6th set GAUSS assignments Financial Econometrics

Add all additional procedures in your personal procedure file.

1. Conditional estimates ("Managed portfolios")

Write additional procedures to estimate the consumption based model, the Fama/French model and the CAPM with instruments. In the GAUSS file `instruments.fmt` you find the two instruments used by Cochrane(JPE 1996). In the first column you find the term spread (yield on long term government bonds less yield on 3-month Treasury bills) and in the second column you find the dividend/price ratio of the equally weighted NYSE portfolio. Instead of using the d/p ratio directly, use $1 + 100 \times [(d/p) - 0.04]$ to keep the scale of the moments comparable. The moment conditions if you use excess returns are:

$$g_T(b) = \begin{bmatrix} E[m_{t+1}R^{e,1}_{t+1}] \\ \vdots \\ E[m_{t+1}R^{e,10}_{t+1}] \\ E[(m_{t+1}R^{e,1}_{t+1})z^1_t] \\ \vdots \\ E[(m_{t+1}R^{e,10}_{t+1})z^1_t] \\ E[(m_{t+1}R^{e,1}_{t+1})z^2_t] \\ \vdots \\ E[(m_{t+1}R^{e,10}_{t+1})z^2_t] \end{bmatrix}$$

where z^1_t is the term spread and z^2_t is the dividend/price ratio.

Hint: If excess returns are used you need an additional moment restriction to identify the parameters. This moment restriction follows directly from the fact that $E(mR^F) = 1$.

2. Plot the average excess return vs. predicted excess return

Estimate and compare the different asset pricing models according to how well the predicted returns fit the realized returns.
The predicted returns R^i for each return decile can be calculated from

$$E(R^i) = \frac{1 - cov(m, R^i)}{E(m)}$$

Predicted excess returns can be computed as:

$$E(R^{e,i}) = -\frac{cov(m, R^{e,i})}{E(m)}$$

Use the procedure which returns the SDF series together with the matrix of returns to compute the predicted mean returns for each return decile. Further, calculate the realized mean returns $\bar{R}^i$ or $\bar{R}^{e,i}$, respectively, for each return decile and collect them in a vector. Plot the predicted mean returns on the x-axis versus the realized mean returns on the y-axis. Draw an additional 45° line to provide an illustration how well the model fits the data. (*Look up the graphics syntax in the example program provided in* `gmmprocs.src`)