Laura Donahue, the recently hired utility analyst for Peachtree Securities, passed her first assignment with flying colors. After presenting her seminar on risk and return, any customers where clamoring for a second lecture. Therefore, Jake Taylor, Peachtree’s president, gave Donahue her second task: determine the value of TECO Energy’s securities (bonds) and prepare a seminar to explain the valuation process to the firm’s customers.

To begin, Donahue reviewed the Value Line Investment Survey data (see Figure 1). Next Donahue examined Teco’s latest Annual Report, especially Note E to the Consolidated Financial Statements. This note lists TECO’s long-term debt obligations, including its first-mortgage bonds, installment contracts, and term loans. Table 1 contains information on three of the first-mortgage bonds listed in the Annual Report.

<table>
<thead>
<tr>
<th>Face Amount</th>
<th>Coupon Rate</th>
<th>Maturity Year</th>
<th>Years to Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>$48,000,000</td>
<td>4 1/2%</td>
<td>1997</td>
<td>5</td>
</tr>
<tr>
<td>32,000,000</td>
<td>8 ¼</td>
<td>2007</td>
<td>15</td>
</tr>
<tr>
<td>100,000,000</td>
<td>12 5/8</td>
<td>2017</td>
<td>25</td>
</tr>
</tbody>
</table>

Note: The terms stated here are modified slightly from the actual terms to simplify the case.

A concern which immediately occurred to Donahue was the phenomenon of “event risk.” Recently, many investors have shied away from the industrial bond market because of the wave of leveraged buyouts (LBOs) and debt-financed corporate takeovers that took place during the 1980s. These takeovers were financed by issuing large amounts of new debt—often high-risk “junk” bonds—which caused the credit rating of the firm’s existing bonds to drop, the required rate of return to increase, and the price of the bonds to decline.

Donahue wondered if this trend would affect the required returns on TECO’s outstanding bonds. Upon reflection she concluded that TECO’s bonds would be much less vulnerable to such event risk because TECO is a regulated public utility. Public utilities and banks are less vulnerable to takeovers and leveraged buyouts, primarily because their regulators would have to approve such restructurings, and it is unlikely that they would permit the level of debt needed for an LBO. Therefore, many investors have turned to government bonds, mortgage-backed issues, and utility bonds in lieu of publicly traded corporate bonds. As a result, Donahue concluded that the effect, if any, of the increased concern about event risk will be to lower TECO’s cost of bond financing.
With these considerations in mind, your task is to help Donahue pass her second hurdle at Peachtree Securities by answering the following questions.

Questions

1. To begin, assume that it is now January 1, 1993 and that each bond in Table 1 matures on December 31 of the year listed. Further, assume that each bond has a $1,000 par value, each had a 30-year maturity when it was originally issued, and the bonds currently have a 10 percent required nominal rate of return.

   a. Why do the bonds’ coupon rates vary so widely?
   b. What would be the value of each bond if they had annual coupon payments?
   c. TECO’s bonds, like virtually all bonds, actually pay interest semiannually. What is each bond’s value under these conditions? Which bonds are currently selling at a discount or at a premium?
   d. What is the effective annual rate of return implied by the values obtained in Part c?
   e. Would you expect a semiannual payment bond to sell at a higher or lower price than an otherwise equivalent annual payment bond? Now look at the 5-year bond in Parts b and c. Are the prices shown consistent with your expectations? Explain.

2. Now, regardless of your answers to Question 1, assume that the 5-year bond is selling for $800.00, the 15-year bond is selling for $865.49, and the 25-year bond is selling for $1,220.00.

   (Note: Use these prices, and assume semiannual coupons, for the remainder of the questions.)

   a. Explain the meaning of the term “yield to maturity.”
   b. What is the nominal (as opposed to effective annual) yield to maturity (YTM) on each bond?
   c. What is the effective annual YTM on each issue?
   d. In comparing bond yields with the yields on other securities, should the nominal or effective YTM be used? Explain.

3. Suppose TECO has a second bond with 25 years left to maturity (in addition to the one listed in Table 1), which has a coupon rate of 7 3/8 percent and a market price of $747.48.

   a. What is (1) the nominal yield and (2) the effective annual YTM on this bond?
   b. What is the current yield on each of the 25-year bonds?
   c. What is each bond’s expected price on January 1, 1994, and its capital gains yield for 1993, assuming no change in interest rates? (Hint: Remember that the nominal required rate of return on each bond is 10.18 percent.)
What would happen to the price of each bond over time? (Again, assume constant future interest rates.)

What is the expected total (percentage) return on each bond during 1993?

If you were a tax-paying investor, which bond would you prefer? Why? What impact would this preference have on the prices, hence YTM's, of the two bonds?

Consider the riskiness of the bonds.

Explain the difference between interest rate (price) risk and reinvestment rate risk.

Which of the bonds listed in Table 1 has the most price risk? Why?

Assume that you bought 5-year, 15-year, and 25-year bonds, all with a 10 percent coupon rate and semiannual coupons, at their $1,000 par values. Which bond’s value would be most affected if interest rates rose to 13 percent? Which would be least affected?

Assume that your investment horizon (or expected holding period) is 25 years. Which of the bonds listed in Table 1 has the greatest reinvestment rate risk? Why? What is a type of bond you could buy to eliminate reinvestment rate risk?

Assume that you plan to keep your money invested, and to reinvest all interest receipts, for 5 years. Assume further that you bought the 5-year bond for $800, and interest rates suddenly fell to 5 percent and remained at that level for 5 years. Note that each interest receipt must be compounded to the terminal date and summed, along with the maturity value. Then, the rate of return that equates this terminal value to the initial value of the bond is the bond’s realized return.

1. How does that value compare with your expected rate of return?
2. What would have happened if interest rates had risen to 15 percent rather than fallen to 5 percent?
3. How would the results have differed if you had bought the 25-year bond rather than the 5-year bond?
4. Do these results suggest that you would be better off or worse off if you buy long term bonds and then rates change? Explain.

Today, many bond market participants are speculators, as opposed to long-term investors. If you thought interest rates were going to fall from current levels, what type of bond would you buy to maximize short-term capital gains?

Now assume that the 15-year bond is callable after 5 years at $1,050.

What is its yield to call (YTC)?

Do you think it is likely that the bond will be called? Explain
Case 2  Risk and Return

Figure 1. Value Line Investment Survey Report