

World Purchasing Managers Index

3/12 Rate of Change

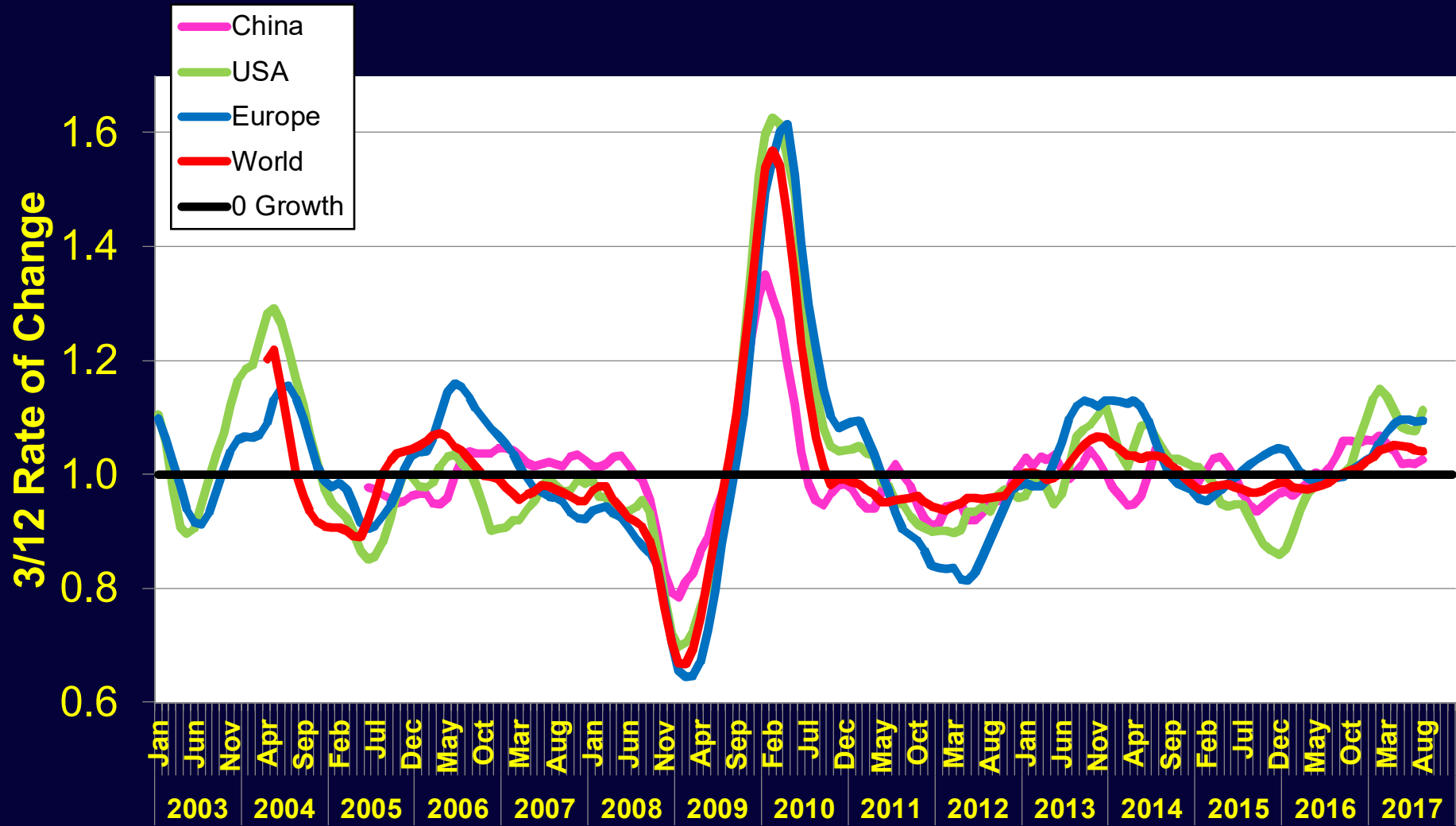
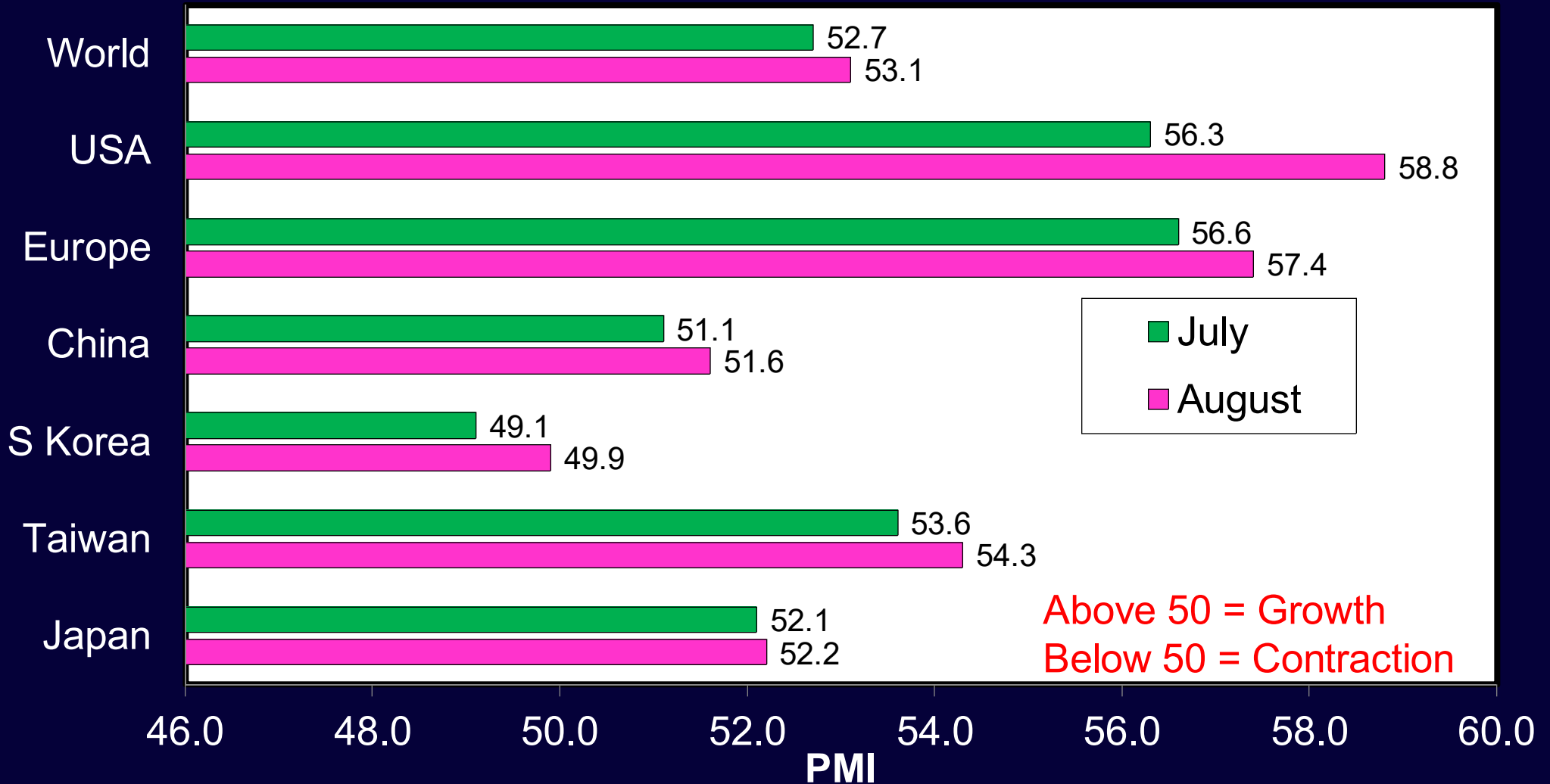


Chart 2

Purchasing Managers' Indices August vs. July 2017

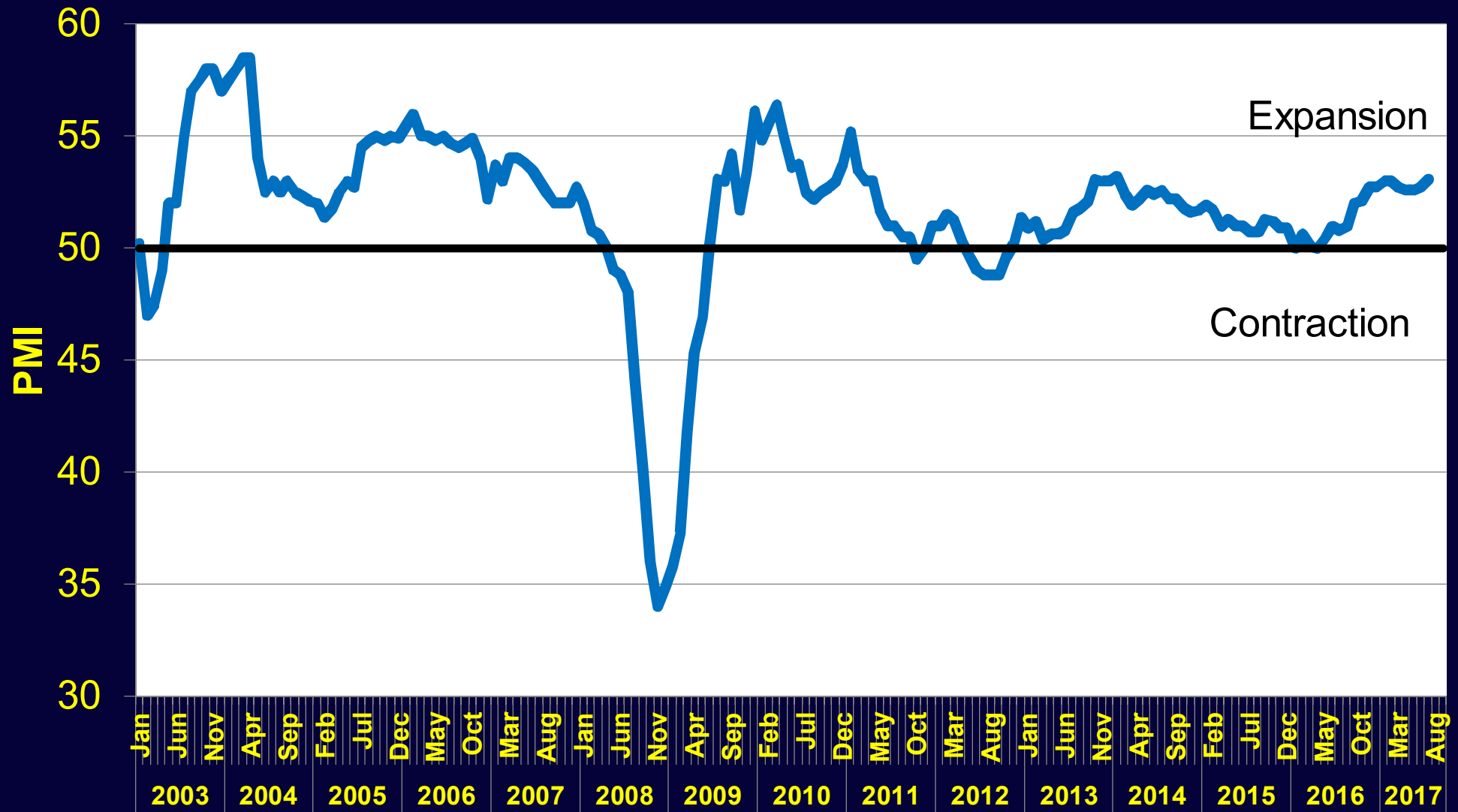


Markit Economics, JPMorgan and ISM

Chart 3

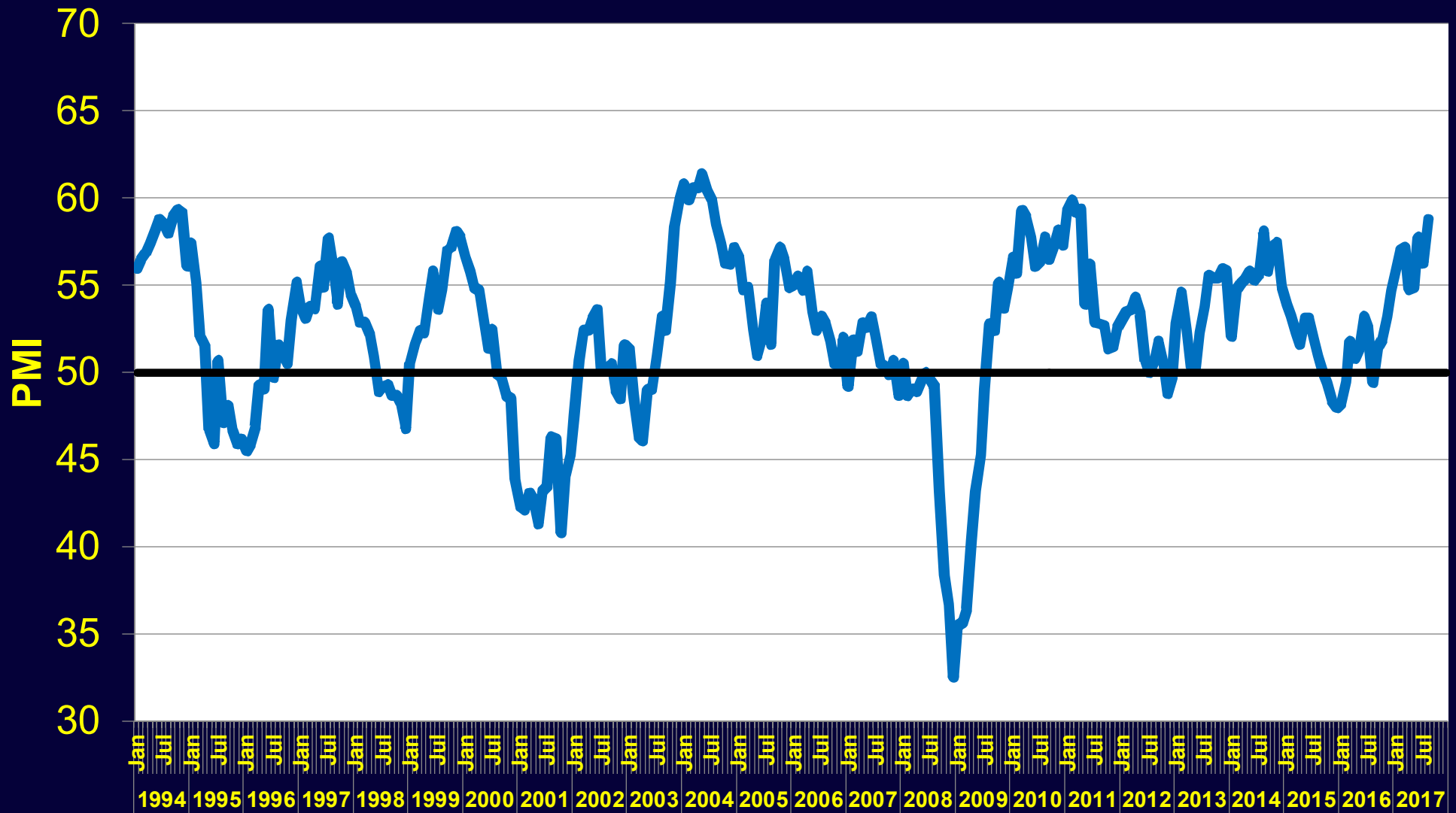
Global "Purchasing Managers" Index

Diffusion Index, >50 = Growth



U.S. "Purchasing Managers" Index

Diffusion Index, >50 = Growth



European Purchasing Managers' Indices August vs July 2017



Eurozone Manufacturing "Purchasing Managers" Index

Diffusion Index, >50 = Growth

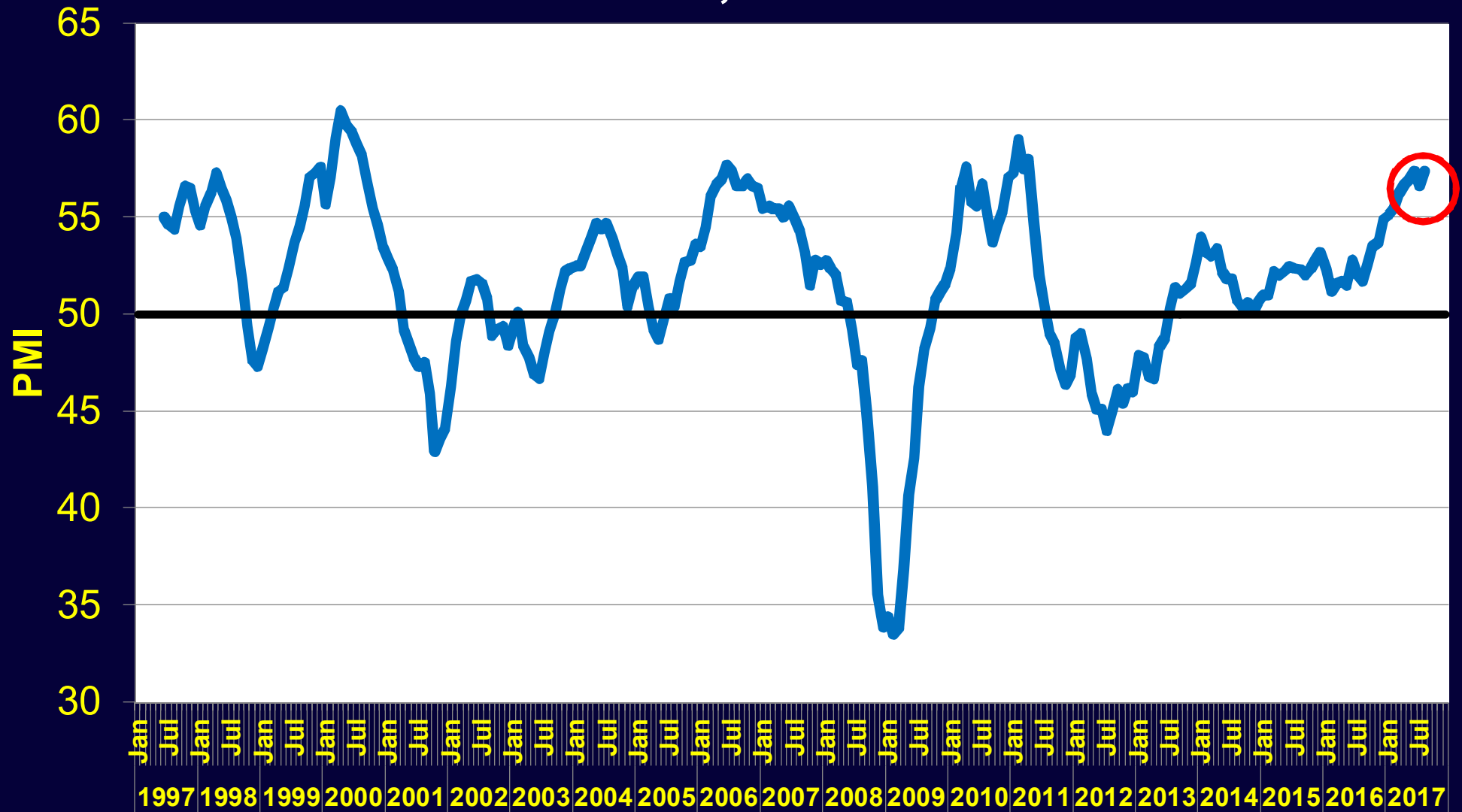
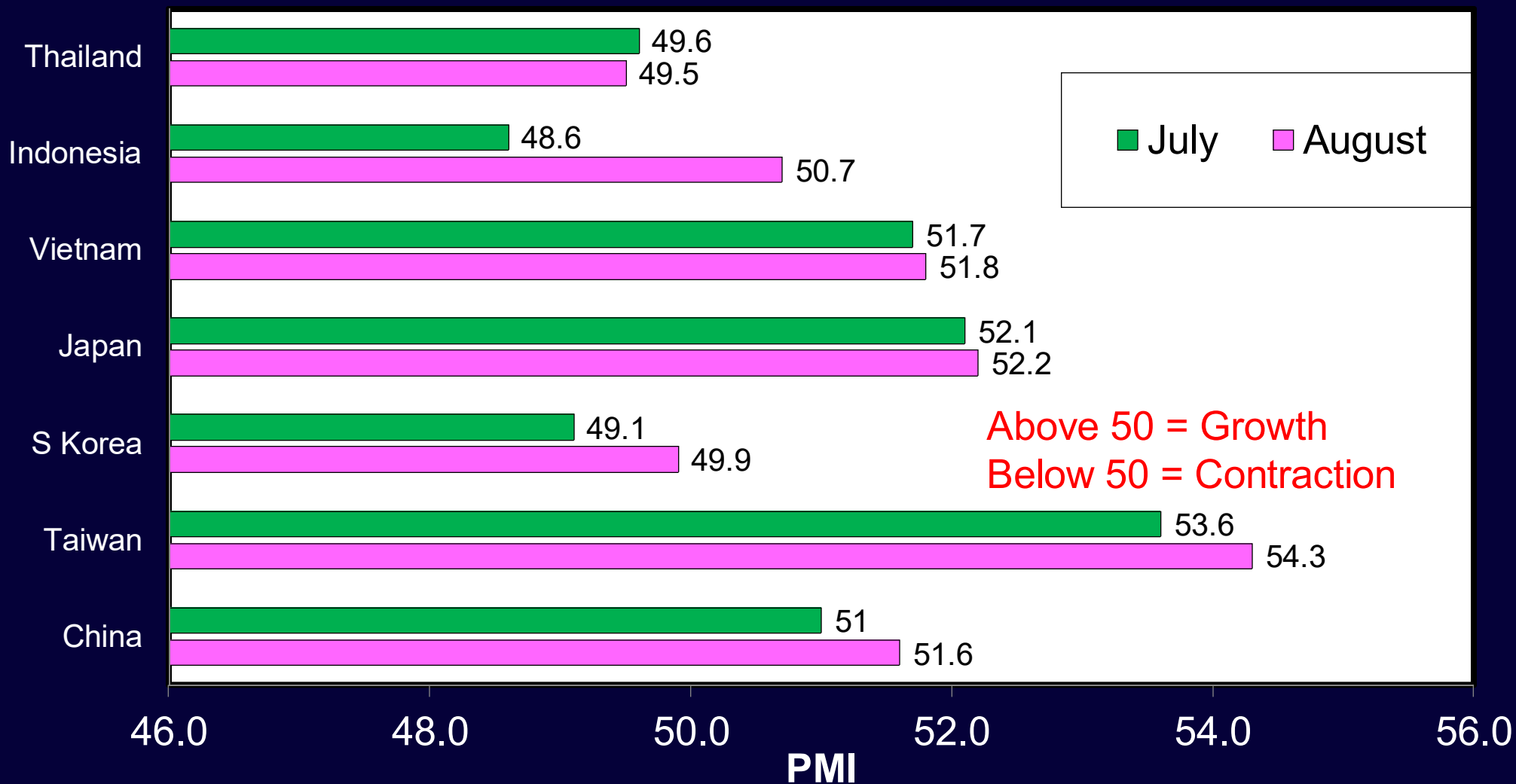


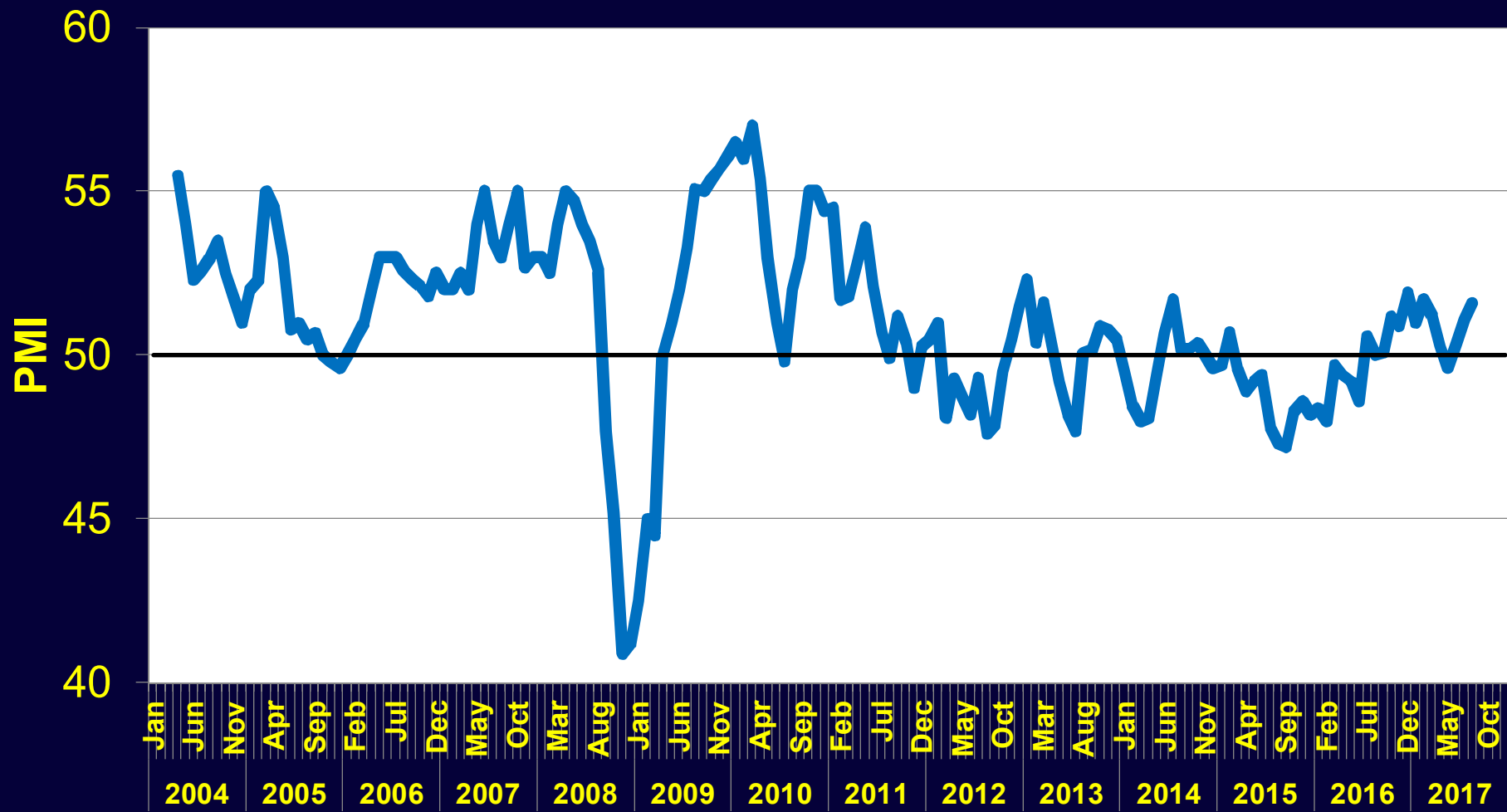
Chart 7

Asian Purchasing Managers Indices August vs. July 2017



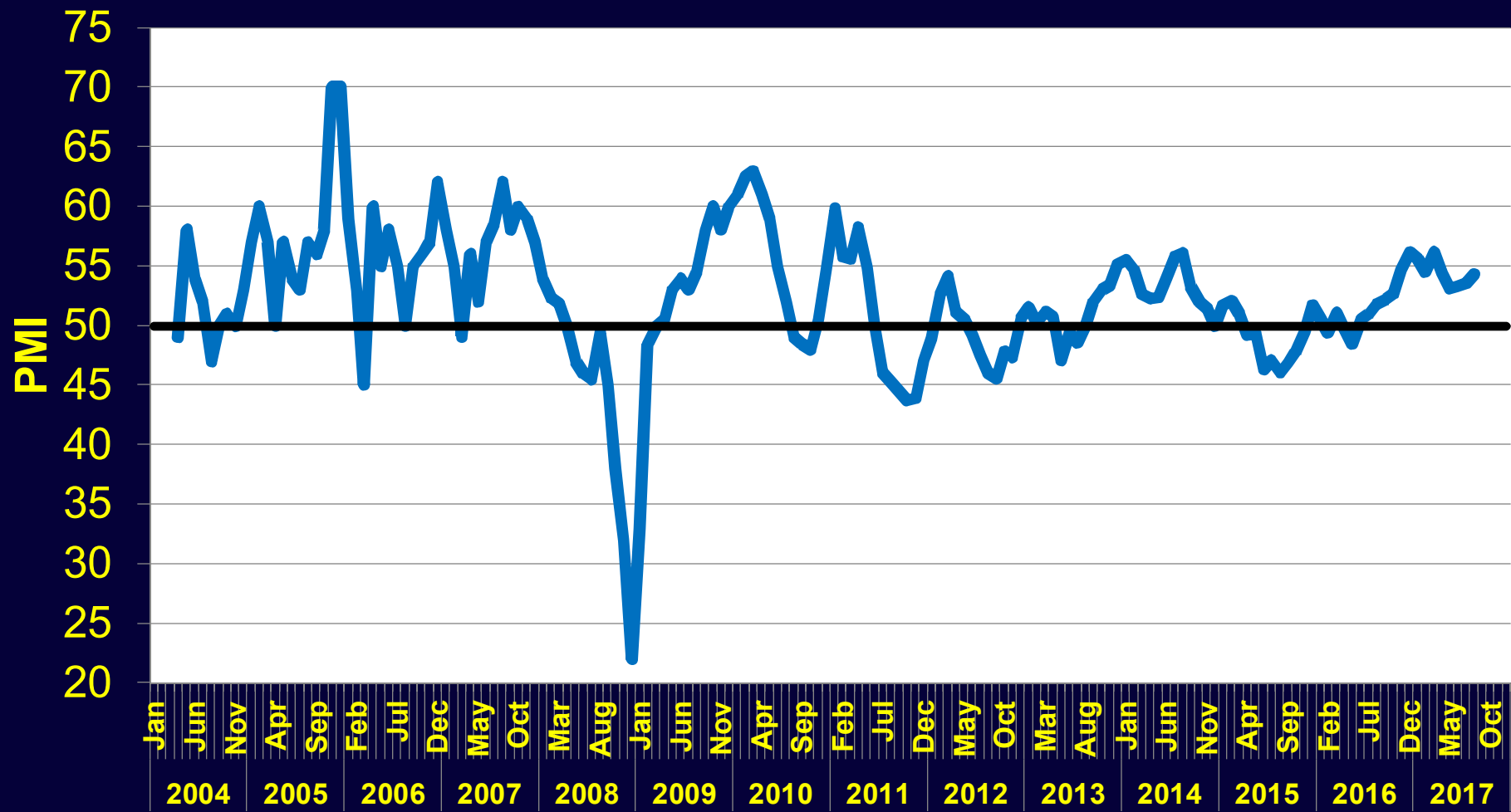
China "Purchasing Managers" Index

>50 = Growth



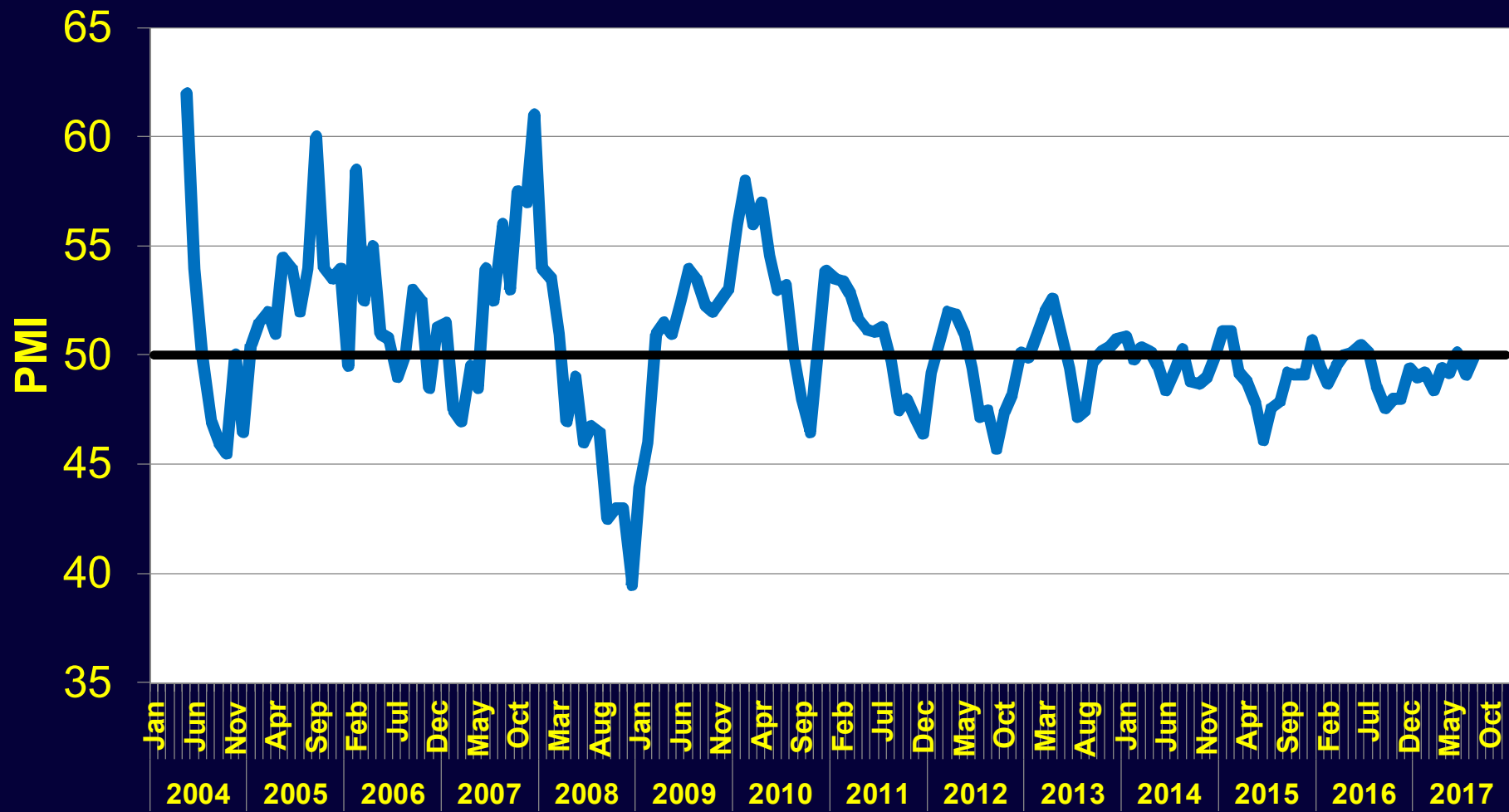
Taiwan "Purchasing Managers" Index

>50 = Growth



S Korea "Purchasing Managers" Index

>50 = Growth



Japan "Purchasing Managers" Index

>50 = Growth

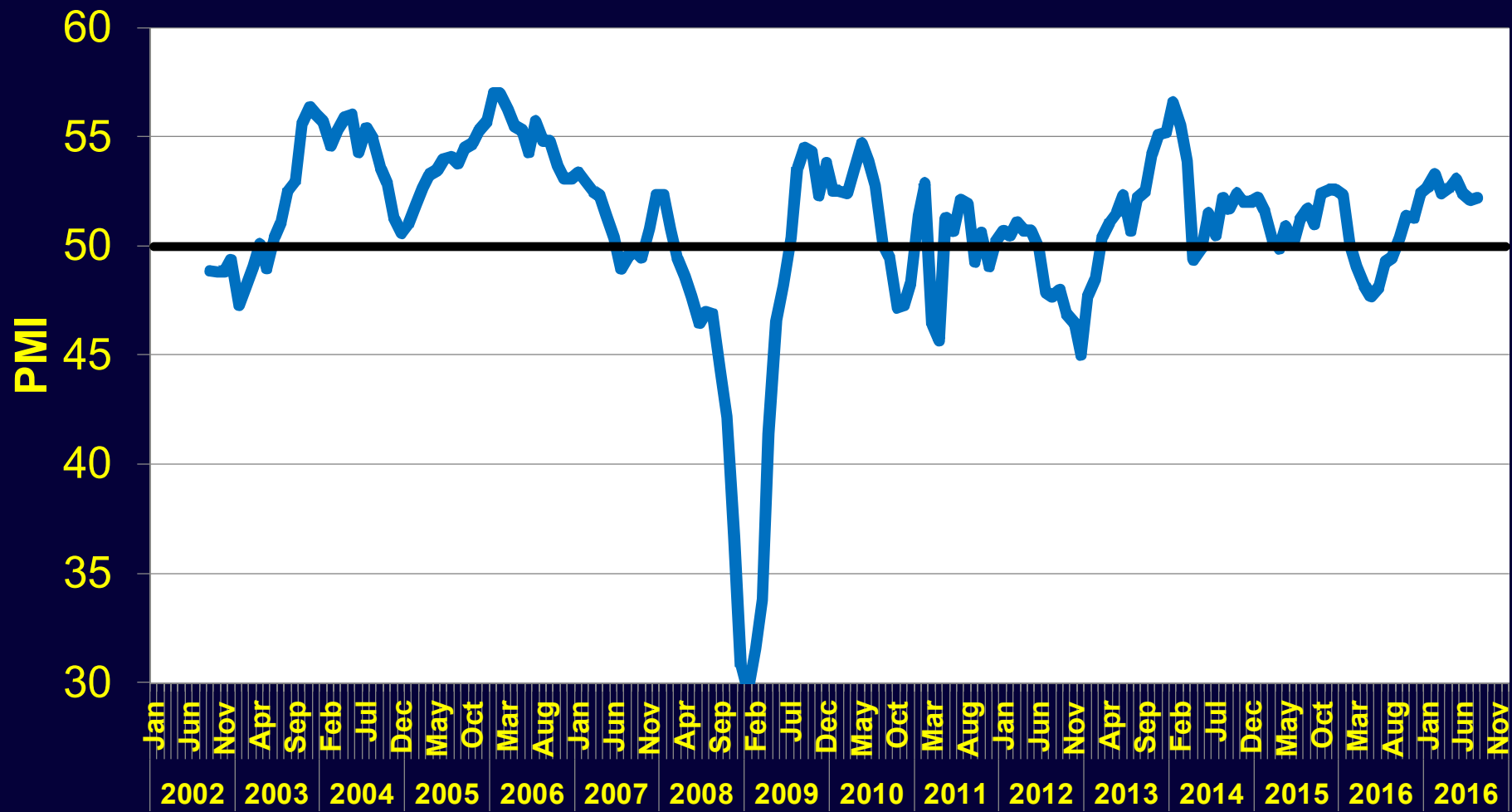


Chart 12

Monthly Semiconductor Shipments

\$ Billions (3-month avg in US\$)

	<u>7/16</u>	<u>7/17</u>	<u>% CH</u>
Americas	5.10	6.94	+ 36.1%
Europe	2.69	3.20	+ 18.9%
Japan	2.60	3.04	+ 16.7%
China	8.61	10.69	+ 24.1%
Asia Pacific / All Other	8.11	9.77	+20.5%
Total	27.13	33.65	+ 24.0%

World Semiconductor Shipments

Monthly US\$

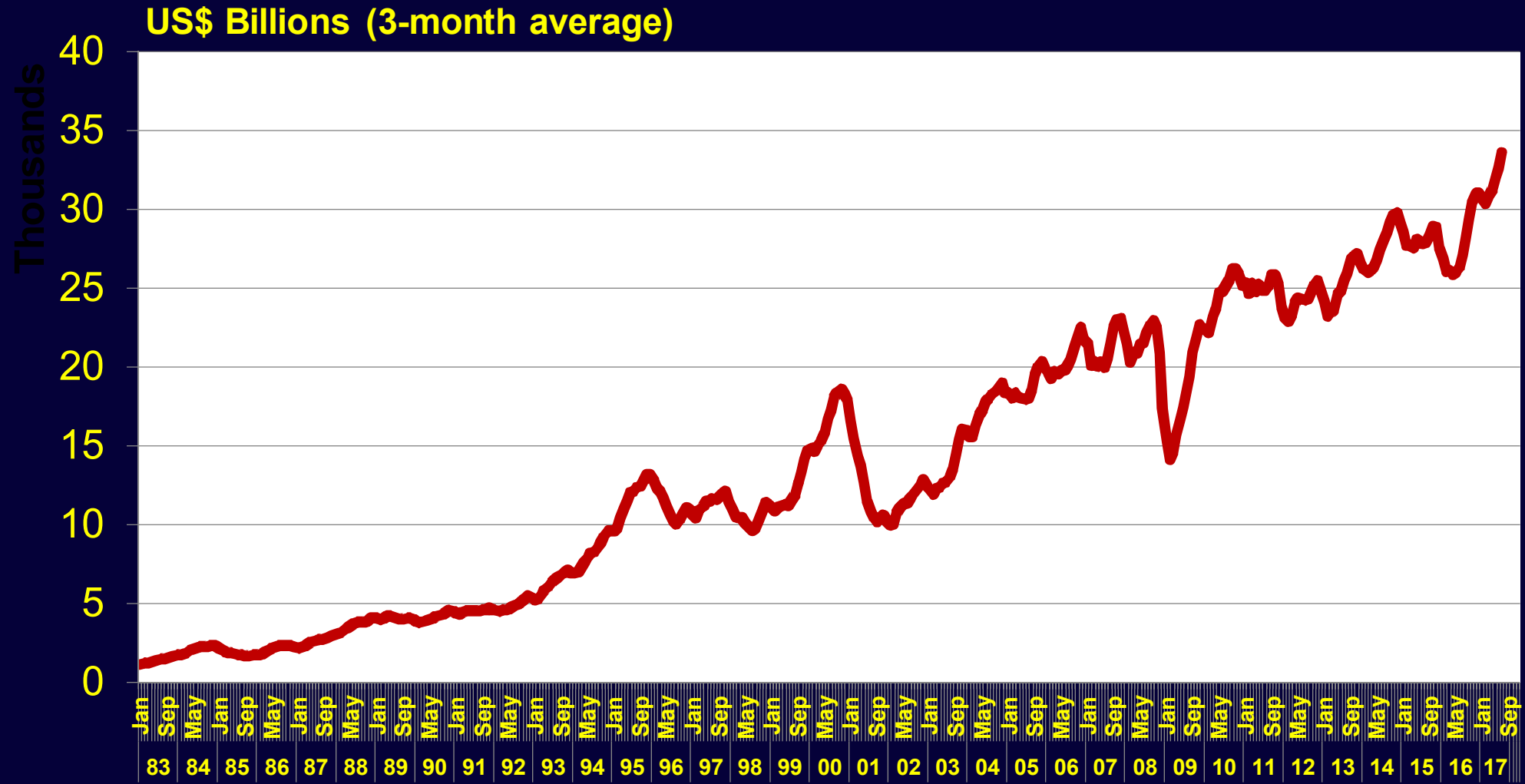
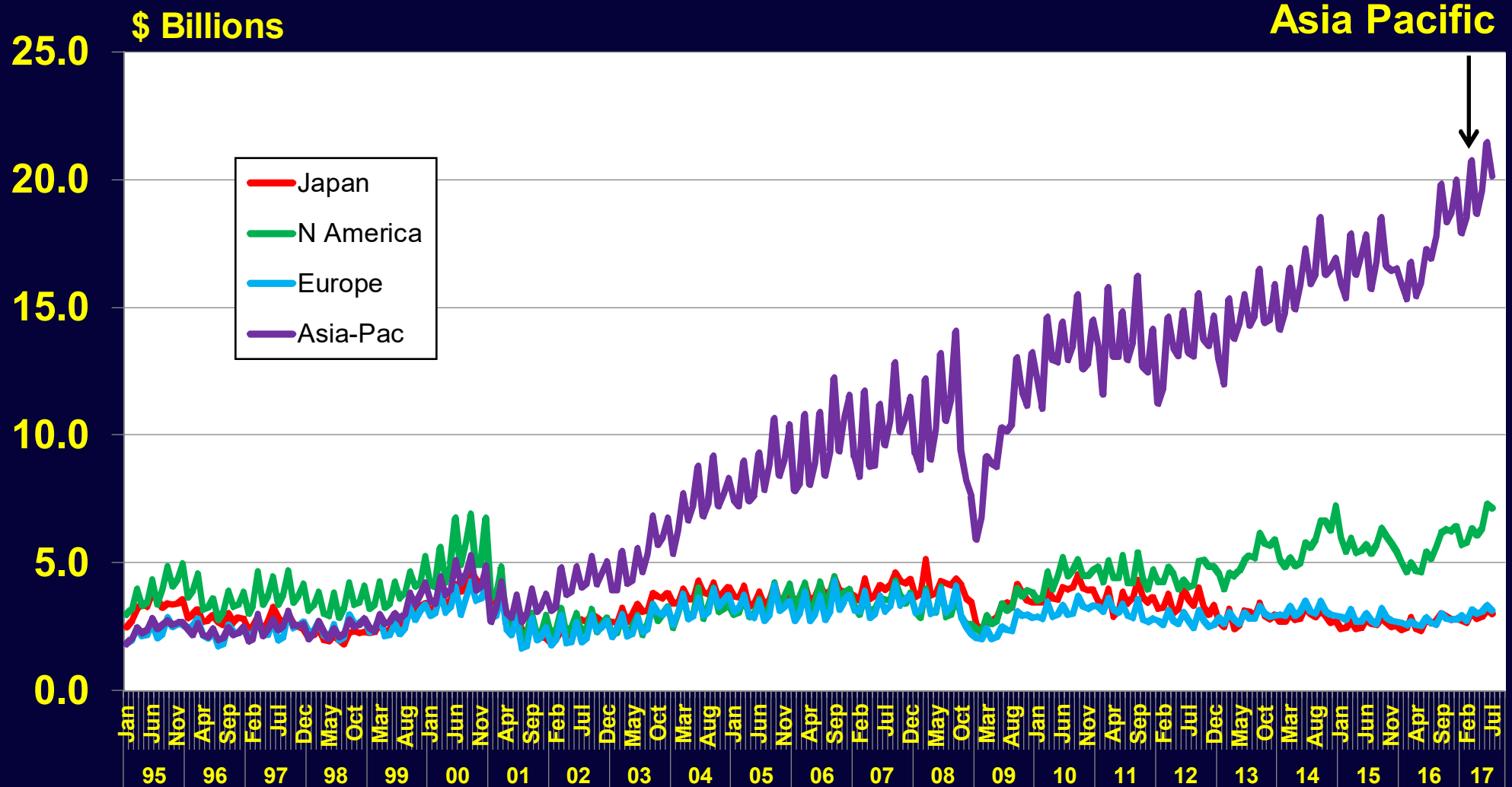


Chart 14

Total Semiconductor Shipments to an Area

Monthly Shipments - Reporting Firms



CCG Semiconductor Leading Indicator vs. Global Semiconductor Shipments

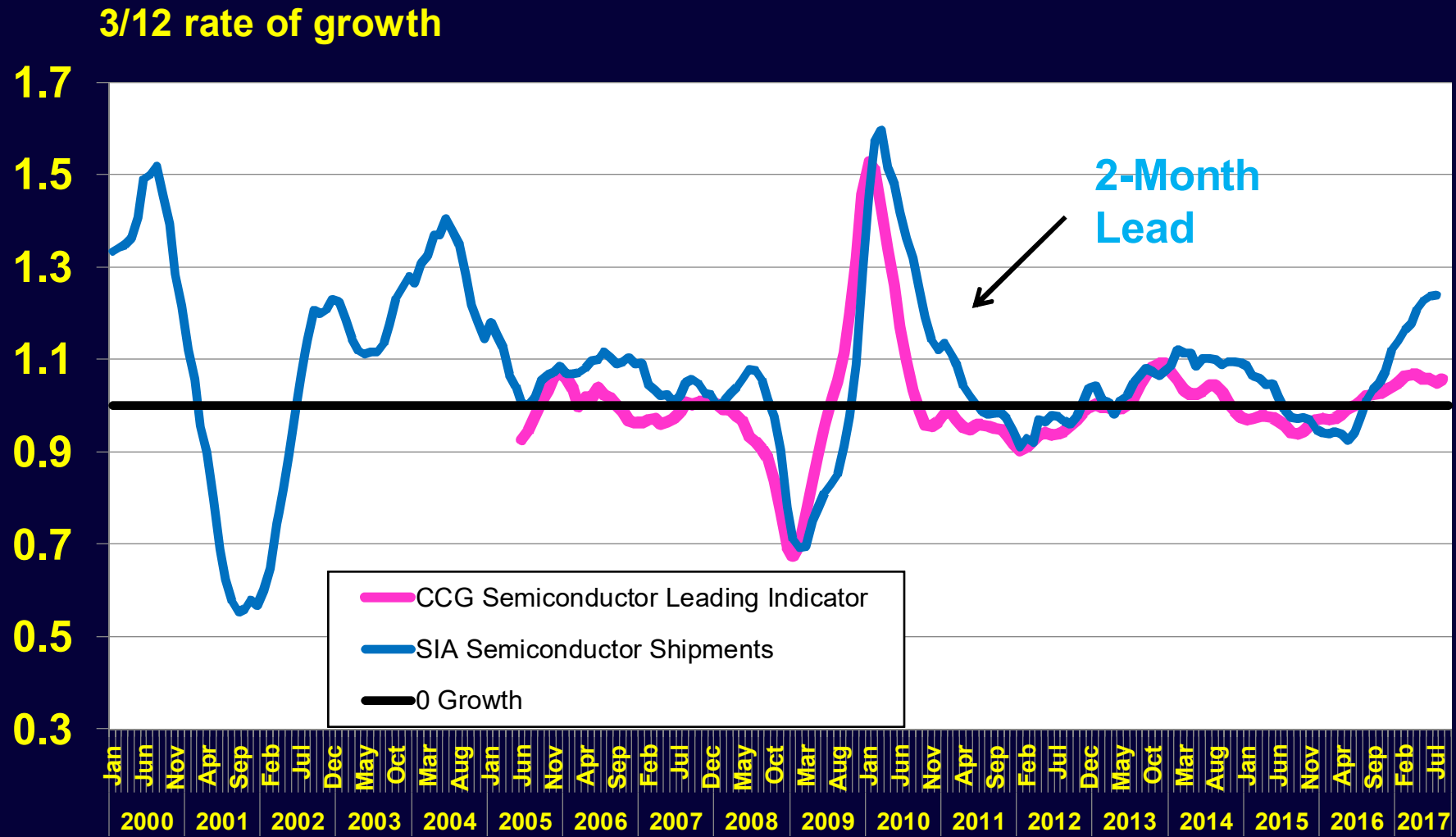
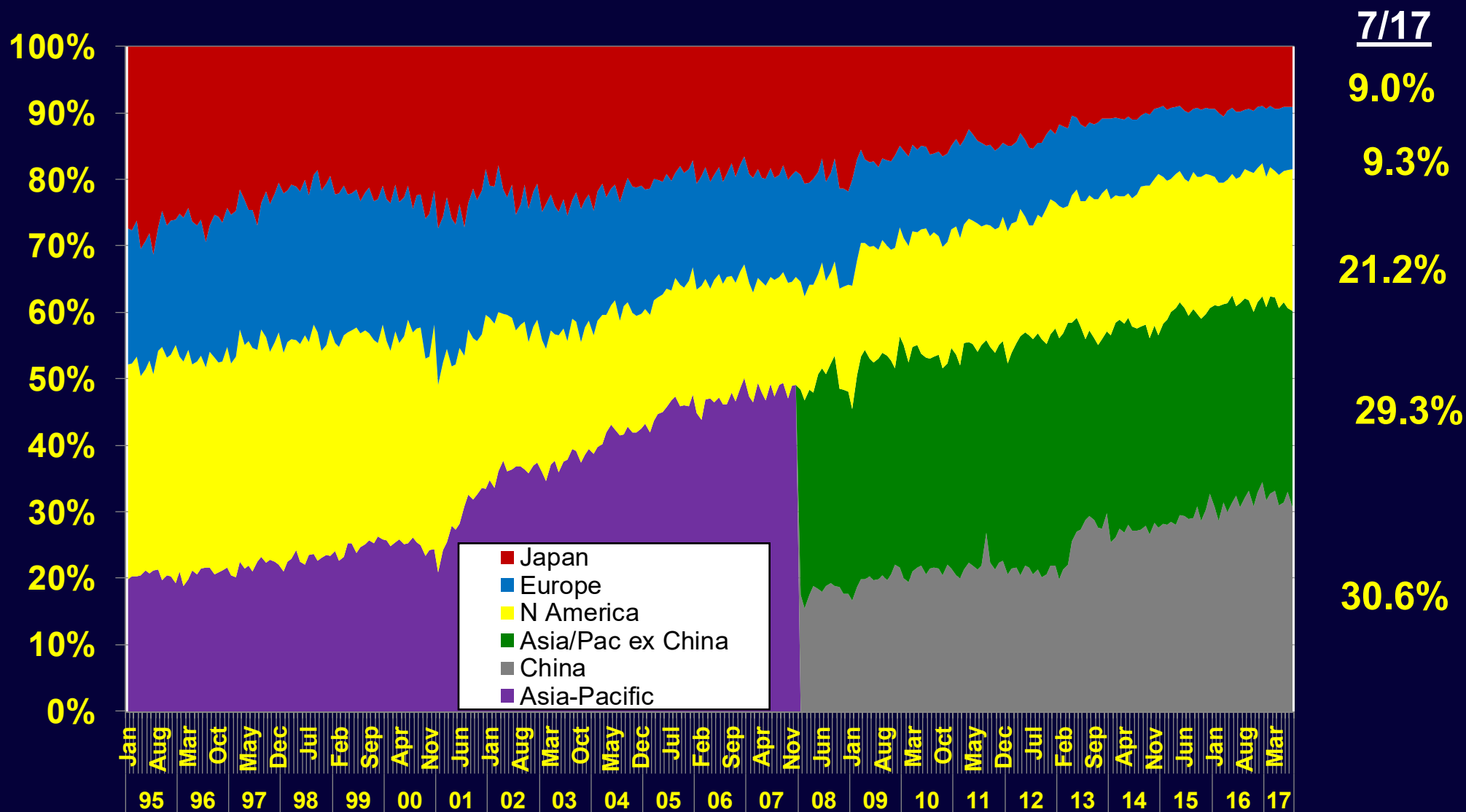


Chart 16

Total Semiconductor Shipments to an Area

Monthly Shipments - Reporting Firms (showing China)



N American Semiconductor Shipments

Monthly & 3-Month Average Shipments

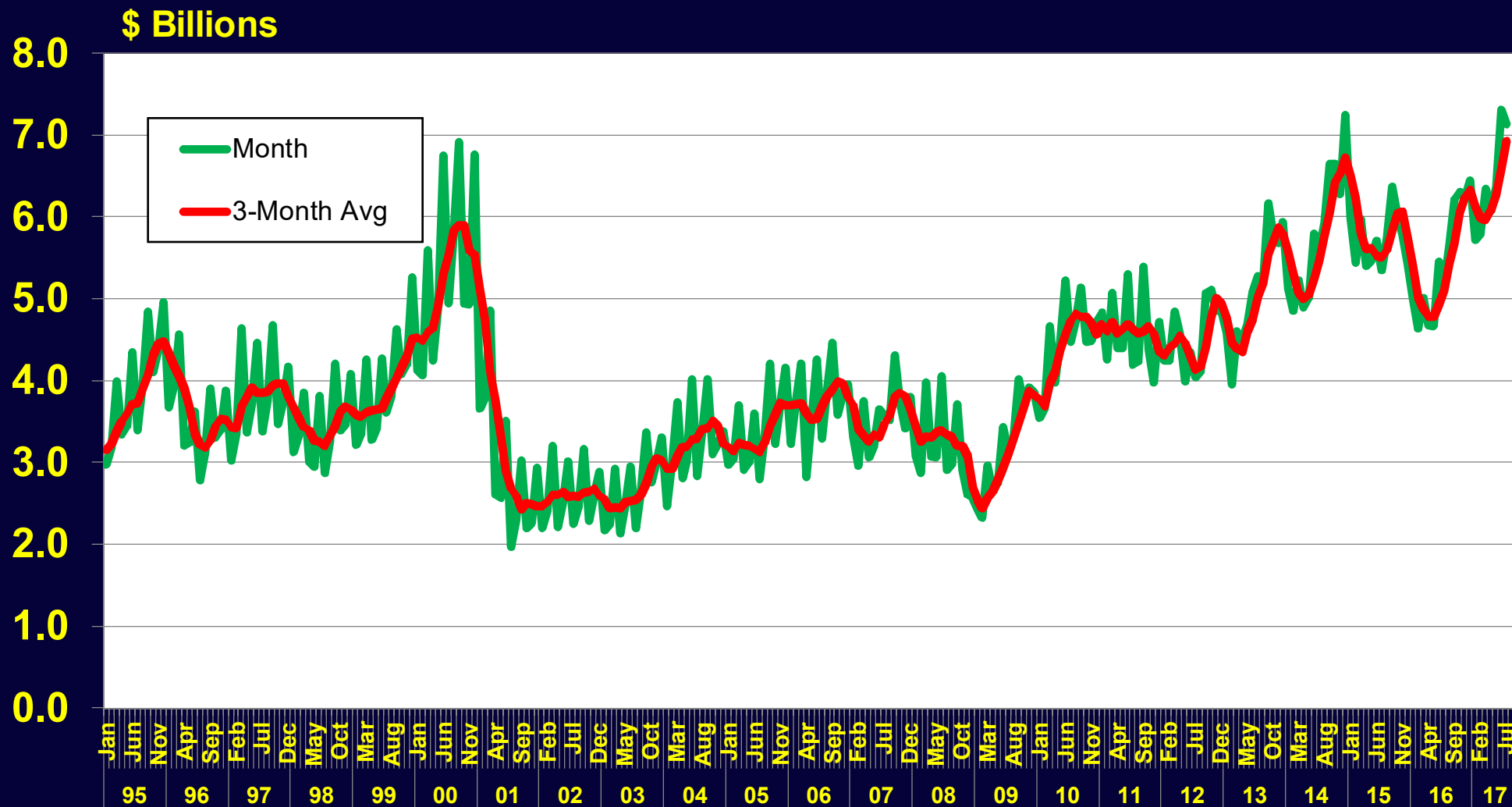
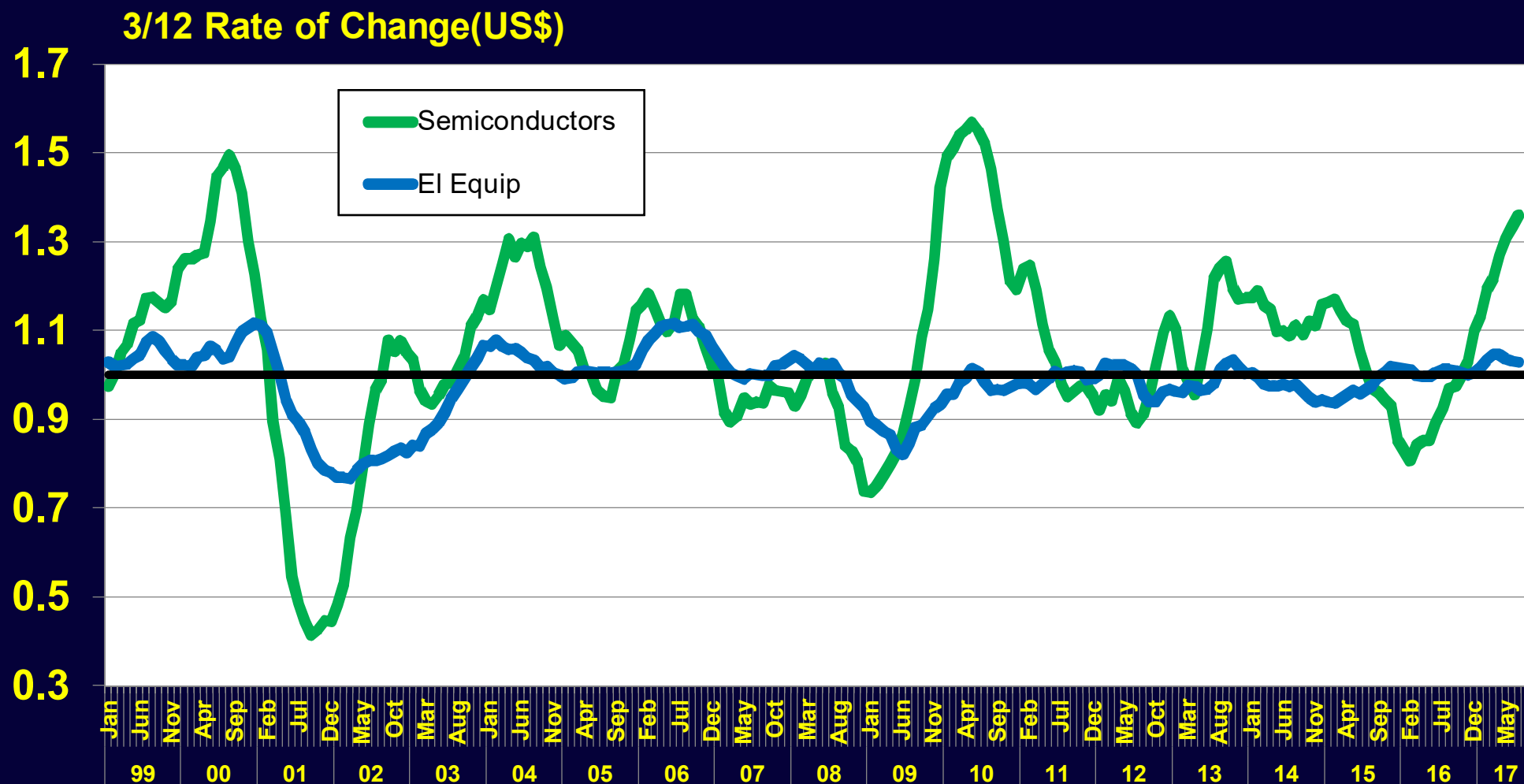


Chart 18

Semiconductor Shipments to N. America vs. U.S Electronic Equipment Production

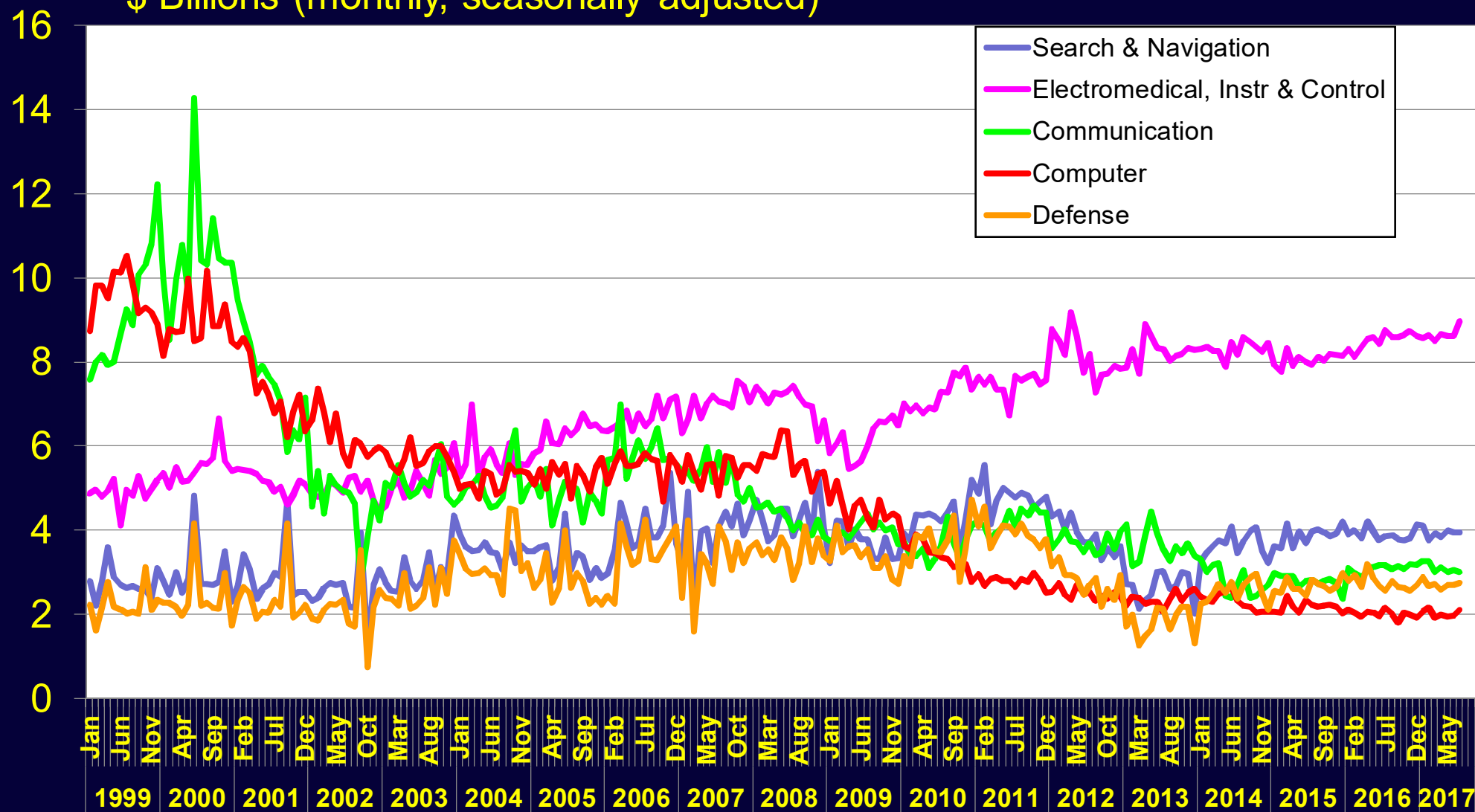


Total \$ Semiconductor Shipments from All Countries to N. America www.sia-online.org/
U.S. Electronic Equipment Shipments www.census.gov/indicator/www/m3/

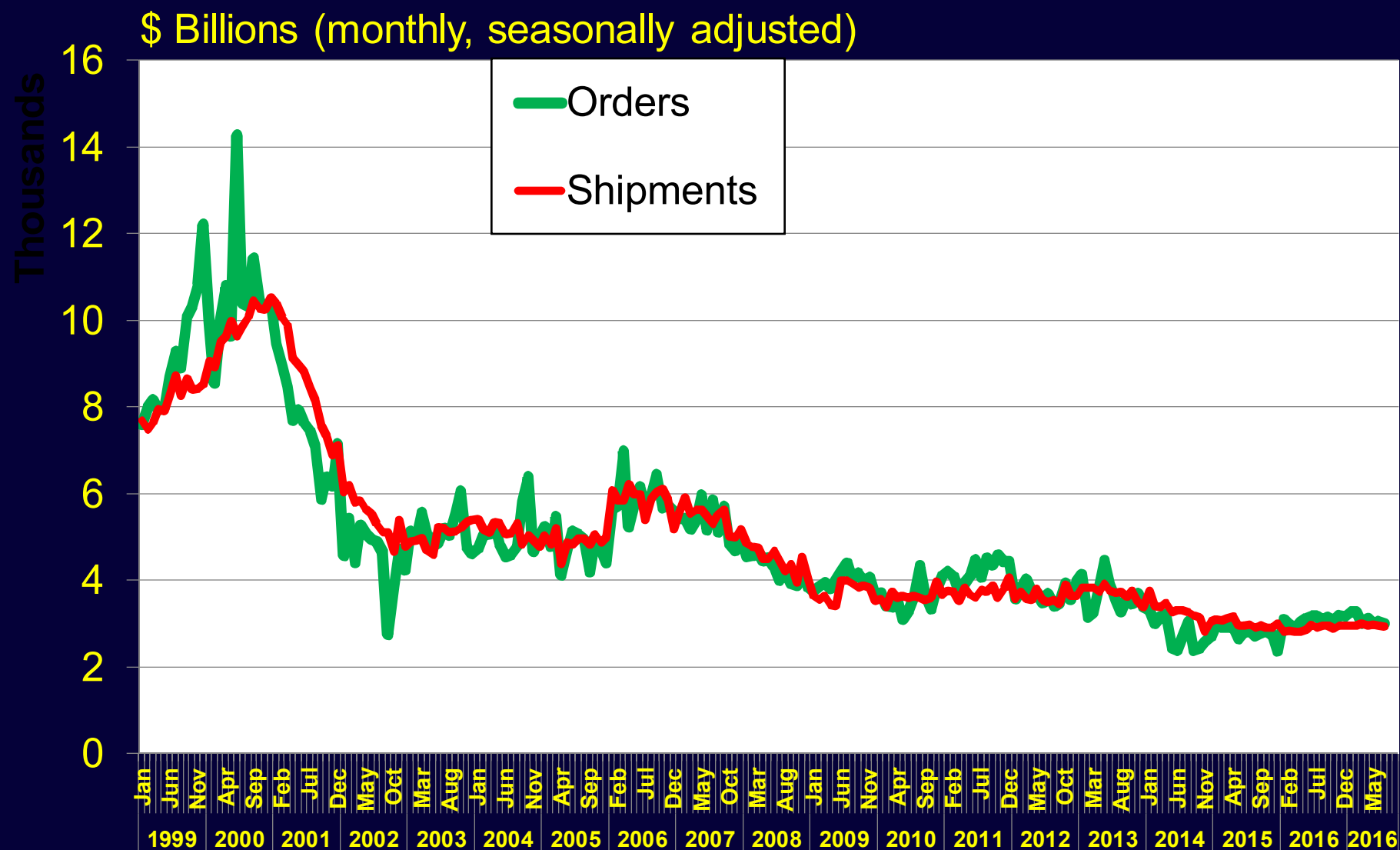
U.S. Electronic Equipment Orders

Monthly Data

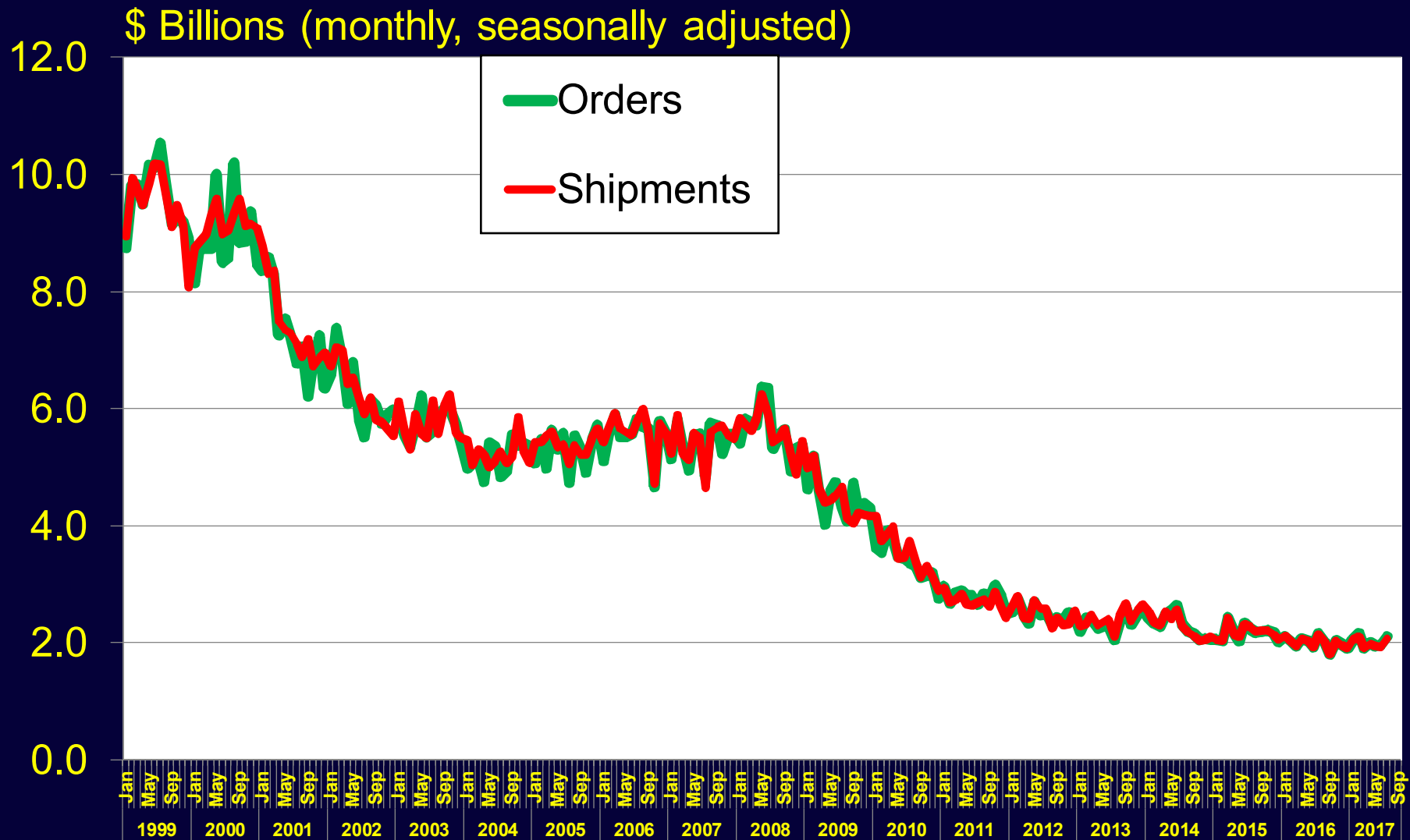
\$ Billions (monthly, seasonally adjusted)



U.S. Communication Equipment Orders & Shipments

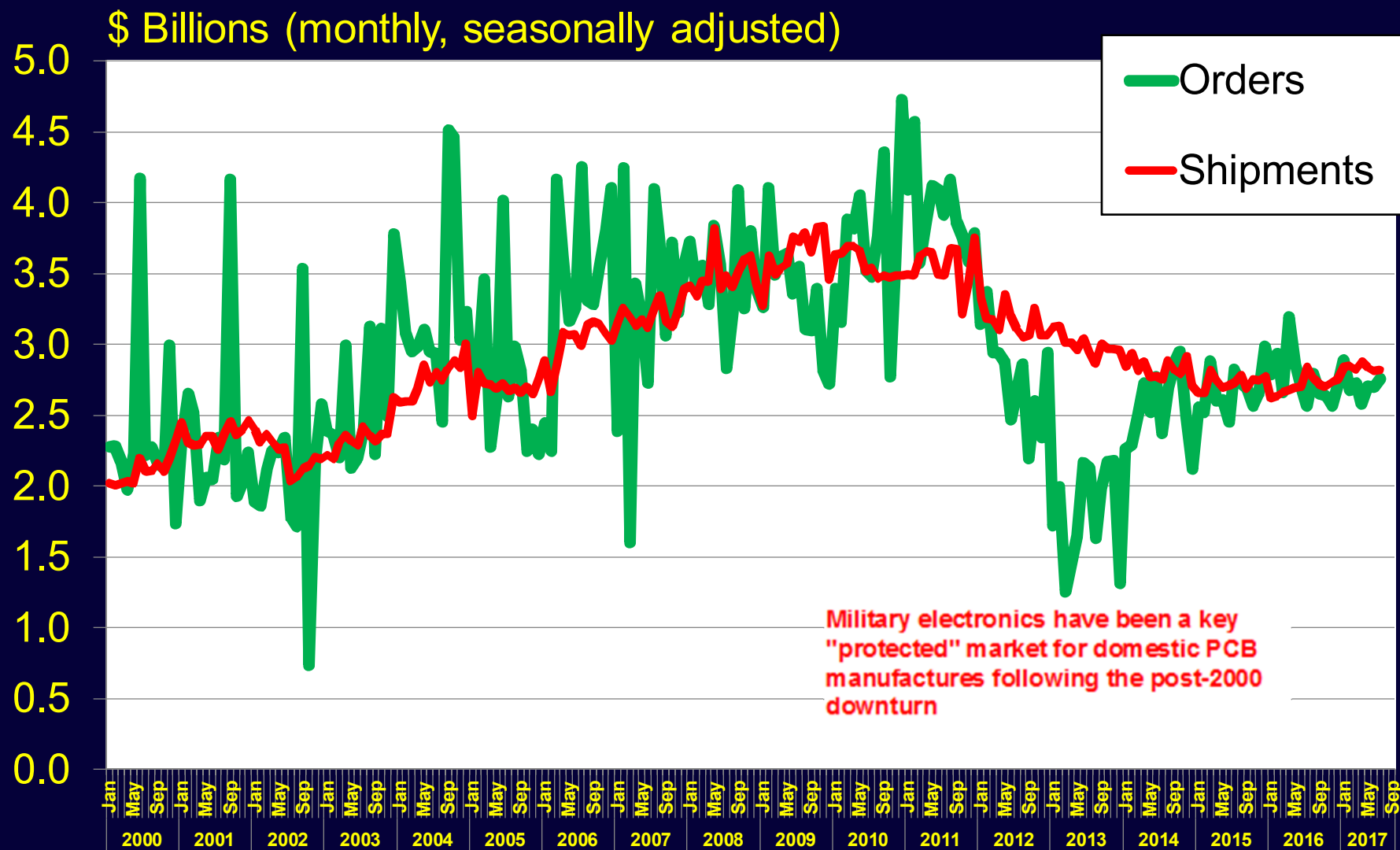


U.S. Computers & Related Products Orders & Shipments



U.S. Military Electronics Orders & Shipments

Defense Communication & Search & Navigation Equipment

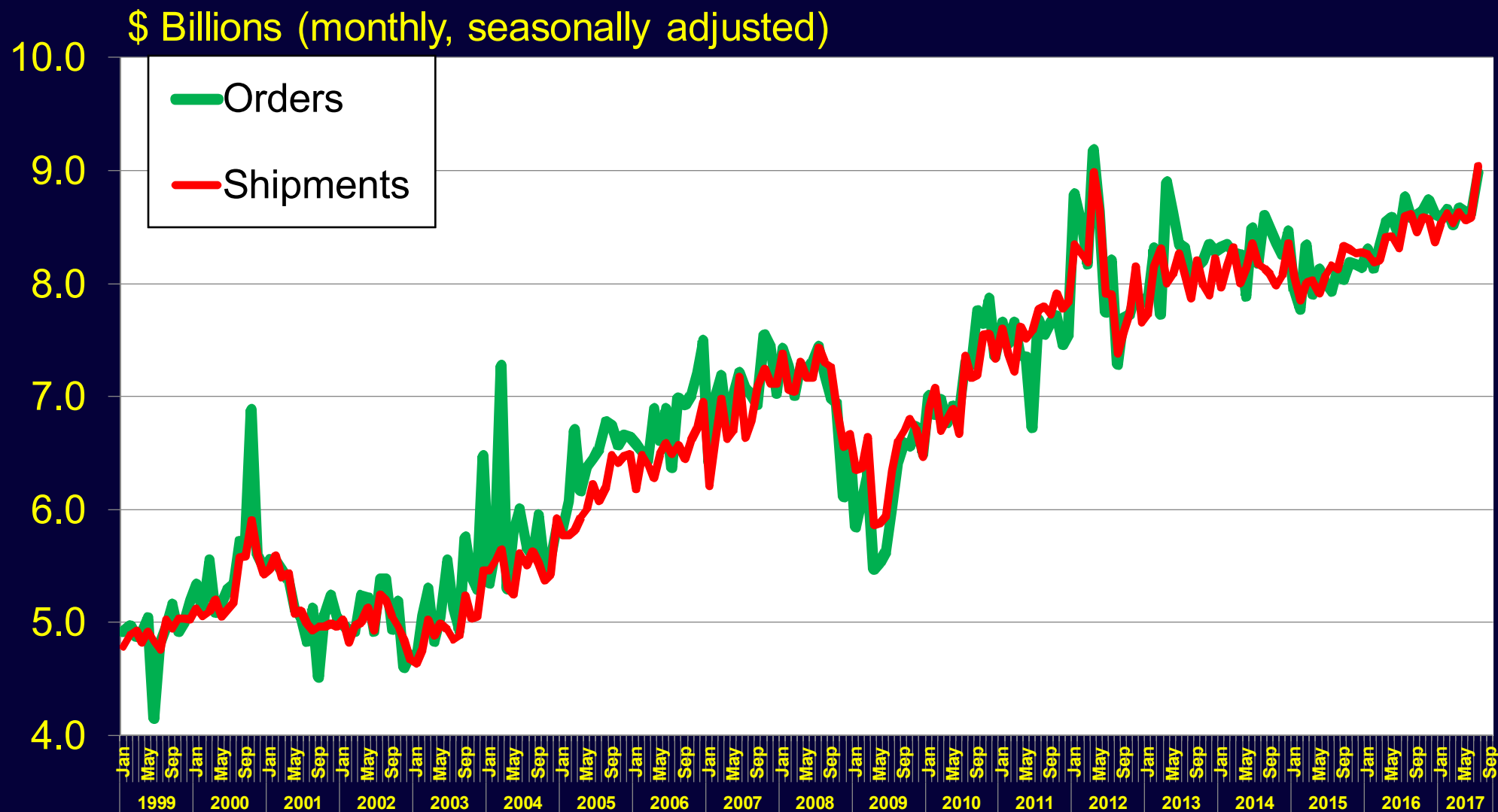


Orders and Shipments (Monthly, seasonally adjusted)

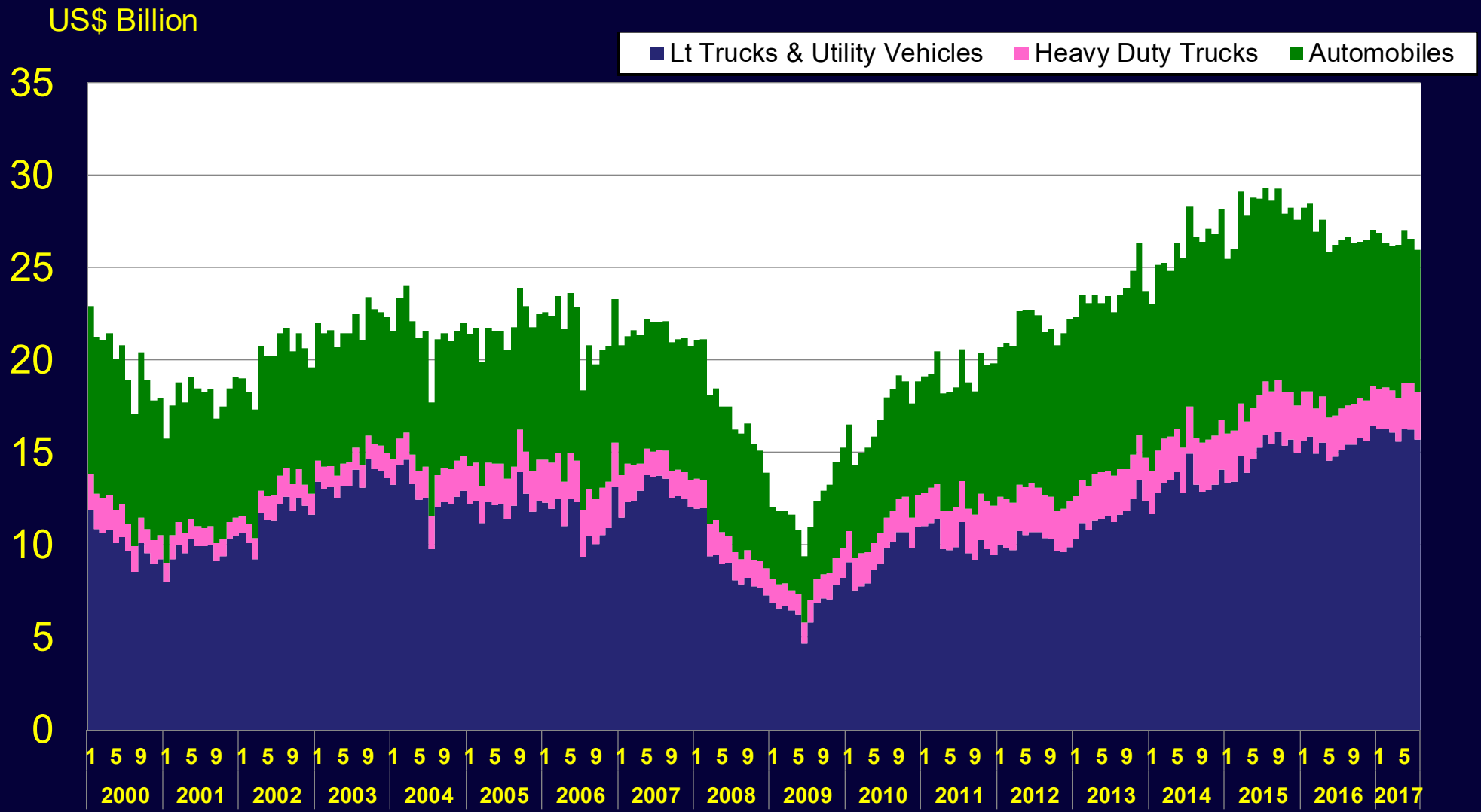
The chart displays two data series over a 25-year period from 1992 to 2017. The Y-axis represents the volume in thousands, ranging from 0 to 30. The X-axis shows months from January to June for each year. The 'Orders' series (blue line) shows significant volatility, with major peaks in May 2000 (approx. 26,000) and November 2012 (approx. 20,000). The 'Shipments' series (red line) is generally smoother, showing a steady increase from around 8,000 in 1992 to a peak of about 12,000 in late 2009, followed by a decline and then a recovery to around 10,000 by 2017.

Year	Jan	Jun	Nov	Apr	Sep	Feb	Jul	Dec	May	Oct	Mar	Aug	Jan	Jun	Nov	Apr	Sep	Feb	Jul	Dec	May	Oct	Mar	Aug	Jan	Jun	Nov	Apr	Sep	Feb	Jul	Dec	May	Oct	Mar	Aug	Jan	Jun										
1992	8.0	7.5	7.8	7.5	7.2	7.0	6.8	6.5	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0	2.8	2.5	2.2	2.0	1.8	1.5	1.2	1.0	0.8	0.5	0.2	0.0	0.0	0.0	0.0	0.0										
1993	11.0	10.5	10.8	10.5	10.2	10.0	9.8	9.5	9.2	9.0	8.8	8.5	8.2	8.0	7.8	7.5	7.2	7.0	6.8	6.5	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0	2.8	2.5	2.2	2.0	1.8	1.5	1.2	1.0						
1994	8.5	8.0	8.2	8.0	7.8	7.5	7.2	7.0	6.8	6.5	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0	2.8	2.5	2.2	2.0	1.8	1.5	1.2	1.0	0.8	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
1995	12.5	12.0	12.2	12.0	11.8	11.5	11.2	11.0	10.8	10.5	10.2	10.0	9.8	9.5	9.2	9.0	8.8	8.5	8.2	8.0	7.8	7.5	7.2	7.0	6.8	6.5	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0	2.8	2.5	2.2	2.0				
1996	13.8	13.5	13.8	13.5	13.2	13.0	12.8	12.5	12.2	12.0	11.8	11.5	11.2	11.0	10.8	10.5	10.2	10.0	9.8	9.5	9.2	9.0	8.8	8.5	8.2	8.0	7.8	7.5	7.2	7.0	6.8	6.5	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0		
1997	6.5	6.2	6.4	6.2	6.0	5.8	5.5	5.2	5.0	4.8	4.5	4.2	4.0	3.8	3.5	3.2	3.0	2.8	2.5	2.2	2.0	1.8	1.5	1.2	1.0	0.8	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
1998	6.8	6.5	6.7	6.5	6.3	6.0	5.7	5.4	5.1	4.9	4.6	4.3	4.0	3.7	3.4	3.1	2.8	2.5	2.2	1.9	1.6	1.3	1.0	0.7	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
1999	6.2	5.9	6.1	5.9	5.7	5.4	5.1	4.8	4.5	4.2	3.9	3.6	3.3	3.0	2.7	2.4	2.1	1.8	1.5	1.2	0.9	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	26.2	25.8	26.1	25.8	25.5	25.2	24.9	24.6	24.3	24.0	23.7	23.4	23.1	22.8	22.5	22.2	21.9	21.6	21.3	21.0																												

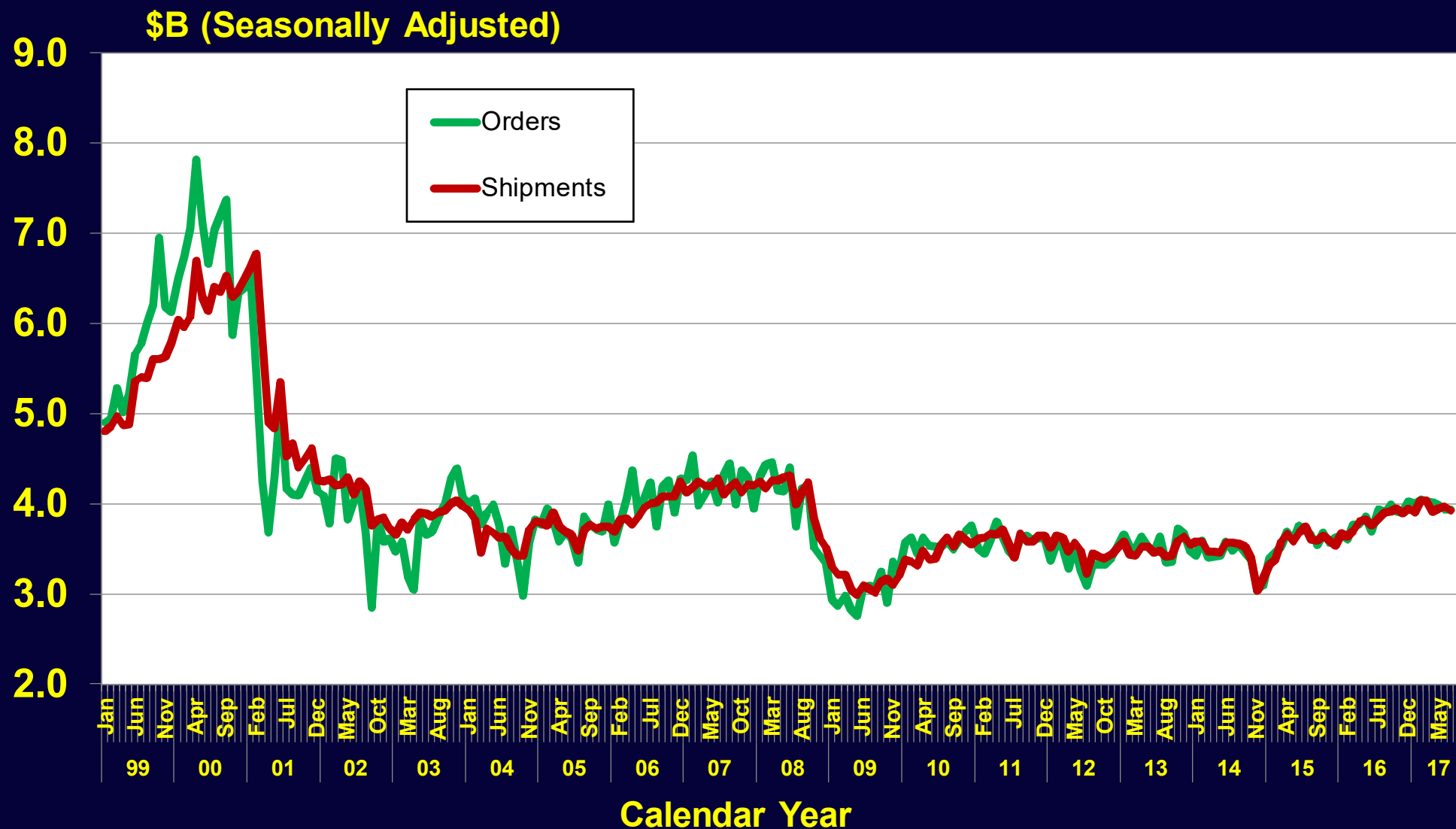
U.S. Electromedical, Measurement & Control Equipment Orders & Shipments



U.S. Vehicle Shipments



U.S. Production: "Other" Electronic Components (excludes semiconductors) Orders & Shipments



U.S. Passive Component Orders & Shipments

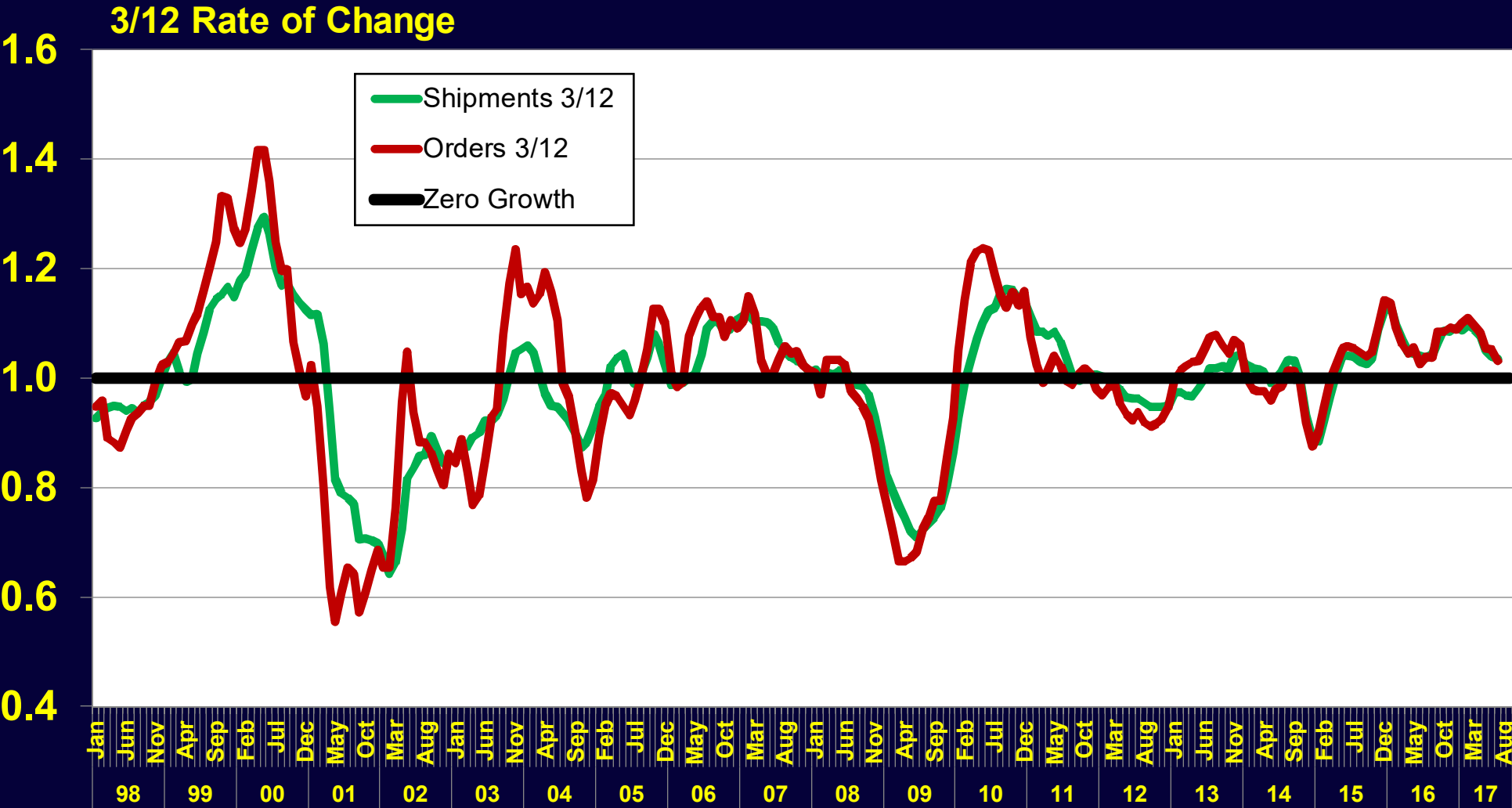


Chart 28

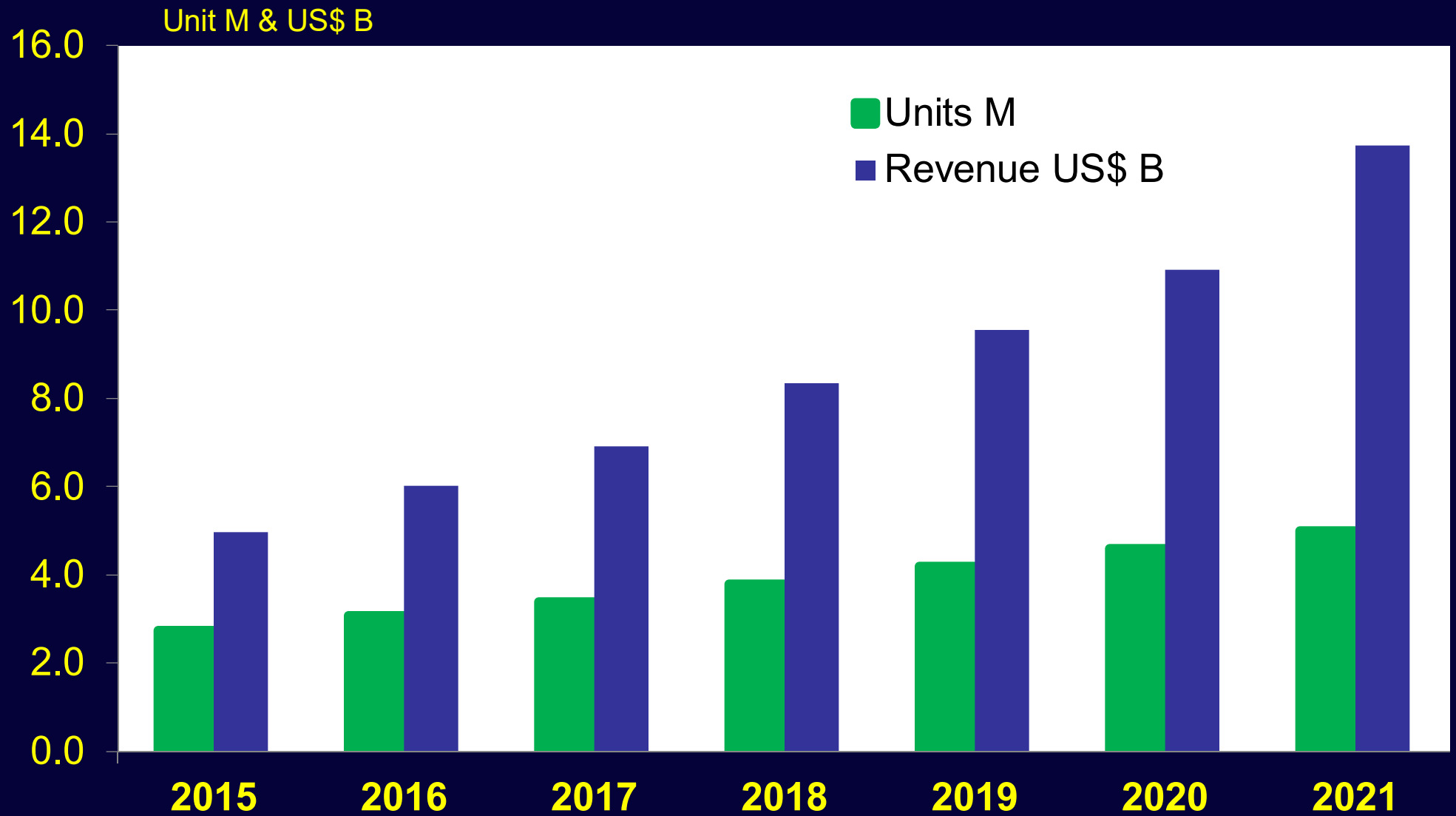
Present Growth Rates (%)

U.S. Economy & Electronics Industry

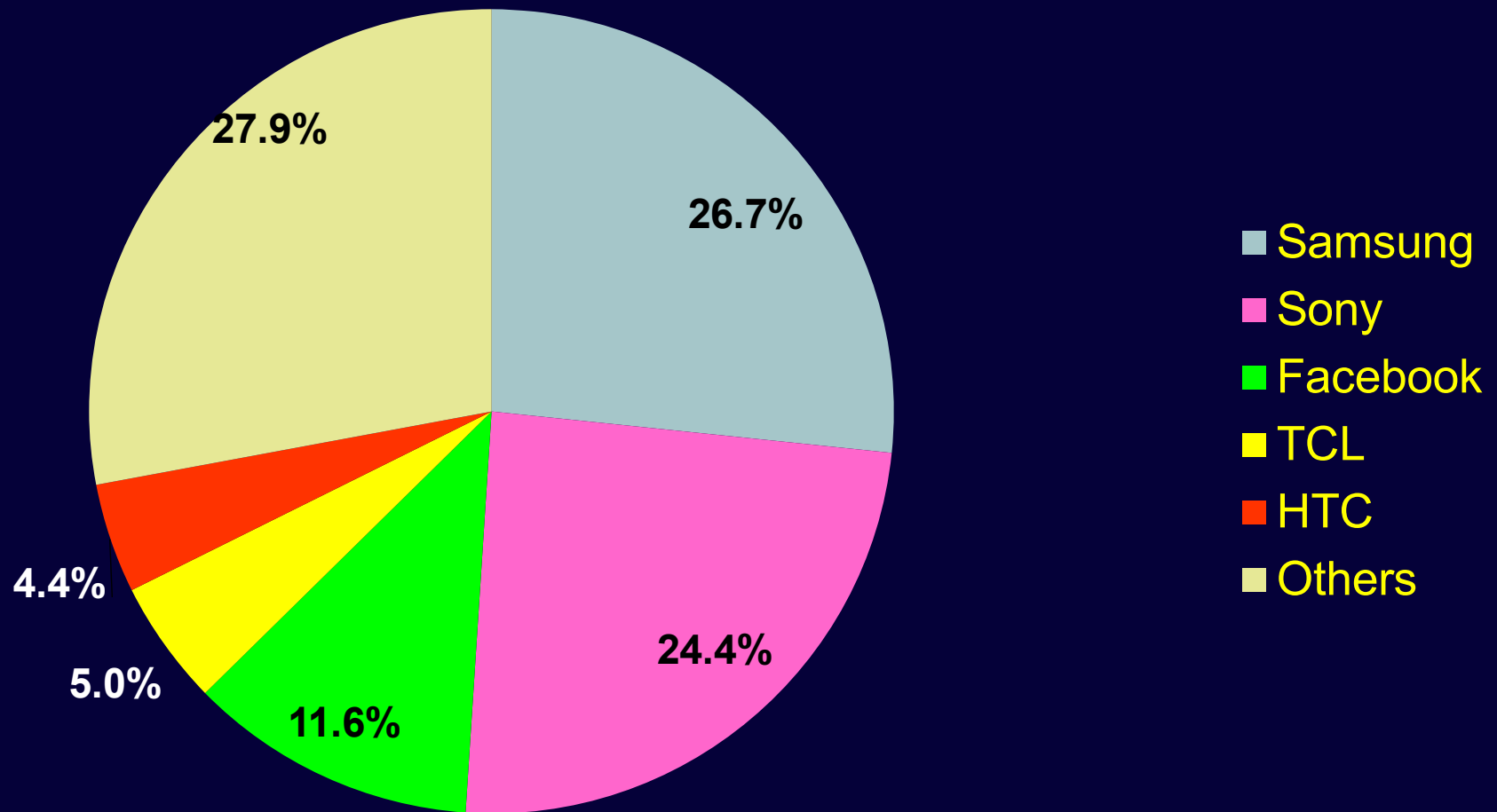
	Latest Month	Annualized Growth Rate	3-Month Growth Rate
Electronic Component \$			
Rigid & Flex PCB Orders (N Amer)	7/17	1.4	6.4
Rigid & Flex PCB Shipments (N Amer)	7/17	-2.9	-4.2
Electronic Component Orders	7/17	7.5	3.2
Electronic Component Shipments	7/17	7.1	3.6
Semiconductor Shipments to N America	7/17	18.1	36.0
U.S. Electronic Equipment Orders \$			
Computer & Related	7/17	-4.6	-1.7
Communication	7/17	7.1	-4.3
Medical, Measurement & Control	7/17	4.1	1.7
Search & Navigation	7/17	-1.2	2.5
Defense Capital Goods	7/17	19.1	44.6
Military Electronics	7/17	-2.8	0.6
Total Electronic Equipment	7/17	2.3	0.4
U.S. Industrial Production	7/17	0.6	2.1

NOTE: 3 month growth rates compare most recent 3 months to same 3 months one year earlier.
Also called 3/12 growth

Public Display Market 2015-2021



AR & VR Headset Shipments 2Q'17

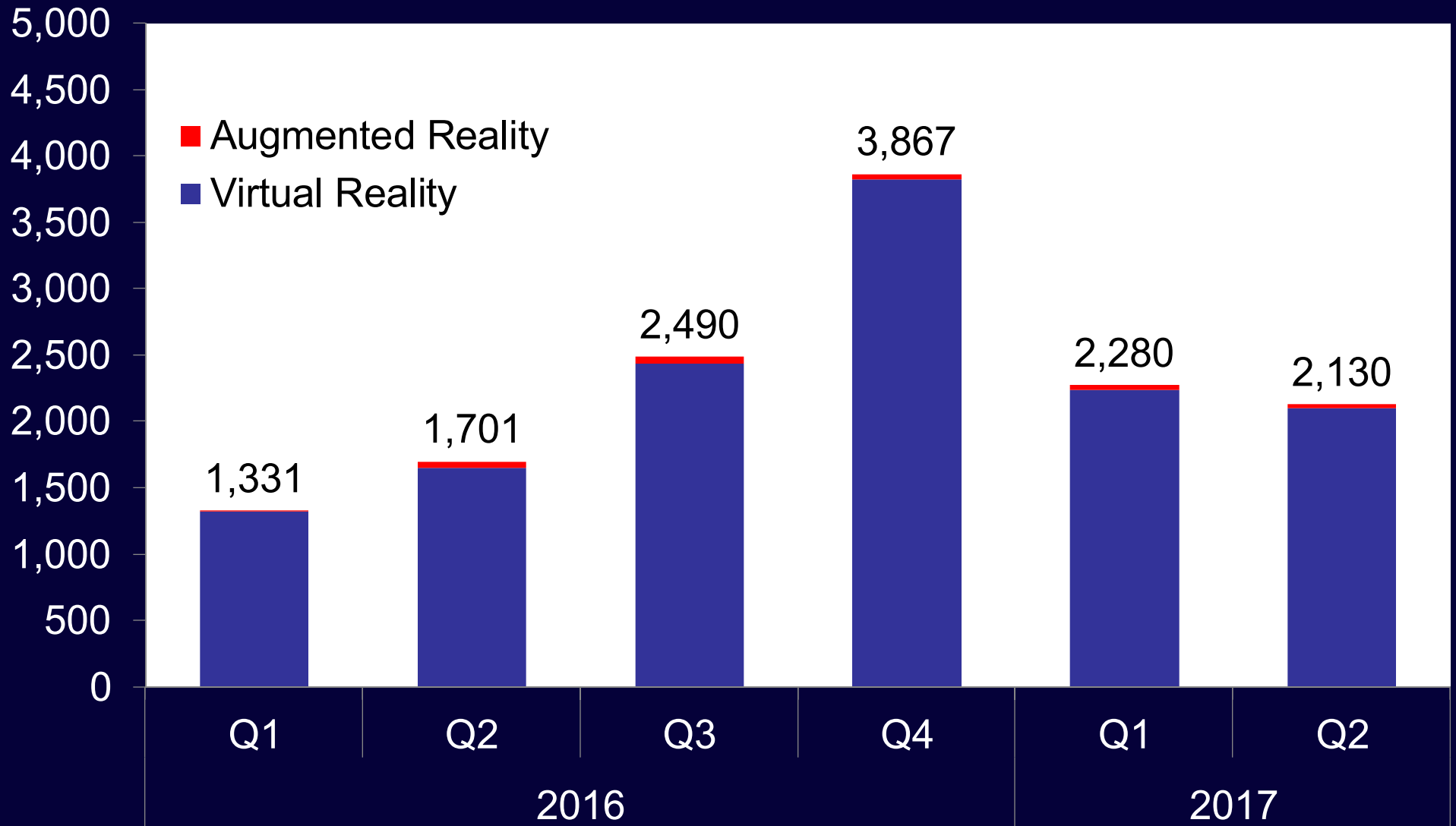


2Q'17 Total: 2.13 Million Units

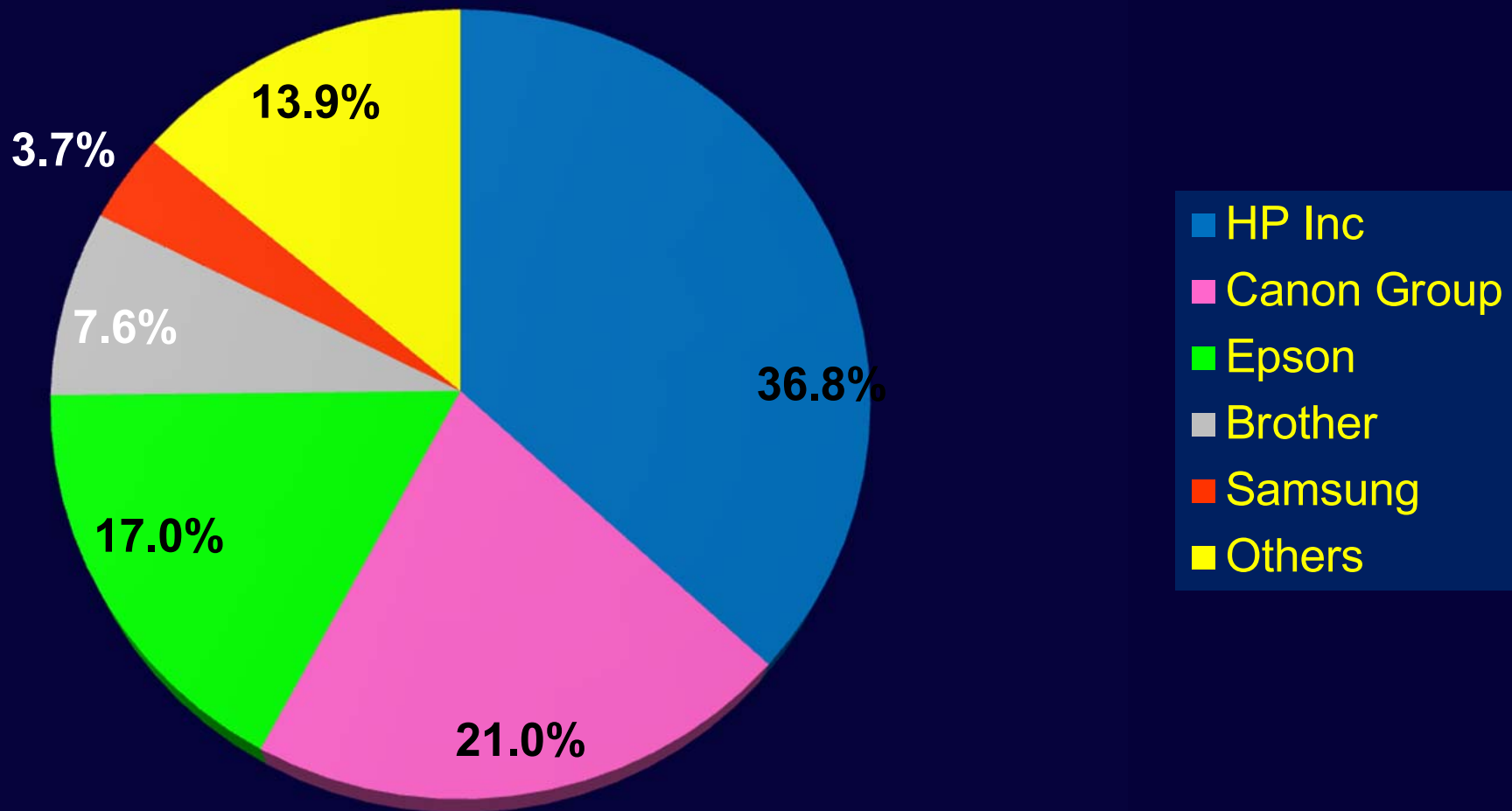
Chart 31

Worldwide AR/VR Headset Shipments

Units (000)



World Hard Copy Peripherals Market 2Q'17



2Q'17 Total: 23,310 Units

World Hard Copy Peripherals Market Unit Share

