

Made in America: The Facts about Semiconductor Manufacturing

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A common misconception, even among knowledgeable policymakers and industry stakeholders, is that semiconductor manufacturing has gone the way of other electronics that are manufactured mostly overseas. This is false. In fact, U.S. semiconductor companies do the majority of their manufacturing in the United States, and semiconductors are one of America's top manufactured exports, behind only aircraft and automobiles. The information below demonstrates the United States' strong and vital semiconductor manufacturing presence.

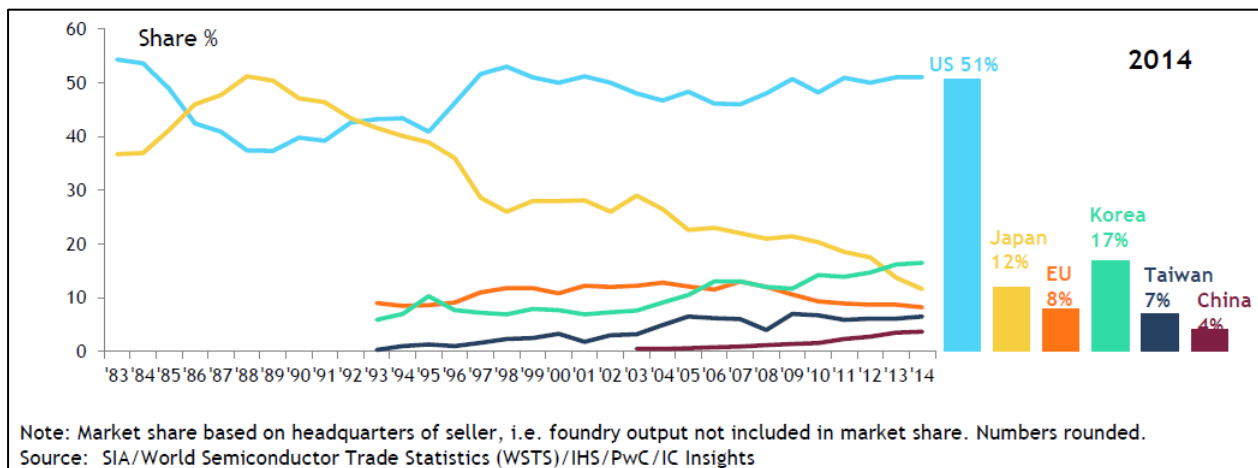
Key Takeaways

1. U.S. semiconductor companies lead in global semiconductor market share, accounting for 51 percent of total global semiconductor sales in 2014.
2. U.S. semiconductor companies do most of their manufacturing (52 percent) in the United States.
3. Semiconductors are one of America's top manufactured exports, behind only aircraft and automobiles.

U.S. Semiconductor Companies Lead the Global Market

The U.S. semiconductor industry holds a dominant position in terms of global market share. Figure 1 tracks leading countries by their industries' semiconductor market share. Sales from U.S. semiconductor firms captured 51 percent of total global semiconductor sales in 2014, far and away the greatest share of any single country. The next-highest country was Korea, with 17 percent global market share, followed by Japan, with 12 percent.

Table 1: The U.S. Semiconductor Industry Has Over Half the Global Market Share



Historically, the U.S. semiconductor industry has maintained global leadership in making and selling semiconductors for many years. In fact, the last time the U.S. semiconductor industry did not lead in global semiconductor sales was over two decades ago in 1992. And since 1997, the U.S. semiconductor industry has dominated global market share with roughly 50 percent market share annually. This long-term sales dominance is significant, because it contradicts the false notion that the U.S. semiconductor industry succumbed to foreign competition long ago and no longer makes semiconductors.

It should be noted that the U.S. semiconductor industry did experience a significant loss in market share from 1982 to 1988 but managed to convincingly regain its leadership position. In the early 1980s, U.S.-based producers held more than 50 percent of worldwide semiconductor sales. Due to intense competitive pressure from Japan-based firms, the effect of illegal "dumping," and a severe industry recession in 1985 to 1986, the industry lost a total of 19 worldwide market share percentage points. The U.S. industry was in an existential crisis.

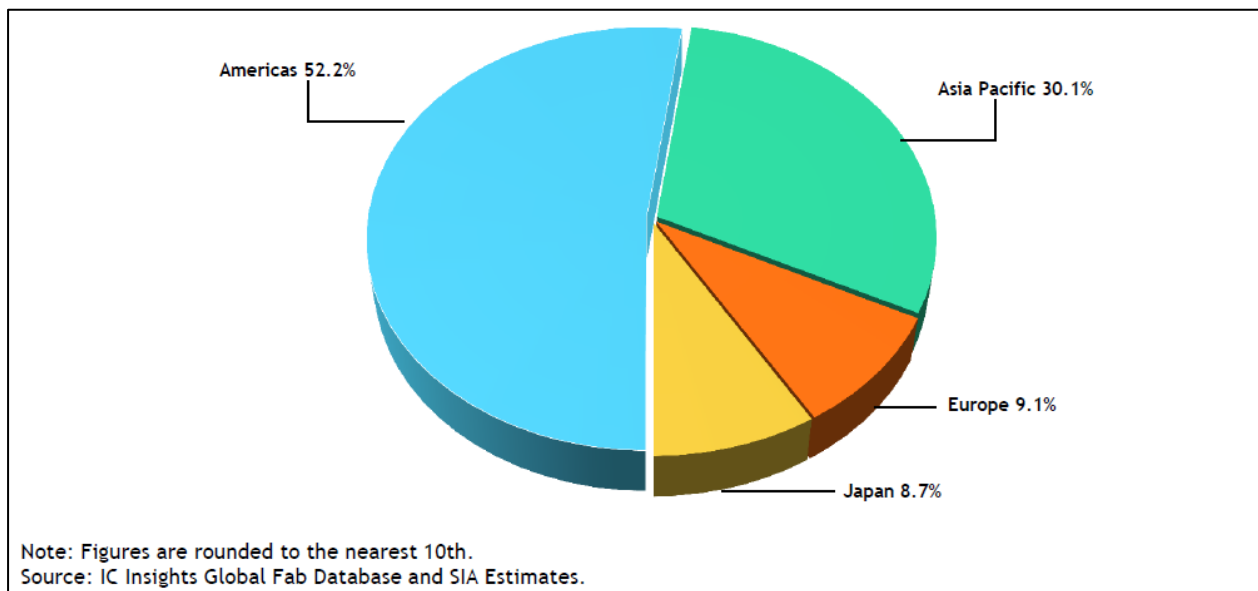
Through strong coalition building and the enactment of new and effective policies, the U.S. industry rebounded strongly in the late 1980s and early 1990s. U.S. semiconductor firms have maintained their competitive edge in

microprocessors and other leading edge devices, and it has even gained in memory in recent years. Strong growth in these sectors has enabled the industry to increase its market share to over half of the world market.

U.S. Semiconductor Companies Do Most of Their Manufacturing in the United States

The United States is where U.S. semiconductor companies conduct the majority of their manufacturing. Figure 2 shows the share of U.S. semiconductor firm front-end semiconductor fabrication capacity by location. Fifty-two percent of all front-end semiconductor fabrication capacity of U.S.-headquartered companies is located in the United States. This fact may surprise many who might falsely assume that semiconductors, like many other electronics, are not made in the United States anymore. While such a view might be accurate when applied to many other electronics industries, especially ones in which significant offshoring of manufacturing has occurred over many years, it is not true when applied to the U.S. semiconductor industry.²

Figure 2: Percent of U.S.-Headquartered Firm Front-End Semiconductor Wafer Capacity by Location



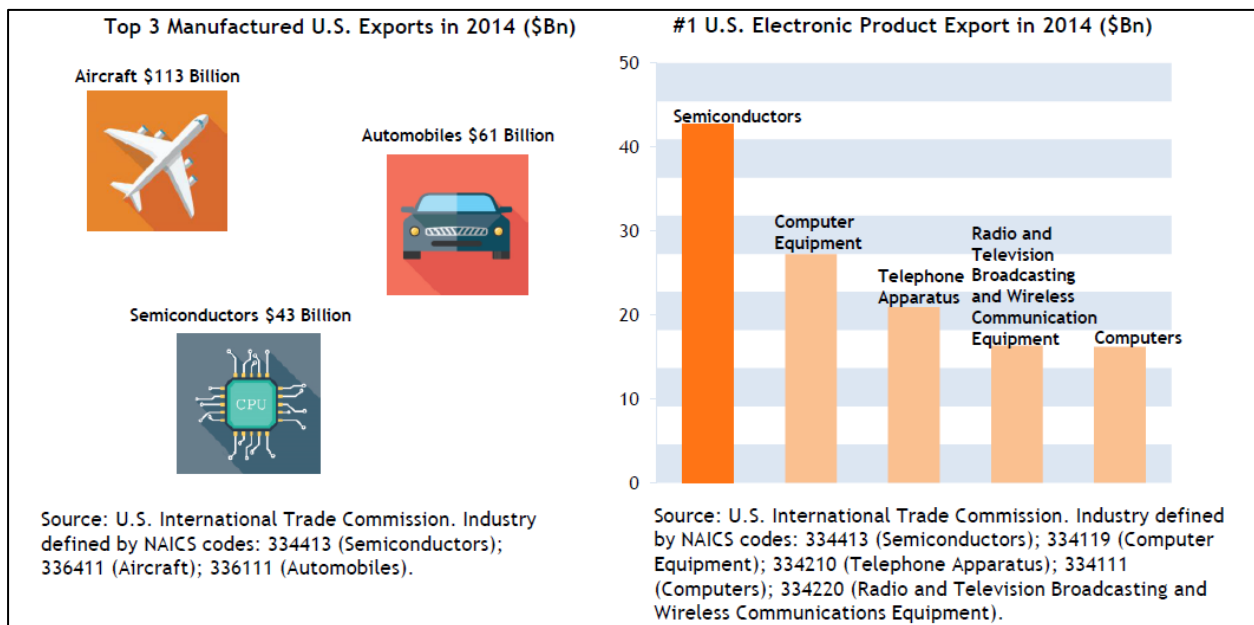
Several reasons account for why the U.S. semiconductor industry still maintains a majority of its manufacturing in the United States, while other industries have moved manufacturing outside of the United States. First, the United States is one of the best, if not the best, IP-secure environments in the world. The semiconductor industry is the most highly R&D intensive industry in the world, and semiconductor manufacturing must be done in a secure IP environment.³ Why risk going overseas to establish manufacturing in less IP-secure environments when your firm is

headquartered in one of the most IP-secure environments in the world? Also, the United States has one of the world’s most talented workforces to fill challenging manufacturing jobs.

Semiconductors are One of America’s Top Manufactured Exports

U.S. semiconductor companies sell most of the world’s semiconductors and do most of their front-end fabrication in the United States, which leads to this little-known fact: semiconductors are perennially a top-three manufactured U.S. export product, along with planes and automobiles. Figure 3 shows how U.S. semiconductor exports rank in terms of electronic products and manufactured products. Besides ranking as a top three manufactured U.S. export product, semiconductors are the top ranking U.S. electronic product export, outranking such products as computers and telephones.

Figure 3: Semiconductors are Top Electronic Product and Manufactured Product U.S. Exports



The U.S. semiconductor industry exported over \$40 billion worth of semiconductors in 2014, largely because 82 percent of U.S. semiconductor industry sales in 2014 were to customers outside of the United States. And because of relatively free and open markets, which SIA has worked very hard to secure over the past 40 years, U.S. semiconductor manufacturers are able to export their products from the United States with little added costs in terms of foreign tariffs and other trade barriers.

Summary

The United States has a strong and vibrant semiconductor manufacturing presence. Unlike other U.S. industries, the U.S. semiconductor industry has chosen to maintain the majority of its manufacturing footprint in the United State

ENDNOTES

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² It should be noted that the majority of the companies that comprise the U.S. semiconductor industry are globally oriented firms that maintain a mix a production both in the United States and abroad, in order to satisfy a truly global market. As an industry that was created in the 1950s in the United States and was responsible for growing modern-day Silicon Valley in California, it is inevitable that any establishment of a manufacturing presence outside of the United States would be a net decrease from the complete manufacturing presence from decades ago. Nevertheless, the long-term trend of the U.S. semiconductor industry diversifying its production globally does not diminish the fact that it continues to maintain the majority of its front-end fabrication production in the United States, a claim that few U.S. electronics industries can still make.

³ According to the EU Industrial R&D Investment Scorecard, the U.S. semiconductor industry ranked as the most R&D intensive U.S. industry in 2014 as measured by R&D spending as a percent of sales. In 2014, the U.S. semiconductor industry spent 18 percent of total sales on R&D. This share is on average with the annual shares that U.S. semiconductor companies must spend simply to participate as a viable company in the industry. For more information, please see SIA's 2015 Industry Factbook, slide 19 at: <http://www.semiconductors.org/clientuploads/Industry%20Statistics/2015%20Factbook/2015%20Factbook%20-%20Complete%20Updated%20-%2008062015.pdf>.