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Financial Markets and Institutions
First Midterm Exam Answers

You have 70 minutes to complete this 100-point exam. Please write clearly and legibly. Graphs must be completely labeled to receive full credit. Show your calculations for partial credit. Good luck!

1. (20 Points). Match each finance term below with the 1 letter preceding its correct definition.

__u__ reinvestment risk
__e__ spot rate
__r__ adverse selection
__a__ mean reversion
__b__ January effect
__d__ par value
__q__ central bank
__h__ market segmentation theory
__p__ underwriting
__m__ stock

A. Stocks that have performed well recently are more likey to perform poorly in the future, and stocks that have performed poorly recently are more likely to perform well in the future.

B. Observation that equity prices rise in January above gains in their intrinsic values.

C. The adverse effect on portfoilio performance of selecting securities with poor risk/reward fundamentals.

D. An amount repaid on a coupon bond's maturity date.

E. An observed interest rate.

F. Effect in January of rapid equity accumulation consistent with efficient markets theory.

G. Purchase of Treasury securities on secondary markets by commercial banks.

H. Sees markets for bonds of different maturities as entirely segmented..

J. Ability of term structure theory to spot inconsistencies in interest rates.

K. Effect on unemployment rate of layoffs that occur in January due to seasonal factors.

L. Equivalent value of a risky bond to one with zero default and liquidity risk.

M. A security that grants a share of ownership of a corporation.

N. Theory that bonds which have high default risk will enventually revert to the mean yield

O. Theory that bond yields depend in part upon liquidty premiums and expectations.

P. An investment bank's actions in issuing securities on the primary market.

Q. The national government's bank; among other things, it controls the money supply.

R. When asymmetric information hinders transactions between sellers and buyers.

S. A debt security that promises to make payments over a period of time.

T. Main office of a bank that has many branches.

U. Occurs because the proceeds of short term bonds are reinvested at uncertain interest rates.

2. (30 Total Points on this Page) Choose FIVE of the six statements below. Indicate whether each of the five is **true** or **false**. Explain each of your indications in one or two sentences each. (Your scores depend entirely upon your explanations)

Prices for long term bonds are more volatile than prices for short term bonds.

True. The higher interest rate risk on long term bonds makes their prices change by a greater % when interest rates change, relative to shorter term bonds.

The New York Stock Exchange is an example of a primary market.

False. Since on the NYSE shares are traded that have been previously issued, it is a secondary market

As the dollar weakens on foreign exchange markets, it becomes less attractive for foreigners to vacation in the U.S.

False. It becomes more attractive, since the purchasing power of foreign currency, when traded for dollars, increases when the dollar weakens relative to foreign currency.

Evidence that stock prices sometimes fall when a firm announces bad news contradicts the efficient markets hypothesis.

False. If the bad news was unavailable before it was announced, so according to efficient markets theory it should not have been a determinant of stock prices prior to its announcement.

The term structure of interest rates describes how interest rates change over the years.

False. It describes the relationship at any point in time between bond yields and their time to maturity.

An unexpected increase in the highest income tax rate would cause municipal bond prices to fall and Treasury bond prices to rise.

False. Municipal bonds are tax free, so their prices should rise as they become more attractive to avoid the higher tax rates. At the same time, Treasury prices should fall, since their returns are now more heavily taxed.

3. (32 points) Today you buy a bond that matures exactly 2 years from now. You will receive two annual coupon payments, the first exactly one year from now. The bond has a par value of $500 and a coupon rate of 10%. The yield to maturity of your bond is 4.5%. Today the yield to maturity on 1-year coupon bonds is 4%. The risk premium today for holding 2-year coupon bonds is .35%.

a) How much did you pay for the bond?

Price paid = (50/1.045) + (550/(1.045^2)) = $551.4984

b) Use liquidity premium theory to forecast the 1-year forward rate on 1-year coupon bonds.

Your bond's yield = (4% + 1 year forward rate on 1 year bond) /2 + .35%

.045 = .04/2 + 1 year forward rate / 2 + .0035

.045 = .0235 + 1 year forward rate /2

.0215 = 1 year forward rate /2

1 year forward rate = .043 or 4.3%

c) Calculate the duration of your bond.

Present value of each future payment:
First payment of $50 = $50/1.04 = 48.0769
Second payment of $550 = $550/((1.04)^2) = 508.5059

Sum of present values of future payments = 556.5828

% that each present value contributes to the sum:
First payment = $48.0769/556.5828 = .08638
Second payment = 508.5059/556.5828 = .91362

Each % multiplied by number of years in future
.08638 x 1 = .08638
.91362 x 2 = 1.82724

Duration = sum of above numbers = 1.82724 + .08638 = 1.91362 years

d) Calculate your rate of return if you sell your bond exactly 1 year from now (immediately after receiving a coupon payment) for $525.

= (525 + 50) / 551.4984 - 1 = .0426 or 4.26%

4. (18 points) You are considering entering into a free contract that guarantees you the right to sell a bond for $1000, immediately after it pays its annual coupon of $200. Using all available information, you dtermine using the best possible methods that, based upon the intrinsic value of the bond, that the equilibrium 1-year rate of return on the bond is 15%. The bond currently sells for $1050. (This bond has no default or liquidity risk.)

a) Should you enter into the contract? Explain, and support your explanation with at least 1 calculation. (Your score depends entirely upon your explanation.

Your risk free rate of return if you buy the contract
= (1000 + 200) / 1050 - 1 = .142857 = 14.2857%

No! Your rate of return is less than the intrinsic value of the bond.

b) I know that you are offered the free contract. But according to efficient markets theory, how much should the contract that you are offered sell for? Explain, and support your answer with at least 1 calculation.

It should sell for $0, since enough folks will be rational enough to understand that the contract will be worthless, since the bond will return 15% without having to buy any contract.

(Now, hypothetically speaking, if the contract guaranteed a rate of return above the intrinsic value of the stock, then it would have some value, now wouldn't it?)