

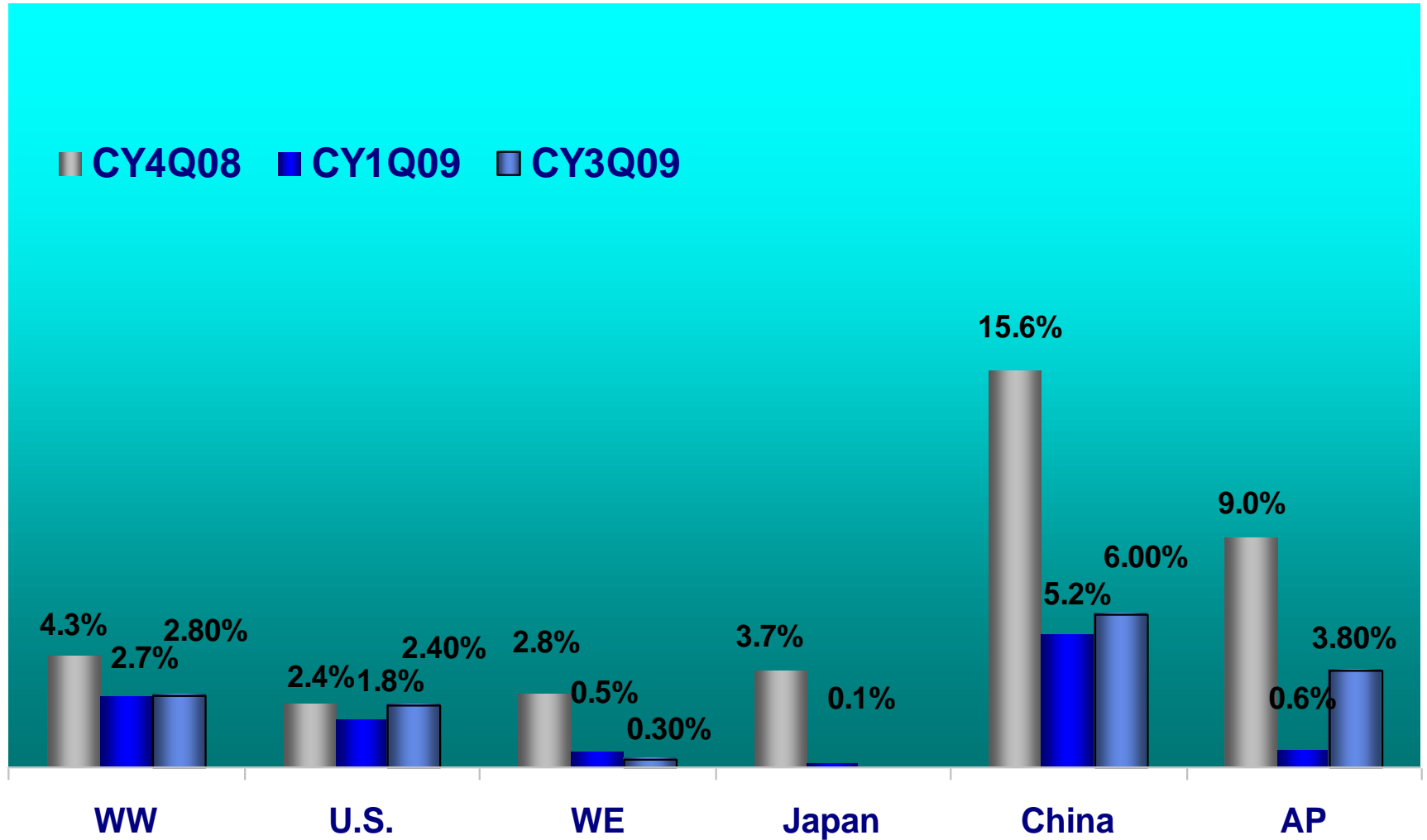
Global 반도체 수요예측과 시장전망

Soo Kyoum Kim
Program Director, Semiconductors
IDC

- **State of the market**
- **Semiconductor Forecast**
- **Memory Market Forecast**
- **PC Semi. Market Forecast**
- **Mobile Phone Semi. Market Forecast**
- **Embedded Processor Market Forecast**
- **Competitive Landscape**

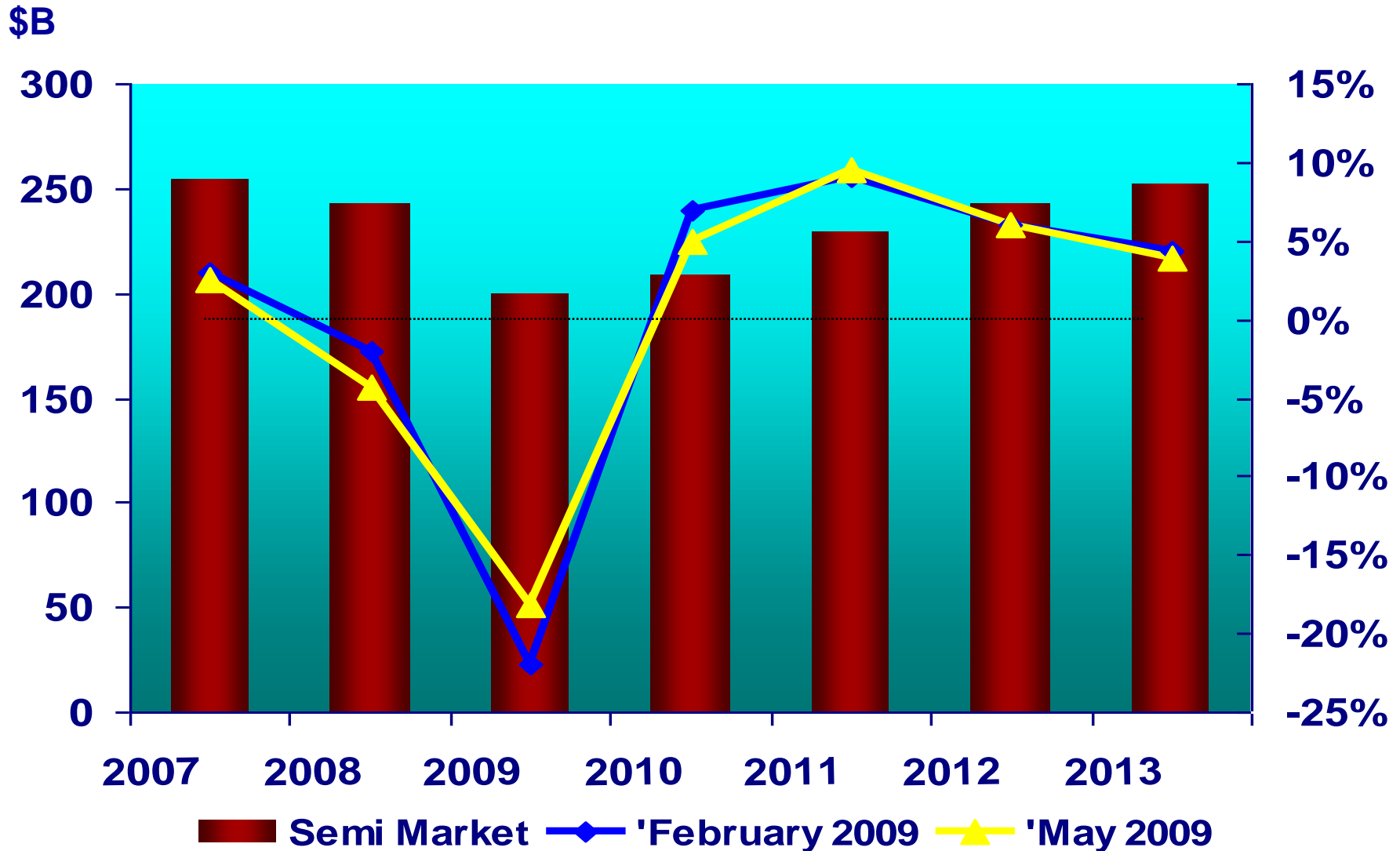
- **WW GDP growth will drop but no plummet**
 - Government boosted global liquidity with various tools and financial sector enlarges discrepancy from real economy.
 - IT industry keeps still very cautious in capital spending, will decide position after confirming 4Q result
- **PC market growing in the consumer and public sector, however enterprise remains weak and does not snapback until 2H'10.**
- **Semiconductor industry sequential revenues improving after a bottom in 1Q09. Y-Y revenue growth remains negative until mid-2010.**
- **Foundry market rapidly improving to 3Q'09 but orders from fabless and utilization decline again by end of this year**
- **DRAM and NAND markets stable but ASPs peak in mid 4Q**
- **Despite the prolonged recession, real opportunities for chipmakers go for embedded, connectivity, smartphone, wireless broadband, volume potential of emerging regions**

IT Spending Forecast for 2010



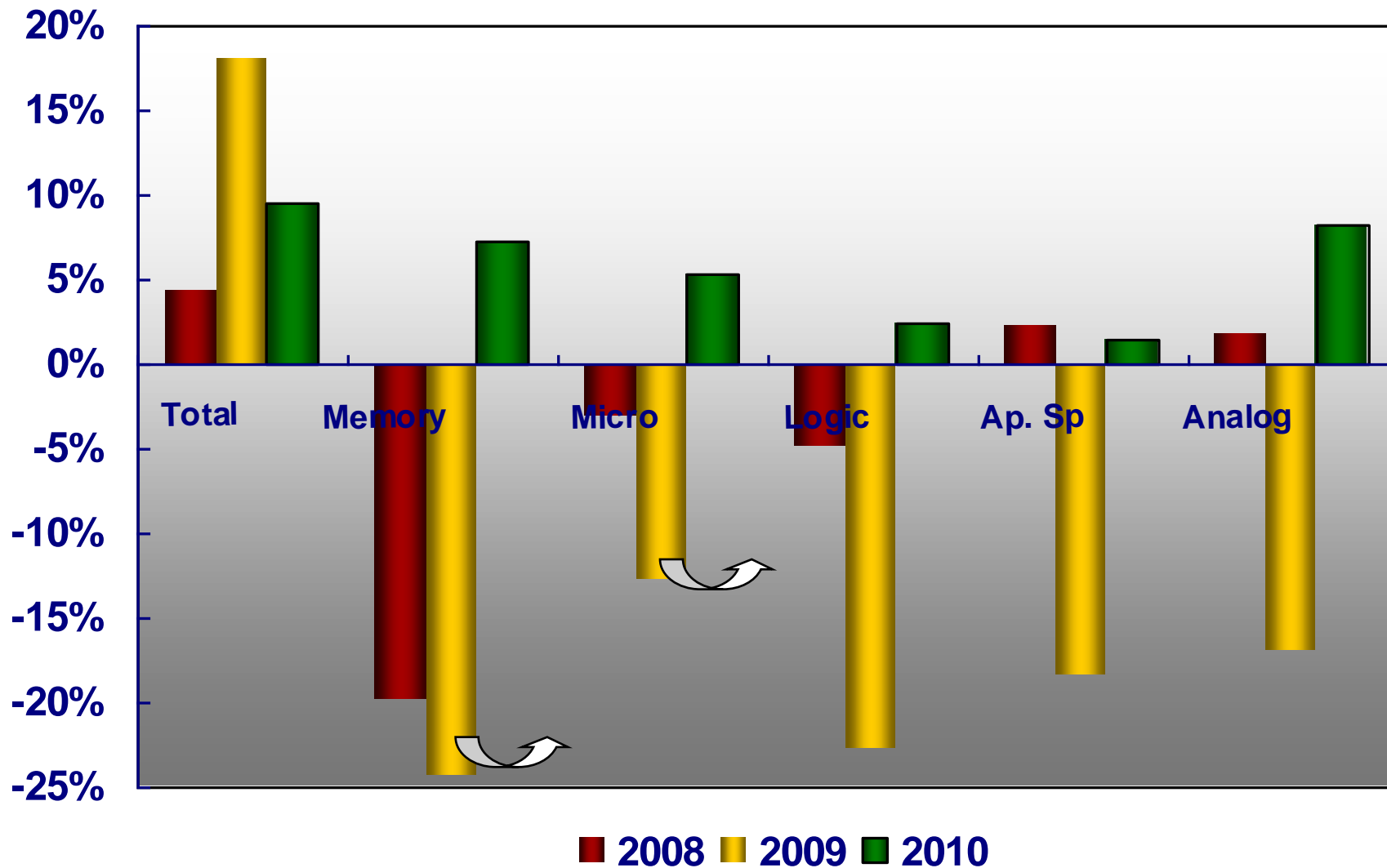
Source: IDC, November 2009

Semiconductor Revenue Forecast



Source: IDC WW Semiconductor Applications Forecaster, June 2009

Semiconductor Market By Device

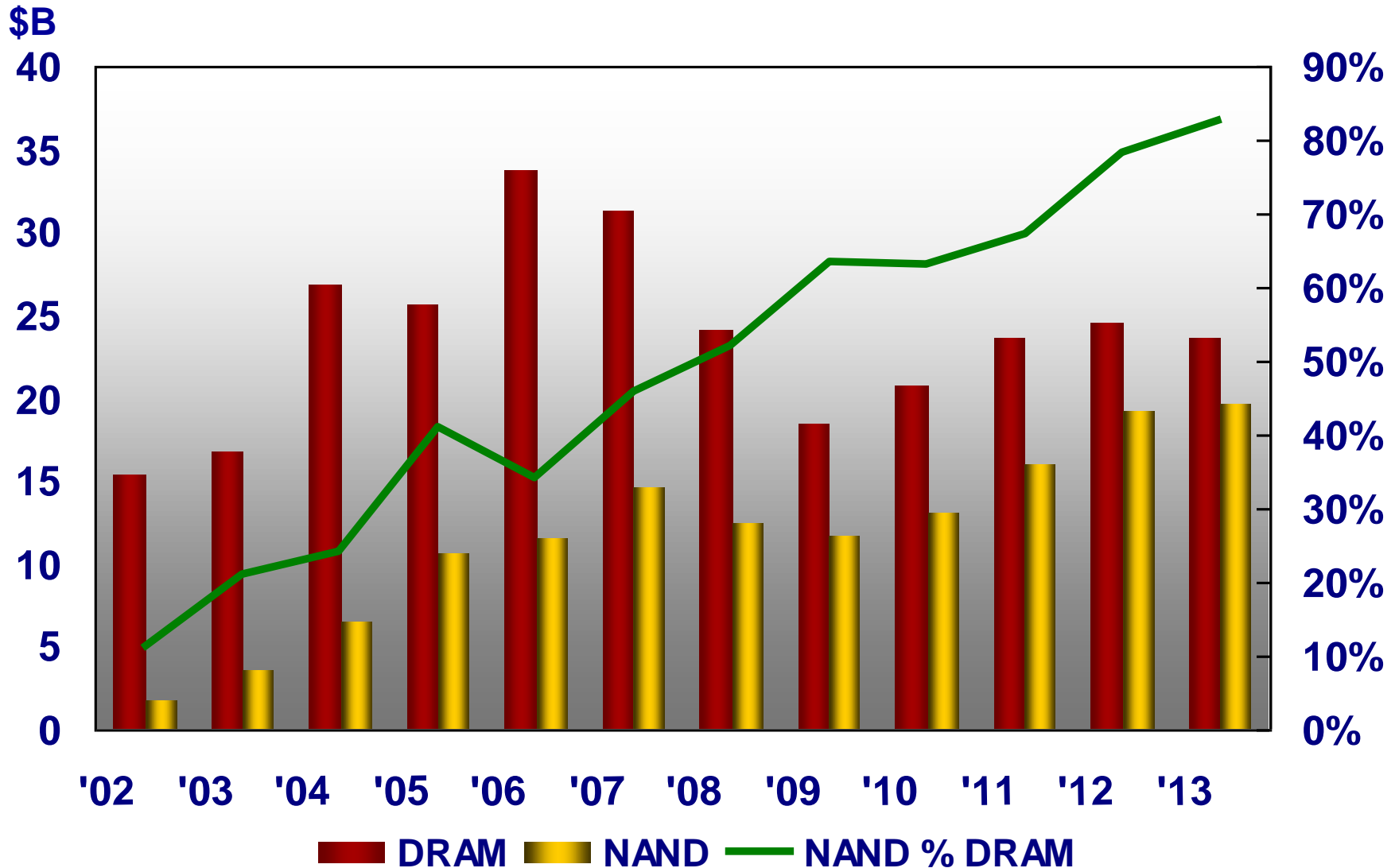


Source: IDC WW Semiconductor Applications Forecaster, June 2009

Memory Market Trends

- **DRAM revenue will reduce 21% to \$19B in '09 and will have a two digit growth next year**
 - PC will have an unprecedented 0~2% growth even in recession. But mass expansion of low-end system will minimize BOM growth
 - Current balanced market comes from interface mix change and followed wafer mismatch but ASP will peak by mid Nov. at best and face decline
 - Capex will return next year but real output will not come until mid'10
- **NAND market will slightly decline to \$12B this year, but will achieve over 10% growth next year**
 - Apple/Smartphone drives demand but other sectors are still slow.
 - Slow process migration and wafer mismatch brings overall supply shortage in 4Q.
- **Minimum Capex and slow process migration will cover slow demand growth, bring stable market in 1H10**

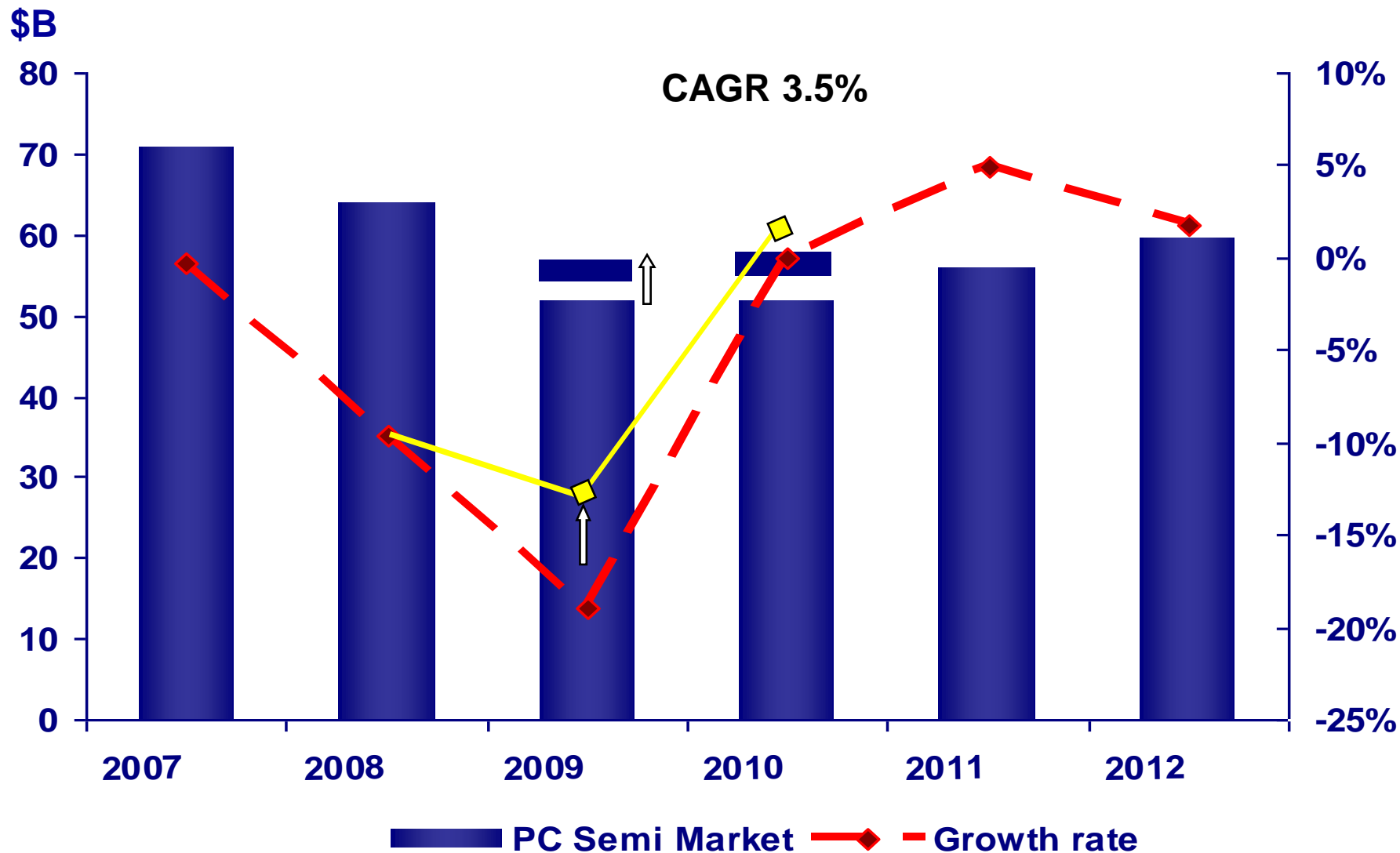
DRAM and NAND Revenue Forecast



Source: IDC, September 2009

- **In 3Q08, processor & chipset markets defied recession**
 - Processors: Units *up* 23.0% QoQ, 0.3% YoY.
 - Chipsets: Units *up* 17.5% QoQ, 5.7% YoY
 - Intel strongly drove low-end segment(Netbook, Nettop, CULV) especially in emerging market with very aggressive pricing. Government stimulus package worked out in the consumer sector
- **4Q may see flat after 3Q peaks**
 - Value chain—foundry, HDDs, systems, channel—indicate weakening overall demand.
 - Foundry expects slight growth in October till Nov. but some slow market then.
 - Windows 7 becomes a sale pitch in consumer market but no outstanding features requiring rich BOM
- **Return to seasonality next year but inventory correction is expected early next year**

PC Semi. Revenue Forecast



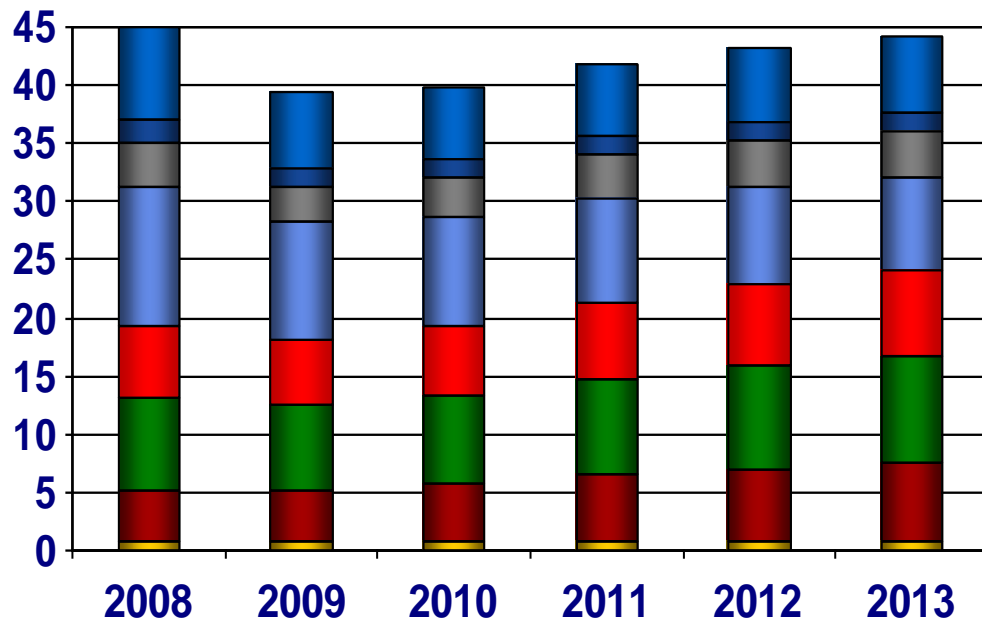
Source: IDC WW Semiconductor Applications Forecaster, June 2009

- **Market revenue will drop 12% to \$39B this year but positive growth will return from**
 - Inventory replenishment produced sudden demand uptick in 2Q but. weak demand of end market will lead a flat or nominal growth in 2H09.
 - All segments are impacted but only HSPA/EVDO/TD-SCDMA will show a positive growth this year
 - 4G will start to emerge from 2010 and 3.5G will get stronger as a mainstream interface into 2013.
 - Maturing technologies of 2G/2.5G started to decline. Semi market will be in low growth of CAGR = 3.5%
- **Connectivity and multimedia processing continue to be key growth driver**
 - Connectivity will be a major driver at 12% CAGR. Established techs (BT, FM, GPS, WiFi) will reach saturation but newer ones (TV, WiMAX, NFC, UMB) will grow faster
 - Embedded NAND Flash in tremendous growth of 33% CAGR for multimedia processing
 - Functionality of AP/MP are increasingly integrated into Baseband
- **Integration, economies of scale and platform solutions will be key focus area for mobile semi. supplier**
 - Mobile BOM costs will decrease at 5% of CAGR as integration trends and competition drive pricing war
 - Shorter phone lifecycle encourages makers to employ platform solution,

Mobile Phone Chipset Forecast and Market Share

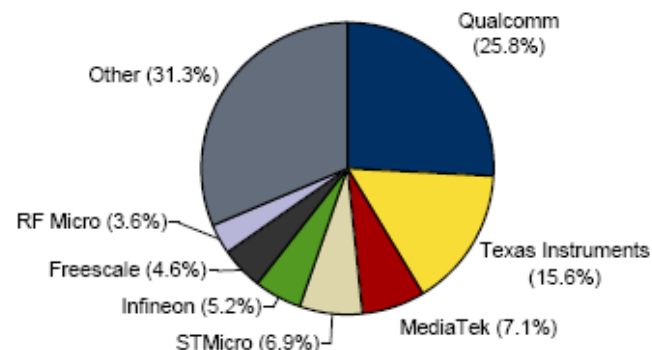
\$B

CAGR 3.0%



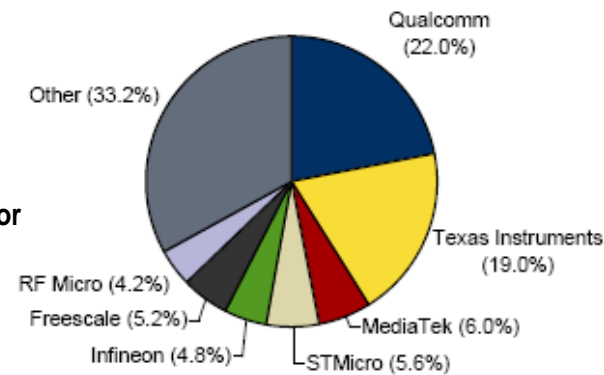
- Image Processor
- Onboard Memory (Flash/PSRAM/MDRAM)
- Baseband (digital + analog)
- Power Amplifier
- Applications Processor and Coprocessor
- Radio/connectivity
- LCD controllers/drivers + other analog
- Other

2008



Total = \$23.6B

2007

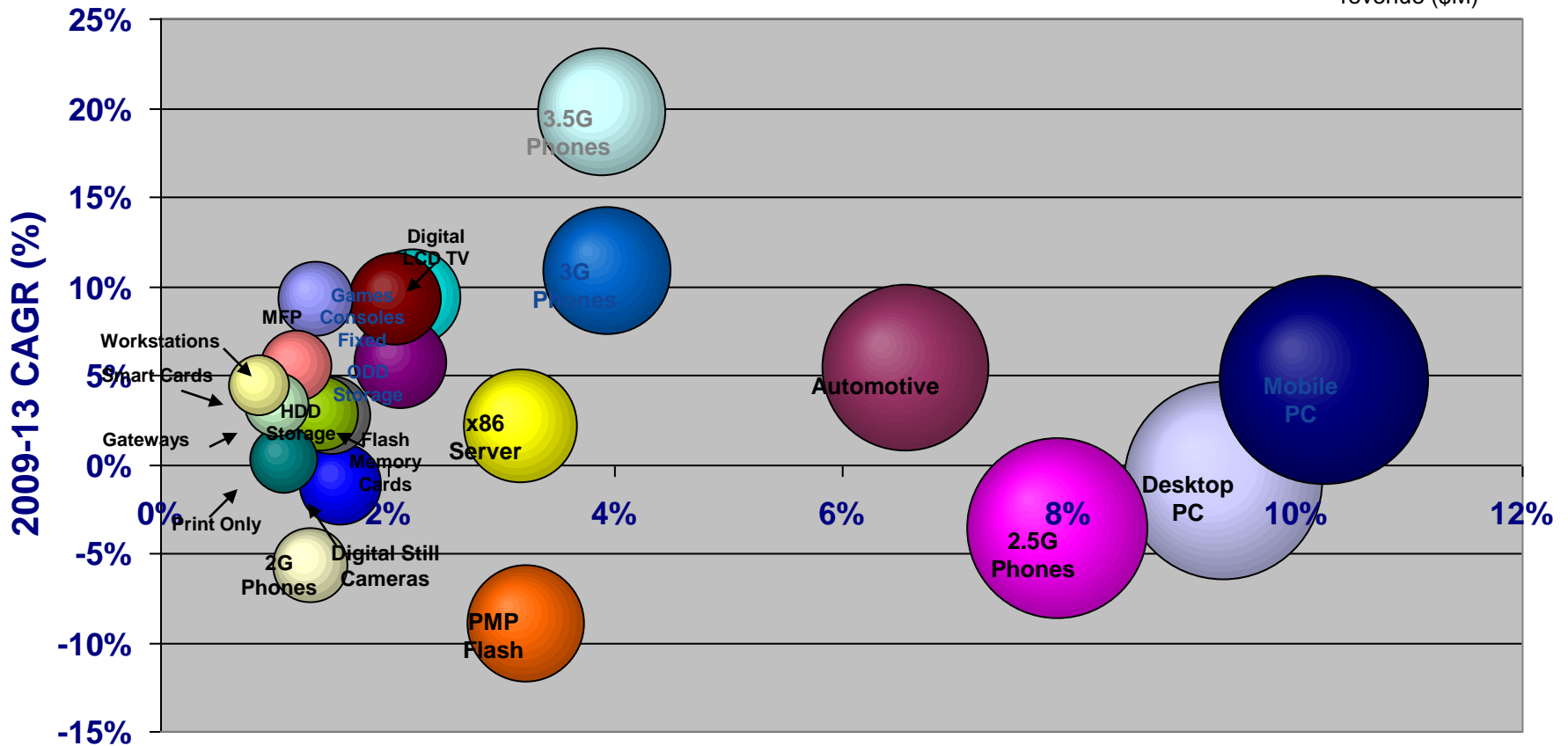


Total = \$23.4B

Semiconductor Total Market Opportunity

WW Semiconductor Market Opportunity by Application

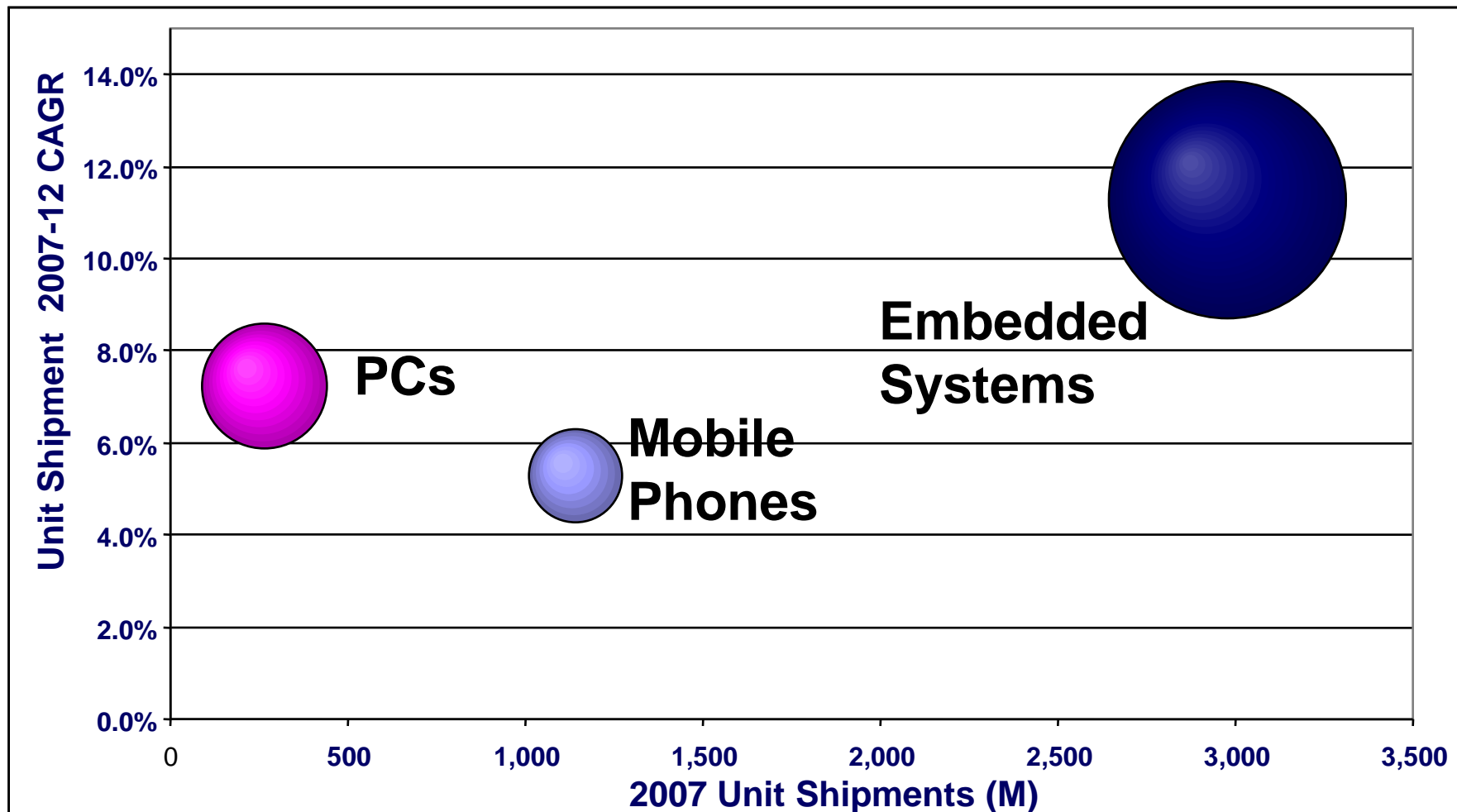
Bubble size refers to 2009 forecasted revenue (\$M)



2009 Share of Total Semiconductor Revenue (%)

Source: IDC WW Semiconductor Applications Forecaster, June 2009

The Embedded Device Market Opportunity



Size of Bubble = 2007 Revenues (\$M)

Embedded Market Unit Shipments

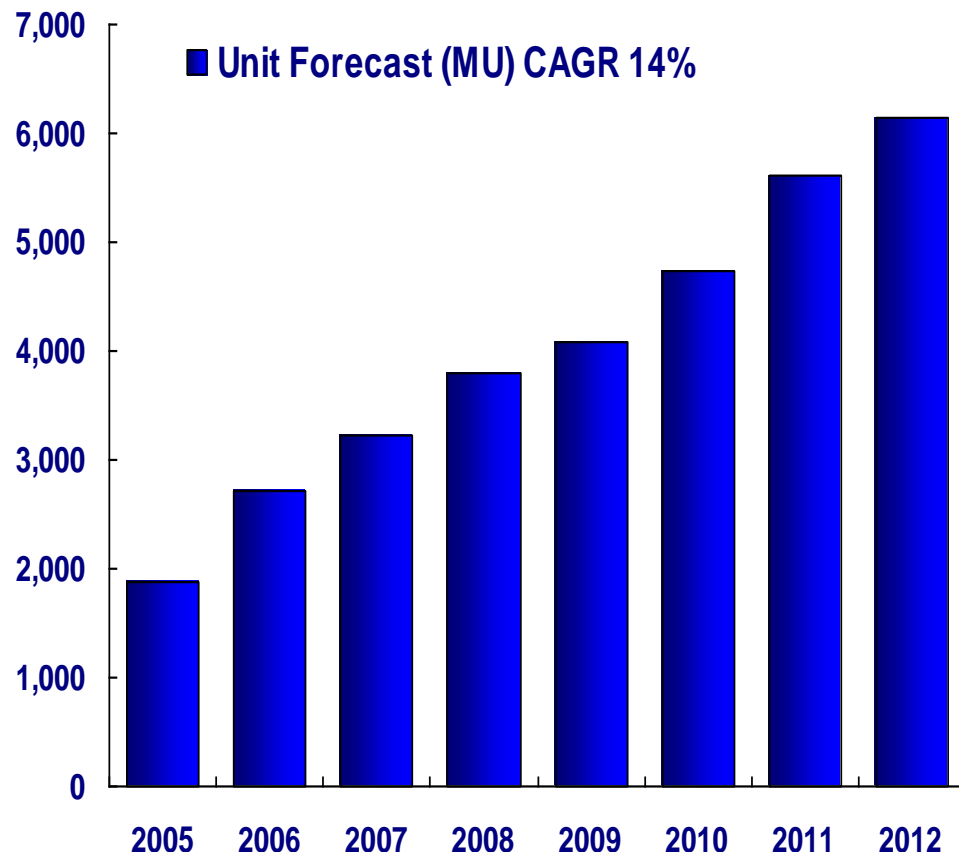
- **3.2 billion embedded processor cores shipped in 2007**

- ARM+MIPS+Power Architecture (including mobile phone processors) accounted for nearly 92% of volume
- 3 out of 4 embedded processor cores shipped in ASSP products
- 64% shipped into communications industry, 24% into consumer

- **6.1 billion embedded processor core to ship in 2012**

- ARM+MIPS+Power Architecture (including mobile phone processors) will account for nearly 87% of volume
- Nearly 85% of embedded processor cores will ship in ASSP products

MU



Estimates include ASSPs, ASICs, and Standalone processors. Volume includes mobile phones. Does not include PCs or MCU replacement volumes.

- **Fabless companies continue to outperform in terms of top line revenue growth and diversification**
 - Leaders like Qualcomm, Broadcom, Nvidia have strong financial structure and execute extremely well
- **DRAM and NAND markets consolidating as market migrates to sub 40nm and 30nm process**
- **IDMs moving to fabless business model-accelerates after 45nm- TI, Freescale, LSI, IDT, NEC, Infineon, Sony, etc**
- **Expect consolidation to accelerate in China and Taiwan among foundry, memory, and fabless companies**

- Please email me at skim@idc.com

