1 Question 1: Structural VAR for the US

1. Estimate a four-variable VAR(6) model for the US using unemployment, inflation, money growth and the Federal Funds rate using the data stored in **Question1.wf1**. (**use the sample period 1970m1-2008m12**)

2. Identify the monetary policy scheme using a Cholesky decomposition and compute the impulse responses.

3. How do the results for impulse responses compare to a Cholesky decomposition when the following identification scheme is used?

$$
\begin{pmatrix}
1 & 0 & 0 & 0 \\
\tilde{A}_{12} & 1 & 0 & 0 \\
\tilde{A}_{13} & \tilde{A}_{23} & 1 & \tilde{A}_{43} \\
0 & 0 & \tilde{A}_{34} & 1
\end{pmatrix}
\begin{pmatrix}
e_{\pi_t} \\
e_{y_t} \\
e_{M_t} \\
e_{R_t}
\end{pmatrix}
=
\begin{pmatrix}
b_1 & 0 & 0 & 0 \\
0 & b_2 & 0 & 0 \\
0 & 0 & b_3 & 0 \\
0 & 0 & 0 & b_4
\end{pmatrix}
\begin{pmatrix}
u_1 \\
u_2 \\
u_{MD} \\
u_{MS}
\end{pmatrix}
$$

4. Estimate a bi-variate VAR using unemployment change and (monthly) money growth (**use the sample period 1990m1-2008m12**). Impose the long run restriction that only supply shocks have permanent effects on unemployment and estimate the impulse response functions in this scheme. Calculate the historical decomposition of the change in unemployment in terms of the two shocks.

2 Question 2: Conditional forecasts from a VAR model

The file question4.wf1 contains quarterly data on UK GDP growth (DGDP), UK inflation (INF), the bank rate (BANKRATE) and house price inflation (DHP)

1. Estimate a VAR(2) model using GDP growth, inflation and the bank rate over using the full sample until 2010Q4. Construct a forecast for the three variables until 2011Q4.

2. Assume that the bank rate will be fixed at 0.5% over 2011. Re-calculate the forecast using this conditioning assumption

3. Repeat 2 by use a stochastic simulation and calculate the confidence intervals to the forecast

3 Question 3: Structural VAR for the US with Sign Restrictions

1. Estimate a three-variable VAR(6) model for the US using unemployment, inflation and the Federal Funds rate using the data stored in **Question1.wf1**. (**use the sample period 1970m1-2008m12**)

2. Identify a monetary policy shock using **sign restrictions** and compute the impulse responses. Use the A_0 matrix:

$$A_0 = \begin{pmatrix} + & x & x \\ - & x & x \\ + & x & x \end{pmatrix}$$

3. Identify a monetary policy shock as well as a demand shock using **sign restrictions** and compute the impulse responses. Use the A_0 matrix:

$$A_0 = \begin{pmatrix} + & + & x \\ - & - & x \\ + & - & x \end{pmatrix}$$