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How Do Tech Companies Finance in the Context of Sci-Tech Finance?

Hongying Li[1,2], Mohd Effandi Yusoff[1]

[1]Faculty of Management, Universiti Teknologi Malaysia, Skudai Johor, Malaysia
[2]School of Management, Hebei Finance University, Baoding, China
Email: bdlhy@163.com

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Abstract

The sci-tech finance aims to cultivate high-value-added industries and enhance the economy's overall competitiveness. A good match of science, technology, and finance helps to accelerate the growth of tech companies and regional economies. This article focuses on the operation mechanism of the financing system of tech companies. The driving mechanism, coordination mechanism, and balancing mechanism are conducive to technology enterprises to obtain more funds and improve the utilization rate of funds. Three models reveal how the financing system operates depending on the specific situation and the process of policy intervention in the sci-tech finance environment. These findings offer theoretical guidelines for policymakers to improve their innovation process and remove possible obstacles by motivating financing institutions.

Keywords

Financing, Tech Company, Operate Mechanism, Sci-Tech Finance, Policy Intervention

1. Introduction

Tech companies are those enterprises with high-technology products and core competitiveness. They are able to continually deliver innovations that meet the market needs. Some tech companies are manufacturing enterprises, which mainly engaged in innovating and producing of information, electronics, new materials and other new technology. Other tech companies develop in supply chain management or technology integration to meet unique customer preferences. Tech companies always attach importance to innovation, so that the R & D expenditure accounts for a relatively high proportion of sales revenue. This

increases the need for targeted fund to supplement resources and reduce uncertainty (Lubik & Garnsey, 2016).

The financing process of tech companies is often influenced by market factors. For example, the banks are the most common stakeholders that finance tech companies. In addition, financing strongly depends on macro-level factors, such as the financing environment and regional context (Hossinger et al., 2020). Some financing policies can increase the R & D expenditure of enterprises by alleviating the financing constraints and reducing the leverage effect of enterprises. Many governments of various countries have formulated policies to promote the innovation and development of tech companies, such as the national strategies of German Sustainable Finance Strategy 2021 and German High-tech Strategy 2025. As a result, financing policy and financial institutions constitute the financing system for tech companies.

Multiple theoretical and conceptual lenses have been proposed to understand how stakeholders fund tech companies. There are some works of literature on how the macro environment is implemented in tech companies' essential resources and activities (Martin et al., 2019) by influencing stakeholders and system participants. From the policy perspective, scholars analyzed the sci-tech finance policies at the national level (Guan & Yam, 2015), provincial and municipal levels (Cheng et al., 2018b), and service platforms (Wagner et al., 2021). Some scholars have classified policy intervention from the perspectives of strategy (Wang, 2018), investment (Cheng et al., 2018b). Research on the policy intervention is poorly recognized in the literature and does not have a solid methodological basis (Kobylińska & Lavios, 2020). The theoretical understanding of the macro driving factors (e.g., sci-tech finance in China) of tech company financing is unclear.

As a unique concept in China, the combination of science, technology, and finance (also known as "sci-tech finance") has existed and developed for 30 years, counting from the first technology loan in 1985. By matching science, technology, and finance, policymakers aim to accelerate the growth of tech companies and regional economies (Mustar et al., 2006; Wang & Xu, 2017). Without considering how the macro environment affects the financial institution, the financial background and operating logic of the tech companies' financing would not be correctly understood (Mathisen & Rasmussen, 2019).

Given this, this article focuses on the operation mechanism of the financing system of tech companies. The driving mechanism, coordination mechanism, and balancing mechanism are conducive to technology enterprises to obtain more funds and improve the utilization rate of funds. The research could identify general frameworks about the participants' activities in the financing system of tech companies that are broadly applicable across different tech companies. The findings will help sci-tech finance policymakers uncover how the financing system works depending on specific circumstances. The conclusion section suggests policy implications for policymakers who seek to foster innovation with these intermediaries.

2. The Sci-Tech Finance

Sci-tech finance became a particular term in 1993 in China. It is strongly supports practical activities and theoretical innovation (Zhang et al., 2018). Although there is no uniform definition, scholars generally agree that sci-tech finance is: 1) A way to broaden the financing channels of sci-tech enterprises; 2) An investment activity aimed at meeting the needs of the capital market; 3) A system that consists of financial instruments, policies, and services together (Fang, 2015).

After more than 30 years of development in China, a multi-level tier financing market has now been formed, which is a financial market structure that offers different financing opportunities to companies of varying sizes and types (Li & Zou, 2018). The multi-level capital market includes stock exchange, bond, and venture capital markets. Some new financing strategies include intellectual property financing (pledges) and supply chain finance (bank credit, guarantee, or factoring). These capital markets and financing strategies form the sci-tech finance environment.

Several policies that help tech companies get funding (both direct and indirect) have provided sufficient space for tech company's technological innovation. Some fiscal policies directly reduce tech company R & D costs; some inclusive financial policies encourage banks to lend to tech companies actively; some supply chain financial policies closely link companies in the industry chain and promote core companies to participate in financing activities of the upstream and downstream of tech companies (**Figure 1**). The sci-tech finance policies match innovation, resources, and market operations (Cheng et al., 2018b), thus creating a vital financing channel for tech companies.

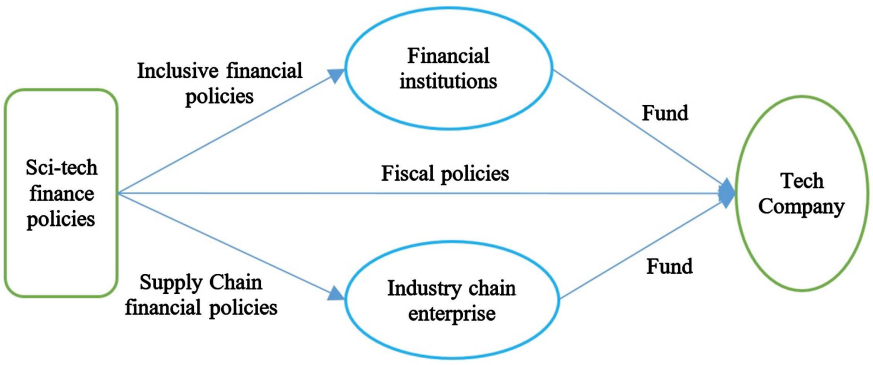

Figure 1. The influence path of sci-tech finance policies on tech company.

3. The Operation Mechanism of the Financing System of Tech Companies

Those financial institutions that directly fund tech companies and those market firms that provide financing strategies for this purpose are considered participants in the technology company financing system, such as banks, VCs, the core enterprises in the industrial chain, etc.

From a macro perspective, the main challenges faced by tech financing companies are 1) few financing participants were found; 2) strategic conflicts between tech companies and participants in the financing market; 3) quality financing participants are being pushed out of the financing system by inferior participants (Chen et al., 2020; Yang et al., 2021). Therefore, to solve or mitigate these difficulties, the financing system of tech companies needs to be optimized from the three aspects of motivation driving, activities coordinating, and system balancing. These operating mechanisms can describe how tech companies get capital by cooperating with other participants through joint activities, projects, and service delivery.

3.1. Driving Mechanism

In the financing system, the participants are mainly fund providers (e.g. banks, VCs) and third parties that help tech companies obtain funds, such as supply chain core enterprises. Services from the participants can take the form of trade-offs, where the provision of one service increases and the provision of another decreases. It can also occur in the form of synergy, where the provision of both services increases or decreases simultaneously (Rodríguez et al., 2006). The activities of these participants are in response to exogenous or endogenous changes in the system. These participants are, therefore, also considered driving factors. Driving mechanisms logically link these drivers to participants' service outcomes.

The driving mechanism of the financing system of tech companies in the sci-tech finance context is divided into three aspects: the pull driving factors generated by tech company demand, the push driving factors caused by the sci-tech finance environment, and the pressure driving factors generated by market competition.

As a technology-oriented enterprise, tech companies have always had an inherent drive to innovate, which prompts the enterprise to continuously increase its investment in R & D and actively carry out technological innovation, resulting in transformation. The innovation activities of enterprises determine that they need continuous funds, knowledge, and opportunities from the environment. These demands form the pulling force of the company finances.

Intense competition also exists among financial markets and institutions. By taking advantage of proactive policies, financial institutions participate in the innovation process of tech companies, thereby gaining the opportunity to develop new services and customers. So, these participants can reap substantial rewards from lending/investing to the tech companies.

Sci-tech finance has the function of resource allocation (Fang, 2015). Policy intervention can support R & D and innovation, as the market alone cannot provide adequate incentives for innovation (Wang, 2018). The sci-tech finance policy uses incentives to encourage financial institutions and supply chain companies to fund tech companies in various forms. So that capital resources can be

allocated to innovative fields that align with regional development strategies and industry trends.

Therefore, under the macro environment of sci-tech finance, the financing system significantly accelerates the flow of funds, enhances the degree of openness, expands the scope of information communication, and strengthens cooperation and exchanges within the system (Wang & Gu, 2021). The push, pull, and pressure inside the financing system promote the financing system's selection, differentiation, and optimization, facilitating the flow of funds (**Figure 2**).

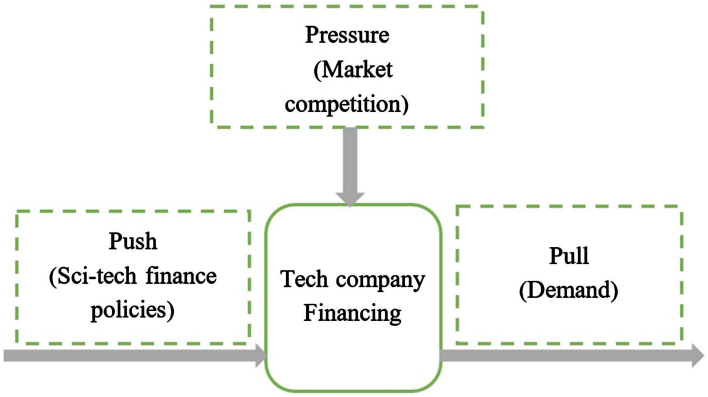

Figure 2. Driving mechanism of the financing system.

3.2. Coordination Mechanism

The financing of tech companies cannot be achieved without the cooperation of the participants. Good consensus is associated with high participant satisfaction levels (Balderas et al., 2022). However, participants often have different value systems, beliefs, preferences for conflicting standards, and resource consumption and availability judgments.

In a financing system, it is difficult to reach a hard consensus between the tech company and its participants. That means each participant cannot achieve the original purpose easily without any compromise. Therefore, it is reasonable and necessary to reach a soft consensus within a specific range of tolerance and consensus (Guo et al., 2023). Good consensus is only possible when the vast majority of participants in the financing system feel they are being treated fairly and equitably. Two conditions were identified to achieve this: 1) Most participants were satisfied with the final solution; 2) The dissatisfied minority was insignificant in number and intensity (Balderas et al., 2022). Thus, the best consensus can be found in the current stage of the preferences and judgments of the group members. According to Fernandez & Olmedo (2013), interactive approaches often assume that collective preferences are transitive and comparable when the former solution is replaced by other solutions that appear to be better. For example, when a financing system policy is acceptable to most participants, additional participants tend to adjust their value systems to the new environment. So, soft consensus does not come from a free search but from mutual concessions.

In this framework (**Figure 3**), the collaborative mechanism refers to a formal opinion generation model, which is used to modify the inconsistent opinions of the participants to reach a consensus (Wu et al., 2021). Traditional collaborative mechanisms adopt the "tolerant behavior" rule, whereby inconsistent participants are always willing to modify their preferences for group consensus, regardless of their associated adjustment costs (Cheng et al., 2018a). In contrast, bidirectional feedback strategies conduct an iterative negotiation process among participants with different attitudes (Cao et al., 2021). Some rationalize participants to optimize their adjustment cost to reach the group consensus threshold under the "tolerant behavior" (Zhang et al., 2020). This strategy does not require complete tolerance and reduces the overall adjustment cost of group consensus. Therefore, the bidirectional collaborative mechanism can balance group consensus and individual harmony with better consistency and conformity. These two fundamental characteristics will help resolve "conflicting behaviors" (Herrera-Viedma et al., 2014) among participants with different attitudes and facilitate coordination and acceptance of the outcomes of the financing system operation.

The bidirectional collaborative mechanism requires more interaction rounds than the traditional one to achieve an appropriate degree of consensus. However, higher interaction activity is a considerable advantage of this strategy (Cao et al., 2021). The collaborative mechanism can effectively improve the overall harmony of the feedback system (self-esteem) and promote the participants' possible non-cooperative behavior into cooperative behavior.

The financing of tech companies is not a process of contradictory growth but a process of coordinated and simultaneous development. To realize effective multipolar coordination, each participant must believe that the coordination activity benefits both overall and individuals through benefits-sharing. Positive (synergistic) and antagonistic (trade-off) relationships among participants are influenced by drivers of change, such as policy interventions and market changes (Dade et al., 2019). **Figure 3** shows how the policy maker obtains feedback from

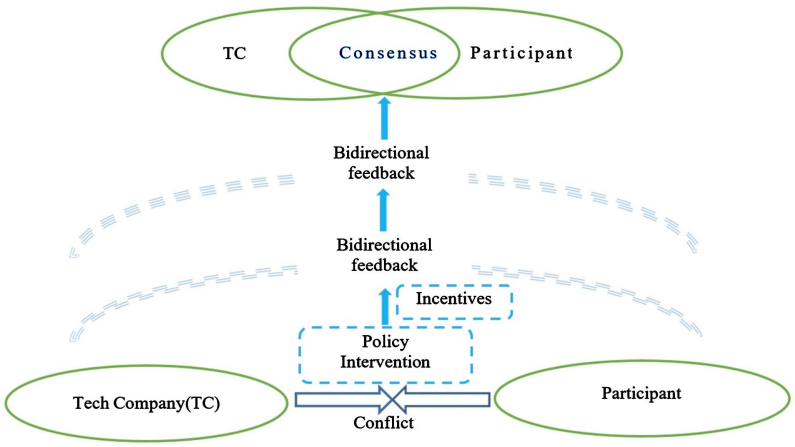

Figure 3. Collaborative mechanism of the financing system.

the tech company (TC) through some platforms (such as incubators, university science parks, etc.) and creates communication channels between the (possibly) conflicting parties. Some science and technology finance policies provide a benefit-sharing mechanism to promote communication between tech companies and participants. These incentive mechanisms encourage collaborative behaviors among tech company financing system participants.

3.3. Balancing Mechanism

A relatively stable financing system can ensure that participants fully understand and trust the behaviors of surrounding stakeholders and create an environment of security and belonging (Farjoun, 2010). Participants can focus on developing long-term strategies, achieving operational objectives, and reducing external conflicts.

However, an unchanging financing system is prone to problems such as lack of resources, knowledge and ability traps, or inability to adapt to environmental changes (Smith & Lewis, 2011). In the face of environmental change and resource scarcity, an overly stable financing system environment is not conducive to enterprises' innovation and development. Because the diversity goals of different participants are different, resulting in internal contradictions and conflicts in the system and destroying the original stable structure of the system. Given this, financing systems are continuous and changing and cannot be rigid or fixed (Lin et al., 2019). This adaptability is essentially open, dynamic, and balanced for the financing system, supporting participants and tech companies in different ways.

To maintain the dynamic balance, the financing system must have the compensability and liquidity (**Figure 4**). The economic trade-offs and externalities (e.g., reduced opportunity or loss of excess value) among participants can conflict with the goals of other stakeholders (Thomas, 2016). The compensation provided by the policy forms the interdependence of the participants. Dependence enforces cooperation and deters opportunistic behaviors, which can also be achieved by the cohesion and reciprocity in the process of financing

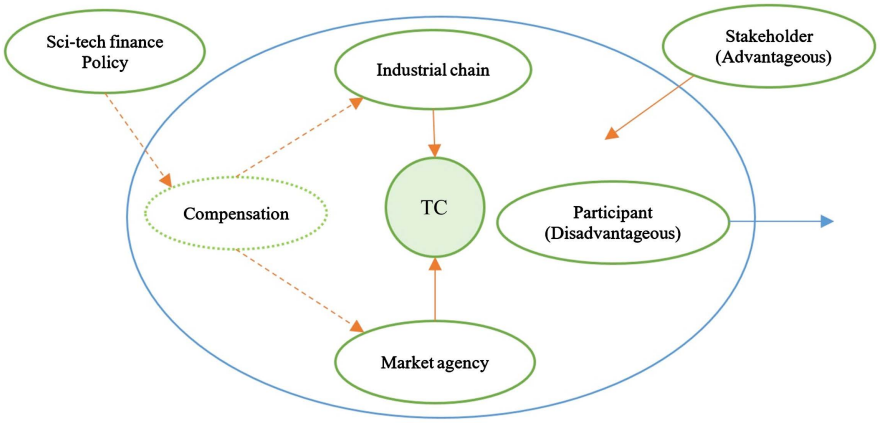

Figure 4. Dynamic balancing mechanism of financing system.

system (Rowley et al., 2000). Some key strategies, including leveraging existing local capabilities, proactive risk management, and bundling/stacking (Cooley & Olander, 2012), can engage stakeholders and facilitate investment effectively. For example, when banks are unwilling to lend to tech companies, some third parties provide guarantees or insurance to help them get funds from banks.

The equilibrium state of the financing system is achieved through competitive markets and policy guidance. Stakeholders outside the financing system may enter the financing system of a tech company because they are driven by profit. These new participants might maximize input-output-profit and get a develop stably. The disadvantageous participant who cannot maintain a virtuous profit cycle might be gradually eliminated; that is, it will withdraw from the financing system. The compensability and liquidity can benefit the tech company financing system to maintain the participants in an advantageous state.

The purpose of the intervention from sci-tech finance policies is to coordinate activities in the existing (undesirable) state and achieve a process of equilibrium state through gradual transformation, thus achieving a balance between economic benefits and environmental and social responsibility (Demianchuk et al., 2021). The compensability and liquidity are conducive to continuously attracting high-quality participants and crowding out disadvantaged individuals. These strategies help to foster and establish a well-functioning financing system.

4. Discussion

Policies for the sci-tech finance market are designed to safeguard financial market liquidity, promote the participation of market resources in innovation, and reduce the risks of economic operations. The sci-tech finance market is the leading supplier of the funds which needed for tech companies (Yuan et al., 2015). It is generally accepted in academia that market development can improve resource allocation and contribute to long-term economic growth by creating liquidity, diversifying risk, searching for information, and improving the structure of financing (Bai & Tan, 2006). More importantly for the policy maker, good markets help achieve a virtuous policy adjustment cycle and mitigate potential risk volatility (Pang & Li, 2017). In a high-stress risk state, the free market responds faster and longer to policy (Zhu & Pei, 2018).

Therefore, the sci-tech finance policy has an apparent indirect support effect on the financing of tech companies. In the environment of sci-tech finance, the incentive from the policy effectively solves the problem of light-asset and high-cost tech companies. These measures reduce the risk of innovation for tech companies. In addition, the policy support has a clear direction conducive to alleviating the information asymmetry and decreasing the market uncertainty. Guiding and non-mandatory science and technology financial policies have promoted the smooth flow of market resources (Lukkarinen et al., 2018). Through market regulation and policy intervention, the behavior of these stakeholders is more active (driving mechanism), their actions are more harmonious (coordination mechanism), and their relationship is more open (balance mechanism). The

three mechanisms are crucial in minimizing the divergence of interests between firms and other participants and managing value conflicts (Moktar, 2018).

In many respects, integrating policy objectives with enterprises' demands is a crucial feature implicit in this framework. So that it is easier for tech companies to obtain the capital relating to innovation. Ultimately, the tech company achieves commercial value, forms technological spill-overs and the social wealth.

5. Conclusion and Suggestion

The relationship between the tech company and its participants is dynamic in the financing system. In other words, participants change over time (Martin et al., 2019) because they have different regional and institutional backgrounds, stages of development, business models, and motivations (Rasmussen et al., 2016). For participants in the tech company financing system, the process offers the opportunity to create new potential resources, which can be exchanged for additional resources through services, thus integrating complementary resources (Vargo & Lusch, 2011). In this virtuous circle, participants not only have the ability to create their share of benefits but are also able to capture more benefits by synergizing and collaborating with other participants in the financing process.

These demands from participants, therefore, form different activity strategies of policies in intervening, such as plan, guide, regulate, and serve the industry through the financial market (Cui et al., 2020). First, the policy can bring together different innovative participants by the role of an intermediary, such as supply chain finance and technology trading. Some sci-tech finance policies offer participants opportunities to increase competitive and creative advantages. Second, the policy can stimulate demand and create markets, such as establishing incubators, technology transfer bases, and strategic alliances of emerging industries. This can be achieved by providing specific open and innovative policies for participants and ensuring that the tech company's resource providers are always interested in the platform. Third, the policy can make good availability regimes (Ceccagnoli et al., 2012) to influence the flow of resources within the financing system through fiscal policies, science and technology policies, and capital markets. Smooth communication structures are the primary conditions to ensure the participants' functioning.

There are limitations to this research. In China, there are a lot of complex and regional sci-tech finance policies so this study could be partial. Only common sci-tech finance policies are mentioned and analyzed. Besides, this article only carries out theoretical research on the financing system of tech companies but does not carry out case demonstrations. Future research could validate the result with an ample sample of cases to determine the rigor of the results. Other factors that may influence enterprises' interactions with the participants will also be further studied to expand our understanding of the financing system of tech companies.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Bai, Q., & Tan, Q. (2006). On the Evolution of Financial Functions and Financial Development. *Journal of Financial Research, No. 7,* 41-52.

Balderas, F., Fernández, E., Cruz-Reyes, L., Gómez-Santillán, C., & Rangel-Valdez, N. (2022). Solving Group Multi-Objective Optimization Problems by Optimizing Consensus through Multi-Criteria Ordinal Classification. *European Journal of Operational Research, 297,* 1014-1029. https://doi.org/10.1016/j.ejor.2021.05.032

Cao, M., Wu, J., Chiclana, F., & Herrera-Viedma, E. (2021). A Bidirectional Feedback Mechanism for Balancing Group Consensus and Individual Harmony in Group Decision Making. *Information Fusion, 76,* 133-144. https://doi.org/10.1016/j.inffus.2021.05.012

Ceccagnoli, M., Forman, C., Huang, P., & Wu, D. (2012). Cocreation of Value in a Platform Ecosystem! The Case of Enterprise Software. *MIS Quarterly, 36,* 263-290. https://doi.org/10.2307/41410417

Chen, Q., Lin, S., & Zhang, X. (2020). The Effect of China's Incentive Policies for Technological Innovation: Incentivizing Quantity or Quality. *China Industrial Economics, No. 4,* 79-96.

Cheng, D., Zhou, Z., Cheng, F., Zhou, Y., & Xie, Y. (2018a). Modeling the Minimum Cost Consensus Problem in an Asymmetric Costs Context. *European Journal of Operational Research, 270,* 1122-1137. https://doi.org/10.1016/j.ejor.2018.04.041

Cheng, X., Bao, X., & Shen, X. (2018b). Quantitative Research of Policy Text on Sci-Tech Finance in Beijing-Tianjin-Hebei Area. *Reform of Economic System, No. 4,* 56-61.

Cooley, D., & Olander, L. (2012). Stacking Ecosystem Services Payments: Risks and Solutions. *Environmental Law Reporter News & Analysis, 42,* 10150-10165.

Cui, L., Shen, S., & Yang, K. (2020). Quantitative Research on the Current Sci-Tech Finance Policies of Chinese Government. *Fujian Tribune, No. 4,* 162-171.

Dade, M. C., Mitchell, M. G., McAlpine, C. A., & Rhodes, J. R. (2019). Assessing Ecosystem Service Trade-Offs and Synergies: The Need for a More Mechanistic Approach. *Ambio, 48,* 1116-1128. https://doi.org/10.1007/s13280-018-1127-7

Demianchuk, M., Bezpartochnyi, M., Filipishyna, L., & Živitere, M. (2021). The Model of Achieving a Balanced Balance between Economic Efficiency and Ecological-Social Responsibility of Digitalized Enterprise. *Journal of Optimization in industrial Engineering, 14,* 45-52.

Fang, H. (2015). Essence of Sci-Tech Finance. *Forum on Science and Technology in China, No. 5,* 5-10.

Farjoun, M. (2010). Beyond Dualism: Stability and Change as a Duality. *Academy of Management Review, 35,* 202-225. https://doi.org/10.5465/AMR.2010.48463331

Fernandez, E., & Olmedo, R. (2013). An Outranking-Based General Approach to Solving Group Multi-Objective Optimization Problems. *European Journal of Operational Research, 225,* 497-506. https://doi.org/10.1016/j.ejor.2012.10.023

Guan, J., & Yam, R. C. (2015). Effects of Government Financial incentives on Firms' innovation Performance in China: Evidences from Beijing in The 1990s. *Research Policy, 44,* 273-282. https://doi.org/10.1016/j.respol.2014.09.001

Guo, W., Gong, Z., Zhang, W.-G., & Xu, Y. (2023). Minimum Cost Consensus Modeling Under Dynamic Feedback Regulation Mechanism Considering Consensus Principle and Tolerance Level. *European Journal of Operational Research, 306,* 1279-1295. https://doi.org/10.1016/j.ejor.2022.08.033

Herrera-Viedma, E., Cabrerizo, F. J., Kacprzyk, J., & Pedrycz, W. (2014). A Review of Soft Consensus Models in a Fuzzy Environment. *Information Fusion, 17,* 4-13. https://doi.org/10.1016/j.inffus.2013.04.002

Hossinger, S. M., Chen, X., & Werner, A. (2020). Drivers, Barriers and Success Factors of Academic Spin-Offs: A Systematic Literature Review. *Management Review Quarterly, 70,* 97-134. https://doi.org/10.1007/s11301-019-00161-w

Kobylińska, U., & Lavios, J. J. (2020). Development of Research on the University Entrepreneurship Ecosystem: Trends and Areas of interest of Researchers Based on a Systematic Review of Literature. *Oeconomia Copernicana, 11,* 117-133. https://doi.org/10.24136/oc.2020.005

Li, X., & Zou, K. (2018). Discussion on the Connotation of Science and Technology Finance and Policy Suggestions. *Financial Theory & Practice, No. 3,* 1-8.

Lin, H., Hu, Y., Liu, H., & Fan, B. (2019). Study on the Paradoxical Relationship between Organizational Stability and Innovation. *Science of Science and Management of S.&.T., 40,* 3-17.

Lubik, S., & Garnsey, E. (2016). Early Business Model Evolution in Science-Based Ventures: The Case of Advanced Materials. *Long Range Planning, 49,* 393-408. https://doi.org/10.1016/j.lrp.2015.03.001

Lukkarinen, J., Berg, A., Salo, M. et al. (2018). An Intermediary Approach to Technological Innovation Systems (TIS)—The Case of the Cleantech Sector in Finland. *Environmental innovation & Societal Transitions, 26,* 136-146. https://doi.org/10.1016/j.eist.2017.04.003

Martin, P. C. G., Schroeder, A., & Bigdeli, A. Z. (2019). The Value Architecture of Servitization: Expanding the Research Scope. *Journal of Business Research, 104,* 438-449. https://doi.org/10.1016/j.jbusres.2019.04.010

Mathisen, M. T., & Rasmussen, E. (2019). The Development, Growth, and Performance of University Spin-Offs: A Critical Review. *The Journal of Technology Transfer, 44,* 1891-1938. https://doi.org/10.1007/s10961-018-09714-9

Moktar, Z. (2018). *From Lab to Market: Early-Stage Business Models for the Commercialisation of University Technology in the Cleantech industry.* Ph.D. Thesis, University of Cambridge.

Mustar, P., Renault, M., Colombo, M. G., Piva, E., Fontes, M., Lockett, A. et al. (2006). Conceptualising the Heterogeneity of Research-Based Spin-Offs: A Multi-Dimensional Taxonomy. *Research Policy, 35,* 289-308. https://doi.org/10.1016/j.respol.2005.11.001

Pang, X., & Li, D. (2017). Financial Market Development and Government Debt Risk in China: Discussion on the Linkage of Fiscal Policy. *Journal of Finance and Economics, 43,* 57-68.

Rasmussen, E., Bulanova, O., Jensen, A., & Clausen, T. (2016). The Impact of Science-Based Entrepreneurial Firms: A Literature Review and Policy Synthesis. https://doi.org/10.2139/ssrn.2857118

Rodríguez, J. P., Beard Jr., T. D., Bennett, E. M., Cumming, G. S., Cork, S. J., Agard, J. et al. (2006). Trade-Offs across Space, Time, and Ecosystem Services. *Ecology and Society, 11,* 28. https://doi.org/10.5751/ES-01667-110128

Rowley, T., Behrens, D., & Krackhardt, D. (2000). Redundant Governance Structures: An Analysis of Structural and Relational Embeddedness in the Steel and Semiconductor Industries. *Strategic Management Journal, 21,* 369-386. https://doi.org/10.1002/(SICI)1097-0266(200003)21:3<369::AID-SMJ93>3.0.CO;2-M

Smith, W. K., & Lewis, M. W. (2011). Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing. *Academy of Management Review, 36,* 381-403. https://doi.org/10.5465/AMR.2011.59330958

Thomas, S. (2016). Between Tun Mustapha and the Deep Blue Sea: The Political Ecology of Blue Carbon in Sabah. *Environmental Science & Policy, 55,* 20-35. https://doi.org/10.1016/j.envsci.2015.08.017

Vargo, S. L., & Lusch, R. F. (2011). It's All B2B… and Beyond: Toward a Systems Perspective of the Market. *Industrial Marketing Management, 40,* 181-187. https://doi.org/10.1016/j.indmarman.2010.06.026

Wagner, M., Schaltegger, S., Hansen, E. G., & Fichter, K. (2019). University-Linked Programmes for Sustainable Entrepreneurship and Regional Development: How and with What Impact? *Small Business Economics, 56,* 1141-1158. https://doi.org/10.1007/s11187-019-00280-4

Wang, J. (2018). Innovation and Government Intervention: A Comparison of Singapore and Hong Kong. *Research Policy, 47,* 399-412. https://doi.org/10.1016/j.respol.2017.12.008

Wang, S., & Gu, S. (2021). Research on the Impact of S&T Finance on the High-Quality Development of Chinese Economy: Theoretical Analysis and Empirical Test. *Economist, No. 2,* 81-91.

Wang, Z., & Xu, Z. (2017). Research on the Status, Characteristics and Enlightenment of Overseas Sci-Tech Innovation Policy Evaluation. *Journal of Beijing University of Aeronautics and Astronautics (Social Sciences Edition), 30,* 114-120.

Wu, J., Zhao, Z., Sun, Q., & Fujita, H. (2021). A Maximum Self-Esteem Degree Based Feedback Mechanism for Group Consensus Reaching with the Distributed Linguistic Trust Propagation in Social Network. *Information Fusion, 67,* 80-93. https://doi.org/10.1016/j.inffus.2020.10.010

Yang, Q., Liu, X., & Sun, S. (2021). Spatiotempotal Pattern and Convergence Test of China's Scientific and Technological Innovation Efficiency. *The Journal of Quantitative & Technical Economics, 38,* 105-123.

Yuan, Z., Guo, J., & Hou, X. (2015). Research on Policy of Sci-Tech Finance in China: A Theoretical Analysis Framework. *Science and Technology Management Research, 15,* 69-75.

Zhang, H., Zhao, S., Kou, G., Li, C., Dong, Y., & Herrera, F. (2020). An Overview on Feedback Mechanisms with Minimum Adjustment or Cost in Consensus Reaching in Group Decision Making: Research Paradigms and Challenges. *Information Fusion, 60,* 65-79. https://doi.org/10.1016/j.inffus.2020.03.001

Zhang, M., Wei, S., & Zhu, X. (2018). Science and Technology Finance: From Concept to Theoretical System. *China Soft Science, No. 4,* 31-42.

Zhu, S., & Pei, P. (2018). Chinese Financial Market Risk Identification and Policy Impact in New Time Period. *Journal of Central University of Finance & Economics, No. 11,* 24-37.