

Research on the Cluster Construction of China's Semiconductor Industry Chain based on Dual Circulation Strategy

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Abstract: Based on the double circulation theory, this paper investigates and analyzes how to reconstruct and upgrade China's semiconductor industry chain under the background of deglobalization, and puts forward some suggestions for the reconstruction of China's semiconductor industry chain.

Keywords: Semiconductor Industry chain; Deglobalization; Dual circulation strategy

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1. Introduction

The rapid development of China's economy threatens the interests of developed capitalist countries such as Europe and the United States. The semiconductor industry is at the core of China's chip industry. Giving priority to the layout and development of the semiconductor industry can help improve the country's comprehensive scientific and technological strength and drive the growth of the industry scale and structural upgrading of other related industries, which is vital to the sustainable development of China's economy. China should make full use of and give full play to the role of the government, provide financial support and policy support for the development of semiconductor industry, and encourage the development of semiconductor-related industries and the cultivation of scientific and technological talents. Guided by the goal of high-quality development, we can tap internal demand, expand the scale of domestic semiconductor market, and form a virtuous circle of domestic economy.

2. Solutions to the reconstruction of domestic semiconductor industry

2.1 Micro environment

Micro enterprises should make full use of domestic market resources, understand the characteristics of domestic market demand, and formulate corresponding enterprise strategies. At the same time, we should cultivate diversified competitive subjects in the industry, actively cultivate private enterprises, start-ups and state-owned enterprises to enter the market, form diversified competitive subjects, give full play to the unique advantages of various subjects, compete with each other in the market, and exchange technology and experience, so as to keep the enterprises participating in the domestic cycle dynamic and dynamic.

2.2 Macro environment

In the macro environment, the government should unwaveringly encourage, support and guide the development of semiconductor enterprises, continue to promote institutional innovation, actively create a good development environment at home and abroad, and regulate the domestic and international double cycle through relevant government policies, including tax reduction and exemption policies, so as to reduce the economic burden for enterprises; Talent training policy to provide talent support for enterprises; Investment and financing policies to broaden economic sources for enterprises; Intellectual property policies protect the intellectual property rights of innovative technologies of enterprises, and give birth to the endogenous driving force of the cycle of semiconductor domestic and international industrial chain through relevant policies to promote the development of semiconductor industry.

In terms of industrial environment, the early Chinese semiconductor industry generally faced the problem of insufficient funds, especially in the era of planned economy, which affected the development of industrial R & D activities. However, we should still strengthen fund-raising, adopt diversified fund-raising methods, and broaden the fund-raising channels of the semiconductor industry.

In the international environment, we should bypass the long arm jurisdiction of the United States. According to the data released by IC insights, the average annual growth rate of China's chip imports has been close to 10% since 2013. Between 2018 and 2020, China's semiconductor imports have been maintained at the level of US \$300 billion. Even if companies in the domestic semiconductor industry are fully put into operation, there will still be a large part of the gap in the Chinese market to be filled. In order to suppress China's high-tech industry, the United States does not hesitate to give up the Chinese market and lose the interests of local companies. However, due to the country's strong support for Huawei and Huawei's solid scientific research strength, the

United States cannot apply the method of splitting and merging Alstom to Huawei. Although the United States agreed to supply some enterprises to China, only American companies such as Qualcomm and Intel were previously licensed by the Ministry of Commerce, while enterprises in other regions such as Japan and South Korea were not licensed. In this way, the United States tries to cut off other chip sources in China and monopolize the Chinese market. However, on September 18, 2019, both Infineon and ARM, the German chip giants, said that most of their chip supply to China would not be affected by the export restrictions of the United States, because the core intellectual property rights were registered in countries and regions such as Germany and Australia, which also prevented the intervention of the “long arm jurisdiction” of the United States. On the other hand, we can import products from the semiconductor industry within the jurisdiction of non-U.S. and take measures such as introducing technologies from non-U.S. regions, cooperating with them to establish research institutions and jointly run scientific research centers in the key links of the semiconductor industry chain, so as to accelerate the localization construction of China’s semiconductor industry chain.

3. New opportunities for domestic semiconductor industry chain

3.1 Domestic market demand and supply are still uncoordinated

After the suppression of China’s semiconductor industry, whether China can independently produce advanced chips has become an important issue. At present, China’s semiconductor industry needs to increase R & D and output, and more young enterprises need to enter, gradually expand the share of China’s domestic semiconductors in the domestic market, realize the domestic cycle of semiconductor equipment, and reduce the dependence of domestic semiconductor demand manufacturers on foreign semiconductor related products.

3.2 Strong support from national policies

In 2016, the second upgrading and transformation of “909” project was launched. On August 4, 2020, the State Council issued several policies to promote the high-quality development of integrated circuit industry and software industry in the new era, in which the most concerned fiscal and tax policies put forward the tax reduction and exemption policies for integrated circuit related enterprises. With regard to the shortage of talents in the domestic semiconductor industry, the State encourages colleges and universities to further strengthen the construction of integrated circuits and software majors in colleges and universities, and accelerate the construction of first-class disciplines of integrated circuits. Domestic enterprises actively respond to national policies, which is also conducive to the development and growth of domestic semiconductor industry chain.

3.3 Breakthrough of domestic semiconductor in the era against the background of Deglobalization

The domestic semiconductor industry needs long-term development if it wants to catch up with foreign leading enterprises and build a double cycle structure in which the semiconductor industry is dominated by domestic cycle and supplemented by foreign cycle. This requires more solid experience accumulation and more solid basic research of domestic manufacturers, which is also more conducive to the profits of young manufacturers. The long-term research on semiconductor basic technology will promote the breakthrough of core technology, and the mastery of core technology will solve the severe problems faced by Chinese enterprises under the background of deglobalization. Finally, we can gradually improve the innovation ability of enterprises and compare with foreign leading enterprises.

4. Conclusion

Since the outbreak of COVID-19 in early 2020, domestic consumption and investment exports have declined, and the pressure of employment has also increased. However, the semiconductor industry grew against the market, because China still has a huge consumer market for semiconductor products. Therefore, it is necessary to ensure the stable supply of domestic semiconductor industry chain. At the same time with the outbreak of the epidemic, there is the further contraction of us technological constraints on China. Under this severe economic situation, China’s semiconductor industry should take the lead in accelerating the construction of domestic circulation. Enterprises in the industrial chain should strengthen technical cooperation and exchange, step up core technology research, ensure production and ensure that the semiconductor industrial chain is not broken. At the same time, actively participate in the international cycle. No industrial chain can develop only by relying on domestic resources. To fight a protracted war, it is necessary to contact foreign advanced semiconductor enterprises, carry out industrial cooperation, absorb advanced experience, and realize the reconstruction and continuous upgrading of the semiconductor industrial chain.

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