

EC303: Money and Banking

Worksheet 4

Spring 2023

Exercise 1

Supply and Demand for Bonds: Assume a discount bond that pays the issuer \$1,000 in a year. Recall that there is no coupon payment (why?). Using the formula you already know, compute the interest rate of this bond assuming the bond now sells at the following prices.

1. \$950
2. \$900
3. \$850
4. \$800
5. \$750

Now, think what would be the relationship between the bond prices and quantity of bond demanded. Next, plot this relationship between bond prices and quantity of bond demanded in a graph. Label vertical axis “Price of Bonds, P (\$)” and horizontal axis “Quantity of Bonds, B (\$ billions)”.

Answer: Here, we use the interest rate formula for a discount bond to calculate interest rate. $i = \frac{F-P}{P}$. For a selling price (P) of \$950, $i = \frac{1000-950}{950} = 5.26\%$. is the interest rate. Similarly, we can calculate interest rates at other prices too.

Next, think what would be the relationship between quantity of bond supplied and the bond prices. Plot a supply curve over the demand curve in the diagram you just drew. Can you figure out the equilibrium price, interest rate, and the quantity of bonds? When is there excess supply and excess demand? What do you think will happen when there is excess demand or excess supply?

Answer: See slide 8 of lecture slides for Ch 5, available on Moodle.

Exercise 2

Shift the demand curve for bond appropriately in the following scenarios.

Answers: Please see slides 10 through 13 of lecture slides for CH5 for answers to the following questions.

1. Business cycle expansions
2. Imagine it's a long-term bond and people expect the interest rate to rise in future (think what happens to the bond's return; assume that maturity is longer than the holding period).
3. A higher expected return on stocks than in bonds
4. An increased riskiness of bonds; an increased riskiness of stocks relative to bonds
5. It becomes easier to sell bonds; it becomes easier to sell stocks than bonds

Exercise 3

Shift the supply curve for bond appropriately in the following scenarios.

Answers: Please see slides 14 through 16 of lecture slides for CH5 for answers to the following questions.

1. Development of super-fast computers leads to the emergence of more profitable business opportunities for the firms
2. Firms expect higher inflation
3. Government spending increases faster than its revenue (budget deficit increases)

Exercise 4

Using the graphical analysis as before, show how an increase in expected inflation affects interest rates (Fisher Effect).

Answers: Please see slide 17 of the lecture slides for CH5 for the answer.

Why do you think maintaining lower inflation is important for keeping interest rates low?

Exercise 5

In the data, we see that interest rates are higher during business cycle expansion. Use the graphical analysis to show how during expansions, interest rates could be high.

Answer: Please see slide 19 of the lecture slides for CH5 for the answer.