1. If the expected path of one-year interest rates over the next five years is 5 percent, 4 percent, 3 percent, 2 percent, and 1 percent, the expectations theory predicts that the bond with the highest interest rate today is the one with a maturity of
   A) one year.
   B) two years.
   C) three years.
   D) four years.
   E) five years.

2. If a corporation begins to make steadily large profits, then
   A) the default risk on the corporate bond will increase and the bond's return will become more uncertain, meaning the expected return on the corporate bond will fall.
   B) the default risk on the corporate bond will increase and the bond's return will become less uncertain, meaning the expected return on the corporate bond will fall.
   C) the default risk on the corporate bond will decrease and the bond's return will become less uncertain, meaning the expected return on the corporate bond will rise.
   D) the default risk on the corporate bond will decrease and the bond's return will become less uncertain, meaning the expected return on the corporate bond will fall.
   E) only (a) and (b) of the above.

3. According to the liquidity premium theory of the term structure
   A) when short-term interest rates are expected to rise in the future, the yield curve will be upward sloping.
   B) when short-term interest rates are expected to decline significantly in the future, the yield curve is likely to be downward sloping.
   C) when short-term interest rates are expected to remain unchanged in the future, the yield curve is likely to be flat.
   D) all of the above.
   E) only (a) and (b) of the above.

4. When a currency appreciates in value compared to other currencies, then
   a. that country's goods become more expensive to the rest of the world.
   b. the rest of the world's goods become more expensive to that country.
   c. that country's goods become less expensive to the rest of the world.
   d. that country's goods do not change in price to the rest of the world.
5. According to the law of one price, if the price of a bottle of French wine is 10 euros and the price of a similar bottle of wine is 15 US dollars, then the exchange rate between the euro and dollar is:
   A) 1.5 dollar per euro.
   B) 1.5 euro per dollar
   C) 150 dollars per euro
   D) none of the above.

6. Which of the following statements are true?
   A) An increase in default risk on corporate bonds lowers the demand for these bonds, but increases the demand for default-free bonds.
   B) The expected return on corporate bonds decreases as default risk increases.
   C) A corporate bond's return becomes less uncertain as default risk increases.
   D) Both (a) and (b) of the above are true statements.

7. The inverted U-shaped yield curve in Figure 2 indicates that
   A) short-term interest rates are expected to rise in the near-term and fall later on.
   B) short-term interest rates are expected to fall moderately in the near-term and rise later on.
   C) short-term interest rates are expected to fall sharply in the near-term and rise later on.
   D) short-term interest rates are expected to remain unchanged in the near-term and fall later on.

8. When the price of a bond is _____ the equilibrium price, in the bond market there is excess _____ and the interest rate will _____.
   A) below; demand; rise
   B) below; demand; fall
   C) below; supply; fall
   D) above; supply; rise
9. (Bonus question): The news article “Breaking records” highlights that
   a. that all US companies have always been making profits
   b. that analysts are expecting a profit growth rate that is unrealistic and therefore
      stock prices are currently undervalued
   c. that analysts are expecting a profit growth rate that is unrealistic and
      therefore stock prices are currently overvalued.
   d. none of the above

10. According to efficient markets theory
    A) one cannot expect to earn an abnormally high return by purchasing a security.
    B) information in newspapers and in the published reports of financial analysts is already
        reflected in market prices.
    C) unexploited profit opportunities abound, thereby explaining why so many people get rich
        by trading securities.
    D) all of the above are true.
    E) only (a) and (b) of the above are true.

11. Suppose the price of bond J rises. This will:
    a. increase the demand for bond K and increase the interest rate on bond K.
    b. increase the supply of bond K and reduce the interest rate on bond K.
    c. increase the demand for bond K and decrease the interest rate on bond K.
    d. increase the supply of bond K and increase the interest rate on bond K.

12. According to the expectations theory of the term structure, if the interest rate on a one
    year bond is 5% and the interest rate on a two year bond is 7%, then:
    a. the market expects the interest rate on a one year bond in one year to be 9%.
    b. the market expects the interest rate on a two year bond in one year to be 9%.
    c. the market expects the interest rate on a one year bond in one year to be 6%.
    d. the market expects the interest rate on a two year bond in one year to be 6%.

13. The risk premium on a bond is:
    a. the difference in interest rates between that bond and a S&P 500 firm bond.
    b. the difference in interest rate between that bond and a municipal bond.
    c. the difference in interest rate between that bond and a bank CD.
    d. the difference in interest rate between that bond and a US government bond

14. Which of the following is not part of the evidence against market efficiency?
    a. The small firm effect.
    b. Stocks with high returns now tend to have high returns in the future.
    c. Markets overreact to news and announcements.
    d. The January effect.

15. All else the same, a decrease in the volatility of the stock market causes the demand for
    bonds to _____ and the demand curve to shift to the _____.
    A) fall; right B) fall, left C) rise; right D) rise; left
16. If long-term interest rates are expected to rise in the future, then
   a. People buy more bonds now, firms issue more bonds now, and interest rates rise now.
   b. People demand more bonds now, firms issue more bonds now, and interest rates fall now.
   c. **People demand fewer bonds now, firms issue more bonds now, and interest rates rise now.**
   d. People buy fewer bonds now, firms issue fewer bonds now, and interest rates fall now.

**Figure 2**

17. In Figure 2, one factor not responsible for the decline in the demand for money is
   A) a decline the price level.
   B) a decline in income.
   C) **an increase in income.**
   D) a decline in the expected inflation rate.

18. An implication of rational expectation is that:
   a. errors will always be zero.
   b. some error can be predicted ahead of time.
   c. **errors will, on the average, be zero.**
   d. changes in how a variable moves over time will not affect the way expectations are formed.
19. (a) (3 points) Assuming that the expectations theory is the correct theory of the term structure, calculate the interest rates in the term structure for maturities of one to five years for the following path of one-year interest rates over the next five years: 6%, 5%, 7%, 6%, 8%.

(b) (3 points) Now suppose that investors prefer short-term bonds. Specifically, the liquidity premiums for one- to five-year bonds are 0%, 0.1%, 0.2%, 0.3%, and 0.4%, respectively. How would your answers to part (a) change? Calculate the new values.

Answer:

a. Apply the expectation hypothesis of term structure i.e., the long-term interest rates are averages of short terms. Then the yields on bonds of different maturities are

<table>
<thead>
<tr>
<th>Maturity</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 yr</td>
<td>6%</td>
</tr>
<tr>
<td>2 yr</td>
<td>(6+5)/2 = 5.5%</td>
</tr>
<tr>
<td>3 yr</td>
<td>(6+5+7)/3 = 6%</td>
</tr>
<tr>
<td>4 yr</td>
<td>(6+5+7+6)/4 = 6%</td>
</tr>
<tr>
<td>5 yr</td>
<td>(6+5+7+6+8)/5 = 6.4%</td>
</tr>
</tbody>
</table>

b. After adding corresponding liquidity premiums, the yields will be as follows:

<table>
<thead>
<tr>
<th>Maturity</th>
<th>New Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 yr</td>
<td>6 + 0 = 6%</td>
</tr>
<tr>
<td>2 yr</td>
<td>5.5 + 0.1 = 5.6%</td>
</tr>
<tr>
<td>3 yr</td>
<td>6 + 0.2 = 6.2%</td>
</tr>
<tr>
<td>4 yr</td>
<td>6 + 0.3 = 6.3%</td>
</tr>
<tr>
<td>5 yr</td>
<td>6.4 + 0.4 = 6.8%</td>
</tr>
</tbody>
</table>
20. (6 points) The following is a part of the report from Wall Street Journal, March 8, 2007, 2:07 pm:

“Shares of Motorola saw some hectic trading after a report that the company's chief financial officer said Motorola would beat first-quarter earnings forecasts. The stock shot up more than 6% after the opening bell, but fell back to earth when Motorola denied the news.”

Question: Using the (fundamental) stock valuation model explain why Motorola stock first shot up by 6% and then “fell back to earth”?

**Answer:**

The fundamental equation to use here is the Dividend Valuation Model:

\[ P_0 = \frac{D_1}{ke - g}. \]

“after a report that the company's chief financial officer said Motorola would beat first-quarter earnings forecasts”:

**Explanation:** The markets expect both \( D_1 \) and \( g \) to be higher now, which increases \( P_0 \)

“but fell back to earth when Motorola denied the news”:

**Explanation:** The market corrects its expectation now – a lower \( D_1 \) and \( g \), that brings the share price \( P_0 \) down.

“The Fed clearly has signaled that interest rates are going higher, and some economists think even if inflation stays benign, the Fed will want to raise its key federal-funds interest-rate target back to a more neutral level -- say, between 4% and 5% -- from the current 2.25%, so that it has room to lower rates for the day when the economy slows. Higher interest rates would cause bond yields to rise and make investing in risk-free Treasurys more attractive, so other bond yields would need to rise to attract capital.”

Question: Using the demand-supply framework explain why “other bond” yields would need to rise?

Answer: Just need one diagram – that of “other” bond. Once the treasury yields rise, the investors expected return on “other” bonds goes down relative to treasuries. That shifts the demand to the left, brings down its price, and raises its yield to maturity.
22. (Assume) Based on past data, the following table summarizes the stock returns with their probabilities. (8 points)

<table>
<thead>
<tr>
<th>Stock</th>
<th>Kmart</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return 1</td>
<td>10% (prob = 0.5)</td>
<td>2% (prob = 0.5)</td>
</tr>
<tr>
<td>Return 2</td>
<td>12% (prob = 0.5)</td>
<td>0% (prob = 0.5)</td>
</tr>
</tbody>
</table>

Calculate the expected returns on the two stocks. Then calculate the standard deviations of these returns. Based on your calculations which stock will you prefer?

As corrected in the exam room this should have read as

<table>
<thead>
<tr>
<th>Stock</th>
<th>Return 1</th>
<th>Return 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kmart</td>
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<td>2% (prob = 0.5)</td>
</tr>
<tr>
<td>Target</td>
<td>12% (prob = 0.5)</td>
<td>0% (prob = 0.5)</td>
</tr>
</tbody>
</table>

**Answer:**

**Expected Return:**

\[
\text{Re\{Kmart\}} = 10\times0.5 + 2\times0.5 = 6\%
\]

\[
\text{Re\{Target\}} = 12\times0.5 + 0\times0.5 = 6\%
\]

**Variance:**

\[
\text{Var\{Kmart\}} = 0.5\times(10-6)^2 + 0.5\times(2-6)^2 = 16
\]

\[
\text{Var\{Target\}} = 0.5\times(12-6)^2 + 0.5\times(0-6)^2 = 36
\]

**Standard Deviation:**

\[
\text{S.D.\{Kmart\}} = \sqrt{16} = 4
\]

\[
\text{S.D.\{Target\}} = \sqrt{36} = 6
\]

Thus although both stocks have same expected return, Kmart has a lower risk. Hence, prefer Kmart.
23. A stock is trading at $60 per share. The stock is expected to have a year-end dividend of $4 per share (D1=4), which is expected to grow at some constant rate ‘g’ throughout time. The stock's required rate of return is 10%. If you are an analyst who believes in efficient markets, what would be your forecast of g? (6 points)

**Answer:** Use the generalized Dividend Valuation Model:

\[ P_0 = \frac{D_1}{k_e - g}, \text{ or} \]

\[ k_e - g = \frac{D_1}{P_0}, \text{ or} \]

\[ g = k_e - \frac{D_1}{P_0} \]

Substitute \( D_1=4 \), \( P_0 = 60 \), and \( k_e = 0.1 \) in the last formula:

\[ g = 0.1 - \frac{4}{60} = 0.0333 \]

Or \( g = 3.33\% \)