

## FIN 410 Investments

Sample EXAM III: Final – E&G: Chapters 12, 13, 16, 22, and 23

Answer all questions. You have 3 hours to complete this exam. There are 50 points possible. Points assigned to each question appear in the margin beside the question.

In accord with School policy, the following pledge must be signed by all students on all exams:

“On my honor, I have neither given nor received any unauthorized aid on this exam.  
Nor am I aware of anyone giving or receiving any unauthorized aid on this exam.”

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

1. You evaluate stock X and conclude that it's  $E(R_x) = .13$  and it's  $\beta_{xm} = 2.0$ .  
In addition, you estimate the following values for the components of the CAPM:  
 $E(R_m) = .06$ , and  $R_f = .02$ .
- (5) A. According to the CAPM, is this stock's  $E(R_x)$  appropriate for its risk? Explain.
- (5) B. Assume the Security Market Line above, and suppose you know another stock (Y) with  $\beta_{ym} = 2.0$  that has an expected return consistent with the equilibrium expected return implied by the CAPM. Construct an arbitrage portfolio between stocks X and Y.

2. Assume the following APT model holds:

$$R_i = a_i + b_{i1} I_1 + b_{i2} I_2 + e_i$$

$$E(R_i) = \lambda_0 + \lambda_1 b_{i1} + \lambda_2 b_{i2}$$

Suppose that, in equilibrium, there are three diversified portfolios ( $i = 1,2,3$ ) with the following attributes:

$i$	$E(R_i)$	$b_{i1}$	$b_{i2}$
1	12.0	1	.5
2	13.4	3	.2
3	12.0	3	-.5

These three portfolios lie on the following equilibrium plane:

$$E(R_i) = 10 + b_{i1} + (2)b_{i2}.$$

- (5) A. Suppose you know of another diversified portfolio (call it portfolio #4) with  $E(R_4) = 14.0$ ,  $b_{41} = 3.0$ , and  $b_{42} = .2$ .  
According to the APT, is this stock's  $E(R_4)$  appropriate for its risk? Explain.
- (5) B. Identify an arbitrage opportunity, and construct an arbitrage portfolio.

3. (5) A. List the major differences between forward and futures contracts.
- (5) B. Consider a forward contract on a non-dividend paying stock, with three months left to maturity ( $T=.25$ ), with current price  $S = \$40$ , and the annualized riskfree rate is  $R_f = .05$ .
- What should the theoretical futures price ( $F^*$ ) be?
  - If the current futures price ( $F$ ) is  $\$43$ , explain the arbitrage opportunity.

4. (5) A. Explain the difference between a short futures position and a put option.

- (5) B. Consider two put options on the same underlying stock with the same maturity.

Cost of Put #1 =  $P_1 = \$7$ ;      exercise price =  $E_1 = \$30$ ;

Cost of Put #2 =  $P_2 = \$3$ ;      exercise price =  $E_2 = \$25$ .

Show the payoff pattern for a combination in which you

buy one of Put #1, and sell three of Put #2.

Be sure to show the slopes of all different segments in this payoff pattern,

as well as any break-even points.

5. Assume the world's riskfree rate is  $R_f = 6\%$ , and you have the following forecasts of the expected returns, standard deviations, and correlations across the stock indexes of different national equity markets:

<u>Market</u>	<u>Expected Return</u>	<u>Std Dev.</u>	<u>Correlation with U.S.</u>
Austria	14%	26.19	.142
France	16%	25.54	.385
Japan	14%	23.28	.235
U.K.	15%	22.01	.564
U.S.	20%	15.39	1.000

- (10) What is the risk-adjusted excess return (Sharpe) Measure for each country?  
 What is the Sharpe Measure for the U.S. adjusted for its correlation with each country?  
 From the point of view of a U.S. investor, which of the above foreign markets are attractive investments relative to the U.S. market? Why?