

Introduction to Financial Econometrics 28th August 2019

Please answer to all questions

Allowed time 90 minutes

Family Name (Surname)	First Name	Student Number (Matr)

Please refer to the code **exam2019_08.R** that works on the dataset `ffdata.csv` generated in one of the first session of the course . The version available of the code just installs all relevant packages and loads the database, you will have to write the rest of the code (by referring to all codes seen over the course) to answer all questions. The pass level for the exam is 18 points. All marks above 18 will be rescaled to fit the Bocconi benchmark distribution.

Q1 (4 points)

Construct a subset of the data table "dataff" which contains observations on the variables **date,exret_mkt,RF, PR15,PR51,er_15, er_51,MOM**, for the sample 1982:1-2013:12. Please report the command lines that you use to this end

Q2 (6 points)

Indicate the Sharpe ratio of the market monthly returns, and of the monthly returns from investing in portfolio 15 and report the lines of code you have used to generate them

Q3 (8 points)

Define as `P_PR15` `P_MOM` and `P_MKT` the value over time of one dollar invested in 1982:1 respectively in PR15, in a momentum strategy and in the market index. Provide a time-series plot of the three series and a cross section plot of `P_PR15` and `P_MOM`. Report below the line of codes that you have used to generate the series and to produce the requested plots

Estimate a CER for the market and a CAPM for portfolio 15. Provide a test of the joint hypothesis $\alpha = 0, \beta = 1$ in the CAPM model. On the basis of the results of your regressions indicate the expected returns for the market and the risk adjusted and risk unadjusted expected excess returns for portfolio 15. Test for the validity of a single factor (MKT) model for the returns on portfolio 15 against a two-factor model (MKT and MOM). Are the risk adjusted expected excess returns for portfolio 15 different when a two-factor model is considered ?

[illegible]

Provide for each month from July 2014 to December 2014 the one-step ahead 5 per cent VaR for the excess returns on portfolio 15. Illustrate the model you have estimated and simulated to construct the (6-month) time-series of the VaR and indicate the number of violations of the VaR over the course of the semester considered and its average value.

This image shows a full page of primary-ruled notebook paper. It features ten sets of horizontal dashed lines for writing, each set bounded by two vertical solid lines that serve as margins. The margins are wider at the top and bottom of the page and narrower in the middle sections. There are no pre-written notes or drawings on the page.