



MAJOR CHALLENGES FACING U.S. SEMICONDUCTOR INDUSTRY RIGHT NOW

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INTRODUCTION

The U.S. semiconductor industry calls for bold federal policies to sustain the country's leadership in chip technology and harness transformative technologies of the future.



INTRODUCTION

In the United States, the semiconductor industry is facing critical challenges, especially in terms of leadership. Foreign industrial policies combined with several other market forces are prompting the shift of new chip production offshore. The US is currently one of the world leaders in chip manufacturing, equipment, and design. If the trend of offshoring continues due to the rising costs, it will soon erode the country's productivity and growth to a large extent. As governments in Asian and European countries make aggressive efforts to coordinate and fund research in both product and process technologies, the U.S. is in the dire need to strengthen the growth of their semiconductor industry.



Why does the semiconductor industry matter for the U.S.?

It is vital for the U.S. economy to have a robust and growing semiconductor industry. The semiconductor industry has a powerful impact on the productivity of the U.S. economy. Improved information technologies and the semiconductor industry's productivity gains are integral for the United States. In manufacturing, the semiconductor industry plays a vital role in terms of enhancing output and the overall value-add in the U.S. economy. Taking into consideration the semiconductor manufacturing's prominent role in the U.S. economy as a source of value-added production, high-wage jobs, productivity gains, and wage growth, giving increased attention to the welfare of the industry is clearly in the nation's interest.



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Key challenges facing the U.S. semiconductor industry

Declining labor pool

The number of skilled labor available in the United States is already shrinking. The number of graduates every year in the US in subjects such as engineering has been static when compared to countries like China, Japan, and India. Although several foreign-born engineers are benefiting from quality education in the U.S., attracting skilled labor is becoming one of the toughest tasks for the American semiconductor industry. This is primarily because countries like China and Taiwan have deployed tax policies to enhance the effectiveness of working in their high-tech clusters. Engineers who work in strategic fields such as the semiconductor industry are also given several other incentives and benefits by countries like China and Taiwan.



Initiative shifting abroad

Contradictory to the U.S. reticence in providing R&D support are the trends in Europe and East Asia. Here, the national and regional programs are rapidly expanding in size and number as governments signal the importance, they attach to their semiconductor industries and seek to address their growing technical challenges with considerable amounts of direct and indirect funding. Furthermore, countries like Germany and France are contributing to research programs at the national level and seeking chip-related foreign investment. Such measures taken by other countries around the globe requires a vigorous and constructive U.S. policy response.

Impact of foreign government policies

The impact of foreign government policies is real. Although the prospect of selling into China's domestic market provides the long-term momentum to site manufacturing capacity there, it is the immediate impact of tax incentives, particularly the VAT rebate, that is so rapidly redrawing the map for semiconductor production. There is very little gap between Taiwan and China in investment and operating costs. The policy which amounts to imposing a tariff on foreign-made wares will be effective; at least until it is condemned by the World Trade Organization. But as long as it holds, China's pull on new production will be powerful. By creating a price umbrella for semiconductors produced in China, the policy gives domestic manufacturers the option of either raise profits by increasing prices or undercut imports to ensure greater capacity utilization and consequently lower the unit costs.

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How to overcome challenges in the US semiconductor industry

Regular assessments

A comprehensive assessment should be undertaken by government or industry groups to determine the challenges facing the U.S. semiconductor industry, including the scope and impact of current measures by other governments in this sector. Information relating to other governments should include the level of expenditure and the impact of these policies on industries such as the U.S. defense industrial base.

Increase R&D funding

The productivity gains driving the U.S. economy are largely driven by the application of information technologies. These technologies, in turn, are based to a significant degree on continued progress in semiconductors. Yet the federal government cut support for physics, chemistry, and engineering through much of the 1990s. Although the trend now seems to be improving, the lag effects of these cuts, as well as their cumulative impact on university research and the recruitment of new researchers, scholars, and students, are a major cause for concern. Increasing R&D funding in universities for disciplines related to the semiconductor industry would be one effective way to help anchor the industry in the United States.

Tax exemptions

Countries such as China and Taiwan have substantial tax exemptions in place. As a result, their scope and effective lower rates are unlikely to be matched in a U.S. context. Congress can, however, take some concrete steps to retain manufacturing by U.S. firms and their tax payments within the U.S. borders. Measures can be taken to reduce the schedule for depreciation allowances from five years to three years, which would more accurately reflect the actual life of semiconductor manufacturing equipment. More broadly, increasing U.S. demand through tax incentives for investments in IT equipment and its manufacture could help foster growth and productivity in the U.S. economy while helping to anchor manufacturing here.

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