Assignment 5

FIN 525, Spring 2019

Due: May 3rd, Midnight

1. Assignment details

In this assignment you will be asked to backtest the "asset growth" investment strategy. The strategy can be described as follows:

1. Every year t, at the end of June, sort firms based on the percentage growth in their total assets from year t-2 to t-1.
2. Short the 10% of firms with highest asset growth and use the proceeds to buy the 10% of firms with the lowest asset growth.
3. Hold these positions for one year, and then repeat steps 1 and 2.

Your task for this assignment is to backtest this investment strategy. Below are the steps you should follow to implement this backtest:

1. Using data from Compustat, calculate percentage growth in total assets (i.e. "asset growth") as "at" divided by lagged "at" minus 1.
    a. Keep only data from 1970 onwards, with positive total assets
    b. Also create a variable called "fperiod" which equals the year plus 1
2. Use PROC RANK to sort the Compustat firms into 10 portfolios (deciles) based on their asset growth, every year.
3. Get monthly returns from CRSP
    a. Exchange code ("exchcd") must be 1,2, or 3
    b. Share code ("schrcd") must be 10,11, or 12
    c. Returns must be larger than -1
    d. Also create a variable called "fperiod" which equals the year when the month is between 7 and 12 and the year minus 1 when the month is between 1 and 6.
4. Merge the monthly return data with the ranks from PROC RANK on permno and "fperiod".
5. Calculate monthly (equal-weighted) average returns for each of the 10 decile portfolios
6. Calculate the monthly return on the "asset-growth" strategy by subtracting the returns of decile 10 from the returns of decile 1
    a. You might want to use PROC TRANSPOSE for this
7. Calculate the average return of your 11 portfolios (the 10 decile portfolios and the spread portfolio from step 6) and the tstats associated with those average returns. Report the results in Table 1.
8. Calculate the risk adjusted returns (alphas) of your 11 portfolios and the tstats associated with those average returns. These alphas are the intercepts from regressing the excess returns on your portfolios on the market, SMB and HML factors from the Fama&French factors dataset. Report the results in Table 2.

2. Submission instructions

You need to submit your SAS code and a written report on D2L before the deadline. Please see the details below:

1. On D2L, please upload a SAS file containing the code you used to generate your results (click on the NAME of this assignment on D2L, not on the attachment. That should take you to a screen where you can upload files).
    a. Make sure you comment your code properly. It should be very clear what you are doing by just reading your comments.
    b. If your code does not compile properly (i.e. if the log shows errors) you will lose 10% of your points so please make sure you check your log every time you run your code.
    c. The title of this file should have the following format: <Last names of group members, separated by underscores>_Assignment05. So, for example, if I did the project together with your TA, our file would be titled "Ion_Beggs_Assignment05".

2. On D2L, please upload a written report (either Word of PDF document) which includes a description of your analysis:
    a. Your report should have the following structure:
        i. Intro: a paragraph or two about what this analysis will cover
        ii. Data: a paragraph about your data sources and the filters you put on it.
        iii. Results:
            1. Using the results in Table 1, do you find that the asset growth investment strategy as provided significantly positive returns in the past?
            2. Using the results in Table 2, do you find that the asset growth investment strategy as provided significantly positive risk-adjusted returns in the past?
        iv. Conclusion: Summarize the main findings of your analysis (1-2 paragraphs).
        v. Tables (properly titled).
        vi. Appendix1: the SAS code you used to produce your results
    b. From intro to conclusion (excluding tables, figures and appendix), the report should be no longer than 4 pages, Times New Roman, one and a half line spacing, 12 pt font.
    c. Tables should be exported and then formatted in excel (i.e. your SAS code should have a portion where you export results into excel). It is NOT OK to copy and paste SAS output.
    d. Make sure your graphs are properly labeled so that it is easy to understand what is being plotted and what the axes are.
    e. The formatting of your report accounts for 10% of your score. It needs to look professional and it needs to read as if you are explaining your results to your boss/client who may not know much about finance.
3. Please make one submission per group and make sure that the names of all the group members show up both in the SAS file and on the written report.

IMPORTANT: Please make sure you do not delete (of later modify) the data or code you used to produce your results. We might ask you to send it to us if we need to re-run your tests. Also, make sure you keep an electronic copy of the written report you hand in during class, just in case we lose your copy and need you to send us another one. If you have any questions regarding the instructions above, please email me at mihaiion@email.arizona.edu.