

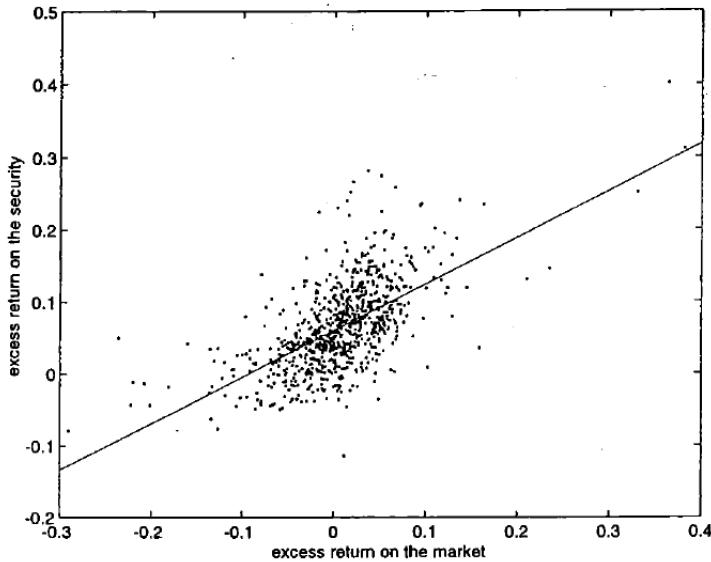
# INVESTOR (Jensen and Fontanier)

## Homework Assignment 3

Please note:

- Do the homework in your small, 4-person learning team.
- The homework covers Lecture Note 5; you should therefore review that lecture note before attempting the questions.
- Submit your answers through the “Assignments” tab on Canvas. You need only submit one copy of the assignment per learning team. Write on the cover page the team number (e.g., Blue 4b) and the first and last names of the people in the team.
- Please use the file name structure “cohort\_group\_homeworknumber.pdf” (e.g., “blue\_4b\_HW1.pdf”) for your submission.
- Make sure that the assignment you submit is formatted for easy printing.

1. This question is about the CAPM.
  - (a) What is the exact definition of the beta,  $\beta$ , of a stock?
  - (b) In practice, we run a regression to compute  $\beta$ . Explain precisely which regression you would run to compute the beta of a stock.
  - (c) The CAPM says that stocks with higher betas should earn higher average returns because they are riskier. Explain carefully the intuition for why stocks with higher betas are riskier.
2. The following diagram, which is being used to figure out the beta of a stock, is a scatter plot of excess returns on the stock against excess returns on the market. The straight line is the best-fit line through the points.



- (a) Explain what is meant here by “excess” returns.
- (b) Use the diagram to obtain an estimate of the stock’s beta. Is there any evidence from the diagram that the historical average return on the stock was different from what the CAPM would have predicted? Indicate what this evidence is.
- (c) When we studied risk-reward analysis, we measured risk using standard deviation  $S$ , or variance  $S^2$ . When we studied the CAPM, risk was measured using something different, namely beta,  $\beta$ . When you are thinking about the risk of a stock, does one of the two measures make more sense than the other? Explain.

3. Suppose the CAPM holds and you have the following information:

Asset	$E(\tilde{r})$	$S$
A	9%	10%
B	4%	8%
C	11%	14%
Market	9%	10%
T-Bills	4%	0%

- (a) Which of A, B, or C has the most systematic risk?  
(b) Which has the most idiosyncratic risk?