Considerations on the validity of NAIRU for an economy in transition - Romania's case

ANDREI TUDOREL *(Bucharest Academy of Economic Studies, Romania, andreitudorel@yahoo.com)*
ANDREA ILUZIA IACOB *(Bucharest Academy of Economic Studies, Romania, aiacob@ase.ro)*
STELIAN STANCU *(Bucharest Academy of Economic Studies, Romania)*
ALINA GEORGIANA PROFIROIU *(Bucharest Academy of Economic Studies, Romania)*
CLAUDIU HERTELIU *(Bucharest Academy of Economic Studies, Romania, claudiu.herteliu@gmail.com)*

Using quarterly data series recorded for Romania for various macroeconomic variables such as the inflation rate, the unemployment rate, the exchange rate leu (national currency) per euro, the growth rate of labor productivity, etc. we try to find answers for the following questions: 1) Which is the optimal level of inflation for a country in transition, 2) Which are major causes that lead to inflation on long term for an economy in transition. To find the answers at these questions we'll use VAR methods.
To determine the cyclical component of inflation and unemployment, in this paper will be applied two methods: Hodrick-Prescott (HP) (Harvey (1985), Morley (2002)) and Beveridge-Nelson (BN) (Beveridge-Nelson (1981).
In the case of HP filter, used to determine the permanent component (TR_i) of the series (y_i), the main problem is to minimize the series' variance around permanent component:

$$\sum_{t=1}^{T}(y_t - TR_t)^2 + \lambda\sum[(TR_{t+1} - TR_t)^2 - (TR_t - TR_{t-1})^2], \lambda \in R. \quad [1]$$

For the two data sets used is chosen a value of the parameter: $\lambda = 14400.$
For BN filter is considered the series $y_t \to I(1),$ which allows the representation:

$$\Delta y_t = \alpha + C(L)\varepsilon_t, \quad [2]$$

where: $\varepsilon_t \to N(0,\sigma_\varepsilon^2)$ and $C(L)$ is a first degree polynomial, defined by the following equality: $C(L) = C(1) + (1-L)B(L).$ This equality is derived from Taylor series' expansion of the $C(L).$ polynomial.
By the integration (2) we obtain the following results:

$$y_t = C_t + TR_t, \quad [3]$$

where the cyclical component is $C_t = B(L)\varepsilon_t$ and the component $TR_i = t\alpha + C(1)\sum_t \varepsilon_t$ represents the series' trend, which is a sum of a deterministic and a stochastic component. This one is satisfying the following recurrence relation:

$$TR_i = TR_{i-1} + \alpha + C(1)\varepsilon_t. \quad [4]$$

Using specific methods we analyze the causal relationship that exists between the two variables. For this purpose we apply the EG (Engel-Granger) test for the initial data series, for the un-cyclical series and for the corrected inflation rate.

Keywords: NAIRU, cointegration, inflation, unemployment