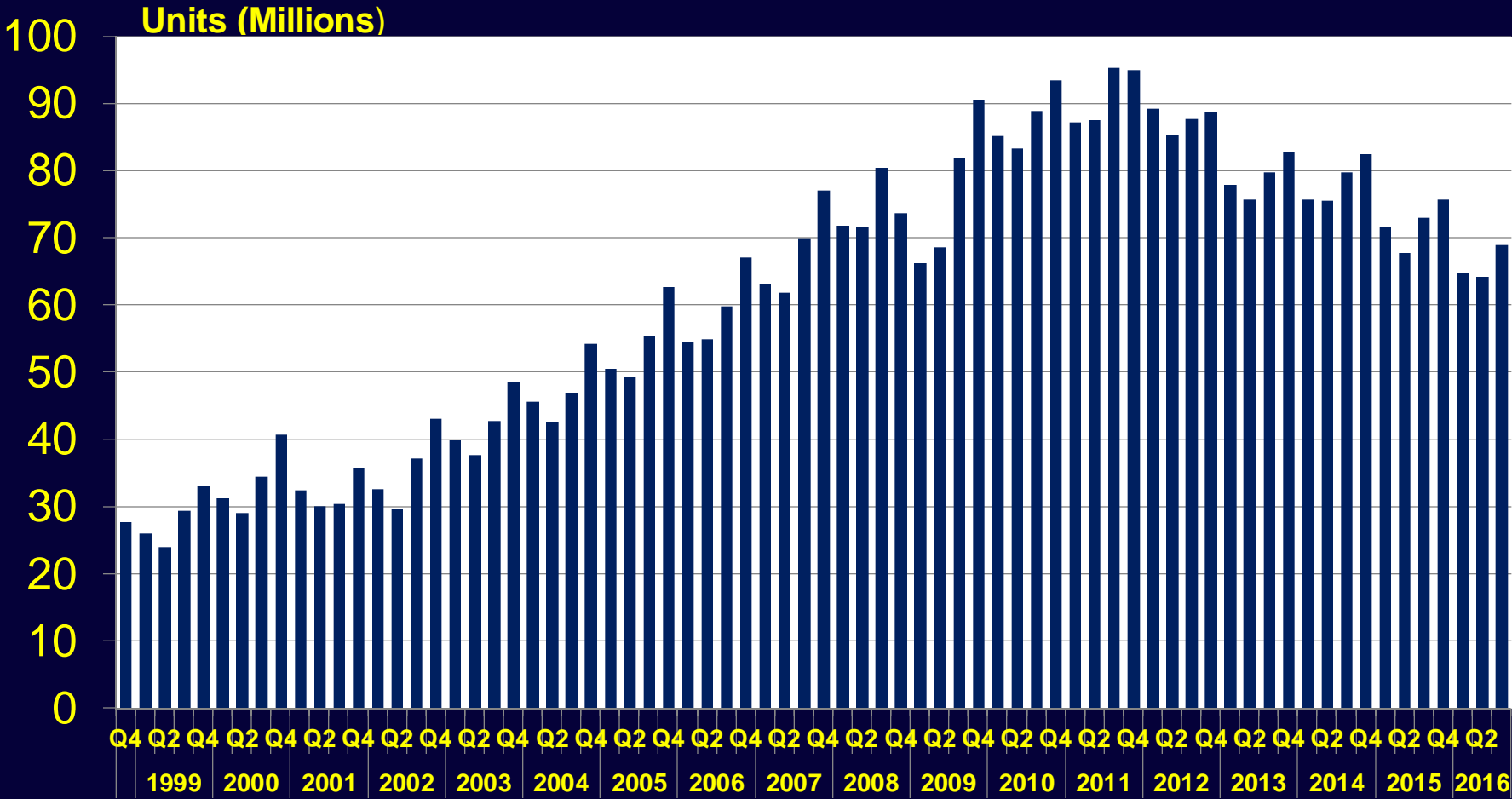
# Personal Computer Market Growth World & USA





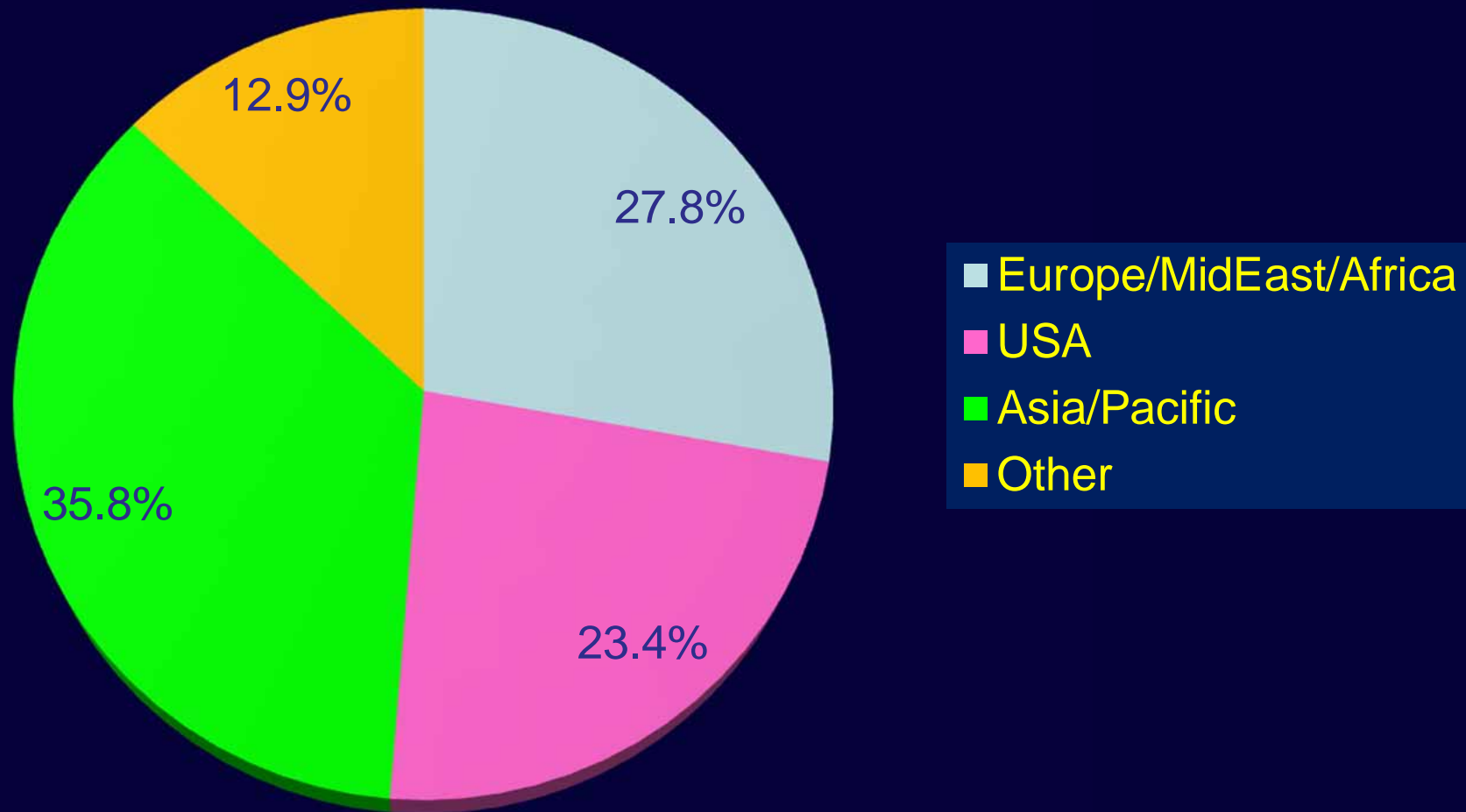
# Personal Computer Unit Shipments

World  
Units



Gartner Dataquest 10/16 & prior reports  
Server & Media Tablets not included

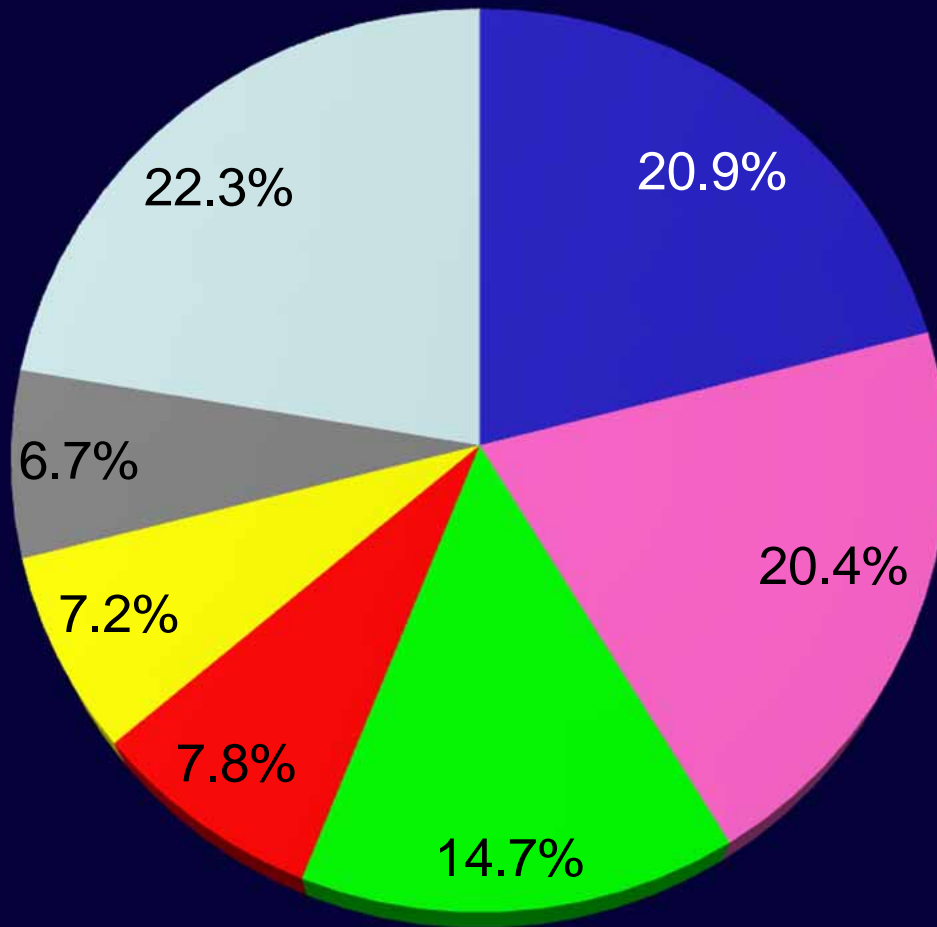
# World Personal Computer Market 3Q'16



**TOTAL: 68.9 Million Units**

Includes desk-based PCs, mobile PCs, mini-notebooks but not Media Tablets

# World Personal Computer Market 3Q'16



- Lenovo
- HP Inc
- Dell
- Asus
- Apple
- Acer
- Others

**TOTAL: 68.9 Million Units**

Includes desk-based PCs, mobile PCs, mini-notebooks but not Media Tablets

# Worldwide 3D Printer Shipments (priced < \$100,000)

