Stationarity of Autoregressive Processes with Endogenous Regime Switching and Asymptotic Properties of the Maximum Likelihood Estimator

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Abstract

Markov regime switching and its incorporation into autoregressive models have become a popular framework in econometric times series analysis. In most literature, nevertheless, the Markov chain determining regimes is assumed to be completely independent from other parts of the model, which is intuitively unrealistic. This paper takes endogeneity in regime switching into consideration and derives stationarity conditions for the model. Moreover, in contrast to the empirical developments using Markov switching models, statistical issues regarding asymptotic properties of the maximum likelihood estimator (MLE) have been ignored until recently. We show the consistency and the asymptotic normality of the MLE in the autoregressive model with endogenous regime switching.

Keywords: endogenous regime switching; autoregressive model; asymptotic properties; maximum likelihood estimator; stationarity

JEL classification: C13, C22

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