

Queen Mary, University of London

ECM056 Empirical Macroeconomics

2011/2012

Exercise list 3

The aim of this exercise is to evaluate forecasts of UK CPI inflation from oil prices and unemployment using autoregressive distributed lag models. The Philips curve suggests that unemployment should have predictive power for inflation, that is, high unemployment anticipates low inflation. There is a large literature on the effect of oil prices in the macroeconomy. In general, high oil prices anticipate high consumer inflation. The Eviews workfile exerc3.wfi has three UK quarterly time series. unem is the seasonally adjusted rate of unemployment. cpi is the consumer price index sampled quarterly. oil is the price in dollars of an oil barrel (Texas intermediate).

1. Compute CPI inflation (Y/Y growth rate), that is, $\pi_t^4 = 100(\log(CPI_t) - \log(CPI_{t-4}))$ and the oil price Y/Y growth rate ($oil_t^4 = 100(\log(Price_t) - \log(Price_{t-4}))$). Compute also the quarterly inflation at annual rates: $\pi_t^1 = 400(\log(CPI_t) - \log(CPI_{t-1}))$.

The in-sample period is from 1988Q1 up to 2009Q4, and the out-of-sample period is from 2010Q1-2011Q4. We assume that the coefficients of the forecasting model are fixed during the out-of-sample period. We also assume that the ADL forecasting model is estimated as: $\pi_t^4 - \pi_{t-4}^4 = \beta_0 + \beta_1 \pi_{t-4}^1 + \beta_2 x_{t-4} + \epsilon_t$, where the variable x is either the growth rate of oil prices or inflation.

2. Compute the forecasts for the period 2010Q1-2011Q4 as follows. (i) estimate the ADL forecasting model by OLS using the unemployment rate as the x variable using the sample from 1988 up to 2009Q4. (ii) After the estimation, copy the estimates using “view, representations” and use “genr” to create the forecasts for the 2010Q1-2011Q4 period from $\hat{\pi}_t^4 = \pi_{t-4}^4 + \hat{\beta}_0 + \hat{\beta}_1 \pi_{t-4}^1 + \hat{\beta}_2 x_{t-4}$. (iii) repeat steps (i) and (ii) using oil as the x variable.

Use the random walk also as a competing forecast, that is, $\hat{\pi}_t^4 = \pi_{t-4}^4$.

3. Compare the forecast accuracy using the mean squared error of the three competing forecast: (i) the random walk; (ii) the ADL model with oil; and (iii) the ADL model with unemployment. Which one is the most accurate forecasting model? What can you say about the usefulness of the Philips curve in forecasting?