Econ 330 Money and Banking, Fall 2014 - Handout 3

1 Review, Chap 5-6

- Money Supply Growth Rate and Interest Rates (chap 5)
  - The liquidity preference framework predicts that an increase in money supply lowers interest rates.

    A criticism by Milton Friedman:
    - Liquidity Effect: $\uparrow M^s \Rightarrow \downarrow i$ (immediately)
    - Income Effect: $\uparrow M^s \Rightarrow \uparrow$ income and wealth $\Rightarrow \uparrow i$ (slowly)
    - Price-level Effect: $\uparrow M^s \Rightarrow \uparrow$ price level $\Rightarrow \uparrow i$ (slowly)
    - Expected-inflation effect: $\uparrow M^s \Rightarrow \uparrow$ expected inflation rate $\Rightarrow \uparrow i$ (slowly)
- Risk Structure of Interest Rates
  - Bonds with the same maturity have different interest rates due to:
    - Default risk
      - U.S. Treasury bonds are considered to be default risk free
      - **Risk premium**: the spread between the interest rates on bonds with default risk and the interest rates on (same maturity) Treasury bonds
    - Liquidity: converted into cash
      - Cost of selling a bond
      - Number of buyers/sellers in a bond market
    - Tax considerations
      - Interest payments on municipal bonds are exempt from federal income taxes
  - Bond ratings by Moody's, Standard and Poor's, and Fitch
  - Bonds with identical risk, liquidity, and tax characteristics may have different interest rates because the time remaining to maturity is different
- Yield Curve & the 3 Components of Net Interest Margin (chap 6)
  - Yield Curve: a plot of the yield on bonds with differing terms to maturity but the same risk, liquidity and tax considerations
    - Upward-sloping: long-term rates are above short-term rates
    - Flat: short- and long-term rates are the same

    - Inverted: long-term rates are below short-term rates

- NIM= Funding Spread + IRR spread + Credit Spread
- Facts Theory of the Term Structure of Interest Rates Must Explain
  - Interest rates on bonds of different maturities move together over time
    (expectations theory)
  - When short-term interest rates are low, yield curves are more likely to have an upward slope; when short-term rates are high, yield curves are more likely to slope downward and be inverted
    (expectations theory)
  - Yield curves almost always slope upward
    (segmented markets theory)
- Liquidity premium theory combines the two theories to explain all three facts!
- Theories
  - Expectations Theory
    - The interest rate on a long-term bond will equal an average of the short-term interest rates that people expect to occur over the life of the long-term bond.
    - Bond holders consider bonds with different maturities to be perfect substitutes
    - $i_{2t} = \frac{i_t + i^e_{t+1}}{2}$, or $i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \ldots i^e_{i+(n-1)}}{n}$
  - Segmented Markets Theory
    - Bonds of different maturities are not subsitutes at all
    - The interest rate for each bond with a different maturity is determined by the demand for and supply of that bond.
    - Investors have preferences for bonds of one maturity over another; If investors generally prefer bonds with shorter maturities that have less interest-rate risk, then this explains why yield curve usually slpe upward.
  - Liquidity Premium
    - Bonds of different maturities are partial (not perfect) substitutes.
    - $i_{nt} = \frac{i_t + i^e_{t+1} + i^e_{t+2} + \ldots + i^e_{t+(n-1)}}{n} + l_{nt}$, where l_{nt} is the liquidity premium for the n-period bond at time t
    - l_{nt} is always positive, rises with the term to maturity

2 Exercises

- **[Q1]** U.S. government bonds have no default risk because

  A) they are backed by the full faith and credit of the federal government.
  B) the federal government can increase taxes to pay its obligations.
  C) they are backed with gold reserves.
  D) they can be exchanged for silver at any time.

- **[Q2]**) If the probability of a bond default increases because corporations begin to suffer large losses, then the default risk on corporate bonds will ——— and the expected return on these bonds will ———, everything else held constant.

  A) decrease; increase
  B) decrease; decrease
  C) increase; increase
  D) increase; decrease

- **[Q3]** A bond with default risk will always have a ——— risk premium and an increase in its default risk will ——— the risk premium.

  A) positive; raise
  B) positive; lower
  C) negative; raise
  D) negative; lower

- **[Q4]** Bonds with relatively low risk of default are called ———securities and have a rating of Baa (or BBB) and above; bonds with ratings below Baa (or BBB) have a higher default risk and are called ———-.

  A) investment grade; lower grade
  B) investment grade; junk bonds
  C) high quality; lower grade
  D) high quality; junk bonds

- **[Q5]** Which of the following securities has the lowest interest rate?

  A) Junk bonds
  B) U.S. Treasury bonds
  C) Investment-grade bonds
  D) Corporate Baa bonds

- **[Q6]** Risk premiums on corporate bonds tend to ——— during business cycle expansions and ———- during recessions, everything else held constant.

  A) increase; increase
  B) increase; decrease
  C) decrease; increase
  D) decrease; decrease

- **[Q7]** Everything else held constant, if the tax-exempt status of municipal bonds were eliminated, then

  A) the interest rates on municipal bonds would still be less than the interest rate on Treasury bonds.
  B) the interest rate on municipal bonds would equal the rate on Treasury bonds.
  C) the interest rate on municipal bonds would exceed the rate on Treasury bonds.
  D) the interest rates on municipal, Treasury, and corporate bonds would all increase.

- **[Q8]** Everything else held constant, the interest rate on municipal bonds rises relative to the interest rate on Treasury securities when

  A) income tax rates are lowered.
  B) income tax rates are raised.
  C) municipal bonds become more widely traded.
  D) corporate bonds become riskier.

- **[Q9]** If the expected path of 1-year interest rates over the next five years is 1 percent, 2 percent, 3 percent, 4 percent, and 5 percent, the expectations theory predicts that the bond with the highest interest rate today is the one with a maturity of

  A) two years.
  B) three years.
  C) four years.
  D) five years.

- **[Q10]** If 1-year interest rates for the next three years are expected to be 4, 2, and 3 percent, and the 3-year term premium is 1 percent, than the 3-year bond rate will be

  A) 1 percent.
  B) 2 percent.
  C) 3 percent.
  D) 4 percent.

- **[Q11]** If the yield curve slope is flat for short maturities and then slopes steeply upward for longer maturities, the liquidity premium theory (assuming a mild preference for shorter-term bonds) indicates that the market is predicting

  A) a rise in short-term interest rates in the near future and a decline further out in the future.
  B) constant short-term interest rates in the near future and further out in the future.
  C) a decline in short-term interest rates in the near future and a rise further out in the future.
  D) constant short-term interest rates in the near future and a decline further out in the future.

- **[Q12]** According to the liquidity premium theory of the term structure, a downward sloping yield curve indicates that short-term interest rates are expected to

  A) rise in the future.
  B) remain unchanged in the future.
  C) decline moderately in the future.
  D) decline sharply in the future.