

Analysis on the Credit Rating of Green Asset-backed Securities in China

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Keywords: Green Asset-Backed Securities; Green Finance; Credit Rating Indicators

Abstract: In recent years, with the increasingly serious environmental problems and the in-depth implementation of green development, the country has repeatedly issued regulations to promote the development of green asset securitizations. Green asset securitizations in China have ushered in a period of vigorous development, however as the credit rating of green asset backed securities uses the ordinary rating indicators of asset-backed securities, it is difficult to reflect the elementary nature of green asset-backed securities. Therefore, this article analyzed the challenges in credit rating of green asset-backed securities and put forward countermeasure proposals in the rating indicators designing.

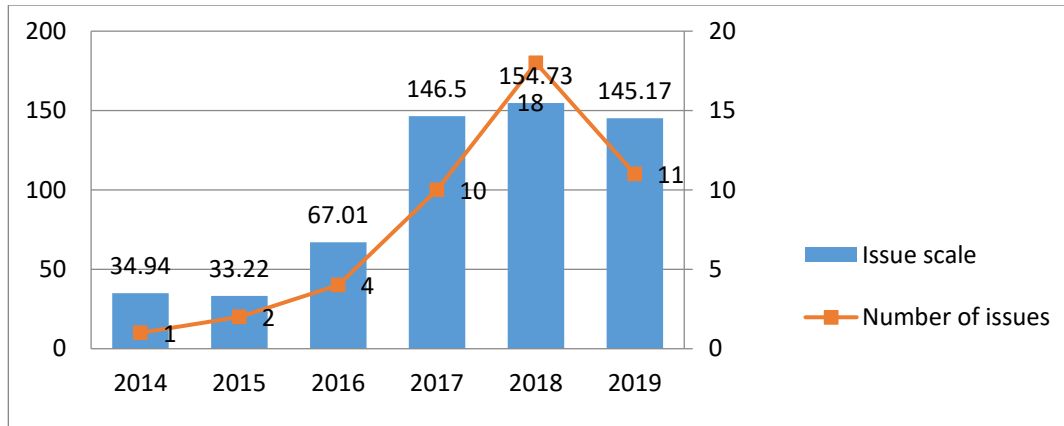
1. Introduction

Table 1 Public polices for promoting green asset securitization in China

Date	Regulations	Brief introduction
September 2015	Overall Plan for the Reform of the Ecological Civilization System	Establish a green financial system, related systems and green related investment products, research and issue green bonds, and encourage the implementation of green credit asset securitization.
May 2016	Questions and Answers on Asset Securitization Supervision	The China Securities Regulatory Commission clearly stated that it encourages the development of green environmental protection industry-related projects through asset securitization.
March 2017	Guidelines for the Business of Non-financial Enterprises' Green Debt Financing Instruments	Propose detailed specifications for issuing green debt financing instruments.
December 2017	Guidelines for Green Bond Evaluation and Certification (Interim)	In the process of China's green bond issuance, the evaluation and certification of the green attributes of bonds have been standardized.
August 2018	Q & A on Asset-Backed Securitization Business of Shanghai Stock Exchange (I), (II)	The relevant content and corresponding operation procedures of green asset securitization products were introduced.

In recent years, environmental protection, as a focal issue that runs through all aspects of society and people's livelihood has received a high degree of attention from the public and public decision-makers. As China's resource and environmental problems become more and more serious, the green financial market is continuously improved, however the development of green industries urgently requires funds. Since 2015, with the support of public policies, green asset-backed securities, as a new type of debt financing tool have ushered in a booming period both in terms of

issue size and the number of issues.



Data source: wind bond database

Figure 1. Issuance of green asset securitizations from since 2015

2. Literature review

As environmental problems are becoming more and more serious, and the idea of green development is accepted gradually. Green asset-backed securities have emerged as well. However there is little research on the credit rating of green asset-backed securities.

2.1 Research on Green Finance

The concept of "green finance" originally refers to the factor of considering environmental impact in the process of financial decision-making. Some scholars put forward a definition "investment and financing activities that can produce environmental benefits to support sustainable development. "Also green finance refers to "economic activities that support the improvement of the environment, the response to climate change, and the efficient use of resources."With the development of the economy and the deterioration of the environment, more and more scholars have begun to study the impact of financial products and financial instruments on the environment. Richardson R (2014) proposed that green finance guides the development of enterprises through the financial market mechanism which is beneficial to the development of enterprises. Linnenluecke MK, Smith T, and McKnight B (2016) believe that finance is conducive to the progress of environmental protection technology and the reduction of financing costs for green enterprises, which is conducive to the development of environmental protection projects, and allows low-cost funds to be invested in projects for environmental protection, Energy efficiency development and carbon emissions cutting. Abrell J, Rausch S, and Yonezawa H (2017) proposed that encouraging green finance and supporting companies to participate in carbon trading can encourage people more active in carbon trading. Wang Lingling (2017) proposed that green finance can enhance the risk management capabilities of banks, and also the introduction of green funds can promote the transition of socioeconomic and financial institutions to green investment.

2.2 Research on asset securitization

Regarding definition of Asset-backed Securities (ABS), Wang Kaiguo (1999) defined itas: transforming the original stockholders' poorly liquid stock assets or stable and predictable future income into a process of liquid financial products. Claessens (2017) researched asset securitization from demand and supply scales, and pointed out that asset securitization products are financial assets with short duration, high liquidity and low risk, which can meet the investment needs of small and medium investors. Regarding green asset securitization, Nanji A, Calder A, etc. (2014) believe that green asset securitization is an innovative green asset-backed securities issued on the capital market with the support of a stable return on basic assets or asset portfolios. Donna and Amy (2010) studied the issue of risk management and control. They believed that for investors, the asset pool information disclosed during the design and circulation of asset securitization is not very

transparent. This asymmetry of information will not only has an impact on the pricing of asset securitization products and is likely to have an adverse effect on investors. Barth M E, Ormazabal G, and Taylor D J (2011) used credit ratings to measure credit risk, studied whether credit rating agencies or bond market's assessment of asset securitization risks differed. Feng Shiting (2017) believes that the complexity and high leverage of asset securitization has exacerbated information asymmetry between investors and issuers. Credit ratings, as an important source of information disclosure, are reducing information asymmetry, promoting risky asset pricing.

2.3 Research on Credit Ratings

In terms of the connection between credit ratings and financial markets, domestic and foreign scholars have carried out the following research. Earlier Efraim Benmelech and Jennifer Dlugosz (2010) used the rating data of debt mortgage bonds (CDO) in the US market to study the 2007-2008 sub-prime crisis before and after the sub-prime crisis, and found that rating agencies started play a negative role in the this sub-prime crisis. To a certain negative effect. Branzei O, Froomean J, McKnight B, and others (2016) studied the relationship between bond credit ratings and default risk. Through research, it was concluded that bond credit ratings can better reflect the company's overall default risk. Olivier David Zerbib (2019) studied the impact of investors 'green preferences on bond prices' and found that green preferences have a lower impact on bond prices. Tang D Y, Zhang Y (2018) conducted a research and analysis on the impact of the company's green bond issuance on existing shareholders. Through this research, it found that companies issuing green bonds can have a positive impact on the stock price. Wang Yao (2016) believes that China's green bond market has just started. First of all, it is necessary to clarify the criteria for "green projects". In addition, it is necessary to conduct special account management for the funds raised by green bonds. As we have seen the above literatures mainly introduces the concept, development, environmental impact of green finance and also the credit rating's impact on financial markets. However, due to the gradual development of green asset securitization in China, the corresponding government regulatory system and laws and regulations have not yet been established. At present, research on green asset-backed securities is relatively limited in China. As an important innovative financing method, green asset-backed securities are based on the "green" characteristics of green finance. The credit rating system of green asset-backed securities is needed to studied as to promote the green finance in China.

3. Analysis on the trading structure and rating challenges of green Asset Securitization

3.1 Analysis of transaction structure

Green asset securitization refers to the process of supporting the cash flow that can be generated by green basic assets in the future after credit enhancement, structured designing steps. The process of green asset securitization involves multiple participants, and the entire transaction structure is relatively complicated. Taking the debt-based assets as an example, the main transaction structure is shown in the following figure:

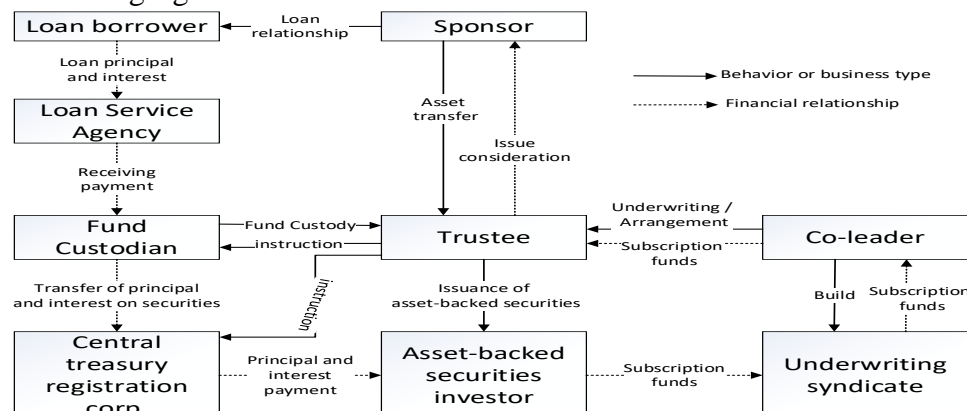


Figure 2. Structure of green asset-backed securities trading

3.2 Rating problem analysis and countermeasure proposals

With the rapid development of green asset securitization, the deficiencies in the credit rating of green asset backed securitization products have also gradually emerged. The rating based on the risk level of the green project itself is a major feature of green asset-backed securities. In currently, the traditional credit ratings indicators using by rating agencies still ignore the differences between green asset-backed securities and the ordinary asset-backed securities. This approach is not only conducive to the development needs of green asset securitization but also to the needs of national green development.

In China the traditional rating indicators of asset backed securities comes from three major rating agencies: Credit Rating Co.,Ltd., Dagong international credit evaluation Co., Ltd. and Oriental Jin cheng International Credit Rating Co., Ltd. The credit rating indicators are as follows:(1) Credit quality of the basic asset pool: The credit quality of the original equity holders, the credit quality of the basic assets (the probability of default of a single basic asset, the correlation of the underlying asset, the default recovery rate and concentration);(2) Analysis of transaction structure: cash flow aggregation mechanism, cash flow payment mechanism, credit trigger mechanism, and transaction structure risk (original equity bankruptcy risk, offset risk, capital confusion risk, interest rate risk, early repayment risk, liquidity risk, Institutional change risk, reinvestment risk, and legal completeness);(3) Credit enhancement measures: priority / sub-structure, excess mortgages, excess spreads, margin replenishment mechanisms, external guarantor guarantees, and mortgage pledge guarantees;(4) Due diligence of major participating institutions: plan managers, fund custodians, asset service agencies, registration and custody agencies, etc.

As the China Interbank Market Dealers Association released the GP form in March 2017, it requires that "the specific evaluation of the energy conservation and environmental protection benefits generated by the investment projects, and the evaluation opinions must be based on the index conclusions." Therefore, "green" evaluation indicators can be added as follows: (1) Basic asset pool categories: the greenness of the industry to which the basic assets belong, the proportion of "green" basic assets in the pool assets, and the realization of environmental benefits; (2) Original human rights: the greenness of the industry to which the main business belongs, the proportion of "green" main business in the total main business, and the realization of environmental benefits; The proportion of "green" investment funds and the realization of environmental benefits.

Conclusion

As to the challenges of the green credit rating in China, this paper established a suitable credit evaluation index system according to the characteristics of green asset-backed securities. The credit evaluation index system for green asset-backed securities are as follows:(1) Credit quality of basic asset pool: Analysis of credit quality of original equity holders, credit asset quality of basic assets, green degree of the asset pool (greenness of the industry to which the basic assets belong, the proportion of "green" basic assets in the pool assets, and the realization of environmental benefits) And the original business owner's main business greenness (the greenness of the industry to which the main business belongs, the proportion of "green" main business in all the main business, and the realization of environmental benefits);(2) Analysis of transaction structure: cash flow aggregation mechanism, cash flow payment mechanism, credit trigger mechanism, and transaction structure risk (original equity bankruptcy risk, offset risk, capital confusion risk, interest rate risk, early repayment risk, liquidity risk, Institutional change risk, reinvestment risk, and legal completeness);(3) Credit enhancement measures: priority/sub-structure, excess mortgages, excess spreads, margin replenishment mechanisms, external guarantor guarantees, and mortgage pledge guarantees;(4) The due diligence of the main participating institutions: special purpose institutions (performance capability, the degree of green funds invested in the industry, the proportion of "green" funds invested, the realization of environmental benefits), fund custodians, asset service agencies, registration and custody agencies, etc.

Acknowledgement

This research was financially supported by the National Natural Science Foundation of China (Grant NO. 71602083, 71971100, 71971107, 71571099).

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