

7. Term structure of interest rates

Suppose that the economy has discount bonds (discussed in question 6) with one- and two-year maturities. Let i_t^1 be the interest rate on a one-year bond issued at the start of year t , and i_{t+1}^1 the interest rate on a one-year bond issued at the start of year $t + 1$. Let i_t^2 be the interest rate (per year) on a two-year bond issued at the start of year t . We can think of i_t^1 as the current short-term interest rate and i_t^2 as the current long-term interest rate.

a. Assume that, at the start of year t , everyone knows not only i_t^1 and i_t^2 , but also the next year's one-year rate, i_{t+1}^1 . What must be the relation of i_t^2 to i_t^1 and i_{t+1}^1 ? Explain the answer by considering the incentives of lenders and borrowers.

b. If $i_{t+1}^1 > i_t^1$ what is the relation between i_t^2 , the long-term interest rate, and i_t^1 , the short-term interest rate? The answer is an important result about the term structure of interest rates.

c. How would the results change if we assumed, more realistically, that there was uncertainty in year t about the future one-year interest rate, i_{t+1}^1 ?

8. Financial intermediaries

Consider a financial intermediary, such as a bank, that participates in the credit market. This intermediary borrows from some households and lends to others. (The loan from a customer to a bank often takes the form of a deposit account.)

a. Does the existence of intermediaries affect the result that the aggregate amount of loans is zero?

b. What interest rates would the intermediary charge to its borrowers and pay to its lenders? Why must there be some spread between these two rates?

c. Can you provide some reasons to explain why intermediaries might be useful?