

# The Impact Analysis of Real Estate Investment Trusts (REITs) on Infrastructure Projects Management and Operation

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#### **ABSTRACT**

REITs is a new type of equity financing tool for infrastructure projects investment in China(C-REITs), which learned from international experience. In this paper, we use the "influence-interest" matrix to analyze the participants of C-REITs and identify each key stakeholder about it. By summarizing and analyzing the existing problems (e.g.,low efficiency of investment) on infrastructure projects management and operation in the past, it is found that the main reason is lacking of effective incentives, external supervision and information disclosure constraints on the projects key stakeholders. This paper analyzes the operation mechanism of "Asset IPO" for infrastructure projects through C-REITs, and aims to study the impact of C-REITs on projects management and operation.

**Keywords:** C-REITs, infrastructure projects, management and operation.

#### 1. BACKGROUND

On April 30, 2020, the NDRC (National Development and Reform Commission ) and the CSRC (China Securities Regulatory Commission) promulgated the Notice on Promoting the Pilot Work of Real Estate Investment Trusts in the Infrastructure Fields, initiating the pilot work of public offering of C-REITs. Then, in August, the CRSC issued the Guidelines for Public offering of C-REITs (Trial), marking the official launch of public offering of C-REITs. The C-REITs is a major reform initiative for infrastructure investment and financing in China, which drawing on international experience in the development of REITs. And it also be a new innovation after the PPP model being promoted since 2015.

In China, governments are the primary providers of infrastructure projects. Because of the "agency problem", for a long time, Infrastructure projects management and operation makes low efficiency, lead to serious waste of social resources and corruption. As well-known, there is a series of strict rules in the capital market ,like qualification examination and approval, periodic information disclosure, external supervision and so on, which make the market openness, transparent and efficiency. These rigorous rules are what has been really

lacking on the infrastructure project management and operation, especially to the related projects key stakeholders. This paper aims to analyze the operation mechanism of "asset IPO" for infrastructure projects management and operation, and research the impact of C-REITs on it.

# 2.CURRENT STATUS OF RESEARCH IN TWO SUBJECTS: INFRASTRUCTURE PROJECT MANAGEMENT AND OPERATION AND REITS

# 2.1 Status of domestic research

The domestic literatures on the infrastructure project management and operation are very sufficient. they mainly focused on the analysis of the institutional mechanism and internal problems of government investment management, as well as the risk analysis of PPP projects and the characteristics of domestic and foreign regulation, putting forward the practices and suggestions in these field. Huang Guopeng and Li Junpeng (2016) analyzed the necessity of public participation in PPP projects and the participation mechanism in each phase of the project based on the Gradient theory of public participation, and considered

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that public participation is an inevitable choice for sound development of cities. Bian Xiao and Zhao Jinzhi (2019), starting from their work practice, proposed that existing problems in China's government investment project management such as unclear government-market relationship, legal constraints and management rules to be improved, decentralization of government project management subjects, and omission of inherent management links, then argued that management should be strengthened in terms of punishment, management system, link refinement and performance evaluation.

Domestic research in REITs is still in the initial stage. REITs is still the new product in China, and there is no specialized legislation for the time being. The REITsalike products that have been launched in the market are mainly of private placement. Public REITs are still in the exploration and pilot period, only several mature products issued at present. Relevant literature studies mainly focus on the characteristics of REITs in foreign markets and products, the main path of domestic development, feasibility, market cultivation, product building model under the current legal system, taxation issues and other areas. Shi Chunning (2012) analyzes the case of overseas IPO of Chinese REITs, puts forward the problems of conducting related business in China, and makes suggestions for the development of this field. Cheng Weicai (2018) argues that changes in China's land policy as well as credit policy have affected the development of the traditional financial industry, and explores the current issues related to the development of real estate investment funds in China.

# 2.2 Status of foreign research

PPP is a mature investment model in the infrastructure sector in many developed countries and is subject to a number of more rigorous constraints throughout the project management and operation lifetime. It benefits from the well-developed legislation, monitoring and disclosure system. World Bank Institute (2013) summarized the practices of PPP projects and their contract information disclosure in 11 regions of 8 countries, including the UK, and concluded that proactive information disclosure can help PPP projects achieve the desired value-for-money objectives and better outcomes.

REITs have developed relatively mature and more diverse types in major foreign markets. The United States, Australia, and India already launching specialized REITs products for infrastructure investment. Since REITs have been operating in developed countries (e.g., North America) for decades, their research is more in-depth, such as the efficiency of their organizational structure, debt policies, market performance, and principal-agent problems. Ming, I, and Tien (2013) studied the correlation between REITs and stock markets in four countries (Taiwan, Hong Kong, Singapore, and Japan) after the U.S. financial crisis, and found that presenting a

strong positive correlation. Riëtte Carstens and Nicolene Wesson (2019) study the impact of SA REIT legislation on real estate listed companies in South Africa, arguing that strict regulations on financial leverage and dividend ratios for REITs can incentivize higher profitability and sustainable growth for companies. For example, the profit margin increased from average about 50% (pre-REITs period) to about 80% (REITs period).

In China, the first batch of 9 C-REITs listed in June 2021, including two highway REITs. The Prospectus of these two highway REITs shows that the gross profit margin is average around 44% between 2018 and 2019 (Pre-REITs period). We will track the subsequent financial data of the projects and find if the gross profit margin may prominent variation.

#### 2.3 Brief summary

It is observed that there is still a lack of effective incentives, supervision and information disclosure in the infrastructure project management and operation in China. Since the promotion of the PPP model, the CSRC and the MOF (Ministry of Finance), as well as other related ministries have issued relevant regulations to regulate project information disclosure matters, but the content of disclosure is limited, public participation is insufficient, and there is still a gap with developed countries in the legislation and management systems. Although C-REITs is in the exploration period, but the top-level Design is consistent with international standards, and they can directly copy mature experience in terms of product characteristics, regulatory system and information disclosure.

# 3.RESEARCH METHODOLOGY AND RESEARCH PATH

#### 3.1 Analysis using models

Model analysis: Using the interest analysis method, we construct an "influence-interests" analysis model for C-REITs, analyzing different levels of stakeholders and key stakeholders. According to the influence-interest matrix, the stakeholders can be classified into four types: A, B, C and D. See Figure 1.

#### 3.1.1 Type A

High-influence, high-interest stakeholders, also called key stakeholders. This type of stakeholder has high influence on the project, powerful strength in the successful achievement of project goals, and will derive high benefits from the project. Therefore, projects should prioritize meeting the needs of this type of stakeholder.



#### 3.1.2 Type B

High-influence, low-benefit stakeholders. This type of stakeholder has a strong influence on the successful of project objectives, and their effort is positively correlated with project performance, but the project brings relatively limited benefits to them. Therefore, projects should meet the needs of this type of stakeholders as much as possible.

# 3.1.3 Type C

Low-influence, high-interest stakeholders. This type of stakeholder has low influence on the project itself, and the project implementation process is not very relevant to them. However, the performance of the project is highly relevant to their interests, and their main interests are realized through the project. Although this type of interest cannot directly influence the project implementation, it

can indirectly influence the project implementation by influencing the type A stakeholders. Therefore, it should be ensured that this type of stakeholder has open access to project information.

# 3.1.4 Type D

They are the stakeholders with low influence and low interest. This type of stakeholders is not really related to the project, so it is sufficient to pay some attention to avoid the project directly or indirectly harming their interests.

The above four types of stakeholders may change their influence and interest attributes when some factors of the project change, and the attitude toward them may also change.

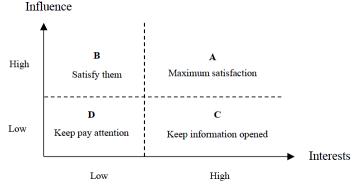


Figure 1 Stakeholder "influence-interests" matrix

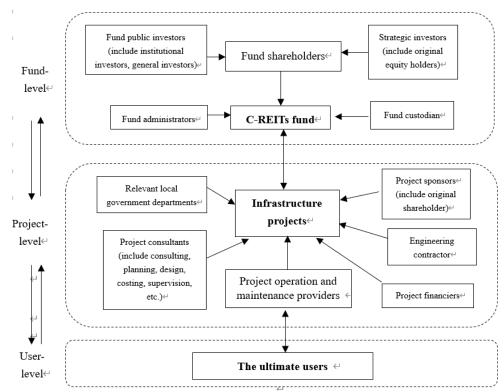


Figure 2 Schematic diagram of relevant participants in C-REITs

(Note: 1. The fund-level also has asset management plan, private equity funds, SPV and so on. These stakeholders are mainly for the purpose of



structuring the C-REITs fund, so be omitted from the figure.2. Project-level participants may also include local residents and community groups in the project site, which are omitted in the figure because they are not direct participants.)

#### 3.2 The C-REITs Stakeholders Identification

Based on the above stakeholder analysis framework, the stakeholders of C-REITs can be identified as follows. See Figure 2.

The above diagram divides the relevant participants into three levels based on the actual C-REITs, contains Fund-level, Project-level and User-level.

The Fund-level. The Fund-level controls the project assets by purchasing the ownership of the infrastructure project company (or purchasing the project income rights), thereby obtaining the management rights and income rights of the project.

The Project-level. This level carries on the top and the bottom by transferring the ownership of the assets to achieve "asset IPO", recovering future cash flow once, and at the same time providing long-term stable income for the fund-level by dividend generated from the management and operation of the project assets; Meanwhile providing products and services for the user-level to meet the usage requirements of the service users.

The User-level. This level mainly enjoys the products and services while paying service fees to the project-level.

Table 1. Stakeholder identification table for C-REITs

Hierarchy division	Stakeholders
Fund-level	Fund manager, Fund custodian, Fund shareholders
Project-level	Local government departments, Project sponsors, Project consultants, Engineering contractors, Project financiers, Project operation and maintenance providers
User-level	The ultimate users

#### 3.2.1 Fund manager

The fund manager is responsible for the active investment management of the assets raised by the fund. Specific responsibilities include selection of investment assets, entrusted evaluation, acquisition and disposal, operation assessment, etc. The purpose is to enable the infrastructure assets to be well operated, to achieve stable expected returns, and to create investment returns for fund shareholders. So, the fund managers have high influence and high interest on C-REITs.

#### 3.2.2 Fund custodian

The fund custodian is mainly responsible for ensuring the safety of the fund's property. According to the requirements of laws and regulations, in the operation process of the C-REITs, it is responsible for the fund's assets custody, liquidation and delivery, net value accounting, transaction supervision, information disclosure and other corresponding responsibilities. So, fund custodians have low influence and low interest on C-REITs.

#### 3.2.3 Fund shareholders

The fund shareholders contain the fund public investors (include institutional investors, general investors) and the strategic investors (include the infrastructure project original equity holders). Who are the direct owner of the asset equity (or earnings) of the C-REITs, and are the direct beneficiaries. Because of the fund manager plays the important roles on asset management, from the perspective of "influence-interests" and considering the actual operation of securities public offering funds, it can be concluded that the fund shareholders have low influence and high interest on C-REITs. (In practice, the infrastructure project original equity holders can control the asset by the project operation and maintenance providers. They usually have strong association relationship.)

#### 3.2.4 Local government departments

Local government departments are responsible for the administrative management and administrative licensor of infrastructure projects. who always have high influence and high interest on infrastructure projects.

#### 3.2.5 Project sponsors

Project sponsors (include original shareholder) refer to the specific investment, management and implementation institutions of infrastructure projects, as well as be the main beneficiaries of infrastructure projects. So, the project sponsors have high influence and high interest on the infrastructure projects.

#### 3.2.6 Project consultants

The project consultants refer to the third-party professional institutions involved in project investment and construction, mainly including consultation, planning, design, cost, supervision, etc. In PPP model, there also have legal, accounting and other service institutions. So the project consultants have high influence and low benefit for infrastructure projects.

#### 3.2.7 Engineering contractors

The engineering contractors have the corresponding engineering construction qualification, construction ability and experience for the infrastructure project. They



have higher influence and higher interest or infrastructure projects.

### 3.2.8 Project financiers

They are institutions and individuals that provide equity and debt financial support for the construction of infrastructure projects. Project financiers have higher influence and higher interest on infrastructure projects.

# 3.2.9 Project operation and maintenance providers

They are professional service organizations providing management, operation and maintenance for the completed and delivered infrastructure projects. The project operation and maintenance providers have a higher influence and higher interest on the infrastructure project.

#### 3.2.10 The ultimate users

The ultimate users refer to the users, consumers and users corresponding to the products or services provided by the infrastructure projects, specifically including institutions, groups, enterprises and individuals. Because infrastructure projects tend to strongly monopoly (e.g., water supply, electricity supply, highways, etc.), the ultimate users are often in a weak position. But the infrastructure project has a huge impact on their interests.

# 3.3 "Influence-interests" matrix of C-REITs participants

By analyzing the "influence-interests" of each level of participants in C-REITs, the "influence-interests" matrix can be obtained as follows. See Figure 3

#### Influence

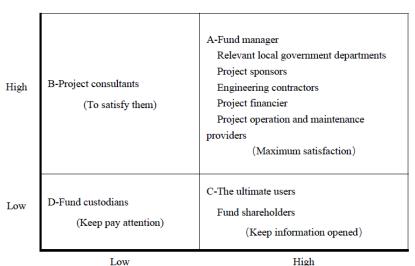


Figure 3 "Influence-interests" matrix of C-REITs participants

#### 3.4 Conclusions of the Model Analysis

From the above analysis of the "influence-interests" matrix model of C- REITs, the following conclusions can be drawn.

# 3.4.1 Type A Stakeholders (Key Stakeholders)

They include fund managers, local government departments, project sponsors, engineering contractors, project financiers, and project operation and maintenance providers. These key stakeholders are inextricably linked to the success of the infrastructure projects (C-REITs). Once any of them uses their influence (or power) in the exercise of their duties to the detriment of the interests of infrastructure projects (C-REITs), it will lead to the failure of the projects, and thus lead other stakeholders' benefit lost. For example, some local government departments in China have lower

administrative efficiency and weak service awareness, which may lead to delay administrative approval and make the project can't acquire financial resources timely, thus affecting the overall schedule of the infrastructure project, even leading to a situation of project failure. Therefore, for these key stakeholders, we should pay close attention to their demands and dynamics of the project, especially to ensure the transparency of project information, and to satisfy the interests of all parties to a great extent within laws and regulations, so as to avoid affecting the overall performance of the project by causing losses to others.

Interests

#### 3.4.2 Type B Stakeholders

This type mainly includes the project consultants (consulting, planning, design, costing, supervision, etc.). For this type of stakeholders, we should ensure their satisfaction by providing them with complete project



information and profiles, as well as comfortable working environment and reasonable service fees, so that they can better provide professional intellectual services for the project in the implementation process.

# 3.4.3 Type C Stakeholders

That includes the ultimate users of the project and fund share holders. These two types of stakeholders are not involved in the actual operation of the infrastructure project (C-REITs), but have the closest relationship with the infrastructure project in terms of interests. Therefore, it is important to ensure that this type of stakeholder has an open access to acquire information about the project.

#### 3.4.4 Type D Stakeholders

The type D Stakeholders are fund custodians, whom should be pay attention to the business connection and communication, and know their demands continuously.

The above analysis shows that the core focus of the projects (C-REITs) should be on the behavior and interests of key stakeholders in type A, namely fund managers, local government departments, project sponsors, engineering contractors, project financiers and project operation and maintenance providers. It should also be noted that, except for the fund manager, the remaining key stakeholders are all located at the project-level. It is not difficult to understand that whether the project itself realizes benefits in C-REITs will directly affect the whole value system.

# 4.THE CURRENT SITUATION OF INFRASTRUCTURE PROJECT MANAGEMENT AND OPERATION IN CHINA

In China, infrastructure projects usually be financed, invested, constructed, operated and managed by the local governments or their authorized agencies to meet the needs of regional economic and social development and guarantee the basic living needs of residents. It mainly includes municipal roads, bus and subway, rail transit, water supply and power supply, gas and communication, waste water and warehouse logistics, etc.

The executant is the project legal person (i.e., government agent) authorized by local governments. PPP model projects are executed by forming a new project company with government project legal person as usual, but it is still difficult to get rid of the intervention of government's "invisible hand". Yan Ling and Zhao Liming [1] (2005) analyzed the two-levels multi-stages principal-agent chain of government investment projects and concluded that the government is an agent, which leads to government failure due to information asymmetry, ineffective supervision by the initial principal, multi-objective nature of government agents, insufficient

and weak incentives of government officials, and so on. In Such a state, the governments still play the dual role of "referee" and "athlete" in infrastructure projects, resulting in insufficient supervision and restraint, and the management and operation problems of infrastructure project due to government failure are still prominent.

Specifically, lots of problems on the government investment projects are concentrated in various aspects, such as pre-proposal, decision making, planning and design, construction and implementation, as well as operation, among which the key stakeholders are mainly including government departments, project sponsors and engineering contractors. Xiang Qiang and Huang Yigang [2] (2004) proposed that China's government investment construction projects are insufficient at preliminary work, misappropriation of construction funds, the main responsibility of the project and the project supervision system is not in place, bidding is not standardized and other problems lead to "three super" projects, scrapped projects and economic crimes. The main reason is that there is no perfect supervision system. They studied the supervision of government projects in developed countries and found that China has a large gap in the system of legal constraints, dynamic supervision, transparent supervision, management of all parties involved, and post-project evaluation, i.e., punishment of responsibility for violations. Cai Weigang [3] (2019) analyzed the main problems in the project construction process of government financing platform company, including the lack of unity between construction and user interests, the lack of depth of user participation in the project, the over-design of the project as well as the under-reporting of the project resulting in increased construction difficulties and actual investment overruns, and design while construction making ECN (engineering change notice) increase and costs out of control. From their work practice, Bian Xiao and Zhao Jinzhi [4] (2019) proposed that there are problems in China's government investment project management such as unclear government-market relationship, legal constraints and management rules to be improved, decentralization of government project management subjects, and oversight of inherent management. They argued that management should be strengthened in terms of punishment, management system, link refinement, and performance evaluation.

# 5.ANALYSIS OF THE IMPACT OF C-REITS ON INFRASTRUCTURE PROJECT MANAGEMENT AND OPERATION

Information transparency of infrastructure projects can have a double effect. The public can play an external regulatory role on the project through information disclosure, and reduce the internal risks of the project through direct participation and public opinion monitoring. Those projects key stakeholders can also be



pressured by information disclosure to regulate their operations in the project decision-making and implementation process. So far, there is no top-level design about information disclosure in the field of infrastructure project management and operation in China, mainly in the form of departmental regulations and other provisions for information disclosure in a few aspects of the project such as planning and procurement.

In 2017, the MOF (Ministry of Finance) of China issued the Interim Measures for the Management of Disclosure on the Comprehensive Information Platform for Government and Social Capital Cooperation (PPP), but the content of information disclosure is still limited. Because of the scope of disclosure is mainly for the PPP's participants, lacking of the approaches for public participation. World Bank Institute [5] (2013) argues that active information disclosure of PPP projects can improve the governance of project procurement, risk sharing between government and social capital, financial cost control of the project and user service quality, which can better realize the expected benefits of the project. Wang Shouqing and Liu Ting [6] (2014) proposed that PPP projects should establish a unified project information release mechanism to publish relevant information to the society, which requires timeliness, accuracy and consistency. They pointed out that disclosing information in project construction and operation is conducive to social supervision, as well as incentive for enterprises to control costs and improve efficiency, and to protect government and public interests. Lv Jianglin [7] (2018) proposes that the public is the direct user of public goods and services, and the performance of PPP projects should be made public to accept extensive social supervision and enable the public participate in the performance management mechanism.

Like the company listing, C-REITs can make the asset of infrastructure projects listing in the capital market (asset IPO). It is an efficient tool connecting the capital market and infrastructure projects. Through C-REITs, it also can introduce the operation mechanism of capital market into the asset management and operation, especially can supervise the project key stakeholders, and make the project more efficient. We can discuss that as follow

# 5.1 The threshold of the "asset IPO" for infrastructure projects

C-REITs have a series of strict regulations on asset ownership, operation time, operation status, management organization, revenue source, land use, operation qualification and mortgage pledge. The "asset IPO" conditions and approval procedures have important impact for key project stakeholders, especially the local governments. Firstly, non-compliant projects in the local government's infrastructure stock will not be able to meet

the issuance qualifications, thus failing to revitalize the stock assets and making it difficult to find new sources of construction funds under the strictly controlled level of local government liabilities. Secondly, in the new infrastructure investment, the local government will strengthen the scientific decision-making procedure and strengthen the management and operation of the project. The goals of scientific decision-making, legal compliance and the pursuit of efficiency in project management operation will have a positive incentive and restraining effect on local government of infrastructure projects.

# 5.2 Supervisory and Disclosure Role of C-REITs

The supervision and information disclosure of C-REITs are governed by the Administrative Measures on Information Disclosure of Publicly Raised Securities Investment Funds [8] and the Guidelines on Publicly Raised Infrastructure Securities Investment Funds (for Trial) [9], which provide more detailed regulations in terms of project due diligence, information disclosure obligations and supervision mechanisms with reference to listed companies and combined with the characteristics of REITs. In order to protect the interests of investors, when the "assets IPO", all kinds of information of fundlevel, project-level and user-level should be disclosed in a standardized manner. The information of the projectlevel includes the administrative approval and legal compliance of the project, the evaluation report of the asset evaluation agency on the dynamics of the project, the various financial statements of the project, the status of the assets sold and purchased, the operating income of the project, etc. The fund manager, as a key stakeholder in the fund-level, will play a crucial role in the legal, compliant and efficient operation of the infrastructure project assets under the joint supervision of the securities regulator and the fund trustee.

At the duration of REITs funds, they are subject to the joint supervision of laws and regulations and industry norms, and the management and operation of projects are subject to information disclosure in accordance with regulations for joint supervision by investors and society, and any irregularities may affect the interests of fund shareholders due to the risky events of their projects. Wu Changhai and Wang Narengaowa[10](2021) deemed that the information disclosure of REITs must focus on the real estate projects. They argued that the main participants of REITs have the obligation to disclose information and keep consistent.

# 6.CONCLUSION

This paper has analyzed the impact of "asset IPO" on infrastructure projects management and operation. By establishing the "influence-interests" analysis model of C-REITs, we identify the key stakeholders involved in the



projects, summarize the main problems of the management and operation of infrastructure projects in China, and conclude that due to the lack of effective incentives, constraints and social monitoring mechanisms for the key stakeholders. And the key stakeholders at the project-level may compromise the interests of the project due to other interests during the project implementation process. As an important way for local governments (the main original owners of various infrastructure projects) to revitalize the stock assets and expand local revenue, "asset IPO", with its unique listing "threshold", operational supervision and information disclosure mechanism, will bring new benefits to the key stakeholders. Besides, it will promote the development of infrastructure projects' management and operation in a more scientific and standardized direction.

Since C-REITs are currently under reviewing and examination (as of this writing), and only several mature funds have been listed, so it is still a lack of specific data about the management and operation of relevant infrastructure projects. At present, it is still difficult to analyze the specific impact and shortcomings through empirical evidence. We may expect that further research and analysis based on specific projects examples will be conducted in the future.

#### **AUTHOR'S CONTRIBUTIONS**

The authors are engaged in engineering management teaching and research for decade years. And they have many research results in this field.

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