



On the consistency of ratings and bond market yields

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Abstract

We study the consistency of the credit-risk orderings implicit in ratings and bond market yields. By analyzing errors in term structure estimates for bonds with particular ratings, we show that for significant periods, a quarter of some categories of high credit quality bonds are rated in a manner that is inconsistent with their pricing. Adjusting for economic determinants of spreads (tax, liquidity and risk premiums) and allowing for the dynamic adjustment of ratings and spreads largely eliminates the inconsistencies, however.

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1. Introduction

Long-term bond ratings produced by agencies like Moody's and Standard and Poor's provide financial market participants with judgments, of a standardized nature, on the likelihood that bond issues will be repaid in an orderly manner. The

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importance of ratings as a source of information to investors has increased in recent years as bond markets have grown more international and come to include a wider range of obligors.¹ Ratings have also acquired new roles, as supervisory authorities have made regulatory requirements for financial institutions contingent on ratings.² Recently, it has been suggested (see [Basel Committee on Banking Supervision, 1999](#)) that regulatory capital for G10 banks be based in part on the agency ratings of the bank's borrowers.

In view of the increasing reliance on bond ratings in credit risk markets, it is important to ask how reliable are ratings as indicators of credit standing, both in general and for particular types of obligor. In particular, are ratings consistent, cross-sectionally and over time, with other measures of credit risk? Two recent papers have critically examined ratings as measures of default risk in this way.

First, [Blume et al. \(1998\)](#) show that firms with given accounting ratios received a significantly lower rating in the early 1990s than firms with similar accounting ratios would have received in the late 1970s and early 1980s.³ The implication is that rating agencies have changed the way in which they evaluate credit standing.

Second, [Delianedis and Geske \(1998\)](#), use equity and liability data for US firms, to construct alternative credit risk indicators and compare their forecasting performance to that of ratings. They conclude that the default probabilities generated by their models increase well in advance of ratings down-grades. They cite this as evidence of “rating stickiness”, i.e., that rating agencies do not immediately change ratings when news affecting an obligor's credit quality is revealed.

In this paper, we study a third aspect of ratings, namely their consistency or otherwise with bond market prices. [Altman \(1989\)](#) shows that, for all years from 1973 to 1987, mean yields to maturity increase monotonically as one descends the ratings scale. However, Altman's finding only implies that *average* bond spreads and ratings are consistent. If individual spreads within a particular rating category vary substantially around their mean, it may be that the implicit credit quality ordering attributed to obligors by the rating agencies and the bond market are very different.

To investigate this empirically, we extract average yields for different rating categories using Nelson–Siegel techniques as described in [Nelson and Siegel \(1987\)](#). The data we employ consists of ratings and price histories in the period 1988–1998 for a large number of non-callable, dollar-denominated, international bonds, primarily Eurobonds. For each trading day, we calculate yields for different maturities for the three highest credit quality rating categories, AAA, AA, and A. We then compare the bonds' actual market values with the prices they would have if a claim to the bond's cash flows were priced with our estimated yields.

¹ In December 1970, 98.0%, 0.3%, and a negligible fraction of Moody's-rated obligors were domiciled, respectively, in the USA, Europe and Japan. By end-December 1989, issuers from the US, Japan, the UK and other European countries were 84.7%, 2.1%, 2.3% and 4.3%, respectively, while by December 1997, they were 66.0% 4.7%, 5.4% and 20.0%.

² See [Cantor and Packer \(1994\)](#).

³ The basic approach of [Blume et al. \(1998\)](#) follows that of [Kaplan and Urwitz \(1979\)](#) who show that ratings may be reasonably well predicted using accounting information.

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