

FIN 517: Financial Analysis Software II: Stata and R

End Semester Take Assignment

Total Marks: 50

Instructions:

To solve the following questions, please download the excel file “Data” from LMS. In “Data” excel file, there are a total of 8 (eight) sheets.

Question 1: (To be performed in Stata)

(Marks: 30)

Identify whether systematic risk factors are important determinants of Oil and Gas sector stocks or if it's the firm specific information which is more relevant (briefly explain the results in the do file)? You can investigate this by employing the following regression specifications:

$$Ret = \alpha + B1 * MR - RF + B2 * Beta + B3 * Oil_Ret + B4 * Oil_Vol + Error$$

$$Ret = \alpha + B1 * MR - RF + B2 * SMB + B3 * HML + B4 * Beta + B5 * MV + B6 * BTPV + B7 * Oil_Ret + B8 * Oil_Vol + Error$$

$$Ret = \alpha + B1 * MR - RF + B2 * SMB + B3 * HML + B4 * WML + B5 * Beta + B6 * MV + B7 * BTPV + B8 * PR12 + B9 * Oil_Ret + B10 * Oil_Vol + Error$$

$$Ret = \alpha + B1 * MR - RF + B2 * SMB + B3 * HML + B4 * CMA + B5 * RMW + B6 * Beta + B7 * MV + B8 * BTPV + B9 * INV + B10 * PRF + B11 * Oil_Ret + B12 * Oil_Vol + Error$$

$$Ret = \alpha + B1 * MR - RF + B2 * SMB + B3 * HML + B4 * CMA + B5 * RMW + B6 * WML + B7 * Beta + B8 * MV + B9 * BTPV + B10 * INV + B11 * PRF + B12 * PR12 + B13 * Oil_Ret + B14 * Oil_Vol + Error$$

Where:

Ret = Oil specific stock returns of firms i.

MR-RF = Oil Specific Market Excess Returns

SMB = Oil Specific Size Factor (Small minus Big)

HML = Oil Specific value Factor (High minus Low)

WML = Oil Specific Momentum Factor (Winners Minus Losers)

CMA = Oil Specific Investment Factor (Conservative minus Aggressive)

RMW = Oil Specific Profitability Factor (Robust minus Weak)

Beta = Firm specific beta (Use past 3 years of data. It is calculated by regression the firms returns on market factor.)

MV = Firm specific market capitalization (in Millions)

BTPV = Firm specific book to price value

PR12 = Firm specific Average of past 11 months returns (i.e. 2 – 12)

INV = Firm specific investment (calculated by taking change in total assets)

PRF = Firm specific operating profit margin

Oil_Ret = Crude Oil returns

Oil_Vol = Standard Deviation of past 36 months crude oil returns.

(Following also needs to be done to solve the question in do file:)

- 1) Clean the dataset, reshape it, and making panel
- 2) Apply winsorization, outliers,
- 3) Calculate rolling beta by taking first 36 months & standard deviation by running this regression
$$ret = \alpha + B1 * MR - RF + error$$
- 4) Apply fixed effect regressions

Note: All work needs to be done in STATA do file. Furthermore, provide precise explanation in the do file.

Question 2: (To be performed in R)

(Marks: 20)

Using the factors and Crude oil data, estimate summary statistics and correlation table in R. Also, plot the data using ggplot2 library in R. Briefly explain the results in the script file.

Note: All work needs to be done in R Script file.

Submission Guidelines:

1. You are required to submit STATA do file and R script file only. It is your responsibility to make sure that both files run smoothly and there are no errors in both files. I have the excel file. I will run your code files on the data.
2. This is a take home exam. So, you can get assistance from books, internet and any other source that may be helpful.

Note: Please make sure that you upload both code files (STATA and R) on LMS before the deadline. The deadline will not be extended. Late submission may result in reduced marks.