Problem 1

Questions 1, 3, 4, 11, 13, 14, 19, and 24 from Chapter 4.

Solutions:

1. It would be worth $0.83 when the interest rate is 20%, rather than $0.91 when the interest rate is 10%. Thus, a dollar tomorrow is worth less with a higher interest rate today.

3. If the interest rate were 12%, the present discounted value of the payments on the government loan are necessarily less than the $1000 loan amount because they do not start for two years. Thus the yield to maturity must be lower than 12% in order for the present discounted value of these payments to add up to $1000.

4. When the yield to maturity increases, this represents a decrease in the price of the bond. If the bondholder were to sell the bond at a lower price, the capital gains would be smaller (capital losses larger) and therefore the bondholder would be worse off.

11. You would rather be holding long-term bonds because their price would increase more than the price of the short-term bonds, giving them a higher return. Longer-term bonds are more susceptible to higher price fluctuations than shorter-term bonds, and hence have greater interest-rate risk.

13. While it would appear to them that their wealth is declining as nominal interest rates fall, as long as expected inflation falls at the same rate as nominal interest rates, their real return on savings accounts will be unaffected. However, in practice, expected inflation as reflected by the cost of living for seniors and retired persons often is much higher than standard measures of inflation, thus low nominal rates can adversely affect the wealth of senior citizens and retired persons.
14. \( \frac{1100}{1 + 0.10} = \frac{1210}{1 + 0.10}2 = \frac{1331}{1 + 0.10}3 = 3000. \)

19. If the one-year bond did not have a coupon payment, its yield to maturity would be \( \frac{1000 - 800}{800} = \frac{200}{800} = 0.25 \), or 25%. Because it does have a coupon payment, its yield to maturity must be greater than 25%. However, because the current yield is a good approximation of the yield to maturity for a twenty-year bond, we know that the yield to maturity on this bond is approximately 15%. Therefore the one-year bond has a higher yield to maturity.

24. The coupon payment \( C = 100 \), thus the current yield is \( \frac{100}{960} = 0.104 \), or 10.4%. The expected rate of capital gain, \( g = \frac{980 - 960}{960} = \frac{20}{960} = 0.021 \), or 2.1%. The expected rate of return, \( R = iC + g = 10.4\% + 2.1\% = 12.5\% \).

**Problem 2**

Questions 1, 5, 6, 20, 24, and 25 from Chapter 5.

**Solutions:**

1. (a) Less, because your wealth has declined; (b) more, because its relative expected return has risen; (c) less, because it has become less liquid relative to bonds; (d) less, because its expected return has fallen relative to gold; (e) more, because it has become less risky relative to bonds.

5. The rise in the value of stocks would increase peoples wealth and therefore the demand for Rembrandts would rise.

6. True, because the benefits to diversification are greater for a person who cares more about reducing risk.

20. (a) The expected return on the stock portfolio is \( 0.25(12\%) \ 0.25(10\%) \ 0.25(8\%) \ 0.25(6\%) \ 9\% \). The expected return on the bond portfolio is \( 0.6(10\%) \ 0.4(7.5\%) \ 9\% \). The expected return on the commodities portfolio is \( 0.2(20\%) \ 0.25(12\%) \ 0.25(6\%) \ 0.25(4\%) \ 0.05(0\%) \ 9.5\% \). Since the commodities portfolio has the higher expected return, you should choose that. (b) In choosing between the stock or bond portfolio, they both have the same expected return. However, since there is less uncertainty over the outcomes in the bond portfolio than the stock portfolio, a risk-averse individual should choose the bond portfolio.
24. (a) Solving for the equilibrium gives: \(-0.6 \text{ Quantity} + 1140 = \text{Quantity} + 700\); \(1.6 \text{ Quantity} = 440\); or Quantity = 275. Using the bond supply equation \(\text{Price} = 275 + 700 = 975\). (b) The expected interest rate on a one year discount bond with face value of $1000 and current price of $975 is given as \(i = (1000 - 975)/975 = 0.0256\), or 2.56%.

25. (a) The monetary policy action, essentially an open market operation, increases the supply of bonds in the market by a quantity of 80, at any given price. Thus the bond supply equation will become \(\text{Quantity} = \text{Price} - 700 + 80\), so that \(\text{Price} = \text{Quantity} + 620\). (b) As a result of the Federal Reserve action, the new equilibrium is given as: \(-0.6 \text{ Quantity} + 1140 = \text{Quantity} + 620\); \(1.6 \text{ Quantity} = 520\); or Quantity = 325. Using the bond supply curve, \(\text{Price} = 325 + 620 = 945\). Thus the expected interest rate on a one year discount bond with face value of $1000 and current price of $945 is given as \(i = (1000 - 945)/945 = 0.0582\), or 5.82%. This is an increase from 2.56% in the initial equilibrium, which was calculated in the answer to the previous question. Note that as we will see in Chapter 14, the open market sale leads to a decline in the money supply and so the liquidity preference framework would then also indicate that the interest rate would rise.

Problem 3
Questions 1, 10, 22, and 25 from Chapter 6.

Solutions:

1. Junk bonds are referred to as junk in that they are very risky investments, but provide high yields to investors who buy them at very low prices and are therefore compensated with a high risk premium.

10. The global financial crisis hit financial companies very suddenly and very hard, creating much uncertainty about the soundness of the financial system, and doubt about the soundness of even the most healthy banks and financial companies. As a result, there was a sharp decrease in demand for financial commercial paper relative to the seemingly safer nonfinancial commercial paper. This resulted in a spike in the yield spread between the two, reflecting the greater risk of financial company investments.

22. As the risk of default by the Greek government increased, this reduced the demand for Greek bonds relative to U.S. treasuries. The result was lower prices and higher yields of Greek debt relative to U.S. debt, similar to the graphs in Figure 2 shown in the text.
The liquidity premium for a given year is the current rate on a multi-year horizon bond minus
the average of expected one year interest rates over that horizon. Thus, the liquidity premiums for
each year are given as:

\[ l_{11} = 2 - 2/1 = 0 \% . \]

\[ l_{21} = 3 - (3 + 2)/2 = 0.5\% . \]

\[ l_{31} = 5 - (4 + 3 + 2)/3 = 2\% . \]

\[ l_{41} = 6 - (6 + 4 + 3 + 2)/4 = 2.25\% . \]

\[ l_{51} = 8 - (7 + 6 + 4 + 3 + 2)/5 = 3.6\% . \]