

Time elements and oscillatory fluctuations in the Keynesian macroeconomic system

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Abstract:

In this paper, we discuss the relationship between three time lags (the consumption lag, the investment decision lag and the gestation lag) and oscillatory economic fluctuations in the Keynesian IS-LM system. We first confirm that in the absence of time lags, the monotone convergence to the unique equilibrium is observed. Next, we demonstrate that, in the Keynesian IS-LM system, in the existence of the investment decision lag and the gestation lag, oscillatory fluctuations are generated around the equilibrium if the gestation lag is relatively long, while in the existence of the consumption lag and the gestation lag, oscillatory behaviors may not occur. Further, we show that the local asymptotic stability of the equilibrium is lost if the gestation lag is long enough. Consequently, we conclude that the existence of time lags may be one of the major causes of oscillatory fluctuations and instability in the macroeconomic system.

Keywords: Keynesian Economics, Delay Differential Equations, Oscillations, Time Lags