

Name: Ian Giddy	Attempt: 1	Max. Score: 15
Started: Sep 23, 1998 8:32	Finished: Sep 23, 1998 8:33	Time Spent: 33 sec.
Student Finished 7 hrs., 59 min., 27 sec. ahead of the 480 min. Time Limit.		

Question 1 (1 marks)

Which of the following is true of Macauley's Duration? (Choose one or more)

- 34.0% 1. It is a measure of the effective maturity of a bond, defined as the weighted average of the times to each payment, with weights proportional to the present value of the payment.
- 33.0% 2. For a horizon equal to a bond's duration, price risk and reinvestment risk exactly cancel out.
- 3. The percentage price change of a bond is the change in the bond's yield to maturity times its duration.
- 33.0%
- 33.0% 4. Low-coupon bonds have greater duration.

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 2 (1 marks)

What is the duration of a perpetuity?

- 0.0% 1. Yield/(1+yield)
- 100.0% 2. (1+yield)/Yield
- 0.0% 3. Payment/Yield
- 0.0% 4. Infinity.

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 3 (1 marks)

Marubeni Trading Corp. issued a 4-year 8% straight Eurobond a year ago. It's now trading at a 10% yield. What's its modified duration?

- 0.0% 1. 3.00
- 0.0% 2. 2.78
- 0.0% 3. 2.57
- 100.0% 4. 2.53

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 4 (1 marks)

Which of the following kinds of bonds would you expect to have positive convexity over some range of yields?

- 20.0% 1. US Treasury bonds
- 20.0% 2. Zero-coupon bonds
- 20.0% 3. Callable bonds
- 20.0% 4. Convertible bonds
- 20.0% 5. Mortgage-backed securities

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 5 (1 marks)

Bayou Bank has \$50 million in assets, \$47 million in liabilities and \$3 million in shareholders' equity. If the duration of its liabilities is 1.5 and the bank wants to immunize its net worth against interest rate risk, what should be the average duration of its assets?

100.0% 1. 1.41

0.0% 2. 1.5

0.0% 3. 1.60

0.0% 4. 2.00

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 6 (1 marks)

Target-date immunization would primarily be of interest to:

0.0% 1. banks

0.0% 2. mutual funds

0.0% 3. hedge funds

100.0% 4. pension funds

0.0% 5. none of the above

Score: 0.0 / 1.0 (Question not answered)

Override Mark:

Comments:

Question 7 (3 marks)

One-year Ratings Transition Matrix (probabilities in percent)

Initial Rating	Rating at Year-end							
	AAA	AA	A	BBB	BB	B	CCC	D
AAA	90.81	8.33	0.68	0.06	0.12	0	0	0
AA	0.7	90.65	7.79	0.64	0.06	0.14	0.02	0
A	0.09	2.27	91.05	5.52	0.79	0.26	0.01	0.06
BBB	0.02	0.33	5.95	86.93	5.3	1.17	0.12	0.18
BB	0.03	0.14	0.67	7.73	80.53	8.84	1	1.06
B	0	0.11	0.24	0.43	6.48	83.46	4.07	5.2
CCC	0.22	0	0.22	1.3	2.38	11.24	64.84	19.79

Source: Standard & Poor's

Based on the above transition matrix,

What is the probability of a A-rated bond's downgrade within the next year?

What is the probability that BB-rated bonds' ratings remain unchanged or get upgraded in any given year?

What is the probability that investment grade bonds default in any given year? (Assume equal weightings for all investment grade bonds)

(Write your answer to the nearest single decimal like: 0.6%,5.4%,12.6%)

No. Student Response Grade Correct Answer (Value)

1. Not answered **0%** 6.6% (34%)
2. Not answered **0%** 89.1% (33%)
3. Not answered **0%** 0.2% (33%)

General Feedback:

Answers:

1. 6.6%
2. 89.1%
3. 0.2%

Score: 0.0 / 3.0

Override Mark:

Comments:

Question 8 (6 marks)

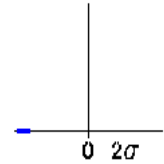
Augment your score with this extra credit question!

Here's another assignment on bond risk and return. Go to the Federal Reserve's statistical data Web site <http://www.bog.frb.fed.us/releases/H15/data.htm> and copy the following data (monthly, for the years 1991-97) into a spreadsheet:

- 10-year US Treasury yields
- Aaa corporate bond yields
- Baa corporate bond yields

Graph them against time. Analyze changes in (1) the levels, and (2) the spreads (difference between yields on different bonds).

Over that time period, lower-rated bonds did well. To what extent is their price rise the result of interest rates falling? To what extent is it attributable to a reduction in credit spreads? Would your answer be the same for high-rated bonds?



Assuming a normal distribution, what is the probability of the Baa-Treasury credit spread returning to its *average 1991-97 level* in the next month?

More than 10% Less than 10%? Less than 1%? Less than 0.5%?

Student Response:

Correct Answer:

I tried this with montly data, 1991-97. The results:

	UsTre	AAA	Baa	AAA-Tre	Baa-Treas.
Jan-91	8.09	9.04	10.45	0.95	2.36
Aug-97	6.3	7.22	7.82	0.92	1.52
	USTre.	AAA	Baa	AAA-Tre	Baa-Treas
Average	6.78	7.80	8.54	1.02	1.76
Standard Dev.	0.75	0.63	0.73	0.22	0.26

Interest rates have fallen significantly, based on 10-year Treasuries.

The credit risk premium for Baa's has fallen sharply, but not for AAA's.

The change in price is approx. = Mod duration * change in yield So given duration, the change in price is proportional to the change in yield. Treasury yields dropped 1.79%, while the Baa-Treas spread dropped 0.84%, for a total drop for Baa's of 2.63%. (For AAA's, the spread dropped by 0.03%, for a total of 1.82%.)

1. Baa percentage price change due to rate fall: $1.79/2.63=68\%$
2. Baa percentage price change due to credit spread fall: $0.84/2.63=32\%$
3. High rated bonds:
- rate fall: $1.79/1.82\%=98\%$ $0.03/1.82\%=2\%$
4. Probability of Baa-Treas return to average: **more than 10%**

This last answer is based on my calculation that the current spread of 1.52% differs from the average of 1.76% by 0.24%, which is less than 1 standard deviation. Assuming the spread is distributed normally, there is approximately a 16% (1/2 of 32%) chance of the spread widening by this amount (remember 1 SD on either side of the mean covers about 68% of the total distribution).

Your mileage may differ.

My spreadsheet can be downloaded from
<http://www.stern.nyu.edu/~igiddy/feddata.xls>

Mark:

Comments:

Quiz Mark Adjustment:

General Quiz Comments:

Total Score: 0.0 / 15 = 0.0%

Update Grade

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