Exercise 5

Consider the dataset USSML.XLS which contains, in Excel format, retrieved from Datastream and from the website of Federal Reserve of St.Louis(http://research.stlouisfed.org/fred2/), monthly and daily time-series data for interest rates stock prices and some macroeconomic variables, over the sample period 1985:1-2007:12.

USSP500PEIBES: Price-Earning ratio for the US SP 500 index based on future(1-year ahead) expected earnings (source IBES);

USSP500: US SP 500 index;

GS10: 10-Year US Government Bonds;

FEDFUNDS: Effective Federal Funds Rate;

CPIAUSL: Consumer Price Index For All Urban Consumers: All Items;

TCU: Total Capacity Utilization for the US economy;

US3MTB: US 3-month Treasury Bills;

CBOEVIX: implied volatility in SP 500 options (Chicago Board of Trade)

1) Estimate over the sample 1985:1-1996:12 the Fed Model and replicate the (possible subset of) the results reported in Exhibit 3 of the Lander et al. paper.

2) Given estimation of the model. Simulate the returns and the cumulative returns over the sample 1997:1-2007:12 of a portfolio allocation rule that gives weight 1 to shares when predicted excess retunr are positive and weight 1 to the safe asset when predicted excess returns are negative. Compare the performance of this strategy with that of a buy and hold strategy.

3) Augment the FED model with a GARCH structure. Given the estimation of this model over the sample 1985:1-1996:12. Use filtered historical simulation (bootstrap) to derive the full distribution of one-period ahead returns. USe also Monte-Carlo simulation to achieve the same results.

4) Use the full distribution of returns to devise alternative portfolio allocation strategies over the sample 1997:1 2008:12 and compare them with the Lander et al. rule.

5) Evaluate the performance of the FED model when estimated over the full sample and suggest some appropriate modification.