TAX INCENTIVES, INNOVATION AND ENTERPRISE PERFORMANCE AMONG SPECIALIZED AND SOPHISTICATED SMALL AND MEDIUM-SIZED ENTERPRISES IN CHINA

PENG QIONG

UNIVERSITI PENDIDIKAN SULTAN IDRIS

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PENG QIONG

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Now, this journey has come to an end. This not only marks the completion of an important phase but also signals the beginning of a new journey ahead.

The road ahead is long and far-reaching; I will search high and low to find the way.

ABSTRACT

This study investigates the impact of tax incentives on the performance of China's Specialized and Sophisticated Small and Medium-sized Enterprises (SMEs), with particular attention to the mediating role of innovation input and the moderating role of innovation output. Utilizing an unbalanced panel dataset comprising 591 SMEs and 3,237 firm-year observations from the Growth Enterprise Market (GEM) Board of the Shenzhen Stock Exchange over the period 2010–2022, the study employs a two-way fixed effects model for empirical analysis. The results indicate that tax incentives significantly improve enterprise performance ($\beta = 0.044$, p-value < 0.01) and substantially increase innovation input ($\beta = 0.103$, p-value < 0.01). Innovation input is found to partially mediate this relationship, contributing to a marginal improvement in performance ($\beta = 0.005$, p-value < 0.01). Furthermore, innovation output exerts a significant moderating effect ($\beta = 0.002$, p-value < 0.05), suggesting that enterprises with higher levels of innovation output derive greater benefits from tax incentives. The analysis also reveals heterogeneity in the effects of tax incentives across ownership structures and geographic regions, with stronger impacts observed among non-state-owned enterprises and those located in western China. Grounded in Institutional Theory and Resource-Based Theory, this study demonstrates that tax incentives improve enterprise performance by facilitating institutional alignment and promoting more effective resource deployment. The findings offer practical implications for policymakers seeking to refine incentive schemes based on regional and ownership characteristics, and for enterprises aiming to strengthen their resource integration and policy responsiveness capacities.

INSENTIF CUKAI, INOVASI DAN PRESTASI PERUSAHAAN DALAM KALANGANPERUSAHAAN KECIL DAN SEDERHANA (PKS) TERPILIH DAN BERTEKNOLOGI TINGGI DI CHINA

ABSTRAK

Kajian ini menyiasat kesan insentif cukai terhadap prestasi Perusahaan Kecil dan Sederhana (PKS) Terpilih dan Berteknologi Tinggi di China, dengan memberi tumpuan khusus kepada peranan pengantara input inovasi dan peranan penyederhana output inovasi. Kajian ini menggunakan set data panel tidak seimbang yang merangkumi 591 PKS dan 3,237 pemerhatian perusahaan yang disenarai oleh Lembaga Pasaran Perusahaan Berkembang (*Growth Enterprise Market*), Bursa Saham Shenzhen bermula dari tahun 2010 hingga 2022. Bagi analisis empirikal, kajian ini menggunakan model kesan tetap dua hala (*two-way fixed effects*). Dapatan kajian menunjukkan bahawa insentif cukai meningkatkan prestasi perusahaan ($\beta = 0.044$, nilai $p < 0.01$) dan input inovasi ($\beta = 0.103$, nilai $p < 0.01$)secara signifikan. Input inovasi didapati memainkan peranan sebagai pengantara separa dalam hubungan ini dan menyumbang kepada peningkatan prestasi secara marginal ($\beta = 0.005$, nilai $p < 0.01$). Selain itu, output inovasi memberi kesan penyederhanaan yang signifikan ($\beta = 0.002$, nilai $p < 0.05$) dan ini menunjukkan bahawa perusahaan yang mempunyai tahap output inovasi tinggi memperoleh manfaat yang lebih besar daripada insentif cukai. Analisis lanjutan menunujukan heterogeniti terhadap kesan insentif cukai berdasarkan struktur pemilikan dan kawasan geografi perusahaan. Walau bagaimanapun, kesan insentif cukai yang lebih besar diperolehi dalam kalangan perusahaan bukan milik kerajaan dan terletak di Wilayah Barat China. Berteraskan Teori Institusi (*Institutional Theory*) dan Teori Berasaskan Sumber (*Resource-Based Theory*), dapatan kajian menunjukkan bahawa insentif cukai meningkatkan prestasi perusahaan dengan memudahkan penyesuaian perusahaan dan memperkukuh penggunaan sumber secara berkesan.Penemuan kajian ini memberi implikasi praktikal kepada penggubal dasar dalam usaha memperhalusi skim insentif berdasarkan ciri-ciri wilayah dan struktur pemilikan, serta meningkatkan keupayaan integrasi sumber serta tindak balas terhadap dasar yang diperkenalkan.

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2SLS	Two Stage Least Square
CIT	Corporate Income Tax
CNRDS	Chinese Research Data Services
CSMAR	China Stock Market & Accounting Research
FEM	Fixed Effects Model
GEM	Growth Enterprise Market
GMM	General Method of Moment
IV	Instrumental Variable
MIIT	Ministry of Industry and Information Technology
OLS	Ordinary Least Square
R&D	Research and Development
REM	Random Effects Model
ROA	Return on Asset
ROE	Return on Equity
SMEs	Small and Medium-sized Enterprises
SOEs	State-owned Enterprises
TOL	Tolerance
VIF	Variance Inflation Factor

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In the current context of economic and societal advancement, innovation has undeniably emerged as a pivotal catalyst for both China's economic progression and societal development. This aligns with the findings of the 17th (2007), 18th (2012), and 19th (2017) Party Congress reports, which consistently advocated for the critical goal of "building an innovative country and improving the capability of independent innovation" (Chinese Communist Party, 2007; Chinese Communist Party, 2012; Chinese Communist Party , 2017). These reports clearly demonstrate that the Chinese government has placed great emphasis on promoting innovation-driven development. Notably, the 18th Party Congress formally proposed the adoption of an innovation-driven development strategy, which subsequently triggered a series of policy measures aimed at promoting "mass entrepreneurship and innovation" (Ma,

2017; Hofman, 2018). In 2016, the State Council issued the Outline of the National Innovation-Driven Development Strategy, further emphasizing the critical role of innovation as the primary engine for China's economic progress. This document explicitly acknowledges innovation as the strategic foundation for enhancing the nation's comprehensive power. Additionally, the 19th Party Congress reaffirmed innovation as the key driving force behind development, positioning it as a central element in constructing a modernized economic system (Dhar & Mutalib, 2020; Wang & Zhu, 2021; Jahanger, 2021; Liu, Liu, Wang, Zhao, & An, 2021).

Specialized and Sophisticated small and medium-sized enterprises (SMEs) play an essential role in fostering innovation and advancing technological specialization, owing to their inherent adaptability and specialized expertise. However, despite their noteworthy contributions to economic and societal progress, these enterprises continue to face a range of challenges that limit their growth potential. These include a scarcity of human and informational resources, limited funding for innovation, and an over-reliance on singular approaches to innovation (Tang, Wang, Zheng, & Wu, 2024; Andalib & Halim, 2019; Gherghina, Botezatu, Hosszu, & Simionescu, 2020). To address these challenges, the government, as a crucial market regulator, has implemented a series of fiscal and tax policies specifically designed to incentivize and stimulate innovation. These policies play a pivotal role in fostering innovation within SMEs and have been explored extensively across various contexts, particularly in relation to the effectiveness of tax incentives (Liu, Lu, & Qiao, 2024; Hvolkova, Klement, Klementova, & Kovalova, 2019; Naradda Gamage et al., 2020).

Nevertheless, it remains critical to thoroughly examine the specific effects of these fiscal and tax policies in promoting innovation activities within enterprises. Moreover, the precise role that innovation plays in the relationship between tax policies and overall enterprise performance remain critical issues that require further investigation. Research into these areas is essential not only to deepen the understanding of the mechanisms underlying tax incentives but also to provide valuable theoretical and practical insights for optimizing and refining tax policies. Such efforts can, in turn, more effectively support the development of Specialized and Sophisticated SMEs while enhancing national innovation capacity.

1.2 Background of the Study

Amid the context of globalization and rapid technological advancements, the Chinese economy is undergoing a critical phase of transformation and upgrading. It has now entered an accelerated growth stage, where the outdated model of relying solely on factor inputs for raw economic expansion is no longer sufficient to meet the modern demands of development. The 19th National Congress strongly emphasized the importance of innovation, identifying it as the primary driving force behind development and recognizing it as the strategic foundation for establishing a modernized economic system (Hu, Mou, Wei, Qiu, Hu, & Zhou, 2024; Agarwala & Chaudhary, 2019).

Therefore, it is imperative to stay at the forefront of global scientific and technological progress, strengthen the foundations of basic research, and pursue

groundbreaking advancements in forward-looking basic research, with a focus on achieving pioneering and original breakthroughs. This perspective was further reinforced in the report from the 20th National Congress in 2022, which reaffirmed the necessity of firmly positioning innovation at the core of China's broader modernization efforts (Xi, 2022).

As China places increasing emphasis on innovation, the overall innovation environment within the country is following a strong and promising trajectory of development. The number of research and development (R&D) projects initiated by enterprises has grown substantially, increasing from 125,467 in 2007 to 824,637 in 2021, marking a nearly seven-fold increase over this fifteen-year period (National Bureau of Statistics of China, 2021). This continuous wave of technological advancement highlights ongoing progress.

According to the 2022 National Science and Technology Funding Input Statistical Bulletin, the latest data on China's science and technology investments indicate that total R&D expenditure in 2022 reached 3,078.29 billion yuan, reflecting a 10.1% increase compared to the previous year. Of this expenditure, enterprises accounted for 76.6%, government-linked research institutions for 14.0%, and tertiary educational establishments for 7.7% (Zhou, Liu & Sun, 2023). These statistics underscore that enterprises are not only the backbone of China's market economy but also serve as a critical driving force in the nation's innovation landscape.

The small and medium-sized enterprise (SME) has been a fundamental pillar of China's national economy and social development since the launch of economic

reforms, playing a critical role in expanding employment opportunities, improving livelihoods, and fostering both innovation and entrepreneurship (Huang & Wang, 2020). SMEs have demonstrated exceptional strength in innovation and adaptability, contributing over 60% of the nation's technological patents and more than 70% of new product development activities (Cao, Zhang, Ouyang, & Li, 2024).

SMEs play a vital role in national economic and social development, serving as the foundation for constructing a modern economic system and achieving high-quality growth. They are pivotal in promoting employment and improving livelihoods. While SMEs are numerous, their prevalence does not necessarily imply sufficient economic resilience. Only SMEs characterized by being "specialized, refined, differential, and innovative" can effectively enhance the economy's ability to withstand risks (Han, 2022).

In the face of recurring global pandemics and increasingly complex international relations, China's critical core technologies are confronted with significant bottleneck technologies. In key sectors such as engines, essential materials, numerical control systems, and industrial software, there remains substantial dependence on foreign technologies. This reliance implies that shifts in the international landscape could have severe repercussions for the national economy. Thus, reducing China's dependence on foreign industrial technologies and enhancing its global competitiveness is crucial for establishing a dual circulation development pattern that integrates domestic and international markets (Wang & Chen, 2022).

In this context, Specialized and Sophisticated SMEs have gained heightened attention from the state, as they are viewed as key to overcoming technological bottlenecks. Presently, more than 90% of "Little Giant" enterprises , which represent the top tier of Specialized and Sophisticated SMEs, are concentrated in critical areas such as core components, key materials, advanced foundational processes, and industrial technology. These firms play an essential role in addressing key technological challenges (Han, 2022). These enterprises are primarily focused on high-tech sectors, particularly in industries such as integrated circuits, advanced materials, and bio-pharmaceuticals, where they demonstrate significant innovation potential and market competitiveness (Xie, 2023). President Xi Jinping has underscored the critical importance of SMEs, noting that they can "accomplish great tasks" and highlighting the need to "cultivate a group of Specialized and Sophisticated SMEs" to support the country's innovation-driven development strategy.

The concept of Specialized and Sophisticated SMEs was initially introduced by the Ministry of Industry and Information Technology (MIIT) in the 12th Five-Year Plan for SME Growth in 2011, which aimed to guide Chinese SMEs toward specialization, refinement, differentiation, and innovation (MIIT, 2011). Since then, these enterprises have consistently enhanced their independent innovation capabilities by launching new products, developing patented technologies, and progressively becoming key players in technological innovation and drivers of economic growth (Zhang & Mohnen, 2017).

With their outstanding innovation capacity and strong market performance, Specialized and Sophisticated SMEs have become indispensable in advancing

national technological independence and driving economic restructuring. These enterprises play an irreplaceable role in fostering new growth drivers and enhancing China's international competitiveness within its broader economic strategy (Chen, 2019). This importance was particularly emphasized during the Central Politburo's July 2021 meeting, where attention was placed on addressing core technological bottlenecks and achieving breakthroughs in advanced manufacturing and critical technologies. The 20th National Congress of the Communist Party in 2022 further reiterated the importance of these enterprises in promoting high-end, intelligent, and green development within the manufacturing sector (Liu & Xu, 2022).

China aims to cultivate 10,000 "Little Giant" enterprises by 2025 to enhance their independent innovation capabilities and global competitiveness in high-tech and manufacturing sectors. To achieve this, China has established a pyramid cultivation system to support the development of high-tech SMEs through tiered nurturing. This system begins with "innovative SMEs," which gradually progress to become "Specialized and Sophisticated SMEs" and may eventually develop into "Little Giant". By utilizing competitive mechanisms, this system optimizes resource allocation, ensuring that enterprises continuously improve their technological and market capabilities.

To address challenges such as financing, competition, and technological advancement, China has created three major financing platforms for high-tech SMEs. The earliest, the Growth Enterprise Market (GEM) , was established in 2009 at the Shenzhen Stock Exchange, requiring a minimum market value of RMB 1 billion. Currently, 20% of listed companies on GEM are "Little Giant" enterprises. The STAR

Market, launched in 2019 at the Shanghai Stock Exchange, also requires a minimum market value of RMB 1 billion. The Beijing Stock Exchange, founded in 2021, has a lower market value threshold of RMB 200 million, with 40% of its listed companies classified as "Little Giant" enterprises. These platforms provide robust financial support for the growth and development of Specialized and Sophisticated SMEs, facilitating their expansion and strengthening (Mercator Institute for China Studies, 2023).

1.3 Problem Statement

Although formally introduced in 2011, specialized and sophisticated SMEs have rapidly become a key driver of China's national economy, contributing to technological innovation, employment, and regional development (Shan, Jia, Zheng, & Xu, 2018; Wu, Mao, & Tang, 2022). Data from the Ministry of Industry and Information Technology of China indicate that these SMEs are playing an increasingly crucial role in enhancing national innovation capacity, advancing technological progress, generating jobs, and fostering regional economic development (Xiao & North, 2018; Ding & Xie, 2021). Recognized as both policy-prioritized and innovation-driven, these firms are crucial to improving industrial resilience.

The 2024 Government Work Report highlighted the importance of fostering the growth of Specialized and Sophisticated SMEs. Through technological innovation, these enterprises have effectively resolved bottlenecks in industrial and supply chains, reducing reliance on specific regions or countries and providing new drivers of

growth for the national economy. Thus, systematically cultivating and promoting innovation within these enterprises has become a critical strategy for maintaining the resilience of industrial chains and improving national innovation competitiveness (Wang & Wang , 2023).

Innovation remains the primary engine of growth and survival for specialized and sophisticated SMEs. As technology-driven firms, they must continuously strengthen their unique advantages and innovation capacity to stay competitive and expand market presence (Ma & Liu, 2024). However, their innovation potential is often constrained by significant barriers. Due to their smaller scale and limited credit history, many struggle to access financing from traditional institutions. Resource constraints in R&D and market expansion further limit their ability to innovate and scale up (Li, 2023). Compared to larger firms, they are also more vulnerable to competitive pressures and policy fluctuations, facing greater operational risks and uncertainty.

In modern economies, tax policy serves not only as a fiscal instrument but also as a strategic tool to promote enterprise innovation and economic growth (Verulidze, 2023; Ahrorov, 2023). Amid globalization and rapid technological change, governments worldwide are increasingly adopting tax incentives to support business innovation, particularly in R&D and technology development. By reducing operational costs, such incentives encourage firms to expand innovation investment and accelerate the introduction of new products and services (Ghazinoory & Hashemi, 2021).

In recent years, the Chinese government has significantly intensified its support for specialized and sophisticated SMEs through a broad set of innovation policies, including tax incentives and financial subsidies (Li, Wang, Chen, & Nie, 2024; Xie, 2023). Among these policies, tax incentives such as reduced corporate income tax rates, additional R&D deductions, and tax relief for small and micro technology firms play a particularly critical role (Li, 2022). These measures alleviate financial pressures, enable firms to focus on core technologies, and attract external resources, thereby enhancing competitiveness in high-risk, innovation-intensive environments (Wang & Chen, 2022).

Tax incentives have received considerable academic attention as a policy instrument influencing enterprise development, particularly in relation to firm performance. Existing studies can be broadly divided into two categories: theoretical research and empirical analysis (Dosi & Tranchero, 2021; Abdelhakim & Zouaghi, 2022).

Theoretically, scholars examine how tax incentives affect investment decisions, financial conditions, and market behavior, drawing on frameworks such as endogenous growth theory, innovation theory, institutional theory, and resource-based theory (Demiral & Demiral, 2023; Klein, 2022; Dai & Chapman, 2022; Chen & Yang, 2019; Huang & Liu, 2024; Odhiambo & Olushola, 2018). Empirically, researchers typically employ quantitative methods such as regression or panel data analysis, focusing on large corporations and high-tech firms (Trinh & Van Tan, 2020; Mukherjee, Singh, & Žaldokas, 2017; Sterlacchini & Venturini ,2019; Klemm & Van Parys, 2012; Dimos & Pugh, 2016). Many studies find a positive effect of tax

incentives on innovation and performance (Obafemi, Araoye, & Ajayi, 2021; Feyitimi, Temitope, Akeem, & Samuel, 2016; Hall & Van Reenen, 2000; Czarnitzki, Hanel, & Rosa, 2011; Twesige & Gasheja, 2019), though others report neutral or even negative effects depending on firm type, industry, and policy implementation (Aghion, Akcigit, Bloom, & Kerr, 2012; Cho, Kang, & Kwon, 2024). Design and administrative factors, such as complex application procedures or sector-specific targeting, also shape policy effectiveness (Wang, 2024; Wu, Huang, & Zhang, 2019).

As the field has progressed, recent research has increasingly explored the mediating mechanisms between tax incentives and enterprise performance (Tembur, 2016). For instance, some studies have introduced R&D expenditure as a mediating variable to investigate how tax incentives indirectly influence corporate performance through such intermediary factors (Li, 2023). This body of research offers a more nuanced understanding by demonstrating that tax incentives not only have a direct impact on an enterprise's financial outcomes but also indirectly affect performance by shaping the enterprise’s innovation activities.

While existing research extensively examines large enterprises and high-tech firms, there is a notable lack of studies focusing on specialized and sophisticated SMEs. Foreign research typically draws on data from developed countries (Sterlacchini & Venturini ,2019; Klemm & Van Parys ,2012; Dimos & Pugh ,2016), whereas domestic studies center on high-tech enterprises, leading to insufficient attention to this emerging group (Pang & Guan, 2018; Ma, 2011). Moreover, prior studies often emphasize statistical correlations without investigating the mechanisms through which tax incentives affect firm performance. Mediating variables are

commonly limited to R&D investment, overlooking the essential role of innovation output. Outputs such as patents, new products, and technological breakthroughs serve as key indicators of innovation capacity and reflect a firm’s ability to commercialize R&D efforts. Unlike innovation input, which reflects investment behavior, innovation output directly relates to performance outcomes. Focusing on output allows research to move beyond expenditures and assess the transformation of innovation into market competitiveness.

This study aims to address the gap in the existing literature concerning the effect of tax incentives on the performance of Specialized and Sophisticated SMEs, with a particular focus on how these incentives improve performance by influencing enterprises' innovation strategies, resource allocation, and innovation activities. Specifically, it explores how tax incentives affect both innovation input and output, and how these factors contribute to overall enterprise performance enhancement. By examining these variables, the study seeks to deepen understanding of the mechanisms through which tax incentives operate, uncovering both direct and indirect effects on enterprise performance.

To achieve this, the research integrates established theoretical frameworks with empirical data, focusing on SMEs listed on the Growth Enterprise Market. As the GEM is designed to support high-growth, innovation-driven SMEs, it provides a suitable sample for studying the unique characteristics of Specialized and Sophisticated SMEs. By investigating the relationships between tax incentives, innovation input, and innovation output, this research not only aims to provide actionable strategies for improving the operational capabilities of these firms but also

offers policymakers evidence-based insights to promote the sustainable development of SMEs.

1.4 Research Objectives

This study examines the effect of tax incentives on the performance of Specialized and Sophisticated SMEs within the context of China's economy, with a focus on tax incentives as a governmental tool to stimulate innovation. Extending beyond general performance outcomes, this study places particular emphasis on how these effects vary across different ownership structures and geographical regions. Furthermore, it seeks to clarify the underlying mechanisms by distinguishing between the respective roles of innovation input and innovation output. Accordingly, the specific objectives of this research are as follows:

(1)To determine the effect of tax incentives on the enterprise performance of Specialized and Sophisticated SMEs.

(2)To examine whether the ownership structure affects the relationship between tax incentives and enterprise performance.

(3)To examine whether the geographical region affects the relationship between tax incentives and enterprise performance.

(4)To determine the effect of tax incentives on the innovation input of Specialized and Sophisticated SMEs.

(5)To determine the effect of innovation input on the enterprise performance of Specialized and Sophisticated SMEs.

(6)To examine whether innovation input plays a mediation effect between tax incentives and enterprise performance of Specialized and Sophisticated SMEs.

(7)To examine whether innovation output plays a moderation effect between tax incentives and enterprise performance of Specialized and Sophisticated SMEs.

1.5 Research Questions

Arising from the challenges identified and the subsequent discussion of the research aims, this study formulates several critical research questions:

Question 1: Do tax incentives affect the enterprise performance of Specialized and Sophisticated SMEs?

Question 2: Does ownership structure affect the relationship between tax incentives and enterprise performance?

Question 3: Do geographical regions affect the relationship between tax incentives and enterprise performance?

Question 4: Do tax incentives affect the innovation input of Specialized and Sophisticated SMEs?

Question 5: Does innovation input affect the enterprise performance of Specialized and Sophisticated SMEs?

Question 6: Does innovation input play a mediation effect between tax incentives and the enterprise performance of Specialized and Sophisticated SMEs?

Question 7: Does innovation output play a moderation effect between tax incentives and the enterprise performance of Specialized and Sophisticated SMEs?

1.6 Research Hypothesis

The formulated hypotheses for this research are as follows:

H1a: Tax incentives will affect the enterprise performance of Specialized and Sophisticated SMEs.

H1b: Ownership structure will affect the relationship between tax incentives and enterprise performance.

H1c: Geographical regions will affect the relationship between tax incentives and enterprise performance.

H2: Tax incentives will affect the innovation input of Specialized and Sophisticated SMEs.

H3: Innovation input will affect the enterprise performance of Specialized and Sophisticated SMEs.

H4: Innovation input will mediate the relationship between tax incentives and the enterprise performance of Specialized and Sophisticated SMEs.

H5: Innovation output will moderate the relationship between tax incentives and the enterprise performance of Specialized and Sophisticated SMEs.

1.7 Conceptual Framework

This study examines how tax incentives promote enterprises' financial performance by fostering innovation through an analysis of the interactions among tax incentives, innovation input, and innovation output. Tax incentives are positioned as the independent variable, with a specific focus on their effect on the performance of Specialized and Sophisticated SMEs, measured by enterprise performance as the dependent variable. As an external incentive mechanism, tax incentives not only alleviate the tax burden on firms but also provide additional financial support,

encouraging greater investment in R&D and innovation activities. This, in turn, fosters long-term growth and cultivates competitive advantages.

This concept is consistent with institutional theory, which posits that external institutional factors, such as government tax incentives, profoundly influence firms' resource allocation and strategic decision-making processes (Chiu, 2018). When faced with tax incentives, firms tend to proactively adjust their business strategies to optimize the benefits of these external stimuli, thereby enhancing their innovation capacity (Jeong & Kim, 2019). Consequently, tax incentives are not merely short-term financial instruments; they act as external drivers of firms' dynamic capabilities, allowing them to better navigate rapidly evolving market environments and capitalize on new opportunities, ultimately improving their long-term financial performance (Sarwar et al., 2021). Moreover, this study conducts a comprehensive examination of two heterogeneity factors, namely ownership structure and geographical region, and their roles in shaping the relationship between tax incentives and performance. The objective of this analysis is to reveal performance variations across different types of enterprises that benefit from tax incentive policies, thereby ensuring that the findings are not only more targeted but also broadly applicable.

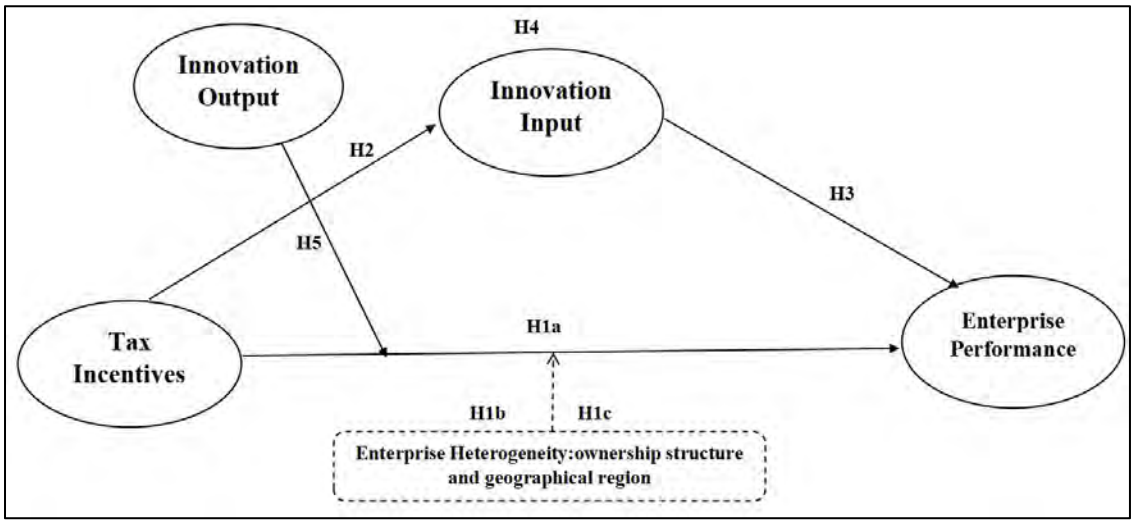
To further explore the mechanisms by which tax incentives affect enterprise performance, this study introduces innovation input as a mediating variable. Innovation input refers to the resources enterprises dedicate to R&D, technological innovation, and related activities, including the financial savings generated through tax incentives. By increasing innovation input, enterprises can improve product and service quality, enhance production processes, or explore new business models, all of

which can directly or indirectly improve their financial performance. According to resource-based theory, innovation serves as a critical internal resource for achieving sustained competitive advantage (Suardhika, Yuesti, & Latupeirissa, 2018). The resource-based theory underscores that enterprises can accumulate more unique and inimitable resources, such as technological expertise, intellectual capital, talent pools, and proprietary technologies, by increasing their innovation investments. The effective integration and application of these resources significantly enhance enterprises' market competitiveness (Abu Bakar & Ahmad, 2010). Therefore, tax incentives, by stimulating innovation input, assist enterprises in accumulating valuable resources and strengthening their competitive position in the market, thereby boosting overall enterprise performance.

Additionally, innovation output serves as a moderating variable, clarifying how innovation outcomes influence the relationship between tax incentives and enterprise performance. According to resource-based theory, higher levels of innovation output enhance the efficiency with which enterprises utilize their innovation resources, thereby amplifying the positive impact of tax incentives on enterprise performance. This aligns with institutional theory, which suggests that enterprises improve their legitimacy and market competitiveness by responding to external policy incentives through increased innovation output (Walter, Au-Yong-Oliveira, Miranda Veloso, & Polónia, 2022). Innovation output not only drives short-term performance gains but also lays a solid foundation for sustained long-term success. As firms accumulate innovation outcomes, they can expand market share, boost brand visibility, and strengthen their leadership positions within their respective industries (Laosirihongthong, Prajogo, & Adebanjo, 2014).

Figure 1.1

Conceptual Framework



1.8 Significance of the Study

In light of the dynamic global economy and rapid technological advancements, there has been substantial interest in examining the effects of tax incentives on the performance of Specialized and Sophisticated SMEs. In the present context, technological innovation is widely recognized as a critical driver of economic growth and enhanced competitiveness (Sein & Darfo-Oduro, 2024). Consequently, understanding how policy instruments support this process holds significant theoretical and practical implications.

1.8.1 Theoretical Significance

The primary objective of this study is to deepen the understanding of the relationship between tax incentives and the performance of specialized and sophisticated SMEs, with particular emphasis on the roles of innovation input and innovation output in shaping this relationship. While previous scholarly work has explored the connections among tax incentives, enterprise performance, and innovation, much of the existing literature focuses predominantly on innovation input, often overlooking the full input and output innovation chain. Moreover, a substantial portion of prior research has centered on developed economies, leaving a theoretical gap concerning how fiscal incentives operate in emerging institutional environments such as China. By examining China's specialized and sophisticated SMEs, this study contributes to the extension of existing theories into new institutional, developmental, and policy-driven contexts, thereby enriching the applicability of fiscal and innovation theories in transitional economies.

This study also makes a methodological contribution by adopting a structured empirical strategy that incorporates both mediating and moderating mechanisms within a panel data framework. Specifically, innovation input is examined as a mediator, and innovation output as a moderator, in the relationship between tax incentives and enterprise performance. This research design provides a more nuanced and causally coherent understanding of how external policy tools influence firm-level outcomes through internal innovation dynamics. By testing the indirect and conditional effects of fiscal policy, the study enhances the explanatory precision of

existing theoretical models and offers a replicable empirical framework for future research.

Furthermore, this study integrates Institutional Theory and Resource-Based Theory into its conceptual model, offering a dual-theoretical perspective to explain how tax incentives affect firm behavior and performance. From an institutional perspective, tax incentives function as formal policy instruments that reduce uncertainty and legitimize innovation-oriented strategies. From a resource-based perspective, they help firms acquire and deploy valuable resources, such as R&D capabilities, technological assets, and innovation infrastructure, thereby enabling sustained competitive advantage. Through this integration, the study not only affirms the explanatory power of both theories in the context of fiscal policy and innovation but also extends their theoretical scope by demonstrating how institutional forces and internal resources jointly influence performance in policy-sensitive sectors.

In sum, this research contributes to theory by contextualizing and operationalizing two widely accepted frameworks within a structured empirical model, offering new insights into the mechanisms through which tax incentives shape firm behavior in emerging economies. It also provides a methodological reference for future studies exploring policy effectiveness through innovation-related channels.

1.8.2 Practical Significance

In the context of the current global economy and rapid technological innovation, Specialized and Sophisticated SMEs play a critical role in driving national scientific progress and fostering economic growth. However, these enterprises face considerable challenges in their innovation and development efforts, primarily due to limited capital, constrained financing channels, and elevated operational risks (Liu, Chen, & Liu, 2023). The government's role in promoting innovation and enhancing the competitive edge of these enterprises through fiscal and tax policies is vital, yet the effective implementation and specific impacts of such policies require comprehensive exploration. The practical implications of this study are multifaceted.

Firstly, the study aims to enhance enterprise innovation and development. By elucidating how tax incentives influence the performance of Specialized and Sophisticated SMEs, particularly focusing on the roles of innovation input and innovation output, this research can help enterprises better understand and leverage these policies to improve their innovative capabilities. The findings can provide enterprises with strategies and methodologies to engage more effectively in market competition, elevate product quality, and strengthen their innovation capacity, thereby securing a sustainable competitive advantage in the marketplace.

Secondly, the study serves as a valuable reference for policymakers. By offering empirical evidence on the impact of tax incentives on the performance of Specialized and Sophisticated SMEs, it helps policymakers better understand the practical effects of these policies, enabling them to make more informed and targeted

adjustments and optimizations in future policy design. Through a detailed analysis of the mechanisms and outcomes of tax incentives, policymakers can craft more precise and effective strategies to support technological innovation in enterprises and promote the sustainable development of Specialized and Sophisticated SMEs.

Lastly, this study makes a significant contribution to the construction of an innovative China. It not only enhances the innovation capabilities and market competitiveness of Specialized and Sophisticated SMEs but also plays a crucial role in advancing China's economic transformation and realizing its innovation-driven development strategy. By refining and improving fiscal and tax policies, the study encourages more enterprises to invest in innovative activities, thus boosting the nation's overall technological innovation capacity and fostering long-term economic growth.

1.9 Scope of the Study

This study focuses on China's Specialized and Sophisticated SMEs, utilizing data from companies listed on the Growth Enterprise Market. As a stock exchange platform specifically designed for innovation-driven SMEs, GEM provides a unique and suitable environment for evaluating the effectiveness of tax policies. The research period covers 2010 to 2022, a critical phase during which the Chinese government actively promoted the growth of Specialized and Sophisticated SMEs through tax incentive policies. This study primarily explores the direct impact of tax incentives on

firm performance and examines how innovation input and output serve as mediating and moderating mechanisms to enhance overall enterprise performance.

First, the study centers on assessing how tax incentives directly influence the performance of Specialized and Sophisticated SMEs. Grounded in institutional theory, this analysis investigates how tax incentives, as key external institutional factors, affect firms' financial strategies and operational decisions (North, 1990; Werekoh, 2022). By reducing the tax burden, tax incentives provide firms with additional financial resources that can be allocated toward development and innovation, potentially resulting in improved financial performance and competitive positioning.

Second, the study thoroughly examines the mediating role of innovation input in the relationship between tax incentives and enterprise performance, alongside the moderating role of innovation output. Tax incentives are recognized as a critical external stimulus that fosters innovation by increasing firms' disposable funds, thereby encouraging investment in R&D and other innovation activities (Yue, Yang, & Wang, 2023). Increased innovation input is expected to lead to greater innovation output, such as new product development and patent applications, enabling firms to strengthen their competitive edge in the market and improve overall performance (Ding, Wu, & Long, 2023). Regarding the moderating mechanism, innovation output serves as a key variable that may influence the strength of the relationship between tax incentives and firm performance. Specifically, higher levels of innovation output are likely to amplify the positive effects of tax incentives on performance. Through intellectual property protection, enterprises can secure exclusive rights to their innovations, preventing competitors from easily copying or infringing upon their

products (Chen, Liang, & Zhang, 2023). This exclusivity not only provides enterprises with opportunities to continuously refine production processes, increase efficiency, and lower costs, but also enables them to introduce market-leading products, further enhancing their competitive advantage. By establishing strong brand recognition, enterprises can solidify their market position, expand their market share, and generate excess profits, thereby improving overall enterprise performance (Li, 2023).

1.10 Operational Definition

1.10.1 Specialized and Sophisticated SMEs

Specialized and Sophisticated SMEs, are defined as small and medium-sized enterprises that possess notable strengths in specialization, refinement, differentiation, and innovation. Specialization denotes an enterprise's in-depth expertise and capabilities within a specific industry or technical field, enabling it to focus on core business areas with a high level of proficiency. Refinement is characterized by stringent control over production processes, management practices, and product quality, all aimed at achieving superior efficiency and high standards. Differentiation highlights the enterprise's unique competitive edge within a specific market or technical domain, allowing it to capture market share through distinctive products or services. Innovation refers to the firm's ability to make continuous advancements in technology, products, and business models, serving as a key driver for the sustainable development of Specialized and Sophisticated SMEs (MIIT, 2022).

According to the Development Plan for Promoting Small and Medium-Sized Enterprises (2016-2020) and the Interim Measures for the Gradient Cultivation of High-Quality SMEs, the gradient cultivation model encompasses three tiers: innovative SMEs, Specialized and Sophisticated SMEs, and "Little Giant" Specialized and Sophisticated SMEs. Innovative SMEs exhibit a high degree of specialization and innovation, forming the foundation of the high-quality SME ecosystem. Specialized and Sophisticated SMEs focus on comprehensive development in specialization, refinement, differentiation, and innovation, constituting the backbone of high-quality SMEs. Little Giant Specialized and Sophisticated SMEs are key players in critical sectors of industrial foundations and pivotal segments of the supply chain. These enterprises are distinguished by their significant innovation capacities, mastery of core technologies, and strong market presence, positioning them as leaders among high-quality SMEs (MIIT, 2022; Mercator Institute for China Studies, 2023).

In this study, Specialized and Sophisticated SMEs are broadly defined to include innovative SMEs, Specialized and Sophisticated SMEs, and Little Giant enterprises. By examining these three categories, this study provides a comprehensive overview of the development trajectories of Specialized and Sophisticated enterprises, particularly their progression from the early stages of innovation to becoming pivotal players in the industrial supply chain.

1.10.2 Innovation, Innovation Input and Innovation Output

Innovation theory, as proposed by economist Joseph Schumpeter, classifies innovation into five dimensions, including product innovation, process innovation, and innovations in the supply of raw materials or semi-finished goods, collectively categorized as technological innovation (Schumpeter, 1934). This study specifically focuses on technological innovation.

Academic perspectives on technological innovation vary, often distinguishing between narrow and broad interpretations. The narrow interpretation emphasizes the outcomes or results of innovation, focusing on the tangible benefits generated by the innovation process. Conversely, the broad interpretation encompasses all stages of the innovation process, facilitating a holistic evaluation of the entire process. Martínez Sánchez et al. (2024) highlighted that in highly competitive markets, particularly in the realm of sustainable energy solutions, patent evaluation serves as a crucial metric for assessing technological innovation, thus reinforcing the importance of process innovation. This study distinguishes between two aspects of innovation: innovation input and innovation output.

Innovation input refers to the various resources invested by enterprises in their innovation activities, including financial, human, temporal, and other resources (Cohen & Levinthal, 1990; Nelson & Winter, 1982; Kline & Rosenberg, 2010; Teece, 1986). It encompasses the financial and material resources allocated to developing new products or advancing existing technologies. Financial resources cover R&D funding, technology adoption expenses, and other innovation-related costs, while

human resources include R&D personnel and technical staff, all of which play a critical role in driving innovation. Moreover, innovation investment often requires sustained efforts over time to generate meaningful outcomes. Specifically, this study measures innovation input using the logarithm of R&D investment.

Innovation output corresponds to the results of innovation input and is broadly defined as the tangible outcomes stemming from an organization's innovation activities (Freeman & Soete, 1997). Although there is no universally agreed-upon definition of innovation output in the academic literature, many scholars use metrics such as the number of invention patents, the output rate of production factors, and the proportion of sales revenue from new products to represent innovation output. These outcomes may take the form of new products, services, technologies, or business models. The direct or indirect outcomes resulting from the resources invested in R&D can be considered innovation output. In this study, the number of patent applications is employed as a key indicator to measure innovation output.

1.10.3 Tax Incentives

Tax incentives refer to governmental tax policies designed to reduce or exempt the tax burden for taxpayers who meet specific criteria. These measures serve as tools to stimulate designated taxpayers and economic activities by adjusting the tax system, with the aim of addressing particular issues prevalent at the current stage of economic development (He, Jiang, & Fang, 2023). By utilizing a range of policy tools and measures, the government extends incentives to specific taxpayers and targeted

economic activities, thereby fulfilling the objectives outlined in the tax policies (Ma, Liu, & Wu, 2024).

Tax incentives in the business sector mainly consist of components such as tax exemptions, tax reductions, and accelerated depreciation. These incentives are generally divided into direct and indirect categories (Xu, 2023; Jinming & Din, 2023). Direct tax incentives, which aim to encourage innovation output, include preferential tax rates, tax deductions, and tax exemption policies, all of which contribute to a reduction in corporate income tax (Xu, 2023; Jinming & Din, 2023). On the other hand, indirect tax incentives, which are intended to boost innovation input, encompass measures such as deductions for fixed assets, pre-tax deductions for R&D expenditures, and investment tax credits (Cao, Li, & Wu, 2023; Yu, 2022). Chen and Yang (2019) highlight that these indirect incentives, particularly pre-tax deductions for R&D expenses, play a crucial role in stimulating firms' innovation input. Tax incentives serve as retrospective motivators for enterprises by effectively reducing their tax liabilities, thereby lowering their operational costs.

This research focuses specifically on the role of tax incentives in relation to Specialized and Sophisticated SMEs. In China, the tax incentives targeting these enterprises predominantly relate to enterprise income tax. Therefore, the tax incentives discussed in this paper refer explicitly to enterprise income tax incentives.

1.10.4 Enterprise Performance

Performance refers to the measurement and feedback regarding the extent to which an enterprise achieves its specific goals. Typically, performance evaluation involves assessing the degree to which individual, enterprise, or team objectives have been accomplished (Lucianetti, Battista, & Koufteros, 2019). In the business context, enterprise performance specifically relates to operational performance and serves as a metric to evaluate business outcomes within a defined operational cycle (Liu, Wu, Zhong, & Liu, 2020).

The formulation of performance evaluation indicators and methodologies must adhere to principles such as comprehensive content, scientific rigor, objective and fair assessment, operational simplicity, and broad applicability. These principles are essential due to the diverse backgrounds of financial information users, which necessitate balancing the information needs of various stakeholders to mitigate information asymmetry (Salehi & Arianpoor, 2021). It is crucial for performance evaluation indicators to exhibit strong comprehensiveness, enabling them to reflect the overall operational situation of the enterprise. Liu (2015) highlighted that an enterprise's operational efficiency, business conditions, and management outcomes serve as comprehensive manifestations of enterprise performance, providing insights into the overall operational status and development trends of the enterprise. Enterprise performance can be evaluated from multiple perspectives, including profitability, growth rate, social recognition, and other dimensions. Scholars have categorized enterprise performance assessment into four key dimensions: employee performance,

enterprise innovation, market performance, and financial performance (Kori, Muathe, & Maina, 2020).

Currently, empirical research on enterprise performance primarily utilizes two types of indicators: financial and non-financial. This study argues that, given the objectivity and uniformity of financial data, measuring performance through financial performance indicators is more straightforward and explicit. Financial indicators, such as profitability levels and cash flow, intuitively reflect an enterprise's operational efficiency and business outcomes, making them essential criteria for evaluating enterprise performance. As a result, this study adopts financial performance data as the primary measure of enterprise performance. Specifically, return on equity is employed as the primary indicator. In addition, return on assets is used in the robustness checks to ensure the consistency and reliability of the empirical findings.

1.10.5 Heterogeneity Factors

This study incorporates two key heterogeneity factors, ownership structure and geographic region, to examine the differentiated effects of tax incentives on firm performance.

Ownership structure is classified based on the ultimate controlling shareholder, following established classifications in the literature (Huang & Liu, 2024; Jin, Shang, & Xu, 2018). Firms in which the central or local government directly or indirectly holds a majority share are defined as state-owned enterprises (SOEs), whereas firms

under other forms of ownership (for example, private, foreign-invested, or collective ownership) are categorized as non-state-owned enterprises (non-SOEs). The relevant data are obtained from annual reports and corporate governance records in the CSMAR database.

Geographic regions are delineated according to the administrative division standards issued by China's National Bureau of Statistics, which divides the country into eastern, central, and western regions. The eastern region comprises Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan; the central region includes Shanxi, Jilin, Heilongjiang, Henan, Hubei, Hunan, Anhui, and Jiangxi; and the western region encompasses Inner Mongolia, Chongqing, Sichuan, Guangxi, Guizhou, Yunnan, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang. Prior studies (Fang, Su, & Lu, 2022; Jia & Ma, 2017) underscore the importance of accounting for regional disparities when evaluating policy effects. Regional classification is based on firms' registered locations and provincial-level statistical information, also sourced from the CSMAR database.

1.11 Thesis Structure

This study aims to examine the impact of tax incentives on the performance of Specialized and Sophisticated SMEs. Data from GEM-listed enterprises are employed to conduct empirical tests, derive conclusions, and formulate corresponding policy recommendations based on the findings. The research is organized into the following five chapters:

Chapter 1 outlines the fundamental content of this study, systematically presenting the overall structure and key elements of the research. This chapter begins with an overview of the research background, highlighting the importance of tax incentives for Specialized and Sophisticated SMEs and explaining the role of innovation activities in influencing enterprise performance. It also includes the problem statement, research objectives, research questions, and hypotheses, and provides a concise description of the conceptual framework. Furthermore, the chapter discusses the theoretical and practical significance of the study, defines the scope of the research, and presents operational definitions of key terms.

The literature review in Chapter 2 offers a comprehensive analysis of the relationship between tax incentives, the performance of Specialized and Sophisticated SMEs, innovation input, and innovation output. This chapter conducts an in-depth examination of existing literature, focusing on how innovation input acts as a mediating factor in the link between tax incentives and enterprise performance, and how innovation output serves as a moderating factor influencing this relationship. Furthermore, it explores recent research trends and provides a detailed discussion of the hypotheses developed for this study, establishing a theoretical basis for the ensuing empirical analysis.

Chapter 3, the research methodology section, provides a detailed description of the methods employed in this study, including research design, the definition of key variables, and the statistical methods and regression models that will be utilized. This chapter elaborates on the criteria and methods used for selecting sample enterprises, thoroughly explains the definition and measurement of variables, and introduces the

data processing techniques. It also discusses the statistical methods and regression models to be used in analyzing the relationships between variables, ensuring a rigorous approach to data analysis.

Chapter 4 focuses on data analysis and presents the results of the empirical research, including descriptive statistical analysis, correlation analysis, baseline regression analysis, mechanism analysis, and other relevant findings. The primary objective of this chapter is to analyze the direct impact of tax incentives on enterprise performance and to examine the roles of innovation input as a mediating variable and innovation output as a moderating variable in this process. Through these analyses, the chapter seeks to reveal how tax incentives influence enterprise performance via innovation input and output, thereby providing valuable insights for future policy formulation.

Finally, Chapter 5 provides a comprehensive summary of this thesis, synthesizing key research findings and discussing the empirical results in detail. This chapter offers targeted policy recommendations for both government and businesses, emphasizing the practical implications of the study. Additionally, it addresses research limitations and suggests directions for future studies.

1.12 Chapter Summary

As China stands at a pivotal juncture in its transition toward becoming an innovative nation, innovation activities have emerged as the cornerstone of constructing the

country's modernized economic system. This is particularly true for Specialized and Sophisticated SMEs, where innovation is not only essential for survival and growth but also serves as a crucial means to enhance the nation's overall innovation capacity. In the context of globalization and rapid technological advancements, these enterprises often face significant challenges due to their limited resources and capabilities, especially when confronted with intense market competition and the constant need for technological renewal. Therefore, understanding and strengthening the innovation activities of Specialized and Sophisticated SMEs, especially through effective policy instruments such as tax incentives, is vital for advancing national innovation strategies.

This study focuses on examining the impact of tax incentives on the performance of Specialized and Sophisticated SMEs in China, with particular emphasis on the roles of innovation input and innovation output as key variables. Specifically, innovation input is analyzed as a mediating variable, while innovation output is treated as a moderating variable. The selection of this research theme stems from an in-depth understanding of China's current innovation-driven development strategy and the unique challenges faced by Specialized and Sophisticated SMEs. As a critical policy tool, tax incentives not only alleviate the financial burden on these enterprises but, more importantly, stimulate their innovation potential. By analyzing the mechanisms through which innovation input and innovation output operate, this study aims to elucidate the specific processes by which tax incentives enhance the performance of Specialized and Sophisticated SMEs.