**Bond Valuation and Interest Rates**

**Learning Problems**

**Online Discussion**

# Problem: Valuing a Straight Bond at Rex

Rex Company issued 200, CAD 1,000, 10-year corporate bonds on January 1, 2009. The bonds have a coupon rate of 12.0%, compounded semi-annually with interest payable on June 30 and December 31. On the date of issuance, the market rate was estimated to be 11.0%, compounded semi-annually.

**REQUIRED:**

1. How much should Rex Company raise on January 1, 2009?
2. How much would Rex Company have raised on January 1, 2009, if the market rate was 13.0%, compounded semi-annually?

**Problem: Valuing a Straight Bond at SureFire**

On July 1, 2002, SureFire Company issued 25,000, 15-year, CAD 1,000 bonds to finance future corporate expansion with interest payable on December 31 and June 30. The coupon rate was 8.0%, compounded semi-annually when the bonds were printed on June 1, 2002, which approximated the market rate for a company of SureFire’s risk at that time. By July 1, 2002, when the bonds were sold, the market rate had fallen to 7.5%, compounded semi-annually.

**REQUIRED:**

1. Calculate the proceeds from this bond issue on July 1, 2002.

2. What is the bond quotation?

**Problem: Valuing a Straight Bond at ABC**

On January 1, 2001, Joe Higgins, a bond trader, was analyzing a bond to determine an appropriate asking price.

Date of issuance: January 1, 1999

Face value: CAD 50,000

Term: 10 years

Coupon rate: 10.0%, compounded semi-annually

Interest payments: June 30th and December 31st

ABC recently had a credit rating assessment by DBRS and was given a BBB rating. The bond yield on companies with similar ratings is 12.0%, compounded semi-annually.

**REQUIRED:**

1. Calculate the value of this bond. Note: You are not buying this bond on the first day of its life.
2. What is the bond quotation?
3. If Joe Higgins expected rates to fall, what two bond trading strategies might he follow?

**Problem: Valuing a Straight Bond at Elford**

On May 1, 2004, Global Bonds Ltd. contemplated buying bonds of Elford Equipment Ltd. These bonds have been in circulation for four years. The following information was available:

Date of issuance: May 1, 2000

Face value: CAD 450,000

Term: 20 years

Coupon rate: 8.0%, compounded semi-annually

Interest payments: October 31st and April 30th

After adjusting the current spot rates on the yield curve for default risk, Global Bonds estimated the market rates for these bonds to be between 7.0% and 8.0%.

**REQUIRED:**

1. Calculate an appropriate market value range for Elford Equipment Ltd.’s bonds based on the interest rate forecast.

2. What action should Global Bonds Ltd. take if these bonds are currently trading at 98.000? Explain why?

# Problem: Zero-Coupon Bonds at Williams

Williams Company issued CAD 200,000 in 15-year corporate bonds on May 1, 2009. The bonds pay no coupon. On the date of issuance, the market rate was estimated to be 8.0%, compounded semi-annually.

**REQUIRED:**

1. How much will Williams Company receive from investors on May 1, 2009?
2. What is the value of the bonds on May 1, 2010, assuming no change in the market rate?
3. How is the return on zero-coupon bonds taxed?

# Problem: Effect of Term and Cash Flow Patterns on Interest Rate Risk at Henson

Henson Company issued the following three bonds on January 1, 2009:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Bond 1** | **Bond 2** | **Bond 3** |
| Face value | CAD 150,000 | CAD 150,000 | CAD 150,000 |
| Coupon rate | 9.0% | 9.0% | 0.0% |
| Market rate | 9.0% | 9.0% | 9.0% |
| Term | 5 years | 10 years | 10 years |

Interest is payable on June 30 and December 31.

**REQUIRED:**

1. If the market rate increased by 1.0%, which bond’s price would fall by the most? Explain.

# Problem: Re-investment Risk at Smithson

Able Williams bought 50, CAD 1,000, 5-year corporate bonds of Smithson Industries on January 1, 2012. The bonds have a coupon rate of 10.0%, compounded semi-annually, which equals the current market rate.

## **Required:**

1. What is the yield to maturity?
2. Would the yield to maturity change if the coupons were reinvested at 10.0%?
3. Would the yield to maturity change if the coupons were reinvested at 5.0%?

# Problem: Yield Curve for A-Rated Companies

The following are two yield curves for A-rated companies in Canada:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Spot Rates** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| January 1, 2010 | 4.44% | 4.98% | 5.25% | 5.56% | 5.88% | 6.03% |
| January 1, 2015 | 8.45% | 7.45% | 6.32% | 5.55% | 4.99% | 4.84% |

**REQUIRED:**

1. Describe each of the two yield curves. What do they indicate about future interest rates?
2. Forecast the following forward rates for each yield curve:

1r2

2r1

3r3

1. Prove that the yield curves are a chain of the one-year spot rate and forward rates.

**Problem: Yield Curve for the Food Processing Industry**

The following is the current yield curve for the food processing industry in Canada:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Spot Rates | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| January 1, 2013 | 3.59% | 4.58% | 4.62% | 5.00% | 5.23% | 5.35% |

**REQUIRED:**

1. Calculate the 3r2? 2r3?

**Discussion: Bond Financing**

**REQUIRED:**

1. Access the most recent financial disclosures (annual financial statements, notes to the financial statements, management, discussion, & analysis, and annual information form) for Canadian Tire found in the investor relations section of its website or through SEDAR.
2. Research the company’s sources of permanent or long-term financing.
3. Prepare a 200-word submission describing these sources of financing providing reasons why they were selected.
4. Respond to the posts of at least three classmates.