# EF4822 Financial Econometrics Problem Set 2

Please submit in groups and write out the names of each groupmate. If R programming is used, please attach the R commands. The data files needed in this problem set are uploaded into the same Canvas folder as this file.

Note on online submission: Any file format is accepted as long as it is clear to read. PDF and Word file format are preferred. You could scan, take photos, or type.

1. Suppose that the simple return of a monthly bond index follows the model

*rt* = 0*.*02 + *at* + 0*.*2*at*−2*,*

where *at* is a white noise series with mean zero and standard deviation *σa* = 0*.*025. What are the mean and variance of the return series *rt*? Compute the lag-1 and lag-2 autocorrelations of *rt*. Assume that *a*100 = 0*.*01 and *a*99 = −0*.*02. Compute the 1-step-ahead and 2-stepahead forecasts of the return series at the forecast origin *t* = 100. Compute the associated forecast errors and the standard deviations of the forecast errors.

1. Suppose that the daily log return of a security follows the model

*rt* = 0*.*01 + 0*.*2*rt*−2 + *at,*

where *at* is a white noise series with mean zero and variance 02. What are the mean and variance of the return series *rt*? Compute the lag-1 and lag-2 autocorrelations of *rt*. Assume that *r*100 = −0*.*01, and *r*99 = 0*.*02. Compute the 1-step-ahead and 2-step-ahead forecasts of the return series at the forecast origin *t* = 100. Compute the associated forecast errors and the standard deviations of the forecast errors.