THE IMPACT OF DEFEASANCE ON BOND PRICES

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Abstract

This study reports on the financial market's reaction to the defeasance of corporate debt and whether the market perceives a change in risk as a result of this activity. The prices of seventeen bonds both before and after defeasance were analyzed using t-tests to determine if any significant price changes related to the act of defeasance occurred between these two time periods. Contrary to what might be expected no significant differences were found.

Introduction

The strategy of defeasing corporate debt was introduced to the private sector in 1982 when the Exxon Corporation and the Kellogg Company both defeased outstanding debt. Defeasance of debt occurs when a company purchases U.S. government securities and places them in a trust account from which the cash flows of the government securities will be dedicated to servicing one or more of the company's debt issues. While the strategy of defeasance has been used in the municipal bond market for many years, the 1982 defeasance by Exxon and Kellogg was the first application in the corporate bond market. The Financial Accounting Standards Board reacted quickly to the situation by declaring a moratorium on defeasance until the issue could be studied. In 1983 the FASB released Statement No. 76 which set the standards for corporate defeasance of debt.

Since that time many articles have been written about defeasance and its financial implications. The early work focused on the mechanics of defeasing debt and identifying the possible effects of defeasance. Examples of this can be seen in Agudelo and Harmon[1] and Peterson, Peterson, and Ang[2]. A survey of the motivations for defeasance and some of the effects can be seen in Mielke and Seifert[3]. One of the potential effects of defeasance that has been suggested is that there will be a change in the wealth position of the defeased bondholders as a result of changing the risk of the bond. Defeasance involves the pledging of U.S. Treasury securities, which are considered risk-free, to service the interest and principal payments of the debt. This implies that the risk of the cash flow stream that the bondholders expect to receive will decrease. This decrease in their risk position should result in an increase in the value of the defeased debt thereby increasing bondholders' wealth. The purpose of this paper is to report the results of a study on the financial market's reaction to the defeasing of debt and whether in fact the market perceives a change in risk which will increase bondholder's wealth position.

Section I of the paper explores the process of this risk and wealth change while Section II reports the results of an analysis of the market valuation of defeased debt before and after defeasance. A summary follows in section III.

I. The Risk and Return Effects of Defeasance

The value of a bond is determined by discounting the stream of coupon payments and the face value of the bond at the investor's required rate of return. The rate of return required by investors will depend on the level of interest rates in general, the risk of the particular bond being valued, and the yield spread associated with quality differences between bonds of differing risk.

Formally the valuation model for bonds is as follows:

$$P = \sum_{t=1}^{n} C_t/(1+r)^t + F/(1+r)^n$$

where:

P = price of the bond
C_t = coupon
F = face value
r = investor's required rate of return
n = maturity of bond

When the quality of the bond being valued changes, the value of the bond will also change. This is a result of the bond being priced using a different required rate of return. The price-interest rate relationship is inverse. If the quality of the bond improves, the required rate of return will go down and the bond price will go up. For example, if a ten year, eight percent coupon bond is priced using an interest rate of eight percent, then the price of the bond will be $1000. If the market changes the assessment of risk for that bond such that a six percent rate of return is appropriate for that bond, the price will rise to $1147.

The act of defeasing debt should result in an increase in bond quality and a corresponding decrease in the bond's required rate of return. The reason for the increase in bond quality is that a certainty cash flow stream, the cash flows from the government securities, is pledged to service the bonds. The increase in quality should reduce the required rate of return thereby, increasing the value of the bond and the wealth of the bondholders. Some critics of defeasance point out that this increase in defeased bondholders' wealth position is at the expense of the remaining bondholders who hold undefeased bonds of the firm and the firm's stockholders. This is because the financial resources that are used in purchasing the government securities were originally available to all classes of investors in the firm. Removing part of the financial resources of the firm and restricting them exclusively to one class of investors implies that the remaining classes of investors have less financial resources available to them and therefore must be in a riskier position vis-a-vis their original position. Weil[4] states ".....if a corporation seizes the apparently attractive opportunity(to defease debt), its shareholders will likely suffer."

The cost of the Treasury issues used to defease the bonds is known at the time of defeasance. If the risk of the defeased bonds were the same as the risk of the Treasuries used to defease, then the after defeasance value of the bonds would be equal to the value of the Treasuries. It is unclear at this point in time whether or not the risk position of the bondholders holding defeased debt would be the same as if they were holding Treasury securities. The answer depends on how the bondholders would be treated in a bankruptcy situation. To date, there have not been any bankruptcy cases to test the court's position on defeased debt. This lack of a court test would argue that the risk position of defeased debt would fall somewhere in a range between their original risk position and the risk position of Treasury debt.

To measure the presence of a change in the risk position of a bond, and corresponding increase in bond prices, one could focus on either the

change in the required rate of return for the bond or on the change in the price of the bond. The transition to a lower required rate of return necessarily requires that the bond price goes up relative to the prices of bonds in general. Because bond prices are continually adjusting to changing market conditions through time, the prices changes that are a result of company specific changes need to be isolated from price changes that are a result of general market changes.

This study analyzes the presence of changes in the risk and value of defeased debt by analyzing the price level of bonds before and after they have been defeased. The shift in price levels for defeased bonds is analyzed by studying the average level of prices before and after the time of defeasance. A sample of defeased bonds that could specifically identified was constructed from studying the financial statements of companies that have reported defeasance transactions. The time series of prices of these bonds was partitioned into a price series before and after defeasance. To account for price changes that result from changing market conditions, the price series of the individual defeased bonds is subtracted from the price series of a Treasury bond of comparable maturity and coupon level. If general market conditions change then the price of the Treasury bond should go up or down reflecting that change. If there has been no change in the risk position of the defeased debt, then the price of the defeased bond will go up or down in a comparable manner resulting in a constant price spread between it and the Treasury. To the extent that the risk of the defeased debt has decreased, the price of the bond should go up relative to the Treasury resulting in a decreased price spread.

These price spread series then become a sample of before defeasance price spreads and after defeasance price spreads. Specifically, the null hypothesis tested here is that the price spread between defeased bonds and a comparable Treasury bond is the same before and after the act of defeasance. The alternative hypothesis is that the price spread decreases after the bonds has been defeased. That is,

$$H_0: \quad (P_G - P_C)_b - (P_G - P_C)_a = 0$$
$$H_1: \quad (P_G - P_C)_b - (P_G - P_C)_a > 0$$

Where:

P_G = Price of government bond of approximate same maturity
P_C = Price of the corporate bond
b = before defeasance
a = after defeasance

This hypothesis was tested by using a one-tailed t-test on the mean of the sample price spread before and after defeasance.

Comparing the price of an individual bond with that of a comparable Treasury security will account for changes in the general level of interest rates. However, there are two other factors which are not company specific that could also influence the price spread. Those factors are the impact of reduced maturity through time for bonds selling at a premium or at a discount and the impact of a changing level of quality spreads between high and low quality bonds. The first factor will affect the price of both the Treasury and the corporate bond. For example, consider the case of a Treasury bond and a corporate bond selling at a discount. With comparable coupons and maturities, the Treasury will sell at a higher price, or a lower discount from par, than will the corporate because the Treasury is priced at a higher yield reflecting its lower risk. The price of both bonds will approach par value as the maturity of each becomes shorter. Because the corporate sells at a greater discount than the Treasury the rate of price change will be greater for the corporate as the maturity date nears. The reverse of this will occur if both

of the bonds are selling at a premium. This fact will build in a decrease or an increase in the price spread of the sample bonds depending on whether they are discount or premium bonds. The second factor could cause the price spread between the matched corporate and Treasury bonds to either increase or decrease relative to yield spreads in general during that time frame. These factors need to be considered in evaluating the test of the hypothesis.

II. Market Analysis

A. The Data

A search was conducted of the annual reports of all publicly held firms included in the NAARS data base for the fiscal years ending between January 1, 1982 and December 31, 1984. This time period includes the corporate defeasance activity started by the Exxon Corporation in the second quarter of 1982 and the issuance of the accounting standard, FASB No. 76 in November, 1983. December 31, 1984 was chosen as a cut-off date for the sample selected to enable the collection of sufficient price observations for the statistical tests.

A total of forty-two defeasance transactions were found. Thirty-seven companies reported that they had defeased debt of one form or another, and five of these defeased debt in two different fiscal years. Of these thirty-seven companies that defeased debt, only six companies provided sufficient information regarding the defeasance transaction to determine which specific debt issues were defeased. The lack of specific disclosure concerning the defeased debt suggests that in most instances a change in risk for specific bondholders, and a corresponding wealth transfer, would not take place. Without this disclosure the financial markets may be unaware of the specific debt that was defeased.

In addition to the bond issues identified in the footnotes of these six companies, additional bond issues were identified by comparing the balance sheets and footnotes disclosures for long term debt of companies before and after the defeasance year. By noting which bond issues having a maturity date beyond the defeasance year had disappeared from the balance sheets or footnotes from one year to the next, additional defeased bonds were identified. The exact date of defeasance for these bonds could not be determined however. An additional thirteen different bond issues were identified using this information. The preliminary sample size was nineteen bond issues. In order to have the largest sample possible, the identified defeased bonds which did not have a specific defeasance date were considered for inclusion in the study.

The nineteen bonds that were considered for inclusion in the study had different maturities and were defeased at different points in time. In order to construct a before and after defeasance sample, the date of defeasance must be known. The thirteen bonds that were identified from comparing balance sheets before and after defeasance did not have a specific defeasance date. The assumption was made that these bonds were defeased at mid-year. Additional tests were conducted to determine if this assumption might bias the results. The bonds were grouped into two preliminary sets, one group of six for which the exact date was known, the other group including the thirteen for which a mid-year defeasance was assumed. The interval of price observation was monthly. To remove any effects of sample size in the price spread series, an equal number of observations of before and after price spreads was used. Requiring a high number of monthly observations would have excluded some of the nineteen companies because they had defeased relatively short maturity securities. Setting the number of months at a low number would undermine the reliability

of the calculated sample means. Considering this trade-off, the number of monthly price observations before and after defeasance was set at seventeen. This resulted in the exclusion of two of the nineteen companies from the final sample tested. The six companies with known defeasance dates were analyzed separately from the eleven companies with assumed defeasance dates. These two groups were then combined and analyzed together as well. If there were a net bias because of the need to assume a defeasance date for the eleven companies, then the results should differ between the two groups.

The mean price spread between each corporate bond and a Treasury bond comparable in coupon and maturity before and after the date of defeasance was subjected to a one-sided t test assuming a normal distribution but unknown variance. While it is not known whether these assumptions are appropriate for the data, if the results fail to reject the null hypothesis under this test, they would not reject the null hypothesis under weaker assumptions.

B. Results

The results of the analysis are shown in Table 1. The null hypothesis could not be rejected in any of the sample groups analyzed at the 5% level of confidence. The market did not appear to reprice these bonds as a result of defeasance. The reason for not repricing could either be that the market was not aware that these bonds were defeased, as was suggested earlier, or that if the market knew that these bonds were defeased, the market did not perceive the risk of these bonds to have changed. Although the test of the bonds for which explicit information was disclosed constitutes a small sample size, it does indicate that even if the market has the defeasance information available it either ignores it or does not consider the risk of the bonds to have changed. It is worth noting that the mean price spread after defeasance was, in fact, lower than before defeasance. The direction of these results is consistent with the notion that risk was perceived to have been reduced with resulting repricing, but the shift was not statistically different from zero.

The outcome of the t test might have been influenced by the other two factors: 1) changing maturity and 2) changing quality yield spreads, as well as, any market response or lack of response to defeasance. All of the bonds in the study were selling at a discount to par. Sixteen of the seventeen corporate bonds studied sold at price lower than the government that they were being matched against. These sixteen corporations should have experienced a greater increase in price than the governments to which they were paired as their maturities shortened. The reverse should have occurred for the one selling at a price higher than the government to which it was compared. On the balance, this factor should have biased the after defeasance price spread series to be

TABLE I

	Mean Price Spread Before	Mean Price Spread After	t	Probability
Group 1(6 firms)	11.7	9.9	0.45	.33
Group 2(11 firms)	16.0	14.8	0.15	.44
Combined	9.3	7.3	0.53	.53

higher and therefore act in a manner which would reject the null hypothesis. The increase in the mean price spread shown in Table I might be due largely to changing maturity rather than any repricing due to a reduction in risk.

The earliest monthly price observation in the sample was in January, 1981 and the latest price observation was in November, 1985. During this time period the quality spread between low and high quality bonds both increased and decreased with the basic trend being downward. As a measure of quality yield spread changes, the yield series for long term government bonds and AA corporate bonds were compared. The trend of the quality spread over the time period of the sample was -0.000357 and the average change in yield spread was -0.00247. The impact of changing yield spreads over the sample should have been one which caused price spreads at the end of the sample period to be smaller than at the beginning of the series. Again, this would have biased the data towards rejecting the null hypothesis. The fact that the null hypothesis was not rejected makes an even stronger case for the conclusion that the market did not perceive a change in risk and reprice the defeased debt.

III. Summary

The defeasance of corporate debt in 1982 by the Exxon and Kellogg corporations caused a great deal of concern within the accounting community. One concern was the issue of whether the bondholders of defeased debt experienced an increase of wealth due to defeasance at the expense of the other classes of investors in the firm. This question was studied by evaluating the price performance of all of the identifiable defeased bonds between the original Exxon and Kellogg defeasance and the end of 1984. The sample was limited by the general lack of disclosure about the specifics of defeasance contained in the financial statements of those companies that utilized a defeasance strategy. This lack of disclosure suggested that defeased debt would not be repriced upward because investors would not be aware of which debt was defeased. Although forty-two defeasance transactions were identified, only seventeen specific bond issues could be analyzed. This relatively small sample limits the analysis, but demonstrates the poor accounting disclosure required in annual reports. It is possible that with broader more detailed disclosures the financial markets may have reacted differently to the defeasance transactions and the associated risk of the bonds and resulted in different statistical results.

The hypothesis that a defeasance related upward shift in the price of defeased bonds was rejected using a one-tailed t test. It is not clear, however, whether this lack of price increase was due to lack of disclosure or due to the market perceiving that risk had not changed as a result of defeasance. Whatever the case, the fears of those who were concerned about a wealth transfer taking place between defeased bondholders and other classes of investors seems to be unfounded.

References

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