

# ***Economy + Internet Trends***

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# Economy + Internet Trends Outline

- **Financial Market + Economy Update / Dashboard**
  1. Financial Markets Have Rebounded, Technology Sector = Relatively Impressive.
  2. Leading Economic Indicators Seem to Have Turned Corner, Coincident / Lagging Indicators Still Weak.
- **Mobile = Incremental Driver of Internet User / Usage Growth**
  1. Mobile Internet Usage Is and Will Be Bigger than Most Think.
  2. Apple Mobile Share Should Surprise on Upside Near-Term.
  3. Next Generation Platforms (Social Networking + Mobile) Driving Unprecedented Change in Communications + Commerce.
  4. Mobile in Japan + Desktop Internet Provide Roadmaps for Mobile Growth + Monetization.
  5. 3G Adoption / Trends Vary By Geography.
  6. Carriers in USA / W. Europe Face Surging Network Demand But Uncertain Economics.
  7. Regulators Can Help Advance / Slow Mobile Internet Evolution.
  8. Mobile-Related Share Shifts Will Create / Destroy Material Shareholder Wealth.

# Financial Market + Economy Update / Dashboard

Financial Markets Have Rebounded,  
Technology = Relatively Impressive.

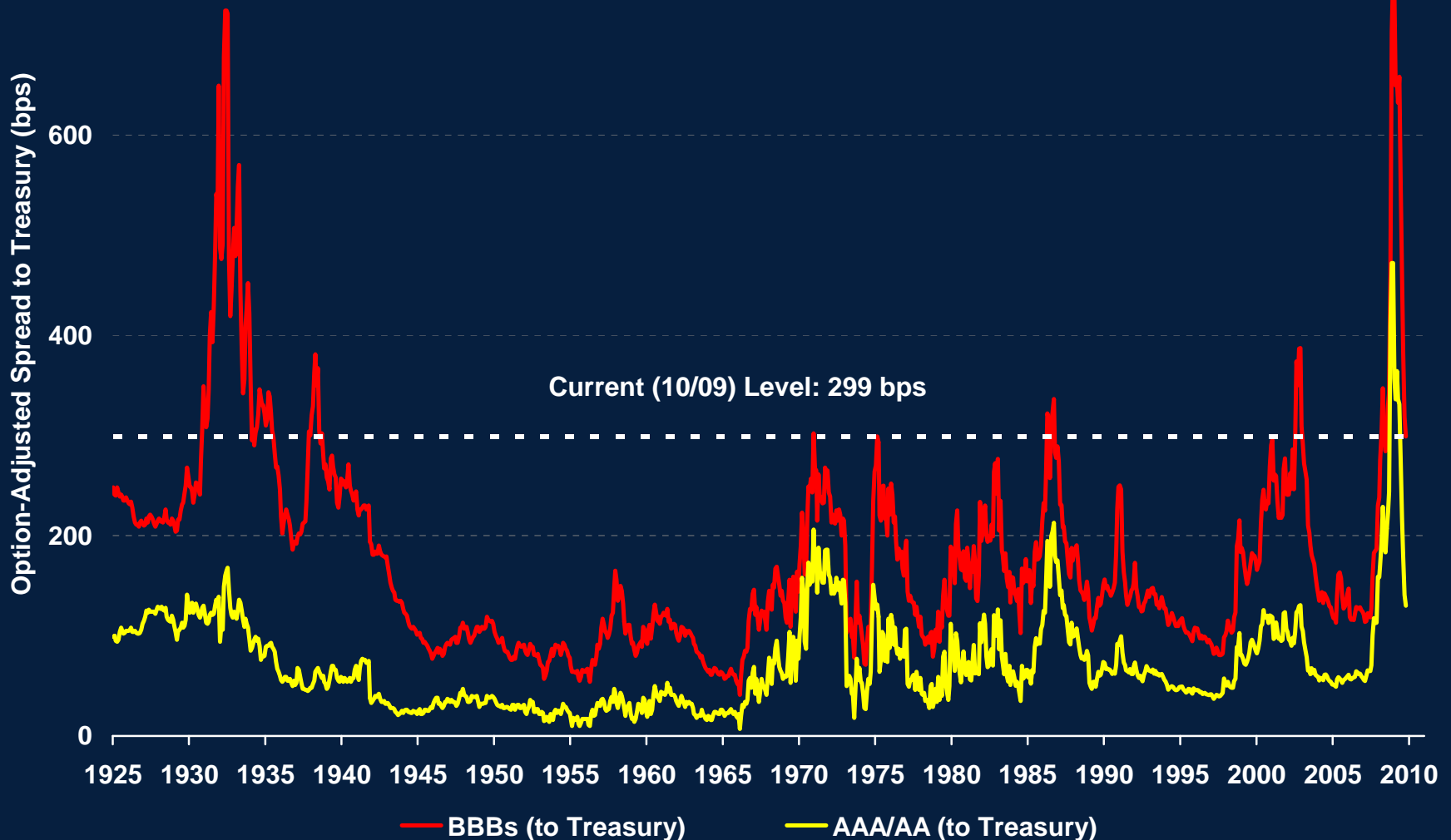
# Stock Market = Often a Leading Indicator of Economic Growth

Russia +181% vs. 36-Month Low / India +109% / China +72% / USA (S&P500) +59%



# Credit Spreads Narrowing = Easier to Borrow Money But Borrowing Cost Still High vs. 'Normal'

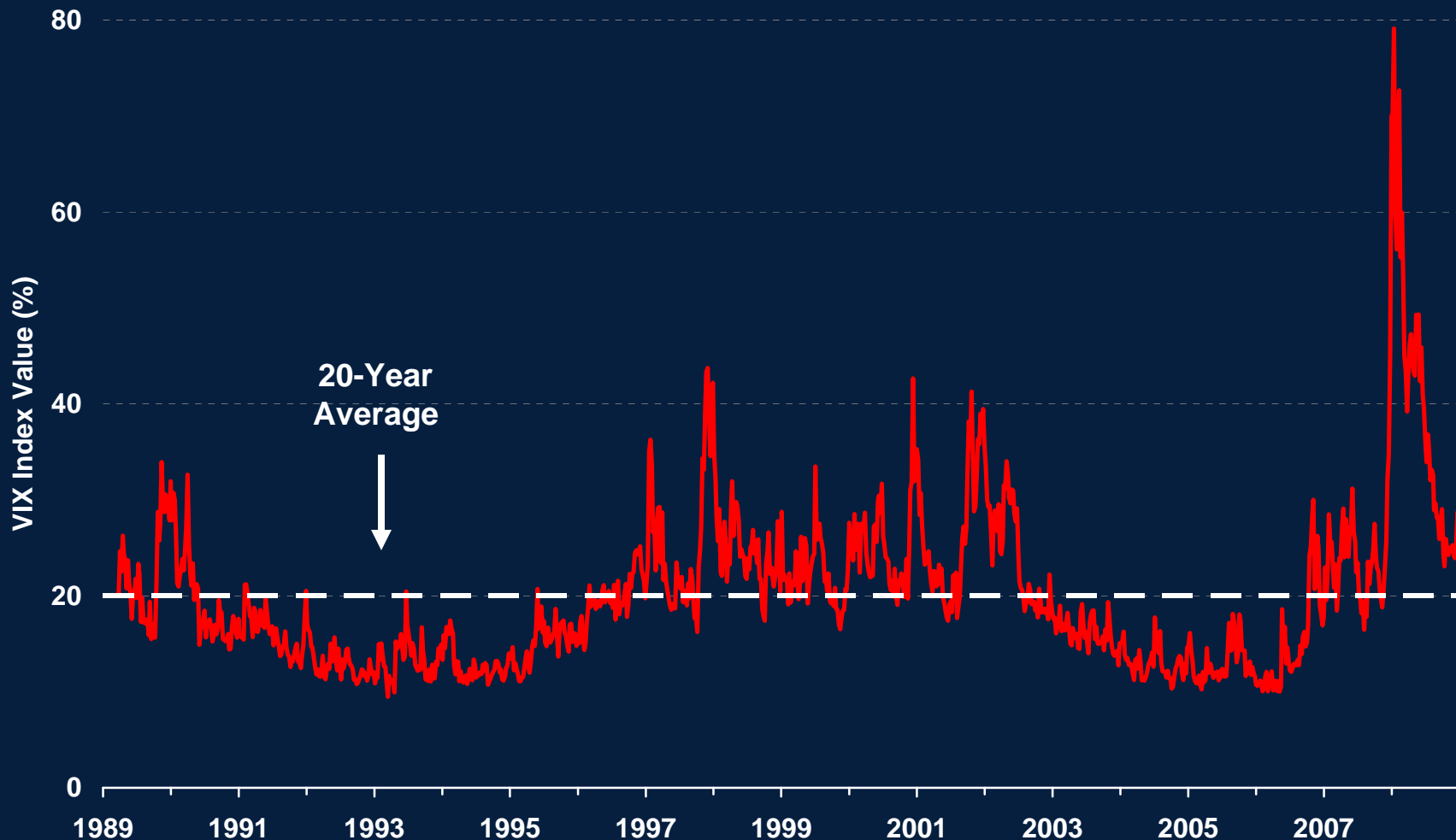
Credit Spreads (to U.S. Treasury Securities), 1925 – 2009 YTD



# Stock Market Volatility Implies Relatively Stable Outlook

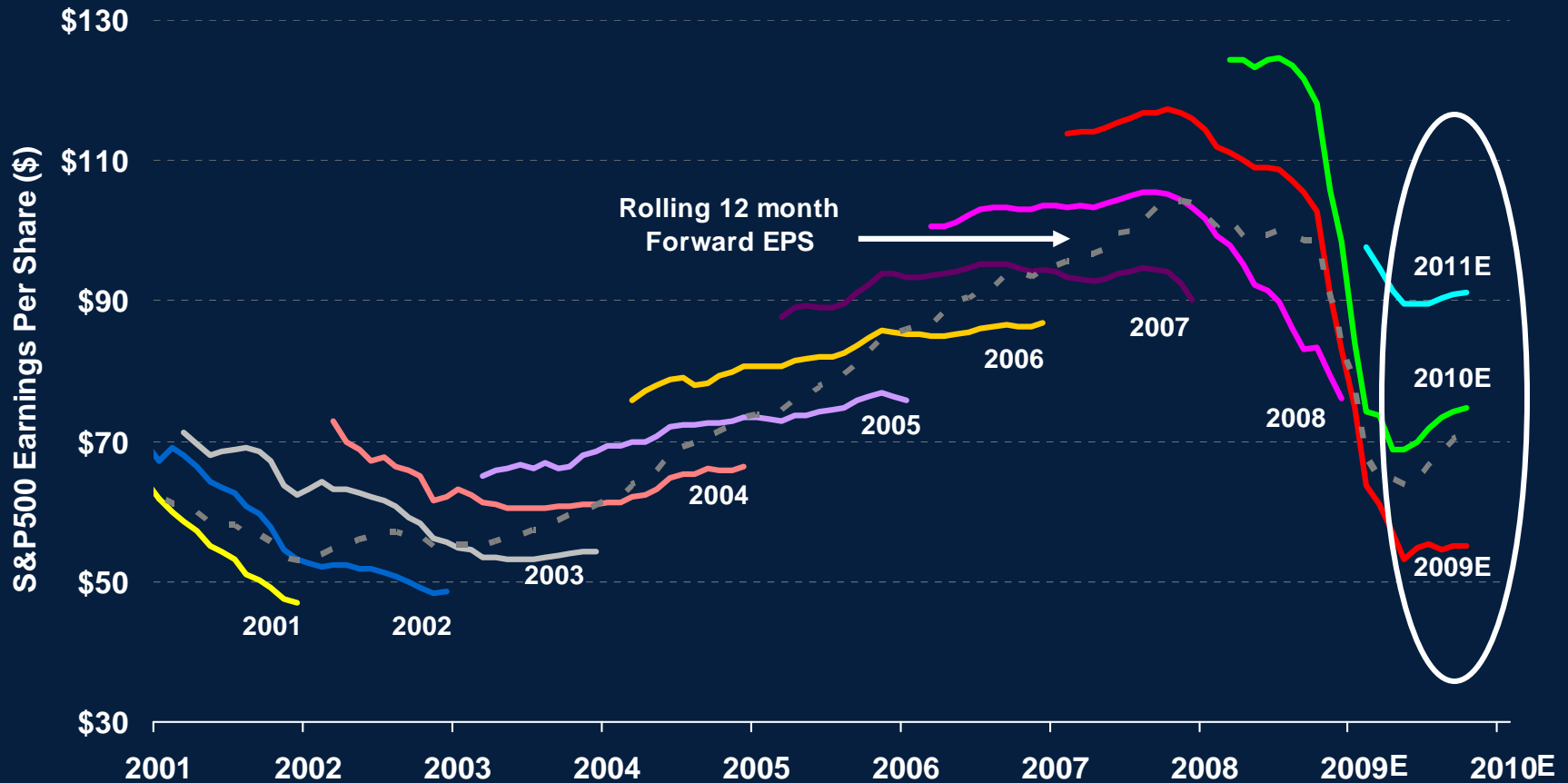
## Volatility Index (VIX) Has Returned Near 'Normal'

Chicago Board Options Exchange (CBOE) Volatility Index, 1990 – 2009 YTD



# S&P500 Positive Earnings Estimate Revisions Rising After Largest Cuts in 20 Years (in C2008 / CQ1:09)

Consensus S&P 500 EPS Trends, 2001 – 2011E



# Technology Sector Shining Relative to Others

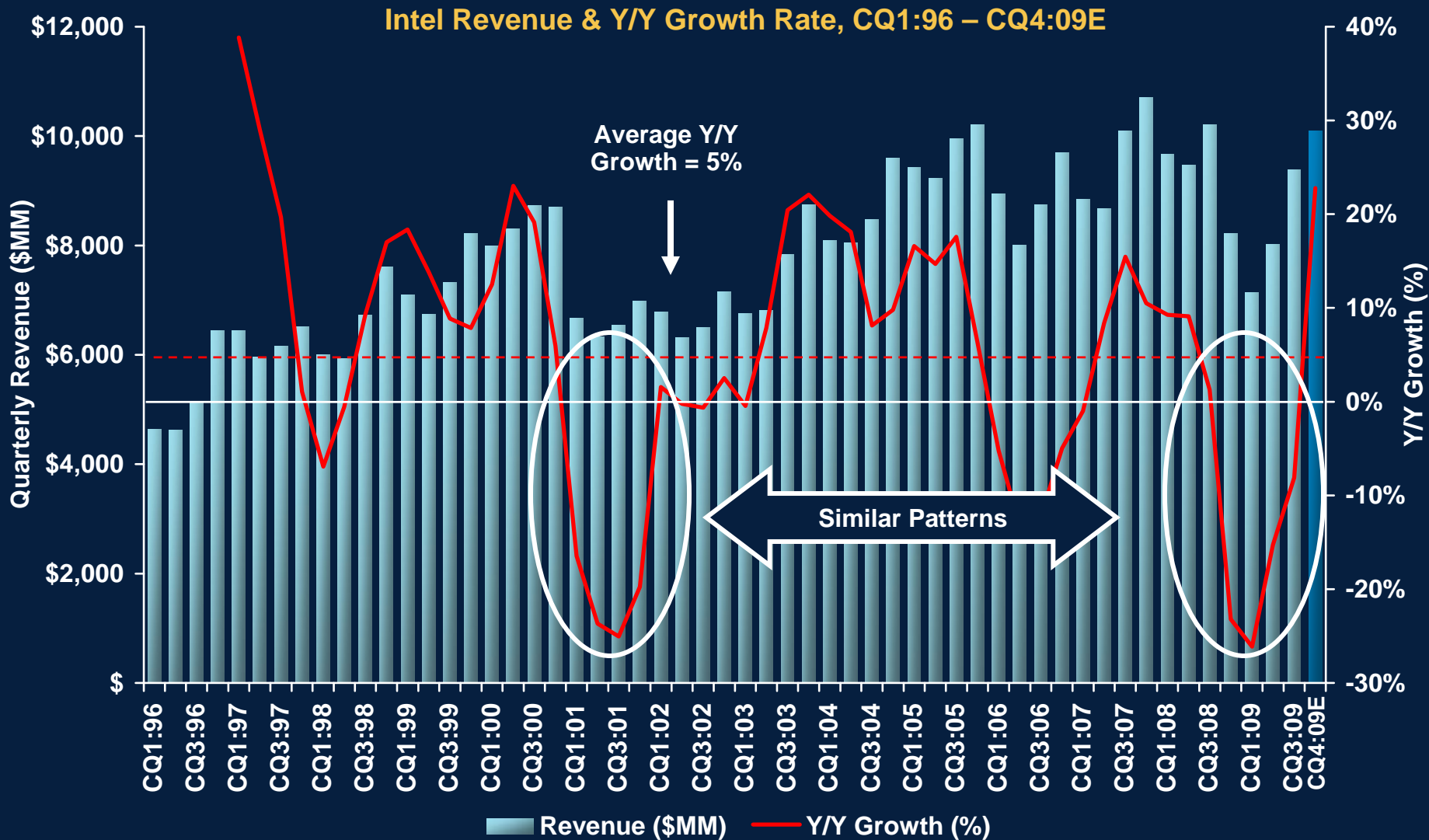
## 19% of S&P500 Market Capitalization vs. 15% in 2008

S&P 500 Sector Market Capitalization Share, 1995 – 2009

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*
<b>Information Technology</b>	9%	12%	12%	18%	29%	21%	18%	14%	18%	16%	15%	15%	17%	15%	19%
<b>Financials</b>	13	15	17	15	13	17	18	20	21	21	21	22	18	13	16
<b>Health Care</b>	11	10	11	12	9	14	14	15	13	13	13	12	12	15	13
<b>Energy</b>	9	9	8	6	6	7	6	6	6	7	9	10	13	13	12
<b>Consumer Staples</b>	13	13	12	11	7	8	8	9	11	10	9	9	10	13	11
<b>Industrials</b>	13	13	12	10	10	11	11	12	11	12	11	11	12	11	10
<b>Consumer Discretionary</b>	13	12	12	13	13	10	13	13	11	12	11	11	8	8	9
<b>Utilities</b>	5	4	3	3	2	4	3	3	3	3	3	4	4	4	4
<b>Materials</b>	6	6	4	3	3	2	3	3	3	3	3	3	3	3	4
<b>Telecom Services</b>	9	7	7	8	8	5	5	4	3	3	3	4	4	4	3
<b>S&amp;P 500 Mkt Cap (\$T)</b>	\$5	\$6	\$8	\$10	\$12	\$12	\$10	\$8	\$10	\$11	\$11	\$13	\$13	\$8	\$10

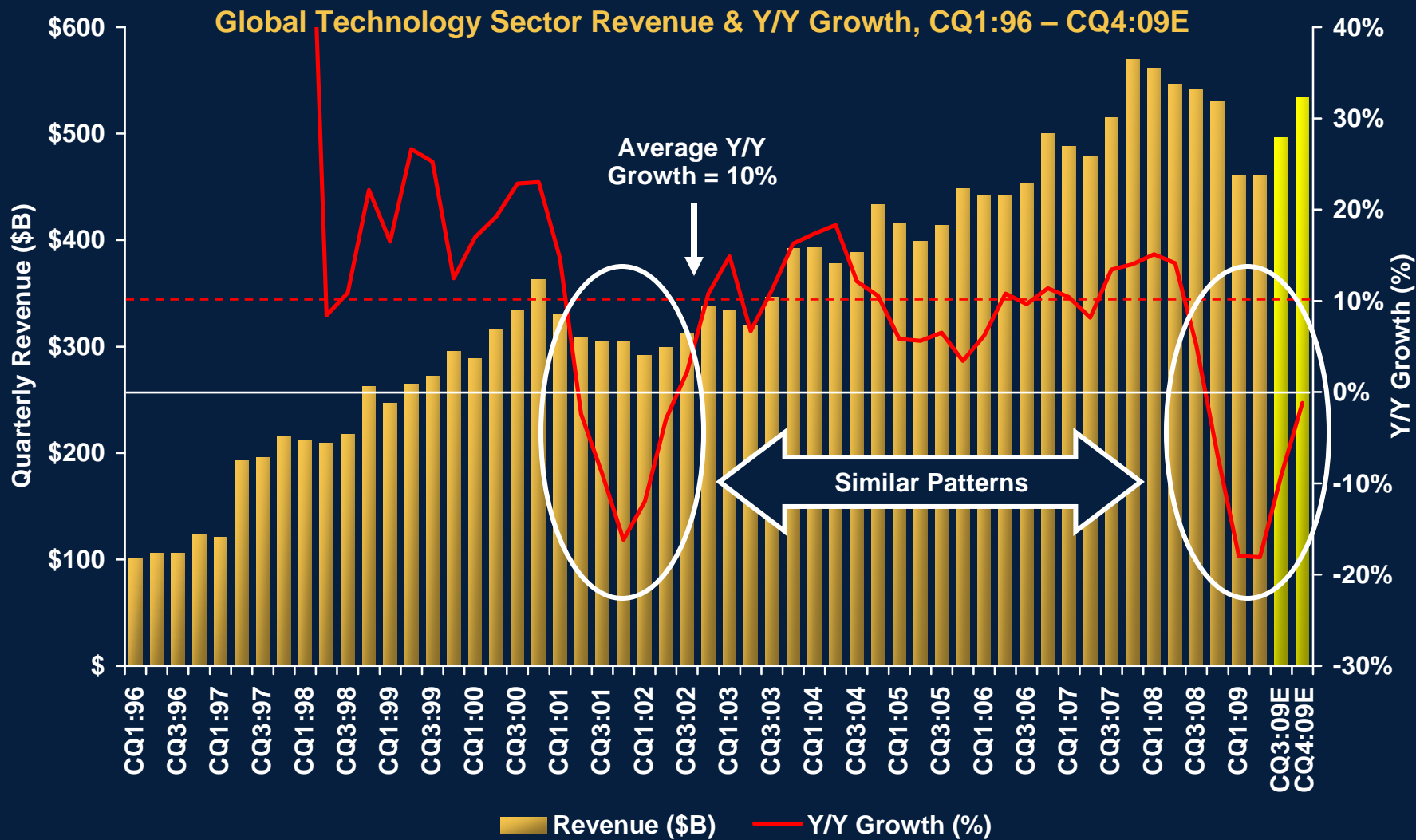
# Intel as Proxy For Technology Spending

CQ3:09 Revenue (+17% Q/Q) = Highest CQ3 Sequential Growth in 30+ Years



# Global Technology Revenue

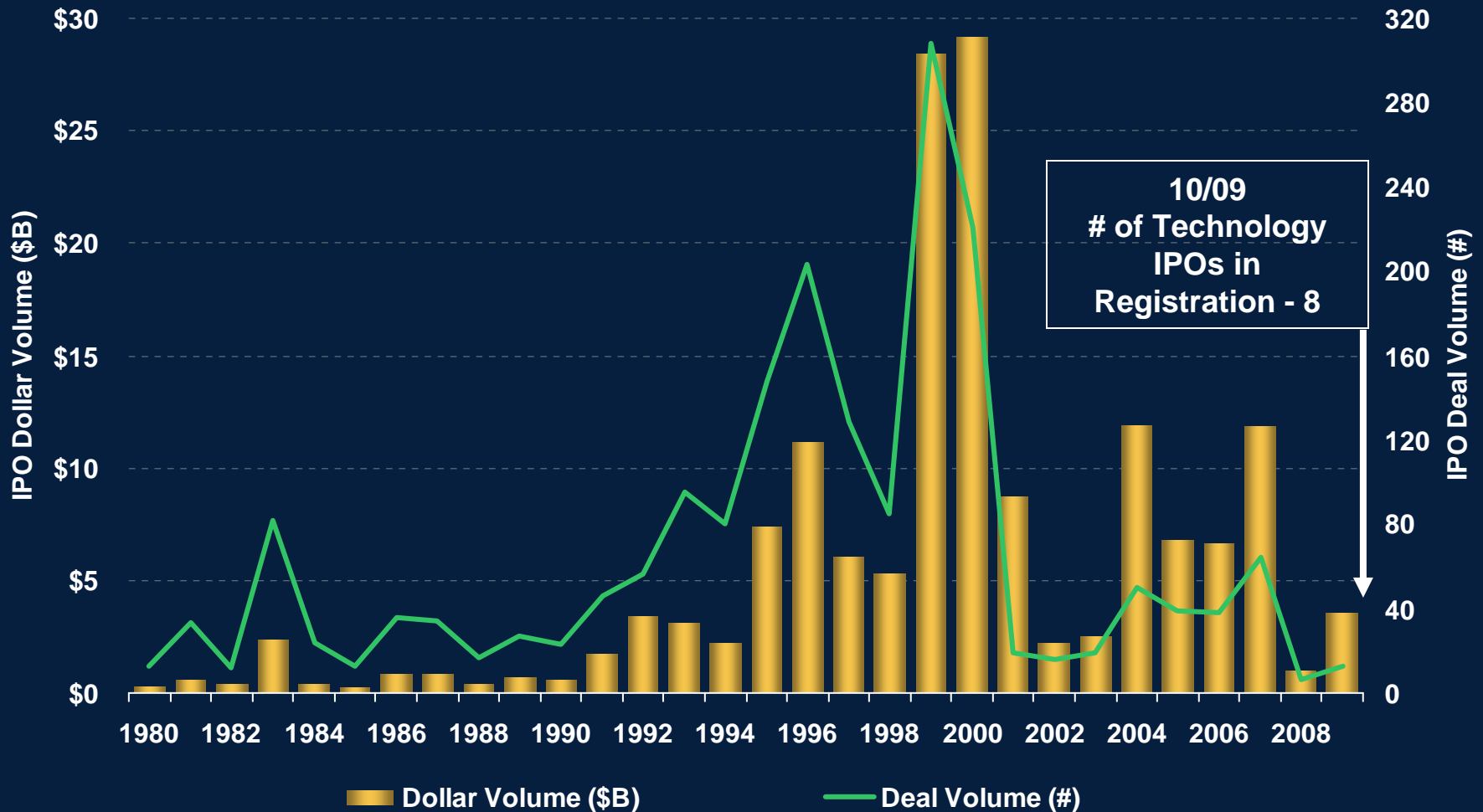
## Estimates Imply Recovery...So Far, a 2001 Redux



# Technology IPO Market

## 2x Deal Volume...4x Dollar Volume YTD vs. 2008

Annual Technology IPO Dollar Volume & Deal Volume, 1980 – 2009 YTD



10/09  
# of Technology  
IPOs in  
Registration - 8

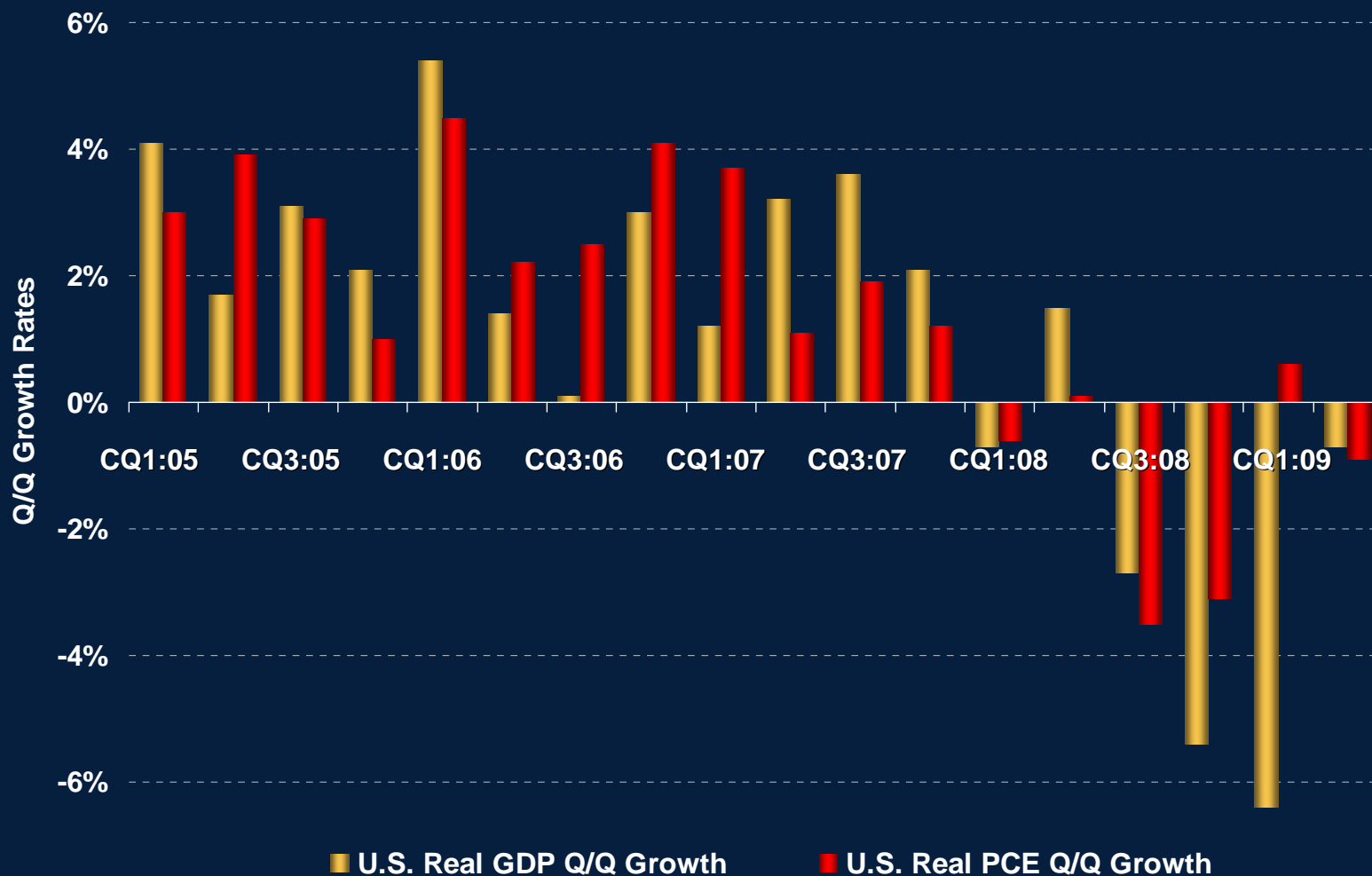
# Financial Market + Economy Update / Dashboard

Leading Economic Indicators Seem to Have Turned Corner,  
Coincident / Lagging Indicators Still Weak.

# Domestic GDP + Consumption

## Trends Becoming Less Bad

U.S. Real GDP vs. Real Personal Consumption Expenditures (PCE)  
Q/Q % Change, CQ1:05 – CQ2:09



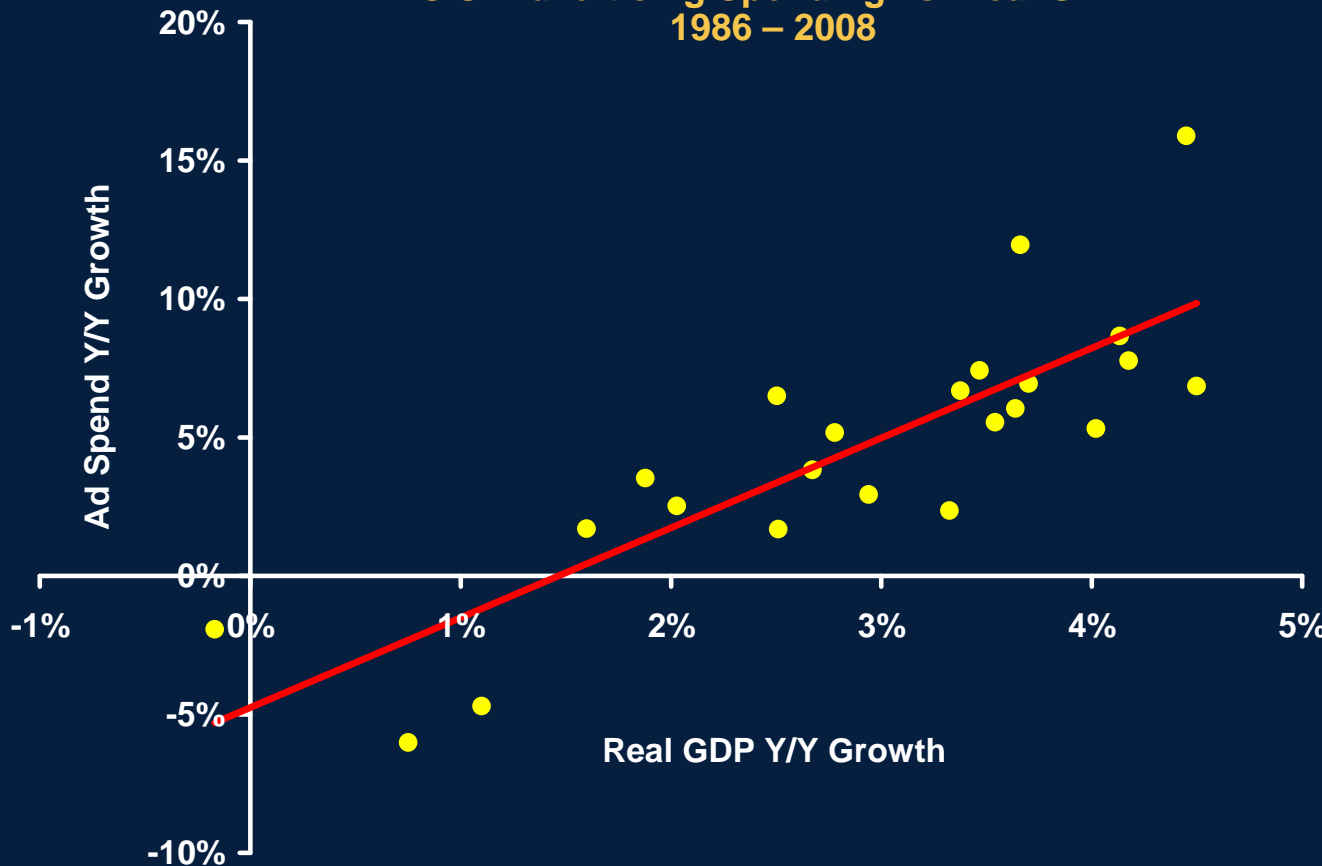
# Global GDP

## Growth Forecasts Have Turned Positive...Led by China / India

Country / Region	2007	2008	IMF Forecasts, 10/09		Difference from 7/09 IMF Forecasts	
			2009E	2010E	2009E	2010E
USA	2.0%	0.4%	-2.7%	1.5%	0.3%	0.6%
Euro zone	2.7	0.7	-4.2	0.3	0.6	0.6
UK	2.6	0.7	-4.4	0.9	-0.2	0.7
China	13.0	9.0	8.5	9.0	1.0	0.5
India	9.4	7.3	5.4	6.4	0.0	-0.1
Russia	8.1	5.6	-7.5	1.5	-1.0	0.0
Brazil	5.7	5.1	-0.7	3.5	0.6	1.0
Developed Markets <sup>(1)</sup>	2.7	0.6	-3.4	1.3	0.4	0.7
Emerging Markets <sup>(2)</sup>	8.3	6.0	1.7	5.1	0.2	0.4
<b>World</b>	<b>5.2</b>	<b>3.0</b>	<b>-1.1</b>	<b>3.1</b>	<b>0.3</b>	<b>0.6</b>

# Advertising Spending Should Grow in 2010E Based on Regression Analysis

**U.S. Advertising Spending vs. Real GDP  
1986 – 2008**



$$y = 3.2458x - 0.0475$$

$$R^2 = 0.6887$$

y – ad spend growth  
x – real GDP growth

If real GDP Y/Y growth is...	Ad spend Y/Y growth could be...
------------------------------	---------------------------------

5%	11%
4	8
3	5
2	2
1	-2
0	-5
-1	-8
-2	-11
-3	-14
-4	-18
-5	-21

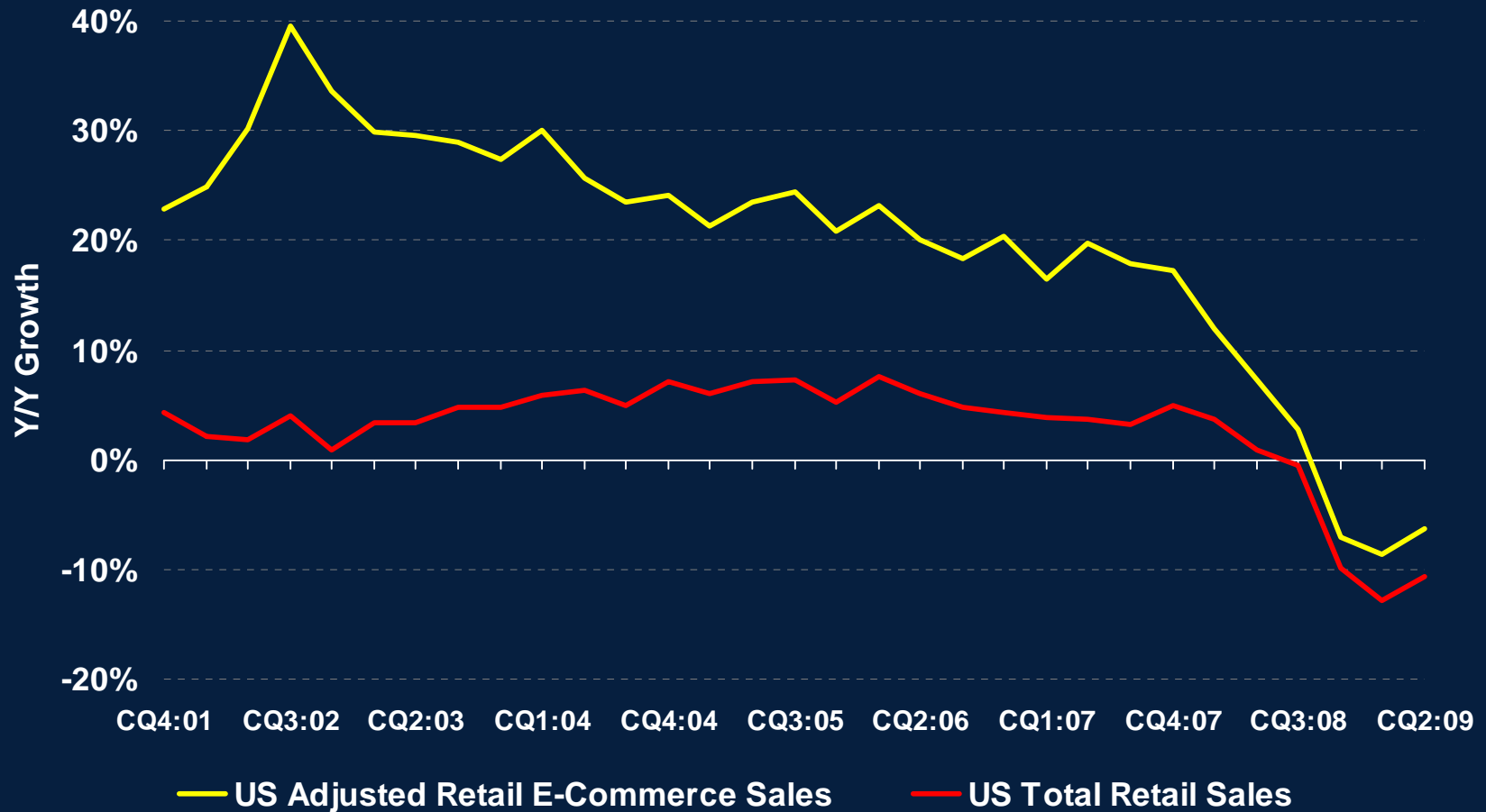
Current MS Estimate Range

● U.S. Ad Spend vs. Real GDP Y/Y Growth  
— Linear Regression Line ( $y = 3.2458x - 0.0475$ ,  $R^2 = 0.6887$ )

# Retail Sales + eCommerce

## Growth Troughed in CQ1:09

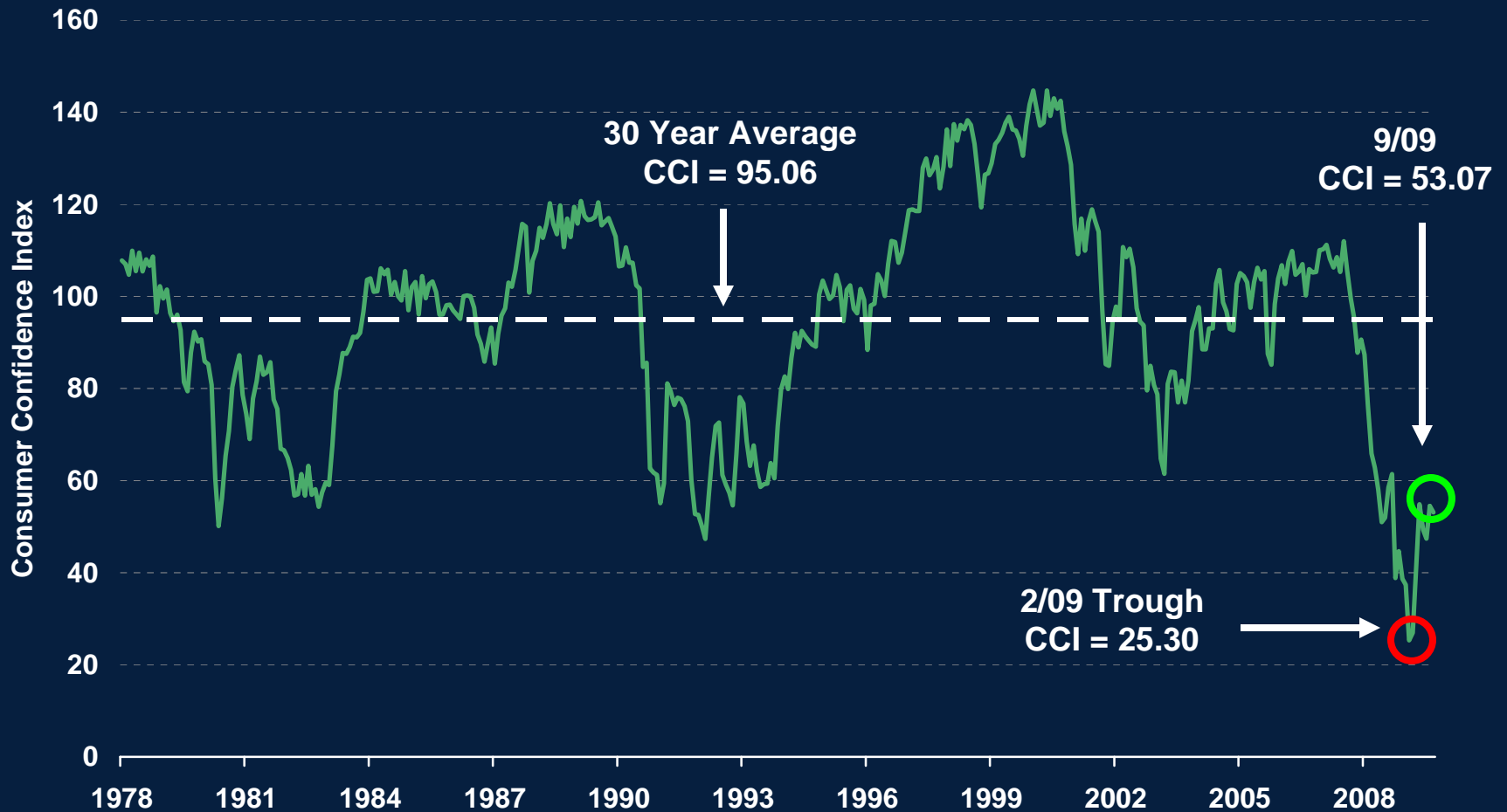
Adjusted Retail Sales vs. Adjusted E-Commerce Sales  
Y/Y Growth, CQ3:01 – CQ2:09



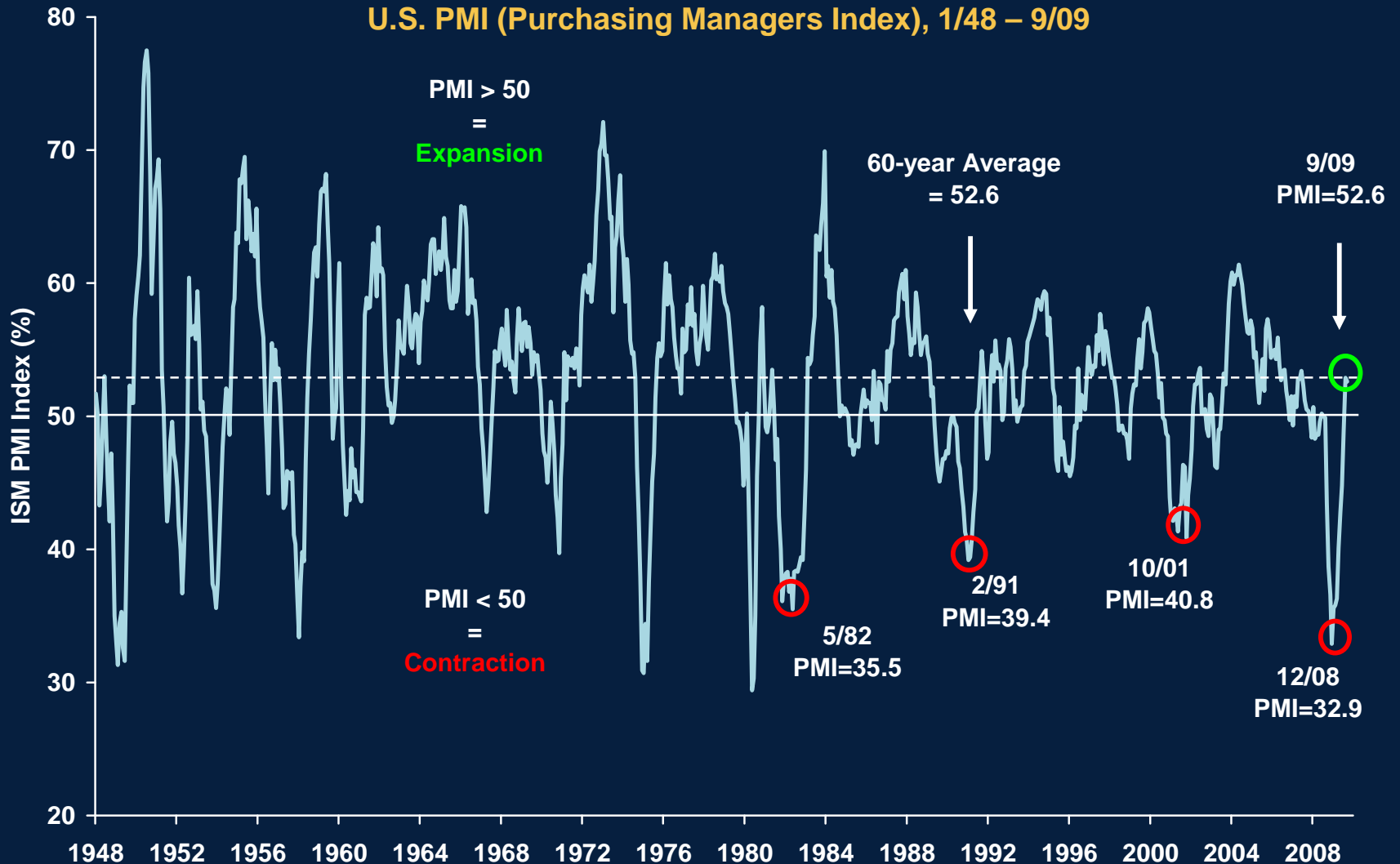
# Consumer Confidence

## Rising But Still Well Below 'Normal'

USA Consumer Confidence Index (CCI), 1/78 – 9/09



# Manufacturing Returning to 'Normal'

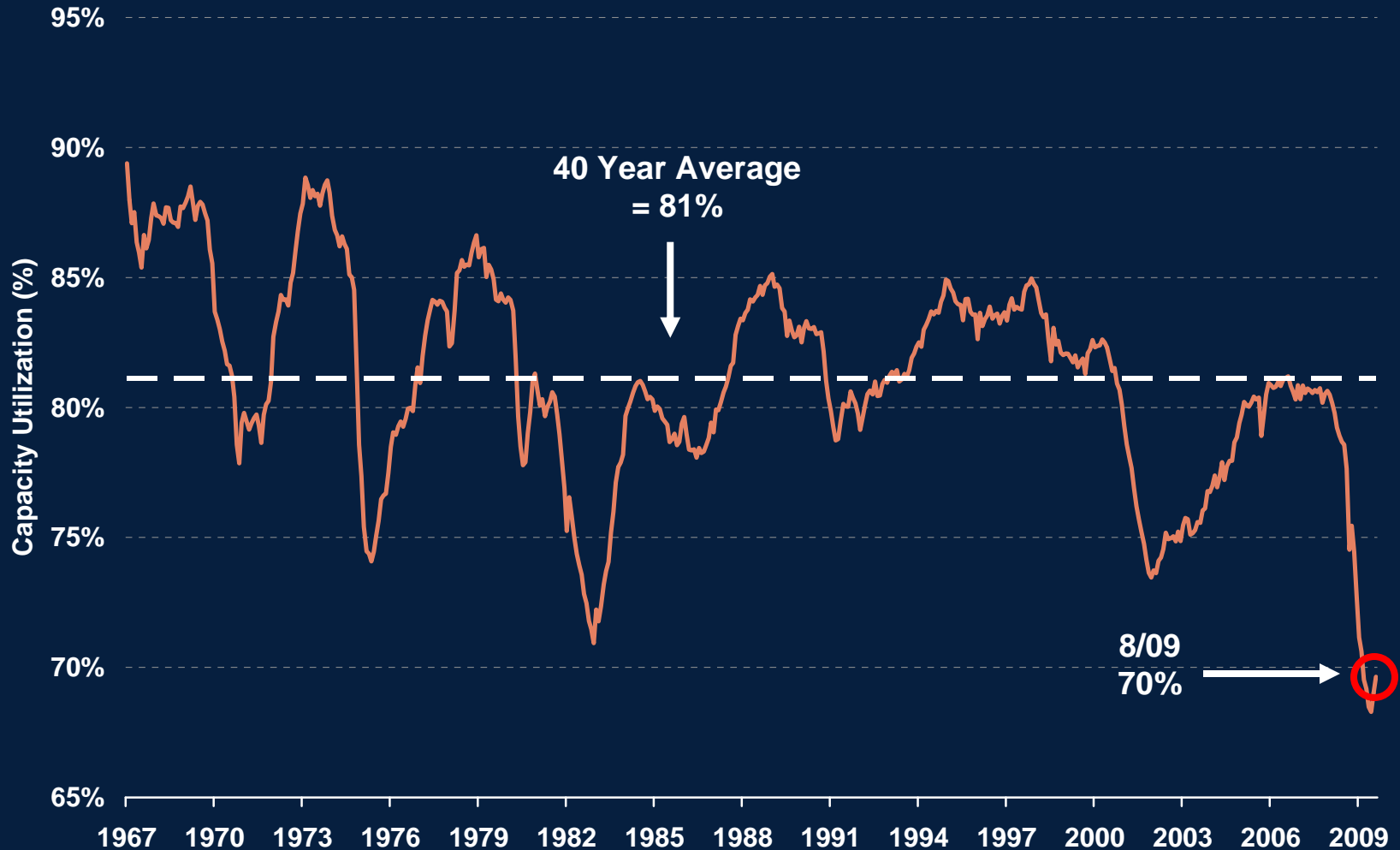


Note: PMI is a composite index based on five major indicators including: new orders, inventory levels, production, supplier deliveries, and employment environment. A PMI index over 50 indicates that manufacturing is expanding while anything below 50 means that the industry is contracting. Source: Institute for Supply Management (ISM).

# Risk

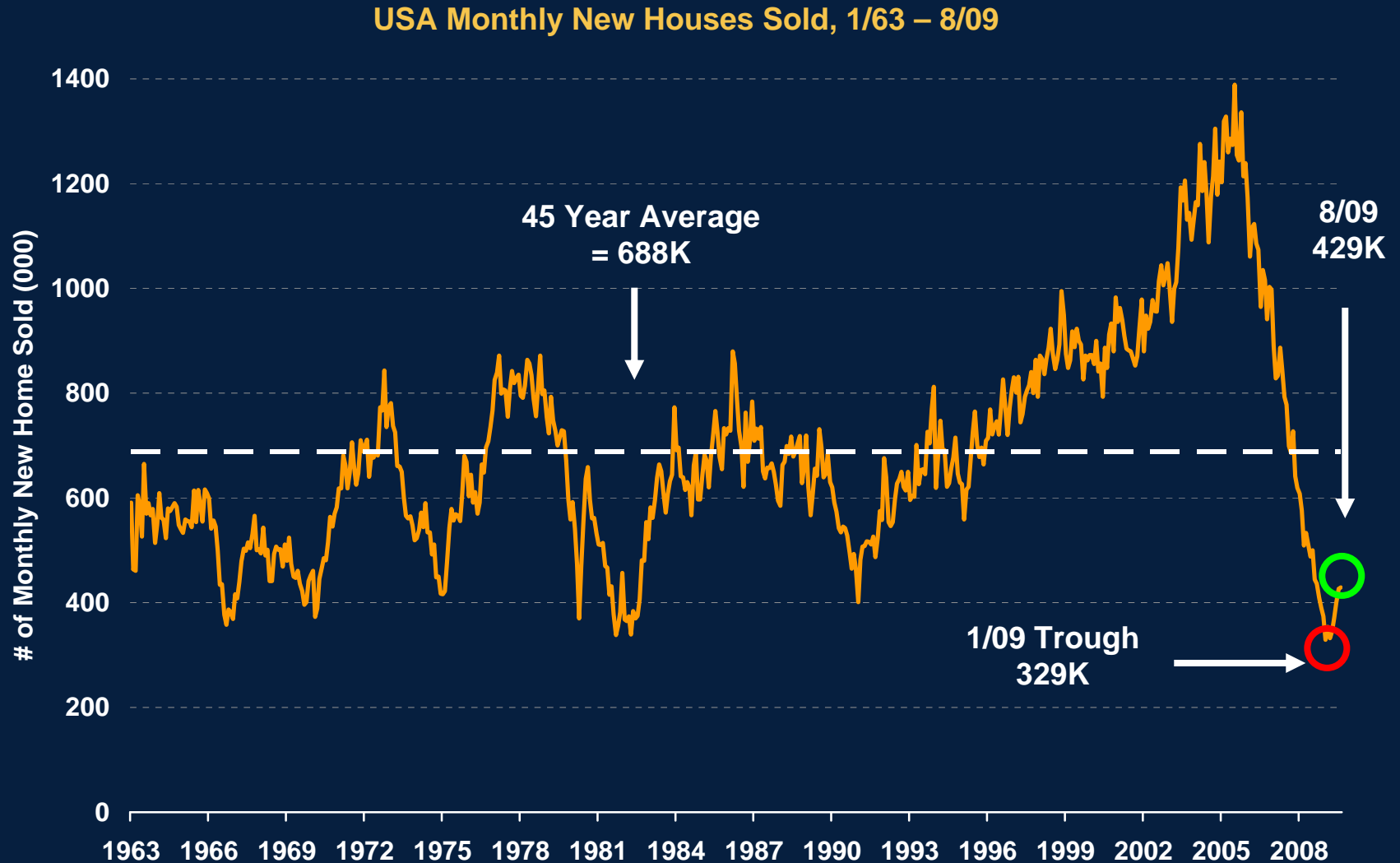
## Low Manufacturing Capacity Utilization Implies Weak Demand

USA Capacity Utilization, 1/67 – 8/09



# Risk

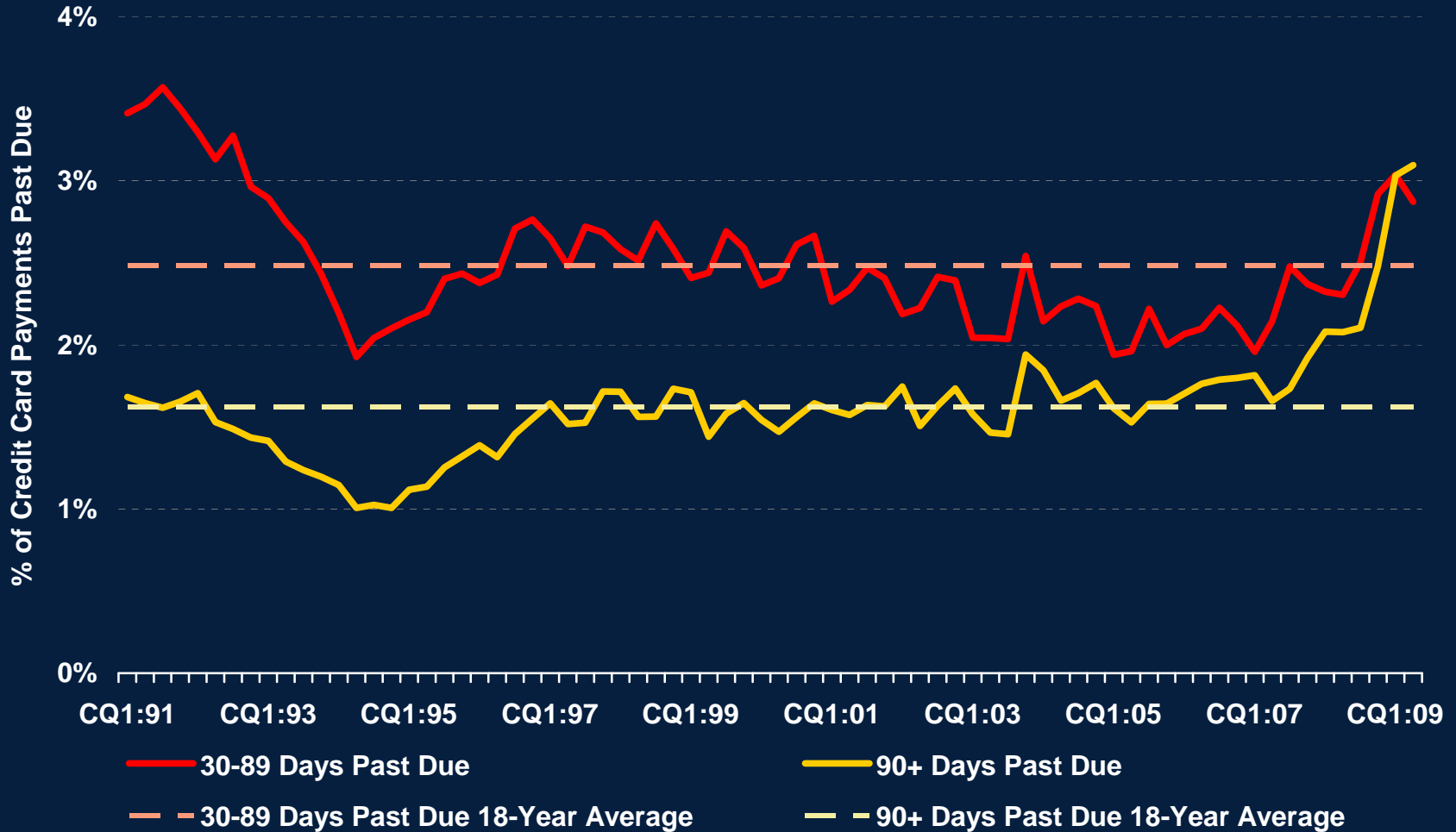
## New Home Sales Off Historic Lows But Way Below 'Normal'



# Risk

## Consumer Credit Card Defaults Rising

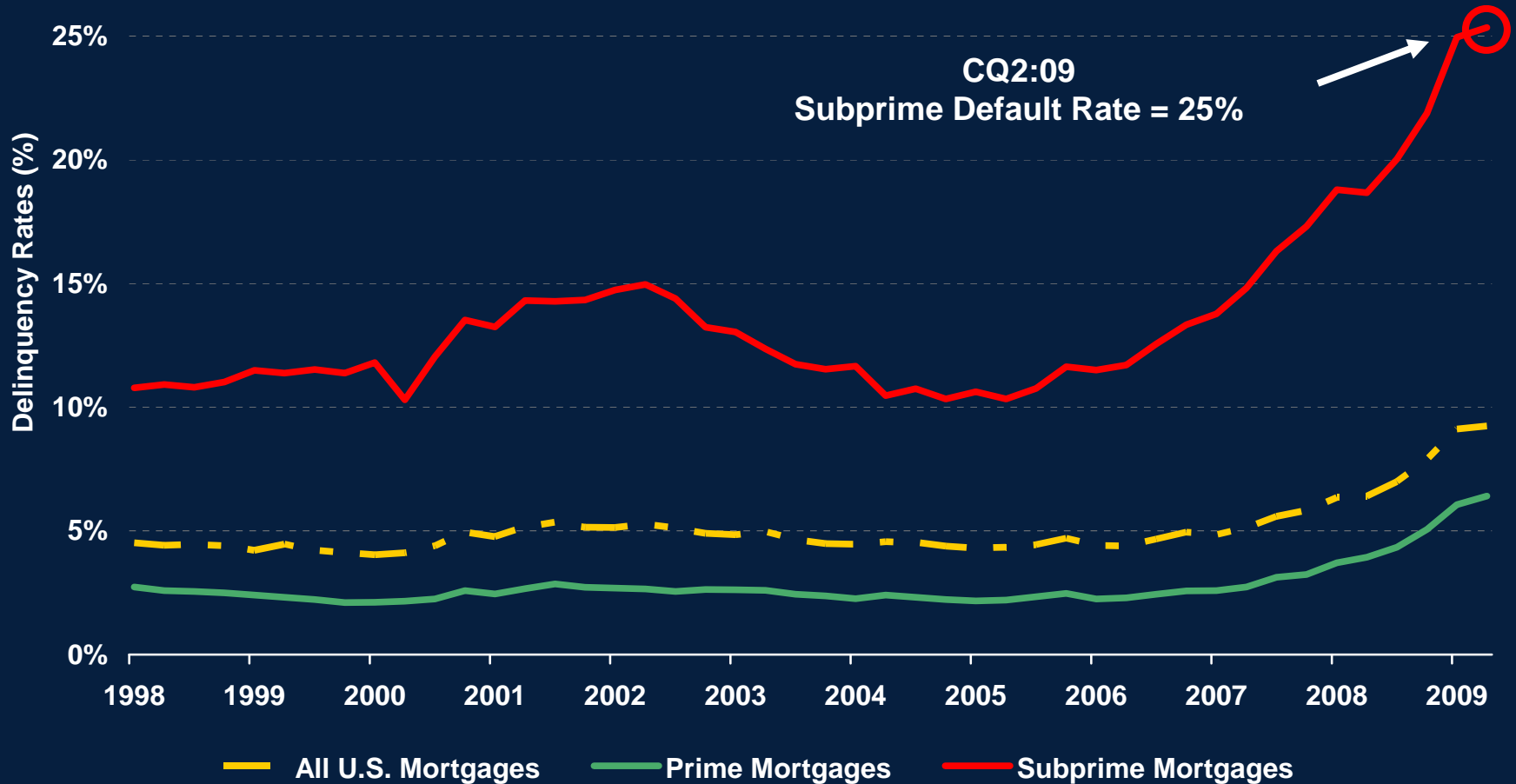
U.S. Consumer Credit Card Delinquency Rates, CQ1:91 – CQ2:09



# Risk

## Residential Mortgage Defaults at All-Time Highs & Rising

Residential Mortgages Delinquency Rates, All / Prime / Subprime, CQ1:98 – CQ2:09

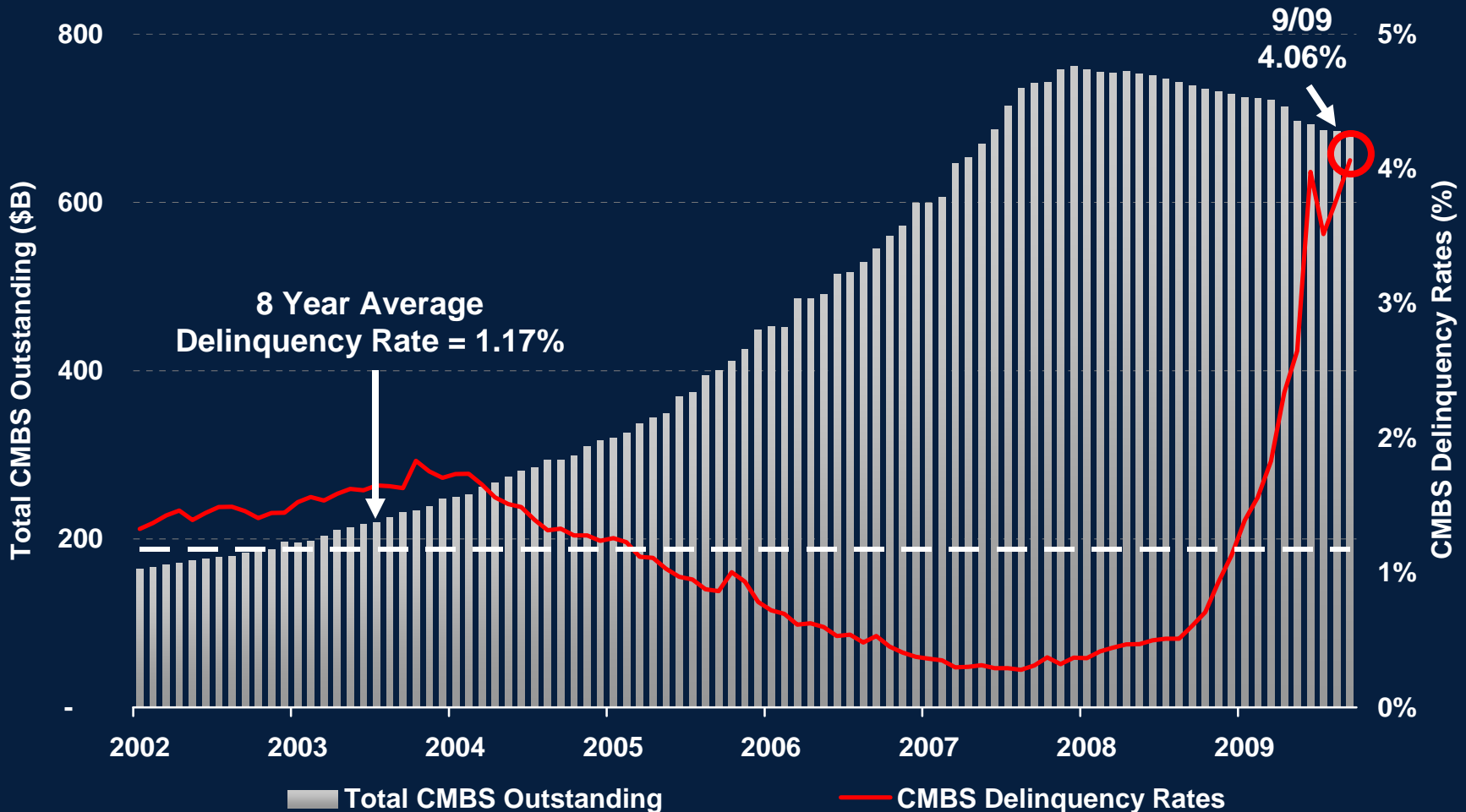


Note: Delinquencies limited to mortgage loans on one-to-four-unit residential properties, seasonally adjusted. CQ2:09 overall delinquency rate of 9.24% is the highest on record since CQ1:72 when data first became available. Source: Mortgage Bankers Association.

# Risk

## Commercial Mortgage Defaults Rising

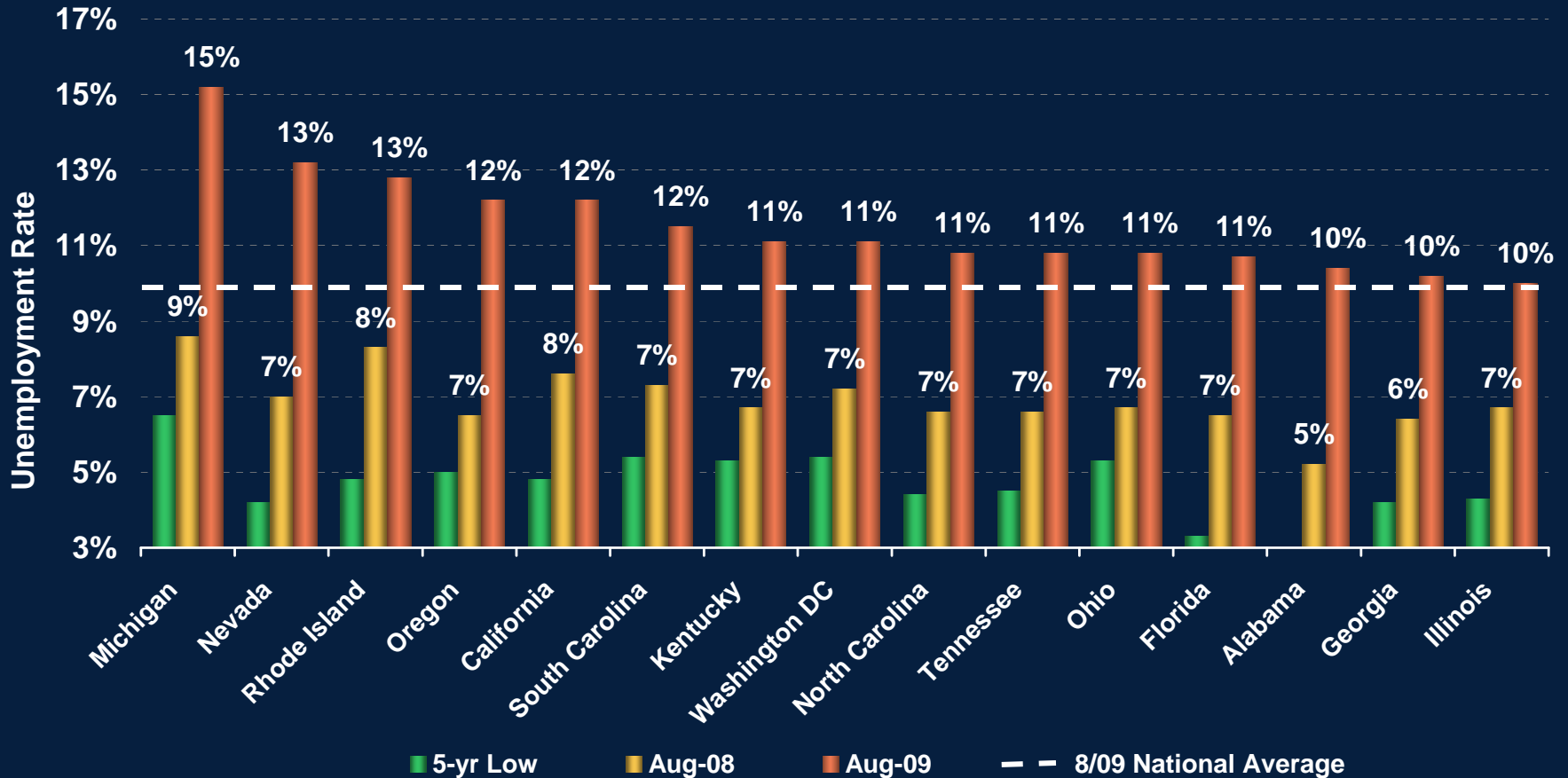
Total CMBS (Commercial Mortgage Backed Securities) Outstanding & Delinquency Rates, 1/02 – 9/09



# Risk

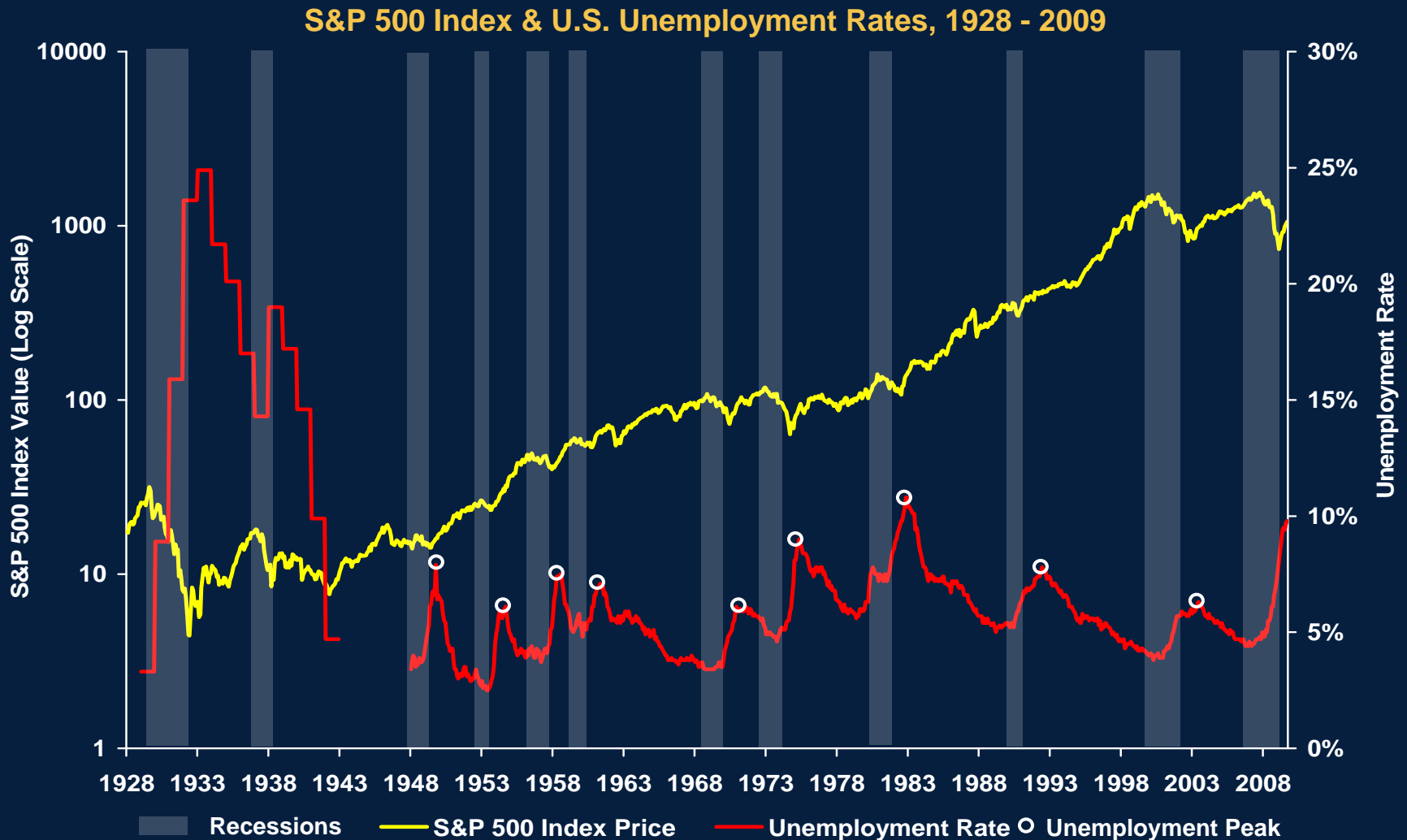
Unemployment High & Rising – USA at 10% in 9/09 vs. 6% Y/Y

U.S. State Unemployment Rates, 5-yr Lows vs. 8/08 vs. 8/09



# Risk

## Unemployment Peak = Typically Key for Sustainable Economic Turn

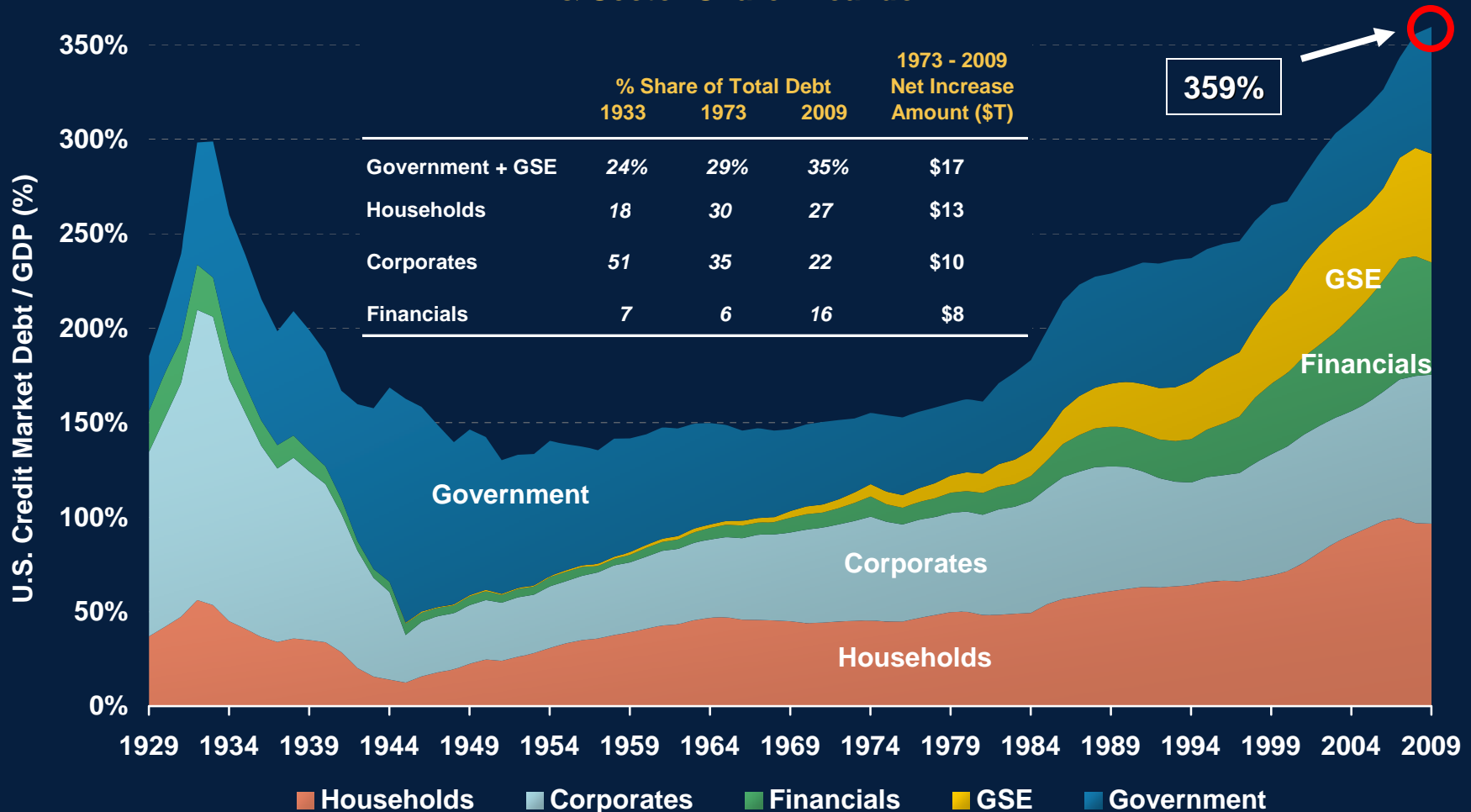


Note: Unemployment rates from 1928–1943 are annual estimates from John Dunlop and Walter Galenson's *Labor in the Twentieth Century* (1978); data unavailable between 1943–1948; Post 1948 unemployment data from BLS, peaks are: 9/49 - 7.9%; 9/54 - 6.1%; 7/58 - 7.5%; 5/61 - 7.1%; 8/71 - 6.1%; 5/75 - 9.0%; 11/82 - 10.8%; 6/92 - 7.8%; 7/03 - 6.3%. Latest data shows 9/09 unemployment rate at 9.8%, 100 basis points below 11/82 peak. Source: FactSet; Bureau of Labor Statistics. Morgan Stanley Research.

# Risk

## Debt Levels at Historic Levels & Rising, USA Government Leading Charge

**U.S. Domestic Credit Market Debt as % of GDP, 1929 – 2009 YTD & Sector Share Breakdown**



# Risk

## USA Income Statement = Expenses Exceed Revenue Entitlement Expenses (Social Security + Medicare...) Going Lots Higher

	F2001	...	F2005	...	F2009E	Comments
<b>Revenue (\$B)</b>	<b>\$1,991</b>		<b>\$2,154</b>		<b>\$2,106</b>	
<b>Y/Y Growth</b>	<b>-2%</b>		<b>15%</b>		<b>-17%</b>	
Individual Income Taxes % of Revenue	\$994 50%		\$927 43%		\$916 43%	Primary source of federal government revenue, varies with economic growth
Social Insurance Taxes % of Revenue	\$694 35%		\$794 37%		\$891 42%	Second largest source of revenue, but massively underfunding growing liabilities
Corporate Income Taxes % of Revenue	\$151 8%		\$278 13%		\$139 7%	Like individual income taxes, varies with economic growth
Other % of Revenue	\$152 8%		\$154 7%		\$160 8%	Includes excise / estate / gift taxes, deposits of earnings and customs duties
<b>Expense (\$B)</b>	<b>\$1,863</b>		<b>\$2,472</b>		<b>\$3,998</b>	
<b>Y/Y Growth</b>	<b>4%</b>		<b>8%</b>		<b>34%</b>	
Entitlement / Mandatory % of Expense	\$992 53%		\$1,284 52%		\$1,725 43%	Fastest growing line item on a normalized basis, causing massive future burdens
Non-Defense Discretionary % of Expense	\$360 19%		\$508 21%		\$1,440 36%	Includes infrastructure / health / education spending / disaster relief / emergency financial (TARP) + economic (ARRA) stimulus packages
Defense % of Expense	\$305 16%		\$495 20%		\$690 17%	Steady rise in defense spending related to ongoing War on Terror
Net Interest on Public Debt % of Expense	\$206 11%		\$184 7%		\$143 4%	Decreasing Interest expense from lower short-term interest rates and lower costs for inflation-indexed securities
<b>Profit / Loss (\$B)</b>	<b>\$128</b>		<b>-\$318</b>		<b>-\$1,892</b>	
<b>Profit Margin (%)</b>	<b>6%</b>		<b>-15%</b>		<b>-90%</b>	\$13T gross federal debt outstanding, \$110K per household, 2x median annual household income

Note: US federal government fiscal year ends in September. Non-defense discretionary spending in 2009 includes "one-time" items such as \$549B TARP funds (excl. \$70B returned, incl. \$100B to Public-Private Partnership Fund; \$85B to automakers; \$70B to AIG; \$50B to Citigroup; \$45B to BofA; \$79B to other financial firms; \$55B TALF; \$50B to homeowners), payment of \$96B to Fannie Mae / Freddie Mac, and ARRA (American Recovery and Reinvestment Act) related spending of ~\$120B. Entitlement / mandatory expense include social security, Medicare, Medicaid, and income security (unemployment / food / housing / retirement benefits). Source: Department of the Treasury, Office of Management and Budget, and Congressional Budget Office.

# Web 2.0 Summits

## 6 Years of Internet Trends for John & Tim

2004 – **China Internet** - Opportunity is Immense

2005 – **Broadband** - Becoming Pervasive, Driving Growth in Communications / UGC

2006 – **Online Video** - Building Momentum

2007 – **Social Networks** - Proliferating, Driving Platform Changes

2008 – **Economic Recession** - Creates Challenge + Opportunity for Web Companies

2009 – **Mobile Internet** - Is and Will be Bigger Than Most Think

# 8 Key Mobile Internet Themes

- 1) Mobile Internet Usage Is and Will Be Bigger than Most Think.**
- 2) Apple Mobile Share Should Surprise on Upside Near-Term.**
- 3) Next Generation Platforms (Social Networking + Mobile) Driving Unprecedented Change in Communications + Commerce.**
- 4) Mobile in Japan + Desktop Internet Provide Roadmaps for Mobile Growth + Monetization.**
- 5) 3G Adoption / Trends Vary By Geography.**
- 6) Carriers in USA / W. Europe Face Surging Network Demand But Uncertain Economics.**
- 7) Regulators Can Help Advance / Slow Mobile Internet Evolution.**
- 8) Mobile-Related Share Shifts Will Create / Destroy Material Shareholder Wealth.**

# Key Theme # 1

## Mobile Internet Usage Is and Will Be Bigger than Most Think

Explosive Apple iPhone / iTouch ramp shows that usage of mobile devices on IP-based networks should surprise to upside for years to come and bandwidth suppliers (telcos / cable) face serious challenges in managing incremental traffic.

# Mobile Internet Next Major Computing Cycle

**Mainframe  
Computing  
1950s**



**Mini  
Computing  
1960s**



**Personal  
Computing  
1980s**



**Desktop Internet  
Computing  
1990s**

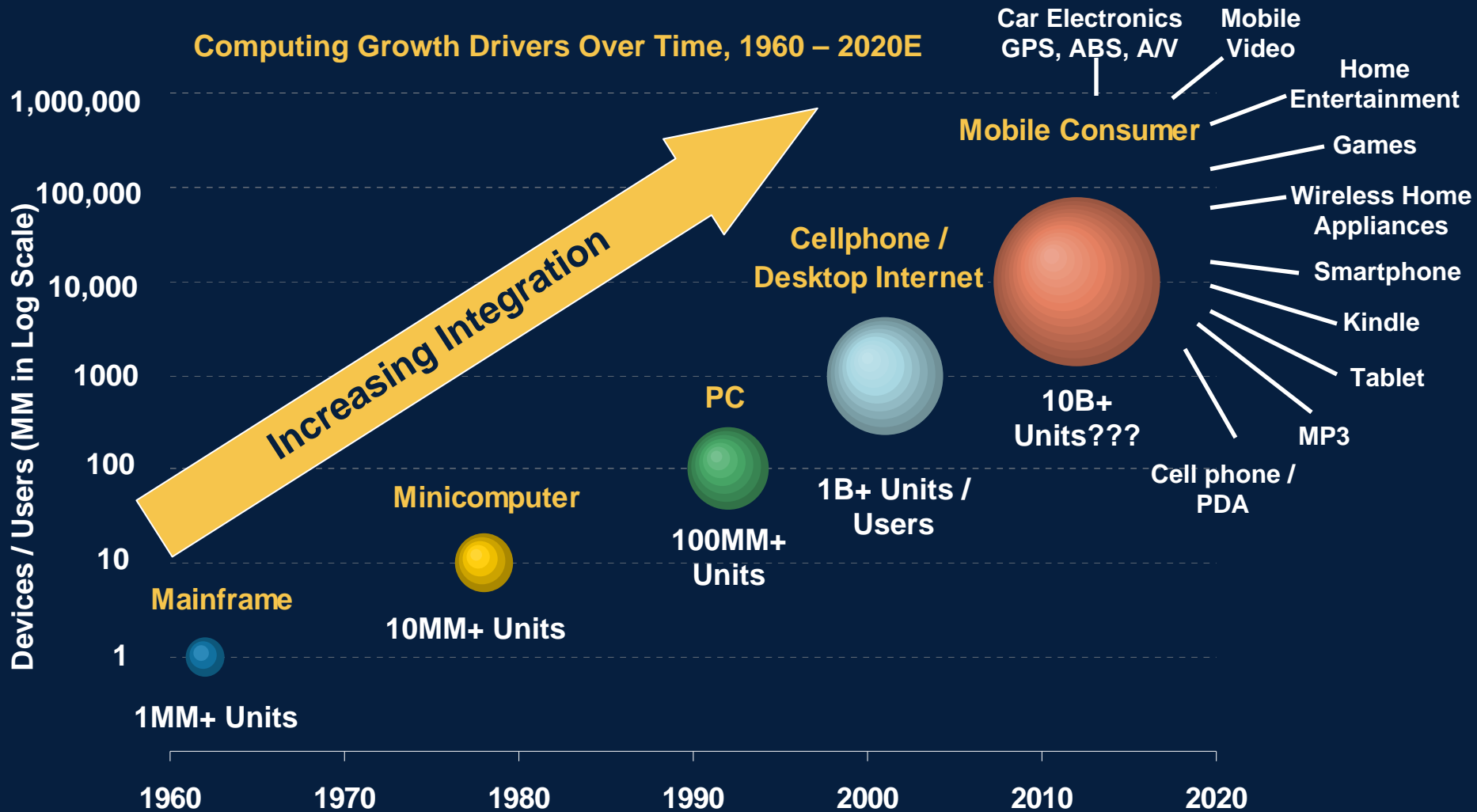


**Mobile Internet  
Computing  
2000s**



# New Computing Cycles Supported by 10x More Devices

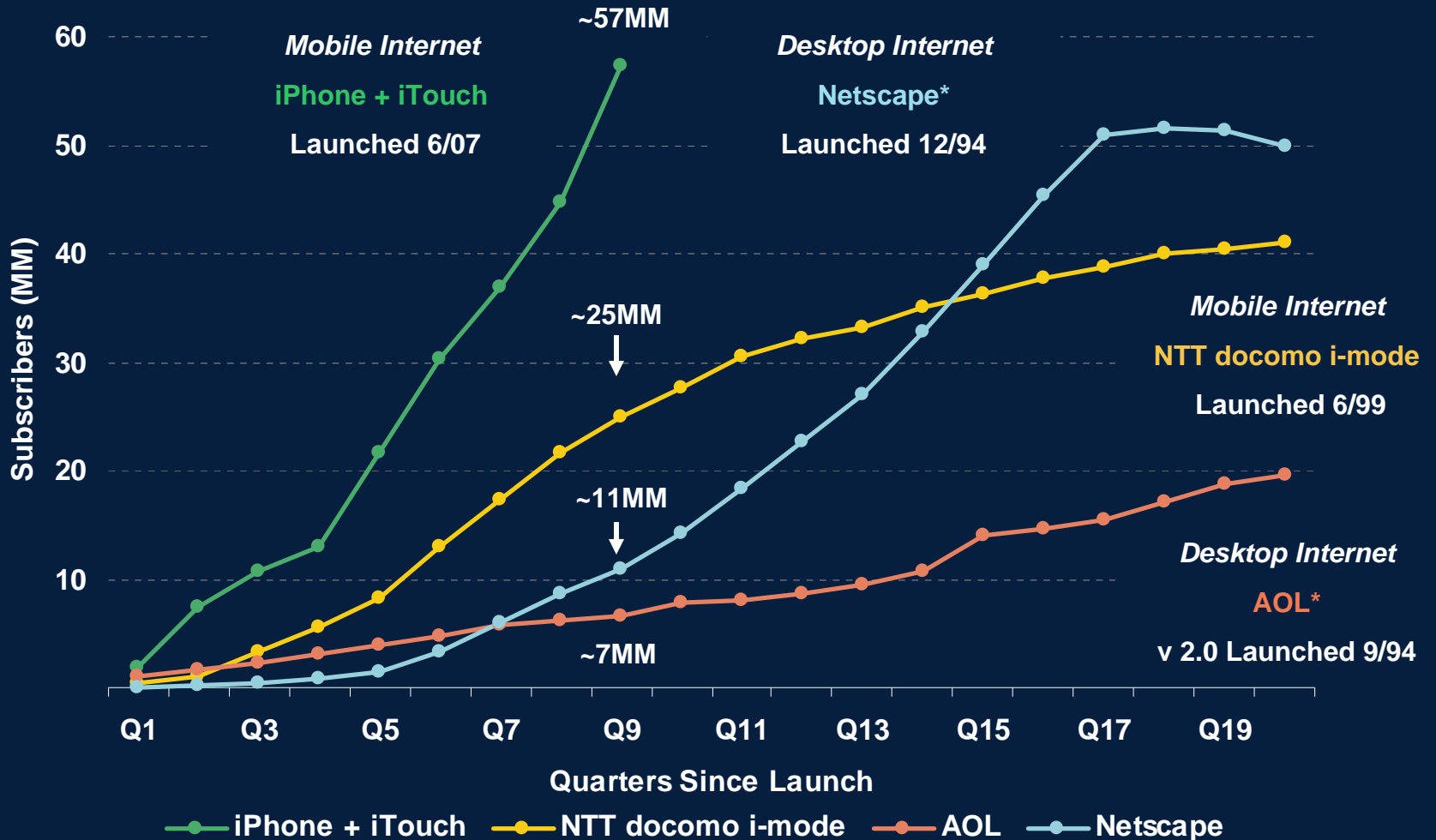
Opportunities for Semiconductor / Hardware / Software / Services



# Mobile Internet Outpaces Desktop Internet Adoption

iPhone + iTouch Users = 8x AOL Users 8 Quarters After Launch

iPhone + iTouch vs. NTT docomo i-mode vs. Netscape vs. AOL Users  
First 20 Quarters Since Launch



# Real-Time Wireless Remote Controls Everywhere

## Number / Types of Cloud-Based Mobile Connected Devices Growing Rapidly



- **GPS** – 421MM+ chipsets sold in 2008E, **+57% Y/Y**; Cell Phones / PDAs = 60% of GPS shipments



- **3G** – 490MM global users, **+45% Y/Y** in CQ2, >12% mobile user penetration, rising to 44% by 2013E...Japan / W. Europe / USA already >30% penetration.



- **Wi-Fi** – 319MM chipsets sold in 2008E, **+42%Y/Y** with 862MM installed base; ~60% of iPhone / iTouch usage may be on Wi-Fi, providing crucial (~10x faster) offload to stressed 3G networks

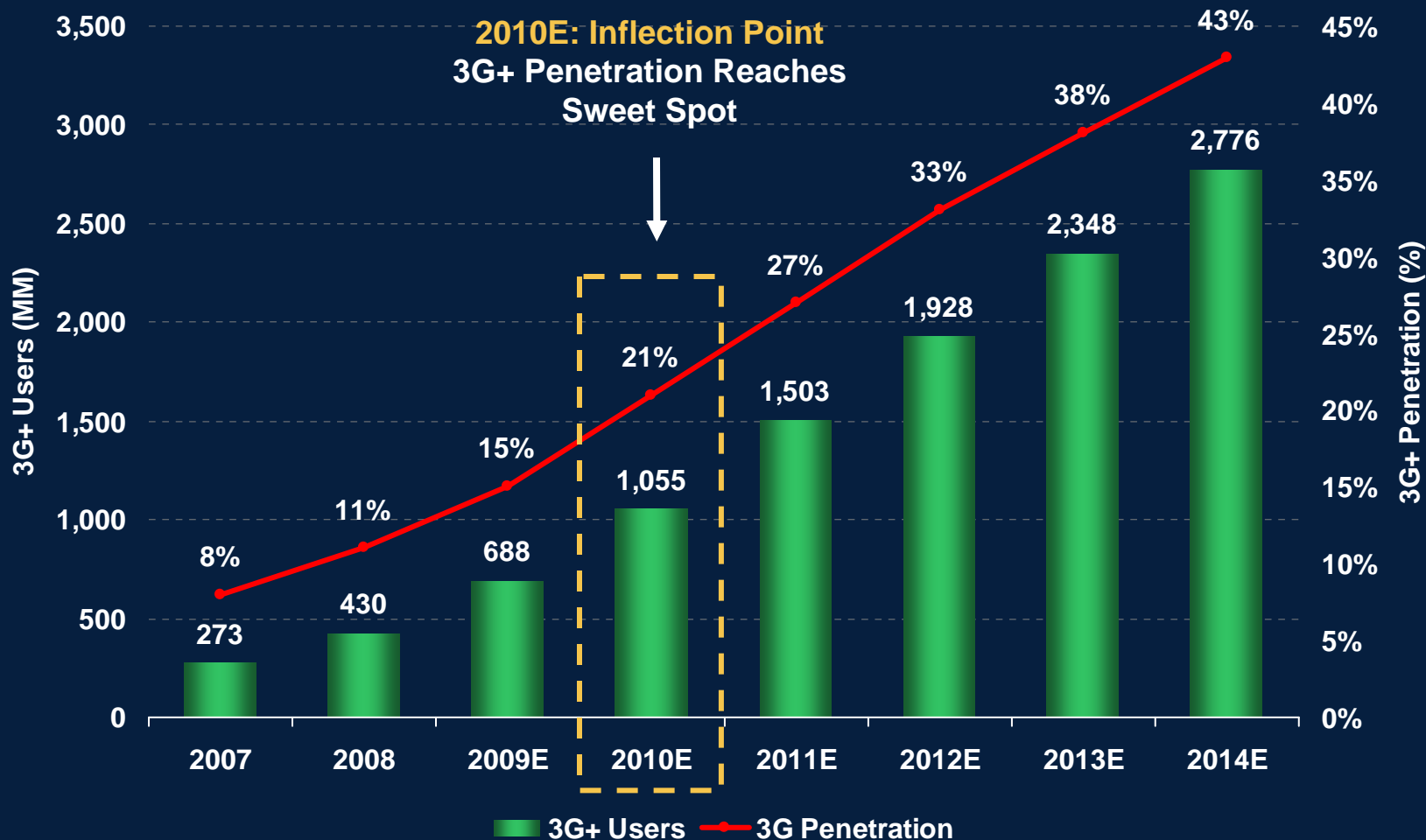


- **Bluetooth** – 1.3B Bluetooth-enabled units shipped in 2008, **+45% Y/Y**; 2B+ Bluetooth devices in use

# Global 3G Subscribers – Wireless Broadband

## 2010E Inflection Point, Penetration >20%

Global 3G+ Subscribers & Penetration, 2007 – 2014E



# Location-Based Services

## Key to Mobile Internet 'Secret Sauce'

*Thanks to the iPhone 3G and, to a lesser extent, Google's Android phone, millions of people are now walking around with a gizmo in their pocket that not only knows where they are but also plugs into the Internet to share that info, merge it with online databases, and find out what – and who – is in the immediate vicinity...Simply put, **location changes everything**. This one input – our coordinates – has the potential to change all the outputs. Where we shop, who we talk to, what we read, what we search for, where we go – they all change once we merge location and the Web.*

*– Mathew Honan, WIRED magazine, 1/19/09*

## Key Theme # 2

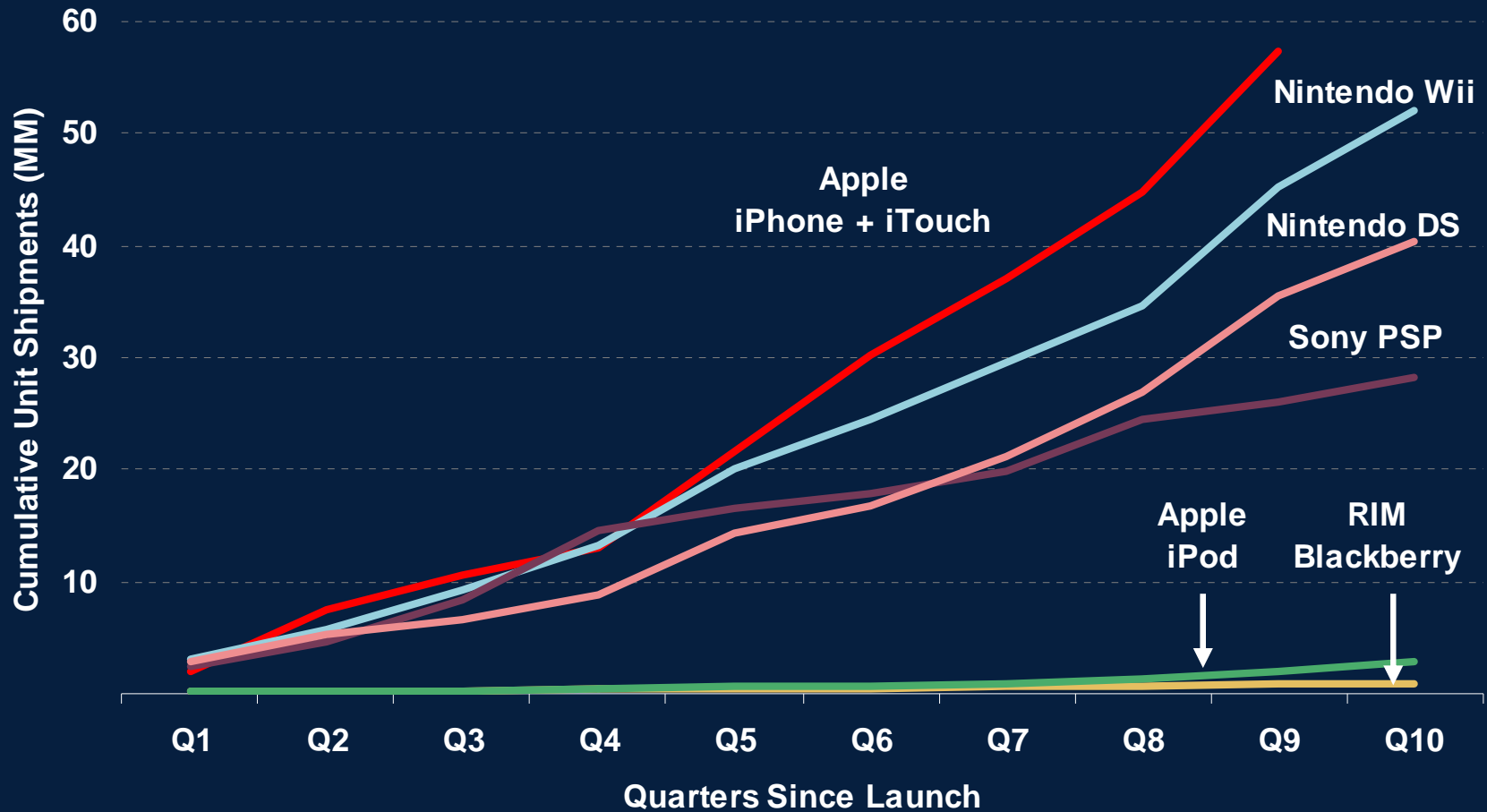
### Apple Mobile Share Should Surprise on Upside Near Term

**Near term, Apple is driving the platform change to mobile computing. Its mobile ecosystem (iPhone + iTouch + iTunes + accessories + services) market share / impact should surprise on upside for at least the next 1-2 years.**

**Long term, emerging markets competition, open mobile web (paced by likes of Google Android) and carrier limitations pose challenges. RIM likely to maintain enterprise lead for 1-2 years owing to installed base.**

# Momentum Favors Apple iPhone + iPod Ecosystem Fastest Hardware User Growth in Consumer Tech History

Global Cumulative Unit Shipments in First 10 Quarters  
iPhone + iPod vs. Wii / DS / PSP / iPod / BlackBerry

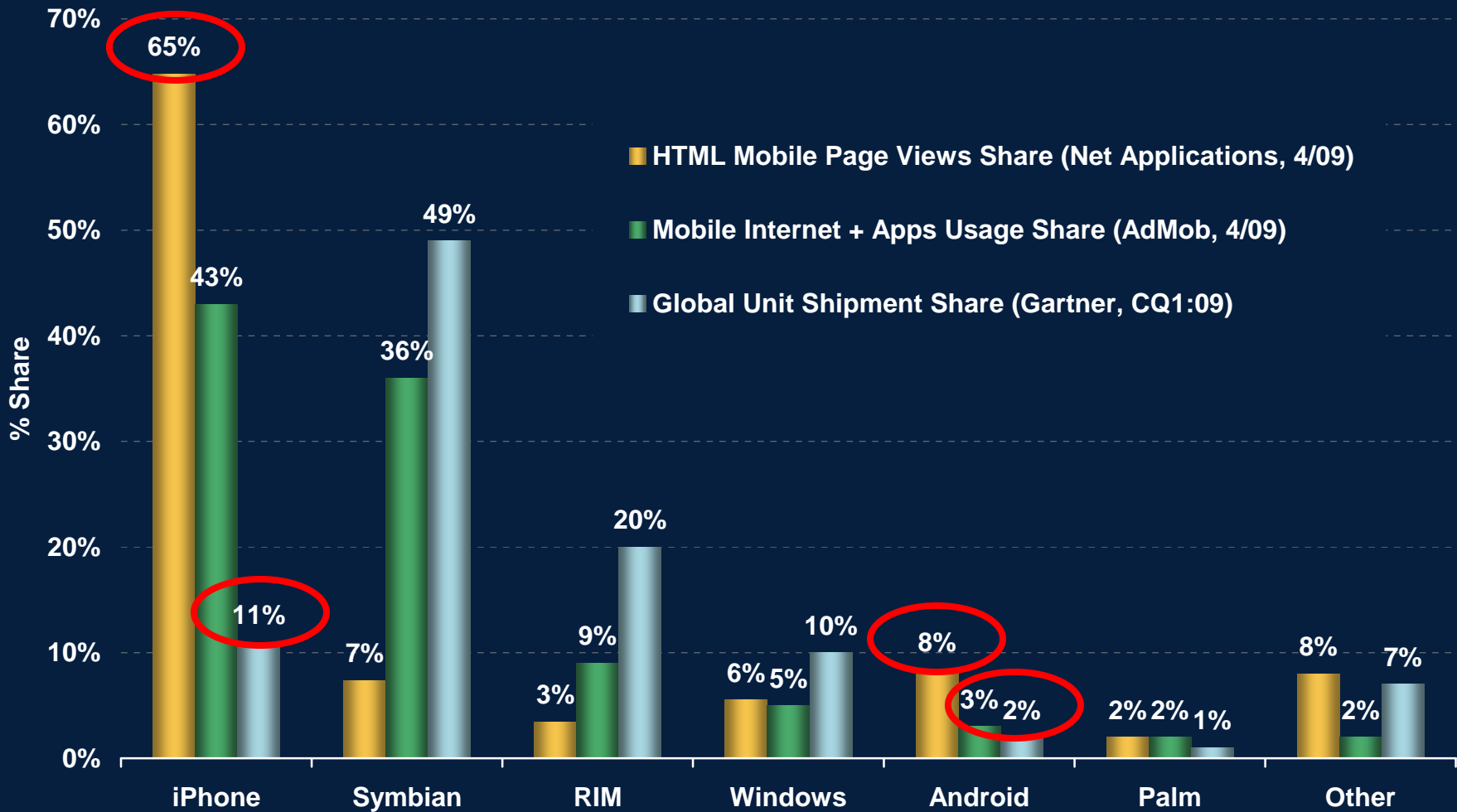


Note: iPhone launched in CQ2:07; iPod launched in CQ4:01; Wii launched in CQ4:06; DS launched in CQ4:04; PSP launched in CQ1:05; BlackBerry smartphone launched in C2002. Source: Apple, Nintendo, Sony, RIM, Katy Huberty, Morgan Stanley Research.

# Mobile Internet Usage Likely a Leading Indicator of Smartphone Shipments

## iPhone / Android Usage Share Much Higher than Shipment Share

Global Smartphone Share of HTML Mobile Page View / Mobile Internet + Apps Usage / Unit Shipments



## Key Theme # 3

Next Generation Platforms (Social Networking + Mobile) are Driving Unprecedented Change in Communications + Commerce

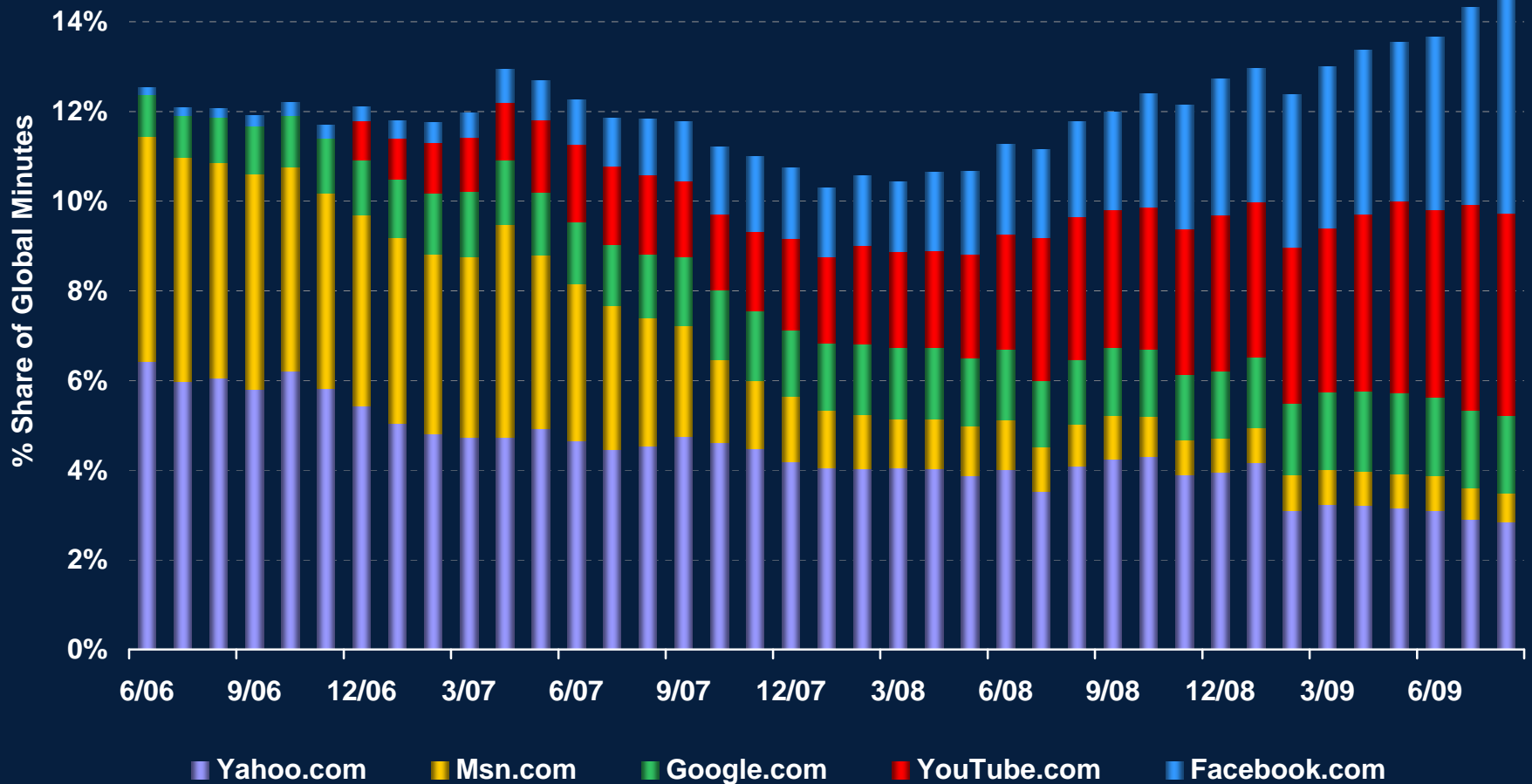
**Improvements in social networking and mobile computing platforms (led by Facebook + Apple ecosystems) are fundamentally changing ways people communicate with each other and ways developers / advertisers / vendors reach consumers.**

**Mobile devices will evolve as remote controls for ever expanding types of real-time cloud-based services, including emerging category of location-based services, creating opportunities + dislocations, empowering consumers in unprecedented + transformative ways.**





# Facebook

## Largest Share Gainer of Online Usage Over Past 3 Years

Share of Global Online Time Spent, 6/06 – 8/09



# Powerful New Publishing / Distribution Platforms

	Users	Y/Y Growth	Comments
	445MM <sup>(1)</sup>	+35%	#2 site in global minutes; 1B+ video views each day, 20+ hours of video uploaded each minute; #2 global search engine – 17B search queries on YouTube in 8/09 (+80% Y/Y) vs. Yahoo! sites' 9B searches (+8% Y/Y). <sup>(1,2,3)</sup>
	390MM <sup>(1)</sup>	+153%	#1 site in global minutes – 6B+ minutes spent on Facebook each day; 2B+ pieces of content shared every week; 2B+ photos / 14MM+ videos shared every month; 350K+ applications / 1MM+ developers <sup>(1,4)</sup>
	55MM <sup>(5)</sup>	+1171%	Real-time micro-broadcasting; ~5K tweets per second during peak times <sup>(5)</sup> ; available via web + apps + SMS
	55MM <sup>(5)</sup>	+46%	3B+ social media interactions per month across 6 web domains / 1B+ cumulative video streams / ~3K pieces of content produced per day <sup>(6)</sup>

# New Communications Platforms

Facebook = Unified Communication + Multimedia Repository in Your Pocket



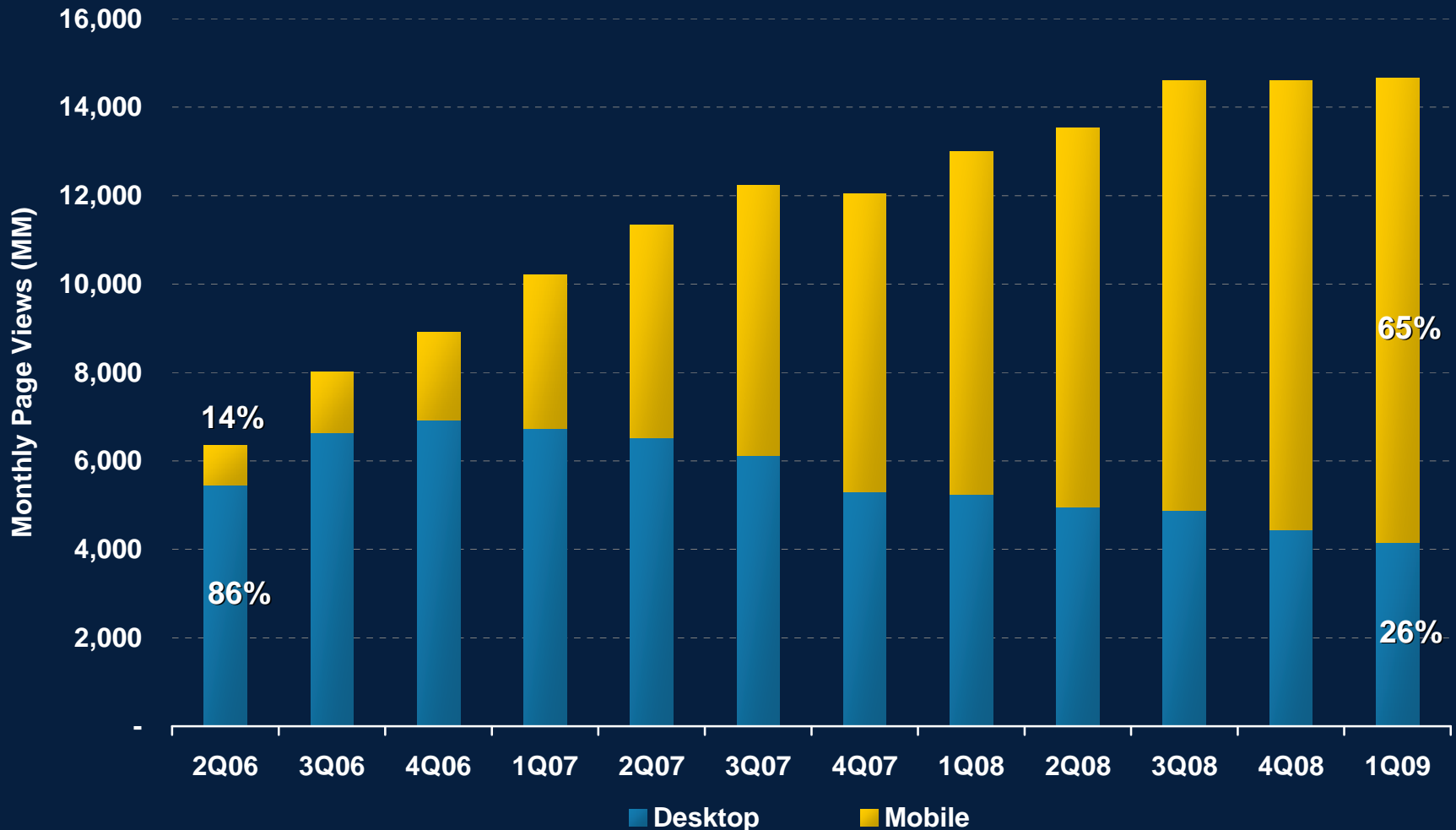
Connectivity / Presence provided by Mobile Phone



# Mobile Social Networking in Japan

~3x Greater (and Rising) than Desktop Social Networking per Mixi

Mixi's (Japan's Leading Social Network) Monthly Page Views, Mobile vs. PC, CQ2:06 – CQ1:09



Note: Mixi is one of Japan's leading social networking sites on PC and mobile with 23MM registered users as of 5/09. It monetizes mobile usage via sales of avatars, customized homepages and other premium services.  
Source: Mixi, Naoshi Nema, Morgan Stanley Research.

# Apple Unshackled Mobile Developers from Carrier Walled Gardens

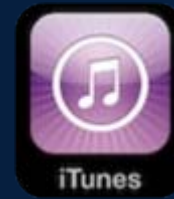
## Leveraged 100MM+ iTunes Users Trained to Purchase Digital Goods Apple's Way

iTunes on PC

Linked Credit Cards / Gift Cards

iTunes on iPhone

App Store on iPhone



One-Click Purchase

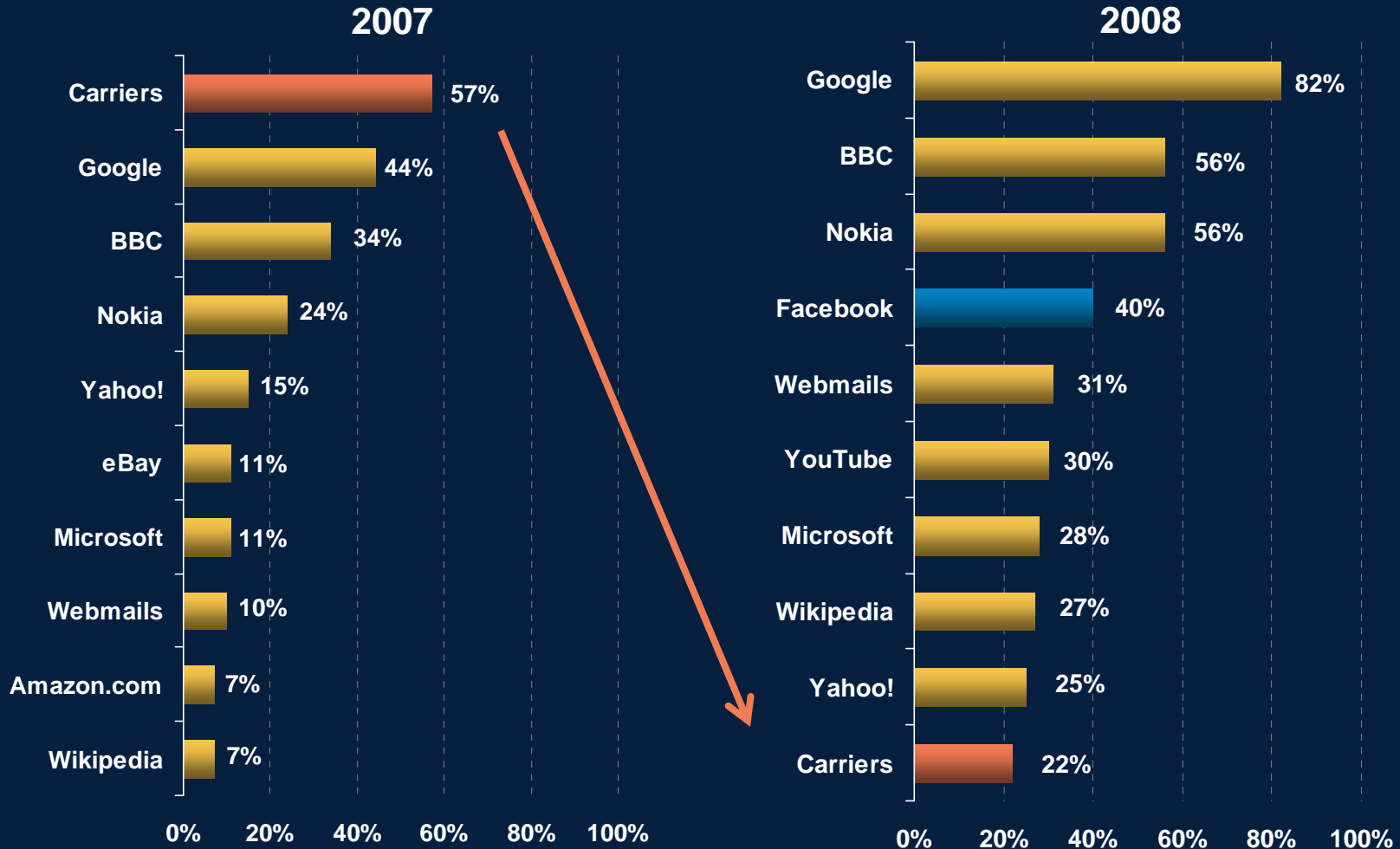
Tap to Buy



# 'Walled Gardens' Collapsed Nearly Overnight

## UK Mobile Users Fleeing From Carrier Portal Sites

Mobile Web Sites' Share of UK Mobile Internet Users



# Facebook + Apple iPhone / iTouch

Driving Independent / Overlapping Innovation in Social Networking + Mobile Platforms

**Facebook**

**Apple iPhone  
/ iTouch**

**390MM users  
+153% Y/Y**

**57MM users  
+166% Y/Y**

**350K+ Apps  
500MM+ Downloads**

**85K+ Apps  
2B+ Downloads**

**Social  
Networking**

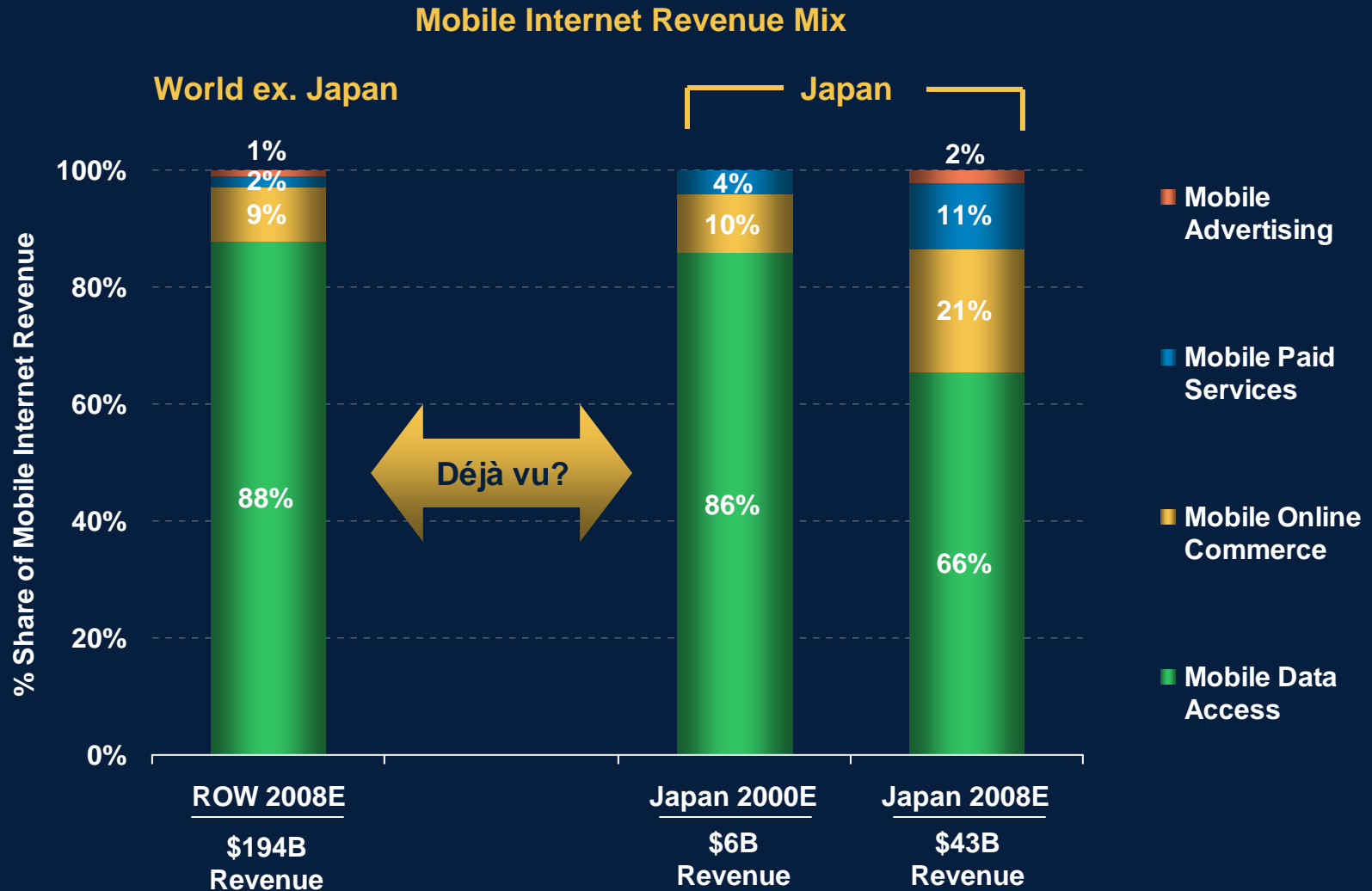
**Mobile**

# Key Theme # 4

Mobile in Japan + Desktop Internet Provide Roadmaps for Mobile Growth + Monetization

Mobile Internet development in Japan and desktop Internet business models indicate significant runways for mobile online commerce / paid services / advertising monetization; data access is likely to lose relative revenue share in mobile Internet ecosystem.

# Japan's Mobile Internet Revenue Mix Shows Growth Potential for eCommerce, Paid Services + Advertising

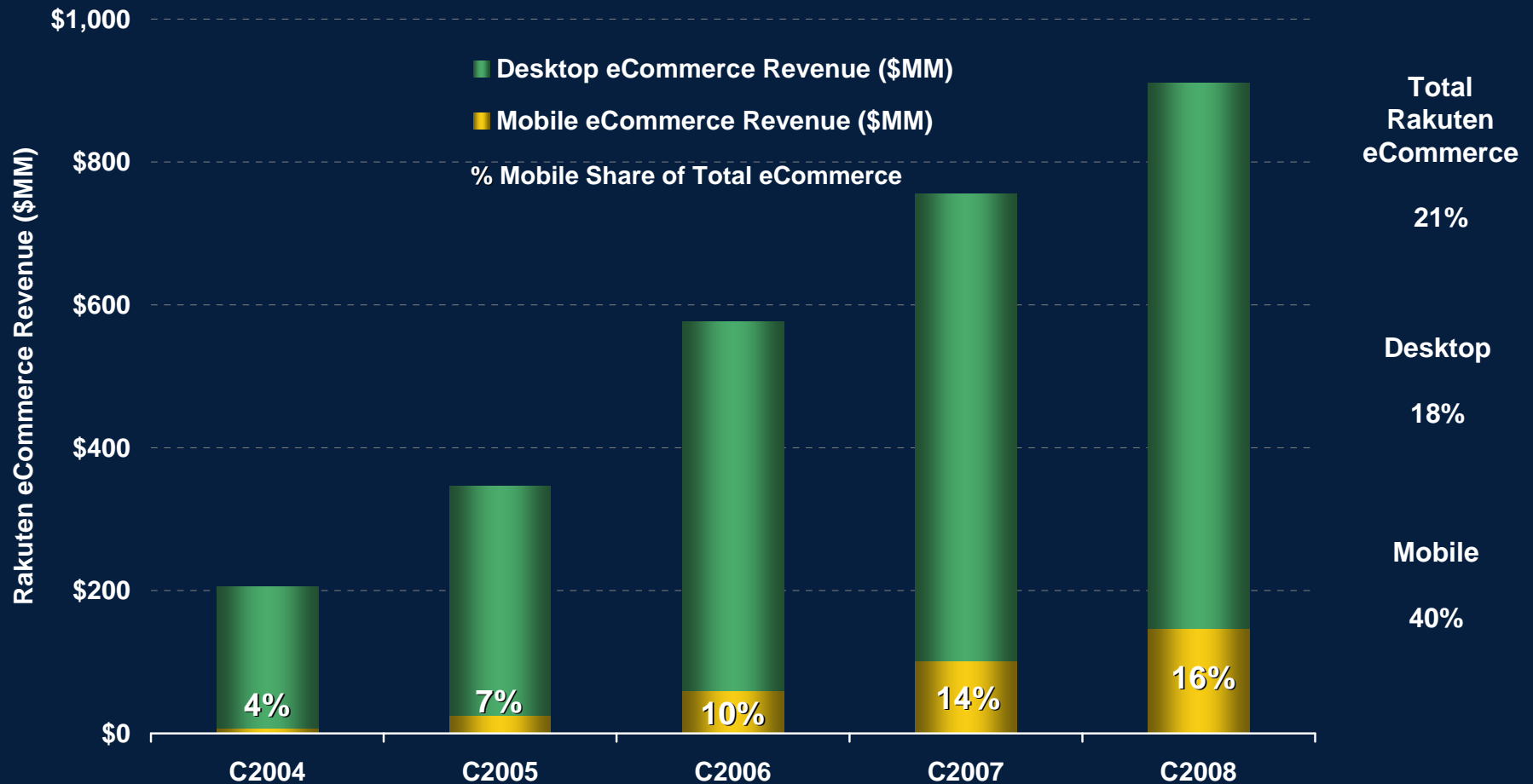


# Mobile Commerce Ramping Rapidly in Japan

## 18% of Rakuten's CQ1 eCommerce Revenue Derived from Mobile

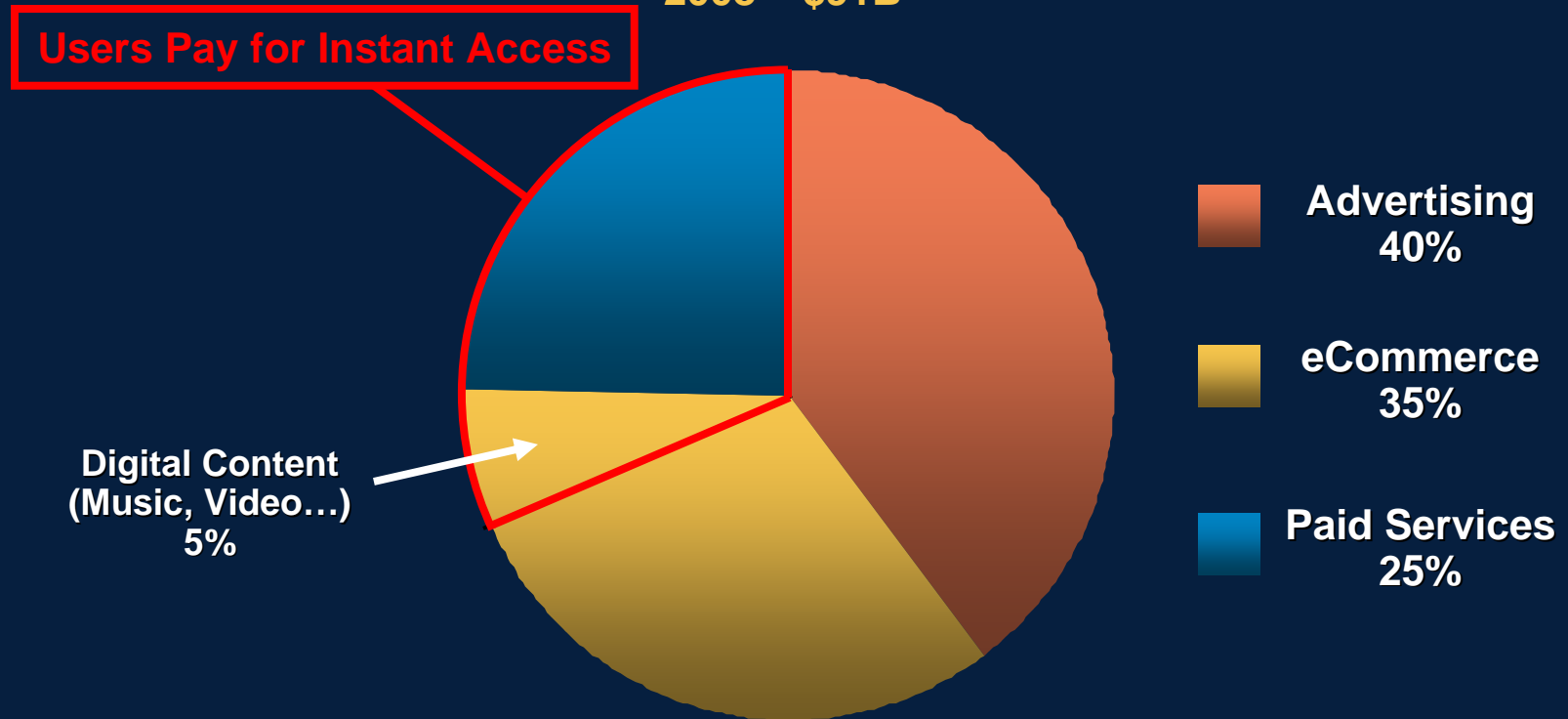
Rakuten's eCommerce Revenue, Desktop vs. Mobile, 2004-2008

CQ1:09  
Y/Y Growth



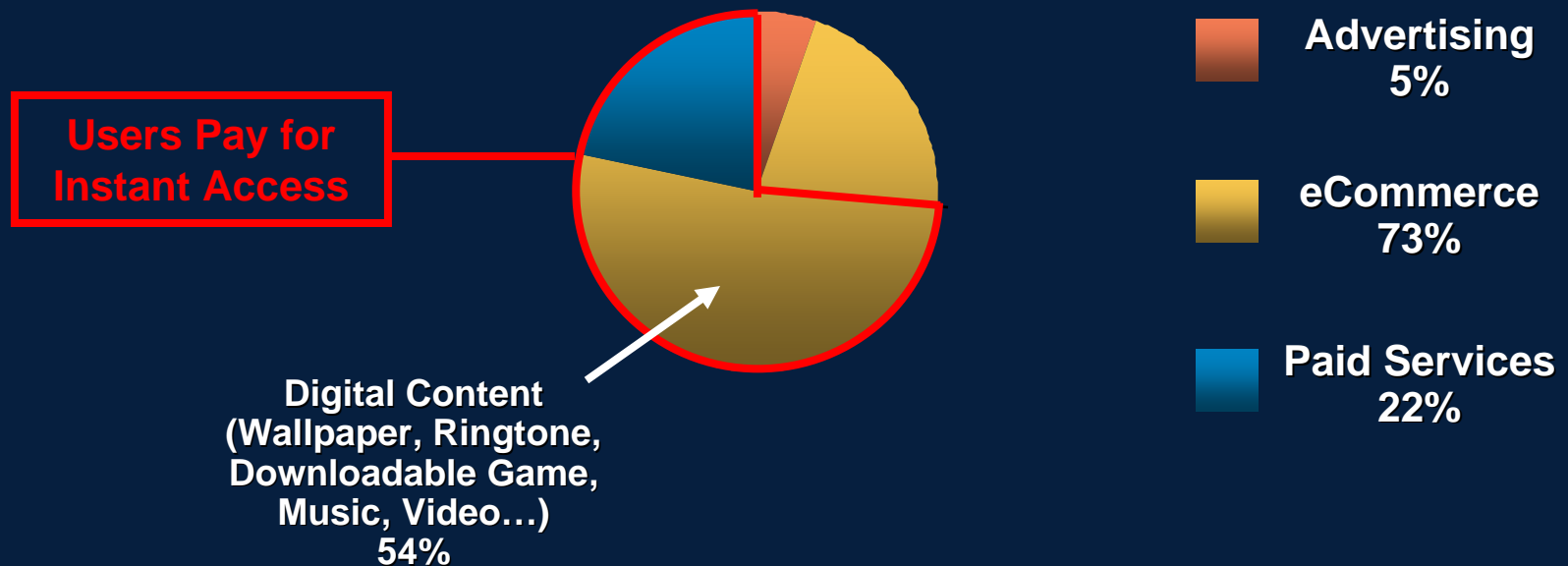
# While Vendors / Advertisers Tend to 'Pay' on Desktop Internet (via Advertising + eCommerce)...

Revenue Mix for Top 50 Global Internet  
(ex. Data Access) Companies  
2008 – \$91B



# ...Users Tend to 'Pay' on Mobile Internet (via Premium Services)

Mobile Internet - Revenue Mix (ex. Data Access)  
2008E – \$37B



# Key Theme # 5

## 3G Adoption / Trends Vary by Geography

**Regional 3G adoption trends, in part, will dictate geographic advancements in mobile Internet products / services.**

**Emerging markets lag developed markets.**

# 3G Penetration Inflection Points Vary by Region

W. Europe + N. America = 2007–2008, ROW = 2010-2012E

## 3G\* Connections & Penetration by Region, 2007 – 2014E

(All connection numbers in 000s)

	2007	2008	2009E	2010E	2011E	2012E	2013E	2014E
<b>Western Europe</b>	79,617	126,724	205,962	299,220	381,422	448,691	499,686	549,615
3G Penetration	17%	25%	39%	54%	67%	77%	85%	92%
<b>Japan</b>	72,690	88,434	101,320	110,823	116,581	120,463	123,217	124,770
3G Penetration	72%	84%	91%	96%	98%	99%	99%	100%
<b>Asia / Pacific (ex. Japan)</b>	50,163	83,514	151,192	295,230	482,981	693,995	918,063	1,135,626
3G Penetration	4%	5%	7%	13%	19%	25%	31%	37%
<b>North America</b>	53,307	83,460	116,575	145,683	177,451	204,835	231,271	260,575
3G Penetration	20%	29%	38%	46%	54%	61%	67%	74%
<b>Eastern Europe</b>	8,785	19,918	40,944	72,321	120,291	139,960	166,288	199,977
3G Penetration	2%	5%	9%	16%	26%	29%	34%	40%
<b>Middle East &amp; Africa</b>	5,781	18,424	50,409	91,085	165,564	239,805	309,251	383,238
3G Penetration	1%	3%	7%	12%	19%	25%	30%	35%
<b>South &amp; Central America</b>	3,126	9,265	21,875	40,448	59,107	80,087	100,027	122,258
3G Penetration	1%	2%	4%	7%	10%	12%	15%	17%
<b>Total</b>	273,469	429,739	688,278	1,054,810	1,503,397	1,927,837	2,347,804	2,776,058
3G Penetration	8%	11%	15%	21%	27%	33%	38%	43%

# Key Theme # 6

Carriers in USA / W. Europe Face Surging Network Demand But Uncertain Economics.

**Global mobile IP traffic likely to grow 66x by 2013E (with 130% CAGR), per Cisco. Increasing 3G / smartphone penetration + emerging usage models (such as video / audio streaming) likely to put significant stress on carrier wireless networks.**

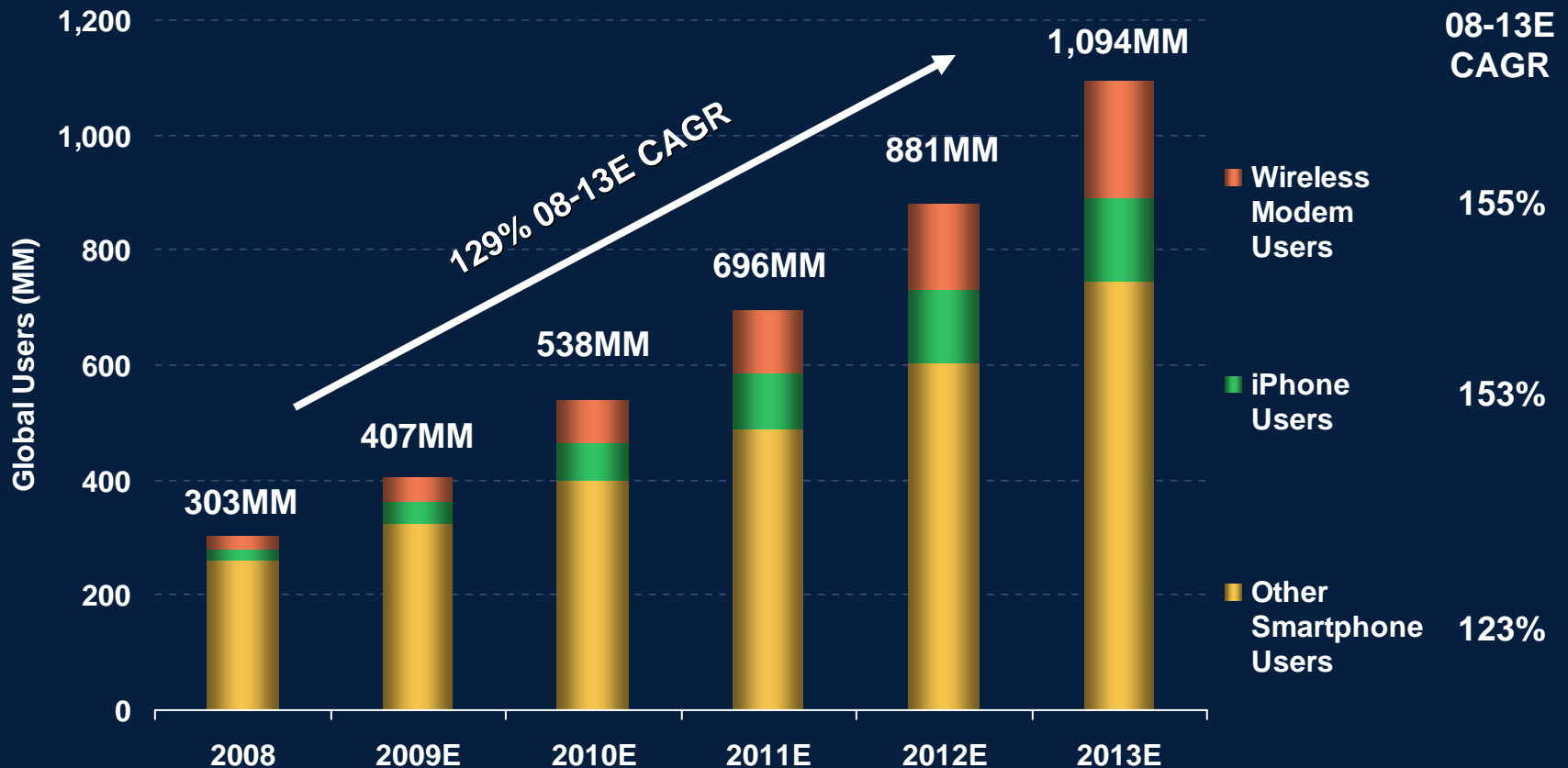
**Carriers will ultimately need to compete on strength of their macro networks, plus availability of Wi-Fi. Scale in mobile market share / full network sharing agreements / co-operation with fixed / Wi-Fi providers will be key.**

**Pricing decisions will be driven by competitive pressure, but will need to take account of potential for VoIP to erode voice revenue. Tiered data pricing (speed, quantity) will likely be key to growing revenue long-term.**

# Heavy Mobile Data Users Likely to Triple to 1B+ by 2013E

Wireless modems (1,000MB 3G mobile data consumption per month) / iPhones (200MB) / Other smartphones (20MB)

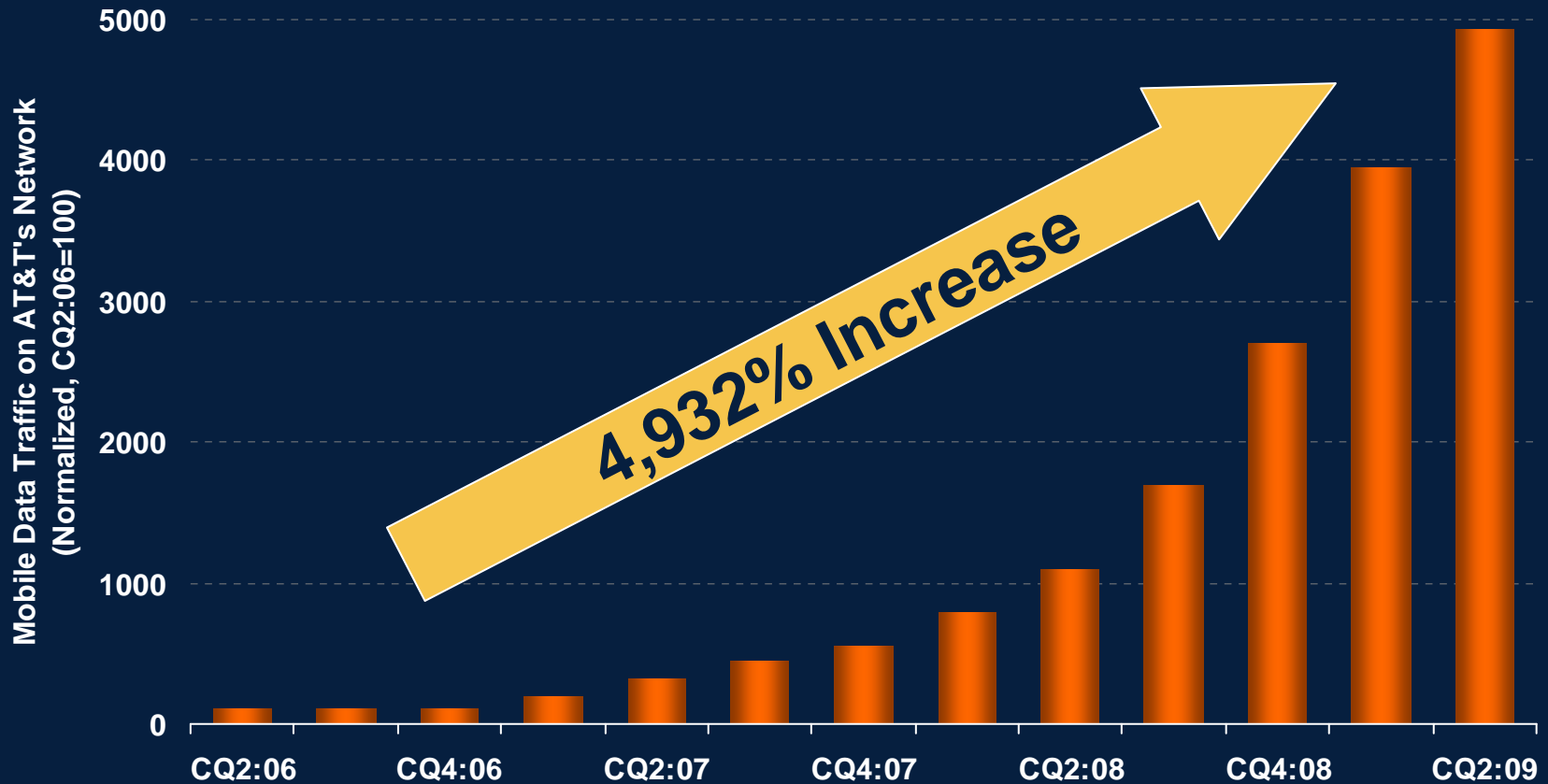
**Global Wireless Modem / iPhone / Other Smartphone Users, 2008 – 2013E**



# AT&T

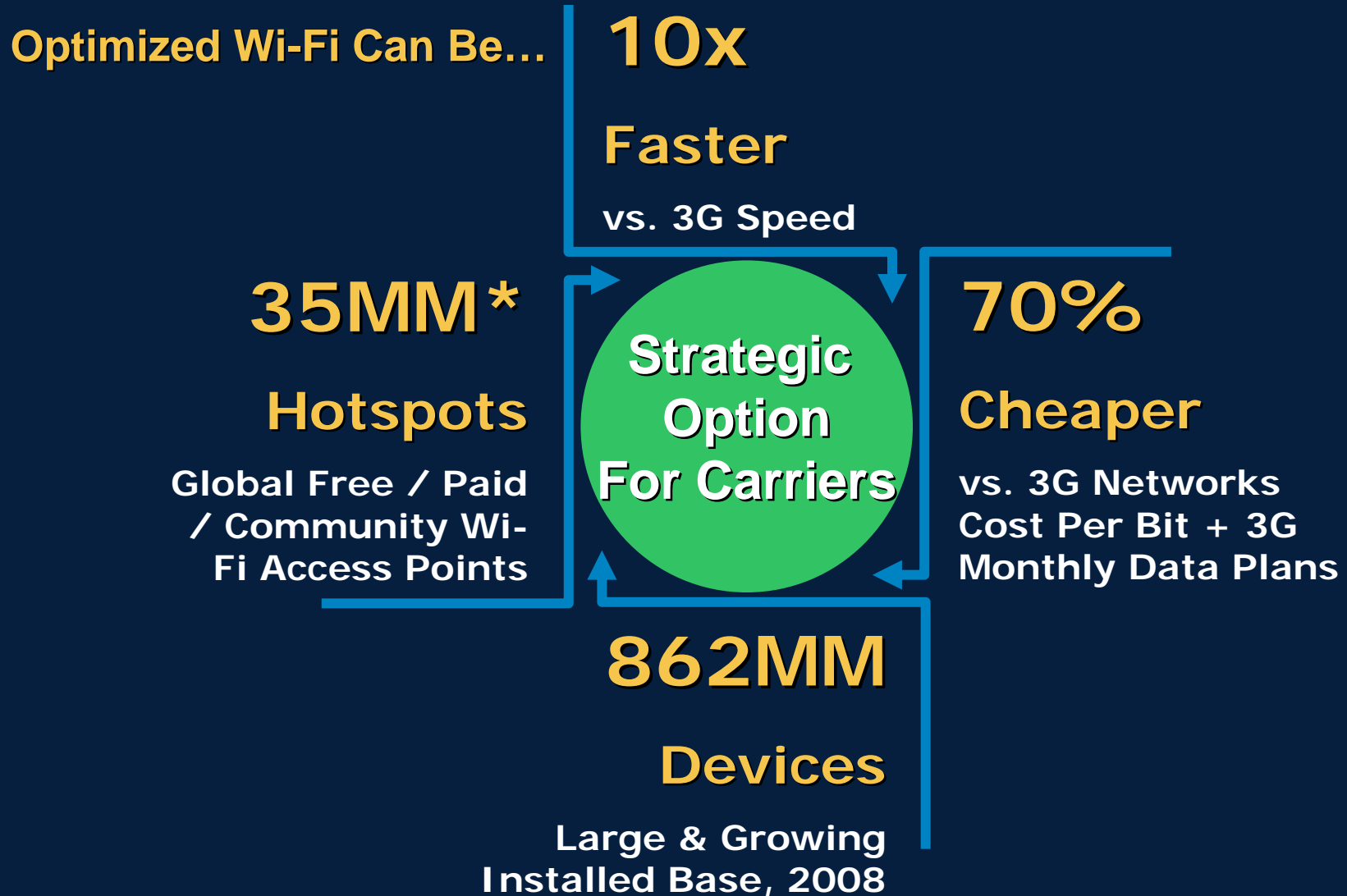
## 50x Mobile Data Traffic Increase in Past 3 Years

AT&T Mobile Data Traffic Growth, CQ2:06 – CQ2:09



# Wi-Fi = Material Portion of USA iPhone Traffic, per AdMob

## Wi-Fi Providing Some Relief to Challenged 3G Networks



# Key Theme # 7

## Regulators Can Help Advance / Slow Mobile Internet Evolution

### **Potential Supports:**

1. Net neutrality enforcement = key to drive decentralized mobile Internet innovation. Key question whether regulators allow continued blocking of bandwidth-intensive apps on mobile or leave it to mobile operators to adopt tiered bandwidth pricing.
2. International data roaming price ceilings (price reductions of >50%) should encourage mobile Internet usage, particularly in Europe.

### **Potential Drags:**

1. Copyright protection - proposed laws (France, UK, Sweden) to cut off persistent mobile Internet illegal file sharers likely to encourage development of mobile payment system, but could increase overhead for carriers.
2. Zoning laws could continue to slow 3G network rollout – but network sharing (as shown by Vodafone + O2 in W. Europe) may be a partial answer.
3. China / India 3G licenses (issued in 1/09 / expected in CQ4:09E, respectively) reshape competitive landscape for carriers. High license prices or standards confusion could impede rollout / adoption.

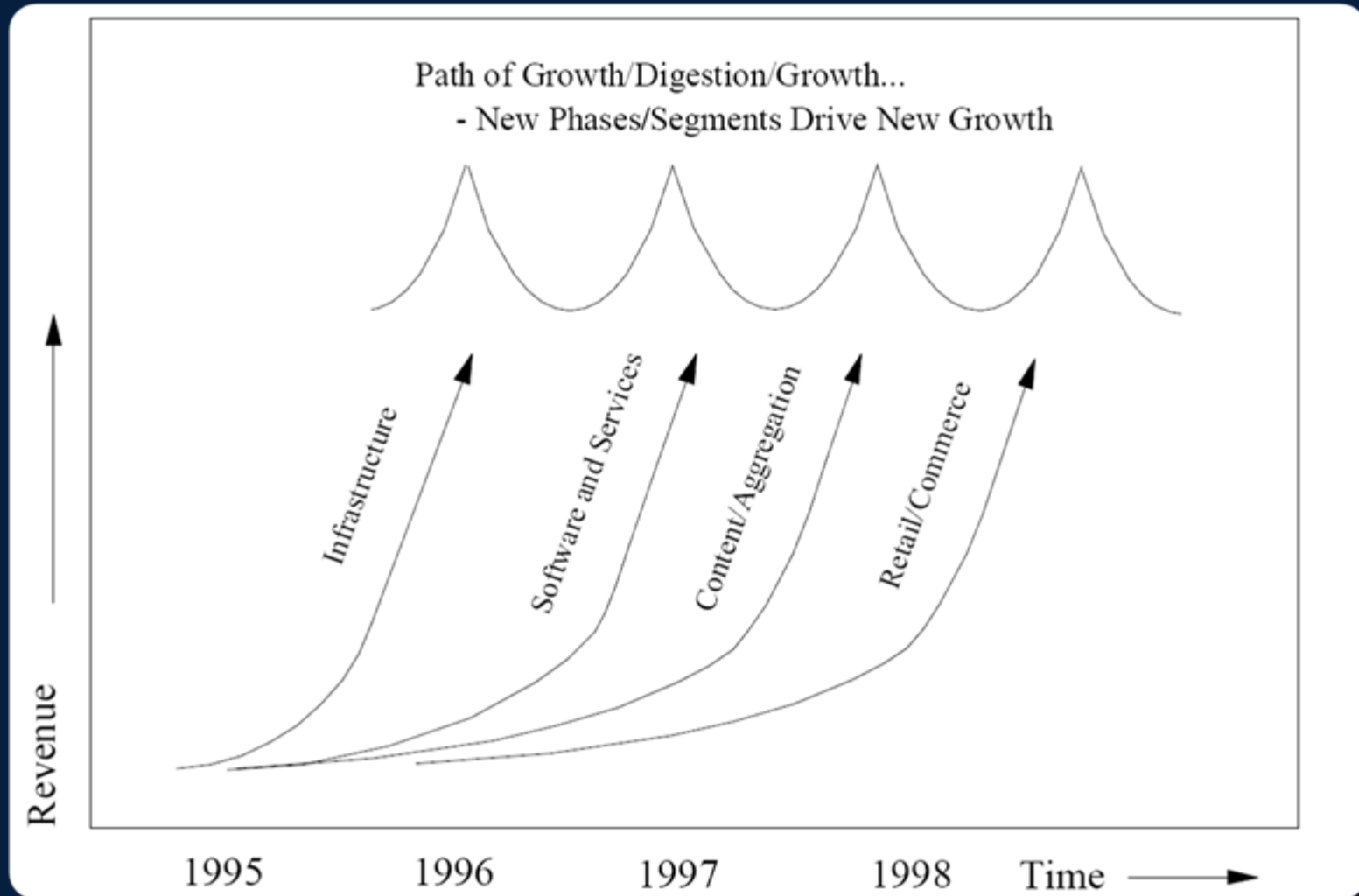
## Key Theme # 8

### Mobile-Related Share Shifts Will Create / Destroy Material Shareholder Wealth

**Massive technology changes typically shift dynamics between incumbents / attackers creating winners / losers.**

# Mobile Internet Likely to Follow Timing & Development Patterns of Desktop Internet Market

Timing & Development of Internet Market Segment – From Our 1996 Internet Retailing Report



# Technology Cycles - Wealth Creation / Destruction

## New Companies Often Win Big in New Cycles

**Mainframe  
Computing  
1950s**

### Winners

IBM  
NCR  
Control Data  
Sperry  
Honeywell  
Burroughs

**Mini  
Computing  
1960s**

### Winners

Digital Equipment  
Data General  
HP  
Honeywell  
Prime  
Computervision  
Wang Labs

**Personal  
Computing  
1980s**

### Winners

Microsoft  
Cisco  
Intel  
Apple  
IBM  
Oracle  
EMC  
Dell  
HP  
Compaq

**Desktop Internet  
Computing  
1990s**

### Winners

Google  
AOL  
eBay  
Yahoo!  
Yahoo! Japan  
Amazon.com  
Tencent  
Alibaba  
Baidu  
Rakuten

**Mobile Internet  
Computing  
2000s**

# Appendix

## USA Income Statement, F2000 – F2009E

	F2000	F2001	F2002	F2003	F2004	F2005	F2006	F2007	F2008	F2009E
<b>Revenue (\$B)</b>	<b>\$2,026</b>	<b>\$1,991</b>	<b>\$1,853</b>	<b>\$1,783</b>	<b>\$1,880</b>	<b>\$2,154</b>	<b>\$2,407</b>	<b>\$2,568</b>	<b>\$2,524</b>	<b>\$2,106</b>
<b>Y/Y Growth</b>	<b>11%</b>	<b>-2%</b>	<b>-7%</b>	<b>-4%</b>	<b>5%</b>	<b>15%</b>	<b>12%</b>	<b>7%</b>	<b>-2%</b>	<b>-17%</b>
Individual Income Taxes	\$1,005	\$994	\$858	\$794	\$809	\$927	\$1,044	\$1,164	\$1,146	\$916
Y/Y Growth	14%	-1%	-14%	-8%	2%	15%	13%	11%	-2%	-20%
% of Revenue	50	50	46	45	43	43	43	45	45	43
Social Insurance Taxes	\$653	\$694	\$701	\$713	\$733	\$794	\$838	\$870	\$900	\$891
Y/Y Growth	7%	6%	1%	2%	3%	8%	6%	4%	4%	-1%
% of Revenue	32	35	38	40	39	37	35	34	36	42
Corporate Income Taxes	\$207	\$151	\$148	\$132	\$189	\$278	\$354	\$370	\$304	\$139
Y/Y Growth	12%	-27%	-2%	-11%	44%	47%	27%	5%	-18%	-54%
% of Revenue	10	8	8	7	10	13	15	14	12	7
Other	\$161	\$152	\$146	\$144	\$149	\$154	\$172	\$165	\$174	\$160
Y/Y Growth	6%	-5%	-4%	-2%	3%	4%	11%	-4%	5%	-8%
% of Revenue	8	8	8	8	8	7	7	6	7	8
<b>Expense (\$B)</b>	<b>\$1,789</b>	<b>\$1,863</b>	<b>\$2,011</b>	<b>\$2,160</b>	<b>\$2,293</b>	<b>\$2,472</b>	<b>\$2,655</b>	<b>\$2,729</b>	<b>\$2,983</b>	<b>\$3,998</b>
<b>Y/Y Growth</b>	<b>5%</b>	<b>4%</b>	<b>8%</b>	<b>7%</b>	<b>6%</b>	<b>8%</b>	<b>7%</b>	<b>3%</b>	<b>9%</b>	<b>34%</b>
Entitlement / Mandatory	\$927	\$992	\$1,060	\$1,150	\$1,225	\$1,284	\$1,351	\$1,450	\$1,509	\$1,725
Y/Y Growth	30%	7%	7%	8%	7%	5%	5%	7%	4%	14%
% of Expense	52	53	53	53	53	52	51	53	51	43
Non-Defense Discretionary	\$345	\$360	\$432	\$453	\$452	\$508	\$556	\$490	\$605	\$1,440
Y/Y Growth	-29%	4%	20%	5%	0%	12%	9%	-12%	23%	138%
% of Expense	19	19	21	21	20	21	21	18	20	36
Defense	\$294	\$305	\$348	\$405	\$456	\$495	\$522	\$551	\$616	\$690
Y/Y Growth	7%	4%	14%	16%	13%	9%	5%	6%	12%	12%
% of Expense	16	16	17	19	20	20	20	20	21	17
Net Interest on Public Debt	\$223	\$206	\$171	\$153	\$160	\$184	\$227	\$237	\$253	\$143
Y/Y Growth	-3%	-8%	-17%	-10%	5%	15%	23%	5%	7%	-44%
% of Expense	12	11	9	7	7	7	9	9	8	4
<b>Profit / Loss (\$B)</b>	<b>\$236</b>	<b>\$128</b>	<b>-\$158</b>	<b>-\$378</b>	<b>-\$413</b>	<b>-\$318</b>	<b>-\$248</b>	<b>-\$161</b>	<b>-\$459</b>	<b>-\$1,892</b>
<b>Profit Margin (%)</b>	<b>12%</b>	<b>6%</b>	<b>-9%</b>	<b>-21%</b>	<b>-22%</b>	<b>-15%</b>	<b>-10%</b>	<b>-6%</b>	<b>-18%</b>	<b>-90%</b>

Note: US federal government fiscal year ends in September. Non-defense discretionary spending in 2009 includes "one-time" items such as \$549B TARP funds (excl. \$70B returned, incl. \$100B to Public-Private Partnership Fund; \$85B to automakers; \$70B to AIG; \$50B to Citigroup; \$45B to BofA; \$79B to other financial firms; \$55B TALF; \$50B to homeowners), payment of \$96B to Fannie Mae / Freddie Mac, and ARRA (American Recovery and Reinvestment Act) related spending of ~\$120B. Entitlement / mandatory expense include social security, Medicare, Medicaid, and income security (unemployment / food / housing / retirement benefits). Source: Department of the Treasury, Office of Management and Budget, and Congressional Budget Office.

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<b>Equal-weight/Hold</b>	<b>1062</b>	<b>45%</b>	<b>314</b>	<b>47%</b>	<b>30%</b>
<b>Not-Rated/Hold</b>	<b>26</b>	<b>1%</b>	<b>3</b>	<b>0%</b>	<b>12%</b>
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