

Foundations of Financial Markets
C15.0002, Section 001
Stern School of Business, Summer 2007

PROJECT

Due Thursday June 21

In this project, you will learn how to use the internet to get financial data and use the data to make investment decisions. You will have all the tools you need to complete the project once we have covered the CAPM. Do not wait until we have covered the CAPM to start working. A majority of the time you will spend on this project will be spent in collecting and getting familiar with real world data. You should start collecting the data and getting familiar with it right away. The project is due on the last day of class, which is Thursday, June 21, **no late submission will be accepted.**

Description

As an investment manager, you have a client who believes in passive investing (see P248-P249 of BMK for the definition of passive investing). She tells you that she would be satisfied if she earned returns that correspond to the return on the S&P 500 Index (see P46 of the text for an introduction to the S&P 500 Index). She is interested in one of the following three index mutual funds:

1. Dreyfus S&P 500 Index Fund
2. Wells Fargo Equity Advantage Index Fund A (formerly Stagecoach)
3. Vanguard 500 Index Fund

She wants you to tell her which is the best index fund for her. Your goal is to determine which investment is best for your client given that her stated goal is to earn returns that correspond to the S&P 500.

Your Assignment

Using monthly historical data (returns) from July 1996 to Dec 2006, answer the following questions:

1. What is the Sharpe measure for each of the three funds?
2. What is the beta for each fund?
3. What is the Jensen measure for each fund?
4. Were your answers to questions (1)-(3) the same for all the funds? If not, given that all three funds are index funds designed to track the S&P 500, what characteristics of the funds would account for the differences in the answers?
5. As the client's investment manager, which of the three investments would you recommend? Why?

For questions (2), and (3), use the single index model (see equation 6.12 P. 185 of the text) where the **excess return** on the S&P 500 represents the market return.

Data Needed

You will need the following historical data: risk free rates, returns on the S & P 500 Index, and returns on the three index funds. For the risk free rates, you should use the three-month T-bill rate. This is available from the Federal Reserve Board of Governors. To get the data, go to the site of the Federal Reserve Bank of St. Louis at www.stls.frb.org, click on Economic Research., then Economic Data - FRED® , in the “Categories” click on Interest Rates. Click on the link named TB3MS, with title “3-Month Treasury Bill: Secondary Market Rate”.(There are three series with the same title, download the one with ‘M’ in the ‘Freq.’ column, which is the monthly series). Click on “Download Data” and save “TB3MS.xls” to your local computer. Use only data from July 1, 1996 to Dec 1, 2006. Note that the rates are reported using the bank discount convention. To get non annualized monthly risk free rates, first convert the rate from a percent to a decimal. Then use the formula

$$\left(\frac{1}{1 - r_{BD} \frac{90}{360}}\right)^{1/3} - 1 \quad (1)$$

For the return on the S&P 500, here is a gift: the data will be available on the course page at <http://pages.stern.nyu.edu/~adesouza/teaching/>. The data are monthly (non annualized) holding period returns computed using

$$HPR_t = \frac{P_t + D_t}{P_{t-1}} - 1 \quad (2)$$

where P_t is the index level at the end of month t , and D_t is the dividend paid out during month t .

You will have to download the returns on the three mutual funds from Yahoo! Finance one at a time. Go the Yahoo finance webpage: <http://finance.yahoo.com/>, type in the ticker symbol in the box at the top of the page, where it says “Enter symbols” - PEOPX for Dreyfus, - SFCSX for Wells Fargo, - VFINX for Vanguard, then click go. Click “Historical Prices” on the left of the page, and enter June 1, 1996 ¹ as the start date and Dec 31, 2006 for end date. Choose the downloading frequency to be “monthly”, and click “Get Prices”. The table of the monthly price data for the stock during the specified period will then be listed, along with some dividend information. Download the data to your local drive by clicking the “Download to Spreadsheet” link right below the table. This will save the price information to a spreadsheet. To compute holding period returns, we also need dividends information. On the same web page where you got monthly price data, choose “Dividends only”, change the starting date to July 1, 1996 and end date to Dec 31, 2006. Then click on “Get Prices”. Dividends and corresponding dividend payout date are listed. Download the data to your computer. When you open the spreadsheet of the price data that you just downloaded, you will see multiple columns of price data, “Open” is the price of the stock at the beginning of each date when the market just opens, “High” and “Low” stand for the highest and lowest price within each date, “Close” is the price at the end of the day before the exchange closes and the “Adj. Close” is the close price adjusted for dividend payment and stock split. Note that the trading volume(“Volume”) is always 0 just because investors do not directly buy and sell mutual funds on the exchange, instead the funds change hands with the company who manages the funds. The price we will use for this project is the “Close” price, which is the fifth column of

¹Notice this is June 1, not July 1, as otherwise.

the data. For the mutual funds, you need to compute the monthly returns using the price data and the dividend payouts in each month. Don't mess up with the time, the price you download is the end-of-month price, although the date column reads the beginning of month date. For example, the price of "Dec 2, 1996" is actually the price of "Dec 31, 1996", and you can verify this using daily data if you want. Use the formula I used above for the S&P 500 to compute returns. You should have 126 observations for each index fund.

Be careful: When you copy and paste the calculated returns from one column to another column, you should use "paste special" instead of "paste" (right click your mouse and you will see "paste special"). And choose to paste "values" only. Otherwise it will paste the formula that you used for calculating returns but change the input data to somewhere else.

What you should submit

1. A printout of your regression results for the single index model for each of the funds.
2. Your answers to the five questions above. For additional information and some hints, refer to Chapter 4, Chapter 6 and Chapter 19 of the text, and look at the web sites for each of the mutual funds.

Have Fun!