Impact of US Tariffs and Trade War on Private Equity Investment in China's Semiconductor Industry: A Comparative Analysis of NAURA and SMIC under the Entity List

Hangyu Meng[1*]

[1]Xiamen University of Technology, Xiamen, Fujian Province, China

Abstract. This paper accelerates the empirical study of the impact mechanism of US tariffs policy and the Entity List on private equity investment in different segments of China's semiconductor industrial chain, the study employs the global value chains theory and PEST analysis framework, combined with Pearson correlation analysis. Through comparative analysis of the operating data of Naura Technology Group Co., Ltd. (equipment manufacturer) and Semiconductor Manufacturing International Corporation (wafer foundry), the analysis finds that the Entity List policy forces the acceleration of domestic substitution through technology blockade, which promotes the counter-cyclical growth of private equity financing in the equipment manufacturing segment; while the foundry segment leads to a decline in private equity valuation due to the surge in supply chains costs. The study shows that the "tariffs + technology blockade" policy has a structurally differentiated impact on private equity investment in China's semiconductor industry, providing important decision-making references and strategic guidance for policymakers, private equity investors, and semiconductor companies.

1 Introduction

Since the first round of the China-U.S. trade war in mid-2018, with the imposition of 25% tariffs, and the U.S. implementation of the "Entity List" for the semiconductor industry in 2019, to the official commencement of the second round of the China-U.S. trade war in 2025, the U.S. has cumulatively increased the composite tariffs on Chinese semiconductor products to 90% (basic tariffs + Section 301 tariffs), and has implemented equipment embargoes on 248 Chinese technology companies through the Entity List [1]. This dual suppression of "tariffs + technology blockade" has led to a structural divergence in private equity investment in China's semiconductor industry: the financing scale in the equipment manufacturing sector has increased by 38% year-on-year, while the valuation of the foundry segment has shrunk by 23% [2].

* Corresponding author: menghangyu357@gmail.com

Against the backdrop of globalization, the international division of labor in the semiconductor industry is being disrupted, and Chinese semiconductor companies are facing unprecedented challenges and opportunities.

This study reveals the influence mechanism of technological barriers and supply chains resilience on private equity investment decisions by comparing the differentiated performance of upstream (equipment) and midstream (foundry) companies in the industrial chain. The research results will provide a Basis for policymakers to implement precise policies, identify key bottlenecks, and verify that technology blockade (such as the embargo on EUV lithography machines) causes greater damage to the industry than tariffs shocks; provide reference value for private equity investors' investment decisions, and find that the intensity of technological barriers replaces production capacity scale as the primary Basis for valuation; at the same time, it provides semiconductor companies themselves with a comparison of the impact of different industrial chains under tariffs shocks, and proposes a dual-track breakthrough path (improving local technology + production capacity globalization).

This paper mainly studies the following issues:

i How do the U.S. "tariffs + technology blockade" policies lead to differentiated resource allocation of private equity capital in the upstream and downstream of the semiconductor industrial chain through the triple paths of cost transmission, technology disruption, and substitution effect in the global value chains;

ii The differences in risk resistance between Naura Technology Group Co., Ltd. (equipment manufacturer) and Semiconductor Manufacturing International Corporation (wafer foundry) under the tariffs trade war, the reasons why Naura Technology Group Co., Ltd. shows counter-cyclical financing characteristics, while Semiconductor Manufacturing International Corporation encounters valuation restructuring; and

iii How the Chinese semiconductor industry breaks through the situation through the three-dimensional synergy of policy support, capital allocation, and corporate strategy.

2 Theoretical framework and research methods

When exploring the research methods for this study, it can be found that there are various options available, such as Porter's Five Forces model and panel regression. However, these methods all have certain limitations when applied to this study. While Porter's Five Forces model can analyze from the perspective of industry competitive landscape, it cannot quantify the impact of technological barriers on investment decisions. Panel regression requires cross-sectional comparison of data from multiple companies over time series, but the sample size of this study is relatively insufficient to meet its requirements for sample size. Due to these limitations, this study selected the following three research methods:

First, conduct analysis based on the global value chains conduction mechanism. The semiconductor industrial chain follows a vertical division of labor system of "equipment-materials-design-manufacturing-packaging," and the US tariffs policy affects Chinese private equity investment through three channels: cost transmission, technology blockage, and substitution effect.

Secondly, employ the PEST four-dimensional analysis model. This model is the only framework that can integrate heterogeneous elements such as politics (e.g., the Entity List), economics (e.g., corporate gross profit margins), society (e.g., talent structure), and technology (e.g., technological breakthroughs), and can comprehensively reflect the external environment faced by China's semiconductor industry.

Finally, the research adopts a case comparative analysis method. Through in-depth mechanism mining, it reveals the internal logic of Naura's counter-cyclical financing and SMIC's valuation restructuring.

At the same time, considering that only two companies, Naura and SMIC, in China's semiconductor equipment and foundry sectors, have reached the industry leader standard in revenue, the scarcity of samples makes case comparative analysis more valuable.

2.1 Global value chain transmission mechanism

The global value chains theory reveals the multi-dimensional impact paths of "tariffs + technology blockade" policies on China's semiconductor industry under the international division of labor. In the context of globalization, the international division of labor system of the semiconductor industry follows a vertical division of labor model of "equipment-materials-design-manufacturing-packaging". The United States' tariffs policy and Entity List sanctions have had a profound impact on all aspects of China's semiconductor industry through three mechanisms: cost transmission, technology disruption, and substitution effects.

Cost transmission mechanism: Tariffs directly drive-up corporate operating costs, squeezing profit margins. The high tariffs imposed by the United States on semiconductor equipment (such as key equipment like lithography machines and etching machines) and export tariffs on Chinese products have significantly increased the procurement costs and sales resistance of wafer foundries such as SMIC. This cost transmission not only affects the short-term profitability of enterprises but also has a negative impact on their long-term competitiveness.

Technology blocking mechanism: The Entity List policy cuts off access to key technologies at the source, hindering industrial upgrade. The United States restricts the export of key technology equipment (such as EUV lithography machines) through the Entity List, directly restricting China's R&D of advanced processes below 14nm.

The failure to achieve technological iteration has invalidated the original valuation logic of enterprises based on expectations of technological breakthroughs, forcing them to shift to cost competition in mature processes, triggering valuation restructuring. This technological blockade not only affects the technological progress of enterprises, but also poses a huge challenge to the upgrading of the entire industry.

Substitution effect mechanism: Policy pressure forces localization and capacity transfer, accelerating the domestic substitution process. The equipment embargo and localization policies (such as the "14th Five-Year Plan" requiring a 70% self-sufficiency rate for key equipment by 2027) jointly create huge domestic market space, driving the procurement rate of domestic equipment from 12% in 2019 to 58% in 2024 [3]. This change directly benefits equipment manufacturers such as Naura Technology Group, whose global share of etching equipment has risen to 2%, and attracts private equity capital to expand against the trend (raising RMB 8.5 billion in 2021), forming a virtuous cycle of "blockade → opportunity → capital → breakthrough" [4].

To circumvent export tariffs and supply chains risks, SMIC also invested 65% of its private placement financing in its Singapore factory, utilizing the RCEP rules of origin to reshape its international production capacity layout [5]. This substitution effect has not only increased the market share of domestic equipment but also provided more development opportunities for domestic enterprises.

2.2 PEST four-dimensional analysis model

Under the current geopolitical and economic landscape, China's semiconductor industry faces multi-dimensional structural pressures. The PEST model can integrate heterogeneous factors such as political, economic, social, and technological aspects to comprehensively analyze the external environment faced by the industry.

Political Dimension: The U.S. implements technology export controls through the Entity List and a complex tariffs system (with a cumulative additional tariff of 90%), forming a dual institutional barrier, which is essentially a struggle for the governance of global value chains [6].

This "technology blockade + tariff barriers" policy group has significantly altered the rules of industrial competition, compelling China to accelerate its domestic substitution strategy under the "Made in China 2025" framework [7]. The U.S. policy not only affected the international market share of Chinese enterprises but also posed challenges to the supply chains stability of the global semiconductor industry.

Economic Dimension: The economic dimension presents a diverging trend. On the one hand, the equipment embargo has led to a surge in procurement costs for wafer fabs, with the cost of 28nm wafers increasing by 18.7%; on the other hand, driven by policies, the procurement rate of domestic equipment has jumped 46 percentage points in five years, creating a substitution market of over US$20 billion [8]. This diverging trend not only reflects the direct impact of tariffs policy on enterprises but also reveals the positive effects of the domestic substitution policy.

Despite facing external pressures, China's semiconductor industry has gradually achieved industrial upgrade and market expansion through policy support and market mechanisms.

Social Dimension: The average annual growth rate of R&D personnel reached 25.8% [9]. However, the cross-border flow of high-end talent is restricted by export controls regulation EAR §744.11 [10]. This strategic restructuring of the talent pool reflects the challenges in talent reserves and innovation capabilities of China's semiconductor industry. Despite the rapid growth in the number of domestic R&D personnel, the shortage of high-end talent remains one of the key factors restricting industrial development. How to attract and retain high-end talent has become a critical issue for industrial development.

Technical Dimension: The key contradiction lies in the conflict between the iterative demands of Moore's Law and the innovation dilemma of latecomers.

The EUV lithography machine embargo has caused China to lag behind in R&D for nodes below 7nm by 2.5 technology generations, forcing domestic equipment manufacturers to break through module technologies such as etching/thin film deposition through reverse engineering and collaborative innovation [11, 12]. This technological blockade not only affects the technological progress of enterprises but also places higher demands on the innovation capabilities of the entire industry. How to achieve technological breakthroughs against the background of technological blockade has become an important issue facing China's semiconductor industry.

2.3 Research methods

2.3.1 Pearson correlation analysis

This study uses the Pearson correlation coefficient to quantify the correlation between the U.S. tariffs policy (independent variable) and SMIC's gross profit margin (dependent variable). The data source extracts the compound tariff rates on Chinese semiconductors (basic tax rate + Section 301 additional tax) announced by the United States Trade Representative (USTR) and the United States International Trade Commission (USITC) from 2017 to 2021. The gross profit margin data adopts the annual gross profit margin audited in SMIC's annual reports (reflecting core profitability).

The Z-score standardization is first applied to the data to eliminate dimensions, and the correlation coefficient r is calculated using the formula:

$$r = \Sigma[(X_i - X)(Y_i - \bar{Y})] / \sqrt{[\Sigma(X_i - X)^2 \Sigma(Y_i - \bar{Y})^2]} \quad (1)$$

A two-tailed t-test (α=0.05, degrees of freedom=3) is performed to verify the significance of the correlation. This analysis method can effectively reveal the direct impact of tariffs policy on the profitability of SMIC, providing an important quantitative basis for subsequent research.

2.3.2 Case comparison analysis

North Microelectronics (equipment manufacturer) and SMIC (wafer foundry) are selected as samples. Through in-depth mechanism mining, the internal logic of North Microelectronics' counter-cyclical financing and SMIC's valuation restructuring is revealed.

This comparative analysis can make full use of scarce samples to reveal the differentiated performance of upstream and downstream enterprises in the industrial chain. Through comparative analysis, the coping strategies and their effects of different enterprises in the face of tariffs policy and technology blockade can be better understood.

3 Case study comparison and analysis

3.1 Naura Technology Group: private placement financing expansion driven by domestic substitution

As a leading Chinese semiconductor equipment manufacturer, Naura Technology Group has demonstrated strong adaptability and innovation in the face of U.S. technology blockade and tariffs policy. This study confirms that its core competitiveness lies in transforming external pressure into the impetus for domestic substitution, thereby triggering contrarian investments from private equity and achieving counter-cyclical financing.

Technological Breakthroughs and Domestic Substitution: The implementation of the Entity List policy has forced Naura Technology Group to accelerate the domestic substitution process. From 2019 to 2024, the localization rate of its etching equipment surged from 12% to 58% [3]. This significant increase reflects not only reflects Naura Technology Group's rapid technological progress but also demonstrates its competitiveness in the market.

Particularly in the field of ICP etching equipment, Naura Technology Group achieved a breakthrough in the 5nm process through modular innovation, giving it a global market share of 2.3% [13]. This technological breakthrough has not only enhanced the company's market position but also laid a solid foundation for the further development of domestic equipment.

Policy Support and Capital Assistance: Strong government support is identified as a key factors in the rapid development of Naura Technology Group. The analysis shows that Naura received cumulative subsidies of RMB 4.2 billion from 2020 to 2023, driving R&D investment to account for 18.5% and shortened the 5nm equipment verification cycle to 6 months (international peers average 24 months), forming a positive "policy-technology-capital" cycle [12]. This reduction in reliance on United States and Japan supply chains provides a strong foundation for domestic substitution.

Active Response from the Private Placement Market: The private placement market has highly recognized NAURA's strategic value. In 2021, NAURA raised RMB 8.5 billion through Private Placement [4]. This expansion reflects capital market confidence in its technology barriers. With R&D personnel at 35%, its PE multiple soared from 25x in 2019 to 42x in 2024 [4], indicating that valuation logic shifted from production scale to technological capability.

3.2 SMIC: supply chain disruption triggers valuation reconstruction

As China's largest wafer foundry, SMIC faces enormous challenges in the face of "tariffs + technology blockade" policies.

The analysis reveals that the core issue lies in the disruption of supply chains and the surge in costs, which directly leads to the restructuring of corporate valuation logic.

The cost pass-through mechanism demonstrates that tariffs policy directly squeezes profitability through the cost pass-through mechanism—the U.S. imposing a 90% compound tariff on semiconductor equipment, coupled with the equipment embargo on the Entity List, resulted in an 18.7% increase in the unit cost of 28nm wafers. This surge caused SMIC's gross profit margin to deteriorate from 23.2% of 2019 to 17.5% of 2023. Pearson correlation tests confirm a significant negative correlation between tariff rates and gross margin ($r = -0.68$, $p < 0.05$) [14], validating the destructiveness of cost transmission in global value chains. Technology blockade and valuation logic restructuring: The technology blockade has a more profound impact on SMIC.

The embargo on EUV lithography machines has led to the stagnation of R&D in advanced processes below 14nm, with its global share remaining below 0.8% for a long time [15]. This has completely invalidated SMIC's original private equity valuation logic based on technology iteration (such as the expected breakthrough in 7nm), forcing capital focus to shift to cost control capabilities [16]. This restructuring of valuation logic not only affects the company's market performance but also poses new challenges to its long-term development strategy.

International capacity transfer and strategic breakthrough: Facing external pressure, SMIC achieved a strategic breakthrough through international capacity transfer and non-US technology cooperation [17]. The company invested 65% of its private equity financing (approximately $3.5 billion) in a Singapore 12-inch wafer fab , utilizing RCEP rules of origin to plan a production capacity of 500,000 wafers/year (reaching production in 2026), effectively circumventing US tariffs and serving European automotive chip customers (such as Bosch).

Meanwhile, SMIC, in collaboration with IMEC Belgium, has achieved a 92% yield in the N+1 process (equivalent to 7nm) supported by non-U.S. equipment through a workaround breakthrough within the mature process framework [18-20]. This response path of "Costs compression → valuation reconstruction → production capacity relocation → technology substitution" demonstrates that technology blockade is more destructive to the foundry segment than tariffs impact, and also provides SMIC with the possibility of finding new development opportunities in a complex international environment.

4 Empirical tests and results

4.1 SMIC data analysis

This study quantifies the relationship between U.S. tariffs policy and SMIC's gross profit margin through Pearson correlation analysis. Pearson correlation analysis is conducted using the gross profit margin section of SMIC's annual reports from 2017-2021, combined with the U.S. slapped tariffs in China from 2017-2021. The x-axis variable is the tariffs for different years, and the y-axis variable is SMIC's gross profit margin for different years. The selection basis starts from 2017 because the first round of the U.S.-China tariffs trade war officially began in 2018, and tariffs began to affect the semiconductor industry from 2018 onwards.

As shown in Fig. 1, the chart illustrates that SMIC's gross profit margin experienced a fluctuating trend of first decreasing and then increasing during the period from 2017 to 2021, while US tariffs stabilized at 25% after 2018.

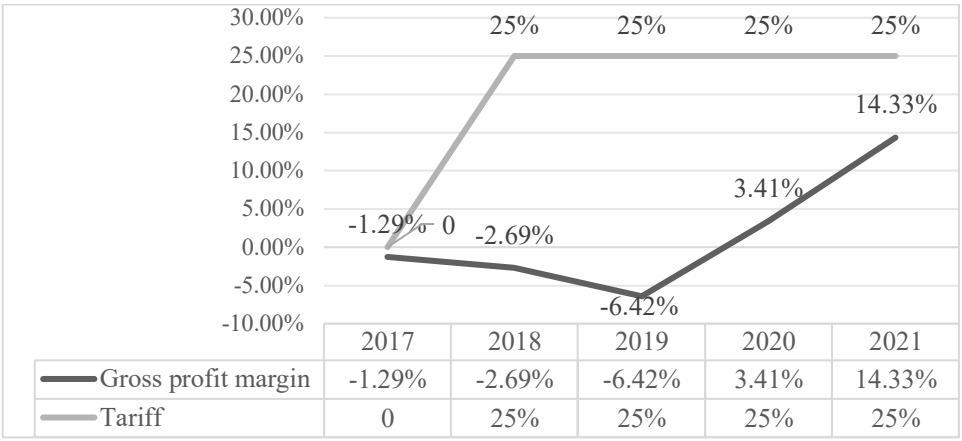

Fig. 1. Impact of tariff changes on SMIC's gross profit margin.

Specifically, the gross profit margin was negative -1.29% in 2017 (when tariffs were 0%). After tariffs increased to 25% in 2018 and 2019, the gross profit margin continued to decline to -6.42%, but in 2020 and 2021 (tariffs remained at 25%), the gross profit margin reversed and rose to 3.41% and 14.33%, indicating that other external factors led to the increase in gross profit margin.

Table 1. SMIC gross margin and tariffs two-tailed test.

Correlation			
		Gross profit margin	Tariff
Gross profit margin	Pearson correlation	1	193
	Two-tailed significance		756
	Number of cases	5	5
Tariff	Pearson correlation	193	1
	Two-tailed significance	756	
	Number of cases	5	5

Table 2. SMIC gross margin and tariff Pearson correlation analysis.

	Average	Standard Deviation	Gross profit margin	Tariff
Gross profit margin	0.015	0.08	1	
Tariff	0.2	0.112	0.193	1
* p<0.05 ** p<0.01				

Based on Fig.1, tariffs and gross profit margin exhibit a negative correlation from 2017-2019. However, since the sum of gross profit margins in 2020 and 2021 is greater than the sum of the previous three years, the overall correlation shows a positive relationship, indicating that other external factors have a greater impact. During the period of 2017-2019, due to the imposing tariffs, the gross profit margin and tariffs showed a negative correlation trend. During the period of 2019-2021, factors such as Government Grant and domestic

customers turning to OEM factories came into play. In Table 1, the Pearson correlation analysis between SMIC's gross profit margin and U.S. tariff rates Table 1 reveals critical findings: This statistical paradox - where tariff increases coincided with margin improvements in later years - underscores the dominant role of non-tariff factors after 2019. Table 2 provides the descriptive statistics (mean and standard deviation) for both SMIC's gross profit margin, and the U.S. tariff rates over the sample period (2017-2021), complementing the correlation analysis presented in Table 1. The average gross profit margin is 0.015, with a standard deviation of 0.08, indicating relatively small fluctuations in gross profit margins among samples. The average tariffs are 0.2, with a standard deviation of 0.112, indicating that the tariffs level is relatively high and the fluctuation is slightly larger. Although the correlation coefficient did not reach the significance mark (*$p<0.05$ or **$p<0.01$), the correlation coefficient of 0.193 still indicates a certain degree of linear association between the two, that is, samples with higher tariffs may be accompanied by slightly higher gross profit margins.

This result suggests that tariffs policy may have a slight impact on the gross profit margin of enterprises, but the role of other factors may be more significant. Further research can explore its internal mechanism by combining more variables.

Therefore, it can be concluded that the impact of the Entity List is greater than tariffs. The U.S. imposition of tariffs directly pushed up SMIC's procurement costs for imported equipment. In addition, the sanctions of the Entity List in 2018 led to the lowest gross profit margin in 2019. Restricted by the Entity List, SMIC was unable to import high-end equipment such as EUV lithography machines, which led to the obstruction of its advanced process (such as below 7nm) R&D and forced it to turn to mature processes (such as 28nm). Due to increased market competition in mature processes, the product premium capability is limited, further compressing the gross profit margin.

Private equity's valuation of foundries was originally based on expectations of technological iteration (7nm breakthrough), but the deterioration of gross margins caused by tariffs (coupled with technology blockade) has forced the valuation model to shift towards cost defense indicators.

4.2 NAURA data analysis

As a leading Chinese semiconductor equipment manufacturer, Naura Technology has demonstrated strong adaptability and innovation in the face of U.S. technology blockade and tariffs policy (see Fig. 2).

It can be observed that Government Grant and R&D investment: From 2018 to 2020, the Government Grant received by Naura Technology increased from RMB 177 million to RMB 400 million(66.5% CAGR). In 2023, the National IC Fund injected RMB 4.5 billion into Naura Technology, accelerating the localization process of key components (such as vacuum pumps and RF power sources) [3], reducing dependence on supply chains from the United States and Japan. These subsidies not only alleviated the company's financial pressure but also promoted the growth of R&D investment.

The R&D expenses increased from CNY 357 million in 2017 to CNY 1.845 billion in 2022, and the continued increase in R&D expenses has provided solid financial support for Naura Technology Group Co., Ltd.'s technological breakthroughs.

Private Placement Financing and Market Recognition: The high recognition and support of Naura Technology Group Co., Ltd. in the private equity market is an important factor for its ability to achieve counter-cyclical financing. In 2021, Naura Technology Group Co., Ltd. raised CNY 8.5 billion through in a Private Placement of stocks, demonstrating the confidence of the capital market. With R&D personnel accounting for 35%, its PE multiple soared from 25x in 2019 to 42x in 2024, indicating that the valuation logic of private equity

capital for Naura Technology Group Co., Ltd. has shifted from pure production capacity scale to the strength of technology barriers. This market recognition not only provides sufficient financial support for Naura Technology Group Co., Ltd., but also enhances its competitiveness and influence in the industry.

Technological Innovation and Market Competitiveness: While the implementation of tariffs policy has presented challenges for Naura Technology, it has also created positive incentives. Faced with tariffs pressure, Naura Technology has increased R&D investment, enhanced product competitiveness through technological innovation, and accelerated the process of domestic substitution. For example, the localization rate of its etching equipment has jumped from 12% in 2019 to 58% in 2024 [3], and it has achieved a breakthrough in the 5nm process, with a global share reaching 2.3% [13] .This technological breakthrough has not only enhanced the company's market position but also laid a solid foundation for the further development of domestic equipment.

Comprehensive Impact and Strategic Response: Government Grant, tariffs, private financing, and R&D interacted synergistically to drive NAURA's development.

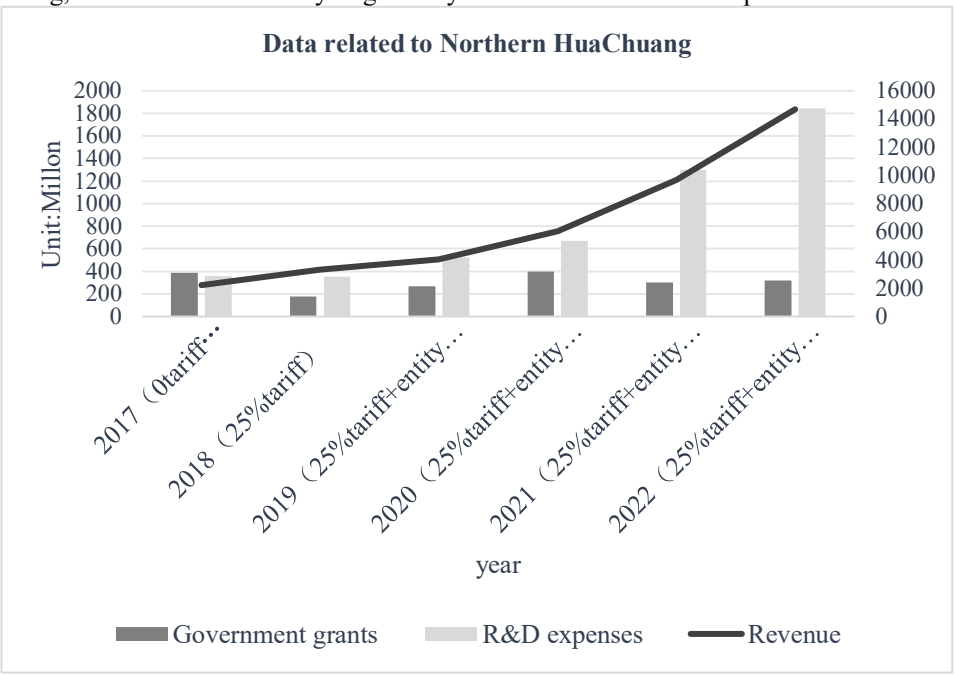

Fig. 2. Impact of Tariffs Changes on Naura Technology

Government Grants have provided financial support for R&D investment, technological innovation has enhanced the market competitiveness of enterprises, private equity financing has strengthened the financial strength of enterprises, and tariff pressure has prompted enterprises to accelerate the process of domestic substitution. The combined effect of these factors has enabled Naura Technology Group to grow against the trend and achieve rapid development in the face of external challenges. In addition, Naura Technology Group has accelerated the verification and large-scale application of domestic equipment through in-depth collaboration with leading domestic manufacturers, further consolidating its leading position in the field of semiconductor equipment manufacturing.

5 Policy recommendation

Based on the research findings, the following policy recommendations are proposed to address the challenges of tariff trade war on China's semiconductor industry:

Government Level: The government should continue to provide R&D subsidies and tax breaks to support semiconductor companies in key technology innovation and domestic substitution.

Simultaneously, establish a dynamic response mechanism, including a technology substitution library and critical component backups, to enhance the resilience and security of supply chains. In addition, the government should support enterprises in utilizing international trade rules to conduct overseas compliant production capacity layout, in order to circumvent trade barriers and expand into international markets.

Private Equity Investor Level: Private equity investors should adjust their investment assessment framework to place greater emphasis on the height of technology barriers, domestic substitution space, and R&D investment intensity. Incorporate tariff costs and equipment embargo risk premiums into valuation models to more accurately assess enterprise value. At the same time, enhance the professional judgment ability of geopolitical risks to make better investment decisions.

Semiconductor Companies Level: Semiconductor companies should strengthen R&D investment to achieve breakthroughs in core technologies and enhance the market competitiveness of their products.

Deepen collaboration with domestic manufacturers, accelerate the verification and large-scale application of domestic equipment. Construct an independent and controllable supply chains system to reduce reliance on external supply chains. Implement a "dual-track parallel" strategy, on the one hand, cultivate the domestic market, and on the other hand, accelerate the construction of overseas compliant production capacity to cope with the uncertainty of the global market.

6 Conclusion

This paper explores the impact of the U.S. "tariffs + technology blockade" policy on private equity investment in different segments of China's semiconductor industrial chain through empirical research. The study found that the policy had a positive impact on Naura Technology Group Co., Ltd., promoting domestic substitution and counter-cyclical financing, while it had a negative impact on Semiconductor Manufacturing International Corporation, leading to valuation restructuring and a decline in gross profit margin.

Specifically, tariff pressures have accelerated domestic substitution, leading to a significant increase in R&D expenses and operating income for equipment manufacturers such as Naura. Conversely, wafer foundries such as SMIC face rigid cost compression and import restrictions on high-end equipment, resulting in decreased gross margins and a shift in valuation models towards cost defense metrics.

However, this study has certain limitations. Although Pearson correlation analysis reveals a certain correlation between tariffs and SMIC's gross margin, corporate performance in reality is affected by multiple factors, such as global semiconductor cycle fluctuations, domestic market competition patterns, corporate management efficiency, and the extent of non-tariff policy support. This study faces challenges in divesting these confounding factors, and the strength of causal inference needs to be improved.

In terms of data collection, there are certain biases due to the difficulty in obtaining much private information, and the accuracy of the data needs to be improved.

In future research, improvements will be made in three aspects: First, in terms of methodology, more precise econometric models, such as the difference-in-differences method, will be adopted to improve the accuracy of the research; second, in terms of data, the sample size will be expanded and the observation period will be extended to enhance the

representativeness and reliability of the research; finally, in terms of research perspective, cross-country comparisons, such as Samsung's response strategies, will be integrated to provide a more comprehensive analytical framework. Through these improvements, future research will be able to more deeply understand the impact of tariffs trade war on China's semiconductor industry and provide stronger support for policy making and corporate strategy.

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