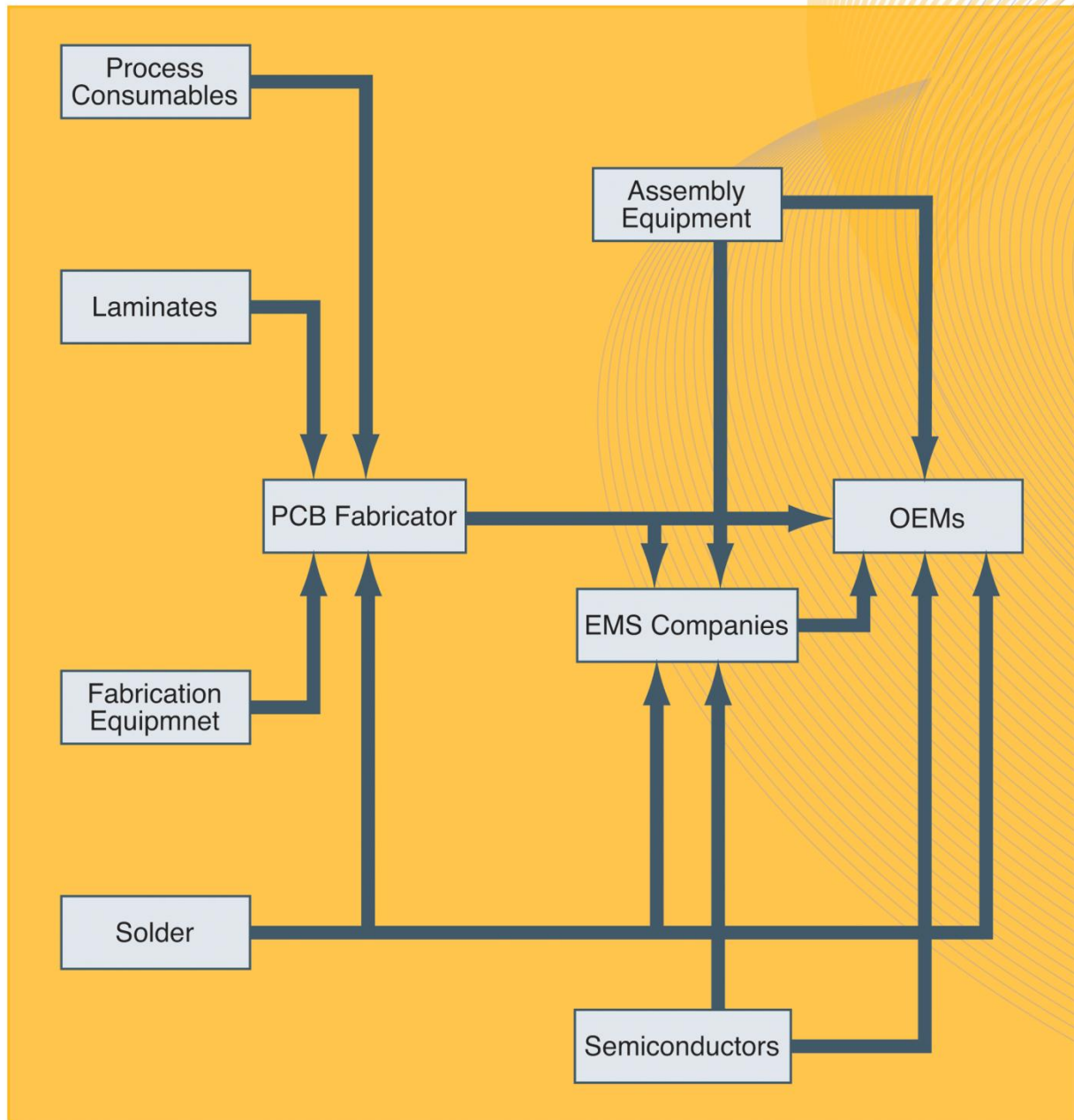




ELECTRONICS INDUSTRIES MARKET DATA UPDATE



Includes Industry Results for Fourth Quarter 2011

Winter 2012

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About this Report

The *Electronics Industries Market Data Update* is published quarterly as a service to IPC members. This report is part of IPC's continuing effort to provide comprehensive and up-to-date market data and trends to its members.

IPC conducts monthly and quarterly surveys that collect unique market data on many segments of the electronic interconnection industry. The surveys cover rigid and flexible printed circuit boards (PCBs), electronic manufacturing services (EMS), electronics-grade solder, process consumables, laminate and PCB assembly equipment. Complete results of these surveys are provided only to the companies participating in the surveys, and participants typically receive only the data from their industry segment (e.g., solder manufacturers receive solder reports, etc.). The *Market Data Update* brings together selected findings from all of IPC's statistical programs in a single report. In addition, the report includes data from other industries, such as semiconductors and electronic end-products, as well as macroeconomic and trade data to complete the supply-chain picture. Most of this data is collected by IPC and is not available elsewhere except at substantial cost.

Global data has been incorporated wherever possible, and more global data will be added over time. IPC is working to make more global data available to its members by expanding survey programs worldwide and exchanging data with partner organizations around the world.

The *Market Data Update* is free to all IPC members. Nonmembers can subscribe for \$600 per year. Quarterly reports are posted on the market research page in the members-only area of IPC's website. Members can go to www.ipc.org/market-research-for-members to see all of the data resources available to them, or they can access the latest edition of the *Market Data Update* directly (via a log-in page) at www.ipc.org/Update. Members who wish to receive each edition directly via email as soon as it is published can request this service by contacting Ms. Piyamart Holmgren, IPC's market research coordinator, at 1-847-597-2868 or homupi@ipc.org.

The appendix of this report provides further information about IPC statistical programs. To learn more about participating in these programs, please contact Piyamart at 1-847-597-2868 or homupi@ipc.org.

Section 1: The World Economy

Global Economy Grows At Sluggish Pace in 2011

Global economic growth slowed during the fourth quarter of 2011, with the sovereign debt crisis in the Eurozone acting as a strong headwind.

China's economy slowed further in the fourth quarter of 2011. China's GDP grew by 8.9 percent year on year in the fourth quarter of 2011, down from 9.1 percent in the third quarter of 2011. It was the slowest pace since the second quarter of 2009, when the rate was 7.9 percent. Despite the economy's slower pace, China's industrial production increased 12.8 percent in December compared to the same period a year earlier. Chinese economy is expected to decelerate in 2012, in part because of the bleak outlook for exports and the government's effort to shift the economy from its export base to one driven by domestic consumption.

The U.S. economy grew at 2.8 percent in the fourth quarter of 2011. The growth suggests that, after the slowdown for much of 2011, the recovery has begun to accelerate again. The new GDP figure suggests that the economy has recovered from the downturn. The nation has recorded 22 straight months of job increases. Americans spent more on cars and trucks, and companies built up their stockpiles. But growth throughout 2011 was held back by the biggest annual government spending cuts in four decades.

U.S. consumer spending rose in the final months of the year and businesses invested more in inventories, a sign that they expect more demand. But most economists expect businesses to ease up on restocking in the first three months of this year. That should slow first-quarter growth.

Japan's economy shrank at an annual pace of 2.3 percent in the fourth quarter as manufacturers were battered by the strong yen, weak export demand amid the European debt crisis, and flooding in Thailand. Compared to the previous quarter, October-December GDP fell 0.6 percent. The contraction comes after a 1.7 percent increase in the second quarter, reflecting some recovery after the tsunami disaster. The rebuilding has yet to begin in many towns as leaders finalize reconstruction plans. Reconstruction is expected to stimulate economic growth, although export demand still appears weak.

U.K. GDP fell 0.2 percent in the fourth quarter of 2011, down from 0.6 percent growth in the previous period. This represents the first economic contraction since the final quarter of 2010. Several factors are hurting the British economy: slowing manufacturing, rising unemployment, stagnant wage growth, decreasing construction activity, dimming consumer confidence and Europe's raging debt crisis.

GDP across the Eurozone contracted by 0.3 percent in the final three months of 2011 compared to the previous quarter. GDP in Germany, Europe's largest economy, fell 0.2 percent from the third quarter. The French economy, Europe's second largest, grew 0.2 percent in the fourth quarter. The debt crisis has dampened growth across Europe's currency bloc and pushed Greece, Portugal, Belgium, Italy and the Netherlands into recession.

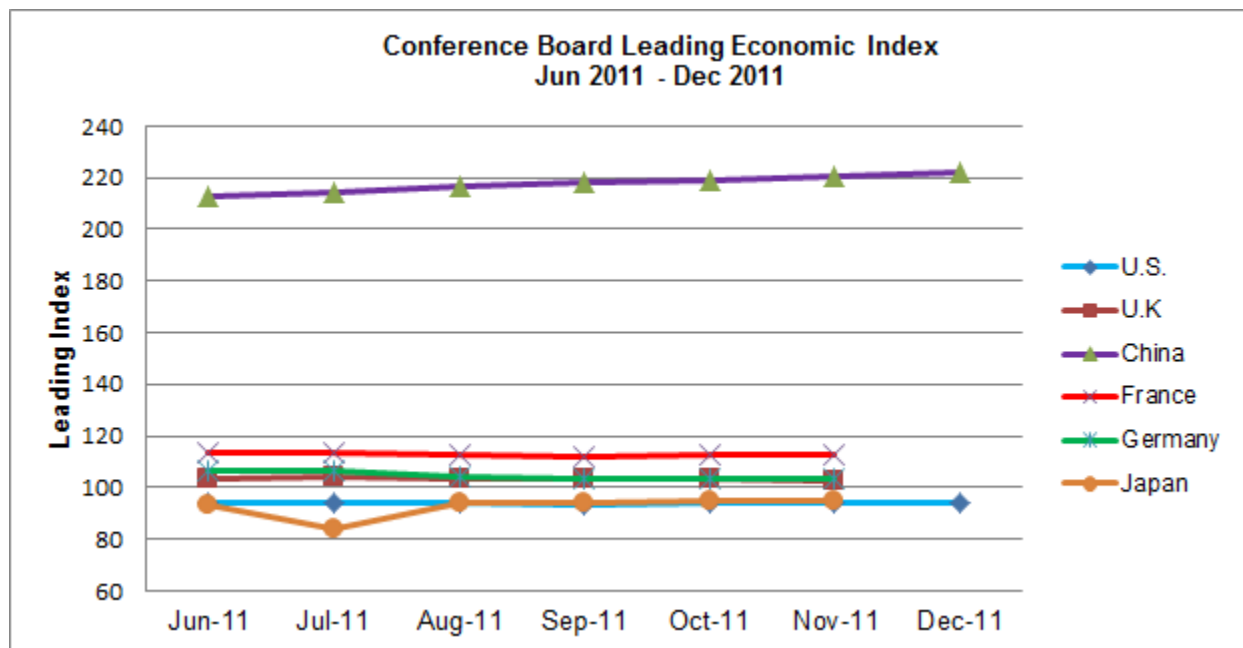
Overall, the global economy increasingly depends on China for growth. An expanding Chinese economy creates demand for commodities from many developing countries and for industrial products and services from wealthy ones. Demand from the USA and Japan will support China's growth, along with domestic demand, for the first half of 2012. The effects of Europe's debt crisis will dampen the growth of the global economy in 2012.

Global Leading Index Indicates Continuing Slow Growth

The conference board leading economic index for past six months indicates slow growth in the global economy. Five of the six countries tracked in the Global Conference Board Leading Index (China being the exception) have been mostly flat in their index growth.

Global Conference Board Leading Index (Jun 2011 – Dec 2012)

	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
China	212.4	214.3	216.3	218.5	219.3	220.4	222
France	113.4	113.2	112.7	112.1	112.7	112.5	
Germany	106.7	106.7	104.5	103.2	103.6	103.4	
Japan	93.2	84.2	94.2	93.7	94.8	94.6	
U.S.	94.2	94.4	93.7	93.1	93.7	93.9	94.3
U.K.	103.6	104	103.6	103.4	103.1	102.5	



The baseline year of the composite indexes is the average for 2004, which equals 100. Index numbers over 100 indicate expansion in the business cycle. For more details, please visit www.conference-board.org

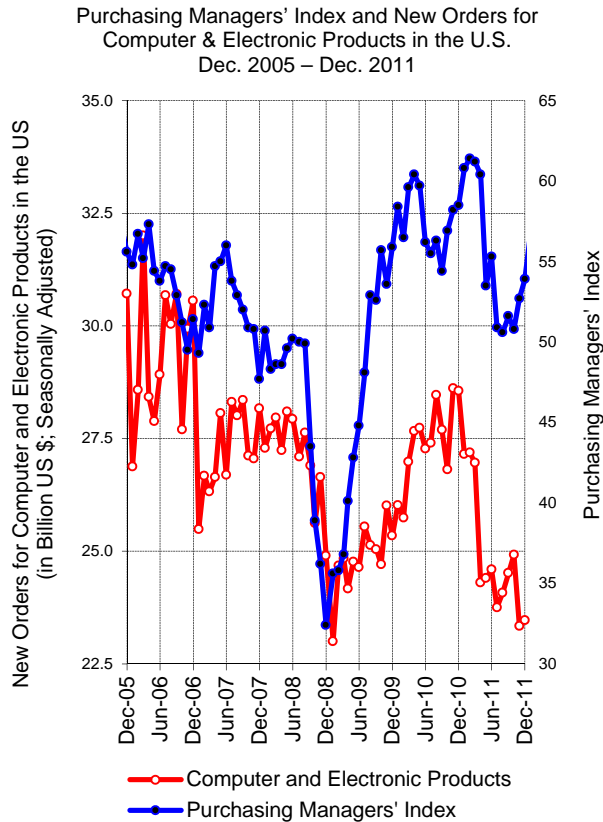
Section 2: Overview of the North American Economy and Manufacturing

Purchasing Managers' Index Predicts Moderate Growth

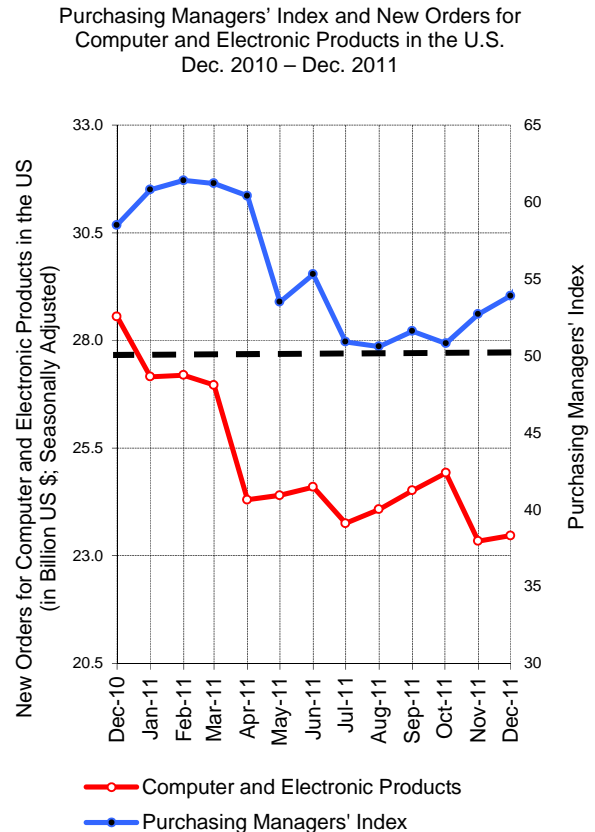
Economic activity in the U.S. manufacturing sector expanded in December for the 29th consecutive month, and the U.S. economy overall grew for the 31st consecutive month. The Purchasing Managers' Index (PMI) registered 53.9 percent in December, an increase of 1.2 percentage points compared to the November reading of 52.7. The latest January number shows an increase by one percentage point at 54.1 percent, starting out the year on a positive note.

A reading above 50 indicates that the manufacturing economy is generally expanding; below 50 indicates contraction. The PMI generally leads end-product orders by about one month.

Long-Range View



One-Year View



Source: US Census Bureau; The Institute for Supply Management

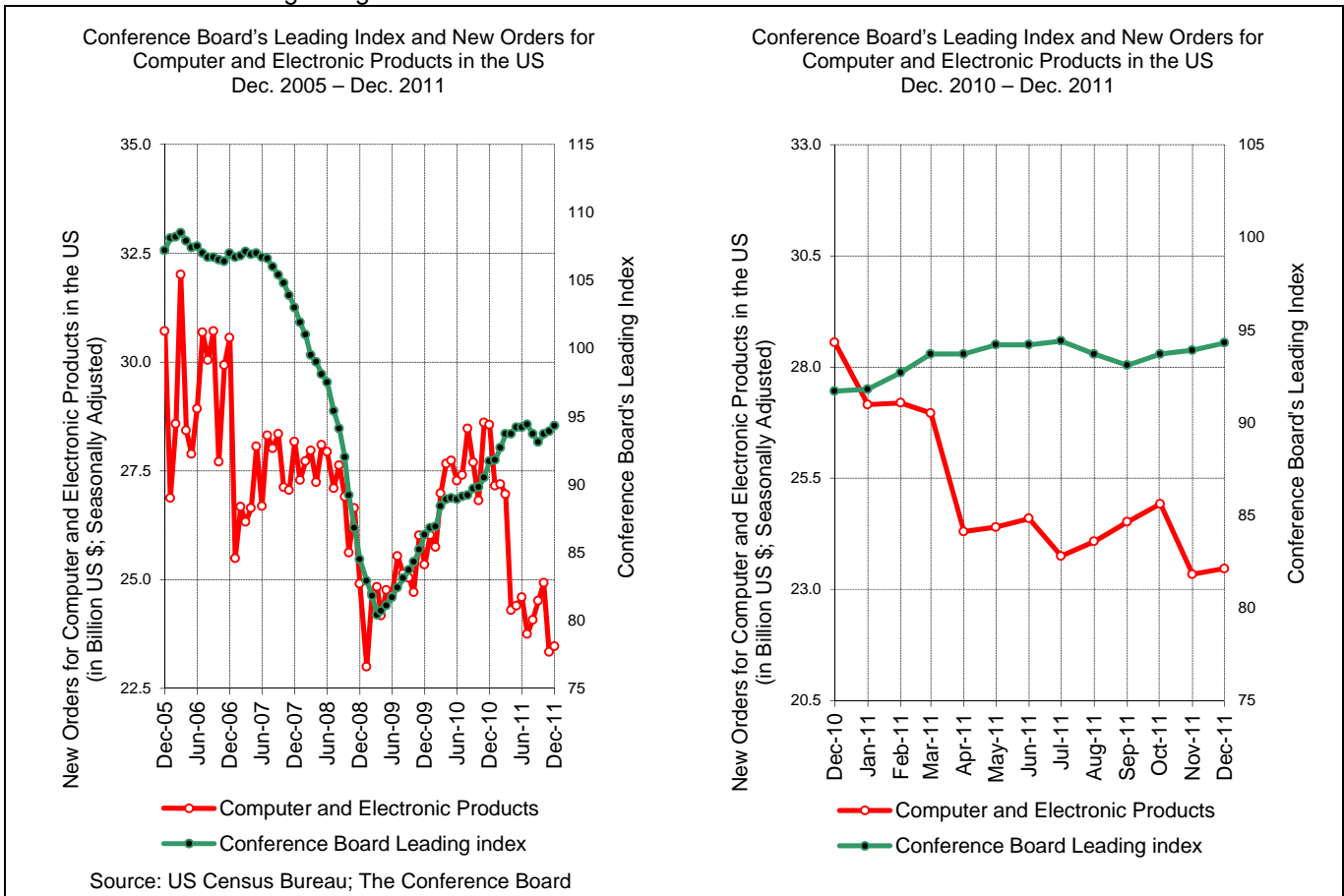
Conference Board Leading Index Signals Continued U.S. Growth

The Conference Board Leading Economic Index (LEI) for the U.S. now stands at 94.3 (2004=100). Based on revised data, this index increased by 0.4 percent in December, following a 0.2 percent gain in November and a 0.6 percent increase in October. U.S. new orders for electronic products were down in the last two months of the year after a brief recovery in October.

The leading index has remained flat for a year. The index numbers reported for the fourth quarter point to an improved economic condition in the next quarter.

Long-Range View

One-Year View



Note: The base year of the composite indexes has been changed to 2004 = 100 from 1996 = 100. For more details, please visit www.conference-board.org

NEMA Business Index Shows Slow Recovery

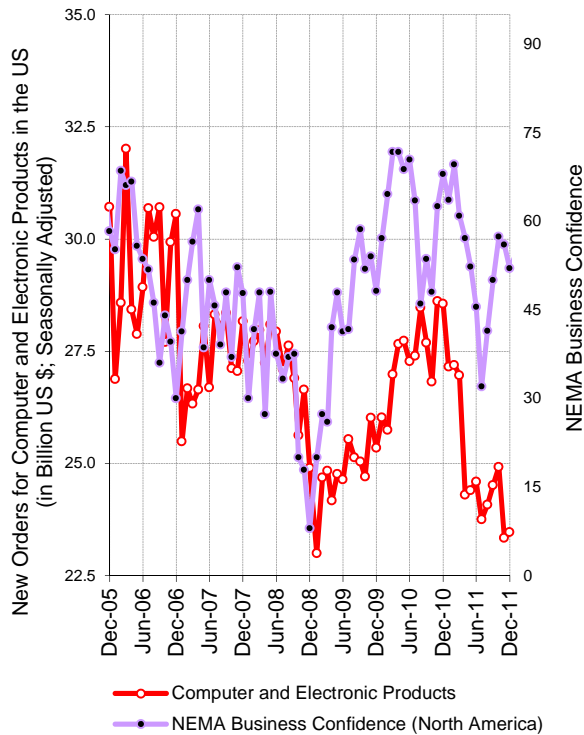
NEMA's Electroindustry Business Confidence Index for current North American conditions reflects modest expansion in December at 52.0. The latest data for January 2012 points toward better conditions over the next six months.

An index above 50.0 indicates business conditions that are favorable to growth. The index appears to lead end-product orders by about one month.

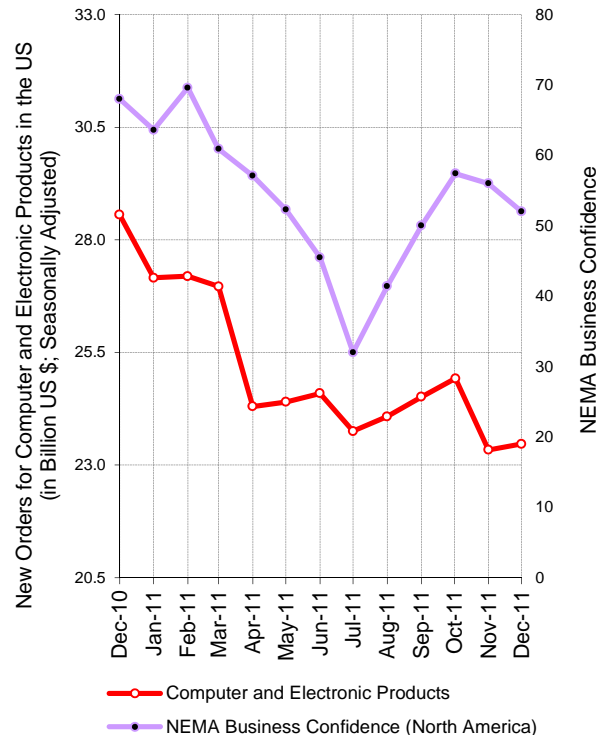
Long-Range View

One-Year View

NEMA's Electroindustry Business Confidence Index and New Orders for Computer and Electronic Products in the US
 Dec. 2005 – Dec. 2011



NEMA's Electroindustry Business Confidence Index and New Orders for Computer and Electronic Products in the US
 Dec. 2010 – Dec. 2011



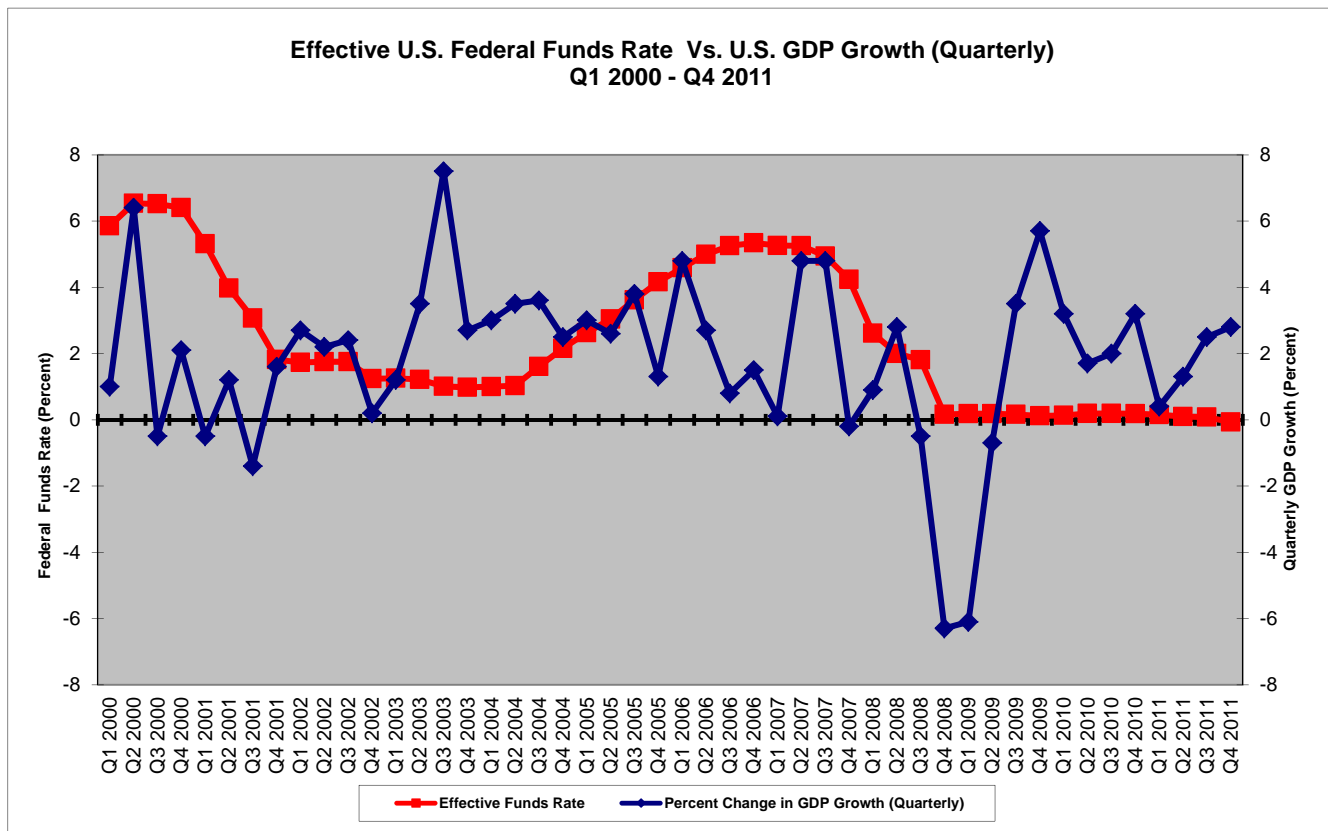
Source: U.S. Census Bureau; NEMA.
 NEMA has been publishing confidence indices since March 2001.

U.S. Federal Funds Rate Set Near Zero to Drive Economic Recovery

The inverse of the Federal Funds rate is a leading indicator for economic growth. It leads economic changes by about 12 months.

The [Federal Reserve](#)'s policy makers have stated that overall economic activity is stabilizing. To encourage borrowing and spending, the federal funds rate remains near zero.

Changes in the federal funds rate trigger a chain of events that affect other short-term interest rates, foreign exchange rates, long-term interest rates, the amount of money and credit, and, ultimately, a range of economic variables, including employment, output, and prices of goods and services.



Source: Federal Reserve Board

U.S. Leading Indicators Show Signs of Growth in the Economy

The fourth quarter indicators reflect the current status of the U.S. economy. They have remained stable and the first January 2012 numbers available predict continuing modest growth for the next quarter.

U.S. Economic Indicators

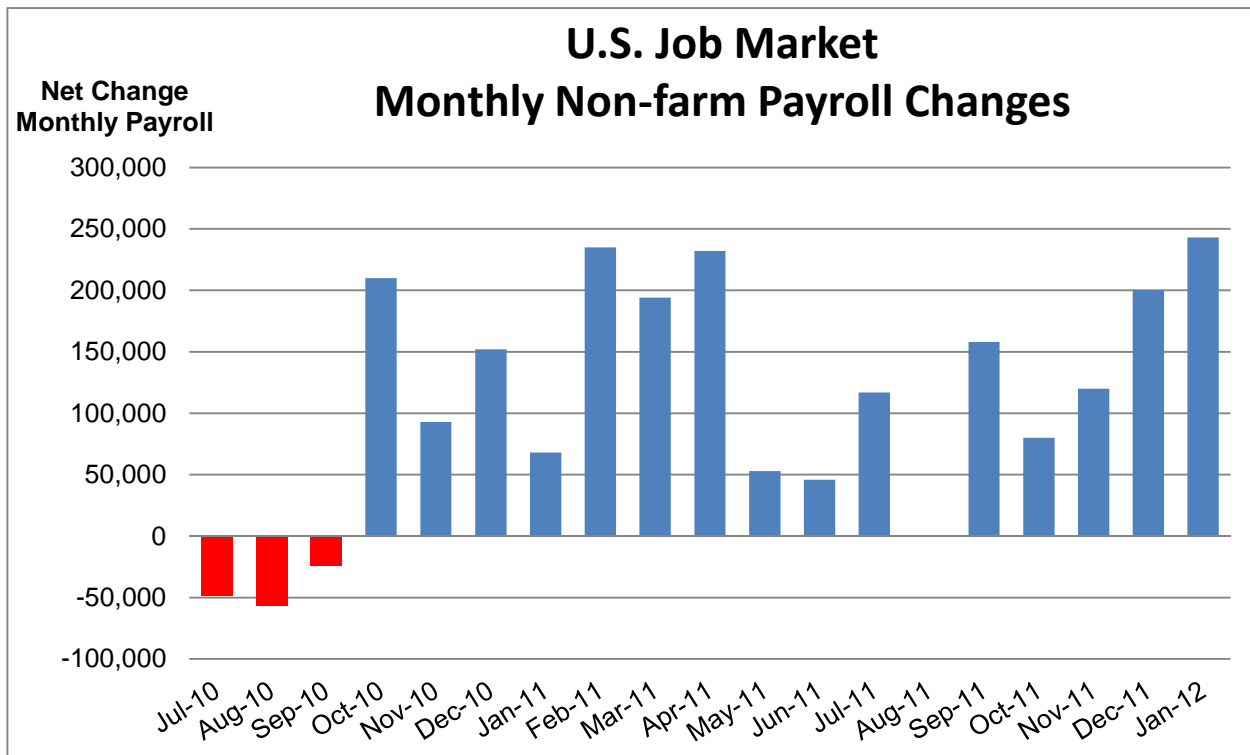
Indicators	Oct-11	Nov-11	Dec-11	Jan-12
U.S. New Orders for Computer & Electronic Products	\$24.9bn	\$23.3bn	\$23.5bn	N/A
Purchasing Managers' Index	50.8	52.7	53.9	56.8
The Conference Board Leading Index	93.7	93.9	94.3	94.9
NEMA Electroindustry Business Confidence Index	57.4	56.0	52.0	54.2
Federal Funds Rate (effective)	0.07%	0.08%	0.07%	0.08%

NA = not available at time of publication

U.S. Unemployment Rate Down to 8.3 Percent

Unemployment statistics are typically lagging indicators. They reflect changes in economic conditions after those changes occur.

The U.S. unemployment rate was down for the fifth month in a row, to a three-year low of 8.3 percent in January 2012. Non-farm payroll employment rose by 243,000 jobs in January 2012, a biggest gain since April 2011. The professional, business and services sector added 70,000 jobs and manufacturing added 50,000 jobs, boosted by the recovery in the auto industry.



Source: U.S. Bureau of Labor Statistics

Section 3: Electronics Supply Chain Performance Overview

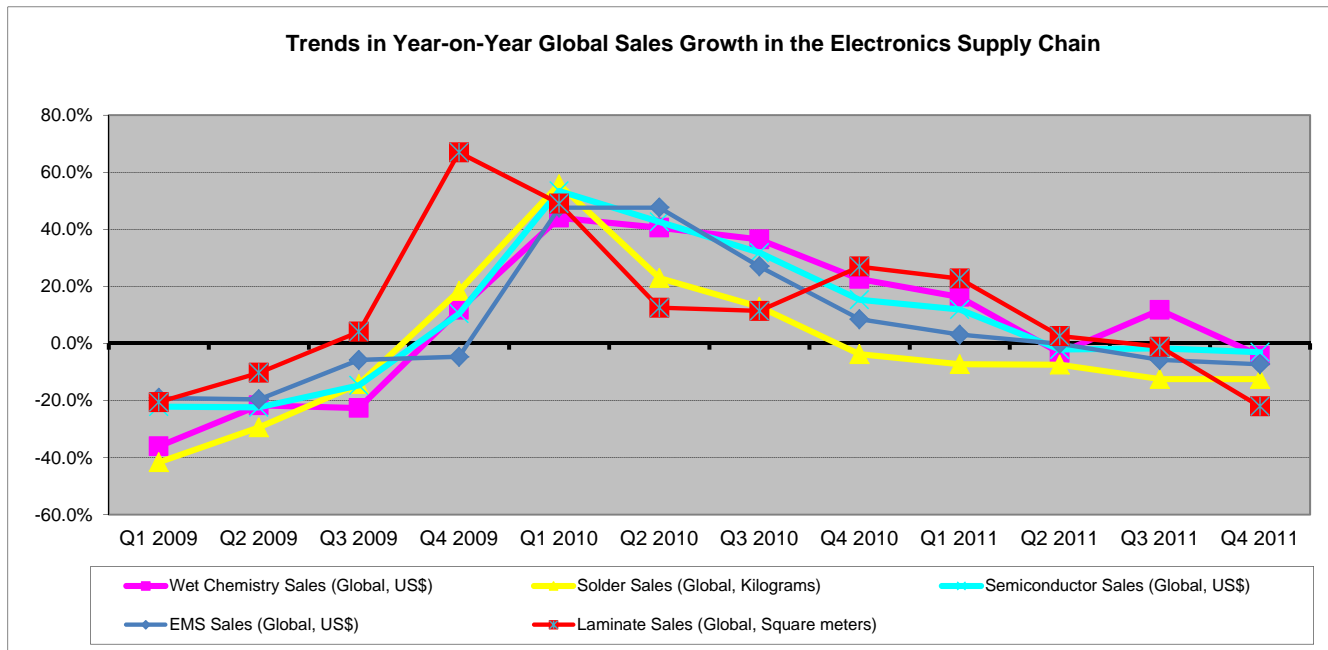
Growth in the Global Supply Chain Slows

Year-on-year shipment growth across the global electronics supply chain continued its downward trend in the fourth quarter of 2011. Year-on-year growth remained negative for all the of the supply chain depicted in the graph below.

Global Sales in the Electronics Supply Chain for Fourth Quarter 2011

	Percentage of Change			
	Oct-11 vs. Oct-10	Nov-11 vs. Nov-10	Dec-11 vs. Dec-10	Q4-11 vs. Q4-10
Assembly Equipment Sales (Global, US\$)				-4.7%
Wet Chemistry Sales (Global, US\$)	**	**	**	-4.4%
Solder Sales (Global, kilograms)	**	**	**	-12.5%
Laminate Sales (Global, square meters)	**	**	**	-22.1%
EMS Sales (Global, US\$) (Preliminary results)	**	**	**	-7.3%
Semiconductor Shipments (Global, US\$)	-1.5%	-2.7%	-5.3%	-3.1%

** Monthly data is not available; global EMS, process consumables, solder and laminate surveys are conducted quarterly.



Source: IPC Statistical Programs; SIA for semiconductor sales.

North American Supply Chain Sales Growth Mostly Down Year-on-Year

The fourth quarter of 2011 varied by segment in the North American supply chain, but most segments ended the quarter down over 2010. North American EMS and U.S. electronic equipment and component sales and orders, along with and assembly equipment sales in North America, registered positive year-on-year growth rates.

North American Orders and Sales in the Electronics Supply Chain for Fourth Quarter 2011

	Percentage of Change			
	Oct-11 vs. Oct-10	Nov-11 vs. Nov-10	Dec-11 vs. Dec-10	Q4-11 vs. Q4-10
Rigid PCB Orders (North America, US\$)	1.0%	-7.2%	0.1%	-2.1%
Rigid PCB Sales (North America, US\$)	-9.4%	-5.9%	-3.6%	-6.2%
Flexible Circuits Orders (North America, US\$)	-10.3%	13.6%	-27.7%	-10.4%
Flexible Circuits Sales (North America, US\$)	-11.3%	-10.0%	-19.8%	-14.0%
EMS Orders (North America, US\$)	-4.0%	9.5%	0.4%	1.7%
EMS Sales (North America, US\$)	7.3%	-0.8%	4.3%	3.5%
Wet Chemistry Sales (North America, US\$)	**	**	**	-4.4%
Solder Sales (North America, kg)	**	**	**	-7.6%
Assembly Equipment Sales (North America, US\$)	**	**	**	15.4%
Semiconductor Sales (North America, US\$)	-2.5%	-2.5%	-4.6%	-3.2%
US Electronic Equipment, Appliances, & Components Orders (US\$)	7.7%	-0.7%	-2.2%	1.4%
US Electronic Equipment, Appliances, & Components Sales (US\$)	5.1%	2.3%	0.8%	2.7%
US Electronics & Computer Products Orders (US\$)	-7.1%	-18.4%	-17.8%	-14.6%
US Electronic & Computer Products Sales (US\$)	-7.3%	-10.3%	-9.2%	-9.0%

Notes:

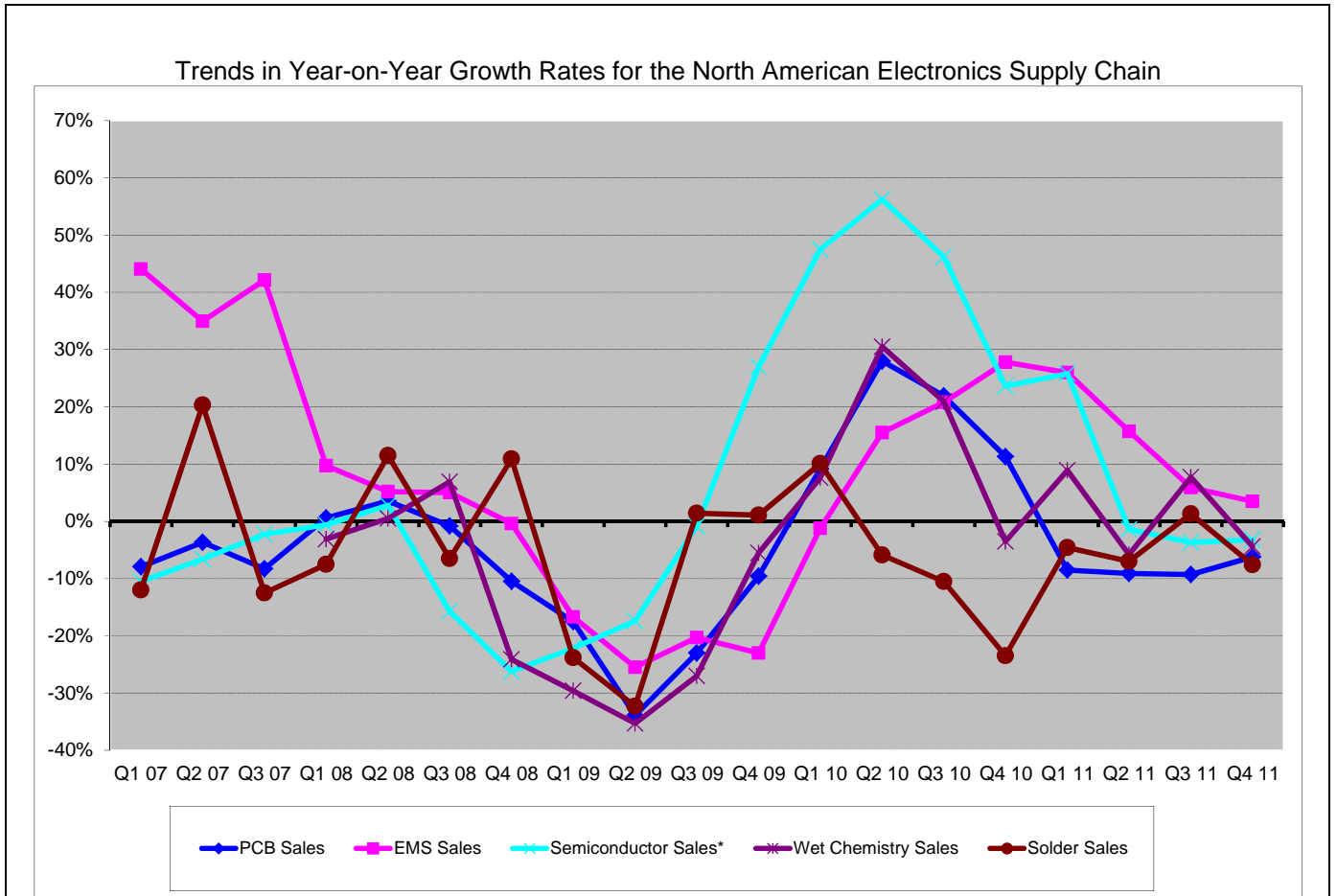
For items included in US Electronic Equipment, Appliances & Components and US Electronics & Computer Product, please visit <http://www.census.gov/indicator/www/m3/hist/naicshist.htm>

Sources: IPC Statistical Programs; SIA for semiconductor sales; U.S. Census Bureau for end-product sales and orders.

** Monthly data are not available; wet chemistry, solder and assembly equipment surveys are conducted quarterly.

Declining Growth Trend is Slowing in the North American Electronics Industry

The graph below illustrates how all segments of the electronics supply chain reflect the current economic picture. Solder and wet chemistry sales were down in the fourth quarter of 2011 over 2010. Although EMS sales growth remained positive year-on-year, its growth rate continued downward in the fourth quarter. PCB and semiconductor sales remained in negative territory in the fourth quarter of 2011 but are inching up compared to the third quarter of 2011. Overall, these results point to slow growth in the first quarter of 2012.



Sources: IPC statistical programs and SIA (semiconductor data)

Section 4: Business Performance Tracking Tools for IPC Members

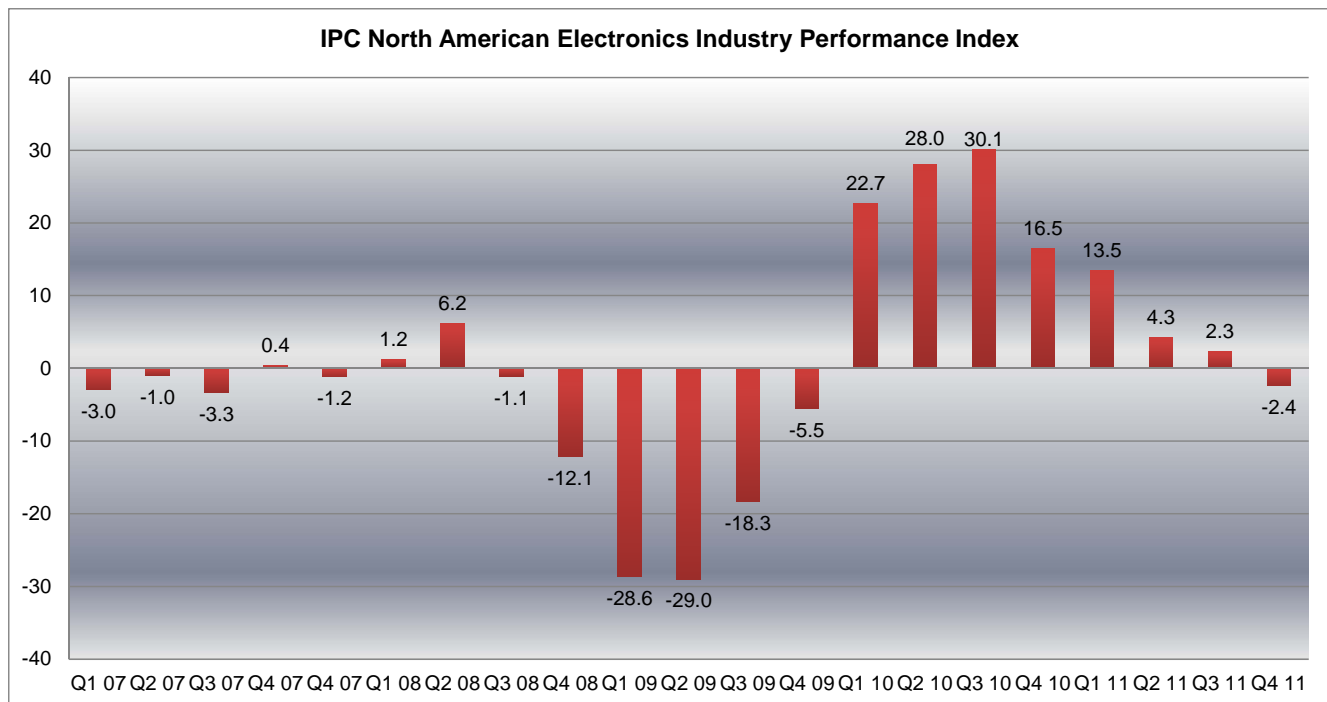
Interactive Graph Tracks Company Performance in Supply Chain Context

IPC has created two business performance tracking tools exclusively for IPC members. The first is an interactive graph similar to the one on the preceding page, in Excel. This graph shows these industries as well as macroeconomic leading indicators from Q1 2007 to the present in North America, and it gives users the ability to enter their companies' sales growth data. The interactive graph then shows all of the trend lines along with the individual company growth trend so that users can see how their companies performed in comparison to the rest of the industry. Members can download the interactive graph at www.ipc.org/Supply-Chain-Leading-Indicators

IPC Index of North American Electronics Industry Performance Shows Big Picture

IPC has also integrated the data trends from all key segments of the electronic interconnect industry with leading indicators to create an *IPC Index of North American Electronics Industry Performance*[®]. This index is updated quarterly and published in every issue of *Electronics Industries Market Data Update*.

The index for Q4 2011 continued its downward trend to -2.4, reflecting the industry's stalled recovery in the fourth quarter of 2011.



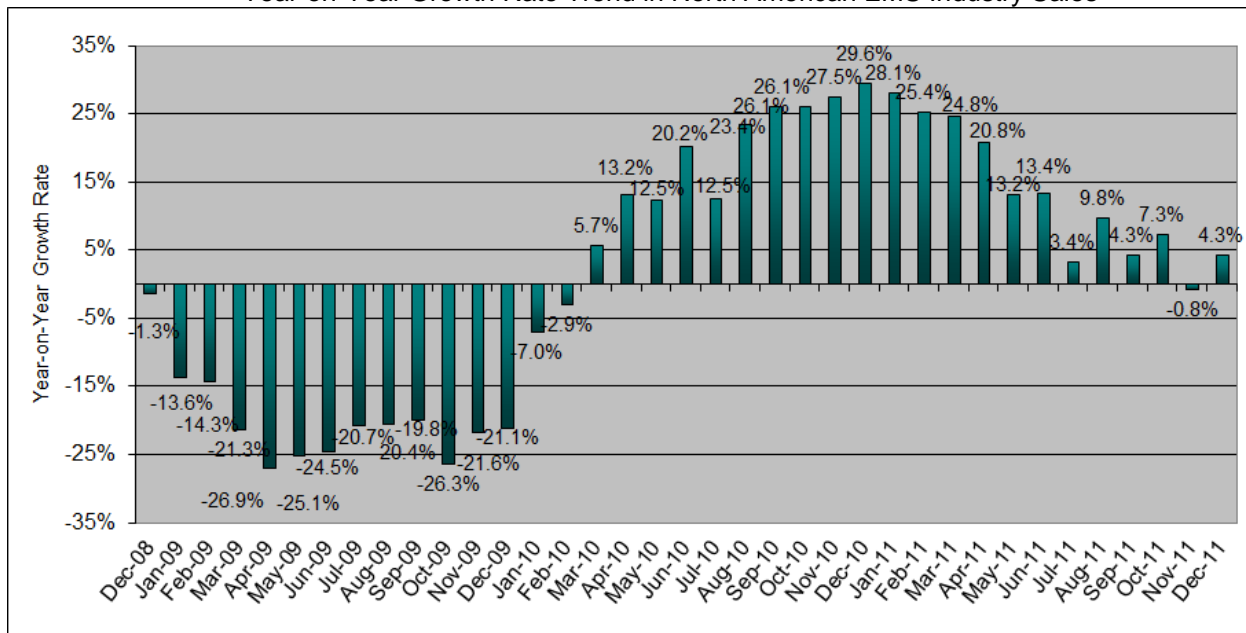
Source: IPC Market Research

Section 5: Results from the EMS Industry

North American EMS Industry Sales Growth Slows but Remains Positive

The recovery for the North American EMS industry occurred later than for other industry segments, beginning in early 2010 and reaching its peak in December 2010. The growth rate began slowing in early 2011, and the slowdown continued in the fourth quarter of 2011. Year-on-year sales growth in December stood at 4.3 percent.

Year-on-Year Growth Rate Trend in North American EMS Industry Sales



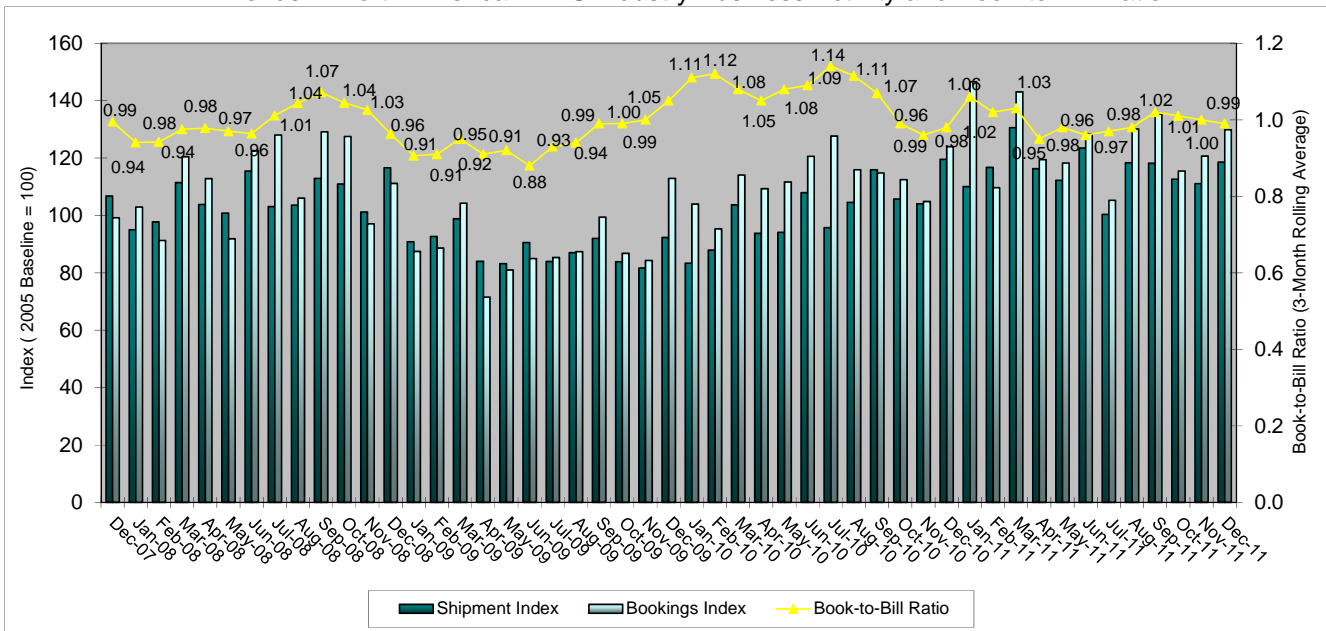
Source: IPC EMS Monthly Statistical Program

EMS Book-to-Bill Ratio Hovering Around Parity

The North American EMS book-to-bill ratio returned to positive territory in September for the first time since March 2011 and remained in the vicinity of 1.00 (parity) though December of 2011.

A book-to-bill ratio above 1.0 indicates that current demand is greater than supply, which is a positive indicator for sales in the next several months. The monthly ratio may be somewhat volatile, however, and only a run in the same direction over several months is considered indicative of a trend.

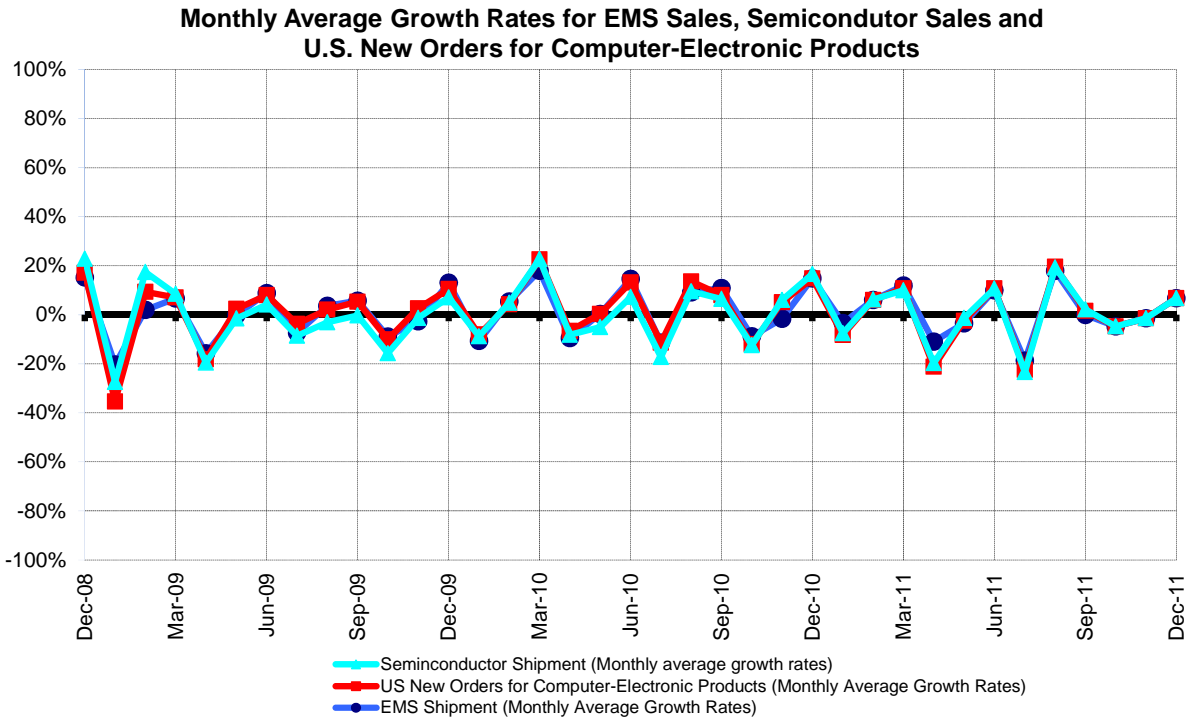
Trends in North American EMS Industry Business Activity and Book-to-Bill Ratio



Source: IPC EMS Monthly Statistical Program

EMS Sales Trend Mirrors Semiconductors and End-Products

The graph below shows how the monthly average growth rates in EMS industry sales compare with the monthly growth in computer and electronic product orders and semiconductor sales in North America. Trends in these industries tend to track one another very closely. This graph shows the growth rates on an upward swing at the end of fourth quarter of 2011.



Source: IPC EMS Monthly Statistical Program; US Census Bureau; SIA

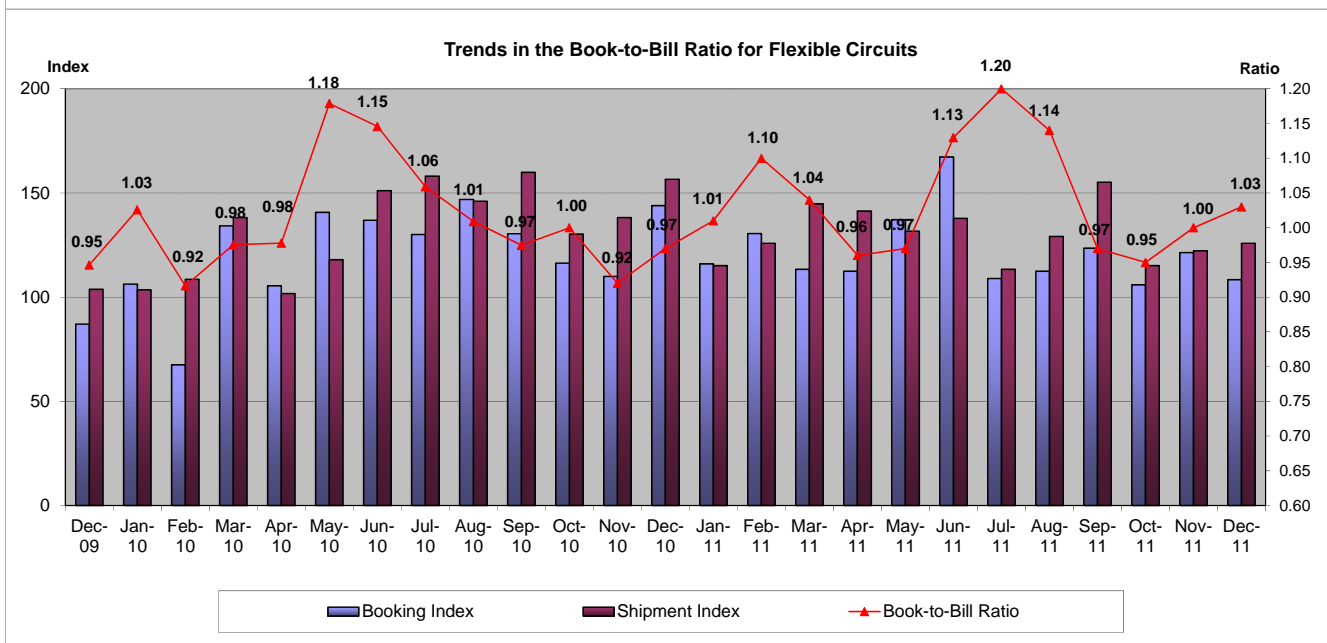
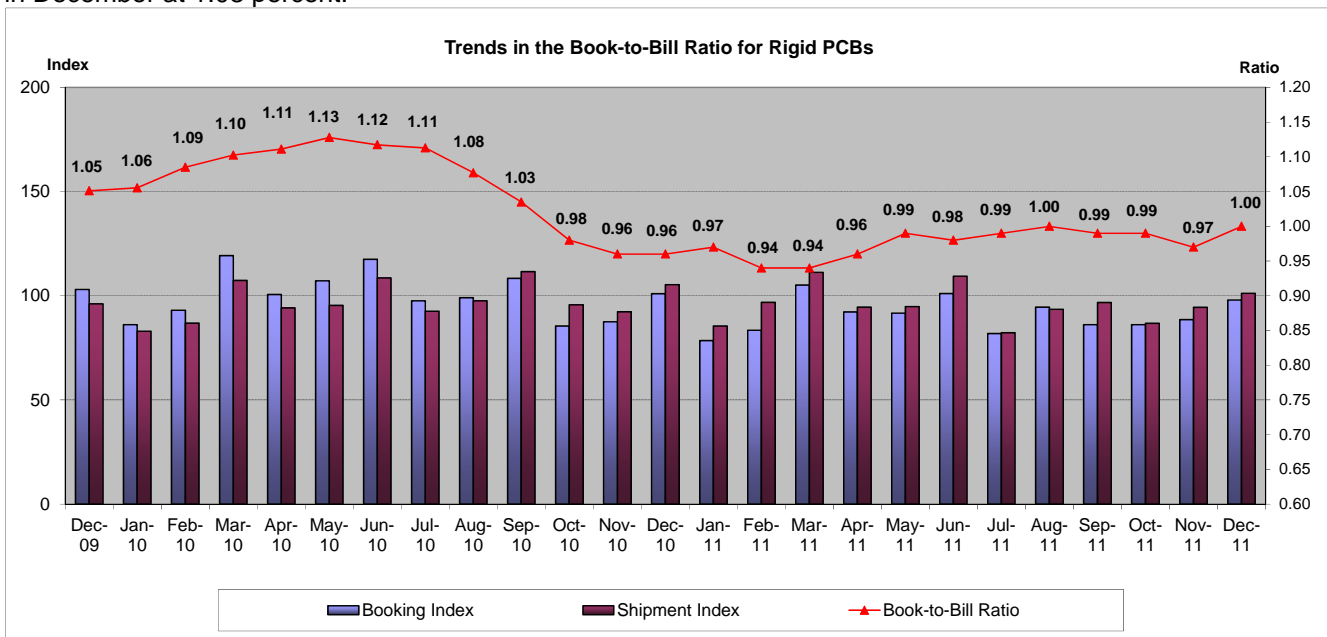
More detailed data on EMS sales and orders and other management metrics, can be found in the monthly and quarterly statistical report for these programs, which are free and available to companies that participate in the programs.

Section 6: Results from the PCB Industry

Rigid PCB Book-to-Bill Ratio Predicts Slowing Sales Growth

The book-to-bill ratio is a good predictor of near-term PCB sales growth. The ratio typically leads shipments by three to six months. Book-to-bill ratios reflect a three-month rolling average of bookings divided by shipments for the same three-month period, as reported by the companies in IPC's monthly statistical programs. A ratio of more than 1.0 suggests that current demand is ahead of supply, which indicates probable near-term growth.

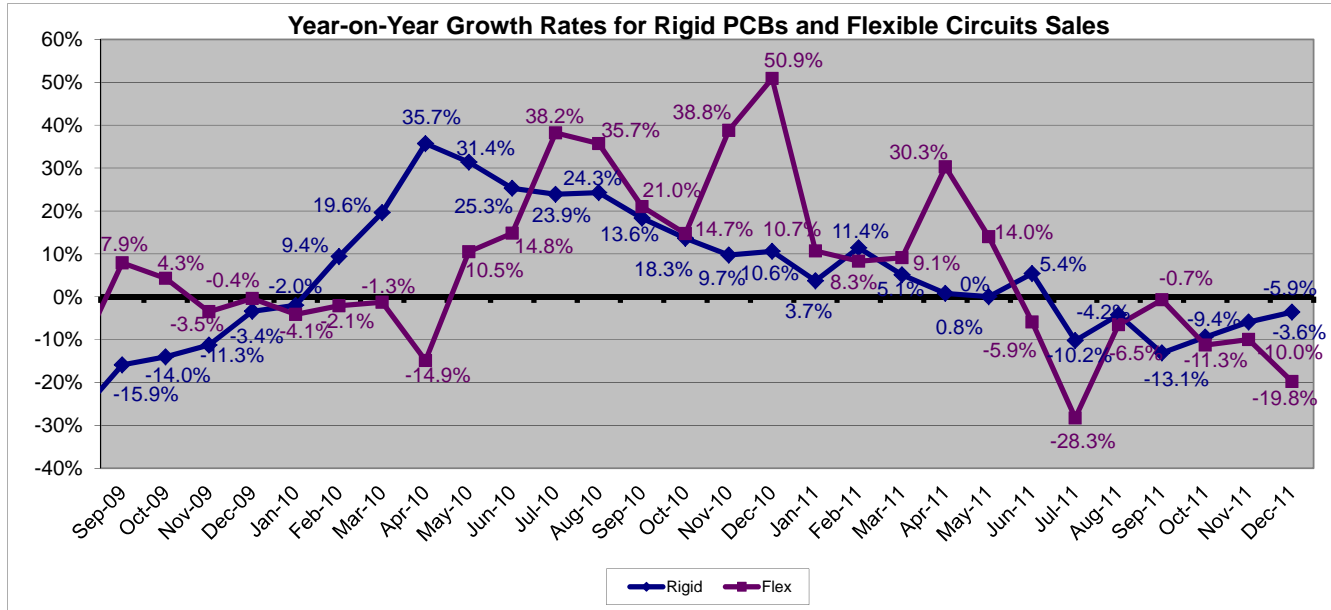
In the rigid PCB segment, bookings lost strength in late 2010. The ratio showed signs of recovery in the second quarter of 2011 and remained at or near parity through December. In the more volatile flexible circuit segment, the book-to-bill ratio reached 1.20 in July 2011, fell sharply and is now climbing again, reaching just above parity in December at 1.03 percent.



Source: IPC Monthly PCB Statistical Program

North American Rigid PCB Growth Shows Upward Trend in Fourth Quarter

Despite its volatility, flexible circuit growth typically mirrors the directional trends in rigid PCB growth over the long range. Both segments have been trending downward in year-on-year growth since the second quarter of 2010. The flex and rigid PCB growth rate remained negative in the fourth quarter of 2011, although the growth rate for rigid PCBs appears to be trending upward.

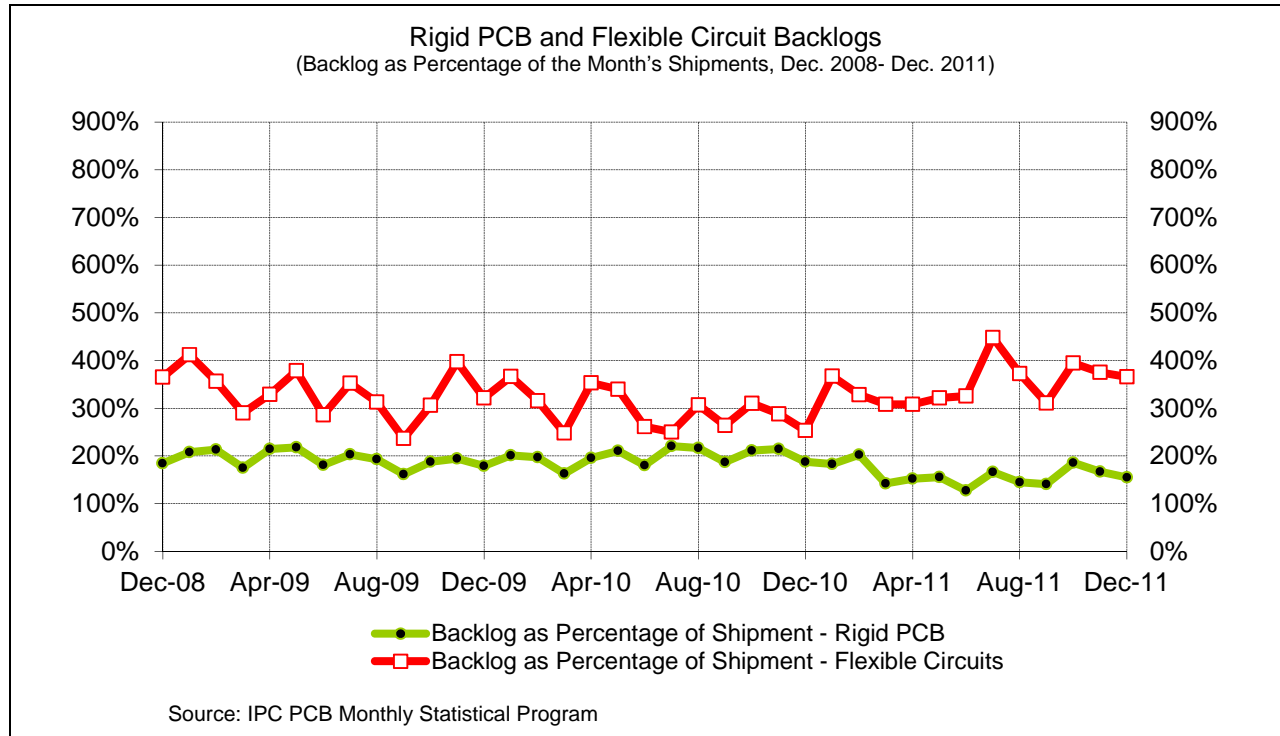


Source: IPC Monthly PCB Statistical Program

PCB Order Backlogs Reflect Slowing Order Growth

Flexible circuit order backlogs have typically been around 300 percent or about three months of production since late 2009. In the last quarter of 2011, the flex backlogs climbed to just below four months of production, a possible indicator of stronger sales in the first quarter of 2012.

Rigid PCB order backlogs have remained stable at around 200 percent, but in 2011 the backlogs began to slip below 200 percent. Since March 2011, they have remained stable at around 150 percent. This decrease in the order backlog reflects this year's slowing orders and negative book-to-bill ratios.

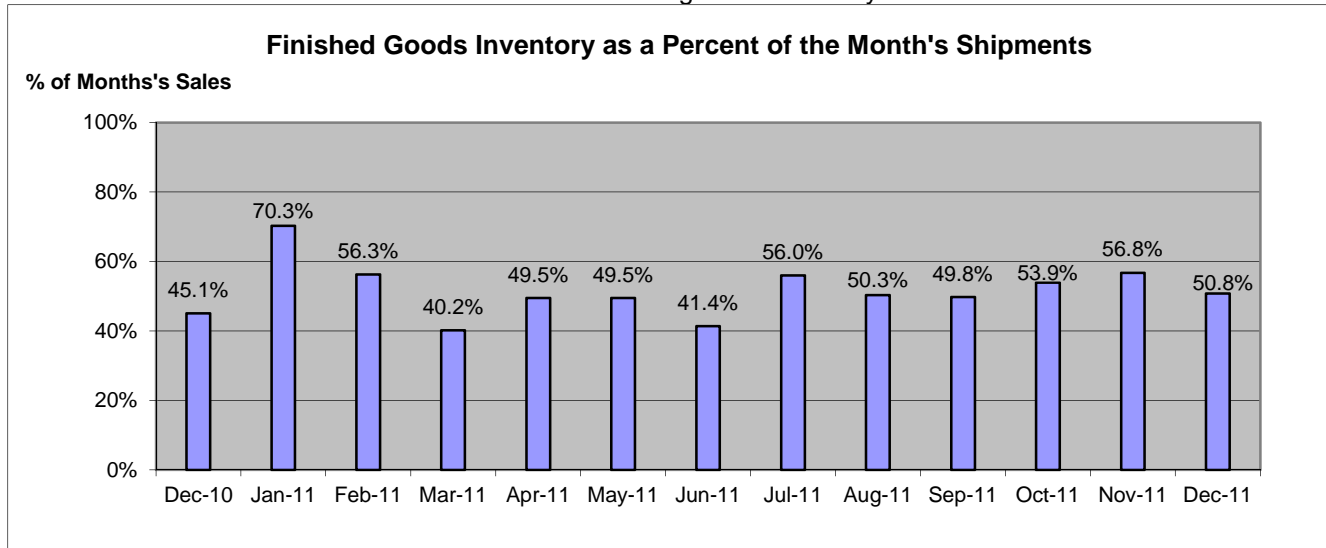


Source: IPC Monthly PCB Statistical Program

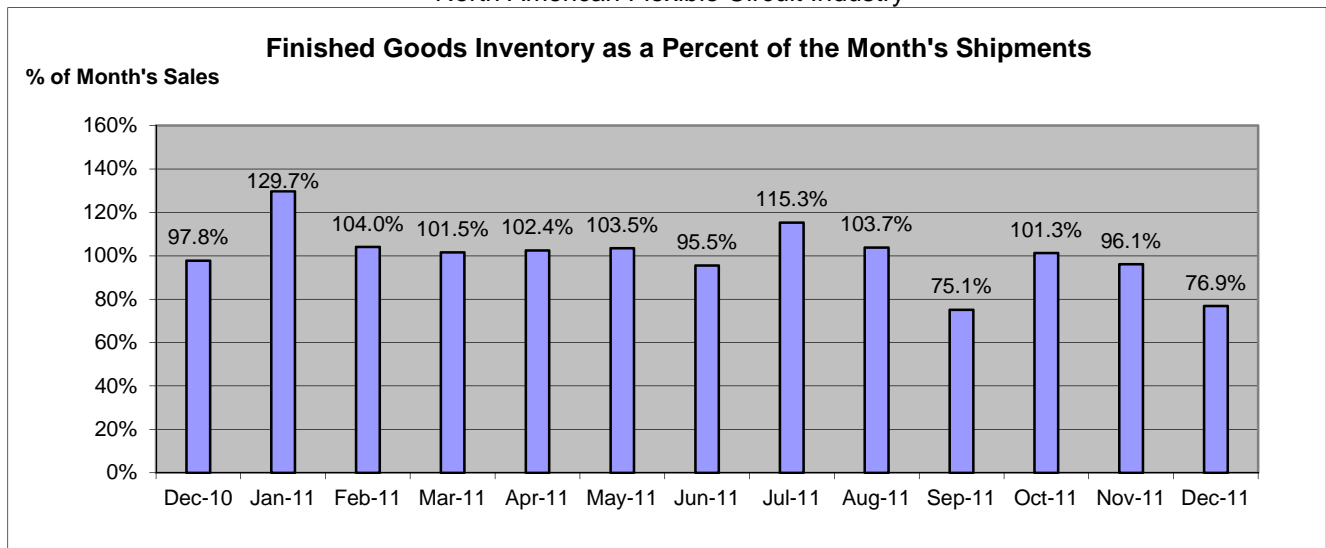
Moderate Finished Goods Inventories are Helping PCB Industry Recovery

Recovery after the economic downturn in 2000 was slowed by high inventory levels. Inventory data from the past two years show that companies learned a vital lesson from the 2000 downturn. Inventory levels were moderate when the most recent recession began, which drove them up but not to dangerously high levels. In the flexible circuit segment, inventory levels tend to be somewhat higher and more volatile, reflecting the greater volatility of flex bookings and sales. Inventory levels in both segments declined in December 2011.

North American Rigid PCB Industry



North American Flexible Circuit Industry

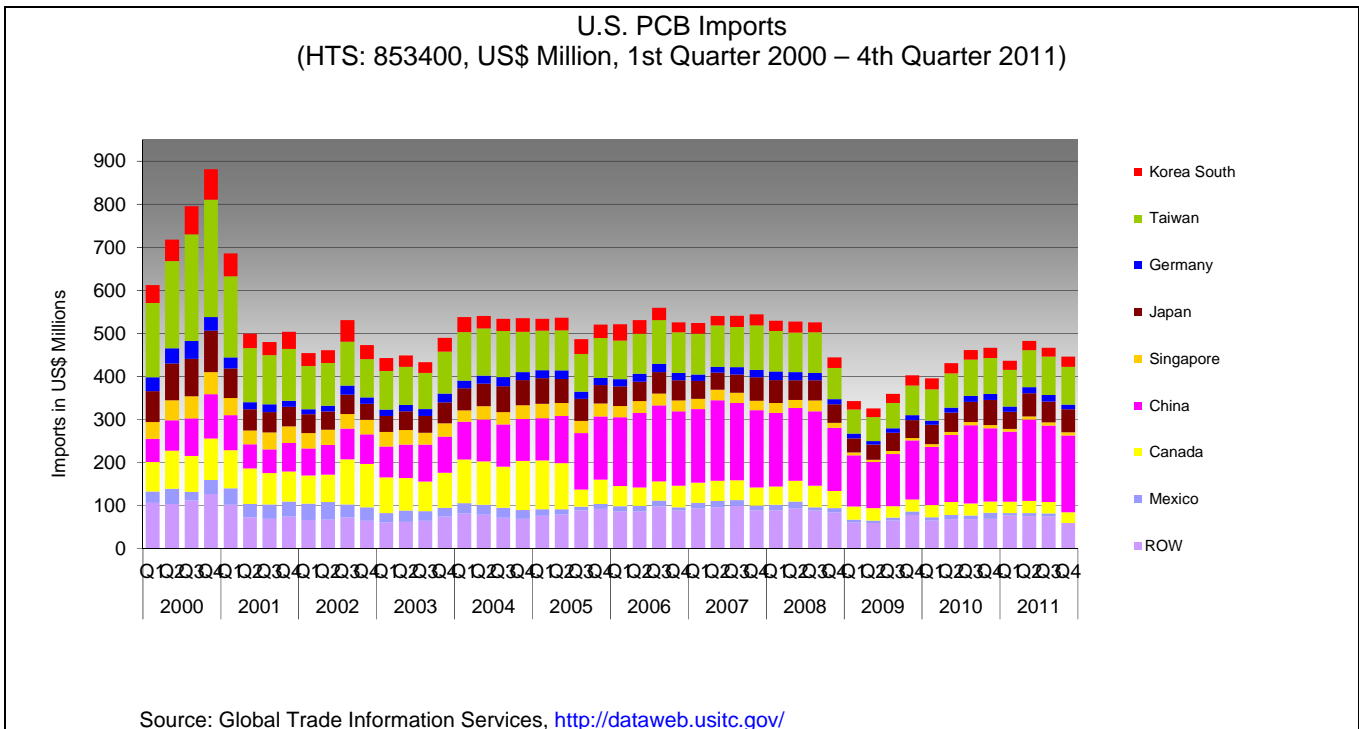
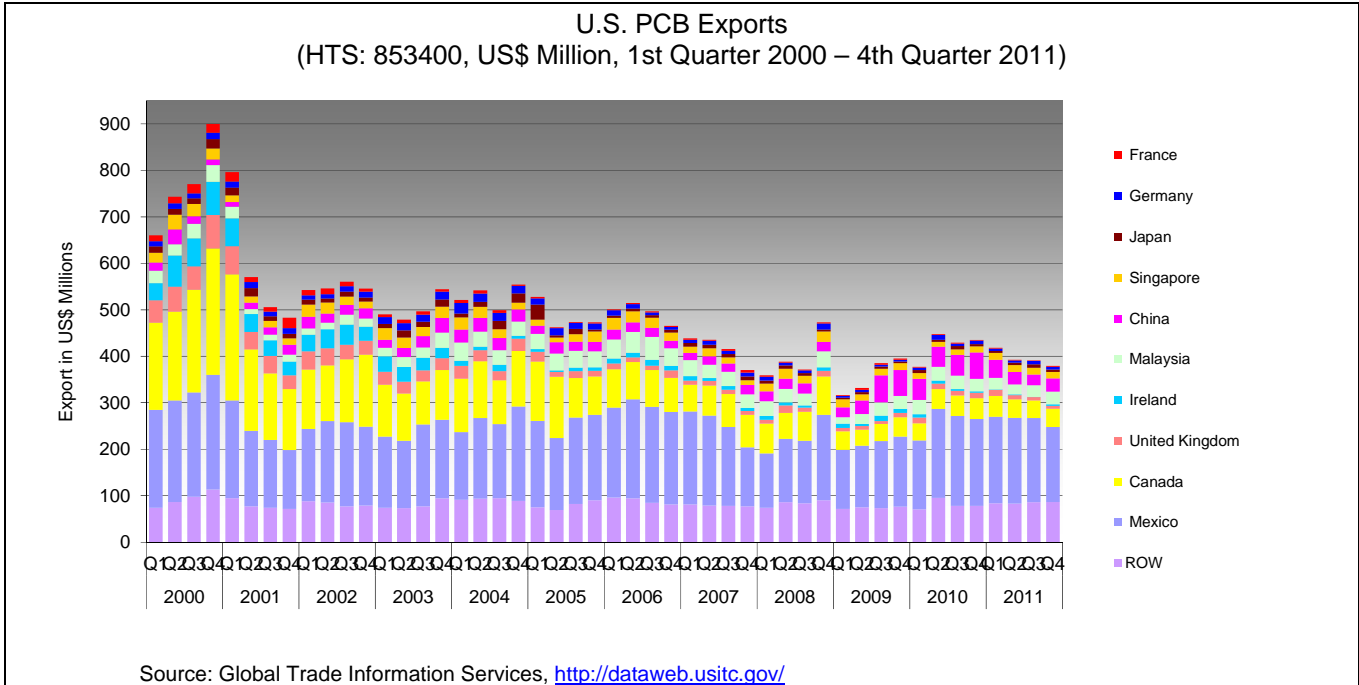


Source: IPC Monthly Statistical Program

More detailed data on PCB sales and orders by product category, as well as backlogs, returns and finished goods inventories, can be found in the monthly statistical report for this program, which is free and available to companies that participate in the program.

U.S. PCB Imports and Exports Decline

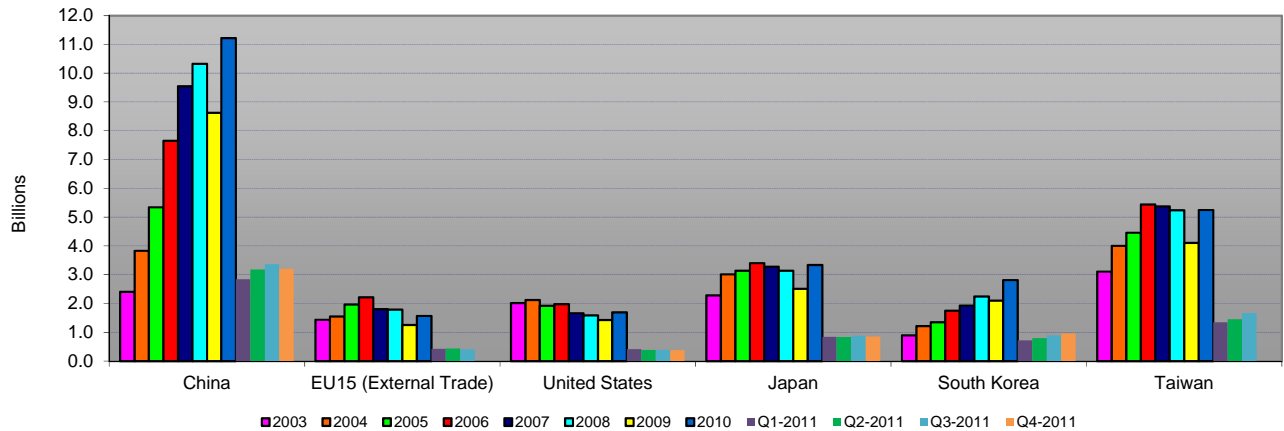
U.S. imports declined in the fourth quarter by -2.6 percent. U.S. PCB exports were also down in the fourth quarter of 2011 by -3.1% when compared to third quarter of 2011. In most quarters since the beginning of 2005, U.S. PCB imports have exceeded exports.



Growth Continues for Asian Trade in PCBs

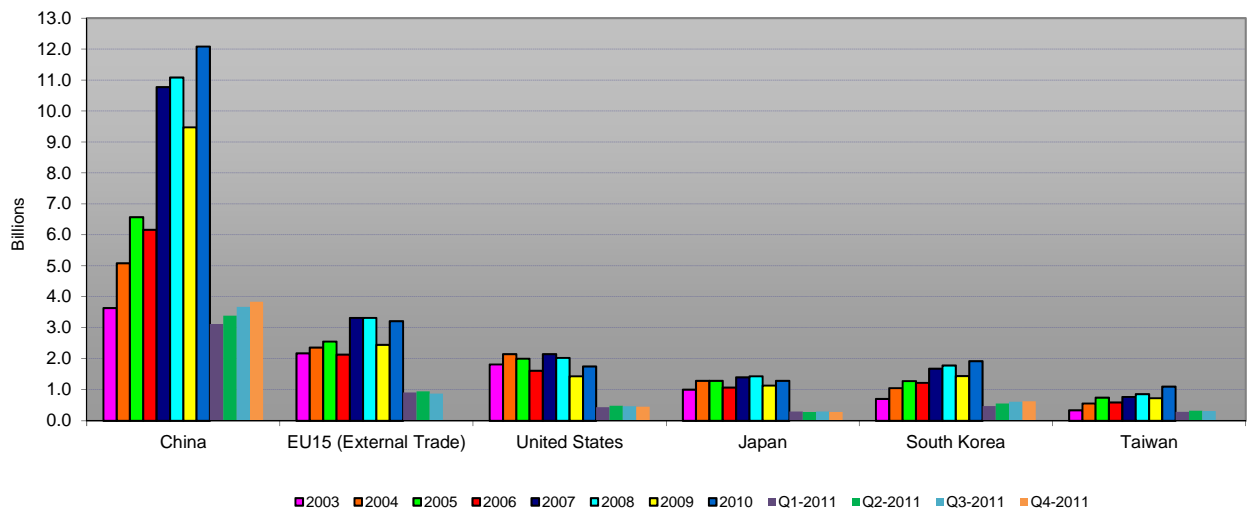
With the exception of 2009, PCB exports and imports have grown steadily in Asia since 2001, with the highest growth rates seen in China. China continues to be a magnet for foreign investment in electronics manufacturing facilities. In 2006, for the first time, China's exports exceeded its imports. In 2009 China's trade was lower than in 2008 due to global recession. In 2010, PCB trade in all of the six key countries/regions shown in the graphs below recovered from the 2009 recession. In the fourth quarter of 2011, China's exports declined compared to third quarter of 2011.

PCB Exports From Six Key Countries/Regions to the World
 (HTS: 853400, US\$ Billion, 2003 – 4th Quarter 2011)



Q4 2011 PCB export data from EU15 and Taiwan are not yet available
 Source: Global Trade Information Services, www.gtis.com

PCB Imports From Six Key Countries/Regions to the World
 (HTS: 853400, US\$ Billion, 2003 – 4th Quarter 2011)



Q4 2011 PCB export data from EU15 and Taiwan are not yet available
 Source: Global Trade Information Services, www.gtis.com

Section 7: Results from the Solder Industry

The global solder industry has responded rapidly to the demand for lead-free solder, despite immense technical challenges. The demand was originally driven by the European Union (EU) Restriction of Hazardous Substances (RoHS) directive, which banned lead in electrical and electronic applications. The RoHS directive became a global driver as other jurisdictions rushed to enact similar laws and companies moved to manufacture a single global product.

PCBs used in automotive, aerospace, military equipment continue to be exempt from the directive, although automotive use of lead is somewhat restricted under the EU end-of-life vehicle directive. While high-reliability telecommunications equipment is currently exempt from the requirement, recent revisions to the RoHS directive will bring this and other previously exempt equipment (medical devices, and monitoring and control equipment) into the scope of the directive over the next few years.

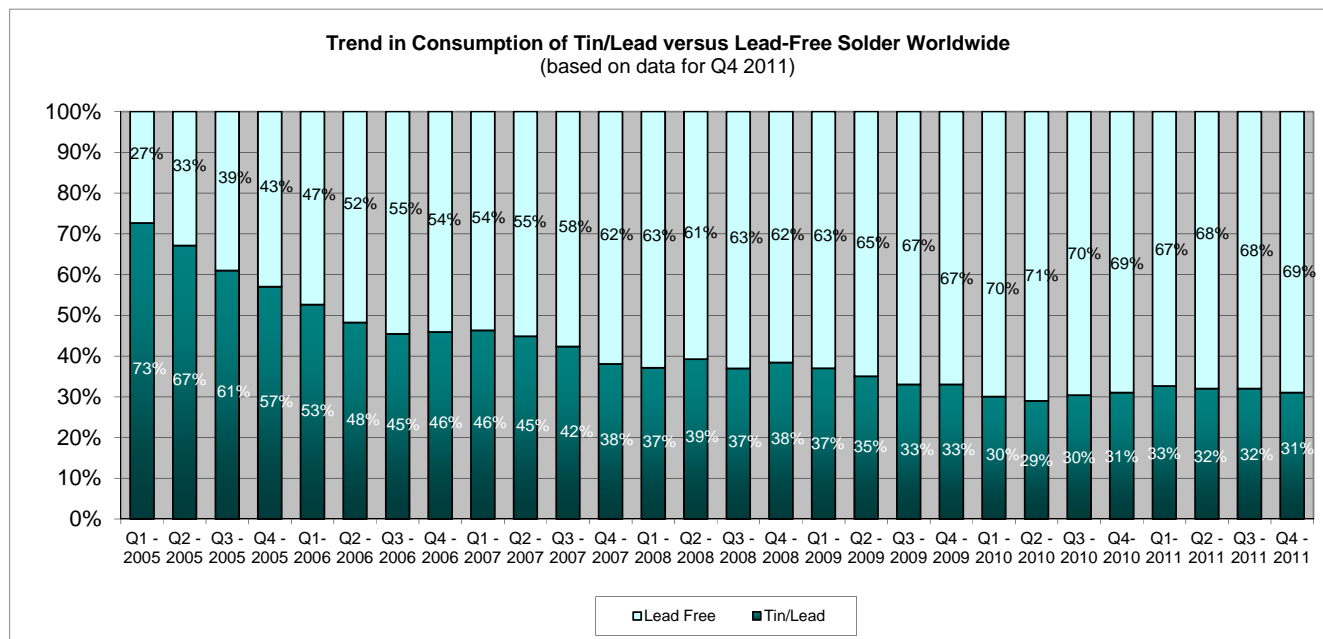
China has similar legislation. The movement to lead-free products has been industry-driven and voluntary in Korea and Japan, but has had just as big an impact.

The shift to lead-free electronics affects the entire supply chain, including the end markets. As the trend continues, industries that are currently exempt from lead-free requirements are finding a dwindling number of suppliers offering lead-based components.

IPC has led several initiatives to help the industry respond to the lead-free challenges. For information about lead-free requirements worldwide, and initiatives to help manufacturers be compliant and remain competitive, visit <http://leadfree.ipc.org>

Lead-Free Proportion of Worldwide Solder Sales has Stabilized

The proportion of lead-free solder in the worldwide marketplace has stabilized at just over two-thirds.

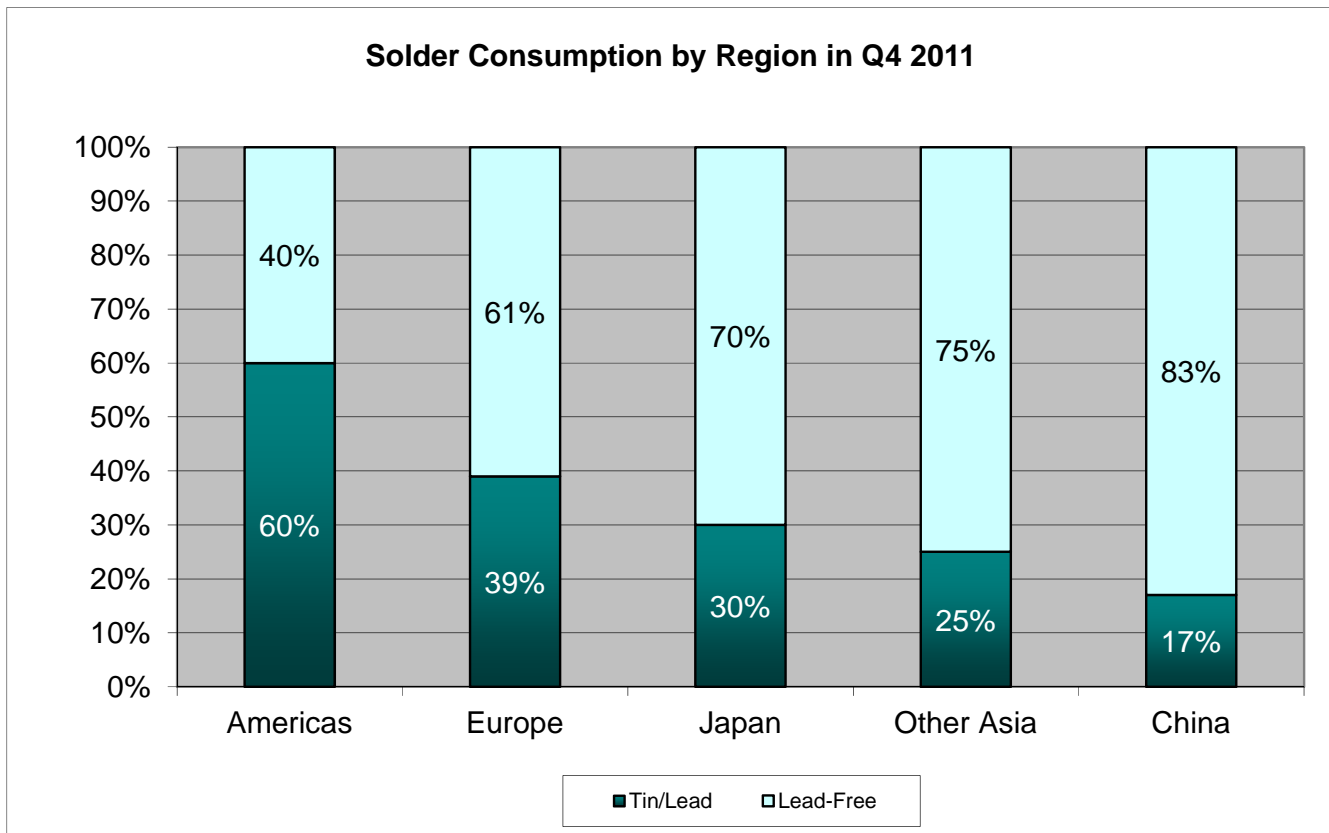


Source: IPC Global Quarterly Solder Statistical Program

Tin-Lead Solder Market Remains Substantial in the Americas and Europe

The Asia/Pacific region consumes a significantly higher proportion of lead-free solder than other regions. More than three-quarters of Asia's solder consumption is now lead free. Results from IPC's quarterly solder statistical program indicate that more than half of Europe's solder consumption is now lead free, and in the Americas it is 40 percent as of fourth quarter 2011.

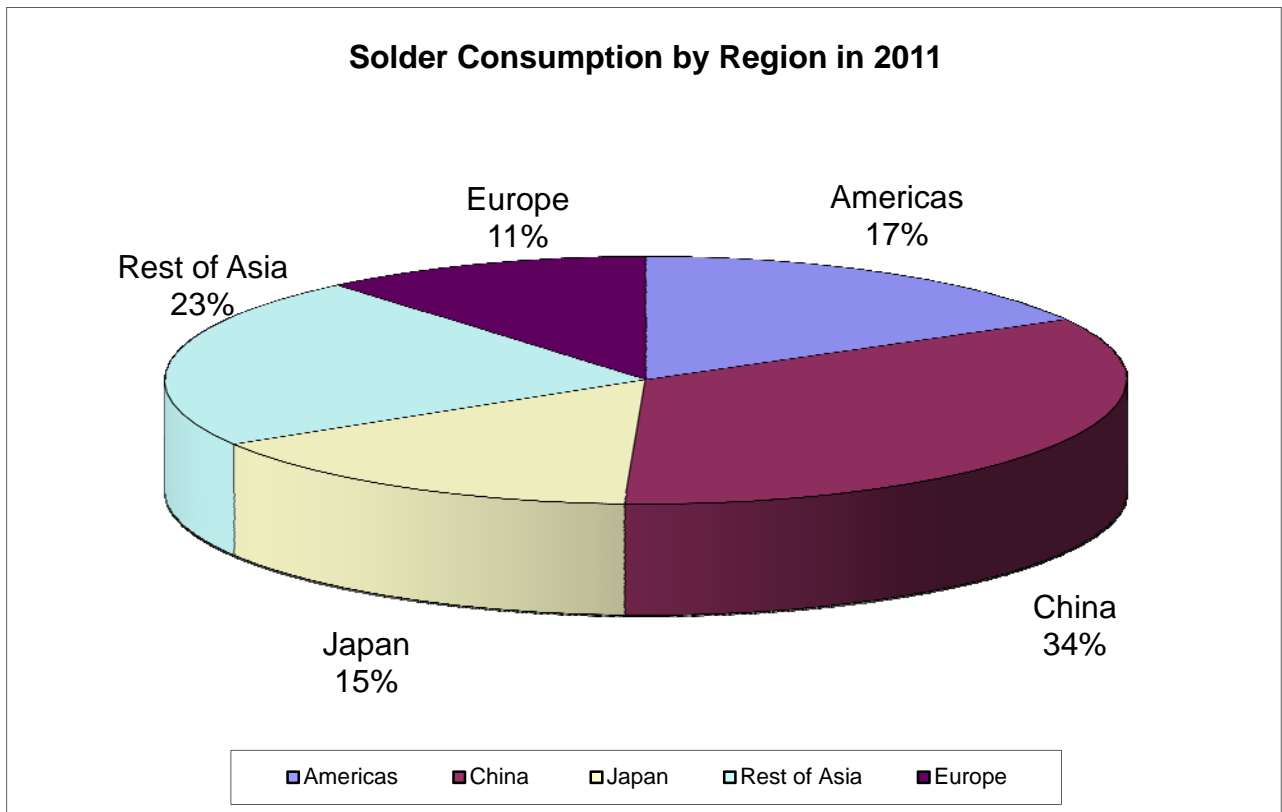
At least in part, the difference can be explained by differences in the regional PCB markets. Asian production is predominantly consumer electronics, to which the current lead-free requirements apply. A higher proportion of PCBs assembled in Europe and the Americas are made for industrial, medical and military markets, which are still largely exempt from lead-free requirements, but this is likely to change in coming years.



Source: IPC Global Quarterly Solder Statistical Program

China is the Largest Solder Market

China now consumes more than one-third of the world's electronics-grade solder. The survey sample in IPC's Global Solder Statistical Program comprises more than 80 percent of worldwide solder production.



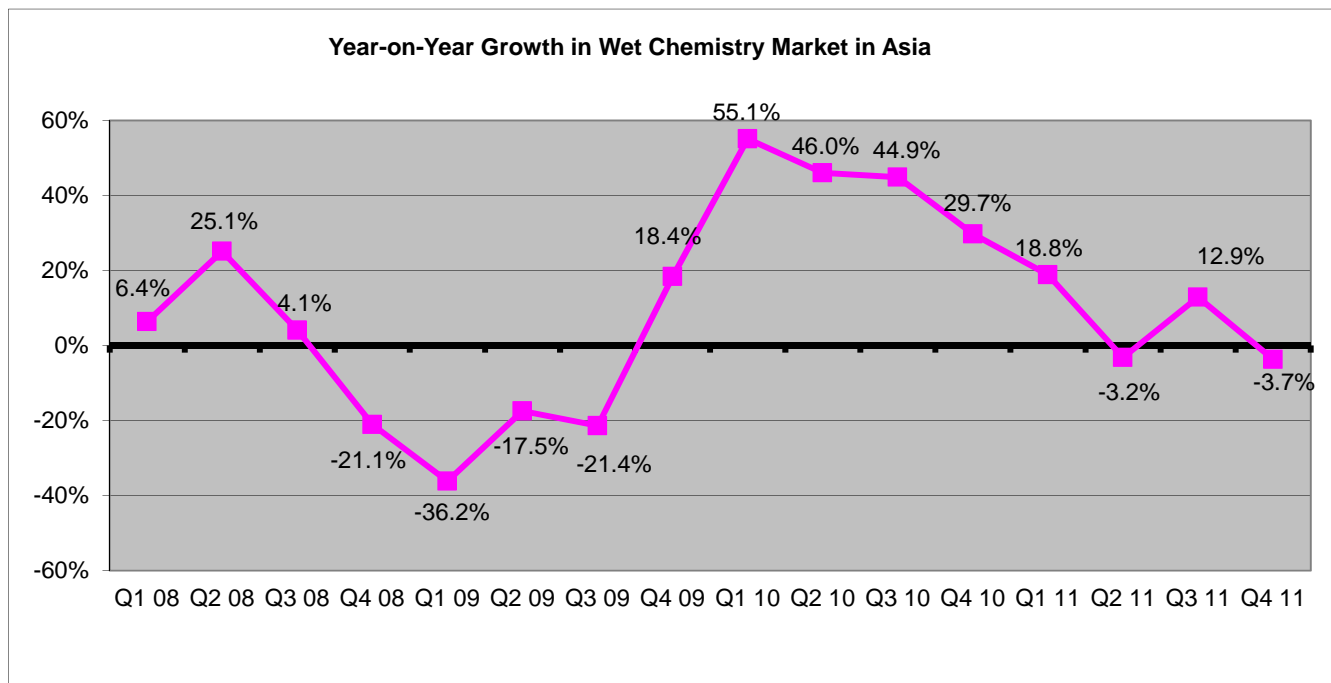
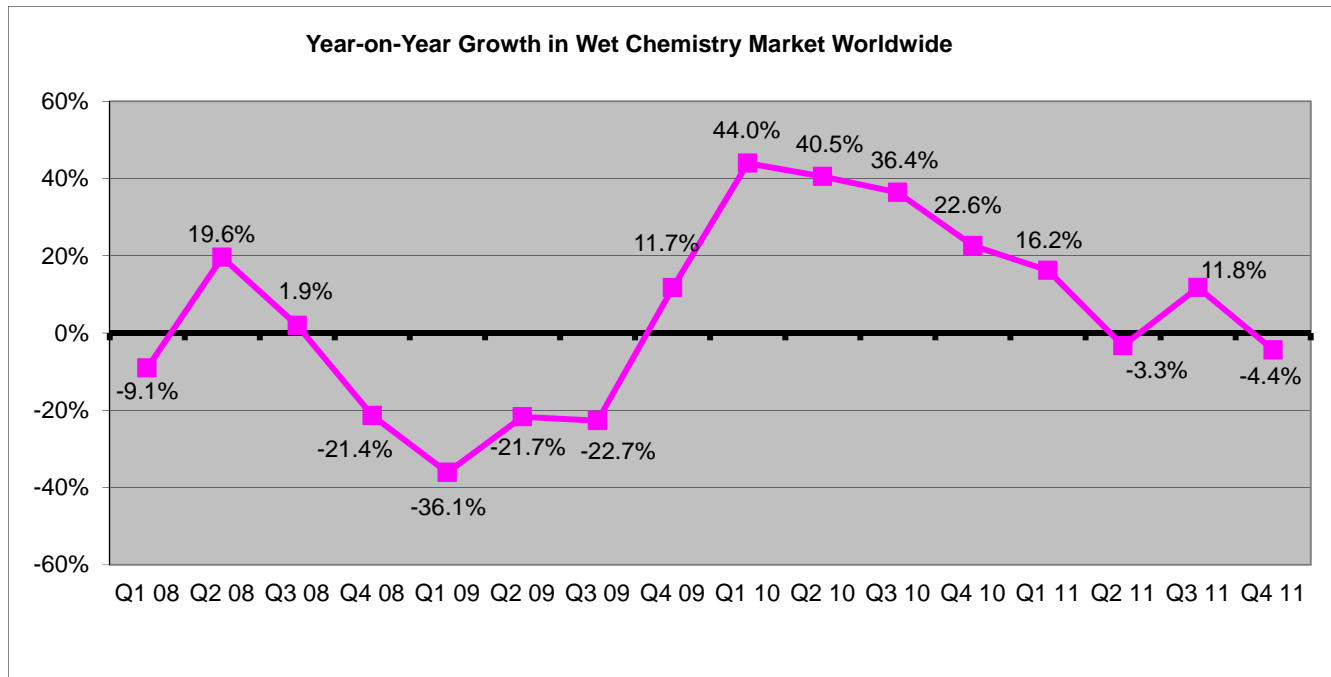
Source: IPC Global Quarterly Solder Statistical Program

More detailed data on solder sales by region and product category can be found in the quarterly statistical report for this program, which is free and available to companies that participate in the program.

Section 8: Results from the Process Consumables Industry

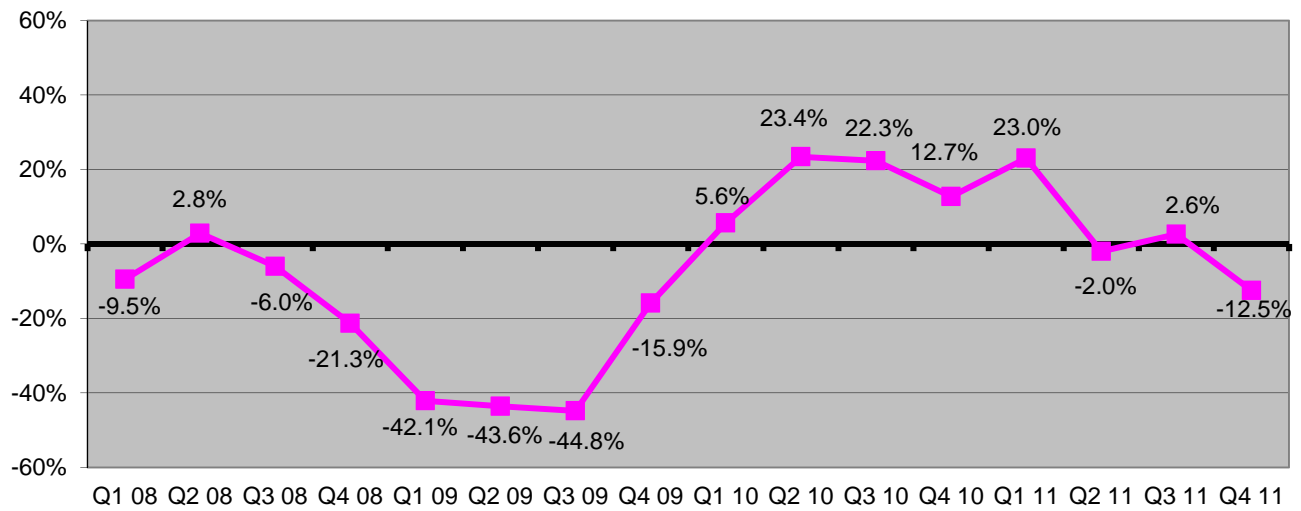
Global Recovery Stalls in Process Consumables Market

On a quarter-to-quarter basis, global process consumables sales decreased by 13.6 percent in the fourth quarter of 2011, signaling slow growth compared to the strong recovery that began in late 2009. Year-on-year growth rates also lost strength and were negative in all regions in Q4 2011.

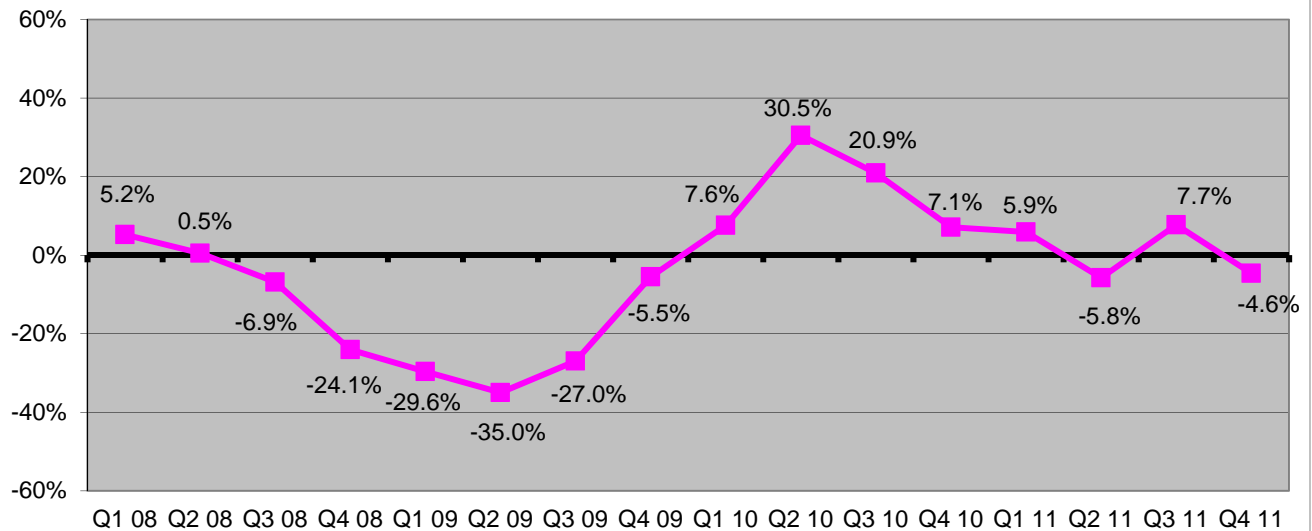


Source: IPC Global Process Consumables Statistical Program

Year-on-Year Growth in Wet Chemistry Market in Europe



Year-on-Year Growth in Wet Chemistry Market in North America



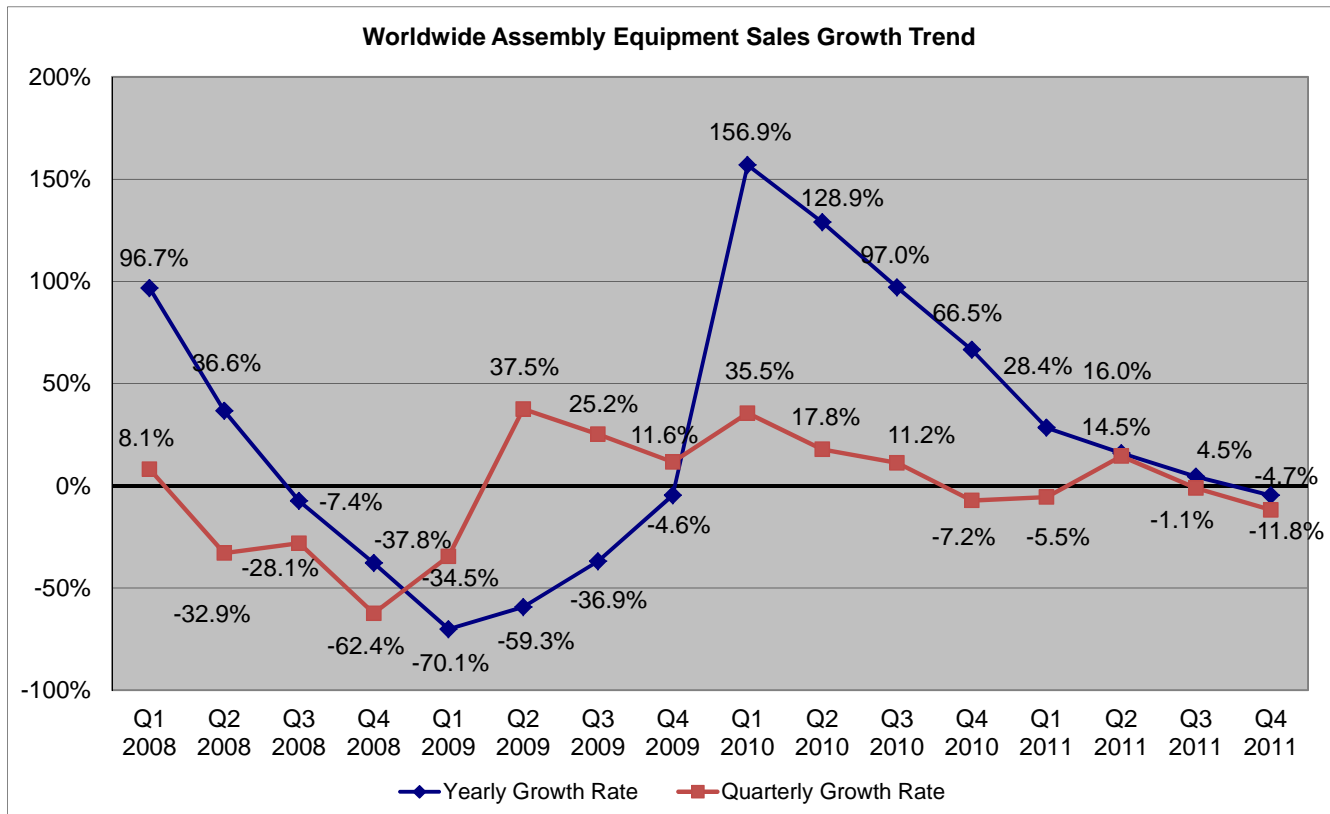
Source: IPC Global Process Consumables Statistical Program

More detailed data on sales of process consumables by 33 product categories and by region can be found in the quarterly statistical report for this program, which is free and available to companies that participate in the program.

Section 9: Results from the Assembly Equipment Industry

Assembly Equipment Sales Growth Continues to Slow

Typically the most volatile segment of the electronics supply chain, worldwide sales of assembly equipment bounced between extreme highs and lows during and after the 2008-2009 recession. Year-on-year growth rates have been trending downward since Q2 2010. Year-on-year sales growth in Q4 2011 stood at -4.7 percent. Quarter-to-quarter sales growth was also down in Q4 2011 at -11.8 percent.



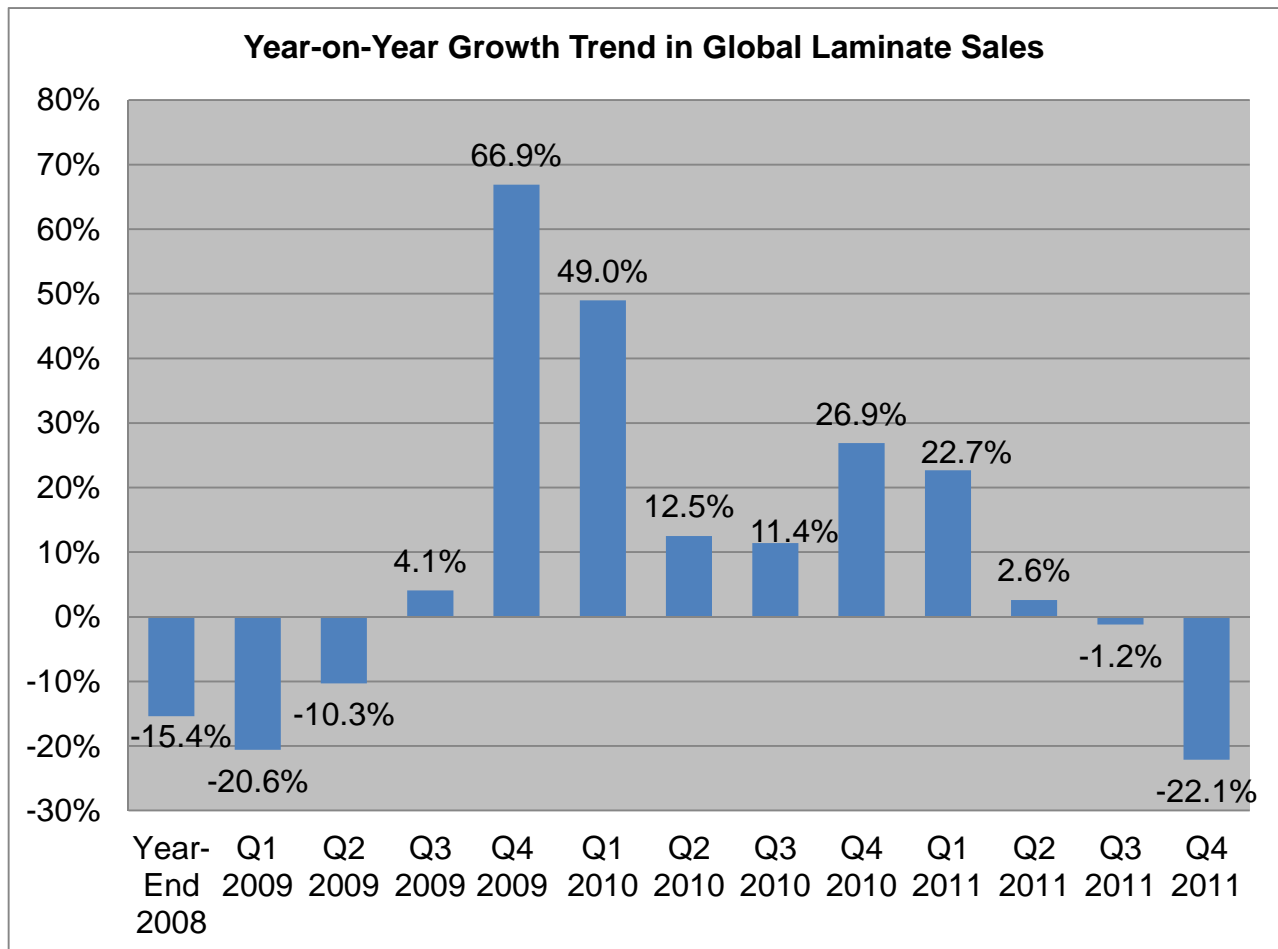
Source: IPC Global Quarterly Assembly Equipment Statistical Program

More detailed data on sales of assembly equipment by specific product categories, by region, and by industry end-market can be found in the quarterly statistical report for this program, which is free and available to companies that participate in the program.

Section 10: Results from the Laminate Industry

Global Laminate Industry Growth Falls

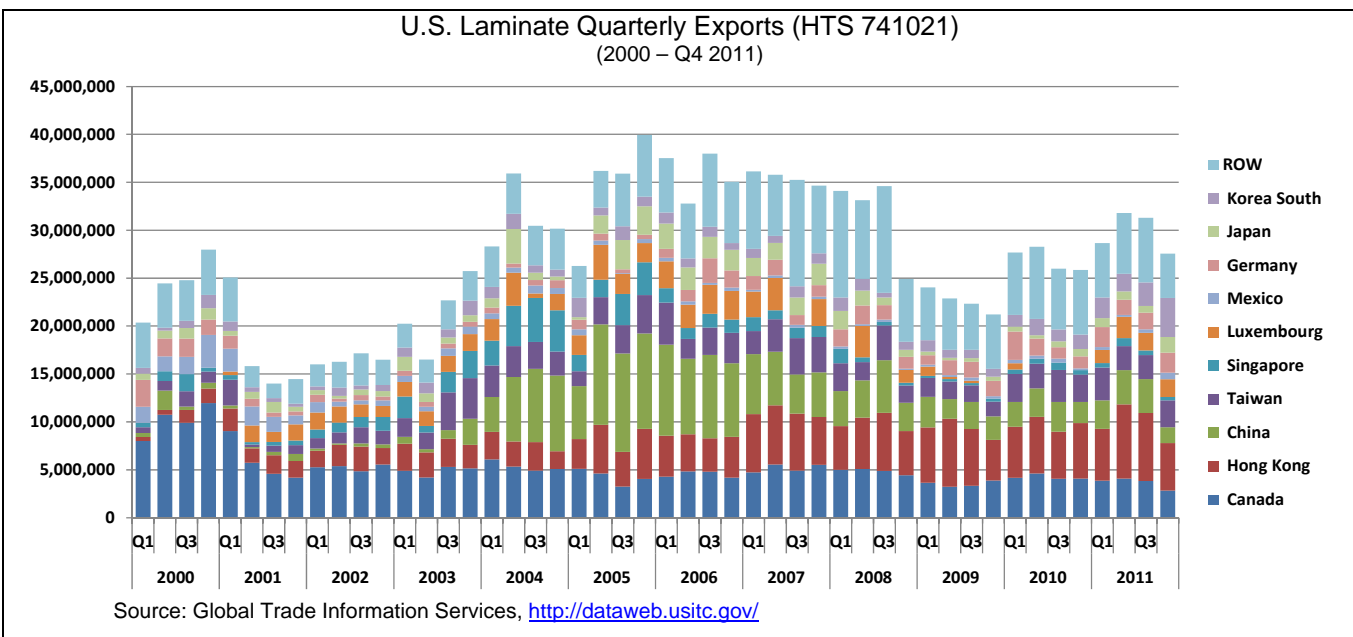
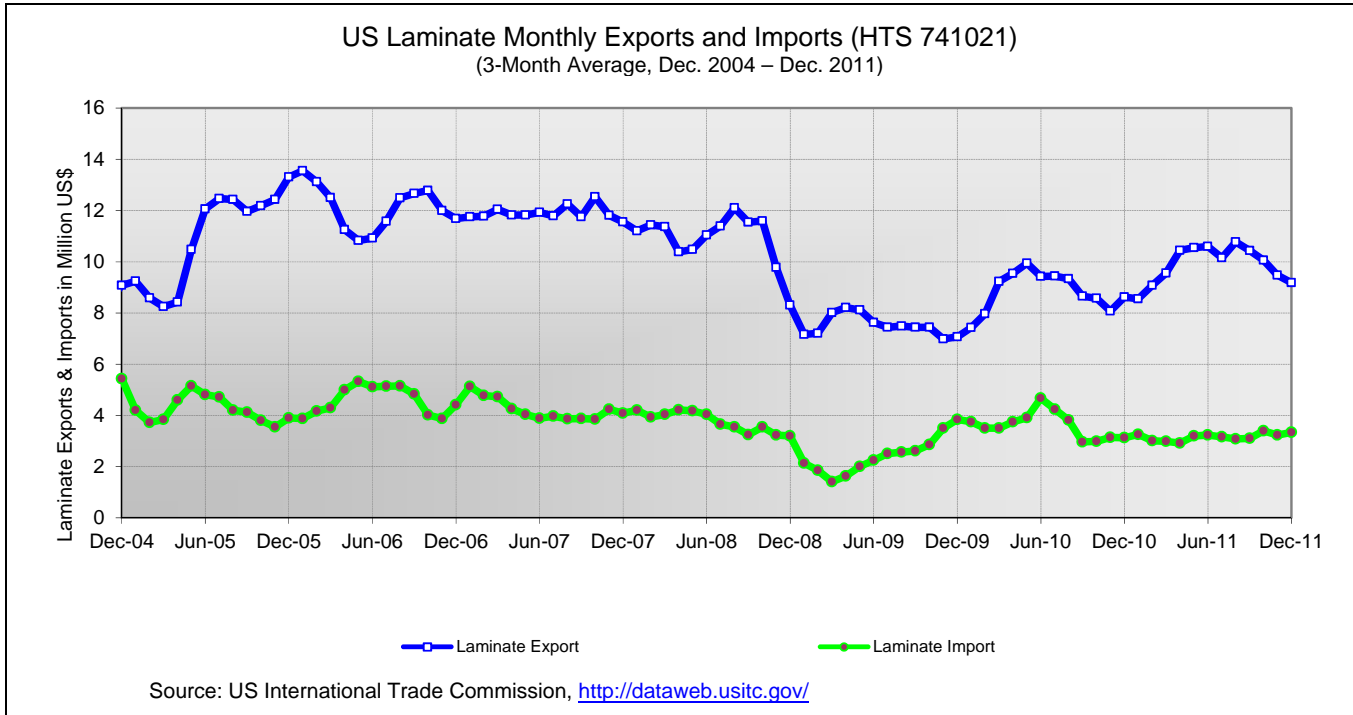
The laminate industry bounced back quickly and dramatically from the global recession. Global laminate sales once again started to decline in the third quarter of 2011. As of Q4 2011, year-on-year sales growth slowed significantly registering a negative year-on-year growth rate at -22.1 percent. It should be noted that IPC's Global Laminate Statistical Program measures growth in units (square meters) instead of in value. (Preliminary results)



Source: IPC Global Quarterly Laminate Statistical Program

U.S. Laminate Imports Flat in Q4

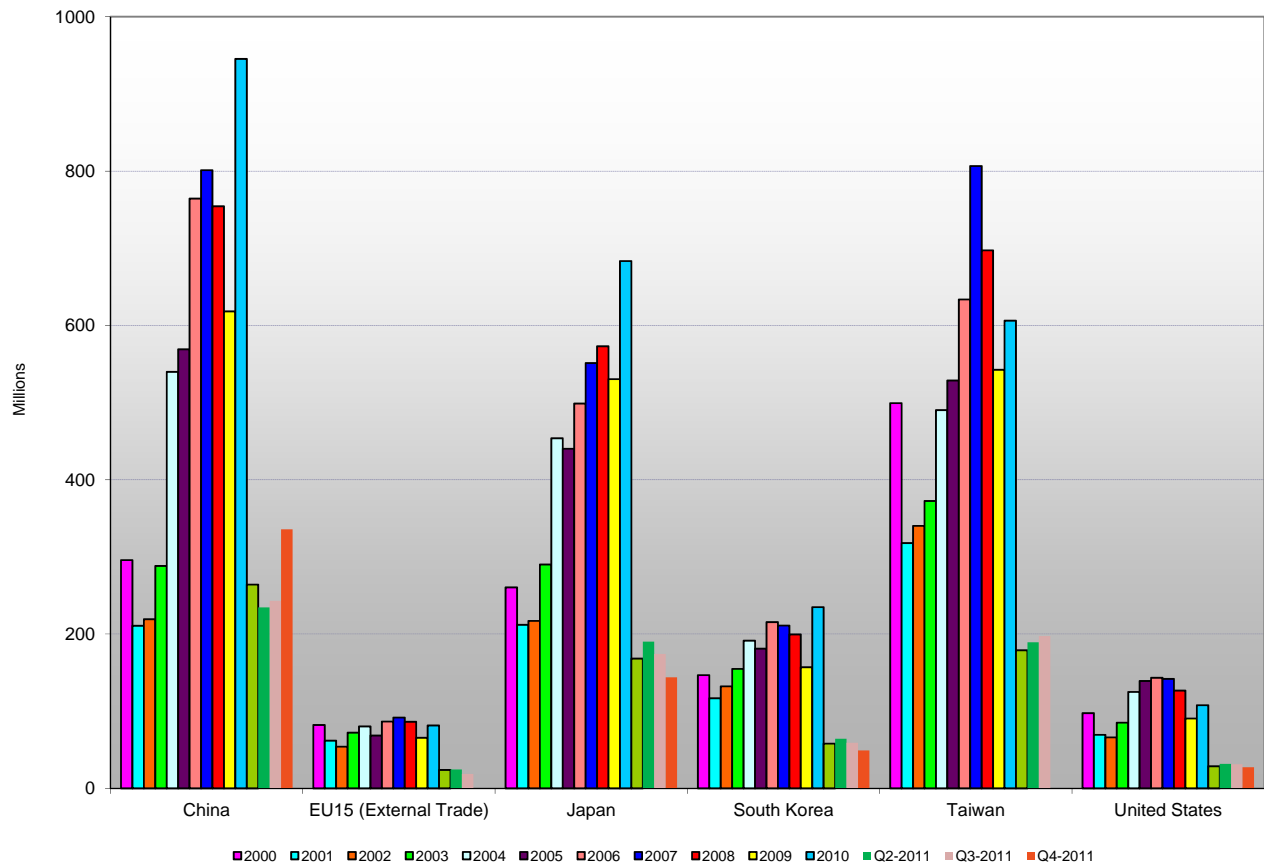
In value terms, U.S. exports of laminate have exceeded imports since 2003. Both imports and exports declined with the worsening recession in late 2008. After a partial recovery, imports remained flat and exports declined in fourth quarter 2011. The biggest consumers of U.S. made laminate are Hong Kong, South Korea, Canada and Taiwan.



Except for China, Laminate Exports Down

In 2010, exports from the major Asian laminate producing countries, as well as Europe and the USA were up compared to 2009. In spite of a slowdown, recovery from the most recent recession can be seen in the export growth in 2010 from all of these regions. In Q4 2011, China's exports showed strong growth, while Japan, South Korea and U.S. exports declined in the fourth quarter of 2011.

Laminate Exports from Six Countries/Regions to the Rest of the World*
 (HTS: 741021; US\$ Million; 2000- Q4-2011)

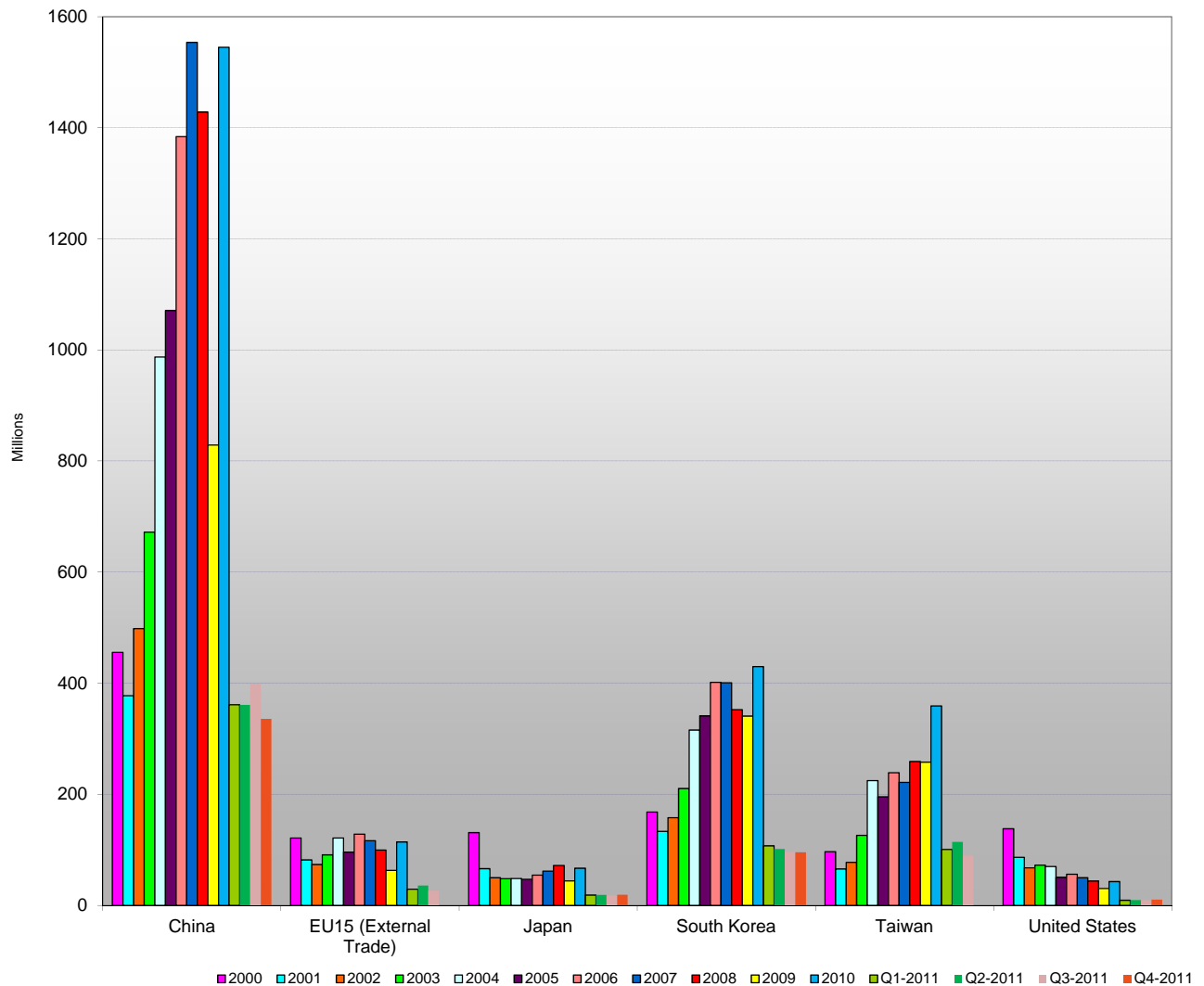


* Q4 2011 laminate export data from EU 15 and Taiwan are not yet available.
 Source: Global Trade Information Services, www.gtis.com

Laminate Imports down in Q4 2011

China, Korea and Taiwan saw dramatic increases in their laminate imports in the past five years, but most countries saw some decline in late 2008. Laminate imports weakened in 2009, but showed a strong recovery in 2010. 2011 reflects signs of a modest slowdown in laminate imports.

Laminate Imports of Six Countries/Regions from the Rest of the World*
 (HTS: 741021; US\$ Million; 2000 – Q4-2011)



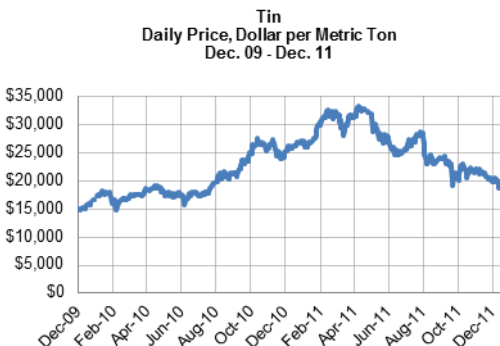
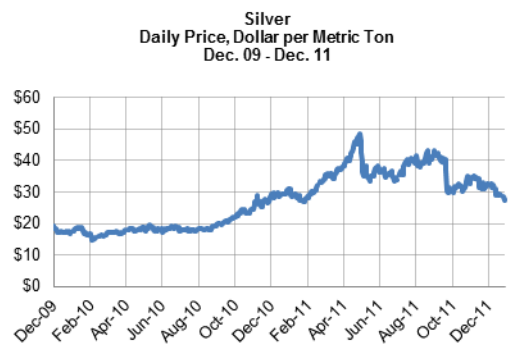
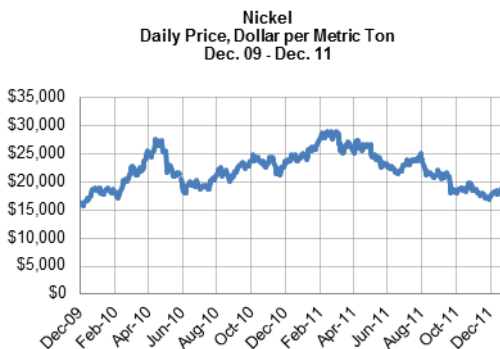
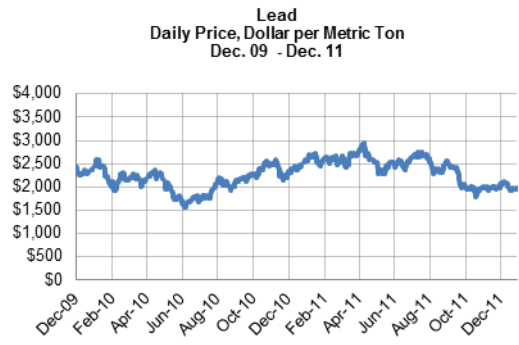
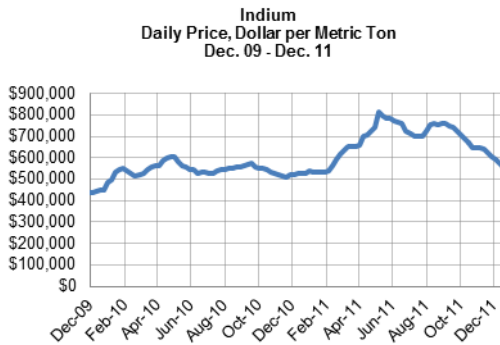
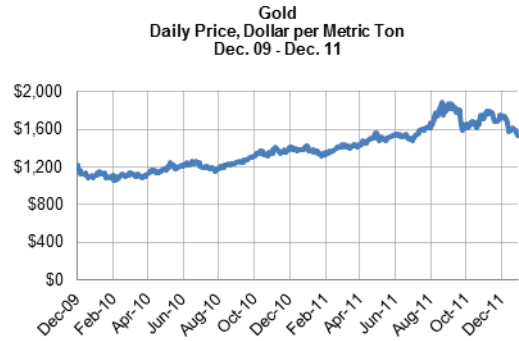
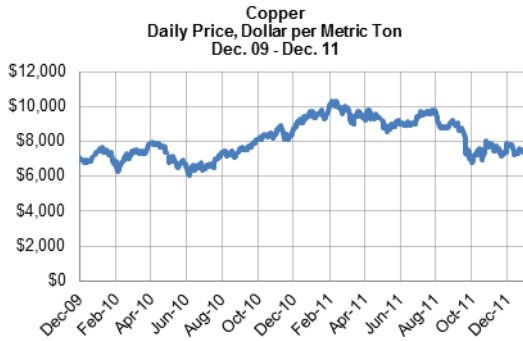
* Q4 2011 laminate import from EU 15 and Taiwan are not yet available.

Source: Global Trade Information Services, www.gtis.com

Section 11: Metal Prices

Metal Prices Down

Prices of all major metals used in electronics dropped in the fourth quarter of 2011. Concerns that the European debt crisis will slow global growth and crimp commodity demand have put added pressure on metal prices in the fourth quarter.



Source: www.metalprices.com

Appendix A: Current IPC Market Research Studies and Reports

	Publication Date	Next Edition Due	IPC Member Price	Standard Price
Market Studies/Reports				
<i>Electronics Industries Market Data Update</i>	Quarterly	May 2012	Free	\$600 annual subscription
<i>World PCB Production Report for the Year 2009</i>	July 2011	July 2012	Free	\$1050 or less for IPC membership
<i>Industry Analysis and Forecast for Flexible Circuits in North America 2009-2010*</i>	September 2010	New report combining rigid & flex (see below)	\$475	\$950
<i>Analysis and Forecast for the PCB Industry in North America 2011-2012*</i>	August 2011	June 2012	\$675	\$1350
<i>Analysis and Forecast for the Electronics Manufacturing Services (EMS) Industry 2011-2012*</i>	September 2011	June 2012	\$475	\$950
<i>2011 Worldwide PCB Technology Trends Study*</i>	New	February 2012	\$675	\$1350
<i>2011 Study on the Defense Market for PCBs*</i>	New	March 2012	\$475	\$950
Management Studies				
<i>IPC Study of Quality Benchmarks for the Electronics Manufacturing Services (EMS) Industry for 2011*</i>	May 2011	May 2012	\$475	\$950
<i>IPC Wage Rate & Salary Report for the North American EMS Industry 2009-2010*</i>	January 2011	December 2013	\$475	\$950
<i>IPC Wage Rate & Salary Report for the U.S. Assembly Equipment Industry 2009-2010*</i>	July 2010	February 2012	Not for sale	Not for sale
<i>IPC Executive Compensation Study for the EMS Industry 2010-2011*</i>	October 2010	December 2012	\$800	\$1600
<i>IPC Executive Compensation Study for the Assembly Equipment Industry 2010-2011*</i>	November 2010	December 2012	Not for sale	Not for sale

* These survey-based studies are free to companies that participate in the survey.

Appendix B: IPC Market Research and Statistical Programs

IPC offers statistical programs on a monthly, quarterly, annual and biennial basis. These programs are a benefit of membership and most are open only to IPC members. To learn more about these programs, please see the program brochure at <http://www.ipc.org/StatPrograms>. Many additional reports are published and offered free to IPC members as benefits of IPC membership.

I. CONFIDENTIALITY GUIDELINES

IPC collects data via confidential on-line surveys using its own website and secure server. The questionnaire for each study is accessible online at <https://secure.ipc.org/survey>. IPC maintains company data in strictest confidence. No company-specific data is divulged. Reports contain only aggregate data, and only when it represents a sufficient number of responses to ensure complete confidentiality for all participants.

II. PROGRAM DESCRIPTIONS AND REQUIREMENTS

IPC offers various statistical programs to member companies that meet a certain profile. The monthly and quarterly programs are open to new participants at the beginning of each calendar year. Participants must commit to provide data for the entire year according to the schedule specified for each program. Within each program, it is IPC's goal to establish a survey sample that is representative of that segment of the industry, and to keep each survey sample constant throughout the year.

The following is a list of IPC's statistical programs and market research reports, along with information about what companies are eligible to participate, type of data collected, survey due dates and report distribution.

A. Programs for PCB Fabricators

Rigid PCB Monthly Statistical Program

Population – Manufacturers of rigid PCBs throughout the Americas.

Data collected – Shipments, backlog and bookings.

Deadlines – Data due on the 15th of the following month.

Report distribution – PCB monthly survey participants only.

Flexible Circuit Monthly Statistical Program

Population – Manufacturers of flexible circuits throughout the Americas.

Data collected – Shipments, backlog and bookings.

Deadlines – Data due on the 15th of the following month.

Report distribution – PCB monthly survey participants only.

Annual Industry Analysis and Forecast for the PCB Industry in North America

Population – North American PCB manufacturers.

Data collected – Various financial, operational and market data.

Deadlines – Surveys on line in February and March, due in April.

Publication date – 2nd quarter.

Report distribution – Free to survey participants. For sale to others (50 percent member discount).

B. Programs for EMS Companies

Electronics Manufacturing Services (EMS) Monthly Statistical Program

Population – North American providers of electronics manufacturing services (EMS).
Data collected – Shipments, bookings, and direct materials and labor as percentages of sales.
Deadlines – Data due on the 15th of the following month.
Report distribution – Survey participants only.

EMS Quarterly Statistical Program

Population – EMS companies worldwide.
Data collected – Shipments, bookings, earnings as percent of shipments, percent return on value add, inventory turns, capacity utilization, cash cycle and other management metrics.
Deadlines – Due one month after the end of the quarter.
Report distribution – Survey participants only.

Annual Industry Analysis and Forecast of the Worldwide EMS Industry

Population – EMS companies worldwide.
Data collected – Various financial, operational and market data.
Deadlines – Surveys on line in April.
Publication date – 2nd quarter.
Report distribution – Free to survey participants. For sale to others (50% member discount).

Annual Study on Quality Benchmarks for the EMS Industry

Population – EMS companies worldwide.
Data collected – Financial and production data, assembly attributes, yields, defect rates (DPMO), customer returns, and supplier performance.
Deadlines – Surveys online in February
Publication date – 2nd quarter.
Report distribution – Free to survey participants. For sales to others (50% member discount).

Biennial EMS Wage Rate and Salary Survey

Population – North American EMS companies.
Data collected – Wage data for non-exempt employees; salary data for exempt employees; salary, commission and bonus data for sales employees; hours and shifts; benefits offered; and HR policies.
Deadlines – Surveys on line in August (odd years).
Publication date – 4th quarter.
Report distribution – Free to survey participants. For sale to others (50% member discount).

Biennial EMS Executive Compensation Survey

Population – North American providers of electronics assembly services.
Data collected – Compensation and benefits for executive management.
Deadlines – Surveys on line in September (even years).
Publication date – 4th quarter.
Report distribution – Free to survey participants. For sale to others (50% member discount).

C. Programs for Suppliers of Materials and Equipment

Laminate Quarterly Statistical Program

Data sources – Worldwide producers of laminate.
Data collected – Shipments by region.
Deadlines – Due one month after the end of the quarter.
Report distribution – Survey participants only.

Solder Quarterly Statistical Program

Population – Worldwide manufacturers of solder for the electronics industry.
Data collected – Shipments by region and product type.
Deadlines – Due one month after the end of the quarter.

Report distribution – Survey participants only.

Process Consumables Quarterly Statistical Program

Population – Worldwide producers of process consumables.

Data collected – Shipments by region and product type.

Deadlines – Due one month after the end of the quarter.

Report distribution – Survey participants only.

Assembly Equipment Quarterly Statistical Program

Population – Worldwide manufacturers of electronics assembly equipment.

Data collected – Shipments and bookings by specific product category, end-markets and participants product models in selected categories.

Deadlines – Due one month after the end of the quarter.

Report distribution – Survey participants only.

Biennial Wage Rate and Salary Survey for Assembly Equipment Manufacturers

Population – North American and European companies.

Data collected – Wage data for non-exempt employees; salary data for exempt employees; salary, commission and bonus data for sales employees; hours and shifts; benefits offered; and HR policies.

Deadlines – Surveys on line in August.

Publication date – 4th quarter.

Report distribution – Free to survey participants. For sale to others (50 percent member discount).

Biennial Executive Compensation Survey for Assembly Equipment Manufacturers

Population – Worldwide companies.

Data collected – Compensation and benefits for executive management.

Deadlines – Surveys on line in September.

Publication date – 4th quarter.

Report distribution – Survey participants only. Not for sale.

D. Special Studies and Reports for IPC Members

World PCB Production Report

Data sources – Data and consensus from panel of top industry analysts and consultants, augmented by data from IPC surveys, other associations, published reports, etc.

Data reported – Worldwide PCB production value by country, region and specific product category.

Publication date – 3rd quarter.

Report distribution – Free to IPC members only. Not for sale.

Quarterly Electronics Industry Market Data Update

Data sources and content – This quarterly report contains the latest findings from IPC's statistical programs for industries across the electronic interconnect supply chain. It includes macroeconomic data, leading indicators and analysis of industry trends. Together they provide a complete picture of the industry and the supply chain dynamics that affect businesses.

Publication date – Around six weeks after the end of each quarter.

Report distribution – Free to IPC members and by subscription to non-members.

Reports on IPC Fast Facts Surveys

Data sources – IPC survey results

Data reported – Each survey covers one specific issue of current importance to the industry. In 2011, surveys covered the impact of the new conflict minerals regulations in the U.S., the global impact of the 2011 disaster in Japan, and the status of the U.S. PCB military industrial base.

Publication date – Typically within two weeks of the close of the survey.

Report distribution – Most reports are free to IPC members and survey participants. Some are also available for sale.

Major Studies as Needed

In 2012, IPC will publish a new study on the defense market for PCBs.

Association Connecting Electronics Industries



3000 Lakeside Drive, Suite 309 S
Bannockburn, IL 60015