July 1999

MonetaryTrends

THE FEDERAL RESERVE BANK of ST. LOUIS

Quality Spreads in the Bond Market

Modern option-pricing theory shows that corporate bonds are equivalent to default-risk free government bonds with the same promised payment streams (and thus the same maturities) except that a corporate bond conveys an implicit put option to the firm’s shareholders. This put option is the right to default with limited liability, that is to walk away from the firm and leave it to the bondholders. The option can be exercised any day up to and including the bond’s maturity date. The value of the corporate bond to its holder thus equals the value of the default-risk free bond minus the value of the shareholders’ put option.

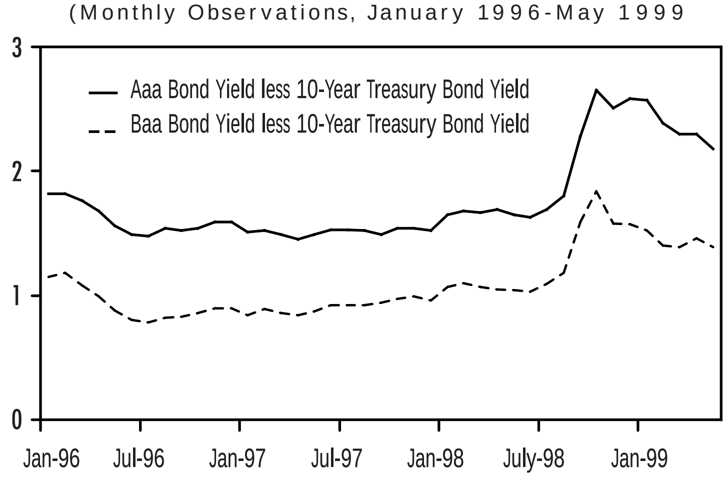
The value of the put option increases with the probability that the option will be “in the money” on the maturity date or any prior day. The option is in the money if (and only if) the value of the firm’s assets is lower than the present value of the promised payments to the bondholders (discounted at the default-risk free rate of return). All else being equal, the value of the put increases with the volatility of the firm’s earnings and a decrease in the expected level of its earnings. The market value of the put option implicit in corporate debt is reflected in the quality spread: the difference between the market yields of a corporate bond and of a comparable default-risk free government bond.

The Russian default on domestic debt in late August 1998 sharply increased volatility in financial markets (see *Monetary Trends*, May 1999). As the chart indicates, the quality spread between corporate bonds and U.S. treasury bonds increased from 1.09 percent (Aaa-rated bonds) and 1.69 (Baa-rated bonds) in July 1998 to 1.84 percent (Aaa) and 2.65 percent (Baa) in October 1998. More than half a year later, Aaa and Baa spreads of 1.39 percent and 2.18 percent, respectively, are still well above the January 1996 - July 1998 average values of 0.95 percent and 1.59 percent.

Many observers have suggested that illiquidity in corporate bond markets explains the increased quality spreads, at least initially. This explanation no longer seems compelling, however, as spreads remain high in mid-1999. It is possible that the sharp increase of the quality spread in the wake of the Russian default was due in part also to a downward revision of expected corporate earnings. As U.S. economic growth accelerated in the last quarter of 1998 and remained high in the first quarter of 1999, however, a near-term decline in expected earnings appears to be an unlikely explanation for the persistence of large quality spreads. More plausibly, bond investors have recognized a heightened and persisting degree of fundamental business risk that makes the right of corporate owners to default on debt payments—the put option—more valuable. This, in turn, depresses corporate bond prices and generates the higher quality spreads that prevail today.

—Frank A. Schmid

Quality Spreads in the U.S. Bond Market
(Monthly Observations, January 1996-May 1999)



Notes: Corporate Bond Yields are Moody’s Seasoned Yields.
Treasury Bond Yields are Constant Maturities Yields.

Views expressed do not necessarily reflect official positions of the Federal Reserve System.

NOW ON THE INTERNET
www.stls.frb.org