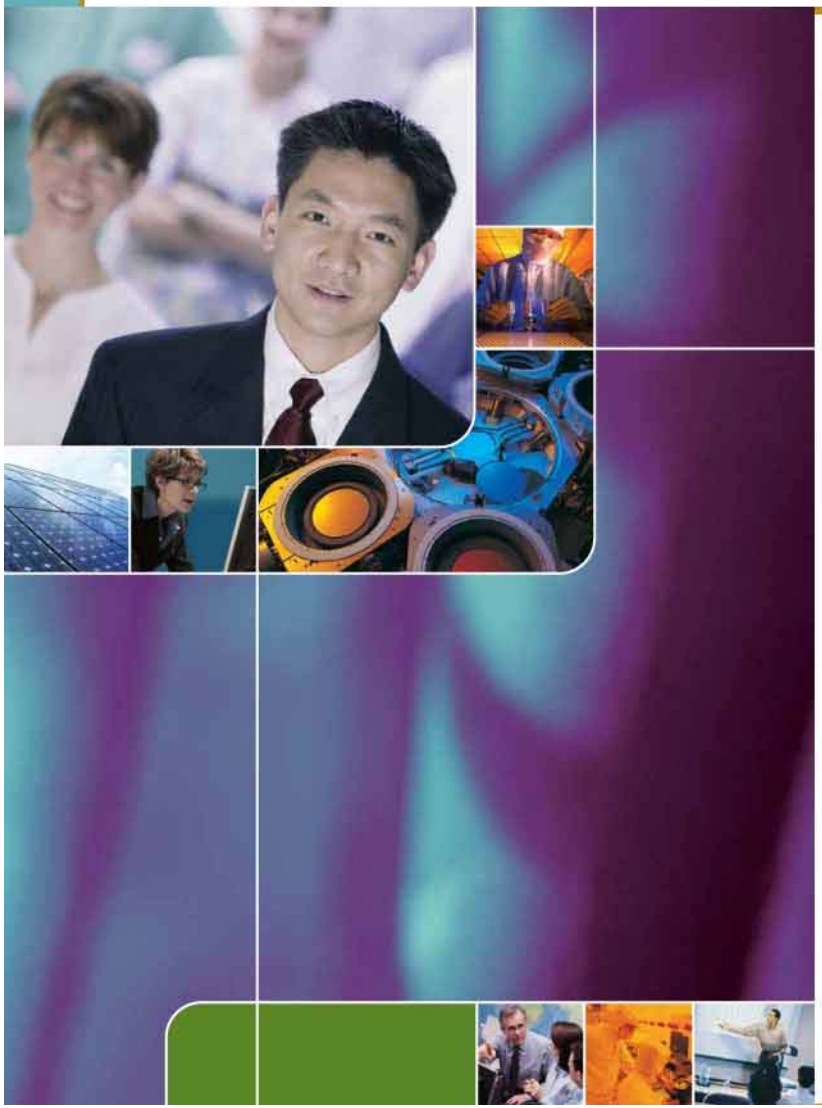
SEMICON® Taiwan 2009



Market Briefing

Semiconductor Market Outlook

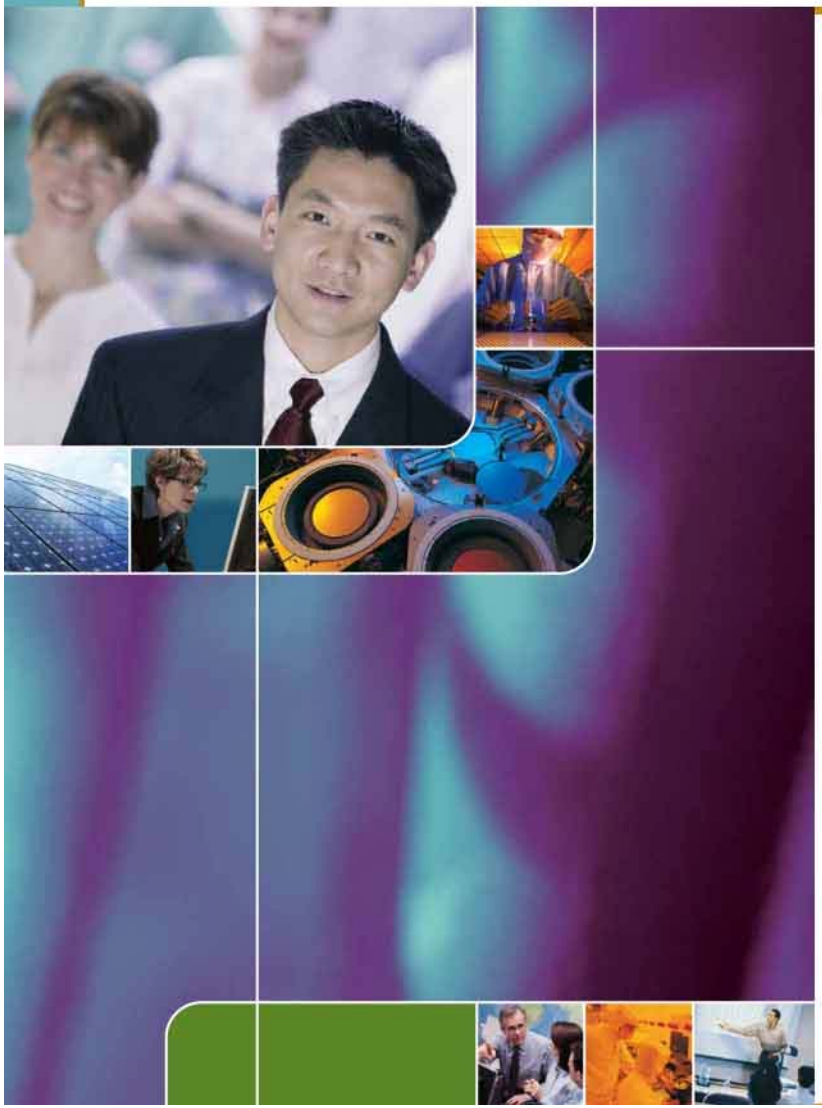
Wednesday, September 30, 2009

08:30 - 12:10

Conference Room 2, TWTC

semi™

SEMI Equipment and Materials Market Outlook



Clark Tseng
Sr. Manager
Industry Research & Statistics

SEMICON Taiwan 2009
Market Briefing
Sept 30, 2009

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Semiconductor Equipment and Materials Outlook

Clark Tseng
Senior Research Manager, SEMI

- Clark is a senior research manager at SEMI, a global industry association serving the manufacturing supply chains for semiconductor industry. His major responsibility is to track and evaluate front-end fab investment in Asia Pacific region. His research also spans over flat panel display and PV industries. His expertise includes in-depth analysis of the industry dynamics, as well as the fundamentals of market forecasting, competitive analysis, and strategic planning.-

- Prior to SEMI, Clark worked for Qimonda as the manager at Strategy and Business Development division, where he managed market & competitive intelligence function in Asia/Pacific. In this role, he tracked market supply/demand, pricing, competitors' capacity planning, technology roadmap, and product portfolios.

- Clark Tseng received a bachelor business administration and a bachelor of arts in international relations from National Chengchi University in Taiwan.

SEMI: The Global Association

SEMI delivers access to:

- Information
- Global Markets
- People—*from governments to customers*

SEMI products and services include:

- Expositions: SEMICON®, PV, FPD, etc.
- International Standards
- Public policy/EHS
- Technical & Business Conferences
- **Industry Research & Statistics**
- Website: www.semi.org

About SEMI

- Global industry association
- Over 2000 members
- Established in 1970 to serve the semiconductor supply chain
- Today serves members in the following industry's
  - Semiconductor
  - Flat Panel Display
  - Photovoltaic/Tech-Energy
  - Nanotechnology
  - MEMS

SEMI International Standards

SEMICON®

Industry Strategy Symposium—ISS

Book-to-Bill

About SEMI Industry Research & Statistics

The SEMI Industry Research and Statistics group provides market data and market research reports covering semiconductor capital equipment, photovoltaic equipment, semiconductor materials, packaging materials, and semiconductor fabs.

For our major reports, we collect actual data from suppliers around the world following strict professional standards of confidentiality. Our reports provide trends, forecast, and outlook to help the industry make important investment, strategic, and business planning decisions.

For additional information regarding our products and our data collection program, please visit us at www.semi.org/marketinfo or contact us at mktstats@semi.org.

Market Research Reports

Semiconductor Equipment

- Equipment Market Data Subscription (EMDS)
- China Domestic Fab Equipment Suppliers
- China Equipment Subsystems, Components, and Parts Vendors Overview
- Historical SEMI Book-to-Bill Report

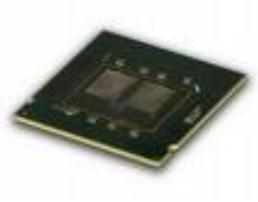
Semiconductor Materials

- Material Market Data Subscription (MMDS)
- Photomask Report*
- Silicon Reclaim Wafer Report*

Semiconductor Fabs

- World Fab Forecast
- FabFutures
- World Fab Watch
- 300 mm Report

Semiconductor Packaging



- Global Semiconductor Packaging Materials Outlook (Oct '09)

Notes:
* These reports are included FREE with the purchase of the MMDS report, but also available as separate reports.

Market Research Reports (con't)

Photovoltaic

- Photovoltaic Equipment Market Subscription Coming Soon
- Chemicals & Materials for Photovoltaic Cells and Modules New ***
- PV Fab Database***
- Solar Cell Capacity, Shipment, and Company Profile Database and Report New ***
- PV Supply Chain Health Report New ***
- Photovoltaic Technologies, Equipment, Applications, and Markets (PV TEAM) ***

Enabling Products

- Mass Flow Controller
- LED Manufacturing Technologies ***
- Sapphire Market ***

MEMS/MST

- Global MEMS Markets and Opportunity***

*** Third-party reports

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SEMICON® Taiwan 2009

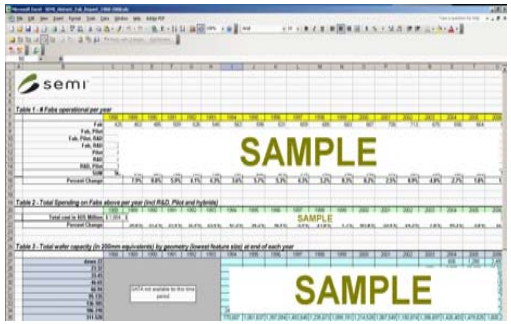
Custom Semiconductor Fab Reports

Custom reports generated

- Fab Transitional Report

  (fabs to be sold, sold, for sale, may-be-closed, etc)

- Historical Fab Report
  - # of fabs operational/year (1988-2008)
  - Total spending on fabs per year (1988-2008)
  - wafer capacity by geometry (1994 – 2008)



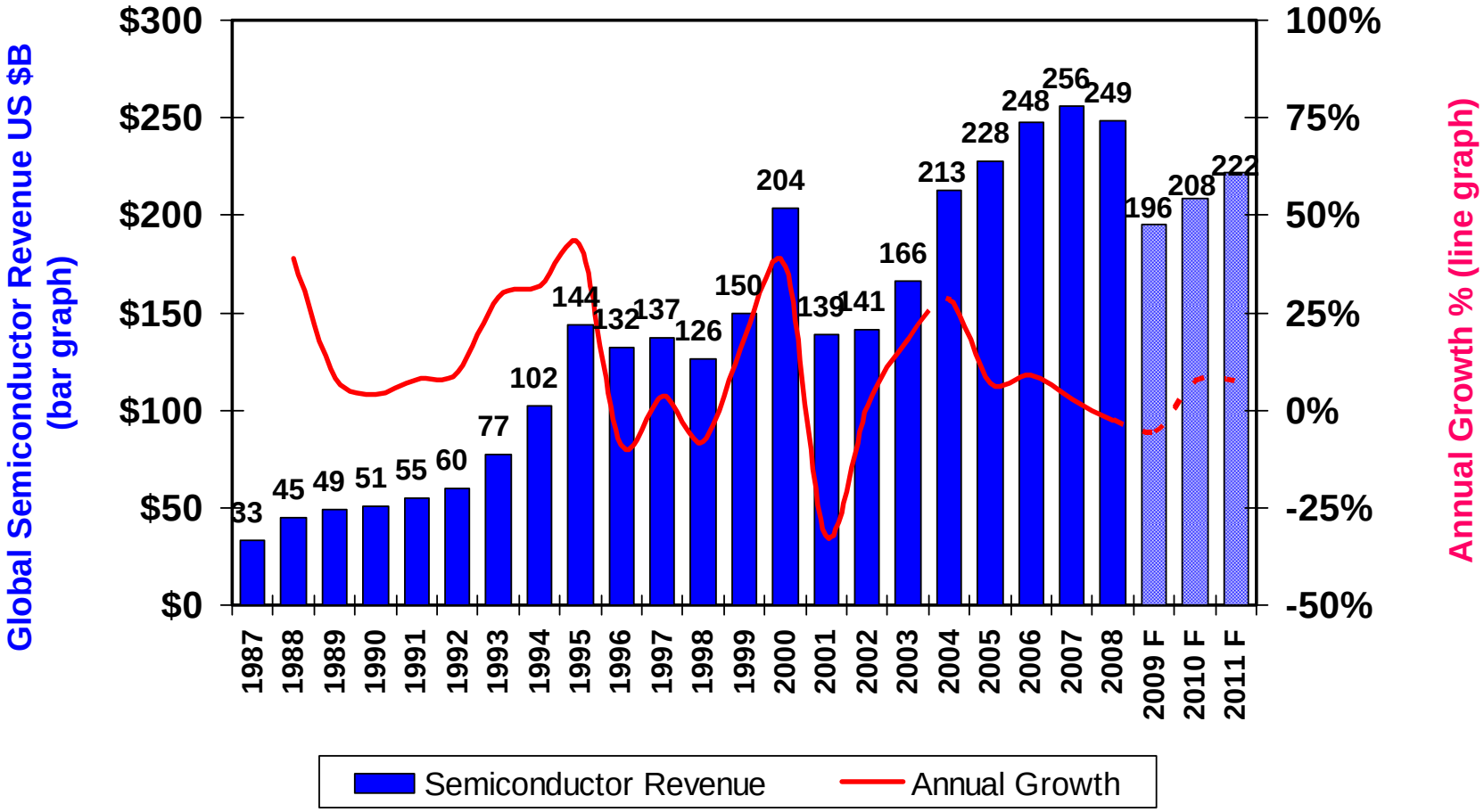
- Historical Fab Report
  - Fab Construction spending (1996 – 2007)
  - Fab Equipping spending (1996 – 2007)
- Regional Fab Capacity Report (2000 - 2008)

Topics of Discussion for Today

- Overall Semiconductor Industry Outlook
- Semiconductor Fab Spending Outlook
- Semiconductor Equipment Outlook
- Semiconductor Materials Outlook
- Summary

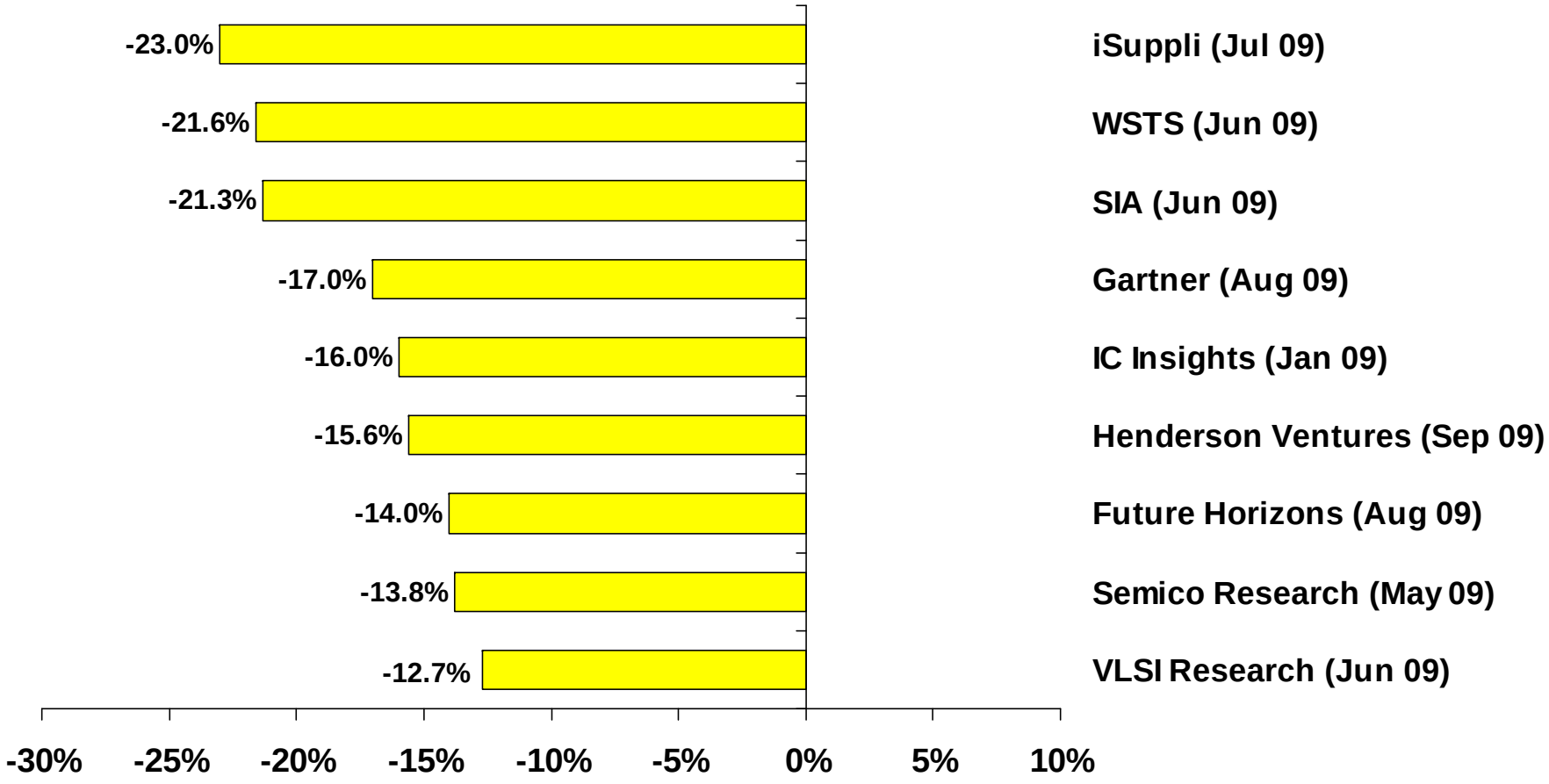
Overall Semiconductor Industry Outlook

Semiconductor Cycles



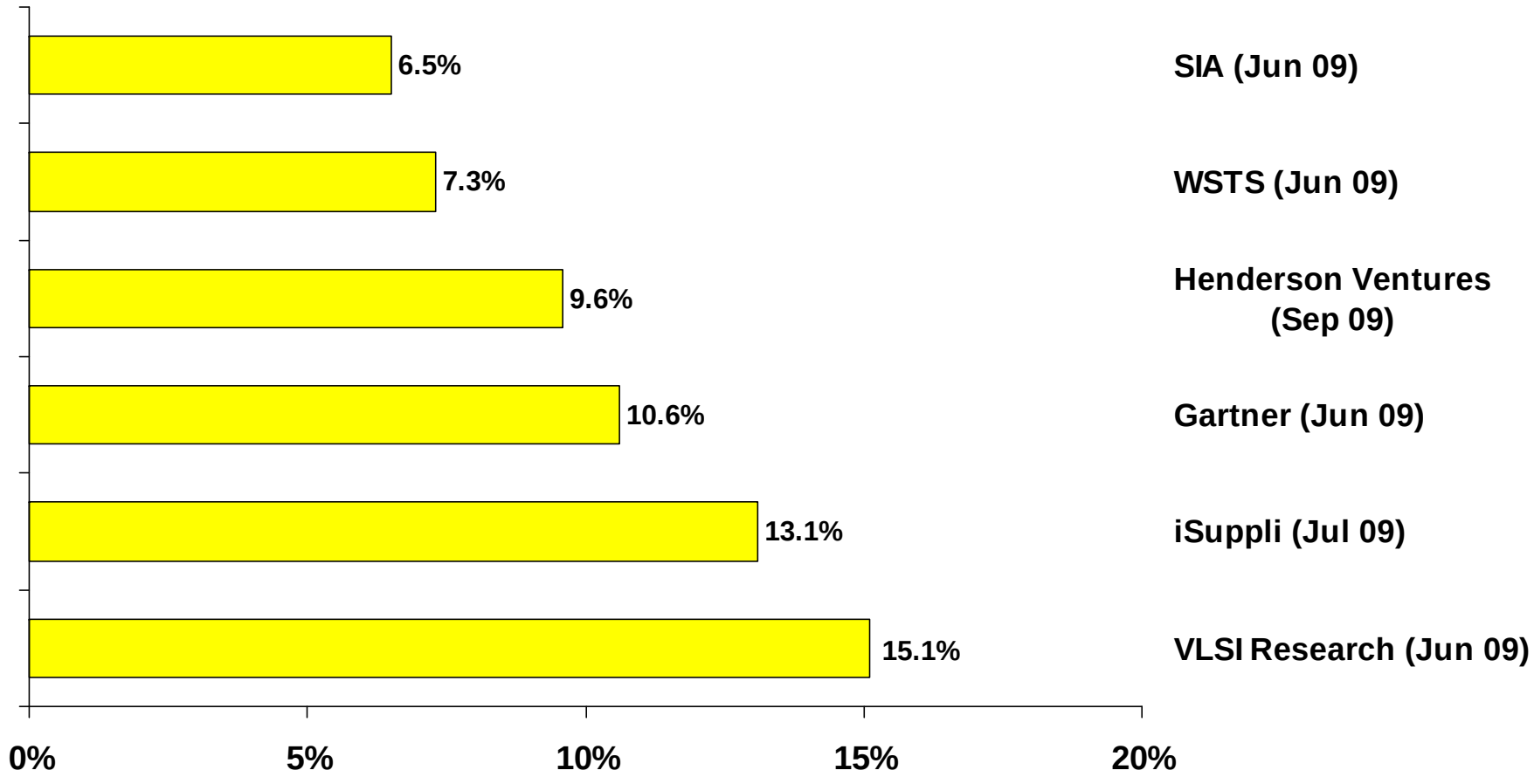
Source: SIA/WSTS historical year end reports, SIA June 2009 Forecast

2009 Semiconductor Revenue Forecasts



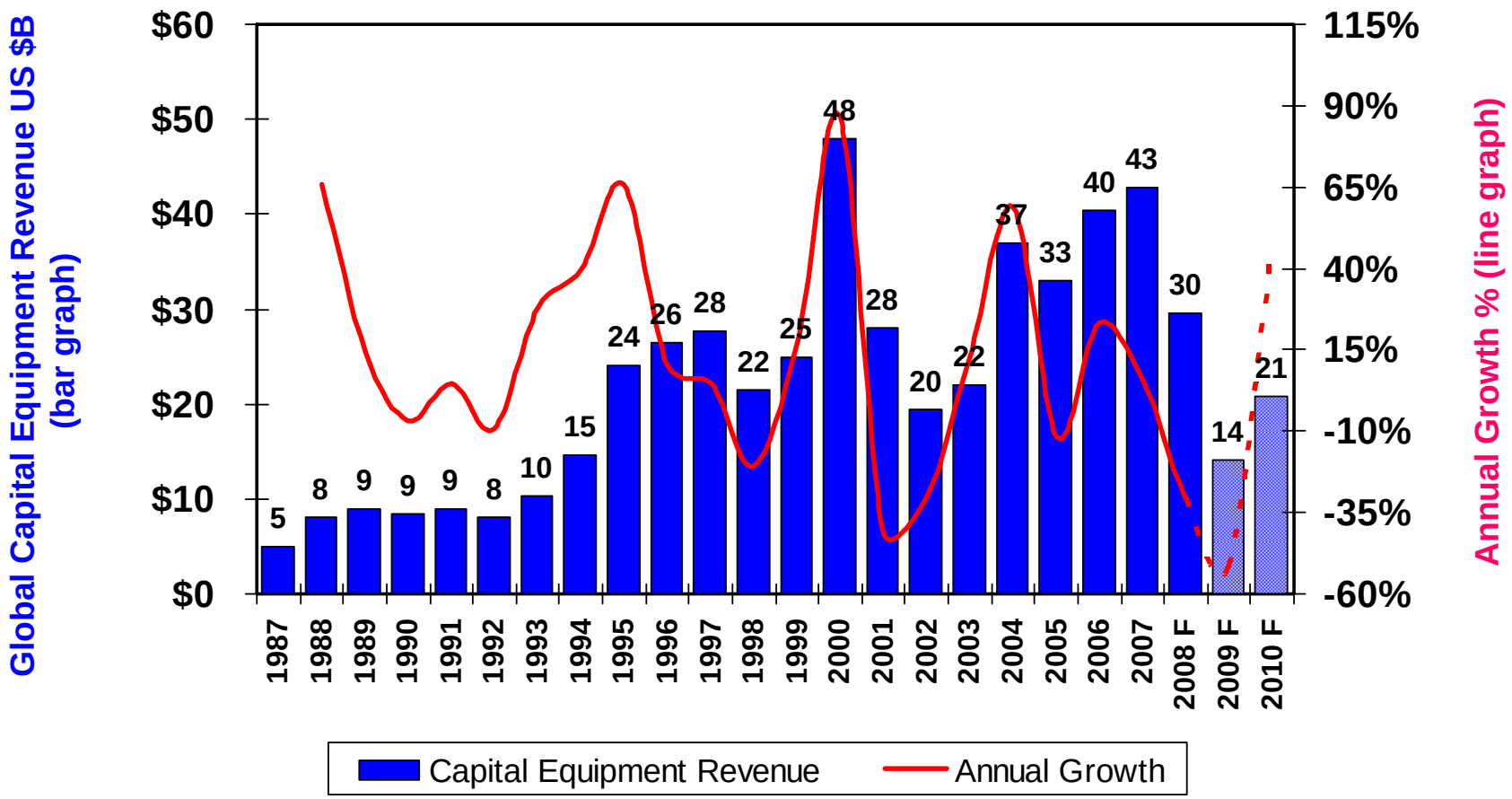
Source: SEMI

2010 Semiconductor Revenue Forecasts



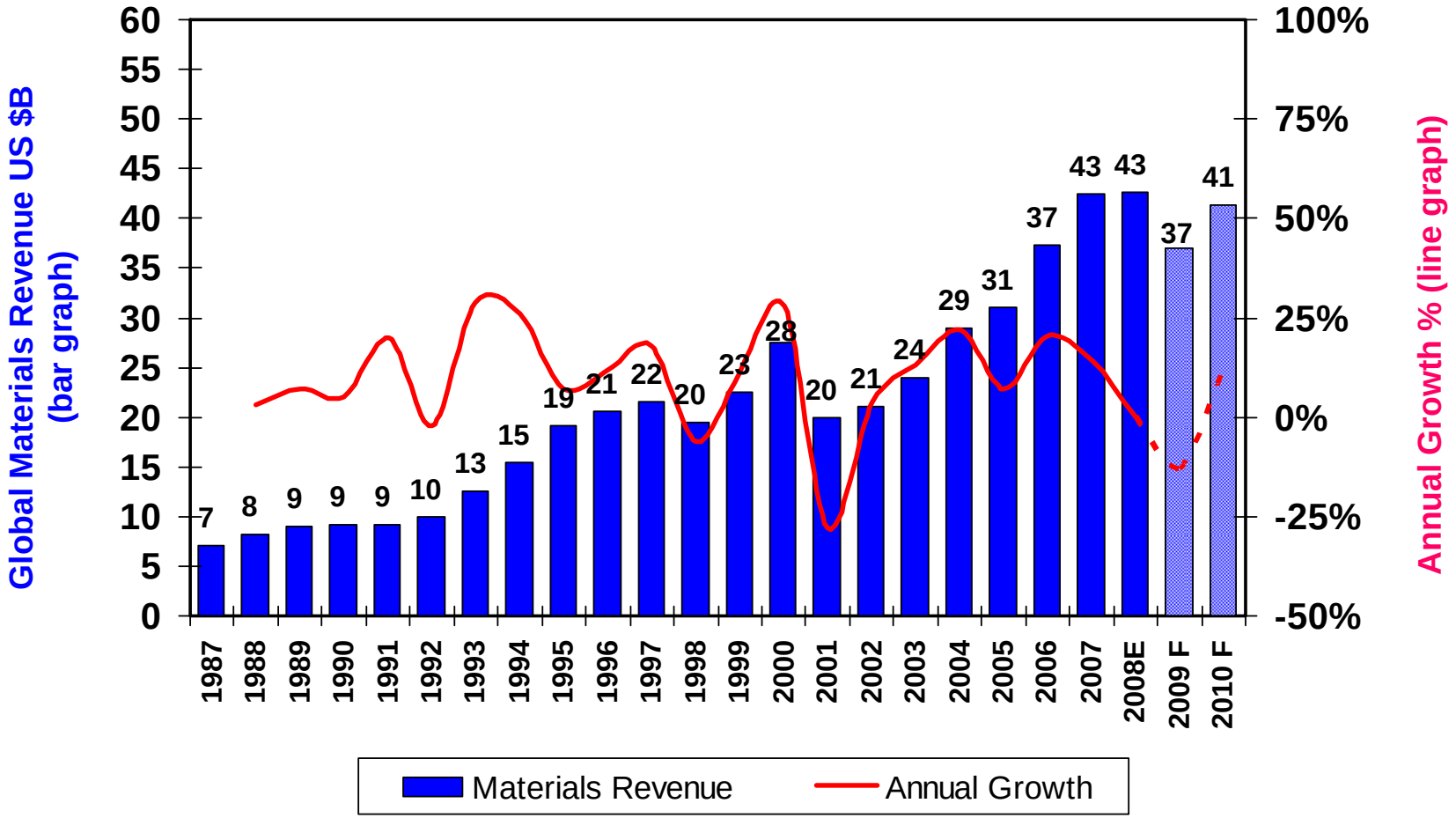
Source: SEMI

Capital Equipment Cycles



Source: SEMI and SEMI/SEAJ year end historical reports, SEMI Year-End 2008 Forecast

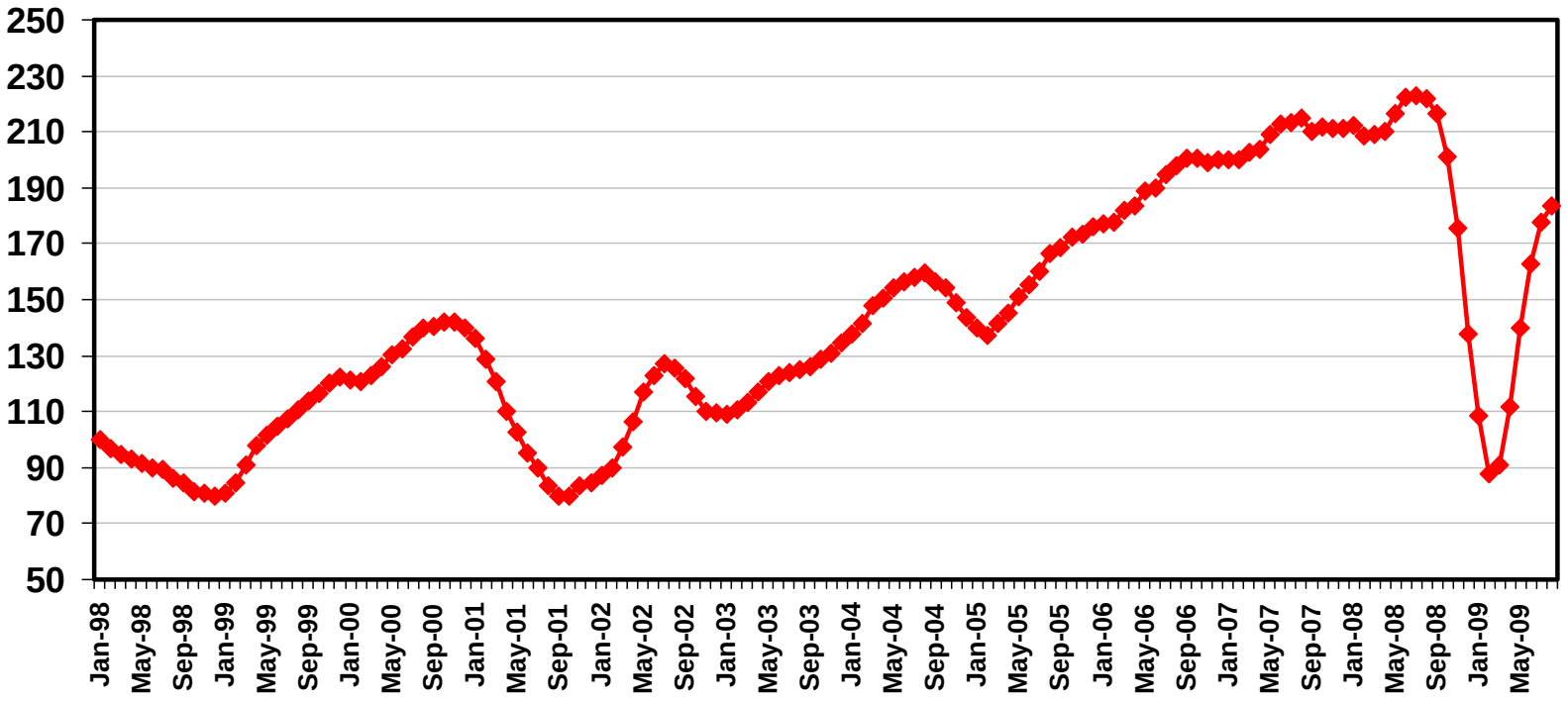
Semiconductor Materials Cycles



Source: Rose Associates historical reports 1987 through 1999, SEMI 1999 through 2010, August 2009

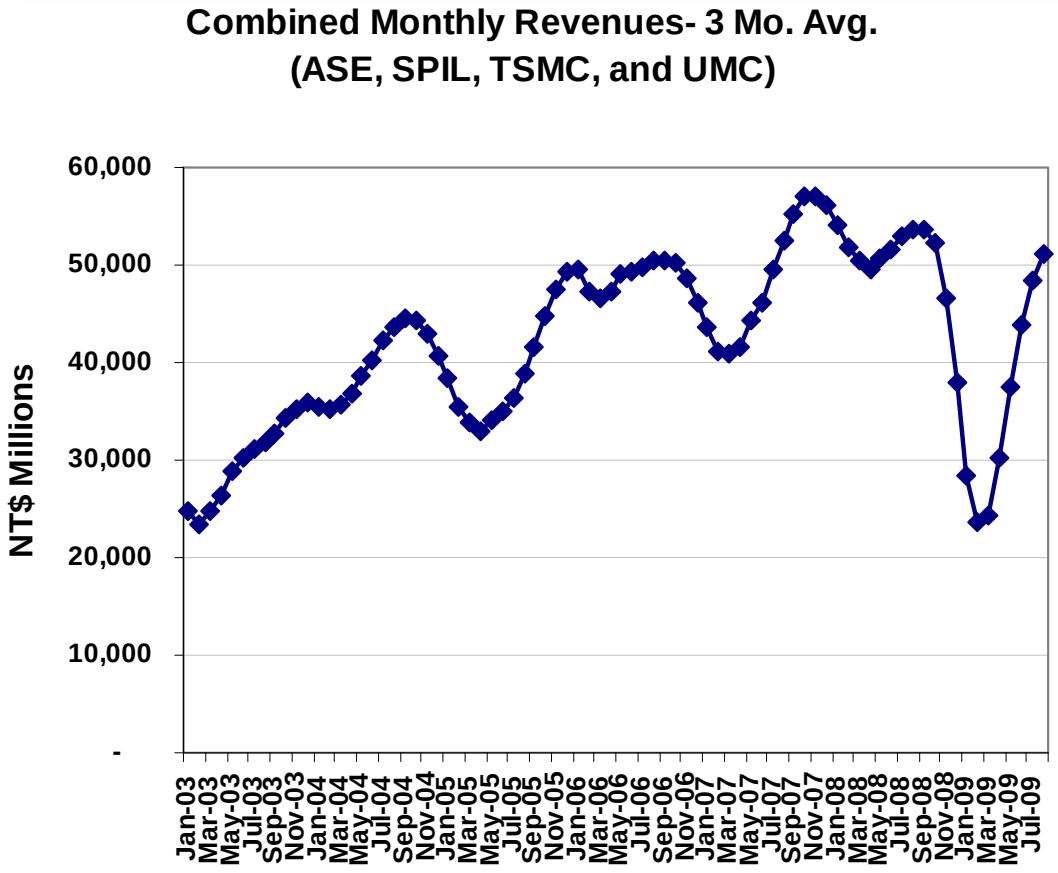
Silicon Area Shipment Index

Worldwide Wafer Area Shipment Index
(Three-month moving average)



Source: SEMI Silicon Manufacturers Group September 2009

Outsource Manufacturers- Monthly Sales Trends through August



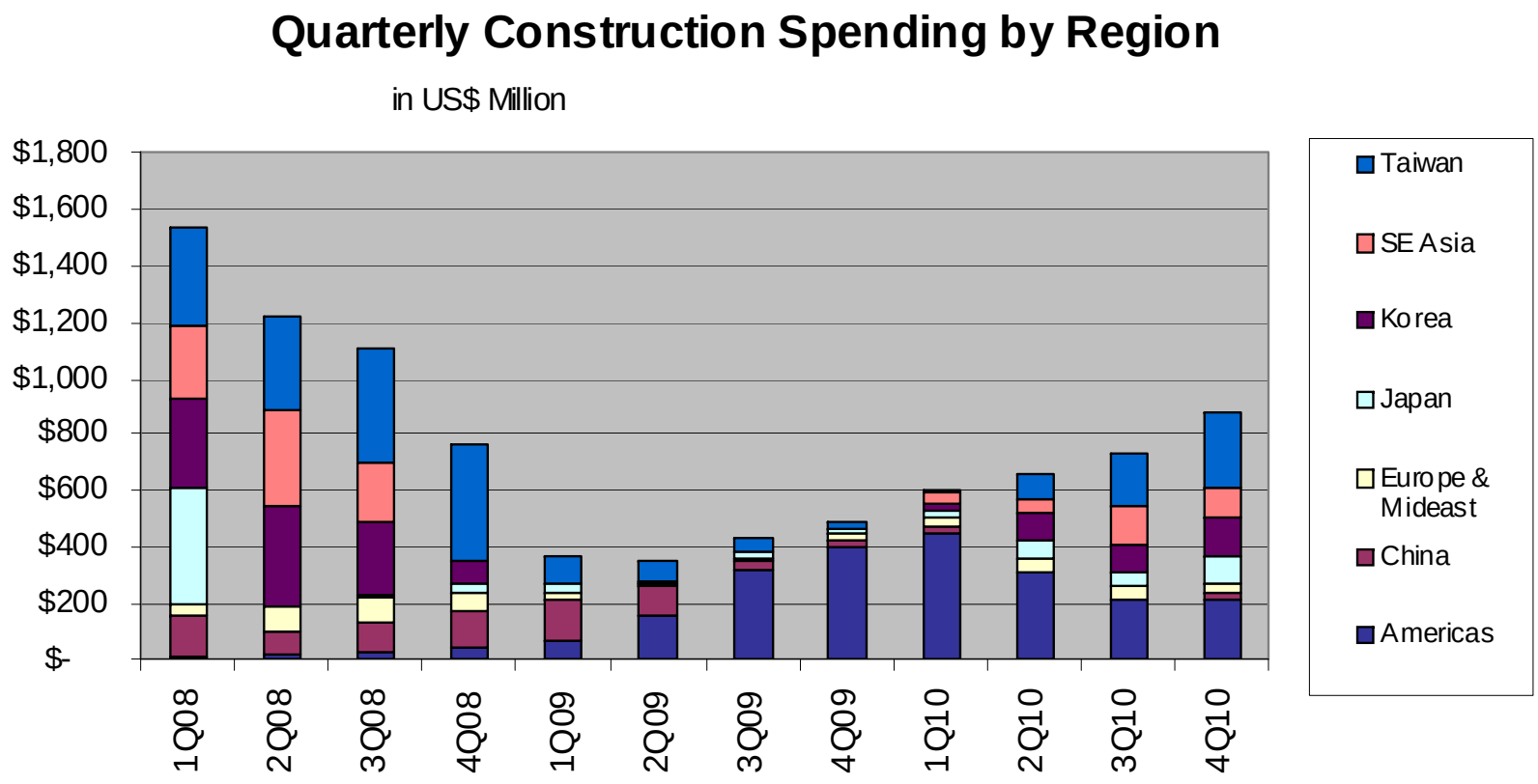
August 2009 sales

- Six months of consecutive increases
- 4.6% below Aug 2008

Source: Company monthly reports

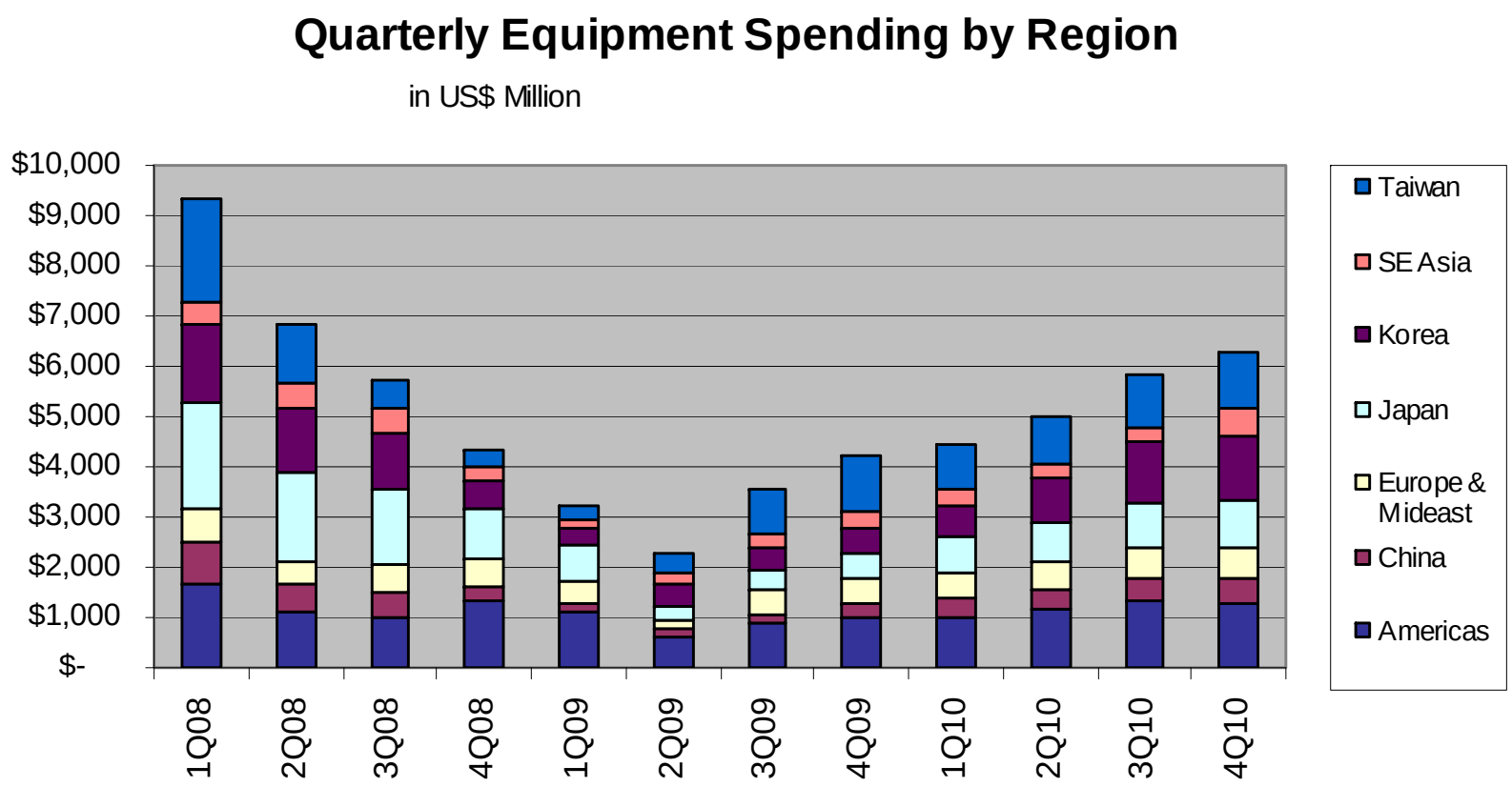
Semiconductor Fab Capacity & Spending Outlook

Fab Construction-
Investments at minimal levels



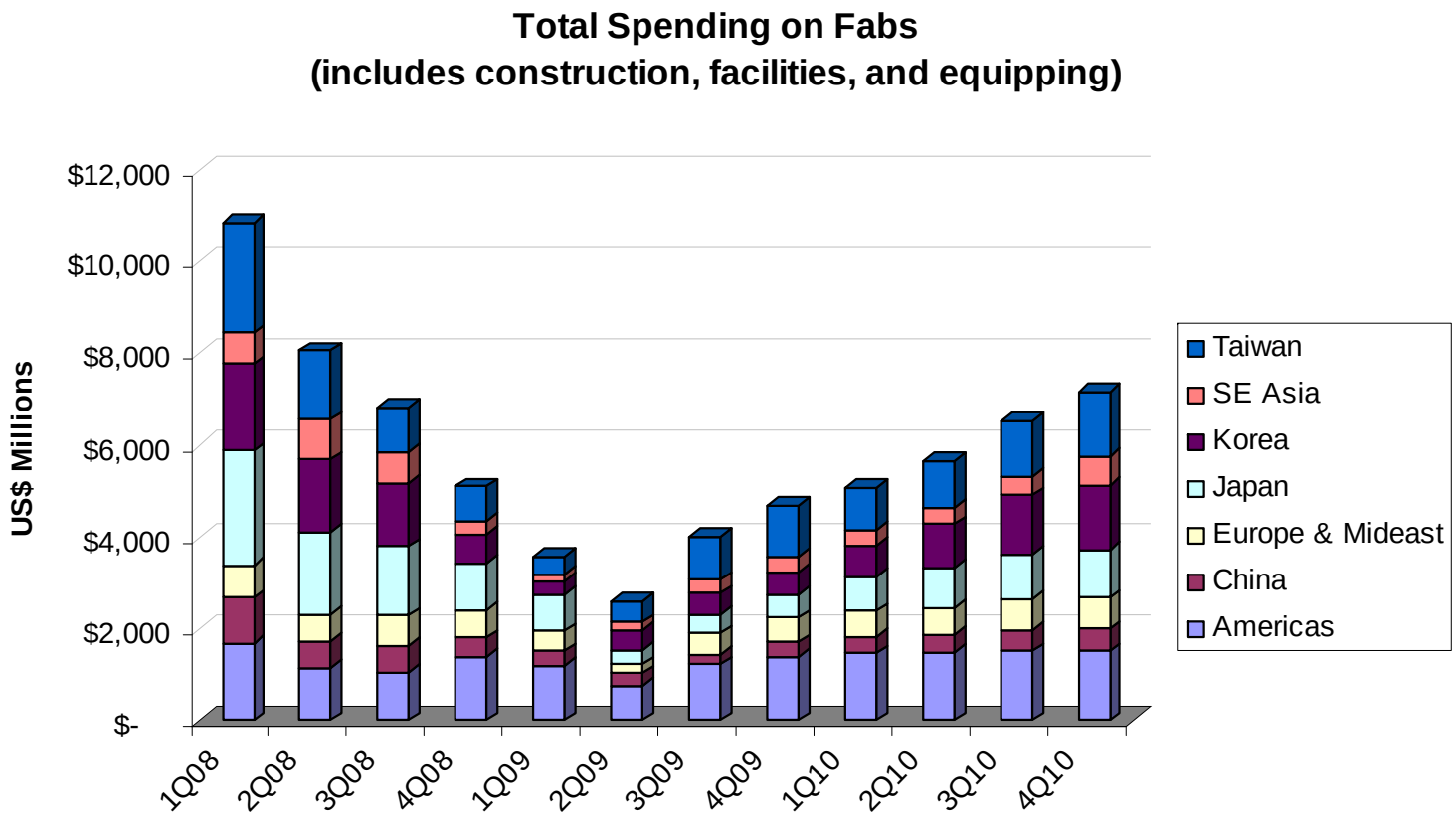
Source: SEMI World Fab Forecast

Equipment Spending – 70% below 1Q 2008



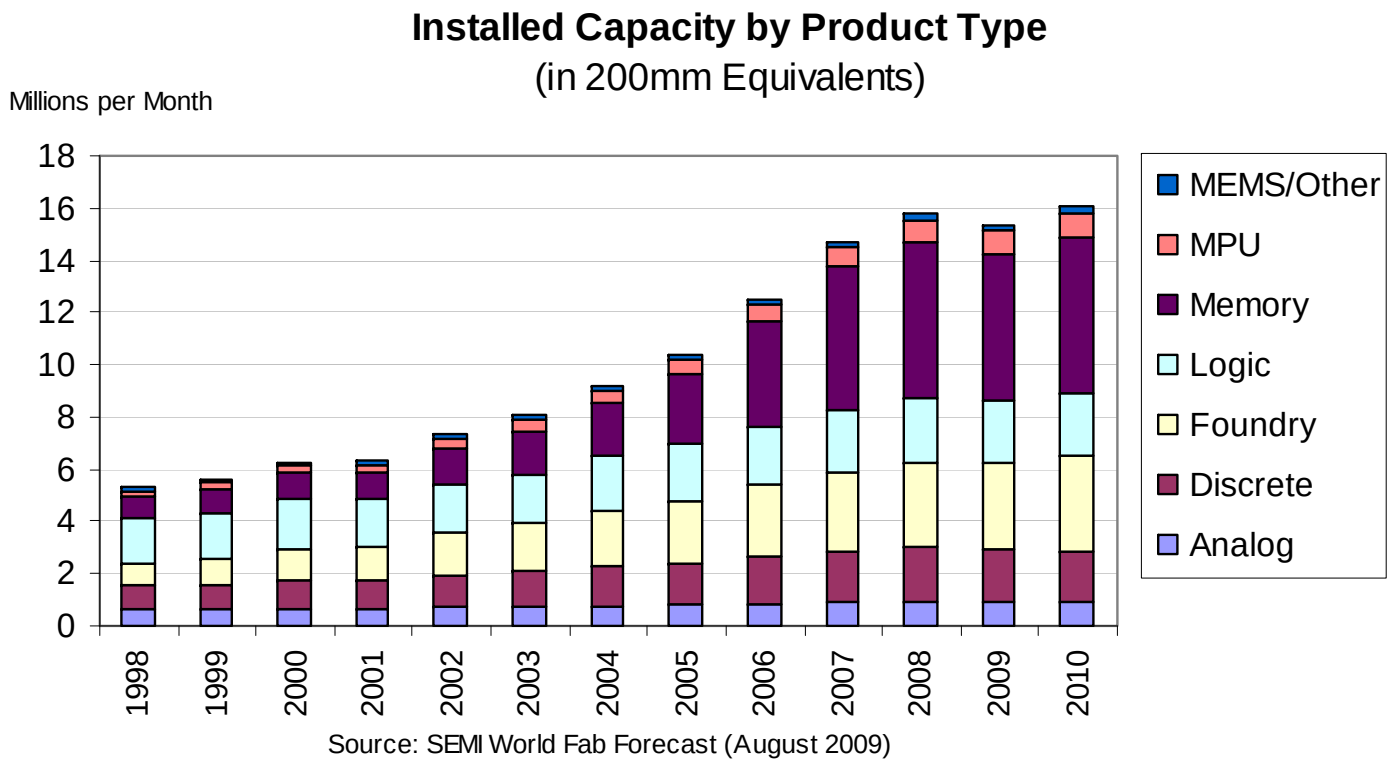
Source: SEMI World Fab Forecast

Total Fab Spending- Increasing off of the 2Q 2009 low



Source: SEMI World Fab Forecast

Installed Capacity by Product Type



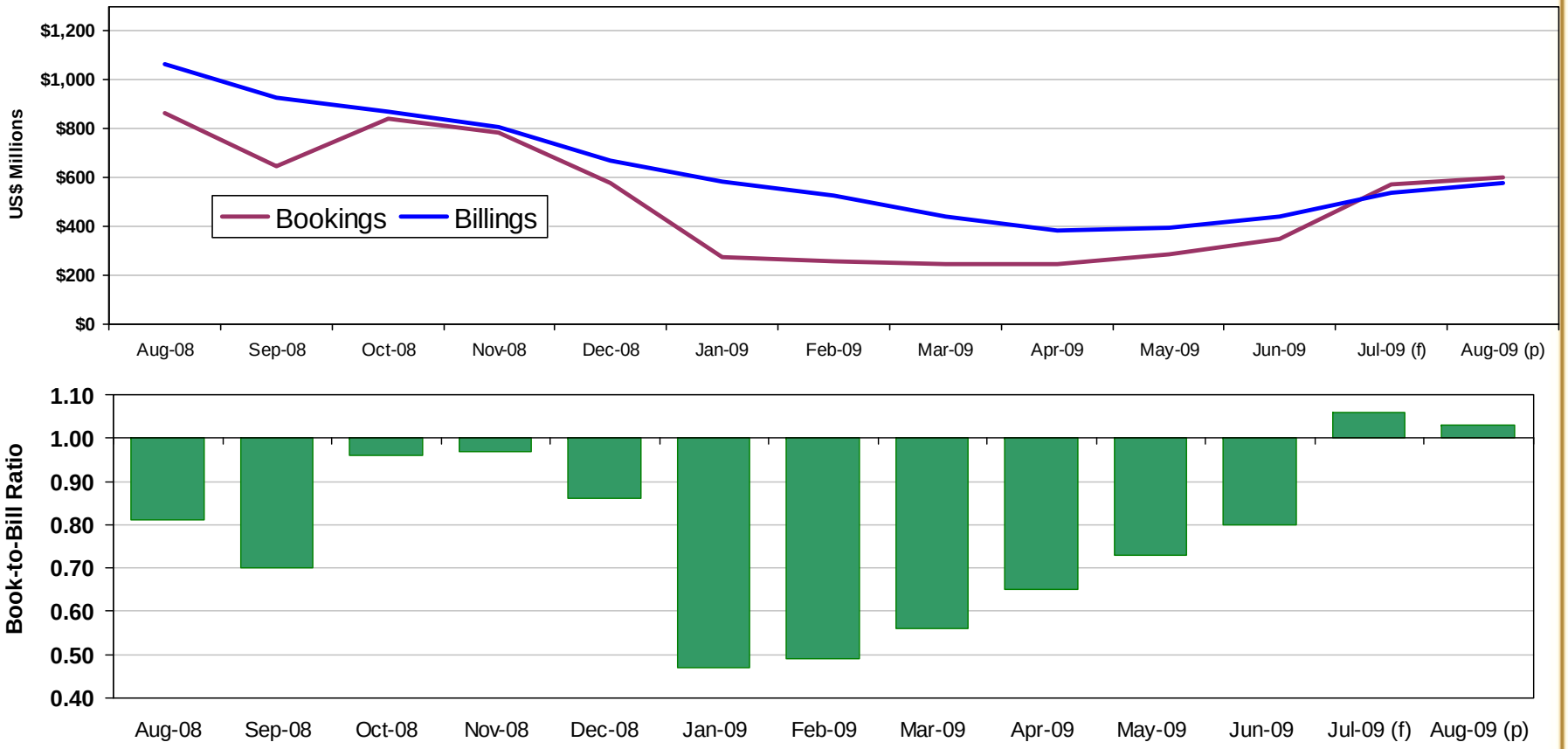
Since 1998, Memory share of fab capacity has grown to ~36% from 15%.

Source: SEMI World Fab Forecast

Semiconductor Equipment Market Outlook

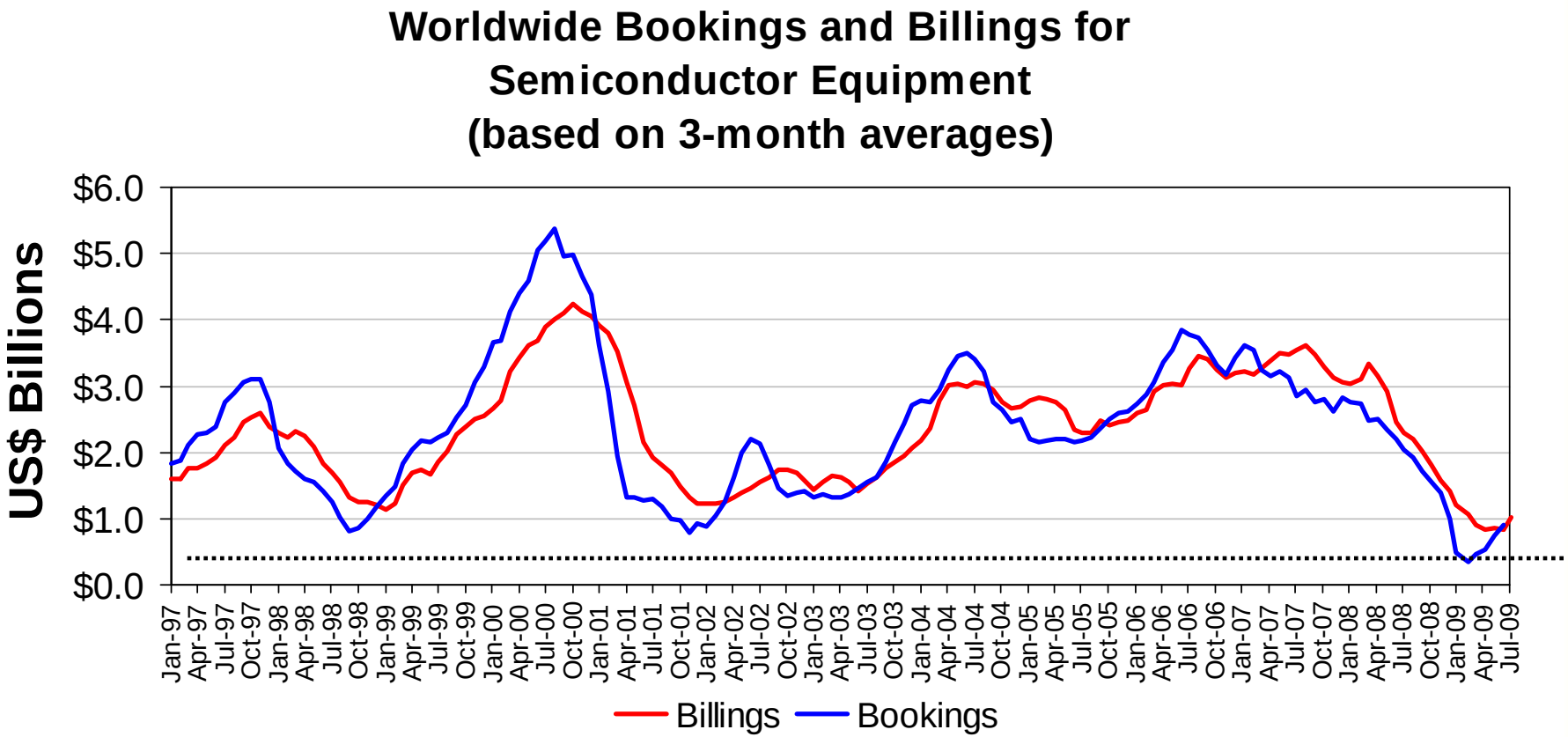
SEMI North America Book-to-Bill Ratio

North American Headquartered Manufacturers Global Capital Equipment Book-to-Bill
(based on three month averages)



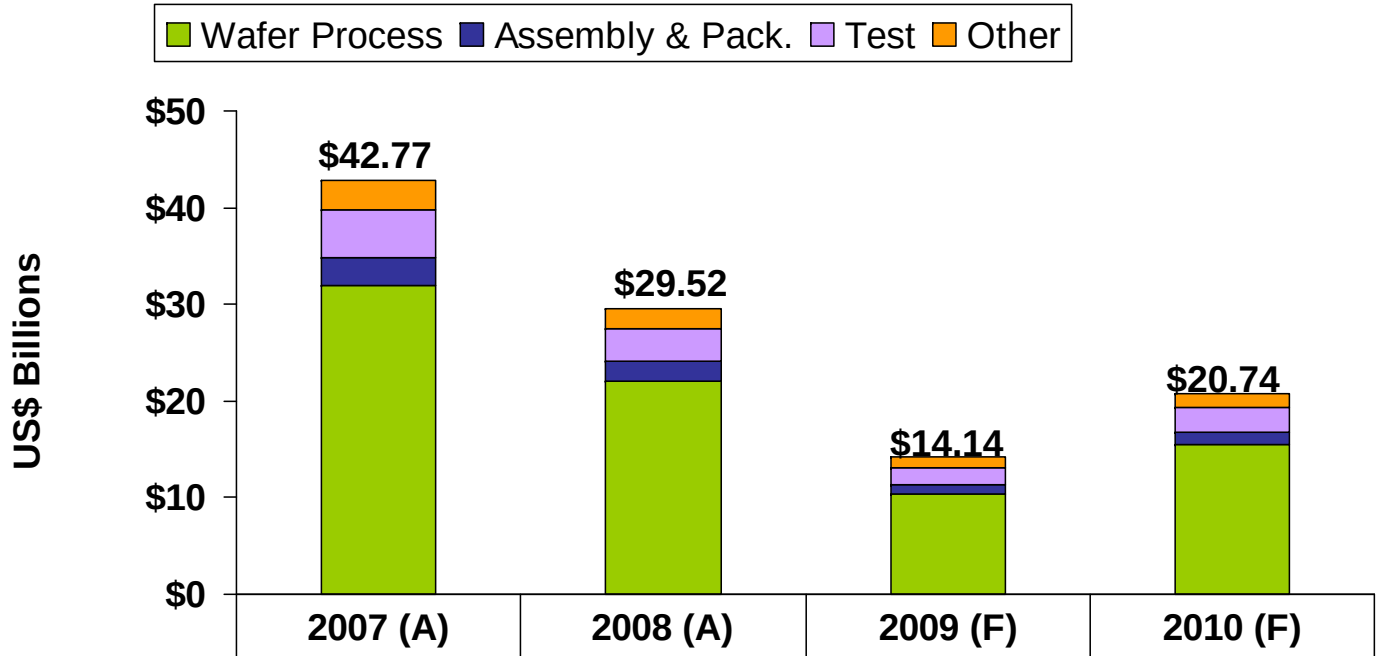
Source: SEMI September 2009

Worldwide Semiconductor (Fab, Test & Assembly) Equipment Trends



Source: SEMI/SEAJ September 2009

SEMI® 2009 Mid-Year Equipment Consensus Forecast By Segment

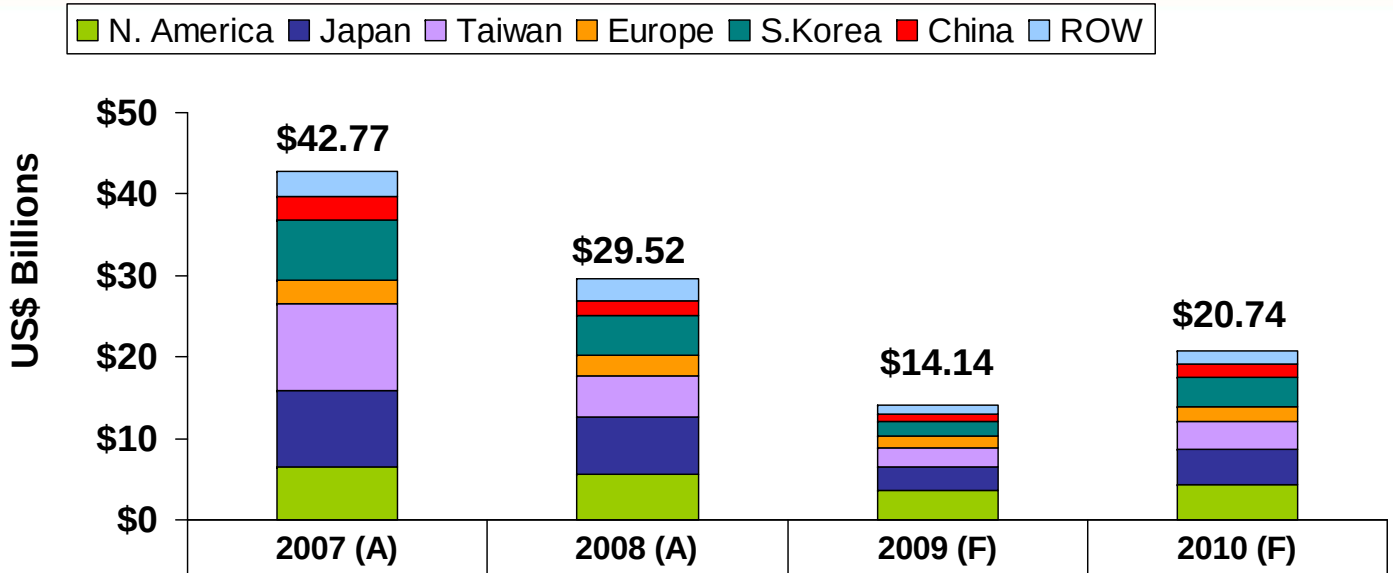


	2007 (A)	2008 (A)	2009 (F)	2010 (F)
Other	2.92	2.00	0.99	1.43
Test	5.05	3.45	1.78	2.54
Assembly & Pack.	2.84	2.04	0.96	1.34
Wafer Process	31.95	22.03	10.42	15.43

Totals may not add due to rounding

Source: SEMI Mid-Year 2009 Semiconductor Consensus Forecast, July 2009

SEMI® 2009 Mid-Year Equipment Consensus Forecast By Market Region

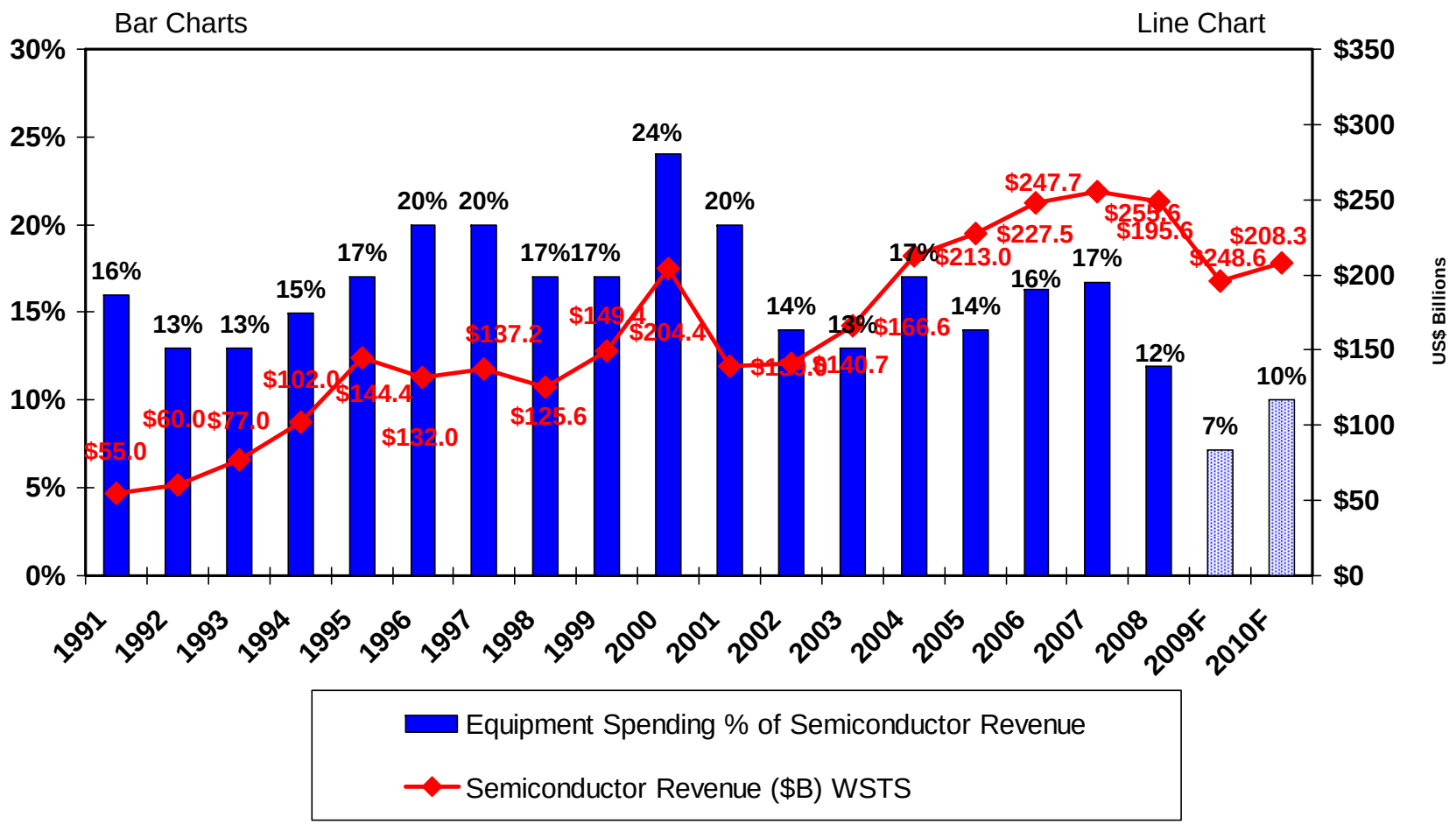


	2007 (A)	2008 (A)	2009 (F)	2010 (F)
ROW	3.05	2.61	1.19	1.61
China	2.99	1.89	0.78	1.59
S.Korea	7.35	4.89	1.88	3.59
Europe	2.94	2.45	1.40	1.77
Taiwan	10.65	5.01	2.37	3.56
Japan	9.31	7.04	2.96	4.32
N. America	6.55	5.63	3.56	4.30

Totals may not add due to rounding

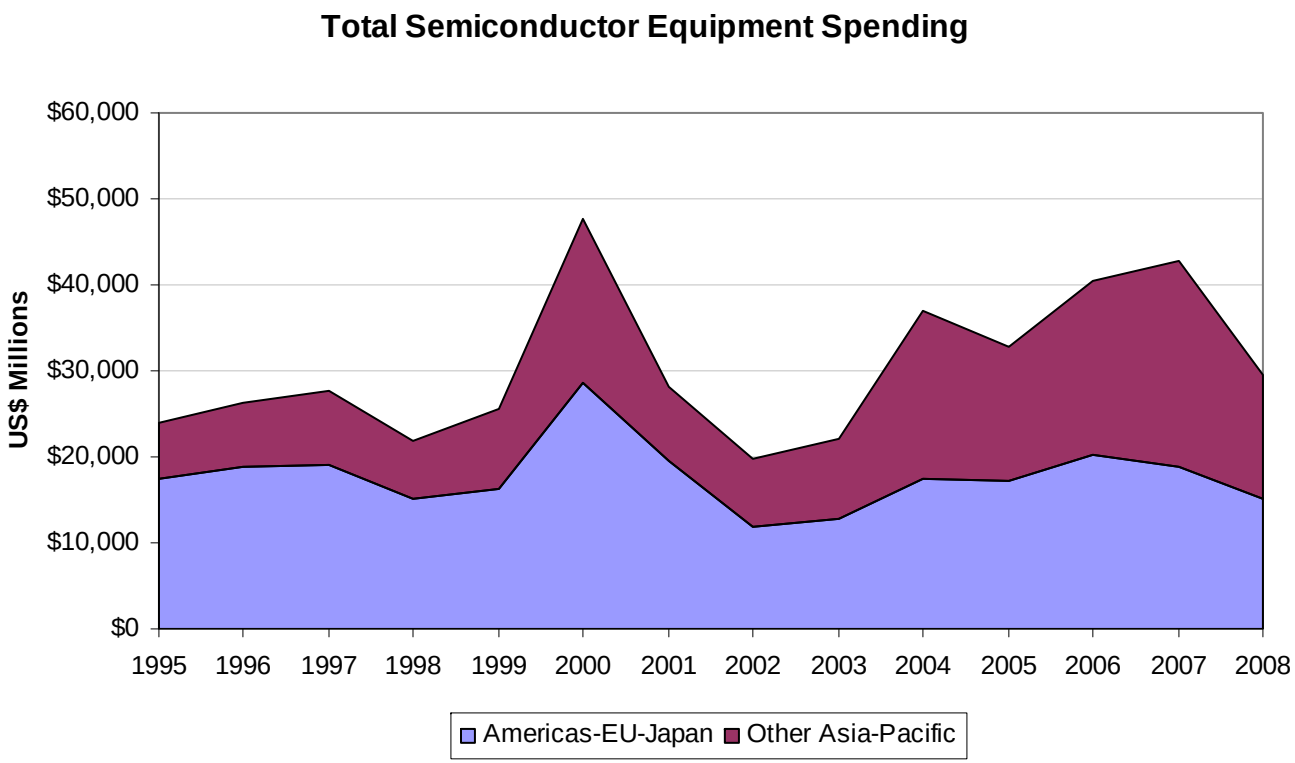
Source: SEMI Mid-Year 2009 Semiconductor Consensus Forecast, July 2009

Equipment Spending Trends



Source: SEMI and SIA July 2009

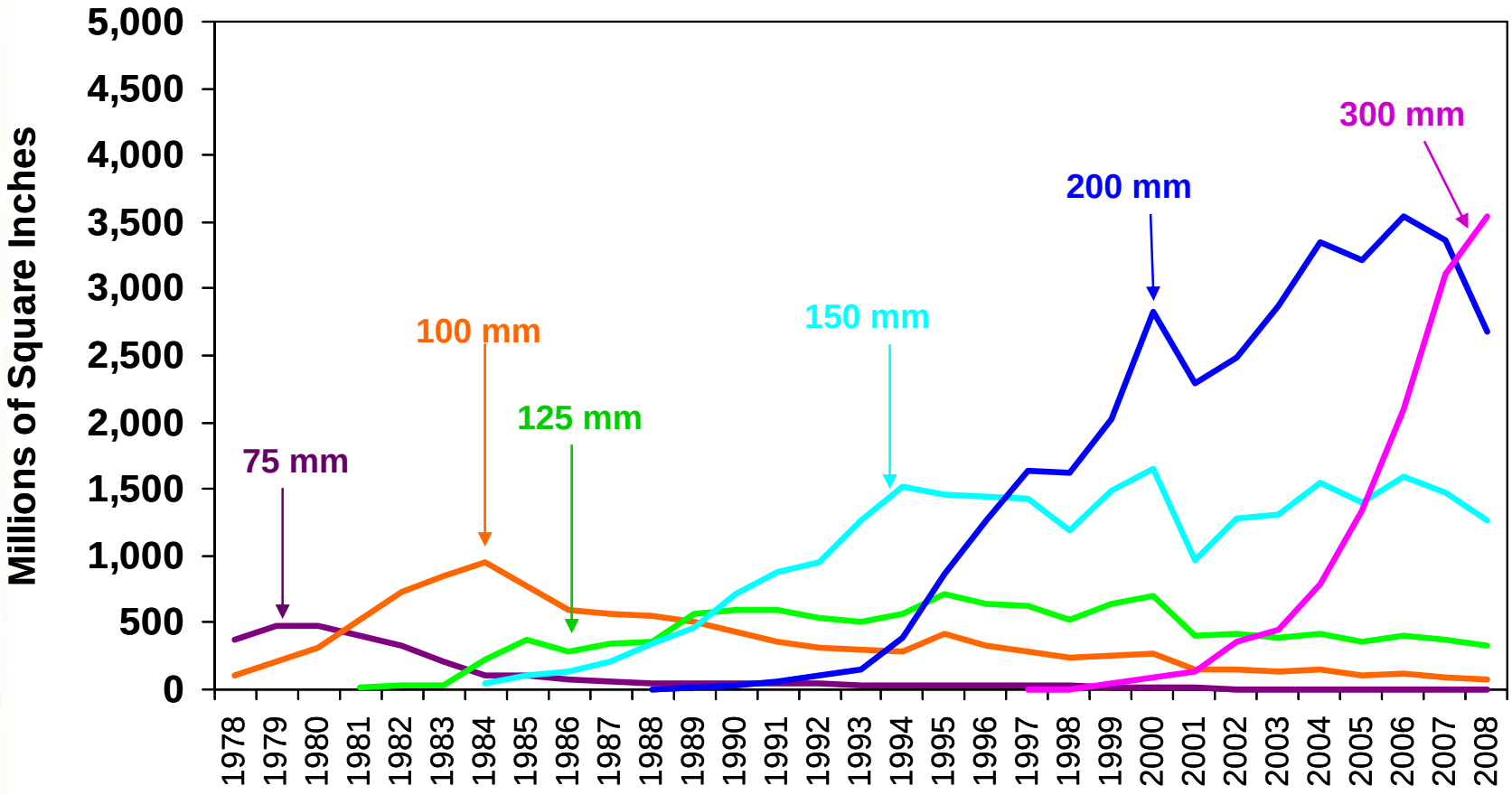
Semiconductor Equipment Sales



Source: SEMI/SEAJ Worldwide Semiconductor Equipment Market Statistics

Semiconductor Materials Market Outlook

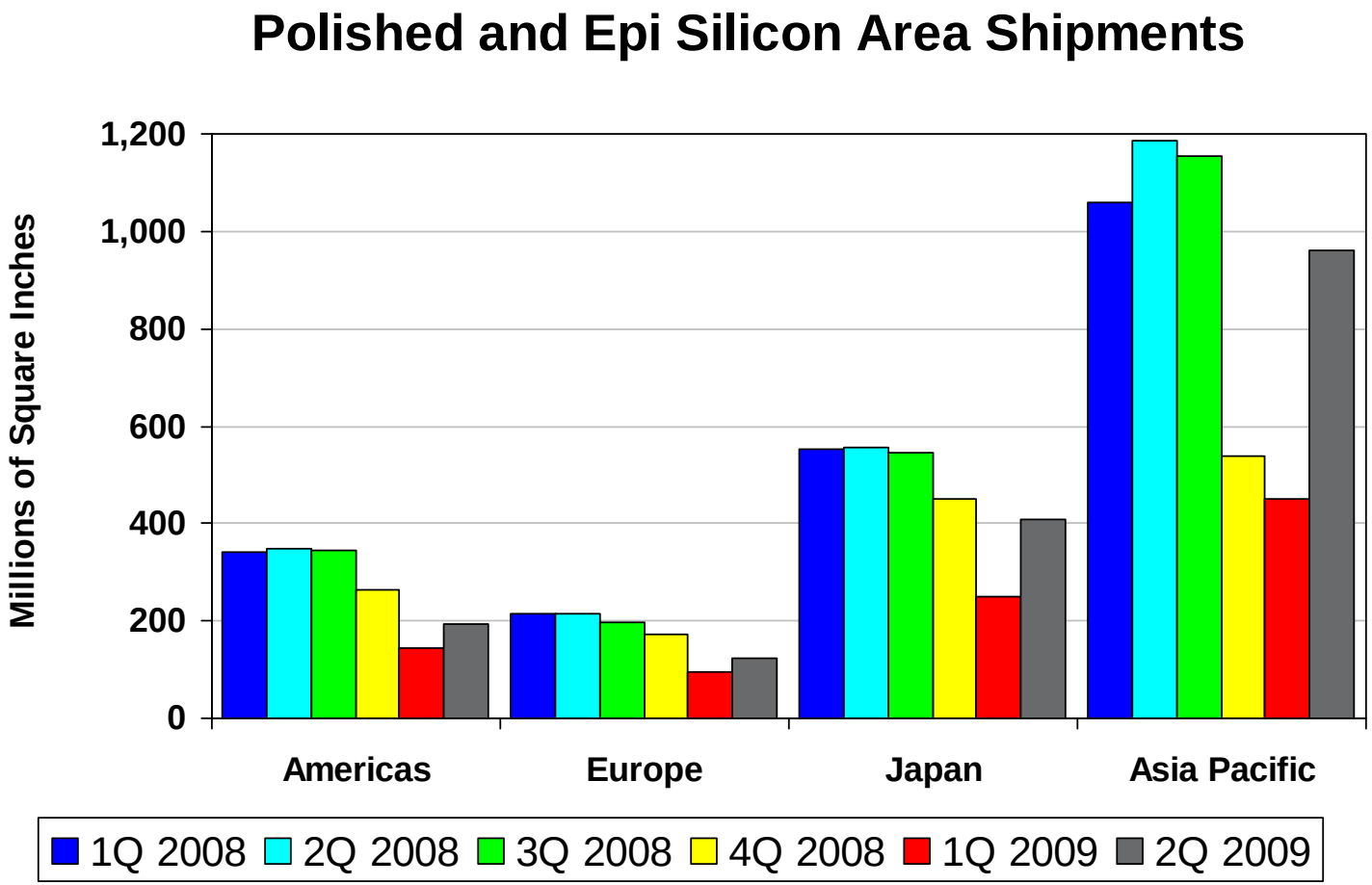
Global Silicon Wafer Diameter Trends



Includes polished and epi wafers. Excludes reclaim, non polished, and SOI.

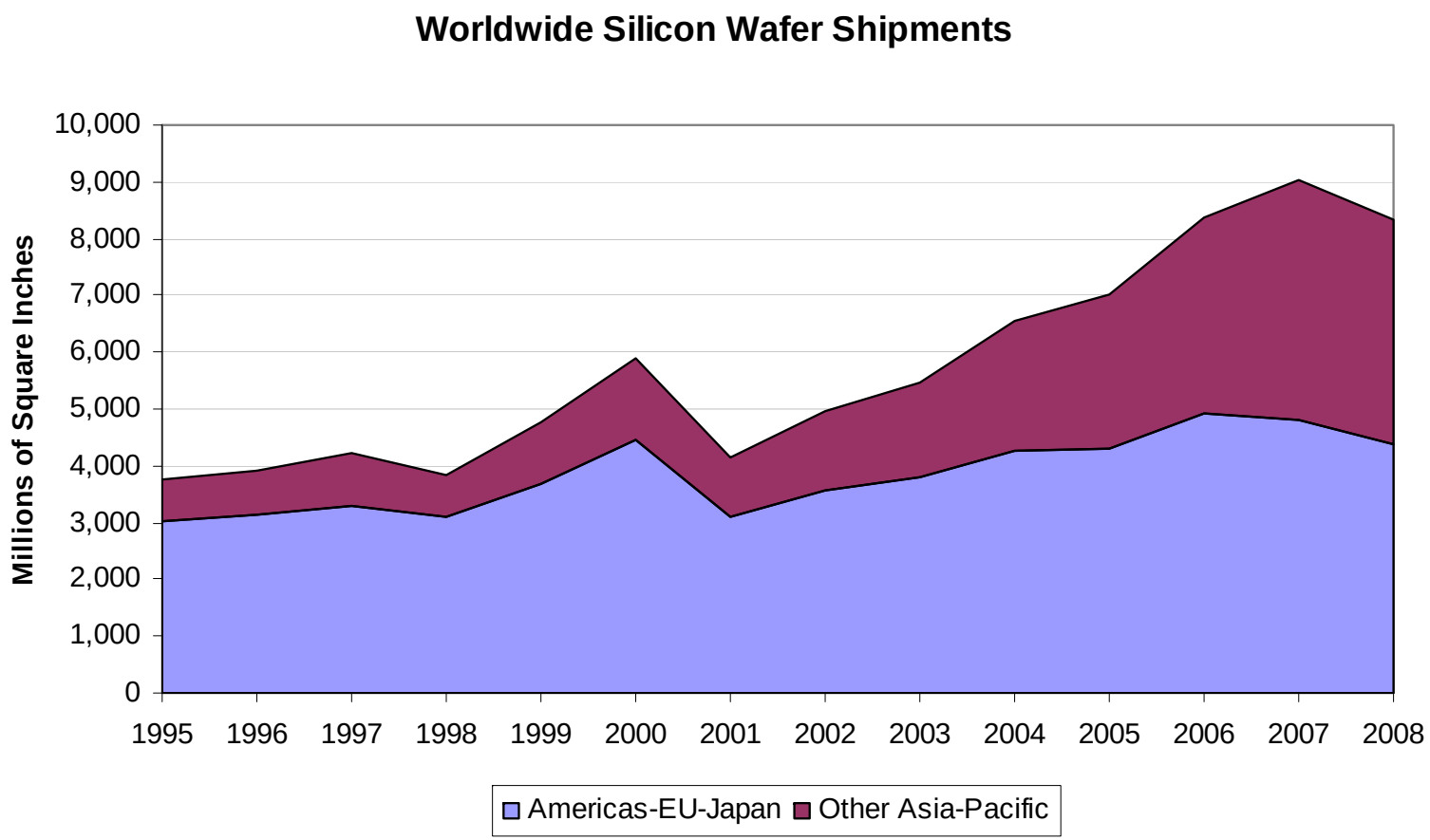
Source: Rose Associates 1978 to 1995; SEMI SMG 1995 to 2006; SEMI SMG

Quarterly Silicon Trends- Strong 2Q Recovery across all Regions



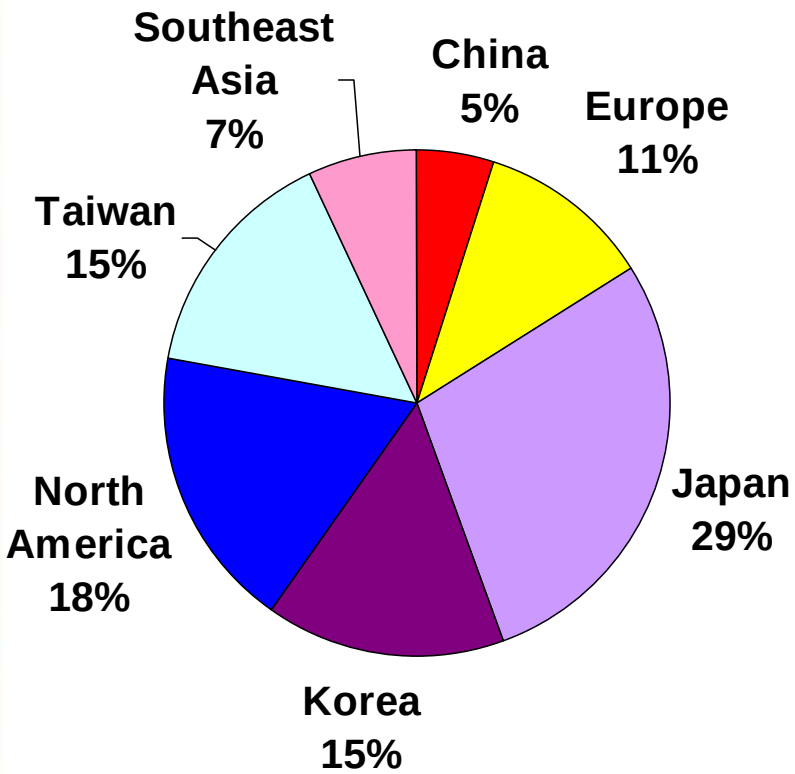
Source: SEMI SMG July 2009

Global Silicon Shipments (from the wafer suppliers to the fabs)



Source: SEMI Silicon Manufacturers Group

Regional Fab Materials Markets



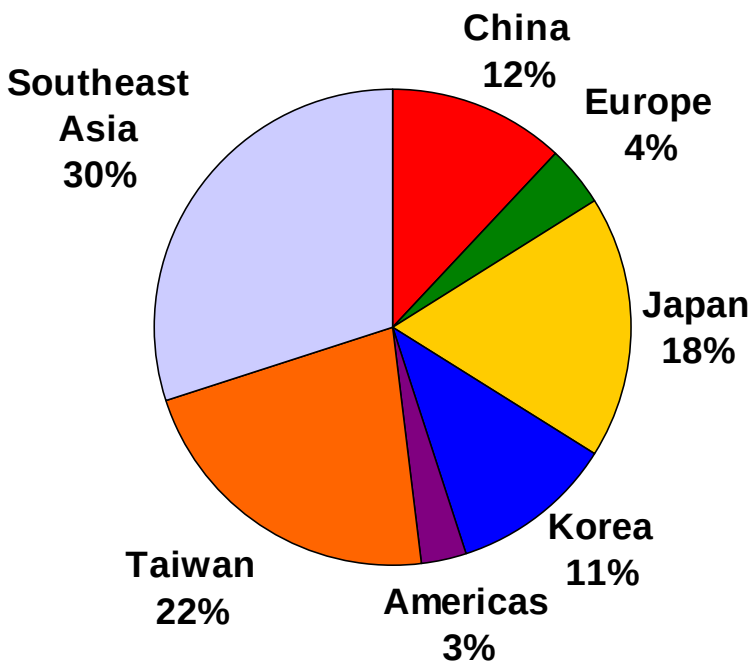
2008 = $24.1 Billion

Source: SEMI Materials Market Data Subscription August 2009

Region	2008 $B	2009F $B	% Change
China	1.17	0.99	-15%
Europe	2.63	2.27	-14%
Japan	6.91	5.90	-15%
Korea	3.63	3.14	-13%
North America	4.36	3.71	-15%
Taiwan	3.73	3.14	-16%
Southeast Asia	1.65	1.37	-17%
Total Regions	24.08	20.52	-15%

Totals may not add due to rounding

Regional Semiconductor Packaging Materials Markets



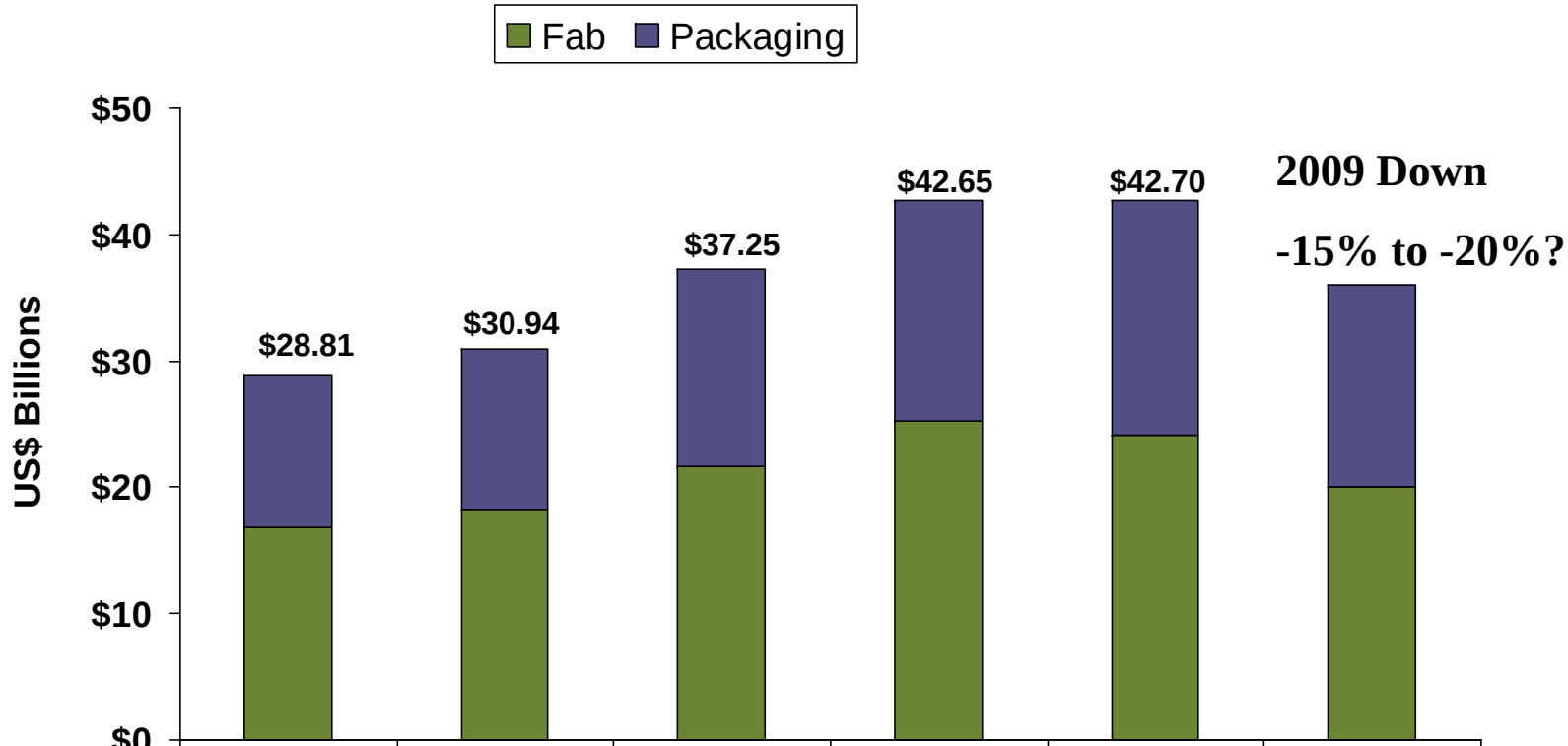
2008 = $18.5 Billion

Region	2008 $B	2009F $B	% Change
China	2.32	2.26	-3%
Europe	0.69	0.63	-9%
Japan	3.30	2.80	-15%
Korea	2.15	1.88	-13%
Americas	0.59	0.52	-12%
Taiwan	4.00	3.66	-9%
Southeast Asia	5.48	4.78	-13%
Total Regions	18.53	16.53	-11%

Totals may not add due to rounding

Source: SEMI Materials Market Data Subscription August 2009

Materials Market Forecast By Segment

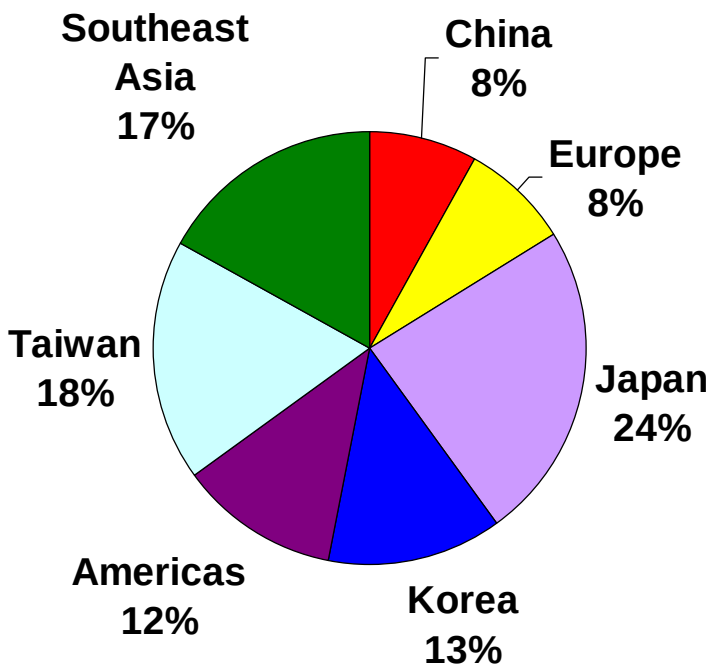


	2004	2005	2006	2007	2008	2009 F
Packaging	11.95	12.77	15.54	17.45	18.58	16.00
Fab	16.86	18.17	21.70	25.20	24.12	20.00

Totals may not add due to rounding.

Source: SEMI February 2009

Total Regional Materials Markets



2008=$42.7 B

Region	2008 $B	2009F $B	% Change
China	3.43	3.00	-13%
Europe	3.32	2.84	-14%
Japan	10.28	8.68	-16%
Korea	5.73	4.92	-14%
Americas	4.96	4.15	-16%
Taiwan	7.72	6.48	-16%
Southeast Asia	7.22	6.07	-16%
Total Regions	42.66	36.14	-15%

Totals may not add due to rounding

Source: SEMI Materials Market Data Subscription May 2009

Summary

Summary

- **Industry Trends**
  - Unit shipments bottomed in January/February with a strong rebound into the third quarter
  - Investments on fabs are increasing on a quarterly basis
  - Overall outlook is for growth in semiconductor sales to continue into 2010
- **Semiconductor Equipment Market**
  - Earlier this year, bookings fell to levels last reported in the early 1990s.
  - Bookings have been slowly improving from this bottom
  - Market forecast
    - a -50% or so decline in 2009
    - +40% to +50% spending growth in 2010
- **Semiconductor Materials Market**
  - 2009 forecasted to decline -15% to -20%
  - 2010 outlook to be inline with overall semiconductor market growth

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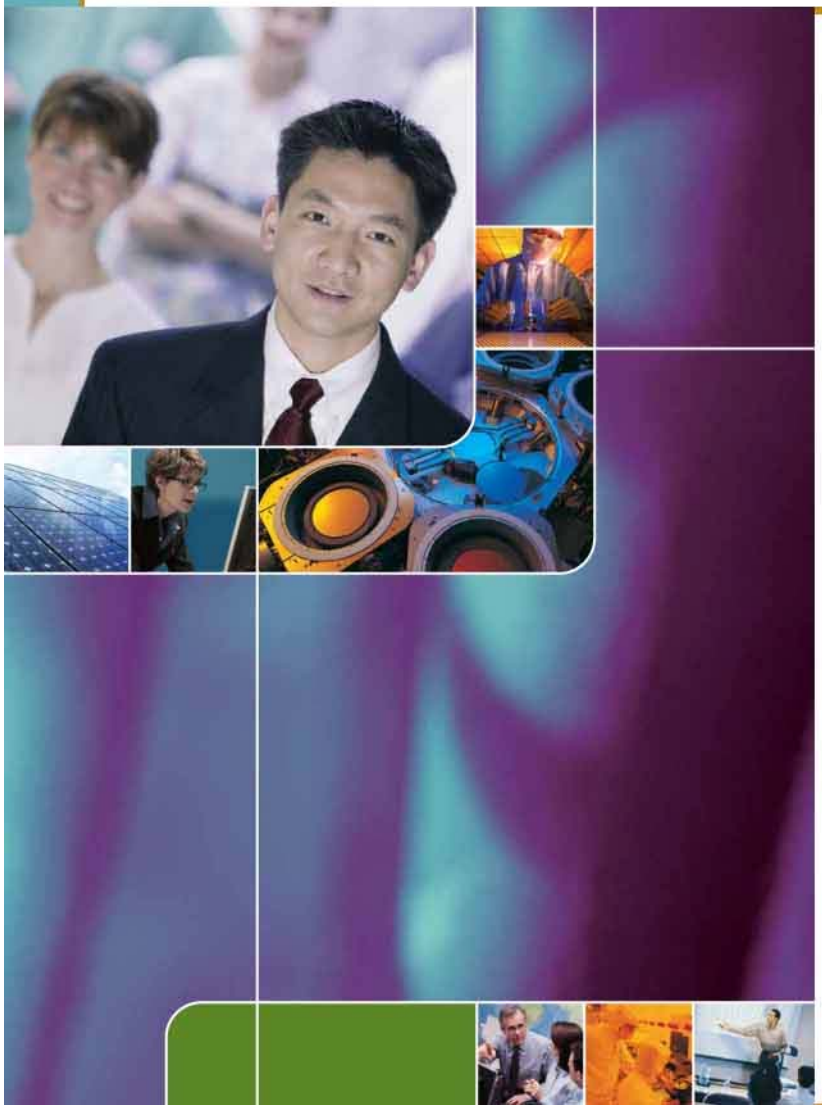
Taiwan2009



Thank You

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