"Inflationary Expectations and the Demand for Money: The Greek Experience"

Another Comment

By Gregor W. Smith, Oxford

In their paper on the demand for money in Greece *Brissimis* and *Leventakis* (1981) (hereafter B - L) consider an equilibrium money demand of the form

(1) $$M_t^* = a_0 + a_1 Y_t + a_2 P_t + a_3 \dot{P}_t^e$$

where M is nominal money, Y is income, and P and $\dot{P}^e$ are the price level and the expected rate of inflation respectively. *B - L* consider two alternative representations of the unobservable expected rate of inflation. Their treatment of rational expectations has been discussed by *Himarios* (1983). This note argues that their treatment of adaptive expectations is in error.

The problem can be illustrated using B - L's equations (2), (4), and (7):

(2) $$M_t - M_{t-1} = \lambda (M_t^* - M_{t-1}) + v_t$$

(4) $$M_t^* = a_0 + a_1 Y_t + a_2 P_t + a_3 \dot{P}_t^e + e_t$$

(7) $$\dot{P}_t^e - \dot{P}_{t-1}^e = \mu (\dot{P}_t - \dot{P}_{t-1}^e) + u_t$$

Here error terms have been added to each equation. Equations (2) and (7) characterize partial adjustment and adaptive expectations respectively.

Combining (2), (4) and (7) gives

(10) $$\begin{aligned} M_t = {} & \mu \lambda a_0 + \lambda a_1 Y_t - (1 - \mu) \lambda a_1 Y_{t-1} + \lambda a_2 P_t \\ & - (1 - \mu) \lambda a_2 P_{t-1} + \mu \lambda a_3 \dot{P}_t \\ & + ((1 - \lambda) + (1 - \mu)) M_{t-1} - (1 - \lambda)(1 - \mu) M_{t-2} \\ & + \lambda a_3 u_t + \lambda e_t + v_t - (1 - \mu) \lambda e_{t-1} - (1 - \mu) v_{t-1} \end{aligned}$$

Assume first that the error terms in (2), (4) and (7) are zero-mean, serially independent processes. In other words, the model is correct. Then *B - L*'s

equation (10), the equation to be estimated, has a moving average error term and least squares yields inconsistent estimates of the parameters. The non-linear, iterative, estimation procedure that B - L employ to identify the parameters in (10) does not avoid this problem.

An alternative is to assume that the composite error term in (10) is white noise. In this case least squares estimation is appropriate. However this assumption implies that the error terms in (2) and (4) follow first order auto-regressions as follows:

(11)
$$v_t = (1 - \mu) \, v_{t-1} + w_{1t}$$
$$e_t = (1 - \mu) \, \lambda \, e_{t-1} + w_{2t}$$

where w_1 and w_2 are white noise. But there is no reason why the adaptive expectations parameter, μ, should appear in the partial adjustment and equilibrium error terms.

This problem is well-known in the literature on partial adjustment – adaptive expectations (PAAE) models.[1] In B - L's paper the estimation method is inconsistent with the theory.

Bibliography

Brissimis, S. N. and *Leventakis,* J. A. (1981): Inflationary Expectations and the Demand for Money: The Greek Experience. Kredit und Kapital. 14, 561 - 572. – *Doran,* H. E. and *Griffiths,* W. E. (1978): Inconsistency of the OLS Estimator of the Partial Adjustment – Adaptive Expectations Model. Journal of Econometrics. 7, 133 - 146. – *Himarious,* D. (1983): "Inflationary Expectations and the Demand for Money: The Greek Experience." A Comment and Some Different Results. Kredit und Kapital. 16, 253 - 264. – *Thornton,* D. L. (1982): Maximum Likelihood Estimates of a Partial Adjustment – Adaptive Expectations Model of the Demand for Money. Review of Economics and Statistics. 64, 325 - 329. – *Waud,* R. N. (1968): Misspecification in the Partial Adjustment and Adaptive Expectations Model. International Economic Review. 9, 204 - 217.

---

[1] See for example Waud (1968), Doran and Griffiths (1978), and Thornton (1982).