

# Risk taking by Japanese bond investors: Testing the “reach for yields” hypothesis in the Japanese bond markets

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## Abstract

This paper attempts to test the “reach for yields” hypothesis in the Japanese bond markets to explore the cause of extremely low credit spreads on Japanese bonds, especially BBB-rated bonds, using a three-factor CAPM ( $\gamma$ -CAPM) with (co)skewness as an additional market risk factor. Under the  $\gamma$ -CAPM, risk premium can be expressed as a weighted average of  $\beta$ -risk and  $\gamma$ -risk. Empirical results support the  $\gamma$ -CAPM against the  $\beta$ -CAPM. The estimated weight of  $\gamma$ -risk is 2.6 percent in Japan, compared with 12.5 percent in the United States. This difference mainly reflects a lower degree of relative risk aversion in Japan.

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*Keywords:* CAPM; Reach for yields; Corporate bonds; Skewness; Risk aversion

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## 1. Introduction

This paper attempts to test the “reach for yields” hypothesis in the Japanese bond markets to explore the Japanese version of the “credit spread puzzle.” To that end, we explicitly consider the risk stemming from negative (co)skewness under a three-factor CAPM framework.

Very few empirical studies have been conducted so far about the pricing of Japanese bonds, corporate bonds in particular. This is due mainly to the facts that (i) the Japanese corporate bond

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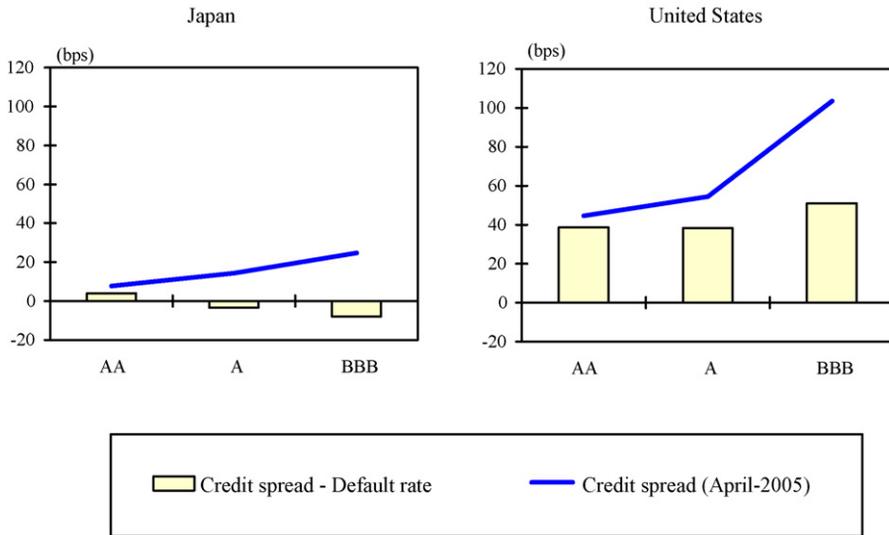


Fig. 1. Comparison of 5-year credit spreads between Japan and the United States. *Notes.* (1) Credit spread is defined as the difference in yields between corporate and government bonds with the same maturity. (2) The default rate is an annualized average of the historical default rate in the past 5 years. *Sources:* Japan Securities Dealers Association, Moody's, R&I, Merrill Lynch.

market is a relatively new market, which started to develop after the implementation of major liberalization measures such as a removal of eligibility criteria in 1996, and (ii) the basic trend of price developments has been quite different between Japan and other major advanced countries like the United States.<sup>1</sup>

Regarding the latter point above, Fig. 1 compares the 5-year credit spreads between Japan and the United States as of the end of April 2005. Note here that the credit spreads on Japanese corporate bonds are significantly less than the U.S. credit spreads. In particular, the Japanese BBB-credit spread is much lower than the U.S. BBB-credit spread. The large spreads on corporate bonds in the United States relative to their historical default rates has been termed the “credit spread puzzle” by Amato and Remolona (2003). In Japan, contrary to the case in the United States, bond investors have witnessed extremely narrowed spreads particularly on BBB-rated corporate bonds in recent years. This might be called the Japanese version of the “credit spread puzzle.”<sup>2</sup> Transactions in the secondary bond markets have been much less active in Japan than in the United States. This implies that liquidity in the Japanese bond markets is much lower and this is especially true in the Japanese corporate bond market. The lower liquidity further deepens the Japanese version of the “credit spread puzzle.” In this paper, we try to minimize the effects of the

<sup>1</sup> In 1990, eligibility criteria based on accounting information were replaced by those based on bond ratings. After that, other restrictions on corporate bond issues were gradually relaxed and in 1996 eligibility criteria themselves were removed in the final stage of the liberalization of the Japanese corporate bond market.

<sup>2</sup> Amato and Remolona (2003) find that U.S. BBB-rated corporate bond spreads were about eight times the expected loss given default on average from 1998 to 2002. They show that negative skewness in the distribution of corporate bond returns calls for an extraordinary large portfolio to achieve diversification, concluding that the spreads are wide because they compensate investors for negative skewness risk. Their conclusion is based on the analysis of arbitrage CDOs (collateralized debt obligation).

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