Proceedings of Business and Economic Studies, 2024, Volume 7, Issue 4
http://ojs.bbwpublisher.com/index.php/PBES
Online ISSN: 2209-265X
Print ISSN: 2209-2641

Research on the Mechanism and Strategy of Equity Investment Driving the Transformation of New Material Innovation Achievements

Xiao Zhang*

Shenzhen Polytechnic University, Shenzhen 518000, China

***Corresponding author:** Xiao Zhang, zhxiao221@126.com

Copyright: © 2024 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: Under the wave of global technological revolution, the new materials industry is facing difficulties in innovation and transformation. Equity investment has become a key driving force due to its flexible mechanism, risk sharing, and deep participation. Based on introducing the current development status of China's new materials industry, this article reveals the mechanism of equity investment in financial support, risk management, incentive constraints, and resource integration. The article proposes optimization strategies, such as building an information-sharing mechanism and a diversified investment fund system, to promote the high-quality development of the new materials industry driven by innovation and provide strategic guidance for policymakers, investors, and enterprises.

Keywords: New materials industry; Transformation of innovative achievements; Equity investment

Online publication: August 26, 2024

1. Introduction

With the continuous advancement of global technological revolution and industrial innovation, the global competitive landscape is undergoing profound changes, and technological innovation has become a new engine driving global economic and social development. New materials are a strategic and fundamental industry and a key area of high-tech competition. Countries around the world, especially developed countries, attach great importance to the development of the new materials industry and have formulated corresponding new material development strategies and research plans, striving to take the lead in this field. Accelerating the development of the new materials industry not only helps to lead the upgrading of the materials industry, supports the development of the advanced manufacturing industry, but also guarantees the construction of major national projects, grasps development autonomy, and is an inevitable choice for a country to achieve high-quality economic and social development and improve its core competitiveness [1].

The transformation of scientific and technological achievements bridges technology, economy, and social progress. The key is to transform scientific research achievements into practical products or technologies and

promote industrial upgrading. Successful transformation signifies technological strength and economic vitality, which are crucial for economic growth and social well-being. New material enterprises face difficulties in obtaining funds during this process, as traditional financing channels are often limited due to high risks and large initial investments. Venture capital and private equity have become important drivers. They not only provide funding, but also bring management wisdom, market vision, and industry connections [2]. Through efficient resource allocation, they help enterprises overcome initial challenges, accelerate the commercialization and expansion of technological achievements, and play a core role in the development of emerging industries and industrial structure upgrading.

This article aims to analyze the driving role of equity investment in the transformation of new materials technology achievements. Firstly, it outlines the current development status of China's new materials industry. Secondly, delve into the underlying mechanisms by which it promotes the transformation of achievements. Finally, propose efficient strategies and implementation paths to provide capital support for the optimization of innovation and transformation in the new materials industry.

2. Current development status of the new materials industry

2.1. Enhanced policy support and rapid expansion of industrial scale

With policy support, China's new materials industry has achieved significant growth and transformation. The country strengthens the transformation and application of scientific and technological achievements and promotes a leap in innovation capabilities. Breakthroughs have been made in the preparation technology and performance of core materials, such as the widespread application of large-diameter silicon materials and carbon fibers. Benefiting from policy incentives, the new materials industry has rapidly expanded in scale, with continuous growth in total output value and a compound annual growth rate exceeding the market average level [3]. Graphene, glass fiber, and other segmented markets are particularly prominent, with accelerated technological iteration and quality improvement, meeting the needs of major national projects and the defense industry. Increased investment in research and development, forming an innovation ecosystem centered on enterprises, market-oriented, and deeply integrated with industry, academia, and research. China has led the world in certain key areas, demonstrating its international competitiveness and growth potential in the field of new materials.

2.2. Cluster effect promotes the coordinated development of industrial chains and regional characteristic layout

The new materials industry in China has shown a trend of clustering development, forming characteristic high-tech clusters, effectively promoting upstream and downstream collaboration in the industrial chain. The eastern coastal areas rely on technological and economic strength to lead innovation, while the central and western regions develop based on resource characteristics to achieve efficient utilization. The national layout presents regional characteristics, with complementary advantages among clusters, promoting industrial prosperity together. In addition, the new industrialization demonstration base has accelerated industrial agglomeration and achievement transformation, providing strong support for the sustainable development of the new materials industry.

2.3. Demand-driven and continuously improving innovation capabilities

With the vigorous development of China's new materials industry, innovation capabilities have been significantly enhanced. The industry has always adhered to the core concept of "demand-driven, innovative

development," continuously made breakthroughs in core technologies, significantly enhanced independent innovation capabilities, and continuously enriched the variety and performance of new materials [4]. China has made significant progress in the preparation of key new materials, process optimization, new product development, energy conservation, environmental protection, and comprehensive resource utilization. The government has played an important guiding and promoting role in this process, further strengthening the depth and breadth of innovation through policy and financial support.

3. Mechanism analysis of equity investment promoting the transformation of innovative achievements in the new materials industry

3.1. Mechanism of financial support

Equity investment provides a solid financial foundation for technological innovation and the transformation of innovative achievements in the new materials industry through direct capital injection [5]. According to the theory of technological innovation, the elements of technological innovation are crucial for sustained economic growth, and the adequacy of funds is a prerequisite for the realization and industrialization of technological innovation. Equity investment not only meets the funding needs of the research and development stage of the new materials industry but also provides necessary financial support for its subsequent large-scale production and market promotion, thereby promoting the transformation and application of innovative achievements [6].

3.2. Risk management and diversification mechanism

Equity investment not only provides financial support but also brings mechanisms for risk management and diversification. Due to the high uncertainty and risk associated with technological innovation in the new materials industry, a single source of funding often finds it difficult to withstand such risks [7]. Equity investment achieves risk diversification and sharing by introducing multiple investors. Additionally, equity investors, with their rich experience and market insights, can more accurately evaluate the risk and value of projects, thereby reducing investment risks and improving investment success rates.

3.3. Incentive and constraint mechanisms

The principal-agent theory and co-governance theory provide incentive and constraint mechanisms for equity investment. Equity investors, as principals, stimulate the enthusiasm and creativity of agents and improve innovation efficiency by formulating incentive plans and participating in corporate management [8]. Simultaneously, through phased investment, monitoring project progress, and direct participation in management, effective constraints are formed on agents to ensure the rational use of funds and the smooth progress of the project. This incentive and constraint mechanism helps to form stable cooperative relationships, reduce transaction costs, and promote the transformation of innovative achievements in the new materials industry [9].

3.4. Integration effect of network resources

Network resource integration is another major efficiency of equity investment. The theory of collaborative innovation emphasizes that equity investment can also promote the integration of network resources within the new materials industry [10]. The theory of collaborative innovation suggests that the development of emerging industries requires the collaborative promotion of multiple entities. Equity investment guides various factors such as capital, technology, information, talent, and market to gather at the forefront of innovation, forming a wide range of network resources, thereby promoting effective resource allocation and assisting in the

transformation and application of innovative achievements [11]. Concurrently, equity investment can also provide external support such as policies, laws, finance, and taxation for the new materials industry.

4. Strategy and path analysis of equity investment promoting the transformation of innovative achievements in the new materials industry

In the process of promoting the transformation of innovative achievements in the new materials industry, the optimization of equity investment strategies and paths is particularly important. By constructing an efficient information-sharing mechanism, developing a diversified investment fund system, and optimizing capital exit paths and risk management strategies and paths, equity investment can more effectively promote the transformation of innovative achievements in the new materials industry [12]. This is not only conducive to promoting the innovative development of the new materials industry but also helps to improve the quality and efficiency of the entire economic system.

4.1. Building an efficient information-sharing mechanism and strengthening the integration of capital and technological innovation

Firstly, establish a financing demand database for technology enterprises, and through intelligent management methods, achieve precise docking between the financing needs of technology enterprises and high-growth innovative enterprises with financial institutions and venture capital institutions [13]. The establishment of this mechanism can effectively improve the efficiency of capital docking and provide timely and sufficient financial support for innovative activities in the new materials industry. Simultaneously, integrating information service platforms, utilizing big data analysis technology, establishing a knowledge value credit evaluation model with innovation capability as the core, providing a scientific basis for investment decision-making, and promoting the deep integration of capital and technological innovation [14].

4.2. Develop a diversified investment fund system and optimize the venture capital ecosystem

In terms of the investment fund system, the establishment process of venture capital institutions should be simplified, cooperation between government and market supervision should be strengthened, and tax incentives and other incentive measures should be provided to attract more social capital to participate in venture capital. Concurrently, through incentive mechanisms, social capital is encouraged to focus on technology enterprises in the seed and start-up stages, adopting a “venture capital + incubation” model, integrating multiple resources, and providing comprehensive support for the full chain transformation of scientific and technological achievements [15]. Moreover, government investment funds should play a leverage role, guide social capital to flow towards key technologies and key industries through performance incentives and income transfer mechanisms, build a diversified and multi-level investment system, and accelerate the growth of early high-quality technology enterprises.

4.3. Optimize capital exit paths and strengthen risk management

In terms of capital exit, efforts should be made to promote the construction of multi-level capital markets, including the utilization of regional equity trading platforms, exploration of mechanisms for the transfer of equity and private equity shares, and the expansion of investment exit paths. Meanwhile, strengthen risk management and compliance construction, use digital regulatory tools, strengthen compliance supervision and risk control of fund operations, and ensure the healthy and orderly development of the industry. Furthermore, while respecting innovation and encouraging exploration, establish a fault tolerance and exemption mechanism

to provide exemption for reasonable errors in investment decision-making and operation, and encourage bold attempts and innovative practices.

5. Conclusion

Driven by policy support and market demand, China's new materials industry has achieved rapid growth and technological innovation. The industry benefits from cluster effects, collaborative development across the industrial chain, and regional characteristic layout, which lay a solid foundation for its sustainable development. In this context, equity investment has become a key approach for new materials companies to secure financial support, manage risks, establish incentive and constraint mechanisms, and integrate network resources. Moving forward, the development of the new materials industry requires a more open and collaborative innovation environment. By establishing efficient information-sharing platforms, promoting the deep integration of capital and technology, and developing a diverse investment fund system, we can provide a more robust foundation for continuous innovation and achieve transformation in the new materials sector.

Funding

(1) Shenzhen Polytechnical University School level Scientific Research Projects 2023: "Research on the Path and Mechanism of Equity Investment in the Innovation Achievement Transformation of New Material Industry from the Perspective of Intermediary Effect" (Project No. 6023310014S)

(2) Shenzhen Polytechnical University Postdoctoral Outstation Late Stage Funding Project: "Research on the Cultivation of Digital Trade Talents in the Guangdong Hong Kong Macao Greater Bay Area" (Project No. 6023271012S)

Disclosure statement

The author declares no conflict of interest.

References

[1] Li J, 2021, Research on the Transformation Path and Influencing Factors of Key Technological Achievements in New Materials: Taking New Materials Technology Co., Ltd. of the Chinese Academy of Sciences as an Example, thesis, University of the Chinese Academy of Sciences.

[2] Liu W, 2022, Ten Years of Development of China's New Materials Industry: 2011–2020. Electronic Industry Press.

[3] Department of Chemical Engineering, Metal and Materials Engineering, Chinese Academy of Engineering, and Chinese Society for Materials Research Frontier, 2023, Report on New Materials Research in China. Chemical Industry Press.

[4] Guo Z, Zhu A, Zhao X, 2021, Simulation Analysis of the Transformation of Scientific and Technological Achievements in the Political Industry University Research System. Economic Issues, 2021(2): 45–52.

[5] Wang G, Zhang T, Hong M, 2017, A Study on the Promoting Effect of Private Equity Investment on Corporate Growth. Modern Management Science, 2017(7): 18–20.

[6] Chemanur T, Loutskina E, Tian X, 2011, Corporate Venture Capital, Value Creation, and Innovation. Social Science Electronic Publishing, 27(8): 2434–2473.

[7] Li W, 2016, The Impact of Private Equity Investment on Corporate Investment Efficiency, thesis, Guangdong

University of Finance and Economics.

[8] Jensen M, Mecking W, 1976, Theory of the Firm: Managerial Behavior, Agency Cost and Ownership Structure. Journal of Financial Economics, 1976(4): 305–360.

[9] Levis M, 2011, The Performance of Private Equity Backed IPOs. Financial Management, 40(1): 253–277.

[10] Schertler A, Tykvova T, 2011, Venture Capital and Internationalization. International Business Review, 20(4): 423–439.

[11] Fang H, Nofsinger JR, Song Z, et al., 2018, Private Equity Performance and Capital Flows: Evidence from China. Emerging Markets Review.

[12] Sapienza HJ, Timmons JA, 1989, The Roles of Venture Capitalists in New Ventures: What Determines Their Importance? Academy of Management Best Papers Proceedings,1989: 74–80.

[13] Arthur JD, Busenitz LW, 2021, Dynamic Capabilities and Venture Performance: The Effects of Venture Capitalists. Journal of Business Venturing, 2021(2): 195–215.

[14] Li H, 2019, Research on the Technology Finance Mechanism for Promoting the Transformation of Scientific and Technological Achievements in Guangdong Province. Science and Finance, 2019(8): 86–91.

[15] Ma C, Cui P, 2020, Development of National Science and Technology Finance and Exploration of Local Science and Technology Finance Work Models. Shanxi Science and Technology, 35(2): 115–119.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.