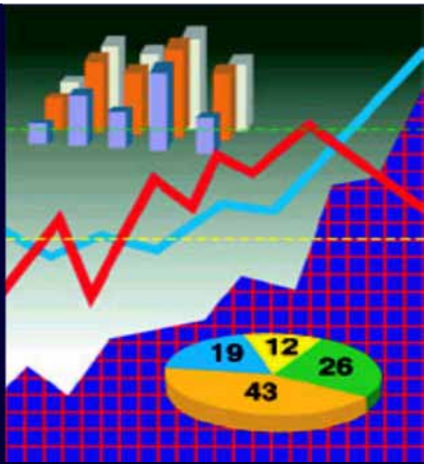
20160218



Business Outlook

Global Electronics Industry

Custer Consulting Group
www.custerconsulting.com
February 2016

Setting Expectations

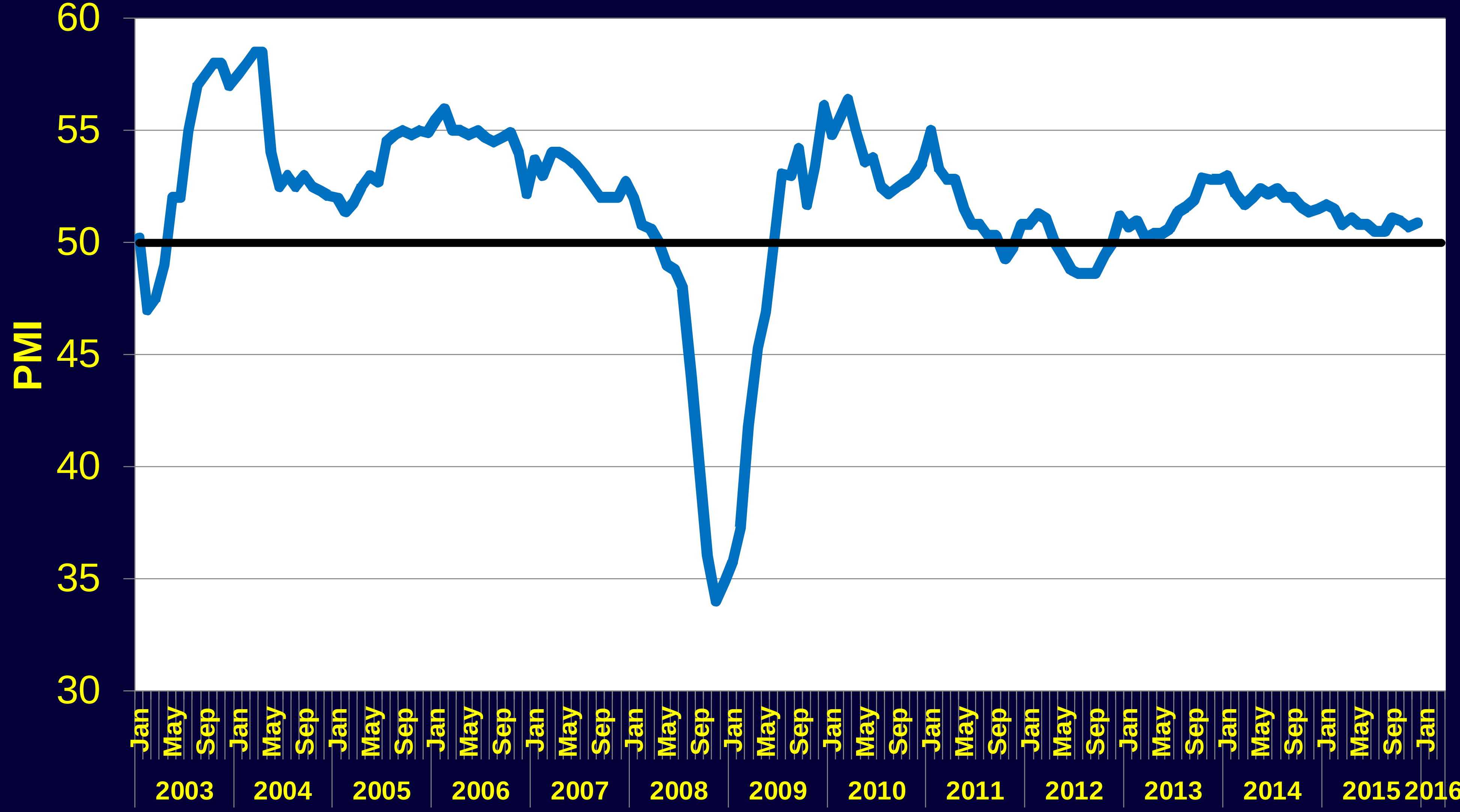

2016

Leading Indicators

20160201

Global "Purchasing Managers" Index

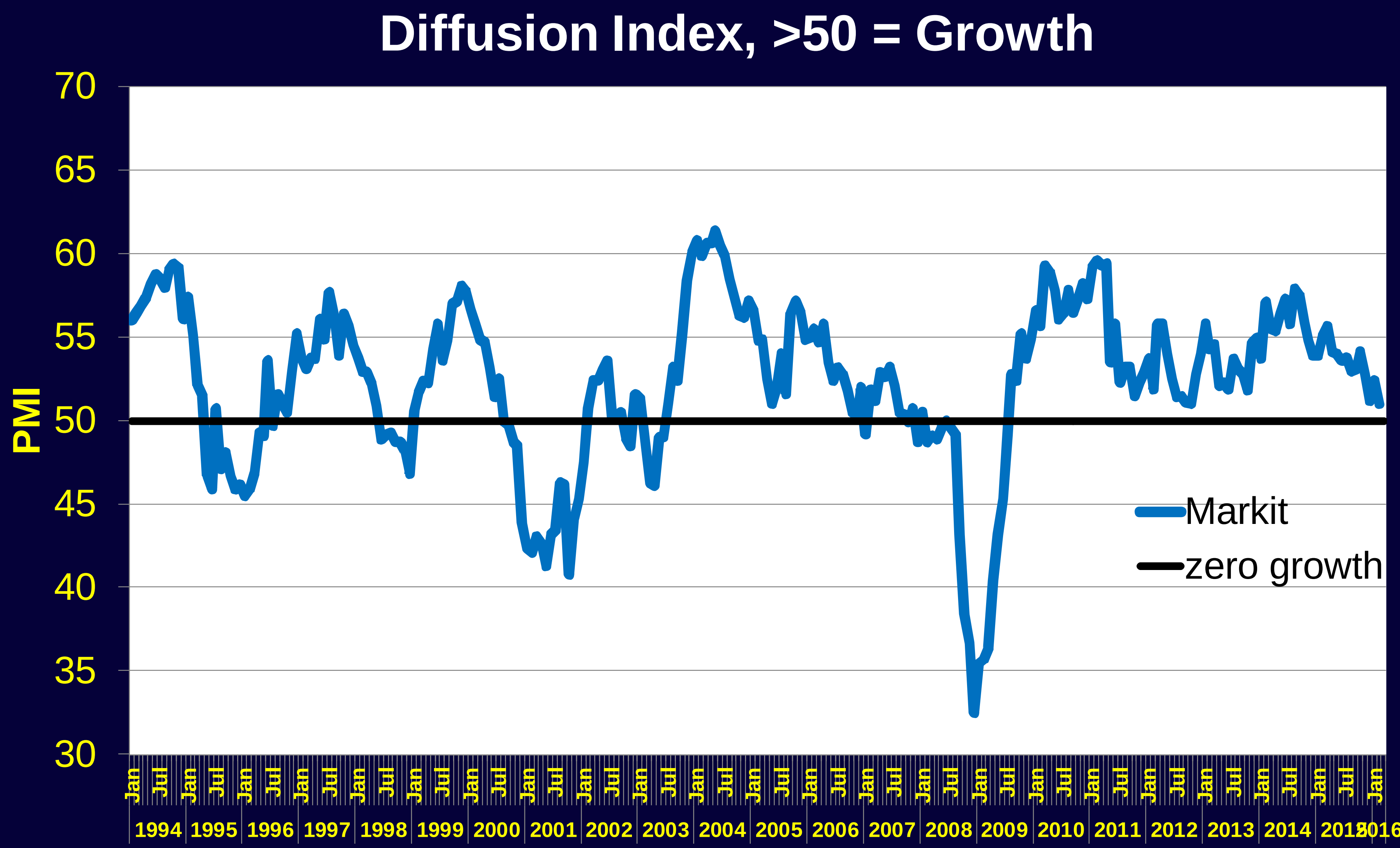
Diffusion Index, >50 = Growth



Markit Economics

20160201

U.S "Purchasing Managers" Index
Markit Economics

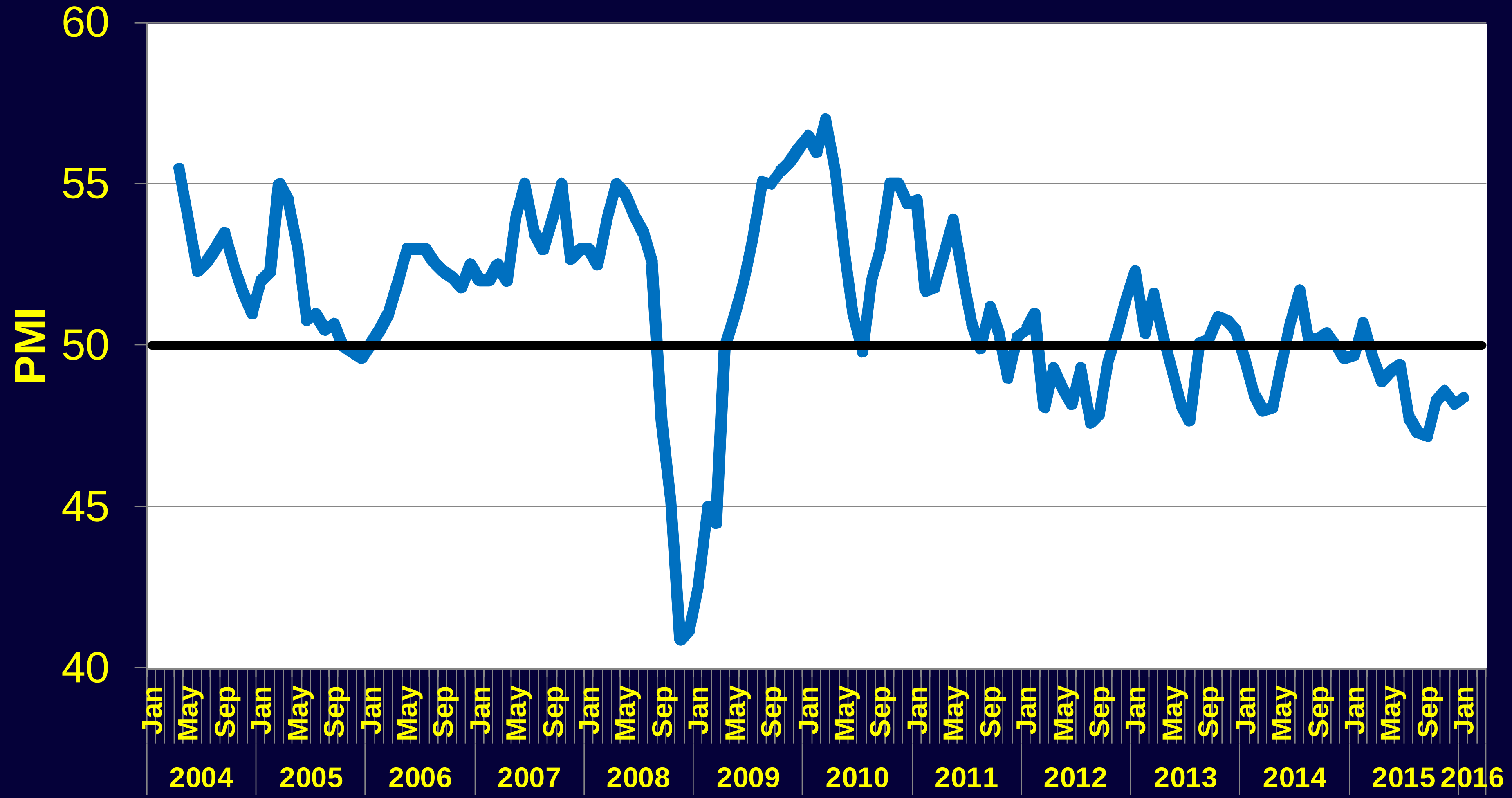


Markit Economics & ISM

20160201

China "Purchasing Managers" Index

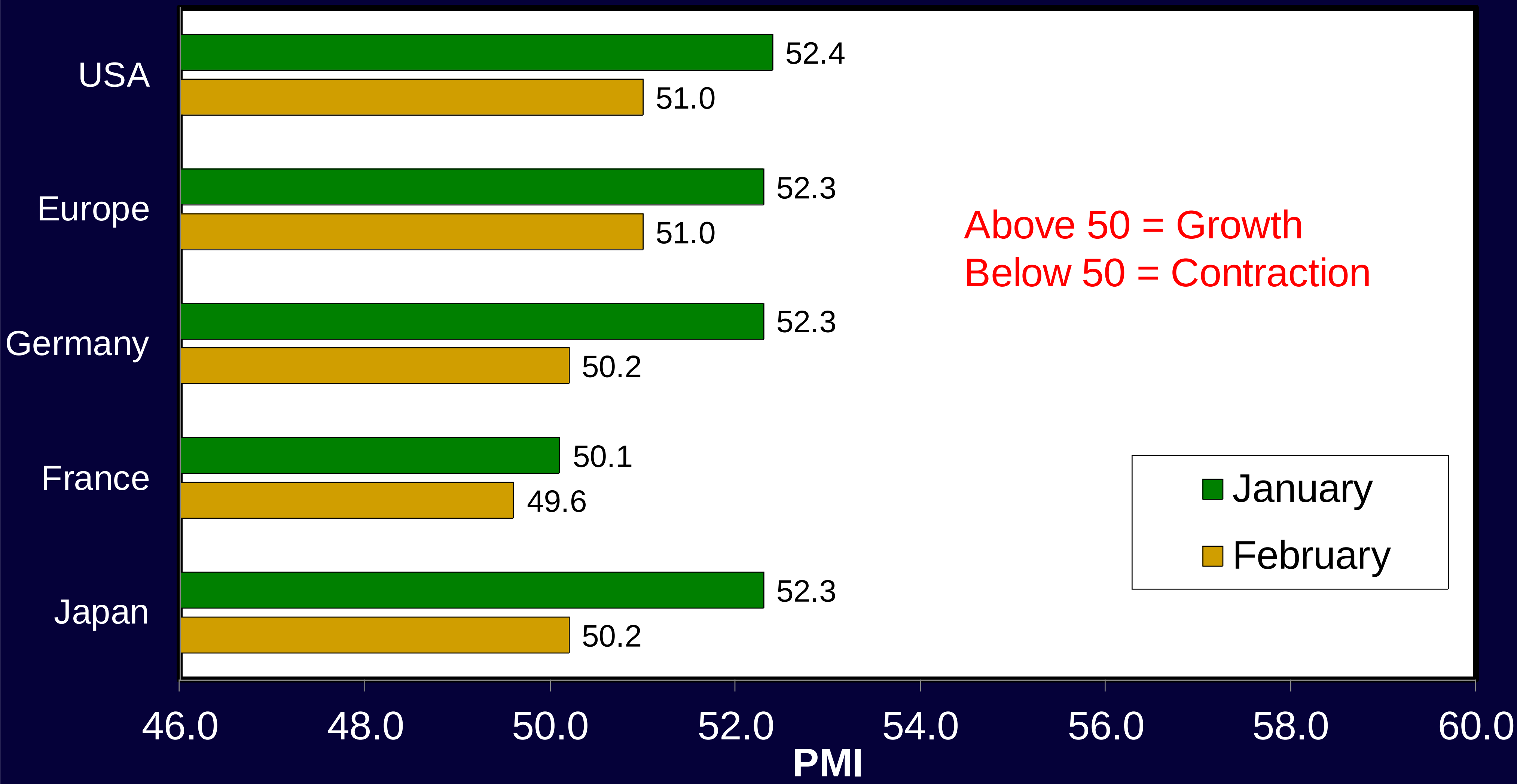
Diffusion Index, >50 = Growth



Markit Economics

20160222

Purchasing Managers' Indices
February (preliminary) vs. January 2016

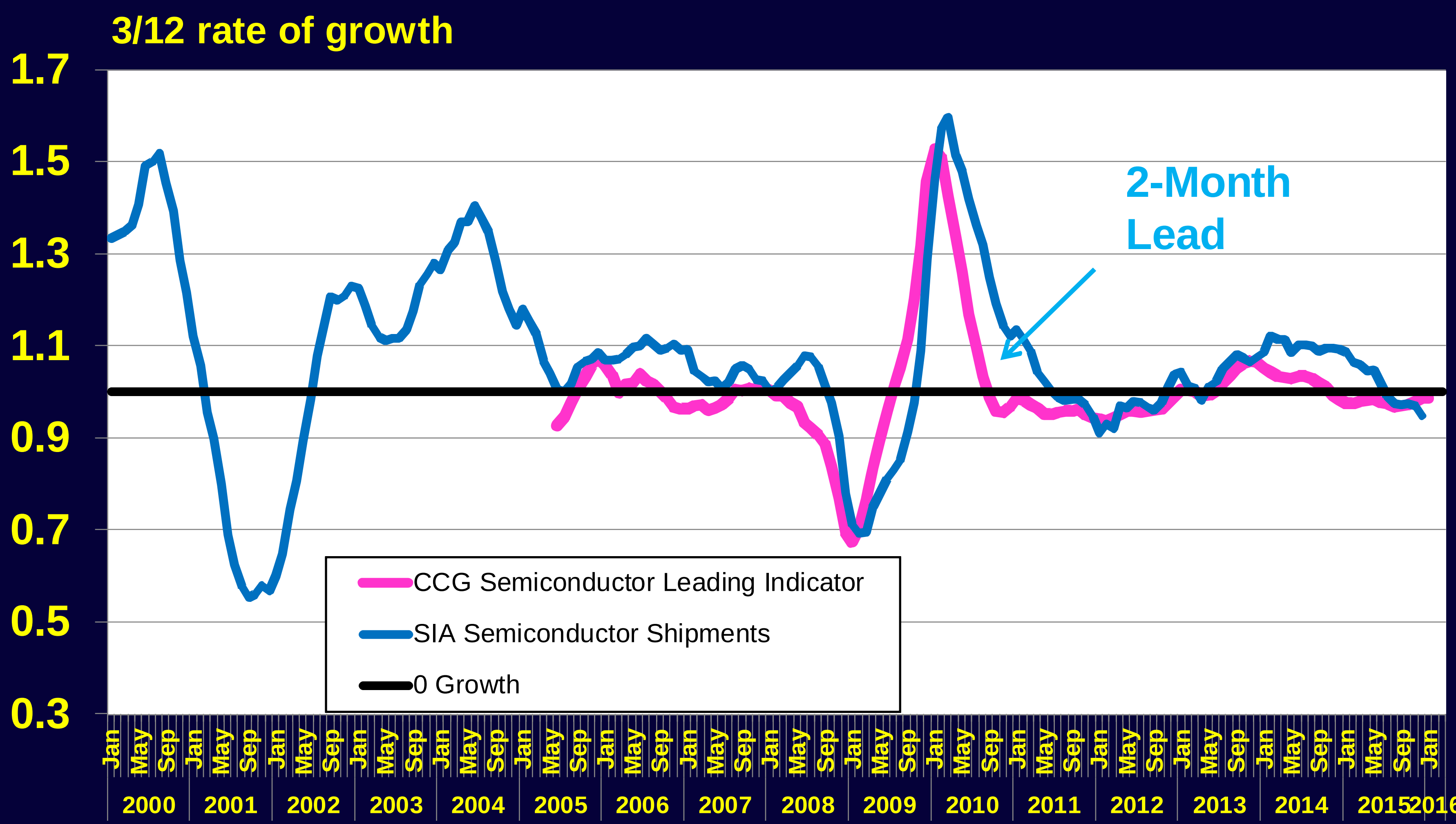


Markit Economics

PMIs
are a 2 to 6 month leading indicator of electronics growth

CCG Semiconductor Leading Indicator vs. Global Semiconductor Shipments

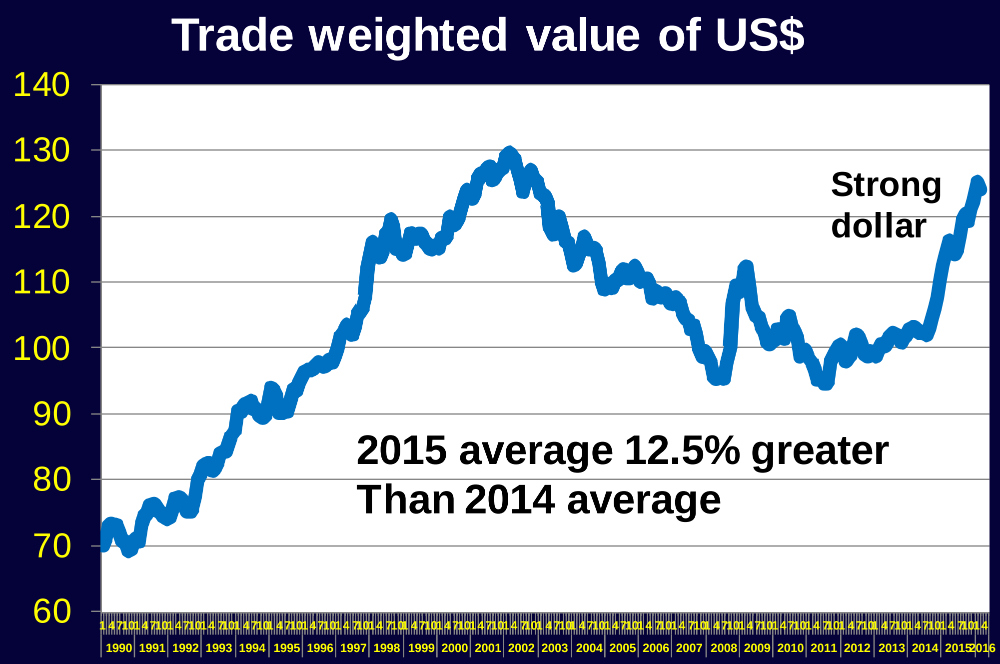
20160201

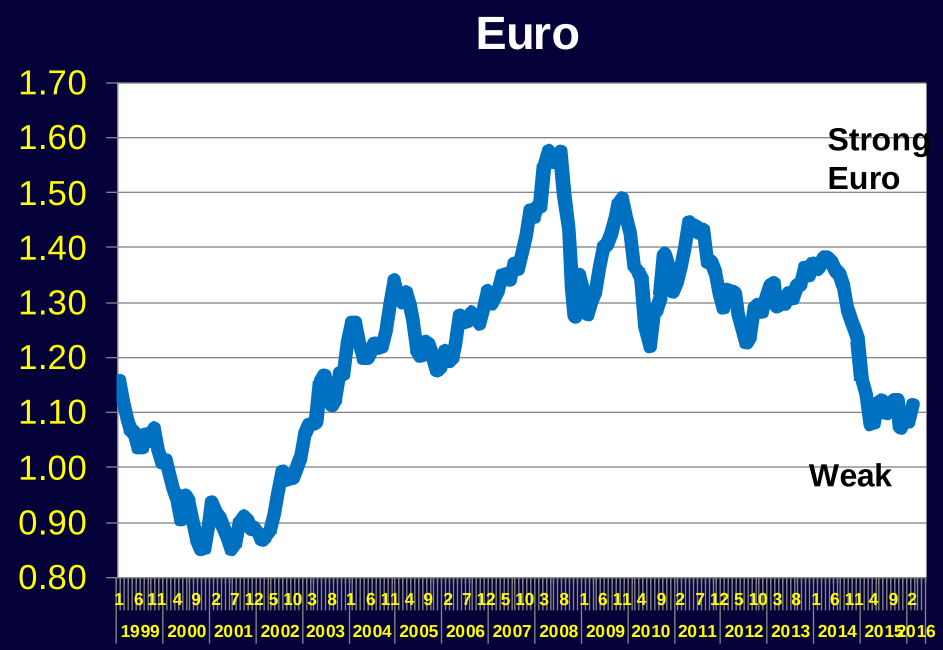


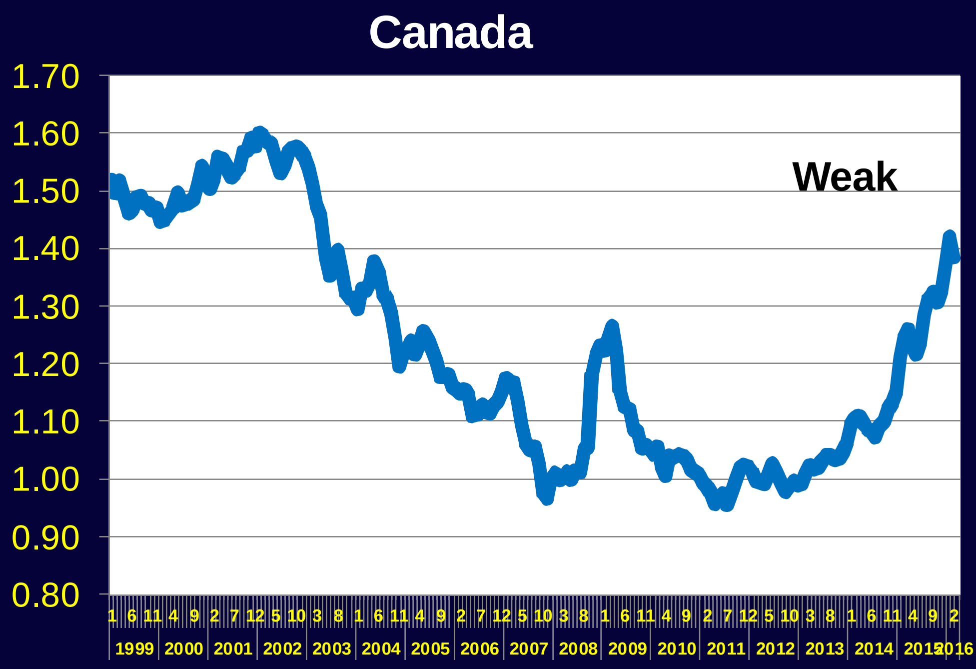
http://www.census.gov/indicator/www/m3/

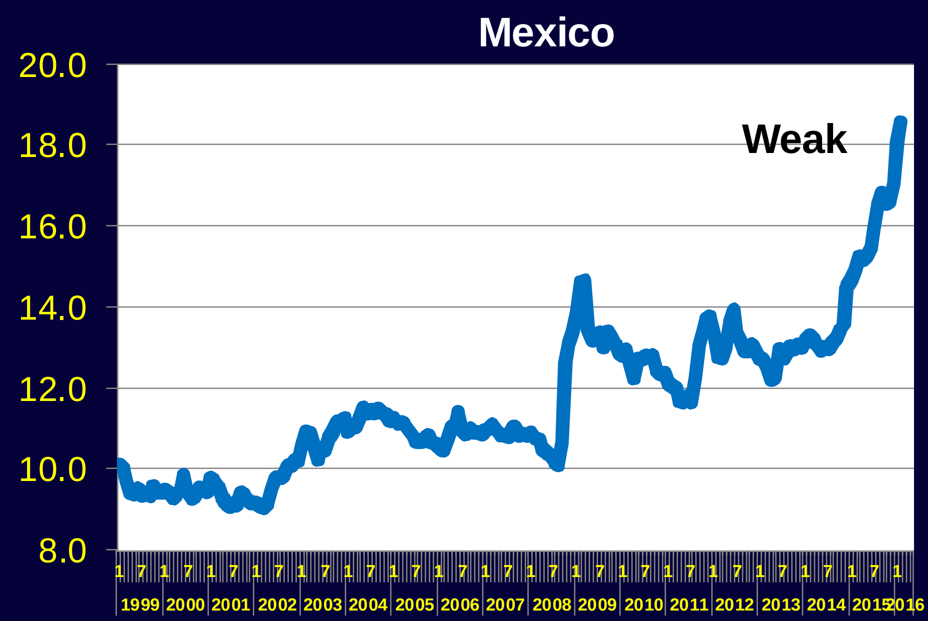
Currency Exchange Rates vs U.S. Dollar

Exchange Rates vs. U.S. Dollar





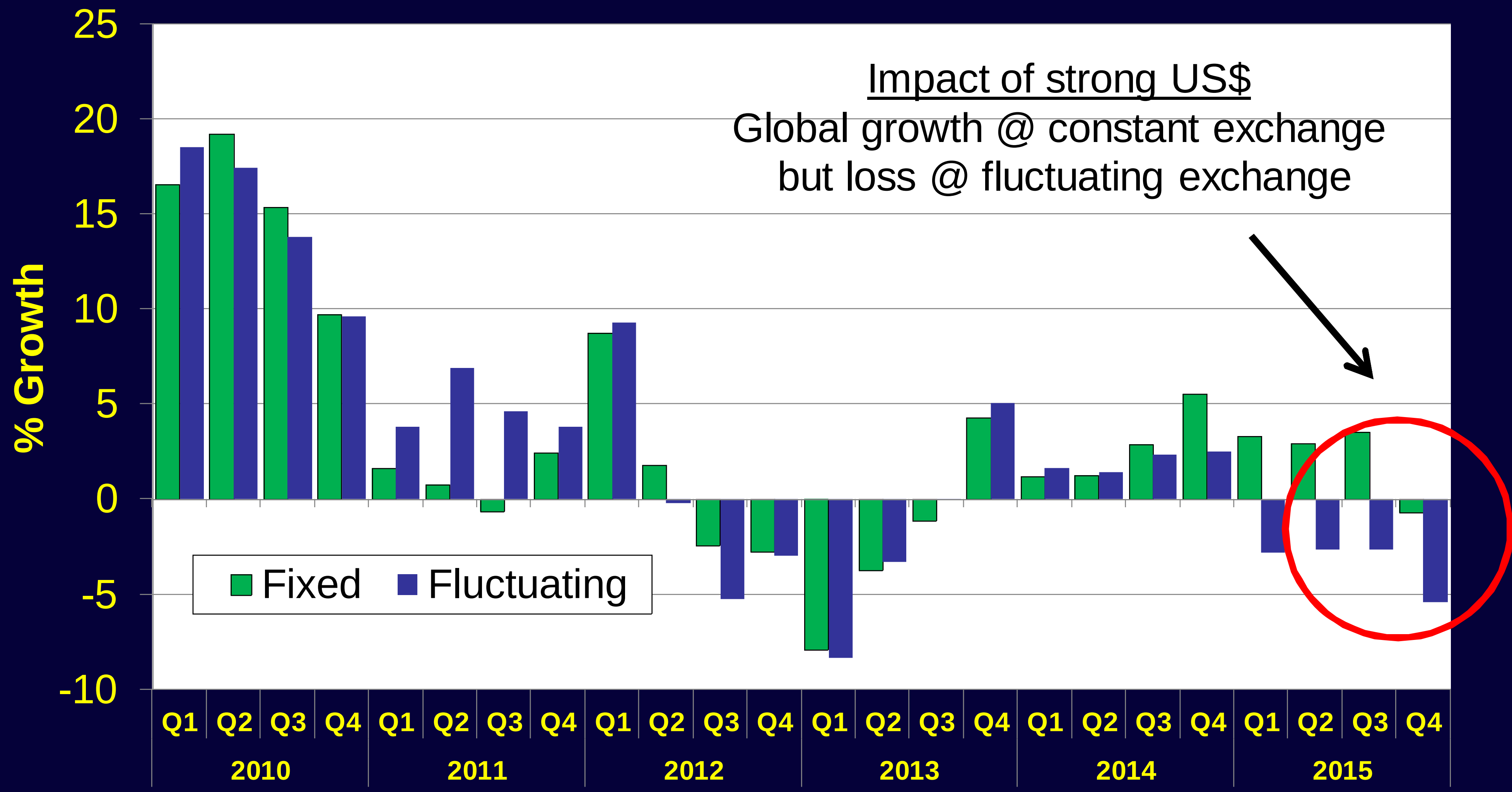




20160217

Exchange Rate Impact on
US$ Denominated Consolidated World Electronic Equipment Sales

Quarterly Revenue Growth Converted to US$
@ Fixed 2014 vs Fluctuating Exchange

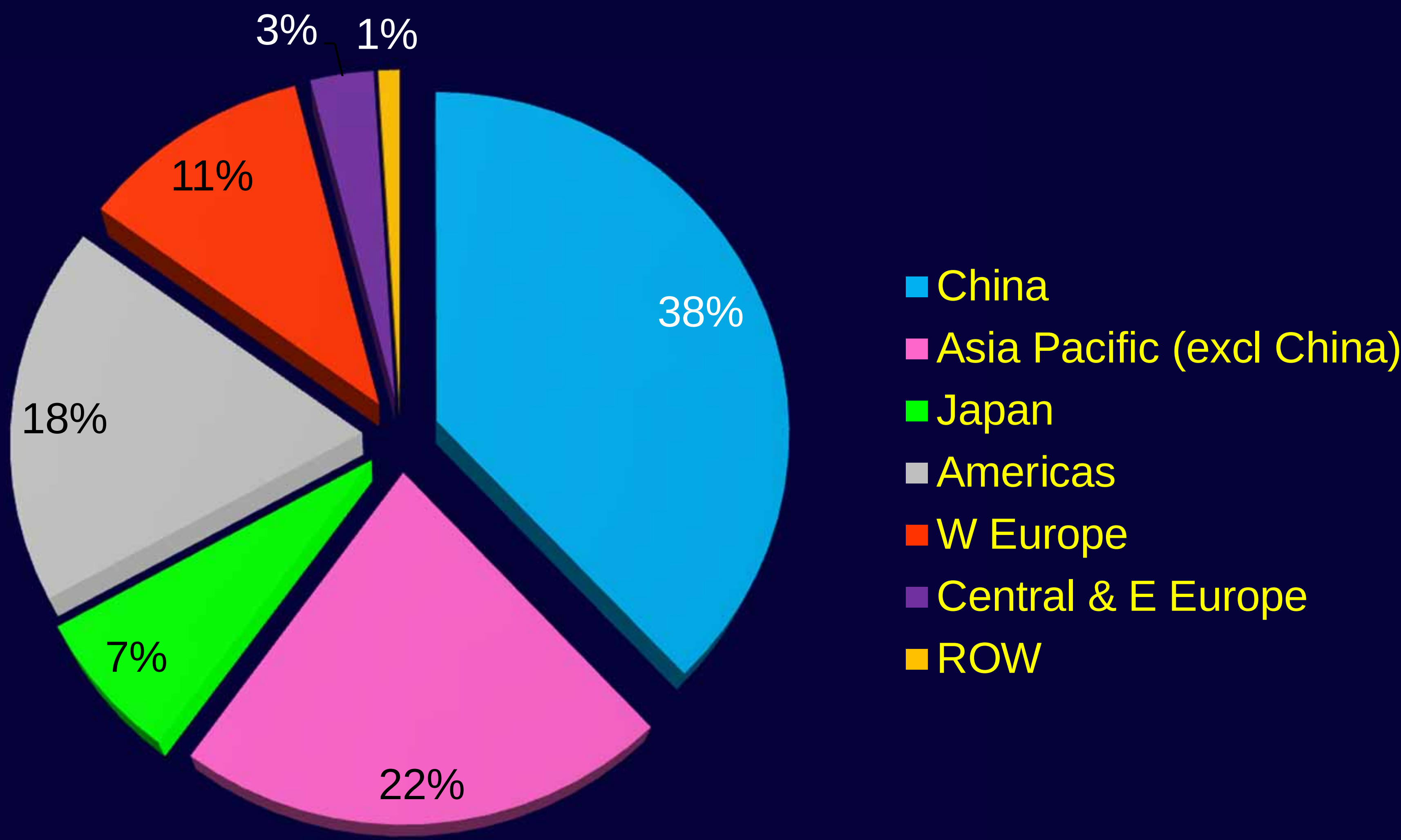


Global model based on regional shipment indices

Electronic Equipment

Global Electronics 2015 - Production Including Components

20160205



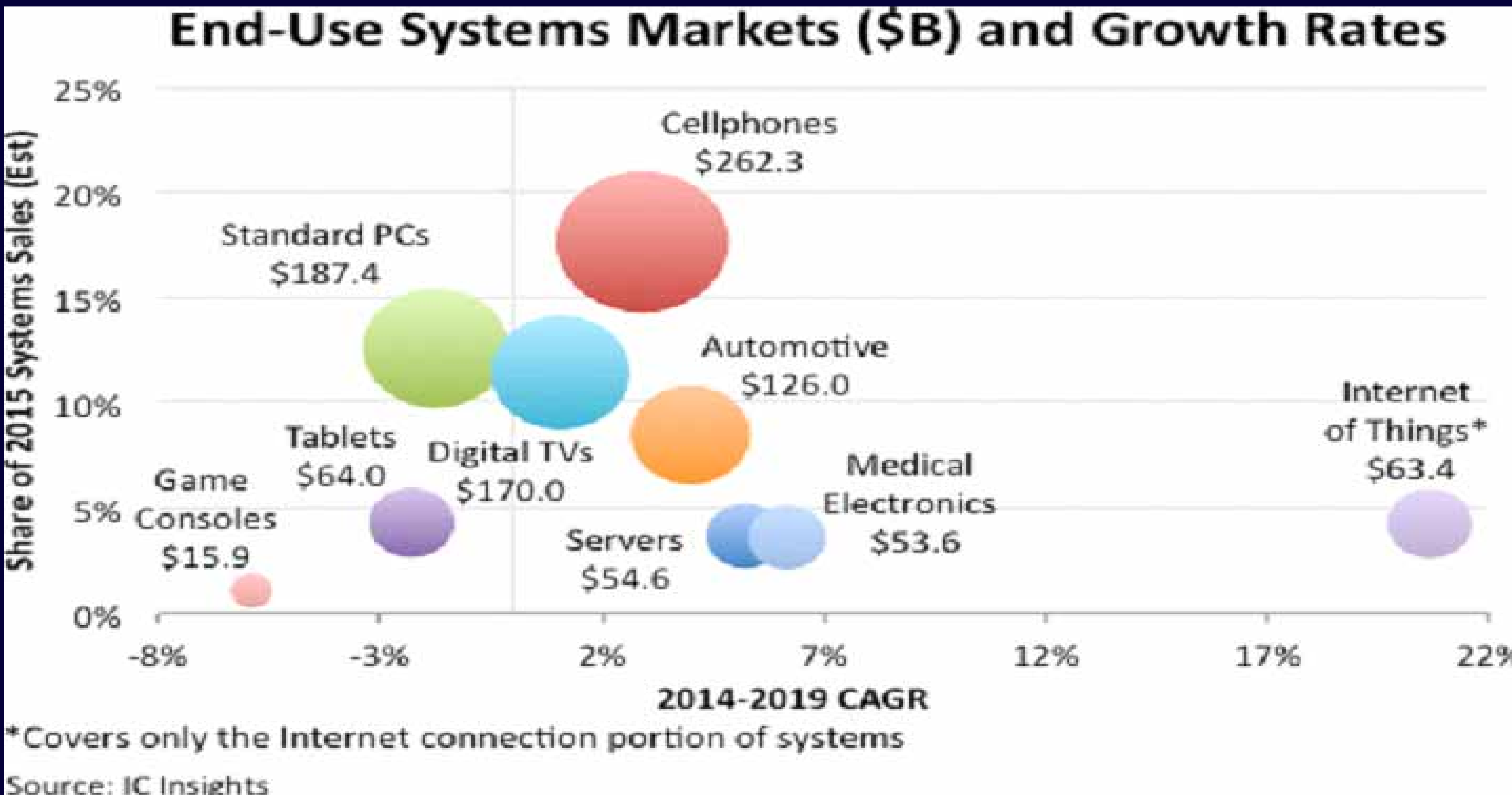
Total US$ 1,861 Billion

Reed Electronics Research 2/16

20151212

End-Use Markets
Size ($B) & Growth Rates

20150308



Methods to Measure Electronic Industry Growth

Sector composites based upon financial reports of similar companies
- Typically quarterly, semiannually or monthly

Government and trade organization statistics
- Typically monthly

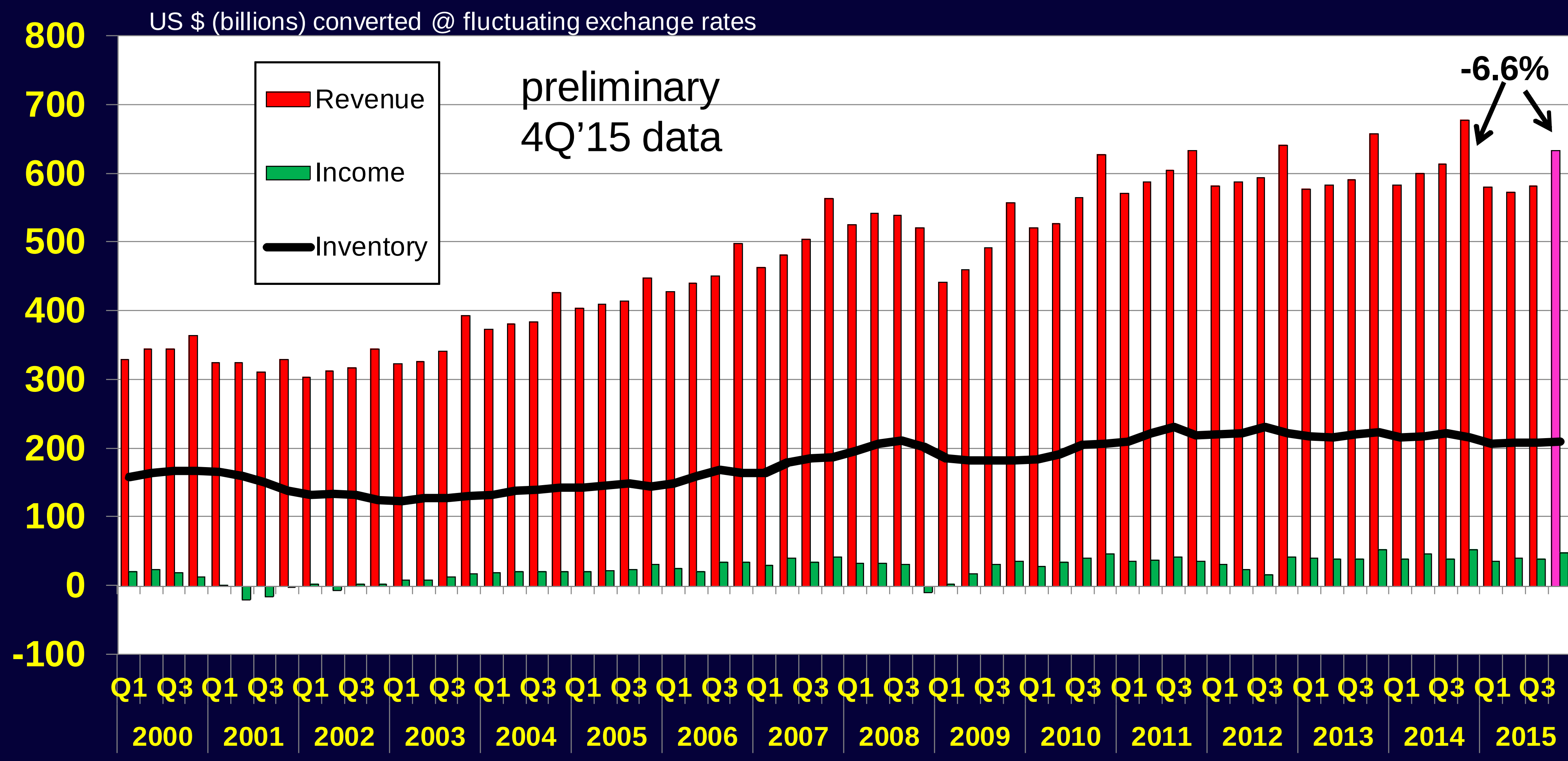
- TIMELY DATA REPORTED ON A CONSISTENT BASIS IS KEY

Sector composites based upon financial reports of similar companies

20160219

Electronic Equipment Suppliers
Composite of 175 Public Companies

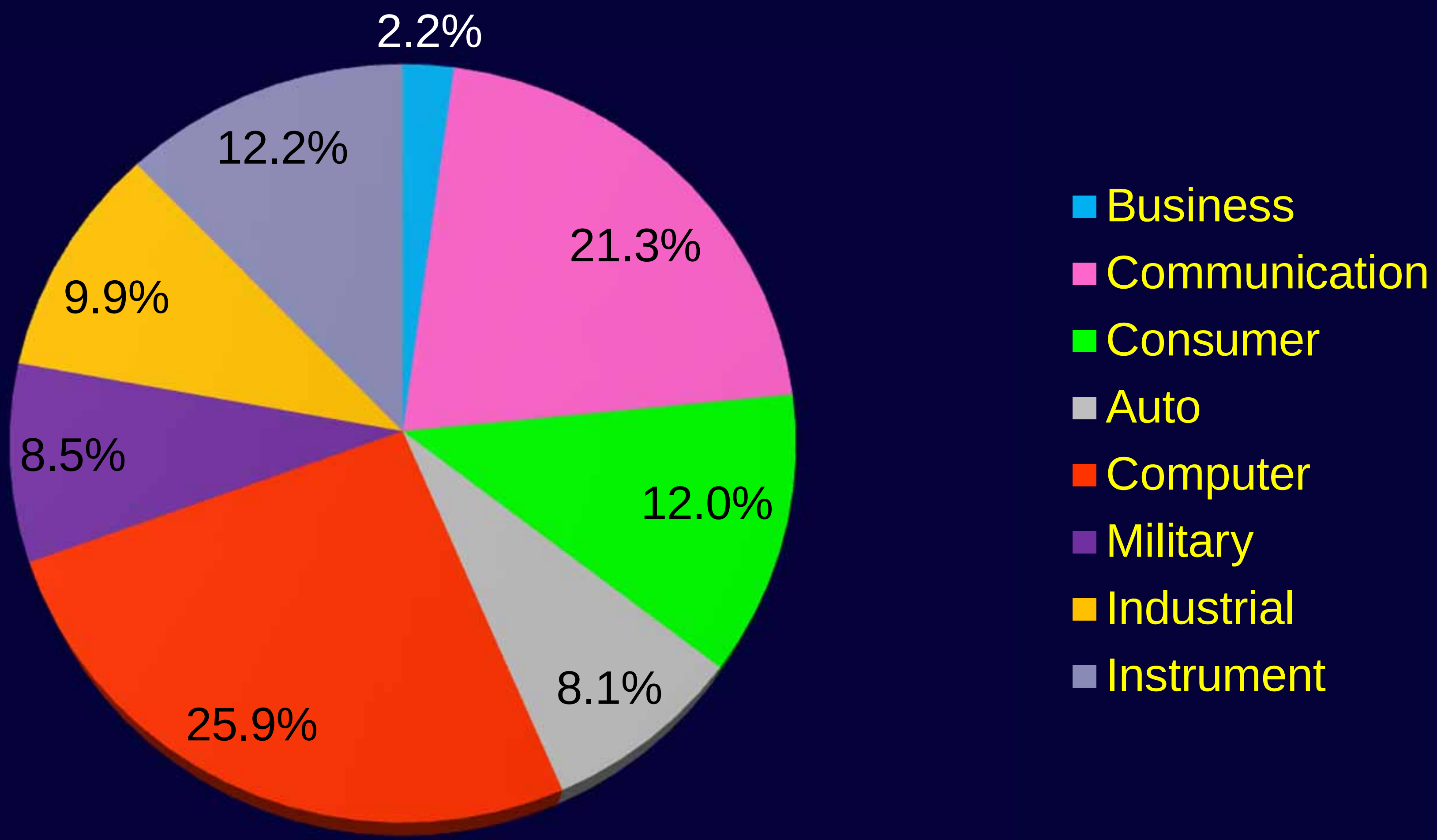
Revenue, Net Income & Inventory



Computer 13, Internet 12, Storage 10, Communication 20, SEMI 37, Medical 21, Instruments 12, Military 21, Business & Office 6, Consumer 13, Automotive 11

World Electronic Equipment Production by Type @2014 Exchange Rates

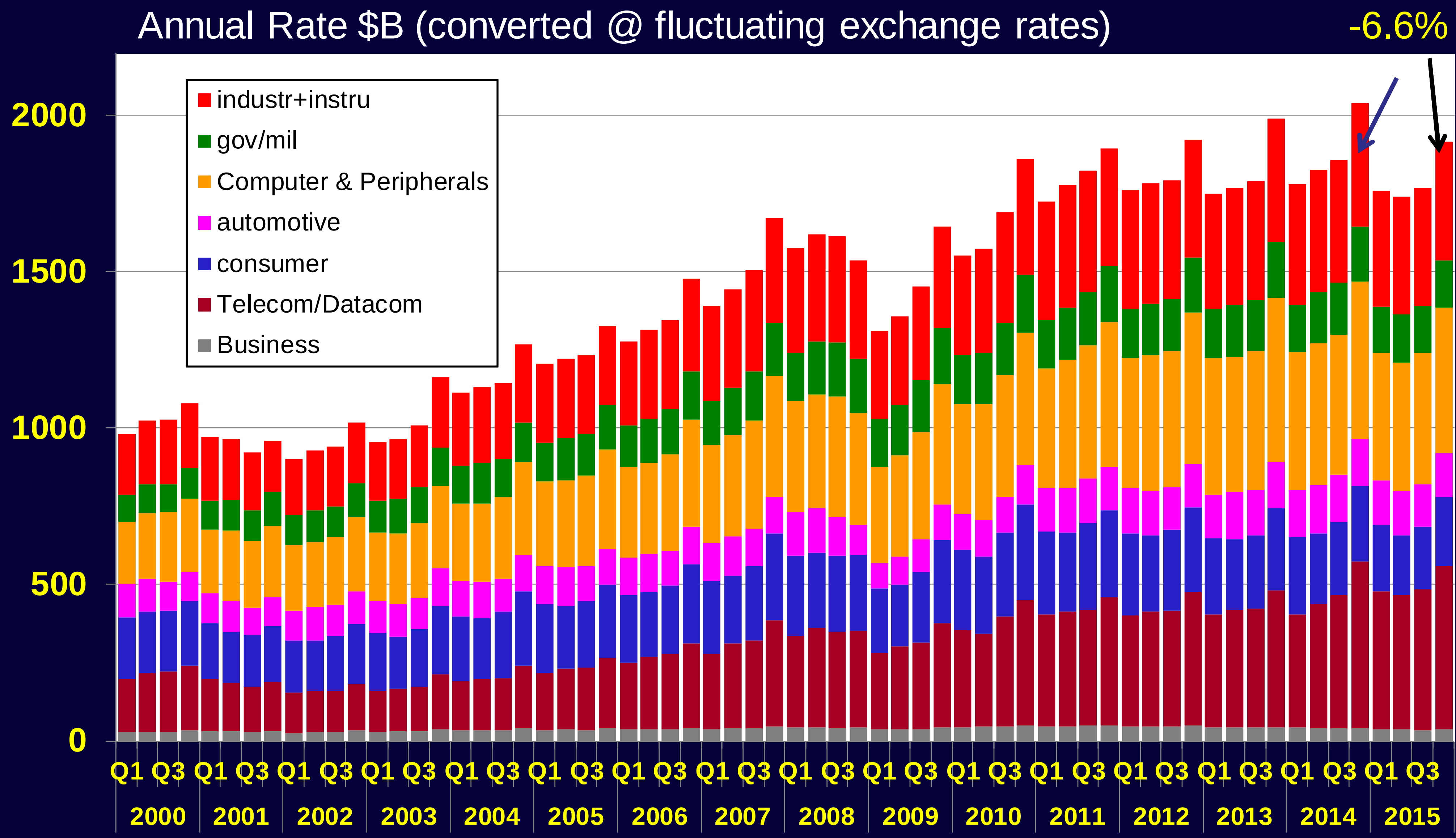
20150912



World Electronic Equipment Production

20160219

By Type (preliminary 4Q'15 results)



Regional Data

U.S.

Europe

Japan

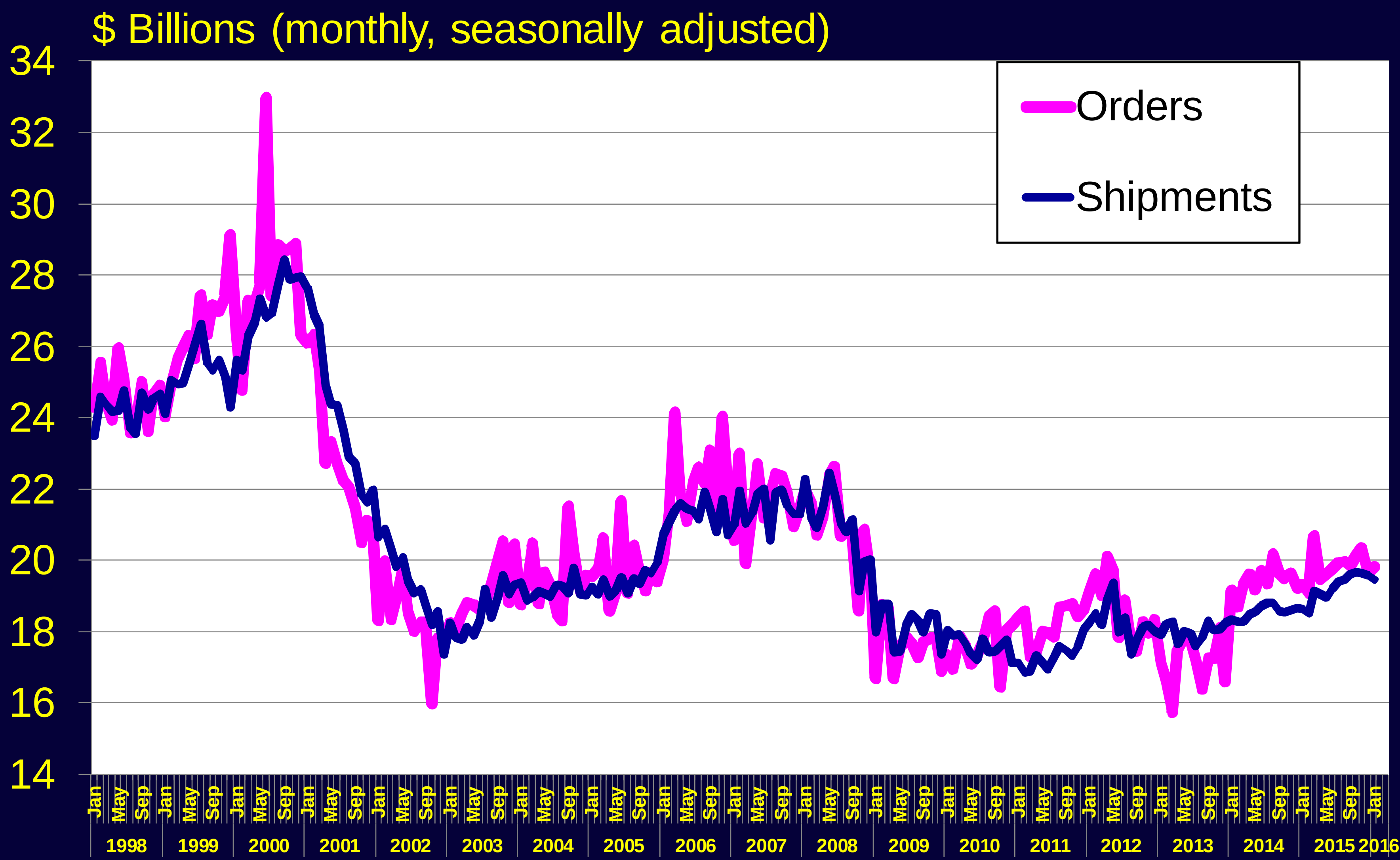
China/Taiwan

S Korea

20150225

U.S. Electronic Equipment Orders & Shipments

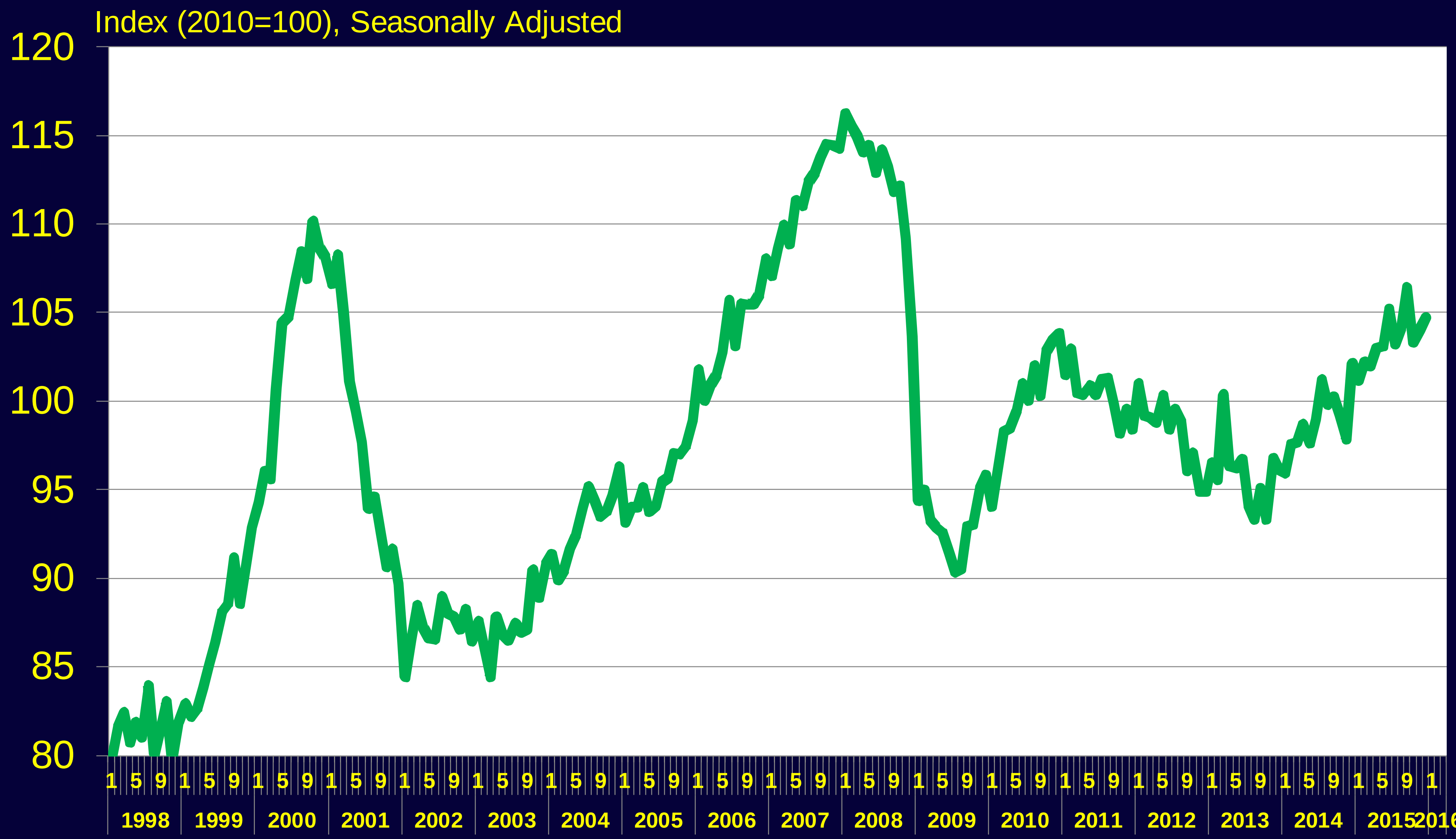
Computer, Communications, Measurement & Control and Military



www.census.gov/indicator/www/m3/

20160212

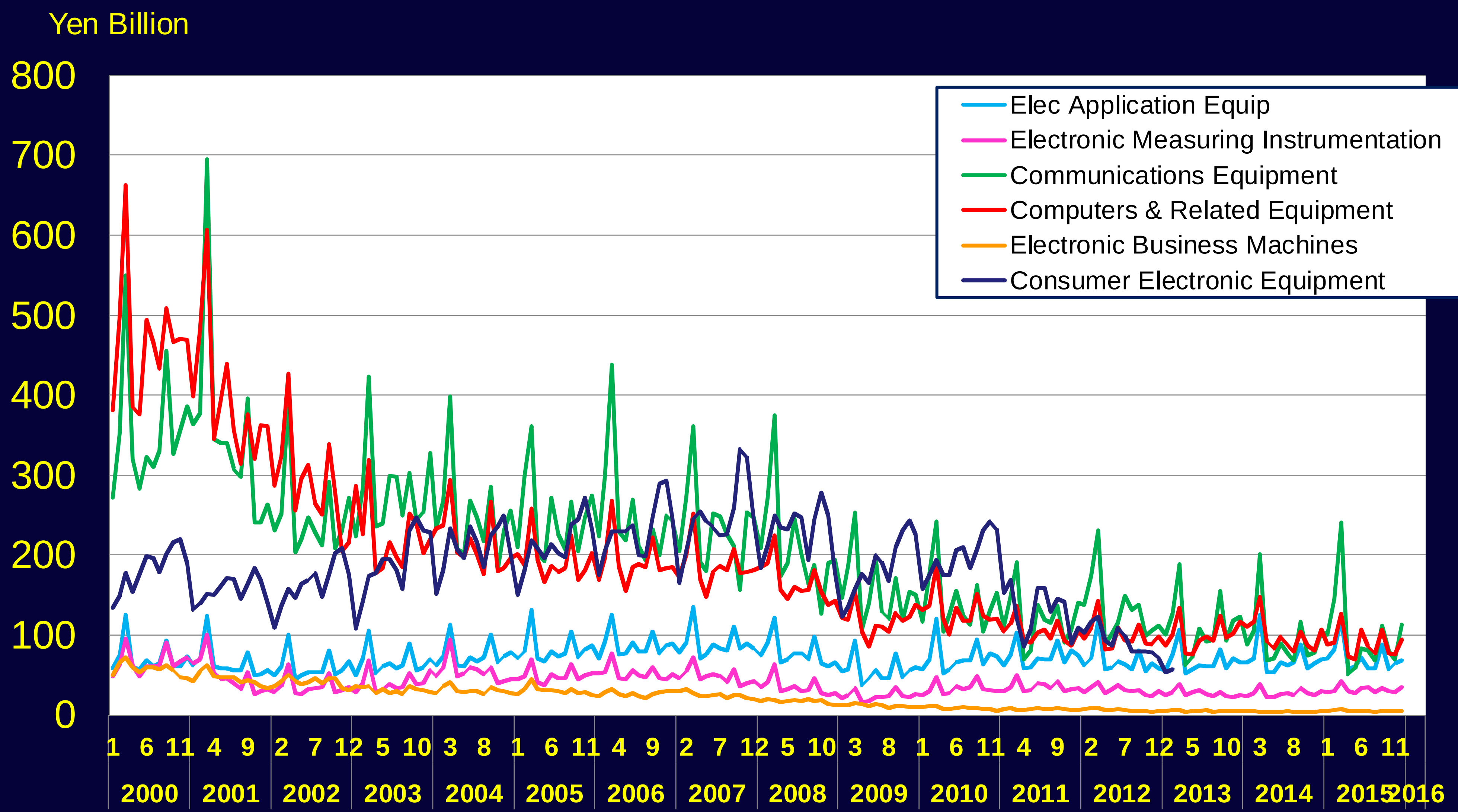
European Computer, Electronic & Optical Products Production



Eurostat, C26 category, EU 27 countries

20160219

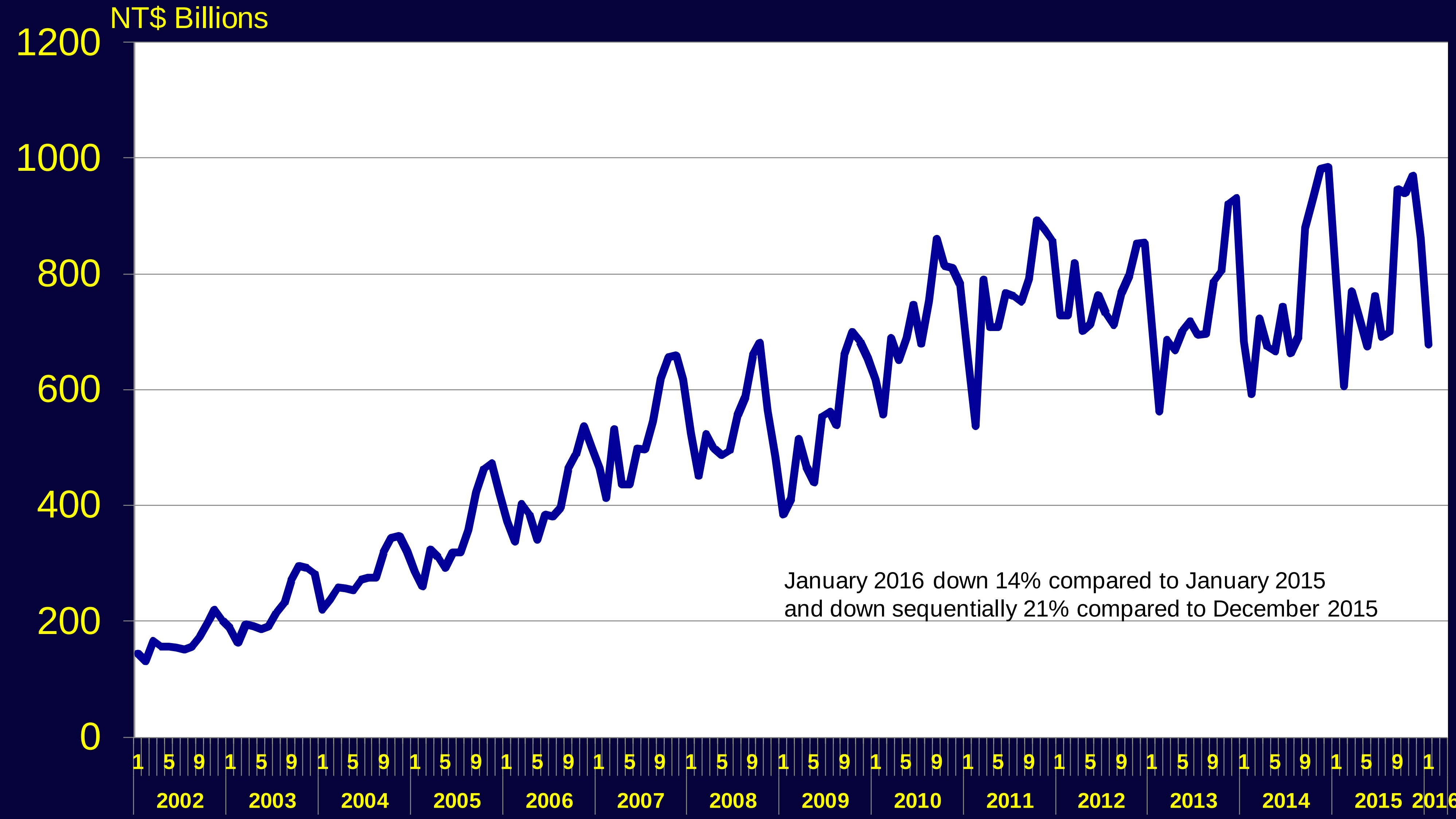
Japan Electronic Equipment Production by Month 2000 to Present



JEITA www.jeita.or.jp/

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

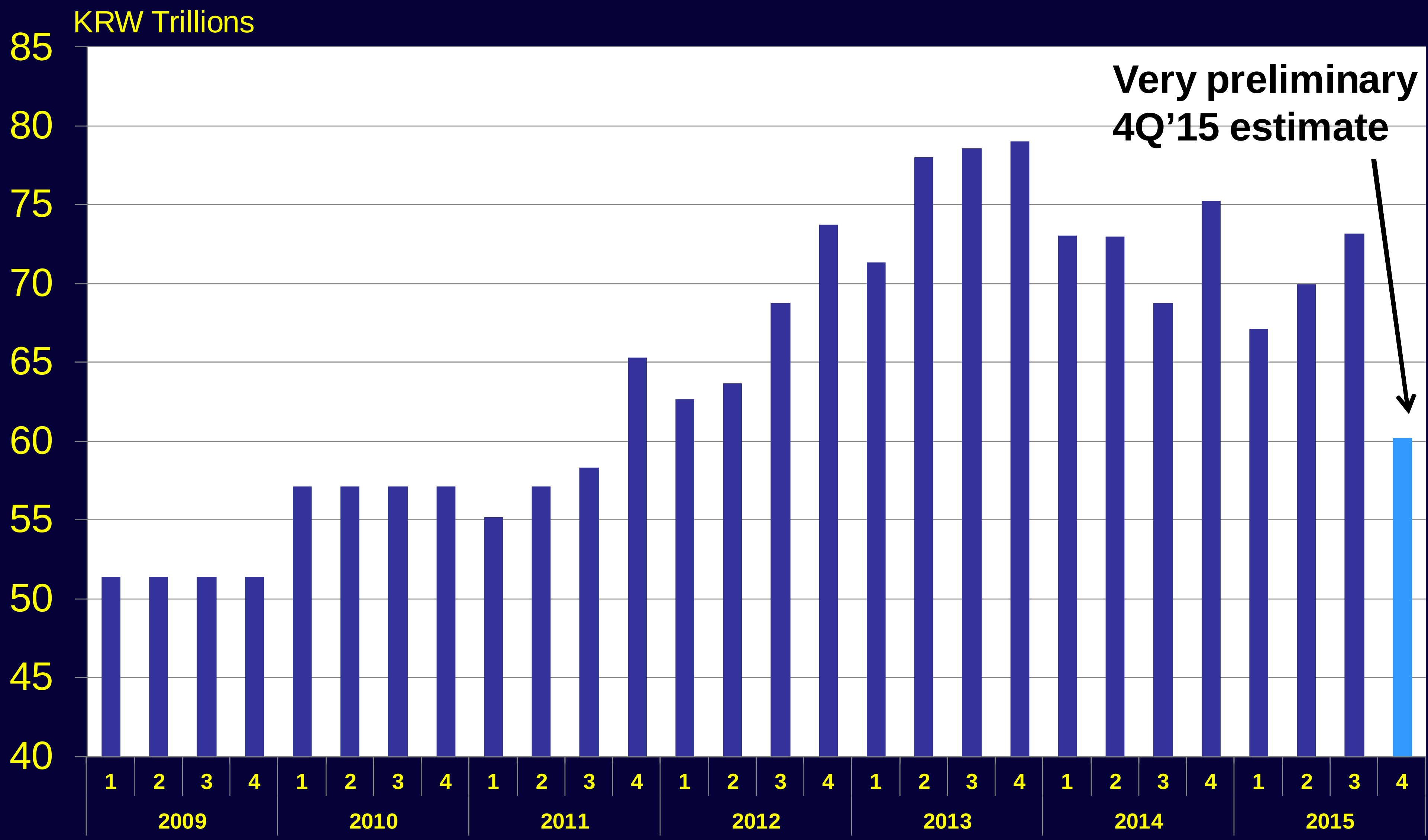
20160216



Taiwan listed companies, often with significant manufacturing in China

20160223

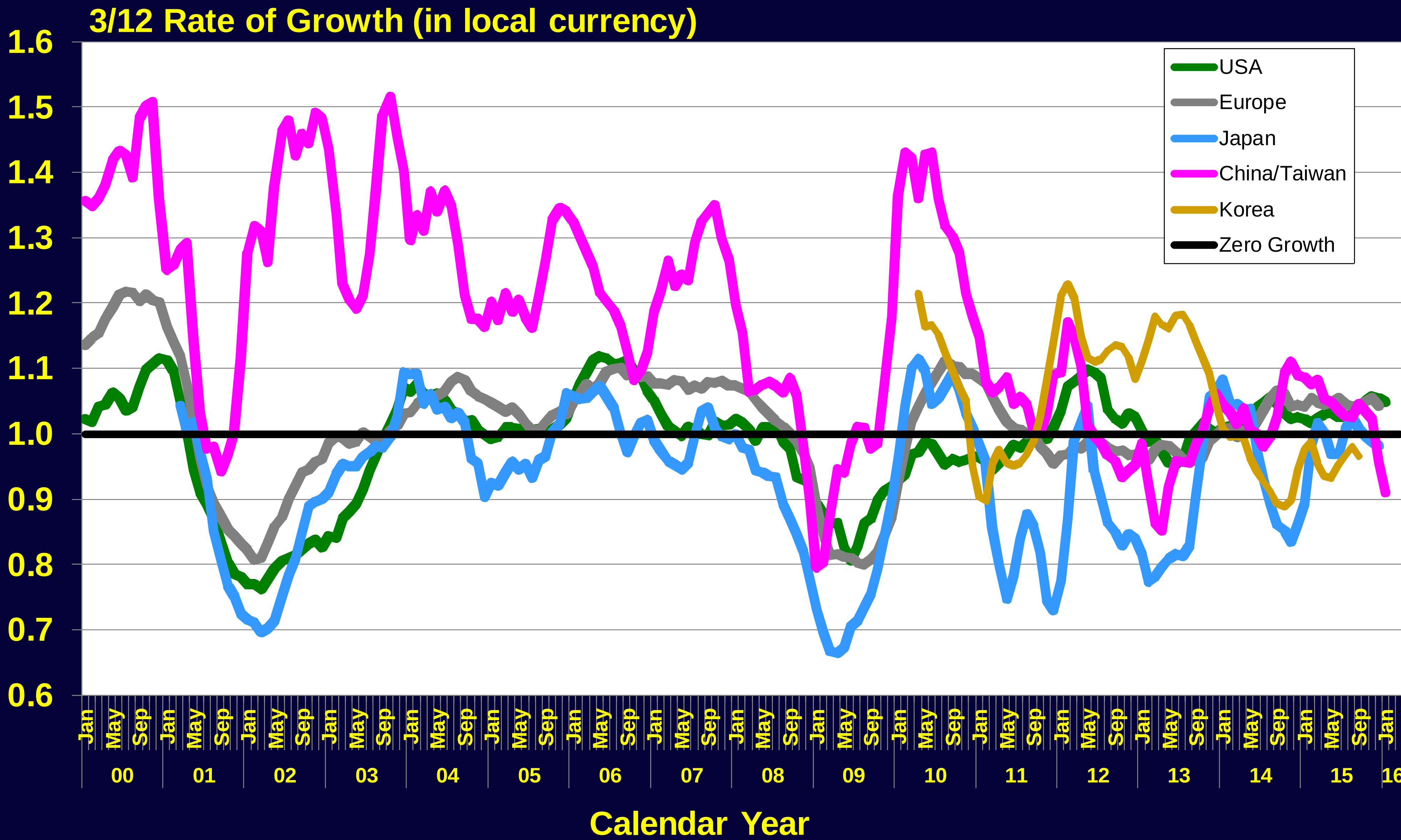
S Korea Electronic Equipment Producers Composite of 7 Manufacturers



Samsung Electronics, LG Electronics, Daewoo Electronic Components, Samsung SDI, Dongbu Hitek, SK Hynix, KEC Corp

20160225

Regional Electronic Equipment Shipment Growth

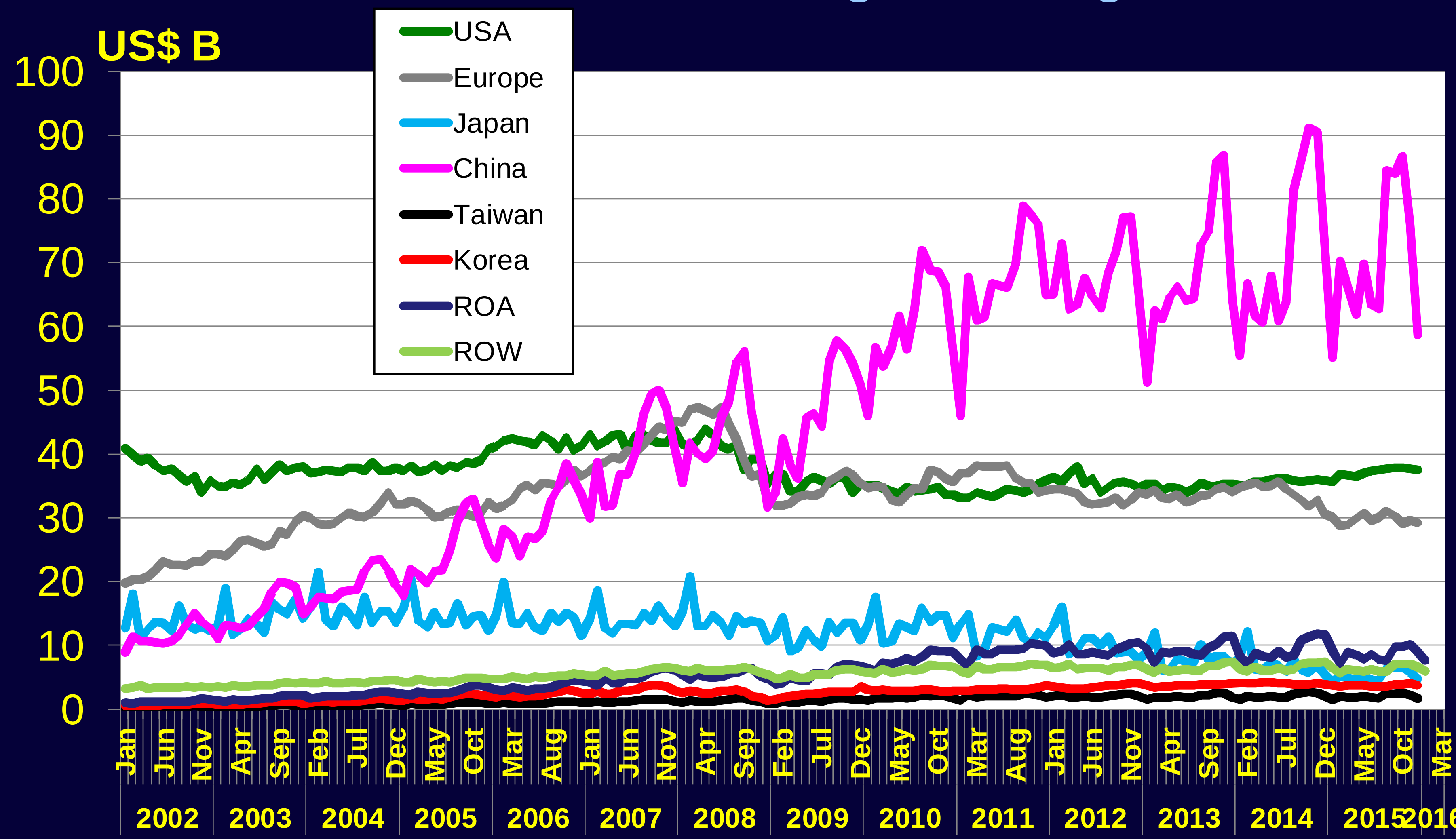


Sources: IPC, JPCA, Taiwan/China composite; S Korea composite; Eurostat "wiring devices" for Europe

20160225

World Electronic Equipment Monthly Shipments

Converted @ Fluctuating Exchange Rates

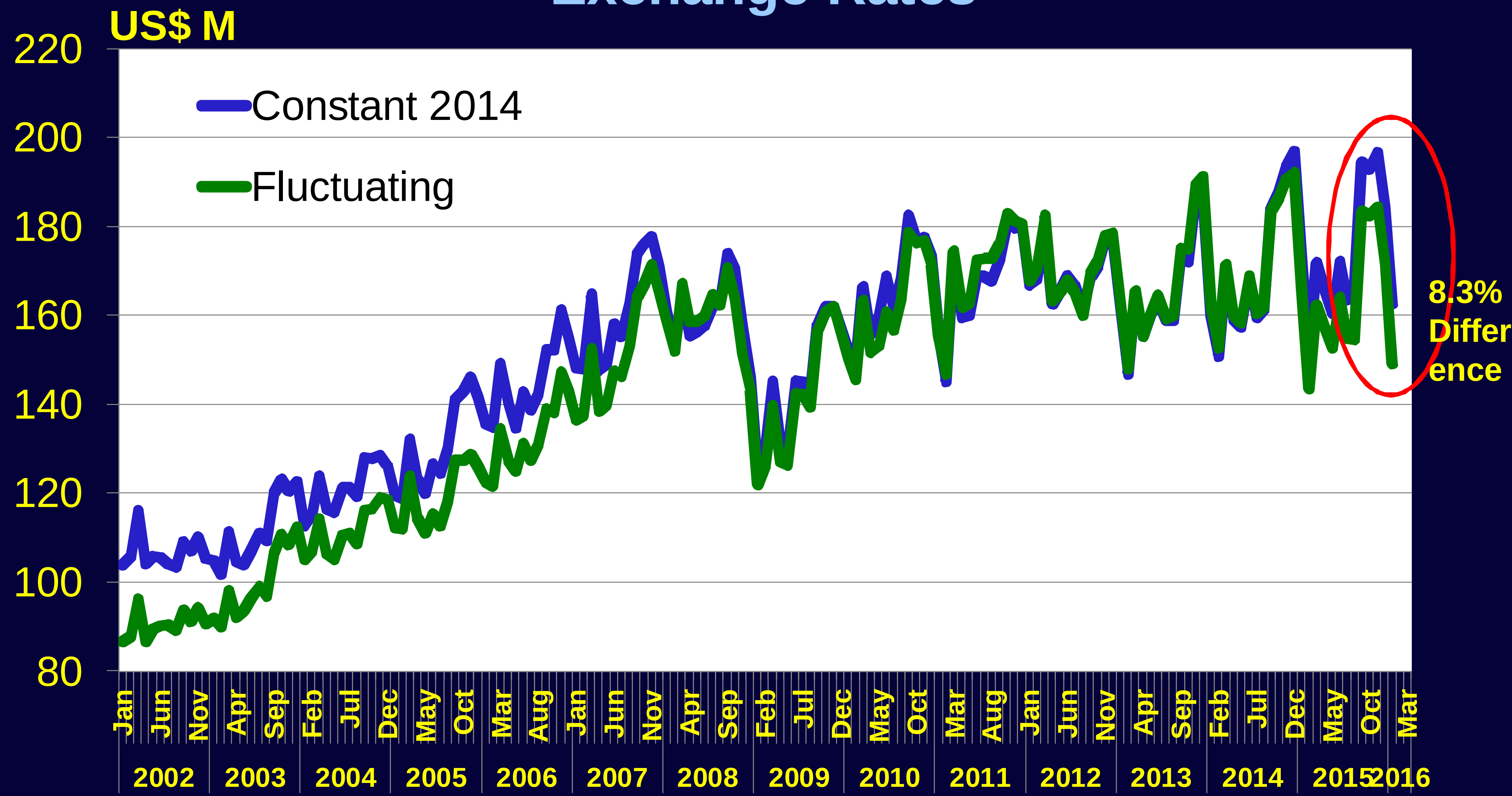


Source: Custer Consulting Group & Electronic Outlook Corp

20160225

World Electronic Equipment Monthly Shipments

Converted @ Constant 2014 vs Fluctuating Exchange Rates



Source: Custer Consulting Group & Electronic Outlook Corp

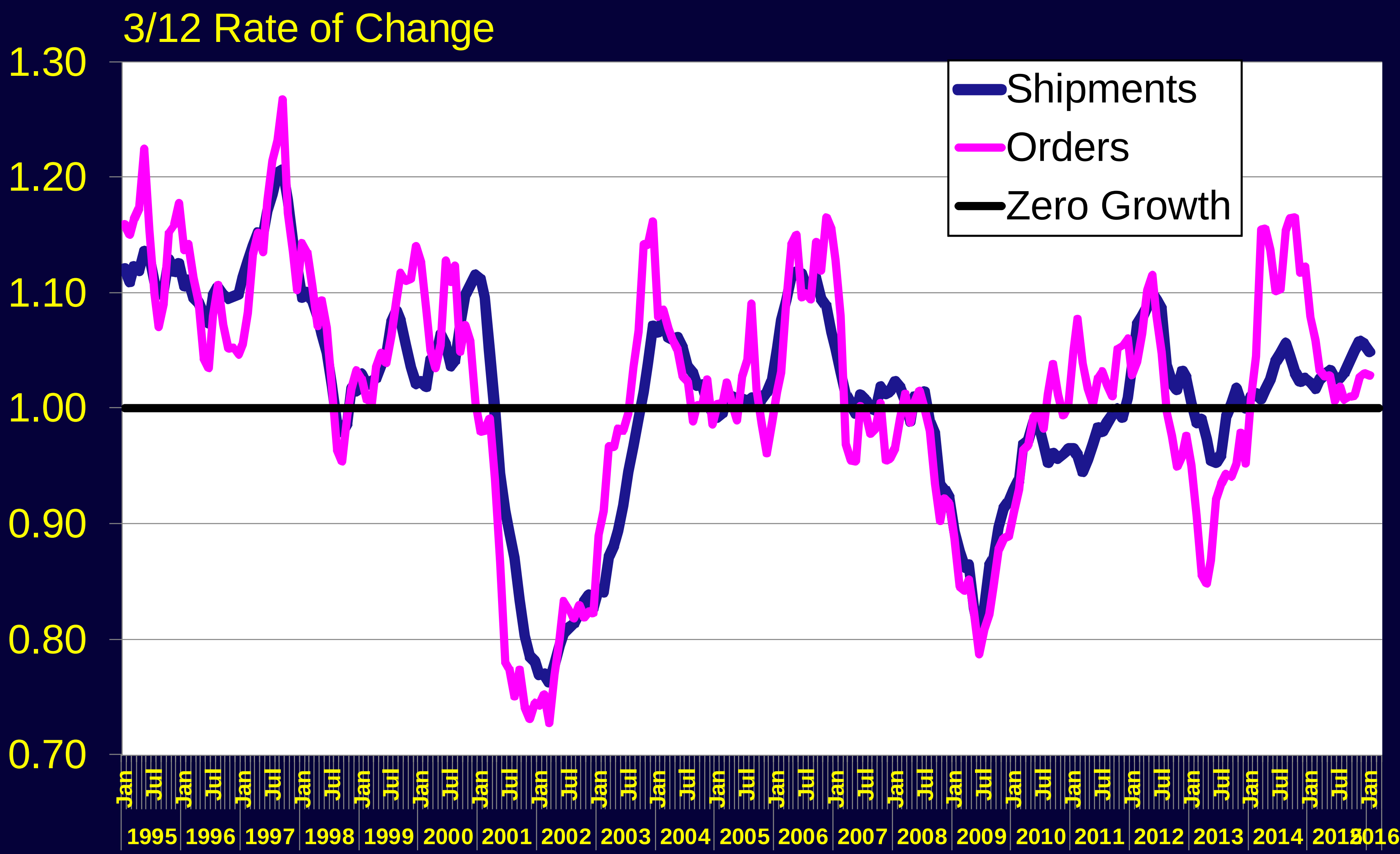
Conclusion:

Demand has weakened but also the strong dollar has significantly impacted global growth rates consolidated into US$

U.S. Electronic Equipment - Orders, Shipments & Inventories

U.S. Electronic Equipment Order & Shipment Growth

Computer, Communications, Measurement & Control and Military

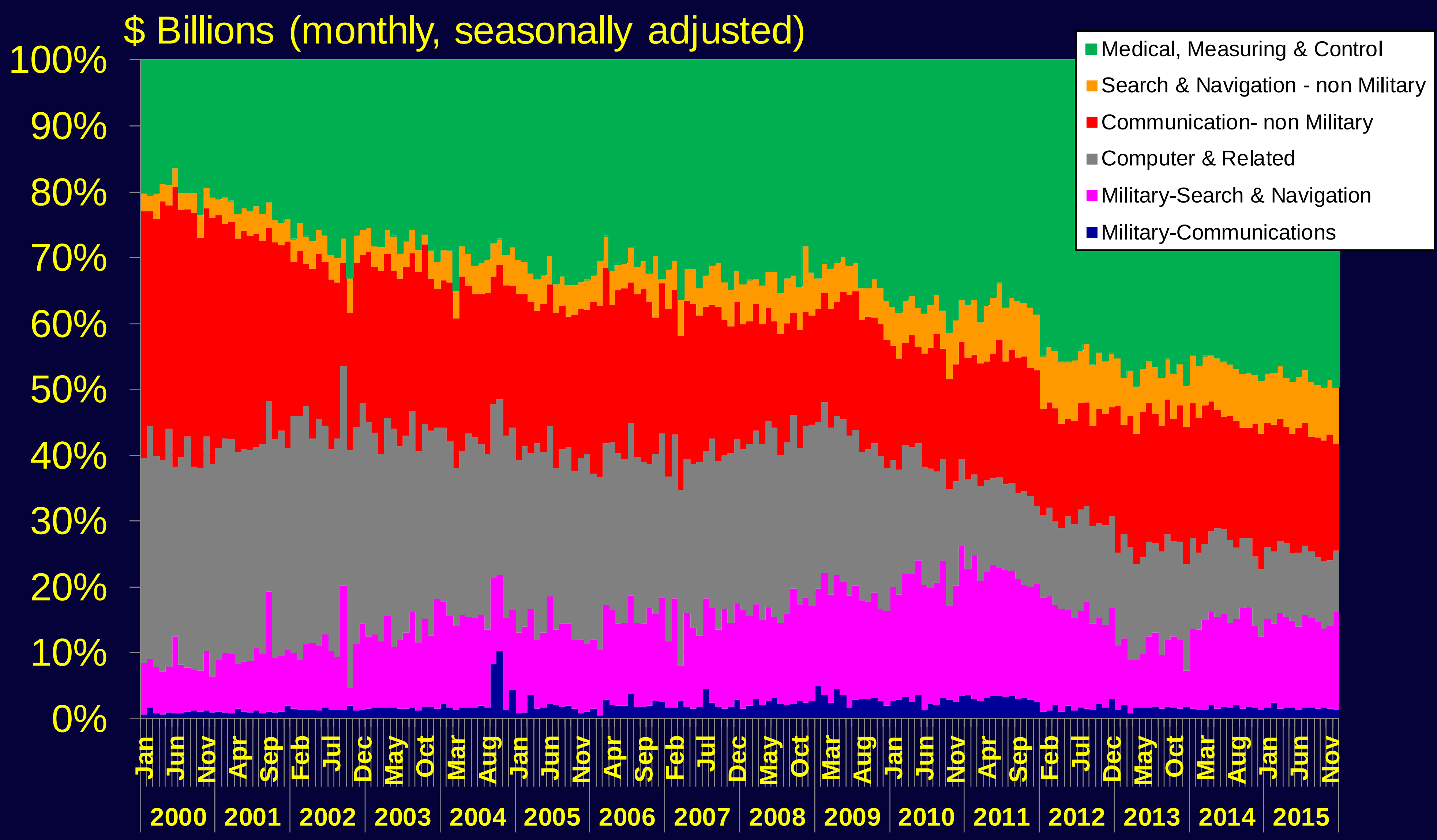


www.census.gov/indicator/www/m3/

20160204

U.S. Electronic Equipment Orders

Monthly Data



www.census.gov/indicator/www/m3/

20160225

U.S. Electronic Equipment Inventories vs. Orders

www.census.gov/indicator/www/m3/

Market Segments

Volume (Shift to Low Cost Areas)
- **Personal Computers**
- **Mobile Phones**
- **Other Consumer Electronics**
- **Datacom/Telecom**
- **Automotive**

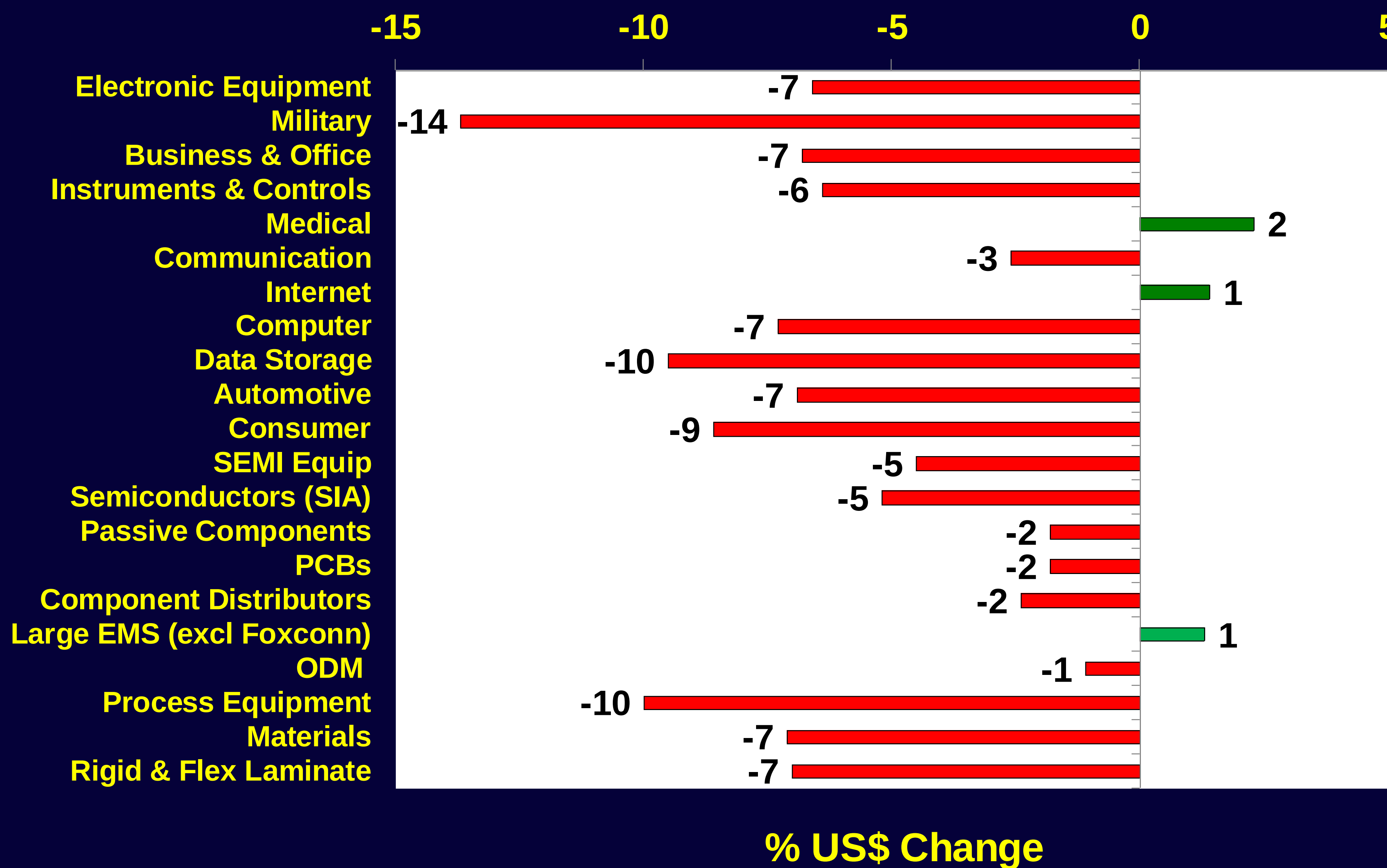
"Protected"
- **Military**
- **Medical**
- **Instruments & Controls**
- **High IP Content**

Prototype, Quick Response, Short Run, Need for Local Support

Global Electronic Supply Chain Growth

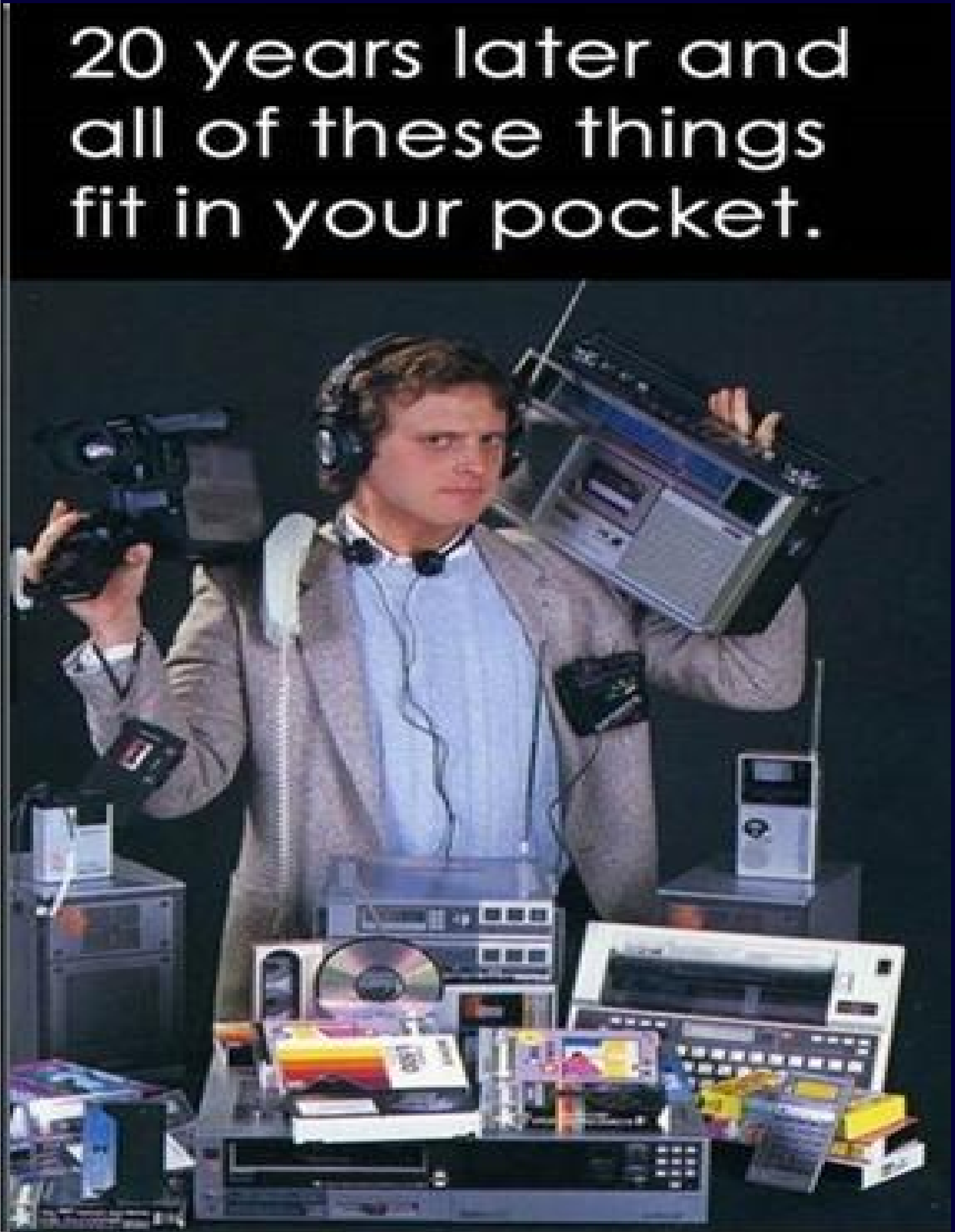
20160223

4Q'15 vs. 4Q'14 (preliminary)



US$ equivalent at fluctuating exchange; based upon industry composites including acquisitions

High Volume Consumer Driven Markets



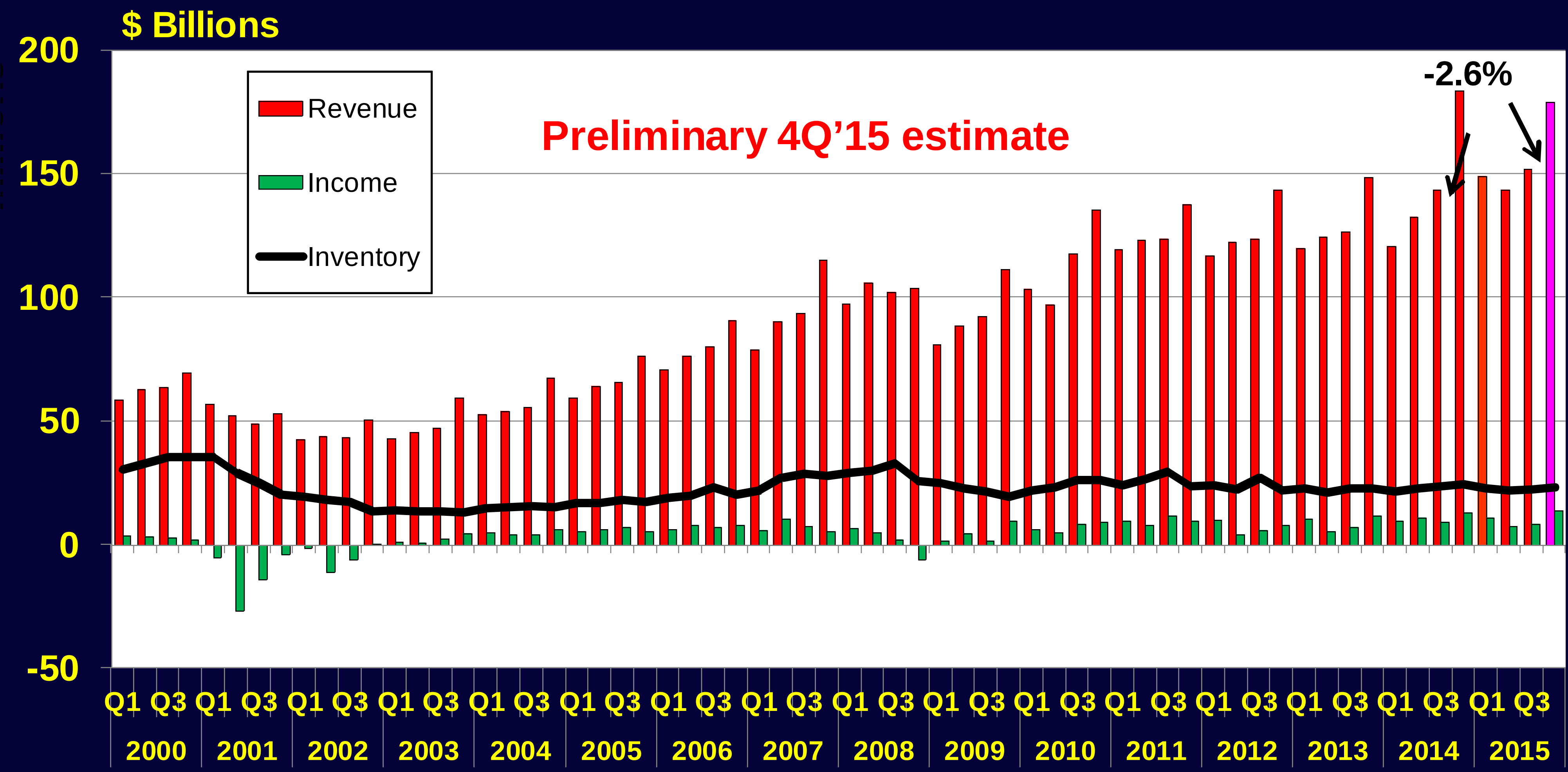
Changing Electronic Equipment Markets

Communication Equipment Suppliers Composite of 20 Companies

20160219

10 mobile phone makers, 10 other telecom equipment makers plus estimate of other mobile makers

Revenue, Net Income & Inventory

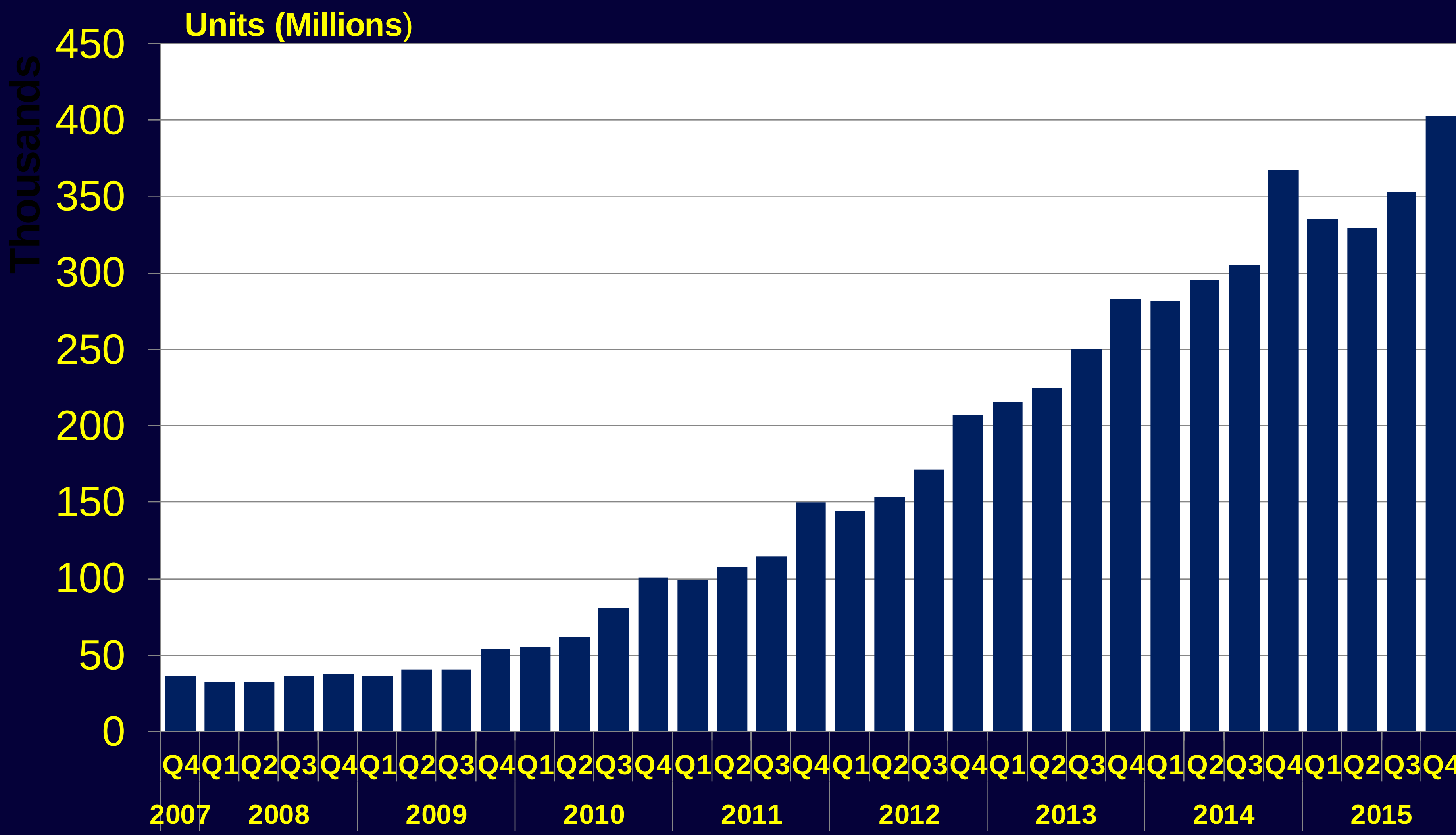


3COM, ADC Telecom, Alcatel+Lucent, Ciena, Ericsson, Motorola Solutions,, Nokia, Polycom, TellLabs, Palm ; Apple iPhone, HTC, Huawei Device, LG, Motorola Mobility, Nokia, RIM, Samsung, Sony Mobility, ZTE; Euros & Krona converted at fluctuating exchange; mobile phone volumes from company reports & Gartner Dataquest quarterly unit shipment estimates; historical data included for acquired companies

20160218

Smartphone Unit Shipments to End Users

World

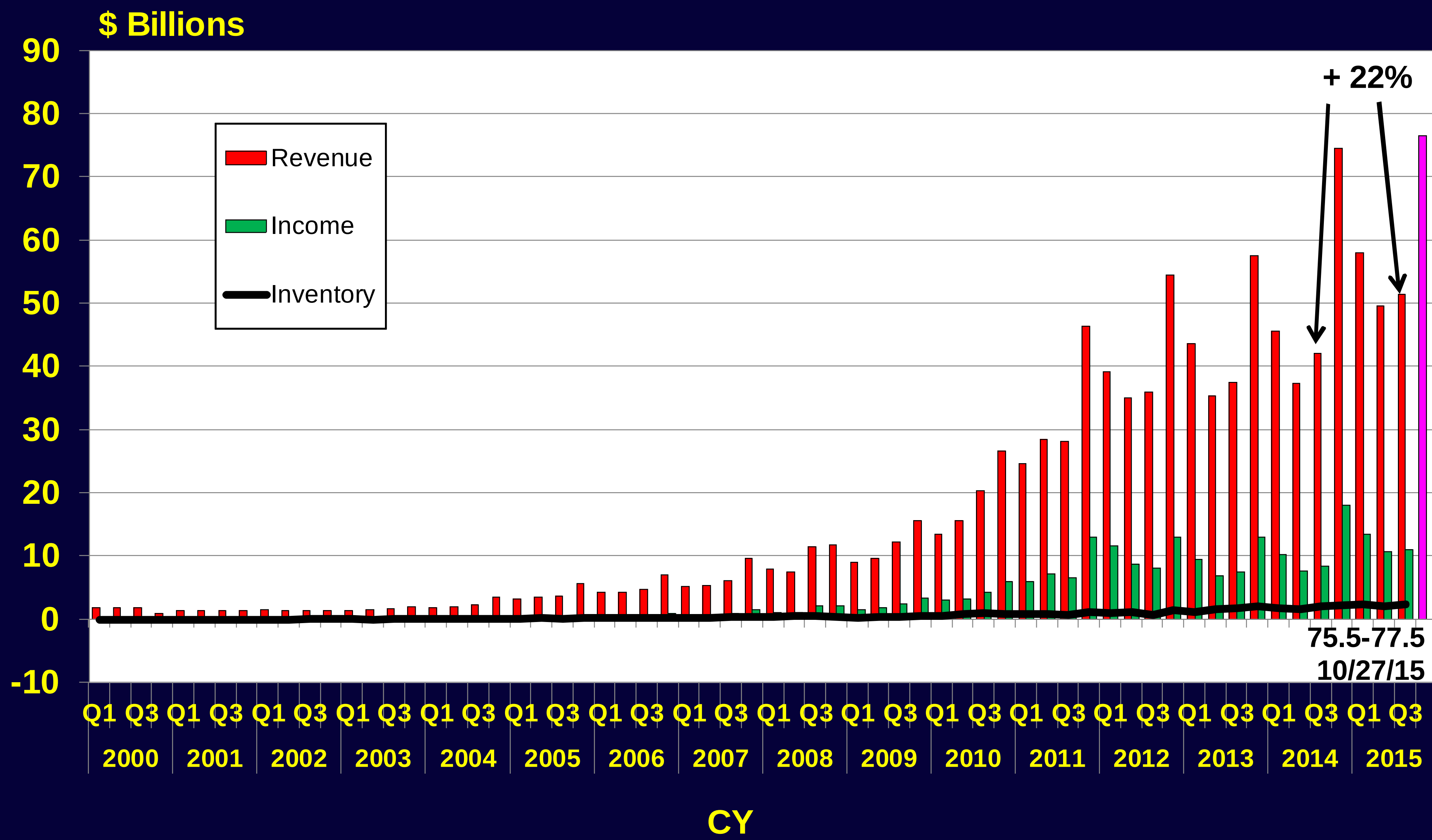


Gartner Dataquest 2/16 & prior reports

20151031

Apple Inc.

Revenue, Net Income & Inventory

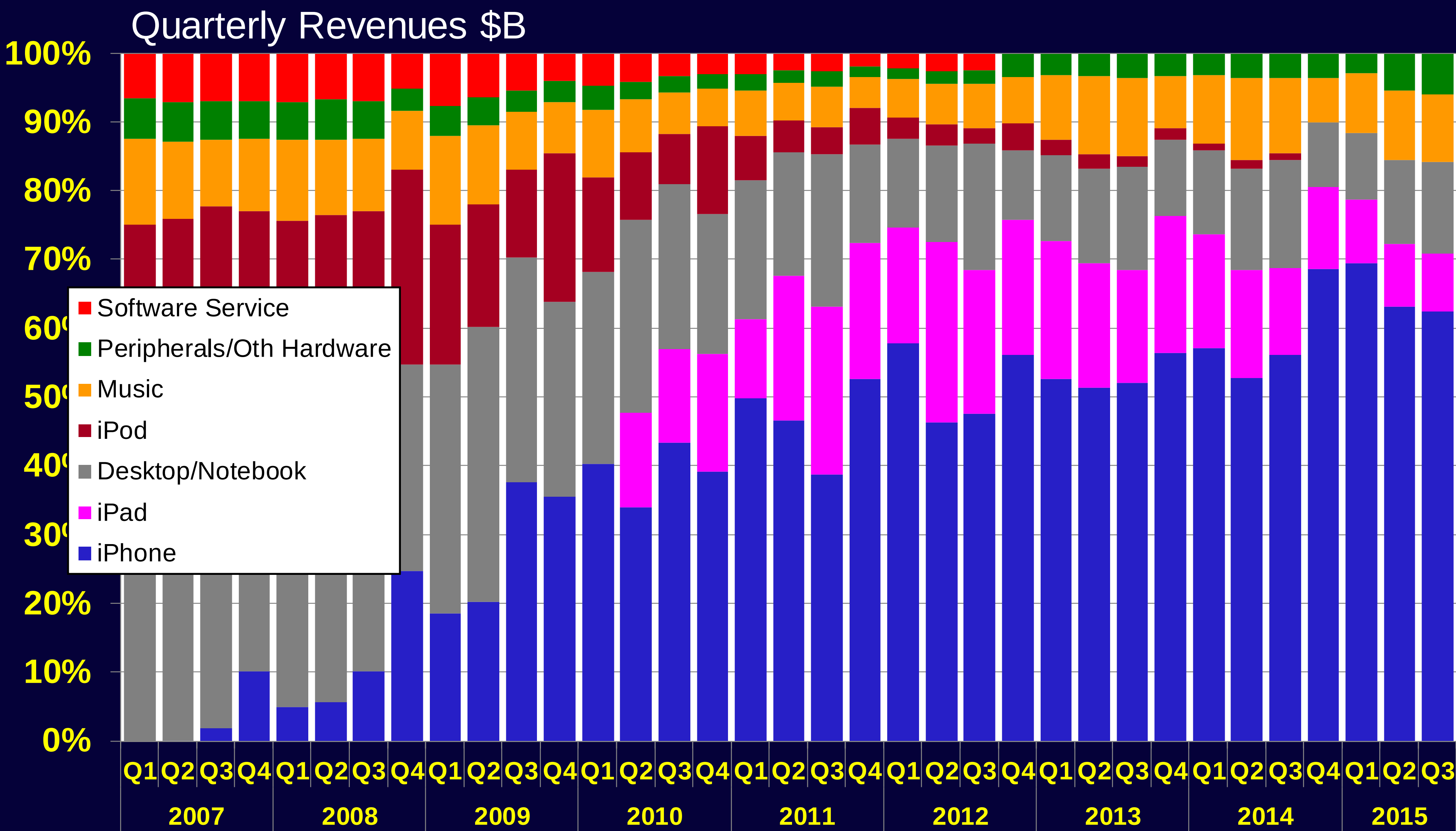


AAPL

FY ends September

Apple Product Mix

20151028




FBI
RIGHT TO PRIVACY

Introducing

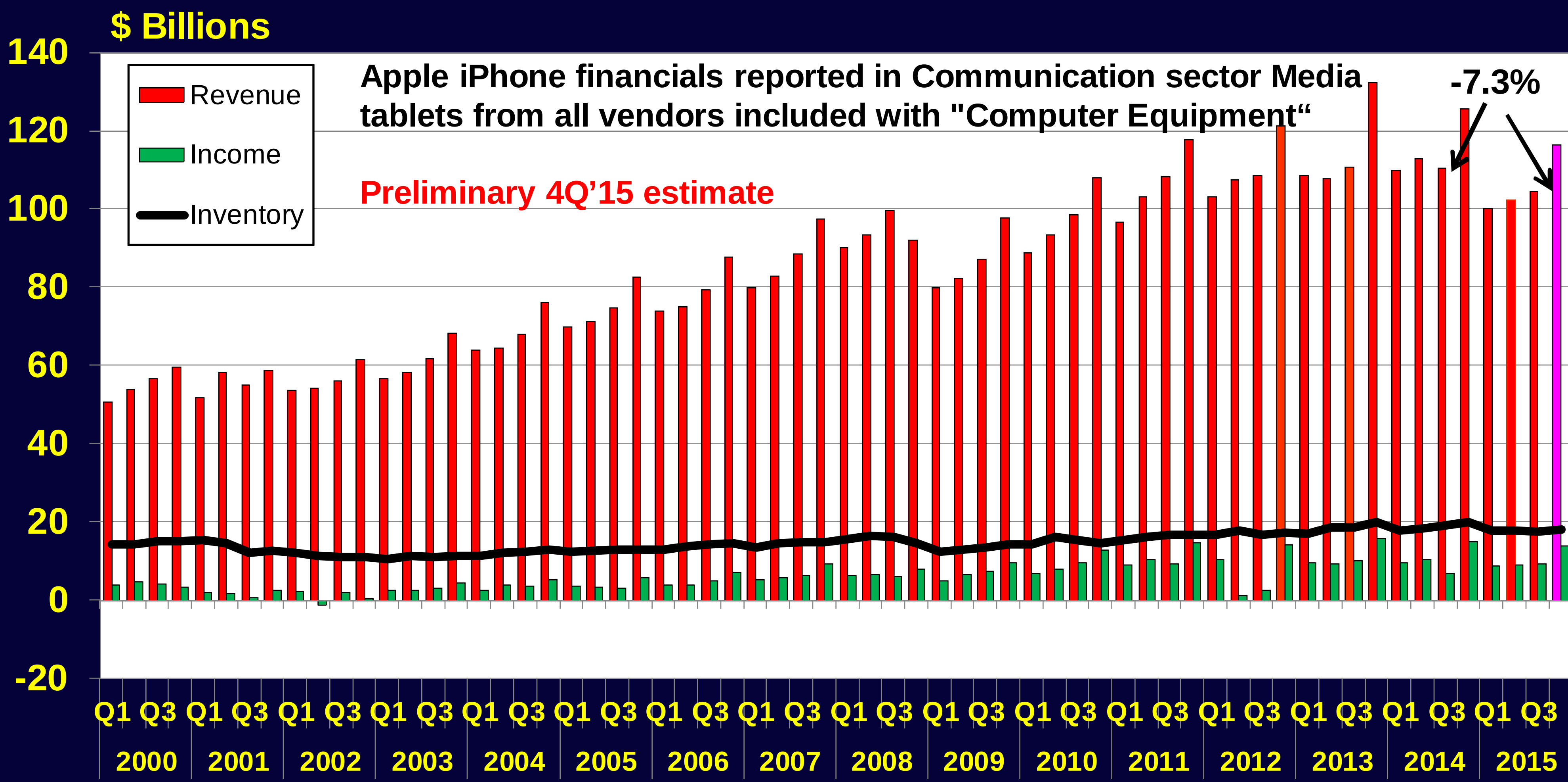
fbiOS

A new operating system designed by the FBI and programmed by Apple.

Computer Equipment Suppliers
Composite of 13 Public Companies

20160219

Revenue, Net Income & Inventory

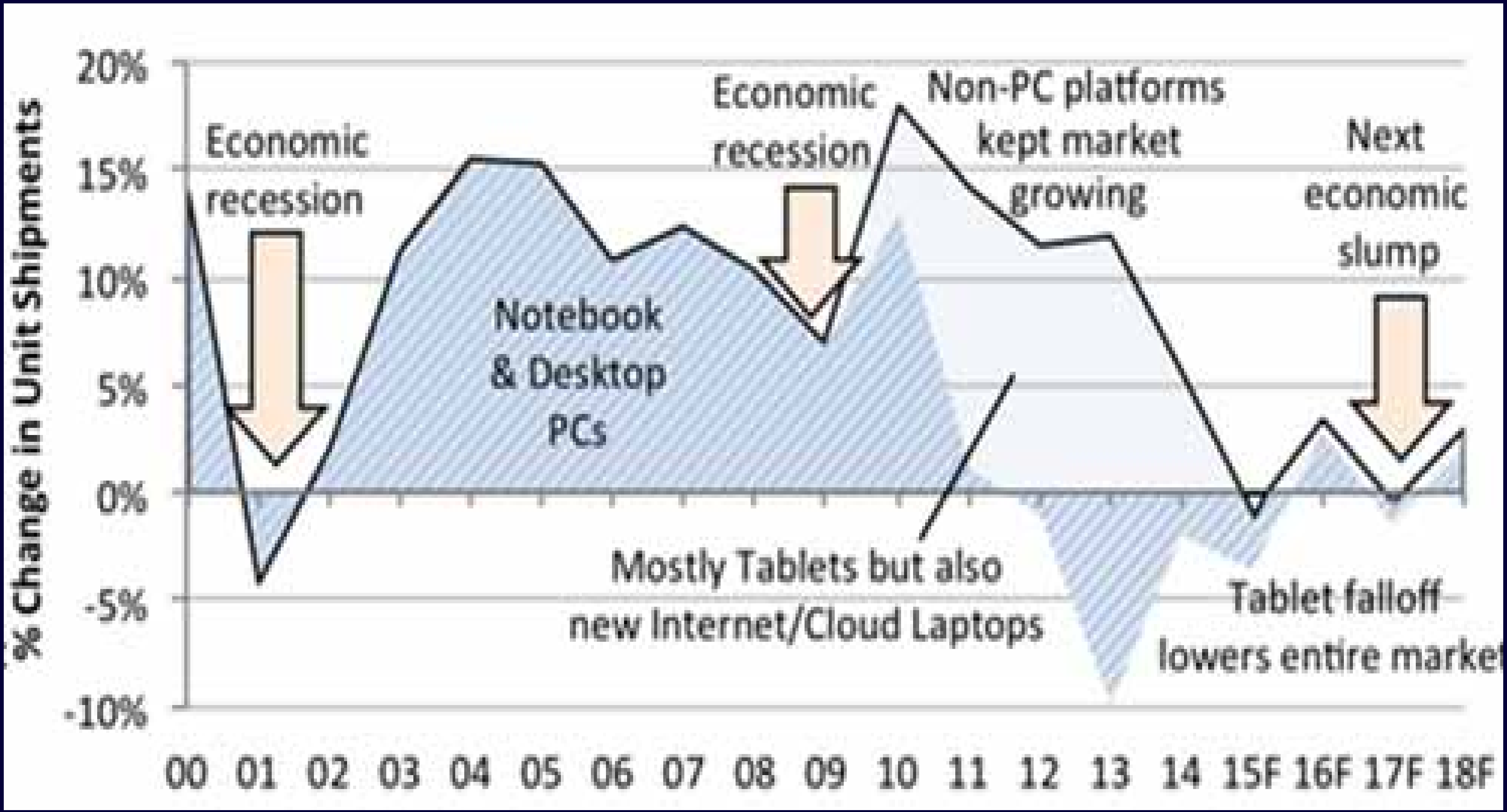


Acer+Gateway, Apple, Creative Tech, Cray, Dell, HP, IBM, Lenovo, Mercury, NCR, Sun Micro, Unisys

Other vendors media tablet sales estimated from unit shipments

20150904

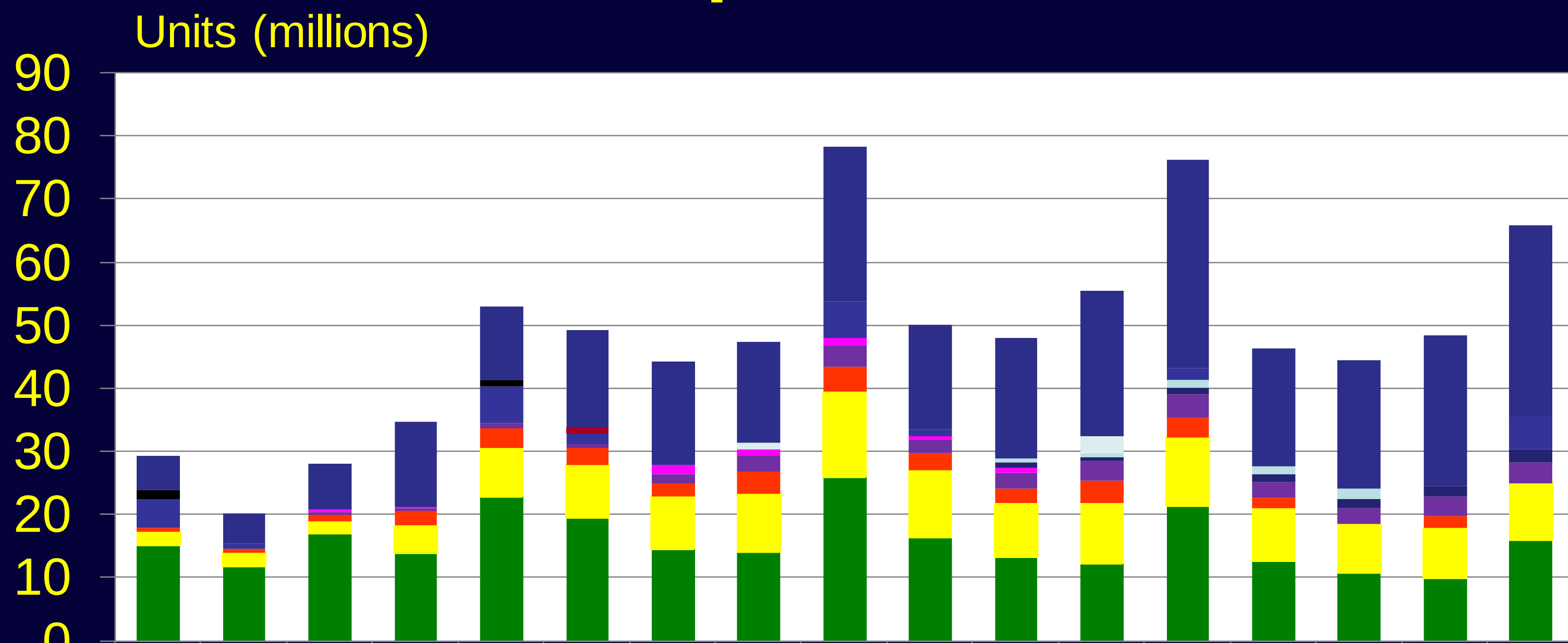
Total Personal Computer Unit Growth



IC Insights 9/15

20160206

Media Tablets
World Top 5 Vendors

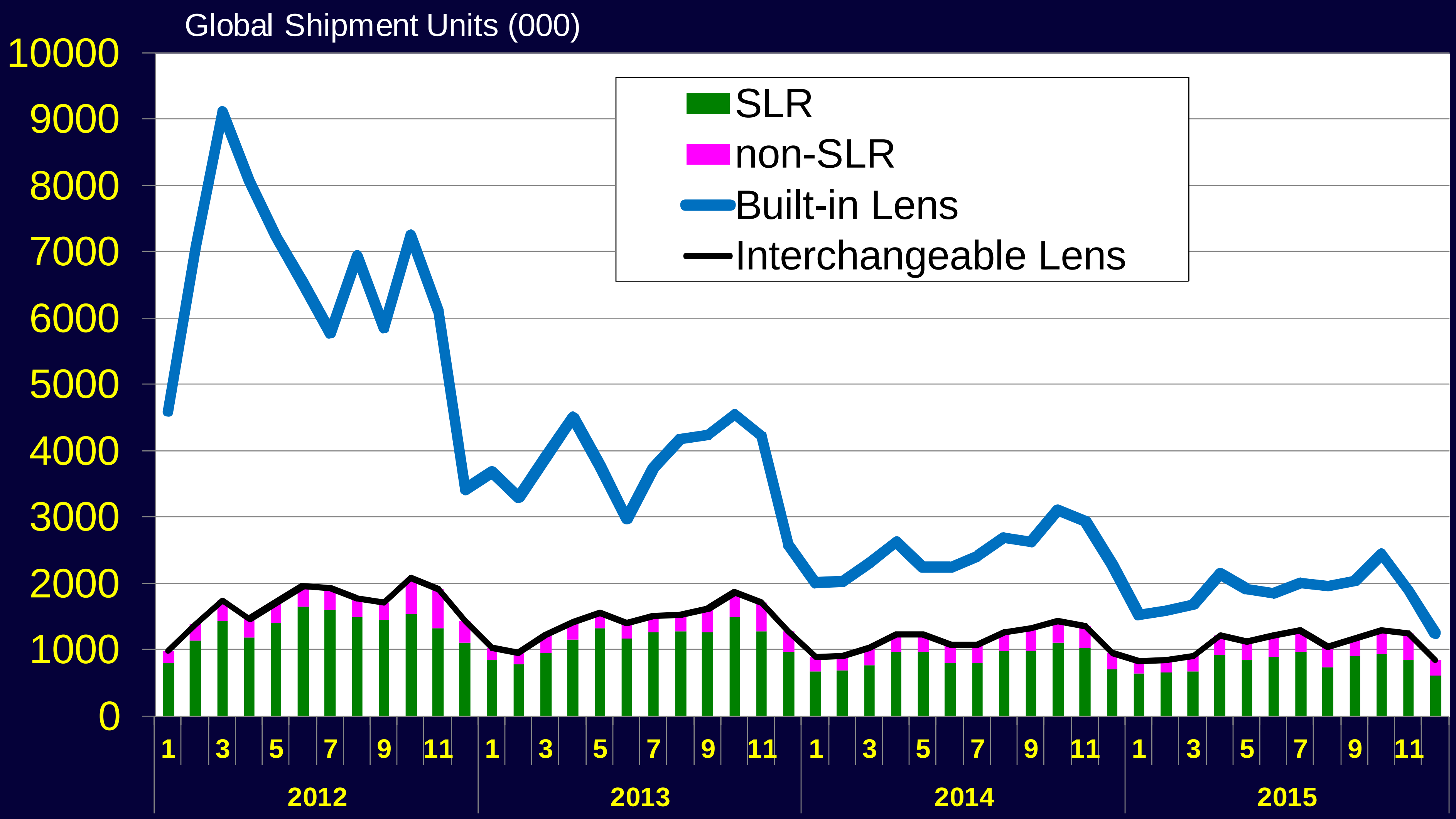


	2011 Q4	2012 Q1	2012 Q2	2012 Q3	2012 Q4	2013 Q1	2013 Q2	2013 Q3	2013 Q4	2014 Q1	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4
Others	5.5	4.9	7.4	13.5	11.6	15.5	16.4	16.0	24.6	16.6	19.1	23.0	33.1	18.6	20.4	23.9	30.2
RCA								0.9				2.6					
Barnes & Noble	1.4				1.0												
Microsoft		0.0				0.9											
Amazon	4.7	0.7			5.9	1.8			5.8	1.0			1.9				5.2
LG Electronics											0.5	0.7	1.3	1.4	1.6		
Huawei											0.8	0.7	1.0	1.1	1.6	1.8	2.2
Acer			0.4	0.3			1.5	1.2	1.1	0.7	1.0						
Lenovo			0.4	0.4	0.8	0.6	1.5	2.3	3.4	2.0	2.4	3.1	3.7	2.5	2.5	3.1	3.2
Asus	0.6	0.6	0.9	2.3	3.1	2.6	2.0	3.6	4.0	2.6	2.3	3.4	3.0	1.8		1.9	
Samsung	2.2	2.3	2.1	4.3	7.8	8.5	8.4	9.3	13.5	10.8	8.6	9.7	11.0	8.4	7.6	8.0	9.0
Apple	15.1	11.8	17.0	14.0	22.9	19.5	14.6	14.1	26.0	16.4	13.3	12.3	21.4	12.6	10.9	9.9	16.1

IDC 1/16 & earlier

20160218

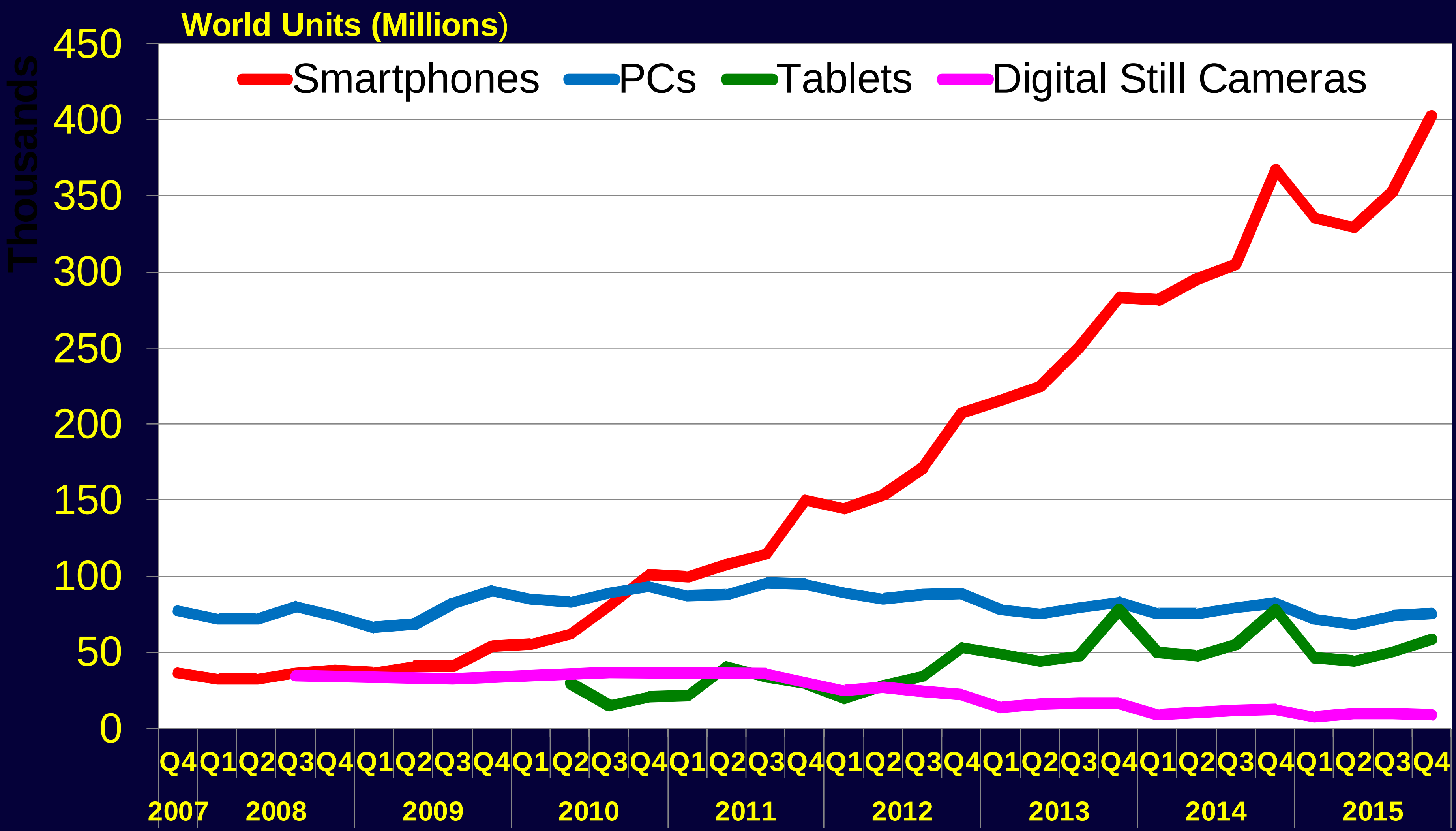
Digital Still Cameras
Built-in & Interchangeable Lens



www.cipa.jp/

20160218

Smartphones Cannibalize PCs, Tablets & Digital Cameras

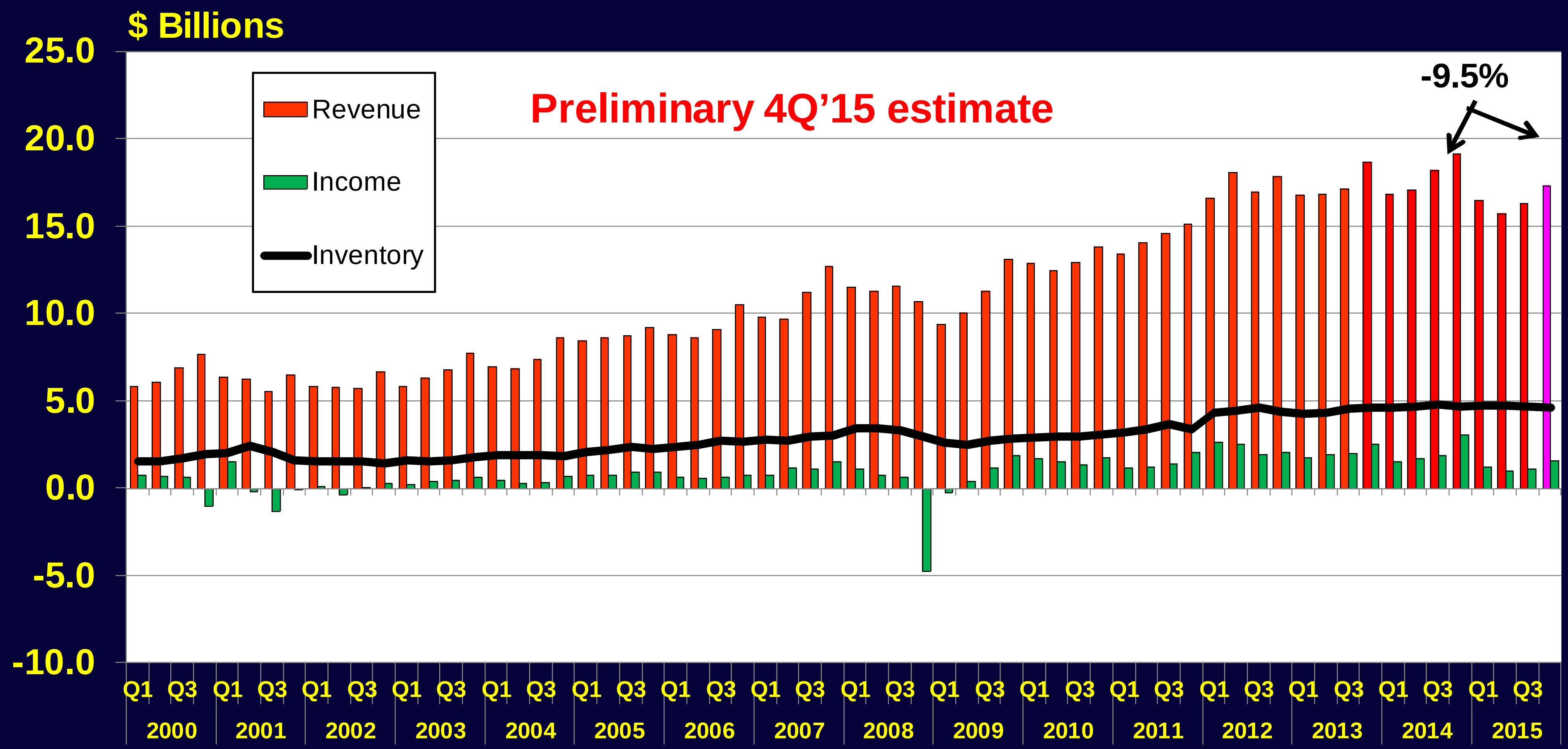


www.gartner.com; www.cipa.jp/; www.icinsights.com; www.idc.com; www.digitimes.com

Data Storage Equipment Suppliers Composite of 12 Public Companies

20160211

Revenue, Net Income & Inventory



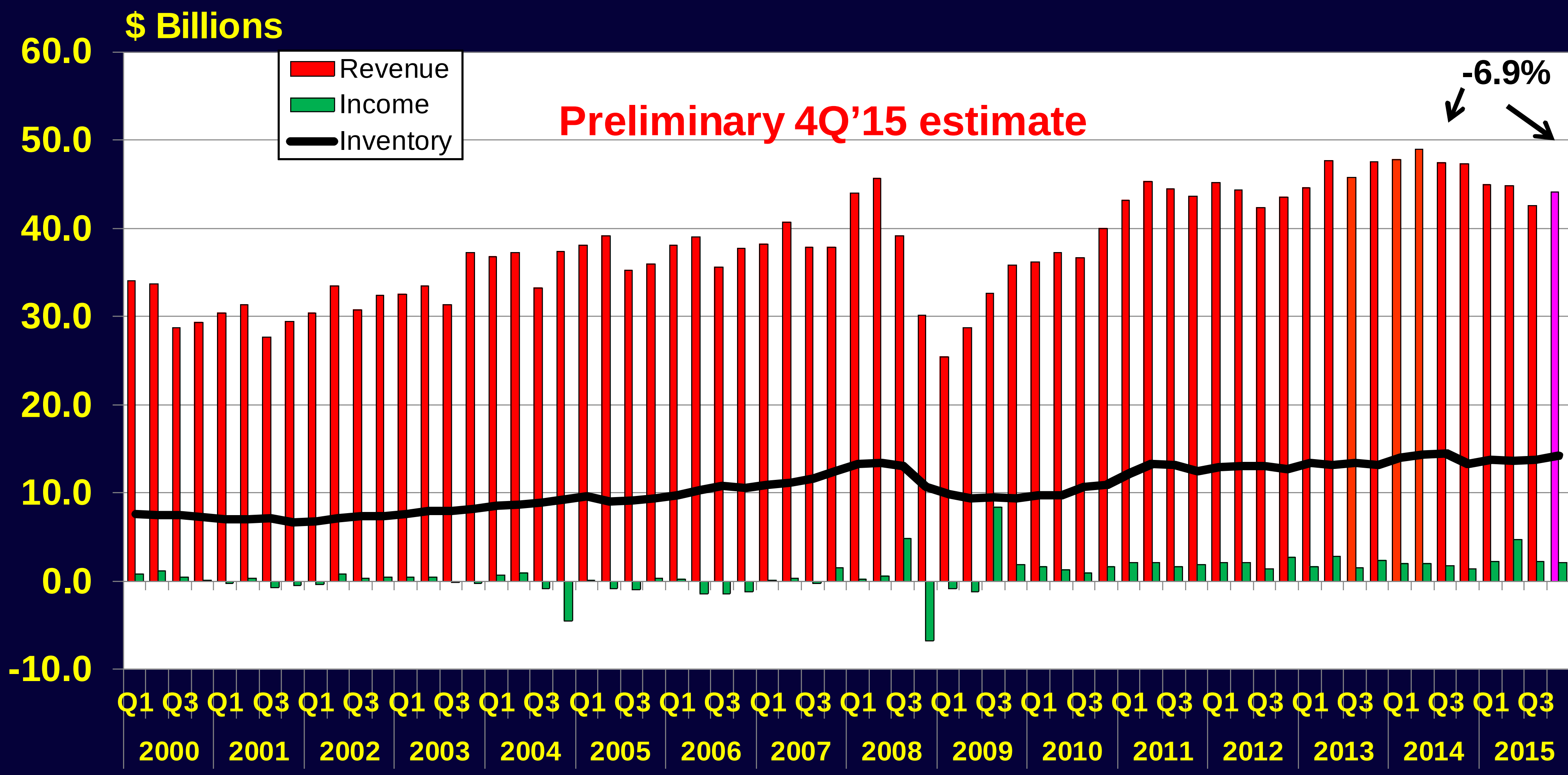
Brocade, EMC, Iomega, Lexar, Maxtor, Network Appliance, Netlist, Qlogic, Quantum, Seagate, Storage Technology, Western Digital, SanDisk. Companies now no longer operating were included in historical data until they shut down

Local Markets

Automotive Electronics

Automotive Equipment Suppliers
Composite of 11 Public Companies
Revenue, Net Income & Inventory

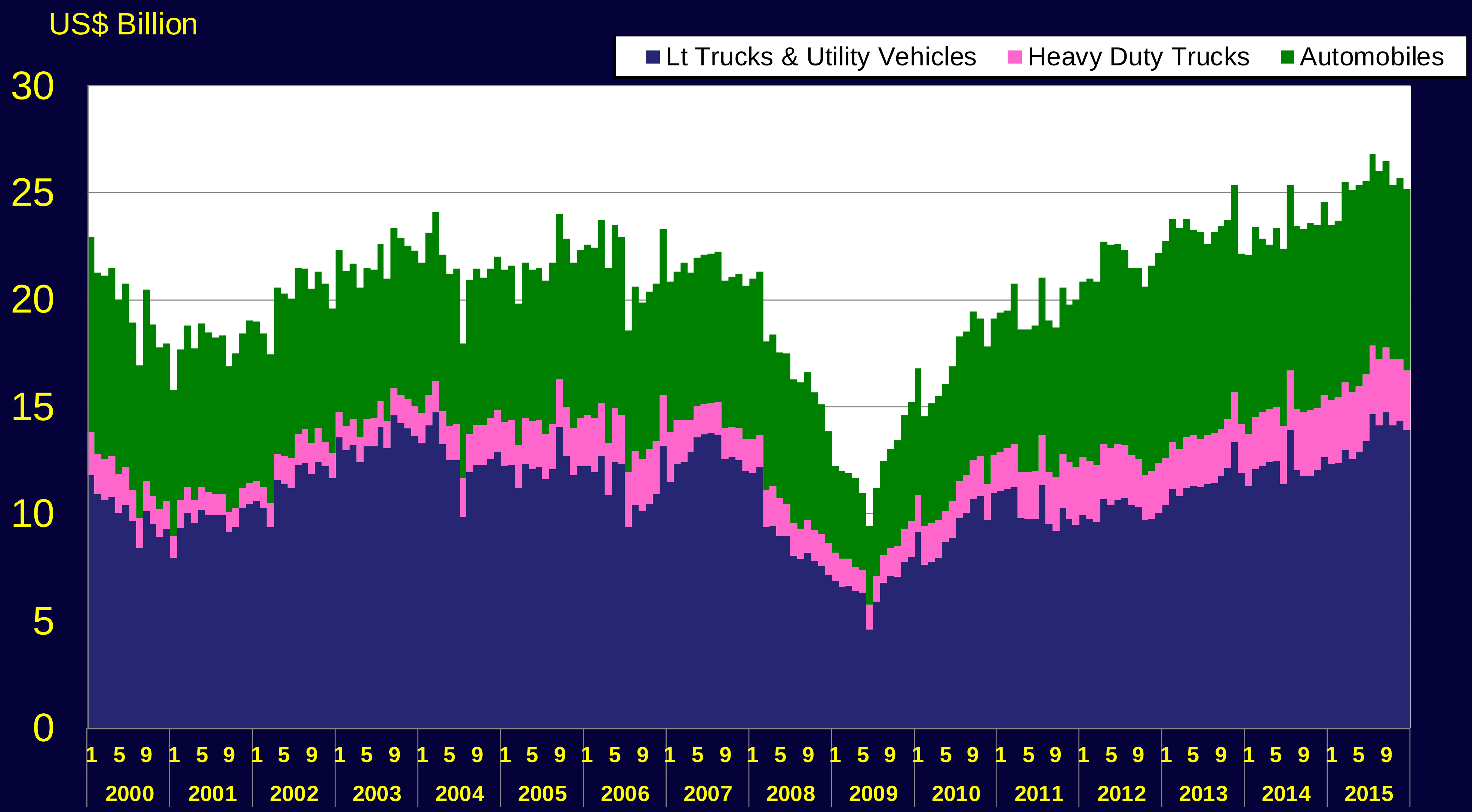
20160219



Autoliv, Borg Warner, Continental AG, Delphi, Federal Mogul, Gentex, Johnson Controls, Lear, TRW Automotive, Valeo, Visteon

20160204

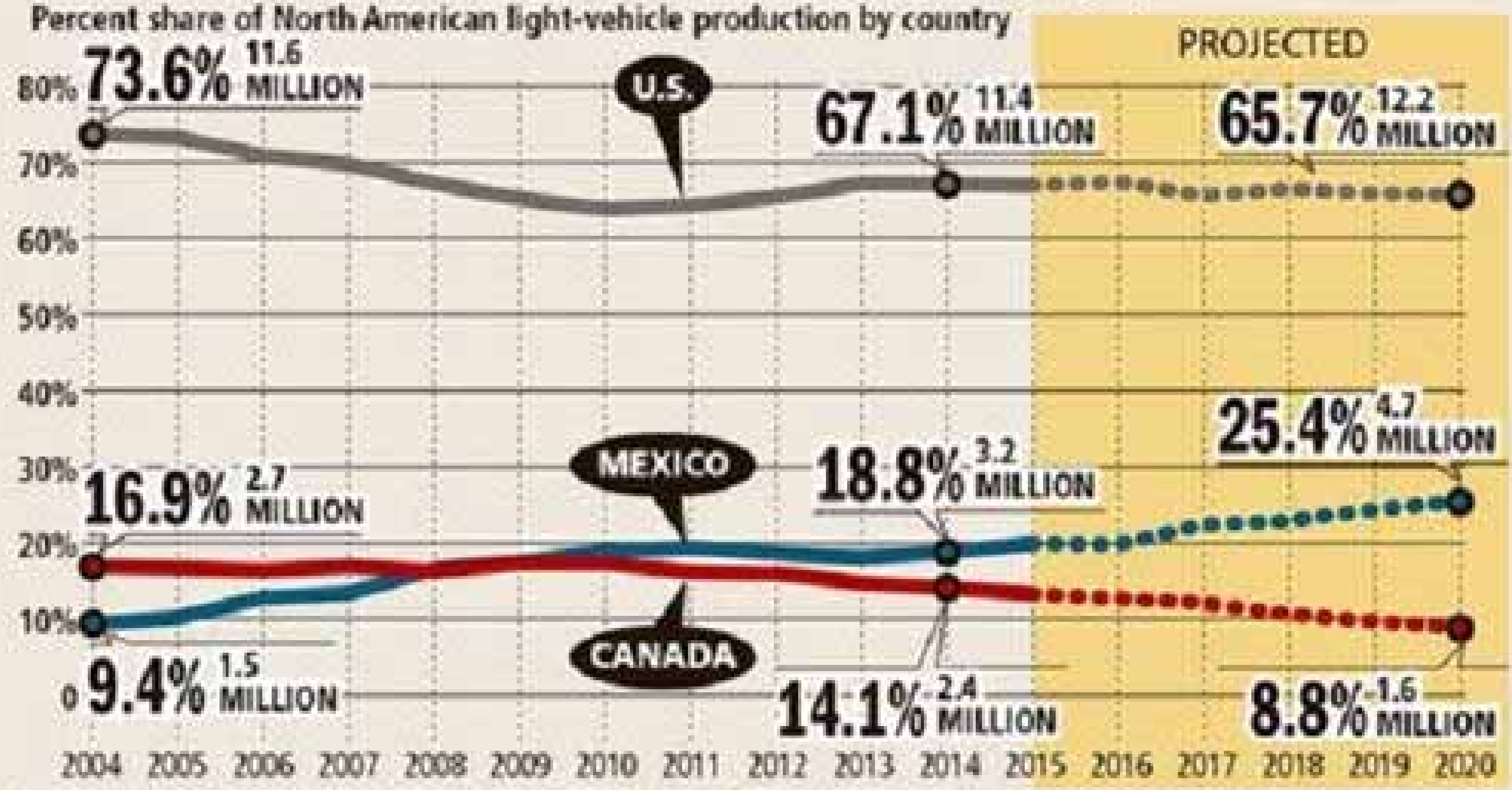
U.S. Vehicle Shipments



www.census.gov/indicator/www/m3

AUTO PRODUCTION POPULARITY CONTEST

Under the North American Free Trade Agreement, the U.S., Canada and Mexico compete for investment in plants and jobs. Here is the capacity split among the three countries historically and the forecast, which sees Mexico growing at the expense of Canada while the U.S. dips slightly.



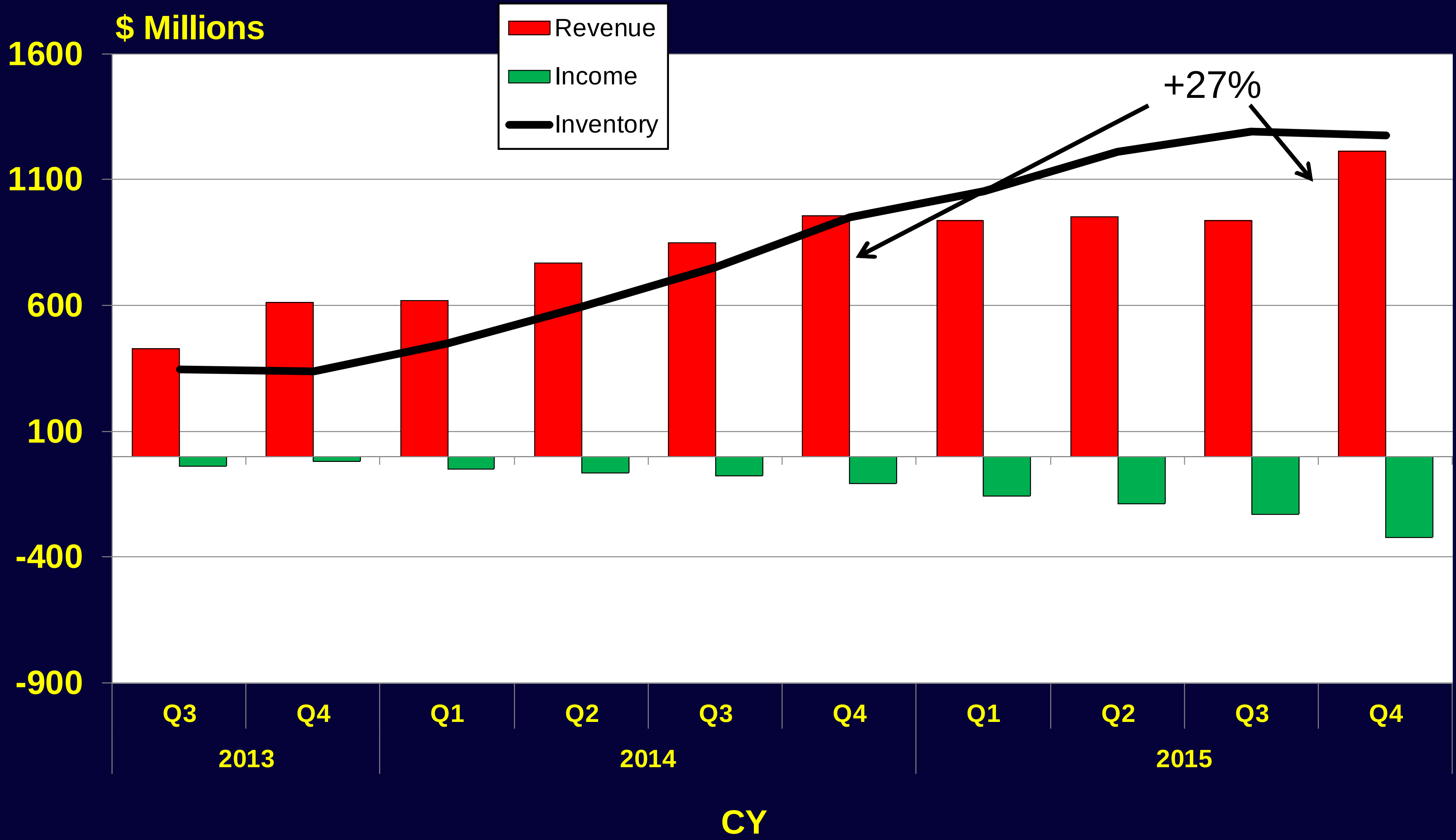
SOURCE: WardsAuto

MARTHA THIERRY/DETROIT FREE PRESS

20160222

Tesla

Revenue, Net Income & Inventory

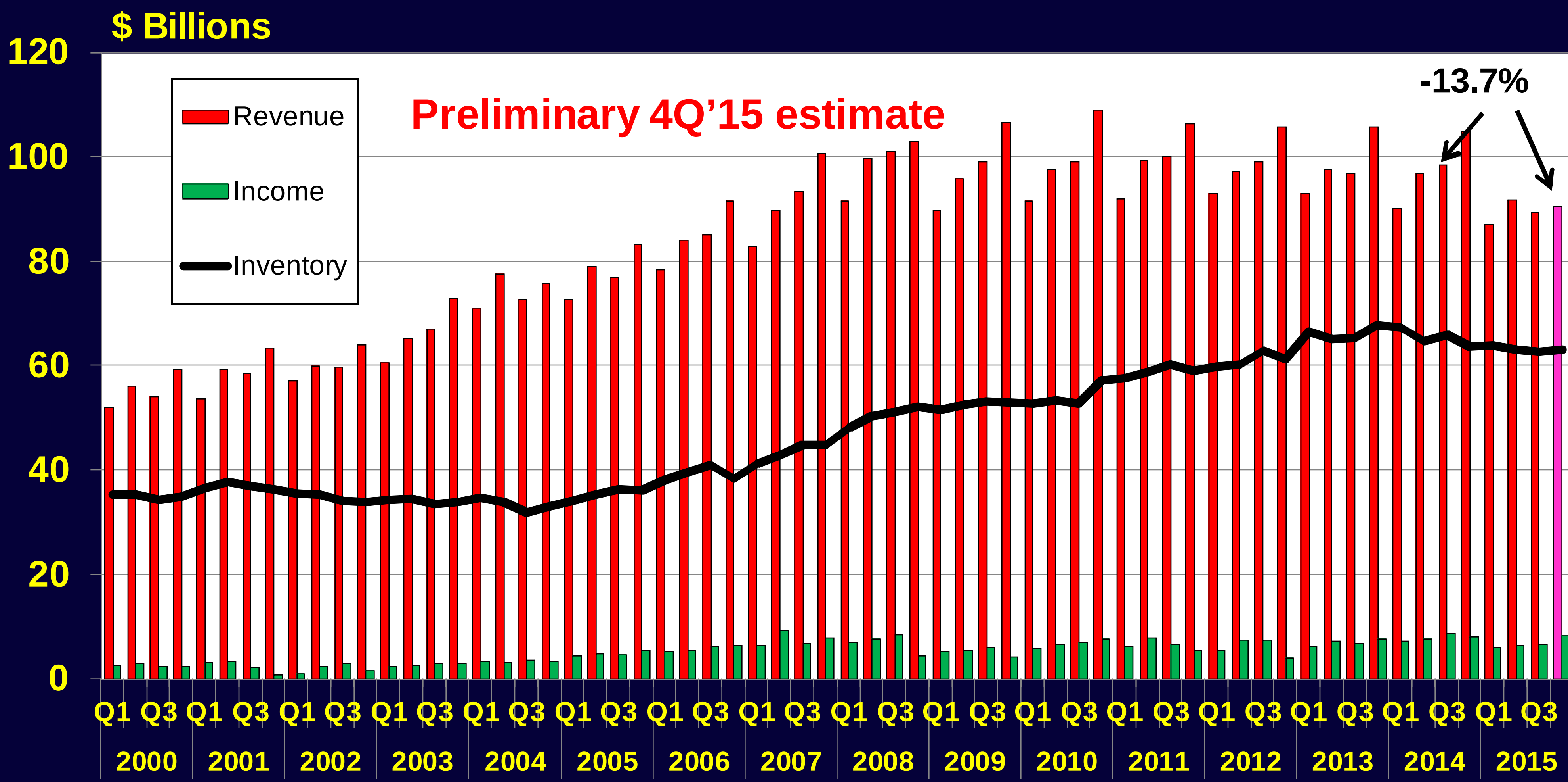


TSLA

Aviation, Government
&
Military Electronics

20160219

Military Equipment
Composite of 21 Public Companies
Revenue, Net Income & Inventory

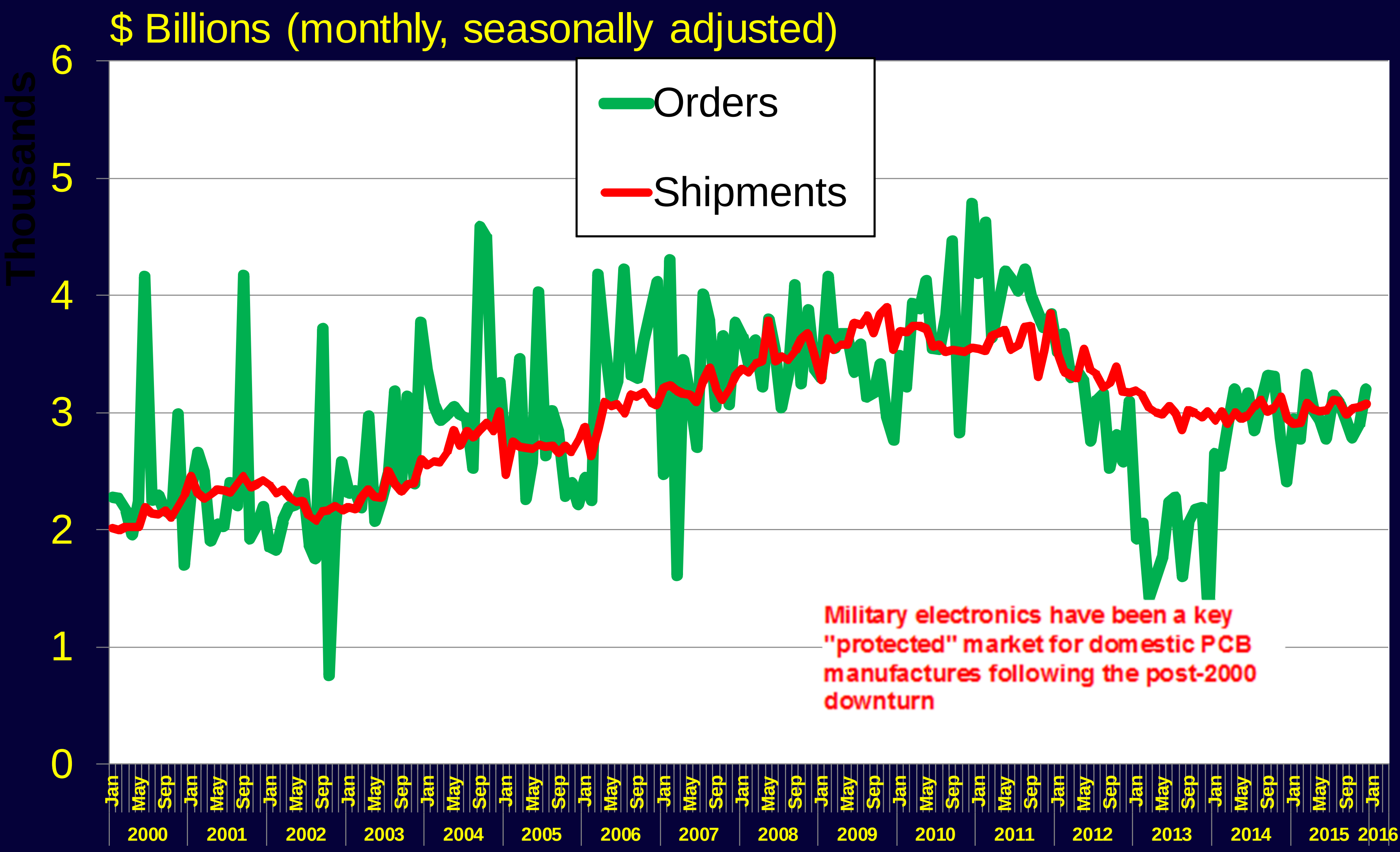


Boeing (military portion), EADS (military portion), Finmeccinica,General Dynamics, Halliburton, Harris, Honeywell (military portion), L-3 Communications, Lockheed, Moog, Northrop Grumman, Raytheon, Rockwell Collins, Textron, Thales, United Technology

20160204

U.S. Military Electronics Orders & Shipments

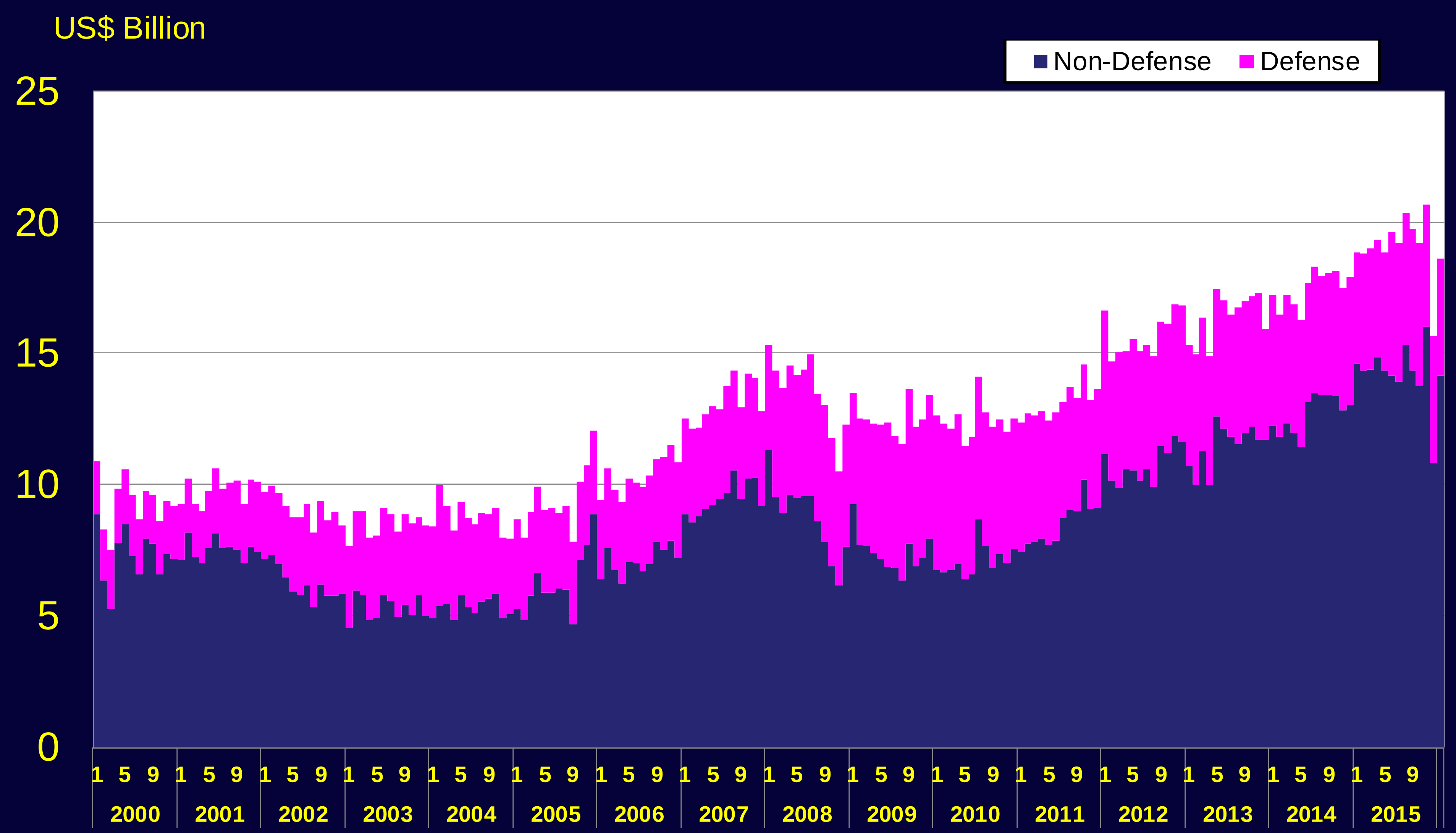
Defense Communication & Search & Navigation Equipment



www.census.gov/indicator/www/m3/

20160225

U.S. Aircraft & Parts Shipments

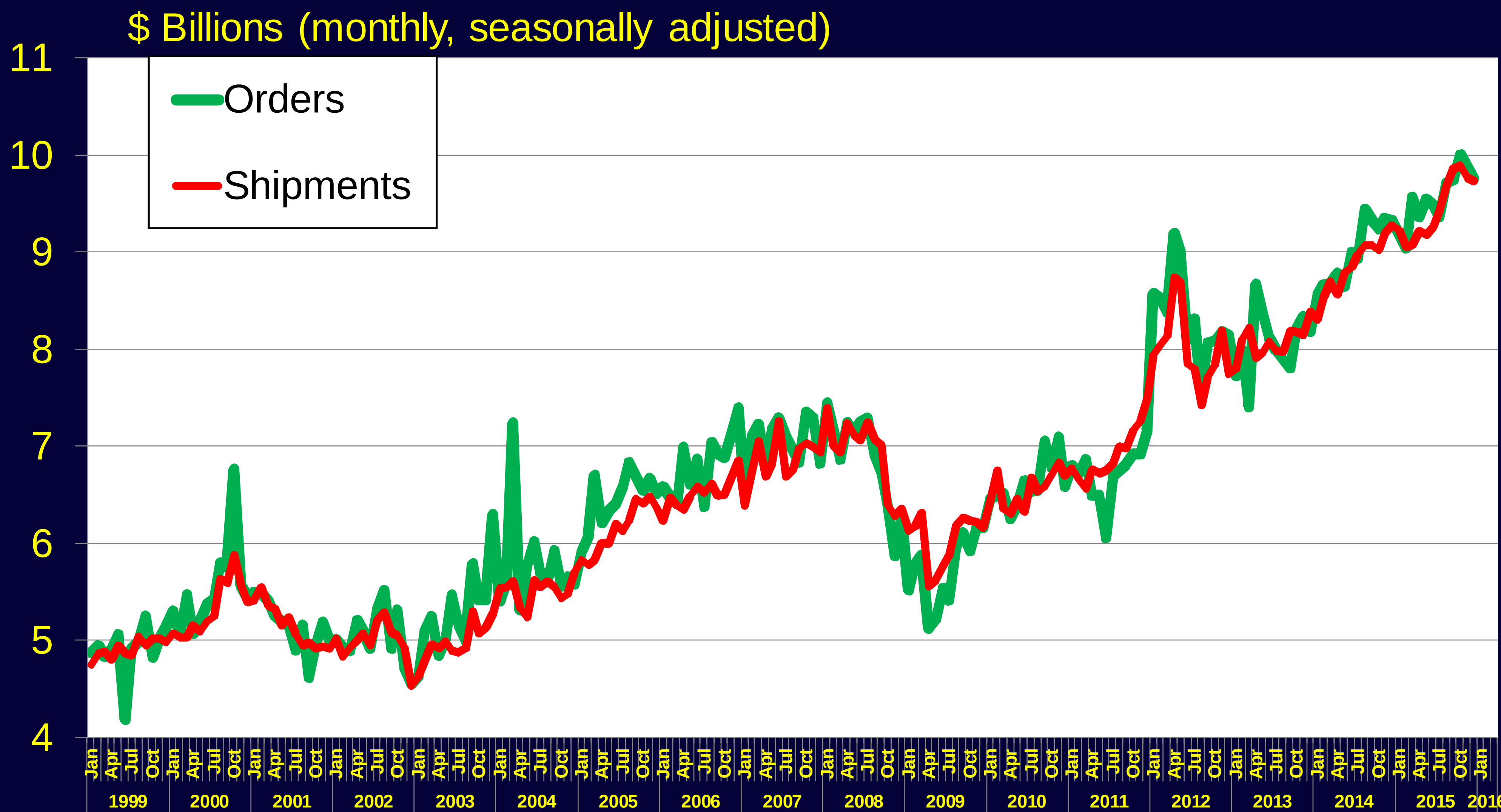


www.census.gov/indicator/www/m3

Instruments & Control Equipment

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

20160204

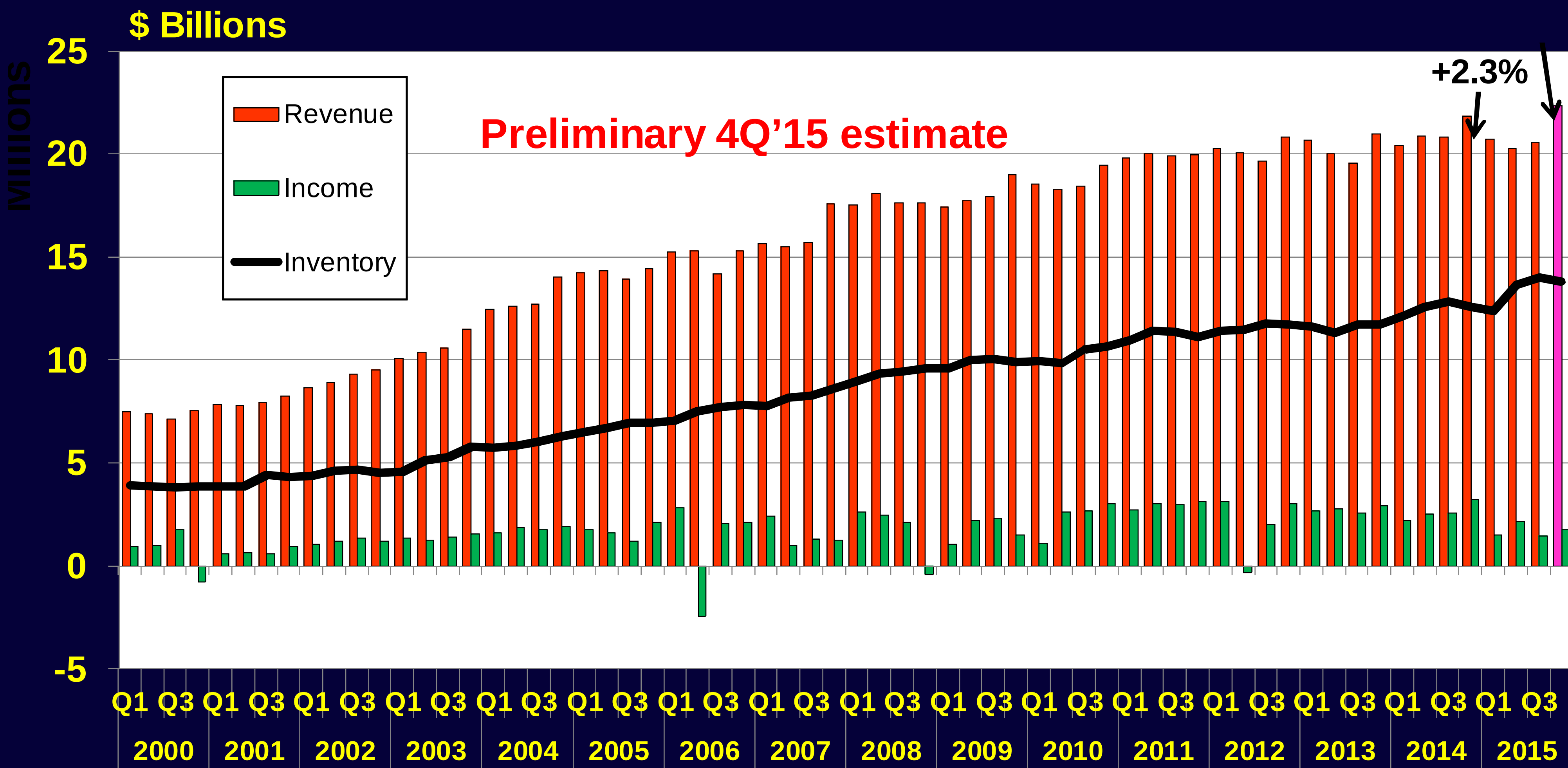


www.census.gov/indicator/www/m3/

20160219

Medical Equipment
Composite of 21 Public Companies

Revenue, Net Income & Inventory



Analogic, Bio-Rad Laboratories, Boston Scientific, Bruker, CareFusion, Covidien, Draeger, Guidant, Hill-Rom, Intuitive Surgical, Invacare, Medtronic, ResMed, St Jude Medical, Smith & Nephew, STERIS, Stryker, Varian Medical, Waters, Zimmer

Future High Volume Markets

Autonomous cars

Internet of Things

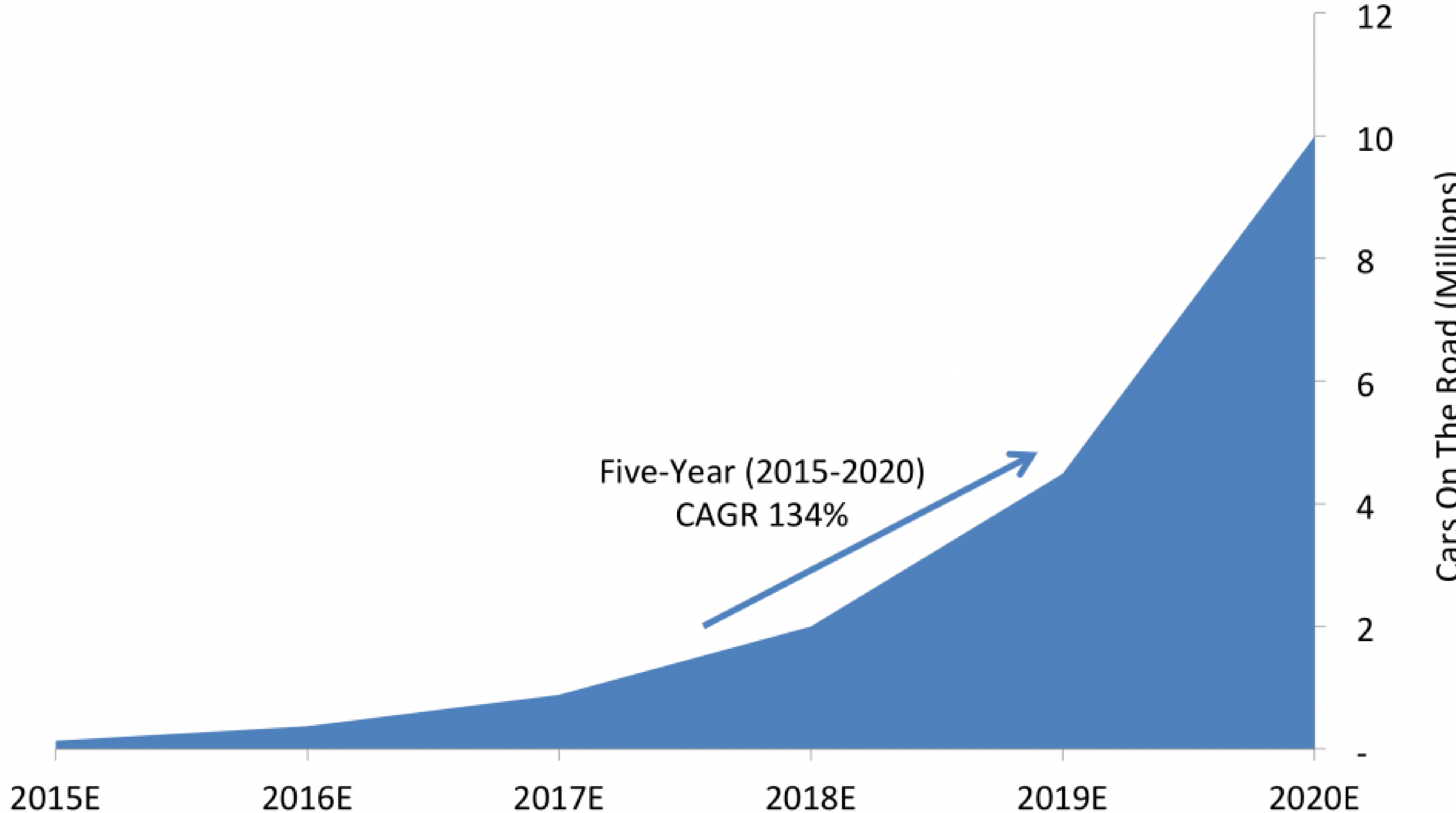
Drones

Robots

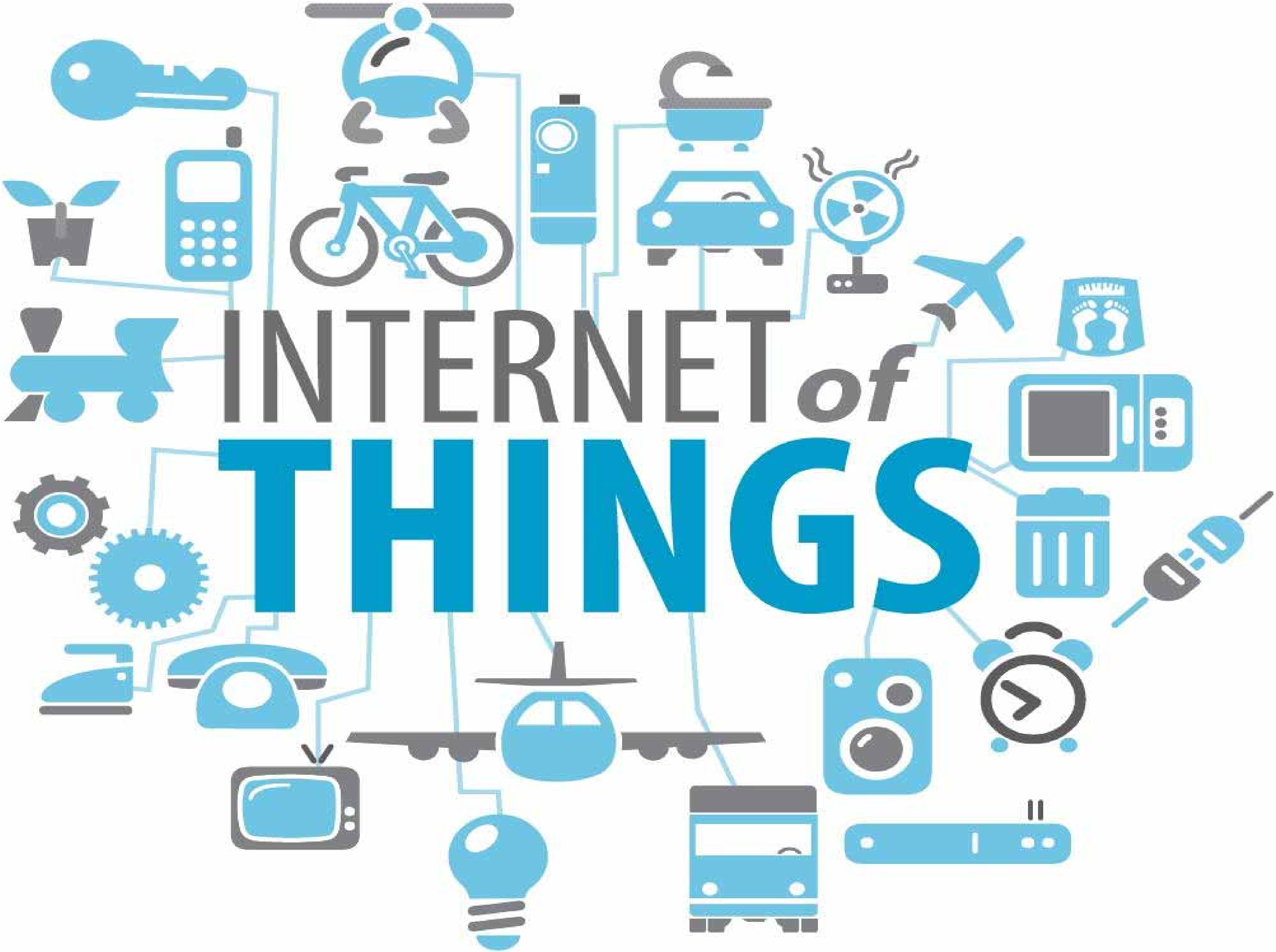
Wearables

Estimated Global Installed Base Of Cars With Self-Driving Features

All Levels

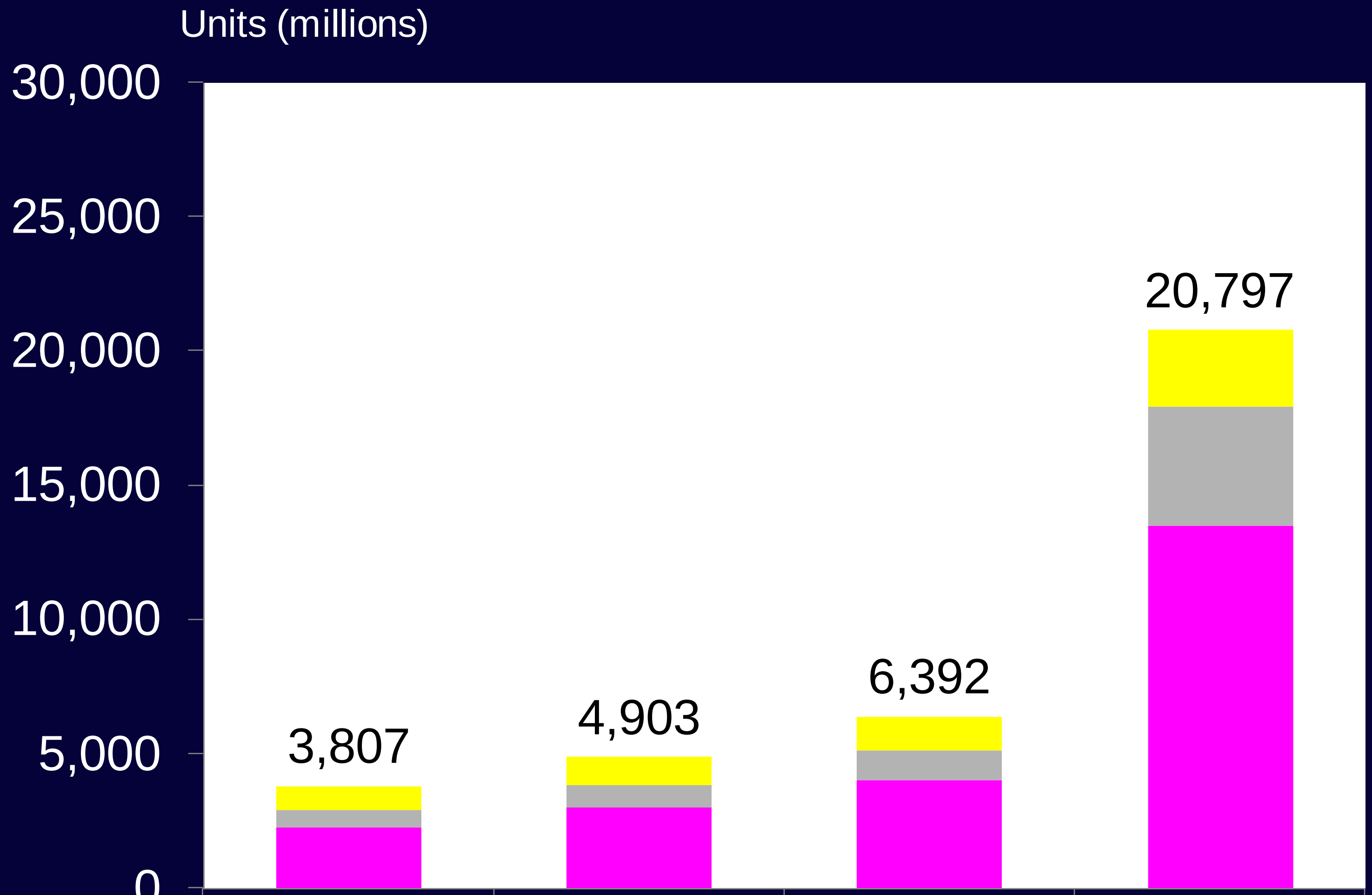


Source: BI Intelligence Estimates, 2015


INTERNET of
THINGS

20160224

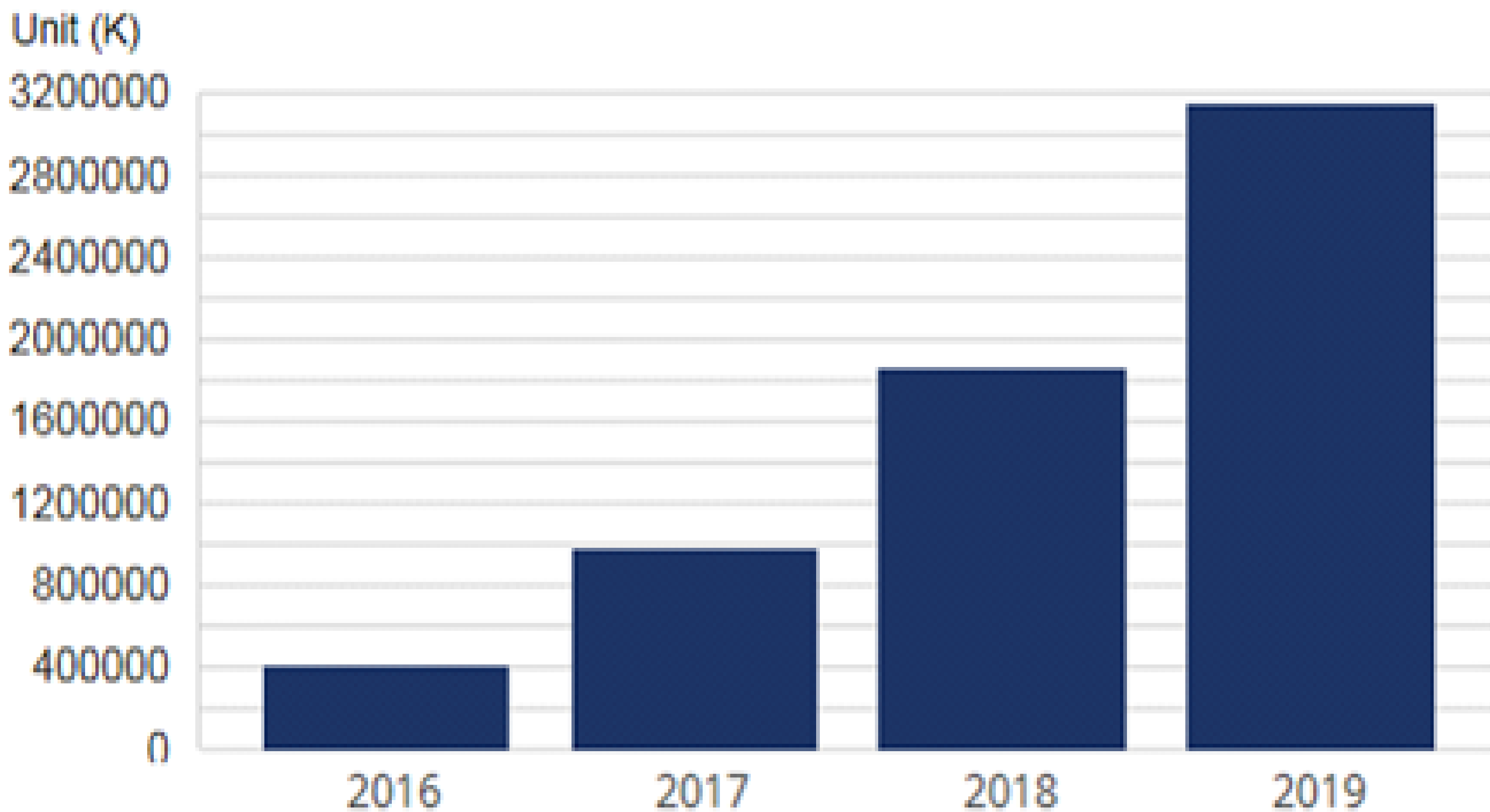
Internet of Things
Installed Base by Category



	2014	2015	2016	2020
Total	3,807	4,903	6,392	20,797
Business Vertical-Specific	898	1,065	1,276	2,880
Business Cross-industry	632	815	1,092	4,408
Consumer	2,277	3,023	4,024	13,509

Gartner 11/15

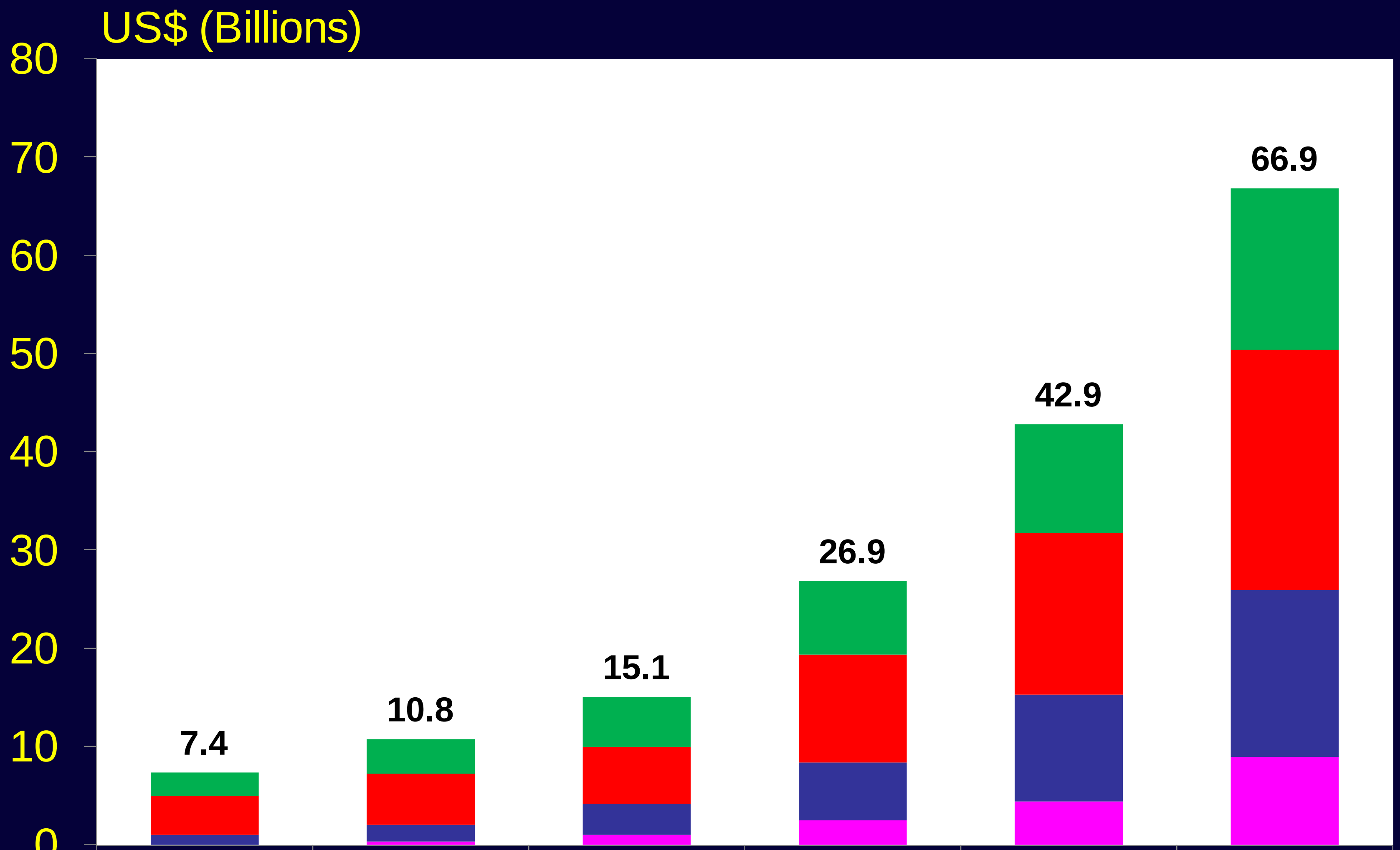
China Aerial Photography Drones Market Forecast, 2016-2019



Source : IDC China Quarterly Camera Drone Tracker Q3 2015

20140906

World Spending on Robots

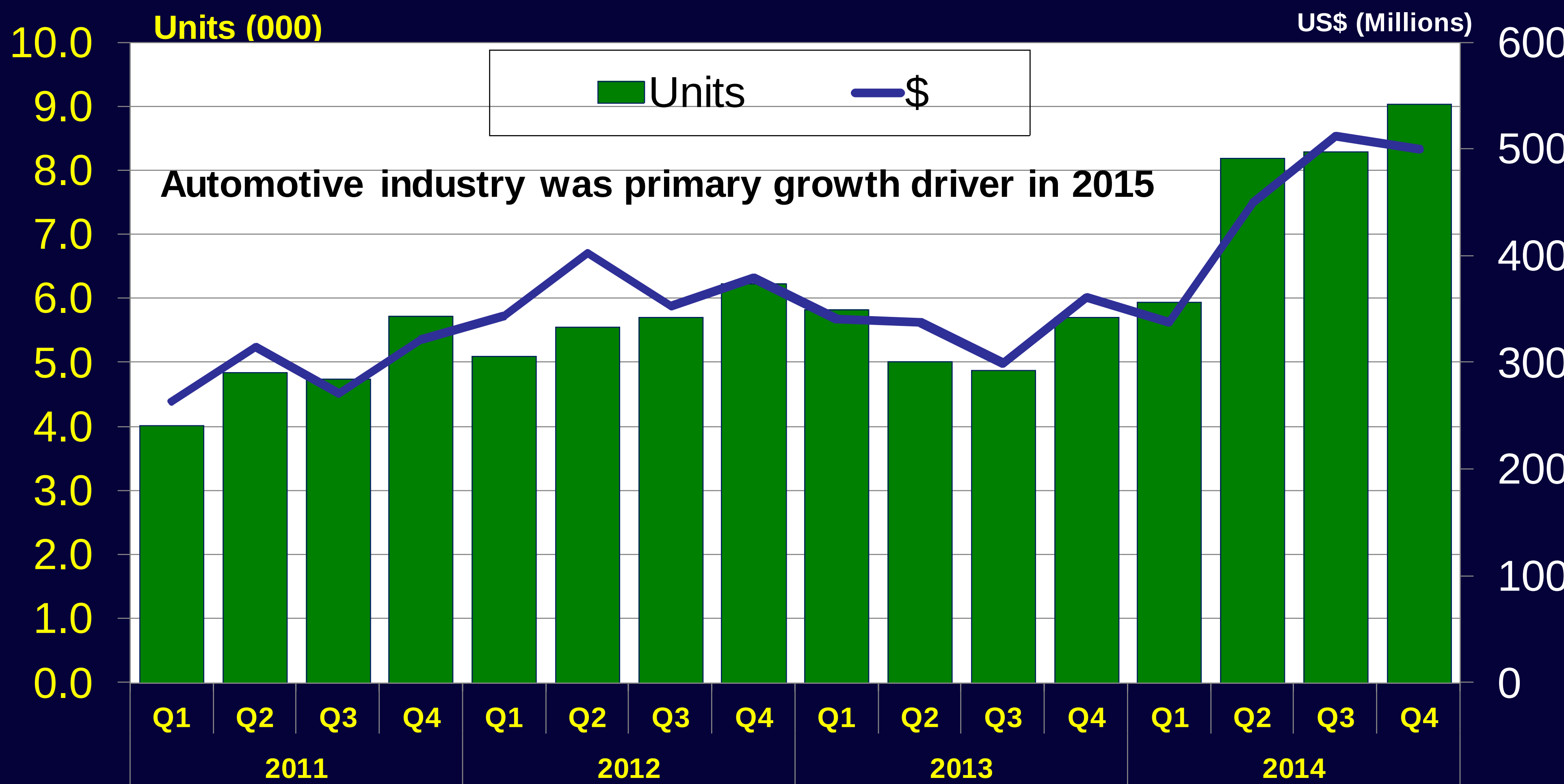


	2000	2005	2010	2015	2020	2025
Total	7.4	10.8	15.1	26.9	42.9	66.9
Military	2.4	3.5	5.1	7.5	11.2	16.5
Industrial	3.9	5.2	5.8	11.0	16.4	24.4
Commercial	1.1	1.7	3.2	5.9	10.8	17.0
Personal	0.0	0.4	1.0	2.5	4.5	9.0

BCG Analysis 9/14, International Federation of Robots, Japan Robot Assoc, Japan Ministry of Economy, Trade & Industry, euRobotics, company filings

N American Robot Orders
Shipments by N American Companies to N America

20160221



www.robotics.org

Fastest growing applications for robot orders in N America in 2015 were Coating and Dispensing (+49%), Material Handling (+24%), and Spot Welding (+22%).

20160221

Wearable Devices 2015-2017
Millions of Devices

Device	2015	2016	2017
Smartwatch	30.3	50.4	66.7
Head-mounted Display	0.1	1.4	6.3
Body-worn Camera	0.1	0.2	1.1
Bluetooth Headset	116.3	128.5	139.2
Wristband	30.2	35.0	44.1
Smart Garment	0.1	1.0	5.3
Chest Strap	12.9	13.0	8.0
Sports Watch	21.0	24.0	26.9
Other Fitnes Monitor	21.1	21.1	25.1
Total	232.0	274.6	322.7

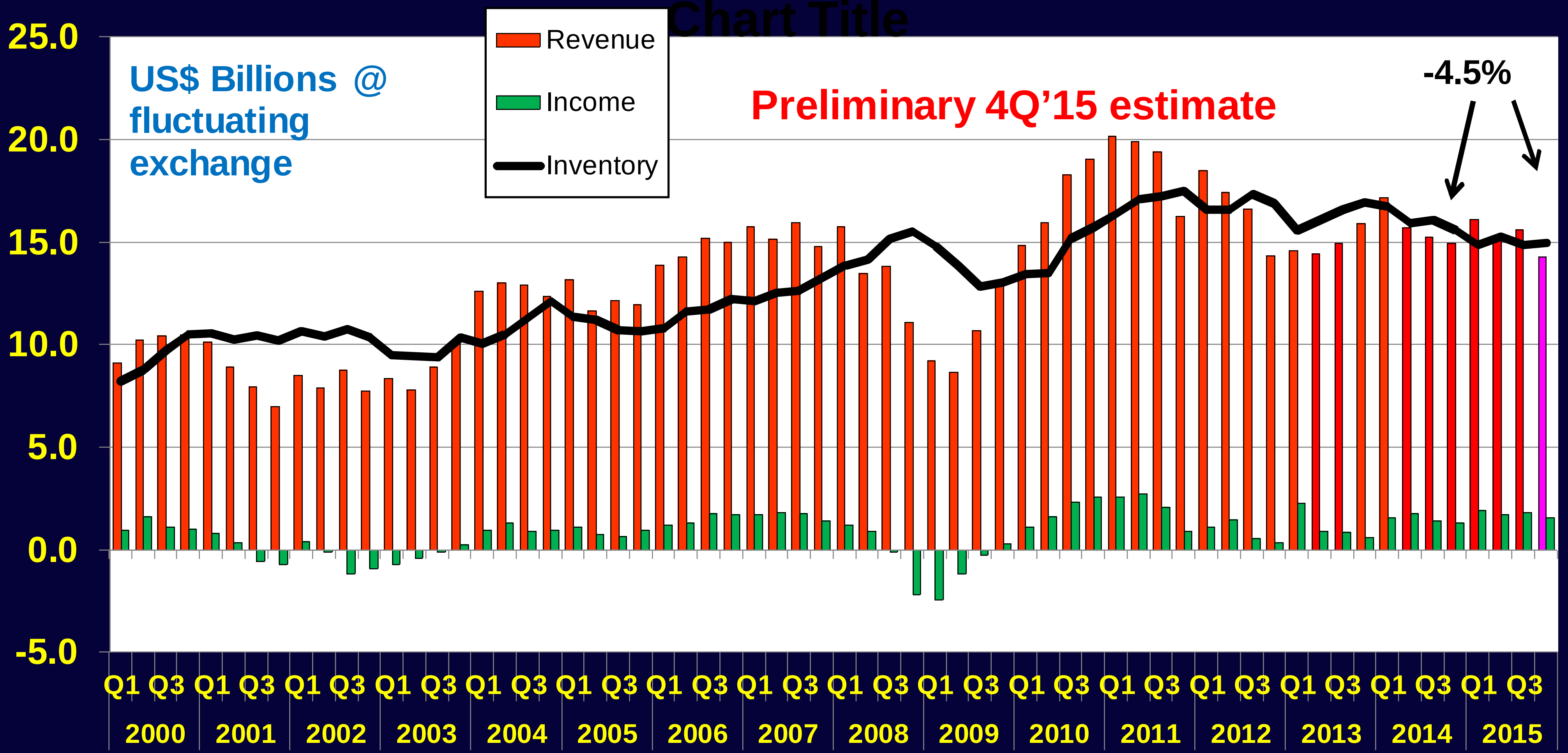
Gartner 2/2016

Semiconductor Fab, Assembly, Packaging,Test & Measurement Equipment

Semiconductor Fab, Test & Measurement Composite of 37 Public Companies

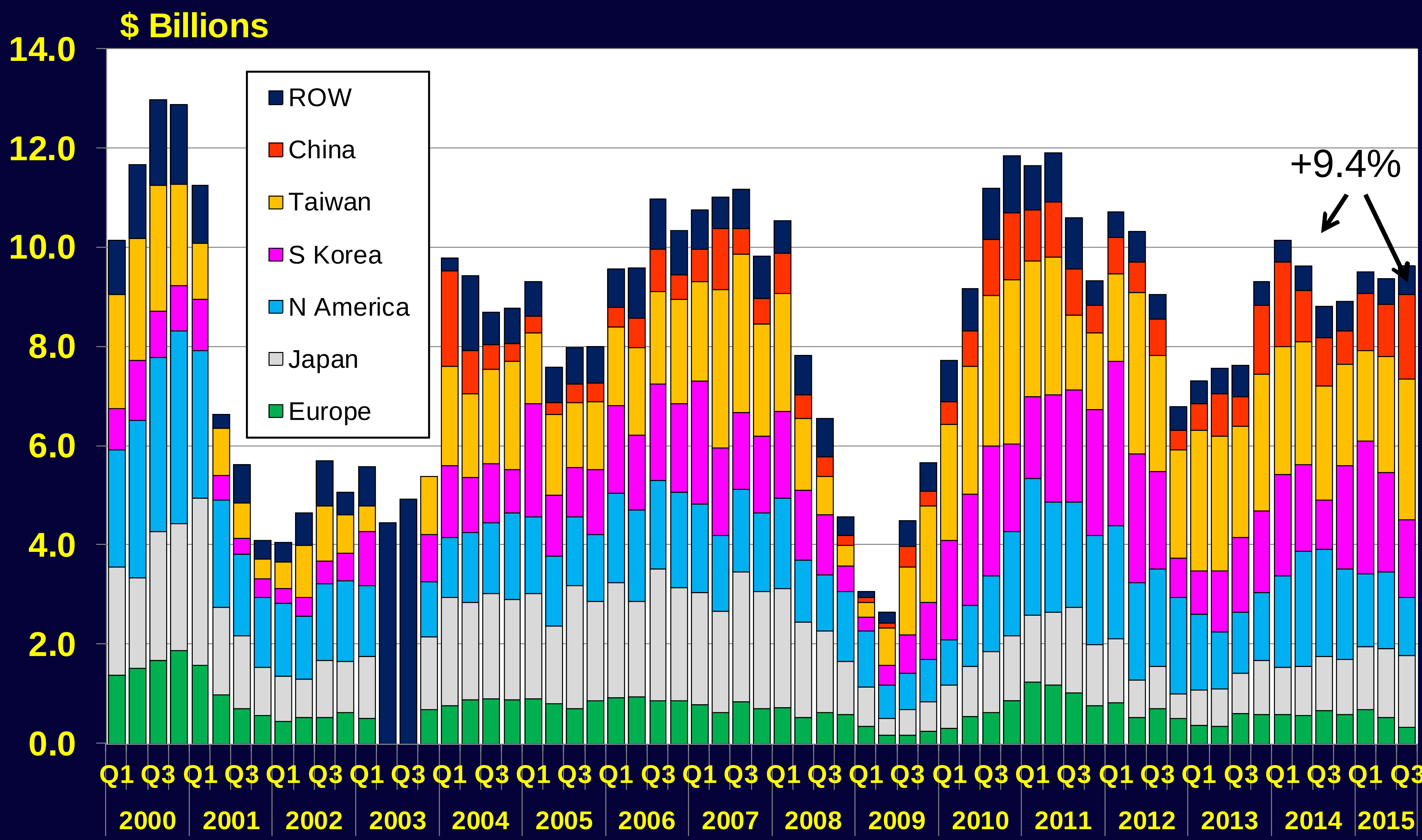
10`60219

Revenue, Net Income & Inventory



Advantest, Applied Materials, ASM Intl, ASML, Brooks Automation, BTU, CollabRx, Dainippon Screen, Disco, Electroglas, Entegris, FEI, FSI, Hitachi Hi Tech, Hitachi Kokosai, KLA-Tencor, Ibis, Intervac, Kulicke & Soffa, Lam Research, Mattson,MKS Instrument, Novellus Systems, Photon Dynamics, Rudolph Technologies, Teradyne, Tokyo Electron, Ultra Clear, Ultratech Stepper, Varian Semiconductor, Veeco, Xcerra (LTX-Credence)

Semiconductor Capital Equipment Shipments by Area

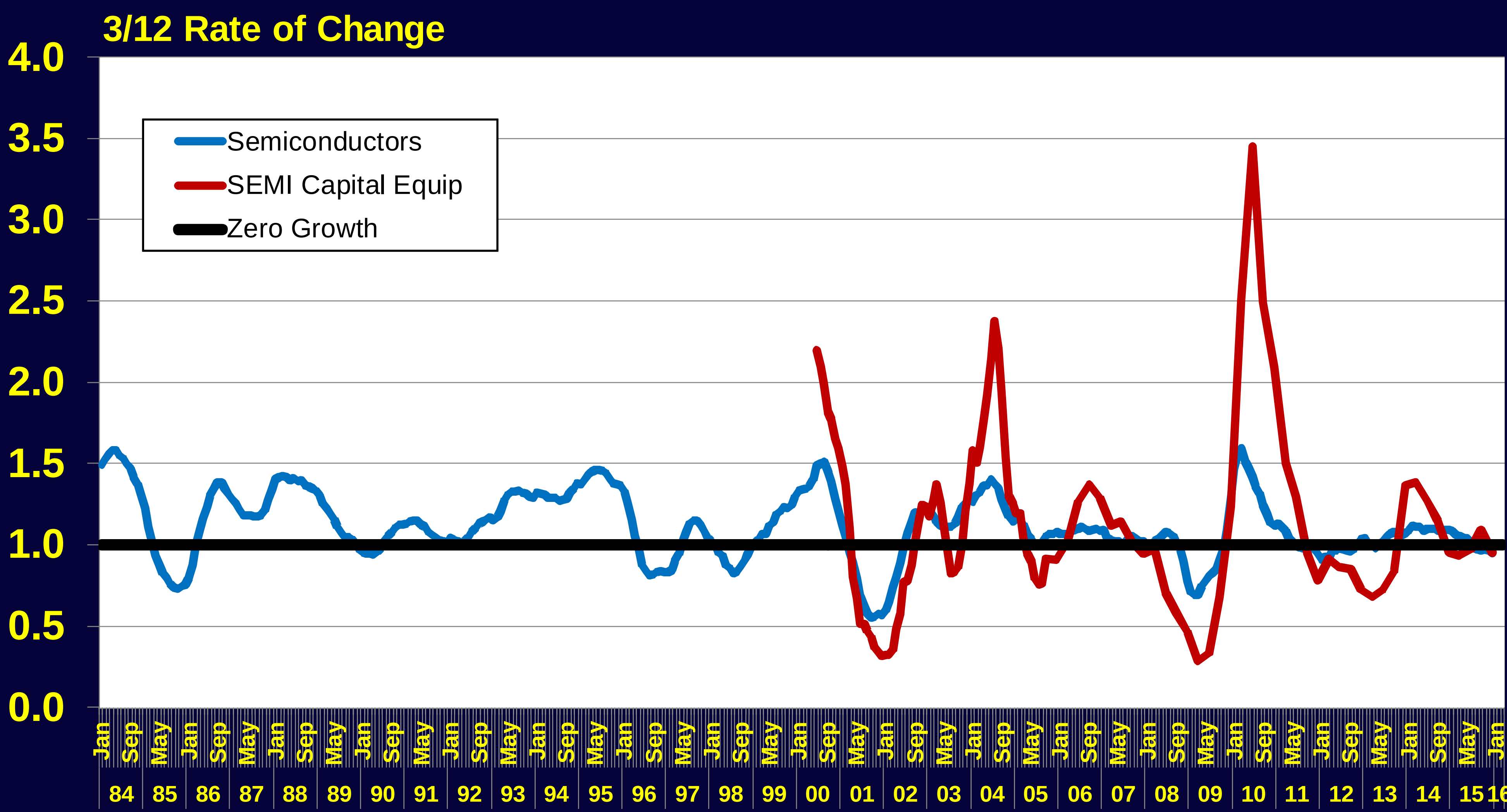


www.semi.org, www.seaj.or.jp/ 12/15

Global Semiconductor & Semiconductor Capital Equipment

20160205

3-Month Shipment Growth Rates on $ Basis



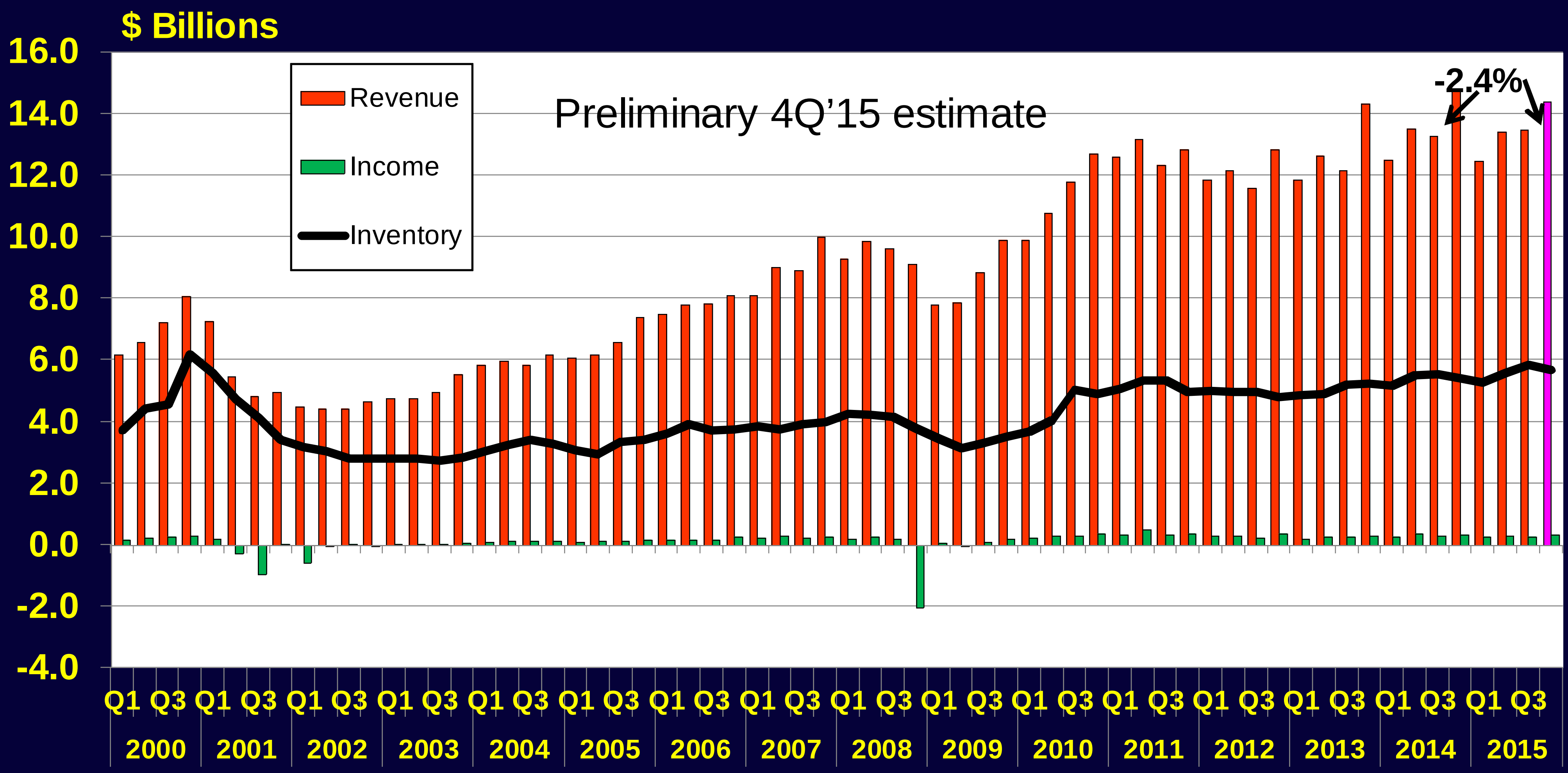
Sources: SIA; Semiconductor Equipment Association of Japan, www.semi.org, Custer Consulting Group SEMI equipment sector composite growth

Component Distributors

20160219

Electronic Component Distributors Composite of 9 US Public Companies

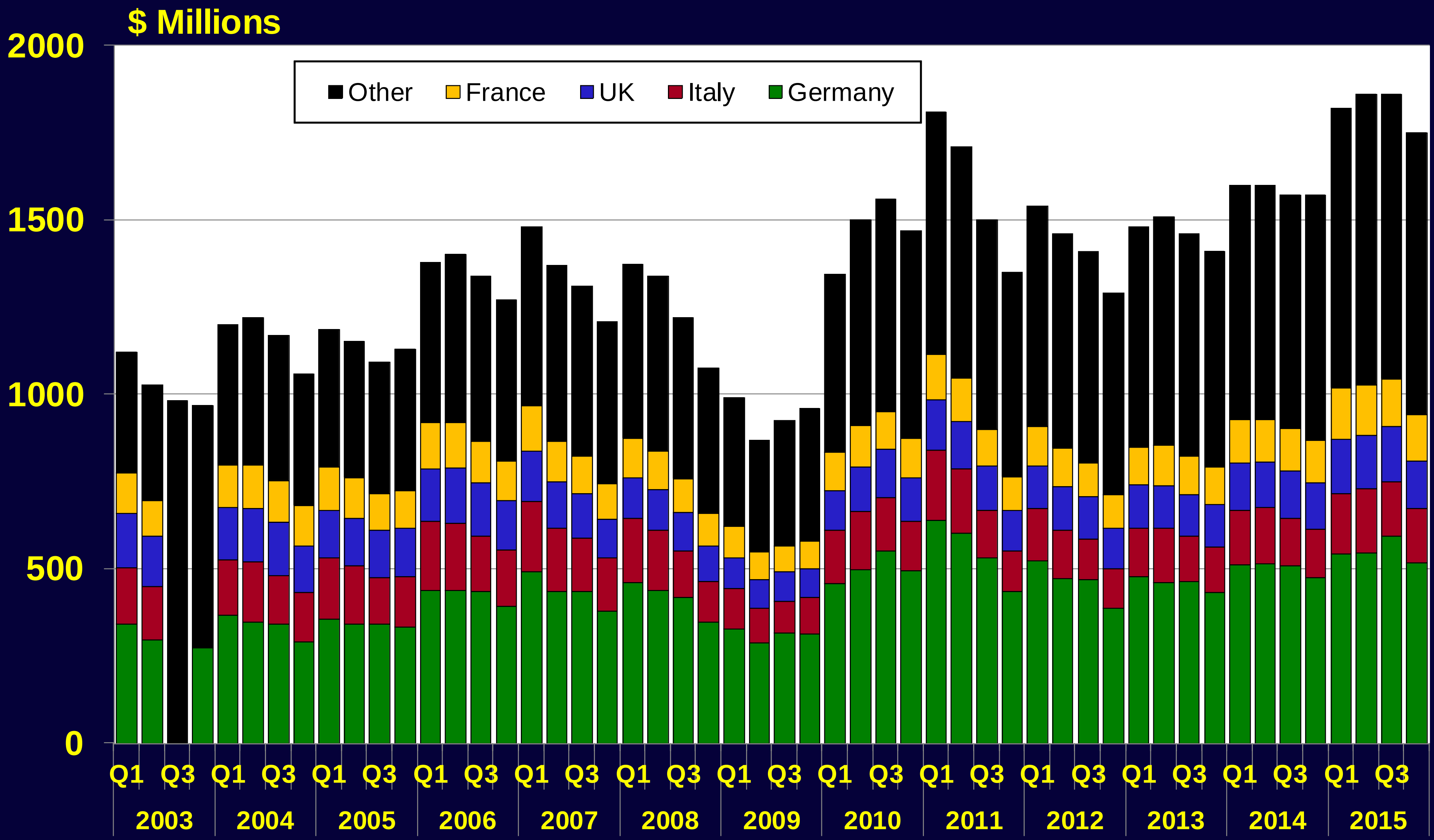
Revenue, Net Income & Inventory



Arrow, Avnet, EACO (Bisco), Electrocomponents, Excelpoint, Nu Horizons (historical), Richardson, WPG Holdings, WT Microelectronics

20160218

DMASS - European Semiconductor Distribution Industry



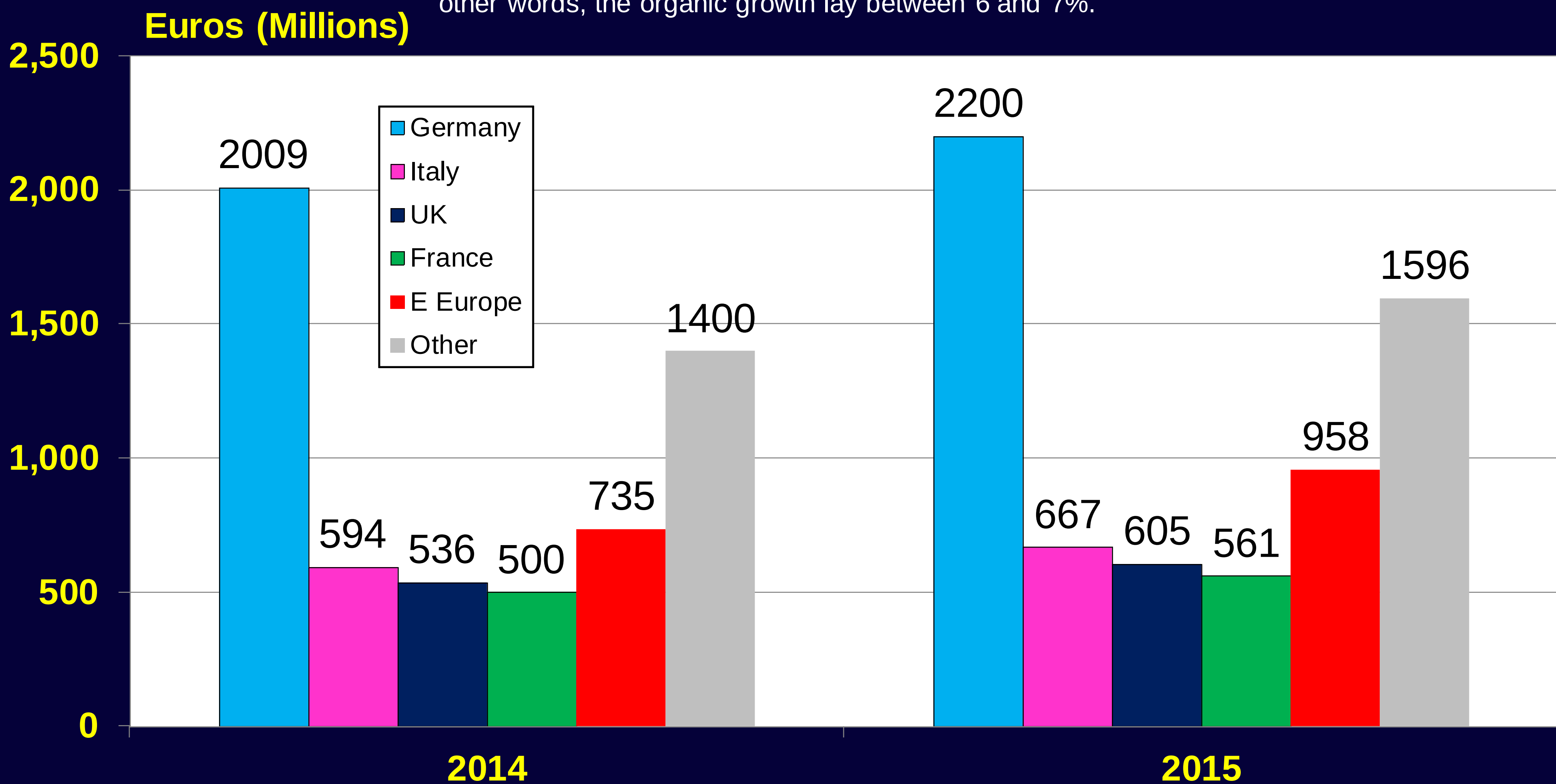
http://dmass.com/ 2/16

20160218

DMASS

European Semiconductor Distribution Industry

DMASS estimates that 60% of the increase in 2015 was due to the exchange rate swing, in other words, the organic growth lay between 6 and 7%.



"As predicted, we enjoyed record business in distribution in 2015, at least from a sales perspective. What is different to previous years is the fact that no shortages accompanied this double-digit growth, product availability was never an issue. A big part of the success story is a purely technical effect that will disappear in 2016, unless the exchange rates run riot again. All signs - currency effects, economy, and Chinese downturn - would lead to conclude that we will encounter a far more solemn business environment in 2016."

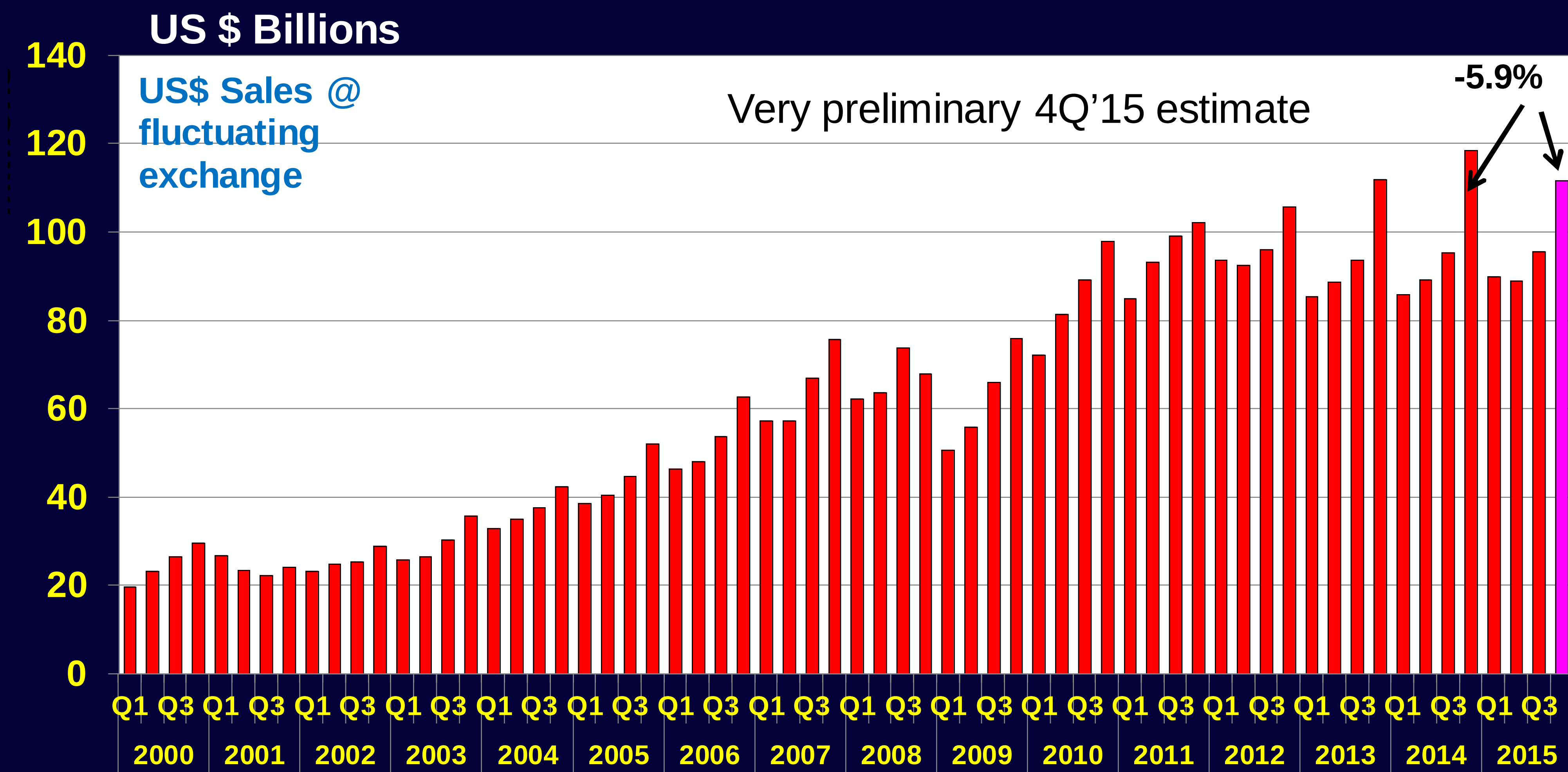
DMASS 2/2016; http://dmass.com/

EMS & ODM Companies

20160211

Global EMS & ODM Companies Composite of 52 Public Companies

Revenue



20160211

Large Global EMS Providers

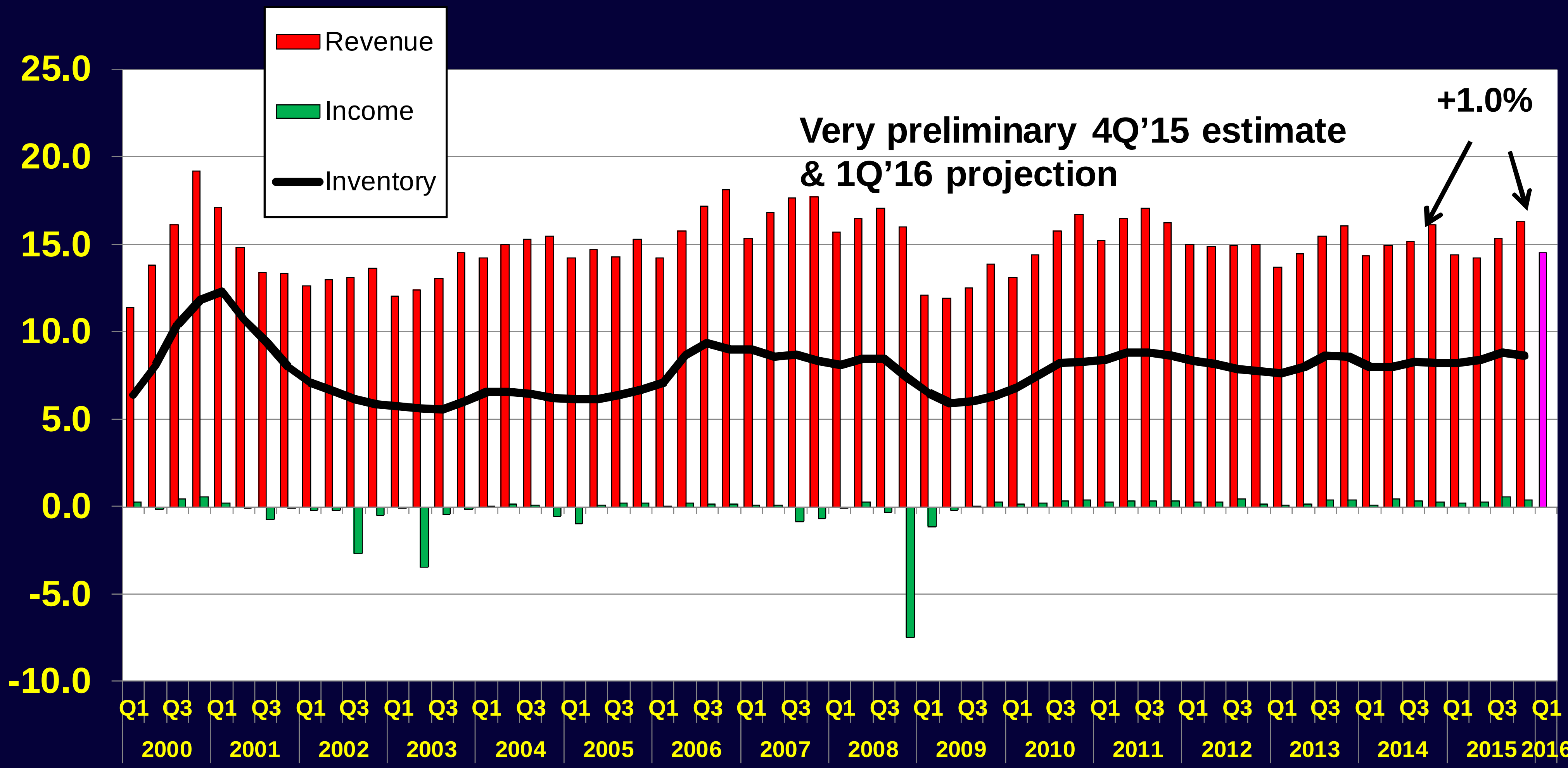
2014 vs. 2015 Sales ($M)

		2014	2015	2015/2014 Growth %
Hon Hai (Foxconn)	Taiwan	138,765	141,717	+2%
Flextronics	Singapore	26,920	24,598	-9%
Jabil Circuit	USA	15,969	18,557	+16%
Sanmina-SCI	USA	6,439	6,238	-3%
Celestica	Canada	5,631	5,639	0%
Benchmark Elec	USA	2,797	2,541	-9%
Plexus	USA	2,509	2,606	+4%
Venture Mfg	Singapore	1,945	1,928	-1%
Sypris	USA	355	153	-57%
Total		201,331	204,291	+1.5%

Sources: Company data
Local currency converted at fluctuating exchange

20160211

Large U.S EMS Providers
Composite of 6 Public Companies
Revenue, Net Income & Inventory



Benchmark+Pemstar, Celestica, Flex+Solectron, Jabil, Plexus, Sanmina

20160111

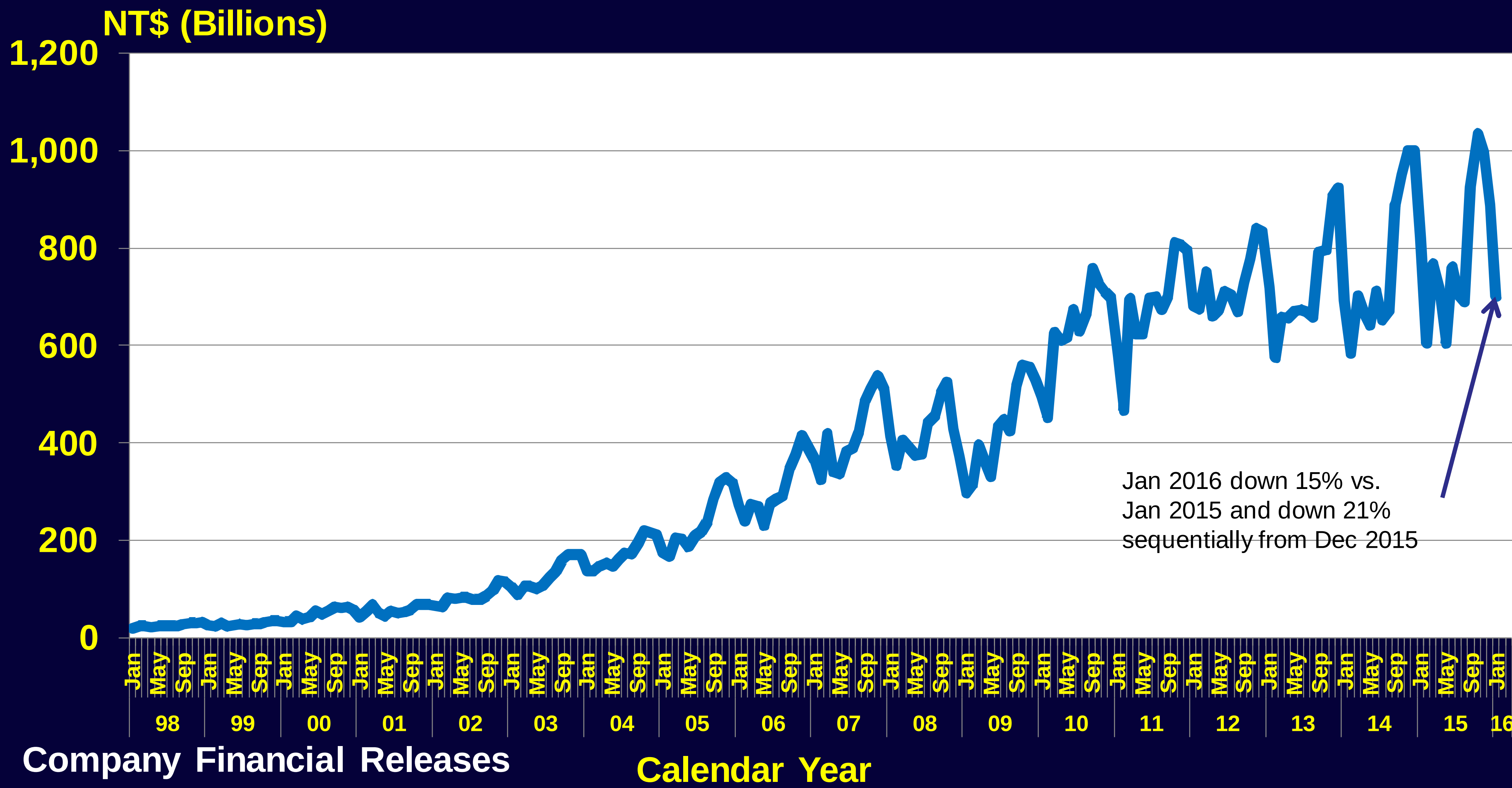
Large Taiwan ODM Providers

2014 vs. 2015 Sales ($M)

	2014	2015	2015/2014 Growth %
Foxconn (Hon Hai)	139,032	141,202	+1.6%
Pegatron	33,632	38,224	+13.7%
Quanta Computer	30,566	31,726	+3.8%
Compal Electronics	27,909	26,685	-4.4%
Wistron	19,534	19,631	+0.5%
Asustek Computer	15,747	14,875	-5.5%
Inventec	14,376	12,456	-13.4%
Chimei Innolux	14,145	11,469	-18.9%
Lite On Technology	7,611	6,828	-10.3%
Total	302,551	303,094	+0.2%

Source: Company data, NT$ converted at constant avg 2015 exchange (31.75 NT$ = 1US$)
Consolidated company sales

Taiwan ODM Companies
Composite Sales of 11 Large Manufacturers



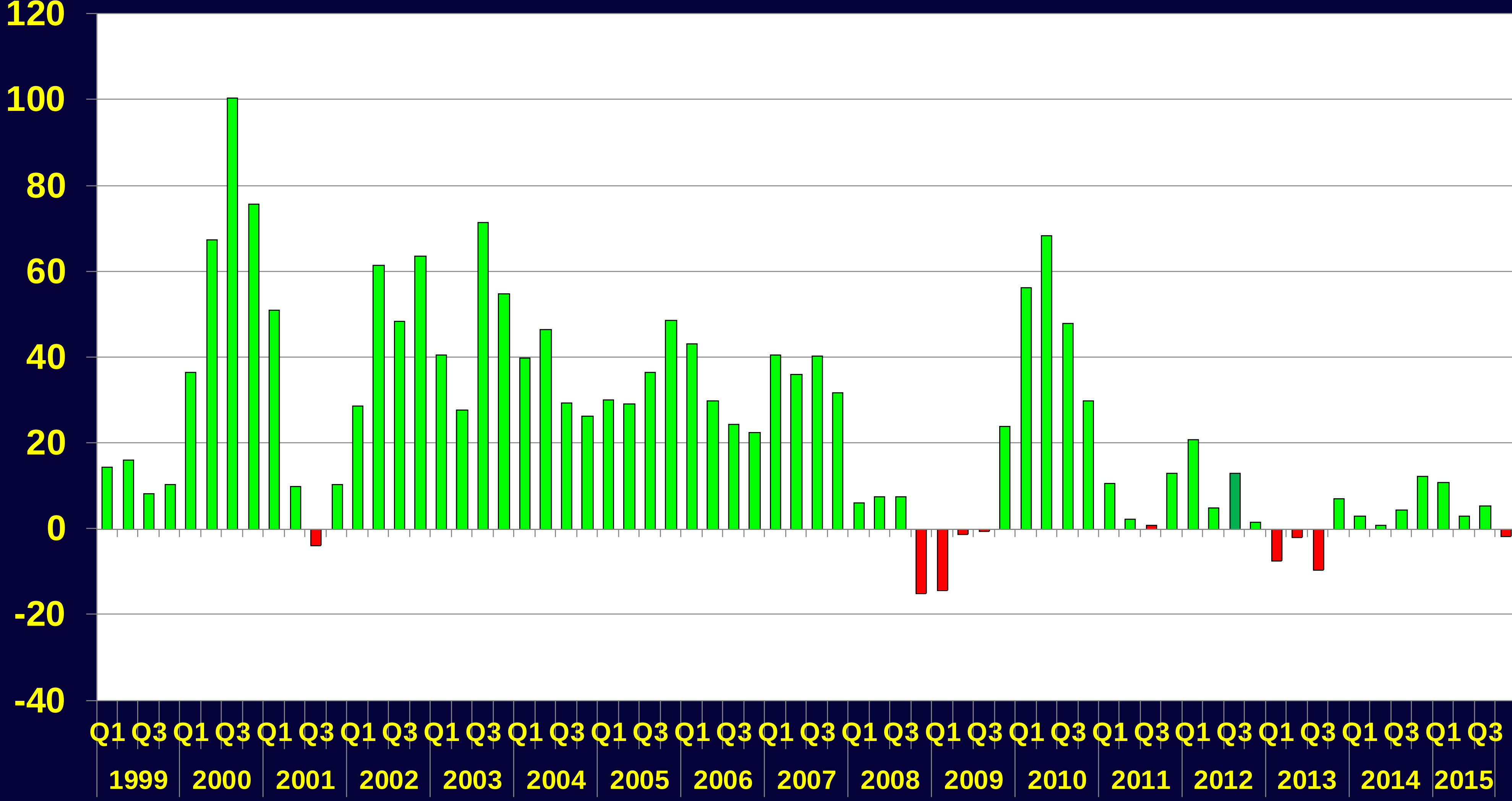
Company Financial Releases

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

20160111

Large ODM Companies
Composite of 10 Public Manufacturers

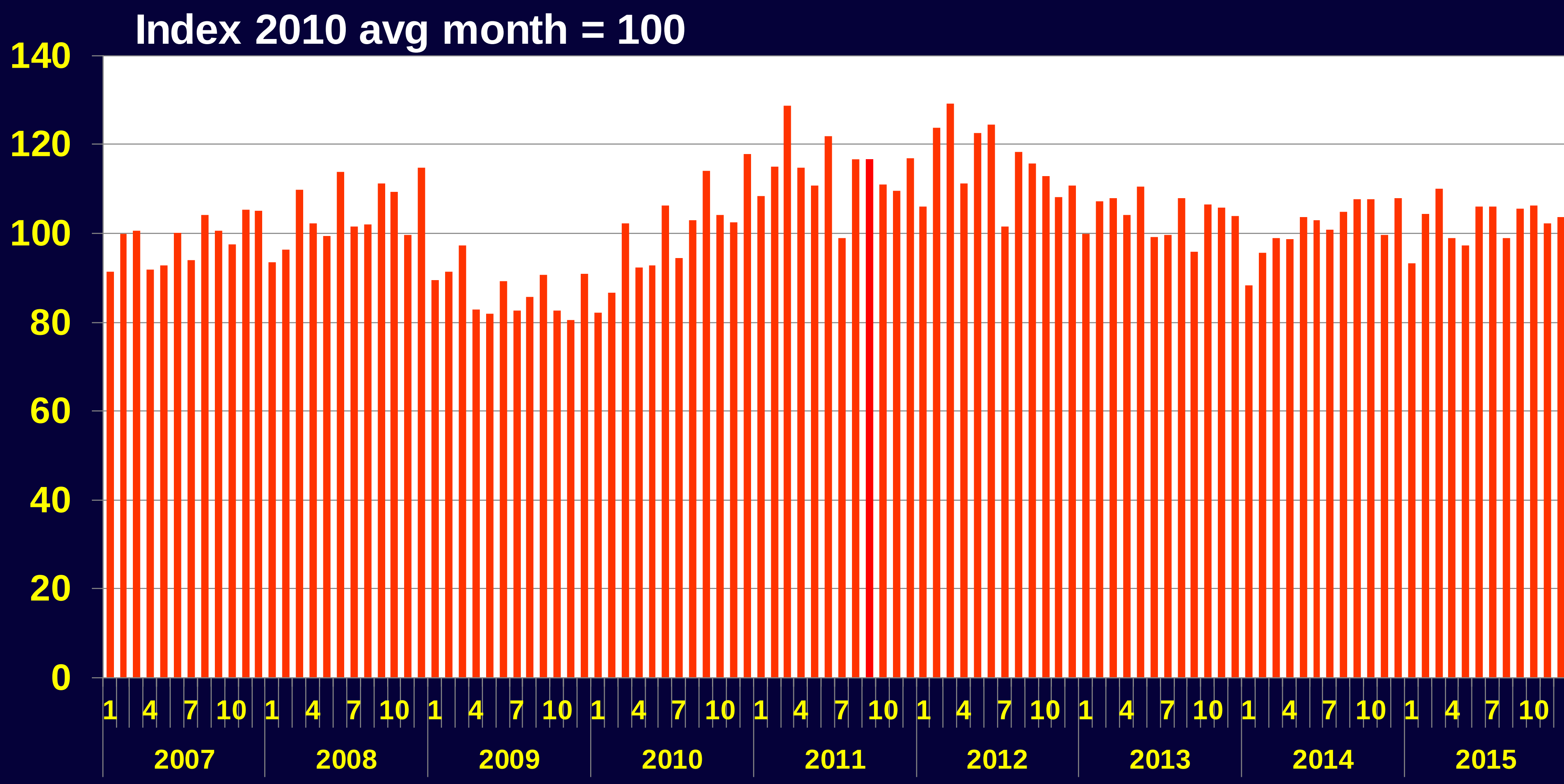
Quarterly Revenue Growth



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

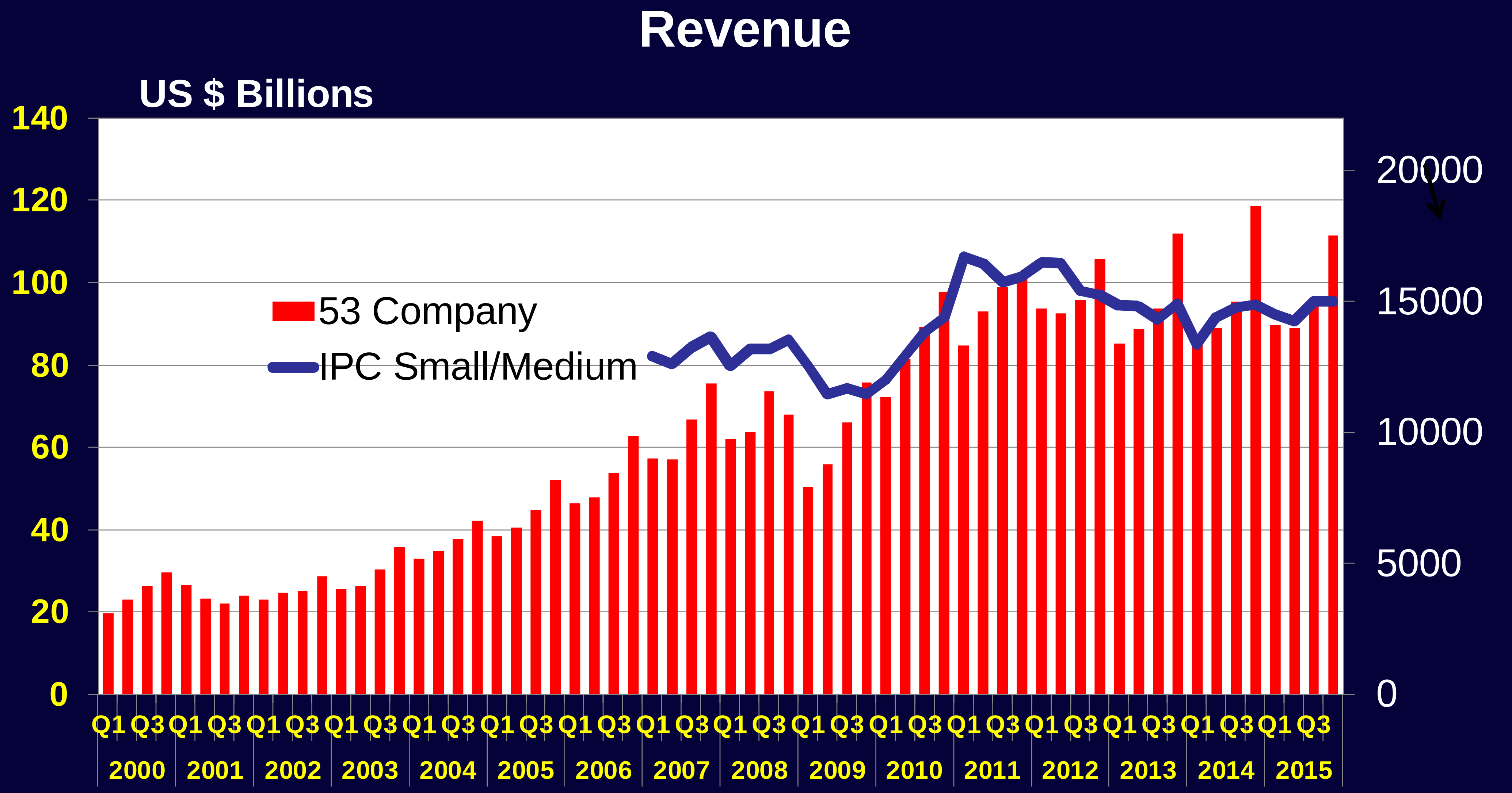
20160224

IPC Small & Medium N American EMS Company Revenue Index



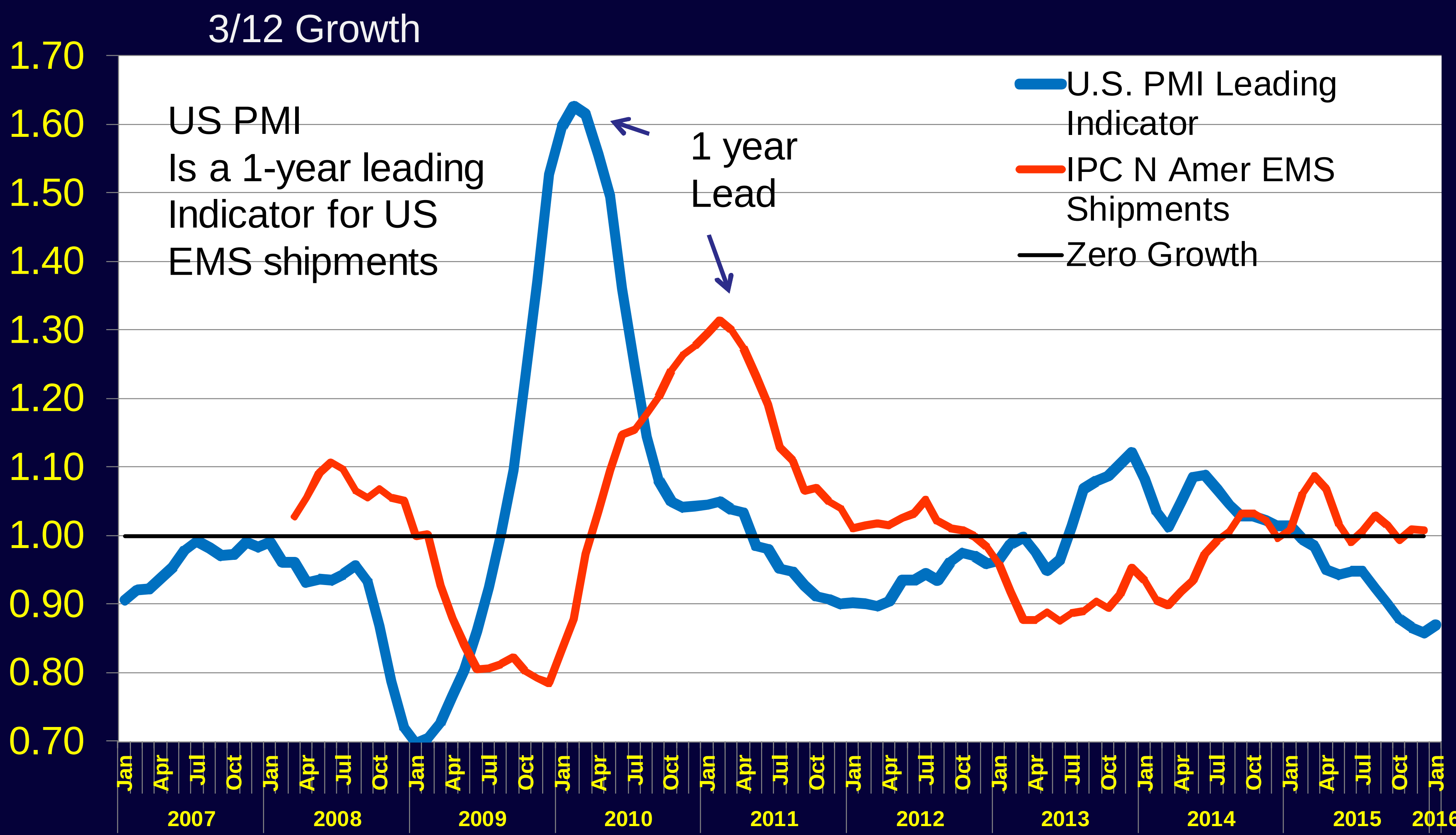
20160224

IPC Small/Medium EMS vs Composite of 53 Public EMS/ODM Companies



20160224

U.S PMI Leading Index vs IPC N American EMS Shipments

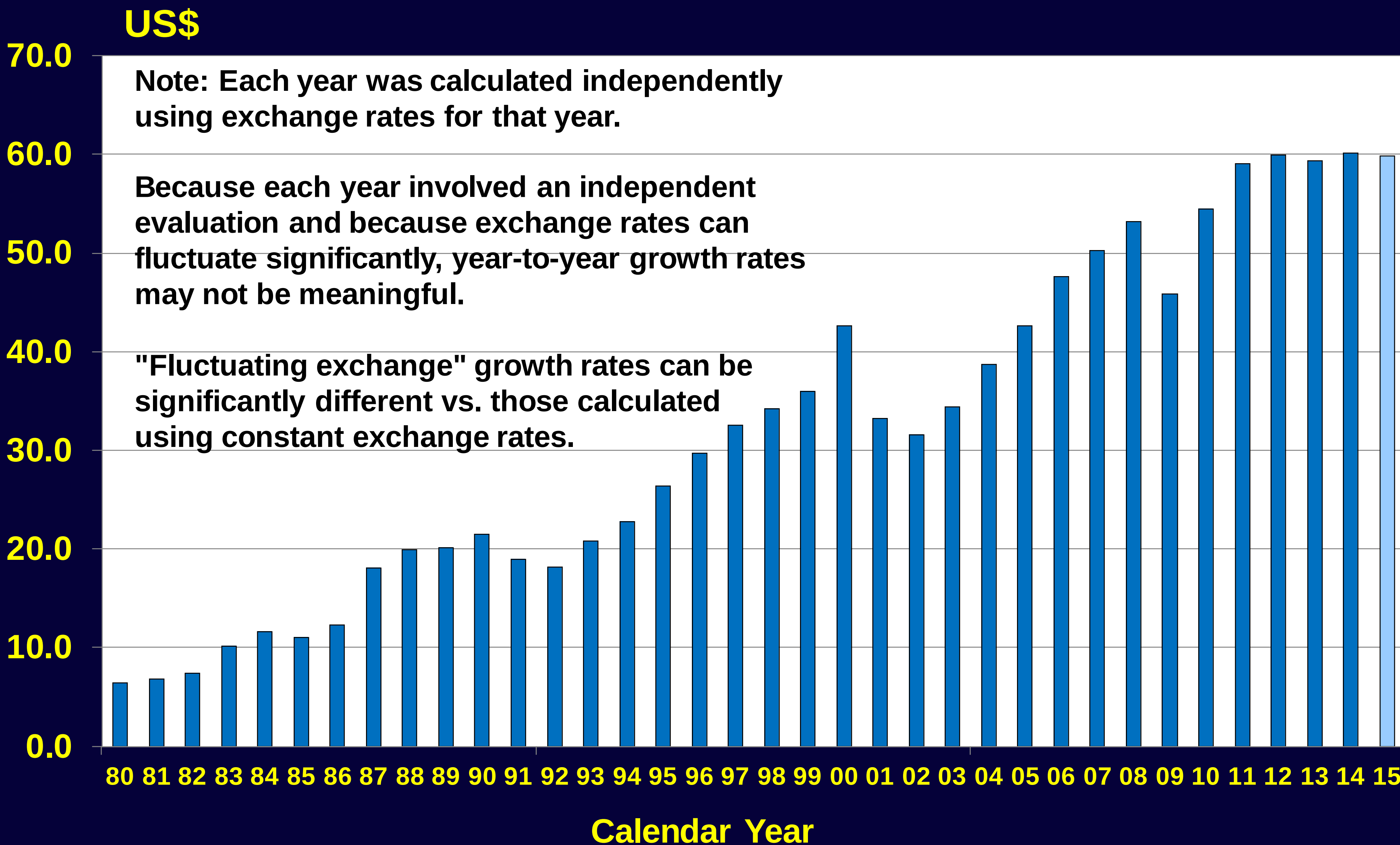


ISM & IPC

PCB Fabrication

20150930

World PCB Production 1980-2014



IPC: World PCB Production Report 2014, Custer estimate for 2015

20150728

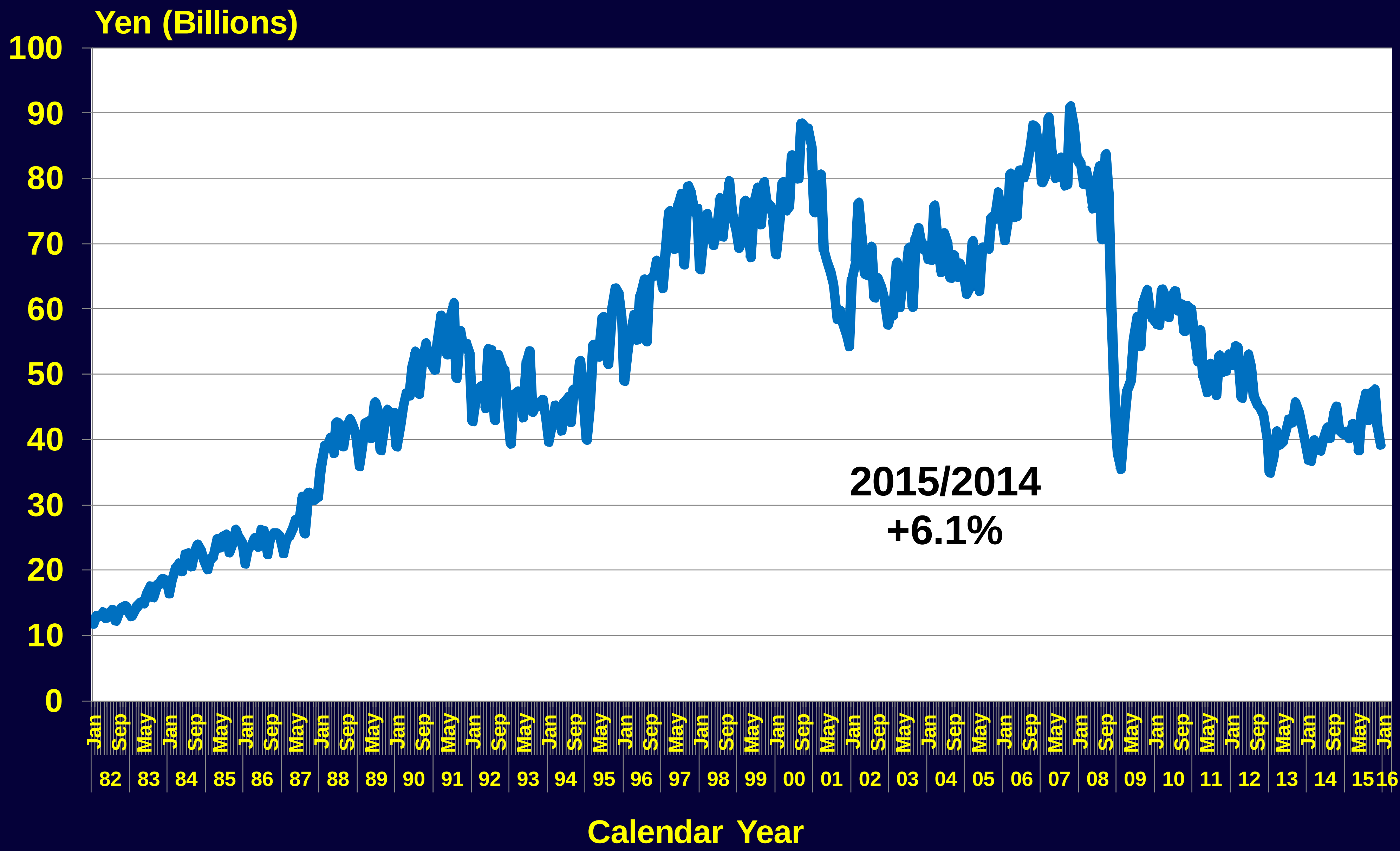
World's Top PCB Companies – 2014 1-25

Rank	Company	Nationality	2013	2014	Growth	Brief Comments
1	Nippon Mektron*	Japan	2,209	3,176	43.78%	A big Apple supplier
2	ZDT*	Taiwan	2,106	2,483	17.90%	A big Apple supplier
3	Unimicron	Taiwan	2,009	2,130	6.02%	Building PCB plants in Huangxi
4	SEMCO	S. Korea	1,795	1,562	-12.98%	Building plants in Vietnam
5	Young Poong Grp*	S. Korea	2,100	1,523	-27.48%	Interflex & YPE poor in 2014
6	Ibiden	Japan	1,315	1,493	13.54%	Boosting growth from Malaysia
7	TTM Technologies	USA	1,326	1,422	7.24%	Purchased Viasystems on 5/'15
8	Sumitomo Denko*	Japan	1,121	1,414	26.14%	A big Apple supplier
9	Tripod	Taiwan	1,337	1,391	4.08%	Pushing into automotive PCB
10	Viasystems	USA	1,171	1,204	2.82%	Purchased by TTM 5/31/2015
11	Daeduck Group	S. Korea	1,297	1,159	-10.64%	Careful investment
12	Nanya PCB	Taiwan	1,016	1,146	8.09%	IC substrates seem to grow
13	Compeq	Taiwan	1,013	1,110	9.55%	Chongqing plant contributing
14	PSA PCB Group	Taiwan	957	970	1.36%	NB mortherboards reduced
15	KG PCB Group	China	922	963	4.45%	Elec& Eltek is the largest
16	AT&S	Austria	784	886	13.01%	CKG plant starts business soon
17	Meiko	Japan	692	850	22.83%	#3 automotive PCB maker
18	Kinsus	Taiwan	757	818	7.97%	Flip-Chip CSP strong
19	LG Innotek	S. Korea	581	791	36.14%	LGE & Qualcomm
20	T.P.T.	Taiwan	684	784	14.60%	NB motherboards increasing
21	Multek	USA	730	750	2.74%	Profitable since Oct 2013
22	WUS Group	Taiwan	658	698	6.08%	Kunshan & Huangxi new plants
23	Chin Poon	Taiwan	634	697	9.93%	#1 automotive PCB maker
24	CMK	Japan	621	689	10.95%	#2 automotive PCB maker
25	Nitto Denko*	Japan	485	684	41.03%	FPC for HDD among others

Dr Hayao Nakahara, N.T. Information Ltd 7/2015

20160219

Japan PCB Shipments

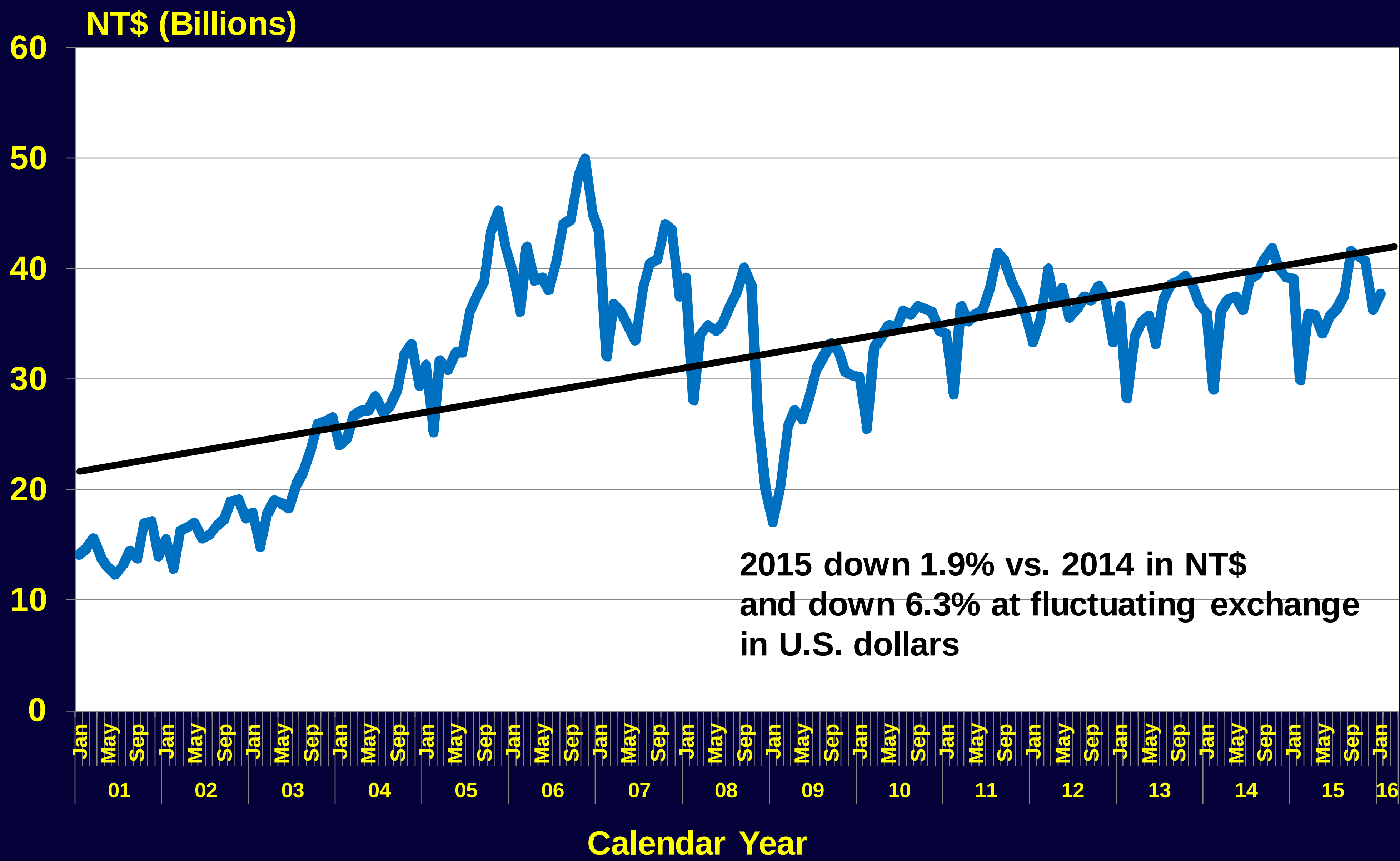


www.jpca.org/kikaitoukei/kikai2013.xls

20160220

Taiwan Rigid & Flex PCB Shipments

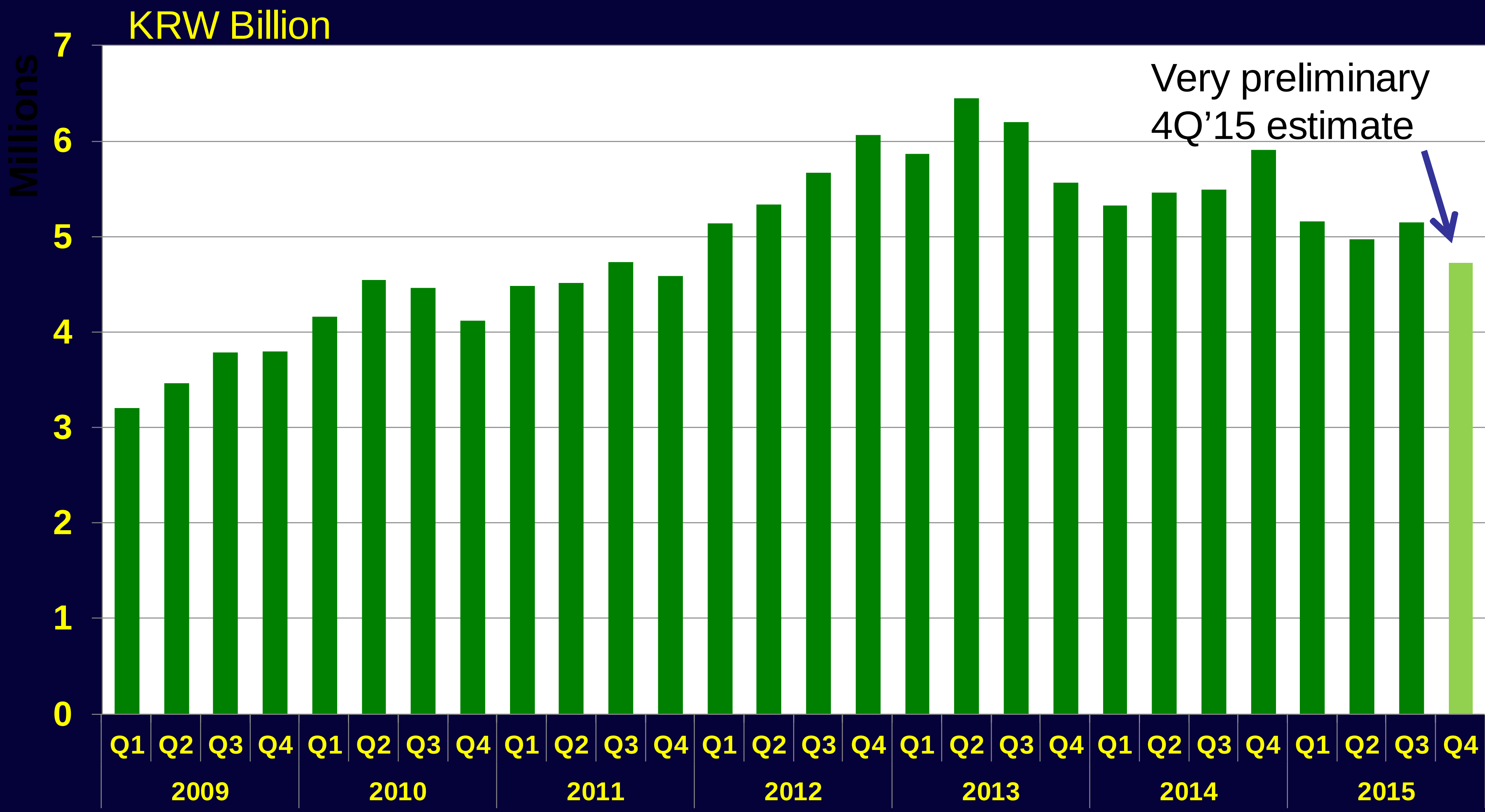
Broad Composite of 46 Taiwan-listed Manufacturers



Company Financial Releases

20151117

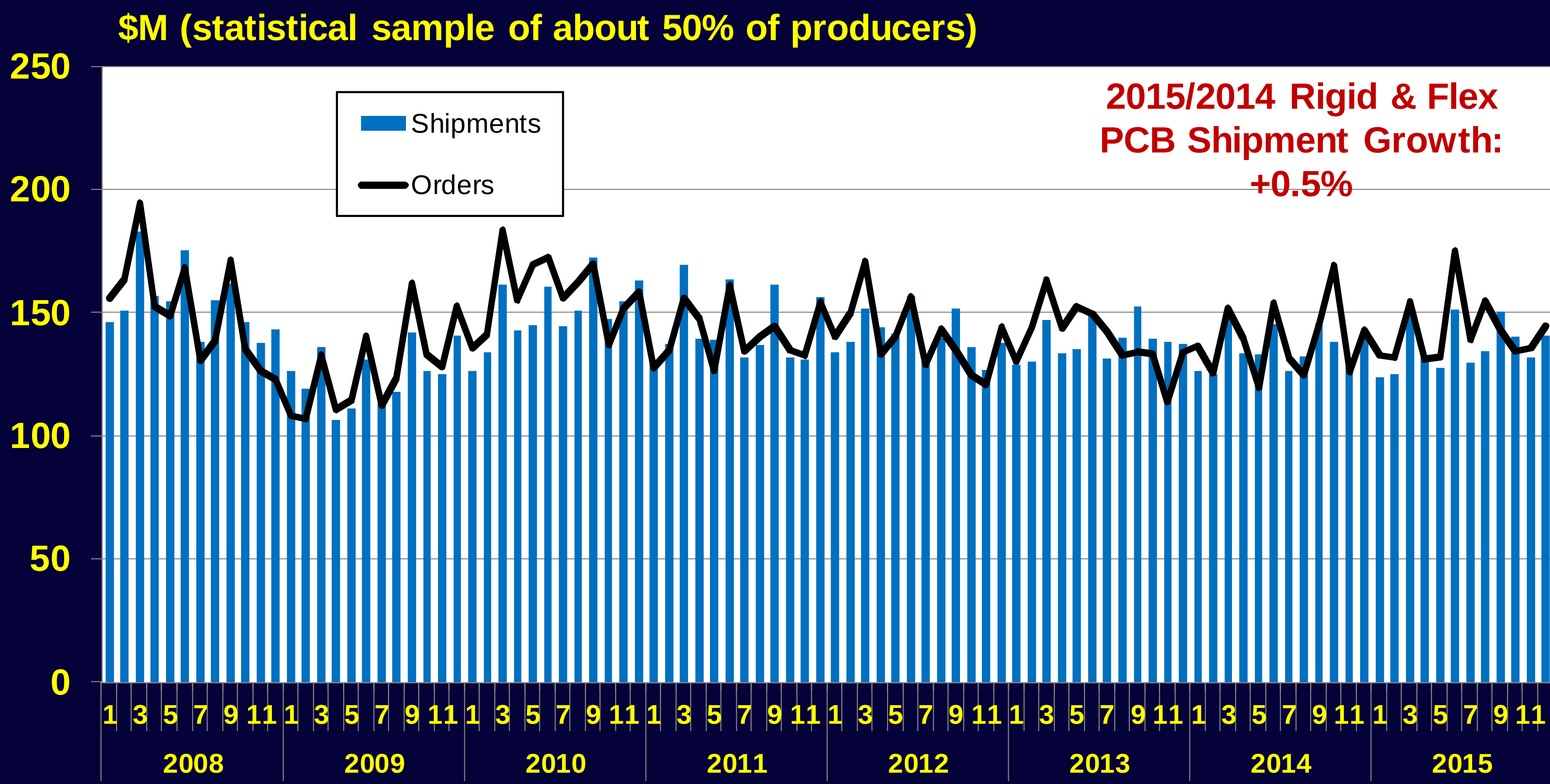
S. Korean PCB Revenues
Composite of 11 Publicly Traded Manufacturers
Quarterly Revenue



Samsung EM, Young Poong, Daeduck, Simm Tech, Isu Petasys, Flexcom, DAP, BH, Samsung Techwin, Korea Circuit

20160129

N American Rigid & Flexible PCB Shipments & Orders

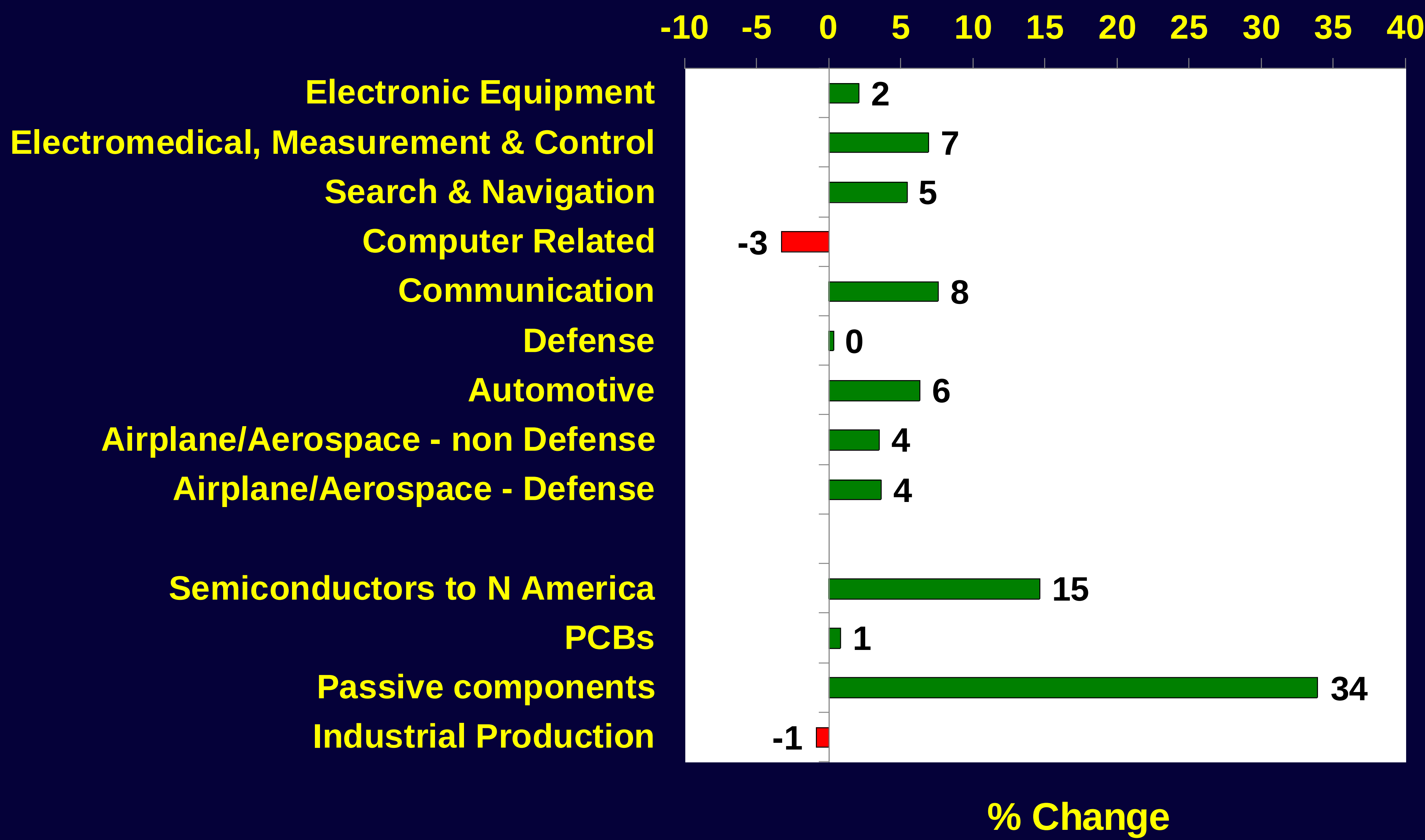


Note: IPC survey captures "market" not domestic production. About 15% of the above represents imported boards resold by N American PCB producers in survey.

IPC

20160204

U.S Electronic Supply Chain Shipment Growth 4Q'15 vs. 4Q'14



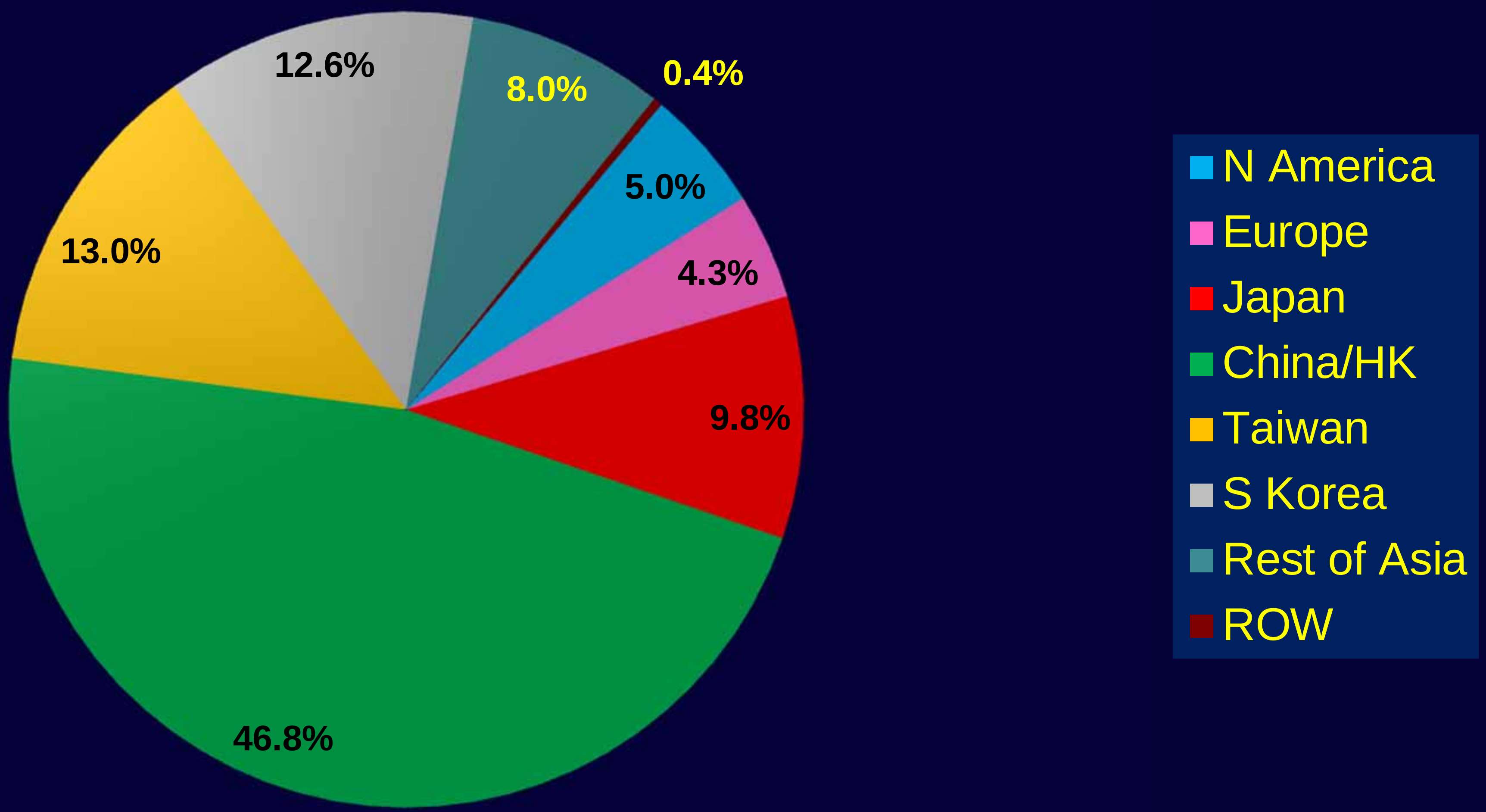
Custer Consulting Group

World PCB Model

20150930

2014 World Total PCB Production by Geographical Area

(US$ M @ Average 2014 Exchange)

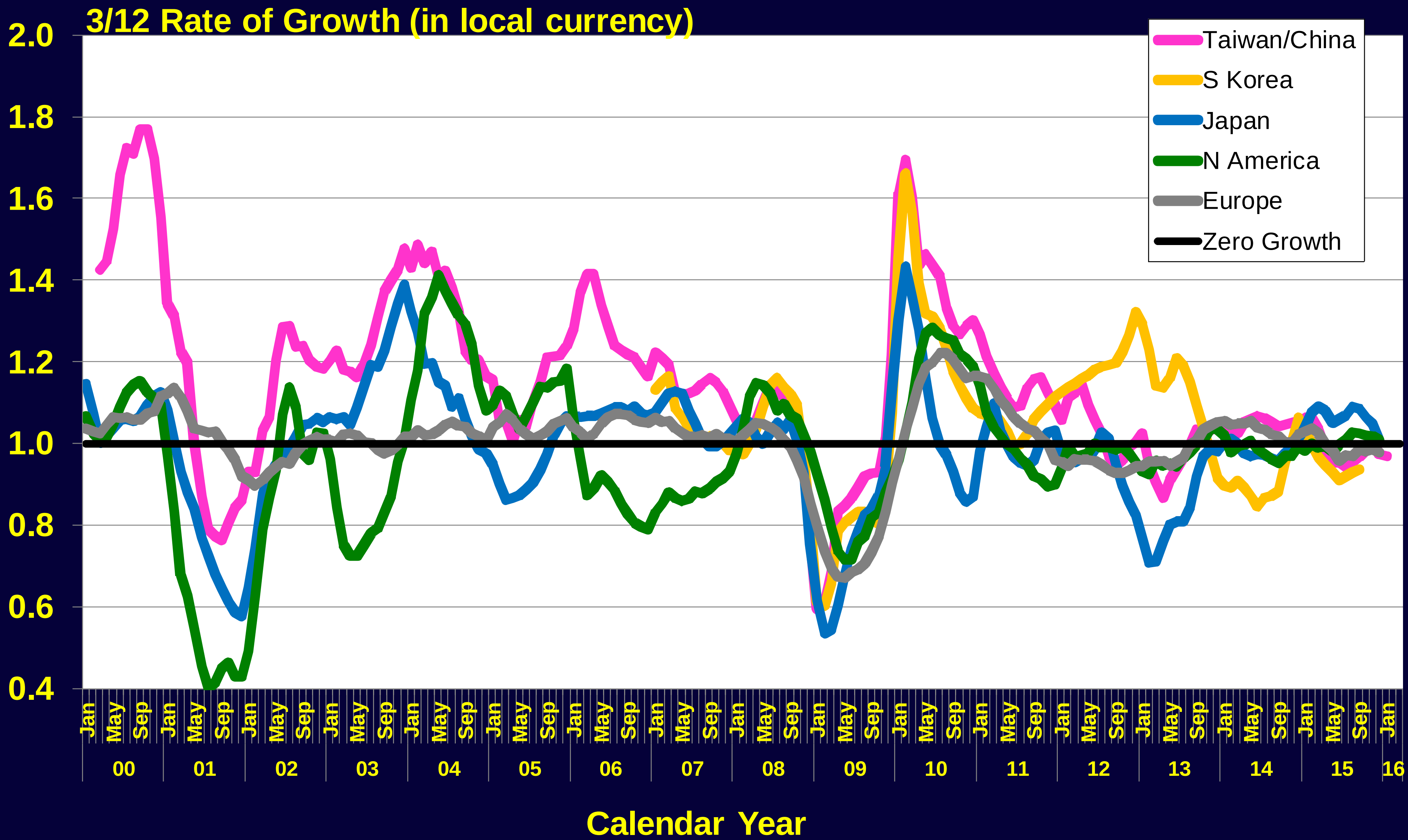


Total: $60.2 Billion

IPC 9/15

20160219

Regional PCB Shipment Growth

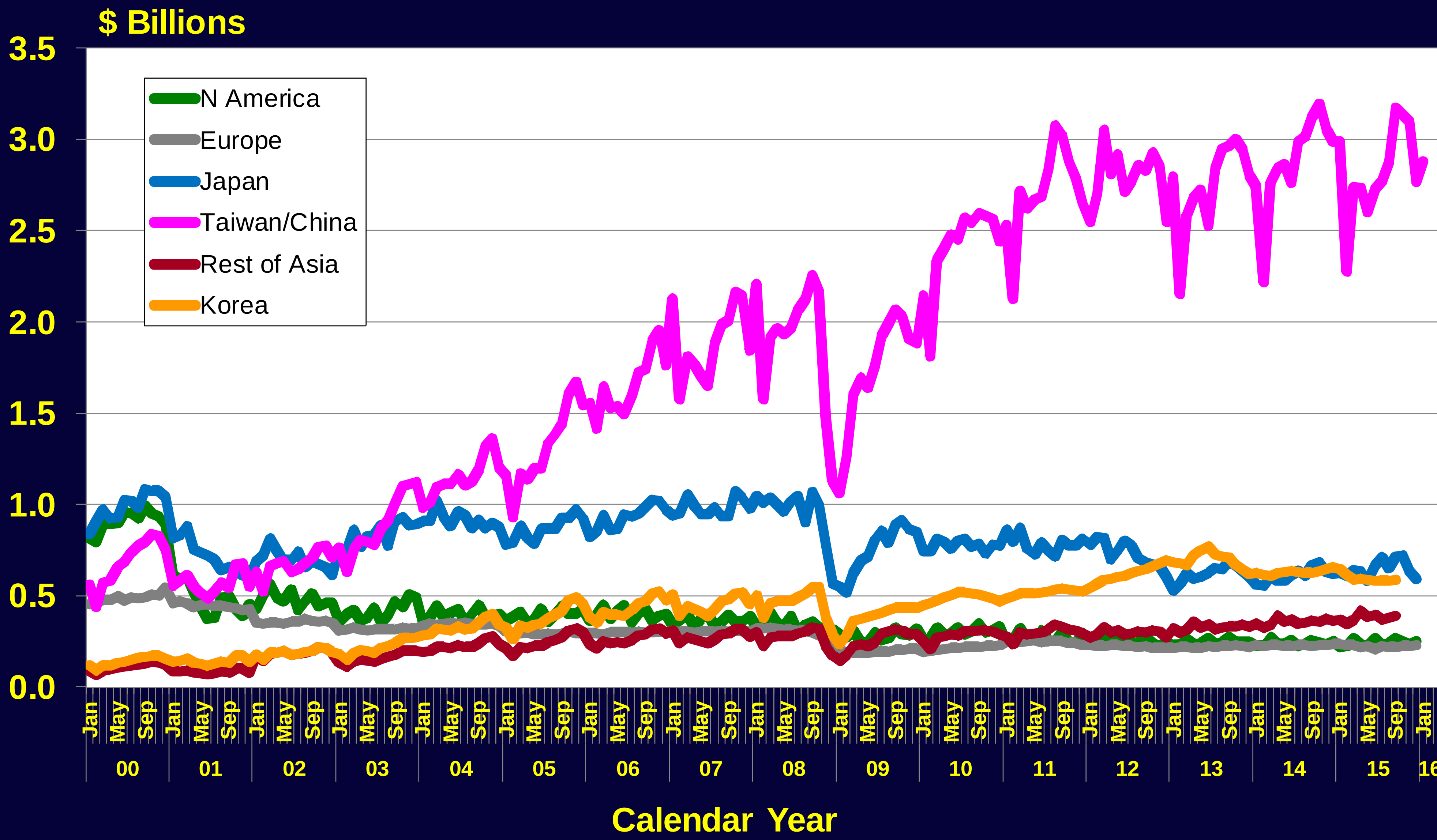


Sources: IPC, JPCA, Taiwan/China composite; Eurostat "wiring devices" for Europe

20160219

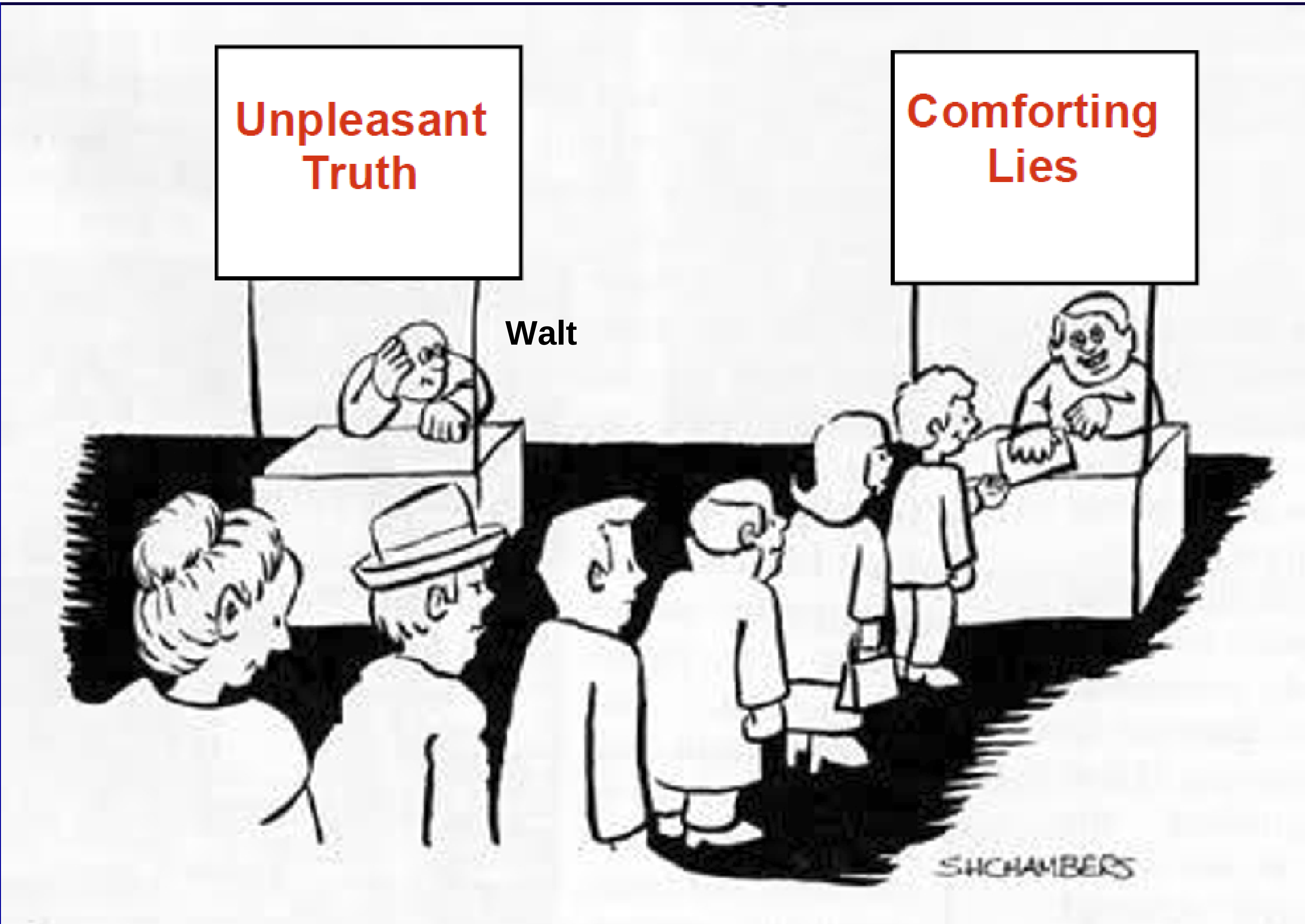
World PCB Monthly Shipments

Converted @ Fluctuating Exchange Rates



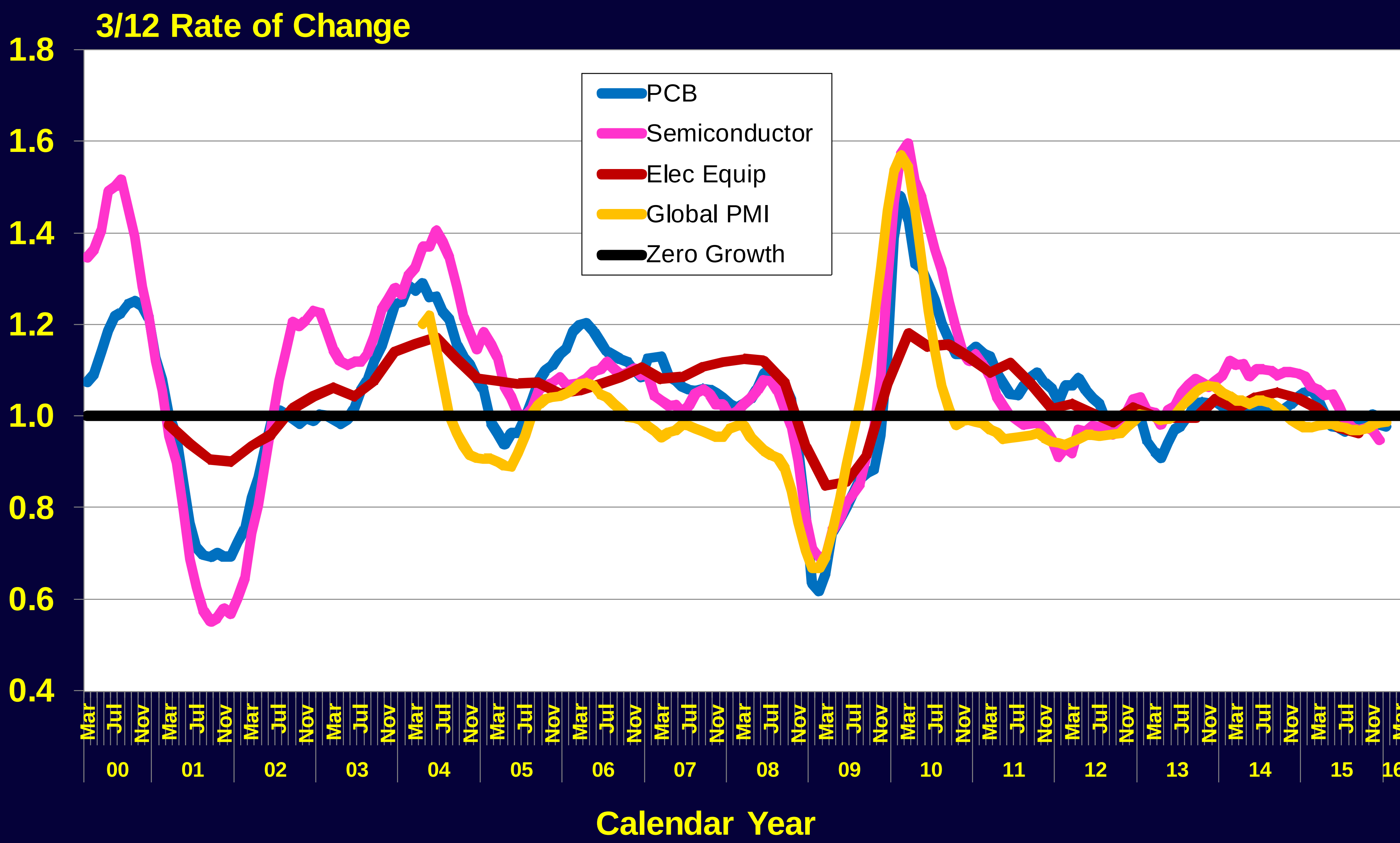
Source: Custer Consulting Group

Outlook


Unpleasant Truth
Walt
Comforting Lies
SHCHAMBERS

Global PMI, Electronic Equipment, PCB & Semiconductor Shipments

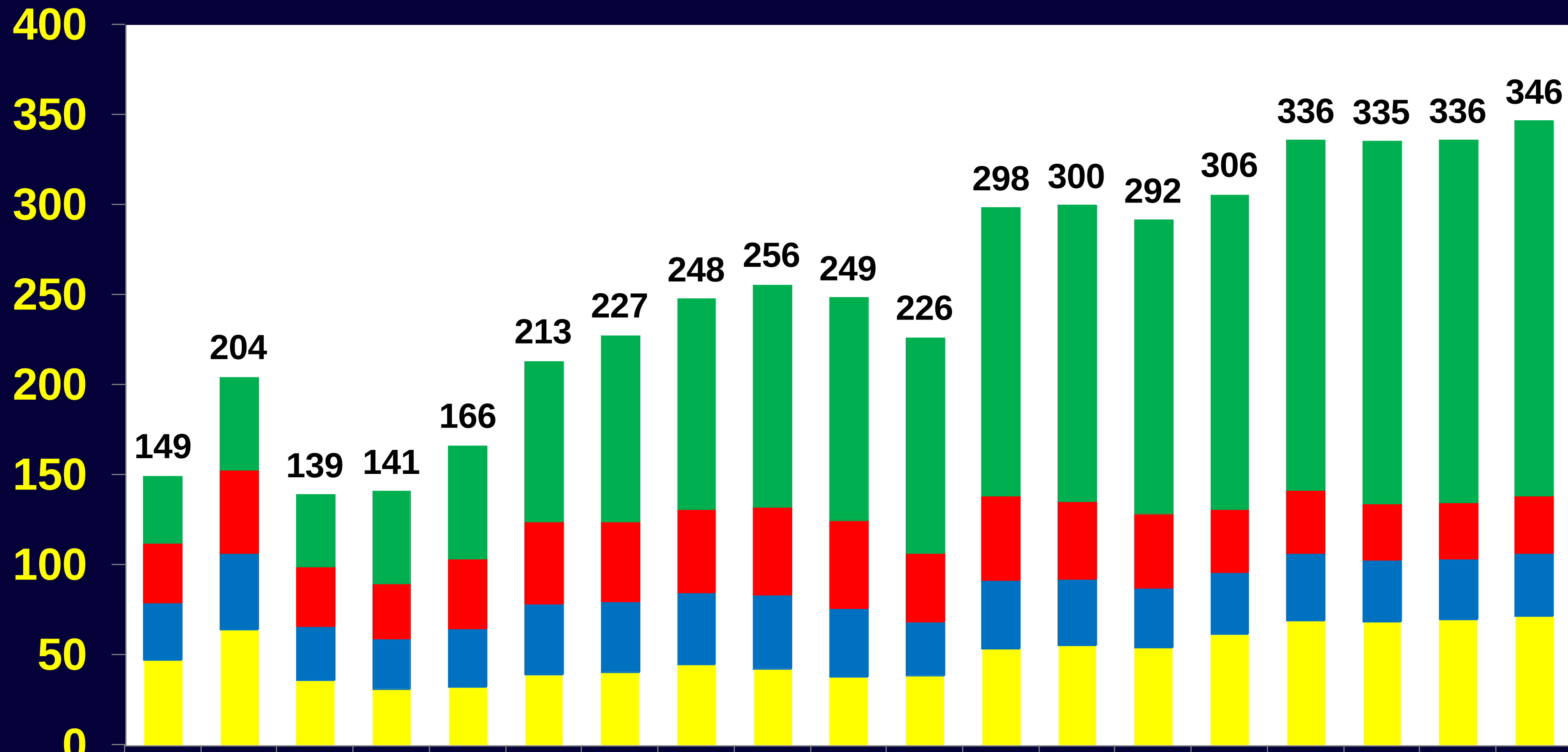
20160216



Source: Custer Consulting Group

20160225

Worldwide Semiconductor Market by Geography
WSTS Forecast

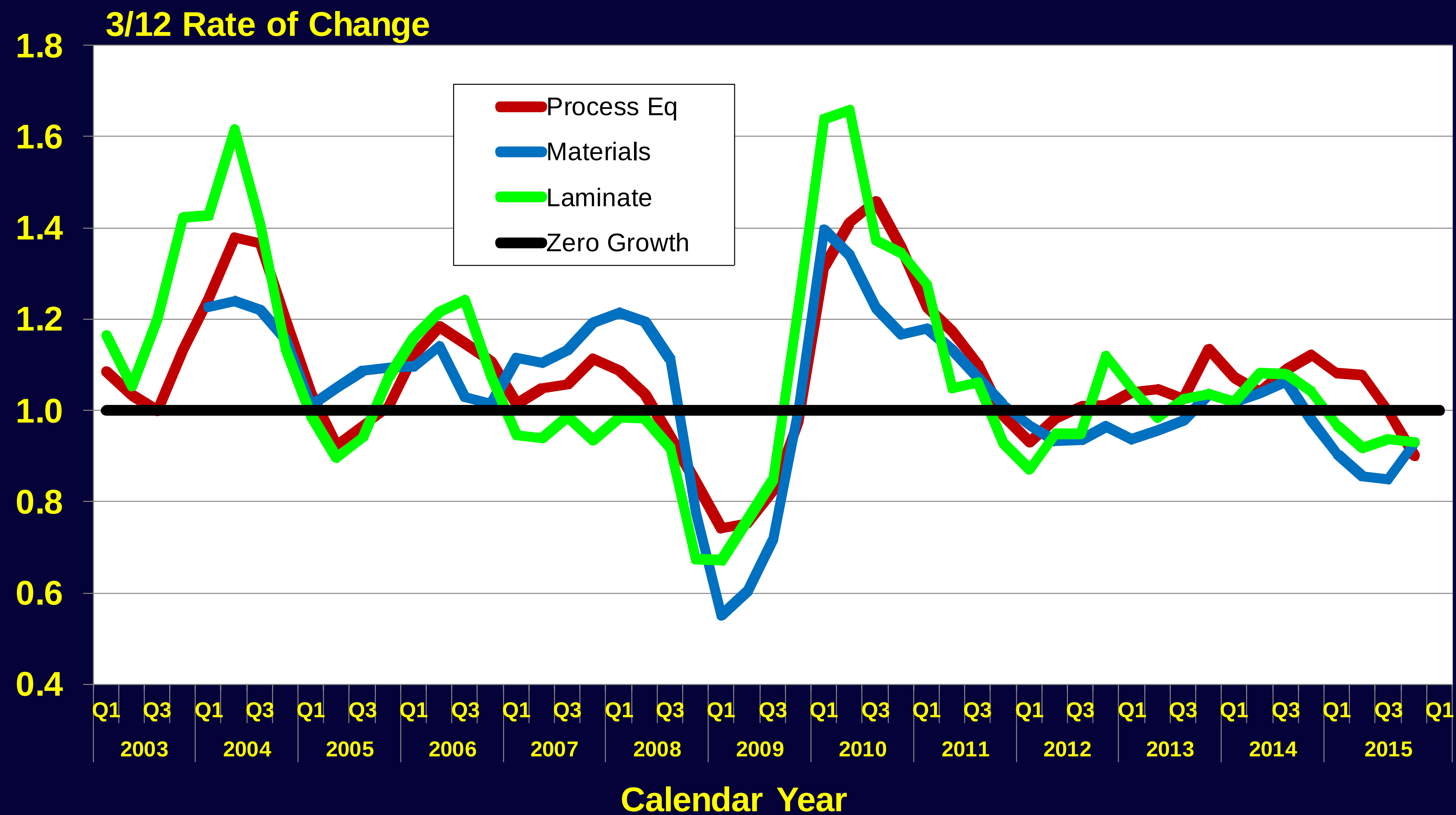


	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total	149.	204.	138.	140.	166.	213.	227.	247.	255.	248.	226.	298.	299.	291.	305.	335.	335.	336.	346.
Asia Pacific	37.2	51.3	39.8	51.2	62.8	88.8	103.	116.	123.	124.	119.	160.	164.	163.	174.	194.	201.	201.	207.
Japan	32.8	46.7	33.1	30.5	38.9	45.8	44.1	46.4	48.8	48.5	38.3	46.6	42.9	41.1	34.8	34.8	31.1	31.3	32.1
Europe	31.9	42.3	30.2	27.8	32.3	39.4	39.1	39.9	41.0	38.2	29.9	38.1	37.4	33.2	34.9	37.5	34.3	33.7	34.5
Americas	47.5	64.1	35.8	31.3	32.3	39.1	40.7	44.9	42.3	37.9	38.5	53.7	55.2	54.4	61.5	69.3	68.7	69.7	72.0

WSTS 2/16

20160223

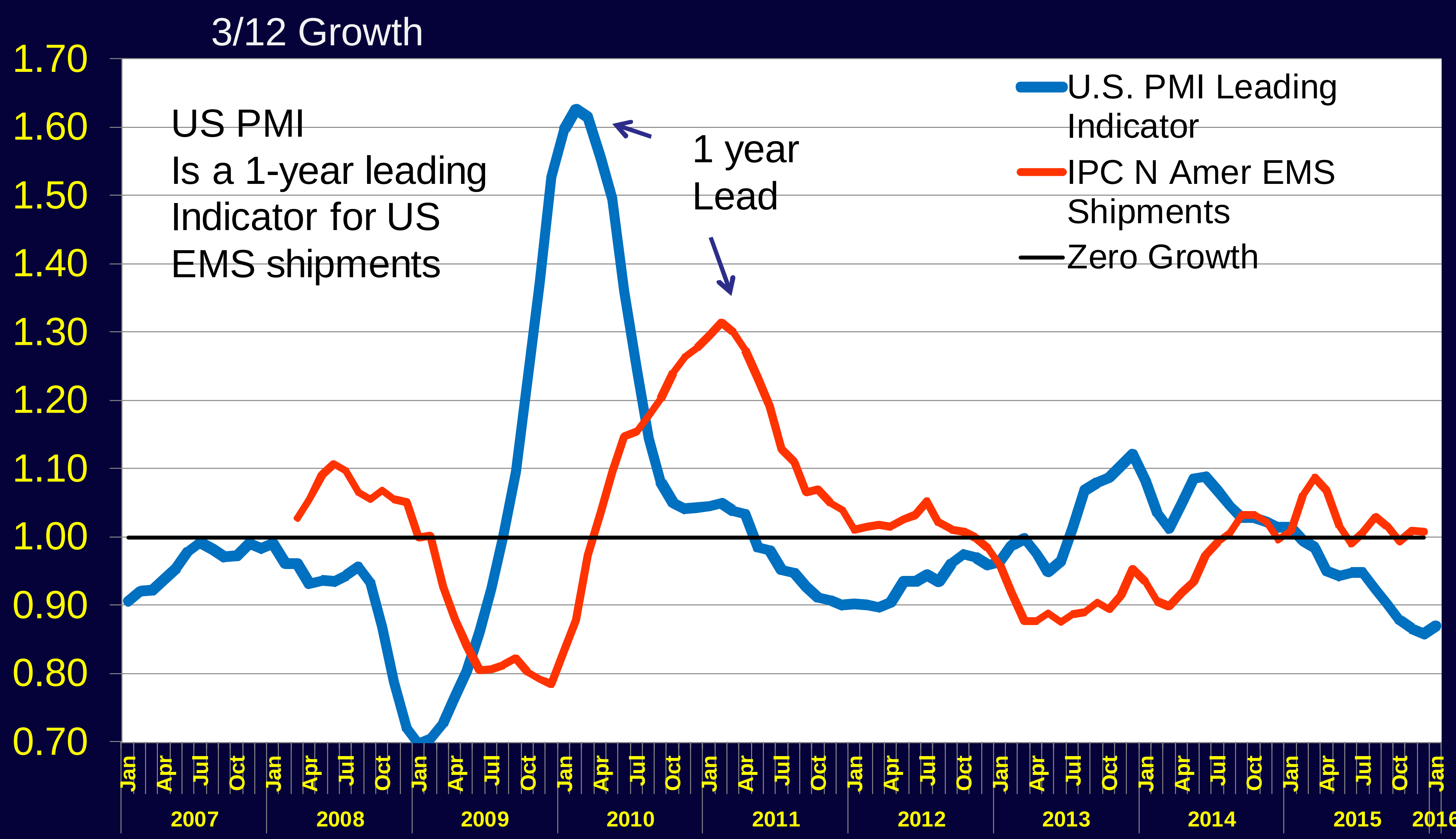
Global Growth Rates
Process Equipment, Materials & Laminate



Company Financials of 12 Laminate suppliers, 13 material suppliers & 8 Process Equipment Suppliers

20160224

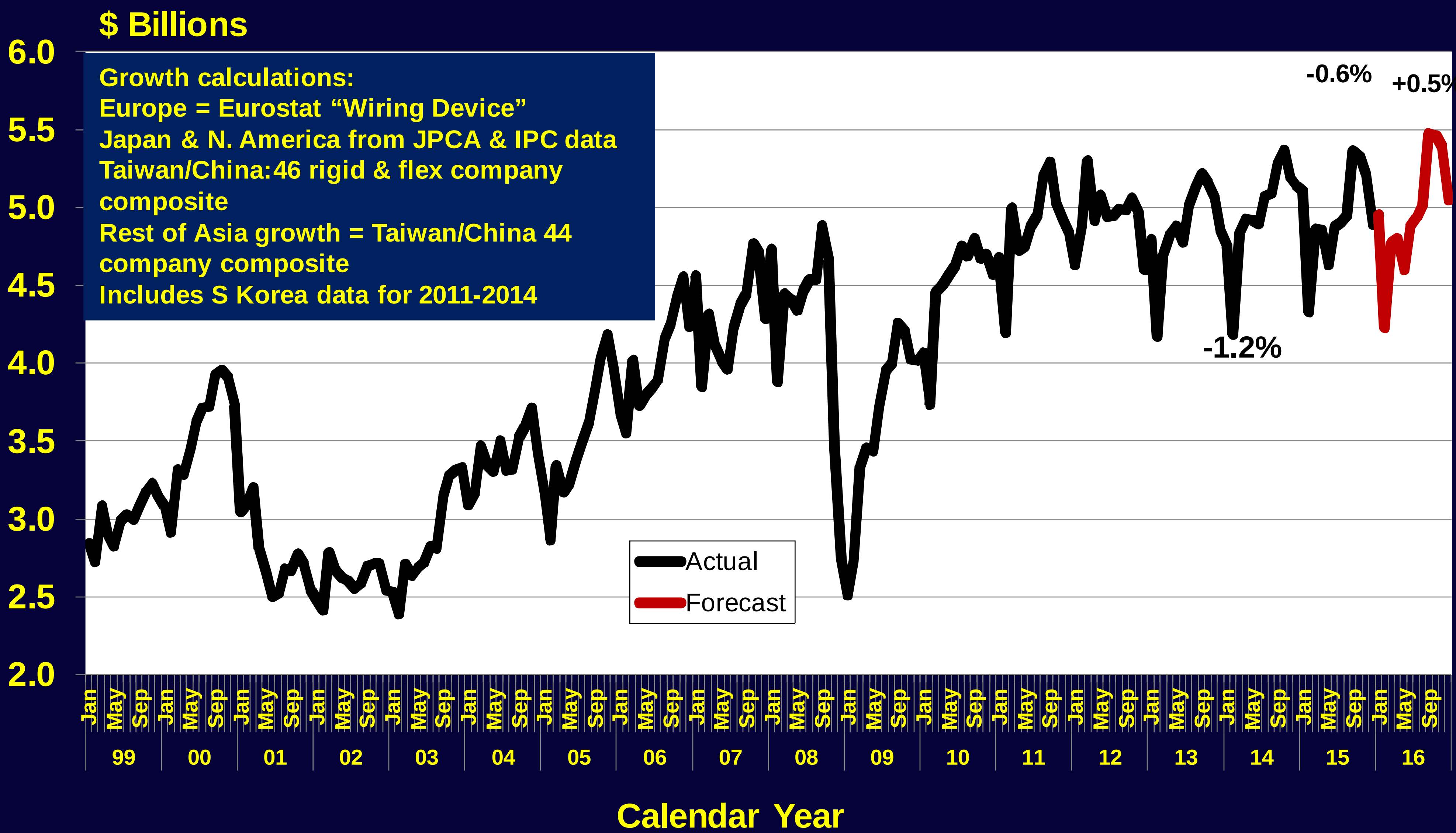
U.S PMI Leading Index vs
N American Small-Medium Company EMS Shipments



ISM & IPC

World PCB Shipments (with forecast)

Converted @ Fluctuating Exchange Rates

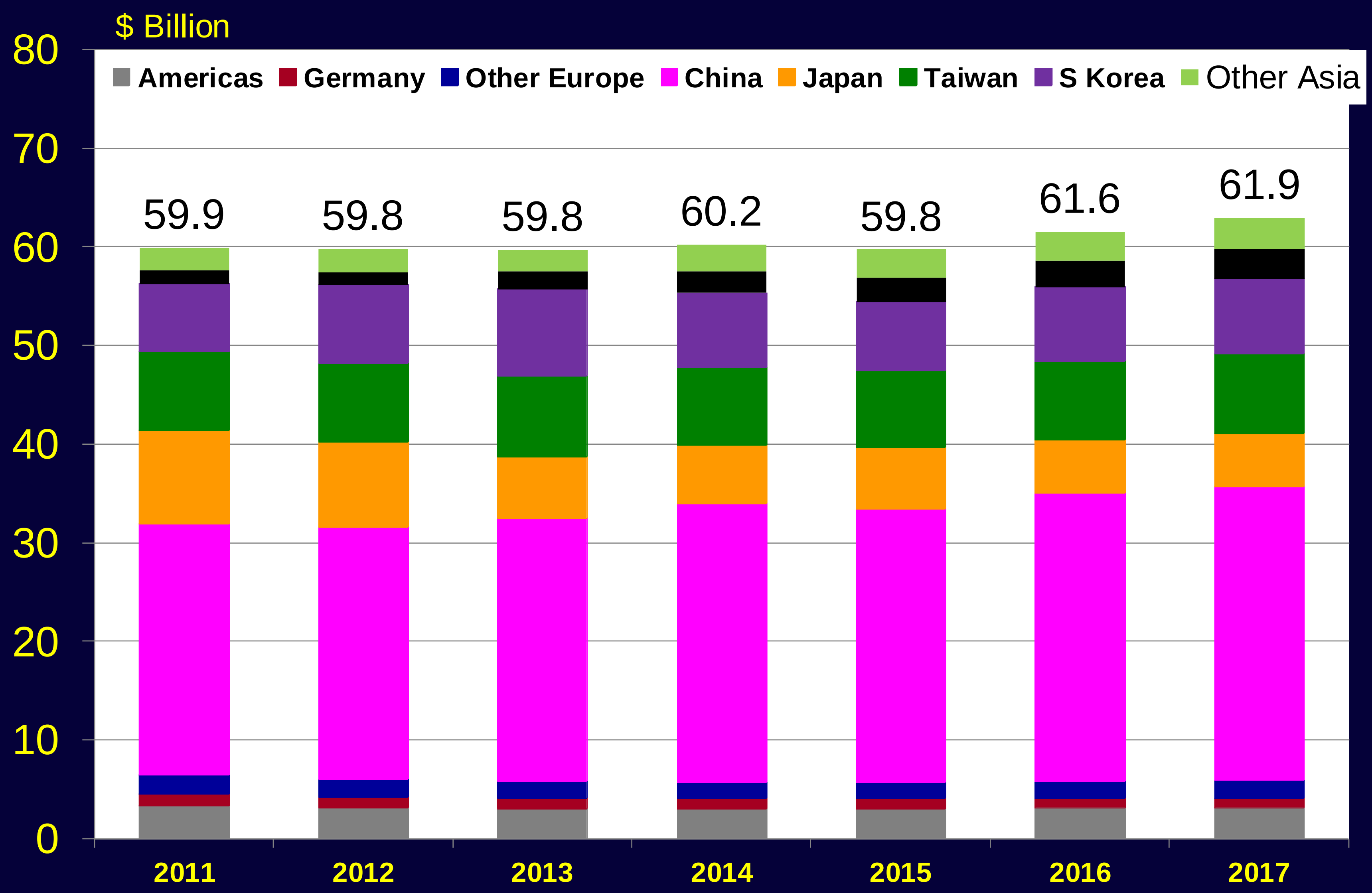


Source: Custer Consulting Group - 2010 base year expanded by monthly growth of N. American, European, Japanese, Korean & Taiwan/China monthly PCB shipments

20151004

World Rigid & Flex PCB Production

Converted @ 10/15 Exchange Rates



Custer Consulting Group 2/16

Conclusions

2015 global growth slowed vs 2014 with many Asia/Pacific produced consumer driven products seeing weakened demand

2016 is off to a modest start

Personal computer, media tablet and digital camera sales have declined and smartphone growth has slowed

New high volume products are emerging but are not yet contributing significantly to global volumes

Strong dollar is negatively impacting US$ denominated global growth calculations

Leading indicators are useful for tracking the recovery regionally

Don't Shoot the Messenger

20111007

Custer Consulting Group Products

Daily News Services (6 days/week)
- Global electronics supply chain
- Solar/Photovoltaic supply chain

Business Outlook
- Market charts & data
  - Global market
  - OEMs
  - Components, EMS, ODM, materials & process equip
  - Solar/Photovoltaic
- Weekly Market Comments with latest charts