

Semiconductor Market Forecast Update

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Agenda

- **State of the market**
- **Semiconductor Forecast**
- **Memory Market Forecast**
- **Dedicated Foundry Market Forecast**
- **PC Semi. Market Forecast**
- **Mobile Phone Semi. Market Forecast**
- **Essential guidance**

State of the Semi. Markets

- **U.S. GDP growth will drop but no plummet**
 - US financial sector will be in short-term relief but aftermath will soon affect real consumption sector by sector
 - Global economic growth will lower to 2~3% range for '08 and '09
- **IT industry expects price wars to counter the effect in end-user pricing of rising raw material and logistics costs**
- **Semiconductor market gradually moves downward through 3Q08 but there's a time-lag until impact comes to supply chain**
- **Dedicated Foundry Market grows this year, 2009 will be challenging for growth**
- **Consolidation accelerates as the cost of technology & platforms, and competition increases**

State of the Memory Market

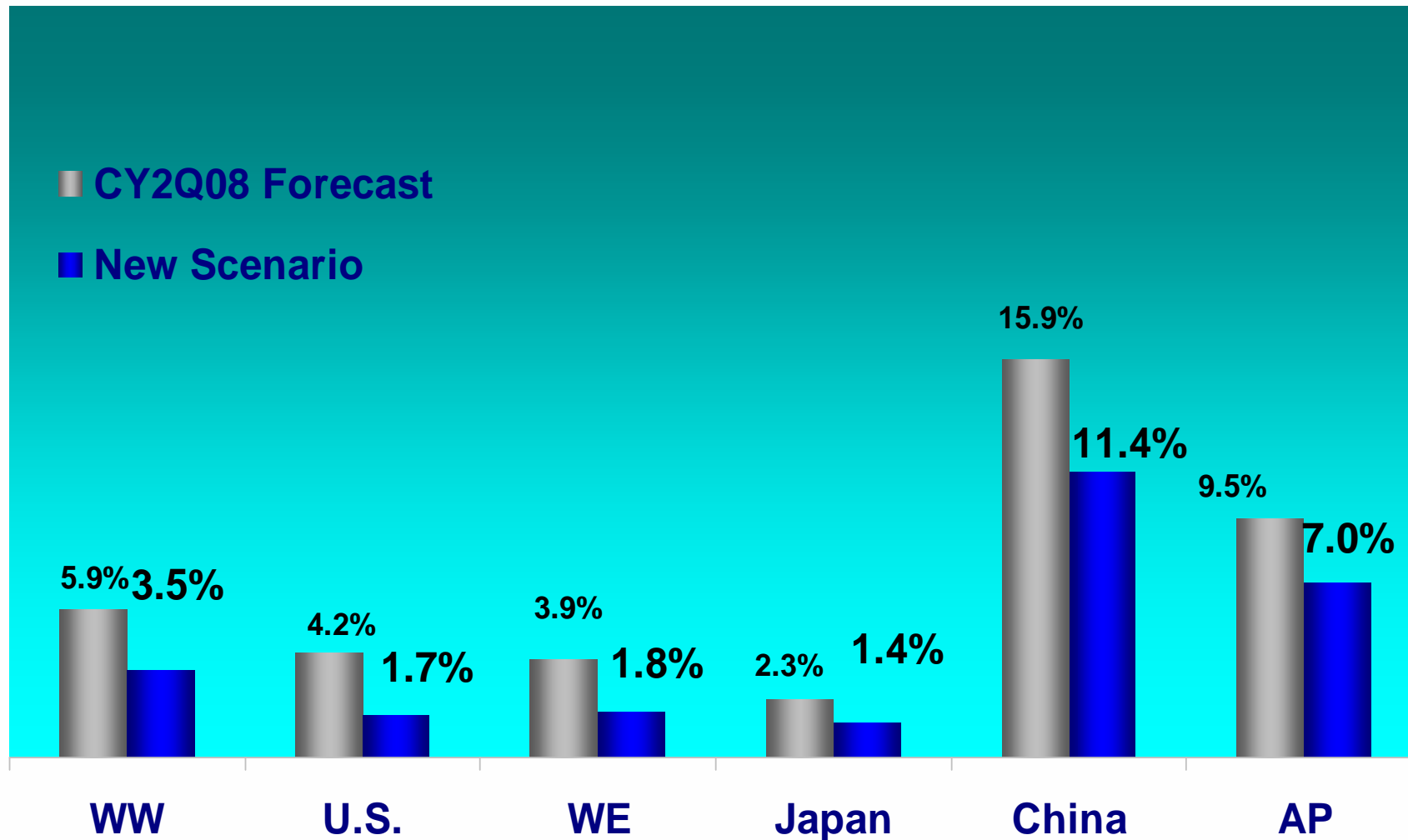
- **DRAM revenue will reach \$24.5B this year, declining 22%, and will grow only in single digits in 2009**
 - Financial crisis started to significantly affect the global economy in 2Q08 then there was a time lag for its impact on real consumption.
 - Current PC market is gradually weakening during 2H08 and towards 2009.
 - Low-cost PCs are getting popular but will not help semiconductor demand. Increases in this form factor shipment will limit bit demand growth to 50% for 2009, much lower than 70% this year.
 - Cap-ex cuts and slower process migrations will reduce bit supply in 2H08-1H09 and eventually cover for weakening demand: IDC expects oversupply will peak this quarter but continue to 1Q09.
 - Every player is struggling to survive. Imminent consolidation will create new market order among players. Consequently, DRAM cycle will pass through the bottom by year-end, one half-year later than IDC expected.

- **NAND revenue will decline 3% to \$14B this year, but will return to healthy 18% growth for 2009**
 - Global recession is gradually impacting consumer demand. Olympics worked in an unexpectedly negative way.

Cont'd

- NAND market is waiting for seasonal demand
 - Card inventory in the channel requires time to make NAND demand revive
 - iPhone and new iPod came out through mid-year but not enough to stimulate component market..
- Hynix's capacity shift didn't change market in 3Q08 but will produce huge capacity hole during 4Q08-1H09 that will cover seasonal demand decrease. So, IDC forecasts at least balanced market or minor shortage in the period.
- As there will be no killer apps in near future, bit growth will get slower until SSD is on growth track. Price erosion will reduce to 40% range and demand will also grow at <100%
- NAND industry cannot avoid consolidation: Samsung with Sandisk

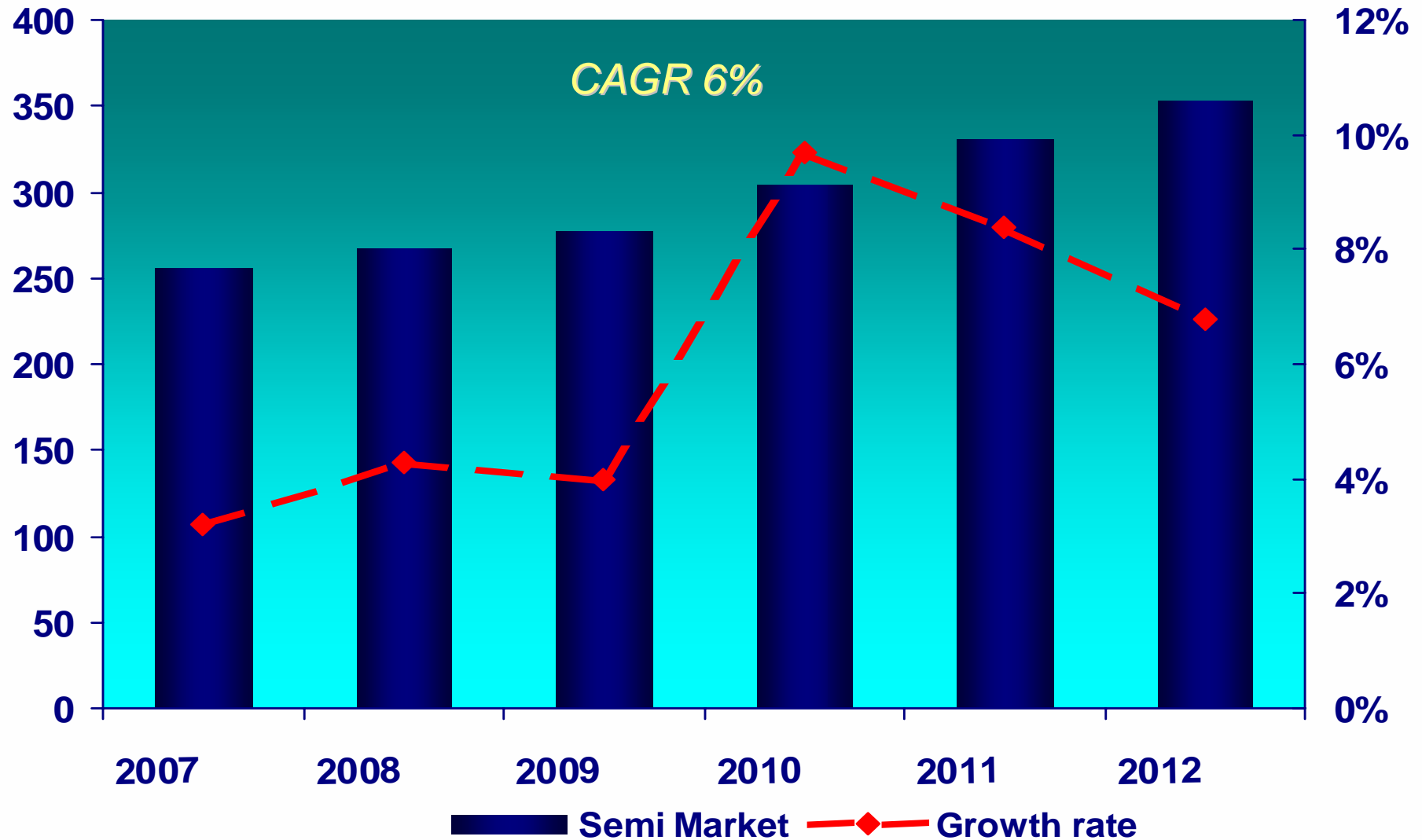
IT Spending Forecast for 2009



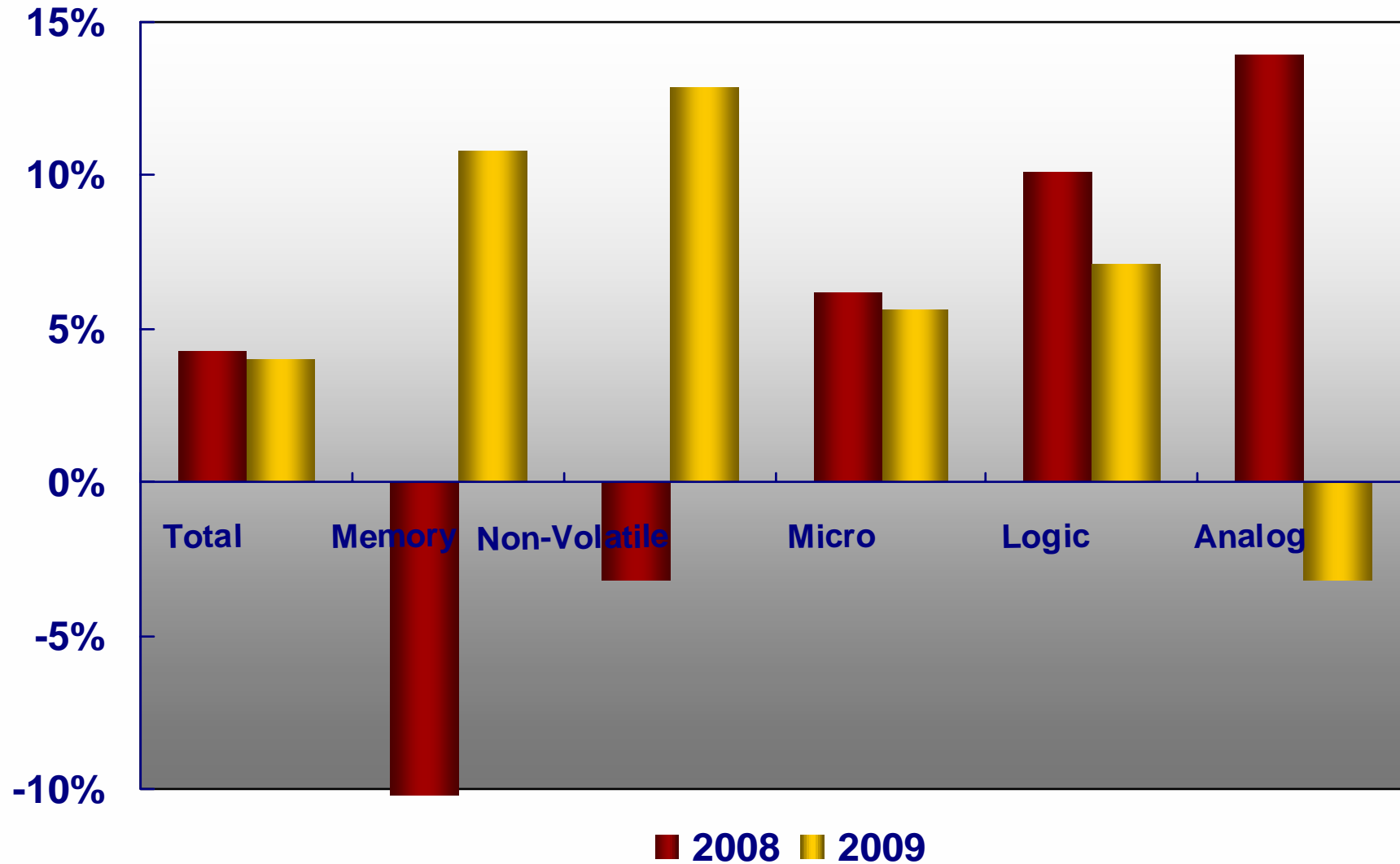
Source: IDC Preliminary, October 2008

Semiconductor Revenue Forecast

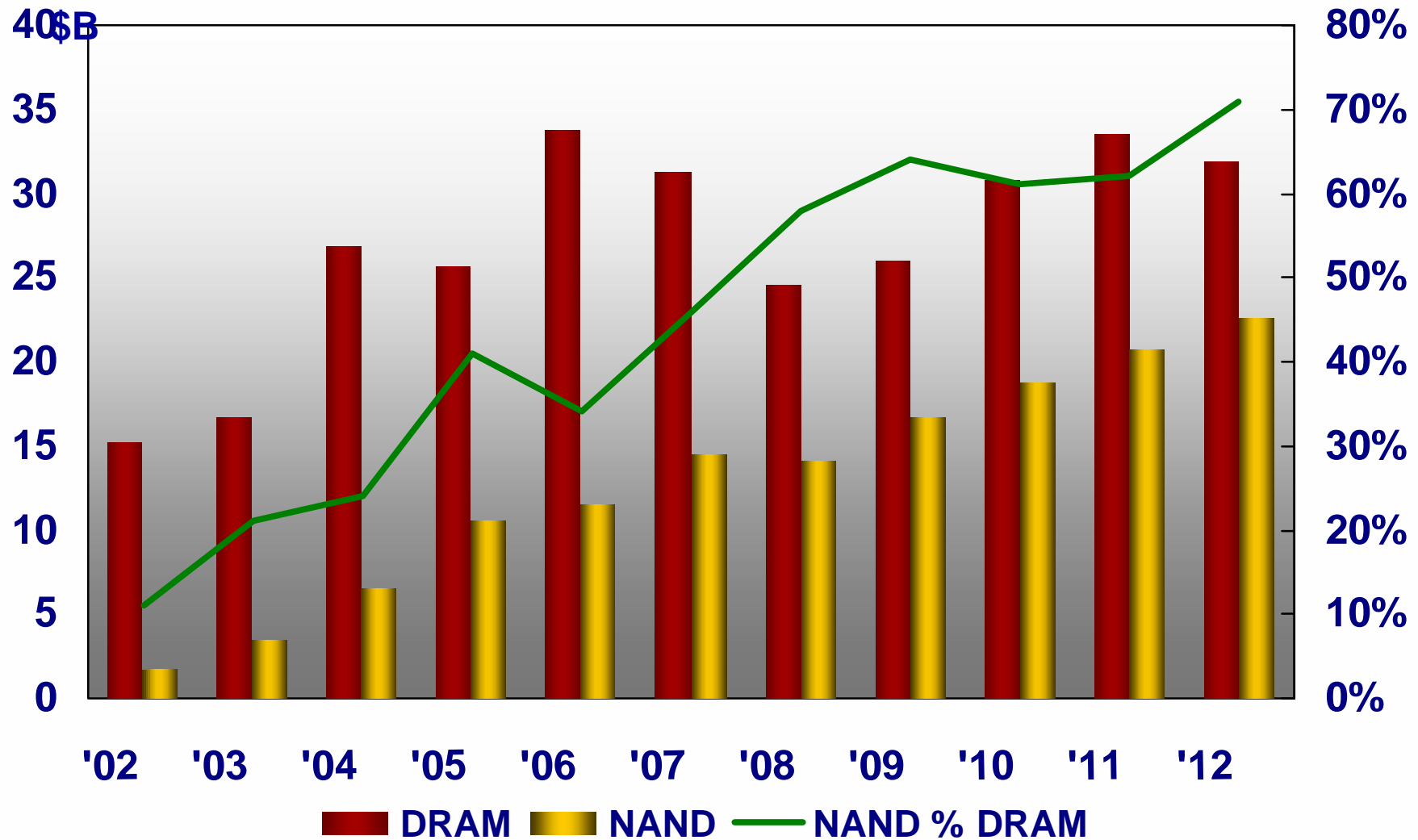
In Billions of Dollars



Cont'd : By Key Product

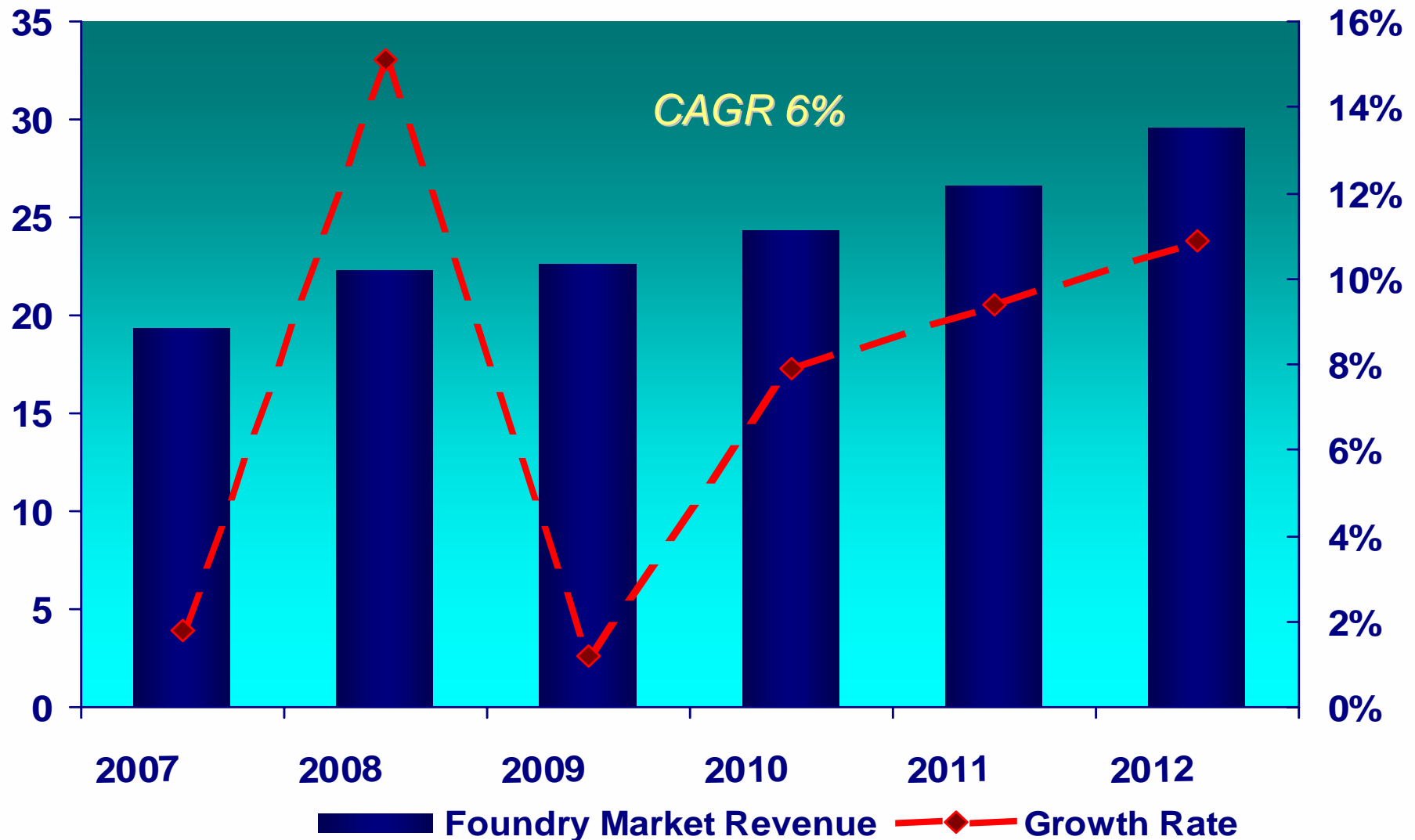


DRAM and NAND Revenue Forecast



Dedicated Foundry Market Forecast

In Billions of Dollars

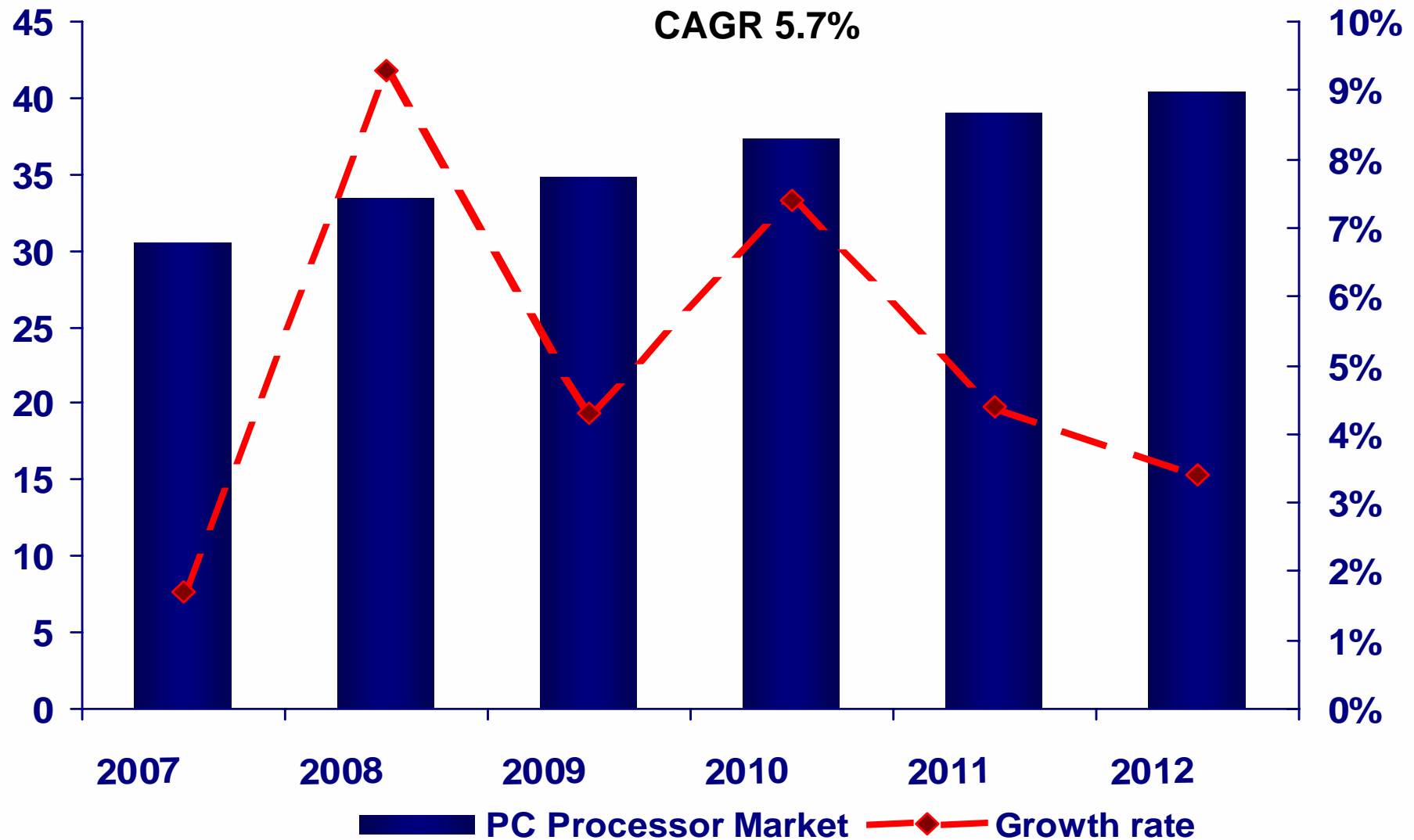


PC Semi. Market Trends

- **In 2Q08, processor & chipset markets defied seasonality**
 - Processors: Units *up* 3.1% QoQ, 16.1% YoY.
 - Chipsets: Units *up* 8.2% QoQ, 17.7% YoY
 - Intel drove market, targeting aggressive prices at specific AMD products in midrange and low-end to make room for Atom.
- **In 2H08, market is weakening**
 - Value chain—foundry, HDDs, systems, channel—indicate weakening overall demand.
 - The recession in the United States began to affect the global economy by end of 2Q08. The recent financial crisis in U.S. will likely accelerate decline and uncertainty through 1H09.
- **Based on 1H08 performance, processor unit forecast for 2008 raised to 13.3%, but forecast for 2009 lowered to 9.9%.**

PC Processor Revenue Forecast

In Billions of Dollars



Mobile Phones Semi. Market Trends



- **Connectivity and Multimedia Processing Continue to be Key growth Driver**

- Connectivity attach rates are prompting combo chips for single chip solution; RF/Baseband + connectivity
- Established techs(BT, FM, GPS, Wifi) will reach saturation but newer ones(TV, Wimax, NFC, UMB) will grow faster
- NAND Flash in in tremendous growth for multimedia processing and functionality of AP/MP are increasingly integrated into Baseband

- **Semi revenue from maturing technologies of 2G/2.5G started to decline but 3G or brand-new 3.5G Growth will pick up pace.**

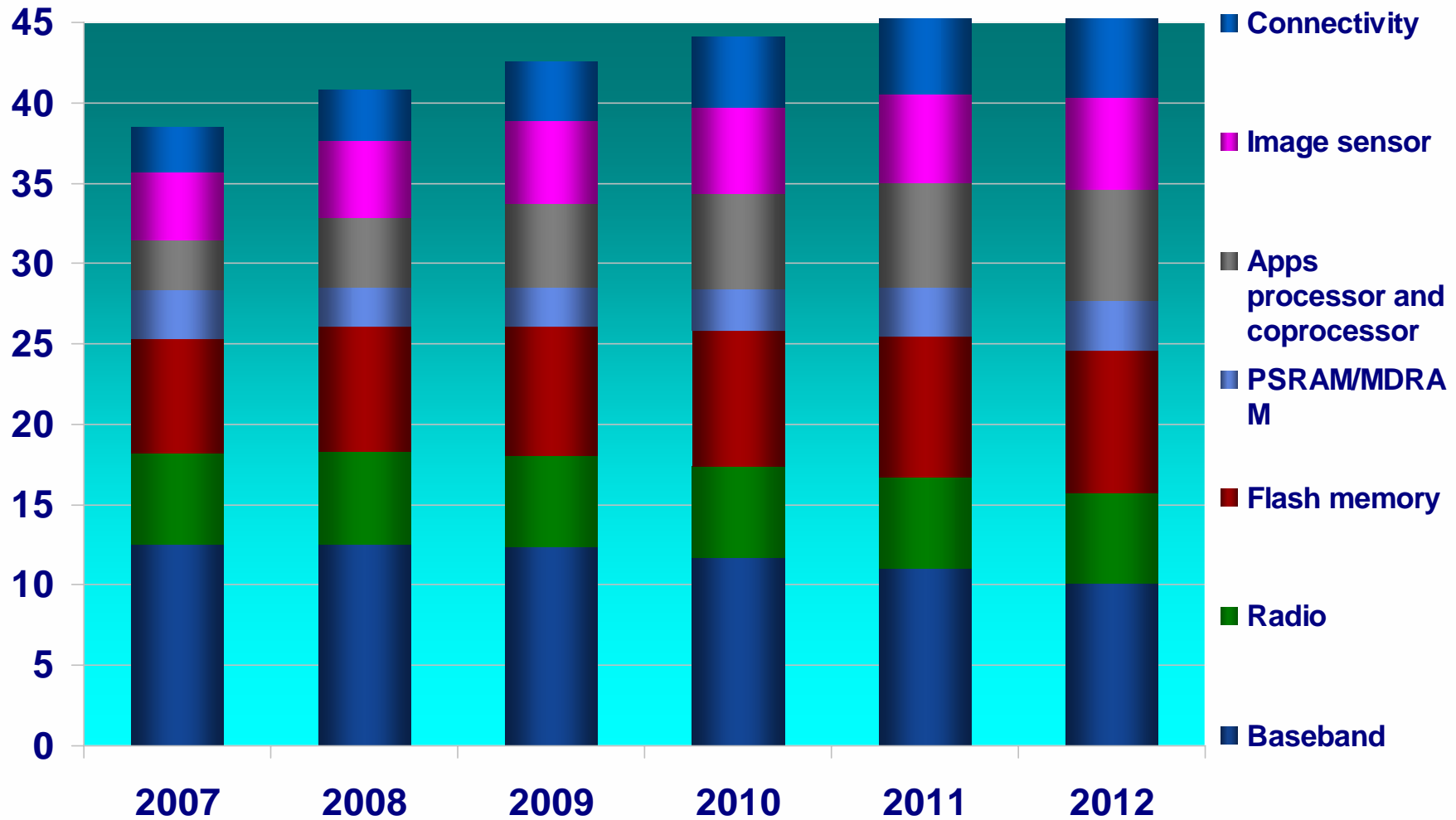
- Penetration in most developed market reached saturation, so most vendors seek for revenue in rich-feature phones

- **Integration, economies of scale and platform solutions will be key focus area for mobile semi. supplier**

- Mobile BOM costs will decrease at 3% of CAGR as integration trends and competition drive pricing war
- Shorter phone lifecycle encourages makers to employ platform solution,
 - not only favors larger semi vendors with a complete portfolio
 - but also enables differentiations in smaller niche market.

Mobile Phone Semi. Forecast

\$B CAGR: Phone = 3% vs Connectivity=14% vs AP=13%



Notes : on-board NAND only.

- **Semiconductor market remains in low single digit growth cycle until 2010**
- **Memory market will bottom by end of '08 and move into next cycle.**
- **Foundry market grows in double digits this year, next year will be a concern**
- **Multimedia, mobility, embedded, NAND, and connectivity are the key markets driving semiconductor growth across all major device categories**
- **Consolidation accelerates, Suppliers must continue to evaluate and execute on partnerships and M&A**
- **Market survivors will have to prepare for the aftermath of upcoming consolidation**

Contact Information/Reminder

- Please email me at skim@idc.com

