1. What is meant by the term structure of interest rates?

The "time yield curve" is a plot of these rates against the period to maturity as a result of the term structure of interest rates, which is a pattern of interest rates (yields) accessible on assets differentiated (distinguished from one another) purely by their term to maturity. Thus, there is a term structure for each class of homogenous assets at any given time.

The distribution of redemption yields, also known as yields to maturity, is covered in our discussions of term structure and the shape of time/yield curves.

Theories of term structure

1. Expectations Theory
2. The term premium hypothesis
3. Market segmentation and preferred habitat theory
4. Explain the expectation theory of the term structure of interest rates.

According to this idea, the long-term interest rate is the geometric average of anticipated short-term rates in the future. If a person wants to make an investment for "L" years, they can either hold a long bond until it matures at a known long-term rate of interest, "r L," or they can hold a series of short-dated bonds, only the first of which has a known long-term rate of interest, "r 1." The funds will be reinvested after the first year in another short-term bond with an unspecified interest rate of 2, which can only be expected or estimated. Consider an investor who is risk-neutral and wants to invest for two years (here, L=2). Assume

and that he is aware of

I The interest rate for one year is currently r 1.

(ii) The current interest rate for two years is r L.

(iii) Assume that he has a firm belief that the one-year rate 2, which will be in effect in a year, would be successful. As a result, the investor won't care which of these two they choose.

when investing strategies, when

(1+r1) (1+r2) = (1+rL )2 …….. (i)

Now, since r1 and RL are known, we can solve for the expected or implied future spot rate r2

1+r2 = (1+rL)21+r1

r2 = (1+rL)21+r1 - 1 ………. (ii)

The implied future spot rate is also referred to as a forward rate.

It can be seen from (i) that if

RL > r1 then r2 > r1

i.e. investors expect future one-year rates to be above current one-year rates.

Again rearranging eqn (ii) we can see that

if rL> r1, then r2 must be greater than RL

Again,

r1 = (1+rL)2(1+r2) - 1 ………. (iii)

As a result, an investor who wants to purchase a one-year bond now at a lower interest rate than the current two-year rate must anticipate being able to replace it at the end of the first year with a second bond that pays an interest rate (for the one-year period) that is higher than the current two-year rate by the amount necessary to generate an average return over the two-year period equal to (1+RL). Therefore, when the yield curve is sloping upward, forward rates must be higher than spot rates of the same maturity, and vice versa when the yield curve is sloping downward.

From I once more, we have

(1+rL)2 = (1+r1) (1+r2)

Alternatively, rL = (1+r1)(1+r2)-1. Enter an equation here (iv).

The linear expression very nearly approximates Eqn (iv).

rL equals r1+r2L 1L(r1+r2).. (v)

Where L is the bond's maturity period and r2 and rL are paid on a two-year bond, respectively.

12(r1+r2) is the value of RL from (v).

alternatively, to be more broad,

rL = r1k+r2(L-K)L......... (vi)

K is the time period during which r1 is paid, and

(L-K) is the amount of time left before maturity for which r2 is anticipated to be paid.

The weighted average of anticipated future short-term rates, or RL, for any "long term" rate of interest, where K and (L-K) are the weights (vi)

Plotting the (real) yields at various times results in the "time yield curve."

The current interest rate on assets with varying terms to maturity is depicted by the time yield curve. The yield curve does not display forward rates if the expectation hypothesis is true; rather, it displays the current rates. According to expectation theory, the shape of the curve can take any form because the market's expectation of future interest rate levels is all that matters.

1. Explain how the term premium theory is different from the Expectation Theory?

According to the premium theory, investors must be paid a premium in order to entice them to hold longer bonds because of the characteristics of longer-dated bonds that make them consistently unattractive. According to the expectation theory, the long-term interest rate is the geometric average of the expected short-term rates in the future.

The expectation theory is founded on:

Long-term interest rates are currently influenced solely by short-term rates for the future.

Lenders typically hold both short-term and long-term securities to equal satisfaction.

Which option they choose will be determined solely by the relative interest rates.

However, Hicks (1939), following Keynes's General Theory, proposed that investors would need to pay a premium to hold bonds with longer maturities. A long-term bond's market price changes with interest rates (equation RC = c/pc), and interest elasticity increases with duration. Therefore, bondholders who may wish to sell their bonds prior to maturity will experience a capital gain or loss as a result of a future change in interest rates.

The term "premium theory" describes a feature in the curve's behavior that is frequently observed.

This time around, the curve has a tendency to slope upward, with the exception of periods when interest rates are high.

Any long-term interest rate (RL) has a risk premium (L) that is independent of the bond market's level of capital risk aversion and the bond's remaining maturity, according to the term premium theory. The extremely high premiums indicate that bonds with longer maturities yield more.

1. Explain in short the main features of Preferred Habitat and its more extreme version Market.

To implement the risk aversion and term premium theory, it is necessary to reject the implicit premise of the pure expectation theory that bonds are homogeneous except for term to maturity.

Preferred Habitat and Market Segmentation, which take heterogeneity into account and argue that investors have distinct preferences for various segments of the maturity spectrum, both assert that investors have distinct preferences for various segments of the maturity spectrum.

The supply and demand for bonds in each segment will have an impact on the shape of the yield curve. If the number of bonds maturing in five to eight years were increased, the yield curve in this maturity range would exhibit a "hump" as the bond price would decrease and the yield would rise.

If we assumed complete substitutability across the maturity range, this curvature would not exist; Instead, the curve would shift upward while maintaining its original shape as adjustment ripples spread across the entire curve. If investors had a preferred habitat, they would be reluctant to leave it.

The preferred habitat theory is important because it sees the maturity spectrum as a collection of segments inhabited by investors whose preferences are based on a variety of factors (not just their attitude toward capital and income risk), allowing for any number of yield curve inflections.

Greater "humps" and "troughs" would result from complete segmentation, as would total resistance to emigration from the preferred habitat.