Research on the Influencing Factors of Bond Default: Literature Review

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Abstract

Since the default of "super-day debt" in 2014, more and more bonds of listed companies in China have defaulted, and bond default has gradually become the norm. In this paper, the influencing factors of bond default are summarized as the research object, and it is found that bond default has certain rules from multiple angles, which can provide reference for theoretical circles, practical circles, government and investors.

Keywords

Bond Default; Influencing Factors; Literature Review.

1. Introduction

Compared with foreign countries, China’s bond market developed late. From the perspective of China’s entire financing structure, of course, direct financing accounted for the largest proportion, but indirect financing such as stock market and bond market also played an important role in optimizing resource allocation, financial market innovation and supporting national economic development. In 2014, the super-day debt default broke the myth of "zero default" that China’s bond market has maintained for a long time due to non-market intervention, and the normalization of default is the embodiment of mature markets. Based on the theoretical basis that risk determines value, bond price can also reflect bond risk, a large number of literatures at home and abroad have studied the influence of credit risk determined by various factors on bond price, However, the commonly used indicator to reflect bond credit risk is default probability, and the influencing factors of corporate bond default are of great significance to the research of bond default risk. This part mainly reviews the previous literature on the influencing factors of bond default, Firstly, it sorts out the literature on the influencing factors of bond default, Secondly, it makes a brief comparative analysis of various credit risk prediction models.

2. Influencing factors of bond default

The essence of bonds is the contract of creditor’s rights and debts, which has both creditor’s rights and securities attributes, As the product of voluntary cooperation between the two parties, bonds have individual characteristics, As an important financing means generally accepted by most enterprises, they will be affected by enterprise characteristics and micro-financial factors, but enterprises are also affected by their industries and overall macro-environment.

2.1. The bond level

Individualized characteristics of bonds affect bond default. Debt maturity is the most important research on the influence of bond’s own characteristics on its default, However, the existing literatures have different conclusions about debt maturity factor. Yang Chaoqiang found that
under the premise of constant total debt, when the weight of short-term debt is greater than the weight of medium-and long-term debt, the probability of default will become larger.

2.2. Company level

2.2.1. Financial indicators
Bond default is often the final result of corporate internal governance performance, while financial indicators are the most intuitive manifestation of corporate governance. Altman [2] (1968) first proposed that the signs of high probability of enterprise bankruptcy in manufacturing enterprises were summarized as low liquidity, poor profitability, high leverage ratio, insufficient solvency and low operating activity ratio. Different from previous univariate research results, it is found that profit is an important guarantee for enterprises to reduce bankruptcy probability, and operating activity ratio plays a role in this process. Chinese scholar student Rong Liu [3] and others have also proved that profitability, leverage ratio and asset liquidity have an important impact on corporate bond default, and jumped out of a single financial indicator to verify that the overall financial report quality and the different nature of enterprises have different impacts on bond default. Broken capital chain and insufficient cash flow are the final performance of most defaulting companies, cash is the blood of enterprises, and cash flow information is the most direct reflection of enterprise's physical resources and financial situation, which has strong financial discrimination and early warning ability for enterprise financial crisis [4]. Cash flow from operating activities is the main source of cash flow of enterprises, which can reveal the strength of hematopoietic function of enterprises, Cash flow from operating activities with sufficient stability, reasonable structure and strong growth plays a significant role in reducing the occurrence of financial crisis.

2.2.2. Nature of property rights
Based on the nature of property rights, the government's relationship has the ability to help companies obtain larger-scale public debt financing. Compared with state-owned enterprises, private enterprises with weak political connections receive government subsidies, which can significantly improve the company's long-term performance [6]. Moreover, the degree of local government intervention has a significant impact on the default risk of local enterprises, When the cost of social bankruptcy is high, banks lower the screening criteria for loans, so that low-quality enterprises can obtain loans, thus increasing the default risk of enterprises more significantly [7]. Although from the long-term and dynamic point of view, the possibility of excessive debt of state-owned enterprises is lower, but the possibility of low interest coverage ratio of state-owned enterprises is higher [8], and from the short-term and static point of view, state-owned enterprises are more likely to have debt default risk, and the possibility of excessive debt is higher. State-owned enterprises will also significantly weaken the role of social network in reducing the probability of corporate debt default [9]. Although the rigid payment of our government has been broken at present, will the government still lend a helping hand when the debt crisis happens to the enterprises that bear the policy burden for a long time?

2.2.3. Accounting information quality
Accounting information comprehensively reflects the financial status and operating results of enterprises, which plays an important role in judging the solvency and cash flow status of enterprises. Hao Xu believes that the lower the accounting conservatism, the greater the probability of debt default, and the more robust companies can timely transmit the signal of default risk changes to creditors, which helps to reduce the probability of default [10]. Accounting information is based on the pricing principle of historical cost, but it will also be affected by the debtor's forecasting ability and opportunistic behavior (such as earnings management), which deviates from the actual situation of enterprises, especially when enterprises have a high proportion of short-term loans and great debt repayment pressure,
they will tend to earnings management, thus improving the degree of information asymmetry [11]. Many scholars focus on the impact of earnings management behavior on the usefulness of accounting information debt contracts, and earnings management behavior of listed companies damages the usefulness of accounting information debt contracts [12]. Before the default of the first listed bond in China in November 2014, the default rate of corporate debt with earnings management behaviors such as cash flow manipulation will be relatively higher [13][14]. With the frequent occurrence of bond defaults by listed companies in China in recent years, the empirical results of comparing earnings management behaviors before and after exposure of corporate bond defaults show that defaulting enterprises will expect high post-default costs, and comprehensively weigh the costs of earnings management and debt default, and more often implement negative earnings management after exposure of default [15], thus reducing reputation losses and legal risks and controlling the costs and risks of debt default, and this tendency will increase with the increase of default degree.

2.2.4. Innovation investment

In the process of China’s economic development, bond financing has become an important channel for enterprises to obtain resources, With the rapid increase in the number and scale of bond defaults, its negative impact on macro-economy and micro-enterprises has increasingly become the focus of academic circles, the public and policy makers. Bond default means that the enterprise fails to repay the creditor’s principal and interest when it expires, thus violating the debt contract, which is mainly manifested in the shortage of cash flow of the enterprise, However, the R&D investment of the enterprise requires a large amount of long-term sustained investment, and the acquisition of external financing resources is the key factor affecting the enterprise’s R&D investment. On the one hand, increasing investment in innovation will help enterprises gain technological advantages and improve product profits. However, the result of innovation and R&D is uncertain, and it takes a long time and capital is injected for a long time, so a stable cash flow source is the necessary guarantee for the success of enterprise innovation [16]. If the capital demand can not be met, it will easily lead to innovation failure, causing huge economic losses to enterprises and correspondingly increasing the risk of default. Therefore, the R&D failure caused by the shortage of funds may enable external investors to perceive the cash flow risk of enterprises in advance. On the other hand, first of all, after debt default, corporate financing constraints will rise, existing creditors will control loans and even recover loans in advance, Moreover, the negative news of default will make new financing more difficult or the financing conditions more stringent.

2.3. The macro level

Altman (1983) pointed out that the probability of enterprise default will be different in different macro environments, and macro factors will have an impact on enterprise default. Nam et al, (2008) created a macro-dependence model by expanding the risk model, and added GDP growth as a macroeconomic indicator, which greatly enhanced the interpretation of the model. Chinese scholars believe that it is more accurate to build a new default prediction model by adding enterprise attribute indicators and regional environmental indicators on the basis of traditional financial indicators, which shows that the factors affecting corporate bond default are expanding [17]. Considering the lagging early warning effect of financial and non-financial factors and economic environment factors will greatly improve the overall classification accuracy and fitting degree [18]. Stock market performance variables and macroeconomic environment variables are all related to financial distress risks, and the new model has a greater ability to explain and recognize the rate than the model only containing financial variables [19]. But mainly due to the growth of debt scale, the probability of default has not changed significantly [20].
3. Overview of Bond Default Prediction Models

There are two main research methods of default prediction model at home and abroad, one is the market model based on market information such as stock and bond prices, and the most widely used one is Merton model, Merton model assumes that the capital structure of the company is simple and the asset value obeys lognormal distribution, etc., and the realization of the model requires strict preconditions, Agarwal and Taffler [21] think that when the actual bond market is difficult to meet, the empirical performance of the model may be unsatisfactory, and this model is based on theoretical derivation and calculation. The other is an accounting model based on enterprise financial statement information and adopting different statistical methods to evaluate default methods, Beaver [22] (1966) first proposed a univariate discriminant model to predict enterprise default by using a single financial indicator, and Altman [2] (1968) introduced (MDA) multiple linear discriminant method into the systematic quantitative research of debt distressed enterprises, which initiated the main genre of default prediction. Subsequently, in the process of default analysis by applying multivariate discriminant method, the academic circles constantly innovated and improved the original model, and jumped out of the strict assumptions of the original model to eliminate the limitations of MDA, Ohlson [23] (1980) and Zmijewski [24] (1984) respectively introduced Logistic model and Probit analysis method, both of which used binary choice model to quantitatively predict the enterprise default model, The result of binary choice model is intuitive, and the estimated value is the default probability of enterprises, Compared with MDA, the hypothesis is weaker, which has strong applicability to the situation that the number of defaults in China’s current bond market is less and the time accumulation of default data is shorter. Of course, there must be no missing financial data when using Logist model. In the existing domestic literature, Wu Shinong and Lu Xianyi [25] (2001) used the Logistics model to analyze the financial distress of listed companies, and Sheng Rong Liu [3] and others (2019) established an early warning system for corporate bond default by establishing the Logistics model to analyze the influencing factors of bond issuers’ default.

4. Review of research

Based on the existing literature, many scholars have done a lot of research on the related factors that affect corporate credit risk and bond default risk from the bond level, the company level and the macro-economic level, providing help for enterprises to find risks early and take self-precautions. Relevant research shows that the term is an important factor in the characteristics of bonds, and the default rate of short-term debt is higher than that of long-term debt. At the company level, financial information and internal governance play an irreplaceable role in the risk of bond default, Compared with non-state-owned enterprises, the risk of bond default in state-owned enterprises is relatively lower; The quality of enterprise accounting information will also convey the relevant business conditions of enterprises to the outside world through information channels, and then affect the risk of bond default; Innovation investment, as an important risk-taking index of enterprises, usually takes up more enterprise resources, and has a long cycle and high risk, which also has a certain degree of influence on the bond default of listed companies. Finally, the development of any enterprise will depend on its external macro environment, and the overall macro trend and local economic characteristics will also have a corresponding impact on the default risk of corporate bonds. These conclusions are helpful to both listed companies and investors’ understanding of bond default risk, and contribute to the sound development of the whole capital market in China. In addition, this paper also summarizes the theoretical and practical models related to the study of credit risk at home and abroad, With the accumulation of literature, the related models are constantly improving and
optimizing, which can more and more truly reflect the real mechanism of bond default of listed companies.

References


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