2009-07-27

PRESS RELEASE

Evaluating a monetary business cycle model with unemployment for the euro area

by Nicolas Groshenny

NBB Working Paper No 173 - Research Series

This paper estimates a DSGE model for the euro area.

This model borrows many frictions from the Smets-Wouters model but features additional labour market frictions. The estimation methodology called Spectra Matching looks for parameter values that minimise the distance between the model spectrum and the data spectrum.

The paper first determines the spectral densities of the data and finds a single peak of 26 quarters for the yearly growth rates of output, consumption, investment and wages, meaning that the business cycle present in these variables is 6.5 years long, while inflation and interest rates which are trending downwards over the sample period have decreasing spectra.

The vacancy/unemployment ratio has the largest variance which comes from business-cycle and low frequency-cycles. Next, the estimation tries to find parameter values that fit the variances of the variables at these frequencies. Having estimated the model, one can compute the spectral densities of the seven endogenous variables (the yearly growth rates of real output, real consumption, real investment, real wages, the annual inflation rate, the short-term nominal interest rate and the vacancy/unemployment ratio which summarises the tightness of the labour market) and compare them with those of the data.

The model does a good job except in the case of inflation, interest rate and investment growth. One can also decompose the spectral densities of the variables implied by the model in terms of the contribution of each of the seven shocks. From this analysis, it emerges that, according to the model, the price mark-up shock is the main driving force of business-cycle fluctuations in the euro area.

The paper then examines which parameters are important in generating these results. The very high degree of backward-lookingness in inflation and a very persistent and strong response of monetary policy to the inflation gap are the main propagation mechanisms.

Communication
National Bank of Belgium Ltd.
boulevard de Berlaimont 14
1000 Brussels
phone + 32 2 221 46 28
www.nbb.be
Company's number:
0203.201.340 – RLP Brussels