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A Study of Existing Problems and Improvement Measures in Credit Risk Management of Fixed Income Securities

Wei Cui[1]

[1] Founder Securities Co., Ltd, Beijing, China

Correspondence: Wei Cui, Founder Securities Co., Ltd, Beijing, China.

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Abstract

Credit risk management of fixed-income securities, as an important component of the financial market, is closely related to market stability and investor rights and interests. In recent years, global economic fluctuations and shifts have become more pronounced, and credit risk events have occurred repeatedly, exposing many shortcomings and weaknesses in the current management system. Currently existing problems are with failure of independence of the rating system, failure of information disclosure mechanisms, risk pricing delayed rather than driven by fundamentals, and regulation does not keep pace with market innovation. These problems have complicated the risk transfer chain process and increased market fragility. The study, based on existing relevant theories and cases, proposes systematic reforms including setting multiple rating mechanisms, stronger information disclosure obligations, implementing dynamic pricing mechanism as well as a comprehensive regulatory framework. By optimizing the risk identification and mitigation paths, it can provide practical references for enhancing market pricing efficiency and safeguarding financial security, and help the long-term healthy development of the fixed income securities market.

Keywords: fixed income securities, credit risk management, existing problems, improvement measures

1. Introduction

The expansion of the fixed income securities market and the acceleration of innovation have made it a central vehicle for global capital allocation. However, the lagging nature of credit risk management has gradually become a bottleneck constraining the development of the market, and the epidemic shocks and geopolitical turmoil since 2020 have further emphasized the non-linear characteristics of credit risk events - defaults by a single entity may trigger a chain reaction in the market, or even evolve into a systemic risk. Existing research focuses on the optimization of traditional risk models, but ignores the structural contradictions such as the bundling of interests of rating agencies and selective disclosure of issuers. For example, the default cases of some highly rated bonds reveal that there is a significant deviation between the rating results and the real risk; while the information asymmetry problem in the private debt market leads to insufficient compensation of risk premium for investors. In addition, regulatory arbitrage has escalated with the help of fintech tools, and it is difficult for traditional compliance checks to penetrate the multi-layered nested trading structure. In the face of this complex environment, there is an urgent need to reconstruct the risk management system from the dual dimensions of system and technology. This paper analyzes the deep-rooted contradictions in credit risk management and explores the improvement path to adapt to the complexity of the market by combining the cases of defaults in China's bond market with the experience of global regulatory reform.

2. Theoretical Basis of Credit Risk Management of Fixed Income Securities

2.1 Concept and Classification of Fixed Income Securities

The structure of fixed-income securities supposes an explicit agreement, through a contract, about the timing and amount of cash flows that are certain. The key feature of fixed income securities is certainty of return, which naturally causes risk not to be fully appreciated when it comes to credit risk. From a legal view, fixed income securities are certificates of debt relationships, which means the credit qualification of the issuing institution has an influence on the ability to remitate principal and interest, as identified according to the issuer. Government bonds have national credit endorsement risk and are classified as a low risk, both corporate, financial bonds, and a multitude of other varieties have a quite closer relation to the operating conditions of the issuing organization; the securities classification also highlights risk to repayment hierarchy, collaterized bonds need pledged assets to provide credit protection, while loan subordinated bonds take on higher risk premium as they are paid out after

degree of liquidation. Within recent years of structural innovation, derivatives have also created mix varieties, or hybrids such as convertible bonds, asset backed securities etc. X-linked credit risk opposes these hybrids to categorical market registration. For example, the quality of the underlying assets of mortgage-backed securities (MBS) can affect the end investor through the securitization chain [1]. It is worth noting that although credit ratings provide a benchmark for risk judgment, static ratings are difficult to capture sudden changes in solvency due to economic cycle switching, and the default probability of some high-yield bonds exposed to macroeconomic fluctuations often exceeds the preset range of rating models.

2.2 Connotation and Characteristics of Credit Risk

The nature of credit risk is the potential loss of a debtor's inability to make timely full payment on an obligation where it cannot be precisely calculated. Credit risk exists because of the limited rationality of market participants captivation of thinking about future solvency. Unlike market risk, credit risk has disproportionate non-linear features, and default events can lead to an aggregate outbreak trend, especially at the inflection point of the economic cycle or during an industry downturn, as for example, the chain of defaults of real estate industry bonds under regulatory policies. Information asymmetry enhances the challenge of risk identification as the issuer may disguise real solvency with financial modifications or manipulations, while investors have to resort to limited public information as a basis for their decision-making. Risk contagion effect is sharply defined in structured products, where a deterioration in the quality of an underlying asset property may flow through to collateralized debt obligations by virtue of the securitization layering design, creating a trimarkets shock. Traditional credit risk models rely excessively on historical default rate data, making it difficult to predict systemic deviations triggered by black swan events, such as the cash flow impact of the New Crown epidemic on global supply chain companies, which exposed the vulnerability of the static assessment framework. Regulatory arbitrage further distorts the risk pricing mechanism, with some institutions using cross-border issuance to circumvent local regulatory requirements, leading to an implicit transfer of risk exposure.

3. Existing Problems of Credit Risk Management of Fixed Income Securities

3.1 Inadequate Credit Rating System

The failures of today's credit rating mechanism have significant effects on the risk-pricing effectiveness of the fixed-income securities market. The issuer-pays business model that is used by rating agencies has objectively led to the bundling of the interest of the issuer with the ratings results and some agencies have, in fact, explicitly upgraded the credit ratings of enterprises in hopes to steal market share; such as the case where a real estate company maintained its investment grade rating prior to defaulting on its bonds exposed the issue with a lack of independence. The adjustment of ratings in cyclical industries is also significantly impaired, as it takes bond ratings in strong cyclical industries such as coal and iron and steel, quite a while to make rating adjustments in downturns, it can delay the ratings, making it difficult for investors to avoid the inevitable risks. The rating standard relies on financial metrics too greatly and leaves out non-financial informative such as governance structure and ESG performance reports. 2022 also saw debt default cases triggered by management decision-making incompetence failings of many new energy enterprises illustrate the limitations of traditional evaluation dimensions. In cross-border issuance scenarios, rating agencies have weak localized risk assessment capabilities for offshore bond issuers, and the difference in rating results between domestic and foreign ratings for some Chinese dollar-denominated bond issuers exceeds three grades, exacerbating pricing distortions in cross-border capital flows. Regulatory rules fail to mandate rating agencies to disclose model parameters and assumptions, making it difficult for market participants to verify the reliability of rating results and indirectly encouraging “rating arbitrage”.

3.2 Inadequate Information Disclosure

The problem of inadequate information disclosure has seriously weakened the risk identification ability of the fixed income securities market. Issuing entities tend to selectively disclose favorable information, for example, some municipal investment companies hide off-balance sheet liabilities by adjusting the scope of their consolidated statements, which leads to investors' misjudgment of their actual solvency. The information transparency of the private placement bond market is particularly worrisome, as the non-public offering feature makes the financial data disclosure standard significantly lower than that of public bonds, and the case of a new energy enterprise that issued a profit forecast announcement three months before defaulting on its private placement bonds highlights the room for information manipulation. There is a lack of disclosure mechanism for the underlying assets of structured products [2]. The underlying asset packages of some asset-backed securities (ABS) are mixed with low-liquidity assets, but the issuance documents only describe the asset classes in a general way, making it difficult to trace the path of risk transmission. In offshore issuance scenarios, the financial reporting of Chinese enterprises' offshore debt often adopts different accounting standards from those in China, making it more difficult for cross-

border investors to assess the comparability of key indicators. Regulatory rules do not require mandatory disclosure of forward-looking information, and significant matters affecting creditworthiness, such as strategic transformation or management changes, are often disclosed late. For instance, in May 2024, a leading urban investment company suddenly announced a delay in the payment of its issued medium-term notes without prior disclosure. Later, after verification by the regulatory authorities, it was found that the company had actually halted 23 ongoing infrastructure projects. However, in the semi-annual report, the relevant projects were still marked as "under normal construction", which led to investors' failure to promptly identify the risk of regional fiscal pressure. In the same year, a listed company in the new energy industry issued green bonds but failed to disclose the environmental impact assessment rectification information of its fundraising project - a lithium battery recycling plant as agreed. It was not until the Ministry of Ecology and Environment issued a penalty announcement that the valuation of its bonds plummeted by 12% in a single week.

3.3 Unreasonable Risk Pricing Mechanism

The distortion of the risk-pricing mechanism of fixed-income securities stems from the overlapping effects of multiple factors. The liquidity premium has been underestimated for a long time, resulting in credit spreads not truly reflecting default probability, and the inflated prices of local SOE bonds due to implicit government guarantees are particularly typical. The 2020 Yongguan Coal incident exposed the systematic bias in the market's pricing of the risks of the same-qualified issuers. Pricing models are overly reliant on historical default rate data, and the yields of a large number of consumer corporate bonds at the beginning of the Xin Guan epidemic did not reflect the risk of cash flow breaks in a timely manner, revealing the flawed dynamic adaptability of traditional models. Cross-border market segmentation exacerbated pricing imbalances, with the yield difference between onshore and offshore bonds of the same issuer reaching up to 200 basis points, exposing the fragmentation of risk perceptions between markets. The adverse selection problem spawned by information asymmetry has resulted in excessive information-seeking costs implicit in the liquidity premium in the high-yield bond market, with bid-ask spreads widening to 30% of par during the liquidity dry-up of a property's dollar bonds in 2022. Regulatory arbitrage further distorted price signals, with some institutions taking advantage of accounting quasi-side differences to package high-risk assets as low-risk products, resulting in persistent deviations between risk pricing and substantive credit levels.

3.4 Loopholes in the Regulatory System

The loopholes in the regulatory system have led to the emergence of systemic risk transmission channels in the fixed income market. Take consumer finance ABS as an example. After the original rights holders package the scattered small claims into a pool, the special purpose vehicle (SPV) maintains the asset scale by constantly purchasing new claims. This dynamic asset turnover makes it impossible to monitor the quality of the underlying assets in real time. In 2024, the overdue rate of the underlying assets of a certain ABS product for new energy vehicle leasing in the inter-bank market exceeded 9%. However, as the "Regulations on the Administration of Asset Securitization Business" did not set a dynamic information disclosure threshold, the issuing institution refused to disclose the details of the asset deterioration in accordance with the current rules, resulting in the senior security holders being unable to exercise the put option in a timely manner. The ambiguity of the risk attribution mechanism makes the traditional regulatory tools based on static asset pools lose the effectiveness of early warning. The update of regulatory rules lags behind the speed of financial innovation, and new products such as digital currency pledge bonds and carbon-neutral linked notes lack targeted binding provisions. Differences between the market maker system in overseas markets and that in China have led to regulatory blind spots, and abnormal trading by a foreign bank in the interbank bond market was not monitored in a timely manner in 2022. There is a serious imbalance between regulatory penalties and the proceeds of violations, with a rating agency manipulating rating results for three consecutive years being fined only 1.5% of its annual revenue, a disguised incentive for violations. Cross-sectoral regulatory coordination mechanisms are missing, and the risk wall between the credit derivatives market and the spot market has not yet been effectively established, exacerbating the vulnerability of the financial market.

4. Improvement Measures for Credit Risk Management of Fixed Income Securities

4.1 Improving Credit Rating System

For the restructuring of the credit rating system, rating regulators need to isolate conflicts of interest and optimize models. Nowadays, the fairness of rating is affected by the transfer of commercial interests between issuers and rating agencies, in this case, the rating regulatory agencies need to establish a financial firewall between issuers and rating agencies, and use the supervision of the designated third-party payment model to cut off the channel for the transfer of commercial interests. Emerging industries have characteristics different from traditional industries,

given that the traditional rating model is difficult to adapt to the assessment needs of emerging industries, so for the rating agencies, the development of dynamic assessment models that can integrate the characteristics of the industry cycle has become a necessary move to incorporate the stability of the supply chain, technological innovation and other non-financial factors into the ratings framework, in order to enhance the adaptability of the assessment of emerging industries. In order to enable the market to effectively supervise the rating quality and enhance the credibility of the rating results, the mandatory disclosure of parameter adjustment records and historical rating backtesting results is a must for rating agencies to build a market-based rating quality verification mechanism. With the continuous development of the cross-border bond market, the differences between domestic and foreign rating standards have led to regulatory arbitrage. In response to this situation, rating regulators should promote mutual recognition of domestic and foreign rating standards, and establish a cross-border rating calibration system based on sovereign credit benchmarks, so as to eliminate the space for regulatory arbitrage. Market investors attach great importance to the real-time and accuracy of rating changes [3]. In order to detect rating anomalies in a timely manner, it is feasible for rating agencies to introduce machine-learning technology to monitor rating changes in real time, and to set an early warning threshold for rating deviation to trigger the review process. In order to strengthen the sense of responsibility of rating agencies and prevent major rating failures, it is necessary for rating regulators to establish a rating quality traceability accountability system, requiring rating agencies to carry out root cause analysis of major rating failures and publicize improvement plans.

4.2 Strengthening Information Disclosure Management

Information disclosure management should be strengthened by building a full-cycle penetrating regulatory framework. The establishment of a parameterized disclosure list mandates issuers to quantitatively display off-balance-sheet liabilities and connected transactions, with a focus on covering complex business scenarios such as supply chain finance and asset securitization. Implement standardized templates in XBRL format to replace traditional PDF documents, with built-in data validation module to automatically intercept contradictory information. Establish a dynamic disclosure coordination mechanism under the framework of IOSCO for cross-border issuance, and unify the conversion rules of key financial indicators and ESG information measurement standard [4]. Created a smart early warning system to monitor financial data fluctuations in real time, based on triggering the obligation of temporary disclosure of material matters. Establish a two-way communication platform between issuers and investors, where institutional investors are allowed to customize their access to risk heat maps and stress test results. Regulators need to create a mechanism that links the quality of information disclosure and refinancing quota, and be able to issue step-wise deductions of debt issuance quota for selective disclosure behavior. Investigate if, and how, blockchain applications can be used to achieve tamper-proof up-linking of transaction data in supply chain notes and other use cases to achieve transparency of underlying assets. Reinforce the forensic responsibility of third-party auditors of non-financial information, and bind management remuneration to the integrity of information disclosure through a contract.

4.3 Improving Risk Pricing Mechanism

To enhance the efficiency of the risk pricing mechanism, financial institutions should overcome the path dependence of traditional pricing models. Given that current local government bond pricing frequently deviates from the issue, financial institutions can develop a dynamic adjustment mechanism for credit spreads and include the industry boom index and regional financial health in the calculation framework for the liquidity premium to minimize it. Since the risk identification of science and innovation bonds has its own specificity that cannot be accurately grasped by traditional models, financial institutions should examine hybrid pricing models incorporating forward-looking indicators and be more lenient in using non-financial variables such as carbon emission intensity of enterprises and the pace of digital transformation resulting in greater risk identification accuracy of science and innovation bonds. With the increasing occurrence of bond trading in cross-border markets, the existence of regulatory arbitrage space affect the fairness of the markets, so financial institutions should establish a coordinated pricing platform for cross-border markets, develop rules for mapping domestic ratings and foreign ratings standards and yield curves so they can narrow the space for regulatory arbitrage [5]. The quotation behavior of market makers will have a large effect on market pricing, and abnormal quoting behaviors will mean irrational pricing transmission. Therefore, financial institutions should enhance not only the monitoring of the quoting quality of market makers, but they should also construct a deep analysis of the order book depth to identify abnormal quoting behaviors, so we might clamp down on irrational pricing transmission. To ensure the pricing basis information is true and reliable, and to avoid pricing bias due to information tampering, financial institutions may adopt blockchain technology to achieve data traceability during the entire bond issuance process, and to ensure that no tampering occurs in regards to the pricing basis information. In the instance of possible pricing deviations in the market, the regulator should consider implementing a hierarchical divergence of pricing response, and should

compel stress testing and liquidity testing for varieties over the given threshold, to ensure stability of market pricing. To the extent the credit derivatives market may be correlated with the spot market, linkage pricing between those markets can help smooth pricing variability. Therefore, the regulator should encourage linkage pricing across the credit derivatives market and spot market, and they'll build hedging tools such as credit default swap indices [6].

4.4 Strengthening the Supervisory System

Regulators ought to develop a multi-dimensional, intelligent monitoring network to enhance the monitoring of credit risk in fixed-income securities. For example, regulators should create a cross-border regulatory sandbox mechanism to pilot sharing regulatory databases in financial hubs that may serve as information laboratories that can connect cross-market risk transmission paths in real time and support a more forward-looking regulatory approach. Build on this, regulators can build a full life cycle tracking system for bonds based on quantum encryption, and incorporate penetrating monitoring of the equity structure and the capital flow of special purpose vehicles so that regulations can be accurate and comprehensive. Simultaneously, regulators should reconstruct regulatory penalty standards and dynamically link violations with bond issuers' market access qualification to create a stepped constraint effect and establish regulatory deterrence [7]. In addition, they should fully encourage the integration and application of regulatory technology and compliance technology, deploy smart contracts to automatically identify risk-mismatched design in some structured products, and improve regulatory efficiency. Moreover, regulators should build an inter-ministerial regulatory information aggregation platform for abnormal trading warning threshold settings in the various markets to enable information sharing and collaborative supervision. They should also update the classification and supervision system of foreign institutional investors and adopt differentiated access arrangements according to the home country's regulatory equivalence assessment results to fulfill internationalization requirements [8].

5. Conclusion

Optimizing credit risk management for fixed income securities is in essence an ongoing process of equilibrium between market efficiency and risk abatement and control. There is evidence that the current system is impaired in terms of issuer rating integrity, information transfer and regulatory capacity. There are three ways in which credit rating can be improved: first, we need to break the "issuer pays" approach and develop a multi-party and ecological rating with checks and balances; second, we need an information disclosure reform, as being with blockchain responsibility and other lifesaving technologies; third, we must integrate a risk pricing mechanism to induct the macro-stress test and micro-principal behavioral test so as to build situational resilience into the model. It is also noteworthy that regulatory technology can efficiently spot the threat contagion path for structured products, albeit we must be vigilant against a new form of regulatory blind spot stemming from technocentrism. Future research needs to further explore the quantitative impact of ESG factors on credit risk, as well as the construction path of cross-border regulatory collaboration mechanisms.

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