Term Structure of Interest Rates

Term Structure versus Yield Curve

Term Structure Theories

1) Market segmentation

2) Rational expectations

Notation: $f_{1,1}$ = 1-year interest rate in one year
$f_{2,1}$ = 2-year investment in one year
$f_{1,2}$ = 1-year investment in two years

Suppose a 1-year T-bill has a YTM of 5% and a 2-year STRIPS has a YTM of 6%. What is the one year interest rate in one year?

Suppose a 1-year T-bill has a YTM of 5% and a 3-year STRIPS has a YTM of 6%. What is the two year interest rate in one year?

Suppose a 2-year STRIPS has an interest rate of 6% and a 3-year STRIPS has an interest rate of 7%. What is the 1-year interest rate in 2 years?

3) Liquidity preference

U.S. Treasury STRIPS, Feb, 15, 2019

Maturity	**Price**
Feb 20	97.100
Feb 21	93.875
Feb 22	90.123

1) According to the pure expectations theory of interest rates, how much do you expect to pay for a one-year STRIPS on February 15, 2020? What is the corresponding implied forward rate? How does your answer compare to the current yield on a one-year STRIPS? What does this tell you about the relationship between implied forward rates, the shape of the zero coupon yield curve, and market expectations about future spot interest rates?

2) Suppose the term structure is set according to pure expectations and the maturity preference theory. To be specific, investors require no compensation for holding investments with a maturity of one year, but they demand a premium of .30 percent for holding investments with a maturity of two years. Given this information, how much would you pay for a one-year STRIPS on February 15, 2020? What is the corresponding implied forward rate? Compare your answer to the solutions you found in the previous problem. What does this tell you about the effect of a maturity premium on implied forward rates?

4) Modern theories

Imputed or Inferred Term Structure

Suppose we have a 1 year zero coupon with a YTM of 6% and a 2 year, 8% annual coupon bond with a YTM of 8%. Assuming annual compounding, what is the one year zero rate in one year?

Suppose we have the following one year bonds (semiannual coupon rates):

8% coupon	6% coupon
7% YTM	7% YTM
Price = $1,009.50	Price = $990.50

What are the six month zero rates and the 1 year zero rates?