

Week 10 Homework: Risk and Term Structure of Interest Rates

1. Use a market for bonds 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 bonds. Illustrate the difference in the price of bonds. Which bond has a higher interest rate? What would you call this premium?

2. Use a market for bonds to describe and illustrate the difference in the rate of interest paid for one-year U.S. federal government bonds and ten-year U.S. federal government bonds. Illustrate the difference in the price of bonds. Which bond has a higher interest rate? What would you call this premium?

3. Suppose with a high degree of certainty, people expect interest rates to decrease over the next two years. Use a market for bonds to describe and illustrate the difference in the rate of interest paid for a 30-day government bond and a two-year government bond. Use two graphs for the two bond markets, show the shifts in both markets, and illustrate what happens to the difference in the price of bonds.
4. Use a market for bonds to describe and illustrate the difference in the rate of interest paid for an investment-grade corporate bond and a speculative-grade corporate bond. Illustrate the difference in the price of bonds. Which bond has a higher interest rate? What would you call this premium?
5. Suppose with a high degree of certainty, people expect interest rates to remain the same or change very little for the next two years. After this time, people expect interest rates will rise, but there is a greater degree of uncertainty in this expectation. Draw and describe a yield curve that illustrates this situation. Identify the two-year maturity in your illustration.

6. In December 2007, people began to expect the economy could fall into a recession due to drops in demand for goods and services. Suppose people expected real GDP to fall, unemployment to rise, and inflation rates to fall. Suppose people expect this situation for approximately three years before returning to normal. Draw and describe a yield curve that illustrates this situation.
7. Paul Volcker became chair person of the Fed in 1979 when the inflation rate in the United States was very high, and quickly started raising interest rates. Suppose in 1979 that people expected the significant contractionary monetary policy that was to come to last approximately one year, after which they expect the Federal Reserve to decrease interest rates significantly to normal levels. Draw and describe a yield curve in 1979 that illustrates this situation.

8. In March 2025, the Fed announced it would hold interest rates constant for the near-term, as there is risk for both recession and inflation, a change in stance from earlier communication for its intention to decrease interest rates as long as there was not risk for higher inflation. In February 2025, President Donald Trump and Elon Musk both suggested that a recession in the future was possible. Suppose people expect the Fed to keep interest rates constant in the near term, but expect recessionary risk to dominate in the Fed's decisions in over the next one to three years. Suppose people have a significant degree of uncertainty for the path of monetary policy after three years. Draw and describe a yield curve in March 2023 that illustrates this situation.
9. Just for fun, go to <https://www.ustreasuryyieldcurve.com/> and look at what the U.S. yield curve actually looked like for the dates below. Did you make these predictions?
- (a) December 3, 2007: the situation in problem #6
 - (b) January 1, 1979; the situation in problem #7
 - (c) March 23, 2025; the situation in problem #8