Tutorial Assignment 7 - Due 27 September at 10:00am (Start of Week 9) - Interest Rates and Bond Valuation

Started: Sep 25 at 17:19

Quiz Instructions

Please note: this is marked by a computer program. I have built in an allowance for rounding, but it is not a big allowance. It is safest to NOT round intermediate results and do all rounding at the very end.

This tutorial assignment is marked and worth 1.25 marks toward your final mark in this subject. There are 11 questions and you will be awarded $\frac{1.25}{11} = 0.1136$ marks toward your final mark for EACH question.

Please note that your tutorial assignment consists of 2 parts -

Part A is unmarked - you can download the questions as a PDF from the first question of the quiz.

Part B is marked by Canvas - it is the on-line quiz you are about to take now. Please print a pdf or take a screen shot of your answers to the computer-based quiz (Part B) at the end. This is insurance in case you write something that the program thinks is an error, but it is not really an error. **Your only time limit is the due date and time. Please note, that only your last attempt of the Quiz is saved and marked.**

Q: What if I do not have time to finish in one sitting?

A: You are permitted multiple attempts, but your **last** attempt before the due date and time is the one that is marked. Canvas, appears to save your answers after you enter them, but you might want to make note of them just in case of a computer glitch.

Please download the unmarked Part A here:

Assignment7_InterestRatesAndBondValuation_PartA.pdf

It's wise to do part A. There certainly could be final exam questions that are similar.

Question 1   1 pts

Suppose an <u>Australian</u> company issues commercial paper (a zero) with a maturity in exactly 270 days and a face value of $10,000. What is the price today, if the bond equivalent yield is 3%?

9782.9 .

$r_{BEY} = 3\%$

$r_{period} = \dfrac{3\%}{\frac{365}{n}} = 2.2192\%$

Question 2   1 pts

Suppose a Treasury Index Bond (TIB) has a 1% coupon rate and a face value of $100. If inflation over the next 4 years is 1.5% per year, what are the annual coupon payments in 4 years?

1.06136

$100 \times (1 + 1.5\%) =$

101.5×0.01

Question 3   1 pts

current yield = $\dfrac{coupon}{P}$ coupon rate = $\dfrac{coupon}{FV}$

If the coupon rate of a bond is less than the current yield is the bond trading at a premium or discount? *Sadly no bonus points, but see if you can prove it using the definitions of the current yield and the coupon rate, and the definition of premium and discount.*

$FV > P$

☑ Discount

○ Premium

Question 4   1 pts

A 5-year zero with a face value of $1,000,000 is sold for $650,000. What is the annualised yield to maturity of this zero-coupon bond? (Answer in percent or decimal form, Canvas will recognise both as correct - plus this assignment is pass/fail - just for trying anyway).

$$650000 = \frac{1000000}{(1+yTM)^5}$$

0.089977

Question 5   1 pts

Definitions are important – an example of other weirdness with bond definitions. US Money market dealers, who deal in bonds with less than 1 year to maturity, use something called "bank discount rates," where the bank discount rate, q, is the interest rate in decimal form that solves the following equation:

$$P = FaceValue \times \left(1 - q \times \tfrac{n}{360}\right)$$

Where n is the number of days to maturity, and 360 is used as the number of days in the year. Suppose a US dealer agrees to a quoted rate of 4% for a term of 90 days for a zero with a $100,000 face value, what is the price of the bond? (*Post script: Please don't complain, if a similar question shows up on the final exam. Yes, it wasn't covered in lecture. It's covered here.*)

99000

This text is for questions 6 through 8:

On the day of issue, suppose the bond-equivalent yield of a quarterly coupon-paying bond is 12%.

Question 6   1 pts

What is the effective annual rate? *(Answer in percent or decimal form. Canvas will mark both correct.)*

$$\left(1 + \frac{12\%}{4}\right)^4 - 1$$

0.1255

Question 7   1 pts

$$HPR = \frac{C + P_1 - P_0}{P_0} = \frac{C + (P_0(1+ytm) - C) - P_0}{P_0} = \frac{P_0 \cdot ytm}{P_0} = ytm$$

If you bought this bond on the day of issue and sold this bond on the date of the first coupon payment (and you received the coupon) what is your holding-period return, if interest rates do not change? *(Answer in percent or decimal form. Canvas will mark both correct.)*

if change ?

$$r_{period} = r_{BEY} \,/\, 4$$

3%

Question 8   1 pts

No calculations needed: Would the holding-period return be higher or lower if interest rates drop to 1% by the sale date in (Question 7)?

$$HPR = \frac{return - cost}{cost}$$

☑ Higher

○ Lower

$$r \downarrow \cdot P \uparrow \quad HPR \uparrow$$

Question 9   1 pts

$$101.56 \sum_{i=1}^{12} \frac{1}{(1+ytm)^i} + \frac{100}{(1+ytm)^{12}}$$

Suppose a three-year quarterly coupon paying bond with a 4% coupon rate has a face value of $100 and price of $101.56. What is the annualised yield to maturity of the bond? *(Answer in percent or decimal form. Canvas will mark both correct.)*

coupon paid per year = 4

Hints: coupon per period = 1

1) If you have Excel or Google Sheets, you can use the YIELD function.

2) Use a business calculator

3) If you don't have access to the above try:
https://www.calculatestuff.com/financial/bond-yield-calculator
(https://www.calculatestuff.com/financial/bond-yield-calculator)

(In general be careful of random websites - I tested out Wolfram Alpha (a usually great site) and I got a YTM of -7 something % which makes no sense. Another website gave me a number that was off by 1/100th of a percent. The link above seems to work correctly - or at least it matches my answer.)

Question 10   1 pts

Assume a 1-factor world where that 1 factor is the market.

Which combination will give me the highest expected return for a stock?

A [Select]   ⌄   Beta during [Select]   ⌄

Question 11   1 pts

There are behavioural and rational arguments for long-term predictability. Which reasons apply to the <u>rational</u> arguments for predictability? Check <u>all</u> that apply.

☐ On average investors are correct in their beliefs and that makes it possible to forecast future returns.

☐ Time variation in corporate profits leads to predictable time variation in future returns.

☐ Correcting extreme prices makes it possible to forecast future returns.

☐ Time variation in expected returns leads to predictable time variation in future returns.

☐ Time variation in the optimism or pessimism of investors leads to predictable time variation in future returns.

Saved at 17:19   Submit Quiz