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Application of ABS Financing Model in the Construction of Public Rental Housing in China

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Abstract: Housing is a fundamental issue affecting residents' lives. With the rapid acceleration of urbanization, low- and middle-income families in urban areas face significant housing pressure. The construction of public rental housing (PRH) aims to provide affordable housing below market prices for groups whose income exceeds the threshold for low-rent housing but who cannot afford to purchase commercial housing or economically affordable housing. However, relying solely on government fiscal investment to fund affordable housing not only leads to an unreasonable allocation of national finances but also hinders the sustainable development and construction of PRH. By introducing market mechanisms into the affordable housing system and utilizing the ABS (Asset-Backed Securities) financing model for PRH construction, a solid foundation is established for the sustainable development of this type of affordable housing. This paper examines the current status and challenges of PRH construction, analyzing the contradiction between high demand and insufficient supply, as well as the sources of funding for PRH. Furthermore, it explores the ABS financing model, its feasibility, and its advantages in PRH development. Through a case study of the Yueyanglou District Gulin Community Railway Block Urban Lowland Waterlogging Area Redevelopment Public Rental Housing Project in Yueyang City, this paper analyzes the application of ABS financing in PRH construction.

Keywords: Public Rental Housing, ABS Financing, Case Study.

1. Introduction

1.1. Research Background and Significance

Housing is a key public welfare concern and an essential issue for every resident. Since the reform and opening-up and the development of China's socialist market economy, the country's economic strength has continuously improved. However, the wealth gap has also widened. With the growing dominance of market mechanisms and the accelerating urbanization process, an increasing number of people are migrating to cities, leading to a steady rise in real estate prices. In many first- and second-tier cities, housing costs account for more than one-third of the income of ordinary wage earners, placing significant financial pressure on the general public. The construction of public rental housing (PRH) aims to provide affordable housing below market prices for low- and middle-income groups whose income exceeds the threshold for low-rent housing but who cannot afford to purchase commercial housing or economically affordable housing.

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1.2. Literature Review

1.2.1. Research on the Application of the ABS Financing Model in China's Public Rental Housing Sector

Using the ABS (Asset-Backed Securities) financing model for PRH projects has certain advantages. Guiling Zhang and Huilan Wang [1] argued that traditional project financing methods are not conducive to PRH construction, as they increase the government's fiscal burden and hinder the rational allocation of national finances and the sustainable development of PRH. Zhiyan Feng [2] analyzed the development, financing status, and challenges of PRH, highlighting the superiority of ABS financing in terms of diversified financing sources, increased housing supply, and providing investors with stable investment opportunities.

1.2.2. Research on Innovative Financing Channels for Affordable Housing Construction in China

(1) Innovating financing channels for affordable housing and diversifying financing methods

Zhefeng Sun [3] identified several issues in affordable housing construction, including insufficient prepayment of demolition costs, limited funding sources for construction, weak asset management and supervision, and repayment difficulties. Yanjun Bai [4] pointed out that the current challenges in affordable housing construction and operation include mismatched supply and demand structures, inadequate resource allocation, and imperfect management mechanisms. He proposed innovating factor allocation mechanisms, strengthening land and financial support, and integrating multi-channel funding sources.

(2) Securitization financing for affordable housing

a. REITs Financing and PRH Construction: Gulina [5] analyzed the application of the REITs (Real Estate Investment Trusts) financing model in PRH construction by assessing its advantages, challenges, and risk control measures, concluding that the REITs model is feasible for PRH financing. Lulu Zhao [6] discussed the challenges faced by talent apartments and emphasized the urgent need for policy support to ensure housing for skilled professionals and drive social development. Jiaqing Ren [7] explored the public REITs financing model for collective construction land rental housing, suggesting the creation of high-quality asset management companies and optimization of public REITs financing structures to promote the healthy development of rental housing REITs.

b. Other Project Financing Methods: Fengling Li [8] examined the PPP (Public-Private Partnership) and ABS financing models through a case study of the "Hua Xia Xingfu Gu’an Industrial Park New Urbanization PPP Project Special Plan for Heating Fee Revenue Rights Securitization." She explored solutions to infrastructure project financing issues, such as low asset liquidity and slow capital turnover.

(3) Research on Real Estate Finance in China

Ziqiong Wang [9] analyzed the application of ABS financing in the real estate sector, highlighting the market conditions that support this financing model and its advantages, including low risk, low financing costs, and the ability to enhance credit ratings through credit enhancement mechanisms.

1.2.3. Research on Affordable Housing Financing Methods in Other Countries

Guangchun Gao and Juping Hou [10] analyzed affordable housing financing models in the United States, Germany, Singapore, and Hong Kong. In the U.S., the Federal Housing Administration provides guarantees and financial compensation mechanisms to facilitate affordable housing financing. Yanqiu Wei, Xihuo You, and Ming Ma [11] examined the U.S. Low-Income Housing Tax Credit (LIHTC) policy, explaining the characteristics and operational mechanisms of the country’s

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closed financial system for public housing. Germany, on the other hand, combines personal savings with government support through housing savings banks, enabling low-income individuals to afford affordable housing.

1.3. Research Objectives and Scope

This study aims to explore new financing channels for PRH construction to expand the availability of affordable housing for low- and middle-income groups and address the imbalance between high demand and insufficient supply caused by financial constraints.

The key research topics include:

(1) Analyzing the current state and challenges of PRH construction, including the rapid expansion and large-scale development of PRH, existing financing methods, and the limitations of traditional financing approaches.

(2) Examining the characteristics and feasibility of the ABS financing model, assessing its applicable conditions, and comparing its advantages with international experiences in affordable housing financing, including funding sources, institutions, and policies.

(3) Conducting a case study to analyze the operational process of ABS financing in PRH projects, focusing on key elements such as stakeholders, equity structure, bond design, guarantee mechanisms, and risk management.

1.4. Research Methodology

1.4.1. Literature Review

This study references domestic and international literature on PRH financing to understand the current status and challenges of PRH, assess the feasibility of ABS financing for PRH, and provide theoretical support and data sources for this research.

1.4.2. Case Study Method

A case study approach is employed to analyze the specific application of the ABS financing model in PRH projects, evaluating its practical implementation, structure, and effectiveness.

2. The Current State and Challenges of Public Rental Housing Financing in China

2.1. Current Status of Public Rental Housing Construction

Public Rental Housing (PRH) refers to publicly leased housing and is a crucial component of China’s affordable housing system. The significance of PRH within this system has been steadily increasing. The Ministry of Housing and Urban-Rural Development of China is currently piloting a "PRH Integration" policy, prioritizing the development of PRH construction, expanding low-rent housing projects, and gradually reducing the supply of sales-oriented economically affordable housing to establish a more diversified housing system.

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2.2. Sources of Funding for Public Rental Housing Construction

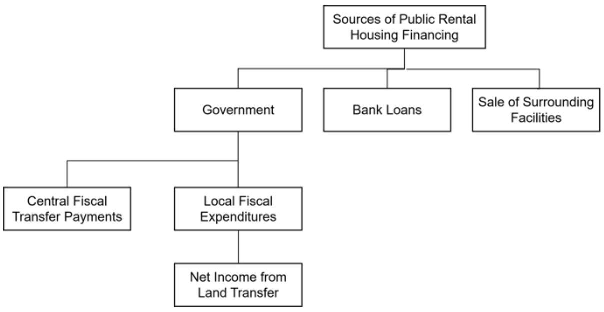

Figure 1: Sources of Public Rental Housing Financing

Funding for PRH construction primarily comes from central government fiscal transfers, local government budget allocations, and net revenue from land sales, as well as bank loans and income from commercial facilities such as shops and service businesses surrounding the project.

2.2.1. Government Investment

(1) Central Government Fiscal Transfers: The central government provides significant financial support for affordable housing projects, recognizing them as crucial for maintaining social stability and ensuring residents' livelihoods. To this end, special funds have been allocated to support PRH construction.

(2) Local Government Fiscal Expenditures: Provincial and municipal governments also allocate dedicated subsidies for affordable housing projects. For instance, the Hunan Provincial Department of Finance and the Hunan Provincial Department of Housing and Urban-Rural Development have established special funding programs to promote PRH construction.

(3) Net Revenue from Land Sales: The net proceeds from land sales constitute a major source of fiscal revenue for local governments. A substantial portion of these funds is directed towards affordable housing projects and other infrastructure developments.

2.2.2. Bank Loans

Bank loans serve as a critical funding source for large-scale affordable housing projects, given their substantial capital requirements. To support PRH construction, Hunan Province established the Hunan Affordable Housing Investment Company, which is responsible for implementing housing projects across the province. Several banks, including the China Development Bank and Huarong Xiangjiang Bank, have signed agreements with this company to provide credit support for PRH projects. The availability of bank loans plays a crucial role in sustaining the development of PRH.

2.2.3. Sales of Surrounding Commercial Facilities

Since PRH projects generate relatively low rental income and cannot be sold, developers often seek alternative revenue streams. The construction of PRH neighborhoods stimulates local economic activity by boosting demand for roads, shops, and other commercial services in the surrounding areas. This economic stimulation helps offset the costs incurred by developers in PRH construction.

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2.3. Challenges in Public Rental Housing Financing

2.3.1. Deficiencies of the Traditional PRH Financing Model

(1) Limited Financing Channels: Traditional PRH financing methods rely heavily on government fiscal allocations and bank loans, leading to a lack of diversification. If government funding is delayed or insufficient, PRH project construction is directly affected, making it difficult to complete projects on schedule. Similarly, if banks tighten credit policies or adjust interest rates, both the construction and financing costs of PRH projects are significantly impacted.

(2) Incompatibility with Recycling Investment: PRH projects generate stable long-term cash flow and are not inherently unprofitable. However, unlike commercial housing, PRH cannot be sold, resulting in a prolonged capital recovery cycle. This makes it difficult to reinvest rental income from completed PRH projects into new developments. In recent years, many new PRH projects have been initiated, but their financial returns remain limited. Under the traditional financing model, the absence of a financing platform hampers reinvestment, obstructing the development of new PRH projects and slowing the overall growth of PRH.

2.3.2. Slow Capital Recovery in PRH Projects

Currently, PRH projects generate revenue solely through rental income, which is priced below market rates. As a result, these projects require an extended period to recover costs. In contrast, Economically Affordable Housing (EAH) allows investors to recoup their funds quickly through sales upon completion, minimizing financial pressure. Although PRH projects yield stable and relatively attractive returns over the long term, their appeal to investors and developers is lower than other real estate projects, which discourages private capital from participating in PRH construction.

3. Application of the ABS Financing Model in Public Rental Housing Construction in China

3.1. General Analysis of the ABS Financing Model

3.1.1. Operation Procedure of the ABS Financing Model

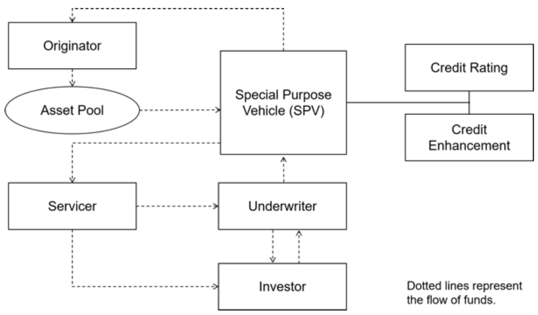

Figure 2: The Operation Procedure of the Asset-Backed Securitization (ABS) Financing Model

The ABS financing model refers to the process of securitizing illiquid assets to raise funds through asset-backed securities. The general procedure includes asset pooling, securitization, credit enhancement, and bond issuance.

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3.2. Comparative Advantages of the ABS Financing Model

3.2.1. Comparison with Traditional and Project Financing Models

Currently, in addition to traditional government and bank financing, China has adopted several innovative financing models for infrastructure projects, including Build-Operate-Transfer (BOT), Public-Private Partnership (PPP), and ABS financing.

(1) Bank Loans: The conventional method of financing affordable housing in China relies heavily on bank loans.

(2) BOT Financing Model: BOT stands for Build-Operate-Transfer, a complete project financing concept. Under the BOT model, the host government or its affiliated institutions grant project companies the rights to build and operate a project. During the concession period, the project company repays investment and operational costs using project revenues while earning profits. After the concession period ends, the project is transferred back to the host government or its subordinate agencies.

(3) PPP Financing Model: PPP (Public-Private Partnership) is a financing structure in which the government partners with private enterprises to fund, construct, and operate a project through a special project company.

(4) ABS Financing Model: ABS (Asset-Backed Securitization) is a financing method in which a project's assets are used as collateral to raise funds. It relies on the expected future income from project assets as a guarantee, issuing bonds in capital markets to raise funds for project financing.

3.2.2. Comparative Advantages of the ABS Financing Model

(1) Lower Financing Costs: The ABS model raises funds through bond issuance, leveraging market mechanisms efficiently. The involvement of fewer intermediaries and the use of credit rating and enhancement mechanisms improve bond creditworthiness, reducing financing costs.

(2) Lower Financing Risk: The existence of a Special Purpose Vehicle (SPV) in ABS financing helps achieve bankruptcy remoteness by conducting true sales of assets, thereby mitigating financing risks. Additionally, external credit enhancement, such as third-party guarantees from financial or non-financial institutions, further reduces financing risks.

(3) Expanded Funding Sources: ABS financing raises capital by issuing bonds to the public, allowing for the absorption of idle private capital and expanding funding channels.

(4) Credit Enhancement: A key feature of ABS financing is its reliance on credit rating and enhancement mechanisms. Since securitized assets often have lower initial credit ratings, financing costs tend to be higher. However, third-party credit guarantees improve asset creditworthiness, lowering financing costs and facilitating project funding.

(5) Separation of Ownership and Management Rights: Unlike BOT and other project financing models that require transferring operational rights, PRH projects are part of national affordable housing programs with strong public welfare attributes. Private operators often struggle to meet the public housing objectives, making ABS financing a more suitable alternative.

3.2.3. Feasibility Analysis of ABS Financing in Public Rental Housing Construction

(1) Low Liquidity of PRH Projects: The fundamental purpose of ABS is to securitize assets that are otherwise illiquid. PRH projects typically have low liquidity and weak cash conversion ability, making them ideal candidates for securitization.

(2) Stable Cash Flow: PRH rental income is collected periodically over an extended time frame, ensuring a stable cash flow that can support medium- to long-term bond financing and timely repayment of ABS financing costs.

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(3) High Creditworthiness of PRH Projects: As a key component of China's affordable housing system, PRH projects face strong demand and are part of government-led initiatives, making them highly creditworthy and secure investment options.

(4) High Capital Demand for PRH Construction: The number of PRH units constructed annually is increasing, requiring substantial financial investment. However, the slow capital recovery cycle limits the pace of PRH development in many provinces.

(5) Market and Legal Support for PRH ABS Financing: China has enacted several regulations that support asset securitization, including the Administrative Measures for Securities Companies' Asset Securitization Business, the Pilot Administrative Measures for Credit Asset Securitization, and the Trust Law. These legal frameworks provide guidance and regulatory support for the development of ABS financing in China.

3.3. International Experience

3.3.1. Asset Securitization-Based Financing—The U.S. Experience

Following the Great Depression of 1933, the U.S. gradually promoted affordable housing initiatives. One of the most significant policies supporting affordable housing development was the Low-Income Housing Tax Credit (LIHTC). Additionally, the Real Estate Investment Trust (REITs) model played a crucial role in financing public housing projects in the U.S. REITs invest in real estate projects and lease financing ventures, aggregating investment capital from diverse investors across multiple investment tiers. These funds are structured into large-scale trust assets and issued as financial instruments (e.g., beneficiary certificates, fund units, and fund shares). By pooling capital from various sources, REITs enable risk-sharing and proportional profit distribution. For developers, REITs provide tax incentives, while investors benefit from diversified securities portfolios and stable, long-term returns compared to other stock market securities.

3.3.2. Specialized Institutional Financing—The Swiss and German Experience

Switzerland established a revolving housing fund to support affordable housing development. This fund provides low-interest loans to developers to encourage the construction of public housing. Germany's housing security system is centered on a "Save Before Borrowing" approach, requiring individuals to contribute to housing savings accounts before qualifying for subsidized housing loans. This method ensures long-term funding sustainability and financial discipline within the housing sector.

4. Case Study: ABS Financing for Public Rental Housing in the Low-Lying Waterlogged Area Renovation Project in Yueyanglou District, Yueyang City

4.1. Analysis of the Project Overview

The Gujing Community Railway Block in Yueyanglou District, Yueyang City, is a low-lying waterlogged area with a large residential population, densely packed private housing, and poor living conditions. To improve residents' living environments and enhance the city's image, the Yueyang municipal government adopted an entrusted construction and operation model, where a pre-financing contractor was responsible for financing demolition and constructing public rental housing. After the developer completed tax payments, they took over the management and operation of the PRH project.

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4.1.1. Analysis of Project Economics

4.1.1.1. Analysis of Project Relocation and Resettlement Costs

Table 1: Analysis of the Cost of Project Relocation and Resettlement

<table>
<tr><td>Type</td><td>Number of Buildings</td><td>Current Number of Households</td><td>Current Housing Area (m^2)</td><td>Number of Resettlement Households</td><td>Resettlement Housing Area (m^2)</td></tr>
<tr><td>Collective Land</td><td>145</td><td>288</td><td>37891</td><td>508 households</td><td>50000</td></tr>
<tr><td>Land Approval</td><td>34.5 Acre</td><td colspan="2">23,027/667*28 million yuan = 9.96 million yuan</td><td></td><td></td></tr>
<tr><td>State-owned Land</td><td>1</td><td>24 households</td><td>3,360 square meters</td><td rowspan="2" colspan="2">Additional compensation for state-owned land housing: 5 million yuan; Contingency and project management fees: 9 million yuan</td></tr>
<tr><td>Demolition Compensation</td><td>Area: 37,891</td><td>Unit Price: 1,800</td><td>68.2 million yuan</td></tr>
<tr><td>Land and Attachments Cost</td><td colspan="5">Comprehensive costs (excluding resettlement balance [37,891*(2,700-1,250)=55 million yuan]; 966 + 500 + 6,820 + 900 = 91.86 million yuan</td></tr>
<tr><td>Resettlement Cost</td><td colspan="5">Resettlement balance: 55 million yuan (on-site resettlement area * high-rise balance). According to the cost estimation by the Yueyanglou District Resettlement Bureau. Total resettlement cost: 91.86 million yuan (comprehensive costs) + 55 million yuan (on-site resettlement balance) = 146.86 million yuan.</td></tr>
</table>

4.1.1.2. Cost Estimation for the 5.55 FAR Land Plot

Table 2: Key Economic and Technical Indicators for the Land Plot

1	Total Planned Land Area	23,027 m^2
2	Net Building Land Area	17,492 m^2
3	Total Planned Construction Area	97,032 m^2
4	Street Community Service Facilities	2,730 m^2
5	Floor Area Ratio (FAR)	5.55
6	Building Density	19.10%
7	Green Space Ratio	35.20%
8	Total Number of Households	710

The total project development cost is estimated at 395.45 million yuan.

Table 3: Cost Breakdown per Square Meter

Item	Unit Price
Land Cost (see notes)	(14,686 / 97,032) 1,514 yuan/m^2 【-372】
Geological Survey	5.00 yuan/m^2
Planning and Design	5.50 yuan/m^2

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Table 3: (continued).

Architectural Design (Mid-rise)	15.00 yuan/m²
Construction and Installation Cost (including water, electricity, civil defense, and foundation)	1,800.00 yuan/m²
Environmental Construction	100.00 yuan/m²
Supporting Facilities	40.00 yuan/m²
Approval and Permit Fees	200.00 yuan/m²
Supervision Fees	8.00 yuan/m²
Management Fees	30.00 yuan/m²
Financial Costs (see notes)	281 yuan/m²
Fire Protection Facilities	40.00 yuan/m²
Contingency Fees	30.00 yuan/m²
Embankment, Land Leveling, Temporary Facilities	17.00 yuan/m²
Subtotal	4,075.5 yuan/m²
Note: Floor Area Ratio Land Price (Land Cost): 146.86 million yuan / 97,032 square meters (Buildable Area) = 1,514 yuan per square meter	

Total project cost: 4,075.5 × 94,032 ≈ 395.45 million yuan.

4.2. ABS Financing for the Public Rental Housing Renovation in Yueyanglou District, Yueyang City

4.2.1. ABS Financing Operation Process for the PRH Renovation Project

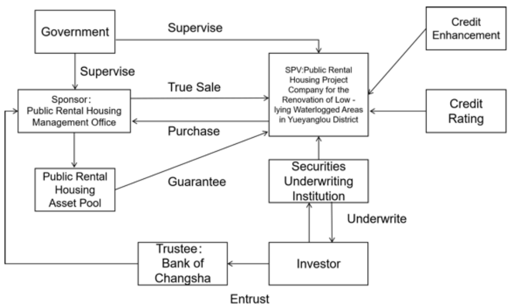

Figure 3: The ABS Financing Operation Process for Public Rental Housing Renovation in Low-Lying Waterlogged Areas of Yueyanglou District, Yueyang City

The ABS financing operation is conducted under government supervision. The process begins with the initiator, which in this case is the Public Rental Housing Management Office under the Yueyang Municipal Housing and Urban-Rural Development Bureau. As the initiator, this office pools the assets of the PRH renovation project and transfers them to a Special Purpose Vehicle (SPV), the Yueyanglou District Low-Lying Waterlogged PRH Project Company, through a true sale. The SPV, as the central entity in the ABS financing process, structures the asset pool according to asset characteristics, types, and maturities to design multi-tiered securities. To enhance issuance conditions and reduce financing costs, internal and external credit enhancement mechanisms are used. Additionally, Fitch Ratings and Standard & Poor's (S&P) were engaged to assess the credit rating of the ABS project, increasing investor confidence and attracting more investors.

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4.3. Analysis of ABS Financing Structure for the PRH Renovation Project in Yueyanglou District

4.3.1. Equity Participation in the PRH Securitization Project

(1) Housing and Urban-Rural Development Bureau:

A government agency responsible for overseeing PRH operations, managing rental collection and allocation, and ensuring project maintenance and supervision.

(2) Public Rental Housing Management Office:

While PRH projects are public welfare initiatives led by the government, the government does not directly fund construction. Instead, the PRH Management Office represents the government's equity interest in the ABS financing project, holding a 40% stake. Changsha Sunshine Investment Company is the primary entity responsible for the project, holding a 70% equity stake in the PRH ABS project.

(3) Yueyanglou District Low-Lying Waterlogged PRH Project Company (SPV):

A Special Purpose Vehicle (SPV) established for the ABS financing process, registered in the Cayman Islands. The primary investors include Changsha Sunshine Investment Company and an Asset Management Company.

4.3.2. PRH Project Guarantee Structure

(1) Overcollateralization and Cash Flow Reserves:

A Debt Service Reserve is established to ensure timely principal and interest payments on senior bonds. A Debt Service Fund is allocated to support subordinated bond repayment.

(2) Third-Party Credit Support:

Changsha Sunshine Investment Company provides a direct repayment guarantee. In case of a default by the Yueyanglou District PRH Project Company, Changsha Sunshine Investment Company assumes primary responsibility for repaying principal and interest to investors.

4.4. Future Revenue Analysis of the Public Rental Housing Project in the Low-Lying Waterlogged Area Renovation in Yueyanglou District

4.4.1. Bond Design for the PRH Renovation Project in Yueyanglou District

The PRH renovation project in Yueyanglou District requires 400 million yuan in financing. Drawing on international experience in real estate financial asset securitization, the project has issued senior bonds and subordinated bonds. Senior bonds have higher repayment priority than subordinated bonds. Interest payments on senior bonds are made annually, and the principal is repaid in installments each year. Subordinated bonds, on the other hand, have a single lump-sum repayment upon maturity.

Table 4: Bond Design for the Public Rental Housing Project in the Low-Lying Waterlogged Area Renovation in Yueyanglou District

Issuer	Yueyanglou District Low - lying Waterlogging Renovation Project Company	
Quota	400 million yuan	
Shares	Senior Bonds	Secondary Bonds
Amount	300 million yuan	100 million yuan
Price	99.40%	99.50%
Annual Coupon Rate	9%	11%
Interest Rate of Five - year Treasury Bonds	5.41%	

Table 4: (continued).

Benchmark Interest Rate of Central Bank Loans with a Maturity of More Than Five Years	6.55%	
Bond Rating	BBB Fitch, BBB- S&P	BB Fitch,B+ S&P
Term	The term is 10 years, and both principal and interest will be paid annually	The term is 16 years, and both the principal and interest will be paid in a lump sum at the end.

4.4.2. Debt Service Analysis for the PRH Renovation Project in Yueyanglou District

Variable Principal Repayment Schedule for the Public Rental Housing Project in the Low-Lying Waterlogged Area Renovation in Yueyanglou District (Unit: Million Yuan)

Table 5: Debt Service Plan for the Public Rental Housing Project in the Low-Lying Waterlogged Area Renovation in Yueyanglou District

Installment	Basic Interest Rate Value (%)	Interest Spread (Basis Points)	Current Interest Rate (%)	Principal Repayment (%)	Principal Repayment	Interest	Debt Repayment	Outstanding Debt	Debt Repaid	Operating Cash Flow	Debt Service Coverage Ratio
0	6	120	7.2					400			
1	6.25	120	7.45	5.75	23	14.9	37.9	377	23	52.668	1.39
2	6.35	120	7.55	5.75	23	14.232	37.232	354	46	52.076	1.399
3	6.5	120	7.7	6	24	13.628	37.628	330	70	53.864	1.431
4	6.6	120	7.8	6.25	25	12.872	37.872	305	95	53.5	1.413
5	6.6	135	7.95	6.25	25	12.124	37.124	280	120	53.54	1.442
6	6.8	135	8.15	6.25	25	11.412	36.412	255	145	52.5	1.442
7	6.85	135	8.2	6.25	25	10.456	35.456	230	170	51.816	1.462
8	6.85	135	8.2	6.25	25	9.432	34.432	205	195	50.312	1.461
9	6.75	150	8.25	6.25	25	8.456	33.456	180	220	49.876	1.491
10	6.75	150	8.25	6.25	25	7.424	32.424	155	245	48.652	1.5
11	6.75	150	8.25	6.25	25	6.392	31.392	130	270	48.34	1.54
12	6.65	150	8.15	6.25	25	5.296	30.296	105	295	46.644	1.54
13	6.6	150	8.1	6.25	25	4.252	29.252	80	320	46.48	1.589
14	6.55	150	8.05	6.5	26	3.22	29.22	54	346	44.832	1.534
15	6.55	150	8.05	6.75	27	2.172	29.172	27	373	42.68	1.463
16	6.55	150	8.05	6.75	27	1.088	28.088		400	41.088	1.463

The Debt Service Coverage Ratio (DSCR) measures the relationship between operating cash flow and debt repayment obligations, where:

OCF_t represents the operating cash flow in year t.

K_t represents the principal repayment in year t.

I_t represents the interest repayment in year t.

$$DSCR = \frac{OCF_t}{K_t + I_t}$$

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This ratio indicates whether the rental income generated by the public rental housing (PRH) project (numerator) is sufficient to cover debt repayment obligations (denominator) in a given operating year. The DSCR provides a concise evaluation of the repayment plan's feasibility. The analysis shows that repayment pressure increases significantly in the later stages of the loan term.

4.5. Optimization Strategies for ABS Financing in Public Rental Housing Construction

4.5.1. Pricing of Public Rental Housing Rent

Public rental housing has strong public welfare attributes and aims to address housing issues for low- and middle-income residents. As such, rental prices must not be too high, as this would contradict the project's original purpose. However, pricing rent too low would make it difficult to repay the principal and interest on financing bonds.

To achieve a reasonable rental price, it is necessary to:

Refine economic data collection and forecasting.

Consider residents' income levels, bond financing costs, and expected returns.

Establish a pricing model that balances affordability for tenants and profitability for investors.

Yao Yu [12] pointed out that large-scale public rental housing construction requires significant capital investment, leading to severe funding shortages. Therefore, innovative financing models and reasonable rent pricing will help alleviate the government's fiscal pressure. Xiaojun Li [13] proposed that rental pricing can be evaluated systematically through the income approach and cost approach, ensuring alignment with local market rents and tenant income levels. Additionally, the Real Estate Investment Trust (REITs) model can be introduced to PRH financing.

4.5.2. Strengthening PRH Capital Supervision

Supervision is crucial for both fund usage in PRH construction and repayment fund collection.

Key recommendations include:

Ensuring transparency and proper use of financing funds, making sure they are directed towards actual PRH construction.

Monitoring post-construction rental income, ensuring rental revenues are managed efficiently to cover debt repayment obligations.

Cooperating with government institutions and trustee banks to enhance financial oversight, protecting the interests of investors.

Shoukui He [14] emphasized that encouraging private capital participation in PRH development is key to addressing funding shortages and inefficiencies in government investment management. However, managing PRH PPP projects effectively and coordinating stakeholders' interests remains a significant challenge for governance.

4.5.3. Enhancing Legal and Regulatory Frameworks for ABS Financing

Currently, asset securitization regulations in China mainly consist of administrative guidelines and pilot policies, rather than formal legislation. To better regulate and guide asset securitization financing, relevant national institutions should enact comprehensive regulations. Additionally, existing laws such as the Negotiable Instruments Law and the Trust Law provide important guidance for asset securitization. However, given the unique nature of PRH projects, specific rules and frameworks should be developed to ensure compliance while enhancing financing efficiency. Yaping Cheng [15] suggested that legislation on asset securitization should follow principles of:

Coordination with existing legal systems.

Separation of ownership and management rights.

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Efficiency in capital utilization.

Investor protection.

Drawing from international best practices, China should adopt a dedicated legislative model to institutionalize and formalize asset securitization regulations, promoting a stable and sustainable financing environment for public rental housing development.

5. Conclusion

(1) Rapid Development and Large-Scale Construction of Public Rental Housing in China

As a crucial component of the affordable housing system, public rental housing (PRH) projects are undergoing large-scale and rapid development. Nationwide, millions of PRH units still need to be built, while a substantial number of newly planned PRH projects are awaiting commencement. This has resulted in a significant acceleration in the construction of PRH projects across China.

(2) Insufficient Fiscal Support and Financing Challenges in PRH Construction

The large-scale and rapid development of PRH projects has led to a significant funding gap. Traditional financing sources, such as government fiscal allocations and bank loans, are insufficient to support the high-speed expansion of PRH construction. The central government must balance urban and rural development, address regional disparities between eastern and western China, and prioritize infrastructure projects related to energy and national economic development, limiting its ability to allocate substantial funds for PRH construction. Local governments are burdened with high levels of debt, making it difficult to finance large-scale PRH projects. Bank loans typically require collateral or guarantees, which PRH projects struggle to provide due to their rental-only nature. Since PRH units cannot be sold, rental income cannot be used for immediate loan repayment upon project completion, further hindering large-scale PRH development.

(3) The ABS Financing Model as an Effective Solution to PRH Financing Difficulties

The ABS financing model raises funds by issuing bonds, allowing for public participation and attracting private capital, thereby expanding financing channels. Given China's fiscal constraints and the challenges of obtaining bank loans, leveraging private capital for project financing presents an effective solution to the financing difficulties. By utilizing credit enhancement and rating mechanisms, the ABS financing model improves the creditworthiness of PRH projects. Additionally, risk isolation mechanisms help reduce financing risks and costs, making ABS an efficient and viable solution to the funding challenges of public rental housing construction in China.

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