

For instance, when managers believe the value of the firm (as measured by the market) is too low, they have an incentive to buy out the firm's existing stockholders. This may involve temporary borrowing to purchase outstanding shares of the firm. Examined in this light, the optimal capital structure approach is too restrictive in scope and should be thought of as an optimal ownership problem.

If the nation's legislators are really concerned with the growth of corporate debt, they should act by reducing the size of the tax shield available to firms. Indeed, tax reform may be the only effective means of controlling the growth of all forms of debt in our economy. When the potential gains from leverage are removed, managers will respond by changing the way they finance their operations, and the substitution of debt for equity will slow or cease.

Summary & Conclusions

Junk bonds have attracted public attention because of the rapid growth in their use, because of their association with mergers and takeovers, and because some observers have felt that the Federal Reserve System is using the margin requirements of Regulation G to restrict their use.

In spite of their recent notoriety, however, low-rated bonds do have a legitimate role in the marketplace and in the financial structure of firms that make use of them. Many of the performance characteristics of junk bonds are well-understood by those who participate in the market. However, since many low-rated bonds are so new, their future performance cannot be accurately predicted, so there is need for caution in their use.

At this point, it is too difficult to determine whether or not the growing use of low-rated bonds in debt-based financing is harmful to our economy. The optimal capital structure of the non-financial corporation depends on so many variables that simple rules about capitalization that have served reasonably well to date may no longer be valid.

In the absence of a serious downturn in the performance of junk bonds, however, it is reasonable to assume that the use of these instruments will increase and that the subsequent growth in debt-based financing will cause a further shift in the quality of corporate debt.

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ECONOMIC COMMENTARY

Junk Bonds and Public Policy

by Jerome S. Fons

Over the past few years, the financial public has developed a fascination with the growth in the market for so-called junk bonds. In this *Economic Commentary* we would like to shed some light on the role of these instruments by providing a working definition of the term "junk bonds," by discussing their place in the financial world, and by examining a few of the issues surrounding concern over the growth of corporate debt.

The public's interest in junk bonds was recently fueled by the controversy surrounding the Federal Reserve Board's reinterpretation of Regulation G, by which the debt securities of a shell corporation, constructed solely as a thinly capitalized vehicle to facilitate a takeover of the stock of another firm, would now be subject to existing margin requirements.

The Federal Reserve Board requires that loans collateralized by margin stock, used to purchase and carry securities, not exceed 50 percent of the market value of the securing stock. Many have interpreted the Board's recent decision as a step to limit the use of low-grade debt instruments. The Federal Reserve Board of Governors has countered this charge, however, by stating that the intention was only to clarify the enforcement of existing regulations.

The phrase "junk bonds" was first coined to describe outstanding bonds issued by so-called "fallen angels." These were firms with initially strong financial histories that were facing severe financial problems and suffering from poor credit ratings. Today, the term "junk bonds" is applied to all speculative-grade debt, regardless of the issuing firm's financial condition.

Speculative-grade bonds are issues with ratings below BBB- (from Standard & Poor's) or Baa3 (from Moody's). Over the past few years, these ratings have frequently been assigned to the debt of new firms that do not have an established performance record. Previously, these firms may have been denied access to capital markets because of the market's distaste for speculative-grade debt. The emergence of markets for these bonds has provided a viable financing alternative for small or new firms that traditionally had to rely on commercial bank loans.

Since the average investor has neither the access to information nor the expertise necessary to effectively evaluate an issuing firm, the bond-rating agencies provide an important service. Ideally, the assigned rating gives the investor a single measure of the default probability of the rated bond. However, the value of the assigned rating may decline as financial conditions change with the passage of time. It has been observed, for example, that knowledgeable investors often incorporate new information about the issuing firm into the price of the bond

well before its rating is actually adjusted by companies such as Moody's and Standard & Poor's.

Since much emphasis is placed on ratings, however, business and financial economists have closely examined the factors that determine the rating, as well as the subsequent performance of the bonds.

By and large, agencies that rate bonds admit that there is no precise formula for determining which rating a bond receives, although studies have shown that certain patterns can be established between the different ratings and various aspects of the rated firms.¹

Factors that appear to figure prominently in the rating process are accounting ratios, including debt to equity; measures of past performance, including variability of earnings; and many so-called qualitative features, such as the evaluator's disposition towards management, and the general outlook for a particular industry.

Although they may vary from issue to issue, the chosen provisions under which bonds are issued (such as call terms, dividend restrictions, or subordination) seek to enhance an issue's attractiveness by providing protection against abuses that could endanger the bondholder. Management, for example, may be restricted from entering into a merger that might dilute the bondholder's claim, or from using the proceeds from a bond sale to pay off shareholders in a liquidation move.

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1. For an excellent survey of this literature, see Robert S. Kaplan and Gabriel Urwitz, "Statistical Models of Bond Ratings: A Methodological Inquiry," *Journal of Business*, vol. 52, no. 2 (April, 1979), pp. 231-61.

Companies usually pay to have their bonds rated. This indicates that being rated is generally beneficial, although some companies choose not to undergo the process. Their bonds, being non-rated, are usually considered speculative grade.

A high bond rating may be important to the issuing firm because it can reduce financing costs due to the lower yield required by bondholders. One reason a lower yield is required is because there are many more potential holders of high-rated securities—since federally chartered banks and others with fiduciary responsibilities are prohibited from holding speculative-grade instruments. The expected gains from obtaining a rating are weighed against the cost of the rating process. In general, the more potential holders there are, the greater the benefits of obtaining a rating.

Low-Rated Bond Characteristics

Low-rated (or junk) bonds are commonly described as speculative because the financial characteristics of the issuing firm are thought to increase the risk of default. Things are not quite that simple, however.

Economists have kept track of the performance of corporate bonds for many years. Part of the difficulty in establishing a relationship between the likelihood of default and an issue's rating stems from the fact that, by the time an issue defaults, it usually descends in rating until it reaches the rating D (for Default). In testimony to the effectiveness of the ratings agencies, not one corporate bond originally issued with the highest rating (AAA) in the past 10 years has defaulted.

On the other hand, bonds originally rated single-B have had the worst default record in recent times. If we look at the performance of issues rated single-B during 1982 (the trough of the worst postwar recession), we find that roughly 4 percent (in terms of par value) defaulted. One measure of average annual default rates for all grades, covering 1971 through 1984, has a mean value of 0.12 percent.² Since even defaulting bonds continue to trade at positive prices, these figures do not represent the percentage of original investment lost by holders of these bonds.

Based on prices prevailing one month after a default, a study by researchers Edward Altman and Scott Nammacher found that defaulting bonds continue to trade, on average, at 41 percent of par value. Since low-rated bonds have traded at yields more than five percentage points above comparable-maturity Treasury issues, many feel that holders of well-diversified portfolios of junk bonds are more than compensated for losses that result from defaults.

Bonds issued to facilitate (or to prevent) mergers can be given a speculative grade. The additional debt tends to cause a deterioration in the firm's debt-to-equity ratio, at times to the point of reducing its ability to service the additional debt. Often, however, the newly capitalized firm will divest itself of some of its operations, thereby allowing it to shed part of its debt burden.

Whether or not traditional rating techniques can be applied to merger-related debt has yet to be determined. The lack of a clear track record for these issues contributes to their riskiness. Merger-related debt financing has proliferated in an economic environment that, for the most part, has been characterized by falling interest rates and low inflation. It may not be rational, however, to expect that the performance of corporate bonds over the next business cycle will be anything like that of the past.

In addition, there are those who believe that a large majority of firms with assets exceeding \$25 million would be given ratings that are below investment grade if they were to apply to Moody's or to Standard & Poor's.

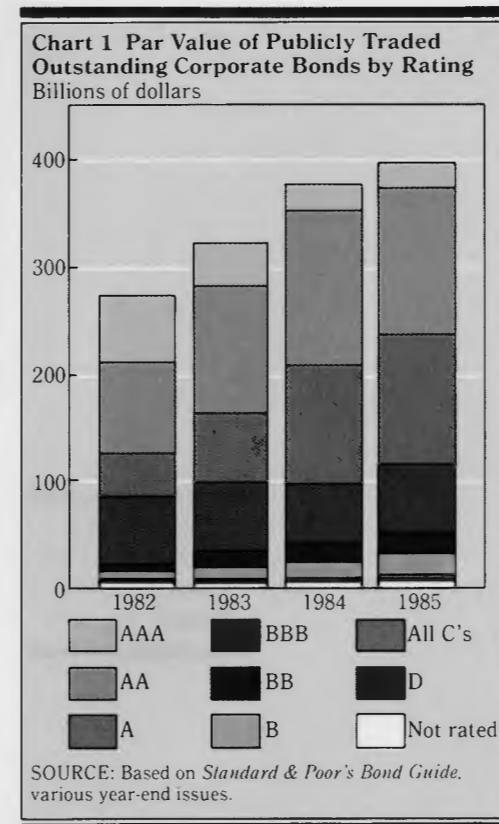
Using this reasoning, one might expect that, if the loans on the balance sheets of commercial banks were rated by one of the rating agencies, the average commercial bank portfolio would be given a speculative grade.³ Consequently, the term "junk bonds" may have connotations that may not appropriately describe the true strength of the issuing firm.

The list of institutions and individuals willing to hold low-rated bonds appears to be growing with the passage of each year in which there are few defaults on these bonds. Studies undertaken by investment banks, as well as by academics, suggest that a diversified portfolio of low-rated bonds contains advantages that may offset some of the default risk. It has been observed that low-rated bonds behave more like equity issues than do their high-grade counterparts. Low-rated bond prices tend to respond to new information about the issuing firm or industry. As a result, the returns on low-rated bonds selected from different industries tend to offset one another, resulting in a less volatile overall portfolio return.

Studies of the performance of portfolios of low-rated bonds indicate that their returns are in fact less risky in the sense that the return variance is lower than other fixed income investment portfolios.⁴ A recent study concludes that, as long as one does not concentrate his holdings in a particular industry, as few as 10 different issues constitutes a well-diversified portfolio.⁵ Of course, mutual funds that specialize in low-grade bonds provide an even greater potential for diversification.

The growth in the market for low-rated corporate debt has been caused by two major factors: new issues and downgradings. In terms of dollars raised, roughly 25 percent of all publicly offered debt (excluding mortgage-backed bonds) by U.S. corporations in 1984 was either non-rated or had a speculative-grade rating. Although this figure fell to 20.3 percent in 1985, it still stands in stark contrast to the lack of such offerings as recently as 10 years ago.

Since 1979, ratings agencies have reported that downgradings have consistently led upgradings. Standard & Poor's downgraded 267 issues in 1985 while upgrading only 125. Chart 1 presents a summary of the par value of straight corporate bonds outstanding, by rating, from 1982 through 1985. In 1982, 8.8 percent of outstanding corporate bonds had speculative-grade ratings; by 1985, this figure had risen to 13.4 percent. The shift in the quality of the nation's corporate debt can generally be attributed to the accumulation of larger amounts of debt by the nation's corporations, as well as to increased merger activity in recent years.



Corporate Debt Growth

The growth of all forms of debt is of great concern to the nation's legislators and financial regulators. Many feel that the rapid growth of debt may eventually restrict the ability of households,

government, and businesses to pay what they owe in the event of an economic downturn. The notion that there is an optimal ratio of debt to equity (or debt-service expense to income) is largely based on these concerns. In order to put these matters into their proper perspective, economists have developed theories to help explain why households and businesses might want to accumulate debt. In particular, economists have paid considerable attention to the idea of how firms should structure their net worth and long-term debt for the best results.

Among the first to provide a rigorous treatment of this issue were economists Franco Modigliani and Merton Miller in 1958.⁶ They demonstrated that, in an idealized world without taxes or bankruptcies, the choice of financing is irrelevant to the valuation of the firm. As long as the fundamental characteristics of the firm's cash flows are not altered, it makes no difference whether debt or equity financing is used.

Subsequent extensions of Modigliani's and Miller's work highlight the importance of the deductibility of interest expense for tax purposes and of the so-called deadweight losses that result from bankruptcy. The ability of the firm to deduct interest expense when determining its tax bill implies that there is a "tax shield" that increases the value of the firm without affecting the distribution of the cash flows, although the contribution of the shield is reduced in the presence of personal income taxes.

The fact that there are usually third-party costs involved when a firm declares bankruptcy has also been shown to inhibit the ability of a firm to increase its value through additional bond-related debt. These (explicit and implicit) costs take the form of liquidation losses and legal/settlement fees that a bankrupt firm faces. As more debt is issued, the probability of default rises, as do the expected costs of bankruptcy. The optimal capital structure is reached when the firm's debt level equates the marginal expected costs of possible bankruptcy to the marginal gains from the firm's tax shield.

In the context of the Modigliani/Miller viewpoint, there are a number of factors that could be linked to a shift in the preference of managers for higher debt levels which, in turn, has contributed to growth in the use of speculative-grade bonds. The changing political and economic environment in the United States may have fostered a belief that the costs of bankruptcy have been reduced. This belief may be grounded in the development of our nation's financial system. Today's financial manager has at his disposal many instruments to reduce the firm's exposure to unanticipated changes in the economic environment.⁷ The development of markets for risk management could invalidate long-held rules of proper financial conduct.

Other factors, such as a growing economy, may contribute to the feeling that the expected costs of bankruptcy should be revised downwards. If this is the case, then the substitution of debt for equity by the nation's corporations constitutes the most logical behavior. Until events arise to change this view, the present trend of growth in the use of low-rated bonds may continue until a new balance of debt-to-equity is reached.

Finally, the notion of agency costs illustrates the complexities of determining the optimal capital structure of the firm. One can view the modern corporation as a set of contracts between stockholders, bondholders, managers, suppliers, customers, unions and others. The problem of choosing debt-versus-equity financing must be considered in light of possible conflicts of interest among these groups. Corporate decisions can adversely affect one group while positively affecting another. Each has his own set of claims on certain aspects of the firm.

2. We constructed a monthly time series of total corporate default rates by summing all corporate defaults (obtained from Edward I. Altman and Scott A. Nammacher, consultants, The Default Rate Experience on High Yield Corporate Debt, Morgan Stanley, March 1985) over the past 12 months, at each point in time. We then divided by total corporate debt outstanding (interpolated

in monthly terms from the Board of Governors of the Federal Reserve System's Flow of Funds statistics) 12 months prior.

3. The comparison between publicly traded bonds and commercial bank loans should be approached with caution. In most cases, the bank's lending officer is in closer contact with the borrower's management and is therefore privy to information that even rating agencies might lack. The avenues of recourse, in the event of a default, are greater as well.

4. See Marshall E. Blume and Donald B. Keim. "Risk and Return Characteristics of Lower-Grade Bonds," Rodney L. White Center for Financial Research, The Wharton School, Philadelphia, PA, University of Pennsylvania, 1984.

5. See Richard Bookstaber and David Jacob. "The Diversification Potential of High Yield Bonds," *High Performance*, Morgan Stanley Credit Research, December 1, 1985, pp. 8-11.

6. See Franco Modigliani and Merton H. Miller. "The Cost of Capital, Corporation Finance, and the Theory of Investment," *American Economic Review*, vol. 48, no. 3, (June 1958), pp. 261-97.

7. Examples of these are interest rate swaps, options, and futures contracts.