INSTITUTO
UNIVERSITÁRIO
DE LISBOA

Evaluating Trillion Funds, Evaluating Chinese Government Industry Guidance Fund through a Multi-Dimensional Lens

ZHANG Zhiqiang

Doctor of Management

Supervisors:
PhD Felipa Sampayo, Associate Professor,
ISCTE University Institute of Lisbon
PhD Li Ping, Professor,
University of Electronic Science and Technology of China

November, 2025

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Evaluating Trillion Funds, Evaluating Chinese Government Industry Guidance Fund through a Multi-Dimensional Lens

ZHANG Zhiqiang

Doctor of Management

Supervisors:
PhD Felipa Sampayo, Associate Professor,
ISCTE University Institute of Lisbon
PhD Li Ping, Professor,
University of Electronic Science and Technology of China

November, 2025

BUSINESS
SCHOOL

Marketing, Operations and General Management Department

Evaluating Trillion Funds, Evaluating Chinese Government Industry Guidance Fund through a Multi-Dimensional Lens

ZHANG Zhiqiang

Doctor of Management

Jury:

PhD Luís Miguel da Silva Laureano, Assistant Professor,
Iscte - Instituto Universitário de Lisboa
PhD Mónica Alexandra Vilar Ribeiro de Meireles, Assistant Professor,
Universidade de Aveiro
PhD Sofia Maria Lopes Portela, Assistant Professor,
Iscte – Instituto Universitário de Lisboa
PhD TIAN Yixiang, Professor,
UESTC - University of Electronic Science and Technology of China
PhD Felipa Dias de Mello Sampayo, Assistant Professor with Habilitation,
Iscte – Instituto Universitário de Lisboa

November, 2025

INSTITUTO UNIVERSITÁRIO DE LISBOA

Evaluating Trillion Funds, Evaluating Chinese Government Industry Guidance Fund through a Multi-Dimensional Lens

ZHANG Zhiqiang

Declaration

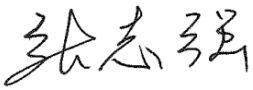
I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed:  Date: 2025.11.28

Name: ZHANG Zhiqiang

作者申明

本人郑重申明：除了论文致谢中明确说明并致以谢意的部分外，所呈交的论文不包含任何他人或作者本人已用于获得任何教育机构的学位和证书而使用过的材料。同时尽我所知，除了文中特别加以标注引用的内容外，本论文不包含任何其他个人或集体已经发表或撰写的成果作品。

作者签名： 日期：2025.11.28

姓名(拼音)：ZHANG Zhiqiang

[This page is deliberately left blank.]

Abstract

The research on evaluating Chinese government industry guidance fund holds significant importance in the current economic context, providing valuable insights for governmental decision-making and fund management. While scholars studying China have achieved preliminary research outcomes on this subject, however, existing studies present notable limitations. Given the heterogeneity of government industrial guided funds across regions and industries, performance evaluation and related factor analyses require broader regional and sector-specific case studies to enhance their comprehensiveness and accuracy. This study reviews performance evaluation for government industrial guided funds systematically. Building on the existing theoretical framework and practical experience, a performance evaluation index system for government industrial guidance funds was constructed, covering three dimensions: policy objectives, investment returns, and management efficiency. The weights of the indicators were determined using the Analytic Hierarchy Process (AHP). Applying the Fuzzy Comprehensive Evaluation Method and the developed performance evaluation index system to industrial guided funds managed by the Sichuan Development Industrial Guidance Fund as a case study, the evaluation revealed that the Sichuan Development Industrial Guidance Fund generally performs well, showing strong effectiveness in achieving its policy goals, although improvements are needed in investment returns and management practices. Furthermore, an in-depth analysis of five representative sub-funds under the Sichuan Development Industrial Guidance Fund was conducted to examine performance determinants through four analytical lenses: policy environment, institutional design, fund management operations, and industrial characteristics. This research contributes to the methodological advancement of performance evaluation for China's government industrial guidance funds and provides valuable insights for designing more effective policy frameworks.

Keywords: Government industrial guidance funds; Performance evaluation; Fuzzy comprehensive evaluation; Regional case study; China

JEL: G24, G11

[This page is deliberately left blank.]

Resumo

A investigação sobre a avaliação do fundo de orientação industrial do governo chinês é de grande importância no contexto económico atual, fornecendo insights valiosos para a tomada de decisões governamentais e a gestão de fundos. Embora os investigadores que estudam a China tenham alcançado resultados preliminares neste tema, os estudos existentes ainda apresentam limitações notáveis. Dada a heterogeneidade dos fundos governamentais de orientação industrial entre diferentes regiões e setores, a avaliação de desempenho e a análise dos fatores associados requerem estudos de caso mais amplos, com enfoque regional e setorial, de forma a aumentar a abrangência e a precisão da investigação. O presente estudo revê de forma sistemática a avaliação de desempenho dos fundos governamentais de orientação industrial. Com base no enquadramento teórico existente e na experiência prática, foi construído um sistema de índices de avaliação de desempenho para estes fundos, abrangendo três dimensões: objetivos de política, retornos do investimento e eficiência da gestão. Os pesos dos indicadores foram determinados através do Processo Analítico Hierárquico (AHP). Aplicando o Método de Avaliação Fuzzy Compreensiva e o sistema de índices desenvolvido aos fundos de orientação industrial geridos pelo Fundo de Orientação Industrial de Desenvolvimento de Sichuan, como estudo de caso, a avaliação revelou que o fundo apresenta, em geral, um bom desempenho, demonstrando elevada eficácia na concretização dos seus objetivos de política, embora sejam necessárias melhorias nos retornos do investimento e nas práticas de gestão. Além disso, foi realizada uma análise aprofundada de cinco subfundos representativos do Fundo de Orientação Industrial de Desenvolvimento de Sichuan, examinando os determinantes do desempenho através de quatro perspetivas analíticas: ambiente político, desenho institucional, operações de gestão do fundo e características industriais. Esta investigação contribui para o avanço metodológico da avaliação de desempenho dos fundos governamentais de orientação industrial na China e fornece informações valiosas para a conceção de enquadramentos políticos mais eficazes.

Palavras-chave: Fundos governamentais de orientação industrial; Avaliação de desempenho; Método Fuzzy Compreensivo; Estudos de caso regionais; China

JEL: G24, G11

[This page is deliberately left blank.]

摘　要

关于中国政府产业引导基金的评价研究在当前的经济背景下具有重要意义，为政府决策和基金管理提供了宝贵的参考。尽管研究中国的学者在该领域已取得初步研究成果，但现有研究仍存在显著局限性。鉴于各地区和行业政府产业引导基金的异质性，绩效评估及相关因素分析需要更广泛的区域和行业案例研究，以提升其全面性和准确性。本研究系统回顾了政府产业引导基金的绩效评估。在现有理论框架和实践经验的基础上，构建了政府产业引导基金的绩效评价指标体系，涵盖政策目标、投资回报和管理效率三个维度，并用层次分析法（AHP）确定指标权重。采用模糊综合评价法，以四川发展产业引导基金管理的政府产业引导基金为案例，运用构建的指标体系对基金运作绩效进行了评价。评价结果显示，四川发展产业引导基金整体表现良好，在实现政策目标方面效果显著，但在投资回报和管理实践方面仍有改进空间。此外，对四川省发展产业引导基金下的五只具有代表性的子基金进行了深入分析，通过政策环境、机制设计、基金管理运作和产业特征四个分析视角，探讨其业绩决定因素。本研究有助于推动中国政府产业引导基金绩效评价方法的进步，并为设计更有效的政策框架提供了宝贵的见解。

关键词：政府产业引导基金；绩效评估；模糊综合评价；区域案例研究；中国
JEL: G24, G11

[This page is deliberately left blank.]

Acknowledgements

As I put down my pen, my heart is filled with mixed emotions. This journey of pursuing my doctorate has been an academic refining experience, but also a trek brimming with support and gratitude. Here, I would like to express my sincerest gratitude to every teacher, mentor, and friend who has illuminated my path.

First and foremost, I wish to express my deepest and most sincere gratitude to my international supervisor, Professor Felipa Sampayo. From the initial conception of the research topic, the construction of the theoretical framework, through the empirical analysis, and to the final conclusions, Professor Sampayo provided comprehensive guidance with her profound intellectual vision and rigorous scholarly standards. What has left an indelible mark on me is her meticulous attention to detail. She devoted tremendous effort to scrutinizing every paragraph, refining every single sentence, and perfecting every table in this dissertation. Her dedication, which went far beyond the call of duty, has not only vastly improved the quality of this work but has also fundamentally shaped my academic ethos. It has been the greatest privilege to be her student.

I am also profoundly indebted to my Chinese supervisor, Professor Li Ping. Professor Li played a pivotal role in my research, particularly in the selection of empirical methods and the analysis of complex data. Whenever I encountered obstacles in the empirical phase, his keen insights and profound expertise were instrumental in helping me navigate through the difficulties, ensuring the robustness and solidity of this study.

The synergistic guidance from both of my supervisors, each with their distinct yet complementary styles, has been the most valuable asset of my doctoral journey. I am eternally thankful to both.

Furthermore, I offer my deepest gratitude to my family.

Thank you to my family; you are my strongest support, providing a safe haven for my studies with your selfless love and understanding. While I buried myself in literature and data countless nights, you took on even more responsibility, patiently and lovingly embracing all my emotions. Your companionship is the warmest light illuminating this arduous journey.

Thank you to my fellow students and close friends; I will forever cherish the days and nights we fought side by side.

Finally, I wish to acknowledge the members of the dissertation examination committee for their time and valuable feedback in reviewing this work.

While this dissertation represents the culmination of my efforts, any shortcomings that remain are solely my own.

致　谢

搁笔之际，心中百感交集。这段博士求索之旅，是一次学术上的淬炼，更是一程满载着支持与恩情的跋涉。在此，我愿以最诚挚的笔触，感谢每一位照亮我前路的师长与亲友。

首先，我愿将最崇高的敬意与最深切的感谢献给我的外方导师 Felipa Sampayo 教授。自论文的选题立意、理论框架搭建，至实证研究的推进与最终结论的锤炼，Felipa 教授始终以其国际化的学术视野和严谨的治学精神，为我把握着前行的方向。然而，令我最为动容并受益终身的，是您对学术细节的极致追求。您倾注了大量心血，从段落的逻辑递进，到每一句英文表达的精准打磨，乃至每一个表格、公式的准确呈现，都留下了您细致入微的修改笔迹。这份超越职责的奉献，不仅极大地提升了本文的质量，更深刻地塑造了我的学术品格。能师从于您，是我莫大的荣幸。

同时，我由衷地感谢我的中方导师李平教授。李老师在我的研究过程中，特别是在论文选题、实证方法的甄选与复杂数据的处理分析方面，提供了至关重要且极具洞见的指导。每当我在实证环节遭遇瓶颈时，您总能一针见血地指出问题所在，并以您深厚的专业学养助我突破困境，为本研究的扎实与稳健奠定了坚实的基础。

两位导师相辅相成的指导，构成了我博士生涯中最宝贵的财富。在此，请接受我诚挚的谢忱。

此外，我将我最深沉的感激献给我的家人。

感谢我的家人，你们是我最坚实的后盾，用无私的爱与包容，为我撑起了一片可以安心求学的晴空。在我埋首于文献与数据，无数次挑灯夜战的时光里，是你们承担了更多的责任，用爱与耐心包容了我的所有情绪。你们的陪伴，是照亮我这段艰辛旅程最温暖的光。

感谢各位同门与挚友，我们并肩作战的日日夜夜，我将永远珍藏。

最后，衷心感谢所有在百忙之中评阅本论文和参与答辩的各位专家、教授。

学海无涯，囿于个人学识，文中难免有疏漏与不足之处，恳请各位师长和同仁不吝赐教。

[This page is deliberately left blank.]

Contents

Chapter 1: Introduction 1
1.1 Research background 1
1.1.1 Realistic background 1
1.1.2 Overview of the current status of performance evaluation of government industry guidance funds 3
1.2 Research significance 4
1.2.1 Theoretical significance 4
1.2.2 Practical significance 5
1.3 Research questions 6
1.4 Purpose 7
1.5 Research content and research methods 8
1.5.1 Main content of this thesis 8
1.5.2 Research methods 9
1.5.3 Main contributions of this thesis 10
Chapter 2: Relevant Theoretical Basis 11
2.1 Overview of government industry guidance funds 11
2.1.1 Definition and role of government industry guidance funds 11
2.1.2 Analysis of the development and current status of government industry guidance funds 12
2.2 Overview of the relevant theories of government industry guidance funds 18
2.2.1 Industrial agglomeration theory 18
2.2.2 Public finance theory 19
2.2.3 Policy evaluation theory 20
2.2.4 Performance evaluation theory 21
2.2.5 Opportunity cost theory 23
2.2.6 Institutional economics 24
2.3 Overview of the theories and policies related to the performance evaluation of government industry guidance funds 25
2.3.1 Relevant theoretical basis 25
2.3.2 China’s government policies on performance evaluation of industrial guidance

funds 26
Chapter 3: Literature Review 29
3.1 Current research status 29
3.1.1 Research landscape on government guidance funds 29
3.1.2 Research developments applied to China 31
3.2 Thematic literature review 36
3.2.1 Evidence and theoretical foundations 36
3.2.2 Empirical evidence from the Chinese experience 46
3.3 Synthesis and research gaps 62
Chapter 4: Determination of the Performance Evaluation Index System of Government Industry Guidance Funds 65
4.1 Basis and principles for indicator system design 65
4.2 Design content of the indicator system 65
4.2.1 Policy objectives and indicators 65
4.2.2 Investment benefit indicators 66
4.2.3 Investment management indicators 67
4.3 Establishment of the indicator system 68
4.4 Determination of the weight of the indicator system 69
4.4.1 Introduction to AHP 69
4.4.2 Calculation process of AHP 69
4.4.3 Questionnaire collection and data processing 72
4.4.4 Calculation of indicator weights 72
4.4.5 Robustness test 77
Chapter 5: Case Analysis of Performance Evaluation of Sichuan Development Industry Guidance Fund 79
5.1 Basic information of the case 79
5.1.1 Sichuan Development Industry Guidance Fund management organization and operation model 79
5.1.2 Investment fields and achievements of Sichuan Development Industry Guidance Fund 82
5.1.3 Overview of the current performance evaluation system of Sichuan Provincial Government Industry Guidance Fund 84
5.1.4 Evaluation of Sichuan Industrial Development Guidance Fund 90
5.1.5 Factors affecting the evaluation of Sichuan Industrial Guidance Fund 91
5.2 Performance evaluation of Sichuan Development Industry Guidance Fund based on

fuzzy comprehensive evaluation method 92
5.2.1 Introduction to fuzzy comprehensive evaluation method 92
5.2.2 Basic work of fuzzy comprehensive evaluation 93
5.2.3 Process and results of fuzzy comprehensive evaluation 94
5.3 Analysis of the performance evaluation results of Sichuan Development Industry Guidance Fund 99
Chapter 6: Overview of Sichuan Provincial Government Industry Guidance Fund 101
6.1 Overview of government industry fund cases 101
6.1.1 Overview of the Integrated Circuit Industry Fund 101
6.1.2 Overview of Tianfu Hongwei Fund 101
6.1.3 Overview of Tourism Industry Fund 102
6.1.4 Overview of Sichuan Merchants Returning Home Fund 102
6.1.5 Overview of PPP Fund 103
6.2 Performance evaluation results and problem analysis 104
6.2.1 Integrated Circuit Industry Fund 104
6.2.2 Tianfu Hongwei Fund 105
6.2.3 Tourism Industry Fund 106
6.2.4 Sichuan Merchants Returning Home Fund 107
6.2.5 PPP Fund 108
6.3 Analysis of factors affecting performance of government industrial fund cases 108
Chapter 7: Conclusion and Outlook 111
7.1 Conclusion 111
7.1.1 Scientificity and practical value of the performance evaluation index system 111
7.1.2 Performance and problem diagnosis of Sichuan Development Industry Guidance Fund 111
7.1.3 Diversity and complexity of factors affecting fund performance 112
7.2 Optimization suggestions 113
7.2.1 Balancing the relationship between fiscal funds and social capital 113
7.2.2 Reconciling the relationship between constraints and incentives 114
7.2.3 Optimize the setting of quantitative indicators 114
7.2.4 Clarify the assessment stages and time 114
7.2.5 Focus on post-investment value-added services 114
7.3 Innovation and limitations of this thesis 115
7.3.1 Innovation 115

7.3.2 Limitations 116
7.4 Future research 116
Bibliography 119
Other References 125
Annex A: Annex Tables and Figures 127
Annex B: Questionnaire 1 137
Annex C: Questionnaire 2 141

List of Tables

Table 4.1 Explanation of the second-level and third-level indicators of policy objectives..... 66
Table 4.2 Explanation of the secondary and tertiary indicators of investment benefit targets. 66
Table 4.3 Explanation of secondary and third level indicators of investment management indicators 67
Table 4.4 Comprehensive indicator system..... 68
Table 4.5 Judgment matrix indicators and meanings 70
Table 4.6 Third-order judgment matrix of importance..... 70
Table 4.7 RI coefficient table 72
Table 4.8 Judgment matrix and indicator weight of first -level indicator 73
Table 4.9 Judgment matrix and indicator weight of policy objectives..... 73
Table 4.10 Judgment matrix and indicator weight of investment benefits..... 73
Table 4.11 Judgment matrix and indicator weight of investment management 74
Table 4.12 Judgment matrix and indicator weight of policy guidance 74
Table 4.13 Judgment matrix and indicator weight of funding driven 74
Table 4.14 Judgment matrix and indicator weight of economic benefits..... 75
Table 4.15 Judgment matrix and indicator weight of social benefits..... 75
Table 4.16 Judgment matrix and indicator weight of fund raising..... 75
Table 4.17 Judgment matrix and indicator weight of project investment 75
Table 4.18 Judgment matrix and indicator weight of post-investment management..... 75
Table 4.19 Judgment matrix and indicator weight of investment exit 75
Table 4.20 Comprehensive indicator weights using the multiplicative method 76
Table 5.1 Main indicators for evaluation of industrial funds during investment period..... 85
Table 5.2 Main indicators for the assessment and evaluation of industrial funds during the exit period..... 87
Table 5.3 Results of fuzzy evaluation questionnaire survey 94
Table 5.4 Scores of each secondary indicator 97
Table 5.5 Scores of each first level indicator 97
Table 5.6 Summary of scores of indicators at all levels by the multiplicative method..... 98
Table 6.1 Fund rankings and scores 104

[This page is deliberately left blank.]

List of Figures

Figure 2.1 Classification of government industry guidance funds..... 12
Figure 2.2 Establishment and fundraising of China's government-guided funds from 2014 to 2024 (Unit: 100 million yuan)..... 17
Figure 5.1 Operational model of Sichuan Development Industry Guidance Fund..... 81

[This page is deliberately left blank.]

Chapter 1: Introduction

1.1 Research background

1.1.1 Realistic background

In November 2005, the State Council, the National Development and Reform Commission and ten other ministries and commissions jointly promulgated the "Interim Measures for the Administration of Venture Capital Enterprises". Article 22 of the Measures clearly stipulates: "The state and local governments may establish venture capital guidance funds to support the establishment and development of venture capital guidance enterprises through equity participation and provision of financing guarantees". With the promulgation and implementation of the management measures, Beijing, Shanghai and other places have established venture capital guidance funds to support the development of venture capital enterprises. In 2007, the "Interim Measures for the Administration of Venture Capital Guidance Funds for Science and Technology-based Small and Medium-sized Enterprises" was promulgated, which stipulates the establishment of venture capital guidance funds for science and technology-based small and medium-sized enterprises. The guidance funds mainly invest in seed-stage and start-up science and technology-based small and medium-sized enterprises. In 2008, the National Development and Reform Commission, the Ministry of Finance and the Ministry of Commerce jointly issued the "Circular of the General Office of the State Council on forwarding the guidance of the National Development and Reform Commission and other departments regarding the standardized establishment and operation of venture-capital guidance funds" (Guobanfa, 2008), which is the first document in China's to regulate the establishment and operation of guidance funds. The document points out that guidance funds mainly guide social capital into the venture capital field by supporting the development of venture capital enterprises. Since then, China's venture capital guidance funds have gradually emerged and developed. In November 2015, the Ministry of Finance issued the "Notice of the Ministry of Finance on Issuing the Management Measures for Government Investment Funds" (Finance and Budget, 2015), which focused on the development of leading industries and emphasized that government investment funds should guide all kinds of social capital to invest in key areas and weak links in economic and social development, and support the development

of related industries and fields. Government investment funds began to more widely support the development of small and medium-sized enterprises, industrial transformation and upgrading, and strategic emerging industries. In January 2017, the National Development and Reform Commission issued the "Notice of the National Development and Reform Commission on Issuing the Interim Measures for the Administration of Government-Invested Industry Investment Funds" (Fagai Caijin Gui, 2016), which made provisions for the fundraising, registration, operation, termination, performance evaluation and credit building of government-funded industrial investment funds.

After years of practice, China's government guidance funds have evolved through three stages: pilot exploration, rapid expansion, and standardized development. By the end of 2024, a total of approximately 2,178 government guidance funds had been established nationwide, with a total target scale of roughly 12.84 trillion yuan, and an already subscribed scale of about 7.70 trillion yuan. Excluding PPP-type funds, there were approximately 2,023 industrial and venture capital guidance funds with a target scale of about 10.39 trillion yuan, and a subscribed scale of about 6.44 trillion yuan. In 2024, 113 new industrial and venture capital funds were established, with a total subscribed scale of around 651.023 billion yuan (excluding the large impact of the third phase of the National Integrated Circuit Industry Investment Fund, the subscribed scale would be about 307.053 billion yuan), indicating a noticeable slowdown in the pace of formation compared to previous years.

At the same time, the central government continued to play a demonstrative and leading role: in 2024, the third phase of the National Integrated Circuit Industry Investment Fund (the "third major fund") was registered, with a huge registered capital (reported to be about 344 billion yuan), and by the end of 2024, it had made several high-profile investment moves, demonstrating the central government's sustained investment and influence in supporting strategic industry development.

Overall, government guidance funds have both amplified the leverage effect of fiscal funds on venture investment, attracting social capital participation, and played an important role in alleviating financing difficulties for small and medium-sized enterprises, promoting industrial upgrading, and supporting coordinated regional development. However, against the backdrop of rapid expansion in scale and uneven establishment timelines at the local level, the rationality and efficiency of fund layout and operation have also become key concerns for regulation and performance evaluation.

1.1.2 Overview of the current status of performance evaluation of government industry guidance funds

On August 30, 2018, the National Development and Reform Commission issued the "Guiding Opinions on Doing a Good Job in the Performance Evaluation of Government-funded Industrial Investment Funds", which provided an important basis for the implementation of the performance evaluation of government investment funds. On June 27, 2019, the Sichuan Provincial Department of Finance issued the "Interim Measures for the Performance Evaluation and Management of Sichuan Provincial-Level Industrial Development Investment Guidance Fund" (Sichuan Cai Gui, 2019) and the "Notice of Sichuan Provincial Department of Finance on Issuing the Measures for Performance Evaluation of Sichuan Provincial Government-Public-Private Partnership (PPP) Investment Guidance Fund" (Sichuan Finance, 2020), which established the performance evaluation system of the Sichuan Provincial Government Industrial Guidance Fund.

The current performance evaluation mechanism is divided into investment period fund evaluation and exit period fund evaluation according to the investment stage of the fund, and the main indicators are divided into policy evaluation, management evaluation, credit evaluation, economic evaluation and other categories. The implementation of the fund performance evaluation mechanism is to implement the national industrial policy orientation, strengthen the construction of the industry credit system, and improve the quality and efficiency of industrial investment funds in serving the real economy, thereby promoting industrial upgrading and economic transformation. The complete investment process of industrial funds includes fundraising mechanism, investment mechanism, management mechanism and exit mechanism. However, the current performance evaluation mechanism does not make a performance evaluation of the fund during the fundraising period and the management period, and is limited to the performance evaluation of the investment mechanism and the exit mechanism. Due to the lack of performance evaluation during the fund fundraising period, the fund cannot make a reasonable assessment of the source of funds and investment qualifications of fund investors, which is easy to cause the "homogenization" phenomenon of industrial investment funds.

The Ministry of Finance clearly stipulated that the financial departments of local governments should strictly control the number of government investment funds and should not repeatedly invest in the same industry or field. However, in the face of severe economic conditions, local governments often keep pace with the central government and establish

industrial investment funds with similar directions to the central level, mostly focusing on the development of the Internet, high-tech, new energy and other industries. This phenomenon of fund homogeneity has caused some industries to obtain too many sources of funds and policy support, resulting in overlapping waste of fiscal capital of local governments at all levels, which is not conducive to creating a fair and stable market competition environment. Local governments at all levels blindly expanded the scale of funds, resulting in the emergence of many industrial investment funds of tens of billions or even hundreds of billions. These huge investment funds have extremely high requirements for investment projects, and small and medium-sized enterprises have lost this part of investment opportunities compared with large enterprises. When the investment direction of these funds is inconsistent with the local development reality and market environment, it will further cause the redundancy of investment funds and stagnation of the development of the invested industries.

Therefore, it is necessary to establish a reasonable performance evaluation of the guidance fund. A reasonable performance evaluation of the guidance fund can give full play to the role of the government guidance fund and promote the maximum effect of the national guidance fund policy; actively guide the investment direction of private venture capital to focus on key industries that the country urgently needs to develop, promote the participating venture capital institutions to strictly implement national policies, and promote the realization of the purpose of the government guidance fund.

1.2 Research significance

1.2.1 Theoretical significance

The government industrial guidance fund is established by the government and is a product that combines the characteristics of non-profit, policy-oriented and market-oriented operation. Regarding the operation model of the fund, some scholars divide it into three categories, namely government-led, local government funded, and jointly established by local governments and state-owned enterprises. Since the investment of government-guided funds mainly comes from government fiscal funds, and China's current supervision and review of public fiscal expenditures often only focuses on legality and compliance review, and has not fully considered the effectiveness, economy, efficiency and professionalism of the guidance fund's operation and management, directly using the performance indicator system of public fiscal expenditures cannot accurately measure the policy effects and economic benefits of government-guided

funds. Therefore, in order to ensure the effective operation of government-guided funds, the preservation and appreciation of fiscal funds and the reasonable returns of funds, it is necessary to implement more scientific and rigorous performance appraisal and supervision of the operating performance of government-guided funds. Research applied to China on government-guided funds is mostly limited to qualitative research, focusing on the establishment of performance evaluation systems and the analysis of their current development status. This thesis combines qualitative and quantitative research methods, literature and data analysis to fully understand the mechanism by which government-guided funds play a guiding and promoting role, and to examine whether government-guided funds have fulfilled their mission to guide private capital investment, promote scientific and technological progress, accelerate capital accumulation, and thus promote economic growth in the region. This thesis aims to conduct a field survey of the Sichuan Development Industry Guidance Fund and its sub-funds, obtain first-hand information, conduct a behavioral analysis of the development status of government-guided funds, combine appropriate theoretical foundations, draw on the development experience of international guidance funds, and finally propose a performance evaluation system suitable for China's government-guided funds and attempt to make evaluation results. By conducting performance evaluation of the guidance fund, constraints and incentives are imposed on the use of funds. Based on the information on fund use, the input costs and benefits generated are scientifically measured and compared, thereby judging the level and effectiveness of fund management, strengthening the supervision of fiscal expenditures, and guiding and standardizing fiscal expenditure management behavior. Establishing a scientific and reasonable performance evaluation system will help guide the transformation of government functions.

1.2.2 Practical significance

The vitality of the economies of countries around the world is increasingly reflected in the successful operation of small and medium-sized enterprises, especially those in emerging industries. The government absorbs social capital through guidance funds, amplifies the effect of fiscal funds, and supports the development of industries with economic potential, which is increasingly valued by governments of various countries. The development of government-guided funds has important practical significance for the government to solve the problem of "market failure" in related industries. China is also facing the same challenge in related fields. How to make government-guided funds achieve target effects under different mechanism environments and supervision and management models requires relevant evaluation of the

operation effect of government-guided funds. The research on relevant effect evaluation can provide a theoretical basis for the government's policy formulation in the field of venture capital guidance funds. At the same time, it can provide suggestions for better exerting the policy effect of the guidance fund itself and correct the deficiencies. Therefore, the operation evaluation of government-guided funds is an objective need. Government-guided funds not only need to ensure the leverage effect of government funds, but also need to achieve the operating goal of capital appreciation. The performance evaluation of government-guided funds can measure the efficiency and effect of the implementation of government-guided funds. By studying and analyzing the relevant factors affecting the performance of government industry guidance funds, the use effect of government guidance funds can be reflected with facts. Therefore, the research in this thesis has outstanding practical significance for the establishment, operation and management of industry guidance funds by governments at all levels in China.

1.3 Research questions

Policy performance evaluation of government industry guidance funds: Policy performance evaluation mainly considers whether the original intention of the government to set up guidance funds has been realized, and specifically considers the leverage effect of the fund, the direction of investment in the industry, the social benefits generated. These considerations can be further refined into specific indicators such as the fund size magnification multiple and the target industry magnification multiple.

Management efficiency evaluation of government industry guidance funds: Management efficiency evaluation aims to ensure the sound and efficient operation of the fund, which is mainly reflected in the consideration of investment progress, information disclosure. The setting of these detailed indicators is aimed at reducing the operational risks of the fund and improving the operational efficiency of the fund.

Economic performance evaluation of government industry guidance funds: Economic performance evaluation mainly focuses on the financial status of the fund, including indicators such as return on investment (MOIC), internal rate of return (IRR) and dividend payout ratio (DPI). These indicators can directly reflect the economic benefits of the fund.

Identification of key factors affecting the performance of government industry guidance funds: In addition to evaluating the performance of the fund, it is also necessary to deeply identify the key factors affecting the fund performance, such as the policy environment, economic cycle, fund management level, and the completeness of the industrial chain. A deep

understanding of these factors will help find ways to improve fund performance.

Optimization of the operation mode of government industry guidance funds: After understanding the fund performance evaluation system and the key factors affecting performance, it is necessary to optimize the fund's operation mode to improve the fund's performance. This may involve changing investment strategies, improving management processes, adjusting operating methods.

The above research questions need to be studied and analyzed in depth in combination with specific actual conditions, and the applicability and feasibility of the research methods also need to be considered.

1.4 Purpose

Promoting the realization of policy goals: The original intention of the government to establish industrial guidance funds is usually to promote the development of specific industries and guide social capital to flow into these areas. By evaluating the performance of government industrial guidance funds, it can be understood whether the funds have achieved the preset policy goals, thereby allowing for the evaluation and optimization of the policy effects.

Improve the efficiency of fund use: The operation of government industry guidance funds needs to follow certain principles, including the standardization, transparency and efficiency of fund use. By evaluating the performance of the fund, the use of funds can be understood, possible problems can be discovered and corrected, and thus the efficiency of fund use can be improved.

Reduce investment risks: Government industry guidance funds may face various risks during operation, such as market risk, credit risk. By evaluating the performance of the fund, these risks can be discovered and assessed, and corresponding measures can be taken to reduce and disperse risks and improve investment security.

Guiding the flow of social capital: The operation of government industry guidance funds can guide the flow of social capital. By evaluating the performance of the fund, the flow and distribution of social capital can be understood, thus providing a basis for formulating more precise policies and enabling a better grasp of market dynamics.

Promoting economic development: The operation of government industry guidance funds can play a role in promoting economic development. By evaluating the performance of the fund, its contribution and effect on economic development can be understood, thus providing a basis for formulating more reasonable policies.

The purpose of conducting research on the evaluating Chinese government industry guidance fund is to improve the operating efficiency of government industrial guidance funds, reduce investment risks, and promote economic development.

1.5 Research content and research methods

1.5.1 Main content of this thesis

This thesis is mainly divided into seven chapters. Chapter 1 mainly introduces the development of Chinese government industrial guidance funds and the current status of performance evaluation of government industrial guidance funds. It intends to use facts to reflect the effectiveness of the use of government industrial guidance funds through research on the performance evaluation of Sichuan Government Industrial Guidance Fund and its sub-funds, improve the operating efficiency of government industrial guidance funds, and promote economic development.

Chapter 2, theoretical research, mainly introduces the development and current status of Chinese government industrial guidance funds, analyzes the relevant industrial theories involved in government industrial guidance funds, reviews the development and current status of government industrial guidance fund performance evaluation, and studies the theories and policies related to government industrial guidance fund performance evaluation.

Chapter 3 reviews the relevant theories involved in government industrial guidance funds, including industrial agglomeration theory, public finance theory, policy evaluation theory, performance evaluation theory, opportunity cost theory and institutional economics. It also studies in detail the current status of research on performance evaluation of government industrial guidance funds at home and abroad, and also points out some shortcomings of previous research, such as regional differences and the subjectivity of indicators.

Chapter 4 determines the performance evaluation index system of the government industrial guidance fund. It mainly adopts the hierarchical analysis method, constructs a performance evaluation index system through three levels, combines qualitative and quantitative indicators, and uses a questionnaire survey method to obtain relevant data of the Sichuan Provincial Development Industry Guidance Fund and its sub-funds to determine the weights of the performance evaluation indicators of the Sichuan Development Industry Guidance Fund.

Chapter 5 is a case study on the performance evaluation of Sichuan Development Industry

Guidance Fund. After assigning corresponding weights to the constructed index system using the hierarchical analysis method, the fuzzy comprehensive evaluation method is used to conduct a performance evaluation on the individual indicators and overall situation of the Sichuan Development Industry Guidance Fund performance evaluation index system to verify the scientificity and rationality of the constructed index system.

Chapter 6 studies the factors affecting the performance of government industrial guidance funds. Combined with the performance assessment of the four government industrial guidance funds under the Sichuan Development Industrial Guidance Fund, it specifically analyzes the impact on the performance of government industrial guidance funds from the perspectives of policy environment, mechanism design, fund management and operation, and industry characteristics. Finally Chapter 7 presents the conclusions, innovation and limitations, and also future research.

1.5.2 Research methods

1.5.2.1 Analytical hierarchy process

The Analytic Hierarchy Process is a multi-criteria decision-making method combining qualitative and quantitative analysis. It decomposes complex decision problems into a hierarchical structure including the goal layer, criteria layer, and alternative layer, constructs judgment matrices through pairwise comparisons of elements at each level, calculates the relative weights of indicators, and conducts consistency checks, so as to realize the quantitative ranking and optimization of decision objects. It is suitable for system evaluation and decision analysis with multi-dimensional, multi-attribute characteristics and partially imprecise information.

1.5.2.2 Fuzzy comprehensive evaluation method

The Fuzzy Comprehensive Evaluation Method is a systematic analysis method based on fuzzy mathematics, which transforms qualitative evaluation into quantitative evaluation by using membership degree theory. By establishing the evaluation factor set, comment set and weight set, it determines the single-factor fuzzy evaluation matrix combined with membership functions, and obtains the comprehensive evaluation vector through fuzzy matrix composition operation, so as to make an overall quantitative judgment on the evaluation objects affected by multiple fuzzy factors. It is applicable to the comprehensive assessment of complex systems with ambiguous boundaries and hard-to-measure indicators.

1.5.2.3 Questionnaire survey method

The operation of Sichuan Development Industry Guidance Fund and its sub-funds was evaluated by constructing a performance evaluation index system for government guidance funds. The data was obtained by distributing questionnaires to Sichuan Development Industry Guidance Fund and its sub-funds.

1.5.2.4 Case analysis

Taking Sichuan Development Industry Guidance Fund and its sub-funds as examples, this thesis evaluates them in combination with the constructed performance evaluation index system.

1.5.3 Main contributions of this thesis

The research on evaluating Chinese government industry guidance fund is of great significance under the current economic context, and can provide valuable references for government decision-making and fund management. However, the performance evaluation of government industry guidance funds is closely related to regions. When conducting performance evaluation, special research needs to be conducted on regional and industry cases to improve the accuracy of the research. This thesis uses the analytic hierarchy process to construct a set of performance evaluation index systems for government guidance funds and assigns corresponding weights. Combined with the fuzzy comprehensive evaluation method, the Sichuan Development Industry Guidance Fund is used as a case study to conduct performance evaluation on individual indicators and the overall situation, verify the scientificity and rationality of the constructed index system, and qualitatively analyze the factors affecting the performance of government industry guidance funds. This thesis provides a reference for the government to formulate the performance evaluation of government industry guidance funds, provides a basis for formulating more effective and reasonable policies, and also provides a certain reference and reference for the performance evaluation of government guidance funds in other provinces and cities.

Chapter 2: Relevant Theoretical Basis

2.1 Overview of government industry guidance funds

2.1.1 Definition and role of government industry guidance funds

2.1.1.1 Definition of government industry guidance funds

The government industrial guidance fund refers to a type of government fund established by governments at all levels through single investment or joint investment with social capital in order to optimize the regional economic structure, economic growth and enhance industrial competitive advantages, and entrusted to professional fund management institutions for market-oriented operation in specific fields.

2.1.1.2 Mechanism of government industry guidance funds

Based on the purpose and function of the government industry guidance fund, its function mechanism can be summarized into the following four points:

First, it promotes enterprise innovation. The industrial guidance fund can directly solve the funding problems encountered by innovative enterprises by providing funds, helping enterprises to carry out technological research and development and product innovation, thereby improving the innovation ability and market competitiveness of enterprises.

Second, strengthen cooperation among all parties. As an important part of the management of industrial guidance funds, post-investment empowerment can facilitate cooperation between upstream and downstream enterprises, thereby promoting the coordinated development of related industrial chains and improving the efficiency and competitiveness of the entire industry.

Third, it drives regional investment. The industry guidance fund invests in specific industries in the name of the government, which can stimulate the activity of social capital, better play the leverage effect of fiscal funds, attract several to dozens of times of social capital to participate in venture capital and invest in specific related industries, and further promote the development of related industries.

Fourth, optimize resource allocation. The industrial guidance fund can not only attract and leverage social capital through the guiding and demonstration effect of policies, but also further allocate social capital to areas with high externalities of industrial transformation and

development through market-oriented means to achieve the purpose of optimizing the allocation of regional funds, technology, talents and other resources.

The flowchart of the working mechanism of government industry guidance funds is shown in Figure A1.

2.1.2 Analysis of the development and current status of government industry guidance funds

2.1.2.1 Development and current status of government industry guidance funds

From the perspective of the management model of government guidance funds, there is consistency among government guidance funds, which are all managed by government agencies or state-owned companies. However, from the perspective of the operation mode of government guidance funds, according to the research of Zheng et al. (2017) and S. Xu (2023), there are distinct differences among government guidance funds, which can be roughly divided into three categories: financing guarantee guidance funds, equity participation and operation guidance funds, and British guidance funds (see Figure 2.1).

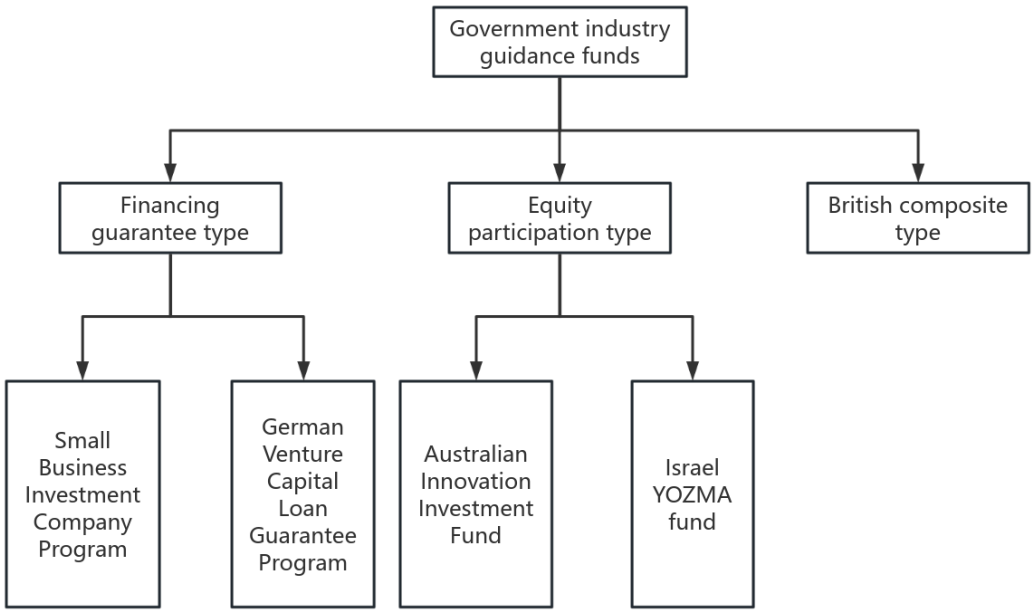


Figure 2.1 Classification of government industry guidance funds

The first type is financing guarantee guidance fund. The Small Business Investment Company Program (SBIC) launched by the U.S. Small Business Administration (SBA) in 1958 is a representative financing guarantee guidance fund abroad. The program is to guide private capital to high-growth small businesses by supporting investment companies that invest in high-growth enterprises, and indirectly help high-growth small businesses solve the problem of

financing difficulties. The program has mainly gone through three development stages: start-up, bottleneck, and transformation (Zheng et al., 2017).

The first stage is the start-up stage. The program has achieved great success, greatly attracting the attention of private capital to small start-up companies, expanding the funding sources of small businesses, and promoting the development of small businesses. The second stage is the bottleneck stage. As time goes by, the funds provided by the government to investment companies in the early stage are mostly short-term loans, and the management and performance of the selected investment companies are less examined. As a result, the problems of difficulty in repaying government loans and low efficiency of fund use by investment companies began to emerge, causing turmoil in the US financial market and causing the development of the fund to enter a bottleneck period. The third stage is the transformation stage. In order to get out of the bottleneck period of the fund as soon as possible, the US Small Business Administration adjusted the program, not only refining the screening conditions for small business venture capital companies, improving the quality of venture capital companies supported by the small business investment plan, but also using government funds and names to guarantee the financing of small business venture companies in the long-term bond market, successfully solving the short-term repayment problem faced by investment companies, allowing more funds to flow to high-growth small businesses, and promoting the development of the US economy (Zheng et al., 2017).

In addition to the above-mentioned U.S. Small Business Investment Company program, the Venture Capital Loan Guarantee Program (BJTU) launched by the German Economic Redevelopment Agency (KFW) is also a typical representative of financing guarantee guidance funds. Its operating mechanism is similar to the transformed U.S. Small and Medium Enterprise Investment Company program, which has greatly promoted the growth of German companies and economic development (Zheng et al., 2017).

The second type is equity participation and operation guidance funds. The Australian Innovation Investment Fund (IIF) and the Israeli YOZMA Fund are both equity-invested operating guidance funds, but their specific operating models and investment targets are different (Zheng et al., 2017).

In terms of the operating model, the former adopts a model where the government and society jointly invest, but the government must hold the majority stake; while the latter adopts a model where the government invests, with part of the funds directly operated by a special management agency established by the government, and the other part of the funds operated by a sub-fund established by a special management agency established by the government in

cooperation with external financial institutions. In terms of investment targets, the former does not make any requirements on the invested enterprises and their development stages, while the latter has clearer requirements on the invested enterprises, not only stipulating that the invested enterprises should have sufficiently large market potential and difficult to replicate and highly professional technologies, but also stipulating that the invested enterprises must be seed-stage or start-up stage enterprises (Zheng et al., 2017).

The last type is the UK's compound operation model. In 1998, the British government established a government-guided fund to solve the problem of financing difficulties for small and medium-sized enterprises, and set up a special guidance fund management agency - the Small Business Service. The fund is called a compound operation fund because of its compound operation mechanism, that is, after the government invests in the establishment of regional guidance sub-funds, it will not only designate excellent fund management agencies to conduct market-oriented operations of the sub-funds and provide equity investment for local small and medium-sized enterprises, but also take measures such as capital guarantees or cost subsidies to reduce the risks and investment costs of the sub-funds (S. Xu, 2023).

With its compound operation model, the fund not only made the UK the country with the most developed venture capital industry in Europe, but also enabled the venture capital industry in the whole of Europe to develop rapidly through its strong demonstration effect.

2.1.2.2 Development of China's government industry guidance fund

According to the order in which relevant policies and regulations are introduced, the development stages of China's government-guided funds can be roughly summarized into three stages: exploratory start-up, rapid development, and adjustment and improvement (Lv, 2021; Sun, 2025)

Exploration and start-up stage. In the late 1990s, in order to solve the problem of financing difficulties for investment projects, the government began to introduce private equity investment institutions and establish Chinese venture capital institutions. In 2001, the government issued the "Interim Measures for the Administration of Industrial Guidance Funds", which clearly pointed out that emerging industries such as information, biology, and new energy are the key areas of support for guidance funds. The clarification of the key support areas of government guidance funds in the "Measures" marked the initial formation of China's government industry guidance funds. In 2005, the State Council announced the establishment of the National Development and Investment Corporation, which enabled my country's government guidance funds to begin to move towards a more standardized development path.

In 2006, the Administrative Committee of Zhongguancun Science Park established the first phase of the Zhongguancun Venture Capital Guiding Fund with a scale of 500 million RMB, marking the formal launch of the government's exploration of a market-oriented operation mechanism for guiding funds in China. In 2007, the Ministry of Finance and the Ministry of Science and Technology issued the "Interim Measures for the Administration of Venture Capital Guiding Funds for Technology-Based SMEs" and initiated the first national-level guiding fund—the "Venture Capital Guiding Fund for Technology-Based SMEs," with a first-phase scale of 100 million RMB.

Rapid development stage. After 2007, the National Development and Reform Commission, the Ministry of Finance and other departments have successively issued a series of laws and regulations to safeguard the rapid development and orderly operation of government-guided funds. In 2015, the Executive Meeting of the State Council decided to establish a national emerging industry venture capital guidance fund with a total scale of 40 billion yuan to support entrepreneurship, innovation, and industrial upgrading. In the same year, the Ministry of Finance issued the "Interim Measures for the Administration of Government Investment Funds," which standardized the establishment, investment, operation, and risk control of government guidance funds. In 2016, the Ministry of Finance introduced the "Guiding Opinions on Injecting Fiscal Funds into Government Investment Funds to Support Industrial Development," further promoting the development of key industries. During this period, the establishment of government guidance funds experienced a surge, and policy objectives gradually expanded from supporting entrepreneurship and innovation to strategic emerging industries and advanced manufacturing.

Adjustment and improvement stage. After 2017, central departments and local governments began to slow down the pace of establishing government-guided funds, shifting their focus from fund establishment to fund management, and issued a series of documents to constrain and regulate government-guided funds. In 2019, the State Council announced the "Regulations on Government Investment," which set budget constraints on government investment funds and prohibited the illegal and irregular borrowing of debts to raise government investment funds. In 2020, the Ministry of Finance, in the "Notice on Strengthening Management of Government Investment Funds and Improving the Efficiency of Fiscal Contributions," explicitly required that the establishment of funds or capital injections using fiscal contributions must be strictly reviewed, incorporated into the annual budget management, and prohibited from using government investment funds as a disguised method of borrowing. Local governments have also successively revised their management measures, optimizing

contribution ratios, reinvestment ratios, and performance evaluation systems, promoting government-guided funds to develop towards precise investment directions.

2.1.2.3 Current status of China's government industry guidance fund

Overall, China's government-guided funds are still in the stage of adjustment and improvement in 2022; the standardization and market nature of fund management have been further enhanced, and management policies and working methods are still being gradually improved and innovated; the strategic nature of the fund's functions has gradually emerged, and the fund's functions have expanded from supporting corporate innovation and entrepreneurship to guiding social capital and supporting the development of specific industries. These funds cover a range of strategic emerging industries, from information technology and new energy to biomedicine, broadly penetrating key areas of the national economy, and demonstrate a strong leading role in guiding social capital and supporting the development of high-tech enterprises (D. H. Wang & Yang, 2025).

From the perspective of the target scale, subscription scale and number of funds of government-guided funds, all three showed a trend of first increasing and then decreasing. From 2014 to 2024, the target scale, subscription scale and number of funds of China's government-guided funds all showed an upward trend. After 2016, in order to further improve the efficiency of government fund use, local governments began to focus on the merger and integration of existing funds and intensive cultivation, which caused the target scale, subscription scale and number of funds of China's government-guided funds to begin to decline (S. H. Chen & Zhao, 2023). According to statistics from the Zero2IPO Research Center, in 2024, China established 113 new government-guided funds, with an annual target scale of approximately 651.053 billion yuan and a subscribed scale of about 307.053 billion yuan, indicating a noticeable slowdown in the pace of fund establishment compared to previous years. Please see Figure 2.2.

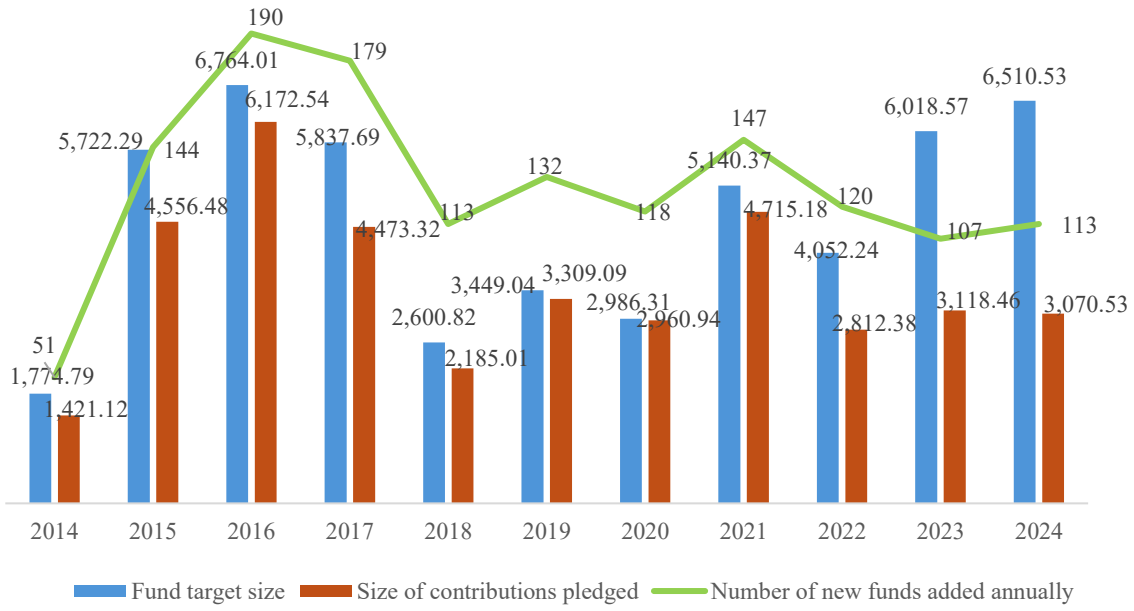


Figure 2.2 Establishment and fundraising of China's government-guided funds from 2014 to 2024

(Unit: 100 million yuan)

Source: Zero2ipo (2025)

From the perspective of the regulatory system of government-guided funds, the regulatory system of government-guided funds is still being improved. In 2020, the Ministry of Finance issued the "Notice on Strengthening the Management of Government Investment Funds and Improving the Efficiency of Government Investments", stating that for funds whose performance fails to meet expectations, whose investment progress is slow, or whose funds remain idle for a long time, the government funding should exit according to the charter (agreement) when appropriate. The aim is to reduce the accumulation of government-guided funds, stimulate fund vitality, and set new requirements for the management and operation of government-guided funds (Q. Zhang, 2020). In addition, the actual management methods of government-guided funds in various places are also constantly innovating. For example, Suzhou and Nanjing have established second-hand share trading funds to explore new ways for government-guided funds to exit (Xie, 2022).

From the perspective of the functional positioning of government guidance funds, it is reflected not only in supporting emerging industries and regional development, but also in leveraging social capital, promoting industrial upgrading, strengthening technological innovation, and addressing financing difficulties. At the same time, balancing their policy-oriented functions with market-oriented operations is also an important consideration in optimizing their functional positioning (F. Huang & Meng, 2023).

However, although China's government-guided funds have been further improved and

developed in terms of scale, regulatory system and functional positioning, there are still many challenges in practice, including conflicts between policy objectives and market mechanisms, the 'crowding-out effect' on private capital, the potential promotion of overcapacity, the lack of fault-tolerant mechanisms, and imperfect performance evaluation systems (D. H. Wang & Yang, 2025).

2.2 Overview of the relevant theories of government industry guidance funds

2.2.1 Industrial agglomeration theory

Industrial agglomeration theory refers to the phenomenon that enterprises in an industry are geographically clustered together and the theory that explains this phenomenon. Industrial agglomeration helps to improve the interaction between enterprises, promote knowledge flow and technological innovation, and thus improve the competitiveness and efficiency of the entire industry.

Porter (2002) formally proposed the concept of industrial clusters in his book *The Competitive Advantage of Nations*, and later further refined it in the article *Industrial Clusters and the New Economics of Competition* (C. M. Li & Wang, 2005). According to his point of view, enterprises can obtain multiple advantages by gathering in a certain geographical area, such as cheaper raw materials, more efficient supply chain, more talents and technicians, and better government support. These advantages can reduce the cost of enterprises, improve production efficiency, and form the phenomenon of "knowledge spillover", which can promote the further development of the industry. This agglomeration phenomenon is called industrial cluster.

Industrial clusters can be formed through different mechanisms, such as ecosystems, technological innovation, and social networks. The ecosystem mechanism refers to the sharing of resources and facilities by enterprises within a certain geographical space, such as the common use of buildings, equipment, and supply chains. The technological innovation mechanism refers to the improvement of the technological level and competitiveness of the entire industry through joint R&D and technological innovation. The social network mechanism refers to the formation of complex social networks through close cooperation and information sharing between enterprises, which promotes knowledge flow and technological innovation (C. M. Li & Wang, 2005).

The theory of industrial agglomeration is of great significance to industrial policy and

regional development. The government can promote the agglomeration and development of industries by providing infrastructure, preferential policies and talent support. At the same time, industrial agglomeration also affects the strategic decision-making and competitive strategy of enterprises. Enterprises can obtain more opportunities and resources by participating in industrial clusters, and can improve their competitiveness through cooperation and competition (Porter, 2002).

In short, the theory of industrial agglomeration is a theory that explains the phenomenon of enterprise clustering in geographical locations and explores related mechanisms and influencing factors. It emphasizes the importance of interaction and knowledge flow between enterprises, and has important guiding significance for the government's industrial policies and corporate strategic decisions.

2.2.2 Public finance theory

Public finance theory studies the role and responsibilities of the government in fiscal activities. It covers aspects such as public expenditure, taxation, debt and fiscal policy, and aims to guide the rational operation of government finances to achieve economic and social goals (Musgrave, 1959).

The core principles of public finance theory include the following aspects:

Public finance objectives: The objectives of public finance should be economic growth, fair and efficient resource allocation, improvement of social welfare, and macroeconomic stability. These objectives may have priorities and conflicts, and the government needs to ensure balanced development of various objectives through trade-offs and balances.

Public expenditure: Public expenditure is a means for the government to intervene in the economy and promote development through purchasing goods and services, providing public goods and social security. Public expenditure should be guided by national economic development and social needs, and follow the principles of efficient resource allocation, improvement of public quality and social equity.

Taxation: Taxation is a type of income collected by the government from economic entities to meet the needs of public expenditure and public services. Taxation should be based on fairness and efficiency, follow the principle of taxpayers' ability, and reduce the distortion and damage of taxation to economic behavior.

Debt: The government can meet fiscal needs through debt financing, but the scale and structure of debt should be reasonably planned according to the country's wealth and the

bearing capacity of the capital market. Reasonable debt management can balance fiscal revenue and expenditure and promote economic growth, but unreasonable debt accumulation may bring fiscal risks and unsustainability.

Fiscal policy: Fiscal policy is the way and measures that the government uses fiscal means to regulate the economy. Fiscal policy can achieve economic policy goals by adjusting elements such as taxation, public spending and debt, such as stabilizing economic growth, regulating inflation and promoting employment.

The research results of public finance theory provide a theoretical basis and empirical guidance for government decision-making. The government can formulate fiscal policies based on actual conditions and theoretical guidance, and promote economic growth, improve social welfare and ensure social stability through means such as public expenditure, taxation and debt. At the same time, public finance theory also advocates the transparency, fairness and ability of the government to balance, so as to ensure the sustainability of public finance and maximize public interests (Musgrave, 1959).

2.2.3 Policy evaluation theory

Policy evaluation theory is a theoretical framework for studying the methods and principles of policy evaluation. It focuses on how to systematically evaluate the effects, cost-effectiveness, feasibility and sustainability of public policies in order to provide scientific basis and decision support for decision makers and policymakers (Dunn, 2002).

Policy evaluation theory covers the following key elements:

Objectives and standards: Policy evaluation first needs to clarify the policy objectives and evaluation standards. Policy objectives can be economic growth, social equity, environmental sustainability. Evaluation standards can be economic benefits, social impact, environmental impact. Clarifying objectives and standards helps determine the focus and direction of the evaluation.

Evaluation methods: Policy evaluation involves a variety of methods and techniques. Common methods include qualitative and quantitative analysis, case studies, questionnaires, focus group discussions. Evaluation methods need to be selected and designed based on the characteristics and feasibility of specific policy issues. At the same time, the comprehensive use of multiple methods can improve the credibility and reliability of the evaluation.

Data collection and analysis: Policy evaluation requires the collection and analysis of various data and information to reveal the effectiveness and impact of the policy. Data can come

from statistical bureaus, survey data, field observations. Analysis methods can include statistical analysis, model building, comparative analysis. Data collection and analysis need to be scientific and reliable, and the legitimacy and quality of data are the basis of the evaluation results.

Evaluation process and procedures: Policy evaluation needs to clarify the evaluation process and procedures, including the formulation of evaluation plans, data collection and analysis, interpretation and reporting of results. The evaluation process requires scientific planning, effective organization and reasonable coordination. At the same time, the evaluation results need to be communicated to relevant stakeholders in a timely manner and provide specific suggestions and opinions for policy decisions.

Policy feedback and adjustment: The purpose of policy evaluation is to help decision makers and policymakers make reasonable decisions. The evaluation results need to be fed back to relevant stakeholders in a timely manner and provide specific policy recommendations. At the same time, policy evaluation can also promote policy adjustments and improvements. Policy feedback and adjustment help improve the feasibility and implementation effect of policies.

Policy evaluation theory not only emphasizes evaluation methods and techniques, but also emphasizes the scientific nature and fairness of the evaluation. Policy evaluation should be objective, independent and comprehensive, and the evaluation results should be credible and reliable. Policy evaluation theory also focuses on participation and communication in the evaluation process to ensure the participation and consensus of all stakeholders.

Policy evaluation theory is of great significance to the formulation and implementation of public policies. It can help the government evaluate the effectiveness and cost-effectiveness of policies, monitor the implementation of policies, and provide suggestions for policy improvements. Policy evaluation theory can also promote the transparency and fairness of policy decisions and enhance the feasibility and sustainability of policies. Through scientific evaluation and feedback, the government can formulate and implement policies more effectively to achieve sustainable social and economic development and maximize public interests (Dunn, 2002).

2.2.4 Performance evaluation theory

Performance evaluation theory is an important concept in management, which aims to measure and evaluate the performance and results of individuals, teams and organizations. Performance

evaluation theory focuses on how to design and implement evaluation systems to help managers better understand and improve performance and provide decision support and incentives. Performance evaluation theory has the following important aspects (Taylor, 2006).

Goal setting: Performance evaluation theory emphasizes setting goals clearly and accurately. Goals should be specific and measurable so that performance can be quantitatively evaluated. Good goal setting needs to be consistent with the strategic and long-term goals of individuals, teams, and organizations to ensure that performance evaluation is consistent with strategic goals.

Performance indicator selection: Performance evaluation theory focuses on selecting appropriate performance indicators to measure performance. Performance indicators should be able to objectively reflect work results and contributions, be consistent with goal setting, and be easy to measure and compare. Commonly used performance indicators include productivity, quality, efficiency, customer satisfaction.

Evaluation methods: Performance evaluation theory explores different evaluation methods and tools. Common evaluation methods include qualitative and quantitative evaluation, 360-degree evaluation, performance ranking. The selection of appropriate evaluation methods needs to be determined based on the specific situation and the characteristics of the evaluation object.

Feedback and improvement: Performance evaluation theory emphasizes timely and effective feedback of evaluation results and provides suggestions for improvement and development. Feedback should be objective and specific, and be able to motivate and inspire individuals and teams. At the same time, evaluation results should also be used as a basis for improving performance and developing capabilities.

Fairness and Equity: Performance evaluation theory focuses on the application of the principles of fairness and equity. The evaluation process should be fair, transparent and non-discriminatory, ensuring the objectivity and credibility of the evaluation results. Individuals and teams should have the right to participate in the evaluation process and provide opportunities for feedback and defense.

Rewards and incentives: Performance evaluation theory considers how to combine evaluation results with reward and incentive mechanisms. Through rewards and incentives, individuals and teams can be encouraged to work harder and more proactively, improving performance and results.

Performance evaluation theory has a wide range of application value in management practice. It can help managers understand and measure performance, identify problems and improvement opportunities, and provide a scientific basis for decision-making and motivation.

Scientific performance evaluation can improve the work motivation and efficiency of individuals and teams and promote the development and innovation of organizations (Taylor, 2006).

2.2.5 Opportunity cost theory

Opportunity cost theory is an important theoretical concept in economics, which mainly refers to the cost of the best alternative opportunity given up when making decisions. It emphasizes the scarcity of economic resources and the trade-offs of choices, and is one of the core concepts in economics (Samuelson & Nordhaus, 2013).

The opportunity cost theory includes the following key points:

Choice and decision making: The opportunity cost theory holds that when making decisions, people need to weigh and compare various options. The benefits of each choice depend not only on its direct costs and benefits, but also on the opportunity costs of giving up other options. Therefore, making a decision means giving up other possible options.

Relative value: The core concept of opportunity cost is relative value. Specifically, relative value is to measure the pros and cons of different options by comparing their costs and benefits. In the selection process, people tend to choose the option that can bring the greatest relative value.

Implicit costs and explicit costs: Opportunity costs include explicit costs and implicit costs. Explicit costs refer to costs that can be directly measured and observed, such as the money paid for purchasing goods. Implicit costs refer to costs that are not easy to observe and measure, such as the time, effort invested, and the cost of giving up other opportunities.

Time value: The opportunity cost theory recognizes the importance of time in resource allocation. Since time is limited, the choices made at each moment will bring different opportunity costs. Therefore, the value and limitation of time must be considered in the decision-making process.

Economic efficiency: The opportunity cost theory emphasizes the pursuit of economic efficiency. Economic efficiency refers to the ability to maximize goals under specific resource constraints. By measuring the opportunity cost of each option, a more economically efficient option can be selected.

Opportunity cost theory is of great significance to economic decision-making and resource allocation. It encourages people to fully consider the opportunity costs of different options when making decisions, and helps people clearly understand the limitedness and cost of resources.

At the same time, opportunity cost theory also provides guidance at the national and corporate levels, making resource allocation and decision-making processes more sensible and more in line with the principle of maximizing economic benefits (Samuelson & Nordhaus, 2013).

2.2.6 Institutional economics

Douglass C. North, an American economist, has a theory of "institutional economics". This theory emphasizes the impact of institutions on economic performance, explores the role of government and policies in economic development, and has an important impact on the development and thinking of economics. This theory can provide an institutional explanation for the evaluating government industry guidance fund (North, 1994).

The main contents of institutional economics include the following points:

Definition of institution: North defines institution as "the whole of the rule game and the related provisions, rules and agreements". He emphasizes that the institution includes not only legal rules, but also informal norms, customs and trust.

The impact of institutions on economic behavior: North believes that institutions have a profound impact on economic behavior. Individual behavior choices and interaction patterns are subject to institutional constraints and incentives. Different institutional arrangements will lead to different behavioral outcomes and economic effects.

Institutional evolution and change: North focuses on the evolution and change process of institutions. He believes that institutions are constantly changing in time and space, and these changes are the result of economic development and social change. Institutional change can occur through institutional innovation, institutional reconstruction, external shocks.

Institutional efficiency: North focuses on the impact of institutions on economic efficiency. He believes that effective institutional arrangements can create positive incentives and reduce transaction costs, thereby improving economic efficiency and social welfare. He emphasizes the importance of the economy of institutions and their ability to create positive incentives.

The driving force of institutional change: North believes that the driving force of institutional change comes from the interaction of internal and external factors. The interest game and resource allocation decision within the system will promote institutional change. At the same time, external technological progress, political changes and economic conditions will also have an impact on institutional change.

Research method of Institutional Economics: North's research method of institutional economics combines a variety of research methods, including historical research, comparative

institutional analysis, empirical research. He emphasizes the combination of theoretical and empirical research, and reveals the mechanism and influencing factors of institutional change through in-depth analysis of specific institutional contexts.

North's "institutional economics" theory has had a profound impact on economic research. It provides a framework for a comprehensive understanding of economic behavior and economic results, emphasizing the impact and decisive role of institutions on economic development. At the same time, it also provides theoretical and methodological support for studying and improving institutional arrangements. North's theory is of great significance to academic research and policy practice in disciplines such as economics, sociology and political science (North, 1994).

2.3 Overview of the theories and policies related to the performance evaluation of government industry guidance funds

2.3.1 Relevant theoretical basis

In essence, the government industry guidance fund is a private equity fund, which must comply with the expenditure standards of the national finance and meet the management and operation mechanism of private equity funds in the market. Its performance evaluation standard design must also be examined from two aspects: national financial requirements and fund market-oriented operation performance. Therefore, the evaluation and management of the government industry guidance fund mainly involve two theories: public finance expenditure management theory and principal-agent theory (Cai et al., 2024; Z. Meng et al., 2014).

The state is the main investor of the fund, and the funds contributed by the government-guided fund should also be included in the public fiscal expenditure performance evaluation system through budget arrangements, and evaluated in accordance with the corresponding evaluation system of public fiscal expenditure. Therefore, under the framework of the public fiscal performance evaluation theory, the departments, project units and financial departments that use fiscal funds jointly conduct fair and objective evaluations of the use process and effectiveness of fiscal funds, and analyze the existing problems and put forward corresponding rectification suggestions based on the evaluation results, so as to achieve the purpose of further improving the efficiency of fiscal funds.

The government industry guidance fund adopts an operating model in which the financial unit or the fund management department performs the duties of the principal and the investor,

and the state-owned platform company or other fund management company manages as the agent. Under the principal-agent theory framework, the principal-agent relationship is a market behavior, and in this case, a game relationship will arise. It is very likely that the agent will conceal his behavior and make negative decisions or decisions that deviate from the agent's expected goals in order to obtain higher benefits or reduce costs. Accordingly, the investment of the government industry guidance fund is a highly professional job, and the effectiveness of the principal's supervision of it also needs to be considered. The principal-agent problem is also very likely to occur. Therefore, it is difficult to ensure the long-term development of the government guidance fund by only taking strict supervision. Therefore, combining the performance evaluation system with incentive measures, such as reasonably setting up the equity structure and formulating incentive and constraint mechanisms under the performance evaluation results, can well ensure the diligence of the agent and achieve the long-term development of the government industry guidance fund.

2.3.2 China's government policies on performance evaluation of industrial guidance funds

As the scale and number of guidance funds increase, the national, local governments or financial departments have successively introduced relatively complete guidance fund management methods and implementation rules, forming a good situation in which the national and local governments work together to improve and carry out fund performance evaluation, and amplifying the role of performance evaluation in promoting fund development and improving fund efficiency.

At the national level, relevant departments have successively issued a series of policies to further clarify the subject and content of performance evaluation, providing examples and references for the design of performance evaluation systems for local governments or financial departments. In 2005, the State Council issued the "Guiding Opinions on the Standardized Establishment and Operation of Venture Capital Guidance Funds", which clearly pointed out that guidance funds must be included in the public finance performance evaluation system, and a scientific and reasonable performance evaluation system and an effective performance evaluation system should be formulated for guidance funds. In 2014, the public officially saw the new "Budget Law", which for the first time clearly stipulated the performance management requirements for public fiscal revenue and expenditure. In 2018, the National Development and Reform Commission issued the "Notice on Doing a Good Job in the Performance Evaluation of Government-funded Industrial Investment Funds", which for the first time provided a

specific evaluation index system example for the performance evaluation of government guidance funds at the national level, laying the foundation for local governments and fund management-related departments to carry out guidance fund performance evaluation work. In 2020, the Ministry of Finance not only issued the "Project Expenditure Performance Evaluation Management Measures", which replaced the original "Interim Measures for the Management of Fiscal Expenditure Performance Evaluation", but also issued the "Notice on Strengthening the Management of Government Investment Funds and Improving the Efficiency of Fiscal Investments", which clearly proposed to implement full-process performance management of the fund, and the fund's policy effects, financial benefits and management level are key aspects of performance management.

At the level of local governments or financial departments, each locality has issued specific performance evaluation management measures to provide universal and targeted assessment standards for the performance assessment of government-guided funds and fund management institutions within its administrative area. For example, in November 2015, the Shandong Provincial Department of Finance issued the first regulatory document in China for the performance evaluation of guided funds, the Interim Measures for the Performance Evaluation and Management of Provincial Equity Investment Guided Funds in Shandong Province. The measures not only provide regulatory explanations for the specific performance evaluation system, assessment indicators and the main departments for evaluation and supervision of the guided funds, but also stipulate that the performance evaluation results must be disclosed within a certain scope in accordance with relevant regulations on government information disclosure (Ma & Jia, 2020).

[This page is deliberately left blank.]

Chapter 3: Literature Review

3.1 Current research status

The government industry guidance fund refers to a fund pool established by the government to provide financial support and various forms of guidance to enterprises in specific industries or fields to achieve the goals of priority development and industrial upgrading. Performance evaluation is the process of evaluating and measuring the operation effect of the government industry guidance fund, aiming to determine whether the fund has achieved the goals set by the government and provide a basis for future decision-making.

3.1.1 Research landscape on government guidance funds

The research on the evaluating government industry guidance fund is relatively extensive and in-depth. The following are the main research directions and results of some scholars:

3.1.1.1 Performance evaluation indicators

Scholars have proposed a variety of performance evaluation indicators, including economic benefits, innovation capabilities, and industrial transformation. For example, indicators of economic benefits mainly include employment growth, GDP growth, and return on investment. Indicators of innovation capabilities include the number of patent applications and the conversion rate of scientific and technological achievements. Indicators of industrial transformation involve industrial structure upgrading and technological progress (Dong et al., 2017).

3.1.1.2 Influencing factors

Scholars pay attention to the influencing factors of government industry guidance funds and explore their impact on performance. These include policy environment, mechanism design, fund management and operation, industry characteristics (Das & Ngacho, 2017). For example, in terms of policy environment, scholars have studied the impact of government industrial policies on fund performance and found that policy stability and consistency have a significant impact on fund performance. In terms of mechanism design, scholars have studied the differences in fund operation models, such as investment decision-making mechanisms, fund

allocation mechanisms. In terms of fund management and operation, scholars pay attention to the role and operation model of fund management institutions and explore their impact on fund performance. In terms of industry characteristics, scholars have studied the characteristics and needs of different industries and their impact on fund performance.

3.1.1.3 Performance evaluation methods

Scholars have proposed a variety of performance evaluation methods, aiming to objectively and comprehensively evaluate the effects of government industry guidance funds. These methods include econometric methods, case studies, comparative analysis. For example, scholars use econometric methods to explore the effects of government industry guidance funds through regression analysis to evaluate the performance of the funds.

Ferson et al. (2006) discuss a method for evaluating the performance of managed portfolios using the stochastic discount factor (SDF) in a continuous-time term structure model. The authors address the performance measurement bias that occurs when fund managers trade or hold replicable option positions within the return measurement interval. Golosov and Tsyvinski (2007) explore the concept of dynamic public finance, extending the static Mirrlees framework to a dynamic environment. Cumming (2007) analyzes the Australian Innovation Investment Fund (IIF) program and its impact on venture capital in Australia. Ellison et al. (2010) explores the factors that lead to the geographic concentration of industries. The authors use clustering patterns to evaluate the significance of various theories of industry agglomeration, which refers to the tendency of different industries to move closer to each other. Ge (2009) mainly studied the relationship between globalization and industrial agglomeration in China. The study provided empirical evidence for the close connection between globalization and industrial agglomeration in China. Ngacho and Das (2014) proposed a multi-dimensional performance evaluation framework for development projects, with a particular focus on the construction projects of the Constituency Development Fund in Kenya. The authors proposed a multi-dimensional performance evaluation framework, which includes six key performance indicators (KPIs): time, cost, quality, safety, on-site disputes, and environmental impact. Guerini and Quas (2016) investigated the screening and certification capabilities of European government-managed venture capital (GVC) companies. The study showed that government venture capital can improve the chances of startups to obtain private venture capital through the certification effect. H. Zhang et al. (2016) introduced the background and importance of the government venture capital guidance fund and pointed out the necessity of constructing a performance evaluation indicator system Das and Ngacho (2017) discussed the key success

factors that affect the performance of development projects, especially the Constituency Development Fund project in Kenya. The study identified six CSFs: project-related factors, client-related factors, consultant-related factors, contractor-related factors, supply chain-related factors, and external environment-related factors. J. Liu et al. (2017) examined the impact of industrial agglomeration on China's energy efficiency. Hoepner and Schopohl (2018) analyzed the exclusion of companies from investors' portfolios based on their business models or violations of international norms. Ielasi et al. (2018) analyzed the portfolio characteristics and performance measures of sustainable development-themed mutual funds compared with ethical mutual funds C. X. Li et al. (2019) examined the agglomeration and spatial agglomeration of the manufacturing industry in Hebei Province, China. This study used industrial location quotient and exploratory spatial data analysis methods to analyze the current status of manufacturing agglomeration in our province. J. Xu et al. (2020) mainly discussed the performance evaluation of the venture capital guidance fund (GVCGF) established by local governments in China. Existing research on this topic mainly focuses on econometric analysis, but this study proposes a multi-attribute decision analysis framework to evaluate the performance of GVCGF. X. P. Liu and Zhang (2021) explored the relationship between industrial agglomeration, technological innovation and carbon productivity in China. Wei et al. (2023) is an empirical study of the performance of Indonesia's regional development banks (BPDs), with a particular focus on the factors that affect their profitability.

In general, scholars have achieved certain results in the study of evaluating government industry guidance fund. Their research focuses on the influencing factors of policy environment, mechanism design, fund management and operation, and proposes corresponding evaluation indicators and methods to improve the performance of government industry guidance funds. However, due to the complexity of government industry guidance funds, there are still many issues that need further research and exploration.

3.1.2 Research developments applied to China

Research applied to evaluating Chinese government industry guidance fund is still in its infancy, but with the rapid development of government guidance funds, research in this field is receiving increasing attention.

In the historical evolution of government industry guidance funds, it can be found that the establishment and development of this fund are mainly driven by policies and market demand. Since the State Council issued the "Guiding Opinions on the Standardized Establishment and

Operation of Venture Capital Guidance Funds" in 2008, government industry guidance funds have developed rapidly across the country. The following are the specific contents of the current research status of some scholars studying China in this field.

3.1.2.1 Performance evaluation indicators

Scholars studying China have proposed a multi-dimensional indicator system for the performance evaluation of government industry guidance funds. Indicators for economic benefits include output value growth, employment rate, profit growth. The performance evaluation indicator system constructed by Du et al. (2024) explicitly identifies 'economic benefits' as a core dimension, with specific indicators including employment growth, GDP growth, and return on investment. Indicators for innovation capability include the number of technology-based enterprises and technological innovation output. Research by Ji and Yang (2025) shows that government-guided fund investments have a significant positive impact on the sustainability of enterprise innovation and promote continuous innovation through mechanisms such as cash flow and financing constraints, with specific indicators including the number of patent applications and the conversion rate of scientific and technological achievements. Indicators for industrial transformation include industrial structure upgrading and technological progress. S. J. Wang et al. (2024) argue that government guidance funds have a significant overall effect on industrial structure upgrading and can effectively promote industrial structure upgrading, but the effects vary by region.

3.1.2.2 Influencing factors

Scholars studying China have made great contributions to the research on the influencing factors of government industry guidance funds. They focus on the impact of factors such as policy environment, mechanism design, fund management and operation, and industry characteristics on performance.

In terms of mechanism design, the internal governance and decision-making mechanisms of funds are central to the performance of government industrial guidance funds. Research by Hua et al. (2025) approaches this from the key perspective of control structures, finding that local industrial investment funds exhibit two types of control structures: "highly connected" and "loosely connected," from which four different expansion-driven models are derived. This indicates that different management institutions and investment decision-making mechanisms lead to different development paths, thus necessitating "differentiated regulation for diversified fund types."

In terms of fund management and operation, outstanding day-to-day operational management ensures the achievement of fund objectives. Hu et al. (2024) systematically propose that performance evaluation should cover the full lifecycle of "raising, investing, managing, and exiting," and set differentiated evaluation indicators according to the characteristics of different types of funds, such as industrial investment funds and venture capital funds. This directly supports research related to investment portfolio strategies and fund utilization efficiency.

In terms of industry characteristics, the performance of funds ultimately needs to be rooted in the industrial base. Empirical research by Wu et al. (2025) presents an important finding: the positive impact of government guidance funds on firm performance (i.e., the "resource blessing effect") exhibits significant regional and scale heterogeneity — it is more pronounced in economically developed regions and for small-scale enterprises. This conclusion strongly suggests that the industrial foundation, development level, and varying firm size characteristics across different regions all modulate the policy effectiveness of the funds.

3.1.2.3 Performance evaluation methods

Scholars have proposed a variety of performance evaluation methods to comprehensively and objectively evaluate the performance of government industry guidance funds. Commonly used methods include econometric methods, case studies, SWOT analysis. Econometric methods are widely used in the evaluation of the performance of government industry guidance funds. The case study method explores the actual effect and performance of fund operations through in-depth analysis of specific cases. SWOT analysis is used to evaluate the strengths, weaknesses, opportunities and threats of the fund.

Feng (2005) discussed the direction of China's education work and the basic characteristics of public finance and the connotation of democratic finance. Yu (2007) stressed the need for a supportive environment that encourages entrepreneurship and promotes innovation. The document emphasizes the role of education in cultivating innovative thinking and suggests that China should focus on developing a diverse and inclusive innovation ecosystem. Sui (2008) discussed the contradictions and challenges faced by state-owned capital in the venture capital sector. The research points out that state-owned capital, as a regulatory tool of the government, plays a guiding and amplifying role in the venture capital sector, but its development is constrained by many factors. L. M. Wang and Wang (2010) explored the investment strategy of fund-of-funds in China. The document emphasizes the importance of FOF in providing investors with professional management and diversified benefits. H. J. Li and Bao (2011)

innovatively proposed the establishment of a performance evaluation system with the policy effect of venture capital guidance funds as the core, introduced the background and purpose of government-oriented venture capital funds, and their role in promoting the development of emerging industries and the transformation of economic growth mode. Liang and Kong (2011) discussed the importance of performance management in government-oriented venture capital guidance funds. The evaluation of these funds should include business indicators, management indicators and efficiency indicators. Ding (2013) discussed the importance of establishing an effective performance evaluation system for government-oriented venture capital funds. Performance evaluation principles should include both general basic principles and special principles. The general basic principles are clarity, measurability, availability, relevance and timeliness. Xiao and Xiong (2014) analyzed the case of Israel's YOZMA Fund successfully creating a "second Silicon Valley" and studied the design of correcting market failure and avoiding government failure. M. Huang et al. (2015) summarized the basic situation of European investment funds developed and operated in the "Found-of-Found" management model. C. X. Liu et al. (2015) mainly discussed issues about performance evaluation. A performance evaluation method, the TOPSIS method, was introduced, and the importance of data processing was emphasized. Yang (2015) explored the impact of agglomeration density on labor productivity in the tourism industry. The main discussion is about the role of the Internet in the tourism industry and the challenges faced by traditional tourism enterprises. C. Meng et al. (2016) discussed the development and current status of China's government-guided funds. It emphasized the characteristics and roles of these funds, including their non-profit nature, the government's indirect participation through leveraged fiscal funds, and market-oriented and paid operation. Y. L. Li and Liu (2017) discussed the need to improve the post-investment supervision and management of government-guided funds to improve their efficiency in supporting the financing of strategic emerging industries. This thesis mainly discussed the performance evaluation methods of equity-invested funds. Xiang et al. (2018) explored the operating model and organizational structure of government venture capital guidance funds and proposed an improved intuitionistic fuzzy hierarchical analysis method to evaluate the performance of these funds. Tian (2018) emphasized the importance of establishing a comprehensive evaluation system for the application of artificial intelligence in higher education to ensure its effectiveness and efficiency. J. Zhang and Yan (2019) explored the relationship between China's financial development and urbanization, and financial inclusion plays a vital role in promoting urbanization and economic development. They stressed the need for a comprehensive understanding of financial inclusion and its impact on urbanization. J. Xu

and Yang (2019) discussed the evaluation and effectiveness of China's "New Deal Policy". Pu (2020) discussed the role of government-guided funds in promoting early-stage venture capital and high-tech industry investment. The research pointed out that through special mechanism design, government-guided funds reduce the risks of commercial venture capital institutions and improve investment returns, thereby attracting and increasing social capital investment in early-stage venture capital projects. Qi et al. (2020) mainly discussed the research direction and development trend of government-guided funds, pointing out that government-guided funds have made significant progress in the development process, but there are also some problems, such as idle funds, chaotic management, and imperfect exit mechanisms. Zhao (2020) explored the legal supervision of artificial intelligence in the field of intellectual property. It emphasized the need to consider the unique characteristics of artificial intelligence in intellectual property supervision, and suggested using AHP (hierarchical analysis method) to evaluate different aspects of artificial intelligence intellectual property supervision and determine their priorities. X. Tang (2021) discussed the construction of a performance evaluation system for government venture capital funds in China. This thesis mainly discusses the performance evaluation index system of government venture capital guidance funds. The index system includes four goals: public finance goal, social benefit goal, economic benefit goal and standardized management goal. Y. H. Tang et al. (2022) focus on the efficiency of government industry guidance funds and discuss the efficiency of government industry guidance funds based on evolutionary game theory. A model for analyzing the stability and simulation of fund management decisions is constructed using the incentive compatibility mechanism. L. Chen and Duan (2022) explore the impact of regional differences in government guidance funds on the innovation performance of Chinese enterprises. The study divides government guidance funds into inland funds and coastal funds, and finds that coastal funds have a more significant role in promoting corporate innovation performance, especially in high-tech industries and early-stage enterprises. K. Z. Zhang and Zhang (2022) discuss the necessity of a global perspective in public finance theory and the challenges the world faces in providing global public goods. The impact of globalization on the global inequality pattern and the importance of building a global public finance system are discussed.

In general, scholars studying China have achieved rich results in the research on evaluating government industry guidance fund. They focus on the selection of evaluation indicators, the analysis of influencing factors, and the application of performance evaluation methods. These studies provide important reference and practical guidance for policymakers to improve the operation effect of government industry guidance funds.

3.2 Thematic literature review

3.2.1 Evidence and theoretical foundations

Farnsworth et al. (2002) discuss a method for evaluating the performance of managed portfolios using a stochastic discount factor (SDF) in a continuous-time term structure model. The authors address the performance measurement bias that arises when fund managers trade or hold replicable option positions during the return measurement interval. They illustrate the method using a U.S. government bond fund for the period 1986-2000. A method for evaluating the performance of managed portfolios using a stochastic discount factor (SDF) in a continuous-time term structure model is presented. The authors address the performance measurement bias that arises when fund managers trade or hold replicable option positions during the return measurement interval. The method uses empirical factors, including time averages of latent state variables, to contribute explanatory power in factor model regressions and reduce model pricing errors. The authors illustrate the method by evaluating the performance of a U.S. government bond fund for the period 1986-2000. This thesis highlights the importance of evaluating the performance of fixed income funds because of their economic significance. Various tools and strategies that fixed income fund managers can use to outperform their peers and benchmarks are discussed. Emphasis is placed on the use of continuous-time models to address medium-term trading bias in performance measurement. The authors evaluate the performance of government bond mutual funds using a continuous-time model within a stochastic discount factor (SDF) framework. The SDF model explains a large portion of the conditional expected return of a government bond portfolio. The authors find that, after risk adjustment, the performance of government bond funds is slightly negative but economically small. The limitations of this approach are discussed at the end. A method for evaluating the performance of government bond funds using a stochastic discount factor is provided and the importance of considering the performance of fixed income funds is emphasized.

Golosov et al. (2006) explored the concept of dynamic public finance, extending the static Mirrlees framework to a dynamic environment. The problems of strategy selection and resource allocation, as well as the requirements of incentive constraints, are first introduced. Then, the problem of constrained efficient planning to maximize the social welfare function is discussed, and the relationship between the consumption-labor wedge, the capital wedge, and the intertemporal wedge is introduced. Next, some theoretical derivations and numerical analyses are carried out for different situations, including the benchmark cases of fixed type and zero

capital wedge, capital wedge and labor wedge under uncertainty, and the impact of aggregate uncertainty. Finally, the factors affecting the size and shape of the wedge are summarized, including the size of the shock, the degree of risk aversion, the labor elasticity, the separability of the utility function. The authors show that this alternative approach provides insights and results that contrast with the representative agent Ramsey approach. They revisit three issues that are widely explored in the Ramsey setting: the distortion of savings, the impact of aggregate shocks on the labor income tax rate, and the time consistency problem. The authors provide a user's guide to the dynamic Mirrlees literature, focusing on the structure of distortions in a dynamic Mirrleyes economy and their dependence on parameters. They also discuss the differences between Ramsey and Mirrlees approaches to optimizing taxation. This thesis presents numerical results, emphasizing the determinants of the labor and capital wedges, and the impact of aggregate uncertainty on tax rates. The authors provide an overview of the literature on dynamic Mirrleesian models and discuss the contributions of previous research in this area.

Cumming (2007) analyzed the Australian Innovation Investment Fund (IIF) program and its impact on venture capital in Australia. The IIF program was established in 1997 to stimulate financing for small high-tech companies in Australia. The program focuses on partnerships between the government and private sector venture capitalists. This thesis compares the IIF program with government venture capital programs in Canada, the United Kingdom, and the United States, highlighting the unique characteristics of the IIF program. The analysis shows that the IIF program promotes investment in start-up, early-stage, and high-tech companies, and provides investors with monitoring and value-added advice. The analysis uses data from the Australian Venture Capital Association and the Thompson Financial Venture Economics Database to provide graphical and descriptive analysis of the Australian venture capital industry. The data show that the IIF program has made an important contribution to the development of the Australian venture capital industry. However, most of the investments have not yet been exited, and the exit performance of IIF is not statistically different from that of other private equity funds. This thesis recommends further evaluation of the performance and results of IIF when subsequent data becomes available. Overall, this thesis highlights the positive impact of the IIF program on the Australian venture capital industry, but also acknowledges the need for continued evaluation and improvement.

Ellison et al. (2010) explore the factors that lead to geographic concentration of industries. The authors use agglomeration patterns to assess the importance of various theories of industry agglomeration, which refers to the tendency of different industries to move closer to each other.

This research discusses the measurement of agglomeration and uses data from the Census Bureau Longitudinal Study Database to calculate pairwise agglomeration measures for the U.S. manufacturing industry. The authors construct measures of the relevance of three theories of industry agglomeration (transportation cost savings, labor market concentration, and knowledge spillovers) to each industry pair and assess the importance of these theories through regression. The results show that input-output dependence is the most important factor, followed by labor concentration. Knowledge spillovers also play an important role. In addition, this research discusses the importance of industry agglomeration measures and cross-industry spillovers and shared natural advantages. The research introduces the EG index, a measure of agglomeration that controls for differences in the distribution of plant sizes and the granularity of geographic data. The EG index is defined as γi = Gi / (1 - ∑mx^2m) - Hi / (1 - Hi), where Gi is the geographic concentration of industry i and Hi is the plant-level Herfindahl index of industry i. The research also introduces a set of industry co-agglomeration index γc, which is given by γc = G / (1 - ∑mx^2m) - H - ∑γiw^2i(1 - Hi) / (1 - ∑w^2i). The research also proposes Proposition 0, which shows that in a probabilistic location choice model, the expected value of the co-agglomeration index is equal to γ0, which represents the correlation between the location choices of plants in the same industry and the correlation between the location choices of plants in different industries. Finally, the research proposes simplified equations for two industry co-agglomerations. The research also proposes some propositions and simplified equations for the co-agglomeration index. Finally, the importance of industry co-agglomeration is discussed, including the advantages of shared labor and knowledge spillovers.

Ge (2009) mainly studied the relationship between globalization and China's industrial agglomeration. The findings here show that from 1985 to 2005, China's industrial agglomeration level showed a significant increase. At the same time, trade and direct investment are closely related to China's industrial agglomeration. Industries that rely on trade and investment tend to locate in areas with good transport links to markets. The concentration of export-oriented and foreign-invested industries is higher than that of other industries. The study also examined the determinants of industry location and found that industries that rely on trade and direct investment tend to be located in regions with easy access to markets. The presence of investment and export intensity have a significant positive impact on the degree of industrial agglomeration. The study also found that resource endowment theory plays an important role in industrial positioning decisions, and agricultural endowment and skill endowment are important considerations for industrial positioning. Overall, this study provides empirical evidence for the close connection between globalization and industrial agglomeration

in China.

Ngacho and Das (2014) proposed a multi-dimensional performance evaluation framework for development projects, with a particular focus on the construction projects of the Constituency Development Fund in Kenya. The authors collected data from 175 respondents involved in the implementation of CDF (Constituency Development Fund) projects and used exploratory factor analysis to identify key performance indicators (KPIs). The performance evaluation of CDF projects was mainly discussed, including time, cost, quality, safety, site disputes and environmental impact. The study emphasized the importance of incorporating additional measures such as safety and environmental impact in the evaluation of development projects. This thesis also discussed the limitations of traditional evaluation criteria and the need for a balanced and comprehensive framework. The study found that the performance of the project depends not only on traditional internal indicators such as time, cost and quality, but also on safety and external factors such as site disputes and environmental impact. Therefore, the authors proposed a multi-dimensional performance evaluation framework, which includes six key performance indicators (KPIs): time, cost, quality, safety, site disputes and environmental impact. The study also pointed out that time and cost are the two most important KPIs, while quality is relatively low. In addition, the authors also put forward some management suggestions, including understanding community needs, evaluating project performance in multiple dimensions, developing appropriate operational indicators, and developing a comprehensive performance evaluation framework. However, this study also has some limitations, such as limited sample scope and data collection methods. Therefore, future research can further explore issues such as the causal relationship of project performance and cross-cultural validation.

Guerini and Quas (2016) investigated the screening and certification capabilities of European government-managed venture capital (GVC) companies. The study used a sample of European high-tech startups and showed that global value chain financing increased the likelihood of obtaining private venture capital (PVC). The results showed that companies that received GVC support were more likely to obtain the first round of private venture capital (PVC) than companies in the control group. Companies that received GVC support were also more likely to obtain the second round of PVC and achieve a successful exit. The timing of events was important, with companies that received GVC support obtaining the first round of GVC at an average of 2.3 years and the first round of PVC at an average of 3.2 years. The study also conducted a “what-if” analysis, and the results showed that if these companies had not received GVC funding support, the probability of obtaining the first round of PVC would be lower.

These results show that global value chain companies have the ability to select promising companies and prove these companies to PVC investors. The study highlights the importance of government intervention in the venture capital market and its potential to stimulate private investment. The information mainly concerns the impact of venture capital on startups and the role of government venture capital. Among them, the study shows that government venture capital can increase startups' chances of obtaining private venture capital through the certification effect. The selective provision of government venture capital can provide startups with a "recognition" mark, thereby increasing their likelihood of financing. In addition, government venture capital can also improve the performance of startups by co-investing with private venture capital. However, research also points out that government venture capital has a limited impact on the performance of startups, especially when government venture capital invests alone. Therefore, the main value of government venture capital may be to promote startups' access to private venture capital through the certification effect.

Dong et al. (2017) introduced the background and importance of government venture capital guidance funds and pointed out the necessity of building a performance evaluation index system. The main point of this research is about the performance evaluation of government venture capital guidance funds. The research introduces the use of DEA clustering method to conduct an empirical analysis of 40 guidance fund management institutions and the corresponding invested enterprises, and establishes new input and output analysis indicators. The classification results are obtained through K-means clustering, and enterprises are divided into three categories: strong increasing scale returns, stable increasing scale returns, weak increasing scale returns and unchanged scale returns. The research also mentions the advantages and limitations of the DEA clustering method, and puts forward suggestions for further research on the selection of performance evaluation indicators for government venture capital guidance funds. In addition, the research also mentions the method of dimensionless processing of data by normalized linear function method, and discusses and analyzes the results of DEA cluster analysis. Finally, the research summarizes the purpose and significance of the study and points out the direction and challenges of future research.

Das and Ngacho (2017) discussed the critical success factors that affect the performance of development projects, specifically the Constituency Development Fund projects in Kenya. The study identified six CSFs: project-related factors, client-related factors, consultant-related factors, contractor-related factors, supply chain-related factors, and external environment-related factors. These factors were identified based on key performance indicators (KPIs) such as time, cost, quality, safety, site disputes, and environmental impact. This thesis stressed the

need for a balanced performance measurement framework that considers economic, social, and environmental dimensions. This thesis mainly discussed the critical success factors (CSFs) that affect the success of development projects and the key performance indicators (KPIs) of large construction projects. This thesis pointed out that traditional project performance evaluation focuses on economic indicators such as time, cost, and quality, but these indicators do not fully evaluate the performance of the project. Therefore, the researchers proposed a performance evaluation framework based on KPIs and identified the CSFs that affect the success of development projects by analyzing data from development projects funded through the Constituency Development Fund (CDF) in the Western Province of Kenya. The research also mentioned that the data collection of this study was limited to one province in Kenya, so cross-cultural validation is needed to enhance the generalizability of the research results. In addition, the research also pointed out that there has been no empirical research on the impact of CSFs on the KPIs of development projects, which can be used as one of the directions for future research. The structure of the research includes literature review, research methods, data analysis and interpretation of results, discussion of CSFs, and summary and future research directions. The limitation of the research is that the data collection is limited to one province in Kenya, so more extensive research is needed to verify the generalizability of the results. Future research can further explore the impact of CSFs on KPIs and conduct cross-cultural validation in other developing countries. The results of the study are not only relevant to the CDF project in Kenya, but also to development projects in other developing countries.

J. Liu et al. (2017) examined the impact of industrial agglomeration on China's energy efficiency. The study used statistics from 285 cities between 2004 and 2013 to analyze the relationship. The results show that urban energy efficiency has significant spatial autocorrelation and spatial heterogeneity. Industrial agglomeration has a significant positive impact on energy efficiency, but it varies across regions. In the eastern region, industrial agglomeration has a threshold effect on energy efficiency, while in the central and western regions, industrial agglomeration can promote the improvement of energy efficiency, among which the positive effect in the western region is greater than that in the central region. While industrial agglomeration can promote improvements in energy efficiency at the national level, there are significant regional differences. The research concludes with specific recommendations for improving energy efficiency. The first is to strengthen the cultivation of human capital: improve education levels and skills training to enhance the technical level and innovation capabilities of the workforce, thereby promoting energy efficiency. The second is to adjust the industrial structure: increase support for high-tech, low-energy consumption, and

environmentally friendly industries, and reduce dependence on high-energy consumption and high-pollution industries to achieve optimization of the industrial structure and improvement of energy efficiency. The third is to strengthen infrastructure construction: improve the construction level of infrastructure such as transportation, energy and information to enhance the connection and technological spillover effects between cities and promote the improvement of energy efficiency. Fourth, rationalization of government intervention: reduce government intervention in economic activities, maintain the dominant role of the market in resource allocation, and avoid inefficient use of energy factors caused by government intervention. Fifth, improve the flexibility of energy prices: reform the energy price formation mechanism so that energy prices can reflect the relative scarcity of energy, thereby promoting the rational allocation of energy and improving energy efficiency. Sixth, control the structure of direct investment: limit direct investment in high-energy consumption and high-pollution industries, encourage direct investment in high-tech, modern services and other environmentally friendly industries, and prevent China from becoming a pollution haven for manufacturing industries. Seventh, develop ecological industrial clusters: build ecological industrial clusters, promote the development of circular economy, actively develop environmental protection industries such as clean energy, green and service-oriented manufacturing, improve the comprehensive utilization of "three wastes" and renewable energy recovery systems, and promote the development of clean energy. These recommendations aim to further improve China's energy efficiency and achieve sustainable energy use and emission reduction goals by improving human capital, industrial structure, infrastructure, government intervention, energy prices and investment structure.

Hoepner and Schopohl (2018) analyze the exclusion of companies from investors' portfolios based on their business models or violations of international norms. The study focuses on two major Nordic investors, and the main point of the research is about the impact of excluding companies in investment decisions by the Swedish AP Fund and the Norwegian Government Pension Fund (GPFG). The study found that the portfolios of these excluded companies did not generate abnormal returns compared to the fund's benchmark index. Although the risk of the excluded portfolios was higher than the corresponding benchmark, this difference was statistically significant only in the case of GPFG. These findings suggest that through exclusion screening, asset owners can achieve ethical goals for their beneficiaries without compromising financial returns. In addition, the research mentions that the Swedish AP Fund and the Norwegian GPFG consider ethical and environmental factors in their investment decisions and take measures to exclude companies that do not meet ethical and environmental

standards.

Ielasi et al. (2018) analyzed the portfolio characteristics and performance measures of sustainability-themed mutual funds compared to ethical mutual funds. The study used a European sample of 106 ethical funds and 51 sustainability-themed funds and analysed their monthly performance from January 1996 to December 2015. The authors find that sustainability-themed funds do not differ significantly from ethical funds in terms of portfolio attributes, except for market capitalization, age, and net asset value. In terms of performance measures, sustainability-themed funds underperform ethical funds, while the two types of funds do not differ in terms of market risk. The study also found that sustainability-themed funds have a higher concentration in the industrial sector and lower exposure to the financial sector than ethical funds. Overall, the research shows that sustainability-themed funds employ significantly different portfolio strategies to achieve returns comparable to ethical funds. This research thesis focuses on the risk and performance differences between sustainability-themed mutual funds and traditional funds. The study found that despite certain restrictions on portfolio selection, the risk-adjusted returns of sustainability-themed mutual funds were not statistically significantly different from those of traditional funds. In addition, sustainable development-themed mutual funds have a relatively high investment proportion in small-cap stocks and focus more on value investing. The study also found that sustainability-themed mutual funds have a more global and international asset allocation, while traditional funds focus more on investments in specific regions. Finally, the study calculated Jensen's alpha for both types of funds using the CAPM model and found no significant difference between them.

C. X. Li et al. (2019) examined the agglomeration and spatial agglomeration of the manufacturing industry in Hebei Province, China. This study uses industrial location quotient and exploratory spatial data analysis methods to analyze the current status of manufacturing agglomeration in our province. The results show that there are significant differences in manufacturing agglomeration in Hebei Province. According to the industrial location quotient and local spatial autocorrelation analysis, the manufacturing agglomeration space in Hebei Province is divided into "diffusion center", "main diffusion center", "polarization center" and "underdeveloped area". Among them, the diffusion center refers to the region where the distribution ratio of manufacturing industry is equivalent to the distribution ratio of manufacturing industry in the entire region, and there is no obvious agglomeration feature. A major diffusion center refers to a region where the distribution ratio of manufacturing industry is higher than that of the entire region and has relative scale and comparative advantages. A polarization center refers to a region where the agglomeration effect of manufacturing is greater

than its diffusion effect, attracting labor, capital and other factors from surrounding areas to move to the region, resulting in a low level of industrial development in the surrounding areas. An underdeveloped region refers to a region where the manufacturing industry is highly concentrated, but the level of industrial development in the region is relatively low compared to the manufacturing industry in the entire region. The study also used multi-indicator comprehensive location quotient and exploratory spatial data analysis methods to analyze the spatial clustering of the manufacturing industry. The multi-index comprehensive location quotient is used to measure the relationship between the proportion of a certain industry in a region and the proportion of the industry in the entire region, thereby reflecting the degree of industrial specialization in the region. Exploratory spatial data analysis methods can reveal the characteristics of the data space, discover clusters or hot spots, and discover spatial heterogeneity through visualization techniques. In general, this study conducted an in-depth analysis of the agglomeration and spatial distribution of the manufacturing industry in Hebei Province, providing a reference for local governments to formulate economic policies and promote industrial transformation and upgrading. The results showed that there were significant differences in the degree of manufacturing agglomeration among the 11 cities in Hebei Province. The study also identified specific industries with agglomeration characteristics. Based on the industrial location quotient and local spatial autocorrelation, the spatial clusters of manufacturing agglomeration in Hebei Province are divided into “diffusion centers”, “primary diffusion centers”, “polarization centers” and “underdeveloped areas”. The research results provide a scientific basis for the spatial guidance and optimal allocation of different manufacturing types in Hebei Province.

J. Xu et al. (2020) mainly discussed the performance evaluation of venture capital guidance funds (GVCGFs) established by local governments in China. Existing research on this topic mainly focuses on econometric analysis, but this study proposes a multi-attribute decision analysis framework to evaluate the performance of GVCGFs. This study constructs a performance analysis model from four dimensions: standardized development, risk control ability, leverage effect, and support effect. The intuitive fuzzy hierarchical analysis method is used to comprehensively evaluate the development performance of a GVCGF project. The research points out that China’s GVCGF has experienced explosive growth since 2014, but the performance evaluation of these funds has received little attention in the existing literature. The research proposes three research motivations: first, the existing literature mainly focuses on the performance of GVCGFs in developed countries, and there are few studies on the performance of GVCGFs in China; second, there are disputes in the existing literature on the evaluation

results of GVCGFs; third, the performance evaluation of GVCGFs needs to be studied from different dimensions and multiple perspectives. This research uses the intuitive fuzzy hierarchical analysis method (IFAHP) to evaluate the performance of Ningbo's GVCGF and obtains the performance evaluation results. The research argues that the performance of Ningbo's GVCGF is at a relatively high level, but there is still room for improvement. The results show that the development performance of GVCGF is high. IFAHP can effectively avoid the false impact caused by data subjectivity and evaluation uncertainty. This study provides an analytical framework for the application of IFAHP in the performance evaluation of other projects. The research also proposes suggestions for improving the performance of GVCGF, including strengthening risk control capabilities, improving support effects, standardizing development, and leveraging effects. The research framework of the research provides a feasible analytical method for the performance evaluation of other GVCGFs. However, the research also has some limitations, including the improvement and revision of the indicator system, and the applicability to other categories of government-supported guidance funds.

X. P. Liu and Zhang (2021) explored the relationship between China's industrial agglomeration, scientific and technological innovation and carbon productivity. This study used panel data from 30 provinces in China from 1998 to 2017 and applied the dynamic spatial Durbin model to analyze the data. The main results of the study are as follows: Industrial agglomeration and carbon productivity have an inverted U-shaped relationship, and the turning point is determined by technological innovation. The impact of technological innovation on industrial agglomeration and carbon productivity varies among different types of industrial agglomerations and regions. Low-carbon technology innovation has a significant impact on carbon productivity, but its potential has not yet been fully realized. Carbon productivity exhibits significant path dependence characteristics and has spatial spillover effects. This study highlights the theoretical and practical significance of optimizing industrial agglomeration for improving carbon productivity and achieving long-term economic growth.

Wicaksono and Fauzia (2023) is an empirical study on the performance of regional development banks (BPDs) in Indonesia, with a particular focus on the factors that affect their profitability. The study collected data from 25 people with BPD between 2013 and 2017 and analyzed the data using multiple linear regression analysis. The results show that the growth of third-party funds has no effect on return on assets (ROA), while capital adequacy ratio (CAR) and loan-to-deposit ratio (LDR) have a positive and significant impact on ROA, and a higher LDR value indicates that banks use more funds for lending, thereby increasing revenue and profits. On the other hand, non-performing loans (NPL) and asset portfolio quality (QAP) have

a negative and significant impact on ROA, and higher NPL values indicate that banks are exposed to higher credit risks, which may lead to lower interest income and lower profits. These findings suggest that capital adequacy ratio, loan-to-deposit ratio, and non-performing loans are important factors affecting banks' profitability, BPD needs to develop better strategies to maximize profits from third-party funds, and local governments should consider other banks to deposit funds so that BPD can compete with other banks and be independent. The study highlights the importance of considering BPDs' dependence on local government funding when assessing their performance.

3.2.2 Empirical evidence from the Chinese experience

Feng (2005) discussed the direction of China's education work and the basic characteristics of public finance and the connotation of democratic finance. The essence of public finance is the finance of the public. It is necessary to promote democratic financial management and legal financial management within the framework of public finance. Public finance has four basic characteristics: public orientation, providing public products and services as the basic method, a standardized public choice mechanism with checks and balances, and a modern openness, transparency, integrity, and a budget determined in advance and strictly implemented as the basic management system. Public finance is democratic finance. Democratic finance means that the public has the right to participate in the decision-making process of various financial decisions and show the public's preference for public products in this process. It is not only conducive to improving the efficiency of resource allocation, but more importantly, it will form checks and balances on government power. It suggests that in order to promote universal compulsory education, the government should reduce tuition fees for students in poor areas and provide free textbooks, transportation and meals. It also recommends improving the teacher salary guarantee mechanism and cites examples from other countries such as Japan, Britain, France, Germany, Switzerland and Russia. This thesis argues that China's public finance theory has been a subject of debate and focuses on four main areas: the relationship between public finance and finance, the relationship between publicness and class, the existence of public finance in a market economy, and the relationship between public finance and China's state-owned economy. This thesis concludes by discussing the different theoretical foundations of public finance theory, including the Marxist theory of state distribution and the social contract theory.

Yu (2007) argues that innovation is critical to economic development and that China needs

to prioritize the development of new industries and technologies. They emphasize the need for a supportive environment that encourages entrepreneurship and promotes innovation. This thesis emphasizes the role of education in fostering innovative thinking and suggests that China should focus on developing a diverse and inclusive innovation ecosystem. The authors also discuss the challenges and opportunities China faces in promoting innovation and entrepreneurship. They emphasize the need for policy reforms and the importance of collaboration among different stakeholders. Overall, this thesis emphasizes the importance of innovation and entrepreneurship in driving China's economic growth.

Sui (2008) discussed the contradictions and challenges faced by state-owned capital in the field of venture capital. The contradictions and challenges faced by state-owned capital in the development of venture capital are discussed. State-owned capital has contradictions in its functional positioning, which requires both the realization of the government's economic functions and the pursuit of commercial profits. State-owned capital also faces contradictions in policy requirements, requiring steady investment but venture capital itself is highly risky. State-owned capital also has problems in the investment system and management system, with limited equity capital flow and insufficient management capabilities. The research points out that state-owned capital, as a regulatory tool of the government, plays a guiding and amplifying role in the field of venture capital, but its development is constrained by many factors. Despite the contradictions and challenges, under the current economic development model in China, state-owned capital will still be the mainstream in guiding venture capital. The research points out that there are contradictions between state-owned capital as an investment subject and the investment field in terms of functional positioning, policy requirements, investment system and management system. Among them, the essence of state-owned capital is a tool to realize the government's economic functions, but at the same time it must also realize the commercial function of profit-making, which is particularly prominent in the field of venture capital. In addition, state-owned capital also faces problems such as the responsibility of maintaining and increasing value, the restrictions of equity capital flow mechanism and human resource mechanism, and insufficient management capabilities. The research also mentions the necessity and advantages of state-owned capital in venture capital, including promoting economic development through capital operation, maintaining and increasing the value of state-owned assets, and guiding the flow of social funds. However, when state-owned capital conducts venture capital, it needs to solve the problems of lack of management and insufficient avoidance ability. Finally, the research points out that under China's current economic development model, state-owned capital will still be the mainstream in guiding venture capital, but before the system

is improved, social capital will still face certain difficulties in entering the venture capital field.

L. M. Wang and Wang (2010) explored the investment strategies of funds of funds in China. FOFs are investment vehicles that pool funds from multiple investors and invest in a diversified portfolio of other funds. This thesis highlights the importance of FOFs in providing professional management and diversified benefits to investors. It discusses the development and growth of FOFs in China since the late 1990s and examines the different types of FOFs that have emerged. This thesis also explores the challenges and opportunities facing FOFs in China, including the need for regulatory support and the importance of effective investment strategies. Overall, this thesis highlights the importance of FOFs in the Chinese investment landscape and provides insights into their investment strategies.

H. J. Li and Bao (2011) innovatively proposed to establish a performance evaluation system with the policy effect of venture capital guidance funds as the core, introduced the background and purpose of government-oriented venture capital funds, and their role in promoting the development of emerging industries and the transformation of economic growth mode. They also mentioned the operation mode and management requirements of government-oriented venture capital funds, and explored the indicator system of their performance evaluation. The main discussion was on the performance evaluation of government-oriented venture capital funds. The research mentioned that the purpose of establishing government-oriented venture capital funds is to increase the supply of venture capital capital by leveraging the leverage effect of fiscal funds, especially investing in early-stage entrepreneurial enterprises such as seed and start-up stages. The research also mentioned some evaluation indicators, such as the industry field invested by the guidance fund, the proportion of seed and start-up enterprises invested, leverage effect and risk control effect. In addition, the research also mentioned some norms and system requirements to ensure the effective operation and policy effect of government-oriented venture capital funds. The main conclusion is that the performance evaluation of government-oriented venture capital funds should focus on the evaluation of policy effects, including government industry orientation indicators, government support direction indicators, leverage effect indicators of guidance funds, risk control effect indicators of guidance funds and value preservation and appreciation indicators of guidance funds.

Liang and Kong (2011) discussed the importance of performance management in government-oriented venture capital guidance funds. The author believes that these funds play a vital role in promoting the development of the venture capital industry and guiding the direction of social capital. They suggested that the evaluation of these funds should include operational, management and efficiency indicators. This thesis highlights the significant growth

of government-led venture capital guidance funds in recent years and stresses the need for a comprehensive performance management model to assess their impact and effectiveness. The authors suggest that such a model should take into account factors such as policy effectiveness, investment performance, and the number of successful projects. Overall, this thesis highlights the importance of performance management in government-oriented venture capital guidance funds and provides a theoretical basis for further research in this area.

Ding (2013) discussed the importance of establishing an effective performance evaluation system for government-guided venture capital funds. It emphasizes the need to understand the nature and purpose of these funds and the potential risks involved. The main content of the performance evaluation principles of guidance funds is discussed. Performance evaluation principles should include both general basic principles and special principles. The general basic principles are clarity, measurability, availability, relevance and timeliness. Special principles should take into account the characteristics of guidance funds and the policy guidance effects, and be designed from three aspects: policy orientation, dynamic continuity and comprehensive balance. According to the inherent operating rules and characteristics of guidance funds, the evaluation focus of funds should be different, usually divided into three stages: fund investment period, post-investment management period and fund recovery period. The evaluation focus and indicator selection of each stage are also different. The evaluation indicators can be considered to be divided into four levels: policy performance, financial performance, economic performance and social comprehensive performance, and each level can select secondary indicators separately. Secondary indicators can be divided into two categories: quantitative indicators and qualitative indicators. The weight of the indicator is a quantitative representation of the relative importance of each indicator in the entire evaluation indicator system. The main methods for determining the weight are subjective weighting method and objective weighting method. The document also emphasizes the importance of evaluating the impact of these funds on social capital inflows, their role in promoting innovation and entrepreneurship, and their asset management. It recommends that the evaluation system should take into account the specific characteristics and dynamics of the funds. The document concludes by stating that a well-designed evaluation system is essential to ensure the proper use of government-guided funds and to maximize their policy effects.

Xiao and Xiong (2014) analyzed the successful creation of the “Second Silicon Valley” by the Israeli YOZMA Fund and studied the design to correct market failure and avoid government failure. Based on this analysis, the document provides suggestions for the Chinese government’s positioning, operation management, industrial investment and exit arrangements.

The document emphasizes the importance of government entrepreneurship guidance funds in promoting innovation and recommends that China learn from the operating model of the YOZMA Fund. The document also emphasizes that the government needs to support and coordinate to promote the development of innovative enterprises.

Yan and Xu (2015) summarized the basic situation of the European Investment Fund, which was developed and operated in the "Found-of-Found" management model. The fund was established by the European Union to promote the development of European SMEs. China's venture capital guidance funds have similar functional positioning to the European Investment Fund, but due to the late start of China's research on guidance funds, there are a series of problems in the actual operation of guidance funds. By summarizing the development experience of the successful operation of European investment funds, it is recommended that China's establish a professional fund management institution to realize the market-oriented operation and professional management of guidance funds, thereby improving the management level and efficiency of guidance funds, giving full play to the driving role of guidance funds in social funds, providing convenience for the innovative development of high-tech enterprises and small and medium-sized enterprises, and better serving the national innovation strategy.

C. X. Liu et al. (2015) mainly discussed issues regarding performance evaluation. They pointed out that performance evaluation is an important management tool that can help organizations achieve their goals. However, there are currently many controversies and challenges regarding performance evaluation. Several key elements of performance evaluation were mentioned, including indicator selection, weight allocation, and data processing. The research also introduced a performance evaluation method, the TOPSIS method, and emphasized the importance of data processing. Finally, some research directions on performance evaluation were proposed, including the integrity, trade-offs, and feasibility of performance evaluation.

Yang (2015) explored the impact of agglomeration density on labor productivity in the tourism industry. The main discussion was on the role of the Internet in the tourism industry and the challenges faced by traditional tourism enterprises. The Internet has become the preferred tool for tourists to obtain tourism information, choose destinations, plan itineraries and complete consumption. Online tourism enterprises have integrated more tourism resources in terms of hotels, air tickets, tickets, routes and group services, enabling tourists to obtain reliable, accurate and timely tourism information more quickly. At the same time, the development of the Internet has also formed a strong competition and substitution for traditional travel agencies and other enterprises. However, traditional tourism enterprises have

organizational inertia and are difficult to change with market demand and environmental changes, which affects their matching degree with the market environment, is not conducive to meeting tourists' new tourism needs, and has an adverse impact on labor productivity. Therefore, when formulating regional tourism economic development strategies, management departments should fully consider the regional agglomeration density effect of the tourism industry, focus on the overall tourism pattern, use information technology to promote tourism industry system innovation, management innovation and market innovation, promote the development of tourism industry clusters with regional characteristics, and form a new driving mechanism for the development of the tourism industry. In addition, diversity is a basic feature of tourism product innovation, and the richness of related industrial elements in a specific region has become a key advantage for improving the labor productivity of tourism enterprises. The proximity and sharing of knowledge and information between tourism enterprises provide conditions, effectively promote the practice of tourism product innovation, form increasing returns related to the diversified tourism production structure, and promote the formation of diversified tourism products, improving the performance of tourism enterprises and their ability to resist external demand fluctuations and unexpected events.

To sum up, the research mainly emphasizes the importance of the Internet in the tourism industry and the challenges faced by traditional tourism companies, and proposes measures such as strengthening cooperation, innovating tourism resources, and promoting industrial integration to promote the development of the tourism industry. This study uses provincial panel data and a quantitative approach to analyze the impact of agglomeration density on the labor productivity of different types of tourism enterprises. The study also extends the theory of industrial agglomeration and examines the impact of organizational ecology on labor productivity in the tourism industry. The research results show that agglomeration density is an important factor affecting the labor productivity of tourism enterprises such as star-rated hotels and travel agencies, supporting the existence of the "Verdun effect" in the development of tourism enterprises. However, the study also shows that labor capital allocation is a key factor affecting the growth of labor productivity in various types of tourism enterprises, while overall labor capital allocation has no significant impact on the labor productivity of star-rated hotels, travel agencies and tourist attractions. In addition, the diversified industry environment has a negative impact on the labor productivity of travel agencies, leading to a paradox in the labor productivity of tourism enterprises. This thesis concludes with policy recommendations based on the empirical analysis.

C. Meng et al. (2016) discussed the development and current status of China's government-

guided funds. It emphasized the characteristics and roles of these funds, including their non-profit nature, indirect government participation through leveraged fiscal funds, and market-oriented and paid operation. The main discussion was on how to strengthen the top-level design of government-guided funds, optimize the investment and financing structure, improve the supervision and evaluation system, and establish a risk prevention and control system. The research pointed out that government-guided funds should achieve a balance between government guidance and market-oriented operation through reasonable positioning and diversified investment structure, while paying attention to the deviation of investment portfolio and the improvement of investment efficiency. The document emphasized that government-guided funds are an effective means to support the development of industry and enterprises under market economy conditions and improve the efficiency of fiscal funds. It also outlined the current status of China's government-guided funds, including the numerous funds established at the central and local levels. The document pointed out that government-guided funds have developed positively, but there are also challenges such as inconsistent establishment and management, and standardized policies need to be implemented to promote their healthy development. The document further discussed the dual nature of government-guided funds and the need for coordination between government and market forces, as well as the issues of optimizing fund structure design and improving supervision and evaluation systems. The research also mentions strengthening the supervision and evaluation of funds, including establishing an internal evaluation system and entrusting third-party institutions to conduct performance evaluations, as well as strengthening the supervision and management of fund management institutions. Finally, the research emphasizes the importance of establishing a risk prevention and control system, including preventing excessive concentration of fund investment areas, clarifying the methods of income disposal and loss burden, establishing an information monitoring system, and strengthening the supervision and management of fund management institutions. Finally, the research puts forward policy recommendations for strengthening the top-level design of government-guided funds, optimizing investment and financing structures, improving the supervision and evaluation system, and establishing a risk prevention and control system.

Y. L. Li and Liu (2017) discussed the necessity of improving the post-investment supervision and management of government-guided funds to improve their efficiency in supporting the financing of strategic emerging industries. This thesis mainly discussed the performance evaluation method of equity-invested funds. The goal realization demands of equity-invested funds include the goal realization demands of government goals, economic

benefits demands (capital preservation and appreciation), and the sustainable support demands of strategic emerging industries. The performance of equity-invested funds can be evaluated from the aspects of the realization of policy goals of equity-invested funds, the profitability of equity-invested funds, and the business management capabilities of equity-invested funds. This thesis mentioned the method of using the intuitive fuzzy analytic hierarchy process (IFAHP) for performance evaluation and gave specific steps. The authors suggested building a performance evaluation system for equity investment funds, focusing on the policy goals, economic benefits, and sustainability of supporting strategic emerging industries. Considering the hesitation of decision makers, they used the intuitive fuzzy analytic hierarchy process (IFAHP) to evaluate the performance of equity investment funds. The results showed that the realization of policy goals has the greatest impact on the performance of equity investment funds. This thesis also emphasized the importance of specific policy indicators, such as the proportion of social capital attracted and the proportion of investment in strategic emerging industries. The authors believe that government-guided funds should pay attention to these indicators in their investment operations. Overall, the document emphasizes the need to establish a performance evaluation system for equity investment funds to ensure effective financing support for strategic emerging industries.

Xiang et al. (2018) explored the operation model and organizational structure of the government venture capital guidance fund. The relevant literature on performance evaluation in recent years is reviewed, and an improved intuitionistic fuzzy analytic hierarchy process is proposed to evaluate the performance of these funds. The document stressed the need for clear positioning and long-term planning of guidance funds, and the introduction of decision-making indicators, output indicators and sustainable impact indicators to address the problems of unclear positioning, improper investment structure and lack of market influence. Finally, this thesis uses the improved intuitionistic fuzzy hierarchical analysis method to determine the weights of the evaluation indicators and finds that this method is intuitive and superior to traditional methods. In addition, this research mainly discusses the establishment, capital contribution, operation and management, decision-making, management and output of the guidance fund. Specifically, it includes the following points: The establishment of the guidance fund mainly includes the system of the guidance fund (trustee) management agency and the management system of the participating sub-funds. The establishment of the management agency system includes the management agency's requirements for its shareholding in sub-funds, requirements for reporting to the management committee, requirements for organizing daily meetings, requirements for understanding the situation of supported enterprises, and

requirements for the implementation of the one-vote veto in investment approval. The management requirements for participating sub-funds include requirements for the stability of the management company team, professional requirements for the investment management team, and compliance requirements. The investment situation of the guidance fund is divided into the equity structure of the guidance fund, the financial funds in place and the social funds in place. The availability of fiscal funds needs to be assessed regularly to see whether actual investment is greater than planned investment. The availability of social funds includes whether the investors' promised capital contributions are paid on time, whether any capital contribution disputes occur, whether non-investors are punished, and whether the capital contributions are legally approved. The equity structure of the guidance fund requires diversification, including whether the participating entities participate in the investment and have interest bundling, whether it attracts diversified corporate capital participation, whether it adopts a limited partnership cooperation form, and the number of unrelated social investors. The operational management of the guidance fund includes information disclosure, risk control and financial management. Information disclosure should pay attention to the scope of objects, content and accessibility. Risk control includes indicators such as investment amount, number of experts on the review committee, management control, priority distribution rights and repayment rights, and fund supervision. Financial management must strictly implement the systems of fund management, expense expenditure and accounting. The decision-making of the guidance fund includes performance target setting, decision-making process, fund allocation and guidance amplification. Performance goal setting should be clear, detailed and quantified. The decision-making process should examine indicators such as the rationality of the number of experts on the review committee, whether the project approval is based on expert opinions, whether it complies with the industrial development plan, and whether the decision is efficient. A clear method should be established for the allocation of funds, and regulations should be made on the proportion of funds for different investment models. To guide the amplification situation, it is necessary to examine the implementation of funds and the amplification multiple of social funds. The output of the guidance fund includes target completion, investment quality, exit status and value preservation and appreciation. The achievement of the target shall be examined based on the investment leverage ratio and investment progress. The quality of investment should examine whether the investment structure complies with policy regulations. The withdrawal situation should consider timeliness and price. The preservation and appreciation of value require examination of the fund's investment income.

Tian (2018)'s document, entitled "Research on the Development Trends and

Countermeasures of Artificial Intelligence in Higher Education", explores the current status and future development of artificial intelligence in higher education. The authors believe that artificial intelligence is an important driving force for the development of higher education and propose countermeasures to promote the integration of artificial intelligence in education. The authors believe that artificial intelligence is an important factor in the development of higher education and should be taken as a new direction for education reform. The development of artificial intelligence in higher education should focus on the integration of artificial intelligence technologies, such as big data analysis, intelligent tutoring systems, and virtual reality to improve teaching effectiveness. The authors emphasize the importance of establishing a comprehensive evaluation system for the application of artificial intelligence in higher education to ensure its effectiveness and efficiency. They suggest that universities should strengthen the training of artificial intelligence talents and promote interdisciplinary cooperation to fully utilize the potential of artificial intelligence in education. The document emphasizes the need for policy support and funding to promote the development and implementation of artificial intelligence in higher education. Overall, the document emphasizes the importance of artificial intelligence in higher education and provides suggestions for its development and integration. It calls for the establishment of an evaluation system, talent training, interdisciplinary cooperation, and policy support to fully utilize the potential of artificial intelligence in education.

J. Zhang and Yan (2019) explored the relationship between financial development and urbanization in China. The authors argue that financial inclusion plays a vital role in promoting urbanization and economic development. They emphasize the need for a comprehensive understanding of financial inclusion and its impact on urbanization. This thesis discusses various aspects of financial development and urbanization, including the types of financial inclusion, the importance of financial inclusion in promoting urbanization, and the challenges and opportunities of implementing financial inclusion policies. The authors also emphasize the need for further research and analysis to better understand the relationship between financial development and urbanization in China. The research points out that government-guided funds, as an important combination of government functions and market mechanisms, play an increasingly important role in promoting supply-side structural reforms. With the rapid growth in the number and scale of government-guided funds, a series of problems that affect operational efficiency have gradually emerged, such as the difficulty in coordinating policy goals with business goals, the difficulty in raising funds under the new capital management regulations, the pressure of fund withdrawal after rapid growth, the imperfection of

performance evaluation and risk control systems, and the lack of professional talents. In order to improve the operational efficiency of government-guided funds, it is necessary to build corresponding coordination mechanisms, innovate profit distribution mechanisms and risk-sharing mechanisms, improve risk monitoring and withdrawal mechanisms, improve performance evaluation mechanisms, and strengthen talent training and introduction mechanisms, based on the typical characteristics and investment areas of government-guided funds. The research also mentions some related keywords, such as government-guided funds, operational efficiency, and mechanism optimization.

J. Xu and Yang (2019) discussed the evaluation and effectiveness of China's "New Deal Policy". The authors analyze the policy's impact on economic growth and employment, as well as its contribution to poverty alleviation and regional development. The study found that the New Deal policies had a positive impact on economic growth and employment, with GDP growing significantly and unemployment falling. However, challenges remain in poverty reduction and regional development. The authors suggest that further steps should be taken to address these issues and improve the effectiveness of policies.

Qi et al. (2020) discussed the role of government guidance funds in promoting early-stage venture capital and high-tech industry investment. The research pointed out that government guidance funds reduce the risks of commercial venture capital institutions and increase investment returns through special mechanism design, thereby attracting and increasing social capital investment in early-stage venture capital projects. Through a comparative study of government guidance funds in the United States, Israel and Australia, the researchers found that government intervention plays an important role in promoting the rapid development of a country's venture capital industry, and the establishment of government guidance funds is a common means for governments to intervene in the venture capital market. The research also introduced the data sources and research methods used in the study. Finally, the research proposed two research hypotheses: government guidance funds can guide more social capital to invest in early-stage venture capital projects, and can guide more social capital to invest in venture capital projects in high-tech industries. The establishment and operation of government guidance funds in China and their role in promoting venture capital are discussed. The key points and key arguments of the document are as follows: Since the issuance of the "Guiding Opinions on the Establishment and Operation of Venture Capital Guidance Funds" in 2008, local governments in China have been setting up GGFs to attract more venture capital and overcome market failures in the venture capital industry.

The GGF aims to leverage government capital to attract more private venture capital and

commercial venture capital institutions to participate in local entrepreneurial investment activities, especially in the seed and early stages of high-tech SMEs. GGF uses special mechanisms such as compensation and profit-sharing mechanisms to reduce the risks of commercial venture capital institutions and increase their investment returns, thereby attracting more social capital to participate in early-stage venture capital projects. The document emphasizes the importance of government intervention in promoting the development of the venture capital industry, and the establishment of GGF is a common means of government intervention. This thesis proposes two research hypotheses: GGF can attract more social capital into early-stage venture capital projects, and GGF can attract more social capital into high-tech industries. Empirical analysis of China's GGF shows that GGF is positively correlated with both pre-entrepreneurship investment and venture capital in the high-tech sector. The analysis also considers factors such as GDP, capital and patents, which have a significant impact on venture capital. In summary, this thesis discusses the establishment of government-guided funds and their role in promoting venture capital in China. It highlights the policy guidance role of GGF in attracting social capital to participate in early-stage and high-tech venture investment projects. The empirical analysis supports these hypotheses and shows that there is a positive relationship between GGF and venture capital.

Qi et al. (2020) mainly discussed the research direction and development trend of government-guided funds. This thesis is mainly about the research on government-guided funds. The research points out that government-guided funds have made significant progress in the process of development, but there are also some problems, such as idle funds, chaotic management, and imperfect exit mechanisms. At present, the academic community has maintained continuous attention to government-guided funds, but there are certain differences in research focus and research methods at home and abroad. Research applied to China mainly focuses on the problems of government-guided funds themselves, while research pays more attention to related fields such as venture capital and fiscal finance. The research proposes a prospect based on a multi-objective portfolio selection model to comprehensively consider factors such as the economic performance, innovation performance, and social performance of government-guided funds. The research also summarizes the existing progress and future development direction of Chinese and research through bibliometrics and keyword clustering analysis. They pointed out that early research mainly focused on the quantitative scale analysis of government-guided funds, while current research pays more attention to the quality performance analysis of government-guided funds. In addition, the research content has also shifted from simply considering economic performance to comprehensive consideration of

economic, social, and innovative performance. The research also summarizes the development laws and type changes of government-guided fund research at home and abroad through bibliometrics and portfolio analysis. Finally, the research proposes a prospect based on a multi-objective portfolio selection model to further optimize the development model and performance evaluation of government-guided funds.

Zhao (2020) explores the legal regulation of AI in the field of intellectual property. It argues that AI poses challenges to traditional intellectual property law and calls for a new legal framework to address these challenges. This thesis emphasizes the need to consider the unique characteristics of AI in intellectual property regulation and suggests using AHP (Analytical Hierarchy Process) to evaluate and prioritize different aspects of AI intellectual property regulation. It also discusses the importance of balancing the interests of AI creators and users and suggests that AI intellectual property regulation should focus on promoting innovation and fair competition. This thesis concludes by emphasizing the need for further research on the legal regulation of AI in intellectual property and the importance of considering ethical and social impacts.

X. Tang (2021) discussed the construction of the performance evaluation system of government venture capital funds in China. This thesis mainly discusses the performance evaluation index system of government venture capital guidance funds. The index system includes four goals: public finance goal, social benefit goal, economic benefit goal and standardized management goal. In terms of public finance goal, the focus is on the fund proportion, social capital leverage ratio and the driving effect on the tax revenue of the invested enterprises. In terms of social benefit goal, the focus is on the transformation effect of scientific and technological achievements and social and economic contribution. In terms of economic benefit goal, the focus is on the fund's own value preservation and appreciation, the investment return rate of cooperative sub-funds, and the main business growth rate and net profit growth rate of the invested enterprises. In terms of standardized management goal, the focus is on the standardized operation and fulfillment of duties of the guidance fund management institutions and cooperative venture capital institutions. In order to determine the indicator weights, this thesis adopts a combination of principal component analysis and hierarchical analysis. By performing dimensionality reduction analysis on the data and calculating weights, a comprehensive performance evaluation index system is constructed. It emphasizes the rapid development of government venture capital funds in recent years and the necessity of establishing a comprehensive evaluation system to evaluate their policy effectiveness and investment performance. The authors propose a framework consisting of four dimensions and

21 indicators to evaluate the performance of government venture capital funds. These dimensions include achieving public financial goals, achieving social benefits, achieving economic benefits, and ensuring regulatory compliance. The authors also explain the methods used to construct the evaluation system, including the use of principal component analysis and hierarchical analysis. This thesis emphasizes the importance of considering policy goals, social impact, and financial operations when evaluating the performance of government venture capital funds.

Y. H. Tang et al. (2022) focused on the efficiency of government industry guidance funds and explored the efficiency of government industry guidance funds based on evolutionary game theory. A model for analyzing the stability and simulation of fund management decisions was constructed using the incentive compatibility mechanism. The results show that government management decisions affect the effort level of fund managers, which in turn affects the operating efficiency of industry guidance funds. The cost of hard work affects the work attitude of fund managers, and the combination of "process incentives" and "result rewards" is more effective. The single management constraints of government departments are not long-term, and "differentiated incentives" are more motivating for fund managers. The document recommends introducing third-party institutions to evaluate and supervise fund managers, and establishing flexible incentive mechanisms, long-term supervision accountability mechanisms, and cost compensation mechanisms to improve fund efficiency. This thesis mainly discusses the game relationship between government departments and fund managers in the operation of industry guidance funds. The goal of government departments is to consider social and economic benefits, while the goal of fund managers is to increase the return on investment and pay more attention to economic benefits. Because the interest goals are not completely consistent, there is a game relationship between government departments and fund managers in the operation of funds. If government departments make inappropriate management decisions, the efficiency of fund operation will be reduced. In order to solve this problem, this thesis introduces the incentive compatibility mechanism, constructs an evolutionary game model of the government and fund managers based on the evolutionary game theory, and analyzes the impact of the government's management decisions with different incentive mechanisms on the behavior of fund managers. Finally, it lays the foundation for the government to improve the management mechanism and take correct management decisions, and promote the safe and efficient operation of industrial guidance funds. The literature review part mainly focuses on the role of industrial guidance funds, risk causes and risk control, and fund management decisions. Through the analysis of relevant literature, it can be concluded that the guidance fund

has a significant role in promoting industrial structure adjustment and regional economic development. However, the current government management mechanism is not mature enough and is prone to agency risks. When discussing agency risks, most people believe that information asymmetry and differences in interest goals between government departments and agents are important influencing factors, and establishing an incentive mechanism is an effective solution. The model assumption and construction part is based on the principle of incentive compatibility. It is assumed that the government's decision-making choices for fund managers are "incentive" and "no incentive", and fund managers also have corresponding choices of "hard work" and "no hard work" for the government's strategy choices. On this basis, the evolutionary game model is introduced, the game benefits of both parties are used as the utility function, and the evolutionary stability analysis results under different circumstances are analyzed. In summary, this thesis proposes an incentive compatibility mechanism by analyzing the game relationship between government departments and fund managers, and constructs an incentive model based on evolutionary games to improve the efficiency of fund operation. This is of great significance for the government to improve the management mechanism and take correct management decisions, and promote the safe and efficient operation of industry guidance funds.

L. Chen and Duan (2022) explored the impact of regional differences in government-guided funds on the innovation performance of Chinese enterprises. The study divided government-guided funds into inland funds and coastal funds, and found that coastal funds had a more significant role in promoting corporate innovation performance, especially in high-tech industries and early-stage enterprises. The document proposes strategies to enhance corporate innovation performance and improve government-guided funds. The author points out that government-guided funds have the characteristics of large capital scale, clear industry guidance goals, and implicit government endorsement, which provide convenience for corporate financing activities. In China, the uneven distribution of government-guided funds between inland and coastal areas leads to different impacts on corporate innovation performance. Coastal funds have advantages in withstanding failure and accumulating experience, and their role in promoting corporate innovation performance is more significant, especially in high-tech industries and early-stage enterprises. This study takes technology-board listed companies as the research object, aiming to provide empirical evidence and technical support for improving the operation and practice of government-guided funds. Previous studies have shown that government guidance funds can promote corporate innovation performance by providing financial resources, management consulting services, and strategic development strategies.

Government-guided funds in different regions are heterogeneous in terms of financing, investment, management and exit mechanisms, and their impact on corporate innovation performance varies. The document emphasizes the need to classify government-guided funds based on regional differences, analyze their impact on corporate innovation performance, and provide targeted policy recommendations and improved financing strategies for different types of companies.

K. Z. Zhang and Zhang (2022) discussed the necessity of a global perspective in public finance theory and the challenges the world faces in providing global public goods. They discussed the impact of globalization on the global inequality pattern and the importance of building a global public finance system. Globalization changes the global inequality pattern by driving cross-border capital flows, information exchange and income redistribution. Globalization will also change the tax structure of a country. In order to attract international capital, the country will take the initiative to reduce the tax burden borne by highly mobile production factors. The regressive nature of this tax system will aggravate global inequality. The development of the digital economy and artificial intelligence will also widen the global income distribution gap. The rapid development of the digital economy has triggered a digital divide. Developed economies have benefited from the digital economy and achieved sustained economic prosperity, while developing countries are limited by their technological level and cannot fully enjoy the dividends brought by the advancement of digital technology. The rapid development of artificial intelligence technology and the widespread application of robots have changed the global division of labor and have had a profound impact on global inequality. Artificial intelligence has changed the income distribution pattern of society by replacing low-skilled labor. The employment of low-skilled workers is more vulnerable to squeeze, and inequality may change due to the bias of technological progress. The application of artificial intelligence has improved the productivity and output levels of developed and developing countries, further widening the development gap between developed and developing countries. Faced with the theoretical and practical difficulties in the process of globalization, countries need to promote global development through coordination and cooperation. Economic globalization has strengthened the connection between countries and transcended the jurisdictional boundaries of countries and regions. At the same time, global public issues have an increasingly greater impact on global welfare, and no country can be immune. In the absence of a global government, building a global public finance system requires interdisciplinary efforts to help countries around the world break the rut of each doing its own thing and drawing a line in the sand. Global public finance attempts to help countries cope with the theoretical and

practical challenges in the process of globalization by building a global public finance system with compatible sovereignty. The subjects involved in global public finance include not only sovereign states, but also regional and global organizations. The establishment of a global public finance system with compatible sovereignty requires strengthening the cooperation between major powers and other countries and international organizations in global public affairs, and promoting the establishment of a multi-level global public finance system that coordinates countries, regions and the world. On the basis of absorbing Marx's community thought and the idea of "the world is for the public" in traditional philosophy, China has put forward the concept of a community with a shared future for mankind. China believes that the world's destiny should be jointly controlled by all countries, international rules should be jointly written by all countries, global affairs should be jointly governed by all countries, and the fruits of development should be shared by all countries. The concept of a community with a shared future for mankind is of great significance for promoting the construction of a multi-level community at the bilateral, regional and global levels. Supporters of cosmopolitanism attempt to provide a broad principle of justice, integrate moral considerations and ethical concerns into the design of global institutions, and establish a global architecture that meets the requirements of justice. The authors argue that despite the increasing interconnection of the global economy, ecology and technology, the global political structure is still based on independent nation-states, which makes it difficult to provide sufficient global public goods to address challenges such as climate change, disease outbreaks and economic fluctuations. They emphasize the existence of market failures and state failures on a global scale. This thesis also discusses the concept of global public finance, studying the financial flows and actions taken by countries to support transnational public policies. The authors emphasize the importance of establishing a theoretical framework for global public finance to address the challenges and frictions brought about by China's rise as a global economic power. They suggest that the traditional approach to national public finance needs to be expanded to incorporate global perspectives and ethical considerations. This thesis concludes by proposing a theoretical basis and framework for global public finance.

3.3 Synthesis and research gaps

The literature review of the evaluating Chinese government industry guidance fund is of great significance in the current economic context. Government industry guidance funds are widely used to promote industrial upgrading and economic development, so the study of their

performance evaluation and influencing factors can provide valuable reference for government decision-making and fund management.

Some research results have been obtained on this topic. Some literatures have explored the performance evaluation system and methods of government industry guidance funds in theory and practice, and provided suggestions for the selection of evaluation indicators and the establishment of evaluation systems. At the same time, some studies have also analyzed the factors affecting performance evaluation, such as policy environment, fund management, project selection, and revealed the impact of these factors on performance through empirical research.

However, the current research also has some shortcomings. First, government industry guidance funds in different regions and industries are different, so the research on performance evaluation and influencing factors needs the support of more regional and industry cases to improve the breadth and accuracy of the research. Second, the performance evaluation index system still has certain limitations and subjectivity, and needs further improvement and perfection to improve the scientificity and objectivity of the evaluation.

The research on the evaluating Chinese government industry guidance fund has made some progress, but it still faces challenges. Further research should focus on the analysis of specific cases, the improvement and perfection of the evaluation index system, and the strengthening of data support to improve the depth and practicality of the research. This will help optimize the operation and decision-making of government industry guidance funds and promote industrial development and economic growth.

[This page is deliberately left blank.]

Chapter 4: Determination of the Performance Evaluation Index System of Government Industry Guidance Funds

4.1 Basis and principles for indicator system design

The government-guided fund is funded by the government. From the perspective of fiscal investment, reference is made to the "Interim Measures for the Performance Evaluation and Management of Sichuan Provincial-Level Industrial Development Investment Guidance Fund" (Sichuan Cai Gui, 2019) and the "Notice of Sichuan Provincial Department of Finance on Issuing the Measures for Performance Evaluation of Sichuan Provincial Government-Public-Private Partnership (PPP) Investment Guidance Fund" (Sichuan Finance, 2020) to build a scientific and comprehensive performance evaluation index system for government-guided funds. The government-guided fund adopts a market-oriented operation model, and the professional capabilities and management norms of the management agency must also be considered. Referring to the performance evaluation index systems set by two government documents, this thesis constructs an index system based on the completeness of the coverage of the indicators and the feasibility of the questionnaire questions, from three dimensions: policy objectives, investment returns, and investment management. The content of the indicators involves the stages of fundraising, investment, management, and exit, providing a comprehensive evaluation of the performance of government-guided funds.

4.2 Design content of the indicator system

4.2.1 Policy objectives and indicators

From the government's perspective, the focus is on the driving effect of the industry that the government at this level wants to develop and how much social capital can be leveraged to participate in investment. Therefore, the policy goal here is broken down into two second-level indicators: "policy guidance" and "capital driving".

"Policy guidance" mainly examines whether the government-guided fund complies with the established investment direction, investment stage, and is specifically divided into three three-level indicators: "investment compliance", "investment proportion of major projects",

and "investment rate of recommended projects". "Fund driving" is broken down into three-level indicators: "fiscal fund magnification multiple", "investment proportion of projects within the province", and "driving social investment". Please see Table 4.1 for specific indicator explanations.

Table 4.1 Explanation of the second-level and third-level indicators of policy objectives

Secondary indicators	Level 3 indicators	Indicator Description
Policy guidance	Investment Compliance	Whether the national and provincial macro development plans and relevant policies and regulations are implemented
	Major project investment ratio	Refers to the proportion of invested projects that are included in provincial major projects
	Recommended project investment rate	Number of investment projects recommended by departments, municipal and state governments in official documents/total number of recommended projects*100%
Funding driven	Fiscal funding magnification	Funds raised under the agreement (including financial contributions)/multiples of financial contributions*100%
	Proportion of investment in provincial projects	Fund's provincial investment amount/fund's total investment amount*100%
	Driving social investment	Total project investment amount in the same round/fund investment amount*100%

Source: Sichuan Cai Gui (2019) and Sichuan Finance (2020)

4.2.2 Investment benefit indicators

From the government's perspective, investment benefits focus more on value preservation and appreciation and the social benefits they drive. Specific social benefits include the growth of invested enterprise income, tax revenue, employment. Here, investment benefits are broken down into two secondary indicators: "economic benefits" and "social benefits".

"Economic benefits" focus on "value preservation and appreciation" and "investment rate of return", and "social benefits" focus on "income growth of invested enterprises" and "tax growth". For specific indicator explanations, please see Table 4.2.

Table 4.2 Explanation of the secondary and tertiary indicators of investment benefit targets

Secondary indicators	Level 3 indicators	Indicator Description
Economic Benefits	Maintain and increase value	Whether the capital provided by the finance department can maintain or increase its value
	Return on investment	Annualized rate of return of fund
Social Benefits	Revenue growth of invested companies	The operating income growth rate of the invested enterprise in the previous year = (the annual operating income growth rate of enterprise 1 + the annual operating income growth rate of enterprise 2 + ... + the annual operating income growth rate of enterprise n) / n, which is the arithmetic mean of the annual operating income

		growth rate of the fund's invested enterprises, where n is the cumulative number of invested enterprises
	Tax growth	Whether the tax revenue of the invested enterprise continued to grow in the previous year

Source: Sichuan Cai Gui (2019) and Sichuan Finance (2020)

4.2.3 Investment management indicators

The investment management indicators examine the fund investment management capabilities from the entire process of "raising funds", "investing", "managing" and "exiting" of government industrial guidance funds. The fundraising stage focuses on the availability of funds, the investment stage focuses on the investment progress, the management stage focuses on value-added services, and the exit stage focuses on the exit progress.

Specifically, "fund raising" is decomposed into three-level indicators: "annual new funds raised", "annual funds in place", and "cumulative funds in place"; "project investment" is decomposed into three-level indicators: "annual investment plan completion rate" and "cumulative investment progress"; "post-investment management" is decomposed into three-level indicators: "value-added services" and "supervision and management"; and "investment exit" is decomposed into three-level indicators: "exit progress" and "achievement of exit expectations". For specific indicator explanations, see Table 4.3.

Table 4.3 Explanation of secondary and third level indicators of investment management indicators

Secondary indicators	Level 3 indicators	Indicator Description
Fund Raising	Annual new fundraising	Refers to the newly raised funds from January 2023 to December 2023/the funds raised before 2023
	Annual funding in place	Refers to the agreed funds actually in place from January 2023 to December 2023/the agreed funds that should be in place from January 2023 to December 2023
	Cumulative funds in place	Refers to the actual funds in place as of December 2023/the agreed fundraising scale × 100%
Project Investment	Annual investment plan completion rate	Refers to the investment funds signed in 2023/investment assessment targets for 2023
	Cumulative investment progress	Refers to the agreed investment funds/investable funds raised in the agreed fundraising (excluding cost expenditures such as management fees) × 100%
Post-investment management	Value-added Services	Refers to the value-added services provided to the invested units in 2023 (number of service projects provided/total number of projects)

Investment Exit	Supervision and Management	Refers to the supervision and management implementation of the project post-investment management system (number of fully implemented projects/total number of projects)
	Exit Progress	Indicates whether there is any overdue withdrawal
	Exit Expectation Realization	Refers to whether the exit meets expectations compared with the investment proposal

Source: Sichuan Cai Gui (2019) and Sichuan Finance (2020)

4.3 Establishment of the indicator system

Based on the Sichuan Cai Gui (2019) and Sichuan Finance (2020), a comprehensive indicator system for the performance evaluation of government industrial guidance funds is constructed. The establishment results are shown in Table 4.4.

Table 4.4 Comprehensive indicator system

	First level indicator	**Secondary indicators**	**Level 3 indicators**
Comprehensive indicator system for performance evaluation of government-guided funds	A1: Policy Objective	B1: Policy guidance	C1: Investment Compliance
			C2: Major project investment proportion
			C3: Recommended project investment rate
			C4: Fiscal funds magnification factor
		B2: Funding driven	C5: The proportion of investment in provincial projects
			C6: Driving social investment
	A2: Investment benefit	B3: Economic Benefits	C7: Value preservation and appreciation
			C8: Investment return rate
		B4: Social Benefits	C9: Revenue growth of invested enterprises
			C10: Tax growth
		B5: Fund Raising	C11: Annual new fundraising
			C12: Annual funds in place
			C13: Cumulative funds in place
	A3: Investment Management	B6: Project Investment	C14: Annual investment plan completion rate
			C15: Cumulative investment progress
		B7: Post-investment management	C16: Value-added services
		b7	C17: Supervision and management
		Investment Exit	C18: Exit progress
		b8	C19: Exit expected realization

Source: Sichuan Cai Gui (2019) and Sichuan Finance (2020)

4.4 Determination of the weight of the indicator system

4.4.1 Introduction to AHP

The indicator weight reflects the importance of the selected indicator to the evaluation target. The indicator weight will affect the scores of each level and the overall target, so it is necessary to choose an appropriate weight calculation method. At present, there are many methods for calculating indicator weights at home and abroad, including the analytic hierarchy process, the priority diagram method, the entropy method, the principal component analysis (PCA) method and the factor analysis (FA) method. These methods can be roughly divided into subjective weighting methods, objective weighting methods and combined weighting methods. Among them, subjective weighting methods, such as the analytic hierarchy process (AHP) and the priority diagram method, rely on expert experience and are suitable for situations where data is insufficient, but they are highly subjective. Objective weighting methods such as the entropy method, principal component analysis, and factor analysis are based on the data itself, objective but may ignore expert opinions. The combined weighting method combines the two, which may be more comprehensive, but more complex.

The analytic hierarchy process (AHP) refers to a decision-making method that decomposes decision-related elements into levels such as goals, criteria, and plans, and conducts qualitative and quantitative analysis on this basis. The analytic hierarchy process decomposes decision-making problems into different hierarchical structures in the order of overall goals, sub-goals at each level, evaluation criteria, and specific alternative investment plans. By constructing a judgment matrix, the hierarchical indicators are compared pairwise, and then the priority weight of each element at each level to an element at the previous level is obtained by solving the eigenvector of the judgment matrix. Finally, the weighted sum method is used to recursively merge the final weight of each plan to the overall goal.

The performance evaluation index system constructed in this thesis is divided into three levels, with a clear structure and a combination of qualitative and quantitative indicators. Therefore, it is more appropriate to use the hierarchical analysis method to calculate the weights of the performance evaluation indicators of government-guided funds.

4.4.2 Calculation process of AHP

4.4.2.1 Constructing the indicator system model

According to the selection of indicators in Section 4.3, a performance evaluation indicator

system for government-guided funds is constructed. The comprehensive indicator system is divided into three levels with a clear structure, which meets the foundation for constructing the hierarchical analysis method model.

4.4.2.2 Set the matrix scale and construct the judgment matrix

By comparing the indicators at each level in pairs, the corresponding matrix scale is obtained. The specific meaning is shown in Table 4.5.

Table 4.5 Judgment matrix indicators and meanings

Scale	Definition	Meaning
1	Equally important	When comparing two factors, one element is as important as the other.
3	Slightly important	Two factors compared, one element is slightly more important than the other
5	More important	When comparing two factors, one element is more important than the other
7	Obviously important	Comparing two factors, one element is obviously more important than the other
9	Absolutely important	Comparing two factors, one element is definitely more important than the other
2,4,6,8	Middle value of adjacent scale	Indicates the scale between two adjacent scales
The reciprocal of the above number	Reverse comparison	The difference between element i and element j is aij, and vice versa is 1/aij

Taking three indicators A_1, A_2, and A_3 as an example, pairwise comparisons are conducted. The importance of indicator A_1 compared to indicator A_2 is represented by a12, and the importance of indicator A_2 compared to indicator A_1 is the reciprocal of a12, that is, 1/a12. The importance of other indicators in pairwise comparisons is expressed in the same way. By summarizing the results of the indicator comparisons, a three-order judgment matrix of importance is constructed, as shown in Table 4.6. Since the importance of an indicator compared to itself does not change, the diagonal values of this matrix are 1. Similarly, second-order and fourth-order judgment matrices of importance can be represented in the same way.

Table 4.6 Third-order judgment matrix of importance

	A_1	A_2	A_3
A_1	1	a12	a13
A_2	1/ a12	1	a23
A_3	1/ a13	1/ a23	1

4.4.2.3 Calculate the largest eigenvalue and the corresponding eigenvector

The calculation methods of weight index of AHP include sum-product method and square root method. Here, sum-product method is used to calculate weight index, and square root method is used for stability test. The calculation process of sum-product method is as follows:

According to the questionnaire, we can obtain the n-order judgment matrix as follows:

First, we normalize the judgment matrix by column to obtain $\overline{A_{ij}}$ as given by Equation (4.1):

$$\overline{A_{ij}} = \frac{A_{ij}}{\sum_{i=1}^{n} A_{ij}},\ i, j=1,2,...,n \tag{4.1}$$

Then, we add the processed judgment matrix row by row to get $\overline{N_i}$ as given by Equation (4.2):

$$\overline{N_i} = \sum_{ij}^{n} \overline{A_{ij}},\ i, j= 1,2,...,n \tag{4.2}$$

Finally, we normalize the vector $\overline{N}=[\overline{N_1}, \overline{N_2}, \ldots, \overline{N_i}]^T$ as given by Equation (4.3):

$$N_i = \frac{\overline{N_i}}{(\overline{N_1}+\overline{N_2}+\ldots+\overline{N_i})},\ i=1,2,...,n \tag{4.3}$$

where $\overline{N}= [\overline{N_1}, \overline{N_2}, \ldots, \overline{N_i}]^T$ is the required eigenvector, and N_i is the weight of indicator A_i relative to the superior indicator.

4.4.2.4 Consistency test

In AHP, decision-makers need to conduct pairwise comparisons of the factors at the same level to assess their relative importance. This process is essentially subjective and can easily lead to logical inconsistencies. For example, a contradictory situation may arise such as 'Factor A is more important than Factor B, Factor B is more important than Factor C, but Factor C is more important than Factor A.' If there are many such contradictions in the judgment matrix, the weights calculated based on it can be distorted, leading to unreliable final decision outcomes. Therefore, to meet the consistency requirements of the judgment matrix and ensure that the research results are scientifically reasonable, a consistency test must be conducted. A matrix that passes the test indicates that the internal comparison relationships are largely coherent, and the weights derived from it are persuasive. Traditional consistency testing mainly relies on the consistency ratio (CR) indicator, and its calculation process involves several key steps.

First, we calculate the consistency index (CI) of the judgment matrix, as given by Equation (4.4). Among them, n is the matrix order, and λmax is the maximum eigenvalue of the judgment matrix, as given by Equation (4.5). When the matrices are completely consistent, λmax= n, and at this point CI = 0. The larger the CI value, the more severe the inconsistency of the matrix.

$$CI = \frac{\lambda_{max}-n}{n-1} \tag{4.4}$$

$$\lambda_{max} = \sum_{i=1}^{n} \frac{(AN)_i}{nN_i} \tag{4.5}$$

Then, we query the average Random Consistency Index (RI). The average Random Consistency Index (RI) is a benchmark value, obtained by randomly generating a large number of judgment matrices of the same order and calculating the average of (CI) values. The (RI)

value only depends on the order of the matrix, and there is a recognized standard value table available for reference, see Table 4.7. For example, when the matrix order is 4, the corresponding (RI) value used is 0.89.

Table 4.7 RI coefficient table

Matrix order	1	2	3	4	5	6	7	8
RI value	0	0	0.52	0.89	1.12	1.26	1.36	1.41

Finally, calculate the consistency ratio (CR), as given by Equation (4.6).

$$\mathbf{CR}=\frac{\boldsymbol{CI}}{\boldsymbol{RI}} \tag{4.6}$$

If (CR) is less than 0.1, the constructed judgment matrix meets the consistency requirements, and there is a reasonable logical relationship between the indicators; if (CR) is greater than or equal to 0.1, the judgment matrix does not meet the consistency requirements, the logical relationship between the indicators is unreasonable, and it is necessary to readjust the pairwise comparisons among the factors until it passes the test.

In addition, for second-order judgment matrices, since there are only comparisons of importance between two factors, there are no contradictions, and consistency testing is not required. This thesis only conducts consistency testing for matrices of third order and above.

4.4.3 Questionnaire collection and data processing

This thesis adopts the hierarchical analysis method to determine the weights of each indicator, and experts are required to score the questionnaire. Due to the limited number of government-guided funds in Sichuan Province, this survey selected a total of 15 representative government-guided funds from provincial, municipal, and district levels. For each fund, executives, mid-level managers, and employees were interviewed, and a total of 90 valid questionnaires were collected (see Annex 1: Questionnaire 1 for details of the questionnaire). The questionnaire sets equal weights for each expert, so this thesis integrates the results of each questionnaire using the geometric mean method to construct an aggregate judgment matrix, and performs subsequent indicator weight calculations on this basis.

4.4.4 Calculation of indicator weights

The indicator weight calculation results of the sum-product method are reported according to the classification of primary indicators, secondary indicators and tertiary indicators. The reported results are as follows.

4.4.4.1 First-level indicator judgment matrix

Based on the questionnaire data and Section 4.4.2.2, the answers of the experts were integrated through the geometric mean method (the same below) to obtain the first -level indicator matrix of (policy objectives, investment benefits, investment management), and the results are shown in Table 4.8.

Table 4.8 Judgment matrix and indicator weight of first -level indicator

	Judgment matrix			**Indicator weight (N_i)**	**Consistency Test**
	Policy objectives	**Investment Benefits**	**Investment Management**		
Policy objectives	1	2.5920	2.3024	0.5478	λ_{max}= 3.0175 CI = 0.0088 CR = 0.0169
Investment Benefits	0.3858	1	1.3210	0.2425	
Investment Management	0.4343	0.7570	1	0.2097	

Calculate indicator weights according to the steps mentioned in Section 4.4.2.3, and do a consistency test according to the steps mentioned in Section 4.4.2.4, the results are also summarized in Table 4.8. The consistency check has passed, proving that there is no unreasonable logical relationship in the results of the government guidance fund performance evaluation first-level indicator questionnaire over time, and the calculated indicator weight results are acceptable.

4.4.4.2 Secondary indicator judgment matrix

According to the questionnaire data, the second-order judgment matrix of policy objectives (policy guidance, funding driven) is obtained, and the results are shown in Table 4.9.

Table 4.9 Judgment matrix and indicator weight of policy objectives

	Judgment matrix		**Indicator weight (N_i)**
	Policy guidance	**Funding driven**	
Policy guidance	1	1.9230	0.6579
Funding driven	0.5200	1	0.3421

The indicator weights were calculated and also shown in Table 4.9. A second-order matrix always has complete consistency, so there is no need to perform consistency test on the second-order judgement matrix, and the calculated indicator weight results are valid.

The same is the indicator of investment benefits (economic benefits, social benefits), and the results are shown in Table 4.10.

Table 4.10 Judgment matrix and indicator weight of investment benefits

	Judgment matrix		**Indicator weight (N_i)**
	Economic Benefits	**Social Benefits**	
Economic Benefits	1	1.2178	0.5491
Social Benefits	0.8212	1	0.4509

As for the indicator of investment management (fund raising, project investment, post-

investment management, investment exit), the results of judgment matrix and indicator weight are shown in Table 4.11. As the results show, the consistency check has passed, and the calculated indicator weight results are valid.

Table 4.11 Judgment matrix and indicator weight of investment management

	Judgment matrix				**Indicator weight (N_i)**	**Consistency Test**
	Fund Raising	**Project Investment**	**Post-investment management**	**Investment Exit**		
Fund Raising	1	0.7294	0.8298	0.7042	0.1987	
Project Investment	1.3709	1	1.5675	0.8849	0.2890	λ_{max}= 4.0126
Post-investment management	1.2052	0.6380	1	0.7357	0.2138	CI = 0.0042
Investment Exit	1.4200	1.1301	1.3593	1	0.2985	CR = 0.0047

4.4.4.3 Three-level indicator judgment matrix

As for the three-level indicator, here are three third-order judgement matrix and five second-order judgement matrix. The judgment matrix and indicator weight of all three-level indicators are shown from Table 4.12 to Table 4.19. All the consistency check has passed, and the calculated indicator weight results are valid.

Table 4.12 Judgment matrix and indicator weight of policy guidance

	Judgment matrix			**Indicator weight (N_i)**	**Consistency Test**
	Investment Compliance	**Major project investment ratio**	**Recommended project investment rate**		
Investment Compliance	1	2.1560	2.6211	0.5334	λ_{max}=3.0246
Major project investment ratio	0.4638	1	1.9444	0.2911	CI = 0.0123
Recommended project investment rate	0.3815	0.5143	1	0.1755	CR = 0.0236

Table 4.13 Judgment matrix and indicator weight of funding driven

	Judgment matrix			**Indicator weight (N_i)**	**Consistency Test**
	Fiscal funding magnification	**Investment ratio of projects within the province**	**Driving social investment**		
Fiscal funding magnification	1	1.2859	0.8555	0.3438	
Investment ratio of projects within the province	0.7776	1	1.1336	0.3196	λ_{max}= 3.0316 CI = 0.0158 CR = 0.0304
Driving social investment	1.1689	0.8821	1	0.3366	

Table 4.14 Judgment matrix and indicator weight of economic benefits

	Judgment matrix Maintain and increase value	**Return on investment**	**Indicator weight $(N_i)_i$**
Maintain and increase value	1	1.5073	0.6012
Return on investment	0.6634	1	0.3988

Table 4.15 Judgment matrix and indicator weight of social benefits

	Judgment matrix Revenue growth of invested companies	**Tax growth**	**Indicator weight $(N_i)_i$**
Revenue growth of invested companies	1	2.4104	0.7068
Tax growth	0.4149	1	0.2932

Table 4.16 Judgment matrix and indicator weight of fund raising

	Judgment matrix				
	Annual new fundraising	**Annual funding in place**	**Cumulative funds in place**	**Indicator weight (N_i)**	**Consistency Test**
Annual new fundraising	1	0.9358	1.1567	0.3419	λ_{max}= 3.0030 *CI* = 0.0015 *CR* = 0.0029
Annual funding in place	1.0686	1	1.0492	0.3459	
Cumulative funds in place	0.8646	0.9531	1	0.3122	

Table 4.17 Judgment matrix and indicator weight of project investment

	Judgment matrix		
	Annual investment plan completion rate	**Cumulative investment progress**	**Indicator weight $(N_i)_i$**
Annual investment plan completion rate	1	0.7396	0.4252
Cumulative investment progress	1.3521	1	0.5748

Table 4.18 Judgment matrix and indicator weight of post-investment management

	Judgment matrix		
	Value-added Services	**Supervision and Management**	**Indicator weight $(N_i)_i$**
Value-added Services	1	1.7002	0.6297
Supervision and Management	0.5882	1	0.3703

Table 4.19 Judgment matrix and indicator weight of investment exit

	Judgment matrix		
	Exit Progress	**Exit Expectation Realization**	**Indicator weight $(N_i)_i$**
Exit Progress	1	1.2035	0.5462
Exit Expectation Realization	0.8309	1	0.4538

The weights of indicators at all levels using the multiplicative method are summarized in

Table 4.20. By multiplying the calculation results of indicators at each level, the comprehensive weight of each three-level indicator can be obtained. That is, starting from the bottom-level indicators, multiply their weight relative to the preceding level by the weight of the preceding level relative to the level above it, step by step, to ultimately obtain the weight relative to the composite indicator. See the last column of Table 4.20.

Table 4.20 Comprehensive indicator weights using the multiplicative method

First level indicator	**First-level indicator weight**	**Secondary indicators**	**Secondary indicator weight**	**Three-level indicators**	**Weight of three-level indicators**	**Comprehensive weight**
Policy objectives	54.78%	Policy guidance	65.79%	Investment Compliance	53.34%	19.22%
				Major project investment ratio	29.11%	10.49%
				Recommended project investment rate	17.55%	6.33%
		Funding driven	34.21%	Fiscal funding magnification	34.38%	6.44%
				Investment ratio of projects within the province	31.96%	5.99%
				Driving social investment	33.66%	6.31%
Investment Benefits	24.25%	Economic Benefits	54.91%	Maintain and increase value	60.12%	8.01%
				Return on investment	39.88%	5.31%
		Social Benefits	45.09%	Revenue growth of invested companies	70.68%	7.73%
				Tax growth	29.32%	3.21%
Investment Management	20.97%	Fund Raising	19.87%	Annual new fundraising	34.19%	1.42%
				Annual funding in place	34.59%	1.44%
				Cumulative funds in place	31.22%	1.30%
		Project Investment	28.90%	Annual investment plan completion rate	42.52%	2.58%
				Cumulative investment progress	57.48%	3.48%
		Post-investment management	21.38%	Value-added Services	62.97%	2.82%
				Supervision and Management	37.03%	1.66%
		Investment Exit	29.85%	Exit Progress	54.62%	3.42%
				Exit Expectation Realization	45.38%	2.84%

4.4.5 Robustness test

In order to verify the reliability of the research conclusions, this thesis adopts the method of adjusting the model for robustness test. By using the square root method to calculate the weights of each judgment matrix indicator and conducting consistency tests, the reliability of the questionnaire data results is further tested to eliminate the impact of the model's potential assumption bias and data processing limitations on the estimation results. The results of the square root method show that each judgment matrix has passed the consistency test, and the original conclusion is robust. The calculation ideas and results of the square root method are shown below. The results of the weights of indicators at all levels and the comprehensive indicator weights are shown in Table A6.

4.4.5.1 Calculation steps of square root method

First, we obtain the judgment matrix based on the questionnaire.

Second, perform product operation on each row element of the judgment matrix, as given by Equation (4.7):

$$\boldsymbol{A_i = \prod_{j=1}^{n} a_{ij}},\ \mathbf{i=1,2,...,n} \tag{4.7}$$

Third, we calculate the nth root of A_i, as given by Equation (4.8):

$$\boldsymbol{\overline{N_i} = \sqrt[n]{A_i}} \tag{4.8}$$

Fourth, we normalize the vector $\overline{N}=[\overline{N_1}, \overline{N_2}, \ldots, \overline{N_1}]^T$, as given by Equation (4.9):

$$\boldsymbol{N_i = \frac{\overline{N_i}}{(\overline{N_1}+\overline{N_2}+\ldots+\overline{N_i})}},\ \mathbf{i=1,2,...,n} \tag{4.9}$$

where $\overline{N}= [\overline{N_1}, \overline{N_2}, \ldots, \overline{N_1}]^T$ is the required eigenvector, and N_i is the weight of indicator A_i relative to the superior indicator.

Finally, we conduct consistency test. The consistency test steps are consistent with the sum-product method. The matrix consistency index CI and random consistency index CR are determined by calculation, and the consistency ratio CR is calculated. See Equation 4.4, Equation 4.5, and Equation 4.6.

4.4.5.2 Calculation of index weights using the square root method

For second-order matrices, the index weights calculated using the multiplicative method and the square root method are consistent, and a second-order matrix always has complete consistency. Therefore, here the square root method is used only to calculate index weights and perform consistency checks for third-order and fourth-order judgment matrices. The results of the indicator weights and consistency tests are shown in Tables A1, A2, A3, A4, and A5 in

Annex A. All judgment matrices passed the consistency tests, further suggesting that the reliability of the questionnaire data is high, with no statistically significant contradictions between earlier and later responses, allowing for further research. Only the calculation results are reported here, and the calculation process is not elaborated.

Table A6 shows the comprehensive indicator weights using the square root method. By comparing Table A6 with Table 4.20, it can be seen that the results obtained by the square root method are not significantly different from those calculated using the multiplicative method. Therefore, it can be concluded that the research results pass the consistency test, and the conclusions are highly reliable.

Chapter 5: Case Analysis of Performance Evaluation of Sichuan Development Industry Guidance Fund

5.1 Basic information of the case

5.1.1 Sichuan Development Industry Guidance Fund management organization and operation model

Sichuan Development (Holdings) Co., Ltd. (hereinafter referred to as "Sichuan Development (Holdings) Co., Ltd.") was established in January 2009. It is a provincial state-owned enterprise established by the Sichuan Provincial Party Committee and the Provincial Government in accordance with the "1+N" model with a registered capital of 80 billion yuan in order to innovate investment and financing mechanisms, accelerate the post-disaster recovery and reconstruction of the Wenchuan earthquake, and revitalize the development of industries in the province. In order to give full play to the industrial investment leading role of provincial state-owned enterprises and to manage provincial industrial guidance funds more efficiently and uniformly, Sichuan Development (Holdings) Co., Ltd. has been entrusted with the management of a total of 11 provincial industrial guidance funds since 2016, and its wholly-owned subsidiary Sichuan Development Industrial Guidance Equity Investment Fund Management Co., Ltd. (hereinafter referred to as "Sichuan Development Guidance Fund") is responsible for unified management and contact, see Table A7.

In the process of entrusted management of the provincial guidance fund, Sichuan Development (Holdings) Company mainly performs two duties: first, as a partner or shareholder, it performs the capital contribution duties in accordance with the fund partnership agreement, including paying capital contributions and attending partner meetings; second, as a trustee management institution, in accordance with the "Sichuan Province Provincial Industrial Development Investment Guidance Fund Management Measures" (Chuan Fu Fa, 2015) and the entrusted management agreement, as the representative of the financial investor, it exercises the relevant rights and performs the relevant obligations of the investor, and specifically undertakes the investment, exit, liquidation, income and other management work of the financial investment. During the operation of the fund, on the one hand, it maintains close

contact with the fund management institution, dispatches personnel to participate in the fund investment decision-making in accordance with the agreement, performs the capital contribution obligations in accordance with the agreement, and puts forward suggestions and support for the fund operation in accordance with the requirements of the competent department; on the other hand, it promptly reports to the Provincial Department of Finance and other competent departments on major matters arising in the operation of the fund, such as revision of the partnership agreement, fund allocation, extension of the operating period and other major matters, and handles related business in accordance with the instructions of the competent department. The operational model of Sichuan Development Industry Guidance Fund is shown in Figure 5.1.

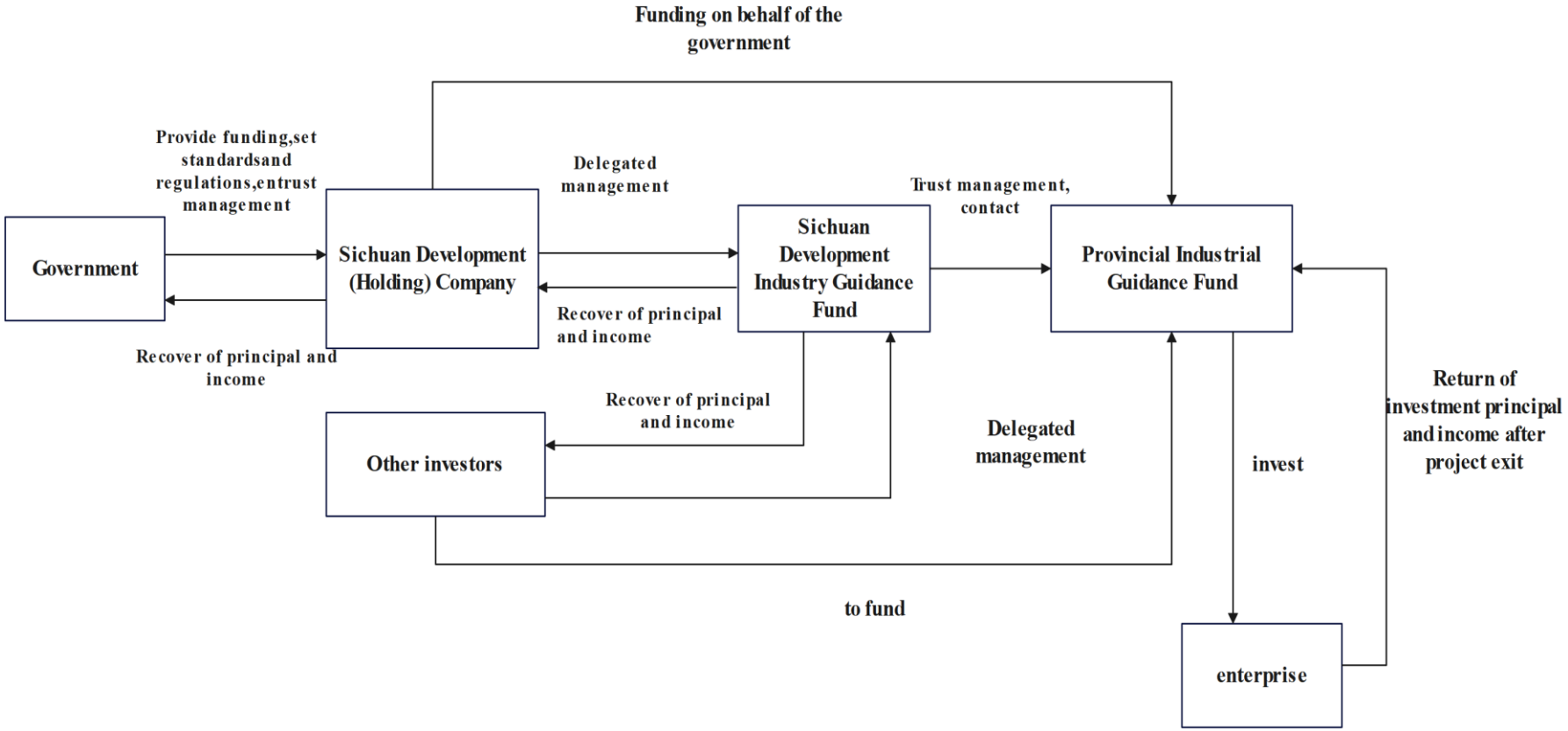


Figure 5.1 Operational model of Sichuan Development Industry Guidance Fund

In order to smoothly undertake the strategic requirements of the provincial industrial development guidance fund and build a state-owned capital operation platform with the "three-in-one" of financial holding, industrial investment guidance, and enterprise reform and development, Sichuan Development established Sichuan Development Industrial Guidance Equity Investment Fund Management Co., Ltd. (Sichuan Development Guidance Fund) on December 21, 2015 with a registered capital of 100 million yuan, with the approval of the Provincial State-owned Assets Supervision and Administration Commission. The establishment of Sichuan Development Guidance Fund is a major measure for Sichuan Development's "three-in-one" "transformation and development" and the implementation of the provincial government's overall strategy of establishing a provincial industrial development investment guidance fund, giving full play to its due investment incentive and leading demonstration role, and efficiently promoting the province's economic structure adjustment and industrial transformation and upgrading.

At present, Sichuan Development Guidance Fund has 4 fund management companies in sub-industries and fields and 5 affiliated fund management companies, as shown in Table A8 for details and Figure A2.

5.1.2 Investment fields and achievements of Sichuan Development Industry Guidance Fund

The above 11 provincial industrial guidance funds are all direct investment funds. The invested projects are mainly distributed in the fields of electronic information and equipment manufacturing, accounting for a total of more than 60%; in addition, they also invest in strategic emerging industries such as energy and chemical industry, advanced materials, and biomedicine, accounting for a total investment of about 15%; investment in PPP projects accounts for about 14%; investment in cultural, sports and tourism projects accounts for nearly 10%, achieving full coverage of the "5+1" modern industrial system.

Among them, Collective Security Fund focuses on the upstream and downstream of the integrated circuit and information security industry chain, promoting related technological innovation and industrial upgrading; the digital fund focuses on digital economy-related fields, covering digital product manufacturing, digital product services and other aspects, promoting the deep integration of digital technology and the real economy; the military-civilian integration fund invests in high-tech industries combining military and civilian, technological transformation of private enterprises and other fields, promoting the two-way transformation

and coordinated development of military technology and civilian technology; the small and medium-sized equity fund mainly invests in small and medium-sized enterprises that provide "chain supporting" services for high-tech industries in Sichuan Province and productive service-oriented small and medium-sized enterprises, supporting the growth and development of small and medium-sized enterprises; the emerging industry fund focuses on strategic emerging industries, such as new energy, new materials, biomedicine, providing financial support for enterprises with innovative technologies and development potential; the Sichuan Tourism Fund focuses on the improvement and construction of tourist attractions in Sichuan, new tourism formats, and the extension and development of the entire tourism industry chain; the two PPP funds mainly invest in projects in which the government and social capital cooperate, involving infrastructure construction, public services and other fields, to help local economic development and urban construction.

As of the end of 2024, the cumulative agreed fundraising scale (including sub-funds) of the above-mentioned 11 provincial-level industrial guidance funds under entrusted management totaled 35.128 billion yuan, with a cumulative paid-in amount of 14.778 billion yuan, a total of 131 investment projects and an agreed investment amount of 14.660 billion yuan.

From the perspective of the fund efficiency under management, some funds that have entered the exit period have performed well and achieved good returns on funds. As of the end of December 2024, the military-civilian integration fund has invested in 25 projects, with an actual investment of 2.32 billion yuan, and has exited 11 projects (including partial exits), with a total recovery of 1.142 billion yuan; the small and medium-sized equity fund has invested in 4 projects, with an actual investment of 285 million yuan, and has exited 4 projects, with a total recovery of 320 million yuan, and the project exit IRR is about 12%.

Funds in the investment period have also achieved remarkable results. As of the end of December 2024, Collective Security Fund has invested in 22 projects, with an actual investment of 5.454 billion yuan, and has withdrawn from 14 projects (including partial withdrawals), with a total recovery of 3.922 billion yuan. The current overall valuation of the fund has increased by more than 19% compared with the book principal of the investor; Digital Fund has invested in 18 projects, with an actual investment of 977 million yuan; the two PPP funds have a total paid-in scale of 1.594 billion yuan, with a total investment of 18 projects and an investment amount of 1.378 billion yuan. See Table A9 for details of the operation of the funds entrusted to Sichuan Development (Holdings) Company.

5.1.3 Overview of the current performance evaluation system of Sichuan Provincial Government Industry Guidance Fund

In today's new normal of China's economy, giving full play to the leading role of the state-owned economy has become an important part of the government's economic work, and the government investment fund is a powerful tool that can fully utilize policy guidance and resource advantages to attract social capital participation, and then give full play to the important role of supporting the development of key industries and weak links in the economy and society. On September 30, 2015, the Sichuan Provincial People's Government promulgated Document No. 49 (Chuan Fu Fa, 2015), which clearly stated that Sichuan Province will gradually establish a provincial industrial development investment guidance fund system to accelerate the transformation of fiscal support for industrial development and give full play to the guidance and amplification effect of fiscal funds. It also made provisions for the establishment, operation, incentives, risk control and supervision and management of the fund to standardize and strengthen the management of the industrial development investment guidance fund.

Later, in order to effectively evaluate whether the industrial guidance fund has completed its established goals and whether it has achieved good economic and social benefits, the Sichuan Provincial Department of Finance has formulated a performance evaluation system for the provincial industrial guidance fund in our province. After continuous development and improvement, the performance evaluation system of the industrial guidance fund in our province has been classified and evaluated according to different stages and types of funds, which is more targeted. At present, the performance evaluation is carried out on an annual basis, and is divided into three categories according to the fund type: industrial funds, transportation funds and PPP funds. Each type of fund is divided into investment period and exit period according to the specific stage of the fund, and the evaluation and assessment are carried out separately. The annual assessment score will be linked to the management fee collected by the fund management institution (if the score is less than 80 points, the fund management fee of the fiscal contribution part cannot be collected in the second year). The following analysis is mainly based on the evaluation system of industrial funds. Please see Table 5.1.

Table 5.1 Main indicators for evaluation of industrial funds during investment period

Level 1 index	Level 2 index	Level 3 indicators	Index evaluation content	Points
Basic management 20%	Financial investment management (7%)	Management System	Whether a financial investment trusteeship and delegation system has been established	1.00
		Management Personnel	Is there a specific person responsible for the management of the financial contributions?	1.00
		Fund security	Whether to store fiscal funds in a special account	1.00
		Funding Disbursement	Whether the financial funds are allocated in time is calculated based on the time it takes the entrusted management agency to respond after receiving the fund call document or the time it takes the Finance Department to approve the document.	1.00
		Entrusted to perform duties	Fulfillment of the relevant provisions of the financial investment trust management agreement, and whether annual assessment targets have been formulated and implemented	3.00
	Fund entrusted management (10%)	Management Qualifications	Whether it has the management qualifications stipulated in the Fund Management Regulations	2.00
		Management System	Whether sound management systems for project collection and investigation, risk control, investment decision-making, and salary management have been established	1.00
		Management Personnel	Assessment of qualified investment managers and the number of people who meet the basic requirements	2.00
		Compliance management	Whether administrative supervision measures have been taken in the second half of 2021 and the first half of 2022	2.50
		Disclosure of Information	Are there any matters that should be disclosed but have not been disclosed by the China Securities Association in the second half of 2021 and the first half of 2022?	2.50
	Fund bank custody (3%)	Custody duties	Fulfillment of custody duties in accordance with the custody agreement	1.00
		Hosting Qualifications	Whether it has the custody qualification stipulated in the Fund Management Regulations	1.00
		Trusteeship System	Whether to establish a special fund custody system	1.00
Investment Management 40%	Fundraising (9%)	Fundraising scale	Agreed fundraising amount/planned fundraising amount*100%	2.00
		Fundraising period	Fundraising completed within the specified time	2.00
		Annual funding in	The actual agreed funds in place from	3.00

		place	July 2021 to the end of June 2022/the agreed funds that should be in place from July 2021 to the end of June 2022 (the agreed funds that have been fully in place in previous years are not included)	
		Cumulative funds in place	Actual funds in place as of the end of June 2022 / agreed fundraising scale × 100%	2.00
		Project Compliance	Whether it complies with the investment areas stipulated in the fund establishment plan	2.00
	Project investment (20%)	Annual investment plan completed	Investment funds signed in 2021 /investment assessment targets for 2021	8.00
		Cumulative investment progress	Agreement investment funds / agreement fundraising investable funds (deducting cost expenditures such as management fees) × 100%	6.00
		Cumulative funds disbursed	Disbursed funds / agreement investment funds × 100%	4.00
	Post-investment management (7%)	Management System	Whether an institutionalized and normalized management system has been established	2.00
		Management Personnel	Whether to appoint a dedicated person for liaison management	1.00
		Value-added Services	From July 2021 to the end of June 2022, provide value-added services to the investee (number of service projects/total number of projects)	2.00
		Supervision and Management	The supervision and management implementation of the post-investment management system for each investment project from July 2021 to the end of June 2022 (number of fully implemented projects/total number of projects)	2.00
	Project exit (4%)	protocol Clarity	Whether there is an exit clause in the agreement between July 2021 and the end of June 2022	2.00
		protocol Compliance	Whether the exit terms violate any laws and regulations related to fund investment management during the period from July 2021 to the end of June 2022	2.00
Investment benefit 40%	Policy guidance benefits (10%)	Proportion of investment in major projects or investment in angel and start-up phases	Major project investment amount/invested project funds × 100% (projects included in the major project database of the provincial party committee and provincial government, including the list of enterprises and projects listed in the industrial development plans and policy documents issued with the approval of the provincial party committee, provincial government and its general office)	5.00

			Angel and start-up investment amount/invested project funds × 100%	
		Recommended project investment rate	The proportion of the number of projects recommended by departments, cities and prefectures in official documents to the total number of investment projects, and the situation of the fund adopting the projects recommended by departments, cities and prefectures	5.00
	Economic benefits (6%)	Fiscal investment to maintain and increase value	Whether the capital provided by the finance department can maintain and increase its value	6.00
		Fiscal funding magnification	The multiple of the agreed raised funds (including financial contributions) and financial contributions	6.00
	Social benefits (24%)	Investment ratio of projects within the province	Fund investment amount in the province / fund investment amount × 100%	6.00
		Driving social investment	The multiple of the total project investment amount and the fund investment amount	6.00
		Investment proportion of green and low-carbon industries	After the policy was implemented, the proportion of investment in green and low-carbon advantageous industries in the total investment projects in this stage	6.00
total				**100**

Comparing the Table 5.1 and Table 5.2, it can be seen that the assessment dimensions of the investment period and the exit period are basically the same, both focusing on the three major sections of basic management, investment management, and investment benefits, and the proportion of each section does not vary due to different stages. The biggest difference between the assessment indicators of the investment period and the exit period is concentrated in the project investment and project exit sections of investment management.

Table 5.2 Main indicators for the assessment and evaluation of industrial funds during the exit period

Level 1 index	Level 2 index	Level 3 indicators	Index evaluation content	Points
Basic management 20%	Financial investment management (7%)	Management System	Whether a financial investment trusteeship and delegation system has been established	1.00
		Management Personnel	Is there a specific person responsible for the management of the financially funded funds?	1.00
		Fund security	Whether to store fiscal funds in a special account	1.00
		Funding Disbursement	Whether the financial funds are allocated in time is calculated based on the response time after the entrusted management agency receives the fund call document or the approval time of the Finance Department.	1.00
		Entrusted to perform duties	Fulfillment of the relevant provisions of the financial investment trust management	3.00

			agreement, and whether annual assessment targets have been formulated and implemented	
	Fund entrusted management (10%)	Management Qualifications	Whether it has the management qualifications stipulated in the Fund Management Regulations	2.00
		Management System	Whether sound management systems for project collection and investigation, risk control, investment decision-making, and salary management have been established	1.00
		Management Personnel	Assessment of qualified investment managers and the number of people who meet the basic requirements	2.00
		Compliance management	Whether administrative supervision measures have been taken in the second half of 2021 and the first half of 2022	2.50
		Disclosure of Information	Are there any matters that should be disclosed but have not been disclosed by the China Securities Association in the second half of 2021 and the first half of 2022?	2.50
	Fund bank custody (3%)	Custody duties	Fulfillment of custody duties in accordance with the custody agreement	1.00
		Hosting Qualifications	Whether it has the custody qualification stipulated in the Fund Management Regulations	1.00
		Trusteeship system	Whether to establish a special fund custody system	1.00
	Fund raising (7%)	Fundraising scale	Agreed fundraising amount/planned fundraising amount*100%	2.00
		Fundraising period	Fundraising completed within the specified time	2.00
		Funding in place	Actual funds in place as of the end of June 2022/agreed fundraising scale × 100%	3.00
	Project investment (7%)	project Compliance	Whether it complies with the investment areas stipulated in the fund establishment plan	2.00
		Investment progress	Agreement investment funds/agreement fundraising investable funds (deducting cost expenditures such as management fees) × 100%	3.00
Investment Management 40%		Funding Disbursement	Disbursed funds/agreement investment funds × 100%	2.00
	Post-investment management (9%)	Management System	Whether an institutionalized and normalized management system has been established	2.00
		Management Personnel	Whether to appoint a dedicated person for liaison management	2.00
		Value-added Services	From July 2021 to the end of June 2022, value-added services will be provided to the investee (number of services provided/total number of projects)	2.00
		Supervision and Management	The supervision and management implementation of the post-investment management system for each investment project from July 2021 to the end of June 2022 (number of fully implemented	3.00

			projects/total number of projects)	
		protocol Clarity	Is there an exit clause in the agreement?	1.00
		protocol Compliance	Whether the exit terms violate any laws and regulations related to fund investment management.	1.00
		Exit Progress	Projects that have been exited as of June 2022/Projects that should be exited as of June 2022 according to the agreement (the denominator is calculated based on the cumulative number of investment projects/exit years) (calculated based on the number of exited projects and the exit amount respectively)	5.00
	Project exit (17 %)	Exit project funds recovery	Exit funds of projects in place by June 2022/funds to be in place as agreed × 100% (Based on the number of exited projects, this indicator is not applicable if there are no fully exited projects; based on the amount of exited projects, partially exited projects can also be calculated)	5.00
		Funds surrender	During this evaluation period, whether the income and exit project principal are turned in on time will be calculated according to the time agreed in the partnership agreement (calculated in working days) (if there is no agreement in the partnership agreement, the score will be given according to the scoring standard and the average of each fund management institution will be calculated; at the same time, the time for the entrusted management institution and the fund management institution to turn in the funds will be examined)	5.00
Investment benefit 40%	Policy guidance benefits (9%)	Proportion of investment in major projects or investment in angel and start-up phases	Major project investment amount/invested project funds × 100% (projects included in the major project database of the provincial party committee and provincial government, including the list of enterprises and projects listed in the industrial development plan and policy documents issued with the approval of the provincial party committee, provincial government and its general office) Angel and start-up investment amount/invested project funds × 100%	5.00
		Recommended project investment rate	The proportion of the number of invested projects recommended by departments and municipal and state governments in formal documents to the total number of investment projects is examined, and the fund's adoption of projects recommended by departments and municipal and state governments is examined.	4.00
	Economic	Fiscal investment to	Whether the capital provided by the finance department can maintain or increase its value	5.00

	benefits (10%)	maintain and increase value		
		Total revenue multiple TVPI	(Investors have received income distribution + fund net value) / paid-in capital	5.00
		Fiscal funding magnification	The multiple of the agreed raised funds (including financial contributions) and financial contributions	6.00
		Investment ratio of projects within the province	Fund investment amount in the province/fund investment amount × 100%	5.00
		Driving social investment	The multiple of the total project investment amount and the fund investment amount	5.00
	Social benefits (21%)	Growth in sales revenue/profit/ number of patents/employment of invested enterprises	Inspect the growth of the invested enterprises' operating income or operating profit or number of patents or number of employees: for example, the invested enterprises' operating income growth rate = (the annual operating income growth rate of enterprise 1 + ... + the annual operating income growth rate of enterprise n) / n, which is the arithmetic mean of the annual operating income growth rates of the fund's invested enterprises, where n is the cumulative number of invested enterprises.	5.00
total				**100**

5.1.4 Evaluation of Sichuan Industrial Development Guidance Fund

In today's rapidly developing Chinese economy, giving full play to the leading role of the state-owned economy has become an important part of the government's economic work, and the government investment fund is a powerful tool that can fully utilize policy guidance and resource advantages to attract social capital participation, and then give full play to the important role of supporting the development of key industries and weak links in the economy and society. On September 30, 2015, the Sichuan Provincial People's Government promulgated Document No. 49 (Chuan Fu Fa, 2015), which clearly stated that Sichuan Province will gradually establish a provincial industrial development investment guidance fund system to accelerate the transformation of fiscal support for industrial development and give full play to the guidance and amplification effect of fiscal funds. It also made provisions for the establishment, operation, incentives, risk control and supervision and management of the fund to standardize and strengthen the management of the industrial development investment guidance fund.

Later, in order to effectively evaluate whether the industrial guidance fund has completed its established goals and whether it has achieved good economic and social benefits, the Sichuan Provincial Department of Finance has formulated a performance evaluation system for the

provincial industrial guidance fund in our province. After continuous development and improvement, the performance evaluation system of the industrial guidance fund in our province has been classified and evaluated according to different stages and types of funds, which is more targeted. At present, the performance evaluation is carried out on an annual basis, and is divided into three categories according to the fund type: industrial funds, transportation funds and PPP funds. Each type of fund is divided into investment period and exit period according to the specific stage of the fund, and the evaluation and assessment are carried out separately. The annual assessment score will be linked to the management fee collected by the fund management institution (if it is less than 80 points, the fund management fee of the fiscal contribution part cannot be collected in the second year). Since most of the survey objects are industrial funds, the following analysis is mainly based on the evaluation system of industrial funds. It can be seen from the existing performance evaluation system of industrial funds that the assessment dimensions of the investment period and the exit period are basically the same, and they are all centered on the three major sections of basic management, investment management, and investment benefits, but the proportion of each section does not vary due to different stages. The biggest difference between the assessment indicators during the investment period and the exit period is concentrated in the project investment and project exit sections of investment management.

5.1.5 Factors affecting the evaluation of Sichuan Industrial Guidance Fund

The existing performance evaluation indicators in our province are still more based on the perspective of examining the use of fiscal funds, and give a greater assessment weight to the "safety and value-added" of funds. The weight for the goal of government-guided funds to drive social capital to focus on key development industries and projects and promote the optimization of local industrial structure is not much, and there is a certain conflict with the characteristics of the fund's operation being market-oriented and commercial in nature. It can be seen from this that the starting point of performance evaluation is crucial to the setting of the entire performance evaluation system. Different starting points will lead to significant differences in the setting of indicators, proportions and final conclusions, and the results of performance appraisal will have a more far-reaching impact on the operation of the fund.

Since the outbreak of the COVID-19 pandemic, people's lives, consumption habits, and business formats have undergone earth-shaking changes. In the pandemic and post-pandemic era, the rise and fall of certain industries is just a matter of seconds. The original intention of

the government's industrial guidance fund was to vigorously develop a specific field and drive the development of a local industry upstream and downstream. However, under the influence of some force majeure factors, the investment operation of the fund will inevitably suffer serious obstacles. In this case, the performance evaluation system and related policies should fully consider the characteristics of the industry and the objective environment and privacy, and adjust, optimize, incentivize and support, so as to avoid using old standards to measure new situations. Therefore, performance evaluation should fully consider the industrial characteristics of industrial funds and protect and support the development of enterprises and funds as much as possible under the influence of certain force majeure factors.

Through investigation and visits, it was learned that the integrated circuit industry fund and the Sichuan Merchants Returning Home Fund, which have higher scores and better fund benefits, have more market-oriented operation models and team structures. This also once again confirms that although the industry guidance fund uses fiscal funds and needs to ensure the security of fiscal funds, it still needs to follow the market-oriented operation model of equity investment funds. Only in this way can the industry guidance fund be competitive in the market. It can be seen that the operation mode of the fund will not only have a great impact on the performance appraisal results, but also provide ideas and directions for the subsequent operation and management of the fund and the establishment and improvement of relevant systems. When setting up the performance appraisal system of the industrial guidance fund, full consideration should be given to the operation mode of the industrial guidance fund and how to guide the future development direction of the industrial guidance fund.

5.2 Performance evaluation of Sichuan Development Industry Guidance Fund based on fuzzy comprehensive evaluation method

5.2.1 Introduction to fuzzy comprehensive evaluation method

After assigning corresponding weights to the constructed index system by using the hierarchical analysis method, the fuzzy comprehensive evaluation method is used to evaluate the performance of the individual indicators and overall situation of the Sichuan Provincial Government Guidance Fund to verify the scientificity and rationality of the constructed index system. The specific steps are as follows:

First, we determine the evaluation factors at all levels, A_i which are the indicators in the indicator system, and i is the number of indicators, see Equation (5.1).

$$\mathbf{A} = \{\mathbf{A_1}, \mathbf{A_2}, \ldots, \mathbf{A_i}\} \tag{5.1}$$

Second, we determine the comment set, where S represents the comment set and T represents the assignment of the evaluation level, see Equation (5.2) and Equation (5.3).

$$\mathbf{S} = \{\mathbf{S_1}, \mathbf{S_2}, \ldots, \mathbf{S_n}\} \tag{5.2}$$

$$\mathbf{T} = \{\mathbf{T_1}, \mathbf{T_2}, \ldots, \mathbf{T_n}\} \tag{5.3}$$

Third, we determine the weight vector of indicators at all levels as given by Equation (5.4) and Equation (5.5).

$$\mathbf{U} = \{\mathbf{U_1}, \mathbf{U_2}, \ldots, \mathbf{U_m}\} \tag{5.4}$$

$$\mathbf{U^{(i)}} = \{\mathbf{U_{i1}}, \mathbf{U_{i2}}, \ldots, \mathbf{U_{ij}}\} \tag{5.5}$$

Fourth, we determine the evaluation matrix R.

Finally, the weight vector of each evaluation index is fuzzy synthesized with the evaluation matrix, see Equation (5.6).

$$\mathbf{V} = \mathbf{U} \times \mathbf{R} \tag{5.6}$$

We calculate fuzzy comprehensive evaluation score as given by Equation (5.7).

$$\mathbf{Q} = \mathbf{V} \times \mathbf{T^T} \tag{5.7}$$

5.2.2 Basic work of fuzzy comprehensive evaluation

First, we determine the evaluation factor set, see Equation 5.8:

$$\begin{gathered} \mathbf{Q} = \{\mathbf{A_1}, \mathbf{A_2}, \mathbf{A_3}\} \\ \mathbf{A_1} = \{\mathbf{B_1}, \mathbf{B_2}\},\ \mathbf{A_2} = \{\mathbf{B_3}, \mathbf{B_4}\},\ \mathbf{A_3} = \{\mathbf{B_5}, \mathbf{B_6}, \mathbf{B_7}, \mathbf{B_8}\}, \\ \mathbf{B_1} = \{\mathbf{C_1}, \mathbf{C_2}, \mathbf{C_3}\},\ \mathbf{B_2} = \{\mathbf{C_4}, \mathbf{C_5}, \mathbf{C_6}\},\ \mathbf{B_3} = \{\mathbf{C_7}, \mathbf{C_8}\}, \\ \mathbf{B_4} = \{\mathbf{C_9}, \mathbf{C_{10}}\},\ \mathbf{B_5} = \{\mathbf{C_{11}}, \mathbf{C_{12}}, \mathbf{C_{13}}\},\ \mathbf{B_6} = \{\mathbf{C_{14}}, \mathbf{C_{15}}\}, \\ \mathbf{B_7} = \{\mathbf{C_{16}}, \mathbf{C_{17}}\},\ \mathbf{B_8} = \{\mathbf{C_{18}}, \mathbf{C_{19}}\} \end{gathered} \tag{5.8}$$

Then, we determine the comment level set S= $\{S_1, S_2, S_3, S_4\}$to represent the indicator comments “excellent”, “good”, “medium” and “poor” respectively; assign it to T= $[100,\ 75,\ 50,\ 25]$.

Finally, according to the calculation results shown in Table 4.20, we determine the weight vectors, see Equation 5.9. It should be noted that the results shown in Equation 5.9 are displayed rounded to two decimal places, but when using the weight vectors for calculations in the following section, we still use the original data.

$$\begin{gathered} \mathbf{U} = [\mathbf{A_1}\quad \mathbf{A_2}\quad \mathbf{A_3}] = [\mathbf{0.55}\quad \mathbf{0.24}\quad \mathbf{0.21}] \\ \mathbf{U^{A1}} = [\mathbf{B_1}\quad \mathbf{B_2}] = [\mathbf{0.66}\quad \mathbf{0.34}] \end{gathered} \tag{5.9}$$

$$U^{A2}= [B_3 \quad B_4]=[0.55 \quad 0.45]$$

$$U^{A3}= [B_5 \quad B_6 \quad B_7 \quad B_8] = [0.20 \quad 0.29 \quad 0.21 \quad 0.30]$$

$$U^{B1}= [C_1 \quad C_2 \quad C_3]=[0.53 \quad 0.29 \quad 0.18]$$

$$U^{B2}= [C_4 \quad C_5 \quad C_6]=[0.34 \quad 0.32 \quad 0.34]$$

$$U^{B3}= [C_7 \quad C_8]=[0.6 \quad 0.4]$$

$$U^{B4}= [C_9 \quad C_{10}]=[0.71 \quad 0.29]$$

$$U^{B5}= [C_{11} \quad C_{12} \quad C_{13}]=[0.34 \quad 0.35 \quad 0.31]$$

$$U^{B6}= [C_{14} \quad C_{15}]=[0.43 \quad 0.57]$$

$$U^{B7}= [C_{16} \quad C_{17}]=[0.63 \quad 0.37]$$

$$U^{B8}= [C_{18} \quad C_{19}]=[0.55 \quad 0.45]$$

5.2.3 Process and results of fuzzy comprehensive evaluation

The questionnaire was distributed to the general managers and deputy general managers of Sichuan Development Industry Guidance Fund and its subsidiary fund managers, as well as relevant staff of investment, finance, legal and risk control departments, which are highly representative. 90 questionnaires were distributed through WJX and WeChat, and 90 questionnaires were collected (see Annex 3: Questionnaire 2 for details of the questionnaire). The survey result proportions for tertiary indicators are determined based on the proportion of the number of people corresponding to each rating level to the total number of respondents. For example, for the tertiary indicator of investment compliance, 80% of the questionnaire results are rated as excellent, and 20% are rated as good; for the tertiary indicator of major project investment ratio, 44% of the questionnaire results are rated as excellent, 44% as good, 7% as medium, and 4% as poor. The survey results for all tertiary indicators are presented in Table 5.3.

Table 5.3 Results of fuzzy evaluation questionnaire survey

First level indicator	Secondary indicators	Three-level indicators	excellent	good	medium	Poor
Policy objectives A_1	B_1Policy guidance	C_1Investment Compliance	0.80	0.20	0.00	0.00
		C_2Major project investment ratio	0.44	0.44	0.07	0.04
		C_3Recommended project investment rate	0.31	0.34	0.29	0.06
	B_2Funding driven	C_4Fiscal funding magnification	0.41	0.52	0.07	0.00
		C_5Investment ratio of projects within the province	0.76	0.23	0.01	0.00

Investment Benefits A_2	B_3Economic Benefits	C_6Driving social investment	0.41	0.51	0.08	0.00
		C_7Maintain and increase value	0.47	0.41	0.12	0.00
		C_8Return on investment	0.32	0.49	0.17	0.02
	B_4Social Benefits	C_9Revenue growth of invested companies	0.42	0.41	0.16	0.01
		C_{10}Tax growth	0.32	0.46	0.21	0.01
Investment Management A_3	B_5Fund Raising	C_{11}Annual new fundraising	0.27	0.46	0.23	0.04
		C_{12}Annual funding in place	0.47	0.37	0.13	0.03
		C_{13}Cumulative funds in place	0.34	0.50	0.14	0.01
	B_6Project Investment	C_{14}Annual investment plan completion rate	0.47	0.34	0.17	0.02
		C_{15}Cumulative investment progress	0.40	0.44	0.16	0.00
	B_7Post-investment management	C_{16}Value-added Services	0.63	0.33	0.03	0.00
		C_{17}Supervision and Management	0.49	0.44	0.07	0.00
	B_8Investment Exit	C_{18}Exit Progress	0.46	0.41	0.09	0.04
		C_{19}Exit Expectation Realization	0.41	0.44	0.10	0.04

First, we calculate the scores of each three-level indicator. Take the investment compliance indicator (C_1) for an example, according to Equation (5.6), we have:

$$Q_{C1}=V_{C1}\times T^{T}=[0.80 \quad 0.20 \quad 0 \quad 0]\times\begin{bmatrix}100\\75\\50\\25\end{bmatrix}=95$$

The remaining three-level indicator scores are computed analogously, and the calculation process is omitted here for brevity. The results are shown in the last column of Table 5.6.

Second, based on the proportions reported in Table 5.3, we next calculate the scores for each secondary indicator. The fuzzy relation matrices derived from those proportions are:

$$R_{B1}=\begin{bmatrix}0.80 & 0.20 & 0.00 & 0.00\\0.44 & 0.44 & 0.07 & 0.04\\0.31 & 0.34 & 0.29 & 0.06\end{bmatrix},\quad R_{B2}=\begin{bmatrix}0.41 & 0.52 & 0.07 & 0.00\\0.76 & 0.23 & 0.01 & 0.00\\0.41 & 0.51 & 0.08 & 0.00\end{bmatrix},$$

$$R_{B3}=\begin{bmatrix}0.47 & 0.41 & 0.12 & 0.00\\0.32 & 0.49 & 0.17 & 0.02\end{bmatrix},\quad R_{B4}=\begin{bmatrix}0.42 & 0.41 & 0.16 & 0.01\\0.32 & 0.46 & 0.21 & 0.01\end{bmatrix},$$

$$R_{B5}=\begin{bmatrix}0.27 & 0.46 & 0.23 & 0.04\\0.47 & 0.37 & 0.13 & 0.03\\0.34 & 0.50 & 0.14 & 0.01\end{bmatrix},\quad R_{B6}=\begin{bmatrix}0.47 & 0.34 & 0.17 & 0.02\\0.40 & 0.44 & 0.16 & 0.00\end{bmatrix},$$

$$R_{B7}=\begin{bmatrix}0.63 & 0.33 & 0.03 & 0.00\\0.49 & 0.44 & 0.07 & 0.00\end{bmatrix},\quad R_{B8}=\begin{bmatrix}0.46 & 0.41 & 0.09 & 0.04\\0.41 & 0.44 & 0.10 & 0.04\end{bmatrix}.$$

For illustration, consider the policy guidance indicator (B_1). Using section 5.2.2, the weight vector is $U^{B1} = [C_1 \quad C_2 \quad C_3] = [0.53 \quad 0.29 \quad 0.18]$. According to Equation (5.6) and Equation (5.7), with T the assignment matrix and T^T its transpose matrix, we calculate the scores of the policy guidance indicator (B_1).

$$Q_{B1}=U^{B1} \times R_{B1} \times T^T=[0.53 \quad 0.29 \quad 0.18] \times \begin{bmatrix} 0.8 & 0.2 & 0.00 & 0.00 \\ 0.44 & 0.44 & 0.07 & 0.04 \\ 0.31 & 0.34 & 0.29 & 0.06 \end{bmatrix} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 87.38$$

The remaining secondary indicator scores are computed analogously:

Funding driven: $Q_{B2} = U^{B2} \times R_{B2} \times T^T = [0.34 \quad 0.32 \quad 0.34] \times R_{B2} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 86.71$

Economic benefits: $Q_{B3} = U^{B3} \times R_{B3} \times T^T = [0.6 \quad 0.4] \times R_{B3} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 81.28$

Social benefits: $Q_{B4} = U^{B4} \times R_{B4} \times T^T = [0.71 \quad 0.29] \times R_{B4} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 79.97$

Fund raising: $Q_{B5} = U^{B5} \times R_{B5} \times T^T = [0.34 \quad 0.35 \quad 0.31] \times R_{B5} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 78.22$

Project investment: $Q_{B6} = U^{B6} \times R_{B6} \times T^T = [0.43 \quad 0.57] \times R_{B6} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 81.23$

Post-investment management: $Q_{B7} = U^{B7} \times R_{B7} \times T^T = [0.63 \quad 0.37] \times R_{B7} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} =$ 88.35

Investment exit: $Q_{B8} = U^{B8} \times R_{B8} \times T^T = [0.55 \quad 0.45] \times R_{B8} \times \begin{bmatrix} 100 \\ 75 \\ 50 \\ 25 \end{bmatrix} = 81.31$

The resulting secondary indicator scores are shown in Table 5.4.

Table 5.4 Scores of each secondary indicator

Secondary indicators	Policy guidance	Funding driven	Economic Benefits	Social Benefits	Fund Raising	Project Investment	Post-investment management	Investment Exit
Scores	87.38	86.71	81.28	79.97	78.22	81.23	88.35	81.31

Third, we calculate the scores of each first level indicator. Each first-level indicator's fuzzy matrix is obtained by composing the secondary-indicator weight vectors with their fuzzy evaluation matrices (see Equation (5.6) and section 5.2.2). As for the Policy Objectives indicator (A1), we have:

$V_{B1}=U^{B1}\times R_{B1}=[0.61 \quad 0.30 \quad 0.07 \quad 0.02]$, $V_{B2}=U^{B2}\times R_{B2}=[0.52 \quad 0.43 \quad 0.05 \quad 0]$, and

$$R_{A1}=\begin{bmatrix}VB1\\VB2\end{bmatrix}=\begin{bmatrix}0.61 & 0.30 & 0.07 & 0.02\\0.52 & 0.43 & 0.05 & 0\end{bmatrix}.$$

Similarly,

$$R_{A2}=\begin{bmatrix}0.41 & 0.44 & 0.14 & 0.01\\0.39 & 0.42 & 0.17 & 0.01\end{bmatrix}, \qquad R_{A3}=\begin{bmatrix}0.36 & 0.44 & 0.17 & 0.03\\0.43 & 0.40 & 0.16 & 0.01\\0.58 & 0.37 & 0.05 & 0\\0.44 & 0.43 & 0.09 & 0.04\end{bmatrix}.$$

For policy objectives indicator (A1), using section 5.2.2, the weight vector is $U^{A1}=[B_1 \quad B_2]=[0.66 \quad 0.34]$. Thus,

$$Q_{A1}=V_{A1}\,T^{\top}=U^{A1}\,R_{A1}\,T^{\top}=[0.66 \quad 0.34]\times\begin{bmatrix}0.61 & 0.30 & 0.07 & 0.02\\0.52 & 0.43 & 0.05 & 0\end{bmatrix}\times\begin{bmatrix}100\\75\\50\\25\end{bmatrix}=87.15.$$

Analogously, for the investment benefits (A2) and for the investment management (A3), we have:

$$Q_{A2}=U^{A2}\,R_{A2}\,T^{\top}=[0.55 \quad 0.45]\times\begin{bmatrix}0.41 & 0.44 & 0.14 & 0.01\\0.39 & 0.42 & 0.17 & 0.01\end{bmatrix}\times\begin{bmatrix}100\\75\\50\\25\end{bmatrix}=80.69 \text{ and}$$

$$Q_{A3}=U^{A3}\,R_{A3}\,T^{\top}=[0.20 \quad 0.29 \quad 0.21 \quad 0.30]\times\begin{bmatrix}0.36 & 0.44 & 0.17 & 0.03\\0.43 & 0.40 & 0.16 & 0.01\\0.58 & 0.37 & 0.05 & 0\\0.44 & 0.43 & 0.09 & 0.04\end{bmatrix}\times\begin{bmatrix}100\\75\\50\\25\end{bmatrix}=82.18,$$

respectively. The first-level indicator scores are shown in Table 5.5.

Table 5.5 Scores of each first level indicator

First level indicator	Policy objectives	Investment Benefits	Investment Management
Q Value	87.15	80.69	82.18

Finally, we calculate the overall score. The comprehensive fuzzy matrix is constructed by composing each first-level weight vector with its fuzzy matrix:

$$V_{A1}=U^{A1}\times R_{A1}=[0.66 \quad 0.34]\times\begin{bmatrix}0.61 & 0.30 & 0.07 & 0.02\\ 0.51 & 0.43 & 0.05 & 0\end{bmatrix}=[0.58 \quad 0.34 \quad 0.06 \quad 0.01].$$

Likewise, $V_{A2}=[0.40 \quad 0.43 \quad 0.15 \quad 0.01]$, $V_{A3}=[0.45 \quad 0.41 \quad 0.12 \quad 0.02]$.

According to the above results, we get the fuzzy matrix:

$$R_Q=\begin{bmatrix}VA1\\ VA2\\ VA3\end{bmatrix}=\begin{bmatrix}0.58 & 0.34 & 0.06 & 0.01\\ 0.40 & 0.43 & 0.15 & 0.01\\ 0.45 & 0.41 & 0.12 & 0.02\end{bmatrix}.$$

Then, according to section 5.2.2, we calculate the weight vector as: $U^Q=[A_1 \ A_2 \ A_3]=[0.55 \ 0.24 \ 0.21]$. Therefore, we have:

$$Q=U^Q\times R_Q\times T^T=[0.55 \ 0.24 \ 0.21]\times\begin{bmatrix}0.58 & 0.34 & 0.07 & 0.02\\ 0.40 & 0.43 & 0.15 & 0.01\\ 0.45 & 0.41 & 0.12 & 0.02\end{bmatrix}\times\begin{bmatrix}100\\ 75\\ 50\\ 25\end{bmatrix}=84.54.$$

The resulting indicator scores at all levels (multiplicative method) are summarised in Table 5.6.

Table 5.6 Summary of scores of indicators at all levels by the multiplicative method

Total score	**First level indicator**	**First-level indicator score**	**Secondary indicators**	**Secondary indicator score**	**Three-level indicators**	**Weight of three-level indicators**
84.54	Policy objectives	87.15	Policy guidance	87.38	Investment Compliance	95.00
					Major project investment ratio	82.22
					Recommended project investment rate	72.78
			Funding driven	86.71	Fiscal funding magnification	83.61
					Investment ratio of projects within the province	93.61
					Driving social investment	83.33
	Investment Benefits	80.69	Economic Benefits	81.28	Maintain and increase value	83.61
					Return on investment	77.78
			Social Benefits	79.97	Revenue growth of invested companies	81.11
					Tax growth	77.22
	Investment Management	82.18	Fund Raising	78.22	Annual new fundraising	73.61
					Annual funding in place	81.67
					Cumulative funds in place	79.44
			Project Investment	81.23	Annual investment plan completion rate	81.39
					Cumulative investment	81.11

			progress	
	Post-investment management	88.35	Value-added Services	90.00
			Supervision and Management	85.56
	Investment Exit	81.31	Exit Progress	81.94
			Exit Expectation Realization	80.56

For comparison, computations using the square-root method yield the summary in Table A10 (derivations omitted for brevity).

5.3 Analysis of the performance evaluation results of Sichuan Development Industry Guidance Fund

Since the differences between the results of the multiplicative method and the square root method are minor and the results are comparable, this section analyzes only the results calculated by the multiplicative method, as shown in Table 5.6. According to the results, with 100 as the full score, the overall performance evaluation score of Sichuan Development Industry Guidance Fund is 84.54 points, which is a relatively high level, indicating that the Sichuan Development Industry Guidance Fund is operating well overall.

The policy goal score is 87.15, which is the highest score among the three secondary indicators. This is mainly because the fund strictly follows the policy investment at the beginning of its establishment in terms of investment direction and investment stage, and mainly invests in projects within the province, achieving the initial guiding goal of the government to establish the fund. However, the government fund magnification multiple and the score of driving social capital investment in the same round are relatively low, indicating that the driving force of the fund needs to be improved. The possible main reasons are: First, since 2023, it has become an industry problem for investment institutions in the primary market to raise funds. Since government-guided funds have certain industrial guidance and investment attributes, it is difficult to raise funds in the market; second, since 2023, the primary market investment has entered a recession period, and the investment frequency and amount of most investment institutions have declined significantly, so the number of investment institutions and the amount of money involved in the same round are also relatively low; third, the brand awareness of the fund needs to be further improved.

The investment benefit score is 80.69, the lowest among the three secondary indicators. From the perspective of the tertiary indicators, it is mainly due to the low investment return rate and the low tax growth score of the invested enterprises. The possible main reasons are: 1. The

market-oriented operation ability of the government-guided funds is relatively weaker. When considering returns, policy goals must be considered more, resulting in low investment returns; 2. Early start-ups are more reflected in the growth of valuations as the company's business and investment expectations are realized, and performance realization is relatively delayed, so the fund investment achieves value preservation and appreciation, but the income and tax revenue of the invested enterprises do not grow synchronously.

The investment management score is 82.18. When broken down into three-level indicators, the scores for new fundraising and funds in place are low, while the scores for value-added services and supervision and management are high. The possible main reasons are: First, in the process of post-investment management of projects, the provincial government industry guidance fund, in addition to implementing supervision in accordance with relevant systems, relies on its own advantages to assist enterprises in providing more value-added services in government project applications, policy subsidy efforts, subsequent equity financing, bank loans; Second, the overall difficulty in fundraising in the primary market and the incomplete market-oriented operation of government industry guidance funds have further increased the difficulty of fundraising for government industry guidance funds.

Chapter 6: Overview of Sichuan Provincial Government Industry Guidance Fund

6.1 Overview of government industry fund cases

6.1.1 Overview of the Integrated Circuit Industry Fund

In order to effectively transform the mode of fiscal support for industrial development and give play to the leverage effect of fiscal funds in leveraging social capital, on June 5, 2015, the 87th Executive Meeting of the People's Government of Sichuan Province agreed in principle to the "Plan for the Establishment of Sichuan Information Security and Integrated Circuit Industry Investment Fund (Draft for Review)" submitted by the Sichuan Provincial Economic and Information Commission, and established Sichuan Integrated Circuit and Information Security Industry Investment Fund Co., Ltd. (hereinafter referred to as the "Integrated Circuit Industry Fund").

The target scale of the Integrated Circuit Industry Fund is 10 billion yuan. At present, the sub-fund has a subsisting agreement scale of 5.987 billion yuan (including 1 billion yuan of fiscal subscription), with a total of 5.527 billion yuan in place (including 1 billion yuan of fiscal paid-in capital), 21 cumulative investment projects, an agreed investment amount of 5.389 billion yuan, 9 exit projects (8 full exits and 1 partial exit), 1.385 billion yuan of exit principal, and 469 million yuan of income. The investment areas are mainly the new generation of information technology industry, focusing on the upstream and downstream of the integrated circuit and information security industry chain in our province, and laying out new areas such as digital economy and artificial intelligence.

6.1.2 Overview of Tianfu Hongwei Fund

In order to promote the development of the defense science and technology industry in our province, better promote the transformation and upgrading of the local economy, and deepen the innovation-driven development strategy and the construction of a comprehensive innovation reform pilot zone in our province, in August 2016, the 125th Executive Meeting of the Sichuan Provincial People's Government approved the "Sichuan Military-Civilian

Integration Industry Development Fund Establishment Plan" and determined the establishment of Sichuan Tianfu Hongwei Military-Civilian Integration Industry Development Equity Investment Fund Partnership (Limited Partnership) (hereinafter referred to as "Tianfu Hongwei Fund").

Tianfu Hongwei Fund has a target size of 10 billion yuan. Currently, the sub-funds have an agreement size of 4.478 billion yuan (including 2 billion yuan of government-subscribed capital), with a total of 2.608 billion yuan in place (including 1.3 billion yuan of government-paid capital), 24 investment projects, an agreement investment amount of 2.634 billion yuan, 2 exit projects, 307 million yuan of principal exit, and 34 million yuan of income. It mainly invests in aviation, aerospace, military electronics, new materials and nuclear technology applications.

6.1.3 Overview of Tourism Industry Fund

On October 12, 2015, the 99th Executive Meeting of the People's Government of Sichuan Province agreed in principle to the request for the establishment of Sichuan Tourism Industry Innovation and Development Equity Investment Fund Center (Limited Partnership) (hereinafter referred to as the "Tourism Industry Fund") as stated in the "Request from the Sichuan Provincial Department of Finance on the Recent Establishment of Several Industrial Development Investment Guidance Funds".

The tourism industry fund aims for a target scale of 3 billion yuan. At present, the sub-fund has a subsisting agreement scale of 1.212 billion yuan (including 300 million yuan of government subscribed capital), with a total of 471 million yuan in place (including 116 million yuan of government paid-in capital), 6 projects with an investment amount of 447 million yuan, 1 project withdrew with a principal of 14.9 million yuan, 3.56 million yuan in dividends, and a loss of 790,000 yuan. The investment direction is to enhance the tourist attractions in Sichuan, new tourism formats, and the extension and development of the entire tourism industry chain.

6.1.4 Overview of Sichuan Merchants Returning Home Fund

On October 12, 2015, the 99th executive meeting of the Sichuan Provincial People's Government agreed in principle to the "Request for Instructions on the Recent Establishment of Several Industrial Development Investment Guidance Funds" by the Sichuan Provincial Department of Finance, and established the Sichuan Chuan Shang Returning Hometown Business Equity Investment Fund Center (Limited Partnership) (hereinafter referred to as the

"Chuan Shang Returning Hometown Fund"). Through the guidance of provincial fiscal investment, the Returning Hometown Fund raises funds from Sichuan businessmen inside and outside the province and other social capital, focusing on investment in consumption upgrades and industrial upgrade transformation projects, and strives to create a cooperative development platform that integrates the resources, funds, and projects of Sichuan businessmen and a reform and innovation platform that promotes the development of mixed-ownership economy between Sichuan state-owned enterprises and private enterprises, and promotes the integration of resources and the return of Sichuan businessmen to start businesses.

The aim of Sichuan Merchants Returning Home Fund is 3 billion yuan. At present, the sub-fund has a subsisting agreement scale of 1.494 billion yuan (including 300 million yuan of fiscal subscription), with a total of 1.521 billion yuan in place (including 266 million yuan of fiscal paid-in capital), 12 cumulative investment projects, an agreed investment amount of 1.379 billion yuan, 5 exit projects (3 full exits and 2 partial exits), 537 million yuan of exit principal, and 648 million yuan of income. Focusing on large state-owned enterprises and private enterprises among Sichuan merchants, especially listed companies, the strategy involves identifying target opportunities and employing diverse approaches including equity participation and controlling share acquisitions. Active investments will be directed toward advantageous sectors and strategic emerging industries, encompassing consumption upgrades, industrial transformation, mineral resources, state-owned enterprise reforms, private placements of listed companies, high-tech initiatives under the "Thousand Talents Plan," and military-civilian integration projects.

6.1.5 Overview of PPP Fund

According to the relevant documents of the 99th Executive Meeting of the People's Government of Sichuan Province on October 12, 2015, the Sichuan Provincial Department of Finance's "Request for Instructions on the Recent Establishment of Several Industrial Development Investment Guidance Funds" was agreed in principle to establish Sichuan Zhongjian Government and Social Capital Equity Investment Fund Partnership (Limited Partnership) (hereinafter referred to as the "PPP Fund").

The aim of the PPP fund is 5 billion yuan. At present, the sub-fund has a subsisting agreement scale of 5 billion yuan (including 500 million yuan of fiscal subscription), with a total of 1.329 billion yuan in place (including 500 million yuan of fiscal paid-in capital), 17 cumulative investment projects, an agreed investment amount of 1.706 billion yuan, 4 exit projects, and a profit of 336 million yuan. Focusing on the overall goal of promoting the

government-social capital cooperation model in Sichuan Province, it invests in PPP investment projects that meet the requirements in key areas such as infrastructure, public utilities, agriculture, forestry and social undertakings in Sichuan Province, and gives priority to national and provincial demonstration projects.

6.2 Performance evaluation results and problem analysis

The following table shows the scores and rankings of the five industry guidance funds under the Sichuan Development Industry Guidance Fund in the three-year assessment from 2020 to 2022. The ranking base is all 20/22 government industry guidance funds in Sichuan Province. Detailed rankings and scores are shown in Table 6.1.

Table 6.1 Fund rankings and scores

Fund Name	2020 Score	Ranking	2021 stage	Score	Ranking	2022 stage	Score	Ranking
Integrated Circuit Industry Fund	100.2	1/20	Investment Period	97.70	2/22	Investment Period	97.74	1/22
Tianfu Hongwei Fund	85.80	10/20	Investment Period	69.47	20/22	Investment Period	70.88	19/22
Tourism Industry Fund	53.40	20/20	Investment Period	49.20	22/22	Withdrawal Period	61.22	21/22
Sichuan Merchants Return Home Fund	78.73	14/20	Withdrawal Period	85.50	13/20	Withdrawal Period	90.90	5/22
PPP Fund	96.53	3/20	Investment Period	83.80	15/20	Withdrawal Period	84.80	13/22

6.2.1 Integrated Circuit Industry Fund

The performance evaluation of the Integrated Circuit Industry fund has always been excellent and has always been ranked at the top, see Table 6.1. However, after visits, investigations and data collection, there are still certain differences between the setting of some indicators and the actual operation of the fund.

The assessment standard for the indicator “fiscal funding leverage ratio” is set too high, and it is difficult for the fund to achieve full marks in actual operation (the current performance evaluation stipulates that a fiscal funding leverage ratio of ≥ 5 times can get full marks). However, the actual fiscal funding leverage ratio driven by the fund operation is generally only around 3. However, since the fund’s investment scale has exceeded 5 billion, a 3-fold leverage

ratio also exceeds 15 billion, which has played a certain role in driving local industries. This has led to some discrepancies between the actual situation and the assessment score.

The "recommended project investment rate" indicator conflicts with the goal of establishing an industrial guidance fund to guide capital to operate in a market-oriented manner, and the identification criteria during the assessment process are not scientific and reasonable, resulting in a loss of points. During the assessment process, only projects recommended by government departments in letters were included in the scope of identification, while projects recommended by platform companies under the city (state) and district were not included in the scope of identification. In addition, it is almost impossible for government departments to send letters to the outside world, resulting in a low score for this indicator.

The evaluation criteria for the "investment progress" indicator need to be refined. If the fund has some over-raised funds due to the structured arrangement of certain investment projects, then this over-raised funds will also be included in the calculation scope of "investment progress", resulting in loss of points and lowering the overall performance evaluation score of the fund.

6.2.2 Tianfu Hongwei Fund

Regarding the performance evaluation scores and provincial rankings of Tianfu Hongwei Fund, an analysis of key issues and contributing factors was conducted through on-site visits, investigations, and data collection. The findings are as follows:

In recent years, the score of the "fund-raising" indicator has always been 0. The main reason is that the fundraising method determined at the beginning of the fund's establishment (joint fundraising with Everbright Bank, Minsheng Bank and Industrial Bank) could not be realized due to the introduction of the new asset management regulations, resulting in the actual fundraising amount being less than the target fundraising amount of RMB 10 billion when the fund was established. Then, as the fund entered the end of its investment period, it was unable to continue fundraising, resulting in no score for this indicator every year. After entering the exit period, this indicator was also included in the exit period assessment indicators, resulting in the inability to improve the performance assessment score.

The score of the "investment progress" indicator in 2022 is low. The fund's investment period will expire in January 2023 before it is extended. When investing in 2022, it is necessary to consider whether the invested projects can be exited within the exit period, which makes it extremely difficult to find suitable investment targets. However, the actual performance

evaluation did not start from the actual situation of the fund, and the original standard was still used when calculating the score of the "investment progress" indicator.

The "fiscal funds leverage ratio" indicator underestimates the actual leverage effect of fiscal funds. Like the above-mentioned integrated circuit industry fund, the Tianfu Hongwei Fund has a large overall investment scale, and the average investment amount of each project in the early stage is about 100-200 million yuan, resulting in a situation where the total amount of funds driven is high but the fund leverage ratio is low. According to the existing performance evaluation indicators, it can only obtain a mid- range score, which does not fully reflect the fund's driving effect on social capital.

6.2.3 Tourism Industry Fund

In recent years, the performance evaluation scores of tourism industry funds have been less than ideal. Through field research, data collection, and comprehensive analysis, the primary issues and underlying causes have been identified as follows:

Since the outbreak of the COVID-19 pandemic in 2020, the entire tourism industry chain has been severely and continuously affected, causing the overall development of the tourism industry to almost stagnate, and many tourism companies to fall into operational difficulties or even go bankrupt. In order to comply with the principles of stability and safety of state-owned assets, the fund could only adopt a contraction strategy of "controlling risks and reducing scale" before the development of the epidemic became clear, and did not dare to invest easily. However, the finance department did not consider this force majeure factor when conducting performance appraisals, and believed that the fund failed to complete its investment tasks and lost points seriously. In addition, some of the invested projects were severely affected by the epidemic, resulting in investment losses, which also caused serious losses in economic benefit assessment indicators such as "preservation and appreciation of fiscal investment".

In the creation of tourist attractions, development of new business formats, and infrastructure construction, most of the relevant high-quality projects are in the hands of state-owned capital. Large state-owned capital has relatively smooth financing channels and relatively cheap financing costs, so most of them lack sufficient motivation to accept investment from government-guided funds. Most of the other projects are chicken-rib projects with large investments, slow results, long payback periods, and even relatively lack of operating cash flow, which are difficult to meet the investment standards of social capital for equity investment projects. As a result, it is difficult to find suitable and high-quality targets and it is impossible

to complete the annual investment task assessment.

Other relatively small and high-quality projects in the entire cultural tourism industry chain were closely followed by many social capitals before the epidemic. When government-guided funds competed with fully market-oriented equity investment funds, they had difficulty obtaining good investment opportunities because they had to consider the government's various regulatory requirements for fiscal funds when investing in projects. After the outbreak of the epidemic, the entire cultural tourism industry suffered a heavy blow, and the related potential high-quality investment projects that had been discovered before also quickly disappeared.

6.2.4 Sichuan Merchants Returning Home Fund

The assessment scores of the Sichuan Businessmen Returning Home Fund have continued to rise in the past three years and its performance has been excellent. The fund has now entered the exit period. The overall operation of the project is relatively impressive. It is expected that the overall annualized rate of return of the fund can reach 20%. Through field visits, surveys, and data collection, an analysis has been conducted to summarize the following advanced practices, as well as opinions and suggestions regarding the existing performance appraisal mechanism.

The Sichuan Merchants Returning Home Fund fully adheres to the market-based recruitment mechanism, strictly recruits personnel according to market principles, and has built a professional and efficient investment team.

The investment and operation model consistently integrates "marketization and government guidance", and have fully united the Sichuan Chamber of Commerce in various provinces to establish a smooth collaborative sharing mechanism, thus achieving efficient mobilization and aggregation of resources, capital and other factors.

The existing performance appraisal mechanism covers the assessment of fund raising, investment, management and exit, but the focus is still on raising and investing. However, in fact, the importance of equity investment funds in the post-investment management stage is increasing, especially in today's rapidly changing social environment. Industrial guidance funds should adapt to market changes and development realities, provide more help and support to enterprises, and thus drive industrial development. In the current performance appraisal system, the assessment score for post-investment management during the investment period is only 7 points, and the assessment score for the exit period is 9 points, which is relatively small overall. In addition, the assessment of the value-added services provided by the fund to enterprises is

only 2 points. The current high investment returns of the Sichuan Merchants Returning Home Fund are inseparable from the comprehensive and rich value-added services it provides to enterprises. The existing performance appraisal indicators and score settings cannot reflect the actual operation and effect of such funds.

6.2.5 PPP Fund

In recent years, the performance evaluation scores of PPP funds have been relatively stable, ranking in the middle of the province. Through comprehensive field research, data collection, and in-depth analysis, the following key challenges and their root causes have been identified:

Some indicators repeatedly deduct points for historical events that have been settled every year. For example, in the indicator of "whether to submit a report on major events", points were deducted every year in the performance evaluation of 2021 and previous years for the "first profit distribution without prior consultation with the Provincial Department of Finance" that occurred in 2018. However, since 2019, all major events of the PPP Fund have been reported as required. Such matters that have been rectified are repeatedly deducted points every year, which lacks rationality.

The investment period of the PPP fund expires on April 27, 2022. The 2022 performance evaluation period is from July 2021 to June 2022. During this evaluation period, the investment period of the PPP fund accounts for 10 months and the exit period accounts for 2 months. However, the final assessment is based on the exit period indicators, which lacks rationality in terms of time proportion and actual operation conditions.

6.3 Analysis of factors affecting performance of government industrial fund cases

Government industry guidance funds is affected by multiple factors, including institutional constraints of policy design and efficiency issues of market-oriented operations. Based on the performance of the five government guidance funds under Sichuan Development Industry Guidance Fund, this thesis analyzes the factors affecting the performance of government industry guidance funds from the perspectives of policy environment, mechanism design, fund management and operation, and industry characteristics.

Policy environment: 2020-2022 is the three years in which Chinese substitution of integrated circuits will be accelerated. The country has introduced a number of policies to

support the development of the integrated circuit industry. Many Chinese integrated circuit companies have been listed, and the performance of non-listed companies has also grown rapidly. Therefore, the integrated circuit industry funds in this industry have completed the assessment in terms of fundraising, investment, investment driving force and investment compliance, so the fund scores are relatively high; the tourism industry has been affected by the three-year epidemic, and its overall development has almost stagnated. Many tourism companies have fallen into operational difficulties or even bankruptcy, and the industry's investment and financing has entered a trough. Therefore, the government's industrial guidance fund has also reduced investment based on the principle of prudence, and scored low in fundraising, industry leadership and investment promotion, so the overall score is low.

Mechanism design: The assessment scores of Sichuan Merchants Returning Home Fund have continued to rise in the past three years and its performance is excellent. The overall annualized rate of return of the fund is expected to reach 20%. The main reasons include that the Sichuan Merchants Returning Home Fund fully abides by the market-oriented selection mechanism, strictly selects personnel in accordance with market principles, and builds a professional and efficient investment team. The existing performance evaluation mechanism involves the assessment of fund fundraising, investment, management and withdrawal; the integrated circuit industry fund, the military-civilian integration industry fund, and the tourism industry fund have lower overall returns because the team selection and assessment mechanism is not market-oriented enough.

Fund management and operation: The management and operation of the five government industry guidance funds all refer to the government guidance fund management rules issued by Sichuan Province, with little difference.

Industry characteristics: The integrated circuit industry includes design, manufacturing, and testing. Especially in the manufacturing stage, the overall financing amount of a single project is large, which is in line with the local government's preference for attracting investment. Therefore, the overall assessment requirements can be met well in terms of investment compliance and investment guidance. However, the financing amount of a single project in the military-civilian integration industry and the tourism industry is small, and the overall investment driving force and the proportion of major project investment are relatively low. Therefore, industry characteristics also directly affect the fund performance assessment.

[This page is deliberately left blank.]

Chapter 7: Conclusion and Outlook

7.1 Conclusion

This thesis focuses on the evaluating Chinese government industry guidance fund, combines the practical cases of Sichuan Development Industry Guidance Fund and its sub-funds, and systematically explores the scientificity and applicability of the performance evaluation index system through theoretical construction and empirical analysis, revealing the key issues and optimization paths in the operation of the fund. The main conclusions are as follows:

7.1.1 Scientificity and practical value of the performance evaluation index system

The performance evaluation index system of government industry guidance funds constructed in this study has significant innovation and application value. First, the indicator system breaks through the traditional single framework based on financial indicators, and comprehensively covers the entire process of fund "raising, investing, managing and withdrawing" through three dimensions: policy objectives, investment benefits and investment management. For example, the "policy guidance" indicator introduces "investment proportion of major projects" and "investment rate of recommended projects", which strengthens the quantitative evaluation of policy orientation; the "capital driving force" indicator accurately measures the leverage effect of fiscal funds and its role in driving regional economy through "fiscal fund magnification multiple" and "investment proportion of projects within the province". Secondly, the integrated optimization of research method improves the objectivity of the evaluation. The analytic hierarchy process (AHP) scientifically determines the indicator weights by empowering experts, effectively balancing the priorities of policy goals and economic goals; the fuzzy comprehensive evaluation rule handles the fuzziness of qualitative indicators through the membership function, reducing the bias of subjective evaluation.

7.1.2 Performance and problem diagnosis of Sichuan Development Industry Guidance Fund

Empirical analysis based on the fuzzy comprehensive evaluation method shows that the overall performance score of Sichuan Development Industry Guidance Fund is 84.54 points (out of

100), which is at a "good" level, but there is significant differentiation within it, see Table 5.6. Specifically:

The policy objectives were achieved effectively (score 87.15): The fund strictly followed policy guidance in terms of investment direction and project layout within the province, and performed particularly well in strategic emerging industries such as integrated circuits and the digital economy. For example, the integrated circuit industry fund has cumulatively driven a large amount of social capital investment, with investment in projects within the province accounting for 93.61%, fully demonstrating the "baton" role of the government-guided fund.

Investment benefits needs to be improved (score 80.69): Although the fund as a whole has achieved the preservation and appreciation of fiscal funds (score 83.61), the investment return rate (77.78 points) and tax growth (77.22 points) are relatively low. The survey found that some funds have neglected market-oriented operations due to over-emphasis on policy goals, resulting in long exit cycles and insufficient liquidity for investment projects. For example, due to the impact of the epidemic and the characteristics of the industry, the average exit cycle of tourism industry funds for invested projects is as long as 8 years, which is much higher than the industry average of market-oriented funds.

There are obvious shortcomings in investment management (score 82.18): the "annual new fundraising" (73.61 points) and "cumulative funds in place" (79.44 points) in the fundraising stage scored low, reflecting the lack of willingness of social capital to participate; "value-added services" (90 points) and "supervision and management" (85.56 points) in post-investment management performed well, but the existing assessment system sets low weights for such indicators, failing to fully reflect their value.

7.1.3 Diversity and complexity of factors affecting fund performance

The study found that the performance of government industry guidance funds is affected by four factors: policy environment, mechanism design, fund management and industry characteristics:

The policy environment is a decisive external factor. The matching degree between the intensity of policy support and the industrial cycle directly affects fund performance. For example, the integrated circuit industry fund has benefited from the intensive introduction of Chinese substitution policies (such as the "National Integrated Circuit Industry Development Promotion Outline"), and has gained high market recognition in fundraising, investment and exit. However, the tourism industry fund is facing the dual pressure of fundraising difficulties

and investment contraction due to the impact of the epidemic and the lag in policy adjustments.

Mechanism design needs to balance security and marketization. Over-emphasizing the security of fiscal funds (such as the rigid requirement of "fiscal fund magnification ≥ 5 times") may cause the fund to miss high-growth projects. Comparing the Sichuan Merchants Returning Home Fund (market-oriented team selection, flexible incentive mechanism) and the Military-Civilian Integration Fund (administrative management, rigid fundraising targets), the former achieved an annualized return of 20% due to its flexible mechanism, while the latter ranked last for three consecutive years due to its failure to meet fundraising targets.

Industry characteristics shape performance differences. Capital-intensive industries (such as integrated circuit manufacturing) are more likely to achieve policy goals through large-scale investment, while decentralized industries (such as tourism services) face challenges such as project fragmentation and long payback periods.

7.2 Optimization suggestions

7.2.1 Balancing the relationship between fiscal funds and social capital

The existing performance evaluation indicators do not consider the relationship between balancing fiscal funds (with the goal of promoting industrial development) and social capital (with the goal of pursuing investment returns) in sufficient detail. For example, for the issue of fund preservation and appreciation, the focus is still on whether the principal has been lost, and no adjustments have been made according to market and industry changes. As a result, government-guided funds are not only uncompetitive in projects with development potential and low risk, but also constrained in investing in projects with development potential but relatively high risk, resulting in the phenomenon of "not being able to grab and not daring to invest", but high returns and high risks are inseparable. For another example, in order to ensure the safety of fund investment funds, fund investment projects must provide clear and specific exit arrangements and exit guarantees at the time of investment and after investment. This is different from and contradictory to the investment style and risk-taking logic of market-oriented equity investment funds. As a result, for projects with great development potential but also high investment risks, government-guided funds have many concerns when making investment decisions, and cannot compete with fully market-oriented funds in a healthy manner.

7.2.2 Reconciling the relationship between constraints and incentives

The existing performance evaluation system does not take into account the characteristics of equity investment funds, does not follow the basic rules of the equity investment industry, and does not set up a corresponding mechanism to encourage and support social capital to actively obey and serve the demands of fiscal funds. The weight given to the safety of the principal of fiscal funds, the preservation and appreciation of value is relatively high, while the weight given to guiding and driving industrial development, driving social capital investment, and driving employment is relatively low.

Therefore, it is suggested that we learn from and draw lessons from the successful experience of the eastern open regions, and introduce a package of policies that conform to the basic laws of the equity investment industry and effectively mobilize social capital to obey and serve the demands of fiscal funds, especially in terms of market-oriented incentives. For example, for fund projects that have outstanding performance in developing and driving industrial investment but have relatively poor economic benefits (or even losses), set up some targeted incentives or subsidies (for example: LP representing government funds makes reasonable interest transfers to LP representing social capital in the form of subsidie).

7.2.3 Optimize the setting of quantitative indicators

For the indicator of “fiscal funds leverage ratio”, it is possible to consider combining the leverage ratio with the fund size for assessment, rather than setting a unified value. As a result, it is not possible to fully and objectively reflect the actual contribution of government-guided funds of different sizes to the fiscal funds leverage effect.

7.2.4 Clarify the assessment stages and time

First, it is recommended that the assessment system be clearly divided by year, and that certain problems that have occurred but have now been rectified no longer be subject to repeated deductions every year; second, the investment period and exit period should be clearly divided according to the actual proportion within the assessment period, to avoid the situation where there are only two months of the exit period within the assessment period and the assessment is directly based on the exit period.

7.2.5 Focus on post-investment value-added services

By comparing the performance evaluation index system of the US SBIC program and the

performance evaluation index of the UK venture capital government guidance fund, it can be seen that the existing performance evaluation index system in our province hardly reflects the value that fund investment brings to the invested enterprises, resulting in the inability to evaluate the role of industrial guidance funds in the development of China's small and medium-sized enterprises, and thus unable to play a guiding role in the establishment and operation of industrial guidance funds in the future.

7.3 Innovation and limitations of this thesis

Based on the evaluating Chinese government industry guidance fund, combined with the practical cases of government guidance funds in Sichuan Province, this thesis systematically discusses the scientificity and applicability of the performance evaluation index system through theoretical construction and empirical analysis, and reveals the key problems and optimization paths in the operation of the fund, which has many innovative aspects, but also certain limitations.

7.3.1 Innovation

First, this thesis breaks through the traditional evaluation framework based on financial indicators, combines the three dimensions of policy objectives, investment benefits and investment management, and constructs a performance evaluation index system suitable for China's government industry guidance funds. By introducing indicators such as policy guidance, capital driving, and social benefits, the guiding role of policy objectives is strengthened, making up for the defects of single indicators and insufficient regional applicability in existing research.

Second, the comprehensive use of the analytic hierarchy process (AHP) and the fuzzy comprehensive evaluation method not only scientifically determines the indicator weights through expert empowerment, but also uses fuzzy mathematics to deal with the fuzziness of qualitative indicators, thereby improving the objectivity and operability of the evaluation results.

Third, taking Sichuan Development Industry Guidance Fund as the research object, combined with the field research data of its four sub-funds, this thesis systematically reveals the operation characteristics and performance of government guidance funds in western China. The case study not only verifies the scientificity and rationality of the indicator system, but also provides a differentiated reference for the practices of other provinces.

Finally, breaking through the limitations of traditional single-factor analysis, this thesis

comprehensively identifies the key factors affecting fund performance from four dimensions: policy environment, mechanism design, fund management and operation, and industry characteristics. It reveals the inherent connection between policy coordination, market-oriented operation and industry adaptability, and provides theoretical support for optimizing fund governance.

7.3.2 Limitations

First, the research data mainly comes from questionnaire surveys and case data in Sichuan Province. Although the sample size is representative, it does not cover fund practices throughout Sichuan Province, which may limit the universality of the conclusions. In addition, some financial data are affected by the fund's life cycle, and the depth of long-term performance evaluation needs to be strengthened.

Second, although the fuzzy comprehensive evaluation method weakens the influence of subjective judgment, qualitative indicators such as value-added services and supervision management still rely on expert scoring, which may introduce bias caused by differences in evaluator experience. In the future, the indicator quantification method can be further optimized by combining objective data (such as enterprise feedback and supervision records).

Third, the research focuses on static cross-sectional analysis and does not track the long-term dynamic evolution of fund performance. At the same time, the impact of external environment such as policy adjustments and economic cycle fluctuations on fund performance has not been fully explored, and time series analysis needs to be included in the future to enhance forecasting capabilities.

Finally, the synergy between fund performance and local government policies and national strategies has not been explored in depth. How to achieve central-local linkage and cross-departmental collaboration through institutional design to improve fund performance is an important direction for future research.

This thesis has certain innovations in theoretical construction and method application, but it still needs to be further improved by expanding the data scope, optimizing indicator design, deepening dynamic analysis, in order to provide more comprehensive decision-making support for the high-quality development of China's government industrial guidance funds.

7.4 Future research

As an important tool to connect policies and markets, the performance optimization of

government industry guidance funds needs to be continuously explored through theoretical deepening and practical innovation. Future research can be carried out in the following directions:

First, expand the sample range and the geographical scope. In future research, the questionnaire interviews and the sample size of the fund can be expanded to the whole country, as well as data from other provinces for research. This thesis studies the performance evaluation of government guidance funds in China.

Second, add long-term performance tracking and time series analysis. Existing research is mostly based on cross-sectional data. In the future, a panel database of more than 10 years can be established to analyze the long-term impact of economic cycles and policy iterations on fund performance. A dynamic game model is developed to simulate the strategic interaction between the government, social capital, and invested enterprises, revealing the design path of incentive compatibility mechanisms.

Third, deepen the research mechanism of policy coordination. Fiscal policy, industrial policy and other policy factors of the central government need be added, focusing on the impact of central policy on local industrial policy and fiscal policy, as well as the impact on the performance of government guidance funds.

Forth, integrate the ESG concept and the dual carbon goals. Incorporate environmental (E), social (S), and governance (G) indicators into the performance evaluation system to explore the "green leverage" effect. For example, for funds investing in new energy projects, increase their social benefit weight to 30%. Study carbon footprint accounting methods, quantify the contribution of fund investment to regional emission reduction, and explore incentive mechanisms linked to the carbon trading market.

Fifth, achieving digital transformation and financial technology applications. Use blockchain technology to put the entire process of fund raising, investment, management and withdrawal on the chain, ensure that data cannot be tampered with, and reduce agency risks. Explore the application of artificial intelligence in project screening, predict the growth of invested companies through machine learning models, and optimize investment decision-making efficiency.

Sixth, conduct research on localization adaptation of international experience. By comparing the governance models of Israel's YOZMA Fund and the US SBIC Program, A "policy–market" balance strategy that can be applied to China's western region has been extracted. In view of the "Belt and Road" Initiative, the performance evaluation standards of cross-border industrial funds have been studied to help Chinese companies "go global."

Seventh, explore multi-level capital market connection mechanism. Explore the linkage mechanism between government-guided funds and the Science and Technology Innovation Board and the Beijing Stock Exchange, provide listing guidance for invested enterprises, and shorten the exit cycle. Promote the establishment of a "government fund special board" in regional equity markets, allow fund shares to be listed and traded, and improve liquidity.

Eighth, conduct research on the investment tolerance mechanism of government industry guidance funds. In the current context of the country advocating early investment, small investment, and investment in hard technology, and local governments have successively introduced policies to increase the investment tolerance rate of government industrial guidance funds, there will be great differences in the evaluation of the performance of government industrial guidance funds in the future. This is a new problem that government authorities will face in the next few years, which requires further research.

In short, the performance improvement of government industry guidance funds is a systematic project, which requires breakthroughs in institutional design, technological innovation and ecological construction. The framework and suggestions proposed in this thesis can provide a reference for policymakers, and future research needs to further deepen the theory in combination with practice to promote China's government guidance funds to a new stage of high-quality development.

Bibliography

Cai, Q., Liu, H., & Shu, S. (2024). Government-guided funds and regional firm innovation: Crowding-in or crowding-out effect? *Journal of Financial Research*, *3*, 76-93.

Chen, L., & Duan, L. (2022). 政府引导基金地区差异对企业创新绩效的影响研究 [Research on the impact of regional differences of government guidance funds on enterprise innovation performance]. *Journal of Southwest University of Science and Technology (Philosophy and Social Sciences Edition)*, *39*(01), 69-76.

Chen, S. H., & Zhao, X. Y. (2023). 我国各级政府引导基金发展现状及存在问题探析 [An analysis of the development status and existing problems of government guidance funds at all levels in China]. *Modern Finance and Economics*, (10), 531-541.

Cumming, D. (2007). Government policy towards entrepreneurial finance: Innovation investment funds. *Journal of Business Venturing*, *22*(2), 193-235.

Das, D., & Ngacho, C. (2017). Critical success factors influencing the performance of development projects: An empirical study of Constituency Development Fund projects in Kenya. *IIMB Management Review*, *29*(4), 276-293.

Ding, Y. (2013). 构建安徽省创业(风险)投资引导基金绩效评估体系研究 [Research on building a performance evaluation system for Anhui Provincial Venture Capital (Risk Investment) Guidance Fund]. *Anhui Science & Technology*, (04), 7-9.

Dong, J., Zhang, H., & Zhou, Y. (2017, November 17). *Research on the performance evaluation of government venture capital guiding fund based on DEA cluster*. 5th Western Risk Analysis and Risk Management Symposium (WRARM 2017), Chengdu, Sichuan, China.

Du, L., Wang, S., Wang, X., & Sun, F. (2024). Research on government guide fund performance evaluation based on ahp-fuzzy comprehensive evaluation method. *Science and Technology Management Research*, *1*, 33-41.

Dunn, W. N. (2002). *Introduction to public policy analysis*. China Renmin University Press.

Ellison, G., Glaeser, E. L., & Kerr, W. R. (2010). What causes industry agglomeration? Evidence from coagglomeration patterns. *The American Economic Review*, *100*(3), 1195-1213.

Farnsworth, H., Ferson, W. E., Jackson, D., & Todd, S. K. (2002). *Performance evaluation with stochastic discount factors*. Social Science Electronic Publishing.

Feng, Q. (2005). 国家分配论、公共财政论与民主财政论——我国公共财政理论的回顾与发展 [State distribution theory, public finance theory and democratic finance theory: Review and development of China’s public finance theory]. *Finance & Trade Economics*, (04), 8-11.

Ferson, W., Henry, T. R., & Kisgen, D. J. (2006). Evaluating government bond fund performance with stochastic discount factors. *Review of Financial Studies*, *19*(2), 423-455.

Ge, Y. (2009). Globalization and industry agglomeration in China. *World Development*, *37*(3), 550-559.

Golosov, M., & Tsyvinski, A. (2007). Optimal taxation with endogenous insurance markets. *The Quarterly Journal of Economics*, *122*(2), 487-534.

Golosov, M., Tsyvinski, A., Werning, I., Diamond, P., & Judd, K. L. (2006). New dynamic public finance: A user's guide (with comments and discussion). *NBER Macroeconomics Annual*, *21*, 317-387.

Guerini, M., & Quas, A. (2016). Governmental venture capital in Europe: Screening and

certification. *Journal of Business Venturing*, *31*(2), 175-195.

Hoepner, A. G. F., & Schopohl, L. (2018). On the price of morals in markets: An empirical study of the Swedish AP-Funds and the Norwegian government pension fund global. *Journal of Business Ethics*, *151*(3), 665-692.

Hu, M., Chen, K., Zhang, C., & Huang, Y. (2024). 构建我国政府投资基金绩效评价指标体系的思考 [Thoughts on constructing a performance-evaluation indicator system for Chinese government investment funds]. *China State Finance*, *904*(22), 14-18.

Hua, P., Li, Q., & Yang, S. (2025). 地方产业投资基金扩张的驱动因素与模式 [Driving factors and expansion models of local industrial investment funds]. *Southeast Academic Research*, *37*(4), 233-245.

Huang, F., & Meng, H. (2023). 政府引导基金中财政资金的体制性困境与出路 [Institutional dilemmas and solutions of fiscal capital in government guided funds]. *Fiscal Supervision*, (23), 77-81.

Huang, M., Meng, Y., & Xu, W. (2015). 欧洲投资基金管理运作模式及对我国政府创业投资引导基金的借鉴 [Management and operation model of the European investment fund and its lessons for China’s government venture capital guidance funds]. *Economic Research Reference*, (07), 87-96.

Ielasi, F., Rossolini, M., & Limberti, S. (2018). Sustainability-themed mutual funds: an empirical examination of risk and performance. *The Journal of Risk Finance*, *19*(3), 247-261.

Ji, L., & Yang, W. (2025). 政府引导基金投资与企业持续创新——理论分析与实证检验 [Government-guided fund investment and sustained corporate innovation: Theoretical analysis and empirical testing]. *West Forum on Economy and Management*, *36*(4), 82-96.

Li, C. M., & Wang, K. Z. (2005). 国外产业集群理论述评 [A review of foreign industrial cluster theories]. *Commercial Economics Research*, (22), 91-93.

Li, C. X., Wu, K. N., & Gao, X. Y. (2019). Manufacturing industry agglomeration and spatial clustering: Evidence from Hebei Province, China. *Environment, Development and Sustainability*, *22*(4), 2941-2965.

Li, H. J., & Bao, X. (2011). 政府导向型创业投资基金绩效评价研究 [Research on the performance evaluation of government-oriented venture capital funds]. *Business Research*, (06), 112-116.

Li, Y. L., & Liu, T. (2017). 战略性新兴产业政策导向型参股基金绩效评价研究——基于IFAHP的分析 [Performance evaluation of policy-oriented equity participation funds in strategic emerging industries: An IFAHP-based analysis]. *Financial Theory & Practice*, (08), 68-73.

Liang, J., & Kong, L. (2011). 创业投资引导基金绩效管理模式探析 [Performance management model analysis of venture capital guidance fund]. *Science and Technology Management Research*, *31*(12), 180-182.

Liu, C. X., Liu, H. T., & Meng, Z. H. (2015). 政府创业投资引导基金参股基金绩效评价研究 [Performance evaluation of government venture capital guidance fund equity-participating funds]. *Shanghai Finance*, (10), 61-65.

Liu, J., Cheng, Z., & Zhang, H. (2017). Does industrial agglomeration promote the increase of energy efficiency in China? *Journal of Cleaner Production*, *164*, 30-37.

Liu, X. P., & Zhang, X. L. (2021). Industrial agglomeration, technological innovation and carbon productivity: Evidence from China. *Resources, Conservation and Recycling*, *166*, 10-15.

Lv, B. (2021). 政府引导基金发展历程及发展方向 [Development history and future direction of government guidance funds]. *Economic Review*, (23), 69-70.

Ma, Q., & Jia, J. (2020). 山东：出台政府引导基金管理绩效评价办法 [Shandong: Provincial government issues performance evaluation measures for government guidance funds]. *Public Finance News*, (8), 84.

Meng, C., Guo, S., Wu, B., & Gao, X. (2016). 促进我国政府引导基金健康发展的几点思考 [Some thoughts on promoting the healthy development of China’s government guidance funds]. *China State Finance*, (11), 41-43.

Meng, Z., Li, L., Tan, Z., & Liu, C. (2014). 政府创业投资引导基金委托管理模式及激励约束机制比较分析 [Comparative analysis of delegated management models and incentive-constraint mechanisms for government venture capital guidance funds]. *Science & Technology Progress and Policy*, *31*(17), 11-15.

Musgrave, R. A. (1959). *Classics in the theory of public finance*. Palgrave Macmillan.

Ngacho, C., & Das, D. (2014). A performance evaluation framework of development projects: An empirical study of Constituency Development Fund (CDF) construction projects in Kenya. *International Journal of Project Management*, *32*(3), 492-507.

North, D. C. (1994). Economic performance through time. *The American Economic Review*, *84*(3), 359-371.

Porter, M. E. (2002). *The competitive advantage of nations*. Huaxia Publishing House.

Pu, H. (2020). 政府引导基金政策引导效应的实证分析 [Empirical analysis of the policy steering effect of government guidance funds]. *Economic Research Herald*, (02), 136-138.

Qi, Y., Liao, K., Zhang, T., & Feng, X. (2020). 政府引导基金研究述评与建模展望——基于文献计量与投资组合的视角 [A literature review and modeling outlook of government guidance funds: From the perspectives of bibliometrics and portfolio theory]. *Science and Technology Management Research*, *40*(04), 24-33.

Samuelson, P., & Nordhaus, W. (2013). *Economics*. Commercial Press.

Sui, W. W. (2008). 以国有资本为投资主体的风险投资评估体系 [Risk investment evaluation system with state-owned capital as the investment subject]. *Shanghai Journal of Economics*, (03), 47-51.

Sun, Q. (2025). 我国政府引导基金发展历程、问题及对策建议 [Development history, problems and countermeasures of China’s government guidance funds]. *China Price*, (2), 83-89.

Tang, X. (2021). 政府创业投资引导基金绩效评价体系的建构——基于主成分和层次分析组合方法的研究 [Construction of a performance evaluation system for government venture capital guidance funds-Based on the combined method of principal component analysis and analytic hierarchy process]. *Contemporary Economics*, (10), 34-39.

Tang, Y. H., Zhang, N., & Wu, D. (2022). 基于演化博弈的政府产业引导基金运行效率分析 [An analysis of the operating efficiency of government industrial guidance funds based on evolutionary game theory]. *Macroeconomics*, (03), 94-105.

Taylor, F. W. (2006). *The principles of scientific management*. China Machine Press.

Tian, J. J. (2018). 产业导向型政府引导基金绩效评价研究——以战略性新兴产业为例 [Performance evaluation of industry-oriented government guidance funds: Evidence from strategic emerging industries]. *Journal of Eastern Liaoning University (Social Sciences Edition)*, *20*(02), 38-45.

Wang, D. H., & Yang, L. (2025). 政府投资基金的运行成效与改革展望 [Operating effectiveness and reform outlook for government investment funds]. *Economic Issues*, (2), 1-11.

Wang, L. M., & Wang, J. (2010). 国内创业投资引导基金运作的现状、问题及对策研究 [Research on the current situation, problems and countermeasures of domestic venture capital guidance fund operation]. *Modern Management Science*, (02), 112-114.

Wang, S. J., Wang, H., & Sun, C. (2024). 政府引导基金对产业结构升级的影响效应研究 [Research on the impact effect of government guidance funds on industrial structure upgrading]. *Contemporary Economics*, *42*(2), 91-99.

Wei, Y., Ang, Y. Y., & Jia, N. (2023). The promise and pitfalls of government guidance funds in China. *The China Quarterly*, *256*, 939-959.

Wicaksono, A. P., & Fauzia, D. (2023). The role of government venture capital in fostering innovation: Evidence from emerging markets. *Journal of Innovation & Knowledge*, *8*(2), 1-15.

Wu, Y., Wang, H., & Zhang, Y. (2025). “如愿以偿”还是“欲益反损”?——基于资源视角探析政府引导基金对企业绩效的影响 ["Getting what you want" or "losing what you want"?—An analysis of the impact of government-guided funds on enterprise performance based on the resource perspective]. *Economic and Management Review*, *41*(4), 51-64.

Xiang, Y., Ma, X., & Lu, J. (2018). 基于改进直觉模糊层次分析方法的政府创业投资引导基金绩效评价研究 [Performance evaluation of government venture capital guidance funds: An improved intuitionistic fuzzy AHP approach]. *Public Finance Research*, (07), 106-118.

Xiao, D., & Xiong, J. (2014). 政府创业引导基金运作模式借鉴——以以色列 YOZMA 基金为例 [Learning from the operation model of government venture capital guidance funds: The case of Israel’s YOZMA fund]. *South China Journal of Economics*, (07), 106-115.

Xie, Y. (2022). *二手份额转让基金顺势而起 [Secondary-fund shares pick up momentum]*. Financial Times Editorial Department.

Xu, J., & Yang, X. (2019). 政府创业投资引导基金促进“创新创业”的绩效评价与提升策略——以宁波市为例 [Performance evaluation and improvement strategy of government venture capital guidance funds in promoting "innovation and entrepreneurship": A case study of Ningbo]. *Science & Economy*, *32*(01), 41-45.

Xu, J., Yu, L., & Gupta, R. (2020). Evaluating the performance of the government venture capital guiding fund using the intuitionistic fuzzy analytic hierarchy process. *Sustainability*, *12*(17), 6908.

Xu, S. (2023). 政府创业投资引导基金运作模式国际比较研究 [International comparative study on the operation models of government venture capital guidance funds]. *Communication in Finance and Accounting*, (15), 154-158.

Yan, M., & Xu, W. (2015). Government venture capital and corporate innovation: Evidence from China. *China Economic Review*, *36*, 734-749.

Yang, Y. (2015). 集聚密度、多样性和旅游企业劳动生产率——兼对产业聚集理论观点的拓展研究 [Agglomeration density, diversity and labour productivity of tourism enterprises — An extension of industrial agglomeration theory]. *Finance & Trade Economics*, (02), 148-161.

Yu, F. K. (2007). 政府创业投资引导基金的实践与作用 [Practice and role of government venture capital guidance funds]. *China Science & Technology Investment*, (09), 70-71.

Zero2ipo. (2025). *China VC/PE market review 2024*. Zero2IPO Research.

Zhang, H., Chen, Y., & Wang, Z. (2016). Research on the performance evaluation of government venture capital fund based on factor analysis and DEA model. *Journal of Risk Analysis and Crisis Response*, *6*(1), 15-20.

Zhang, J., & Yan, C. (2019). 影响政府引导基金运营效率的突出问题与机制优化研究 [Research on prominent problems and mechanism optimization affecting the operating efficiency of government guidance funds]. *Economic Review*, (07), 113-119.

Zhang, K. Z., & Zhang, W. T. (2022). 全球公共财政学：理论与框架 [Global public finance: Theory and framework]. *Public Finance Research*, (03), 26-36.

Zhang, Q. (2020). 政府引导基金退出机制研究 [Research on the exit mechanism of government guidance funds]. *Financial Markets*, (8), 90-93.

Zhao, B. (2020). 政府创业投资引导基金绩效评价指标构建及权重研究 [Research on the construction and weighting of performance evaluation indicators for government venture capital guidance funds]. *Science Entrepreneurship Monthly*, *33*(07), 1-10.

Zheng, L., Zhu, H., & Zhong, Z. (2017). 国外政府产业引导基金特征、模式与启示 [Foreign government industrial guidance funds: Characteristics, models and implications]. *Local Public Finance Research*, (3), 30-36.

[This page is deliberately left blank.]

Other References

Chuan Fu Fa. (2015). *Sichuan province provincial industrial development investment guidance fund management measures* (Report No. 49).

Fagai Caijin Gui. (2016). *Notice of the national development and reform commission on issuing the interim measures for the administration of government-invested industry investment funds* (Report No. 2800).

Finance and Budget. (2015). *Notice of the Ministry of Finance on issuing the management measures for government investment funds (trial)* (Report No. 210).

Guobanfa. (2008). *Circular of the general office of the state council on forwarding the guidance of the national development and reform commission and other departments regarding the standardized establishment and operation of venture-capital guidance funds* (Report No. 116).

Sichuan Cai Gui. (2019). *Interim measures for the performance evaluation and management of Sichuan provincial-level industrial development investment guidance fund* (Report No. 8).

Sichuan Finance. (2020). *Notice of Sichuan provincial department of finance on issuing the measures for performance evaluation of sichuan provincial government-public-private partnership (PPP) investment guidance fund* (Report No. 3).

[This page is deliberately left blank.]

Annex A: Annex Tables and Figures

Table A1 Judgment matrix and indicator weight of first-level indicators using the square root method

	Judgment matrix			Indicator weight (N_i)	Consistency Test
	Policy objectives	**Investment Benefits**	**Investment Management**		
Policy objectives	1	2.5920	2.3024	0.5492	λ_{max}=3.0175 CI = 0.0088 CR = 0.016
Investment Benefits	0.3958	1	1.3210	0.2418	
Investment Management	0.4343	0.7570	1	0.2090	

Table A2 Judgment matrix and indicator weight of investment management

	Judgment matrix				Indicator weight (N_i)	Consistency Test
	Fund Raising	**Project Investment**	**Post-investment management**	**Investment Exit**		
Fund Raising	1	0.7294	0.8298	0.7042	0.1988	
Project Investment	1.3709	1	1.5675	0.8849	0.2889	λ_{max}=4.0126 CI = 0.0042 CR = 0.0047
Post-investment management	1.2052	0.6380	1	0.7357	0.2134	
Investment Exit	1.4200	1.1301	1.3593	1	0.2990	

Table A3 Judgment matrix and indicator weight of policy guidance

	Judgment matrix			Indicator weight (N_i)	Consistency Test
	Investment Compliance	**Major project investment ratio**	**Recommended project investment rate**		
Investment Compliance	1	2.1560	2.6211	0.5351	λ_{max}= 3.0246 CI = 0.0123 CR = 0.0236
Major project investment ratio	0.4638	1	1.9444	0.2903	
Recommended project investment rate	0.3815	0.5143	1	0.1746	

Table A4 Judgment matrix and indicator weight of funding driven

	Judgment matrix				
	Fiscal funding magnification	**Investment ratio of projects within the province**	**Driving social investment**	**Indicator weight (N_i)**	**Consistency Test**
Fiscal funding magnification	1	1.2859	0.8555	0.3439	
Investment ratio of projects within the province	0.7776	1	1.1336	0.3195	λ_{max}= 3.0316 CI = 0.0158 CR = 0.0304
Driving social investment	1.1689	0.8821	1	0.3366	

Table A5 Judgment matrix and indicator weight of fund raising

	Judgment matrix				
	Annual new fundraising	Annual funding in place	Cumulative funds in place	Indicator weight (N_i)	Consistency Test
Annual new fundraising	1	0.9358	1.1567	0.3419	λ_{max}=3.0030 CI = 0.0015 CR= 0.0029
Annual funding in place	1.0686	1	1.0492	0.3459	
Cumulative funds in place	0.8646	0.9531	1	0.3122	

Table A6 Comprehensive indicator weights using the square root method

First level indicator	**First-level indicator weight**	**Secondary indicators**	**Secondary indicator weight**	**Three-level indicators**	**Weight of three-level indicators**	**Comprehensive weight**
Policy objectives	54.92%	Policy guidance	65.79%	Investment Compliance	53.51%	19.33%
				Major project investment ratio	29.03%	10.49%
				Recommended project investment rate	17.46%	6.31%
		Funding driven	34.21%	Fiscal funding magnification	34.39%	6.46%
				Investment ratio of projects within the province	31.95%	6.00%
				Driving social investment	33.66%	6.32%
Investment Benefits	24.18%	Economic Benefits	54.91%	Maintain and increase value	60.12%	7.98%
				Return on investment	39.88%	5.30%

Investment Management	20.90%	Social Benefits	45.09%	Revenue growth of invested companies	70.68%	7.71%
				Tax growth	29.32%	3.20%
		Fund Raising	19.88%	Annual new fundraising	34.19%	1.42%
				Annual funding in place	34.59%	1.44%
				Cumulative funds in place	31.22%	1.30%
		Project Investment	28.89%	Annual investment plan completion rate	42.52%	2.57%
				Cumulative investment progress	57.48%	3.47%
		Post-investment management	21.34%	Value-added Services	62.97%	2.81%
				Supervision and Management	37.03%	1.65%
		Investment Exit	29.90%	Exit Progress	54.62%	3.41%
				Exit Expectation Realization	45.38%	2.84%

Table A7 Funds that Sichuan Development (Holdings) Company has been entrusted to manage

Serial number	**Fund Name**	**Fund Full Name**	**Date of Establishment**	**Business Stage**	**Duration**	**Fund size**	**Investment Directions**
1	Collective Security Fund	Sichuan Integrated Circuit and Information Security Industry Investment Fund Co., Ltd.	2016/03/31	Investment Period	13	56.11	Integrated circuit and information security industry chain upstream and downstream
2	PPP Fund (Phase I)	Sichuan Zhongjian Government and Social Capital Equity Investment Fund Partnership (Limited Partnership)	2016/04/28	Withdrawal Period	15	13.29	Projects of cooperation between the government and social capital involve infrastructure construction, public services and other fields, and help local economic development and urban construction
3	PPP Fund (Phase II)	Sichuan Zhongzhu Government and Social Capital Equity Investment Fund Partnership	2019/01/16	Withdrawal Period	15	2.65	Projects of cooperation between the government and social capital involve infrastructure construction, public services and other fields, and help local economic development and

		(Limited Partnership)					urban construction
4	Emerging Industry Fund	Sichuan Emerging Industry Venture Capital Guidance Fund Partnership (Limited Partnership)	2016/01/29	Liquidation	7	5.54	Strategic emerging industries, such as new energy, new materials, biomedicine
5	Military-Civilian Integration Fund	Sichuan Tianfu Hongwei Military-Civilian Integration Industry Development Equity Investment Fund Partnership (Limited Partnership)	2017/01/12	Withdrawal Period	10	26.08	High-tech industries combining military and civilian sectors, technological transformation of private enterprises, and other fields
6	Digital Economy Fund	Sichuan Tianfu Core Cloud Digital Economy Development Fund Co., Ltd.	2021/12/30	Investment Period	10	14.56	Digital economy related fields, covering digital product manufacturing, digital product service industry
7	Small and Medium Equity Fund	Sichuan Small and Medium Enterprise Development Equity Investment Fund Partnership (Limited Partnership)	2016/12/21	Liquidation	5	5.10	Small and medium-sized enterprises that provide “chain supporting” services for high-tech industries in the province and small and medium-sized enterprises that provide productive services
8	Innovation Financing Fund	Sichuan Sunac Zhuye Investment Development Co., Ltd.	2016/07/15	Withdrawal Period	30	2.02	State-owned financial service platform companies established or planned to be established by municipal (state) governments
9	Sichuan Tourism Fund	Sichuan Tourism Industry Innovation and Development Equity Investment Fund Center (Limited Partnership)	2015/12/31	Withdrawal Period	9	4.71	Improvement and construction of tourist attractions in Sichuan, new tourism formats, and extension and development of the entire tourism industry chain
10	Sichuan Merchants Fund	Sichuan Chuan Shang Fan Xiang Xingye Equity Investment Fund Center (Limited	2016/02/23	Withdrawal Period	12	15.21	Consumption upgrade and industrial upgrade transformation projects, as well as participation in mergers and acquisitions of advantageous industries in

		Partnership)					the province, state-owned enterprise reforms, and targeted share issuances of listed companies in the province.
11	Hite Fund	Sichuan Haite Aviation Venture Capital Fund Partnership (Limited Partnership)	2014/12/24	Withdrawal Period	10	2.50	Strategic emerging industries in aerospace and related extension fields and high-tech transformation and upgrading of traditional industries

Table A8 Situation of Trust Funds of Sichuan Development Guidance Fund

Serial number	Fund Name	Fund Full Name	Fund Manager
1	Collective Security Fund	Sichuan Integrated Circuit and Information Security Industry Investment Fund Co., Ltd.	Sichuan Hongxin Equity Investment Fund Management Co., Ltd.
2	PPP Fund (Phase I)	Sichuan Zhongjian Government and Social Capital Equity Investment Fund Partnership (Limited Partnership)	Sichuan Hongzhan Jianxin Equity Investment Fund Management Co., Ltd.
3	PPP Fund (Phase II)	Sichuan Zhongzhu Government and Social Capital Equity Investment Fund Partnership (Limited Partnership)	Sichuan Hongzhan Jianxin Equity Investment Fund Management Co., Ltd.
4	Emerging Industry Fund	Sichuan Emerging Industry Venture Capital Guidance Fund Partnership (Limited Partnership)	Sichuan Hongyuan Emerging Industry Equity Investment Fund Management Co., Ltd.
5	Military-Civilian Integration Fund	Sichuan Tianfu Hongwei Military-Civilian Integration Industry Development Equity Investment Fund Partnership (Limited Partnership)	Sichuan Hongwei Equity Investment Fund Management Co., Ltd.
6	Digital Economy Fund	Sichuan Tianfu Core Cloud Digital Economy Development Fund Co., Ltd.	Sichuan Hongxin Equity Investment Fund Management Co., Ltd.
7	Small and Medium Equity Fund	Sichuan Small and Medium Enterprise Development Equity Investment Fund Partnership (Limited Partnership)	Sichuan Guochen Tianfu Equity Investment Fund Management Co., Ltd.
8	Innovation Financing Fund	Sichuan Sunac Zhuye Investment Development Co., Ltd.	Chengdu Gaotou Yingchuang Power Investment Development Co., Ltd.
9	Sichuan Tourism Fund	Sichuan Tourism Industry Innovation and Development Equity Investment Fund Center (Limited Partnership)	Chengdu New Hope Cultural Tourism Investment Management Co., Ltd.
10	Sichuan Merchants Fund	Sichuan Chuan Shang Fan Xiang Xingye Equity Investment Fund Center (Limited Partnership)	Chengdu Chuan Shang Xingye Equity Investment Fund

11	Hite Fund	Sichuan Haite Aviation Venture Capital Fund Partnership (Limited Partnership)	Management Co., Ltd. Chengdu Boyuan Haite Investment Management Partnership (Limited Partnership)

Table A9 Operation of funds entrusted to Sichuan Development (Holdings) Co., Ltd.

Serial number	Fund Name	Fundraising		Project Investment			Project Exit			
		Cumulative agreed fundraising scale	Fundraising scale of the existing agreement	Cumulative paid-in amount	Cumulative project investment		Revenue		Number of projects	
					Number of projects	Agreement amount	Amount of payment	Withdrawn principal	Profits obtained	Partial withdrawal	Complete Exit
1	Collective Security Fund	119.89	52.08	56.11	twenty two	58.79	54.54	29.38	9.83	4	10
2	PPP Fund (Phase I)	50.00	50.00	13.29	17	17.06	13.08	-	4.01	0	4
3	PPP Fund (Phase II)	10.95	10.95	2.65	1	0.70	0.70	-	0.04	0	0
4	Emerging Industry Fund	7.06	7.06	5.54	5	4.94	4.74	0.30	1.33	1	1
5	Military-Civilian Integration Fund	62.78	44.78	26.08	25	26.94	23.20	7.53	3.88	3	8
6	Digital Economy Fund	28.30	28.30	14.56	18	12.75	9.77	0.50	0.09	0	1
7	Small and Medium Equity Fund	10.10	10.10	5.10	4	2.95	2.85	2.11	1.09	0	4

8	Innovation Financing Fund Sichuan	2.02	2.02	2.02	12	2.00	2.00	0.20	0.02	0	1
9	Tourism Fund Sichuan	12.12	12.12	4.71	6	4.47	4.47	0.15	0.26	0	1
10	Merchants Fund	45.56	14.94	15.21	12	13.79	13.79	5.37	7.12	4	2
11	Hite Fund	2.50	2.50	2.50	9	2.20	2.20	1.05	3.92	3	3

Table A10 Summary of scores of indicators at all levels calculated by the square root method

Total score	**First level indicator**	**First-level indicator score**	**Secondary indicators**	**Secondary indicator score**	**Three-level indicators**	**Weight of three-level indicators**
84.42	Policy objectives	87.17	Policy guidance	87.41	Investment Compliance	95.00
					Major project investment ratio	82.22
					Recommended project investment rate	72.78
			Funding driven	86.71	Fiscal funding magnification	83.61
					Investment ratio of projects within the province	93.61
					Driving social investment	83.33
	Investment Benefits	80.69	Economic Benefits	81.28	Maintain and increase value	83.61
					Return on investment	77.78
			Social Benefits	79.97	Revenue growth of invested companies	81.11
					Tax growth	77.22
	Investment Management	81.51	Fund Raising	78.22	Annual new fundraising	73.61
					Annual funding in place	81.67
					Accumulated funds in place	79.44
			Project Investment	81.23	Annual investment plan completion rate	81.39
					Cumulative investment progress	81.11
			Post-investment management	88.35	Value-added Services	90.00
					Supervision and Management	85.56
			Investment	81.31	Exit Progress	81.94

	Exit	Exit Expectation Realization	80.56

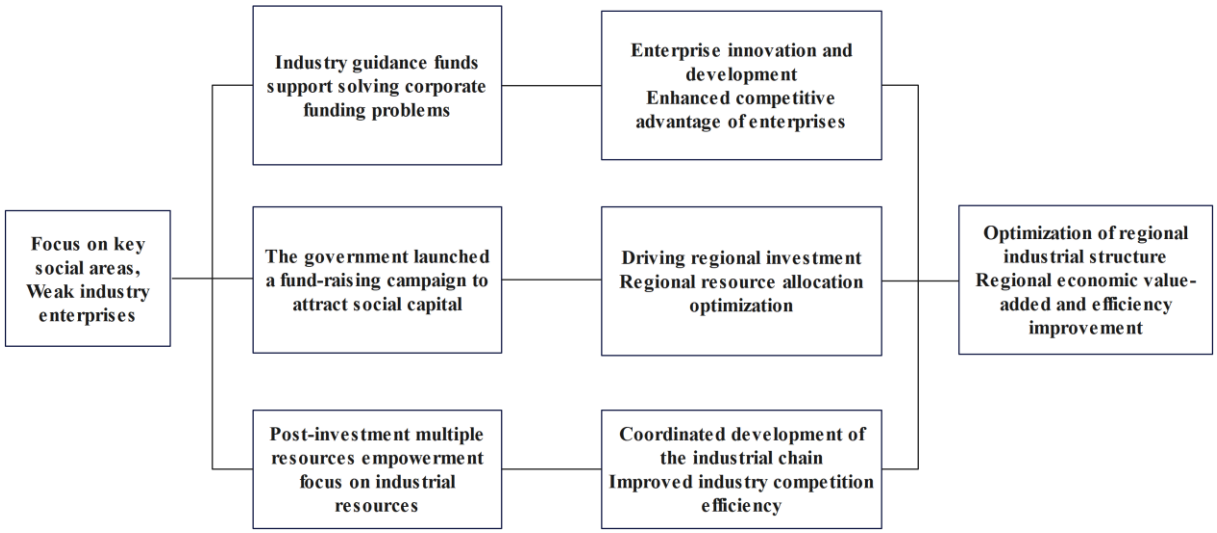


Figure A1 Mechanism of government industry guidance funds

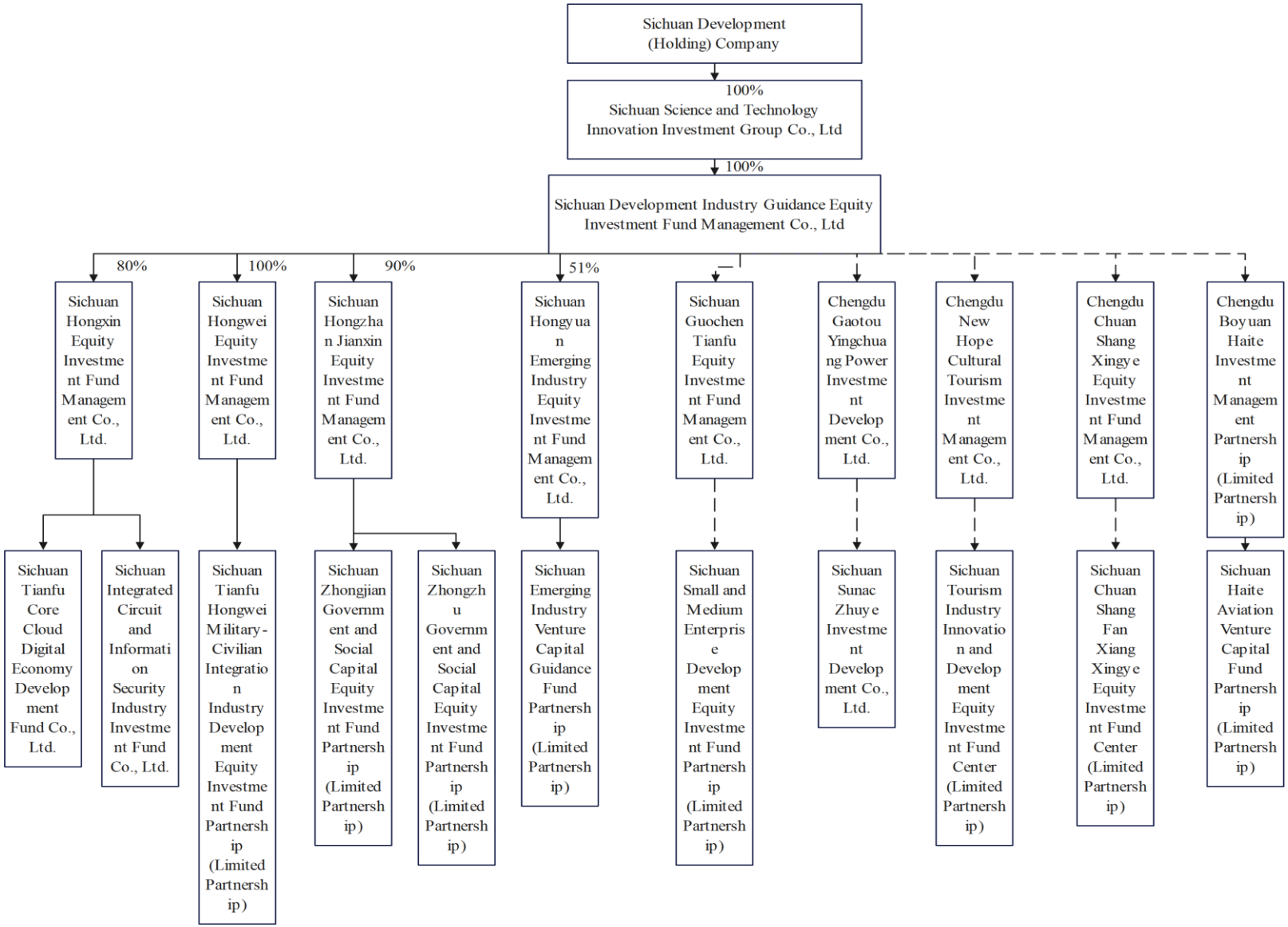


Figure A2 Situation of the Trust Fund of Sichuan Development Guidance Fund

[This page is deliberately left blank.]

Annex B: Questionnaire 1

Expert Questionnaire on the Weight of Performance Evaluation Indicators of Sichuan Provincial Government Guidance Fund

Dear leaders and experts:

Hello! The purpose of this questionnaire survey is to determine the weights of the performance evaluation indicators of the government-guided funds.

Filling method: Score the performance evaluation indicators of the government-guided funds (direct investment funds) managed by each party in pairs. The parameter table is shown in the figure below. You can also choose the middle values 2, 4, 6, and 8 when scoring.

Performance evaluation scoring reference form

Relative importance of indicators	Absolutely important	Obviously important	More important	Slightly important	Equally important	Slightly less important	Less important	Obviously secondary	Absolutely secondary
Relative importance ratio of indicators	9:1	7:1	5:1	3:1	1:1	1:3	1:5	1:7	1:9

First-level indicator evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of “policy objectives” and “investment benefits”	
“Policy objectives” compared to “investment management” indicators	
Comparison of the indicators of “investment efficiency” and “investment management”	

Secondary indicator policy target evaluation form

Compared with the index	Comparison between the indicators of “policy guidance” and “capital driving”
Relative importance ratio	

Secondary indicator investment benefit evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of “economic benefit” and “social benefit”	

Secondary indicator investment management evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of “fund raising” and “project investment”	
Comparison between “fund raising” and “post-investment management” indicators	
Fundraising vs. Exits	
Comparison between “project investment” and “post-investment management” indicators	
Comparison of the indicators of “project investment” and “investment exit”	
Comparison between “Post-Investment Management” and “Investment Exit”	

Three-level indicator policy guidance evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of “investment compliance” and “investment proportion of major projects”	
Comparison between the indicators of “investment compliance” and “recommended project investment rate”	
Comparison of the “Investment ratio of major projects” and “Investment ratio of recommended projects” indicators	

Evaluation form of the driving effect of third-level indicators and funds

Compared with the index	Relative importance ratio
Comparison between the indicators of “fiscal funds magnification multiple” and “investment ratio of projects within the province”	
Comparison between the indicators of “fiscal funds magnification multiple” and “driving social investment”	
Comparison between the “investment ratio of projects within the province” and the “driven social investment” indicators	

Three-level indicator economic benefit evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of “value preservation and appreciation” and “investment return rate”	

Social benefit evaluation form for level 3 indicators

Compared with the index	Relative importance ratio
Comparison between the indicators of “invested enterprise income growth” and “tax growth”	

Evaluation form for fund raising for level 3 indicators

Compared with the index	Relative importance ratio
Comparison of the indicators of "Annual New Funding" and "Annual Funding in Place"	
Comparison between the indicators of "Annual New Fund Raised" and "Cumulative Funds in Place"	
Comparison between the indicators of "Annual funds in place" and "Cumulative funds in place"	

Investment evaluation form for level 3 indicator projects

Compared with the index	Relative importance ratio
Comparison between the "Annual Investment Plan Completion Rate" and the "Cumulative Investment Progress" indicators	

Level 3 index post-investment management evaluation form

Compared with the index	Relative importance ratio
Comparison between the indicators of "value-added services" and "supervision and management"	

Level 3 index investment exit evaluation form

Compared with the index	Relative importance ratio
Exit Progress vs. Exit Expectation Achievement Metrics	

Indicator explanation

Serial number	Index	Explain
1	Investment Compliance	Refers to whether the national and provincial macro development plans and related policies and regulations are implemented.
2	Major project investment ratio	Refers to the proportion of invested projects that are included in provincial major projects
3	Recommended project investment rate	Refers to the proportion of the number of projects recommended by departments, cities and prefecture governments in official documents to the total number of recommended projects.
4	Fiscal funding magnification	Refers to the multiple of the agreed raised funds (including fiscal contributions) and fiscal contributions
5	Proportion of investment in provincial projects	Refers to the fund's provincial investment amount /fund investment amount × 100%
6	Driving social investment	Refers to the multiple of the total project investment amount and the fund investment amount in the same round.
7	Maintain and increase value	Refers to whether the capital provided by the finance department is value-added or not
8	Return on investment	Refers to the annualized rate of return of the fund

9	Revenue growth of invested companies	The operating income growth rate of the invested enterprise in the previous year = (the annual operating income growth rate of enterprise 1 + the annual operating income growth rate of enterprise 2 + ... + the annual operating income growth rate of enterprise n) / n, which is the arithmetic mean of the annual operating income growth rate of the fund's invested enterprises, where n is the cumulative number of invested enterprises
10	Tax growth	Refers to whether the tax revenue of the invested enterprise continued to grow in the previous year
11	Annual new fundraising	Refers to the newly raised funds from January 2023 to December 2023 / the funds raised before 2023
12	Annual funding in place	Refers to the agreed funds actually in place from January 2023 to December 2023 / the agreed funds that should be in place from January 2023 to December 2023
13	Accumulated funds in place	Refers to the actual funds in place as of December 2023 /the agreed fundraising scale × 100%
14	Annual investment plan completed	Refers to the investment funds signed in 2023/ investment assessment targets for 2023
15	Cumulative investment progress	Refers to the agreed investment funds /investable funds raised in the agreed fundraising (excluding cost expenditures such as management fees) × 100%
16	Value-added Services	Refers to the value-added services provided to the invested units in 2023 (number of service projects provided/total number of projects)
17	Supervision and Management	Refers to the supervision and management implementation of the project post-investment management system (number of fully implemented projects /total number of projects)
18	Exit Progress	Indicates whether there is any overdue withdrawal
19	Exit Expectation Realization	Refers to whether the exit meets expectations compared with the investment proposal

Annex C: Questionnaire 2

Sichuan Provincial Government Guidance Fund Performance Evaluation Form

Dear experts:

Hello! We would like to ask you to evaluate the performance of the Sichuan Provincial Government Industry Guidance Fund. Please evaluate the performance of the government guidance funds (direct investment funds) managed by you according to the data of various indicators of the development of the Sichuan Provincial Government Industry Guidance Fund. Please tick the appropriate box in each row. If you have any reasons, please indicate them.

Performance Evaluation Form

Serial number	Index	Indicator Introduction	Excellent	Good	Medium	Poor	Reason
1	Investment Compliance	Refers to whether the national and provincial macro development plans and related policies and regulations are implemented.					
2	Major project investment ratio	Refers to the proportion of invested projects that are included in provincial major projects					
3	Recommended project investment rate	Refers to the proportion of the number of projects recommended for investment by departments, municipalities and prefecture governments in official documents to the total number of recommended projects.					
4	Fiscal funding magnification	Refers to the multiple of the agreed raised funds (including fiscal contributions) and fiscal contributions					
5	Proportion of investment in provincial projects	Refers to the fund's provincial investment amount/fund investment amount × 100%					
6	Driving social investment	Refers to the multiple of the total project					

		investment amount and the fund investment amount in the same round.					
7	Maintain and increase value	Refers to whether the capital provided by the finance department is value-added or not					
8	Return on investment	Refers to the annualized rate of return of the fund					
9	Revenue growth of invested companies	The operating income growth rate of the invested enterprise in the previous year = (the annual operating income growth rate of enterprise 1 + the annual operating income growth rate of enterprise 2 + ... + the annual operating income growth rate of enterprise n) / n, which is the arithmetic mean of the annual operating income growth rate of the fund's invested enterprises, where n is the cumulative number of invested enterprises					
10	Tax growth	Refers to whether the tax revenue of the invested enterprise continued to grow in the previous year					
11	Annual new fundraising	Refers to the newly raised funds from January 2023 to December 2023/the funds raised before 2023					
12	Annual funding in place	Refers to the agreed funds actually in place from January 2023 to December 2023/the agreed funds that should be in place from January 2023 to December 2023					
13	Accumulated funds in place	Refers to the actual funds in place as of December 2023/the agreed fundraising scale × 100%					
14	Annual investment plan	Refers to the investment funds signed in 2023/investment					

	completion rate	assessment targets for 2023					
15	Cumulative investment progress	Refers to the agreed investment funds/investable funds raised in the agreed fundraising (excluding cost expenditures such as management fees) × 100%					
16	Value-added Services	Refers to the value-added services provided to the invested units in 2023 (number of service projects provided/total number of projects)					
17	Supervision and Management	Refers to the supervision and management implementation of the project post-investment management system (number of fully implemented projects/total number of projects)					
18	Exit Progress	Indicates whether there is any overdue withdrawal					
19	Exit Expectation Realization	Refers to whether the exit meets expectations compared with the investment proposal					