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The relationship between REITs industry characteristics and project performance: The moderating role of macroeconomic fluctuations

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THE RELATIONSHIP BETWEEN REITS INDUSTRY CHARACTERISTICS AND PROJECT PERFORMANCE: THE MODERATING ROLE OF MACROECONOMIC FLUCTUATIONS

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I hereby declare that this dissertation is my original work and it has been written by me in its entirety. I have duly acknowledged all of the sources of information which have been used in this dissertation.

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ABSTRACT

As a distinct investment vehicle, Publicly Listed Real Estate Investment Trusts (REITs) projects enable real estate projects to be listed on the stock market. This study begins with the industry attributes of the underlying assets of Publicly Listed REITs projects. Using econometric methods, it analyzes the variances in market performance between growth and defensive REITs, based on annual data from 1,674 REITs products in the United States from 2005 to 2022 and 27 listed REITs in China from Q3 2021 to Q1 2023. The study also leverages the data from China to explore the moderating effects of macroeconomic factors such as interest rates, inflation, and stock market volatility on these relationships.

In this research, the underlying assets of Publicly Listed REITs are categorized into growth and defensive types. Growth assets refer to investment targets with developmental potential, marked by high risk and high returns. In contrast, defensive assets imply investment in stable and reliable assets, usually backed by national policies and government subsidies. Empirical results indicate that growth REITs outperform defensive REITs regarding net profit and earnings per share but are associated with greater market volatility. Additionally, the study uncovers the negative moderating effect of interest rates on the profitability of growth REITs, suggesting their earning capacities might be constrained in high-interest-rate environments. In contrast, the impacts of

inflation and stock market volatility on the performance of REITs are not significant.

This research provides practical implications for investors on effectively allocating assets between growth and defensive REITs, emphasizing the importance of making investment choices based on individual risk preferences and market conditions. Simultaneously, it offers insights for policymakers on utilizing REITs as a financing channel for urbanization and infrastructure development.

Despite its valuable insights, this study has limitations, including the constraints of data, not fully considering all factors that could affect the performance of REITs, and the limited sample period. Future research could expand in these areas to achieve a more comprehensive and deeper understanding of the REITs market.

Keywords: growth REITs, defensive REITs, macroeconomic fluctuations, REITs project performance

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Chapter 1 Introduction

1.1 Background

Real Estate Investment Trusts (REITs) are trust funds that aggregate investor capital through issuing fund shares, using real estate infrastructure projects as underlying assets. Managed by specialized institutions, REITs distribute investment returns to investors. As a unique investment tool, REITs transform real estate into liquid securities, essentially constituting the listing of real estate projects. Since the first issuance of REITs in the United States in 1960, the global development momentum has been robust. According to data from the FTSE Global Equity Index, from 1972 to the present, REITs have delivered an annualized return of 9.70%, slightly lower than the NASDAQ Index at 10.23% but higher than the S&P 500 Index at 7.81%. Overall, the REITs market demonstrates stable performance with considerable long-term returns, characterized by high yields and low drawdowns. REITs also meet the needs for portfolio liquidity (Akinsomi et al., 2016; Kola & Kodongo, 2017; Tsai & Chiang, 2013) and convenience in investment exit, even forming a potent alternative to stocks and bonds (Niskanen & Falkenbach, 2010), becoming an important choice for investors to diversify investments and obtain stable returns (Liow & Song, 2022). Over 40 countries and regions have launched REITs, with a total market value exceeding $2.2 trillion.

The operation model of U.S. REITs is the most mature, dominating the global market in terms of the number and scale of products. As of the end of 2022, the U.S. had issued 232 REITs with a total market value of $1.28 trillion. Regarding asset types, infrastructure REITs hold the largest market value,

accounting for 17.4%. Residential and industrial REITs comprise 15.5% and 11.4% of the market value, respectively. Compared to the U.S., the Asian REITs market started later. The 2021 Asian Real Estate Investment Trust Report showed that as of the end of 2021, there were 198 active REITs in Asia with a total market value of $304.1 billion. Japan, Singapore, and Hong Kong accounted for 48.6%, 28.1%, and 9.9% of this market value, respectively. Regarding underlying asset types, the highest proportion in Asian REITs is comprehensive properties, accounting for 45%, with office buildings, industrial, and retail properties also holding significant shares. Mainstream foreign REITs projects are primarily concentrated in relatively marketized sectors.

The securitization of real estate assets in China started later and has significant localized characteristics. In 2021, China's first batch of Publicly Listed REITs was officially traded. As of October 2023, 29 Publicly Listed REITs have been listed, with a total market value of 100 billion yuan. Regarding underlying asset types, Chinese REITs projects focus on infrastructure "gap-filling" projects supported by the state. This includes highway, industrial parks, warehouse logistics, and green projects, mainly centred around infrastructure construction (Liu, 2020; Wu, 2021; Li et al., 2020; Cai et al., 2021), characterized by high safety and stability. Notably, since the end of 2022, China has accelerated the development of REITs, beginning to extend REITs projects into more marketized sectors such as long-term rental housing consumer and commercial real estate.

Due to differences in underlying assets, the stability of returns varies among different types of REITs projects. Research has found that the specific sub-industry of the underlying assets held by REITs projects determines

fundamental differences in their operation and returns, leading to variations in investment returns and volatility patterns (G. R. Mueller & Laposa, 1995; Radcliffe et al., 1974). Empirical studies based on U.S. data have shown that REITs projects with traditional infrastructure as underlying assets exhibit stronger stability and better resistance to sudden risks (Liu Jianli et al., 2023). Conversely, more market-oriented assets possess higher potential growth and greater value appreciation, attracting investor attention. However, existing literature lacks a deeper exploration of safety and growth characteristics, particularly in China's emerging REITs market.

Simultaneously, as a financing instrument, REITs embody the dual attributes of debt and equity and are inherently influenced by macroeconomic fluctuations. On the one hand, the dividend yields of REITs are affected by real interest rates (Devaney, 2001; Kola & Kodongo, 2017) and inflation (Chan et al., 1990; Chatrath & Liang, 1998), with the correlation coefficient between REITs' dividend yields and the yield on 10-year U.S. Treasury bonds being as high as 0.75 since 1972. On the other hand, the capital appreciation component of REITs is primarily influenced by economic cycles and the operational status of underlying assets, with the correlation coefficient between REITs' capital gains and the S&P 500 index reaching 0.61 (Conover et al., 2000; Patel & Olsen, 1984). Moreover, various global events can easily trigger interactions among financial markets (Adekoya et al., 2021; Umar et al., 2021).

China's REITs market is still in its infancy, and the return on REITs investment often experiences significant fluctuations due to multiple factors. While existing research has discussed the factors influencing volatility in China's stock market, the REITs market differs from the stock market, and their

correlation is not strong (J. Anderson et al., 2021). Furthermore, the development of China's REITs market has distinct local characteristics, focusing more on safe assets such as infrastructure and public utilities. These aspects require deeper exploration. This study, grounded in the Chinese context, investigates the relationship between industry characteristics and the performance of REITs projects and further explores the moderating role of macroeconomic fluctuations, aiming to supplement the relevant literature while providing references for investors.

1.2 Significance

REITs essentially represent the public listing of real estate projects. Their inception enables ordinary investors to participate in large-scale real estate investments, earning dividend and interest income (Habbab & Kampouridis, 2024). As REITs satisfy both diversification and convenience in investment portfolios, they have gained considerable recognition among investors since their first U.S. listing in 1960. In 2021, China officially launched Publicly Listed REITs. After three years of exploration, the publicly listed REITs market is emerging as another significant financing market in China, alongside stocks and bonds. As a novel concept in China, the development of the Chinese REITs market exhibits unique characteristics. This study focused on the Chinese context, holds significant theoretical and practical implications.

1.2.1 Theoretical Significance

Firstly, by distinguishing REITs projects into defensive and growth assets based on their inherent characteristics, this study contributes to a deeper understanding of the operational mechanisms of REITs and the inherent

theoretical logic driving their market performance. Existing literature has classified assets based on industry types such as office, hospitality, retail, industrial, infrastructure, and healthcare (Aguilar et al., 2018). However, simple classification by industry type seems insufficient to explain the performance differences in REITs projects. Research shows a positive link between the defensive characteristics of underlying assets and the long-term stability and returns of REITs (Candelon et al., 2021). The growth potential of underlying assets is closely related to the market value increase and long-term performance of REITs, where high-quality assets help reduce volatility, attracting more long-term investors (Mansley et al., 2020; Newell & Marzuki, 2022). Therefore, analyzing REITs performance based on the growth and defensive logic of underlying assets enhances understanding of their performance determinants and expands existing literature.

Secondly, studying the theoretical logic of REITs performance helps understand the interaction between REITs and other investment instruments, such as stocks and bonds. Unlike direct real estate investment, U.S. REITs' returns are more akin to stocks (Corgel et al., 1995; Han & Liang, 1995). However, compared to stocks, publicly listed REITs have a more limited business scope, growth potential, and smaller market fluctuations. In China, REITs often form part of investment portfolios alongside stocks and bonds (Fang et al., 2017), to enhance returns and reduce risk (Günther et al., 2022; Razak, 2023; Zulch, 2022). Understanding the interplay across multiple markets is thus crucial. This study contributes to understanding the correlations and dynamic interactions between REITs and other asset categories, supplementing

existing literature.

Thirdly, analyzing the moderating effect of macroeconomic fluctuations on the relationship between REITs industry characteristics and project performance expands research on how macroeconomic fluctuations impact investment markets. Previous studies have shown that REITs' performance is influenced by macroeconomic factors (N.-F. Chen et al., 1986; de Mendonça & Díaz, 2023; M. Lee, 2006), including economic cycles (Salisu & Vo, 2020), inflation (Blanchard, 2019), exchange rates (Kodongo & Ojah, 2014), financial crises, and interest rates (Naranjo & Ling, 1997). Building on this, our study's focus on moderating effects highlights the complexity of REITs as a unique investment tool, significantly extending existing research.

1.2.2 Practical Significance

Firstly, REITs offer vast developmental potential as a tool for revitalizing existing assets. For policy makers, the findings of this study are crucial for effectively utilizing REITs to support urbanization and infrastructure construction. Additionally, given the Chinese government's substantial funding needs for urbanization and infrastructure and increasingly narrow financing channels, issuing REITs helps reduce local government debt pressures and raise funds for urban development. It aligns with the policy logic of revitalizing existing assets through REITs. Thus, this research is significantly valuable for policy makers in steadily expanding the scale and asset types of publicly listed infrastructure REITs markets, fostering a virtuous cycle of revitalizing existing assets and spurring new investments (Zhang & Li, 2023; Qin, 2023).

Secondly, this study clarifies the mechanisms affecting REITs project performance based on the underlying asset logic, aiding investors in

comprehending the investment rationale of REITs.

Clarifying the logic of underlying assets in REITs investments makes the return on investment more predictable, thus attracting more investment institutions and investors and expanding the investment scale and attractiveness of China's REITs market. Notably, this study conducts a detailed comparative analysis of the incentive mechanisms for growth-oriented and safety-oriented REITs. The study highlights that through exploring innovative models, growth-oriented REITs actively seek market breakthroughs, forming an incentive mechanism characterized by professional operations and market-oriented approaches. In contrast, safety-oriented REITs, strongly tied to public welfare, are committed to future cash flow stability, adopting a relatively cautious stance in pursuing growth and innovation. Especially amid widespread concerns about deflation, the conclusions of this study are significantly enlightening for investors in selecting quality investment targets. Finally, the study provides more practical guidance for individual and institutional investors. From the perspective of industry characteristics, defensive REITs projects embody more of a bond nature, with relatively more minor fluctuations.

Conversely, growth REITs projects reflect more of an equity nature, with higher net profits and earnings per share. Considering investor preferences, a preference should be given to defensive REITs assets for investments seeking predictable returns and capital preservation, whereas investors seeking high returns and accepting high risks might lean towards growth REITs assets. Additionally, given the impact of macroeconomic fluctuations causing differences in returns, investors must adjust their portfolios according to macroeconomic conditions to construct a healthier REITs investment portfolio,

better-balancing risk and investment returns.

1.3 Arrangement

This study comprises seven main chapters to thoroughly analyze and evaluate China's REITs market's current state and potential.

Chapter 1, the introduction, mainly discusses the background and significance of the study, elucidates the research's purpose and importance, and provides an overview of the overall content arrangement.

Chapter 2 reviews the literature, deeply analyzing domestic and international research on REITs project performance valuation, the impact of internal management on project performance, the relationship between macroeconomic fluctuations and REITs project performance, and how REITs industry classification affects project performance.

Chapter 3 discusses international experiences and China's practices in the REITs field, comparing the development paths of REITs markets in different countries and the uniqueness of the Chinese market.

Chapter 4 presents the theoretical analysis and research framework, proposing a theoretical analysis for the safety and growth characteristics of underlying assets in Chinese REITs projects, exploring the relationship between REITs industry characteristics and project performance, and analyzing the potential impact of macroeconomic fluctuations on these relationships.

Chapter 5 covers research design, including data sources, measurement methods for variables, and specific steps for model construction, laying the groundwork for empirical analysis.

Chapter 6 presents the results of the empirical study, analyzes the data, and tests research hypotheses, exploring the factors affecting Chinese REIT projects'

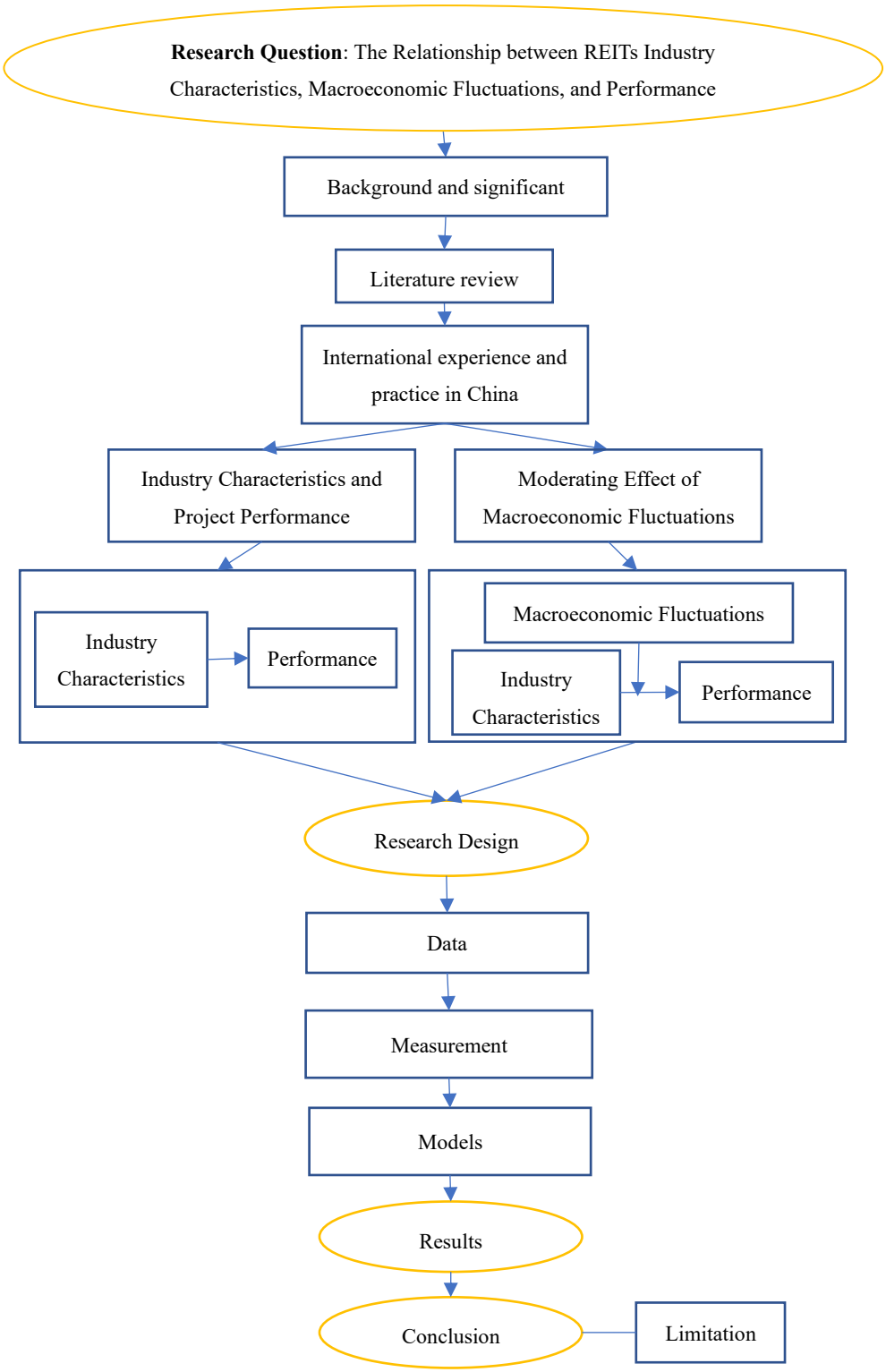
performance.

Chapter 7 summarizes the study's main findings, discusses its limitations and future research directions, and offers valuable insights and recommendations for investors and policymakers.

Through this structural arrangement, the study aims to provide a comprehensive, systematic analytical framework for understanding China's REITs market, offering practical insights for investors, managers, and policymakers. The conceptual framework of this study is illustrated in Figure 1.1.

Figure 1.1

Research Approach Diagram



Note. Self-compilation

Chapter 2 Literature Review

This chapter first explores the valuation studies of REITs project performance, focusing on analyzing different performance evaluation methods in existing literature and their applicability. Subsequently, the chapter elaborates on the impact of internal management on REITs project performance, covering management efficiency, decision-making processes, and the critical role of internal governance structures in project success. Moreover, the chapter will also review the impact of macroeconomic fluctuations on REITs project performance, including how economic cycles, interest rate changes, and market volatility shape the performance of REITs. Finally, the chapter discusses the classification of the REITs industry, examining how different REITs affect project performance. Through this series of literature reviews, this chapter aims to build a solid theoretical foundation, providing necessary background and theoretical support for subsequent chapters.

2.1 Valuation Studies of REITs Project Performance

In publicly listed REITs performance valuation, existing research primarily focuses on the measurement methods for core indicators like cash flow and value ratios. Regarding cash flow accounting, the market price to Funds From Operations (FFO) ratio is a common valuation indicator for American REITs (Duan, 2020). Practically, the Net Cash Flow (NCF) method of REITs projects, measuring all operating income and expenses, is deemed a suitable valuation approach as it can reasonably assess property cash flows and their stability. Additionally, when employing market methods for valuation, pre-tax indicators such as EBIT, EBITDA, pre-tax cash flows, or post-tax cash flow NOIAT (Net

Operating Income After Tax) value ratios, or PE value ratios should be chosen (Zhao et al., 2020). Existing research discusses the predictability of REITs returns using multifactor models with different sample periods. Studies have found that economic monetary policy tools and sentiment indicators are the most potent predictors of REITs returns (Akinsomi et al., 2016). Furthermore, research has used returns on small-cap value stocks, small-cap growth stocks, large-cap stocks, bonds, and private real estate to estimate the asset returns of individual REITs (R. Anderson et al., 2005).

2.2 Impact of Internal Management on REITs Project Performance

Existing research indicates that internal management factors impacting the performance of REITs include the management's debt ratio, size, turnover rate, and asset growth rate. Combined with the U.S. Real Estate Investment Trust Act stipulations, existing studies have analyzed the returns of U.S. REITs and their influencing factors. The results suggest that the level of operational management by the management team plays a pivotal role in enhancing the returns of REITs (Voyer & McIntosh, 2013).

2.2.1 Managers and Investors

From the perspective of managers, the presence of institutional investors actively improves corporate internal management. While constraining shareholder behaviour, institutional investors help ensure good investment returns, thereby driving up the market price of REITs (R. I. Anderson et al., 2002).

From the investor's perspective, investor sentiment significantly impacts the size of REITs returns (S. Chen et al., 2020; W. Y. Lee et al., 2002). When

investors are generally optimistic, they actively participate in the capital market, causing fluctuations in the REITs market (Benefield et al., 2009) and further increasing REITs yields. Conversely, when investors are generally pessimistic, the yields of REITs are lower (Chiang & Tsai, 2023; Lin et al., 2009). Generally, the REITs market is more responsive than pessimism during periods of investor optimism (Ding et al., 2004).

2.2.2 Debt Ratio

Using the DEA model, existing research on U.S. REITs risk control from 1992-1996 shows that high corporate asset-liability ratios negatively impact REITs performance (R. I. Anderson et al., 2002). Empirical research based on data from the U.S. financial crisis of 2007-2009 indicates that REITs projects with high debt ratios experienced more significant declines than those with low debt ratios (Newell et al., 2013). Research based on Australian data suggests that a company's debt ratio also negatively impacts its earnings (Ratcliffe & Dimovski, 2013).

2.2.3 Size and Turnover Rate

Existing research finds that the size influences REITs returns, like stocks. Studies have found that large REITs are more stable in performance than smaller ones (Han & Liang, 1995). Research also shows that compared to small REITs products, large REITs products exhibit more significant development advantages in both yields and cost expenses (Linneman et al., 1997). However, considering risk, small companies often have higher returns than large ones (McIntosh et al., 1991; Nelling & Gyourko, 1998). Of course, once the size of REITs exceeds a specific range, it may lead to a decline in overall investment

returns due to a lack of available quality investment projects. Therefore, REITs can control their size to avoid a reduction in yields. Additionally, the efficiency and liquidity of REITs also affect their unsystematic risk and, in turn, impact their performance (Chaudhry et al., 2004).

2.3 The Impact of Macroeconomic Fluctuations on REITs Project Performance

2.3.1 Economic Cycles

Macroeconomic factors play a major role in influencing REITs' returns. Research indicates that a nation's macroeconomic situation, inflation rates, and interest rate levels all impact the investment performance of REITs (Ghosh et al., 2014). Macroeconomic factors have a profound impact, especially for REITs, which are investment tools based on real estate. Empirical research based on U.S. data from 1971-2007 shows an interaction between the REITs market, the stock market, and the real economy, with REITs demonstrating similar trends to industrial production growth (Laopodis, 2009).

2.3.2 Interest Rate

There is a correlation between the performance of REITs projects and interest rates. The performance of REITs is strongly correlated with the state of the real estate market, and studies based on UK real estate industry data show a significant correlation between real estate stock returns and long-term interest rates (Brooks & Tsolacos, 2010). Interest rate factors are crucial in determining the pricing of REITs projects (K. Liow et al., 2006; McCue & Kling, 1994). More detailed studies indicate that REITs' returns are affected by interest rate hikes and are more sensitive to the spread between long and short-term Treasury

bills than the credit spread of long and short-term corporate bonds (Swanson et al., 2002).

Some studies further divide monetary policy into predictable and unpredictable parts, using a VAR model to analyze the relationship between interest rates and REITs performance. Results show that the impact of interest rates on REITs is significant in the initial periods but converge to zero in the latter periods, and the impact on REITs yields during unpredictable periods is much greater than during predictable periods (Chang, 2011). An empirical study using Australian data and an AR-GARCH model found that the returns of REITs projects are highly correlated with the stock market (Rong & Trueck, 2015).

2.3.3 Inflation

Ever since Fama and Schwert first discussed the relationship between asset returns and inflation (Fama & Schwert, 1977), empirical studies on REITs yield data from seven countries across Europe, Asia, and the Americas have found a negative correlation between the performance of REITs in Japan and Switzerland and inflation, i.e., higher inflation rates correlate with lower REITs performance (Liu et al., 1997). Some studies use the "inflation illusion" concept to explain the negative correlation between REITs' performance and inflation (Hardin et al., 2012).

Other studies argue that there is no significant correlation between REITs performance and inflation or that inflation only causes minor fluctuations in REITs (Park et al., 1990). Research on U.S. REITs indicates that overall inflation from 1991-2002 had no significant impact on REITs' performance: regardless of high or low inflation, REITs' yields were not significantly affected (Simpson et al., 2007). Another empirical study based on U.S. data also shows

that inflation volatility has a negligible impact on REITs performance (Payne, 2003).

2.3.4 Stock Market Fluctuations

Many literatures have studied the interconnection between REITs and stock markets (Glascock et al., 2000). Studies have found that fluctuations in REITs prices are closely related to changes in stock prices, exhibiting a long-term equilibrium trend (Glascock et al., 2000; Yung & Nafar, 2017).

2.3.5 Monetary Policy

Monetary policy can be divided into predictable and unpredictable parts, which significantly impact the performance of REITs projects (Chang, 2011). Compared to the predictable part of monetary policy, the unexpected part has a greater impact on REITs performance (Bernanke & Kuttner, 2005; Bredin et al., 2007). Findings from data from periods of economic recession indicate a significant correlation between monetary policy and REITs returns (R. I. Anderson et al., 2012). Monetary tightening leads to reduced monetary liquidity, thus affecting the yield of REITs (Ewing & Payne, 2005). An empirical study using data from 2005-2013 also showed that restrictive monetary policy in China hurts the yields of REITs in Hong Kong (Ju & Chen, 2015).

2.3.6 Foreign Exchange Rates

Exchange rate fluctuations also significantly affect the performance of REITs projects. Studies have shown that the appreciation of the U.S. dollar leads to a decrease in the returns of U.S. REITs, particularly in sectors such as healthcare, residential, and retail (Kola & Kodongo, 2017).

2.3.7 Real Estate Market

The uncertainty of real estate market risk significantly impacts the performance of REITs projects (Ling et al., 2019). Existing studies have categorized the risks in the U.S. REITs market into ten aspects, using hierarchical analysis and binary semantics for risk assessment, finding higher weights for policy, principal-agent, investment, and legal risks. Moreover, the research identified that the pricing of real estate projects also impacts the performance of REITs projects (Chen, 2006).

2.4 The Business Types of REITs Projects and Their Relationship with Project Performance

2.4.1 Business Types of REITs Projects

The business types of REITs projects refer to the industry classification of the underlying assets of the REITs projects. Globally, REITs markets mainly include office, lodging, retail, industrial, infrastructure, medical, and other types (Aguilar et al., 2018).

In mature REITs markets like the United States, REITs projects are classified based on the type of real estate they invest in, their operational structure, and market capitalization. If classified by the type of real estate, categories generally include residential, commercial, and industrial real estate REITs (Chong & Phillips, 2022). If classified by operational structure, they can be divided into equity REITs and mortgage REITs. By market capitalization, they can be categorized into large, medium, and small REITs (Rehman et al., 2022).

In China, the business types of REITs are sometimes classified by asset

attributes into commercial real estate, office and residential, infrastructure, etc., and sometimes by product type into manufacturing, retail, finance, healthcare, etc. If classified by operational structure, Chinese REITs projects can also be divided into equity and mortgage REITs.

Regarding regional distribution, logistics REITs are mainly located in the five major economic city clusters. Office REITs focus on core areas of first-tier cities, and commercial real estate REITs concentrate on first-tier and new first-tier cities. In contrast, shopping centre REITs are relatively dispersed, mainly located in densely populated areas of commercially developed cities (Ding, 2020).

2.4.2 Performance Differences Across Industries

The fundamental operational and revenue differences of the underlying assets held by REITs result in varied investment characteristics, rates of return, and revenue volatility. An empirical study based on data from 1968-1973 indicates that mortgage REITs outperformed the S&P 500 index, whereas equity and mixed REITs underperformed compared to the S&P 500 (Radcliffe et al., 1974).

Performance disparities become evident across different underlying assets. Segmenting U.S. REITs into six categories — diversified, retail, office, healthcare, hotel, and residential — revealed substantial market performance variations across these categories, especially during financial crises, where healthcare and diversified REITs were less impacted (Zhou & Zhao, 2021). A study based on data from Beijing, Shanghai, Shenzhen, and Chongqing, China indicated lower investment risks in office buildings than residential properties (Pang & Gong, 2011).

Given the performance differences across REITs sectors, existing studies have also discussed diversification strategies in REITs portfolios. It has been shown that combining different types of REITs, such as office and residential properties, can achieve diversification and risk mitigation (Miles & McCue, 1982). However, other research suggests that diversification across asset types can negatively impact investment value, with property location and type diversification increasing administrative costs and borrowing costs while reducing liquidity (Capozza & Seguin, 1999).

2.5 Comments of Literature

Existing literature has explored factors influencing the performance of REITs, including internal management, macroeconomic fluctuations, investor sentiment, stock market structure, and business types. While these studies recognize the heterogeneity in performance due to industry differences, they lack insights into the theoretical logic behind this heterogeneity.

Moreover, existing research primarily focuses on developed markets like the United States, Japan, Singapore, and Hong Kong, with limited attention to the emerging Chinese REITs market. China's REITs market has unique characteristics as an emerging economy undergoing economic transformation. Firstly, from the perspective of underlying assets, Chinese REITs are concentrated in large-scale infrastructure projects. Secondly, given the government's strong influence on macroeconomics and capital markets in China, a politically driven economy, the decision-making logic behind the performance of REITs, a market with considerable government intervention, remains thoroughly analyzed. This study, grounded in the Chinese context and based on both theoretical deduction and empirical practices of Chinese REITs, extracts

the theoretical logic between industry characteristics and project performance of REITs and empirically tests it. Considering the greater macroeconomic volatility in China, an emerging economy, and its unique impact on the capital market, this study empirically examines the moderating effect of macroeconomic fluctuations on the relationship between industry characteristics and project performance, thereby addressing gaps in the existing literature.

Chapter 3 International Experience and Practice in China

As an investment vehicle, Real Estate Investment Trusts (REITs) have demonstrated their potential and influence globally by providing investors with indirect opportunities in real estate. China, as the world's second-largest economy, has also been actively exploring and implementing practices in REITs. This chapter focuses on the development experiences of international REITs markets. It introduces the practices of Chinese REITs, aiming to closely integrate theory with practice and provide an empirical foundation for the overall study. In the international experience section, the chapter delves into the overall development status of global REITs markets, including the total issuance of REITs across different countries and regions, as well as the performance and effectiveness of various project types (such as commercial, residential, industrial, etc.) in different markets. This part aims to provide a global perspective for understanding the Chinese REITs market by comparing and analyzing the diversity and maturity of international REITs markets. In the section on China's practice, the chapter focuses on the development history of the REITs market in Mainland China, including its origins, evolution, and current status. Additionally, it will explore the characteristics of publicly listed REITs projects in China, such as asset structure, management styles, and market performance. These analyses will help reveal the uniqueness and potential challenges of the Chinese REITs market, providing a solid practical background for the theoretical analysis and empirical research in subsequent chapters.

3.1 International Experience of REITs

3.1.1 Total Issuance of International REITs

Currently, 43 countries and regions worldwide have introduced REITs, with a total market size exceeding $2 trillion, of which the U.S. market accounts for more than half. The U.S., as the birthplace and largest market of REITs globally, exhibits significant market maturity. As early adopters of REITs, Asia, Singapore, Japan, and Hong Kong demonstrate strong market representation.

From 2001 to 2020, the U.S., Japan, Singapore, and Hong Kong have collectively issued 332 REITs projects. Specifically, the U.S. issued 233, Japan 57, Singapore 30, and Hong Kong 12. The issuance details of these countries and regions are listed in Table 3.1.

Table 3.1

Statistics on REITs Issuance by Year and Country/Region

Year	US	Japan	Singapore	HongKong	Subtotal
2001	98	0	0	0	98
2002	100	1	0	0	101
2003	102	5	1	0	108
2004	102	6	2	0	110
2005	113	12	2	0	127
2006	117	15	5	2	139
2007	119	23	6	4	152
2008	118	27	11	6	162
2009	118	27	13	7	165
2010	124	27	13	7	171
2011	134	27	13	8	182
2012	144	28	15	9	196
2013	151	29	17	9	206
2014	171	33	18	11	233
2015	184	37	23	11	255
2016	196	43	23	11	273
2017	200	50	27	11	288
2018	210	53	27	11	301
2019	220	57	29	11	317

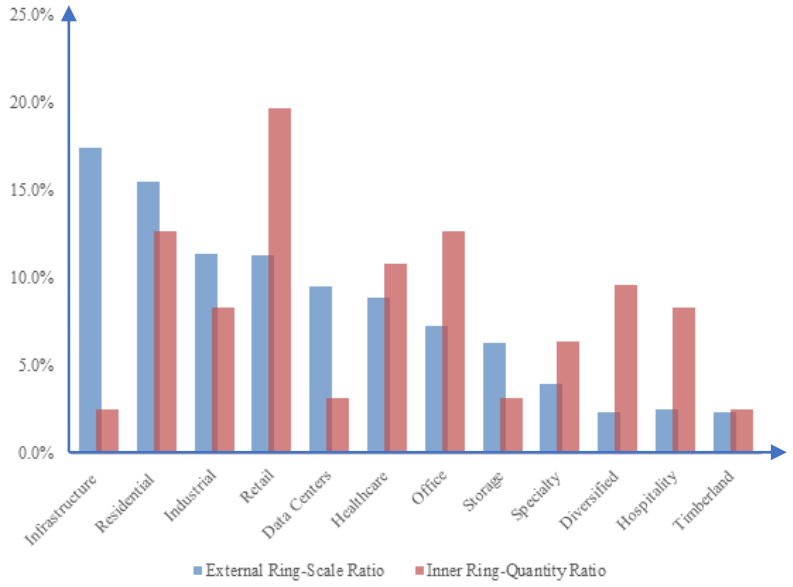
Year	US	Japan	Singapore	HongKong	Subtotal
2020	222	57	30	11	263
2021	230	58	30	12	273
2022	232	59	32	13	279

Data Source: Wind Database

Regarding types, U.S. REITs are predominantly equity-based. After nearly half a century of development, the proportion of equity REITs in the U.S. listed REITs market has steadily grown. As of the end of 2022, the number of U.S. listed equity REITs reached 162, with a total market value of $1.21 trillion, accounting for 95% of the total REITs market value. From the perspective of underlying assets, U.S. equity REITs cover a wide range of assets, encompassing 12 major categories, including infrastructure, residential, industrial, and retail. Among these categories, retail and residential REITs have the largest proportion, accounting for 36%. This data reflects the diversity of underlying assets in the U.S. equity REITs market and their significant position in the overall market.

Figure 3.1

Market Value Proportion of Different Types of U.S. REITs



Data Source: Nareit

In the Asian region, the REITs market has developed relatively late but has shown significant growth, with a market value exceeding 300 billion U.S. dollars, and its underlying assets exhibit diversity. Regarding asset types, the highest proportion of Asian REITs is in mixed-use properties that include various types of assets, accounting for 45%. Additionally, office buildings and industrial and retail assets hold significant proportions.

Particularly noteworthy is the high degree of internationalization of Singapore's REITs market. As of the end of 2022, over 90% of Singapore REITs held overseas assets, with 17 REITs specifically owning foreign assets mainly distributed in countries such as Australia, China, Japan, and the United States, showcasing their wide geographical distribution. This characteristic highlights the globalization trend of Singapore's REITs market and reflects its unique position in the Asian REITs market.

3.1.2 International REITs: Asset Types and Performance

From the perspective of international REITs markets, the investment asset types display considerable richness, covering high-value asset categories like office, residential, retail, industrial, infrastructure, and healthcare. These asset types show the diversity of REITs as an investment tool and reflect their adaptability in various markets and economic environments.

Overall, REITs in different countries and industries exhibit certain degrees of correlation. In a multidimensional comparison, distinct performance differences are observable among different countries and industry types. These variances could be influenced by a range of factors, including geopolitical factors, levels of economic development, market maturity, and specific industry trends.

There is a certain degree of synchrony in the performance of REITs projects across different countries and regions. For instance, during the 2008 financial crisis, the average performance of most REITs projects in various countries and regions was negative. Similarly, in 2020, due to the impact of the COVID-19 pandemic, the average performance of these projects declined as well. This global synchronicity underscores the interdependence of international financial markets and the effect of global economic events on REITs performance.

On a segmented market level, there are significant differences in investment performance across specific industry types in various countries or regions. For example, U.S. REITs projects have shown strong performance in the "Industrial and Infrastructure" and "Healthcare" sectors while being relatively weaker in the "Retail" and "Office" sectors. Japanese REITs excel in

"Office" and "Residential" sectors but perform poorly in "Retail" and "Healthcare." Singapore's REITs are notably strong in the "Other" and "Healthcare" sectors but weaker in the "Industrial and Infrastructure" sector, with a lack of investment in the "Residential" sector. As for Hong Kong, REITs projects excel in the "Retail" sector but are less competitive in "Residential" and "Other" sectors and lack investment in "Industrial and Infrastructure" and "Healthcare" sectors.

These observations highlight the uniqueness of each country's REITs market and indicate the varying performance of different sectors in global investments.

3.2 The Development History of China Mainland's REITs Market

China's REITs market has evolved over nearly two decades, from its initial stages to formal implementation. Throughout this period, national policies have continuously propelled its growth, coupled with innovative market product practices. The development of China's REITs market can be summarized in the following four stages:

3.2.1 Exploration and Research Phase (2004-2007)

This phase began on January 31, 2004, when the State Council of China issued the "Several Opinions on Promoting the Reform, Opening and Stable Development of the Capital Market" (Guofa [2004] No. 3 Document), marking the official start of exploring asset securitization business in China. During this period, the Chinese REITs market was mainly in the exploration and research stage, with no official REITs products listed domestically. However, overseas REITs investing in Mainland China's assets began to emerge. Notably, on

December 12, 2005, Yuexiu Real Estate Investment Trust (code: 00405. HK) was approved for listing on the Hong Kong Stock Exchange and began trading on December 21, becoming the world's first listed real estate investment trust investing in Mainland China's property, marking the preliminary debut of China's REITs market on the international stage.

3.2.2 Research and Demonstration Phase (2007-2014)

In 2007, the People's Bank of China, along with the China Banking Regulatory Commission, China Securities Regulatory Commission, and other departments, established the "REITs Pilot Management Coordination Group" to jointly promote the pilot work of REITs, thus initiating the construction of the domestic REITs market in China. China's REITs market officially entered the research and demonstration phase. The market practice mainly focused on overseas-issued REITs and REITs products in the interbank market, with representative products including CapitaLand Commercial China Trust, Tianfang Group's affordable housing asset-backed notes, etc. Notably, the first phase of asset-backed notes issued by Tianjin Real Estate Trust Group Co., Ltd. ("Tianfang ABN") in 2012 was China's first rental housing asset securitization product. Tianfang ABN was approved by the National Association of Financial Market Institutional Investors on August 17, 2012, and issued on August 24. The product had a registered amount of 2 billion yuan, divided into five tenures (1-year, 2-year, 3-year, 4-year, and 5-year), with respective sizes of 340 million yuan, 360 million yuan, 400 million yuan, 440 million yuan, and 460 million yuan, and annual expected yields of 5.75%, 6.25%, 6.75%, 7.74%, and 8.23%, respectively.

The underlying assets of Tianfang ABN consisted of 32,018 units of

Tianjin's affordable housing owned by Tianjin Real Estate Trust Group Co., Ltd. These housing units were located in six districts of Tianjin, including Nankai and Hexi, with complete infrastructure and mature regional environments. Tianfang ABN also had replacement assets, totalling 5.75% of the original underlying assets' total construction area, located in the Nankai and Hexi districts. The funds raised were lent to the Housing Trust Group through entrusted loans to undertake Tianjin's affordable housing construction tasks. Tianjin Real Estate Development and Operation Group Co., Ltd. ("Tianfang Group"), as the master lessee, signed a "Master Lease Agreement" with the Housing Trust Group, repaying the principal and interest to Tianfang ABN investors through annual rental payments.

As China's first rental housing asset securitization product, Tianfang ABN has significant implications for the development of similar future products in terms of asset operation and management model, basic asset eligibility criteria, credit enhancement measures, and investor exit arrangements.

3.2.3 Quasi-REITs and "PBOC Version" REITs Development Phase (2014-2020)

In 2014, the People's Bank of China (PBOC) and the China Banking Regulatory Commission jointly released a notice on further improving housing financial services, proposing the active and prudent implementation of REITs pilots. On April 25 of the same year, China's market saw its first REIT-like product, the "CITIC Sail Special Asset Management Plan," officially listed and issued on the Shenzhen Stock Exchange. Following the mainstream international REITs model in 2020, the Northern Exchange introduced the first "PBOC version" REITs. This product adopted a corporate structure, where the

project company acted as the main entity of the REITs, with its company equity being traded as REITs shares.

3.2.3.1 Quasi-REITs

The structure of quasi-REITs is based on the equity and debt of real estate project companies, using future cash flows as a source of repayment. These products set up asset-backed note trusts or special plans to raise funds from specific qualified investors in a public or private manner. The main characteristics of quasi-REITs include essentially being debt, where the original equity holder is required to repurchase upon maturity; the product structure usually includes senior and subordinated (or more layered) tranches, where the senior tranche generally carries a fixed interest rate and usually accounts for over 80-90% of the issuance. At the same time, the initiator purchases the subordinated tranche to enhance credit, helping to reduce the interest rate of the senior tranche. However, current quasi-REITs are primarily privately issued and have relatively weak liquidity.

From a broader perspective, quasi-REITs and true REITs show significant differences in real estate operation models. Quasi-REITs tend to hold properties, whereas REITs are more inclined to sell properties. However, quasi-REITs and true REITs are somewhat similar under the existing framework. For instance, the manager only needs to change the ownership of the underlying assets and connect the institutional investment part of the asset management plan with public funds to transition from quasi-REITs to REITs. In practice, China's quasi-REITs serve as transitional financing tools (leaning more towards debt financing). At the same time, publicly listed REITs are more akin to an "asset listing" process, aiming to establish a platform that continually assists issuers in

asset revitalization. Therefore, there is a "connecting" and "gradual" relationship regarding logic between quasi-REITs and publicly listed REITs.

3.2.3.2 The First Exchange-Based Quasi-REITs in Mainland China

On April 25, 2014, the Chinese market witnessed the listing and transfer of the first exchange-based REITs on the Shenzhen Stock Exchange. This product, launched by CITIC Securities, was named "CITIC Sail Special Asset Management Plan" ("CITIC Sail"). The underlying assets included two office buildings owned by CITIC Securities. The plan adopted a structured securitization approach and was traded on the exchange, amounting to 5.21 billion RMB. The senior tranche beneficiary certificate of CITIC Sail, named "Sail Senior," with the securities code "119053," was set to mature on April 24, 2019, with an annual interest payment at year-end and principal repayment at maturity, enjoying a 10% share in the appreciation at exit. The subordinated asset-backed security, named "Sail Subordinate," with the securities code "119401," also had the same maturity date, repayment, and interest payment method. Still, it enjoyed a 90% share in the appreciation at exit.

3.2.3.3 The First Publicly-Offered REITs Product in Mainland China

China's first publicly-offered REITs product that met the regulatory requirements was Penghua Qianhai Vanke REITs. It was officially approved and registered on June 8, 2015, and had a limited issuance on June 26. The issuance of Penghua Qianhai Vanke REITs signified the expansion of public funds' investment scope into the real estate sector.

Penghua Qianhai Vanke REITs was initially established with a scale of 3 billion RMB, where Qianhai Financial Holdings acted as the cornerstone

investor, subscribing to 300 million RMB with a two-year non-transferable clause; Penghua Fund subscribed to 10 million RMB, non-transferable for three years. The fund was a closed-end fund for ten years, after which it transitioned to a LOF (Listed Open-Ended Fund) bond fund. In terms of investment targets, apart from investing in the equity of Qianhai PR company (accounting for about 42% of the total funds raised), the fund could also invest in fixed-income and equity assets. Regarding profit distribution, the fund distributed profits annually, allocating no less than 90% of distributable profits to investors.

The fund acquired 50% of the project company's equity for 1.26682 billion RMB, gaining 100% of the business income (excluding property management fees) of the Qianhai Mansion project from January 1, 2015, to July 24, 2023. The total investment of the Qianhai Mansion project, owned by the fund, was estimated to be about 7.7 billion RMB, covering an area of 93,000 square meters, including 33 enterprise office properties, one large public building, and about six small public buildings, with a total construction area of approximately 65,200 square meters. According to the fund's prospectus, all units of the Qianhai Mansion project had been leased out or had confirmed tenancy intentions through lease contracts or lease reservation agreements. The project had 49 enterprise tenants, with lease terms of 3, 5, or 7 years, accounting for 11.3%, 42%, and 46.7% of the total, respectively. As agreed, 50% of the project company's equity would be transferred and exited in four stages by the end of 2021.

3.2.3.4 "PBOC Version" REITs

In 2020, under the guidance of the People's Bank of China (PBOC), the Northern Exchange introduced the "PBOC Version" REITs. This product was

designed based on the mainstream international REITs model. It featured a corporate structure where the project company serves as the issuing entity, and its equity shares are traded as REITs shares. The main characteristics of the "PBOC Version" REITs are as follows:

1. Structure Similar to U.S. REITs: These REITs adopt a corporate governance structure similar to that in the U.S., featuring a clear transaction framework and avoiding complex Special Purpose Vehicle (SPV) structures.

2. Direct Equity Shares as REITs Units: Unlike structured, layered approaches, this model uses company equity as REITs shares.

3. Flexibility in Asset Operation and Fund Use: Unlike publicly-offered REITs, the "PBOC Version" offers more flexibility in asset operation stages and the use of funds.

4. Mandatory Profit Distribution: The project company must distribute at least 90% of its profits regularly to shareholders, providing a guaranteed return for investors.

5. Equity Investment Category: It facilitates asset liquidation and equity capital recovery, revitalizing existing assets.

3.2.4 Development Phase of Publicly Offered REITs (2020-Present)

In April 2020, the China Securities Regulatory Commission (CSRC) and the National Development and Reform Commission (NDRC) released notifications and guidelines for promoting the Real Estate Investment Trusts (REITs) pilot in the infrastructure field, marking the official launch of publicly-offered REITs in China. In June 2021, the first batch of nine publicly-offered infrastructure REITs projects was listed on the Shanghai and Shenzhen stock exchanges.

As of December 8, 2022, Li Chao, Vice Chairman of the CSRC, proposed accelerating the development of the REITs market in the affordable rental housing sector and considered expanding the pilot scope to market-oriented long-term rentals and commercial real estate. In March 2023, the CSRC and NDRC prioritised the issuance of infrastructure REITs related to urban and rural commercial facilities such as department stores, shopping centers, and farmers' markets, expanding the scope of REITs to include consumer and commercial sectors.

The key features of publicly-offered REITs include:

1. Product Structure: Often designed as a combination of public funds, ABS, and project companies, with a flat structure without prioritized and subordinate distinctions.

2. Strict Asset Requirements: Initially limited to infrastructure and rental housing as underlying assets, but recently expanded to include a broader range of assets like department stores and farmers' markets.

3. No Fixed Income, Mandatory Profit Distribution: Mandatory distribution of no less than 90% of distributable profits without fixed income.

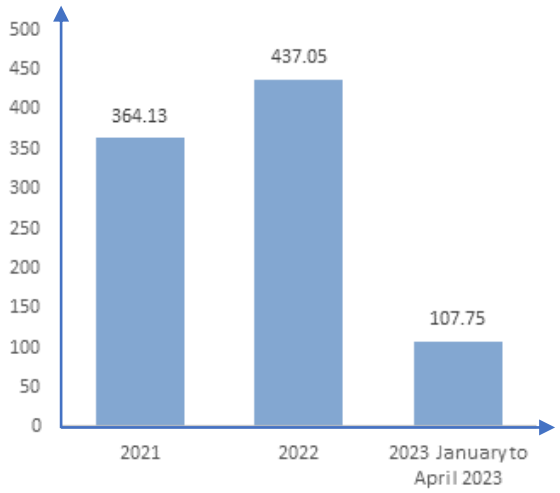
4. Issuance and Liquidity: Publicly issued, significantly expanding the range of potential investors and enhancing liquidity.

3.3 Development Characteristics of Publicly Offered REITs Projects in China

In June 2021, the first batch of publicly offered infrastructure REITs was listed on the Shanghai and Shenzhen stock exchanges, officially launching the publicly offered REITs pilot in China. As of April 2023, 27 REITs have been issued, with a combined issuance size of 908.92 billion yuan.

Figure 3.2

Issuance Scale of Chinese REITs

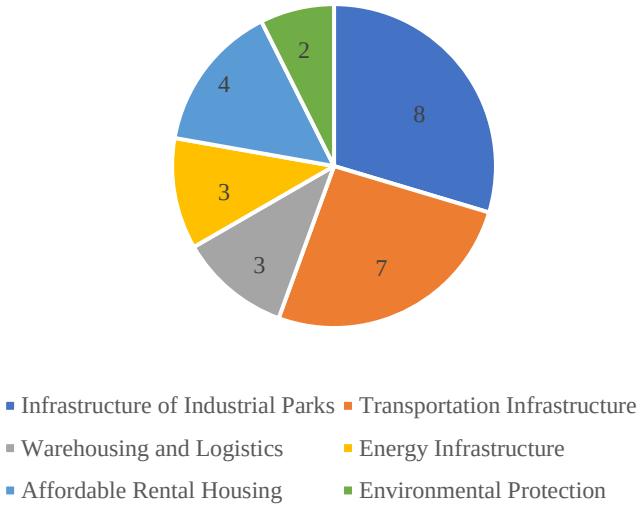


Data Source: Wind Database

Of these, 15 publicly offered REITs mainly focus on park and transportation infrastructure as their underlying assets. Moreover, in the second half of 2022, four affordable rental housing REITs were issued, and in 2023, two newly issued REITs were based on energy infrastructure. With the increasing support for affordable rental housing, the scale of REITs in this category is expected to expand. Additionally, with the expansion of underlying assets to include department stores, shopping centres, and farmers' markets as urban and rural commercial facilities, the scale of REITs in these asset classes is also expected to increase.

Figure 3.3

Asset Types of Chinese REITs



Data Source: Wind Database

From the perspective of the subdivided asset types invested in, the existing 27 REITs projects can be categorized into seven major types: transportation infrastructure, park infrastructure, storage logistics, ecological and environmental protection, energy infrastructure, and affordable rental housing. The diversity of asset types provides investors with various investment options, helping to achieve diversified asset portfolios and effectively reducing investment risks. As seen from Table 3.2, geographically, most are concentrated in the Yangtze River Delta, Pearl River Delta, and other locations serving national development strategies. In terms of issuance conditions, due to the different scales of underlying assets, the market's asset assessment and expected returns for different projects vary, leading to significant differences in the issuance prices of different projects.

Table 3.2

Issuance Details of Chinese REITs

REITs	Asset Type	Location	Issuance Size (Billion Yuan)	Issue Price (Yuan)	Number of Shares Issued (Billion)
Boshi Zhongshang Shekou Industrial Park	Infrastructure of Industrial Parks	Shenzhen	2.079	2.31	0.900
Huaxia Hefei High-Tech Industrial Park	Infrastructure of Industrial Parks	Hefei	1.533	2.19	0.700
Huaxia Hangzhou Heda High-Tech Industrial Park	Infrastructure of Industrial Parks	Hangzhou	1.404	2.81	0.500
Ping An Guangzhou Jiaotou Guanghe Expressway	Transportation Infrastructure	Guangzhou	9.114	13.02	0.700
Huaxia Yuexiu Expressway Closed Infrastructure Fund	Transportation Infrastructure	Wuhan	2.130	7.10	0.300
Hongtu Innovation Yantian Port Warehousing and Logistics	Warehousing and Logistics	Shenzhen	1.840	2.30	0.800
Penghua Shenzhen Energy	Energy Infrastructure	Shenzhen	3.538	5.90	0.600
Hongtu Innovation Shenzhen Talent Housing	Affordable Rental Housing	Shenzhen	1.242	2.48	0.500
Zhonghang Shougang Biomass	Environmental Protection	Beijing	1.338	13.38	0.100
Hua'an Zhangjiang Everbright Park	Infrastructure of Industrial Parks	Shanghai	1.495	2.99	0.500
Zheshang Securities Shanghai-Hangzhou-Ningbo Expressway	Transportation Infrastructure	Hangzhou	4.360	8.72	0.500
Fuguo Shouchuang Water Affairs	Environmental Protection	Shenzhen, Hefei	1.850	3.70	0.500
Guojin China Railway Construction Expressway	Transportation Infrastructure	Chongqing	4.793	9.59	0.500
Zhongjin Anhui Traffic Control	Transportation Infrastructure	Wuhu	10.880	10.88	1.000

REITs	Asset Type	Location	Issuance Size (Billion Yuan)	Issue Price (Yuan)	Number of Shares Issued (Billion)
Huaxia China Communications Construction Expressway	Transportation Infrastructure	Xianning	9.399	9.40	1.000
Guotai Junan Lingang Innovation Industrial Park	Infrastructure of Industrial Parks	Shangjhai	0.824	4.12	0.900
Dongwu Suzhou Industrial Park Industrial Park	Infrastructure of Industrial Parks	Suzhou	3.492	3.88	0.800
CITIC Construction National Power New Energy	Energy Infrastructure	Yancheng	7.840	9.80	1.500
Zhongjin Prologis Warehousing and Logistics	Warehousing and Logistics	Suzhou, Guangzhou, Foshan, Beijing	5.835	3.89	0.500
Zhongjin Xiamen Affordable Rental Housing	Affordable Rental Housing	Xiamen	1.300	2.60	0.400
Huatai Jiangsu Traffic Control	Transportation Infrastructure	Suzhou	3.054	7.64	0.500
Huaxia Beijing Affordable Housing	Affordable Rental Housing	Beijing	1.255	2.51	0.500
Huaxia Fund Huarun Nest	Affordable Rental Housing	Shanghai	1.209	2.42	0.500
Guotai Junan Dongjiu New Economy	Infrastructure of Industrial Parks	Wuxi, Shanghai, Kunshan, Changzhou	1.518	3.04	0.300
Zhonghang Jingneng Photovoltaic	Energy Infrastructure	Yulin, Suizhou	2.935	9.78	0.500
Jiashi JD Warehousing Infrastructure	Warehousing and Logistics	Chongqing, Wuhan, Langfanmg	1.757	3.51	0.900
Jianxin Zhongguancun Industrial Park	Infrastructure of Industrial Parks	Beijing	2.880	3.20	

Data Source: Wind Database

3.4 Chapter Summary

This chapter provides an in-depth analysis of the development of REITs globally and in China. Globally, REITs have achieved mature development in several countries and regions, such as the United States, Singapore, Japan, Hong Kong, and China, characterized by good liquidity, low risk, and high returns. The REITs projects in these markets show diversity in the types of underlying assets and interconnectedness during global events like financial crises. The Chinese REITs market has undergone four stages of development since 2004: exploration and research, research and demonstration, the development of quasi-REITs and "People's Bank version" REITs, and finally, entering the stage of publicly offered REITs. By 2023, China's publicly shown REITs have rapidly developed, involving seven major categories: transportation infrastructure, park infrastructure, storage logistics, ecological and environmental protection, energy infrastructure, and affordable rental housing, with park infrastructure and transportation infrastructure occupying a large proportion. Chinese publicly offered REITs exhibit characteristics of stable dividends, but the market also faces challenges of volatility and divergent views among investors.

Chapter 4 Theoretical Analysis and Research Framework

Chapter 4 focuses on theoretical analysis and the construction of a research framework. The chapter initially classifies Chinese REITs projects from a theoretical standpoint into two main categories: growth and defensive. It then delves into the theoretical exploration of the relationship between REITs industry characteristics—namely, growth and defensive attributes—and project performance. Additionally, this chapter examines the moderating effects of macroeconomic fluctuations on REITs project performance. Based on these theoretical analyses, an integrative research framework is constructed to thoroughly understand and evaluate Chinese REITs projects' performance and their influencing factors.

4.1 Growth and Defensive Attributes: Industry Characteristics of Chinese REITs Projects

4.1.1 Industry Characteristics of REITs Projects' Underlying Assets

For investors, understanding the underlying logic of different industries is crucial for asset allocation and risk management, especially in the context of market risks and specific shock impacts, where the asset pricing of REITs becomes particularly important (K. H. Liow & Addae-Dapaah, 2010). For example, during the global pandemic, the return performance of different asset types showed significant differences. On the one hand, the rise of remote working increased the demand for data transmission, communication equipment, transmission towers, and high-tech facilities housing cloud servers. On the other hand, due to the epidemic prevention policies implemented in most countries and regions, international and domestic travel has significantly reduced,

negatively impacting retail, office, and residential REITs (Ling et al., 2020). Existing studies suggest that size might be an essential factor in REITs asset pricing, with larger REITs having higher risk-bearing capacity during crises, indicating a premium for larger REITs (Rehman et al., 2022). However, the asset category seems insufficient to explain the differences in project returns.

Based on the underlying logic analysis, we can distil two types of underlying assets for REITs projects. One type mainly invests in relatively stable industries such as highways and medical infrastructure, characterized by stable cash flows and lower market volatility risks, providing relatively reliable investment returns. Furthermore, these industries often receive national policy support and government subsidies (Damodaran, 2002), hence defined as defensive REITs projects. The other type invests in industries with higher growth potential, such as commercial real estate, technology parks, and emerging industry properties. These assets are relatively less stable, usually facing higher risks and higher return rates (Mansley et al., 2020; Newell & Marzuki, 2022), and thus are defined as growth REITs projects in this study. This classification emphasizes the importance of underlying asset attributes in REITs asset pricing, risk management, and investment decisions.

Industrial parks, ecological and environmental protection, storage logistics, and energy infrastructure represent "policy-driven + investment-driven" industries with significant asset appreciation potential and higher sensitivity to macroeconomic fluctuations. Therefore, this study classifies them as growth REITs projects. For example, industrial parks focus on investing in technology parks, with land use rights, building ownership, and associated structures and facilities as the primary sources of income, with potential for growth alongside

economic growth. In the long term, the performance of growth REITs projects in the secondary market is significantly influenced by the operational conditions of the underlying assets, dividend situations, and macroeconomic fluctuations, with relatively large volatility.

Conversely, transportation infrastructure, affordable rental housing, and water infrastructure have strong public welfare attributes and belong to rigid social demands, less impacted by economic cyclical fluctuations. Even under the backdrop of economic downturn and uncertain economic environments, the demand for these assets remains robust and stable. Secondly, the non-exclusivity and irreplaceability of their services create high industry barriers and regional monopolies, generating relatively stable and enduring cash flows. The irreplaceability of these services makes these assets long-term defensive components in investment portfolios, while long-term lease contracts and the geographic fixedness of the assets further enhance their predictability and stability. Lastly, strong government regulation and financial support help maintain the stability and safety of these assets' values. All these reflect the risk resistance and resilience of the underlying assets, leading us to define transportation infrastructure, affordable rental housing, and water infrastructure as defensive REITs projects.

4.1.2 Typical Growth REITs Project: Dongwu Suzhou Industrial Park

4.1.2.1 Project Overview

Among the Chinese REITs projects involving industrial parks, there are 8. The scale of these projects is influenced by critical indicators such as the park's positioning, industry direction, tenant demographics, occupancy rate, and rental

level. Dongwu Suzhou Industrial Park Industrial Park REIT stands out for its representative scale.

Suzhou Industrial Park, a significant collaborative project between the Chinese and Singaporean governments, is heralded as an important window to China's reform and opening-up and a successful model of international cooperation. The park leads nationally in openness, development quality and efficiency, innovation vitality, and business environment. On June 21, 2021, the "Dongwu Suzhou Industrial Park Closed-end Infrastructure Securities Investment Fund" (after this referred to as "Suzhou Industrial Park REIT"), with Suzhou Industrial Park Science and Technology Development Co., Ltd., Suzhou Industrial Park Jianwu Industrial Park Development Co., Ltd., and Suzhou Industrial Park Zhaorun Investment Holding Group Co., Ltd. as the original equity owners, was successfully listed on the Shanghai Stock Exchange.

The initial fundraising of Dongwu Suzhou Industrial Park REIT was 3.492 billion yuan, with a total of 900 million fund shares priced at 3.88 yuan per share. The proportions of strategic, offline, and public investors were 60%, 30%, and 10%, respectively. The basic assets covered the International Science Park Phase V B Area and the 2.5 Industrial Park Phases I and II projects, with Dongwu Fund as the fund manager and Dongwu Securities as the ABS manager.

4.1.2.2 Underlying Assets

Growth in project investment analysis represents the project's potential for growth and return, including the growth rate of rent, potential for capital appreciation, and opportunities provided by market demand and industry development. As a typical growth asset, Suzhou Industrial Park REIT, with its high growth potential, generally offers a high potential for investment returns,

adapting to market demand and economic development.

Suzhou Industrial Park REIT adopted a "public fund + special plan + project company" composite transaction structure, with underlying assets including the International Science Park Phase V B Area and 2.5 Industrial Park Phases I and II projects. Since its inception in April 2000, the International Science Park project has a total investment of 6 billion yuan, developed in seven phases, covering a total construction area of 1.0596 million square meters. As of the end of 2019, were 619 companies in the park, with an annual output value of about 22 billion yuan. By the end of 2020, the International Science Park Phase V B Area project had rented comprehensive buildings for R & D. It supported 345 tenants, mainly in information technology, professional services, artificial intelligence, and financial institutions. The 2.5 Industrial Park was developed in three phases, covering 214,800 square meters with a planned construction area of 440,000 square meters. It focuses on four major industrial platforms: enterprise management consulting services, financial data processing, technology R&D services, and financial back-office support, and commenced operations at the end of 2011. As of the end of December 2020, the R & D parts of the 2.5 Industrial Park Phases I and II projects were leased to 117 tenants, covering industries such as information technology, electronics, biomedicine, logistics, and new materials.

The income of Suzhou Industrial Park REIT largely depends on the operational revenue of the infrastructure projects held by the project company, affected by national macro-control policies, industry cycles, geographic location risks of the project's region, as well as market competition and market risks brought by other infrastructure projects in the vicinity, causing price

fluctuations.

4.1.2.3 Investment Returns

According to the assessment report dated December 31, 2022, the market values of the International Science Park Phase V B Area project and the 2.5 Industrial Park Phases I and II projects were estimated at 1.835 billion yuan and 1.525 billion yuan, with the income approach used for evaluation. As per data from the official website of Suzhou Industrial Park, in 2022, the average actual rental area was 258,575.79 square meters with an occupancy rate of 95.59%; for the Aipaike Company, the average actual rental area was 132,332.96 square meters with an occupancy rate of 85.18%.

In terms of operating net income, the revenues of the Dongwu Suzhou Industrial Park REIT project include four parts: rental income, property fee income, parking fee income, and other income. Its operating costs cover management fees, property-related expenses, maintenance costs, insurance fees, taxes, and additional costs. In 2022, the park achieved a regional GDP of 351.561 billion yuan, a year-on-year increase of 2.3%; the total industrial output value of enterprises above designated size reached 685.02 billion yuan, up 7.0% year-on-year; the total import and export value was 715.13-billion-yuan, accounting for 27.8% of the city's total, ranking first in the city; actual foreign investment used was USD 2.089 billion, also ranking first in the city. These key economic indicators demonstrate the park's strong development momentum.

In 2022, the net income target for the Kezhi Company project was 90.225 million yuan, and the actual net income achieved was 100.5455 million yuan, exceeding the target by 11.44%. Similarly, the net income target for the Aipaike Company project was 69.3558 million yuan, and the actual net income achieved

was 79.3764 million yuan, exceeding the target by 14.45%. Despite the rent reductions due to the pandemic impacting both companies' operating income, they successfully exceeded their annual net income targets by implementing various cost-reduction and efficiency-enhancing measures. Table 4.1 shows the operating conditions of the Suzhou Industrial Park REIT project from 2018 to 2022. The data reveals that despite significant fluctuations in operating income due to the pandemic, the project's operating cash flow experienced substantial growth thanks to excellent operational management.

Furthermore, the per-unit distributable amounts in 2021 and 2022 were particularly noteworthy. Regarding calculating distributable amounts, the Suzhou Industrial Park REIT project adjusts its consolidated net profit to Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA). Based on this, the project considers factors such as the sustainable development of the project company, its debt repayment capacity, and operating cash flow to determine the adjustments for the distributable amount. Despite the impact of the pandemic on rent concessions, the fund manager of the Suzhou Industrial Park REIT project waived a portion of the fund management fee, and the operational management organization gave up part of their operational management fee to ensure investors' returns. This reflects the sensitivity of the Suzhou Industrial Park REIT project to external environmental changes. It also highlights the growth characteristics of the project's effective incentive mechanism.

Table 4.1

Operational Details of the Suzhou Industrial Park REIT Project

Unit (10,000 Yuan)	2018	2019	2020	2021	2022
Income	20,970	22,589	18,469	14,759	23,287
Expenses	15,682	16,498	14,548	11,553	15,970
Cash Flow	-3.29	18.46	40.29	15,426	17,356
Total Fund Amount	349,200	349,200	349,200	349,200	349,200
Distributable Amount				9,261	15,979
Per Unit Distributable Amount				0.1029	0.1775

Data Source: Prospectus for the Closed-end Infrastructure Securities Investment Fund of Dongwu Suzhou Industrial Park Industrial Park

4.1.3 Typical Defensive REITs Project: Fuguo Shougang Water Affairs

4.1.3.1 Project Overview

The Fuguo Shougang Water Affairs Closed-End Infrastructure Securities Investment Fund (after this, referred to as "Fuguo Shougang Water Affairs REIT") is China's first publicly traded REIT product with water infrastructure as its underlying asset. The product structure adopts the "public fund + infrastructure asset-backed securities" model, managed by Fuguo Fund Management Co., Ltd. (referred to as "Fuguo Fund"), responsible for active management. The external managing entity, i.e., the original rights holder, Beijing Shougang Co., Ltd. ("Shougang Shares"), assumes the responsibility for asset operational management. The special plan manager is managed by Fuguo Asset Management (Shanghai) Co., Ltd. (referred to as "Fuguo Assets", a wholly-owned subsidiary of Fuguo Fund).

This project encompasses the Build-Operate-Transfer (BOT) concession projects of the Fuyong, Songgang, and Gongming water purification plants in Shenzhen City and the Public-Private Partnership (PPP) project of the Shiwulihe Sewage Treatment Plant in Hefei City, including two sub-projects.

The water affairs public fund REIT, jointly launched by Fuguo Fund and Shougang Shares, provides financial support for the construction of urban infrastructure. Water-based assets' cash flow stability and counter-cyclicality offer investors a diverse investment tool. The company acquires the concession rights of the projects through the "TOT + BOT" model. Its sewage treatment services are priced based on a reasonable rate of return principle, ensuring stable income and profits. The company can apply price adjustments in cases of standard upgrading or raw material price increases, effectively resisting economic cycle fluctuations. At the same time, sewage treatment fees are included in residents' water bills, ensuring the stability and diversification of cash flows.

4.1.3.2 Underlying Assets

Fuguo Shougang, Water Affairs REIT's primary operating income comes from solid waste processing and sewage treatment businesses. Currently, the company's water investment and engineering projects are distributed in 28 provinces/municipalities/autonomous regions nationwide, covering over 100 cities, with a wealth of operational water assets that ensure the stable operation of the underlying assets. As of the end of 2021, Shougang Shares' sewage daily processing capacity reached 14.714 million tons. The project's sub-items have distinct locational advantages: The Shenzhen project is located in the economically developed Guangdong-Hong Kong-Macao Greater Bay Area, with significant industry clustering effects; the Hefei project is located in the Yangtze River Economic Belt, where high-tech industries and the tertiary industry are developing rapidly. Both these regions are priority areas for REITs pilot support, as detailed in Table 4.2 for the specific underlying assets.

Table 4.2 Underlying Asset Details of the Fuguo Shouchuang Water Affairs REIT Project

Sub-Project Asset Name	Shenzhen Fuyong, Songgang, Gongming Water Quality Purification Plants BOT Concession Project	Hefei Shiwuli River Sewage Treatment Plant PPP Project
Construction Content and Scale	Fuyong Water Plant and its standard upgrade project, designed capacity of 125,000 tons/day. Songgang Water Plant and its standard upgrade project, designed capacity of 150,000 tons/day. Gongming Water Plant and its standard upgrade project, designed capacity of 100,000 tons/day.	Phase I project of the Hefei plant designed for 50,000 tons/day. Phase II project designed for 50,000 tons/day. Phase III project designed for 100,000 tons/day. Phase IV project designed for 100,000 tons/day.
Operation Mode	BOT (Phase I BOT mode construction and standard upgrade for Phase I results)	TOT+BOT (Phases I, II, III TOT, Phase IV BOT).
Total Investment	Not fully accounted for yet	Estimated total investment of 1,006,460,000 Yuan.
Concession Period	Fuyong Water Plant 2009-2031. Gongming Water Plant 2011-2033. Songgang Water Plant 2009-2031.	2018-2047
Revenue Sources	Sewage treatment service fees and leachate treatment service fees.	Sewage treatment service fees, intermediary treatment service fees, and sludge treatment service fees.

Data Source: Prospectus for the Closed-end Infrastructure Securities Investment Fund of Fullgoal Shouchuang Water Management

4.1.3.3 Investment Return Analysis

Regarding operational net income, Fuguo Shougang Water Affairs REIT's operating revenue comprises rental income, property fee income, parking fee income, and other income. The operational costs include management expenses, property-related expenses, maintenance costs, insurance fees, taxes, and additional costs. The net cash flow generated from operating activities and EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization)

performs well, maintaining a dividend rate above 70%.

Sewage treatment income is minimally affected by macroeconomic fluctuations. The volume of sewage treated and the unit price are explicitly stipulated in the "Concession Agreement," the actual charges are executed according to the agreement, less influenced by market and economic volatility. As long as the sewage treatment volume remains stable, the robustness of project revenue can be assured. According to the prospectus, from 2018 to 2020, the service fee recovery rate for the Shenzhen and Hefei projects reached 100%, indicating stable operations. Additionally, the projects in Shenzhen and Hefei can adjust the sewage treatment unit price every three years based on changes in electricity, chemical, labour, and income tax policies. The "basic sewage treatment volume" clause in the "Concession Agreement" adds counter-cyclicality to the underlying assets while enhancing the stability of project revenue, providing a safety net for fund earnings.

As a core part of national welfare, the water affairs industry is subject to strong government regulation, high industry entry barriers, and significant regional monopolies. As a key industry in environmental protection, sewage treatment is an important measure to achieve national energy-saving and emission-reduction goals and requires government leadership and macroeconomic support. From the perspective of the industry cycle, the water affairs industry is a weak cyclical sector with a strong ability to resist economic cyclical risks. Against the backdrop of the current sporadic outbreak of the pandemic, sewage treatment maintains its essential demand attribute, with overall low volatility. Table 4.3 shows the operational status of the Fuguo Shougang Water Affairs REIT project. Over the past three years, the volume of

sewage treatment for the Shenzhen and Hefei projects has steadily increased. The sewage treatment service fee covers the construction and operational costs and taxes and achieves reasonable profits.

Table 4.3 shows that while the distributable amount for the Fortune Capital Water Affairs REIT project also reached a high threshold, calculating the annual distributable amount did not involve proactive actions by the fund manager and operational management organization. This not only indicates the stability of the returns of the Fortune Capital Water Affairs REIT project but also suggests that the incentive mechanism of the project is more conservative.

Table 4.3 Operational Status of Fuguo Shouchuang Water Affairs REIT Project

Unit (10,000 Yuan)	2018	2019	2020	2021	2022
Income	10,833	19,927	27,230	18,228	29,447
Expenses	10,571	17,575	22,091	14,359	25,619
Cash Flow	4,847	11,925	17,982	16,049	19,242
Total Fund Amount				185,000	185,000
Distributable Amount				13,715	16,846
Per Unit Distributable Amount				0.27	0.34

Data Source: Prospectus for the Closed-end Infrastructure Securities Investment Fund of Fullgoal Shouchuang Water Management

4.2 REIT Industry Characteristics and Project Performance

4.2.1 Impact of REIT Industry Characteristics on Investment Performance

The theory of industrial organization emphasizes the significant influence of industry characteristics on market structure and corporate behaviour (Rubinstein & Tirole, 1989). Industry characteristics determine critical structural features such as market competitiveness, concentration, and product characteristics. Variations in market structure led to significant differences in competitive content, characteristics, and intensity among firms, impacting their

risk resistance, operational models, and investment strategies, ultimately significantly affecting project performance.

In the REIT market, projects with different industry characteristics optimize their asset portfolio, asset and financial management, and operational models to achieve their objectives. Safety REIT projects focus on stable cash flows and dividend returns, while growth-oriented ones emphasize growth potential and capital returns. Growth-oriented REITs often invest in high-tech, high-growth industries or emerging markets, such as Dongwu Suzhou Industrial Park REIT, experiencing rapid market expansion and technological innovation. These parks usually cluster many high-tech and innovative enterprises, where innovation is a key growth driver. Existing research indicates that high-tech industries have stronger innovation motives (Aghion et al., 2005; Grullon et al., 2019). Hence, driven by innovation, growth-oriented REITs can achieve higher returns.

Simultaneously, growth-oriented REITs are typically involved in highly competitive markets. A typical feature of high-competition industries is rapidly changing market shares, directly impacting property occupancy rates and rental levels. Companies often seek higher production efficiency in highly competitive industries to reduce costs and maintain market competitiveness (Baker & Hubbard, 2003). Therefore, compared to safety-oriented REITs, growth-oriented REITs can achieve higher investment returns through efficiency improvements and cost control.

Moreover, the investment returns of growth-oriented REITs are significantly affected by changes in market demand. With the spread of new technologies and the development of new products, or simply due to economic

development, market demand grows rapidly, providing broad investment opportunities and profit potentials for growth-oriented REITs. This rapidly changing market demand brings high profit potential to growth-oriented REITs, although it also comes with higher market risks.

Finally, the investment returns of growth-oriented REITs are influenced by industry policies and the macroeconomic environment. Governments promote specific industries' growth by providing tax incentives, funding support, or other incentives. These policy supports help accelerate the development of industries where growth-oriented REITs invest, enhancing their asset values and profitability. Additionally, changes in the macroeconomic environment, such as economic growth, consumer confidence, and capital market fluctuations, significantly impact the investment returns of growth-oriented REITs.

In summary, the high-return characteristics of growth-oriented REITs stem from the high growth potential and rapid technological innovation of their industries. They also benefit from their market competitiveness, efficiency advantages, growing market demand, policy support, and macroeconomic environment. These factors collectively impact growth-oriented REITs, enabling them to achieve higher returns.

4.2.2 Impact of REIT Industry Characteristics on Investment Performance Volatility

Safety-oriented REIT projects, which often serve national livelihood stability and meet development strategy needs, boast several advantages. Firstly, they are typically backed by policy support and stable funding sources, leading to lower operational risks. Secondly, they usually involve state-owned property rights, providing steady returns. Thirdly, these projects often exist in

oligopolistic or natural monopoly market structures, wielding strong market power and less susceptibility to market risks. In fact, their relatively stable market position for safety-oriented REIT projects allows them to maintain steady cash flow returns even after policy adjustments.

Moreover, their market structure is relatively stable, reducing the likelihood of asset devaluation due to policy changes (Candelon et al., 2021). In contrast, growth-oriented REIT projects, often in rapidly developing industries, are subject to higher risks and uncertainties, and government policies might restrict or more rigorously regulate them to mitigate excessive market impacts. Additionally, growth-oriented REITs usually focus on asset appreciation rather than steady cash flow returns, making them more susceptible to market conditions and policy environments.

Conversely, growth-oriented REITs often have higher capital appreciation potential than traditional REITs. As they invest in high-growth industries, the value of these assets often increases faster than those in traditional sectors. For instance, a logistics park in an economically developed area may rapidly increase in value due to growth in the park's enterprises and technological advancements. Similarly, emerging tech parks might rapidly attract businesses due to breakthroughs in specific fields.

However, the potential for high capital appreciation also implies higher risks. Market saturation or technological shifts can lead to a rapid exodus of businesses from logistics or tech parks. Macroeconomic fluctuations, industry policy changes, and other external factors will likely impact growth-oriented REITs projects. As technology evolves and market demand grows, the economic performance of these projects may exhibit significant fluctuations. The high-

speed market development is accompanied by high uncertainty, such as changes in market demand or technological advancements, potentially leading to substantial fluctuations in investment returns.

Furthermore, from an investor behaviour perspective, growth-oriented REITs, with their high return potential, tend to attract investors with a higher risk appetite. While seeking high returns, these investors must also bear corresponding high risks. This concentration of risk preference may lead to high price volatility in the growth-oriented REIT market. During market uptrends, these projects may attract substantial capital inflow, driving up prices; conversely, panic selling during downtrends can lead to rapid price declines. Therefore, overall, the investment returns of growth-oriented REITs are greatly influenced by the competitive market environment, resulting in greater volatility.

4.3 The Moderating Effect of Macroeconomic Fluctuations

Macroeconomic fluctuations refer to significant changes in the overall economy over time, influenced by economic policy, technological advancement, international events, and demographic shifts. These fluctuations include variations in economic growth, inflation, unemployment rates, international trade, interest rates, and exchange rates, impacting financial markets and real economies deeply (N.-F. Chen et al., 1986; Chatrath & Liang, 1998; K. Liow et al., 2006). As a fundamental basis for formulating economic policies and managing macroeconomics, these fluctuations are sources of potential financial risks (Boudoukh & Richardson, 1993; N.-F. Chen, 1991).

Evidence suggests significant relationships between macroeconomic indices like interest rates, real GDP, money supply, and stock market returns (N.-F. Chen et al., 1986; de Mendonça & Díaz, 2023; M. Lee, 2006). Further

research indicates that uncertainty in macroeconomic fundamentals drives stock market volatility (Fulmer, 2010), highlighting the importance of understanding these trends for investment portfolio management.

Macroeconomic fluctuations also present cyclical risks, especially in a globally integrated economy where economic impacts are closely interlinked, shortening the periods of economic cycles and increasing their amplitude. Financial crises in major countries can trigger global financial risks, reducing investor confidence (Akerlof & Shiller, 2009). Some studies focus on the heterogeneous impact of macroeconomic fluctuations on different industry performances (Lang & Stulz, 1993). For instance, conservative investments fare better during economic recessions, while riskier investments thrive during economic expansions (Fama & French, 1989).

Real estate has long been considered a barometer of China's economic condition, with REITs particularly sensitive to economic fluctuations (Salisu & Vo, 2020). Increasing policy uncertainty risks (Born & Pfeifer, 2014; Fernández-Villaverde et al., 2015) may reduce investment and consumption expenditures (McDonald & Siegel, 1986), significantly increasing market volatility (Xu & Wang, 2019). Studies using data from emerging real estate markets, like Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand, show that real estate investment performance, adjusted for risk, is mainly determined by macroeconomic factors (Ooi & Liow, 2004). Similarly, variables like economic cycles, interest rates, inflation rates, stock market conditions, industrial production growth, output growth, and term structure are identified as short-term influencers of REIT market performance (Akinsomi et al., 2016; Aubert-Tarby et al., 2018; Ewing & Payne, 2005; Kola & Kodongo,

2017).

The impact of macroeconomic fluctuations on the REIT market is primarily evident in interest rates. Research on the effect of interest rate changes on REIT returns suggests that rate changes affect how investors discount future cash flows, thus influencing the value of real estate assets, commercial properties, and housing. However, interest rate changes can have positive and negative impacts on REIT returns. Some studies argue that REIT yields rise with increasing interest rates (NARANJO & LING, 1997), while others suggest that higher rates reduce REITs' attractiveness compared to other securities (Devaney, 2001).

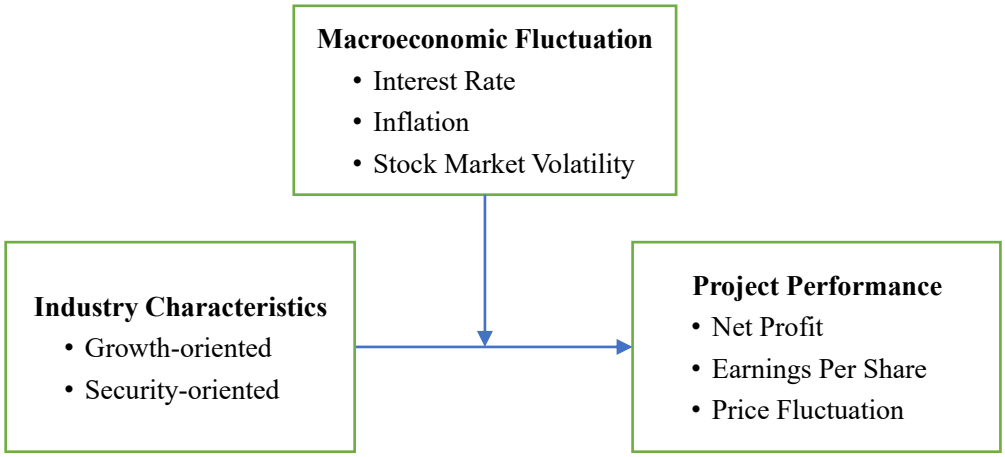
Furthermore, inflation has always been a critical economic issue globally (Akinsomi et al., 2016; Chatrath & Song, 1998). However, the literature has no consensus about inflation's impact on REIT performance. Some studies indicate that high inflation indirectly raises societal costs (Blanchard, 2019), causing investors to shift assets to tangible assets, negatively impacting the REIT market. Empirical studies also show an inverse relationship between inflation rates and REIT yields (Ewing & Payne, 2005), attributing it to REITs' performance resembling traditional securities, not aligning with inflation, and often showing strong negative correlation with expected inflation (Gyourko & Linneman, 1988). Nonetheless, other views posit that REITs, with high dividends and resistance to inflation, are crucial tools against inflation – U.S. data over 20 years show an average REIT dividend yield of 5.12% compared to an average CPI of 2.12% (Ping An Securities, 2021). Empirical studies also indicate a positive correlation between REIT returns and expected inflation levels, partly offsetting the impact of inflation (Park et al., 1990; Hartzell et al., 1987).

Stock market volatility is also deemed a significant influence on REIT performance (Li & Wang, 1995). As securitized investment tools, REITs trade alongside stocks in financial markets, showing long-term equilibrium with stock indices (Clayton & MacKinnon, 2003; Tsai & Chiang, 2013). Thus, research on stock market fluctuations is crucial for predicting REIT investment returns.

Given the impact of macroeconomic fluctuations on REITs, industry characteristics suggest that safety-oriented REIT projects, often involving public infrastructure and national critical sectors with significant state-owned property proportions, are typically operated by large state-owned enterprises with relatively stable operation models. Therefore, safety-oriented REIT projects might have a higher capacity to withstand risks when facing macroeconomic fluctuations. On the other hand, growth-oriented REITs projects involving emerging industries and services with high growth potential are more affected by macroeconomic fluctuations. This study constructs a theoretical framework, as shown in Figure 4.1, where REITs projects are categorized based on the industry characteristics of their underlying assets into growth-oriented and safety-oriented REITs, with significant differences in project performance (including investment returns and volatility). In this framework, macroeconomic fluctuations affect the relationship between industry characteristics and project performance, including interest rates, inflation, and stock market volatility levels.

Figure 4.1

Theoretical Framework of This Study



4.4 Chapter Summary

Chapter 4 provides a theoretical framework for understanding the performance differences among various REITs projects, analyzing the impact of industry characteristics on investment performance and the moderating role of macroeconomic fluctuations. Initially, the chapter categorizes REITs projects based on the industry characteristics of their underlying assets into growth-oriented and safety-oriented REITs. Safety-oriented REITs typically involve public infrastructure and critical national sectors with state-owned property assets and are often operated by large enterprises. This category strongly resists macroeconomic fluctuations due to its relatively stable operation models. In contrast, growth-oriented REITs usually encompass emerging industries and services with high growth potential, demonstrating higher sensitivity to macroeconomic fluctuations.

This chapter also provides an in-depth analysis of two typical cases, Suzhou Industrial Park and Fuguo Shouchuang Water Affairs, corroborating the

theoretical analysis. On this basis, the theoretical framework of this study is constructed. Overall, Chapter Four not only emphasizes the importance of industry characteristics in the performance of REITs projects but also reveals how macroeconomic fluctuations affect the performance of these projects, providing a theoretical basis for subsequent empirical research.

Chapter 5 Research Design

Chapter 5 outlines this study's design, including data sources, variable measurement, and model construction. This chapter first clarifies the data sources, detailing the methods of data collection to ensure the research is based on reliable and comprehensive information. Subsequently, the chapter further refines the measurement of variables, encompassing how to quantify key variables and process and analyze the collected data, ensuring the accuracy and applicability of the research results. Finally, the chapter describes the process of model construction, including the statistical models and analysis methods employed, aiming to provide solid theoretical and empirical support for the research hypotheses. Overall, this chapter offers a robust methodological foundation for this study, ensuring the effectiveness and credibility of the research findings.

5.1 Data

The data used in this study are sourced from the Wind Database and the National Bureau of Statistics of China. The Wind Database is a professional financial data service platform that covers a global range, offering comprehensive data and information services in financial market areas, including stocks, bonds, futures, foreign exchange, funds, and indices. The database is rich in data types and quantity, and its data quality and precision have been widely recognized, meeting the needs of investment institutions, banks, securities companies, finance departments, and academic research institutions. This study primarily utilizes the listing information, issuance details, and quarterly and annual market data of REITs projects published in the

Wind Database. It matches it with the macroeconomic data published by the National Bureau of Statistics to form an unbalanced panel database. Initially, the study analyzes the impact of REITs industry characteristics and project performance using data from China and the United States. Considering the focus of this study on the performance analysis of Chinese REITs, quarterly data on Chinese REITs is used to analyse adjustment effects.

Specifically, the United States is the world's largest commercial real estate market, issuing 232 REITs by the end of 2022. The REITs in the U.S. cover a rich array of industries, such as office buildings, commercial properties, residential properties, industrial facilities, hotels, medical facilities, etc. Considering the availability of data and the needs of the research question, we exclude REITs samples that have been delisted and select annual data of 1,674 REITs products from 2005-2022 to construct a multi-dimensional panel database. The selection of data from 2005-2022 is because, during this period, the U.S. REITs market experienced several cycles and significant market events, such as the global financial crisis, the economic recovery phase, and the COVID-19 pandemic, which helps to capture the impact of macroeconomic fluctuations and provides a comprehensive analysis of the impact factors on REITs products' project performance.

As of March 31, 2023, 31 REITs projects were listed in mainland China. However, the market data of CITIC Jianan National Power New Energy REIT and AVIC Jingneng Photovoltaic REIT, which were listed on March 29, were insufficient to reflect the needs of the research question. Therefore, these two REITs were excluded from the study, leaving 25 REITs as the research objects. Regarding the time period selection, the study chooses quarterly data from June

2021 to March 2023. The reason for selecting quarterly data is twofold: on the one hand, the development process of REITs in China is relatively short, and annual data provides a relatively limited sample size; on the other hand, financial market data changes are easily affected by multiple random factors. Compared to monthly/daily data, quarterly data provides a more stable and comparable time interval, allowing for a better assessment of REITs' operational status and investment value. The choice of the period from the third quarter of 2021 to the first quarter of 2023 is due to the following reasons: 2021 is the "inaugural year" for public offerings in China, and during 2021-2023, the COVID-19 pandemic occurred, with multiple interest rate cuts, economic growth adjustments, significant stock market fluctuations, and other macroeconomic events, providing rich data for studying macroeconomic fluctuations. Moreover, during this period, Chinese REITs projects expanded from infrastructure to office parks, warehousing logistics, guaranteed rental housing, and other fields, with increasing coverage, capable of more comprehensively reflecting the industry characteristics of different REITs projects.

5.2 Measurement

5.2.1 Dependent Variable: Project Performance

The dependent variable in this study is the performance of REITs projects. The performance of REITs projects is measured in profitability and price volatility in the secondary market. Regarding profitability, net profit represents the surplus of a project after deducting all costs and expenses for a specific period. As a significant financial indicator, net profit showcases a project's

profitability and operational efficiency. Hence, this study uses it as a primary measure of REITs project performance. Additionally, earnings per share, which is the result of dividing a project's net profit by the total capital stock, is employed to gauge the profitability per share, assisting investors in assessing a project's profit potential and investment return. Therefore, it is also utilized as a proxy for profitability.

Price fluctuation, a metric for assessing changes in asset prices, reflects a project's market performance over a specified period. Analyzing this metric provides insights into the project's investment return rate and market competitiveness. Thus, this study employs it to characterize the price volatility of REITs projects in the secondary market.

5.2.2 Independent Variable: Industry Characteristics

Based on underlying asset conditions, this study categorizes REIT projects into safety- and growth-oriented REITs. Safety-oriented REITs primarily exhibit stable cash flows and low-risk features, while growth-oriented REITs are characterized by asset value appreciation and market growth potential.

Commercial properties, like industrial parks and warehousing logistics, with intense market competition, high capital intensity, high risk, and high leverage (Singal, 2015), are susceptible to external market conditions (Chambers & Cifter, 2022; Ling et al., 2020) and possess significant value appreciation potential. They also exhibit higher return volatility than other real estate investment trust sectors (G. Mueller & Anikeeff, 2001) and have higher market risk (Benefield et al., 2009; Tang & Jang, 2008). Based on these characteristics and incorporating the views of industry practice experts, this study defines residential real estate, office real estate, diversified real estate,

industrial real estate, speciality real estate in the U.S., and other segments, as well as industrial parks, ecological conservation, warehousing logistics, and energy infrastructure in China, as growth-oriented REITs projects.

In contrast, assets with sustained demand and relatively stable cash flows, such as healthcare, elderly care, prisons, transportation, and energy sectors, usually relate to essential services and public needs (Eichholtz et al., 1997). Transportation and water infrastructure also have a public service nature (Reinert et al., 2009; Rosenstein-Rodan, 1943). In China, guaranteed rental housing addresses most public housing needs and receives strong government regulation and policy support (Damodaran, 2002), aligning with public service categories. Accordingly, combining insights from industry practice experts, this study defines healthcare real estate, speciality real estate in healthcare, elderly care, prisons, transportation, and energy projects in the U.S., as well as transportation infrastructure, guaranteed rental housing, and water infrastructure in China as safety-oriented REITs projects.

Specifically, this study sets industry characteristics as a dummy variable, assigning a value of 0 to safety-oriented REITs projects and 1 to growth-oriented REITs projects. Thus, safety-oriented REITs serve as the baseline group and growth-oriented REITs as the experimental group to compare and analyze the performance differences between safety-oriented and growth-oriented REITs.

5.2.3 Moderating Variable: Macroeconomic Fluctuations

Numerous domestic studies in China have discussed macroeconomic fluctuations and provided methods for measuring them (Xu & Wang, 2019). Following these studies and aligning with the theoretical framework, this study

characterizes macroeconomic fluctuations from interest rates, inflation, and stock market volatility. Firstly, the risk-free interest rate is used as a benchmark for risk premium in the risk asset pricing model. Therefore, this study uses the three-year government bond rate to characterize risk-free interest rate fluctuations, denoted as R0. Secondly, the Consumer Price Index (CPI) measures the price changes of a basket of consumer goods and services and is commonly used to indicate inflation levels. Hence, the study employs quarterly CPI to characterize inflation-denoted CPI. Thirdly, the Shanghai Composite Index is a major stock index of the Shanghai Stock Exchange, representing the overall performance of China's stock market. Therefore, the study uses the Shanghai Composite Index return rate as a stock market fluctuation factor, denoted as Rm.

5.2.4 Control Variables

To accurately assess the impact of REITs industry characteristics on project performance, this study controls a series of critical variables. Controlling these variables eliminates external factors interfering with the assessment results, ensuring the study's accuracy and reliability. Below are the specific definitions of each control variable and an explanation of their significance:

Listed Trading Shares: Refers to the number of REITs shares available for trading on the public market. Controlling this variable helps eliminate the impact of fund size on project performance. Larger listed trading shares may imply a larger number of investors and higher market attention, which could affect the market performance of REITs.

Net Value on the Day Before Listing: Reflects the REITs' net asset value ratio to the issued shares. By controlling the net value of the day before listing,

we can consider the fundamental value of REITs, thereby avoiding the disturbance of net value fluctuations on project performance evaluation.

Number of Holders: Represents the number of investors holding REITs. Controlling this variable helps consider the potential impact of different investor bases on project performance, as investors of different sizes and types may have different effects on the operation and performance of REITs.

Management Company: REITs are typically managed and operated by professional management companies. Considering the management company as a control variable allows for assessing the impact of different management companies' expertise and experience on project performance.

Custodian: Responsible for the custody of REITs' assets and operations, providing administrative and custodial services. By controlling the custodian variable, we can assess the potential impact of different custodians' service quality and experience on project performance.

Fixed Management Fee Rate: Refers to the management fees charged by management companies at a fixed ratio. Controlling this rate helps to eliminate the disturbance of management fees on project performance assessment, thereby more accurately measuring the impact of other factors.

Custodian Fee Rate: Indicates the custodial fees charged by the custodian at a fixed ratio. Controlling the custodian fee rate allows us to exclude its impact, thereby more comprehensively assessing the influence of other factors on project performance.

Listing Date: Refers to the date when REITs are traded on the securities market. Controlling the listing date allows for consideration of the potential impact of market reactions and the maturation period on project performance

post-listing.

By carefully controlling these variables, this study aims to more accurately reveal the impact of REITs industry characteristics on project performance while ensuring the research results' high reliability and explanatory power.

5.3 Models

This study employs panel data spanning temporal and spatial dimensions to construct a panel model to explore the dynamic evolution and coupled state of safety-oriented and growth-oriented REITs on project performance.

Panel data analysis, an econometric method integrating time series and cross-sectional data, analyzes the interrelationships among variables and predicts their trends. This method reveals the changing patterns and characteristics of the study subjects across time and space. A major advantage of panel data is that it significantly increases the sample space, enhancing degrees of freedom, thereby more effectively measuring and detecting impacts not observable with solely time-series or cross-sectional data. Moreover, it reduces the issue of multicollinearity among variables and better addresses the correlation between the error component and explanatory variables in regression equations, leading to more reliable parameter estimates. As a regression method across time and individual dimensions, panel regression analysis is a crucial tool for studying relationships among variables (Greene, 2003; Wooldridge, 2010).

In this research, the panel regression analysis method is utilized. Through an F-test, the fixed effect model is chosen, and the Hausman test confirms the establishment of a two-way fixed effects model to analyze the impact of REITs industry characteristics on project performance and the moderating effect of

macroeconomic fluctuations. Panel regression analysis effectively eliminates interference from heterogeneity among individuals and time trends, thus clearly identifying the impact of REITs industry characteristics on project performance. In the two-way fixed effects model, industry-fixed and time-fixed effects are introduced as dummy variables to capture the fixed characteristics of industries and time. To validate the research hypotheses and rationalize theoretical analysis effectively, this study, referencing classic econometrics textbooks (Greene, 2003; Wooldridge, 2010), constructs a baseline regression model to test the impact of REITs industry characteristics on project performance and the moderating role of macroeconomic fluctuations.

$$Y_{it} = \alpha_0 + \beta_1 X_{it} + \gamma Z_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \alpha_0 + \beta_1 X_{it} + \beta_2 V_{it} + \beta_3 X_{it} V_{it+} \gamma Z_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Here, i represents each REIT project, t represents the date. Y_{it} is project performance, including net profit, earnings per share, and price fluctuation indicators. X_{it} is industry characteristics, V_{it} represents macroeconomic fluctuation factors, including interest rates, inflation rates, and stock market volatility. α_0 is the intercept term, Z_{it} are other control variables affecting project performance, μ_i is the industry fixed effect, representing the influence of industry-specific constant factors on the dependent variable, such as industry attributes and management strategies; λ_t is the time fixed effect, indicating the influence of time-specific constant factors on the dependent variable, like seasonal changes, policy shifts, etc. By introducing these two fixed effects, the study mitigates the interference of industry and time heterogeneity on results. ε_{it} is the random error term, and β_1 is the regression coefficient measuring the

impact of industry characteristics on project performance.

5.4 Chapter Summary

This study explores the impact of REITs industry characteristics on project performance and the moderating effect of macroeconomic fluctuations on this influence. Therefore, it employs basic information, issuance details, quarterly data of REITs from the Wind database, and macroeconomic data published by the National Bureau of Statistics of China for empirical research. This study selects 25 of the earlier issued REITs in China, covering quarterly data from June 2021 to March 2023, and combines corresponding quarterly macroeconomic data to construct an unbalanced panel dataset. Data from the U.S. REITs market is also incorporated, including annual data samples of 1674 REITs products from 2005 to 2022 to strengthen the reliability of the research conclusions, creating a multi-dimensional unbalanced panel database.

The study's dependent variables in variable selection include net profit, earnings per share, and price fluctuation indicators to assess project performance. The explanatory variable is divided into growth-oriented and safety-oriented based on industry characteristics. In contrast, the moderating variable includes three macroeconomic indicators: interest rate fluctuation, inflation, and stock market volatility. Additionally, to more accurately assess the impact of these factors, we also control characteristics like listing information and issuance details.

Regarding model construction, the study employs a two-way fixed effects model for cross-temporal and cross-individual data regression analysis, aiming to eliminate heterogeneity among individuals and time trends. This method enables us to more clearly identify the impact of REITs industry characteristics

on project performance and deeply understand the moderating role of macroeconomic fluctuations in this relationship. The study strives to provide in-depth and reliable conclusions for the REITs market through this comprehensive methodological framework.

Chapter 6 Results

This chapter aims to present the empirical results of the study. Initially, it offers a descriptive statistical analysis, summarizing the research sample's fundamental characteristics and data distribution, thus laying a foundation for further in-depth analysis. Subsequently, the chapter elaborately reports the direct effect of regression results of industry characteristics on project performance, revealing how growth-oriented and safety-oriented REITs impact project performance. Additionally, the chapter includes the regression results of the moderating effects of macroeconomic fluctuations, exploring how economic cyclical factors such as interest rate changes, inflation, and stock market volatility affect the relationship between REITs industry characteristics and project performance. Finally, this chapter provides a detailed analysis and discussion of the regression results to understand REITs market behaviour better.

6.1 Descriptive Statistics

Table 6.1 presents the descriptive statistics of the data used in this study. As seen from Table 6.1, the REITs market in the United States is more mature, while the public REITs in China started later, resulting in a smaller overall sample size. Following the rules outlined in Chapter 5, this study categorizes industries into safety and growth. Table 6.1 shows that nearly 85% of U.S. REITs projects are growth-oriented, in contrast to only 65% in China. This result aligns with the localized characteristics of China, where many REITs projects focus on infrastructure related to national welfare, featuring high safety and stability.

In contrast, U.S. REITs mainly concentrate on the growth and profitability

of the projects. Additionally, from a performance perspective, the returns of the REITs market in China are still not as high as in the U.S., with lower net profits and earnings per share and greater volatility. This could be due to the relative immaturity of China's REITs market.

Table 6.1

Descriptive Statistics

Country	Variables	Obs	Mean	S. D	Min	Max
China	Net Profit	82	16.447	0.937	14.098	19.087
	Earnings Per Share	101	0.097	0.101	0.02	0.629
	Price Fluctuation	78	21.437	16.056	-11.352	54.008
	Growth-oriented	101	0.644	0.481	0	1
	Listed Trading Shares	101	5.261	2.965	0.994	14.872
	Net Asset Value on the Day Before Listing	101	5.907	3.798	2.19	13.38
	Number of Shareholders	101	142948.17	108070.52	38178	466942
	Fixed Management Fee Rate	101	7.436	4.073	1	15
	Custody Fee Rate	101	1.921	1.361	1	5
	Asset Type	101	2.99	1.597	1	6
U.S.	Net Profit	1095	4.025	1.61	-2.04	10.48
	Earnings Per Share	1736	4.559	0.792	-1.079	6.764
	Price Fluctuation	1841	8.114	33.24	-94.266	523.144
	Growth-oriented	1970	0.849	0.358	0	1
	Initial Public Offering Price	1970	1.4	1.442	0	3.367
	Investment Rating	1970	2.043	1.383	0	5
	Total Assets	1939	14.502	1.37	2.783	17.93
	Number of Employees	1656	2331.056	13191.964	10	147700
	Asset Type	1970	4.197	1.9	1	6

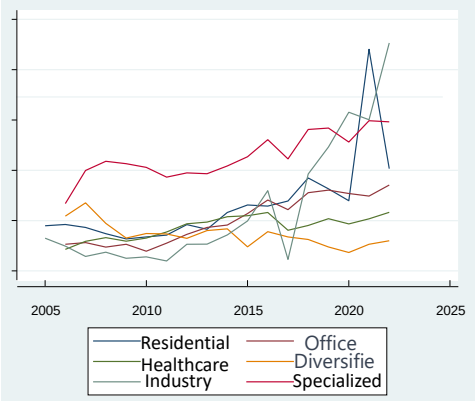
Note: The units related to currency in Chinese REITs are in Renminbi, while U.S. REITs are in U.S. dollars.

In the descriptive statistics section of this study, industries are initially classified into safety-oriented and growth-oriented sectors, as prescribed in Chapter 5. Figure 6.1 illustrates the cash flow volatility of different industry REITs in the United States and China. Here, cash flow is depicted through the net amount of cash flow from operating activities, and its volatility is quantified by calculating the standard deviation of the logarithm of cash flow. Figure 6.1 indicates that, compared to growth-oriented industries, safety-oriented industries exhibit lower volatility, substantiating the rationale behind categorizing REITs projects into safety and growth categories. In fact, from an operational mode and risk characteristic perspective of the underlying assets, safety-oriented REITs often involve stable industries such as infrastructure and utilities, characterized by relatively consistent business models and lower operational risks.

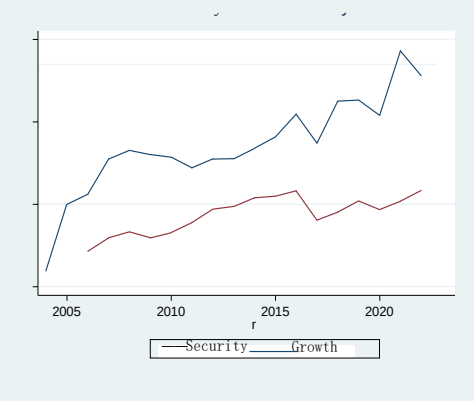
In contrast, growth-oriented REITs typically refer to sectors with high growth and risk, such as technology and the internet, exhibiting more significant variability and uncertainty in their profit models. Moreover, from a market demand analysis, products or services of safety-oriented REITs, like water services and affordable housing rentals, generally fall under basic needs and tend to be relatively stable throughout economic cycles. Therefore, the market demand fluctuations faced by safety-oriented REITs are comparatively minor, limiting their impact on cash flow. This classification provides a pivotal perspective in assessing REIT projects' performance and risk characteristics.

Figure 6.1

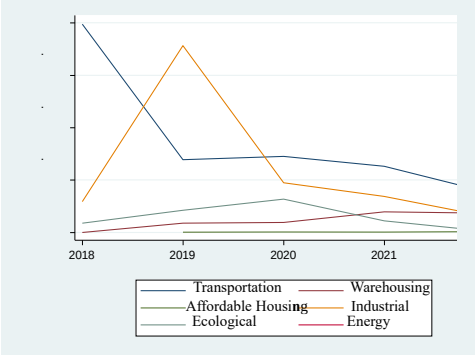
Diagram Illustrating Cash Flow Volatility in Different Industries of REITs in the U.S. and China



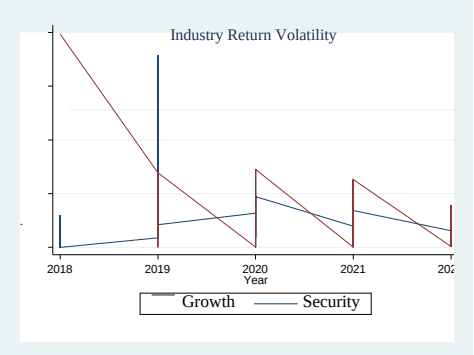
I Cash Flow Fluctuations Across Various Industries in the U.S.



II Cash Flow Fluctuations in U.S. Defensive and Growth Industries



III Cash Flow Fluctuations Across Different Industries in China



IV Cash Flow Fluctuations in U.S. Defensive and Growth Industries

6.2 Direct Effect Results

Table 6.2 presents the regression analysis results of U.S. REITs data, where growth-oriented REITs are set as a dummy variable: assigned a value of 1 for growth-oriented REITs, and 0 otherwise. The analysis indicates that the t-values of the dependent variables – net profit, earnings per share, and price fluctuation – all pass the significance level test, with the coefficients of the explanatory variables being positively signed as anticipated. This finding suggests that the selected econometric model possesses high explanatory power.

Specifically, the regression results show that growth-oriented REITs perform better in terms of net profit and earnings per share than safety-oriented REITs but exhibit larger fluctuations in price. This phenomenon likely stems from the growth potential and innovativeness of growth-oriented REITs, attracting investors seeking high-return investment opportunities. Consequently, REITs in growth industries tend to exhibit more prominent market performance. This high-risk, high-return strategy may increase net profit and earnings per share for growth-oriented REITs, enhancing market volatility and price fluctuation amplitude. In contrast, safety-oriented industries are characterized by relative stability and maturity, with investment strategies leaning towards long-term stability rather than seeking short-term high returns. This conservative approach may result in lower net profit and earnings per share for safety-oriented REITs, coupled with relatively lower market volatility and price fluctuation, less market competition, and comparatively lower profit margins.

Additionally, the analysis of control variables also reveals some interesting results. For instance, the initial public offering price positively influences price fluctuations, potentially indicating a strong correlation between higher IPO prices and the upward trend in REITs. Higher IPO prices might attract more investors, thereby driving up the price of REITs. Moreover, larger total assets and higher staff numbers may negatively impact REITs' profitability and market performance. These results from the control variables further enrich the analysis and conclusions of this study, providing deeper insights into understanding the dynamics of the REITs market.

Table 6.2

Basic Regression Results for U.S. REITs

Variables	Net Profit	Earnings Per Share	Price Fluctuation
Growth-oriented	0.050***	0.042***	0.050**
	(0.018)	(0.009)	(0.018)
Initial Public Offering Price	0.090**	-0.004	0.090**
	(0.044)	(0.044)	(0.044)
Investment Rating	-0.019	0.077*	-0.019
	(0.048)	(0.047)	(0.048)
Total Assets	-0.905***	-0.531***	-0.905*
	(0.063)	(0.051)	(0.063)
Number of Employees	-0.086**	0.093**	-0.086**
	(0.042)	(0.047)	(0.042)
Listing Date	Yes	Yes	Yes
Asset Type	Yes	Yes	Yes
Year	Yes	Yes	Yes
Constant	-40.502***	-9.816	-196.944
	(9.507)	(10.854)	(196.275)
N	1,460	1,602	1,674

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 6.3 presents the regression analysis results for Chinese REITs data. Comparing the regression results of REITs data between China and the U.S., a consistency is observed: growth-oriented REITs exhibit larger price fluctuations and higher net profit levels than safety-oriented REITs. This phenomenon may reflect investors' high expectations towards growth industries, enhancing market demand for REITs in these sectors.

Furthermore, regarding the results of control variables, the significant positive relationship between listed trading shares and price fluctuation suggests that larger trading volumes may have attracted more investors, increasing market demand for REITs. The significant correlations between the performance of REITs projects and factors such as management companies, custodians, fixed management fee rates, and custodian fee rates are also

noteworthy. These results indicate that the operational strategies and management capabilities of management companies and custodians, as well as the levels of management and custodian fee rates, significantly impact the performance of REITs projects. These factors may indirectly affect the market performance of REITs by influencing operational efficiency, capital costs, and investor confidence.

Table 6.3

Basic Regression Results for Chinese REITs

Variables	Net Profit	Earnings Per Share	Price Fluctuation
Growth-oriented	1.378***	0.017	19.829***
	（0.238）	（0.064）	（6.153）
Listed Trading Shares	-0.045	-0.0035*	0.9194*
	（0.045）	（0.002）	（0.516）
Net Asset Value on the Day Before Listing	0.009	0.005	1.866***
	（0.030）	（0.004）	（0.594）
Number of Shareholders	-0.00**	-0.000	-0.000
	（0.000）	（0.000）	（0.000）
Management Company	-0.053	-0.001	-0.224
	（0.034）	(0.001)	（0.712）
Trustee	-0.184	-0.023*	-3.279
	（0.168）	（0.012）	(2.719)
Fixed Management Fee Rate	0.005	-0.000	0.5507***
	（0.005）	（0.002）	（0.167）
Custody Fee Rate	-0.053***	-0.006***	-2.691***
	（0.016）	（0.002）	（1.026）
Listing Date	Yes	Yes	Yes
Asset Type	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Constant	8.143	2.690	-441.299
	（23.415）	（1.735）	（329.312）
N	82	101	78

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Overall, the regression analysis of REITs data from China and the U.S.

reveals significant differences between growth-oriented and safety-oriented REITs regarding investor expectations, market demand, and management efficiency. These differences reflect the market positioning and operational characteristics of different types of REITs and provide crucial information about various REITs investment strategies for investors. Additionally, these analytical results offer a basis for understanding the dynamic changes in the REITs market, carrying important implications for investment decisions and market regulation.

6.3 Macroeconomic Fluctuation's Moderating Regression Results

6.3.1 The Moderating Effect of Macroeconomic Fluctuations on Net Profit

The regression analysis results presented in Table 6.4 reveal a negative moderating effect of interest rates on the relationship between the industry type of growth-oriented REITs and net profit. Specifically, higher interest rate levels decrease the net profit of growth-oriented REITs compared to safety-oriented REITs. This finding suggests that in a high-interest-rate environment, the profitability of growth-oriented REITs may be constrained. Potential explanations include: on one hand, higher interest rates signify increased financing costs. For growth-oriented REITs, which often require loans for project development or investment, a rise in loan interest rates directly leads to an increase in financing costs, subsequently compressing their net profit margins. On the other hand, higher interest rates may suppress borrowing demand. Especially for growth-oriented REITs involved in the residential market, the increased cost of loans in a high-interest-rate environment may lead to homebuyers delaying or reducing purchases, negatively impacting the rental income and net profits of these REITs.

Table 6.4

Regression Results on the Moderating Effect of Macroeconomic Fluctuations on Net Profit

Variables	Net Profit		
Growth-oriented	5.361**	1.564***	1.378***
	(2.378)	(0.345)	(0.248)
Interest-rate	-1.024***		
	(0.231)		
CPI		-14.006**	
		(6.189)	
Stock Market Volatility			3.967***
			(1.531)
Growth-oriented * Interest-rate	-1.322*		
	(0.76)		
Growth-oriented *CPI		-8.3973	
		(8.312)	
Growth-oriented * Stock Market Volatility			0.1546
			(1.153)
Listed Trading Shares	Yes	Yes	Yes
Net Asset Value on the Day Before Listing	Yes	Yes	Yes
Number of Shareholders	Yes	Yes	Yes
Management Company	Yes	Yes	Yes
Trustee	Yes	Yes	Yes
Fixed Management Fee Rate	Yes	Yes	Yes
Custody Fee Rate	Yes	Yes	Yes
Listing Date	Yes	Yes	Yes
Asset Type	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Constant	-7.5976	-8.4072	-8.1875
	(18.694)	(23.354)	(23.659)
N	82	82	82

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

6.3.2 The Moderating Effect of Macroeconomic Fluctuations on Earnings Per Share

The results in Table 6.5, like those in Table 6.4, exhibit a negative moderating effect of interest rates on the relationship between the growth-oriented REITs sector and earnings per share.

Table 6.5

Regression Results on the Moderating Effect of Macroeconomic Fluctuations on Earnings Per Share

Variables	Earnings Per Share		
Growth-oriented	0.805*	-0.003	0.017
	(0.43)	(0.075)	(0.066)
Interest-rate	-0.032		
	(0.056)		
CPI		-1.518***	
		(0.57)	
Stock Market Volatility			0.301**
			(0.129)
Growth-oriented * Interest-rate	-0.274*		
	(0.16)		
Growth-oriented *CPI		0.932	
		(1.173)	
Growth-oriented * Stock Market Volatility			-0.003
			(0.234)
Listed Trading Shares	Yes	Yes	Yes
Net Asset Value on the Day Before Listing	Yes	Yes	Yes
Number of Shareholders	Yes	Yes	Yes
Management Company	Yes	Yes	Yes
Trustee	Yes	Yes	Yes
Fixed Management Fee Rate	Yes	Yes	Yes
Custody Fee Rate	Yes	Yes	Yes
Listing Date	Yes	Yes	Yes
Asset Type	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Constant	1.744	2.704	2.691
	(1.157)	(1.778)	(1.816)
N	101	101	101

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This indicates that in high-interest-rate environments, the earnings per share of growth-oriented REITs are suppressed. The rationale is that high-interest rates can lead to increased financing costs and decreased investment returns, adversely affecting earnings per share. Additionally, financial market

volatility in high-interest-rate environments may intensify, negatively impacting the economic environment and market demand. This creates uncertainty and pressure on growth-oriented REITs' operational and investment environment, subsequently affecting their earnings per share.

6.3.3 The Moderating Effect of Macroeconomic Fluctuations on Price Fluctuation

Regression results in Table 6.6 point out a positive moderating role of interest rates in the relationship between the growth-oriented REITs sector and price fluctuation. In other words, an increase in interest rates exacerbates the price fluctuation of growth-oriented REITs. This may be because growth-oriented REITs typically invest in high-growth industries or projects, and the rise in interest rates, by increasing the cost of capital, adversely impacts their performance and profitability, leading to greater price fluctuation. Conversely, safety-oriented REITs might better withstand the impact of rising interest rates, with their price fluctuation being less affected by interest rate changes. This can be attributed to safety-oriented REITs typically investing in relatively stable and low-risk assets, such as low-risk commercial real estate or stable-income rental properties, which are less sensitive to interest rate fluctuations. These findings emphasize the importance for investors and market participants to closely monitor interest rate factors when considering REITs investments, particularly in decision-making for investing in growth-oriented REITs.

Table 6.6

Regression Results on the Moderating Effect of Macroeconomic Fluctuations on Price Fluctuation Rate

Variables	Price Fluctuation		
Growth-oriented	-182.172**	23.498***	19.971***
	(87.145)	(8.692)	(6.228)
Interest-rate	-45.997**		
	(22.751)		
CPI		1,109.95***	
		(373.719)	
Stock Market Volatility			-264.974***
			(89.571)
Growth-oriented * Interest-rate	71.925**		
	(30.956)		
Growth-oriented *CPI		-173.354	
		(286.93)	
Growth-oriented * Stock Market Volatility			21.543
			(39.351)
Listed Trading Shares	Yes	Yes	Yes
Net Asset Value on the Day Before Listing	Yes	Yes	Yes
Number of Shareholders	Yes	Yes	Yes
Management Company	Yes	Yes	Yes
Trustee	Yes	Yes	Yes
Fixed Management Fee Rate	Yes	Yes	Yes
Custody Fee Rate	Yes	Yes	Yes
Listing Date	Yes	Yes	Yes
Asset Type	Yes	Yes	Yes
Quarter	Yes	Yes	Yes
Constant	-578.734**	-463.128**	-432.925*
	(242.586)	(234.941)	(233.763)
N	78	78	78

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

6.4 Analysis of Regression Results

The empirical findings of this study offer an in-depth analysis of the characteristics of the REITs industry and their relationship with project performance. The results indicate that growth-oriented REITs surpass safety-

oriented REITs regarding net profit margin and earnings per share. This is likely due to growth-oriented REITs often involving industries with high growth potential, such as technology and healthcare, where innovation and market demand potential can lead to higher profitability. However, growth-oriented REITs also exhibit greater price fluctuations, reflecting the higher market volatility and economic environmental risks they face, possibly because macroeconomic changes and technological innovations influence these industries more significantly.

The empirical results also reveal a significant moderating role of interest rates on the relationship between industry characteristics and net profit, earnings per share, and price fluctuations. As illustrated in Figure 6.2, interest rates negatively affect the net profit and earnings per share of growth-oriented REITs, suggesting that their profitability and market performance might be hindered in high-interest-rate environments. This could be due to higher interest rates increasing financing costs, reducing the funds available for expansion and innovation, thereby impacting profitability. Conversely, interest rates positively moderate the price fluctuations of growth-oriented REITs, indicating that high-interest rates might amplify market volatility, especially for those reliant on external financing.

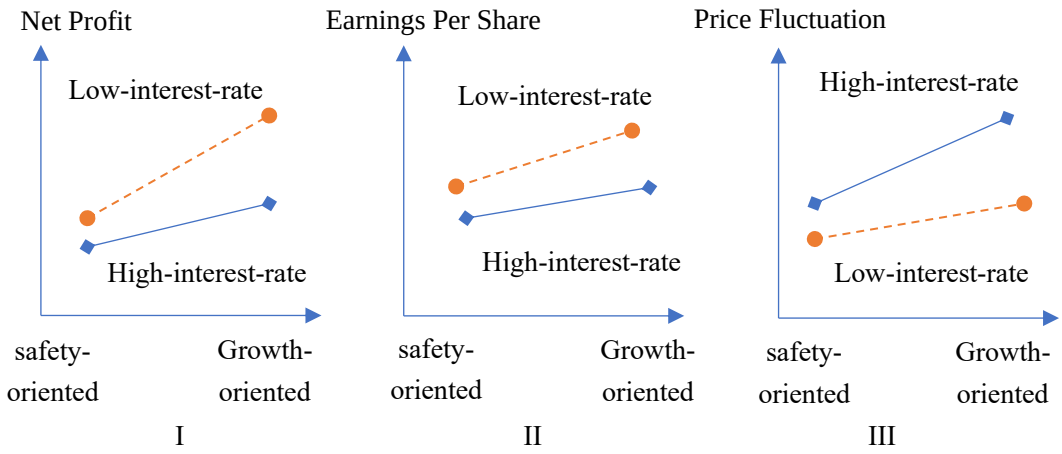
However, inflation and stock market volatility did not show significant moderating effects in this study. A possible explanation is that REITs, as a real estate investment tool, are more influenced by real estate's inherent characteristics and cycles and less by inflation or stock market volatility. Additionally, REITs' revenues primarily come from rental income and capital value growth, factors which may not have a direct and strong link to inflation

and stock market fluctuations.

Overall, the empirical findings underscore the importance of considering industry characteristics and macroeconomic factors when evaluating and investing in REITs. Particularly for growth-oriented REITs, high interest rates and market volatility are key factors requiring special attention from investors. Meanwhile, this also indicates that while safety-oriented REITs may not offer the profit potential of growth-oriented ones, they can provide more stable investment returns.

Figure 6.2

Diagram Illustrating the Moderating Effect of Interest Rates



Chapter 7 Conclusions, implications and limitations

7.1 Conclusions

During periods of economic fluctuation, investing in real estate has been recognized as an effective way to mitigate investment risks (Akinsomi, 2020; Jain, 2017). However, investing in real estate often requires substantial capital, making Real Estate Investment Trusts (REITs) a viable option for ordinary investors to participate in real estate investment and earn dividend and interest income (Habbab & Kampouridis, 2024).

The unique risk-return characteristics of REITs offer the potential to enhance the overall returns and reduce risks in an investment portfolio (Günther et al., 2022; Razak, 2023; Zulch, 2022). However, significant variances in investment returns exist across different REIT projects (Benefield et al., 2009; Piao et al., 2016). This study suggests categorizing REITs based on the characteristics of their underlying infrastructure assets into growth-oriented and safety-oriented REIT projects to understand the performance logic of REITs projects, particularly Chinese REITs. Growth-oriented REIT projects refer to those invested in asset classes with high growth potential and higher market volatility risks. In contrast, safety-oriented REITs projects primarily invest in asset classes with relatively stable cash flows and lower market volatility risks.

Empirical studies indicate that growth-oriented REITs in China and the United States outperform safety-oriented REITs in terms of net profit margin and earnings per share, reflecting the high growth potential and profitability of growth industries. However, growth-oriented REITs exhibit higher market volatility, with larger price fluctuations, revealing the potentially higher risks associated with investing in growth-oriented REITs. Further, empirical results

based on data from the Chinese REITs market show that interest rate changes have a negative moderating effect on the net profit and earnings per share of growth-oriented REITs. In high-interest-rate environments, the profitability of growth-oriented REITs is suppressed, possibly due to increased financing costs and reduced market demand. Conversely, rising interest rates intensify the market volatility of growth-oriented REITs, suggesting that their market performance may be more unstable in high-interest-rate environments. Additionally, the empirical studies indicate that inflation and stock market volatility did not exhibit significant moderating effects.

7.2 Practical Implications

7.2.1 Implications for Investors

The findings of this study underscore the importance of meticulously considering industry characteristics and macroeconomic factors when evaluating REITs investments. While growth-oriented REITs offer high potential returns, they are associated with greater risks and market volatility, in contrast to safety-oriented REITs' more stable but potentially lower returns. Moreover, growth-oriented and safety-oriented REITs may have differing sensitivities and capacities to respond to macroeconomic fluctuations, making these factors crucial in explaining performance variances among REITs projects. The study’s insights are significant for investor decision-making in the REITs market.

1. Emphasize risk management and portfolio diversification. Growth-oriented REITs might suit investors with a higher risk tolerance, especially those seeking long-term growth and higher returns. Conversely, safety-oriented

REITs are suitable for risk-averse investors or those seeking investment stability and consistent cash flows. However, combining growth-oriented and safety-oriented REITs in a portfolio can balance risk and return. While growth-oriented REITs offer higher return potential, they also bring greater market volatility and risk, especially during economic turbulence or interest rate fluctuations. Conversely, safety-oriented REITs offer more stable returns, albeit potentially lower, providing better risk mitigation during economic downturns or market instabilities.

2. Monitor macroeconomic indicators and dynamically adjust investment strategies. Investors should closely watch macroeconomic indicators like interest rates when considering REITs investments. This study indicates that high interest rates can negatively impact the net profit and earnings per share of growth-oriented REITs while increasing market volatility. Investors should assess the current and anticipated macroeconomic environment in their investment decisions. Since various factors can influence REITs market performance, investors should adopt flexible and dynamic strategies. Adjusting the investment portfolio in response to market conditions and balancing growth and safety assets can help investors better navigate market fluctuations and economic cycles. For example, in the current context of widespread deflationary concerns, the enhanced purchasing power of money makes stable income streams more valuable. Therefore, like safety-oriented REITs, fixed-income assets might become a favoured investment option. Investors should focus on REITs projects with strong market positions, stable cash flows, and good asset quality, as they may perform more robustly in a deflationary environment, especially those involving essential industries like infrastructure and healthcare.

3. Consider the interplay between REIT investments and stock and bond market investments. Due to their equity nature, growth-oriented REITs may offer higher return potential but also come with higher risk and volatility. They might suit investors seeking growth and willing to take on higher risks. In contrast, safety-oriented REITs are more akin to bonds, offering stable cash flows and lower volatility, suitable for risk-averse investors or those needing a stable income source. As an intermediate asset class between stocks and bonds, investors should consider incorporating REITs into their overall investment portfolio. REIT investments can be a hedging tool, helping investors reduce sensitivity to stock or bond market fluctuations. Especially during times of significant stock market volatility or low bond yields, REITs can provide an alternative source of returns.

7.2.2 Implications for Policymakers

Based on an in-depth analysis of REITs, the conclusions of this study also offer significant insights for policymakers, particularly in utilizing REITs as an innovative financing tool and employing them to revitalize existing assets and support urbanization and infrastructure development, thereby providing robust support for economic growth.

1. Promote REITs as a channel for urbanization and infrastructure financing. Governments can actively promote REITs as an effective funding tool, especially in urbanization and infrastructure development. By converting existing infrastructure assets into REITs, new funding sources can be provided for urban development projects, reducing the debt burden on local governments. Policymakers should consider establishing and implementing more standardized public REIT market policies to enhance transparency and

attractiveness. Expanding market size and asset types can increase investor choices and promote a healthy cycle of existing and new investments. Additionally, governments can encourage private and state-owned enterprises to convert their infrastructure assets into REITs, incentivizing more companies to participate in the REIT market.

2. Strengthen REIT market regulation and risk management. Policymakers need to enhance market regulation and establish comprehensive risk management mechanisms to ensure the stability of the REIT market and investor confidence. First, strict supervision should be implemented on REITs' financial transparency, management quality, and project sustainability. Next, legal and tax policy optimizations should be promoted to provide solid legal protection for the development of the REIT market. Finally, enhancing public awareness and education can increase public and potential investor understanding of REITs, contributing to a more mature and active REIT market.

7.3 Limitations

This study empirically tested the impact of industry characteristics on corporate performance and the moderating effect of macro fluctuations based on REIT data from China and the USA, offering valuable academic contributions and practical insights. However, certain limitations exist.

1. Data Limitations. Given the relatively recent emergence of the Chinese REIT market, the number of REITs involved in the study is limited, with a somewhat homogeneous variety. This may restrict a comprehensive understanding of the market, particularly in assessing the performance of different types of REIT projects. Additionally, the discussion in this study on the moderating role of macroeconomic volatility solely utilizes Chinese data,

which limits the validity of its conclusions to China's specific economic environment and market conditions. However, macroeconomic volatility is a global issue, and research relying only on Chinese data may restrict a universal understanding of macroeconomic fluctuations worldwide, rendering the study's conclusions somewhat one-sided.

2. Consideration of Limited Factors. The study mainly focuses on the impact of industry characteristics and macroeconomic fluctuations, possibly overlooking other significant elements. For instance, policy changes, market competition conditions, cultural features, and geographical locations might also significantly impact REITs' performance. Additionally, specific events in the REITs market, such as the lifting of restrictions on strategic allotment shares, fluctuations in the equity market, and the entry of large funds, may also significantly impact the performance of REITs. Moreover, the performance of REITs projects may be influenced by factors such as national political risks, including government limitations on highway tolls and water prices, which could have a substantial potential impact on REITs projects. Although these factors could be crucial determinants of REITs project performance, this study could not delve deeply into them due to limitations such as data availability.

3. Lack of Long-term Trend Research. The study's timeframe is relatively short (from Q3 2021 to Q1 2023), limiting the observation and analysis of long-term trends and cyclical changes in the REIT market. Given that the characteristics of the REIT market might change over time, especially under different economic cycles and market conditions, a longer data span would be beneficial for a more comprehensive understanding of REITs' performance and characteristics.

4. This study overlooks the correlation between the performance of REITs projects and inflation. As a real estate securitization instrument, the performance of REITs is influenced by factors such as property value, rental income, and the overall economic situation, typically having a close relationship with inflation. However, the study's failure to consider the relationship between REITs projects and inflation might result in an incomplete understanding of the mechanisms through which macroeconomic fluctuations affect them.

Future research should consider using a more diverse range of data sources to enhance the representativeness and general applicability of the study. Additionally, more factors potentially affecting REITs' performance should be considered, along with longer-term data analyses, better to understand REITs' market dynamics and long-term trends.

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