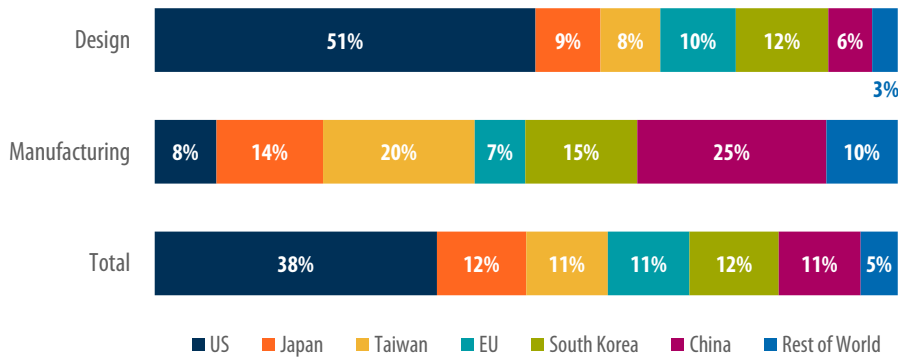


Progress In Semiconductor Self-Sufficiency

This week’s “Three on Thursday” examines the semiconductor industry and American progress in independent chip manufacturing. Rising political tensions and supply chain issues pulled back the curtain on the entangled industry back in 2020. Two years later, demand surges for AI and data centers put semiconductors even further under the microscope. As a result, many countries (including the US) passed legislation and encouraged investment in chip manufacturing, with the goal of bringing as much of the semiconductor supply chain within their own borders as possible. Now, the biggest projects are finishing up, and the US is getting a glimpse of its future position in the semiconductor industry. For more insight on where the US is situated, see the three charts below.

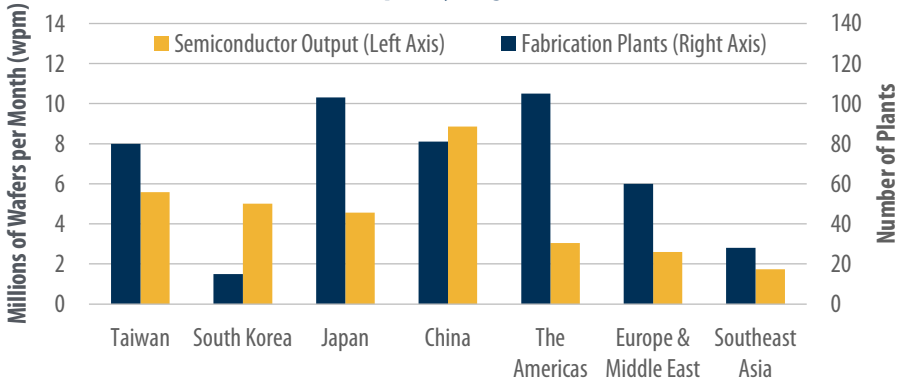
Semiconductor Value Added by Supply Chain Segment and Country



Source: Semiconductor Industry Association, Boston Consulting Group, First Trust Advisors. Most recent data from 2022.

There are two distinct processes involved in making a semiconductor, which fractures the industry into two segments: design and production. Many companies will either design or manufacture chips, but only the big names can do both. Due to higher labor and construction costs, US companies have primarily designed chips at home and outsourced the production overseas. And because chip value is heavily weighted to design—accounting for about 60% of total value—the US is the single largest contributor to the industry’s value and innovation. However, without manufacturing there would be no semiconductors, keeping China and Taiwan as important players in the industry.

Global Fabrication Plants and Output by Region



Source: World Population Review, SEMI, First Trust Advisors. Data year 2024. The Americas includes the continents of North and South America.

Together, North and South America (the Americas) are home to the largest number of semiconductor fabrication plants in the world with 105 plants (95 are in the US), followed by Japan (103), China (81), and Taiwan (80). While the US has a large number of plants, it is significantly behind the world leaders in total chip production. Why is that? The majority of plants in the US are small and specialized for research and development purposes, compared to the “mega-fabs” of China, Taiwan, and South Korea. The Americas produced 3.0 million wafers (semiconductor units) per month (wpm) last year, fifth most in the world but only a little more than a third of China’s output (8.9 million wpm). On top of that, China’s chip output is expected to grow 14% in 2025, compared to just 5% in the Americas. That said, China has a long way to go before completely dominating the industry. Of the advanced process semiconductors (chips for AI, supercomputers, etc.), Taiwan alone is responsible for 68% of the market—a concentration that many countries are still trying to unwind.

Current and Planned Fabrication Plants in the US

	Current Number of Fabs	New Fab Projects Planned or Under Construction	Estimated Total Project Investment (\$M)
Arizona	8	3	\$165,000
New York	8	3	\$115,150
Texas	14	2	\$77,000
Idaho	3	1	\$50,000
Ohio	1	1	\$28,000
North Carolina	3	1	\$6,000
Kansas	2	1	\$1,900
Indiana	5	3	\$270
California	23	2	\$121
Other States	49	5	\$11,069

Source: Semiconductor Industry Association, First Trust Advisors. Data through 7/18/2025.

In addition to the nearly \$53 billion from the CHIPS Act, the US has seen more than \$600 billion of private investment into semiconductor manufacturing since 2020, resulting in 22 new fabrication plants currently being planned or under construction. The wave of investment that began in 2020 is finally starting to materialize: last spring Taiwan Semiconductor began mass production at its first advanced semiconductor “mega-fab” in Arizona, which will produce 20,000 wpm. Intel finished construction on a \$20 billion Arizona plant within the past month, expecting to increase chip output by 30,000 wpm. Micron will begin production at a \$50 billion fab in Idaho by 2027, only to be shadowed by their \$100 billion fab in New York, which expects to produce a quarter of all US semiconductors by 2030. Projects like these are projected to triple US chip production capacity and grow the US market share for advanced semiconductors from 0% in 2022 to 28% in 2032.

This report was prepared by First Trust Advisors L.P., and reflects the current opinion of the authors. It is based upon sources and data believed to be accurate and reliable. Opinions and forward looking statements expressed are subject to change without notice. There can be no assurance any estimates will be achieved. This information does not constitute a solicitation or an offer to buy or sell any security.