Thoughts on the Past and Near-Future for U.S. Optics Manufacturing

Ever since the presidential campaign two years ago, there has been a lot of talk in the U.S. about manufacturing employment, tariffs, and trade agreements. With the complexity of global tech businesses today, though, it's hard to say how that is playing out for optics and photonics. OIDA estimates U.S. optics and photonics employment at 385,000—from systems to components—but accurate data to show a year-by-year trend is not available. Yet, we can understand a lot by looking across other sectors, which are likely behaving similarly. The figure below shows U.S. employment in the manufacturing of communication equipment, in red. The telecom bubble added tens of thousands of jobs starting around 1995, until the bubble collapsed around 2001-2002. What's striking is the background trend, in blue, of jobs moving abroad, particularly to Asia. Today the U.S. employment in this category is only 86,000, about 1/3 of the employment from 20 years ago.

The next figure shows U.S. manufacturing overall over the last two decades, in terms of employment and shipments, each compared to 1998. Overall manufacturing employment (red) also reset to a lower level as manufacturing jobs went offshore. It has just recovered to the level of December 2008, at 12.7 million. It may grow, but it's unlikely to return to historical highs.
On the other hand, U.S. manufacturing shipments, unadjusted for inflation (top, solid green), are currently at an all-time high at US$ 5.9 trillion (2018 annualized). It shows long-term growth, punctuated by recessions. When adjusted for inflation, manufacturing shipments appear approximately steady over the last 20 years, but still faring better than employment has.

Adjusted manufacturing shipments remained flat as foreign competition gained on U.S. manufacturers and the U.S. economy shifts more to trading in services. The U.S. economy has also been shifting to higher value products (such as microprocessors), while many lower value products (such as clothing) moved offshore. Factory automation is another factor.

Economists warn of signs that the economy could slow by 2020, or sooner. The trade war could hurt business confidence. Overextended government budgets and corporate debt could trigger another debt crisis. While it’s hard to generalize across many companies and their respective customers, U.S. optics and photonics suppliers are faring well so far this year. Let’s hope that some of the uncertainty lifts for smooth growth going forward.

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