

# Semiconductor Equipment and Materials Outlook



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SEMI Industry Research & Statistics Group

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# Outline

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**Update on current market and forecast for,**

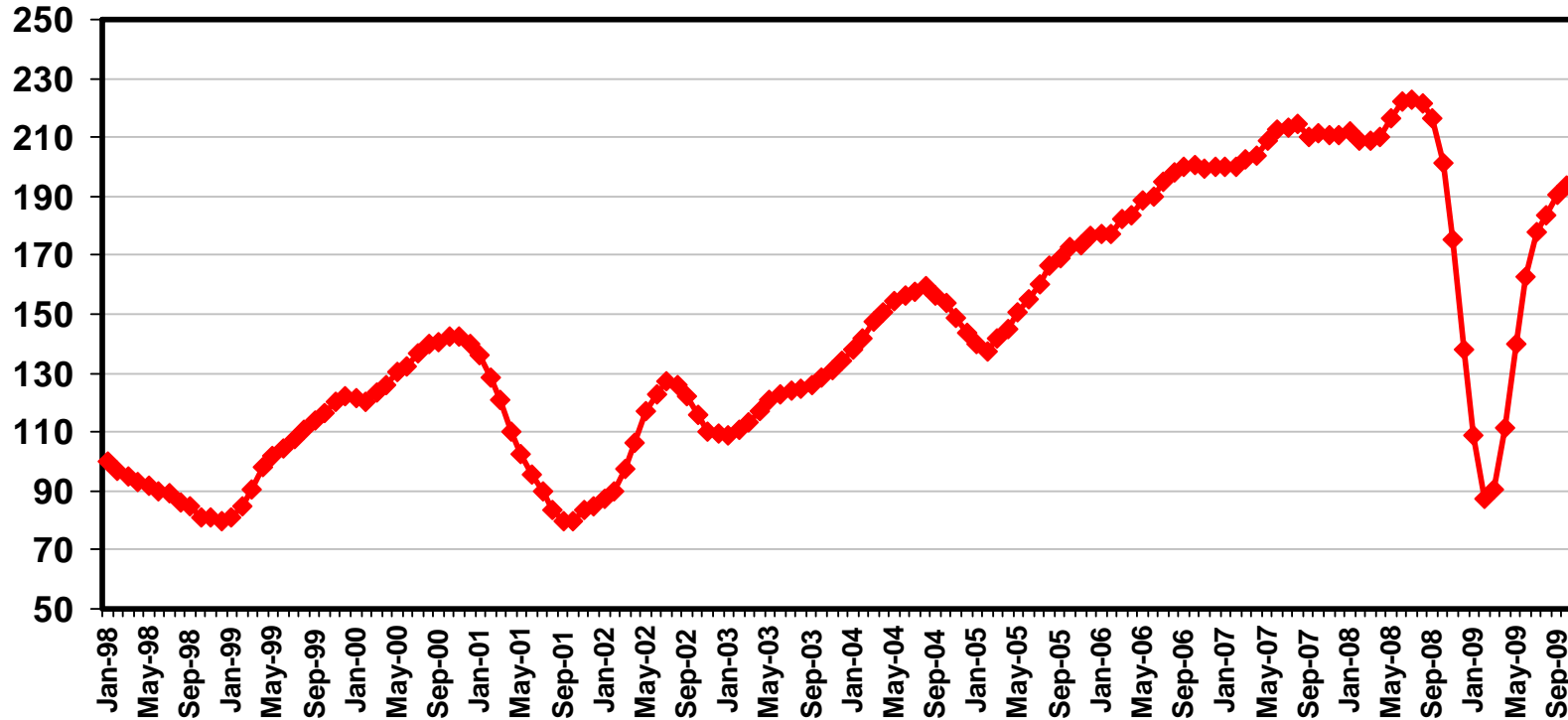
✓ **Semiconductor Equipment**

✓ **Semiconductor Materials**

**Summary**

# Silicon Area Shipment Index

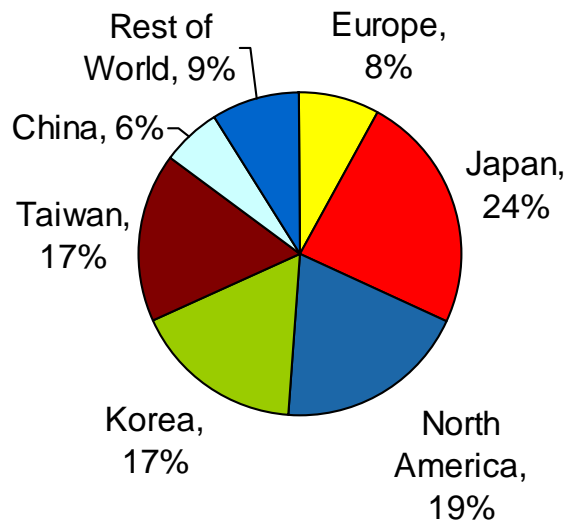
**Worldwide Wafer Area Shipment Index**  
(Three-month moving average)



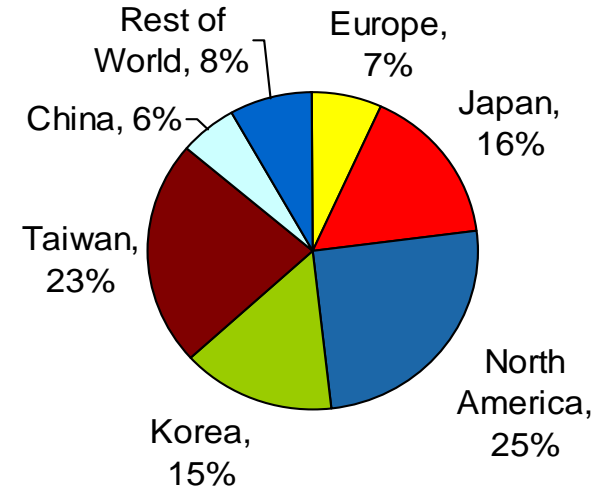
Source: SEMI Silicon Manufacturers Group November 2009

# Semiconductor Equipment

# Semiconductor Equipment Spending by Region



2008 Market Billings = \$29.5B

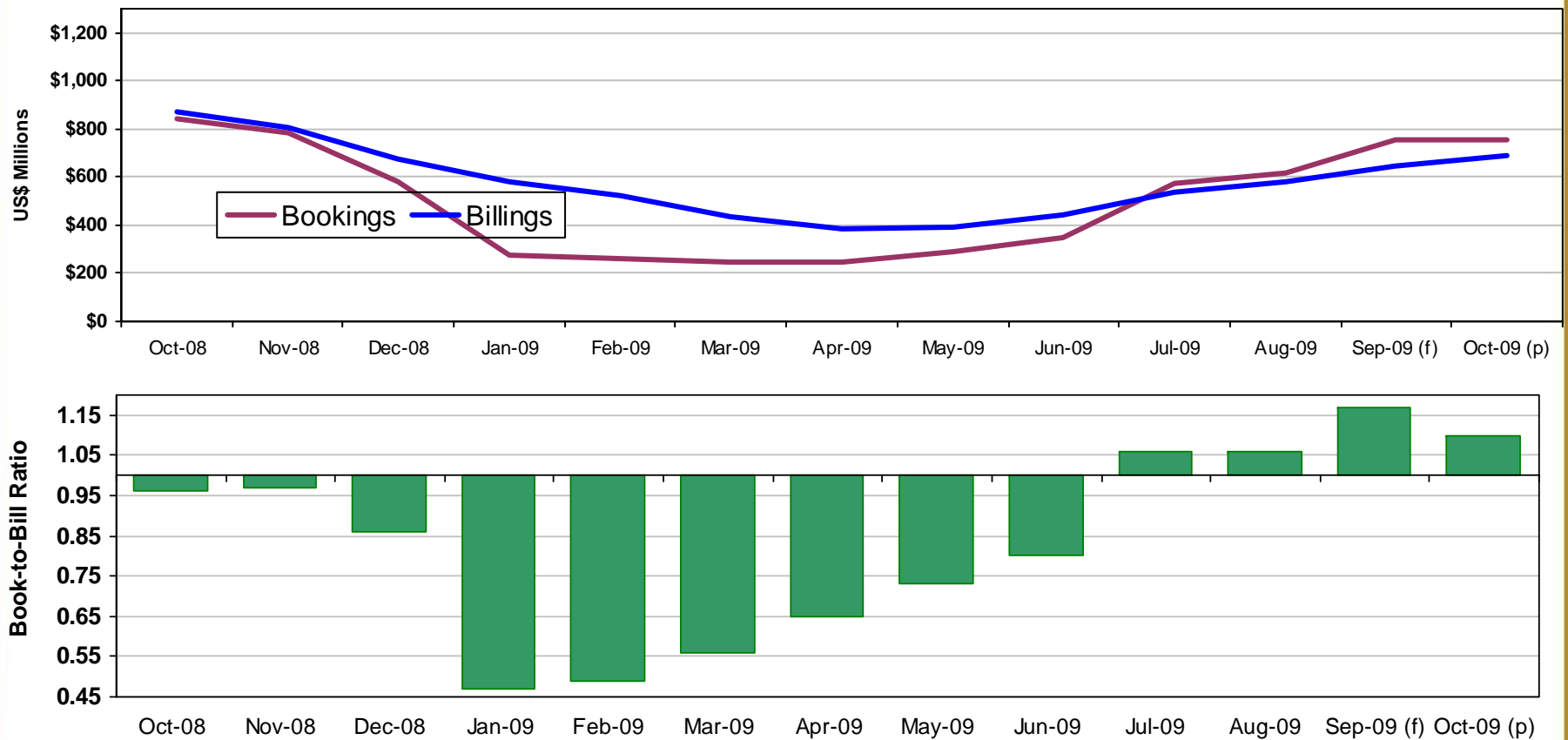


2009 Year-to-date through September Market Billings = \$10.2B

Source: SEMI/SEAJ October 2009

# SEMI North America Book-to-Bill Ratio

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

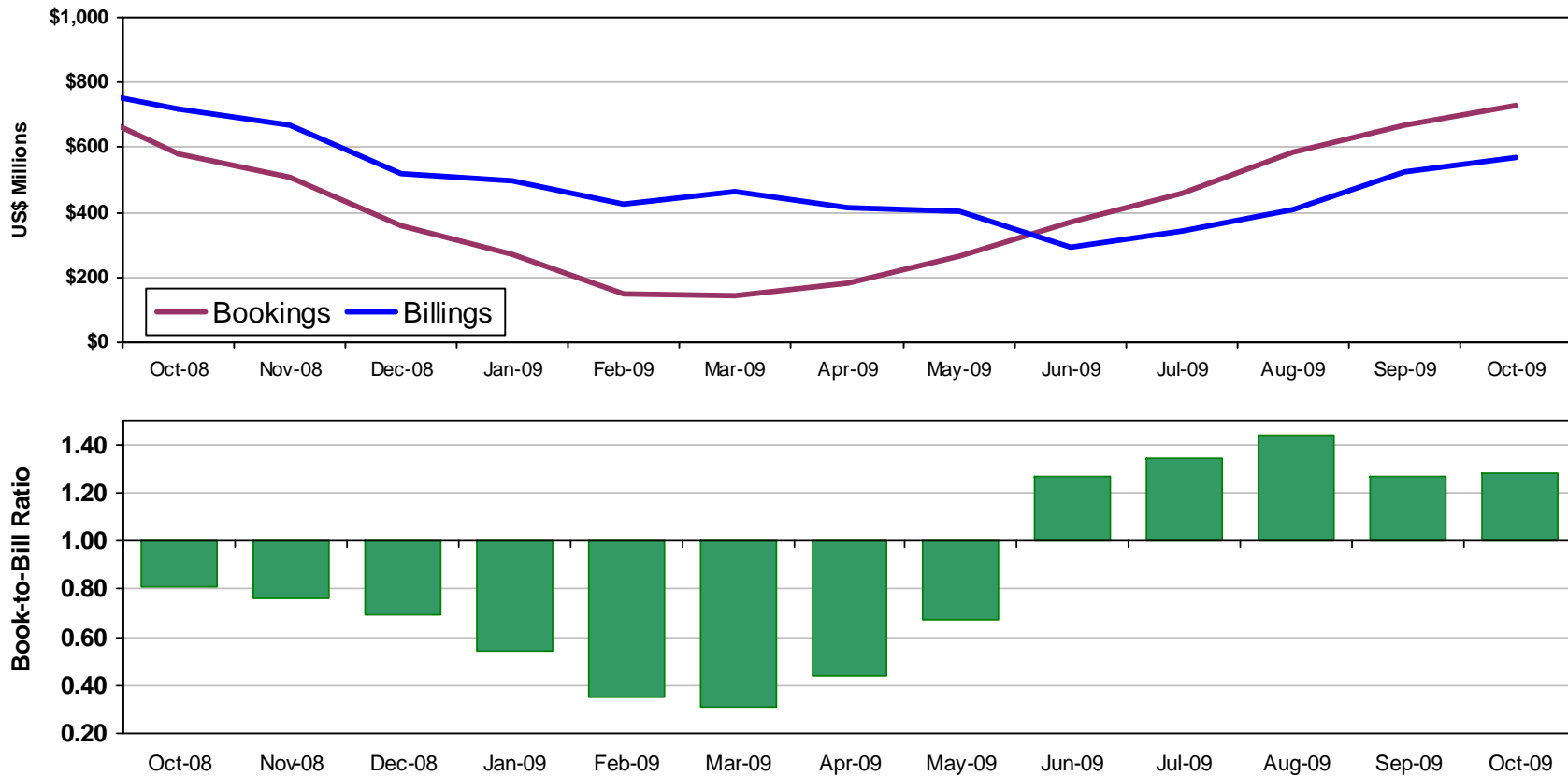


Source: SEMI November 2009

SEMI Market Seminar, SEMICON Japan 2009

# SEAJ Japan Book-to-Bill Ratio

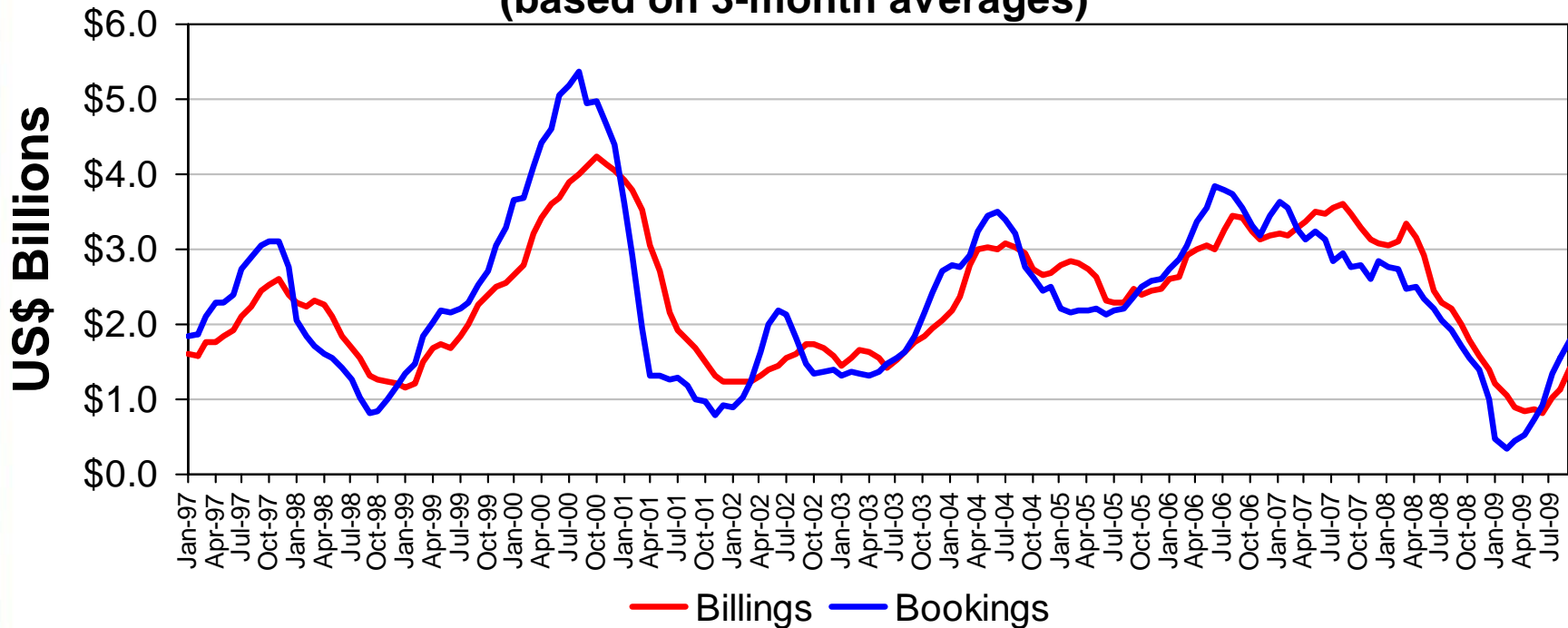
**Japanese Headquartered Manufacturers Global Capital Equipment Book-to-Bill**  
(based on three month averages)



Source: SEAJ October 2009

# Worldwide Semiconductor (Fab, Test & Assembly) Equipment Trends

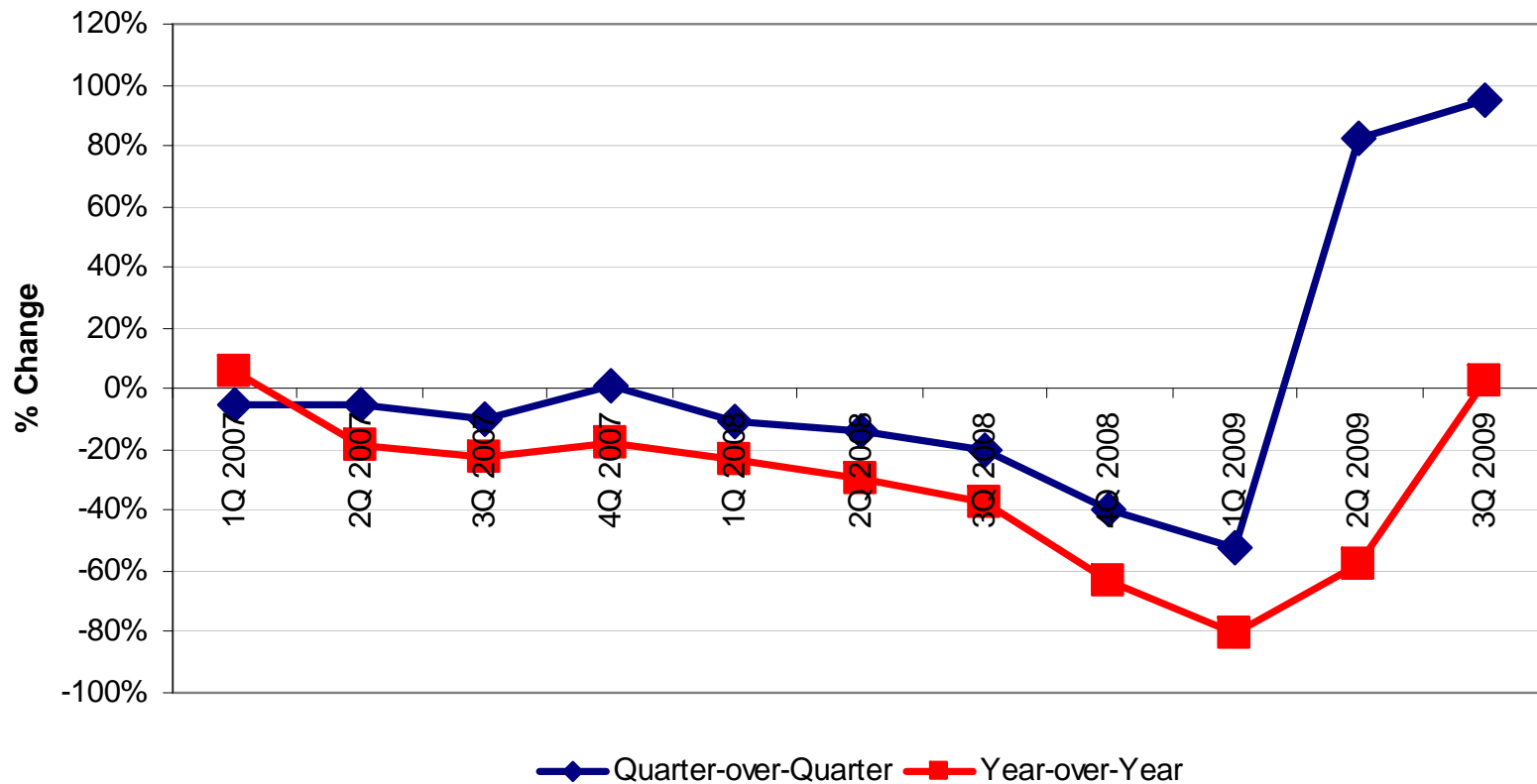
**Worldwide Bookings and Billings for Semiconductor Equipment (based on 3-month averages)**



Source: SEMI/SEAJ October 2009

# Orders- First year-over-year improvement since 1Q 2007

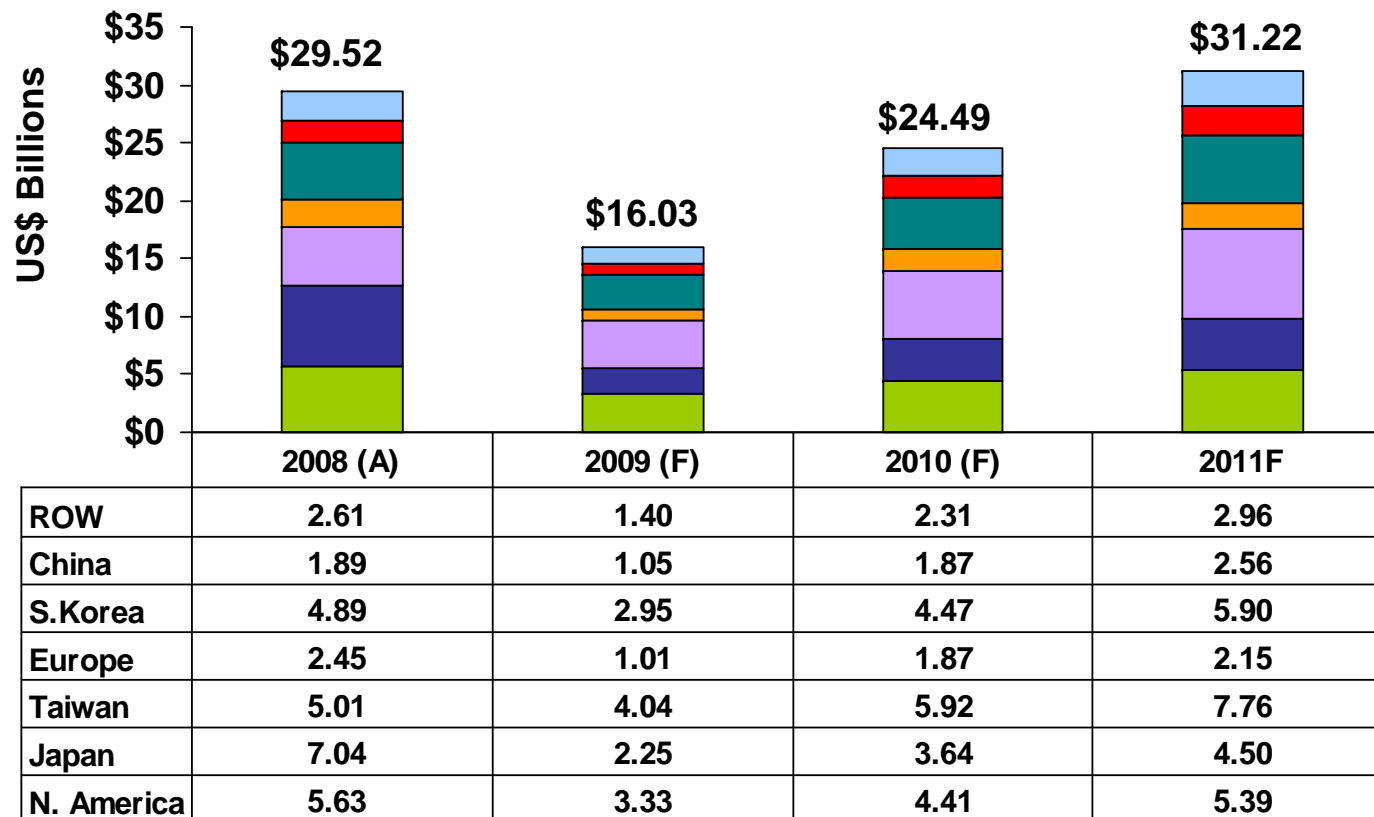
Equipment Order Trends



Source: SEMI/SEAJ

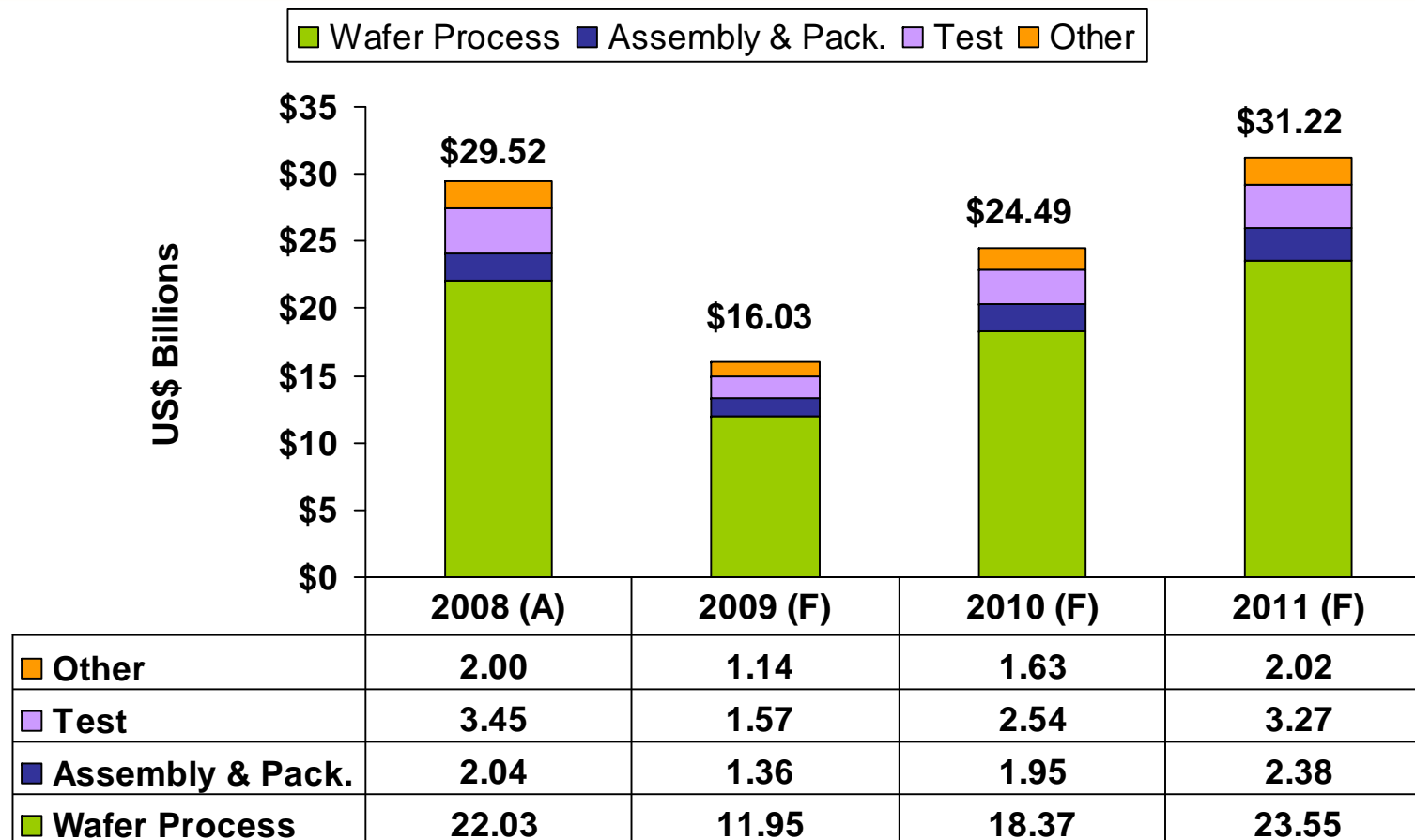
# SEMI® 2009 Year-End Equipment Forecast By Market Region

■ N. America 
 ■ Japan 
 ■ Taiwan 
 ■ Europe 
 ■ S.Korea 
 ■ China 
 ■ ROW



Totals may not add due to rounding

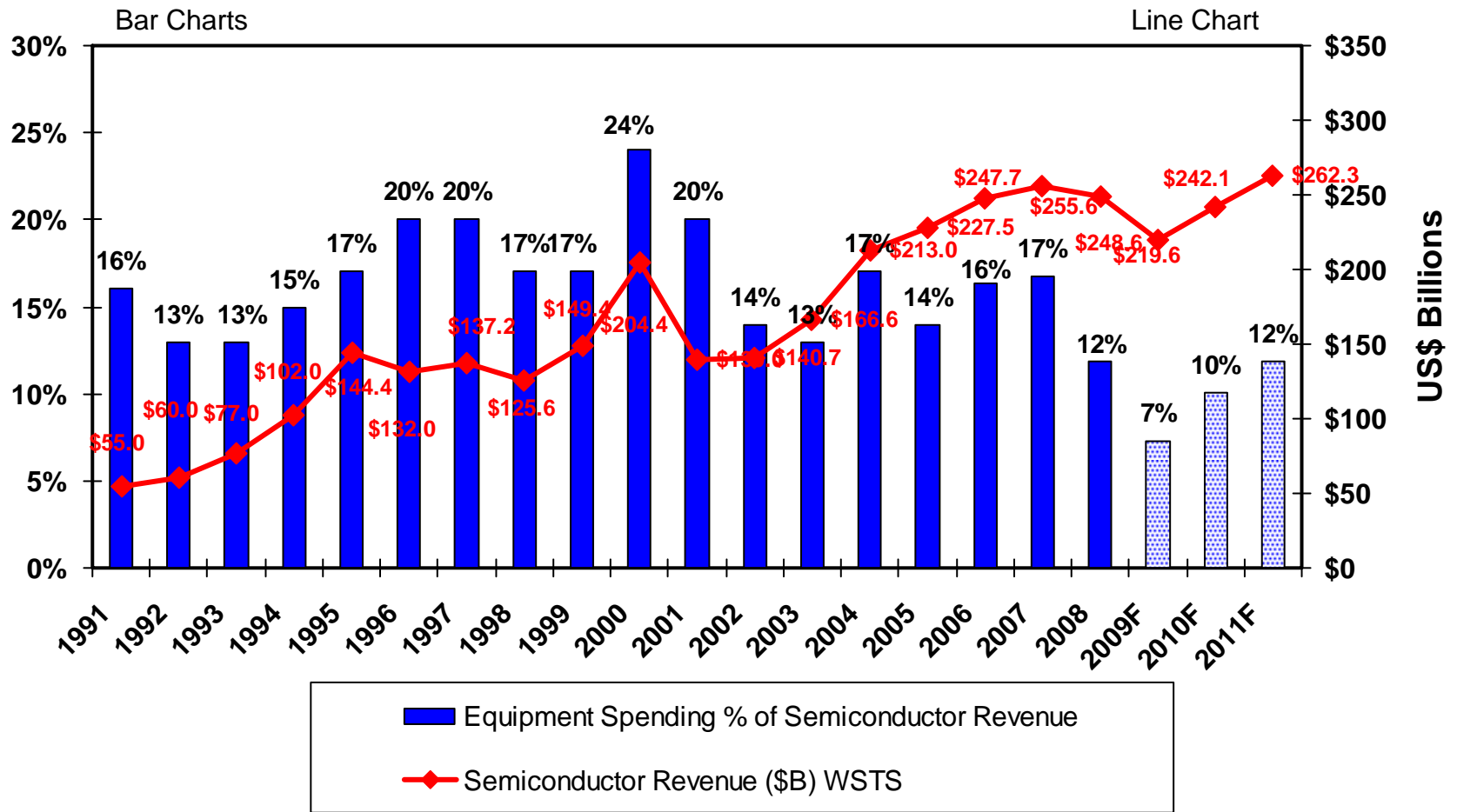
# SEMI® 2009 Year-End Equipment Forecast By Segment



Totals may not add due to rounding

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

# Equipment Spending Trends

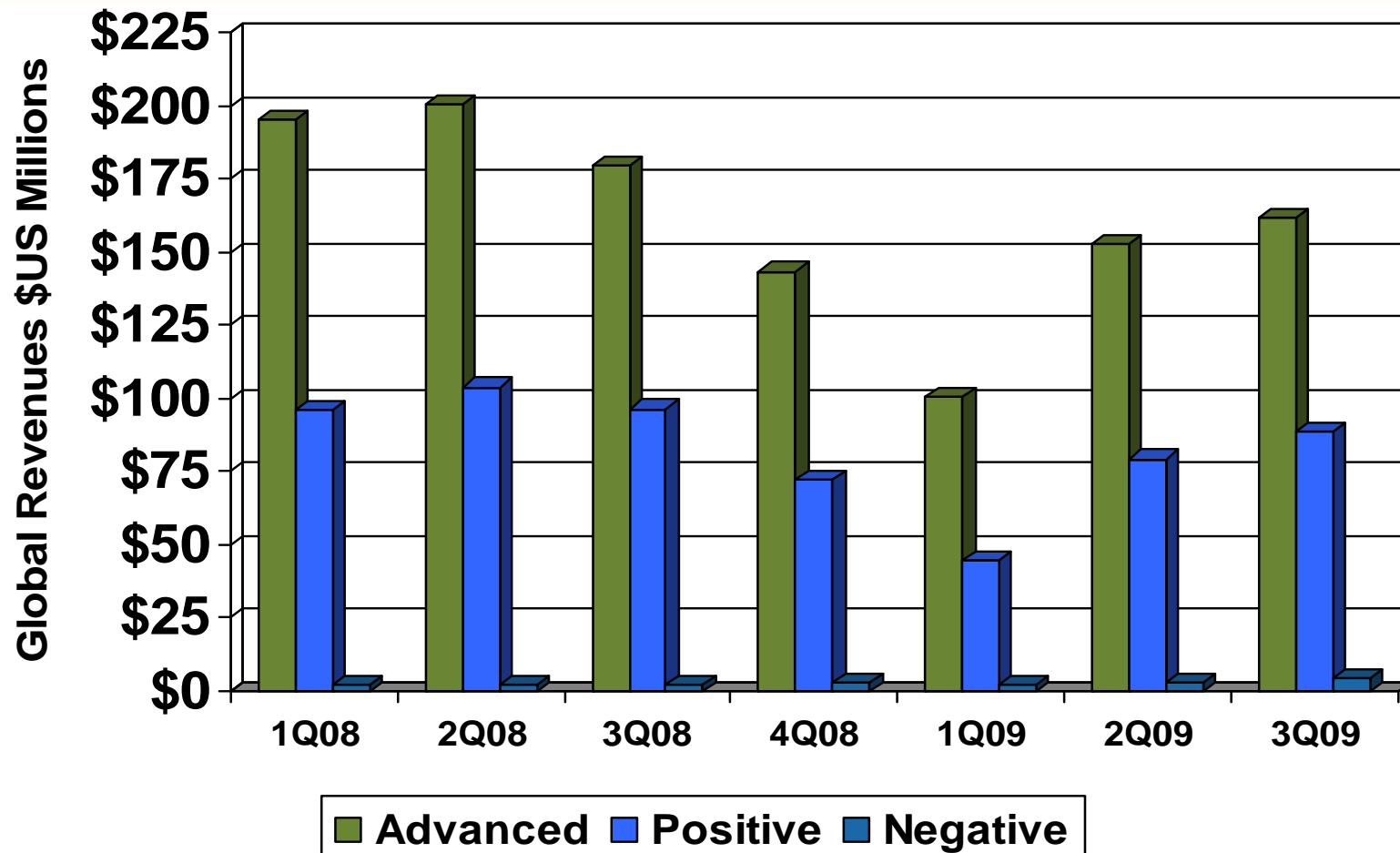


Source: SEMI and SIA November 2009

SEMI Market Seminar, SEMICON Japan 2009

# Semiconductor Materials

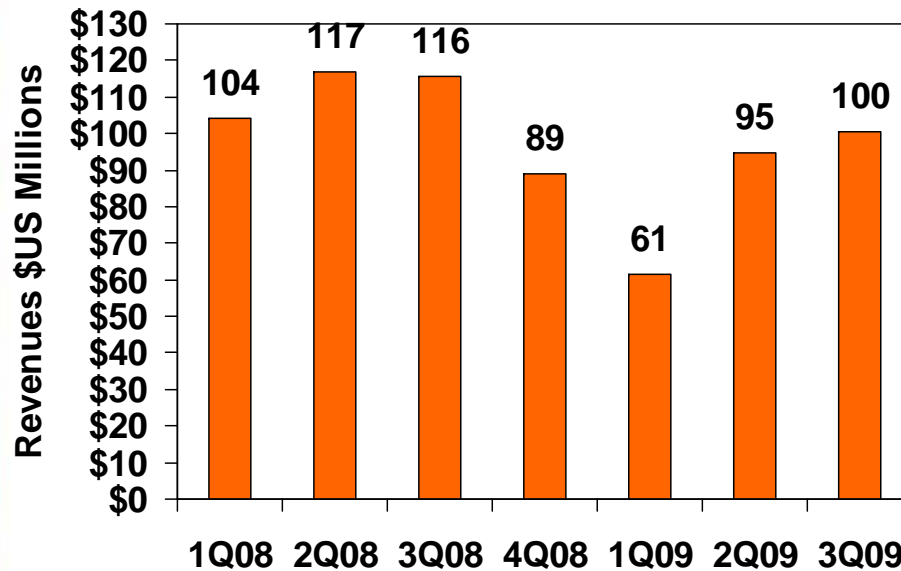
# Photoresist Market Trends



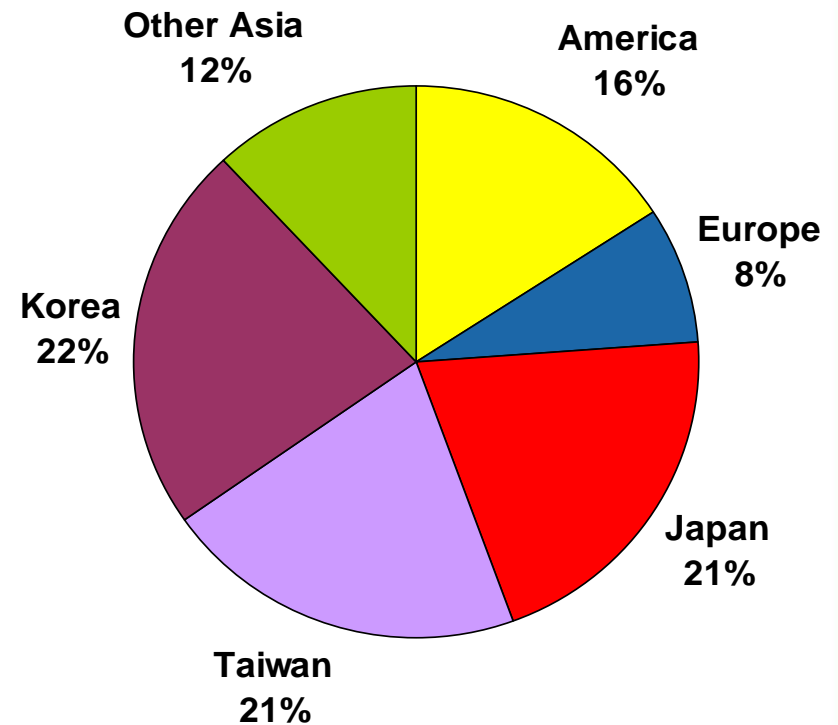
Source: SEMI CGMG November 2009

# Anti-Reflective Coatings Markets

Global Anti-Reflective Coatings Market



Source: SEMI CGMG November 2009

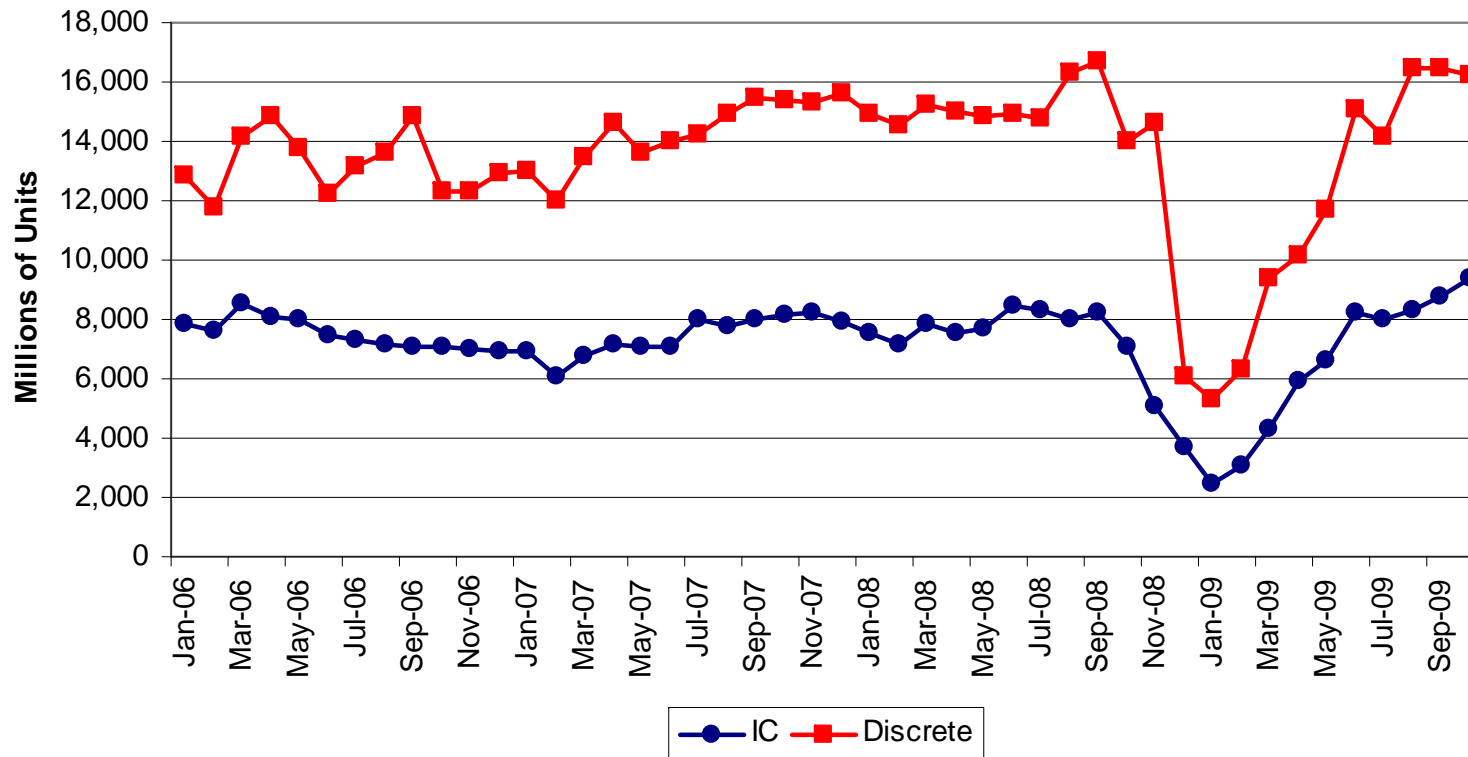


\*Total may differ slightly due to rounding

**2009 Market (year to date)  
= \$256M**

# Leadframes- Shipments return to year ago levels

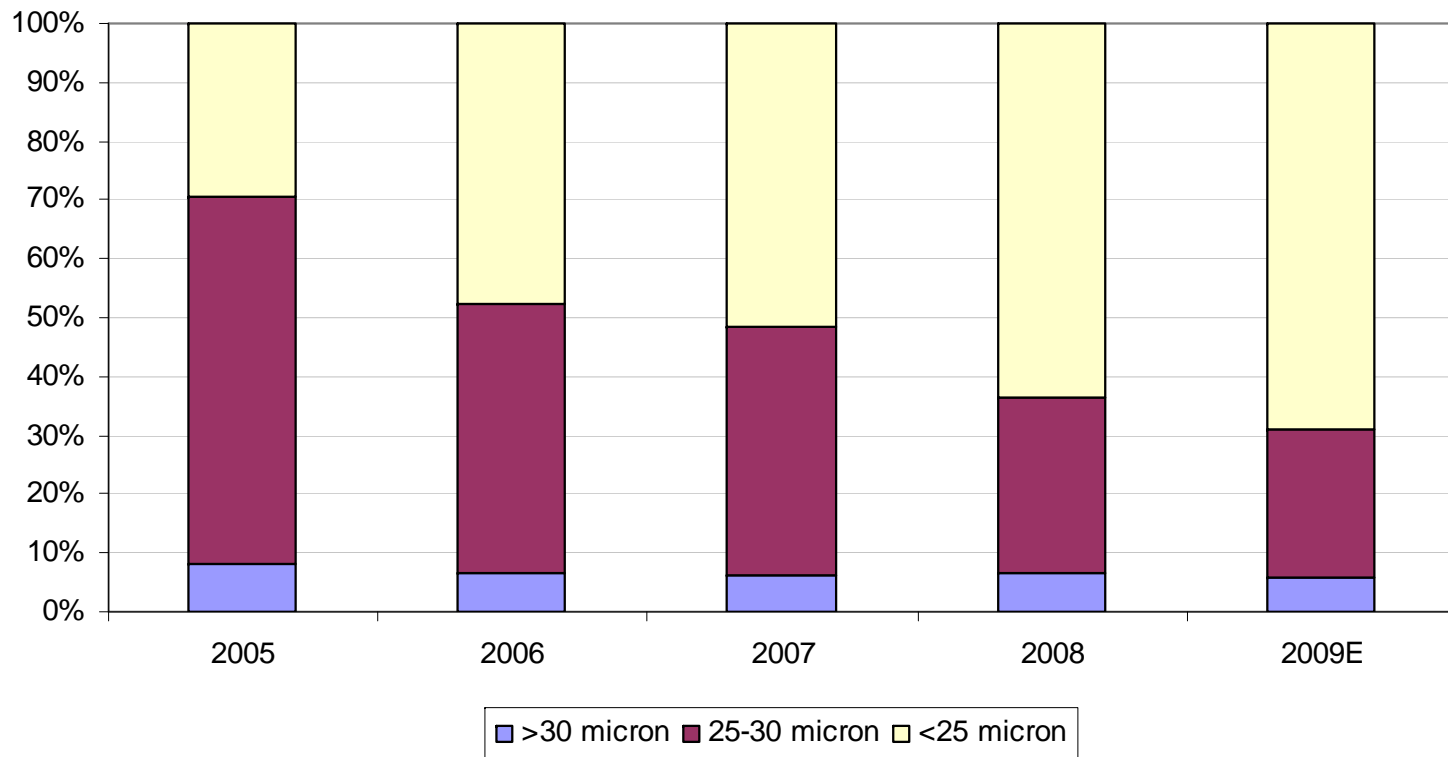
Global Leadframe Shipments



Source: SEMI Materials Market Data Subscription

# Gold Bonding Wire- Clear Transition to Smaller Diameter

**% Share of Gold Wire Market by Diameter**



Source: SEMI and Techsearch International, Global Semiconductor Packaging Materials Outlook

# Packaging Materials Outlook

Segment	2008	2009	2010	2011
Organic Substrates (K square meters)	7,574	6,573	7,055	7,479
Leadframes (billions of units)	331	300	343	365
Bonding Wire (billions of meters)	15.8	15.4	18.0	20.3
Mold Compound (millions of kg)	158.0	137.4	160.7	171.3

Source: SEMI and Techsearch International, Global Semiconductor Packaging Materials Outlook

# China Semiconductor Packaging Market

## Trends in China:

### ✓ Packaging houses

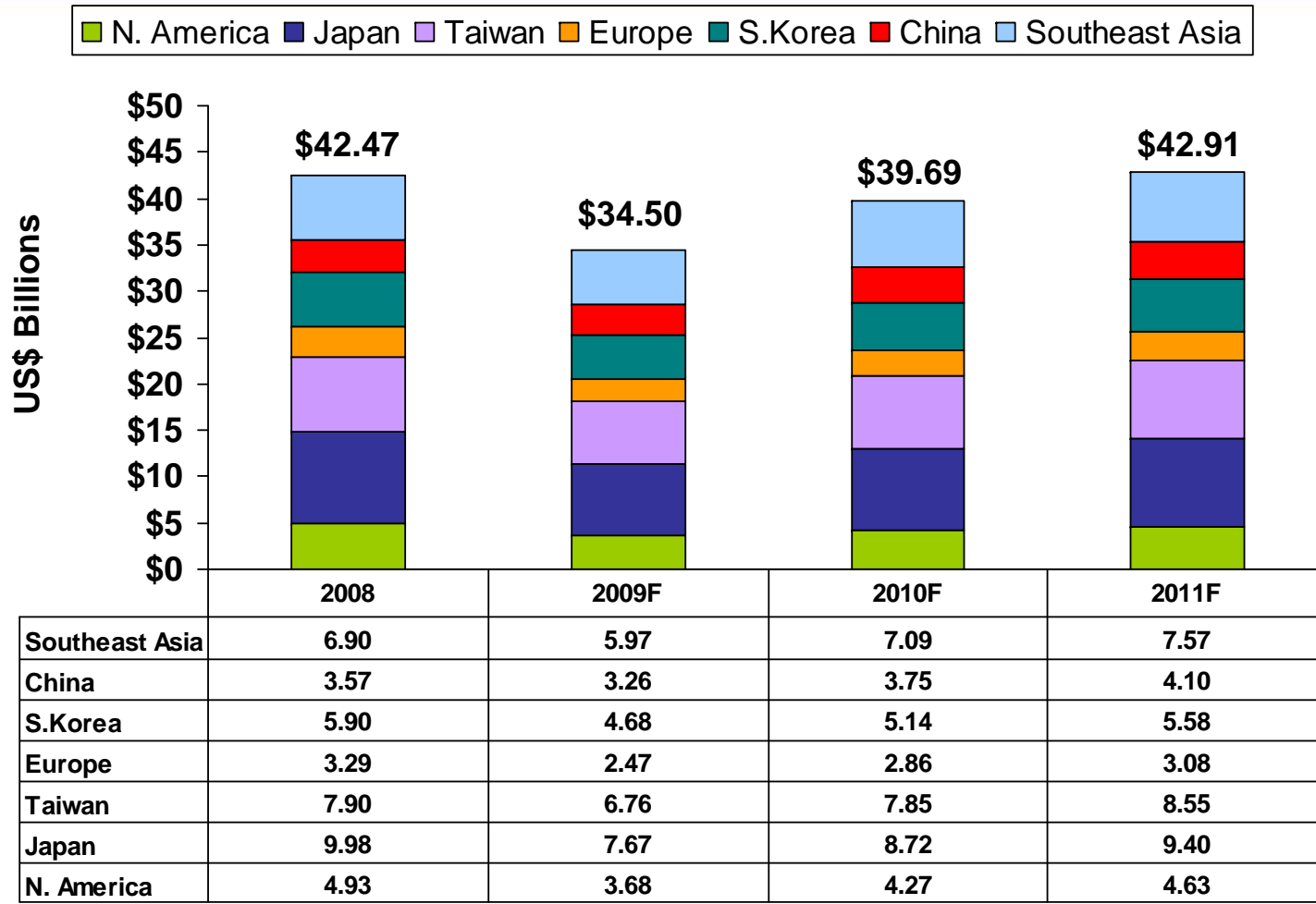
- More than 15 companies are capable of substrate-based packaging technology
- Seven bumping fabs with wafer size arranged from 125mm to 300mm
- TSV for CIS is under mass production

### ✓ Packaging Materials

- China is estimated to represent about 14% of the market in 2009
- Substrate drives the growth of packaging material market in the next several years
- China headquartered packaging material suppliers have made progress in leadframe, bonding wire, mold compound, and solder ball area

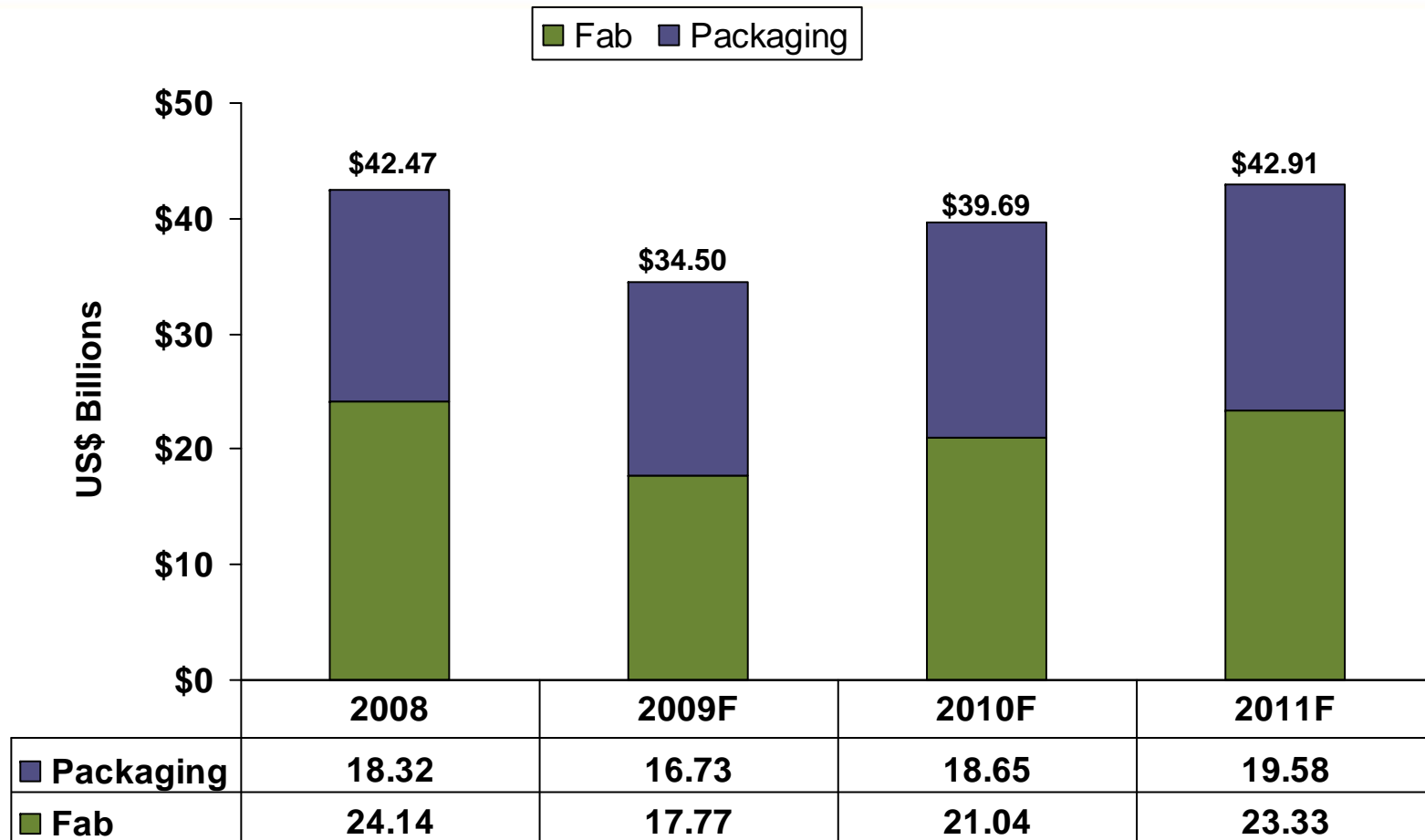
Source: SEMI *China Semiconductor Packaging Market Overview*

# SEMI® 2009 Materials Forecast By Market Region



Totals may not add due to rounding.

# Materials Forecast By Segment



Totals may not add due to rounding.

Source: SEMI Materials Market Data Subscription November 2009

# Summary

- **Unit shipment trends**
  - Bottomed in January/February
  - Strong rebound into the third quarter
- **Semiconductor Equipment Market**
  - At the beginning of 2009, bookings fell to levels last reported in the early 1990s.
  - Bookings are improving from this bottom
  - Market forecast
    - a -46% decline in 2009
    - +53% growth in 2010 and +28% growth in 2011
- **Semiconductor Materials Market**
  - 2009 forecasted to decline -19%
  - 2010 outlook to be inline with overall semiconductor market growth