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Research on Credit Risk Identification and Management Strategy of Real Estate Supply Chain from the Perspective of Sustainable Development

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Abstract: The real estate sector plays a pivotal role in driving economic growth. However, it faces significant challenges related to credit risk and sustainable supply chain practices. The management of credit risk and the integration of Environmental, Social, and Governance (ESG) factors into credit risk assessment have garnered increasing attention. This paper investigates the influence of sustainability practices within the real estate supply chain on credit risk management, focusing on the case study of China Evergrande Group. Through an analysis of Evergrande Group's financial reports and relevant policy changes via literature review and case study methodology, this research delves into the underlying causes of its credit risk as well as its repercussions on the supply chain. The findings indicate that Evergrande Group's high leverage coupled with an aggressive debt expansion strategy has resulted in a heightened accumulation of credit risk amid evolving policies and market conditions. Consequently, it is recommended that real estate enterprises enhance their mechanisms for assessing supply chain-related credit risks, establish early warning systems for potential credit issues, promote information sharing among stakeholders, and refine their contractual agreements and guarantee frameworks to mitigate credit risks while promoting sustainable development within their supply chains.

Keywords: Real estate supply chain management, Credit risk assessment, Sustainability practices, Environmental, Social, and Governance (ESG) criteria, Evergrande group.

1. Introduction

The real estate sector is a major contributor to economic expansion. Yet, it confronts serious challenges regarding credit risks and sustainable supply chain practices. Recently, the assessment and management of credit risks have gained notable attention in this sector. It is crucial for stakeholders involved in real estate finance to understand the various factors affecting credit risk. For example, developers' implementation of sustainable procurement methods is essential for promoting the use of eco-friendly building materials, which may enhance sustainability and affect credit dynamics [1]. In addition, recent studies emphasize the link between environmental, social, and governance (ESG) elements and the management of credit risks in real estate. The increasing pressure on property firms to meet ESG standards indicates a trend towards sustainability, which may mitigate credit risks

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associated with high debt levels and market volatility. The connection between ESG performance and financial results is becoming more critical, especially as fluctuating market conditions and regulatory changes present additional hurdles for real estate companies [2]. Building on the identified challenges, this paper will explore the research question: How does the integration of ESG considerations within the real estate sector influence credit risk management? The subsequent sections will analyze this question through a literature review, theoretical framework, and a case study of a prominent real estate company to illustrate these concepts in practice. The significance of this research is twofold. Firstly, it provides an analysis of the credit risk landscape in the real estate sector, offering insights into how sustainability practices can mitigate financial vulnerabilities. Secondly, it contributes to the practical understanding of credit risk management strategies that align with sustainable development goals, which is essential for stakeholders navigating the complexities of the modern real estate market. By dissecting the case of Evergrande Group, this research aims to offer actionable recommendations for the industry to enhance supply chain resilience and financial health.

2. Sustainability and Real Estate Supply Chain

2.1. Application of Sustainable Development in the Real Estate Industry

For the sustainable advancement of the real estate sector, Environmental, Social, and Corporate Governance (ESG) risks associated with climate change have emerged as critical areas of focus. As of late 2021, 173 publicly traded real estate firms had released annual ESG reports in standalone formats, representing over 60% of all real estate companies listed on China's A-share market [3]. In terms of corporate governance, real estate firms enhance operational efficiency by optimizing energy usage and material consumption, indicating a growing adoption of sustainable development principles. On the environmental front, it is imperative for companies to prioritize the reduction of carbon footprints and waste in construction activities, as well as to advocate for the use of eco-friendly building materials and energy-efficient technologies. The social aspect necessitates that firms work towards enhancing the quality of living and working environments and contribute positively to local community growth. Embracing sustainable practices not only aids firms in establishing a positive public perception but also aligns with both regulatory frameworks and market expectations.

In the realm of real estate supply chain sustainability, key components include resource efficiency, environmental impact, social accountability, and economic viability. Resource efficiency focuses on minimizing resource usage across all supply chain stages. The environmental impact aspect mandates a long-term examination of supply chain operations on ecosystems, emphasizing pollution reduction and biodiversity preservation. Social accountability ensures that the rights and interests of those involved in the supply chain are safeguarded, encompassing equitable labor practices and community engagement. Economic viability stipulates that economic gains and competitive market positioning must be preserved while striving for sustainable development.

2.2. Impact of Sustainable Development on Supply Chain Management

Lamming et al. (2004) characterized the supply chain network as a business ecosystem composed of interconnected supply chains. These chains facilitate the procurement and distribution of goods and services, where the operational choices of individual firms influence others, resulting in a complex environment. Corporate ESG performance plays a vital role within supply chain networks [4].

Advancing sustainability necessitates that supply chain managers reassess and choose suppliers. They must prioritize partners that adhere to sustainability standards. Suppliers should possess robust environmental management systems and demonstrate social responsibility. Furthermore, they must deliver environmentally friendly, high-quality products and services. Supply chain design and operations should increasingly emphasize eco-friendliness and social accountability, incorporating

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principles of the circular economy and community engagement initiatives. Moreover, sustainability fosters transparency and traceability within the supply chain. Consumers and investors are showing greater interest in corporate social responsibility disclosures and environmental performance indicators.

3. Credit Risk in the Real Estate Supply Chain

3.1. Credit Risk

Credit risk pertains to the potential economic loss stemming from a counterparty's failure to fulfill contractual obligations. This risk generally divides into two categories: default risk and credit migration risk. The primary concern is default risk, which arises from shifts in the credit quality of the counterparties [5]. Within the real estate supply chain, this risk becomes particularly pronounced, given its association with the creditworthiness of suppliers, contractors, developers, and end users. Real estate projects typically require significant capital and involve prolonged contracts; thus, defaults can have severe repercussions. Furthermore, the numerous participants in the real estate supply chain—such as material suppliers, construction contractors, and financial institutions—complicate the landscape of credit risk. Additionally, market volatility amplifies uncertainty, as fluctuations in market conditions can alter the credit profiles of participants.

3.2. Impact of Credit Risk on the Real Estate Supply Chain

The influence of credit risk on the real estate supply chain is diverse. The most immediate consequence is financial loss, which may manifest as delays or an inability to recoup funds. Moreover, credit risk can lead to project setbacks, necessitating the search for alternative suppliers or contractors. Beyond this, credit risk can tarnish a firm's reputation, adversely impacting its relationships with both current and prospective clients. Over time, inadequate management of credit risk can erode an enterprise's competitiveness and even jeopardize its viability. Consequently, real estate suppliers must prioritize credit risk management by establishing a robust credit management system to mitigate risks and enhance market competitiveness.

4. Case Analysis

Founded in 1996, Evergrande Real Estate Group initially concentrated on property development, later transforming into China Evergrande Group in 2016. However, its financial health took a turn in 2020, when China implemented the "Three Red Lines" policy to curb real estate financing risks. Despite this, Evergrande's end-of-year financials revealed dire ratios: an asset-liability ratio of 83.43% (excluding prepayments), a soaring net debt ratio of 152.89%, and a plummeting cash-to-debt ratio of 0.54, breaching policy thresholds [5].

In 2021's first half, Evergrande's troubles escalated with defaults on wealth products, bills, and bonds. Supplier Three Trees Company disclosed overdue notes of 51.37 million yuan linked to Evergrande's liquidity issues. The crisis spilled over to partners like Gold Mantis, with 6 billion yuan in notes tied to Evergrande, 509 million of which turned into unpaid receivables. E-House China also provisioned 1.9 billion yuan for bad debts related to Evergrande.

As negative supplier disclosures piled up, Evergrande's liquidity crisis deepened, shaking market confidence. In September 2021, Evergrande Financial Wealth Management faced payment failures, marking a full-blown financial crisis for the real estate giant.

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4.1. Macro Factors

National policy changes significantly impacted Evergrande's crisis. As a key sector, real estate closely aligns with regulatory oversight. Since 2010, the government sought to control soaring housing prices via land, tax, and finance regulations. The "housing, not speculation" mantra introduced in late 2016, along with the "three red lines" policy, directly altered the financing landscape for real estate firms. This policy offers measurable indicators for financial institutions assessing credit risk. Consequently, high-risk developers struggle to secure funding, resulting in project delays affecting related businesses. Leasing firms may cautiously finance high-risk entities, thereby mitigating sector-wide financial risk [6]. Evergrande's prior model of high leverage, debt, and turnover has faced severe challenges post-policy changes, leading to cash flow disruptions and credit risks.

Local Chinese governments imposed various property transaction restrictions to stabilize prices, including transaction fees, moratoriums on existing home sales, cooling-off periods, and limits on large developer sales [7]. Demand-side restrictions also surfaced, like home purchase and mortgage lending limits.

Changing economic conditions represent another macro factor. The COVID-19 outbreak in late 2019 severely affected the global economy, including China's real estate sector. Offline sales halted during the pandemic. Although Evergrande's online strategies maintained some sales growth, profit margins shrank due to discounts and rising costs, drastically undermining performance. This economic vulnerability revealed flaws in Evergrande's supply chain credit risk management, specifically its inadequate response to external changes, leading to the accumulation and eventual exposure of credit risks.

4.2. Internal Factors

4.2.1. Evergrande's High-Turnover Risks: Supply Chain Tensions Under Regulation

Evergrande Real Estate's swift expansion hinges on a high-turnover model, emphasizing rapid land acquisition and sales to enable capital withdrawal for its extensive operations. Yet, this approach strains the supply chain by deferring payments to suppliers and shifting financial burdens onto partners. Although this tactic temporarily relieves Evergrande's fiscal pressures, it increases tensions within the supply chain and elevates credit risks. A market shift, driven by tighter national regulations or declining sales, could threaten Evergrande's stability, potentially leading to a disruption in the capital chain. Recent upheavals highlight its reliance on supply chain funding amid evolving external circumstances. Under the national "three Red Lines" policy, Evergrande confronts restricted financing avenues and worsening capital chain challenges.

4.2.2. Evergrande's Aggressive Expansion: Debt Crisis

Evergrande Group's aggressive expansion strategy has resulted in significant financial strain. Its rapid growth, achieved through mergers and diversified operations, imposed high funding demands. The introduction of the "three Red Lines" regulations further compounded financing pressures. To mitigate these challenges, Evergrande transferred financial burdens to its supply chain partners by extending payment terms and issuing commercial papers [8]. Although this approach temporarily addressed immediate financial requirements, it escalated credit risks and compromised the long-term stability of the supply chain. Additionally, market shifts, particularly a downturn in the real estate sector, curtailed Evergrande's capital availability, culminating in a debt crisis. This crisis adversely affected Evergrande's operations and reverberated throughout the broader real estate market and economic landscape. From a sustainable development perspective, Evergrande's expansion strategy and inadequate capital allocation overlooked essential principles of prudent management and supply chain credit risk.

4.2.3. Evergrande's Expansion Woes: Inadequate Risk Management and Supply Chain Financing Pitfalls

Evergrande Group displays inadequate internal management and insufficient risk awareness. Its failure to manage scale and risk during expansion highlights a convoluted management framework lacking proper risk controls. The firm depended excessively on supply chain financing, which inflated debt levels without prompt risk detection.

Additionally, Evergrande's risk awareness proves deficient. In the face of external challenges, it did not revise business strategies, choosing to prioritize growth over risk management. The "three Red Lines" policy should have initiated a process of deleveraging and debt restructuring. Rather, the company resorted to concealed financing, exacerbating financial vulnerabilities. Moreover, management's limited understanding of supply chain credit risk dynamics obstructs effective risk mitigation strategies.

4.2.4. Evergrande's Debt-Driven Expansion: Supply Chain Strain and Credit Risk Amplification

Excessive leverage and a flawed financing structure play significant roles in Evergrande Group's accumulation of risk. During its rapid expansion, Evergrande relied heavily on debt, which inflated its interest-bearing liabilities. The introduction of stricter financial regulations, particularly the "three Red Lines" policy, led to a deterioration in Evergrande's financing. The company struggled to adapt its strategy effectively and resorted to occupying supply chain capital to convert some debt into interest-free liabilities, such as overstated accounts payable and commercial paper issuance. Although this approach temporarily eased debt pressures, it exacerbated the financial strain on supply chain partners, destabilized the supply chain, and increased credit risk.

Moreover, the unreasonable financing structure is pivotal to Evergrande's crisis. The Group overly relies on indirect financing methods like bank loans and bonds, demonstrating limited use of direct financing. This reliance supports rapid growth during favorable market conditions. However, during economic downturns, it imposes severe financial pressures. Moreover, Evergrande's lack of diversification in financing channels and instruments diminishes its flexibility and resilience to risk.

5. Discussion

5.1. Strengthen the Supply Chain Credit Evaluation Mechanism

Real estate enterprises should establish a comprehensive supply chain credit evaluation mechanism to regularly evaluate the credit status of upstream and downstream enterprises in the supply chain. This includes comprehensive consideration of the enterprise's operating status, financial status, performance record, industry reputation and other dimensions. By introducing third-party credit rating agencies or self-built credit evaluation models, the objectivity and accuracy of evaluation results are ensured. At the same time, credit files are established to record the credit performance of supply chain enterprises and provide basis for subsequent credit decisions.

5.2. Establish Supply Chain Credit Risk Early Warning System

Real estate enterprises should set up a supply chain credit risk early warning system to monitor the credit risk status of supply chain enterprises in real time. By collecting and analyzing the financial data, market dynamics, policy changes and other information of supply chain enterprises, we can

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timely discover potential risk factors and take corresponding preventive measures. For example, when the supply chain enterprises show signs of financial tension and operation difficulties, the real estate enterprises can adjust the cooperation strategy in time, reduce the credit supply or require guarantee measures to reduce the credit risk.

5.3. Strengthen Information Sharing and Communication among Supply Chain Enterprises

To establish a perfect supply chain credit management system, it is necessary to strengthen the information sharing and communication among supply chain enterprises, and pay attention to the close cooperation with supply chain participants, especially key suppliers. Supply chain participants can provide companies with important resources and help them collectively manage financial risks [9]. By establishing an information sharing platform or holding regular supply chain meetings, information exchange and cooperation between supply chain enterprises can be promoted. This will not only help real estate enterprises timely understand the operating conditions and risks of supply chain enterprises, but also enhance the trust and cooperation between supply chain enterprises. As a result, the stability and anti-risk ability of supply chain will be significantly improved.

5.4. Improve Supply Chain Credit Contract and Guarantee Mechanism

Real estate enterprises should improve the supply chain credit contract and guarantee mechanism, clarify the rights and obligations of both parties, and reduce credit risks. When signing a credit contract, clauses such as loan amount, interest rate, repayment term and liability for breach of contract should be specified in detail to ensure the legality and validity of the contract. At the same time, supply chain enterprises are required to provide corresponding guarantee measures, such as mortgage, pledge or third-party guarantee, to increase the security of credit. In the course of contract performance, the supervision and management of supply chain enterprises should be strengthened to ensure the safe recovery of credit funds.

6. Conclusion

This research has provided an analysis of the impact of ESG integration on credit risk management within the real estate supply chain, with a particular focus on the case study of China Evergrande Group. The study has demonstrated that the integration of ESG considerations is not only crucial for sustainable development but also plays a significant role in mitigating credit risks. The findings indicate that Evergrande Group's aggressive debt expansion and high leverage, amidst evolving policies and market conditions, have led to a heightened accumulation of credit risk. This underscores the necessity for real estate enterprises to enhance their credit risk assessment mechanisms, establish early warning systems, and foster information sharing to mitigate potential credit issues, aligning with broader sustainability objectives. And ESG integration is pivotal for managing credit risk effectively. It provides a framework for real estate companies to navigate financial vulnerabilities and market volatility, ensuring supply chain stability and long-term viability.

While this study may offer valuable insights, it is essential to acknowledge its limitations. The reliance on secondary data and a single case study restricts the generalizability of the findings. Future research can aim to broaden the analysis with multiple case studies and primary data collection to enhance the robustness of the conclusions.

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