Research on the Development and Innovation of High-Quality and High-Yield Bonds in China

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Abstract. This paper compares the structural differences between China and the US credit bond markets. Two innovative bond varieties are creatively proposed: stock-bond compound innovative industrial bond and SPV M&A bond. It is suggested that improving the risk management and credit enhancement mechanism, provide effective risk management tools and reduce the risk of default; enrich the exit mechanism to promote the high-quality development of the bond market, and use the high-quality bond market to serve the high-quality development of China's economy.

Keywords: high-yield bond, credit rating, Sci-Tech Innovation Bond, SPV M&A bond

1 Introduction

Driving the development of new productive forces relies on the support and promotion from the capital market, with the bond market being an integral part of it. In November 2023, the People's Bank of China and other eight departments jointly issued the Notice on Strengthening Financial Support Measures to Help the Development and Growth of the Private Economy, proposing to explore and develop the high-yield bond market, meet the financing needs of technology-based small and medium-sized enterprises (SMEs), and build an exclusive platform for high-yield bonds. Consequently, their bond financing channels are obstructed [4]. This paper begins by comparing the structural differences between the credit bond markets of China and the United States.

2 Structure and Implications of Credit Bond Market of China and US

According to Wind data, by the end of 2023, the stock market size of China's credit bond is 46.31 trillion yuan. According to the Securities Industry and Financial Markets Association (SIFMA), by the end of 2022, the stock market size of US credit bonds was 29.4 trillion US dollars. The stock size and proportion of China's corporate bond market are much smaller than those of the US. In terms of the industrial distribution of stock

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corporate bonds, by the end of 2023, China's stock corporate bonds amounted to 11.41 trillion yuan while United States reached $10.8 trillion during the same period. In terms of the issuer's attributes, as of the end of 2023, the stock scale of local government financing vehicles (LGFVs) bonds in China reached 4.98 trillion yuan [3].

High-yield bonds are bonds with a credit rating of non-investment grade (below BBB by Standard & Poor's, Fitch, or below Baa by Moody's). High-yield bonds account for $0.18 trillion, or 13%, of the $1.44 trillion in primary U.S. corporate bond issuance in 2023. By the end of 2023, there were 13,647 bonds in China's corporate bond stock market. In terms of investor structure, the investor structure of US corporate bonds is relatively diversified. The U.S. high-yield bond market is predominantly composed of "rising stars." The firms falling into “rising stars” category are termed as making their way to acquiring better credit rating, despite being below investment grade [5]. However, in China, issuers have historically maintained investment-grade credit ratings, and there are no companies comparable to "rising stars" in the international market issuing speculative-grade bonds in the primary market.

3 Analysis of the Obstacle That Currently Restrict China's High-Yield Bond Market

3.1 The Perspective of Financing Side

3.1.1 High Entry Standards for Issuers, and SMEs Often Lack the Qualifications.

In March 2020, the Securities Law of the People's Republic of China (hereinafter referred to as the "New Securities Law") changed the issuance of corporate bonds from the approval system to the registration system, making it more complex for the SMEs.

3.1.2 Credit Rating Has Low Discrimination and Lacks Warning Signals.

In mature markets, credit rating results can serve as the basis for pricing high-yield bonds. However, in China, the differentiation in credit ratings is relatively low. Domestic mainstream rating agencies lack independence under the issuer-pay model.

3.1.3 Imperfect Default Disposal System, and Excessive Underwriting Responsibility.

Due to the higher default risk and uncertainty of repayment associated with high-yield bonds, the handling of defaults and market clearance is particularly crucial.

3.2 The Perspective of Investment Side

3.2.1 Lack of Reasonable Pricing Mechanism and Mismatch Between Risk and Return.

The lack of sufficient historical data and default samples in the domestic market makes it difficult to assess the extent of price deviation from value, resulting in an imbalance in risk-return ratios.

3.2.2 Weak Liquidity and Low Activity in the Market.

Lack of liquidity is a common disadvantage of private placement bonds. High- yield bonds have lower trading activity, large issuance discount and high liquidity premium, which increase bond financing costs.

4 Innovation Path of China's High-Yield Bond Products

4.1 China's Industrial Bond Innovation Attempts

In 2016, the CSRC promoted the pilot development of innovation and entrepreneurship bonds. In 2016. China became the largest green bond issuers all across the globe [6]. In 2019, the Shanghai and Shenzhen Stock Exchanges, together with the National Equities Exchange and Quotations (NEEQ) and China Securities Depository and Clearing Co., Ltd (CSDCC), introduced non-publicly offering convertible corporate bonds. In 2020, the pilot issuance of technology innovation corporate bonds was launched. In early 2021, the Securities Association of China introduced high-growth enterprise debt financing instruments.

4.1.1 "Double Innovation Bonds".

The "Double Innovation Bond" was first issued on a pilot basis in 2016. It aims to meet the financing needs of innovative and entrepreneurial SMEs.

4.1.2 "Double Non-Public Convertible Bonds".

In 2019, the Shanghai and Shenzhen Stock Exchanges, the NEEQ and CSDCC jointly formulated and issued the Implementation Measures for Non-Public Issuance of Convertible Corporate Bonds by Non-listed Companies. On the base of the "Double Innovation Bonds", the "Double Non-Public Convertible Bonds" is further innovated.

4.1.3 "Sci-Tech Innovation Bonds".

On May 20, 2022, the "Sci-Tech Innovation Bond" was officially launched on the basis of the preliminary pilot, aiming to enhance the capital market's financing service capacity for scientific and technological innovation enterprises.

4.1.4 "High-Growth Bonds".

The issuers of 'High-Growth Bonds' are positioned as growth-oriented innovative enterprises with outstanding market competitiveness, core technologies, and promising development prospects.

4.2 Innovation of High-Yield Bond Products

High-yield bonds have the characteristics of high risk and high return, and the mismatch between risk and return has become a key factor restricting the development of high-yield bonds.

4.2.1 Equity-Bond Composite Innovative Industrial Bonds.

On the basis of "dual non" convertible bonds, the equity-bond composite innovative industrial bonds are further innovated and non-publicly issued by non-listed companies.

4.3 Design of Equity-Bond Composite Innovative Industrial Bonds

4.3.1 Issuer, Method and Conditions.

The issuers of equity-bond composite innovative industrial bonds are mainly unlisted small and medium-sized enterprises and private enterprises, including all listed companies and non-listed companies on the New Third Board.

4.3.2 Use of Raised Funds and Information Disclosure.

In terms of the use of raised funds, the use of funds is more flexible, which can be used to repay stock debt, supplement the company's capital, equity investment, fund investment, project construction, etc., and can also be used to increase the capital of subsidiaries.

4.3.3 Bond Conversion Clause and Performance Linked Clause.

Based on the experience of setting equity conversion clauses for American high-yield bonds, equity-bond composite innovative industrial bonds allow bonds to be converted into core non-listed company equity.

4.3.4 Coupon Rate Linked Clause and Debt Repayment Guarantee Clause.

At present, most of the industrial bonds have fixed coupon rates, and the yields are lack of imagination. In addition to the equity conversion clause, the bond yield can also be linked to the industrial index.

5 Difficulties in Implementation and Solutions

5.1 Initial Pricing of Equity

According to Myers (1977) [2], the overall value of the enterprise = existing asset value + real option value. The existing asset value can be estimated by the FCFF model; the real option value is the future growth value created by the enterprise's strategic resources and core competitiveness, which can be calculated by the B-S formula, with the calculation formula referred to Zheng Zheng (2020).

$$PV = \sum_{t=1}^{n_1} \frac{FCFF_t}{(1+WACC)^t} + \sum_{t=n_1+1}^{n} \frac{FCFF_t}{(1+WACC)^t} \quad (1)$$

$$WACC = R_b \cdot (1-T) \cdot \left(\frac{D}{D+E}\right) + R_s \cdot \left(\frac{E}{D+E}\right) \quad (2)$$

In Equation (1), PV is the value of the company's existing assets, and $FCFF_t$ is the free cash flow of the enterprise at the end of the period t, which can be calculated by

using the formula FCFF=OCF-CAPEX with reference to Copeland (1990) [1]. In Equation (2), WACC is the weighted cost of capital; R_b is the cost of debt, which can be measured by the interest rate of bank loans; R_s is the cost of equity, which can be determined by the CAPM model. According to the B-S pricing formula, take the core profitable assets as the underlying assets of real options, and the calculation formula is as follows:

$$C = V \cdot N(d_1) - I \cdot N(d_2) \tag{3}$$

$$d_1 = \frac{\ln\frac{V}{I \cdot e^{rt}} + (r + \frac{\sigma^2}{2})t}{\sigma\sqrt{t}} \tag{4}$$

$$d_2 = \frac{\ln\frac{V}{I \cdot e^{rt}} + (r - \frac{\sigma^2}{2})t}{\sigma\sqrt{t}} = d_1 - \sigma\sqrt{t} \tag{5}$$

Where, $V \cdot N(d_1)$ = discounted value of future asset price income, $I \cdot N(d_2)$ = discounted value of future payment cost of obtaining the underlying asset, and the difference is the value of real option. V = current market value of the underlying asset, I = investment cost of the underlying asset, σ = volatility; r = risk-free interest rate.

5.2 Investment Exit Strategy Problem

Early over-the-counter redemption by setting the performance-linked clause of industrial bonds. Listing exits or issuer buyback. Bond default and settlement of core assets.

6 SPV Mergers and Acquisitions Bond Innovation

6.1 Experience of Mergers and Acquisitions Bonds in the United States

Since 1985, M&A bonds have gradually become a substitute for bank M&A loans, accounting for 50% of high-yield bonds. By the middle and late 1980s, the proportion of M&A bonds in the total scale of high-yield bonds was close to 70%. At the end of the enterprise M&A wave in the early 1990s, the proportion of M&A bonds fell to about 20%.

6.2 Design of China's SPV M&A Bonds

Special Purpose Vehicle (SPV) is a special entity/subject created by financial market participants for investment and financing purposes. Early SPVs included project financing companies or real estate investment trusts, and in recent years, SPVs have been well known for their use in asset securitization. The main purpose of establishing SPVs is to separate risks between the issuers and investors.

7 The Institutional Design of Building High-Quality High-yield Bond Platform

(1) Actively promote innovation in the bond market, optimize the structure of the bond market, and provide a systematic innovation mechanism for high-quality bond market innovation

(2) Improve risk management and credit enhancement mechanism, increase the investment attractiveness of high-yield bonds

(3) Improve the mechanism for handling bond defaults and restructuring, and provide a guarantee for high-yield bond investment.

(4) Improve the innovative market system of high-yield bond in China, and provide an operation standard for the development of high-yield bond market

i. Improve the bond credit rating system and promote the reasonable pricing of bonds

ii. Consolidate the due diligence obligations of private enterprise bond underwriters and strengthen their responsibility for information disclosure

(5) Improve the over-the-counter equity transfer market, and build a joint system between the high-yield bond market and the over-the-counter equity market

(6) Optimize investor qualification measurements, actively develop high-yield and high-risk investors, especially institutional investors

8 Conclusion

The innovation of high-quality and high-yield bonds in China is taking new shapes with government initiatives aiming at promoting the business environment. However, the developed countries such as United States have a faster pace in development of the high-quality and high-yield bond market. Certain risks and limitations such as lack of adequate regulations, lack of proper default risk management mechanisms and poor credit rating systems create obstacles for the development of the high-quality and high-yield bond market in China. Hence, it is suggested that the improvement in regulations, credit rating systems and default risk management mechanism may reinforce the development of the high-quality and high-yield bond market in China.

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