

In-class Exercise: Risk and Term Structure

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. Use a market for assets to describe and illustrate the difference in the rate of interest paid for one-year investment-grade corporate bonds and one-year U.S. federal government bond. What explains the difference in the interest rate? What would you call this premium?

2. Use a market for assets to describe and illustrate the difference in the rate of interest paid for U.S. federal government bond with one year until maturity and a U.S. federal government bond with 10 years until maturity. What explains the difference in the interest rate? What would you call this premium?

3. Use a market for assets to describe and illustrate the difference in the rate of interest paid for a AAA-rated asset-backed security with one-year maturity that is not highly traded and a AAA-rated one-year U.S. federal government bond. What explains the difference in the interest rate? What would you call this premium?

4. 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) Which investment strategy pays the highest after-tax return?

(b) 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) Which investment strategy would you choose if you were risk averse, but you do plan to hold these bonds for three years. Explain.

5. 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.

	2016	2017	2018	2019
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) What is the expected nominal and real return from purchasing a one-year bond in 2016, and rolling it over for a total of three years (for 2017 and 2018)?

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

- (c) Suppose both the one-year bond and three-year bond are risk free and highly liquid. What is the premium on the three year bond? What would you call this premium?

