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What determines the Japanese corporate credit spread? A new evidence

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ABSTRACT

This paper investigates the determinants of the corporate credit spreads changes in the Japanese bond markets. We show that the business cycle risk and market skewness risk affect changes in the credit spread in Japan even after controlling for the frequently used variables. We also find that the magnitude of market skewness risk is relatively higher for low-rated bonds. Our results are robust to changes in credit ratings, different maturity groups and time periods around the recent global financial crisis.

1. Introduction

Theoretical models by Black and Scholes (1973) and Merton (1974), as well as the empirical study by Collin-Dufresne et al. (2001) were instrumental in initiating a strand of research on factors affecting corporate credit spreads.¹ While the studies of Collin-Dufresne et al. (2001) and others discuss the significance of factors such as the business conditions and financial leverage, prior studies either overlook or improperly price risks from business cycle and market skewness. We argue and provide empirical evidence that business cycle risk and market skewness risk are also priced in the Japanese corporate bonds market.

Litzenberger (1992) argues that credit spreads are sensitive to changes in both business and economic conditions, which affects the probability of default and/or the recovery rate. Even if the business climate does not affect the probability of default, credit spreads may still be influenced by changes in the expected recovery rate, which is found to be time-varying with the business conditions (Altman and Kishore (1996)). In line with this notion, the expected recovery rate should act as a function of the business climate,² and investors would expect the risk premium related to business cycle to increase simultaneously with the business and economic conditions. Fama and French (1989), for instance, find that credit spreads widen when economic conditions are weak. These arguments and findings suggest that credit spreads may contain a priced risk factor from business cycle.

Another risk factor is the skewness risk, which is also largely ignored in the bond market literature. A market skewness risk is a reflection of the financial constraint risk that affects the leverage and its cost. A firm with higher (lower) financial constraint tends to have higher (lower) skewness risk (Adrian and Rosenberg, (2008)) and higher (lower) cost of debt. Thus, financial constraint risk

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causes heterogeneity in the access to funds. This heterogeneity of access to funding, as well as borrowing restrictions, experienced by some firms is expected to increase the funding costs thereby increasing credit spread. This also implies that a firm with lower (higher) credit rating should experience higher (lower) skewness risk. While the credit rating could be one of the reasons of skewness risk, the difference in credit risk premium across domestic and international market could also increase the skewness risk. For example, [Nishioka and Baba \(2004\)](#) find that firms are required to pay higher spread to international bondholders compared to the domestic ones.

Thus based on the above discussion, it is reasonable to expect that the firm value and its expected recovery rate are positively related to the business cycle risk and skewness risk. Being highly integrated with global financial markets, it is expected that business cycle and skewness risks are also priced in the Japanese bonds market. However, the existing literature on this market provides inconsistent findings.

[Johnson \(1993\)](#) argues that there are few differences between the Japanese capitalism and that of other Anglo-American countries. The main differences according to [Johnson \(1993\)](#) relate to: “managerial autonomy from the interests of stockholders and employees; social priorities that favor producers over consumers; industrial policy; and the strong Japanese state.” However, he further posits that throughout the cold war era, the leaders of these countries denied any important or lasting differences in capitalism arguing that any such differences would be due to the Japanese culture. Authors such as [Aaker \(1984\)](#), [Pascale and Athos \(1981\)](#) argue that Japanese firms have a stronger corporate culture than Americans. This strength is evident in employees’ commitment to their organizations values as well as in employee-employer relationships. [Pascale and Athos \(1981\)](#) posit that Japanese employees value the relationship with their managers and see themselves as part of inclusive organizations, while their American counterparts value their independence relatively more. We contribute to the literature on comparative capitalism by focusing on Japanese corporate credit spread as compared to the American one.

Japan witnessed during the period 1997–1998 one of its worst financial crises. For the first time in Japan’s history a corporate default occurred in September 1997 (*Yaohan*) followed by a series of bank defaults (e.g. *Sanyo Securities*, *Hokkaido Takushoku Bank*, *Yamaichi Securities*, and *Tokuyo City Bank*). The following year, two more banks collapsed (*The Long-Term Credit Bank of Japan* and *Nippon Credit Bank*) (see [Hattori et al., 2001](#)). In the year 1998, the liabilities of firms claiming bankruptcy rose to 15.1 trillion yen from 12.6 trillion yen the previous year. From October 1997 to April 1999, the share of issuers rated AA to AAA by US rating agencies declined from 15.1 to 10.6 percent, while the share of issuers rated below investment grade rose from 21.4 to 30.2 percent (see [Packer, 1999](#)). As a consequence, corporate credit spread widened to unprecedented levels during this period.

A research by [Tsuji \(2005\)](#) on credit spread determinants in Japan find similar results to [Collin-Dufresne et al. \(2001\)](#)’s US results. Although, the methodology in the former study differs by focusing on the static components of the credit spread rather than the actual changes as in the latter, both studies find the determinants to be related to credit ratings, illiquidity, and investors’ preference. However a study by [Hattori et al. \(2001\)](#) introduces one extra variable that is specific to the Japanese market, which is the “Japan Premium”,³ or the TIBOR-LIBOR spread.

[Covrig et al. \(2004\)](#) suggest that the Japan Premium is the key driver behind credit spreads. In terms of the two pricing bases, the yen’s interbank interest rate would differ depending on the investor’s time zone. In Asian markets, where the TIBOR is quoted, investors would have a systematically higher yen rate, compared to those investors in Western Europe and the Americas, where the LIBOR is quoted. In their analysis of credit spreads, [Covrig et al. \(2004\)](#) find the Japan Premium to be modelled as a function of the determinants of credit spreads, and that systematic variation in the premium, explained by interest rate changes, stock price effects and information, bears effect on credit spreads.

Our contribution to the corporate credit literature in general, and in Japan in particular is twofold. First, while using an approach similar to but more robust than [Adrian and Rosenberg \(2008\)](#) in obtaining the business cycle and market skewness risks from the stock market volatility, we show that these risks affect changes in the credit spread in Japan even after controlling for the frequently used variables. Second, with an updated dataset in terms of time and bonds quality, compared to published studies, we find that the magnitude of market skewness risk is relatively higher for low-rated bonds. Our results are robust to different specifications including those based on extant literature and partitioning data into different sub-samples such as credit ratings, maturity groups and both turmoil and tranquil periods.

The remainder of this paper is organised as follows. Section 2 discusses the data, variable construction and hypothesis development. Methodology is explained in Section 3. Section 4 presents empirical findings, discussion on empirical findings and the robustness analysis and Section 5 concludes the paper.

³ Japan witnessed a severe banking crisis in 1990 that had considerable consequences on its corporate credit. Due to the banking crisis, and in the event of bank failures, loans that were in offshore banking accounts had no ‘lender of last resort guaranty.’ This type of risk was priced in a premium reflecting the likelihood of a bank’s failure, and the expected payoff to creditors in such event. In this case a smaller premium was experienced since the probability of government bailouts of the banking system resulted in lower chances of loss. This, according to [Covrig et al. \(2004\)](#), in addition to the failure of the Hyogo Bank in 1995, gave rise to the Japan Premium. Prior to this particular failure, as a means of trying to avoid bank failures, the Japanese government organised insolvent banks to be taken over. This government protection of financial institutions resulted in the system being viewed in a paternalistic manner, and was referred to as a ‘convoy system’ ([Covrig et al. \(2004\)](#)). By the mid 90’s, the push towards deregulation of the Japanese financial market and more reliance on market discipline resulted in a greater credit risk. The new approach towards insolvency by the government led to the emergence of the Japan Premium, and consequently, greater cost of funds for the Japanese banking system.

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