

Econ 252 - Financial Markets

Spring 2011

Professor Robert Shiller

Midterm Exam #1 - Practice Exam

Instructions:

- The exam consists of a total of seven pages including this coversheet.
- There are two parts to this exam.
- In Part I, answer any eight of the ten questions, five minutes each.
The total for Part I is 40 minutes.
- In Part II, answer both questions.
The total for Part II is 30 minutes.
- For the exam, there are 70 question minutes total, each question minute corresponding to 1 point.
- You have 75 minutes to do the exam.
- The exam is CLOSED BOOK.
- You are allowed to use a non-programmable calculator.

Part I.

Answer eight of the ten questions. (5 points each - 40 points total)

1. What is the basic point, in brief summary, of Andrew Carnegie's *Gospel of Wealth*?
2. What was the point of the Health Maintenance Organization Act of 1973, and what does it have to do with the Yale Health Plan?
3. According to Markowitz's portfolio theory, how are the Efficient Portfolio Frontier and the Tangency Portfolio defined for a given set of risky assets? How does the Tangency Portfolio relate to the Mutual Fund Theorem?
4. What is a monoline insurance company? Give a couple of examples of their business.
5. How has the capital asset pricing model (CAPM) been tested, and what is the outcome?
6. What does David Swensen think of market timing, as compared with asset class selection, and why?
7. Name three important factors that have led to the integration of financial markets worldwide.

PART I CONTINUES ON THE NEXT PAGE.

CONTINUATION OF PART I.

8. What is limited liability? When was it established as a basic principle, and what was the important consequence of it?

9. What is the equity premium puzzle and how is it demonstrated?

10. What is the Sharpe ratio, and why might it sometimes be misleading?

Part II.

Answer BOTH of the following questions.

(Question 1: 10 points, Question 2: 20 points - 30 points total)

Question 1 (10 points)

Some Yale Students have lent \$100 to each of three different people with the promise that they will be paid back tomorrow: Honest Abe, Bonnie, and Clyde.

Throughout this problem assume that the present value discounting between today and tomorrow is negligible.

The Yale students have decided to turn the IOUs into tradable bonds. Honest Abe will always repay the loan. Bonnie and Clyde are somewhat less trustworthy, and they will each either repay the loan in full, or skip town without paying anything. The probability that Bonnie and Clyde repay is as follows:

| | Clyde pays | Clyde runs |
|-------------|------------|------------|
| Bonnie pays | .25 | .4 |
| Bonnie runs | .2 | .15 |

(a) (2 points) What are the expected values of the Honest Abe bond, Bonnie bond, and Clyde bond?

(b) (3 points) What are the variances of the Honest Abe bond, Bonnie bond, and Clyde bond?

QUESTION 1 CONTINUES ON THE NEXT PAGE.

CONTINUATION OF QUESTION 1.

(c) **(2 points)** What is the covariance of the Bonnie and Clyde bonds?

(d) **(3 points)** Deciding to diversify, you buy 30% of the Honest Abe bond, 60% of the Bonnie bond and 10% of the Clyde bond. What is the expected value and variance of this portfolio?

Question 2 (20 points)

Consider the following two assets:

- Asset A's expected return is 6% and return standard deviation is 42%.
- Asset B's expected return is 2% and return standard deviation is 17%.

The correlation between assets A and B is -0.1.

The table below indicates the expected return and the return standard deviation for portfolios that put weight w on asset A and weight $1-w$ on asset B.

| Weight | Expected Return | Return Standard Deviation |
|---------|-----------------|---------------------------|
| $w=0.8$ | 5.2% | |
| $w=0.5$ | | 21.85% |
| $w=0.1$ | | 15.46% |

(a) **(3 points)** Complete the above table.

(b) **(4 points)** Draw a careful sketch of the portfolio frontier associated with assets A and B. Clearly indicate assets A and B as well as the three portfolios from the above table. Moreover, clearly label the region that corresponds to selling asset A short by "SHORT A" and the region that corresponds to selling asset B short by "SHORT B".

(c) **(2 points)** For an investment of \$50,000, how much money is invested in each of the two assets for $w=0.5$? What is the return standard deviation of your portfolio in \$?

(d) **(4 points)** Repeat part (c) for $w=-0.5$? Very briefly describe the procedure to create this negative weight on asset A.

QUESTION 2 CONTINUES ON THE NEXT PAGE.

CONTINUATION OF QUESTION 2.

From now on, consider a third asset C, whose risk-free return is 3%, and ignore asset B entirely.

- (e) **(3 points)** Draw a careful sketch of the portfolio frontier associated with assets A and C. Clearly indicate assets A and C. Moreover, clearly label the region that corresponds to selling asset A short by “SHORT A” and the region that corresponds to selling asset C short by “SHORT C”.
- (f) **(2 points)** In a portfolio that puts weight v on asset A and weight $1-v$ on asset C, find v such that the return standard deviation of the portfolio equals 63%?
- (g) **(2 points)** Considering again portfolios with weight v on asset A and weight $1-v$ on asset C, what is the range of v such that the expected return of the portfolios is negative?