

ECONOMICS 7344, Spring 2009

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HOMEWORK 6. Due Monday March 30. (The first question is harder and I suggest you start on this asap. The other questions are fairly standard questions in the CAPM-model, which we will cover Friday 3/27).

1. Romer 7.11. (7.9 in 2nd edition) (This homework builds on a very famous paper by Lucas and it is important that you try to understand the details—in other words, this will be assumed known for the exams. If you get stuck, see me in my office or email me!)
2. (7% of second core exam 2003.) Asset A and asset B exist for one period and their returns have identical covariances with the market return. The rate return of asset B has a variance that is twice as large as the variance of the rate of return of asset A. Which asset will—if the CAPM holds—have the highest expected rate of return?
3. Assume that the mean return on the market portfolio (ER_M) is 10% and that a safe asset exists with a return of 6%. Assume that the standard CAPM is true.
 - a) Let X is an asset whose payout is determined by you flipping a coin and paying 1\$ if head and nothing if tail. What is the return (R_X) to an investment in X?
 - b) Now let the return (R_i) to an asset be $R_i = .5 R_M + .5 R_X$. What is the expected value $E(R_i)$.
 - c) If the asset X now paid out 100\$, rather than just 1\$, in the case of heads, and still nothing in the case of tails. What would now be the answer to a)?
4. Assume that IBM stock has a mean return of 3% and a variance of 4, and that GM stock has a mean return of 8% and a variance of 9. Also assume that the covariance between IBM and GM stock is 1. Calculate the mean and standard deviation for portfolios that consist of IBM and GM stocks: do this for 0, 25%, 50%, 75%, and 100% invested in IBM. Sketch (by hand) the efficient frontier when these are the only assets available.