Econ 353, Spring 2012
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Practice exercise # 2 for Chapter 4

("present value" and "future value")

1. An asset pays $1000 at the end of year 1, $1000 at the end of year 2, $1000 at the end of year 3. (You are at the beginning of year 1.) What is the PV of the asset assuming an average interest rate of 5%?
2. You get an inheritance today of $100,000. It has been put in a 2-year CD for you. What is the value of the inheritance 2 years from now (future value in 2 years) assuming the average market interest rate is 5%?

3. Is the future value in Q2 larger or smaller when the average market interest rate is 6%. Is the future value larger or smaller when the average market interest rate is 4%? Find the future values in all cases. (Caution: Don't use the acronym FV for "future value". We use it for "face value" of a coupon bonds in this course.)

4. In Q1, does the PV get smaller or larger if the interest rate is 6%? What happens to the PV, if the interest rate is 4%? Find the PVs in all cases.

("yield to maturity")

Q 5-11 refers to questions from your textbook. These are same across all editions. But to help you, the questions have been scanned and attached to this document, below. Copies on reserve are also available at Parks Library.

5. Do question 3, from the end of chapter 4 exercises in your textbook.

6. Do question 4, from the end of chapter 4 exercises in your textbook.

7. Do question 5, from the end of chapter 4 exercises in your textbook.

8. Do question 6, from the end of chapter 4 exercises in your textbook.

9. Do question 7, from the end of chapter 4 exercises in your textbook.

10. Do question 8, from the end of chapter 4 exercises in your textbook.

11. Do question 9, from the end of chapter 4 exercises in your textbook.

(“current yield”, “coupon rate” and “yield to maturity”)

12. Suppose you buy a 10-year 10% coupon bond with a face value of $1000 today. The average market interest rate today is 10%. Write down an expression which would give the (competitive) market price of the bond today? Without using a calculator, can you find the price?

13. Assume all the conditions of Q12 to hold true. You buy the bond today, plan to hold it for a year and sell it off a year from today. You expect the average market interest rate to remain at 10% a year from today. What is the market price you expect to get for the bond, a year from today? (Give a number without using the calculator.)

14. Assume all the conditions of Q12 to hold true. You buy the bond today, plan to hold it for a year and sell it off a year from today. You expect the average market interest rate to be 15% a year from today. Provide an expression for the market price of the bond a year from today. Will you make a capital gain or loss in the process?

    (“interest rate risk”)

15. You buy today a 3-year, 10% coupon bond with face value $1000. The market interest rate currently is 10% also. You hold the bond for a year and sell it off a year later when the interest rate is 15%. What is your one period rate of return on the bond?

16. Suppose you buy a 10-year 10% coupon bond with a face value of $1000 today. The average market interest rate today is 10%. Write down an expression which would give the (competitive market) price of the bond today? Without using a calculator, can you find the price? If the term to maturity of the above bond is 15-years and everything else is the same, is the market price of the bond higher or lower relative to your answer? Explain. If the average market interest rate is 5% and everything else about the bond is the same, write down an expression that would give the price of the bond in a competitive market? Is the price higher or lower compared to your initial answer? Explain.

17. A 20-year coupon bond pays a coupon rate of 5.75%, has a face value of $1000 and is currently being sold for $1000. Without using a calculator, state its yield to maturity? How did you arrive at your answer? Suppose the bond is currently being sold for $1500. Is its yield to maturity higher or lower compared to your first answer? What should the price of bond be for the yield to maturity to rise above the level you determined as your first answer? What is the current yield on the bond?

QUESTIONS AND PROBLEMS

All questions and problems are available in myeconlab *at* www.myeconlab.com/mishkin.

1. Would a dollar tomorrow be worth more to you today when the interest rate is 20% or when it is 10%?
2. You have just won $10 million in the state lottery, which promises to pay you $1 million (tax free) every year for the next ten years. Have you really won $10 million?
3. If the interest rate is 10%, what is the present value of a security that pays you $1,100 next year, $1,210 the year after, and $1,331 the year after that?
4. If the security in Problem 3 sold for $3,500, is the yield to maturity greater or less than 10%? Why?
5. Write down the formula that is used to calculate the yield to maturity on a twenty-year 10% coupon bond with $1,000 face value that sells for $2,000.
6. What is the yield to maturity on a $1,000-face-value discount bond maturing in one year that sells for $800?
7. What is the yield to maturity on a simple loan for $1 million that requires a repayment of $2 million in five years' time?
8. To pay for college, you have just taken out a $1,000 government loan that makes you pay $126 per year for 25 years. However, you don't have to start making these payments until you graduate from college two years from now. Why is the yield to maturity necessarily less than 12%, the yield to maturity on a normal $1,000 fixed-payment loan in which you pay $126 per year for 25 years?
9. Which $1,000 bond has the higher yield to maturity, a twenty-year bond selling for $800 with a current yield of 15% or a one-year bond selling for $800 with a current yield of 5%?
10. Pick five U.S. Treasury bonds from the bond page of the newspaper, and calculate the current yield. Note when the current yield is a good approximation of the yield to maturity.
11. You are offered two bonds, a one-year U.S. Treasury bond with a yield to maturity of 9% and a one-year U.S. Treasury bill with a yield on a discount basis of 8.9%. Which would you rather own?
12. If there is a decline in interest rates, which would you rather be holding, long-term bonds or short-term bonds? Why? Which type of bond has the greater interest-rate risk?
13. Francine the Financial Advisor has just given you the following advice: "Long-term bonds are a great investment because their interest rate is over 20%." Is Francine necessarily right?
14. If mortgage rates rise from 5% to 10% but the expected rate of increase in housing prices rises from 2% to 9%, are people more or less likely to buy houses?
15. Interest rates were lower in the mid-1980s than they were in the late 1970s, yet many economists have commented that real interest rates were actually much higher in the mid-1980s than in the late 1970s. Does this make sense? Do you think that these economists are right?

WEB EXERCISES

1. Investigate the data available from the Federal Reserve at www.federalreserve.gov/releases/. Answer the following questions:
   a. What is the difference in the interest rates on commercial paper for financial firms when compared to nonfinancial firms?
   b. What was the interest rate on the one-month Eurodollar at the end of 2002?
   c. What is the most recent interest rate report for the 30-year Treasury note?
2. Figure 1 in the text shows the estimated real and nominal rates for three-month Treasury bills. Go to www.martincapital.com/main/charts.htm and click on "Nominal vs. Real Rates," then on "Nominal vs. Real Market Rates."
   a. Compare the three-month real rate to the long-term real rate. Which is greater?
   b. Compare the short-term nominal rate to the long-term nominal rate. Which appears most volatile?