

EXAM FM QUESTIONS OF THE WEEK

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Week of April 24/06

Prices for 1-year, 2-year and 3-year bonds with face amount 100 and annual coupons at rate 10% are: 1-year bond 105.77 , 2-year bond 109.39 , 3-year bond 112.36 .

Find the price and yield to maturity of a 3-year bond with face amount 100 and annual coupons at rate 5%.

The solution can be found below.

Week of April 24/06 - Solution

We will denote the term structure of annual effective yields on zero-coupon bonds by s_1 - 1 year zero yield , s_2 - two year zero yield , s_3 - three year zero yield .

$$\text{Then } 105.77 = \frac{110}{1+s_1} \rightarrow s_1 = .0400 ;$$

$$\text{and } 109.39 = \frac{10}{1.04} + \frac{110}{(1+s_2)^2} \rightarrow s_2 = .0500 ;$$

$$\text{and } 112.36 = \frac{10}{1.04} + \frac{10}{(1.05)^2} + \frac{110}{(1+s_3)^3} \rightarrow s_3 = .0550 .$$

$$\text{The price of the 3-year 5\% bond is } \frac{5}{1.04} + \frac{5}{(1.05)^2} + \frac{105}{(1.055)^3} = 98.76 .$$

The yield to maturity (found using the calculator function) is 5.46% .