

ECO 301: Money and Banking**Name:** (20 points) _____**In-class Exercise: Measuring Interest Rates**

Learning Objective: LO3: Predict changes in interest rates using fundamental economic theories including present value calculations, behavior towards risk, and supply and demand models of money and bond markets.

Directions: Work in groups of up to four people and answer the following questions. All papers will be collected, but only one member's paper will be randomly selected and graded and all members of the group will receive the same grade.

By signing below, you agree that the following work represents the efforts of everyone in the group, and you are willing to accept as your own grade for the group project the grade earned from this representation of your group's work. Every member must agree to these terms to earn a non-zero grade for this assignment.

| | | |
|-----------------------------------|---------------------|---------------|
| _____ Signature Group Member 1 | _____ Print Name | _____ Date |
| _____ Signature Group Member 2 | _____ Print Name | _____ Date |
| _____ Signature Group Member 3 | _____ Print Name | _____ Date |
| _____ Signature Group Member 4 | _____ Print Name | _____ Date |

1. Suppose you have the following financial investment choices for the next three years. Suppose interest income is taxed at 15%, except for securities that are tax exempt.
 - INVESTMENT A: A three year risk-free bond that pays interest at an annual rate of 6%.
 - INVESTMENT B: Roll over three one year risk-free bonds. Today a one year bond pays 8%. Next year, a one year bond is expected to pay 7%. In two years, a one year bond is expected to pay 5%.
 - INVESTMENT C: A three year tax-exempt municipal bond that pays interest at an annual rate of 5.5%.
- (a) (10 points) Which investment strategy pays the highest after-tax return?
- (b) (10 points) Which investment strategy would you choose if you were risk averse, and there was a possibility you would need to sell bonds before the maturity date? Explain.
- (c) (10 points) Which investment strategy would you choose if you were risk averse, but you do plan to hold these bonds for three years. Explain.

2. Suppose values for current and expected future interest rates on one year and a three-year bonds and the consumer price index are as given below.

| | 2012 | 2013 | 2014 | 2015 |
|---------------------------------|------|------|------|------|
| Consumer Price Index | 245 | 250* | 257* | 264* |
| Interest rate - One-Year Bond | 6% | 5%* | 5%* | 5%* |
| Interest rate - Three-Year Bond | 7% | 6%* | 5%* | 5%* |

* Expected

- (a) (10 points) What is the nominal and real expected return from holding the one-year bond, and rolling it over for a total of three years?

- (b) (10 points) What is the nominal and real expected return from holding a three-year bond.

- (c) (10 points) Suppose both the one-year bond and three-year bond are risk free and highly liquid. What is the term premium on the three year bond?

3. (10 points) Suppose with a high degree of certainty, people expect interest rates to remain the same for three years. After this time, people expect interest rates will rise, but there is a greater degree of uncertainty about what interest rates will be. Draw and explain a picture of a yield curve that illustrates this.
4. (10 points) Suppose people expect the economy is dipping into a recession. As a consequence, over the next few years people expect inflation rates and interest to fall. People expect the economy to return to normal after about three years. Draw and explain a picture of a yield curve that illustrates this.
5. (10 points) In 1979, the inflation rate in the United States was very high. By 1981 the Federal Reserve increased the Federal Funds rate to 19% to combat inflation. Suppose people expected monetary policy would effectively reduce inflation, and afterward the Federal Reserve would decrease interest rates again. Draw and explain a picture of a yield curve that illustrates this.