

SPARKING INNOVATION

How Federal Investment in Semiconductor R&D Spurs U.S. Economic Growth and Job Creation

For decades, federal government and private sector investments in semiconductor research and development (R&D) have propelled the rapid pace of innovation in the U.S. semiconductor industry, making it the global leader and spurring tremendous growth throughout the U.S. economy. This report analyzes the impact of federal investments in semiconductor R&D on U.S. economic growth, job creation, and our country's technology leadership. The report reaches the following key findings:

FINDING 1. FEDERAL GOVERNMENT FUNDING FOR SEMICONDUCTOR R&D DRIVES ECONOMIC GROWTH AND PROMOTES AMERICA'S GLOBAL TECHNOLOGICAL LEADERSHIP

EACH ADDITIONAL DOLLAR INVESTED IN FEDERAL SEMICONDUCTOR RESEARCH INCREASES U.S. GDP BY \$16.50.

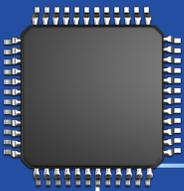


Federal government funding for semiconductor R&D offers an outsized return on investment through huge benefits across the entire economy. We find that each dollar invested by the federal government into semiconductor research has increased overall U.S. gross domestic product (GDP) by \$16.50.

The multiplier effect of federal government investments in semiconductor R&D is due to the unique role of semiconductors in the modern, technology-driven economy. Advances in semiconductor technology have a positive impact on nearly every sector, including automotive, agriculture, bio-medical, and defense.

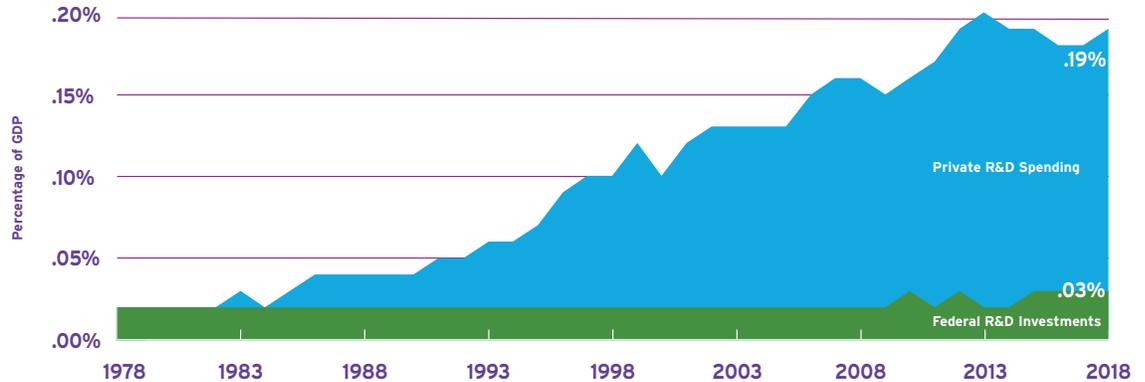
In addition, federal investments in semiconductor R&D incentivize, or "crowd in," greater private sector R&D investments and, in turn, spark innovation in the semiconductor industry and the many downstream industries enabled by semiconductors. These innovations lead to growth in the broader U.S. economy and promote America's global technology leadership.

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FINDING 2. FEDERAL GOVERNMENT FUNDING FOR SEMICONDUCTOR R&D HAS LAGGED BEHIND PRIVATE SECTOR INVESTMENTS

AS A PERCENTAGE OF GDP, FEDERAL SEMICONDUCTOR AND RELATED RESEARCH HAS REMAINED FLAT OVER THE PAST 40 YEARS, WHILE PRIVATE INDUSTRY INVESTMENT HAS INCREASED 10-FOLD.



Federal government investments in semiconductor R&D play a critical role in complementing existing private sector R&D and stimulating greater levels of private investment in new R&D. Unfortunately, annual federal investments have increased at a much slower rate than private sector investments.

Forty years ago, federal funding for semiconductor R&D was more than double private R&D funding. Today, the story is far different, as the private sector invests 23 times more in direct semiconductor research than the federal government. In 2019, private sector funding for semiconductor R&D totaled nearly \$40 billion, while the federal government spent only \$1.7 billion on core, semiconductor-specific R&D (along with an additional \$4.3 billion in research in semiconductor-related fields).

FINDING 3. ADDITIONAL FEDERAL FUNDING FOR SEMICONDUCTOR R&D WOULD FURTHER INCREASE U.S. ECONOMIC GROWTH, CREATE NEW JOBS, AND HELP AMERICA LEAD IN THE TECHNOLOGIES OF THE FUTURE

As our economy becomes increasingly reliant on technology, chip innovation is becoming more complex and more expensive. Increased federal semiconductor R&D investments are required to sustain U.S. leadership in semiconductor technology and the key technologies of the future, including artificial intelligence, quantum computing, and advanced wireless networks.

We find that tripling federal investments in semiconductor-specific research (from \$1.7 billion to \$5.1 billion by 2024) and doubling federal investments in semiconductor-related research (from \$4.3 billion to \$8.6 billion by 2024) would:

- Add \$161 billion to U.S. GDP by 2029;
- Create nearly 500,000 more jobs by 2029;
- Maintain U.S. technology leadership in the face of growing global competition.



INCREASING FEDERAL SEMICONDUCTOR RESEARCH INVESTMENTS WOULD:



ADD \$161 BILLION TO U.S. GDP



CREATE HALF A MILLION MORE JOBS



MAINTAIN U.S. TECHNOLOGY

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In short, increased funding of semiconductor research is a sound investment for the federal government and yields significant returns for the economy as a whole.