ECON 133 – Securities Markets – FALL 2010, UCSC

HOMEWORK # 4 (Due Friday Oct. 29, Beginning of Class)

This homework asks you to estimate CAPM and FAMA-FRENCH 3 FACTOR MODEL and answer the relevant questions. Read the instructions carefully.

Instructions:

1) Download the following MONTHLY data for 07/2001-09/2010 time period. Save each data file into a separate Excel file:

a) Fama-French Benchmark Factors from http://people.ucsc.edu/~vsushko/econ133.php/Fama_French200106_201009.xls

b) Monthly 1-month T-Bill rates from http://research.stlouisfed.org/fred2/categories/115

c) Prices of The Goldman Sachs Group, Inc. (GS) stock from http://finanace.yahoo.com

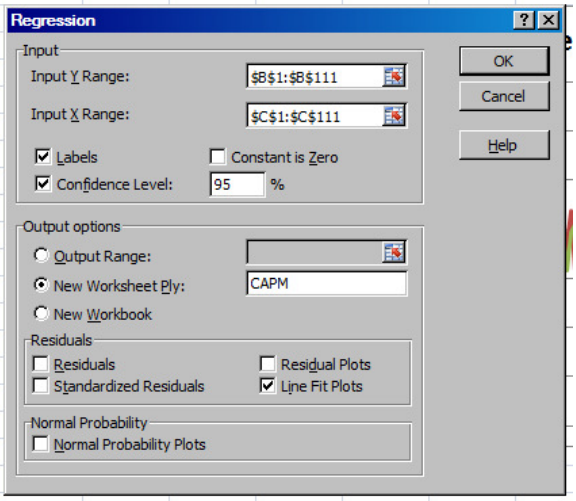
2) Using b) and c) construct the monthly excess return series of GS call it "Rgs-Rf". Remember you lose first month observation because you calculate returns.

3) Combine all data into one Excel worksheet with columns in the following order: *Time, Rgs-Rf, Rm-Rf, SMB, HML*. Make sure ALL UNITS AGREE. Make sure DATES AGREE. This is all the data you need. I suggest plotting *Rgs-Rf* and *Rm-Rf* against *Time* to visualize the data and make sure it is correct before you proceed to the next part.

4) Install Data Analysis ToolPak in Excel following these instructions: http://office.microsoft.com/en-gb/excel-help/load-the-analysis-toolpak-HP010021569.aspx

5) Estimate CAPM : in Data tab, click on Data Analysis, the click on Regression. Check the boxes in the regression window as shown below, call the new worksheet ply "CAPM":

	A	B	C	D	E
1	Time	Rgs-Rf	Rm-Rf	SMB	HML
2	200108	-7.27745	-6.37	1.96	2.48
3	200109	-14.252	-9.29	-5.75	-0.42
4	200110	7.000861	2.47	9.24	-2.18
5	200111	10.99875	7.64	1.63	3.3
6	200112	2.40405	1.52	5.85	1.14
7	200201	-7.96896	-1.44	1.8	-0.83
8	200202	-8.9444	-2.31	-1.86	2.98
9	200203	9.100894	4.31	4.73	1.75
10	200204	-15.1965	-5.27	4.53	2.02
11	200205	-6.01266	-1.38	-3.51	0.11
12	200206	-4.55058	-7.17	3.86	-1.14
13	200207	-1.80838	-8.25	-5.32	-4.54
14	200208	3.824399	0.42	-1.64	0.86
15	200209	-17.4227	-10.44	3.17	-2.45
16	200210	6.63388	7.9	-3.38	-0.48
17	200211	8.418507	6.01	4.26	10.32
18	200212	-15.7139	-5.82	-0.6	-2.11
19	200301	-0.99659	-2.51	0.76	-1.07
20	200302	0.765129	-1.79	-1.03	-1.9



Note that your Y-Range is *Rgs-Rf* and your X-Range *is Rm-Rf*. A regression output will appear in the new worksheet.

6) Repeat the Regression, but now for X-Range select THREE COLUMNS corresponding to your *Rm-Rf, SML*, and *HML* data. Call the New Worksheet Ply "FAMA-FRENCH 3-FACTOR", the output will appear in that worksheet. You are done with model estimation! You may have to play around with the plot, deleting residual series and inserting a trend line.

PROBLEMS

ANSWER THE FOLLOWING QUESTIOS USING CAPM REGRESSION OUTPUT:

1. What is the standard deviation of GS's excess return? (show calculations)
2. What is the standard deviation of the market's excess return? (show calculations)
3. What percentage of GS's total risk is explainable by the market? (show calculations)
4. What percentage of GS's total risk is "firm specific"? (show calculations)
5. What is GS's Alpha and Beta?
6. Interpret the statistical significance of the GS's Alpha and Beta; i.e., do you have confidence that the estimates are non-zero? Why?
7. What is the range for GS's Beta at the 95% confidence level?
8. Using the information so far, draw GS's Security Characteristic Line (SCL), label all relevant axes and slope. What is the interpretation of the slope of the SCL?

ANSWER THE FOLLOWING QUESTIOS USING FAMA-FRENCH 3-FACTOR MODEL (FF) REGRESSION OUTPUT:

9. Which model explains the variation of GS's excess returns better, CAPM or FF? (Explain by comparing a key statistic from the regression outputs.)
10. Does GS stock exhibit extra risk associated with "small caps"? (Explain by referring to the regression output)
11. Does GS stock exhibit extra risk associated with "high book-to-market value" firms? (Explain by referring to the regression output)
12. Based on CAPM and FF estimates for GS stock this time period, is there any merit to using FF? (Explain briefly)
13. Print and Attach the Regression Outputs (SUMMARY OUTPUT and ANOVA tables only) for both CAPM and FF.