Gartner
12th Annual

Asia Pacific
Semiconductor Roadshow

Asia Pacific's Impact on the Semiconductor Industry

Ben Lee
Principal Analyst
ben.lee@gartner.com
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Agenda

- Asia Pacific semiconductor market leaders, 2005
- Asia Pacific semiconductor market outlook
  - Applications that fuel semiconductor growth
  - Major geographic market forecast
  - China electronic & semiconductor industry outlook
- Asia Pacific foundry industry

Key Issues

- What are the emerging applications that will drive Asia Pacific semiconductor growth over the next 5 years?
- What's the semiconductor foundry trends in the near future?
- What is the ODM/EMS production trends in the region and what are the implications to the semiconductor industry?

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2005 Asia Pacific Semiconductor Market Share Leaders

2004 Rank	2005 Rank		2004 Revenue	2005 Revenue	Growth (%)	2005 Share (%)
1	1	Intel	13,791	17,154	24%	16%
2	2	Samsung Electronics	7,061	8,119	15%	8%
3	3	Texas Instruments	4,258	4,861	14%	5%
4	4	STMicroelectronics	3,924	4,098	4%	4%
5	5	Philips Electronics	3,282	3,561	9%	3%
8	6	Hynix Semiconductor	2,620	3,262	25%	3%
6	7	Infineon Technologies	2,774	2,731	-2%	3%
7	8	Toshiba	2,631	2,717	3%	3%
9	9	Freescale Semiconductor	2,501	2,670	7%	3%
10	10	Renesas Technology	2,272	2,101	-8%	2%
		Others	48,733	53,056	9%	51%
		Total Market	**93,847**	**104,330**	**11%**	**100%**

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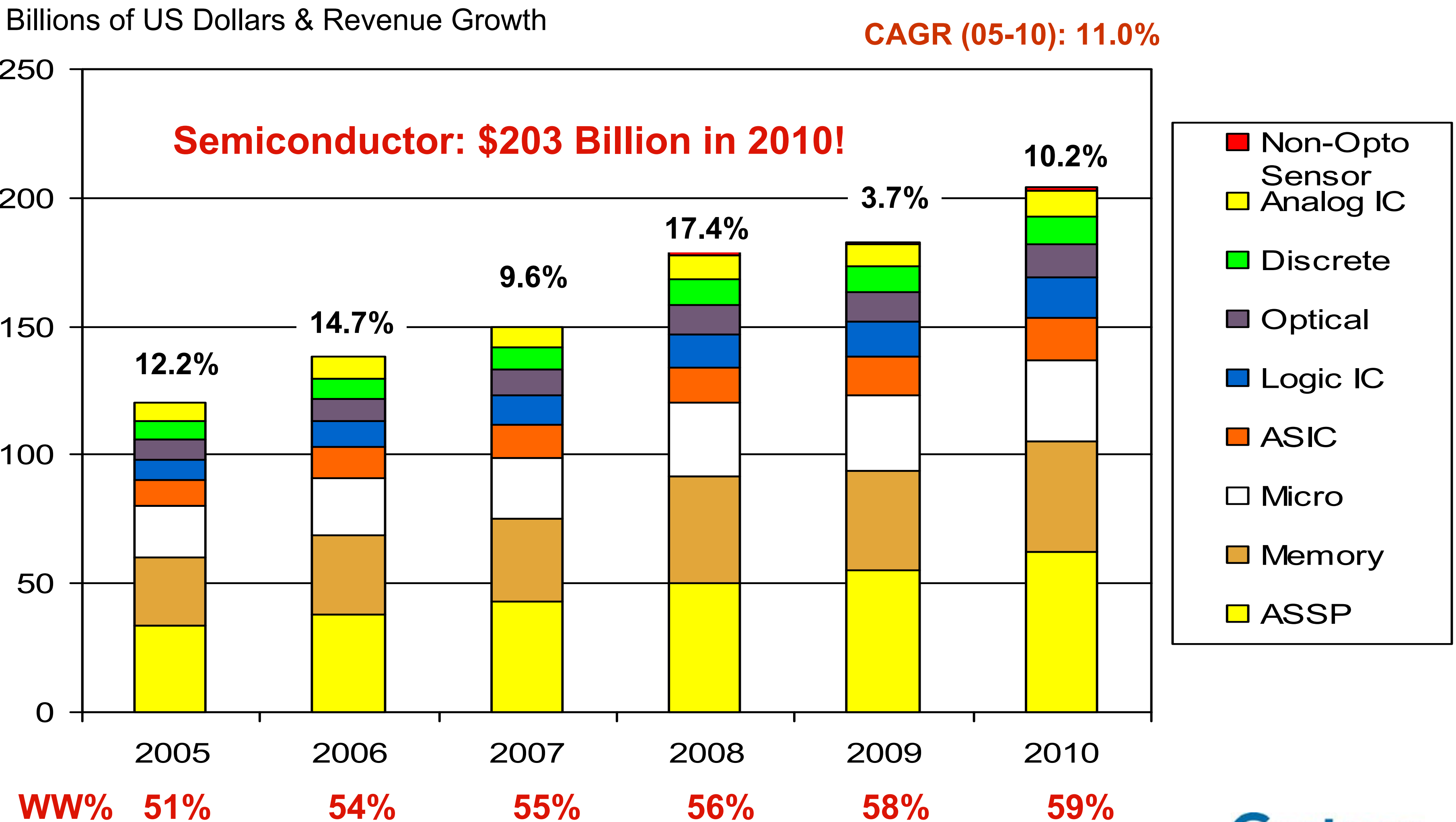
Asia Pacific Semiconductor Market Forecast



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Applications –
Engine of Semiconductor Growth in Asia/Pacific

Applications	05 (MUS$)	10 (MUS$)	CAGR (05-10)	05 shr%	10 shr%
LCD TV	1,267	4,485	28.8%	1.1%	2.2%
Digital Audio Players-Flash	3,969	13,054	26.9%	3.3%	6.4%
Wireless LAN Client Adapter	835	2,296	22.4%	0.7%	1.1%
Mobile PCs	10,804	23,150	16.5%	9.0%	11.4%
Digital Cellular	20,156	43,104	16.4%	16.8%	21.3%
USB Flash Drive	1,392	2,770	14.7%	1.2%	1.4%
Flat Panel Monitor	3,626	6,532	12.5%	3.0%	3.2%
Manufacturing Systems	1,572	2,561	10.2%	1.3%	1.3%
Flash Cards	4,112	6,563	9.8%	3.4%	3.2%
Rigid Disk Drive	3,683	5,271	7.4%	3.1%	2.6%
Optical Disk Drive	3,583	4,768	5.9%	3.0%	2.4%
Desktop PCs	15,255	19,224	4.7%	12.7%	9.5%
Digital Still Camera	2,450	2,887	3.3%	2.0%	1.4%
Video Game Consoles	2,275	2,661	3.2%	1.9%	1.3%
Graphic Cards	3,239	3,764	3.1%	2.7%	1.9%

RS3: Removable Solid-state Storage

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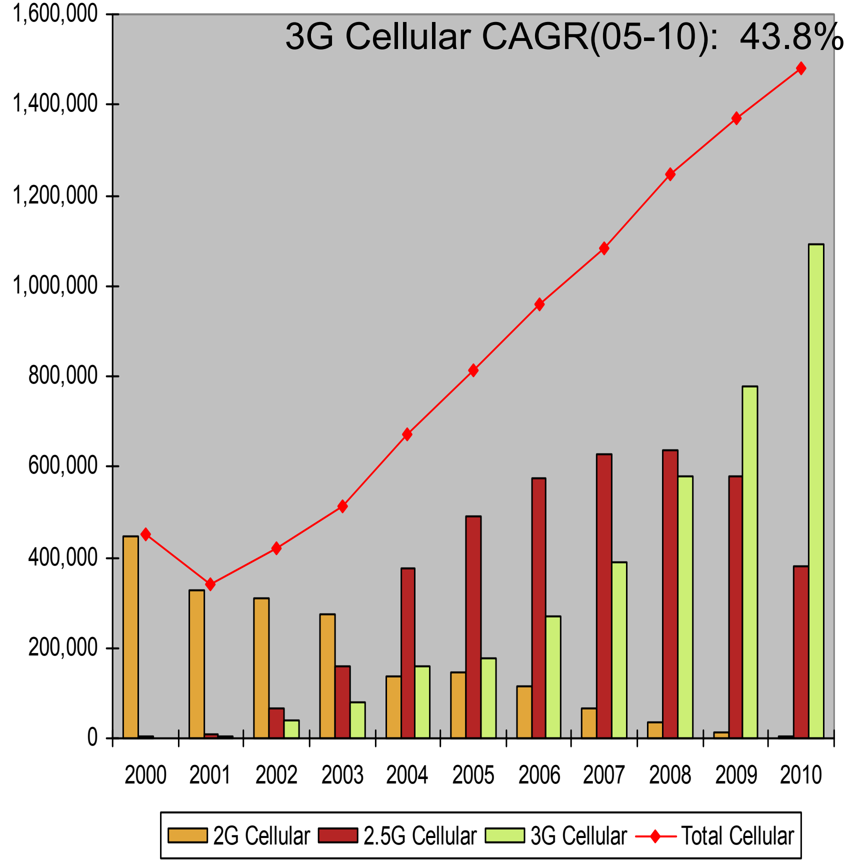
Cellular Phone Production Forecast, Worldwide

Unit: K

2G Cellular CAGR(05-10): - 46.2%

2.5G Cellular CAGR(05-10): - 4.9%

3G Cellular CAGR(05-10): 43.8%



Key trends for 3GSM::

- **Thinness**-all vendors are adding thin products to their portfolios. This trend was pioneered by Motorola with its Razr and Sl phones.
- **Design and Fashion**-the use of color, new materials and design are now critical in the portfolio of all the major manufacturers.
- **Technology**-characterized in two areas: th addition of multiple functions to devices (such as cameras, music, video, and TV support), and the pure technology like HSDPA, flash memory and display.
- **Microsegmentation of device portfolios** notable areas of strong growth are phones for emerging markets and devices for enterprise users.

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Manufacturers' Sales of Mobile Terminals to End Users: Worldwide, 2005 and 2004

manufacturer	05 units (K)	05 mkt shr	04 units (K)	04 mkt shr	Mkt shr change
Nokia	265,614.8	32.5%	207,231.3	30.7%	1.8%
Motorola	144,920.4	17.7%	104,124.2	15.4%	2.3%
Samsung	103,753.6	12.7%	85,238.4	12.6%	0.1%
LG	54,924.6	6.7%	42,276.8	6.3%	0.4%
Sony Ericsson	51,773.8	6.3%	42,031.7	6.2%	0.1%
Siemens	28,590.6	3.5%	48,455.8	7.2%	-3.7%
Sagem	16,327.4	2.0%	14,472.1	2.1%	-0.1%
Panasonic	11,801.8	1.4%	15,388.7	2.3%	-0.9%
BenQ Mobile	11,101,7	1.4%	NA	NA	NA
Sanyo	10,689.5	1.3%	9,178.5	1.4%	-0.1%
Ohters	117,064.7	14.5%	105,604.4	15.8%	-1.3%
Total	816,562.9	100%	674,001.9	100%	

ODM Handsets as Percentage of Total is expected to be around 10% in 2006.

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Taiwan Cellular Phones ODMs, 2005

Name	Own brand	Technologies supported	Technology supplier	Customers	Shipments, 04(K)	Shipments, 05(K)	Shipments, 06(K)
Compal Comm.		GSM,CDMA	TI	Motorola, Alcatel, Panasonic, Eastcom, Datang Telecom	3,500	30,000	35,000
Arima		GSM	Broadcom, Agere, EMP	Sony Ericsson, NEC	12,000	12,000	13,000
HTC	Dopod	GSM, CDMA	Broadcom, TI, EPM, Qualcomm	O2, T-Mobile, Orange, Compaq	1,000	6,850	8,000
Quanta	Giya	GSM	ADI	Panasonic, Alcatel, Philips, Konka Group, Lenovo, Ningbo Bird	10,000	2,900	3,600
Inventec	Okwap	GSM		Own brand only	700	1,800	2,000
DBTel	DBTel	GSM	Infineon, Philips		2,000	2,850	1,500
BenQ	BenQ	GSM,CDMA		Nokia	16,000	3,980	1,000
ChiMei Comm.		GSM	TI	Motorola, Capitel Group, CECT	750	700	1,000
Others					10,250	7,940	2,100
Total					56,250	69,020	67,200

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Semiconductor Vendors Target 3G Mobile

Most semiconductor vendors are concentrating on the application of these chipsets for mobile TV and media, and achieving lower power consumption and smaller form factors.

- TI-OMAP 3430 chip: targets the higher-end enhanced phone and smartphone market. This spans capabilities from video and receiving digital TV broadcasts to business applications.
- Qualcomm-single-chip Universal Mobile Telecommunications System (UMTS) transceiver device: leads to a more highly integrated radio in WCDMA handsets.
- Freescale- i.MX processors: multimedia solutions and mobile TV. IT also strong at radio frequency (RF) chipsets to complement existing mobile platforms.
- Philips-BGT215: uses Digital Video Broadcasting - Handheld (DVB-H) for handheld front-end solution, and has a 7 mm-by-7 mm footprint that includes the RF and demodulation functions.
- Infineon Technologies- a new single-chip baseband HSDPA device: The HSDPA solution has been selected by Vodafone.
- Agere-X455 HSDPA: a solution at 3GSM with Modem-Art architecture and would allow lower-cost platforms and easy upgrading to evolving standards. It is particularly targeting Chinese and Japanese manufacturers.

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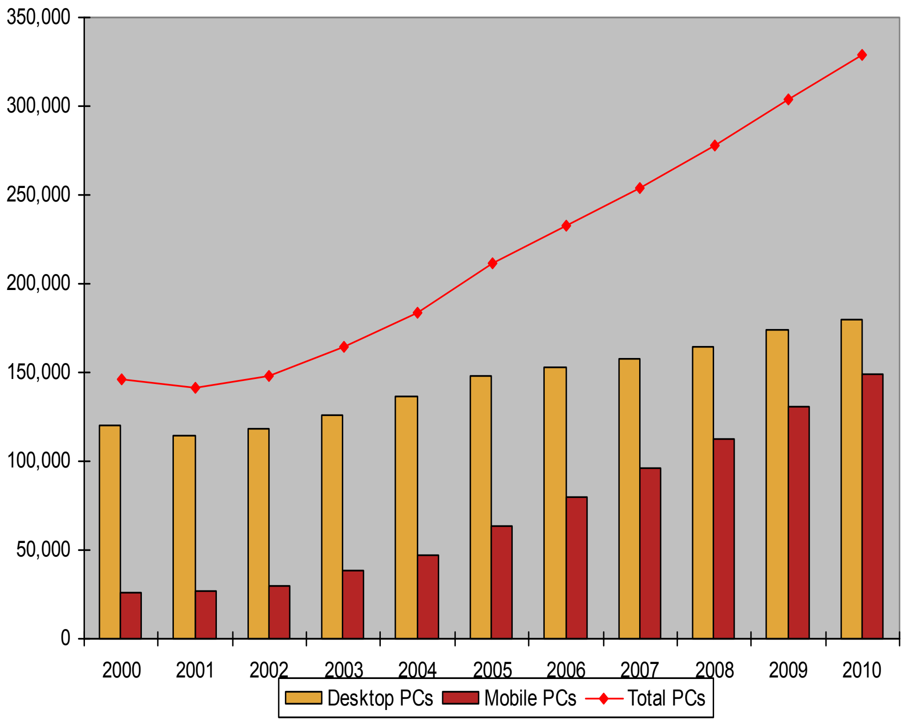
Personal Computer Production Forecast, Worldwide

Desktop PCs CAGR(05-10): 3.9%

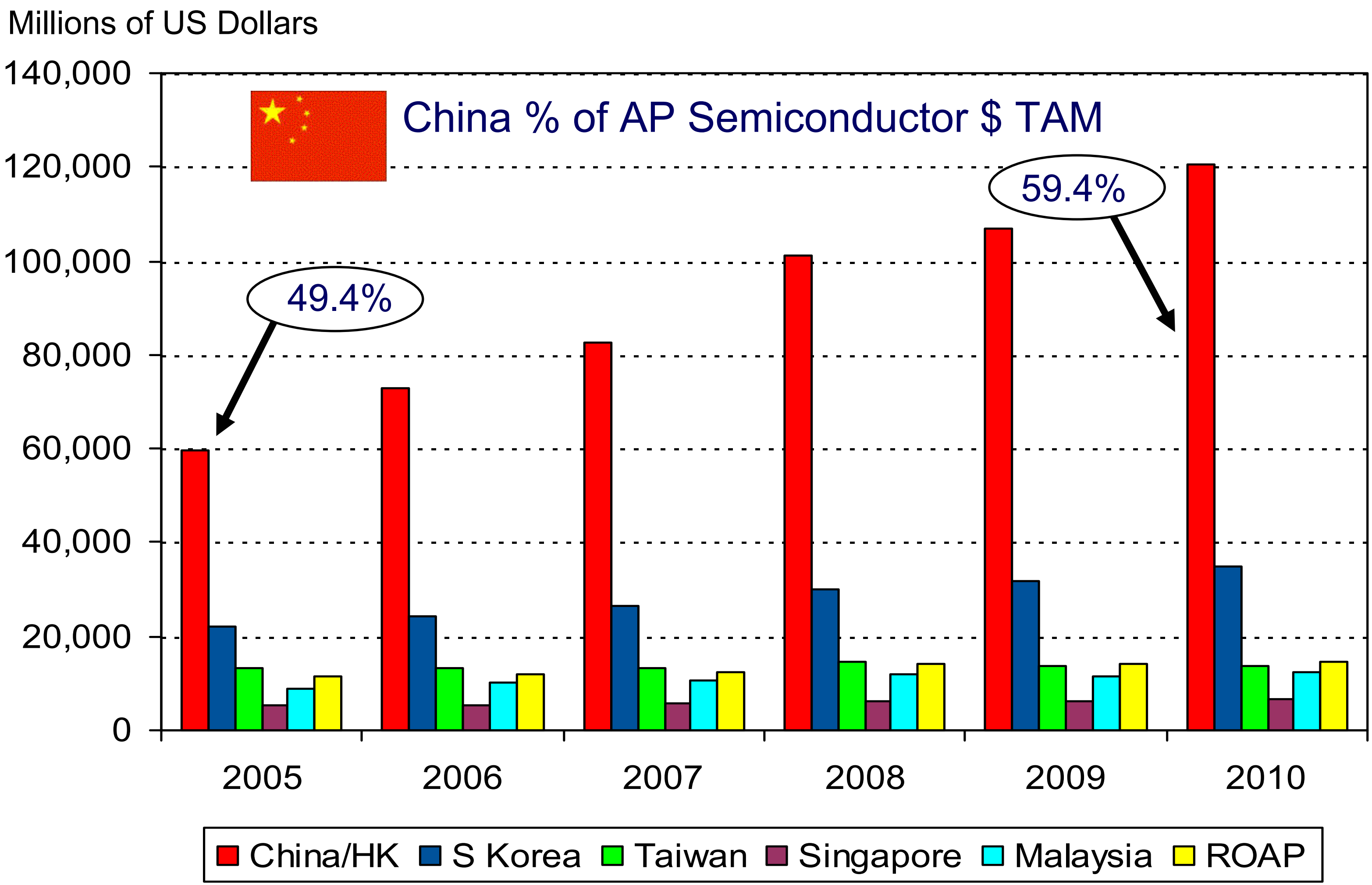
Unit: K **Mobile PCs CAGR: 18.6%**



Forecast Overview:

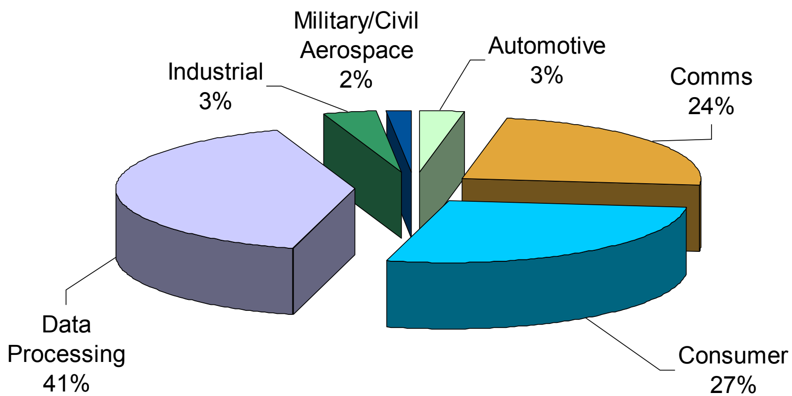
- The upward revision reflects expectations for stronger mobile PC shipment growth as well as more-robust emerging market growth.
- Deskbased PC shipment growth has been reduced on expectations of weaker replacement activity and more aggressive mobile-for-deskbased substitution in mature markets.
- Worldwide PC ASP will decline 9.7 percent in 2006 and 7.3 percent in 2007. Windows Vista's delay could affect ASPs in the latter part of 2006 and early 2007.
- the $100 mobile PCs

Major Geographic Semiconductor Market



China Electronics Industry –
The No. 1 Electronic Manufacturing Centre

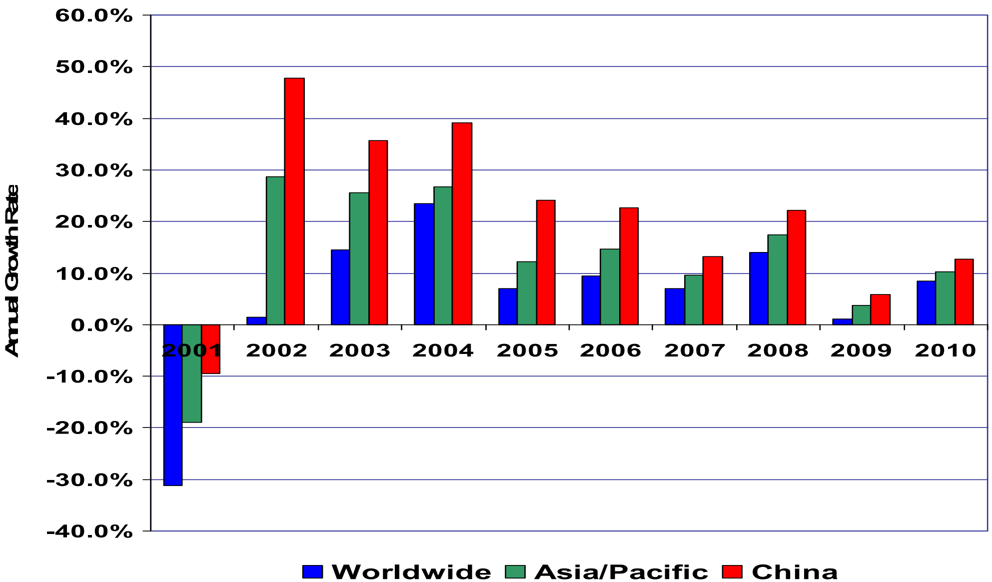
China: Electronic Equipment Production Revenue, 2005

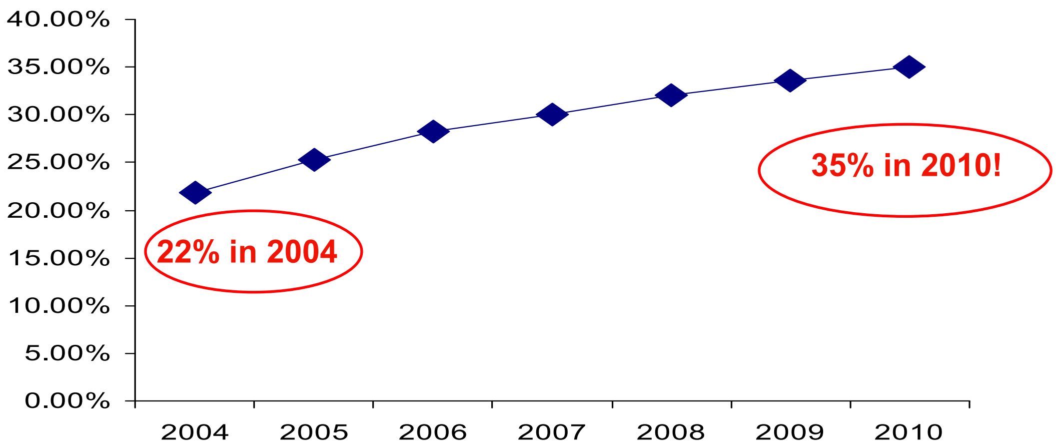


China Market in 2005	Production Revenue ($M)	Share of Worldwide
Automotive	7,343	8.9%
Communication	58,827	20.0%
Consumer	68,203	25.2%
Data Processing	100,923	26.8%
Industrial	8,665	5.7%
Military/Civil Aero	4,205	5.1%

- Worldwide electronics equipment manufacturers continue to shift production to China
- Similarly, Taiwanese companies continue to expand their production capacities in China to stay competitive
- More R&D activities are moving into China from Taiwan
- China's electronic equipment production revenue will account for about 28% of worldwide electronic production revenue by 2010, from 19.7% in 2005

China Semiconductor Market –
Continues to lead semiconductor growth





- China has become the largest semiconductor market in the world since 2004
- China continues to lead the worldwide & regional semiconductor market growth through 2010
- China's share of worldwide semiconductor continues to increase
- The worldwide market is in the middle of three years of moderate growth, 2005 through 2007

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China Semiconductor Market Conclusion

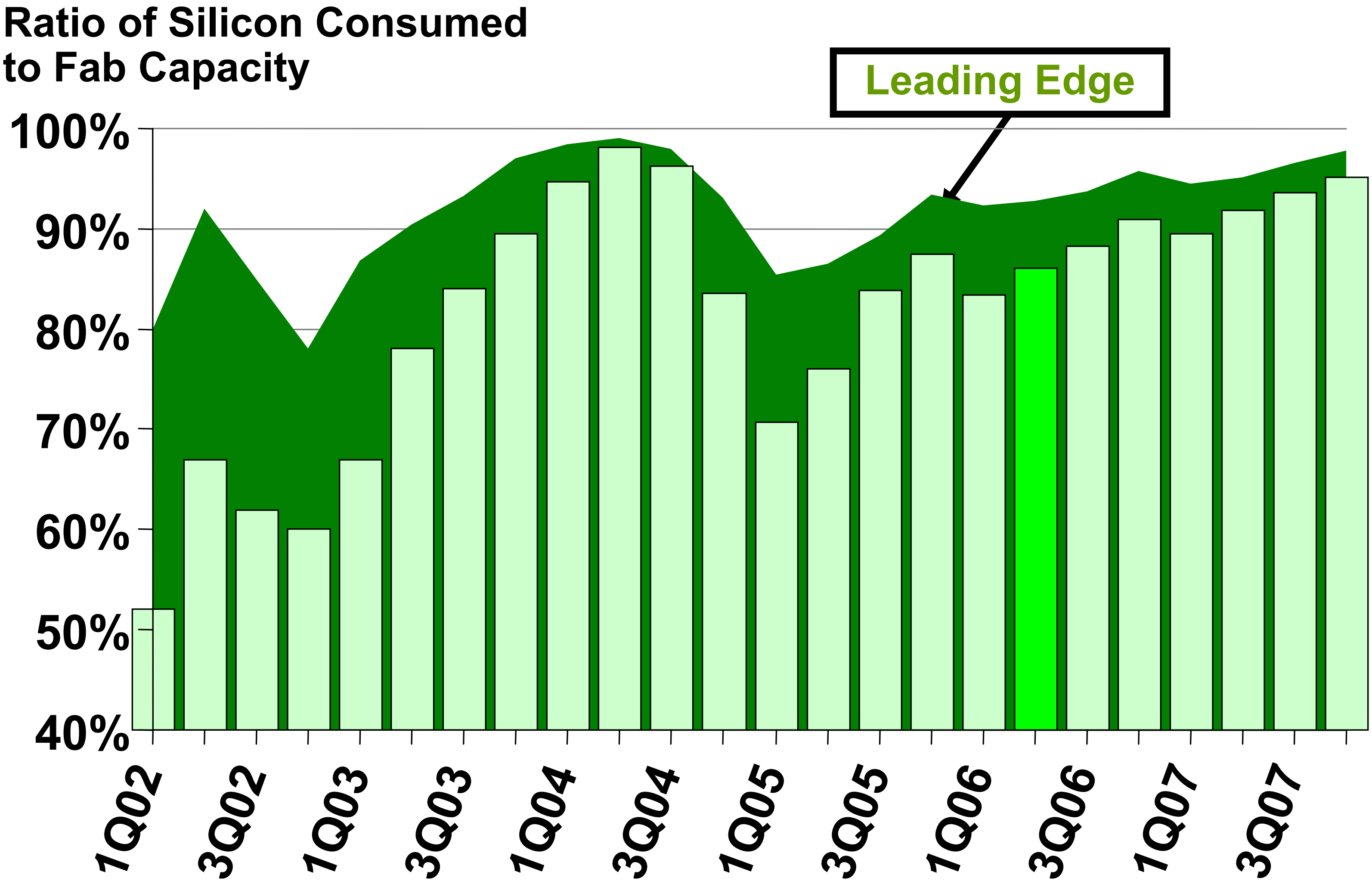
- China is expanding fast in semiconductor and electronic supply chain (except still problems in IC and system design industries)
- Expect more investment (both domestic and foreign) in the electronic equipment manufacturing industries, although the government's initiative to slow down the economy may have some impact on the domestic electronics consumption
- China semiconductor consumption continues to expand, especially in the mobile phone and consumer electronics areas
- Wafer manufacturing should benefit from the global under-supply of ICs in 2004; semiconductor manufacturers need to set up more partnerships during this period.

INDICATOR:
DQ Foundry Utilization Index

INDICATOR JUDGEMENT

2006

2007



Note: Leading edge is define as 130nm and below.

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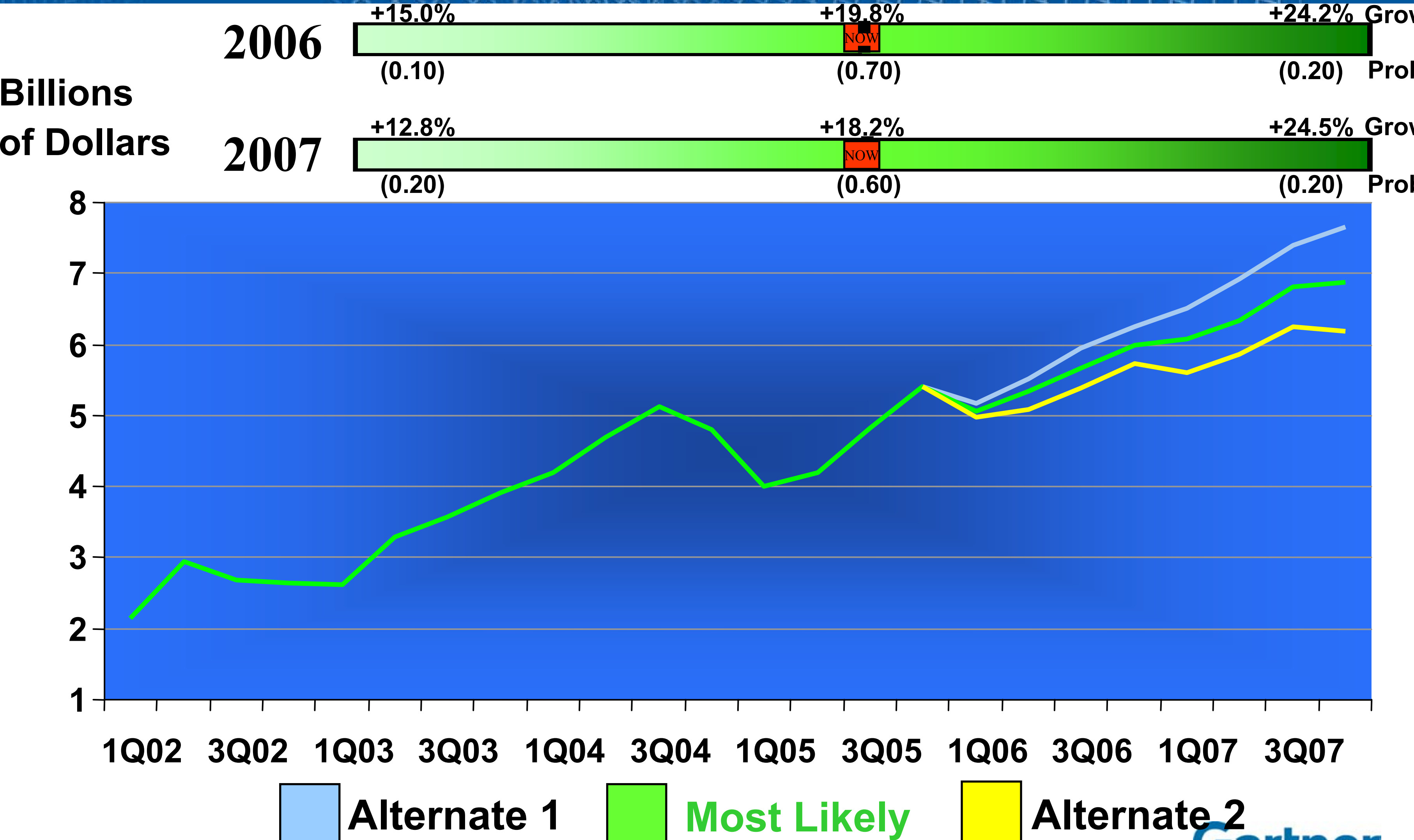
Foundry Market
Quarterly Revenue Forecast Scenarios



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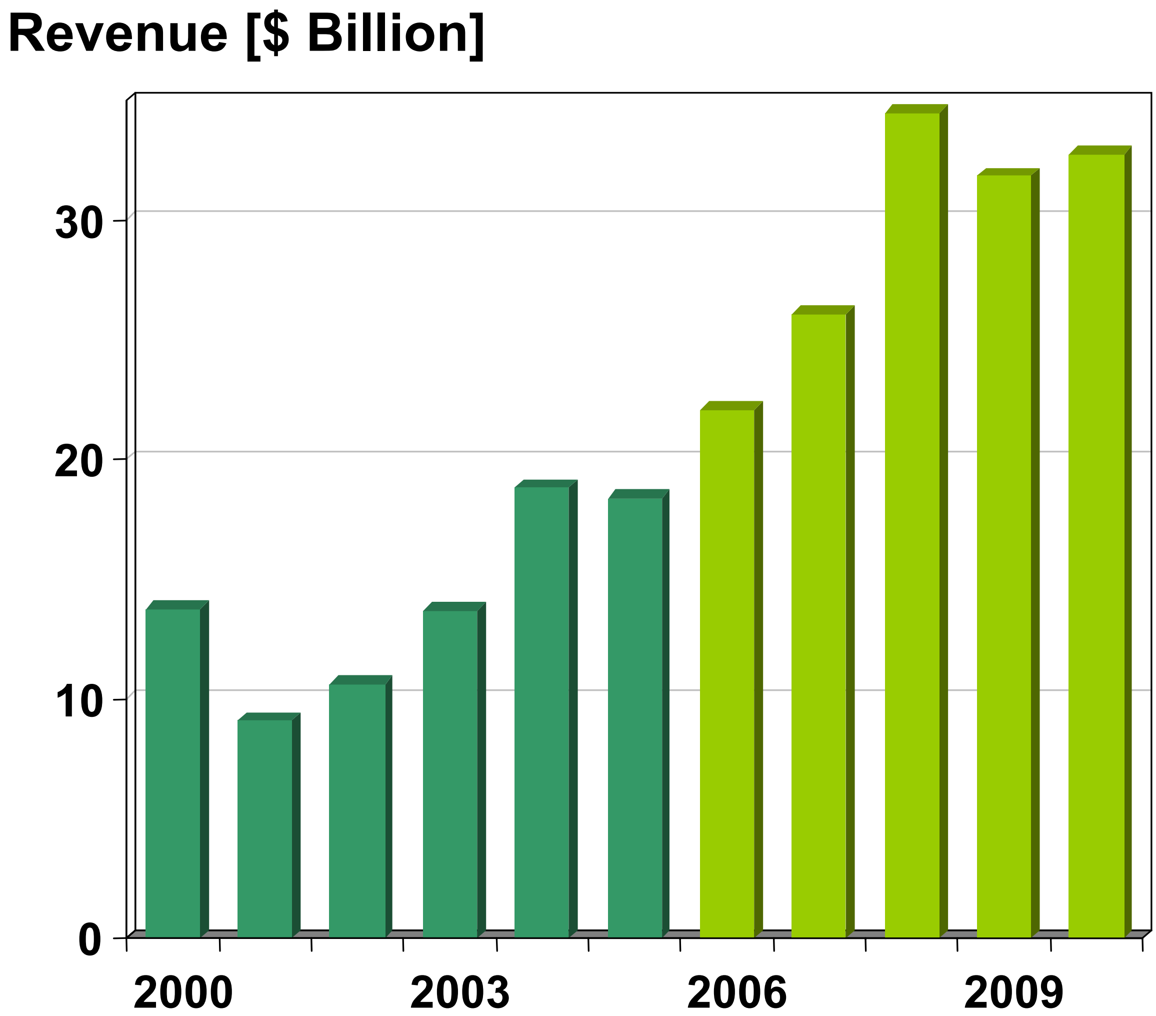
Wafer Fab: Foundry Services Market Revenue Forecast



Summary

- 2006: Demand growth; improving capacity utilization
- 2007: Accelerating demand growth; tight capacity
- 2008: Capacity shortages; strong pricing support
- 2009: Capacity overshoot; declining wafer prices
- 2010: Recovery

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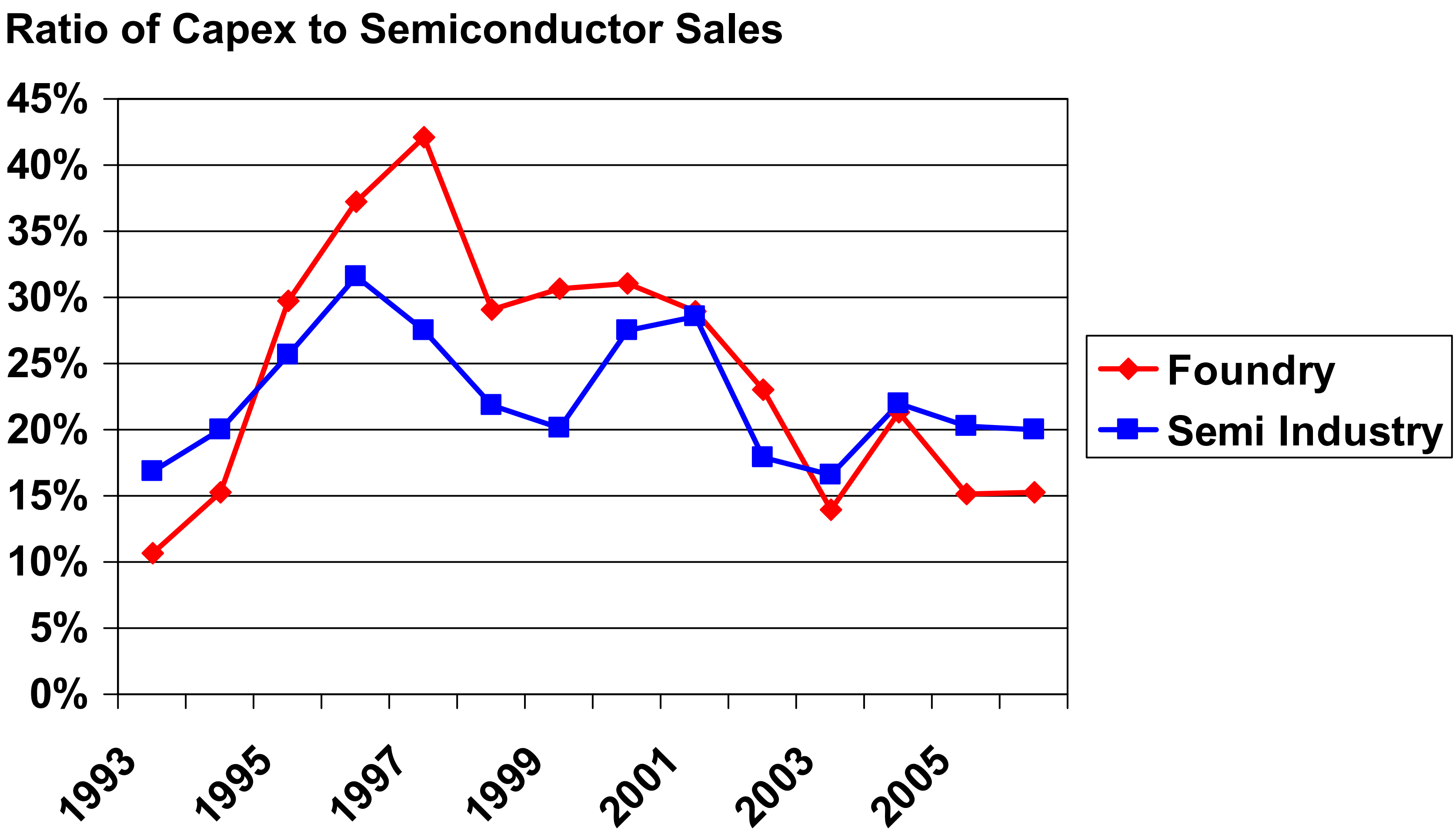
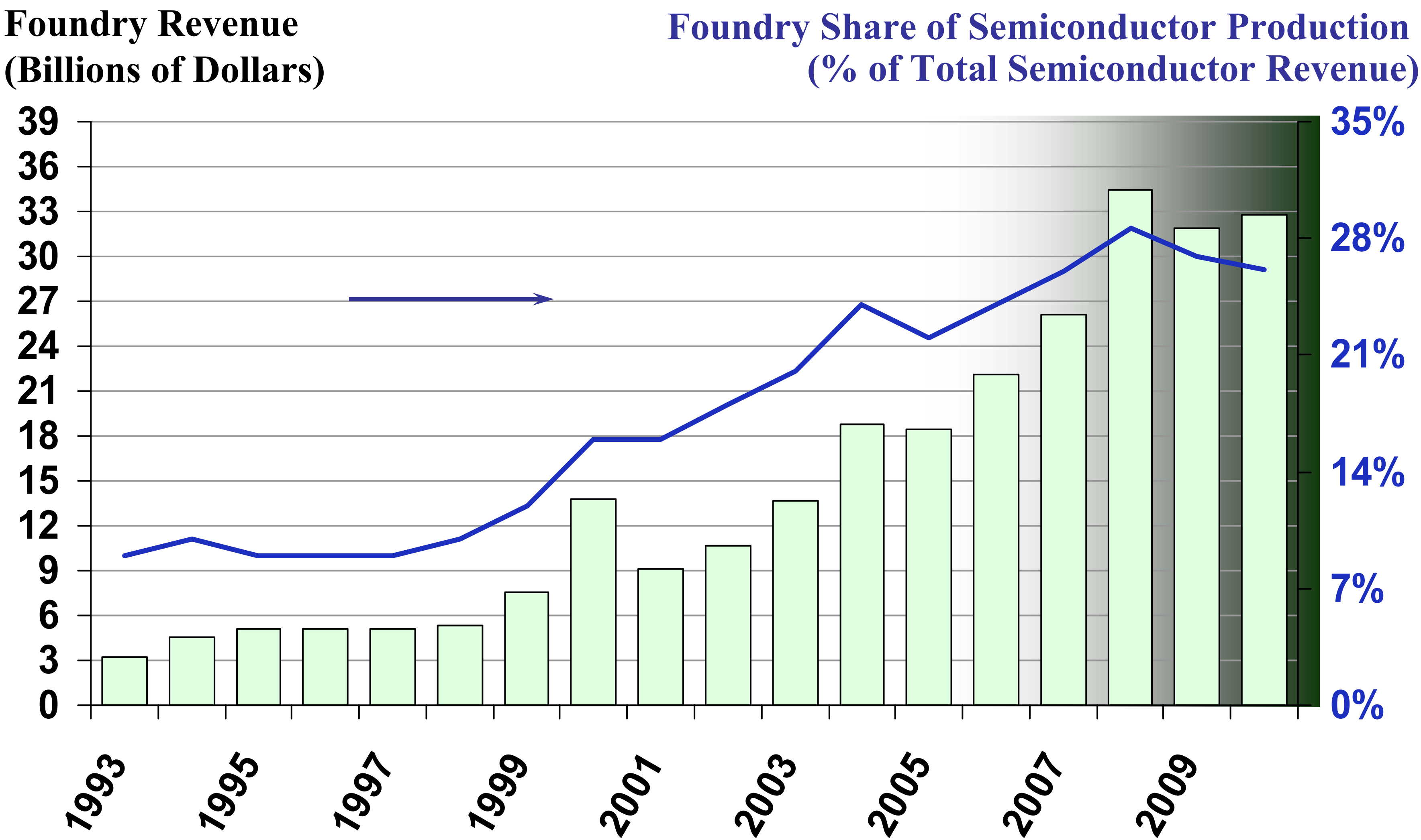
Foundries Have Been Outspending the Industry… Until Now



Note: Foundry wafer sales adjusted to equivalent semiconductor device sales

Foundries Have Increased Their Share of Semiconductor Production



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The Foundry Industry Conclusion

The Foundry Market Today

- Foundry Revenue Reached $18.42 Billion in 2005
- Foundry market decline despite overall Semiconductor Industry registering growth
- Foundries now account for 22% of worldwide semiconductor production
- Concentrated Market
- Top three foundries control 2/3 of the market
- Capacity Utilization is ~ 90% in 2Q06
- 90-nm Demand Ramping Up

Near-Term Foundry Outlook is Strong

- Capacity utilization is high
- Leading-edge is tightening, but capacity is increasing in pace with demand
- Forecast 19.8% growth in foundry revenues in 2006

Long-Term Challenges

- Increasing R&D and capital costs
- Complexity of technology development and shorter cycles

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EMS/ODM Market Overview

Jamie Wang
Semiconductor Principle Analyst
Jamie.wang@gartner.com

May, 16, 2006 - Taipei

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Agenda

- **OEM & PC, Cellular Handset End-Market Outlook**
  - to compare EMS/ODMs' penetration rate and business opportunity

- **Asia Pacific EMS/ODM Market Update/ Forecast, 2005-2010**
  - EMS/ODM Major Electronics Production, share to WW
  - Major Electronics Production/Semiconductor Consumption Forecast, 2005-2010
  - New Business Opportunity & Market Places

- **Asia Pacific EMS/ODM Industry Trend**
  - Key Finding in 2005
  - Market Predict 2010

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Key Issues

- How will the EMS/ODM market develop over the next five years?
- What are the implications for the semiconductor industry for EMS/ODM production trend?
- Why will Asia Pacific continue to be a major semiconductor consumption center ?
- How new business activity (OBM, DMS) will increase local Asia Pacific IC design & procurement?

PC & Cell Handset End-Market Units 2005 vs. 2010

WW 2005 Million Units	WW 2010 Million Units
PC : 211.6 - Desktop: 148.1 - Mobile PC: 63.5 Dell + HP = 64.9 (31% WW) China: 19.2 India: 4.8	**PC : 328.6** ▪ Desktop : 179.6 ▪ Mobile PC : 149.0 China: 39.8 India: 19.0
Cell Handsets: 816.7 **Nokia 33%, Moto 18% Sony-E 6%** **Siemens +BenQ 5%** Top 2 51% China: 88.4 India : 29.9 N. America: 150.1 W. Europe: 160.4	**Cell Handsets : 1,092** (2009) China: 143.3 (2009) 62% ↑ India: 117.5 (2009) 292% ↑ N. America: 183.1 (2009) W. Europe: 172.9 (2009)

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WW PC Units exceed 300 million by 2009

WW PC Unit Sales Forecast 2005 -2010

End Market Sale	2005	2006	2007	2008	2009	2010	CAGR % 2005-2010
Units - Million	211.6	232.2	253.9	277.7	304.0	328.6	9.2%
YoY - Growth	15.4%	9.8%	9.3%	9.4%	9.5%	8.1%	---

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WW Notebook sales exceed 100 million by 2008

End Market Sale	2005	2006	2007	2008	2009	2010	CAGR % 2005-2010
Desktop : Units - Million	148.1	152.4	157.3	164.9	173.7	179.6	3.90%
YoY Growth	8.8%	2.9%	3.2%	4.8%	5.3%	3.4%	---
Notebook : Units - Million	63.5	79.8	96.6	112.9	130.4	149.0	18.60%
YoY Growth	34.5%	25.7%	21.0%	16.9%	15.5%	14.3%	---

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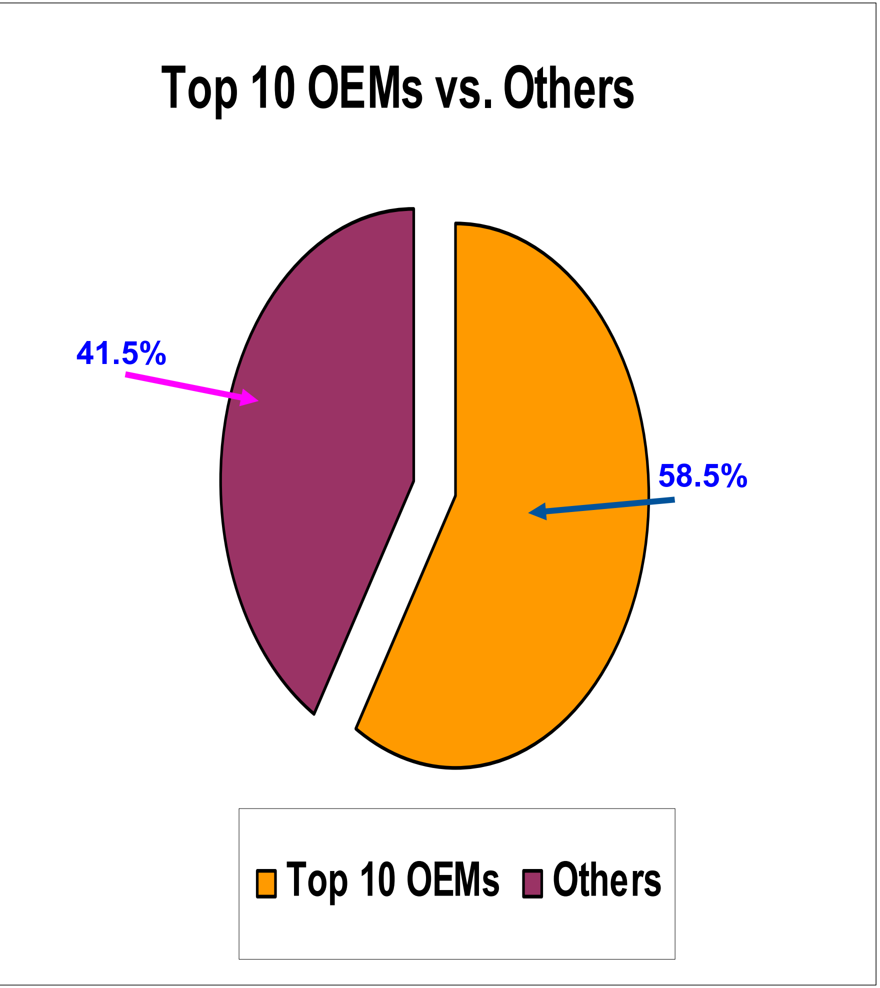
WW PC OEM Market Share 2005: Dell & HP outsource ALL production

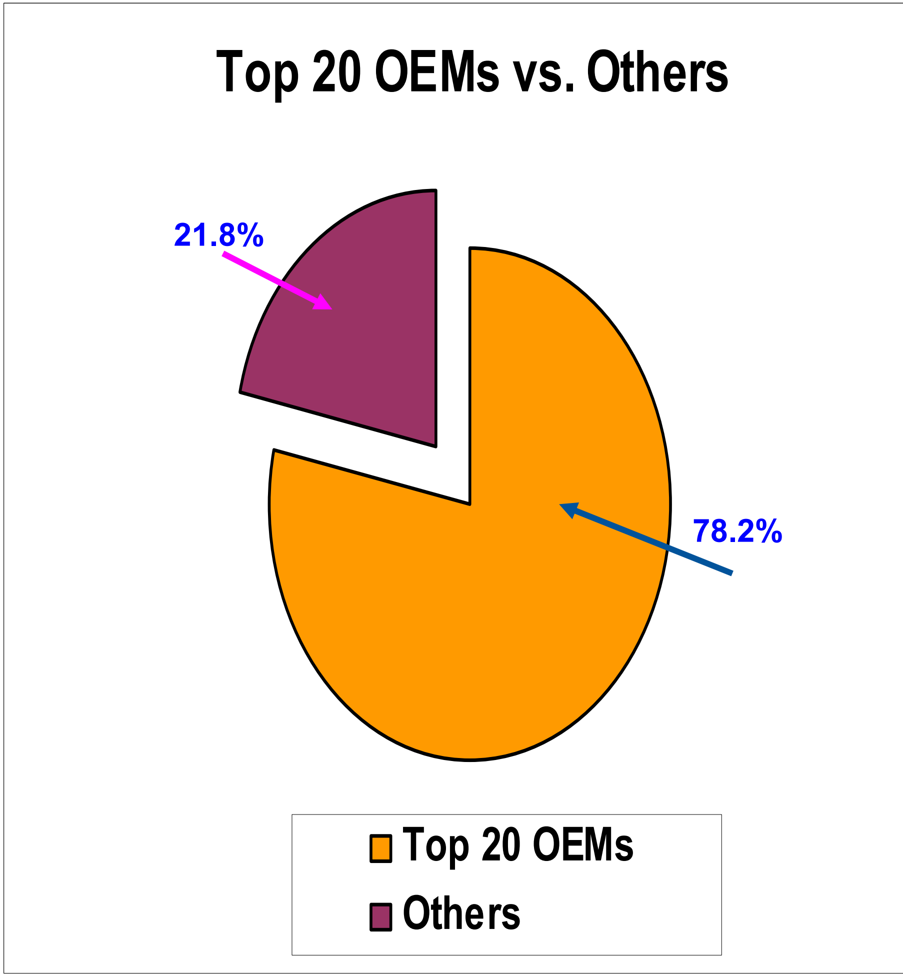
Ranking	**Desktop**	2005 Units - M	**Mobile PC**	2005 Units- M
1	Dell	23.9	Dell	11.1
2	HP	19.7	HP	10.2
3	Lenovo	9.6	Toshiba	7.1
4	Fujitsu/Fujitsu Siemens	4.0	Acer	6.8
5	NEC	3.5	Lenovo	5.3
6	Acer	3.3	Fujitsu/Fujitsu Siemens	4.0
7	Gateway	3.2	NEC	2.5
8	Apple	2.5	Sony	2.4
9	Founder	1.9	Apple	2.2
10	Tongfang	1.5	ASUS	1.4
	Total	73.1 M	Total	51.6 M

30% of WW

34% of WW

WW PC Market Share 2005 Unit Analysis: Production dominated by large vendors





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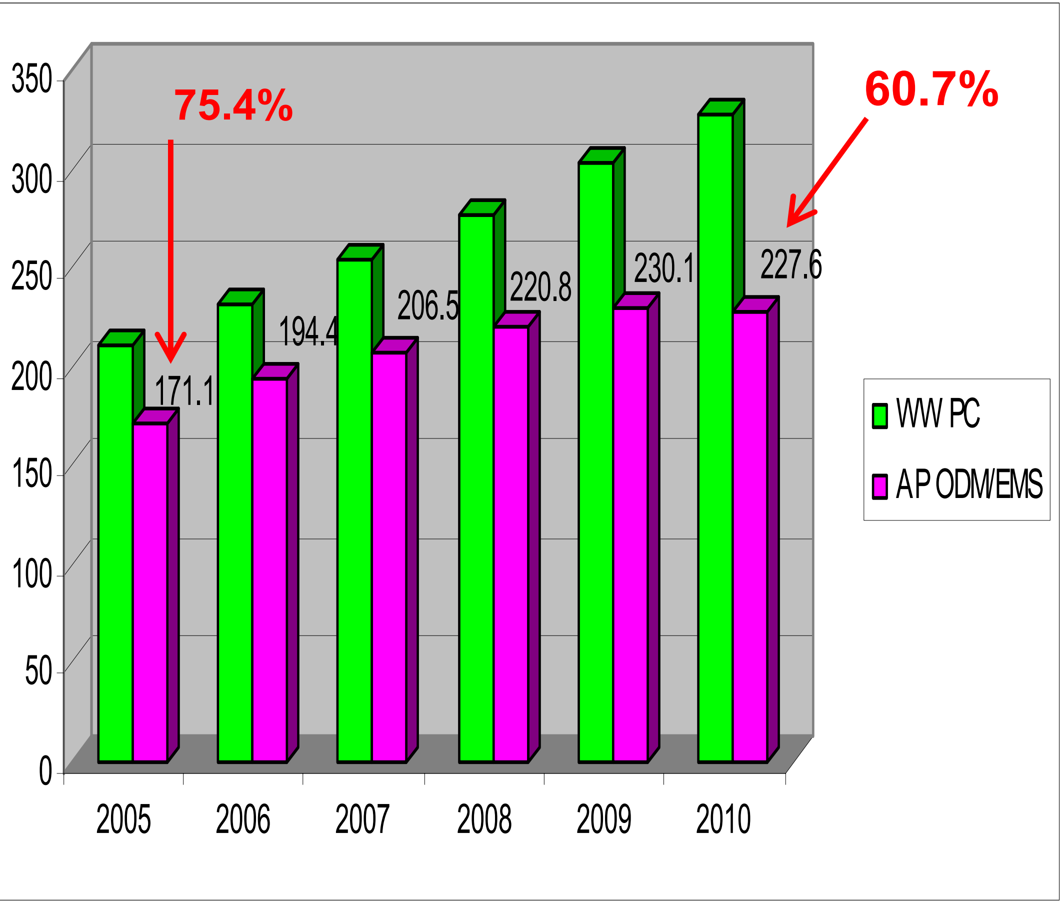
WW PC vs. ODM/EMS Production Forecast



- AP located EMS/ODM Mobile PC production declines from 75.4% to 60.7 % of WW by 2010.
  - OBM Shipment Increase
  - AP gains Market share in Emerging Market -- Channel Brand, distributorship, re-labeling market
- AP EMS/ODM IC Consumption for PC will increase from $14.4B in 2005 to $20.2B by2010.

WW Cellular Handset demand will exceed 1 Billion by 2008 !

End Market Sale	2005	2006	2007	2008	2009	2010	CAGR % 2005-2009
Units - Million	816.7	896.7	956.1	1,025	1,093	na	7.6%
YoY - Growth	15.4%	9.8%	9.3%	9.4%	9.5%	na	---

2010 Forecast no. coming soon !!

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Cellular Handset Shipment WW Market Share 2005: 817 B Units

1	Nokia	265614.8	32.5%
2	Motorola Outsource	144920.4	17.7%
3	Samsung	103753.6	12.7%
4	LG	54924.6	6.7%
5	Sony Ericission Outsource	51773.8	6.3%
6	Siemens	28590.6	3.5%
7	Sagem	16327.4	2.0%
8	Panasonic Outsource	11801.8	1.4%
9	BenQ Mobile	11101.7	1.4%
10	Sanyo	10689.5	1.3%
	Others	117064.7	14.3%
	total WW	**816562.9**	100%

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WW Cellular Handset Forecast by Region: 2005 - 2010

	2,000	2,001	2,002	2,003	2,004	2,005	2,006	2,007	2,008	2,009	CAGR 20 2
ica	9.5	7.9	9.3	13.2	25.1	43.4	50.2	54.4	58.9	63.6	10.
sia/Pacific	**84.6**	**95.0**	**106.4**	**132.5**	**164.5**	**206.0**	**246.2**	**292.5**	**339.3**	**386.3**	**17.**
Europe	15.4	27.5	34.1	44.5	65.7	79.8	79.9	78.6	82.5	88.0	2.
pan	41.6	40.6	39.3	48.7	43.6	44.2	47.1	47.5	44.7	46.1	1.
tin America	32.9	30.4	28.6	38.4	72.8	102.8	112.3	107.7	110.1	112.9	2.
ddle East	13.1	7.3	10.5	12.3	20.0	29.8	34.2	36.6	38.3	39.9	7.
rth America	84.3	89.3	95.4	108.1	134.6	150.1	161.2	170.2	176.9	183.1	5.
Europe	133.7	115.3	103.8	122.2	147.8	160.4	165.5	168.3	174.2	172.9	1.
tal	415.0	413.3	427.4	520.0	674.0	816.6	896.7	956.0	1,025.0	1,092.8	**7.**

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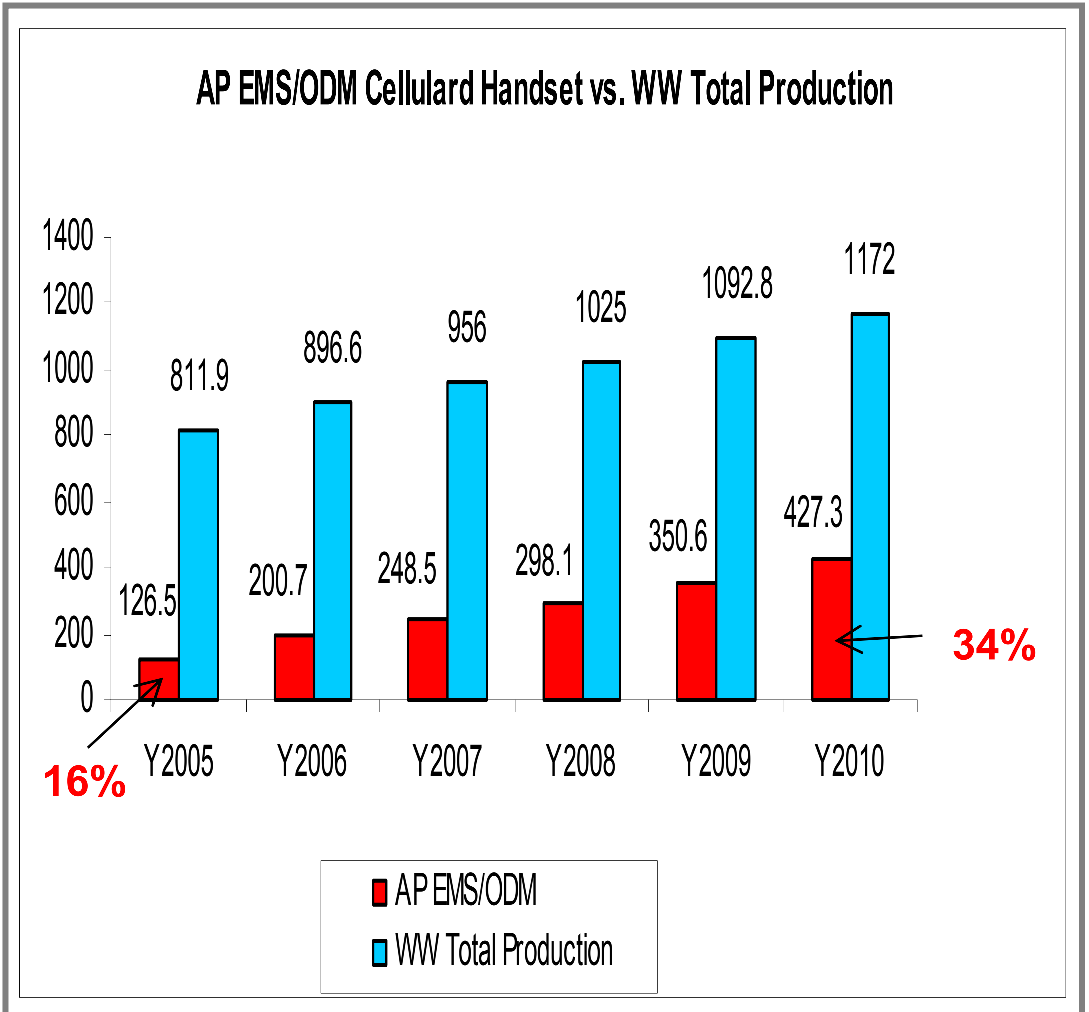
WW Cellular Handset EMS/ODM Production is gaining share.



- AP EMS/ODM Cellular Handse accounted 15.9% of WW End- Market in 2005
- AP EMS/ODM Cellular Handse will account 34.0% of WW End Market in 2010
  - OBM Shipment Increase
  - Gain Market share in emerging Market – Telcom System Operator, Distributorship
- AP EMS/ODM IC Spending on Cellular Handset will hit $15.7 I in 2010, from $3.2 B in 2005

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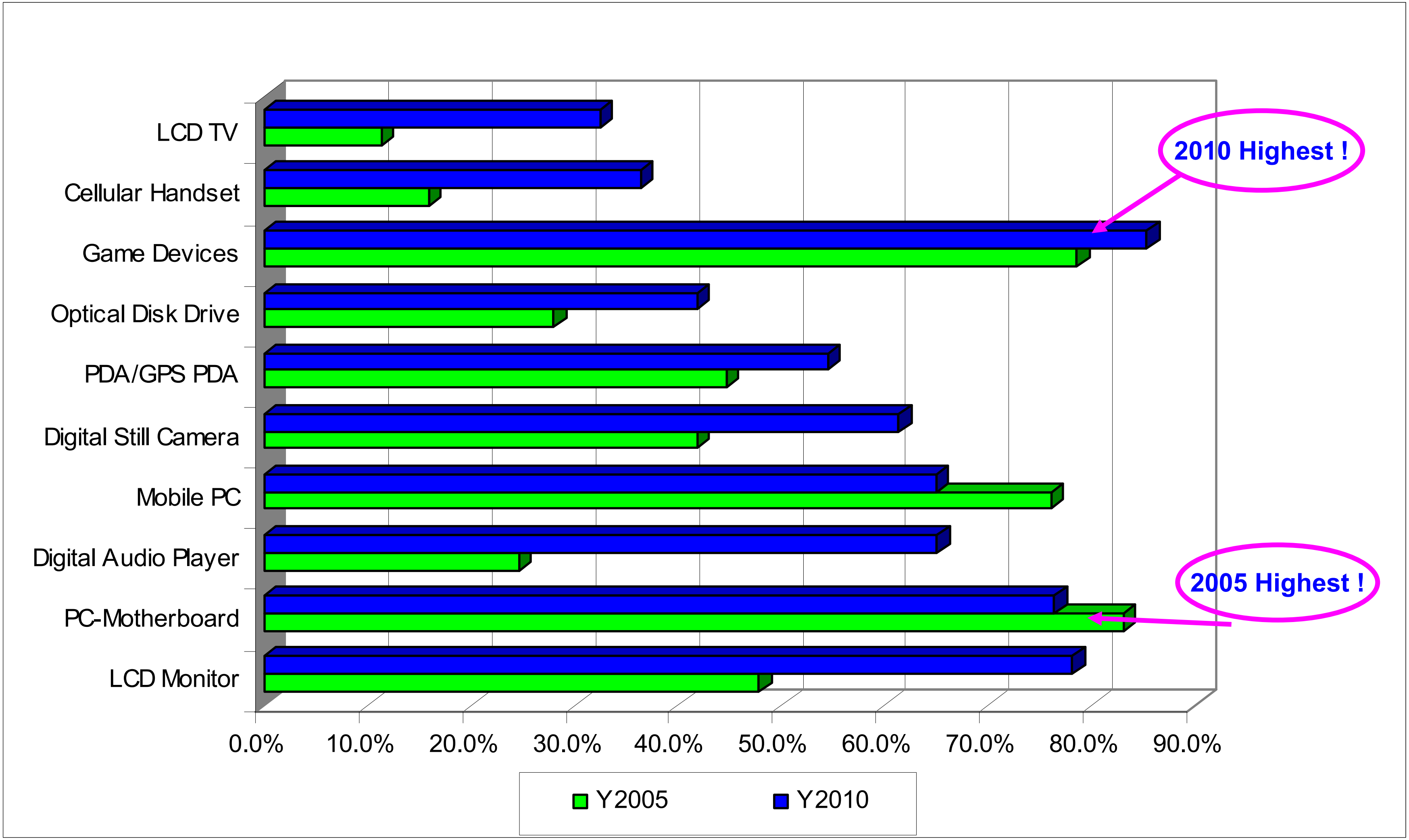
A/P Top 12 EMS/ODM Revenue 2005: $91B

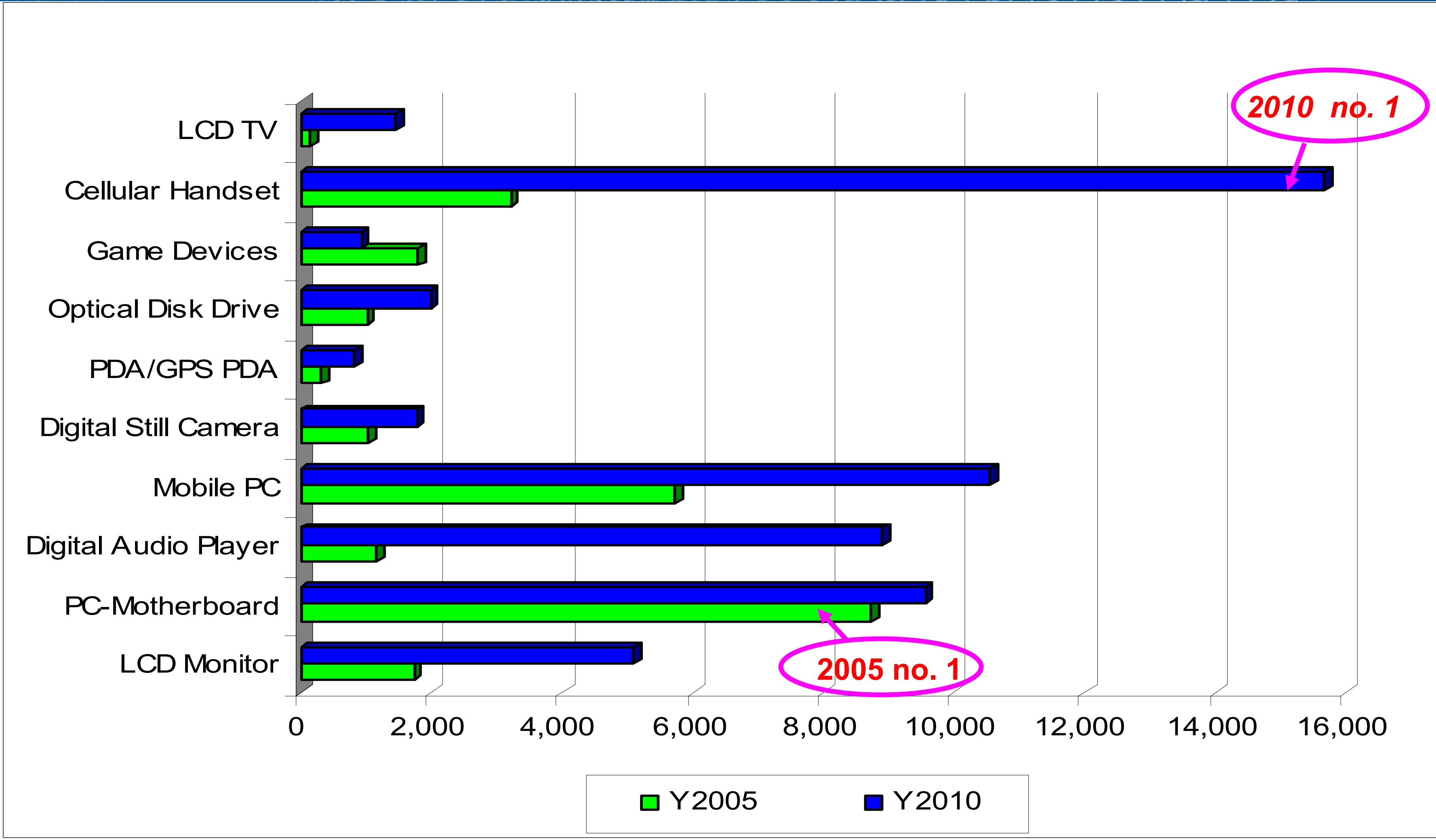
1	Foxconn	$21,068
2	Flextronics	$15,908
3	Quanta	$12,574
4	Compal	$6,432
5	ASUStek	$5,606
6	Lite-On Tech	$5,075
7	Inventec	$5,069
8	TPV	$5,053
9	Wistron	$4,834
10	BenQ	$4,277
11	Inventec Appliance	$3,592
12	Delta	$2,006
	Total	**$91,494**

EMS

AP percentage of WW Electronics Production: 2005 vs 2010



AP EMS/ODM Semiconductor Consumption from Major Electronics Production: 2005 vs. 2010



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2005 EMS/ODM Industry Key Findings

- EMS/ODM semiconductor spend gaining WW share
- 80% of AP EMS/ODM production is in China by 2005 end
- New Sales Markets emerging – (Telecom/Broadcast System Operator, Channel Brand)
- CE OBM business development
- Emerging Business: Camera Module, Bluetooth, Auto CE, Solar Power Energy
- Production Prospects for– India, Vietnam, Czech
- Prospect for M & A of Fabless & Subsystem Vendors

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Where is EMS/ODM Production in AP? Not Just China !

	China	ROA	Europe	America
Foxconn	WW No 1 Shenzhen, Quanshan	India	Czech, Hungary	Houston
Flextronics	Shenzhen, Zhuhai	India, Malaysia	Czech, Poland, Ukarine, Ireland	Mexico
Quanta	Shanghai		Holland	
Compal	Quanshan	Thailand		
ASUStek	Suzhou, Shanghai		Czech	
Lite-on Tech	Dongguan		Czech	
Inventec	Shanghai	Malaysia	Czech, Scotland	
TPV	Fuqing, Shuzhou			
Wistron	Quanshan, Zhangshan			
BenQ	Suzhou		Czech	
Inventec Appliance	Shanghai, Nanjing			
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Market Predictions in 2010:

- S.Asia & E. Europe Production Scale Increase
- OBM Gains Market Share from Production/New Sales of CE, Auto Electronics and Industrial PC Ramp up
- More Production & Assembly Site Near End-Market
- Steady Escalation of R&D Manpower & Activity Neard Production Site
- Increasing Localized IC Solution & Procurement
- More Samsung-like EMS/ODM company emerging

Conclusion

AP EMS/ODM's low-price solution will continue to advantage the OEMs' end-market to grow

Top EMS/ODM will remain competitive & grow

Small EMS/ODMs likely to merge or be acquired

Remain core competencies: Differentiations, Innovation

Time-to-(volume) Market -- all at cost-effectiveness

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EMS/ODM Market Overview

Questions ?

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