

## Unit 13 - Week 10: Bond Portfolio Management

## Course outline

How does an NPTEL online course work?

## MATLAB

## Week 0: Prerequisite

## Week 1: Basics of Probability Theory

## Week 2: Basics of Financial Markets

## Week 3: Mean-Variance Portfolio Theory

## Week 4: Mean-Variance Portfolio Theory- II

## Week 5: Non-Mean-Variance Portfolio Theory

## Week 6: Non-Mean-Variance Portfolio Theory- II

## Week 7: Non-Mean-Variance Portfolio Theory- III

## Week 8: Optimal Portfolio and Consumption

## Week 9: Optimal Portfolio and Consumption- II

## Week 10: Bond Portfolio Management

Lec 1: Interest rates and bonds; Duration

Lec 2: Duration; Immunization

Lec 3: Convexity; Hedging and Immunization

Quiz : Assignment 10

Feedback form

Assignment Solution

## Week 11: Risk Management

## Week 12: Applications with market data

## Live Session: Mathematical Portfolio Theory

## Text Transcripts

## Assignment 10

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-11-25, 23:59 IST.**

1)

If the horizon  $H = T - t = 1.7$  years and the annual rate of interest is 5%, with the bond price at time  $t$  being  $B(t) = 98$ , then  $B(T)$  equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 106,107

1 point

2) If the value of a zero-coupon bond at time  $T = 2$  is 100 and the risk-free annual spot rate is 8%, then the price of the bond at time  $t = 0$  equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 85.5,86.0

1 point

3) Consider a coupon bond with a nominal of 100 and annual coupons of 8, with the maturity of the bond being 10 years. If the annual compounding rate of interest is 6%, then the duration  $D$  of the bond equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 7.4,7.5

1 point

4) The value of the Modified Duration for the bond in Question Number 3, equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 7.00,7.04

1 point

5) If we invest the  $\frac{2}{3}rd$  of the total amount in a zero-coupon bond of maturity 2 years and the remaining  $\frac{1}{3}rd$  of the total amount in a zero-coupon bond of maturity 3 years, then the Duration of the resulting portfolio of the two bonds equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 2.3,2.4

1 point

6) The value of the Convexity for the bond in Question Number 3, equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 65.0,65.3

1 point

7) The absolute value of the difference between the estimate of  $\frac{\Delta B}{B}$  using only Duration

and the estimate of  $\frac{\Delta B}{B}$  using both Duration and Convexity, for the bond in Question Number 3, when the interest rate increases by 1%, equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Range) 0.002,0.004

1 point

8) We create a bond portfolio of two zero-coupon bonds, with the maturities of 2 and 4 years, respectively, so that the resulting bond portfolio has a Duration of 3. If  $w_1$  and  $w_2$  are the respective weights of the two zero coupon bonds in the portfolio, then the value of  $\frac{w_1}{w_2}$  equals :

## Hint

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
(Type: Numeric) 1

1 point