

Chart 1

Purchasing Managers' Indices February (Flash) vs. January 2018

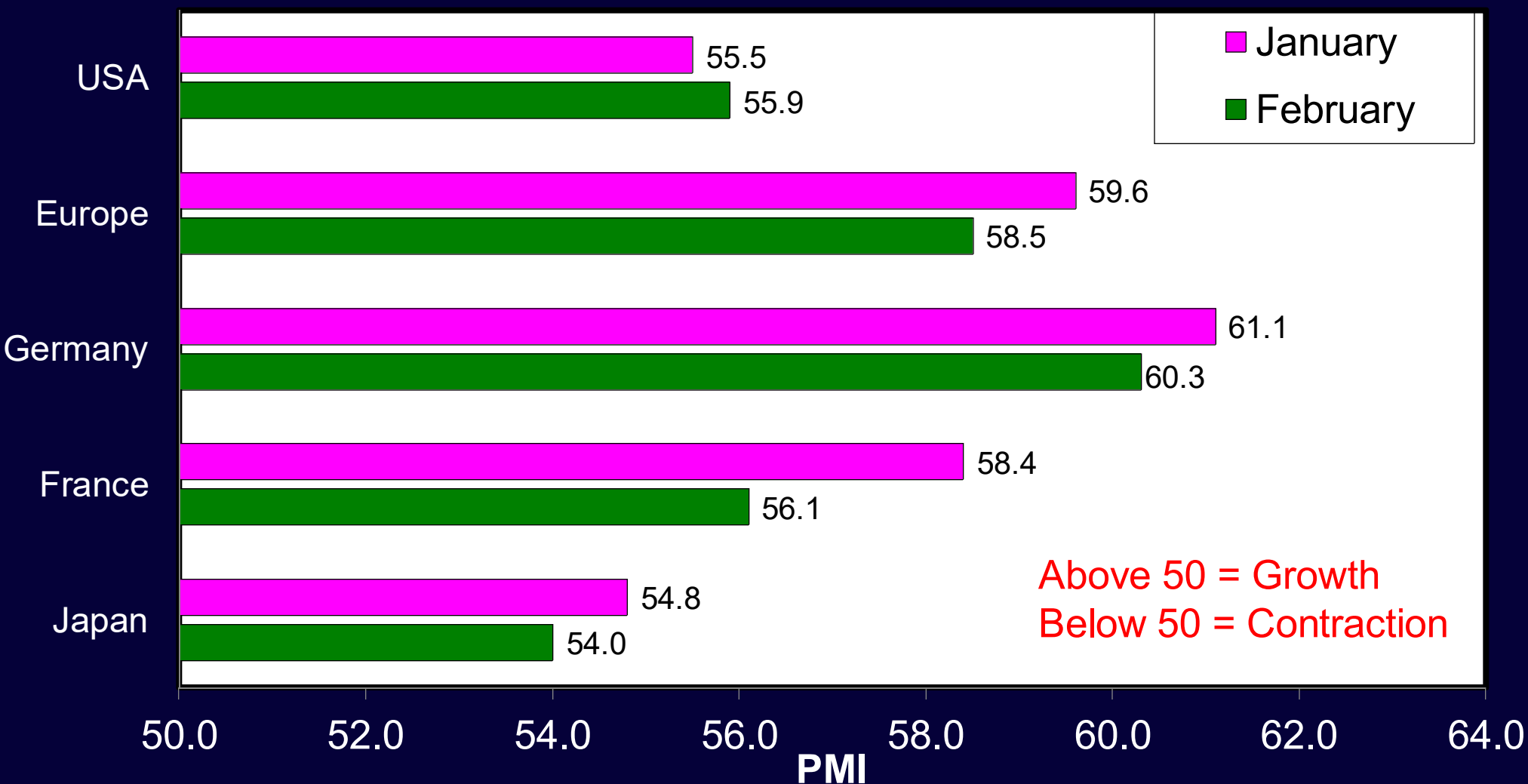


Chart 2

U.S "Purchasing Managers" Index

Markit Economics

Diffusion Index, >50 = Growth

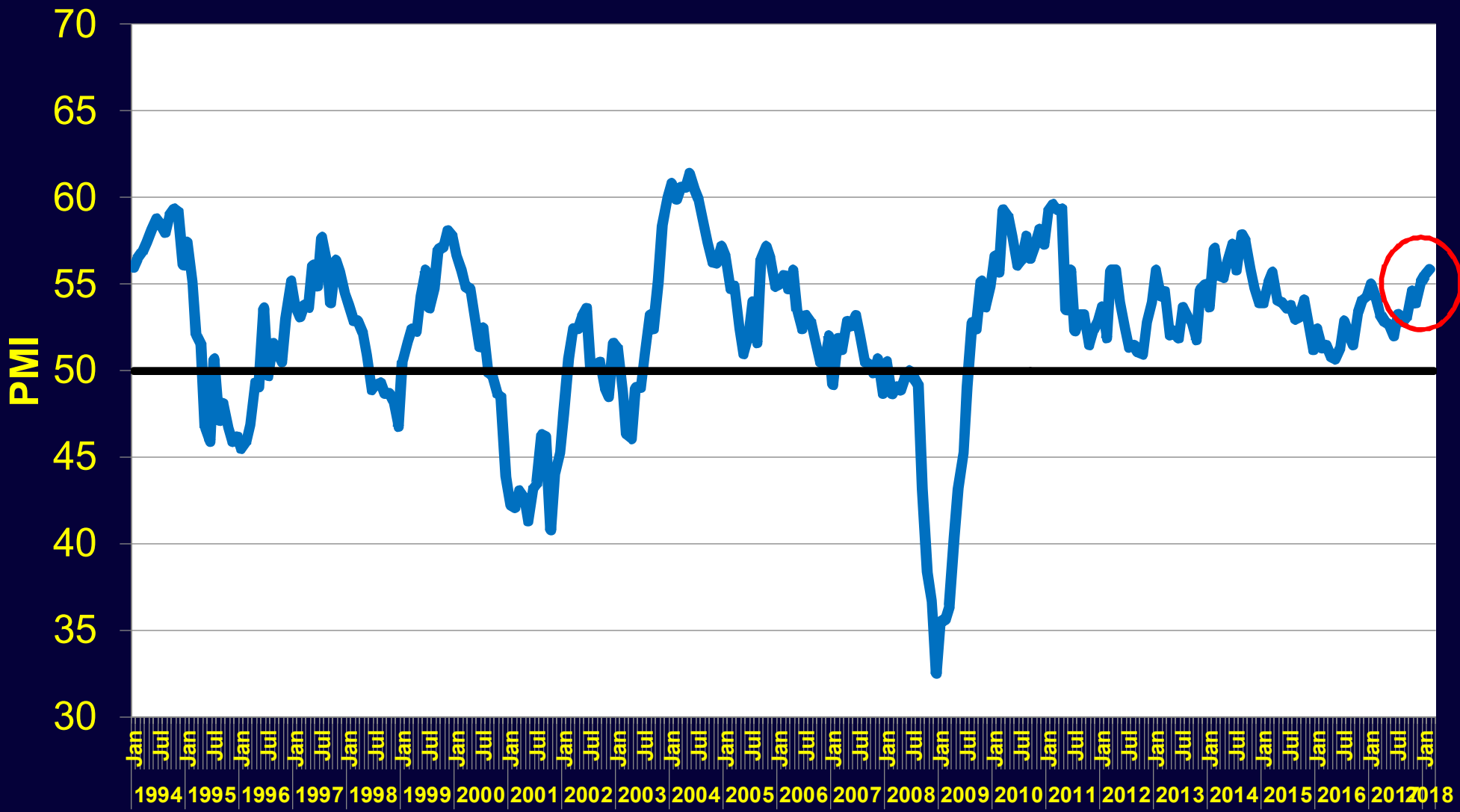


Chart 3

Japan "Purchasing Managers" Index

>50 = Growth

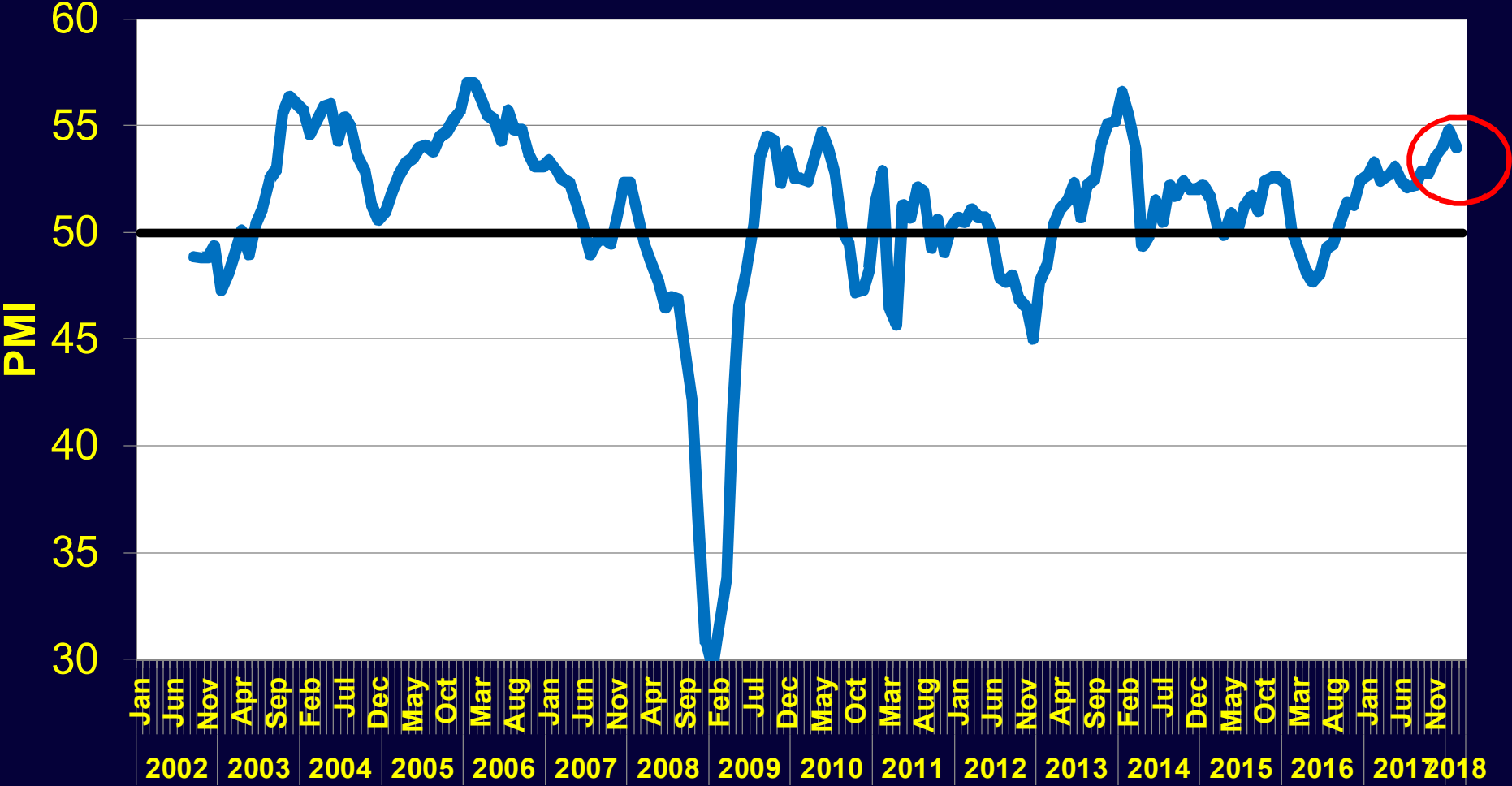
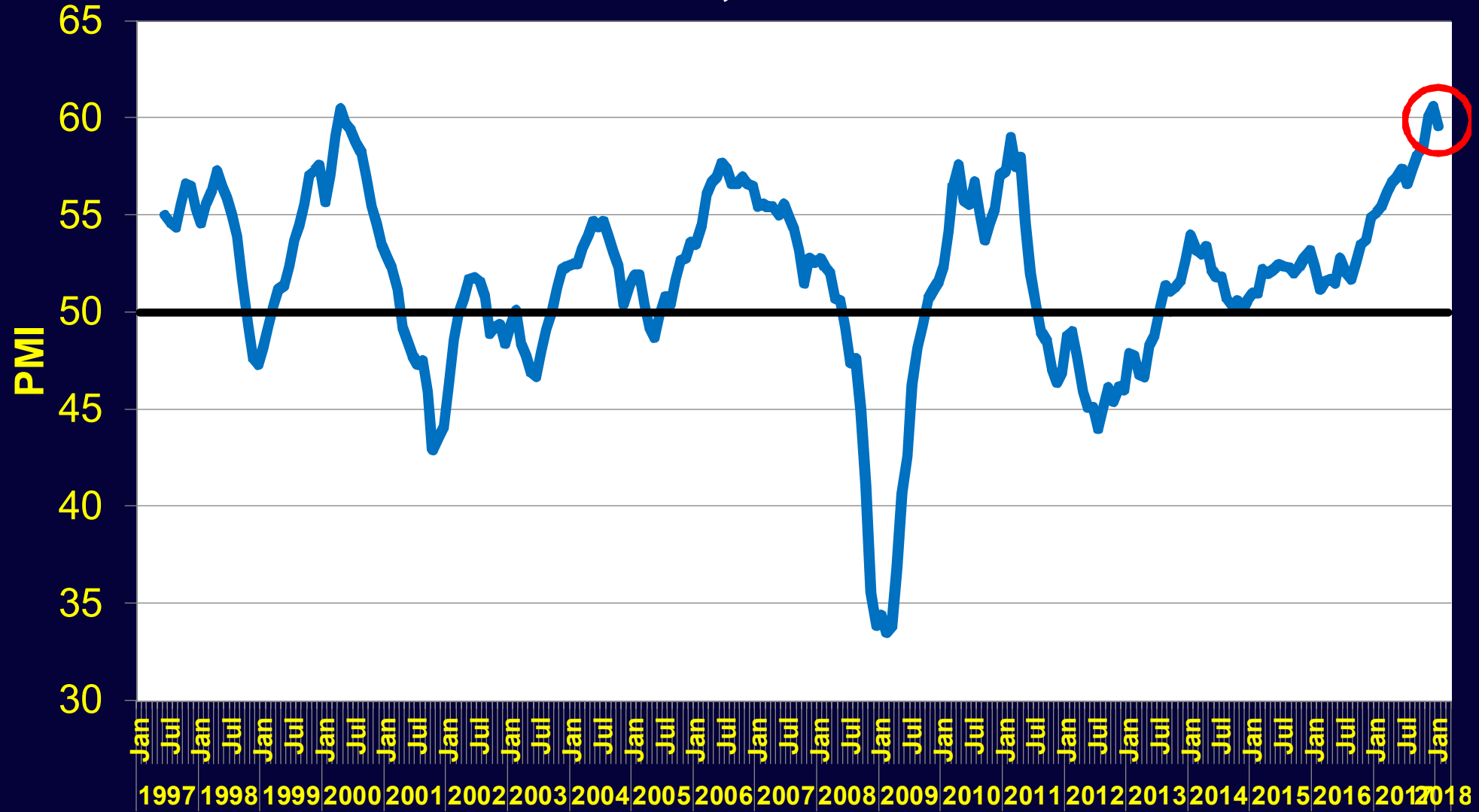


Chart 4

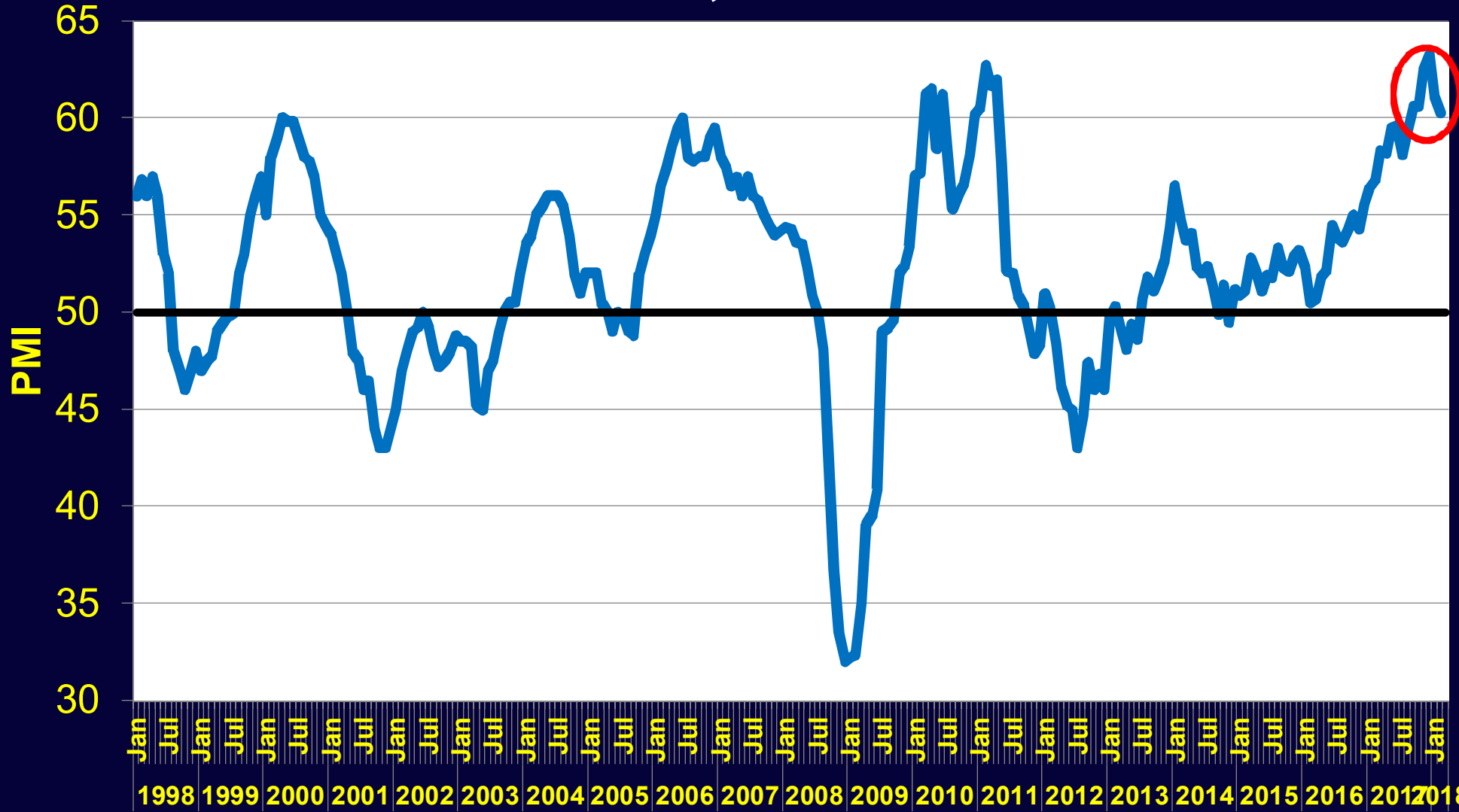
Eurozone Manufacturing "Purchasing Managers" Index

Diffusion Index, >50 = Growth



Germany Manufacturing "Purchasing Managers" Index

Diffusion Index, >50 = Growth



France Manufacturing "Purchasing Managers" Index

Diffusion Index, >50 = Growth

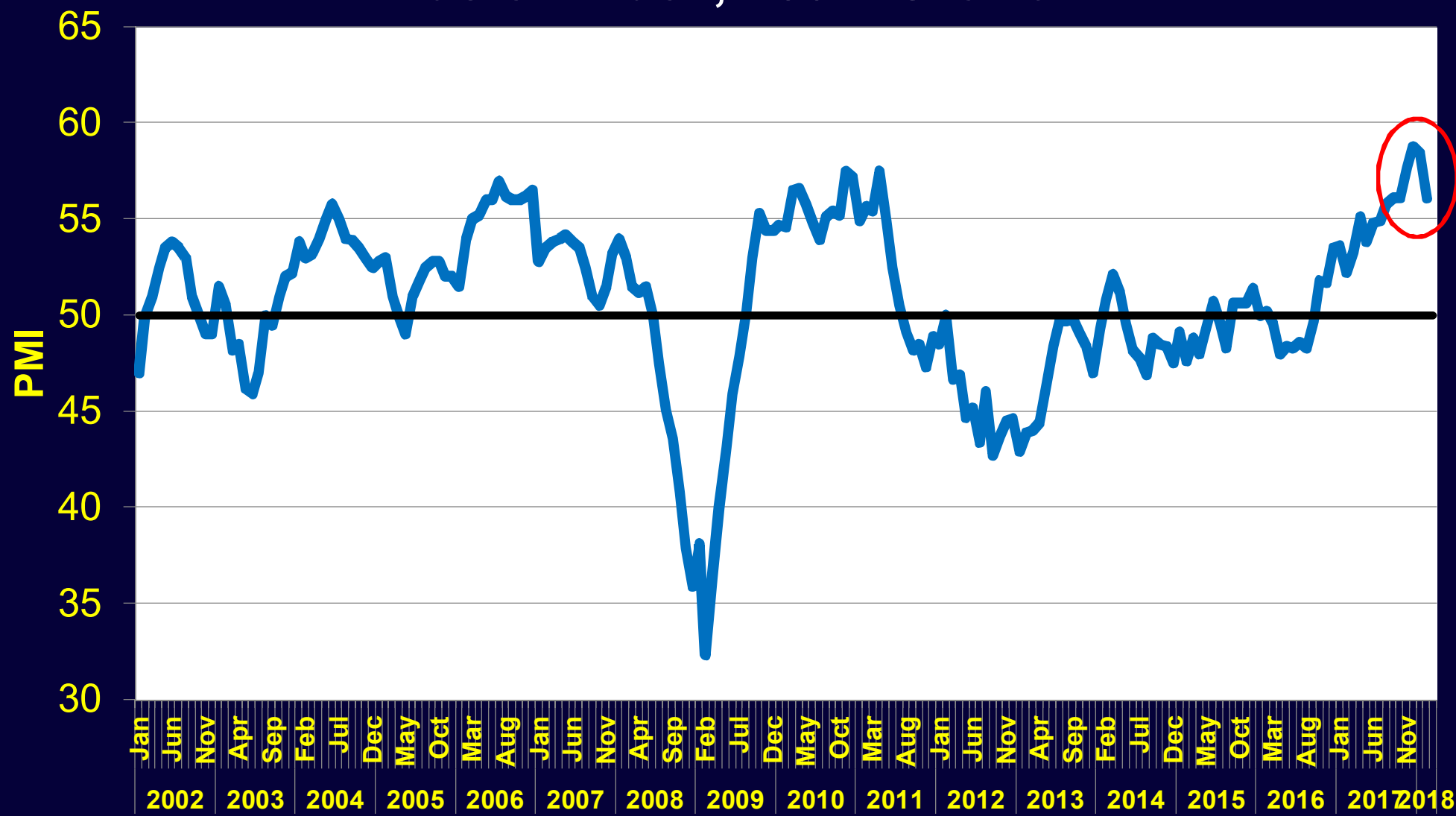


Chart 7

Japanese Yen vs. U.S. Dollar

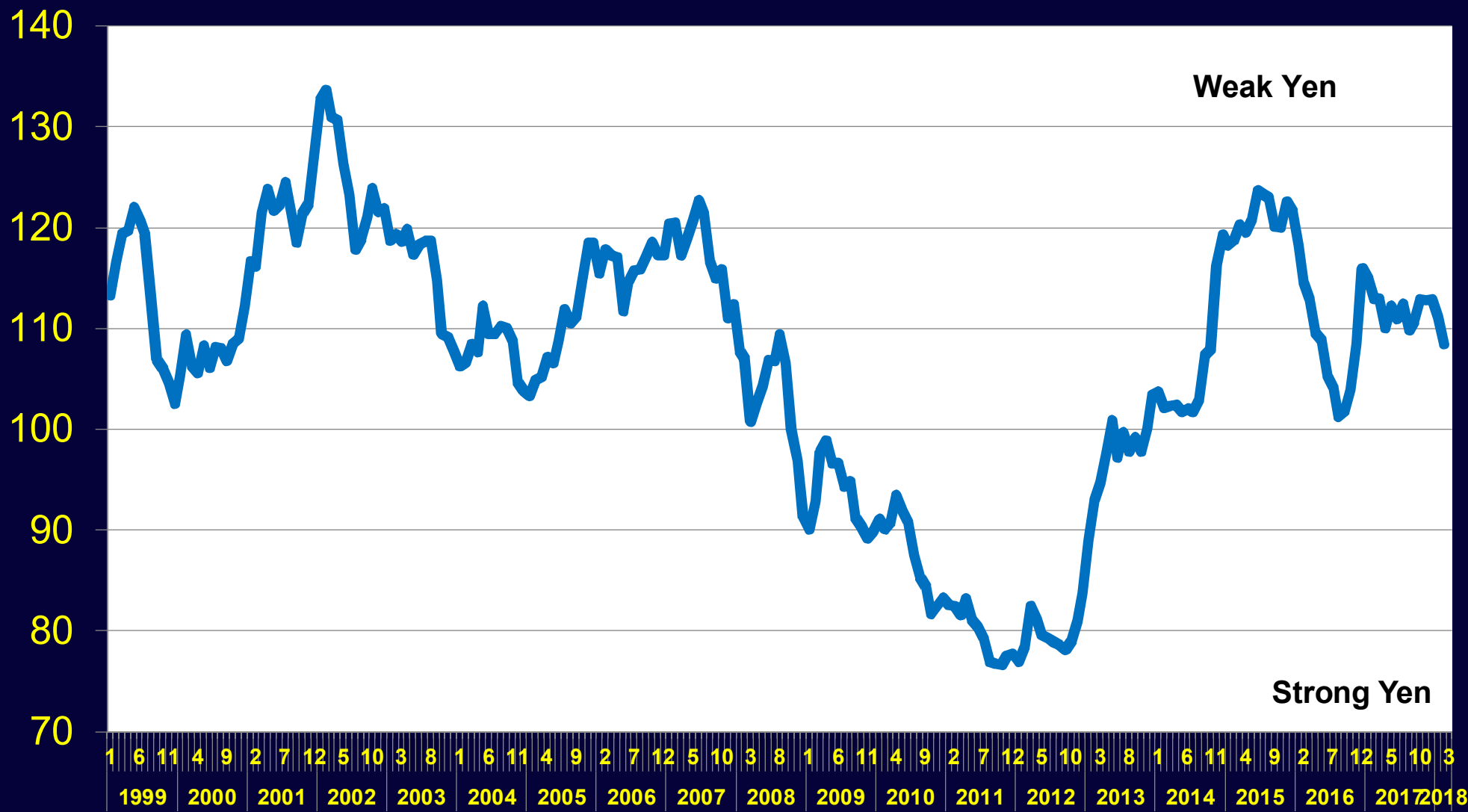




Chart 9

Japanese Electronic Component & Device Production

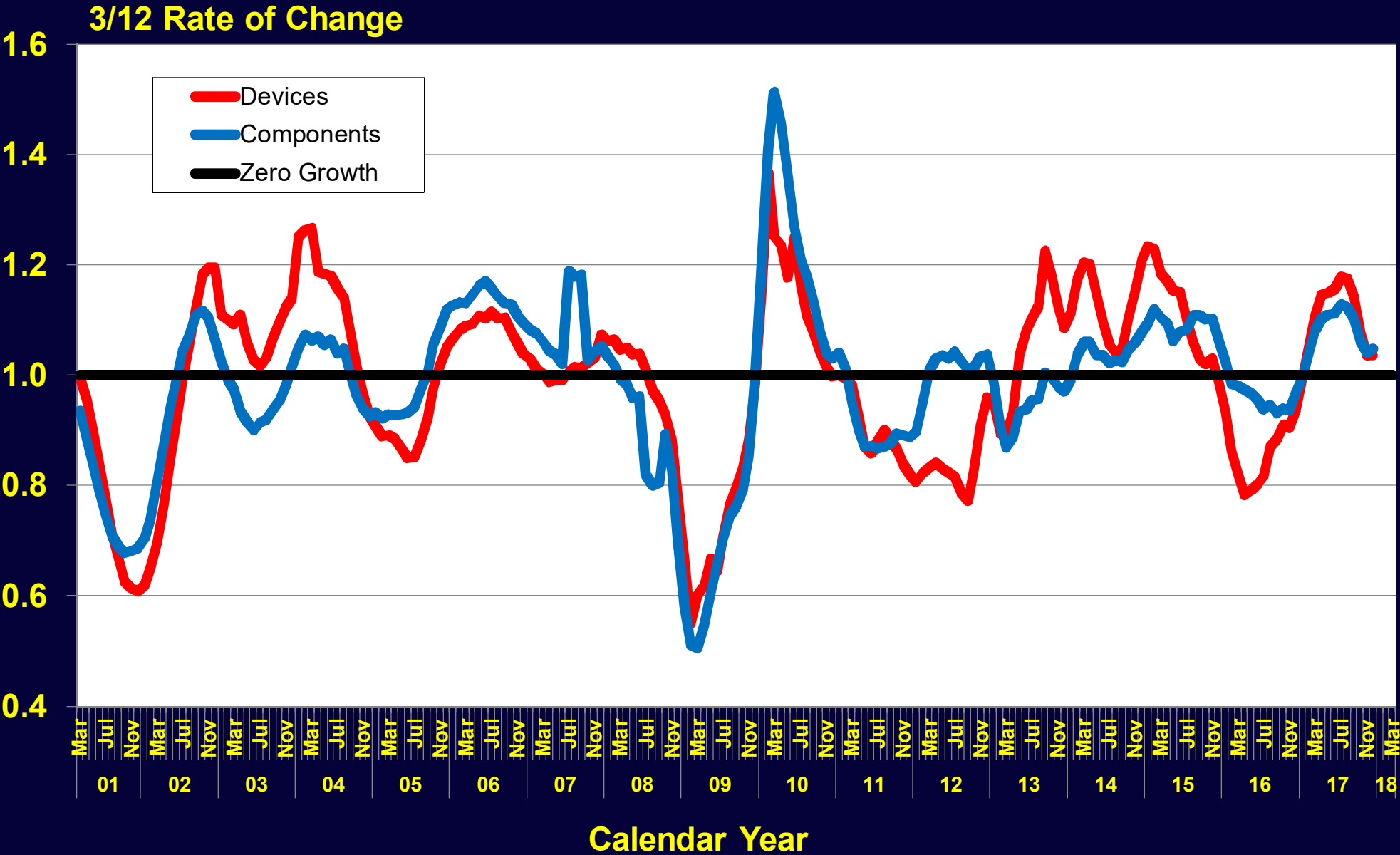


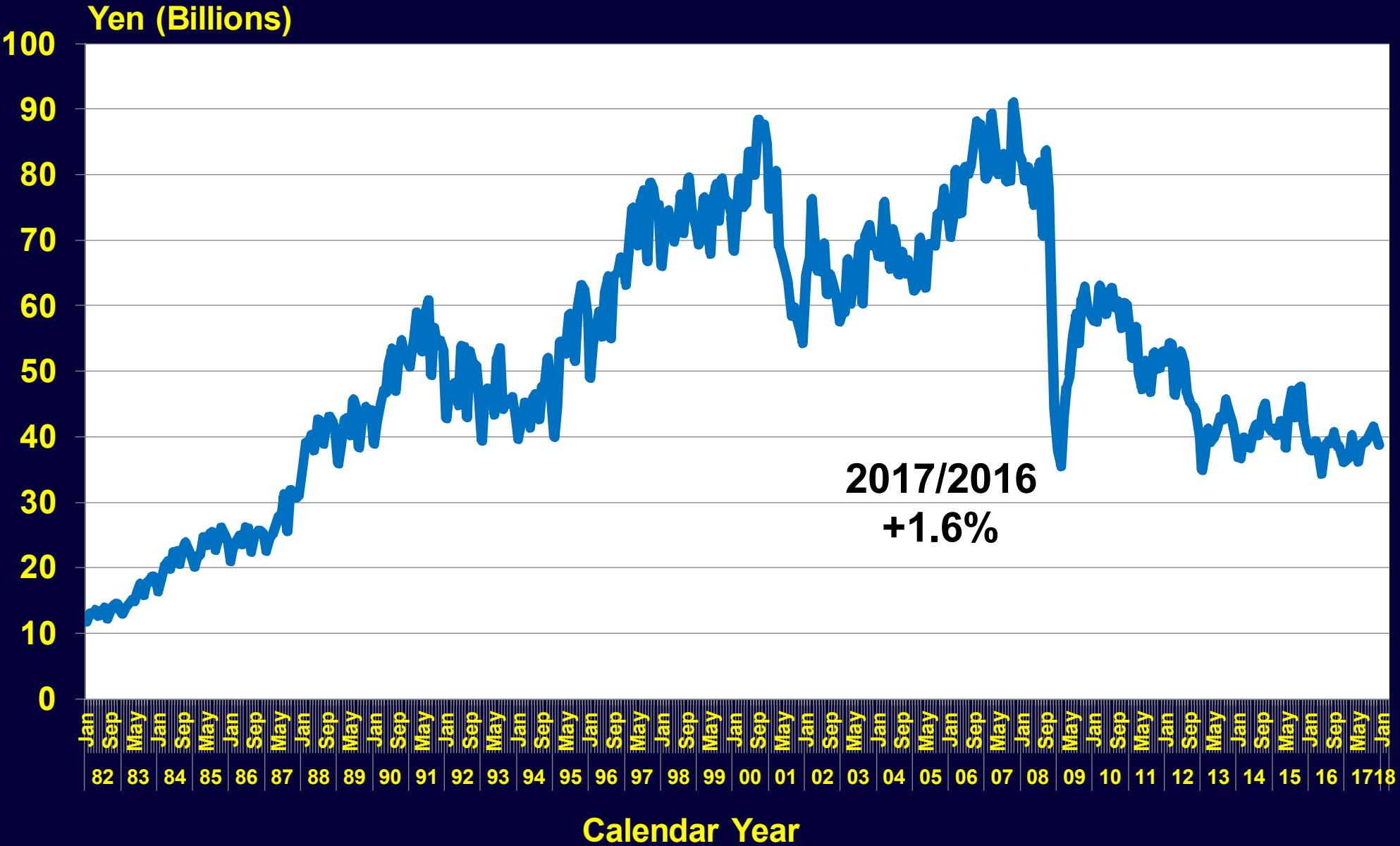
Chart 10

Japan Passive Component Domestic Production

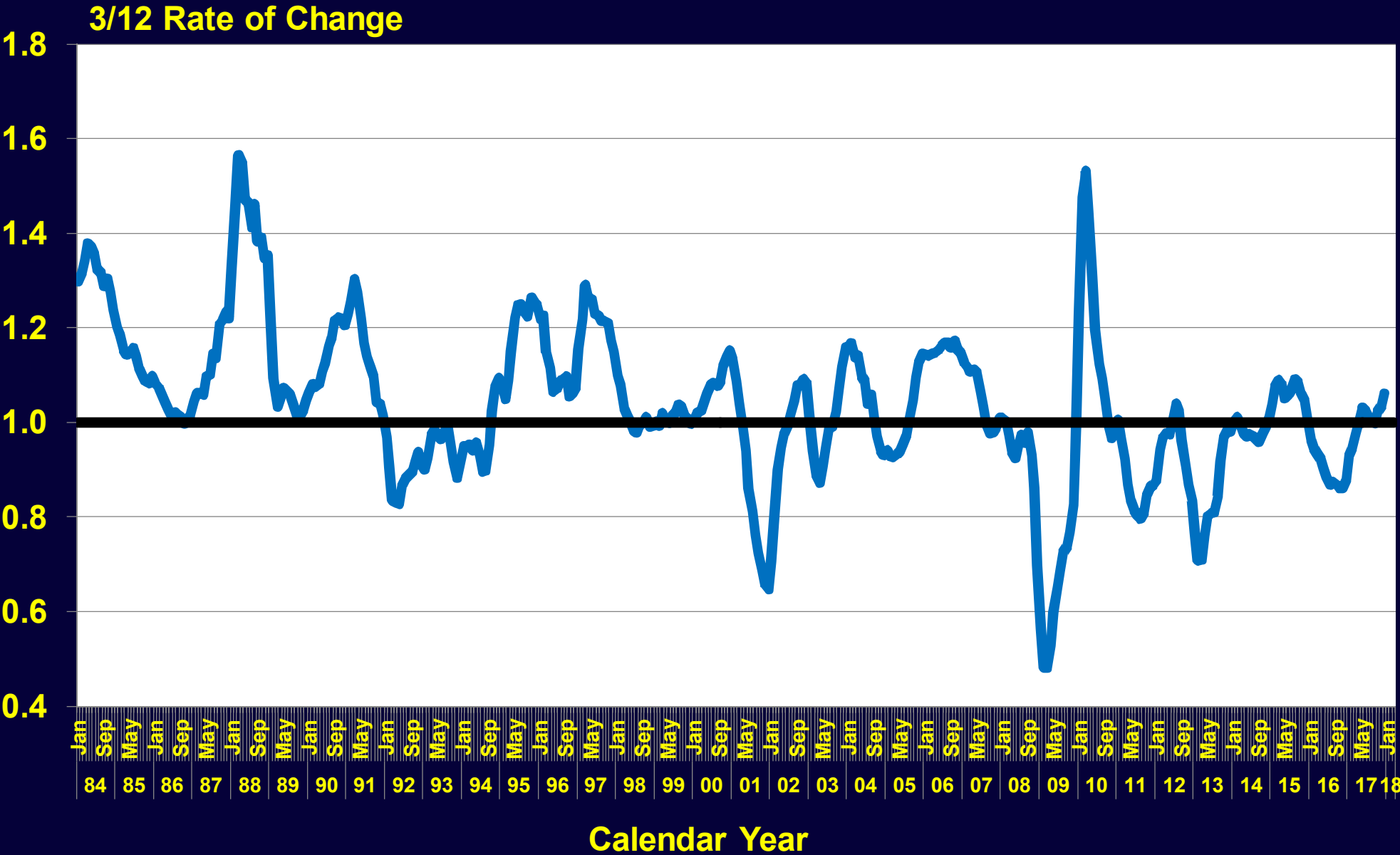
Yen (million)



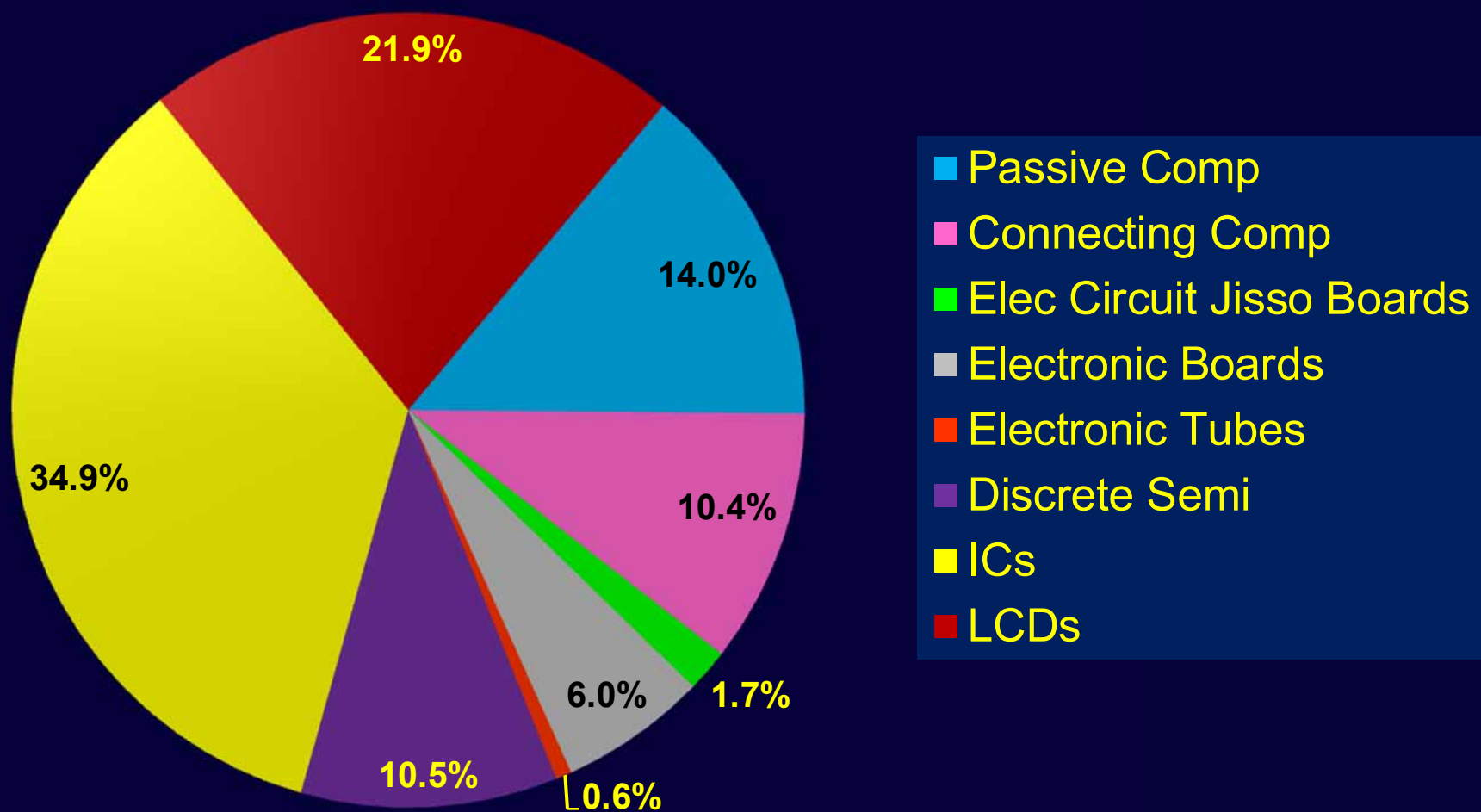
Japan PCB Production



Japan PCB Production



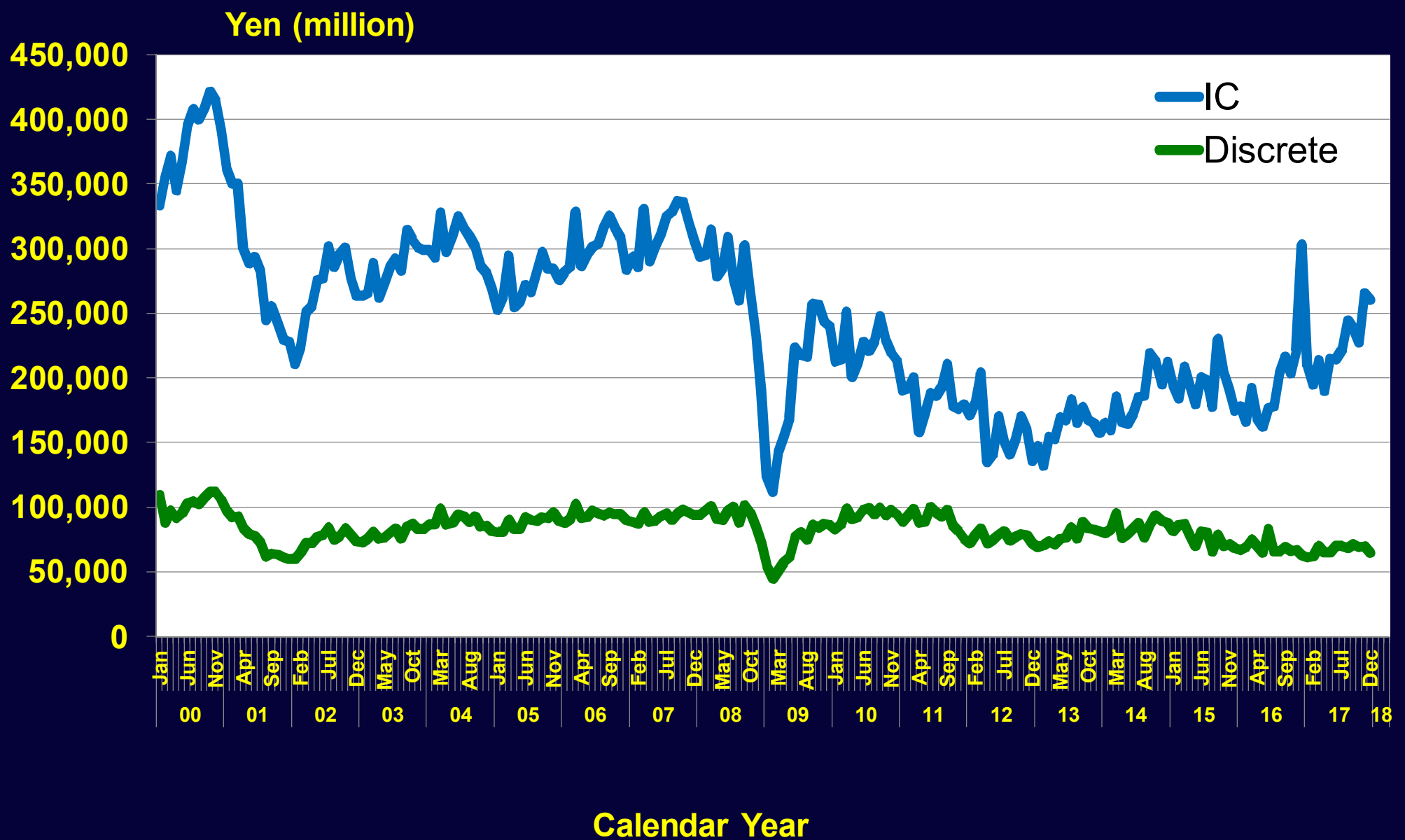
Japanese Electronic Component & Device Production 2017



2017 Total 7.7 Billion Yen

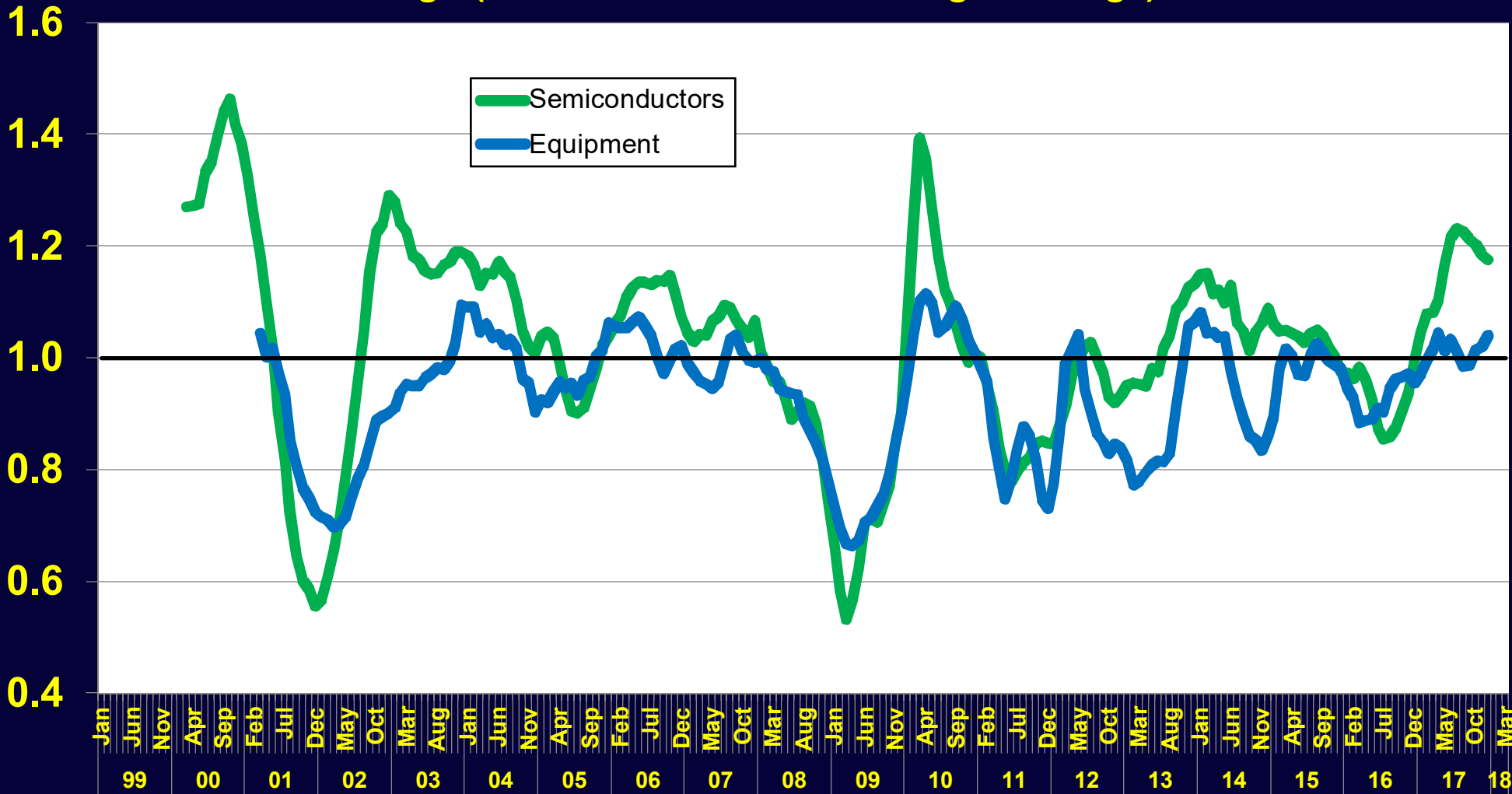
Chart 14

Japan Integrated Circuit & Discrete Semiconductor Domestic Production

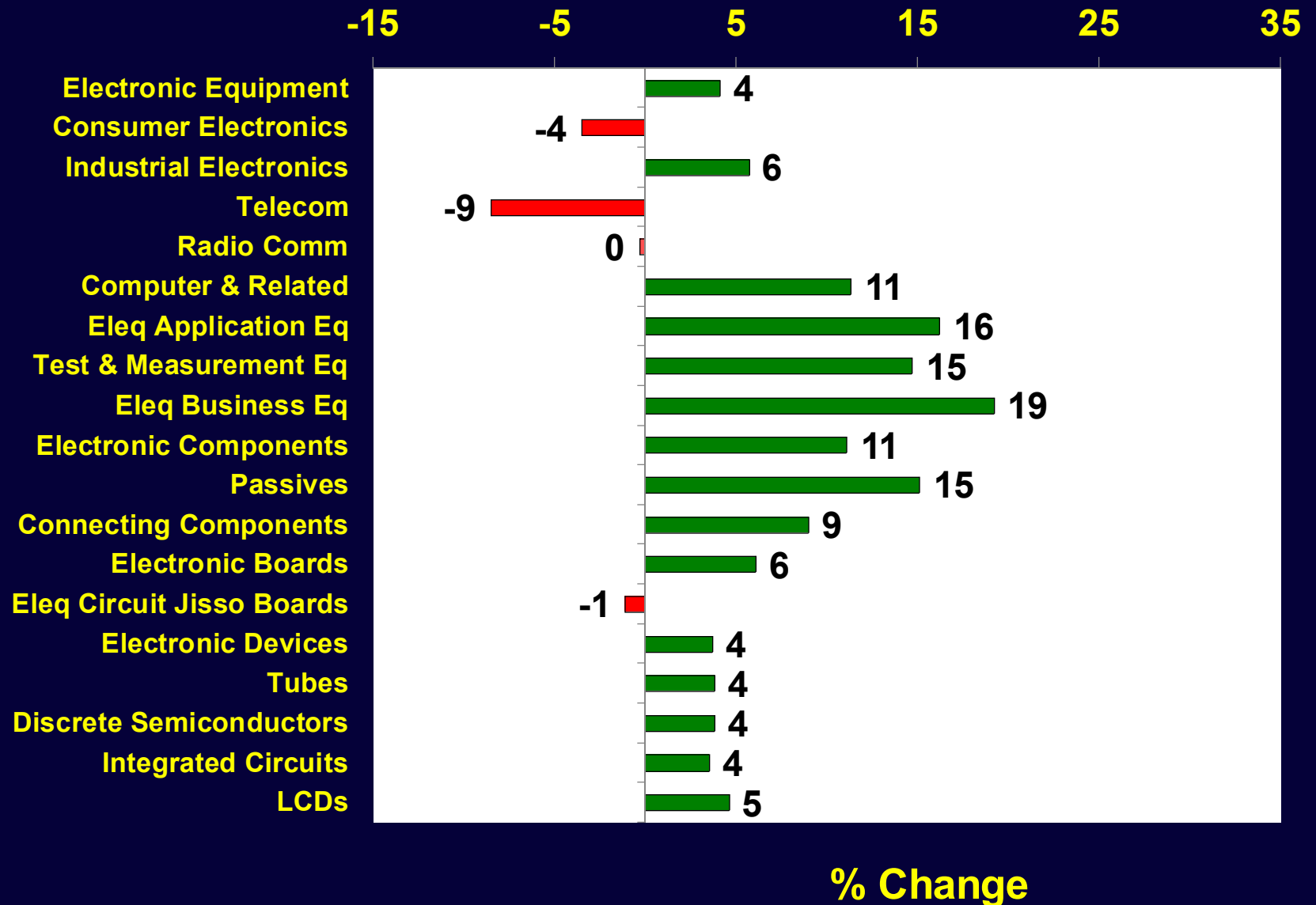


Semiconductor Shipments to Japan vs. Japanese Electronic Equipment Production

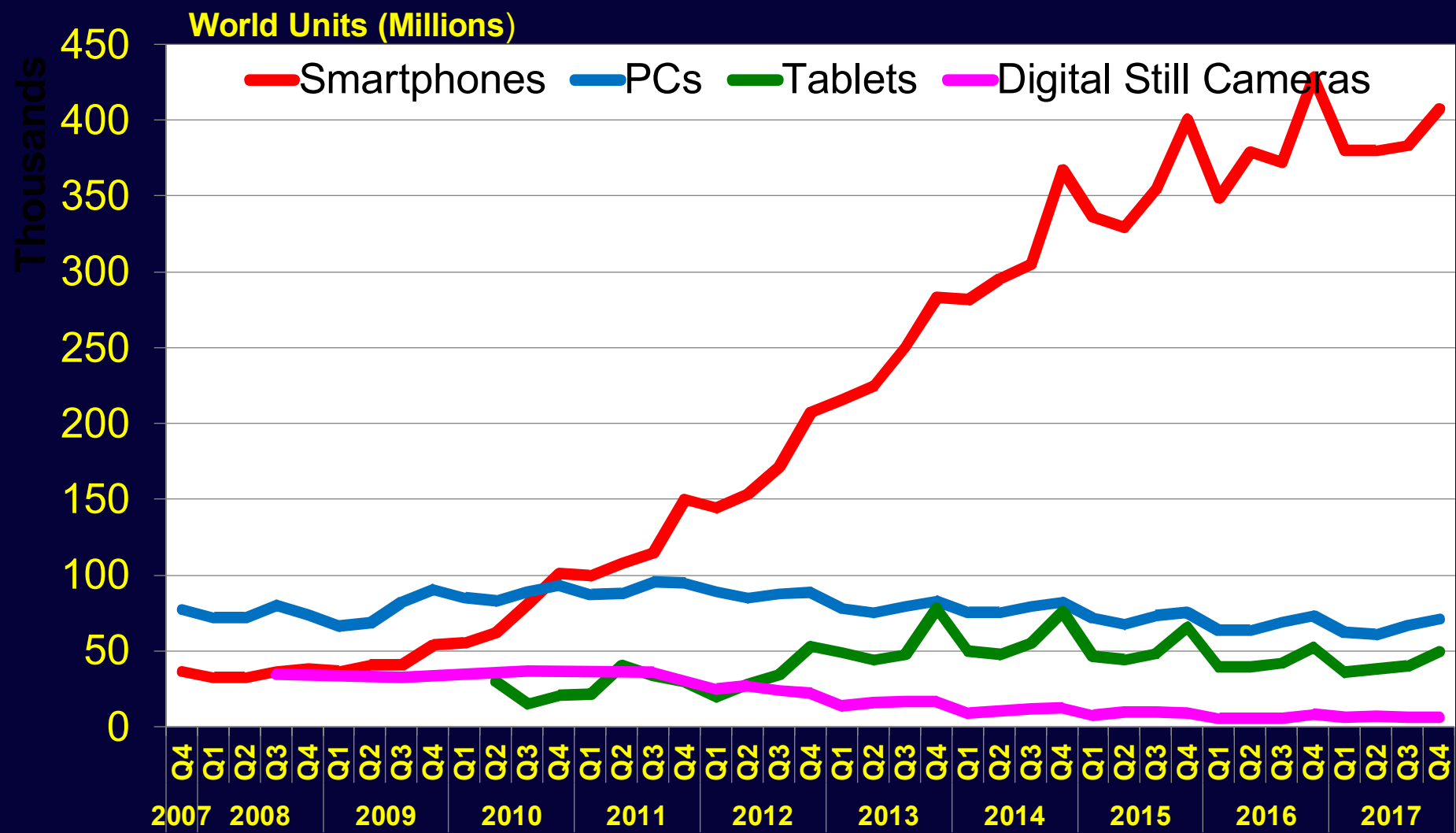
3/12 Rate of Change (Yen converted at fluctuating exchange)



Japan Electronic Supply Chain Growth 4Q'17 vs 4Q'16 (domestic production in Yen)



Smartphones, PCs, Tablets & Digital Cameras



Future Volume Markets

Autonomous cars

Internet of Things (IoT)

Industrial Internet of Things (IIoT)

5G Handsets & Infrastructure

Virtual & Augmented Reality

AI/Machine Learning

Smart Cities, Smart Agriculture

Drones

Robots

Wearables

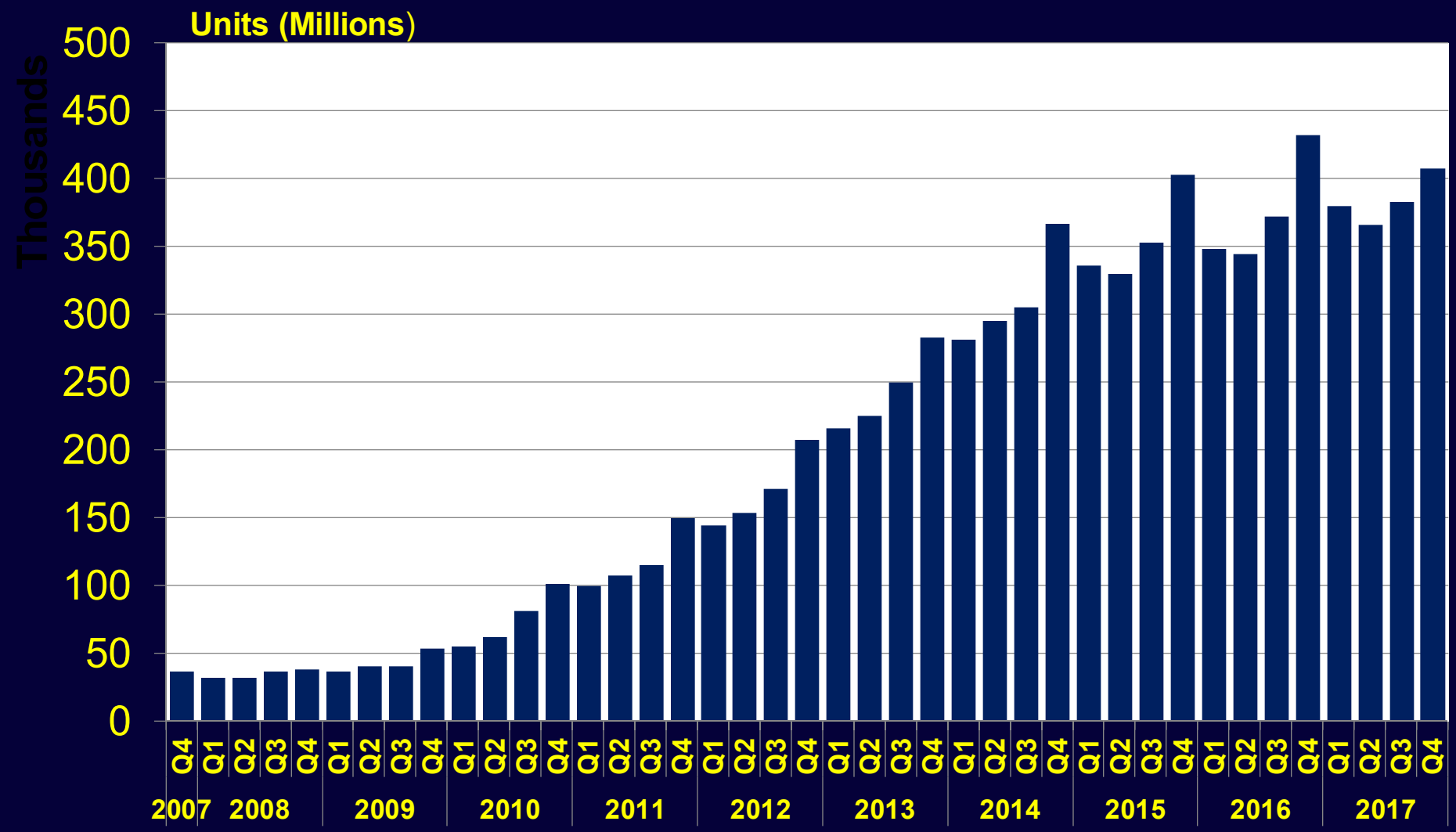
3D Printing

Health Care

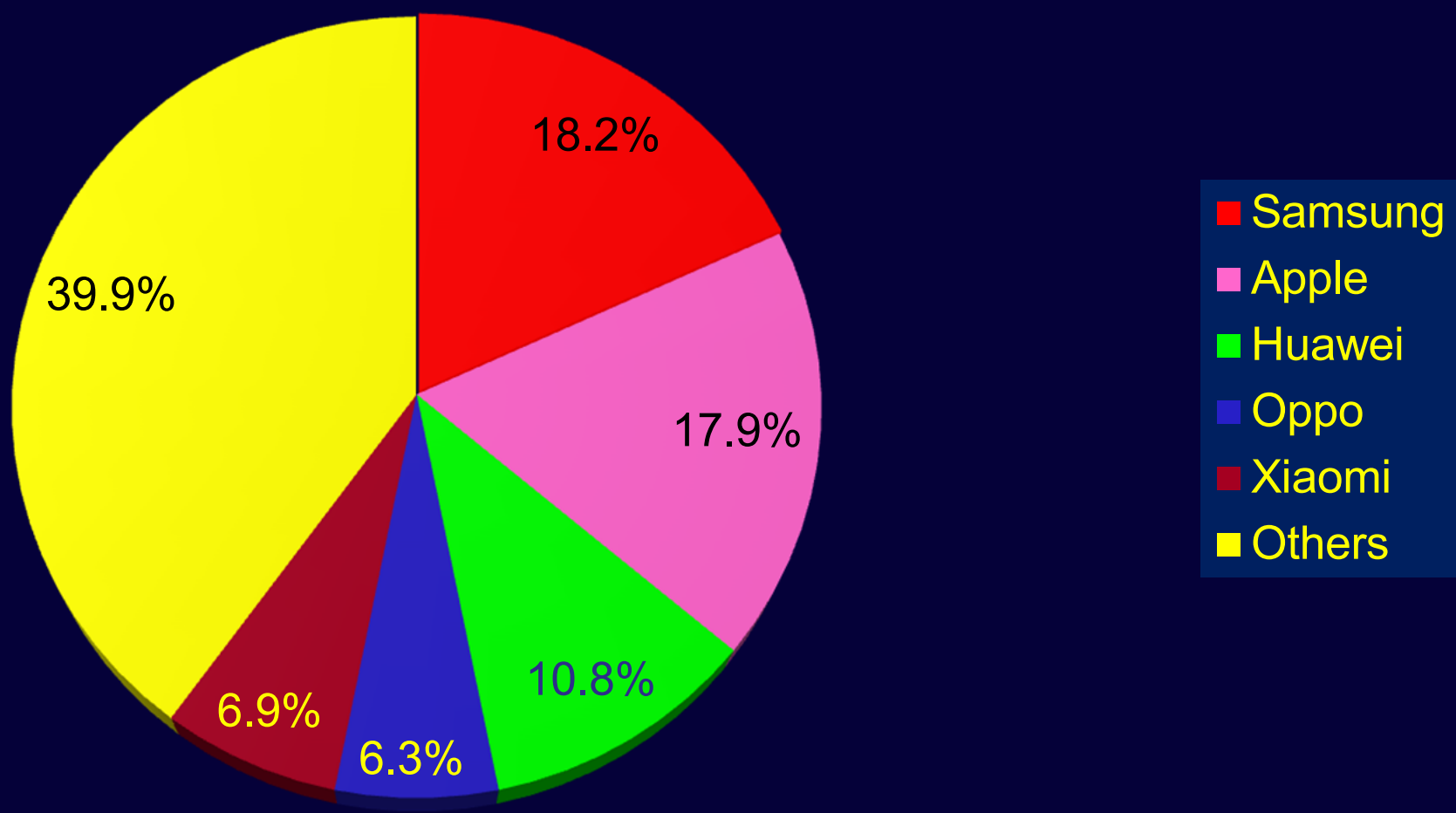
Chart 19

Smartphone Unit Shipments to End Users

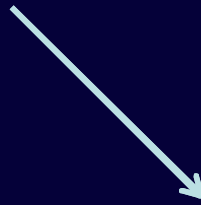
World



World Smartphone Sales 4Q'17

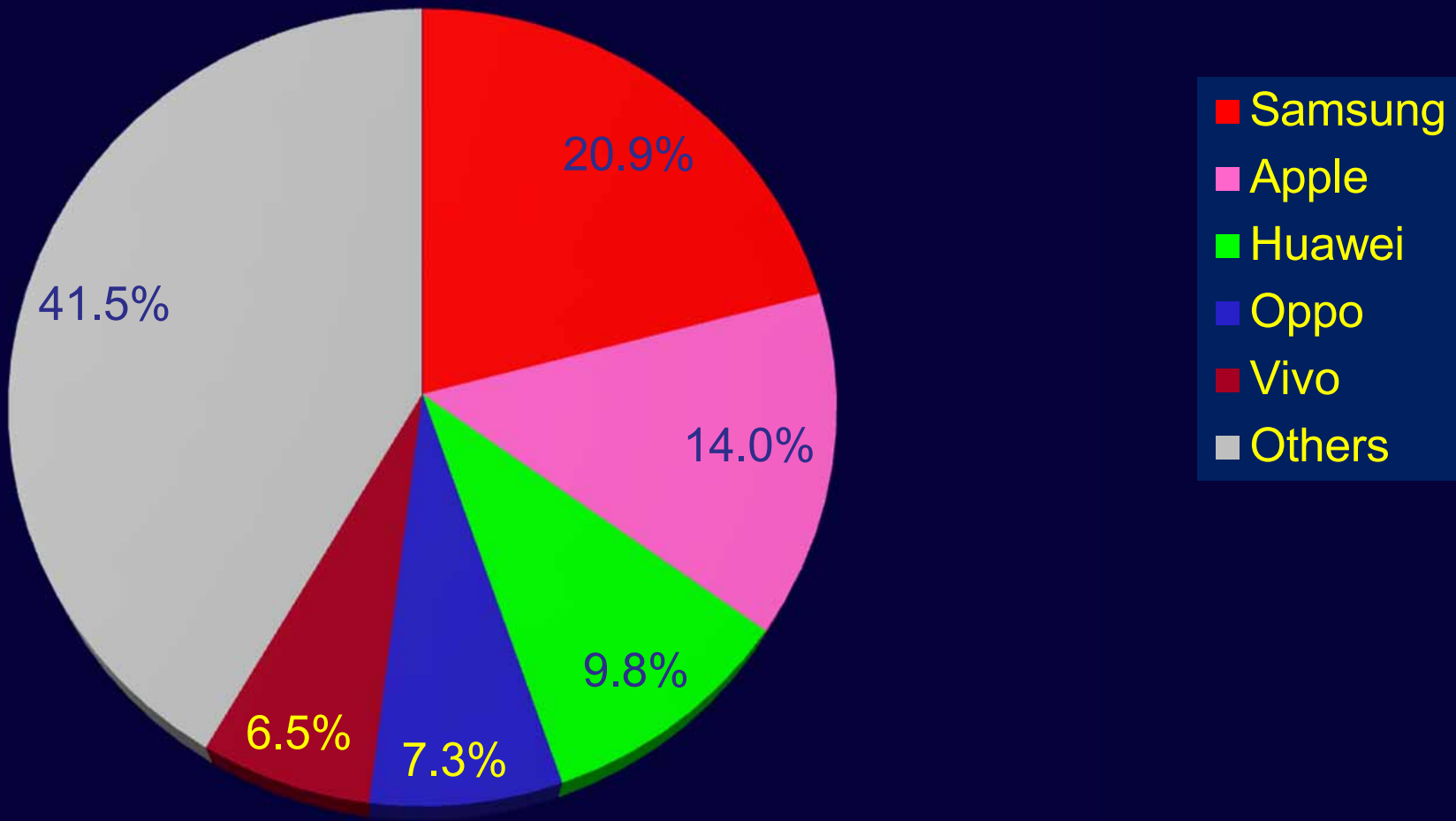


4Q'16
432 M

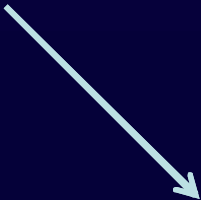


4Q'17 TOTAL: 408 Units

World Smartphone Sales 2017



2016
1,496M



TOTAL: 1,537 Million Units

Top 10 Semiconductor R&D Spenders

20171219

Top 10 Semiconductor R&D Spenders (Companies with $\geq$ \$1B in Spending)

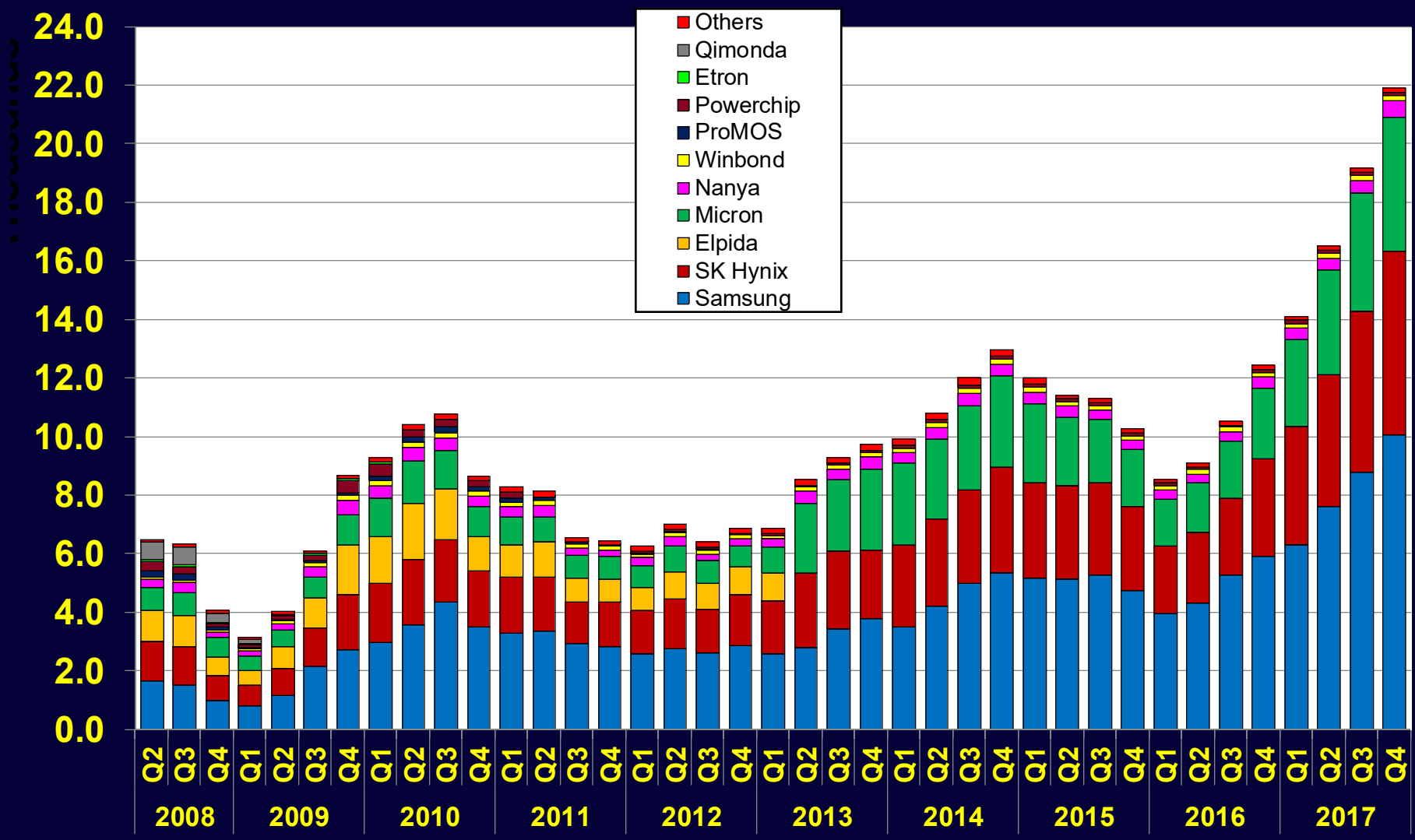
2017 Rank	Company	R&D Exp (\$M)	R&D/Sales (%)	17/16 % Chg in R&D
1	Intel	13,098	21.2%	3%
2	Qualcomm	3,450	20.2%	-4%
3	Broadcom*	3,423	19.2%	4%
4	Samsung	3,415	5.2%	19%
5	Toshiba	2,670	20.0%	-7%
6	TSMC	2,656	8.3%	20%
7	MediaTek*	1,881	24.0%	9%
8	Micron	1,802	7.5%	8%
9	Nvidia	1,797	19.1%	23%
10	SK Hynix	1,729	6.5%	14%
Top 10 Total		35,921	13.0%	6%

Source: Company reports, IC Insights' *Strategic Reviews* database

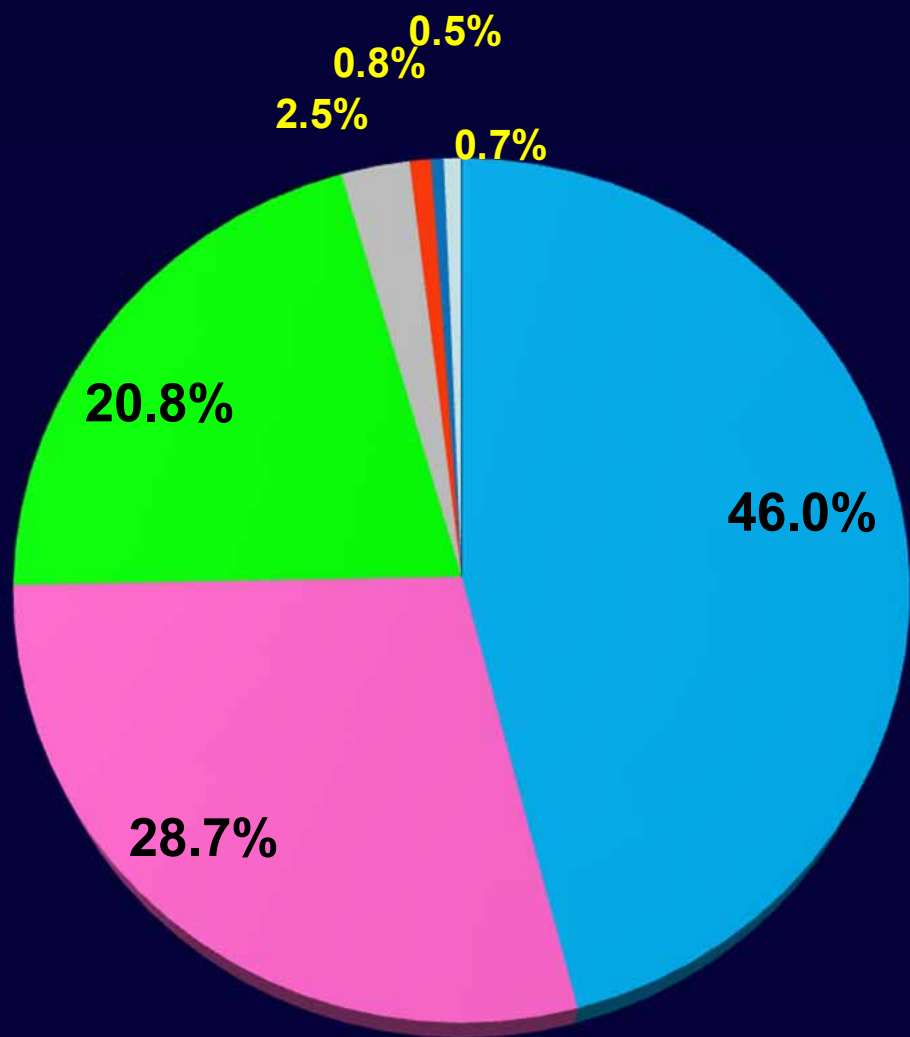
*Sales and R&D spending of acquired semiconductor supplier are included.

Branded DRAM Revenue

US\$ (Billions)



Branded DRAM Revenues 4Q'17



- Samsung
- SK Hynix
- Micron
- Nanya
- Winbond
- Powerchip
- Others

\$19.2 B
3Q'16

4Q'17 Total: US\$21.9 Billion