



ELECTRONICS MANUFACTURING SERVICES

CURRENT TRENDS

- Many commodities and components have been in short supply, up in price or both because of ongoing supply chain constraints resulting from the COVID-19 pandemic.
- Total North American printed circuit board (PCB) shipments for June 2021 were up 6.3% over June 2020.
- In general, increasingly effective inventory management has resulted in higher values for finished circuit board inventory and raw materials.
- PCB equipment values are currently steady; older assets are still marketable but decreasing in demand internationally. Since 2020, demand has increased for late-model surface-mount technology equipment.
- The automotive, medical, industrial and military markets make up most of the domestic EMS providers' revenue.

PROJECTED VALUES (12-MONTH OUTLOOK)



APPROXIMATE NET RECOVERY ON COST

70-90%

finished goods

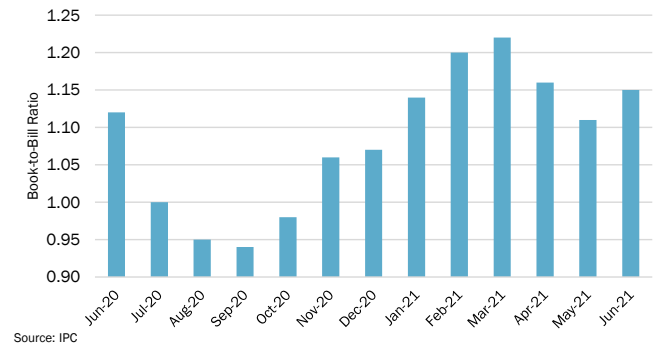
50-70%

work-in-process

40-60%

raw materials

NORTH AMERICAN PRINTED CIRCUIT BOARD BOOK TO BILL RATIO TRENDS



Source: IPC

NOTE: THIS PUBLICATION IS PROVIDED FOR INFORMATIONAL MARKETING PURPOSES ONLY. THE MATERIAL CONTAINED HEREIN SHOULD NOT BE REGARDED AS ADVICE, NOR RELIED UPON TO MAKE FINANCIAL, OPERATIONAL OR OTHER DECISIONS; NOR SHOULD IT BE USED AS A SUBSTITUTE FOR AN ASSET APPRAISAL. ACTUAL RECOVERY VALUES MAY VARY FROM TRANSACTION TO TRANSACTION AND THE RECOVERY VALUES REFERENCED HEREIN ARE FOR REPRESENTATIVE TRANSACTIONS WITHOUT REGARD TO SPECIFIC KEY FACTORS. THIS MATERIAL MAY BE REDISTRIBUTED ONLY IN ITS ENTIRETY, INCLUDING NOTICE OF COPYRIGHT. ALL RIGHTS RESERVED. ©2021 GORDON BROTHERS, LLC. REFERENCE SOURCES: IPC INTERNATIONAL, I-CONNECT007, EPS NEWS, EVERTIQ, IBISWORLD, SUPPLYFRAME, INSTITUTE FOR SUPPLY MANAGEMENT, SOURCEABILITY



**Gordon
Brothers**

GORDONBROTHERS.COM
+1.617.426.3233

ELECTRONIC COMPONENTS IN SHORT SUPPLY: The Institute for Supply Management has reported dozens of commodities in short supply, up in price, or both in short supply and increased in price in 2021. In June, prices for aluminum, copper, electronic components and assemblies, epoxy, packaging materials, plastics, resins, PVC, semiconductors and steel had all increased over the prior month. Copper and aluminum have been on the increased-price list since mid-May, and analysts expect semiconductors to be scarce through 2023.

In its third quarter 2021 Commodity Intelligence Quarterly, market intelligence platform Supplyframe reported component price hikes as high as 40% over the prior quarter. In January, chip demand unexpectedly bounced back following the downturn spurred by the pandemic, which caused supplies to drop. More recently, semiconductor production and testing have been hampered by a water shortage and infection outbreaks in Taiwan, where half of the world's semiconductors are manufactured, per reporting from Supplyframe.

Chip prices have increased between 10% and 40%, according to industry sources. "Availability is king, and some suppliers that are holding inventory are using that leverage to drive up cost," said Josh Pucci, Vice President of Sales for distributor Sourceability. Price hikes are not limited to semiconductors. Component costs have increased 10% to 15% on average since 2020, with certain products costing as much as 40% more than they did a year ago, according to electronic components distributor Avnet, Inc.

NORTH AMERICAN ELECTRONIC MANUFACTURING SERVICE INDUSTRY

SHIPMENTS INCREASE: Total North American electronic manufacturing service (EMS) shipments were up 14.3% in June 2021 over June 2020. Compared to the preceding month, June shipments grew 31.3%. June EMS bookings rose 61.3% year over year and 43.8% from the previous month, according to data from Evertiq, a news network for global electronics design and manufacturing.

"Demand for domestic electronics production remain at historic levels," said Shawn DuBravac, Chief Economist for IPC, an electronic interconnection trade association, in a July 2021 news release. "Despite record orders in recent months, monthly shipments have been declining because of supply constraints and parts availability. For the first month in several months, shipments rose in June, suggesting some shortages are starting to abate. But the market remains in disequilibrium; EMS orders are roughly 15% above 2019 levels but shipments are 13% lower compared with the same time period."

MARKET TIERS AND REGIONS DEFINE THE MARKETPLACE: The EMS industry is commonly divided into tiers by revenue: tier one has revenue over \$5 billion; tier two has revenue between \$500 million and \$5 billion, and tier three has revenue under \$500 million.

The Expert: Brad Tarnutzer



Brad Tarnutzer specializes in the appraisal of high tech machinery and equipment and inventory for Gordon Brothers. His experience includes computer/server and consumer electronics manufacturers and distributors, contract manufacturers including EMS companies, defense contractors, and solar energy firms. Read his full bio [here](#).

High-volume, low-complexity manufacturing is concentrated in low-cost regions such as China and Mexico. Most North American EMS activity focuses on low-volume, high-complexity manufacturing for industries such as aerospace, industrial, medical and military. Original equipment manufacturers' customers in these industries often choose just one EMS provider to produce their products, which can lead to relatively high recoveries for inventory.

PRINTED CIRCUIT BOARD ORDERS INCREASE: For the semiconductor industry, the ratio of new orders to completed sales is known as the book-to-bill ratio. The printed circuit board (PCB) book-to-bill ratio was 1.15 for June 2021, per data published by IPC. Total PCB shipments in North America for June were up 6.3% over June 2020. Compared to May, June shipments increased 17.3%.

Additionally, PCB bookings in June increased 19.4% year over year and 28.9% over May. PCB orders were strong in June, outstripping any month since early 2006. Because electronics supply remains constrained, companies continue to look for any available capacity. Shipments picked up significantly in June, suggesting some disruptions are starting to improve and companies are increasingly able to fulfill incoming orders, according to IPC.

INVENTORY DYNAMICS DETERMINE VALUE: Inventories are composed of finished goods, work-in-process and raw materials. Valuation methodology focuses on the assumption of a sell-back to original equipment manufacturers, based on provided orders and forecast. Other factors affecting value include component lead times, whether raw materials are proprietary or off-the-shelf, since materials more difficult to replace have higher values, and customers' reliance on the EMS provider in their supply chain. When the EMS provider is a customer's sole source, the desirability of the inventory increases.

EQUIPMENT IS VALUABLE: Equipment at EMS providers includes PCB assembly (PCBA) lines, which typically consist of screen printers, high-speed chip placement machines, reflow ovens and automated optical inspection stations. Other equipment groups can include test and measurement and metal and plastic fabrication tools. The majority of PCBA equipment at EMS facilities is manufactured by a small number of vendors. Newer models are distinguished by increased speeds and the ability to produce smaller and denser products.

Although each successive generation of equipment decreases the value of legacy equipment, the useful life of PCBA equipment is long, with a strong market for legacy equipment in developing countries worldwide. These markets include Asia, Latin America and Eastern Europe.

INDUSTRY VOLATILITY NECESSITATES CLOSE MONITORING: Many EMS providers are dependent on a few customers for a large percentage of their revenue. When one of these customers suffers a downturn and delays or cancels orders, the EMS provider is often left with excess inventory and lowered revenue in what is typically a low-margin business. Gordon Brothers highly recommends frequent reappraisals, particularly of inventory.

Additionally, other events that should trigger an inventory and/or equipment appraisal update include the opening or closing of a facility, since the asset mix is likely to change or the addition of a significant customer since "fresh" inventory typically results in increased inventory value due to lower rates of excess material when compared to legacy customers.



Gordon Brothers

GORDONBROTHERS.COM
+1.617.426.3233