

Potholes in the road to recovery



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The hoped for the “2012 recovery” has met with a number of recent roadblocks as evidenced by the May decline in the JPMorgan Global Purchasing Managers’ Index (Chart 1).

Growth obstacles include:

- Europe’s major economic woes, resulting declining industrial output (Chart 2) and the struggles to keep the EU and its common currency in tact in the face high debt and minimal liquidity in Greece, Spain and Italy.
- Japan’s very strong yen (Chart 3) limiting its exports.
- U.S. political wrangling bringing legislative progress to a standstill.
- China, Taiwan and S. Korea’s dwindling export prospects as it its normal customers struggle with weak economies.

As measured by global electronic equipment production (Chart 4), May should have been the bottom of the normal seasonal trough with significant growth resuming in June and then extending through the pre-Christmas “busy season.” Unfortunately based upon today’s weak global markets the 2012 summer/fall growth seasonal spurt will probably be throttled by low consumer and industrial

demand.

Despite the current economic headwinds there are signs of a seasonal pickup. One optimistic indicator is Taiwan wafer foundry sales (Chart 5), which historically have been a leading indicator for global semiconductor shipments (and hence world electronic assembly activity). Hopefully the May wafer foundry sales spurt portends an imminent seasonal upturn in 2012! We hope so but we are not sure.

Charts 6 and 7 summarize our colleague Ed Henderson’s most recent forecasts for world GDP and electronic equipment production by region. For more details see www.hendersonventures.com.

End Markets

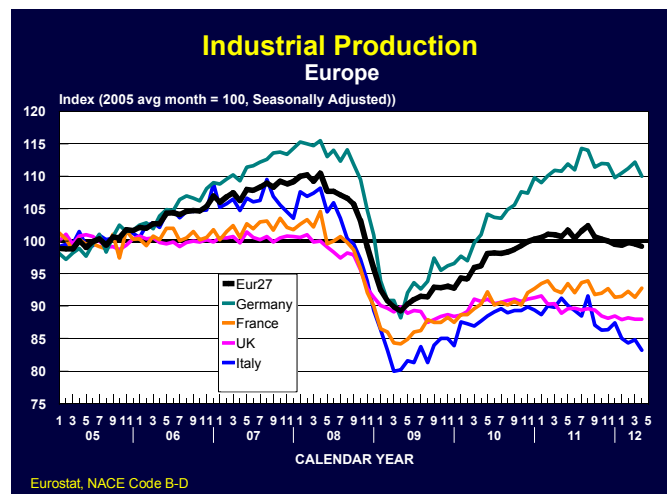
China’s IT equipment consumption is expected to increase to US\$173 billion in 2013, 4 percent more than that of Japan. — IDC

Computers & Peripherals

- Total PC shipments are expected to rise 15 percent y/y to 478 million units in 2012. —*IC Insights*
- Mobile PC shipments fell 15 percent y/y to 76.2 million units in 1Q’12 but grew 30 percent y/y; tablet PCs grew

124 percent y/y and notebooks and mini-notebooks grew 12 percent. — *NPD DisplaySearch*

- Tablet shipments reached 18.2 million devices in 1Q’12; Apple accounted for 65 percent or 11.8 million of the total shipments. —*ABI Research*
- Workstations shipments reached 918.4 thousand units in 1Q’12. —*Jon Peddie Research*
- Worldwide server shipments grew 1.5 percent in 1Q’12 to 2.3 million units while revenue declined 1.8 percent to \$12.4 billion. —*Gartner*
- Global server revenues fell 2.4 percent to \$11.8 billion in 1Q’12. —*IDC*
- Global enterprise router market declined 9 percent to \$834 million in 1Q’12. —*Infonetics Research*
- Global service provider router and switch market decreased 14 percent to \$3.3 billion in 1Q’12. —*Infonetics Research*
- Global wireless LAN equipment revenue fell 4 percent q/q to \$859 million in 1Q’12. —*Infonetics*
- VoIP equipment market increased 1 percent q/q to \$715 million in 1Q’12. —*Infonetics Research*
- Worldwide external disk storage sys-



tems factory revenues increased 7.1 percent y/y to \$5.99 billion in 1Q'12. —*IDC*

- Graphics add-in board shipments fell 2 percent q/q to 15.8 million units in 1Q'12. —*Jon Peddie Research*

Mobile Communications

- Worldwide mobile phone shipments are expected to grow 4 percent to 1.8 billion units in 2012. —*IDC*
- Worldwide mobile phones sales (budget, midrange, feature and smartphones) to end users declined 9 percent to 379 million units in 1Q'12. —*Forward Concepts*
- Connected car solutions will grow from 66 million units in 2012 to 356 million in 2017. —*ABI Research*
- China mobile subscribers rose 1.1 percent to 1.02 billion users in April 2012.

EMS, ODM & Related Assembly Activity

3CEMS' South China facility, Broad Technology received IECQ QC080000 certification for Hazardous Substance Process Management.

API Technologies' EMS Business Unit reduced head count by 40 positions.

Artaflex

- acquired Adeptron.
- named Frank Skerlj CFO.

CB Technology installed a MYDATA MY100LX14 pick-and-place machine.

Computrol installed an additional KISS 103 selective solder system from ACE Production in Meridian, Idaho.

EMS-Electra purchased an in-circuit test system from Dr. Eschke Elektronik GmbH.

Enics received AA-level customs certification in China.

Fascia Graphics invested in pick & place technology.

Foxconn/ Hon Hai Precision

- invested USD210 million for new Apple production line in Jiangsu, China.

- cut more than 100 jobs at its handset factory in Salo, Finland.
- plans to double wages again.
- is investing \$210M to build a 40,000 sq. meter plant in Huai'an City, China.
- and Sharp are building a 6G LTPS panel plant in Chengdu, China.

General Atomics added a 140,000 SF expansion to its Shannon, Mississippi facility for PCBA and cable manufacturing.

Hansatech EMS added a Europlacer Lineo II pick and place system.

IEC invested in a Corelis JTAG ScanExpress system.

Jabil

- cut 350 jobs in Kwidzyn, Poland.
- opened its first Israeli office in Ramat Ha'Chayal, Tel Aviv.
- entered a strategic cooperation agreement with R.H. Technologies for its Nazareth Illit manufacturing plant.

Plexus is constructing 280,000 SF manufacturing plant in Oradea, Romania.

Raven Industries named Stephanie Hersth Sandlin as General Counsel and VP-Corporate Development.

Sanmina-SCI Defense and Aerospace division received NSA Type 1 certification from the National Security Agency for integrated secure wireless intercommunications system.

SigmaTron acquired Spitfire Control.

SMT Tech named Chan Tak Sin Norman, Managing Director.

SMTC

- bought Alco Electronics, and expanded its Dongguan China manufacturing facility.
- Ontario acquired a Mek iSpector HDA 650 AOI system.

Suntron's Methuen, MA facility began manufacturing ZeeVee products formally made in China.

Suntronic moved to a 10,731 SF facility in Austin, Texas

Technical Manufacturing received ISO 9001:2008 and AS 9100C certifications.

Variosystems broke ground on its 120,000 SF facility in Suzhou, China.

Videcon set up a manufacturing unit in Kerala, India.

PCB Fabrication

South Korean PCB output was about \$7.4 billion in 2011. —*Dr. Hayao Nakahara*

ACD added a PDR IR-E3 Evolution 2000 BGA rework system.

Advanced Circuits acquired Universal Circuits.

AT&S and **Mentor Graphics** entered an embedded component package technology partnership to optimize PCB design-through-manufacturing.

AT&S opened a sales office in Chicago.

Canadian Circuits purchased a Camtek Orion 828 AOI system.

Career is expanding FPCB capacity by 30 percent in 2H'12.

Chemitalic Suzhou added an Orbotech AOI machine, solder mask exposure machine, fixture e-tester and flying probe e-test machine.

Cicor's PCB Division in Switzerland integrated and merged its manufacturing capacities in its Boudry and Moudon (Cicorel SA) sites.

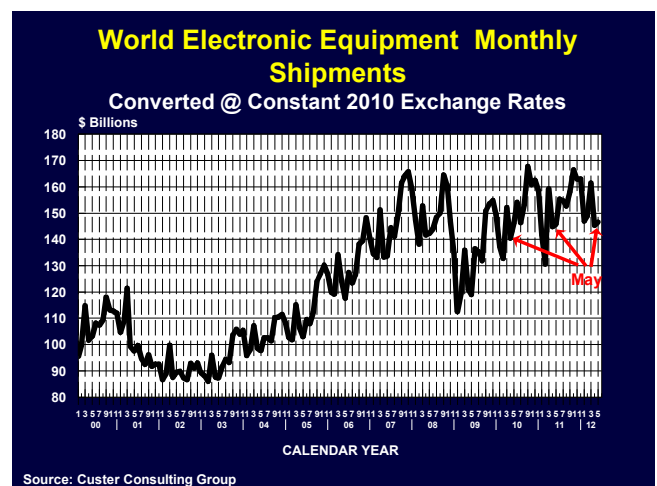
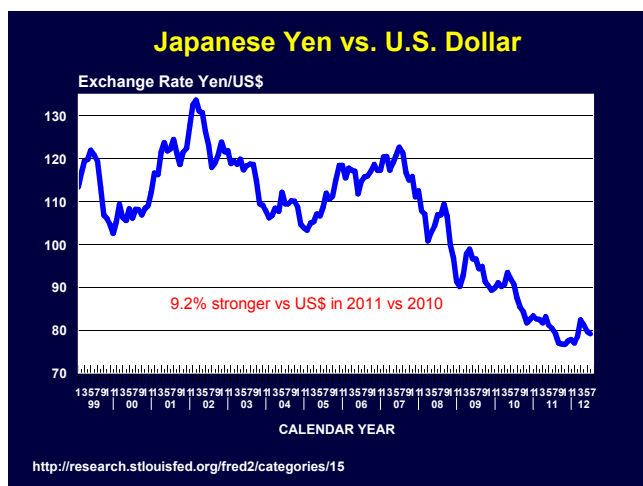
Cirexx added an Excellon COBRA hybrid laser.

Eagle Circuits, One Source Group received AS9100 Quality Management System certification.

Eltek appointed Endicott Interconnect Technologies as sales partner in the U.S.

Elvia PCB hired Benoit Hareng as Director of International Sales and Business Development.

Hitachi Computer Manufacturing Technology will shut down its PCB manufacturing operation on June 28, 2013.



Invotec was sold to RG industries.
Marl International added a DEK Horizon 03iX print platform.
National Physical Laboratory, In2Tec and Gwent Electronic Materials developed PCBs with components that can be easily separated by immersion in hot water.
P. D. Circuits received ISO 9001:2008 recertification.
Schweizer Electronic introduced HDI and RF combi boards.
TC ORI LIGHT sold 51 percent of share capital in PCB subsidiary ISU TC CO.
Viasystems completed its DDi acquisition.
Westak celebrated 40 years of PCB manufacturing.
Zhen Ding will invest THB530 million (US\$16.7 million) to add buildings at its PCB factory in Thailand and an additional THB500 million in production equipment.

Materials & Process Equipment

Advanced electronic materials are projected to increase at a 5-year, 36.3 percent CAGR from \$27.6 million in 2010 and \$30.7 million in 2011 to more than \$5.5 billion in 2016 and almost \$26 billion in 2021.

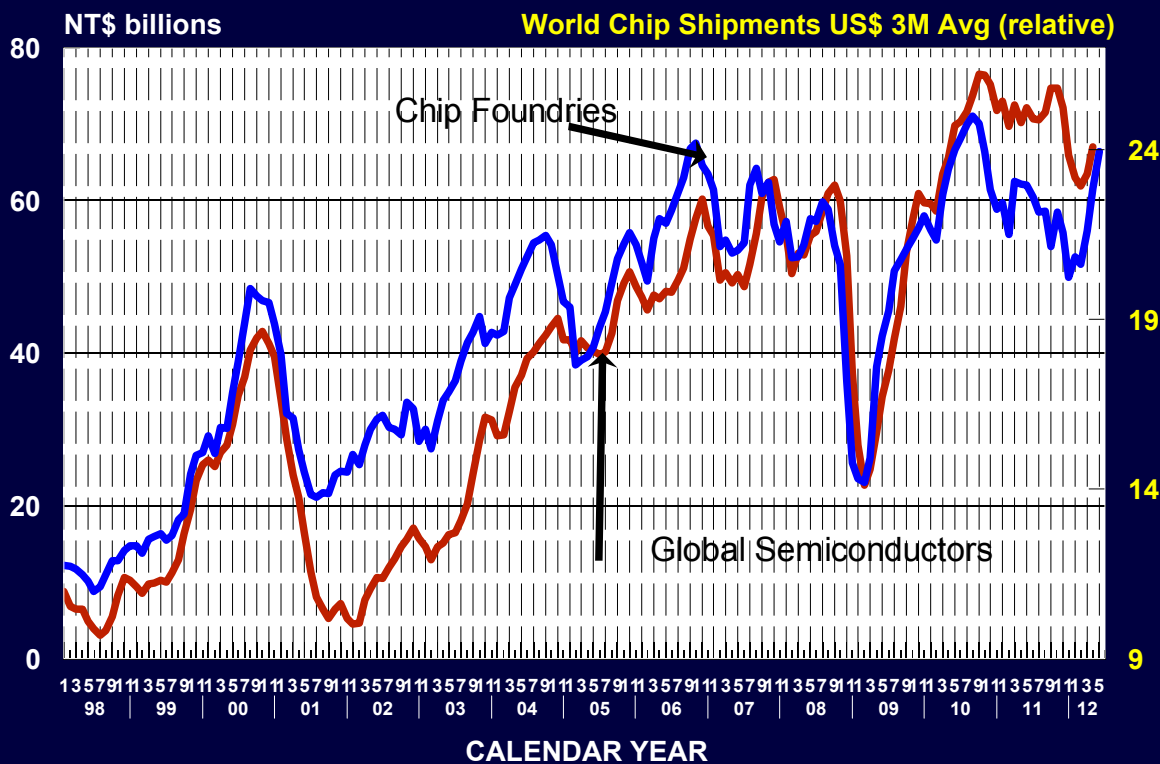
China's general purpose test equipment market is forecast to grow at a 5-year 9.4 percent CAGR from \$415.9 million in revenue in 2011 to \$713.5 million by 2017.-Frost & Sullivan
Conductive ink market will grow from \$2.86 billion market in 2012 to \$3.36 billion in 2018, with \$735 million captured by new silver and copper nanostructure inks.-IDTechEx
Agilent bought Dako for \$2.2 billion.
AimCore expanded its ITO coating capacity to 10 lines.
Airtech achieved ISO 9001:2008/AS9100 Rev C.
Arlon Material Technologies doubled its lamination capacity in Suzhou China.
Asahi Kasei is constructing a PCB dry film photoresist manufacturing plant in China with an annual capacity of 120 million sq. meters.
Csun opened a TFT LCD, PCB and semiconductor equipment plant in Taichung, Taiwan.
Datec installed a XD7600NT500 Ruby X-ray inspection system with X-Plane™ technology from Nordson DAGE.
Data I/O appointed Brian Crowley to its

Board of Directors.
Dow Chemical promoted Bhavesh Muni to Global Business Director of Advanced Packaging Technologies.
Elite Material is building a CCL fabrication plant in western China.
Hitachi High-Technologies purchased Seiko Instruments' subsidiary that specializes in analytic, measurement and observation instruments.
Indium

- acquired a new manufacturing facility in Rome, New York.
- named Robert Ploessl Ph.D. as product manager for indium, gallium, germanium and tin compounds.

Isola celebrated its centennial anniversary. Juki Automation Systems celebrated the shipment of 25,000th machine.
Kaneka Malaysia began construction of a polyimide film plant.
Koh Young delivered its 3000th 3D in-line SPI system to Mack Technologies.
Maskless Lithography named Mark Wolfenbarger North American Sales Manager.
Nordson MARCH appointed Carla Loeffler Western Regional Sales Manager.

Taiwan Wafer Foundry Composite vs Global Semiconductor Revenues



14 Taiwan Company Financial Releases & SIA

Nordson received ISO 9001:2008 certificates for adhesive dispensing equipment development and production facilities in Duluth and Swainsboro, Georgia, U.S.
Palomar Technologies expanded its Singapore-based demonstration center and spare parts depot.
Park Electrochemical appointed Joseph Milack Controller and Cindy Arroyo Assistant Controller.
Photo Stencil added a 3rd laser cutting stencil system in Malaysia.
Photocad Partners entered a partnership with Factronix to advance the SMD stencil cleaning process.
Taimide completed Phase-1 of its new

polyimide factory in central Taiwan.
Technic opened an Advanced Technical Center at its Hong Kong headquarters.
Teledyne acquired BlueView Technologies and LeCroy.
Torenko and Associates obtained its 50th SMT equipment account in Mexico.
Ultra Clean Holdings merged with American Integration Technologies.
Vitronics Soltec consolidated manufacturing and expanded operations in China.

Semiconductors & Other Components

Worldwide semiconductor shipments will rise 0.4 percent in 2012 to \$300.8 bil-

lion.- *World Semiconductor Trade Statistics*
European Semiconductor Distribution (DMASS) grew 15 percent y/y to 1.54 billion euros in 1Q'12.
IC packaging substrate shipments are expected to reach \$9.2-9.3 billion in 2012. —*Dr. Hayao Nakahara*
Fab equipment spending is forecast to increase 2 percent y/y to US\$39.5 billion in 2012 and 17 percent y/y to \$46.3 billion in 2013. —*SEMI*
Global automobile sensor market is expected to grow from \$14.1 billion in 2011 to nearly \$15.2 billion by 2012. —*BCC Research* □

GDP Growth
Constant \$ Growth Rates Converted @ Constant Exchange Rates

	2010	2011	2012	2013	2014
World	4.3	3.0	2.8	3.3	4.0
USA	3.0	1.7	2.2	2.3	3.1
EU	2.0	1.6	-0.3	1.1	2.0
Japan	4.5	-0.7	2.2	2.1	2.6
Four Tigers	8.1	3.9	3.1	4.1	4.4
China	10.3	9.3	8.0	8.4	8.2

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Electronic Equipment Production Growth
Current \$ Growth Rates Converted @ Constant Exchange Rates

	2010	2011	2012	2013	2014
World	15.3	1.4	4.7	6.3	7.4
USA	1.8	-1.5	0.2	2.5	4.4
W Europe	6.6	4.1	0.8	2.8	4.1
Japan	11.1	-18.7	1.7	5.3	4.7
Four Tigers	13.5	3.8	6.3	7.0	7.8
China	28.4	5.1	7.3	8.6	9.2

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