

FN312

Quiz 4 Solution

- a.) Calculate the spot rates associated with each bond as well as the implied one year forward rates.

Answer:

$$r_{01} = \left(\frac{1000}{965.6} \right) - 1 = 0.0356$$

$$r_{02} = \left(\frac{1000}{924.8} \right)^{1/2} - 1 = 0.0399$$

$$r_{03} = \left(\frac{1000}{884.2} \right)^{1/3} - 1 = 0.0419$$

$$r_{04} = \left(\frac{1000}{846.5} \right)^{1/4} - 1 = 0.0425$$

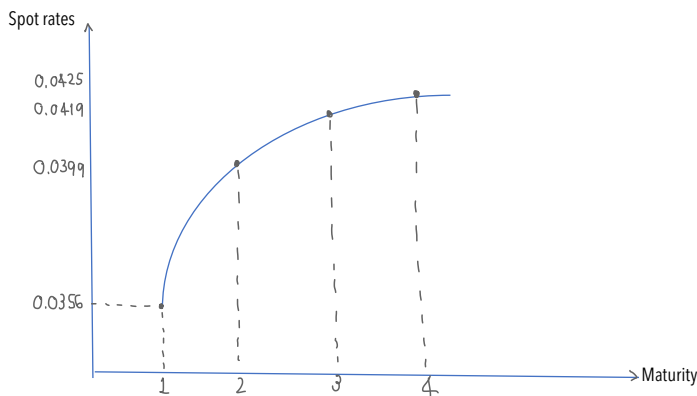
$$f_{12} = \frac{(1+r_{02})^2}{(1+r_{01})} - 1 = 0.0441$$

$$f_{23} = \frac{(1+r_{03})^3}{(1+r_{02})^2} - 1 = 0.0450$$

$$f_{34} = \frac{(1+r_{04})^4}{(1+r_{03})^3} - 1 = 0.0444$$

- b.) Plot the term structure of interest rates. What does the information in the term structure say about the future course of interest rates? Can actual short rates turn out to be different from forward rates? Explain.

Answer: the expectations hypothesis implies that the implied forward rates are the best forecasts of future spot rates. The EH predicts slightly rising one year spot rates for a year then a slight decrease.



- c.) What is the price of a 2years coupon bond making annual coupon payments with an annual coupon rate of 3 % and a face value of \$1000? Write out (but don't solve) the equation you would use to find the yield to maturity of this 2years coupon bond.

Answer:

$$PV = C_0 + \frac{C_1}{(1+r_1)} + \frac{C_2}{(1+r_2)} = \frac{30}{1.0356} + \frac{1030}{(1+0.399)^2} = 981.51$$

$$\text{Solve } 981.51 = \frac{30}{(1+r)} + \frac{1030}{(1+r)^2} = 0$$