

# Assignment 5

FA-542

Due: December 7, 2023

## **Problem 1** (100pt)

The Federal Reserve Bank of St. Louis publishes selected interest rates and U.S. financial data on its website: <http://research.stlouisfed.org/fred2/>. Consider the monthly 1-year (DGS1) and 10-year Treasury (DGS10) constant maturity rates from January 1962 through December 2021; see the file **homework05.csv**. The rates are in percentages. Let  $c_t = r_t - r_{t-1}$  be the change series of the monthly interest rate  $r_t$ .

- (i) Construct single time series autoregressive models for the single time series  $c_t^1$  and  $c_t^{10}$ .
- (ii) Build a *bivariate* autoregressive model for the two change series.
- (iii) Transform the constructed bivariate model into a structural form.
- (iv) Briefly discuss the implications of the vector autoregressive model and compare with the single time series models.