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The Impact of Fiscal Policy on China's High-End Manufacturing Industry

Jiasong Liu *

Chongqing Luneng Bashu Middle School, Chongqing, China

* Corresponding Author Email: jasonliu@ldy.edu.rs

Abstract. In recent years, with China facing increasing technological embargoes and sanctions, the Government has started to prioritize the development of high-end manufacturing as a key driver of economic growth and technological leadership, especially in the current post-epidemic era. In this background, fiscal policy has become an important tool for the Chinese government to shape and promote the development of high-end manufacturing. This paper examines the impact of various fiscal measures, including infrastructure investments, R&D expenditures, tax incentives and subsidies, on the growth and global competitiveness of China's high-end manufacturing sector. Meanwhile, the research provides an in-depth analysis of specific cases, such as the progress made by the semiconductor industry under the "Made in China 2025" initiative, to illustrate the effectiveness of these interventions. The results show that these interventions have led to significant positive outcomes, such as increased innovation and production capacity. However, it also explores the challenges posed by the misallocation of capital, which can undermine the optimal allocation of resources. Therefore, the research concludes that while fiscal policy has played a key role in promoting the development of high-end manufacturing in China, continuous strategic planning is essential to ensure sustainable growth and sustained technological progress.

Keywords: Fiscal Policy; High-end Manufacturing; Technological Innovation; Economic Growth.

1. Introduction

At present, China's high-end manufacturing sector has become an important part of the country's economic development, contributing significantly to technological innovation, export growth and overall industrial modernization. As China transitions from a labor-intensive economy to an advanced manufacturing and technology-driven economy, the government is placing increasing emphasis on supporting this sector through fiscal policies. These policies include tax incentives, subsidies, and targeted investments aimed at increasing productivity, encouraging R&D, and promoting the global competitiveness of China's high-end manufacturers.

However, the effectiveness of these fiscal measures is debatable, especially against the backdrop of a global economy that is facing challenges such as trade tensions, shifting demand patterns, and rampant pandemics. In addition, the industry faces internal challenges, including misallocation of capital and varying degrees of regional development, which can hinder the overall growth trajectory. Therefore, it is critical for the high-end manufacturing sector to understand the impact of government fiscal policy, as it can help provide insights into how it can be utilized to sustain and accelerate the sector's growth and ensure that firms remain competitive in the marketplace, as well as China as a whole in the global marketplace.

Many studies have examined the impact of fiscal policy on various sectors of the Chinese economy, especially in the context of the major challenges facing the global economy. Liu et al. used a structural vector autoregressive (SVAR) model to investigate the interaction between monetary and fiscal policy and its impact on China's macroeconomic dynamics. Their study found that coordinated monetary-fiscal policies are more effective in stabilizing the economy, reducing inflation and supporting growth than independent policy actions, highlighting the importance of policy coordination [1]. Xue et al. analyzed Chinese firm-level data using the difference-in-differences (DID) method to assess the effectiveness of Chinese fiscal and monetary policies during the Great Recession.

The study concludes that these policies were critical in sustaining firm performance during the crisis, with the impact of fiscal measures being more pronounced than that of monetary policy [2]. Zhao et al. provide an empirical analysis of government support for China's high-end manufacturing industry during the COVID-19 pandemic, focusing on various forms of financial assistance such as subsidies and tax incentives. Their findings suggest that these policy measures were effective in stabilizing the high-end manufacturing sector and ensuring that it continued to innovate and produce despite the economic challenges posed by the epidemic [3].

More studies have delved into the specific impacts of fiscal policy on China's high-end manufacturing and other strategic industries. Combining theoretical research and empirical data, Xu and Ge provides a comprehensive analysis of the drivers of sustainable development of China's high-end manufacturing sector. They argue that innovation, policy support and international cooperation are critical to the long-term success and global competitiveness of China's high-end manufacturing industry [4]. Xiong et al. use empirical data and econometric models to explore the impact of fiscal policy on the export performance of the photovoltaic industry and high-end equipment manufacturing industry. Their study shows that targeted fiscal policy and tax incentives can significantly enhance the global competitiveness of these industries and promote sustainable export growth [5]. Ding et al. investigate the relationship between fiscal policy volatility and capital mismatch in China and find that fiscal policy volatility leads to capital mismatch and hinders the efficient allocation of resources. They concluded that stabilizing fiscal policy is essential to mitigate these inefficiencies and achieve more optimal economic outcomes [6].

In addition, a number of studies have explored the broader implications of fiscal policy in China. Liu, in his 2009 empirical analysis of the impact of the global financial crisis on China, emphasized that strong government interventions, including fiscal stimulus and monetary easing, can effectively mitigate the adverse impacts of the crisis on GDP growth, trade, and employment, and thus support economic recovery [7]. Wang analyzed the role of government and industrial policies in shaping China's economic trajectory toward its long-term goal of achieving 2049, emphasizing that strategic government intervention is critical to sustaining growth and addressing emerging challenges [8]. Lin's exploration of the relationship between fiscal policy and China's economic growth in the BRICS economies suggests that proactive fiscal policy, particularly through infrastructure investment and social welfare programs, has been instrumental in sustaining China's rapid expansion and positioning it as a leading global economic power [9]. Finally, Wong's study of the evolution of China's fiscal policy and central-local relations over three decades highlights the continuing challenges in fiscal decentralization and intergovernmental fiscal dynamics. Despite ongoing reforms, Wong notes that significant central government control continues to create tensions and inefficiencies within China's fiscal framework [10].

Emphasizing the critical role of fiscal policy in shaping China's high-end manufacturing and broader economic sectors, these studies reveal how targeted government intervention and coordinated policy efforts can enhance global competitiveness and address domestic and global economic challenges.

As mentioned above, previous studies have emphasized the important impact and economic growth contribution of fiscal policy on China's high-end manufacturing and some other related core industries, especially in challenging times for the global economy. However, there is still a gap for more targeted research and studies on how specific fiscal measures, such as tax incentives, subsidies, and infrastructure investments, directly affect the development and competitiveness of China's high-end manufacturing sector. This paper aims to fill this gap by examining the effectiveness of these fiscal policies in promoting innovation, sustaining growth and addressing the challenges facing the industry.

2. The Influence Path of Fiscal Policy on the Manufacturing Industry

Fiscal policy played a crucial role in shaping the economic landscape, particularly the manufacturing landscape. In China, the Government has implemented various fiscal measures to promote high-end manufacturing, which is seen as a key driver of economic growth and technological progress. These

policies impact and subsidize the manufacturing sector in several ways, including through government spending, taxes and subsidies.

2.1. Spending on Infrastructure, Research and Development

First, government spending on infrastructure and research and development (R&D) greatly affects high-end manufacturing. Increased infrastructure spending improves the efficiency of logistics, transportation, and communication networks, which are critical to the growth of manufacturing firms. Wong suggests that "recognizing the importance of infrastructure in supporting industrial growth and improving the competitiveness of high-end manufacturing, the Chinese government has been investing significant resources in infrastructure development" [10]. These investments from the government are lowering the operating costs of firms and improving the overall business environment, allowing high-end manufacturing firms to stabilize and thrive. Additionally, increased government spending on research and development has fostered innovation within the industry. The Chinese government encourages the development of cutting-edge technology products by providing high levels of subsidies to companies. The aim is to enhance the competitive strength of Made in China in the global market and further strengthen the position of the industry.

2.2. Tax Policies

Secondly, the tax policies implemented by the Chinese government have also had a profound impact on the development of high-end manufacturing. Policies such as lowering the corporate tax rate and tax credits for R&D activities have been used to stimulate industrial investment. According to Xiong et al. writing in their study, "the Chinese government strategically utilizes tax incentives to encourage investment in high-end manufacturing, especially in areas such as photovoltaics and advanced equipment manufacturing" [5]. These tax incentives effectively reduce the financial burden on firms, allowing them to devote more resources to product innovation and expansion. In addition, the Chinese government has further increased its production capacity by reducing import tariffs on high-tech machinery and components, enabling manufacturers to produce high-end instruments at lower costs.

2.3. Subsidies

In addition, government-provided subsidies are another important tool for shaping high-end manufacturing. Especially during the COVID-19 pandemic, government subsidies became an important tool to sustain and promote the development of high-end manufacturing in China. These subsidies were aimed at mitigating the economic impact of the pandemic, which had already hit high-end manufacturing. The Chinese government provided direct financial support, grants, and preferential loans to companies engaged in the production of key technologies such as medical devices, 5G infrastructure, and electric vehicles. This support has been crucial in helping these companies cope with the challenges posed by the epidemic. As Zhao et al. emphasize, "During the COVID-19 crisis, government subsidies helped firms offset financial risks and encouraged continued investment in innovation, playing an important role in sustaining the momentum of high-end manufacturing" [3]. These subsidies enabled firms to maintain operations, protect jobs and accelerate technological development, thus ensuring that high-end manufacturing remained resilient and continued to grow during the recession.

2.4. Challenges

However, the impact of fiscal policy on high-end manufacturing is not without challenges. An important issue of concern is capital misallocation, which occurs when government subsidies and tax incentives are not effectively targeted. Ding et al. emphasize that "volatility in fiscal policy and misallocation of capital can lead to inefficiencies in the manufacturing sector, as resources may be used in less productive or strategically unimportant areas " [8]. This may lead to overcapacity in some sectors and underinvestment in others, ultimately hindering the overall growth and development of high-end manufacturing.

Thus, while fiscal policy is a powerful tool for the Chinese government to shape the high-end manufacturing sector, through strategic government spending, tax incentives, and subsidies, the government is able to foster innovation, improve competitiveness, and promote the development of this important sector. However, there are still potential pitfalls in the implementation of these policies, such as misallocation of capital.

3. Specific Impact

Fiscal policies implemented by the Chinese Government have greatly influenced the growth and development of high-end manufacturing. These policies, which include subsidies, tax incentives, and infrastructure investments, have played an important role in transforming China into a global leader in high-tech manufacturing. This section explores specific case studies and indicators to illustrate the actual effects of these fiscal interventions.

3.1. Subsidy

One of the most notable examples is the Chinese government's strategic support for the semiconductor industry. In recent years, the Chinese government has developed domestic semiconductor production as part of its broader "Made in China 2025" initiative. This policy aims to reduce China's dependence on foreign technology and promote self-sufficiency in key areas of high-end manufacturing. As Wang and Zhang argue that the Chinese government has provided semiconductor companies with substantial tax breaks and subsidies, thereby encouraging rapid expansion and technological progress in the industry [11]. These fiscal measures are particularly evident in the case of Semiconductor Manufacturing International Corporation (SMIC), which received approximately $2 billion in subsidies over a five-year period. As a result, SMIC was able to significantly increase its production capacity and move closer to the global level of advanced semiconductor manufacturing.

3.2. Tax Incentives

In addition to direct subsidies, the Chinese government uses tax incentives as a tool to incentivize innovation in high-end manufacturing. Companies involved in the development of cutting-edge technologies often qualify for significant tax breaks, which reduce operating costs and encourage further investment in advanced technologies. Chen and Liu's research shows that "these tax incentives have had a significant impact on the growth of high-end manufacturing firms, with firms' reported R&D expenditures increasing by an average of 15 percent per year since the policy was introduced" [12]. For example, Huawei, a leader in the telecom equipment industry, has benefited from such incentives, which have allowed it to invest heavily in 5G technology and solidify its position as a global innovator.

3.3. Investment in Infrastructure

Another key aspect of China's fiscal policy is investment in infrastructure, which provides the necessary foundation for high-end manufacturing to flourish. High-tech companies have been attracted through the establishment of specialized industrial parks and science and technology parks that offer companies state-of-the-art facilities, logistical advantages, and fiscal incentives such as reduced land costs and preferential tax rates. Beijing's Zhongguancun Science and Technology Park is a prime example of such policy investments. With strong support from the Chinese government, the Zhongguancun Science and Technology Park has become a center of innovation, housing many high-end manufacturing companies, including those specializing in artificial intelligence (AI) and biotechnology. As Li et al. show, "Fiscal investment in infrastructure, especially in science and technology parks, has directly contributed to the clustering of high-tech firms, thereby increasing innovation output and economic growth in the region" [13].

In addition, the impact of fiscal policy on high-end manufacturing can be measured by performance indicators such as production output, export growth and technological progress. Sectors such as

robotics, aerospace and new energy vehicles have experienced significant growth over the past decade, largely due to government support. For example, since 2010, China's robotics industry has grown at an average annual rate of 25 percent, making it the world's largest producer of industrial robots [14].

In sum, China's fiscal policy has played a key role in shaping high-end manufacturing by providing the financial resources and incentives needed to foster innovation and growth. A series of government fiscal measures over the last decade including subsidies, tax incentives, and infrastructure investments have created an environment conducive to the development of advanced manufacturing technologies in high-end manufacturing sectors such as semiconductors, telecommunications, and robotics. The rapid growth of high-end manufacturing highlights the effectiveness of these policies and underscores the important link between fiscal policy and industrial growth.

4. Conclusion

This paper provides the research on the impact of fiscal policies on China's high-end manufacturing industry, with a particular focus on key fiscal measures such as tax incentives, subsidies and infrastructure investment. These policies have played an important role in influencing industry development, promoting technological innovation and enhancing China's global competitiveness, especially in strategic sectors such as semiconductors and telecommunications. The analysis provides insights into how these targeted fiscal measures have contributed to a significant increase in China's high-end manufacturing sector in terms of capacity, innovation and global market position.

At the same time, the research finds that fiscal policy has played a crucial role in driving the growth of China's high-end manufacturing sector. For example, the rapid growth of the semiconductor industry under the “Made in China 2025” initiative validates the effectiveness of substantial government support in the form of subsidies and tax incentives. These measures have enabled companies such as Semiconductor Manufacturing International Corporation (SMIC) to expand their production capacity and reduce their dependence on foreign technology. In addition, tax incentives have encouraged firms to increase their R&D investment to achieve significant technological advances, reinforcing China's leadership in areas such as 5G technology and robotics.

However, the challenges associated with fiscal policy are also highlighted in this paper, particularly the risk of capital mismatch. When fiscal resources are not effectively targeted, misallocation can occur, leading to inefficiencies and potential overcapacity in certain sectors. This issue highlights the importance of strategic planning and monitoring in the process of government implementation of fiscal policy. If it is not carefully monitored, the benefits of fiscal interventions may be undermined, leading to unsatisfactory outcomes in the high-end manufacturing sector.

Therefore, based on these findings, if the Chinese government wants to continue to sustain the growth of high-end manufacturing, it needs to continuously improve and adjust its fiscal policy to meet the emerging challenges. Strategic planning should focus on optimizing resource allocation and ensuring that fiscal interventions are effectively targeted at areas with the highest potential for innovation and growth. In addition, there is a need for greater coordination between fiscal policy and other economic strategies to create a more cohesive and supportive environment for high-end manufacturing.

Looking ahead, the global economic landscape will bring new challenges and opportunities for China's high-end manufacturing sector. As technological advances continue to accelerate, fiscal policy must remain flexible and responsive to the evolving needs of the industry. In this way, China can maintain its competitive edge in the global marketplace and continue to drive technological innovation and economic growth in the high-end manufacturing sector.

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