

Large-dimensional cointegrated threshold factor models

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Abstract

In this paper we study large-dimensional cointegrated threshold factor models. In particular, our interest focuses on the development of threshold vector error-correction models (TVECM) and band vector error-correction models (BVECM) to account for nonstationarity and nonlinearity in large-dimensional data sets. Linearity is frequently contested by economic theory. For example, in a recession, unemployment rates may experience a more rapid increase compared to the decrease in an economic expansion. Stock markets tend to respond more to negative news as opposed to positive news. The concept of asymmetric adjustment relaxes the linearity assumption, allowing for changes in financial or macroeconomic variables to occur differently in different regimes, motivating in this way the development of TVECM. Moreover, it is also important to consider that in certain scenarios, a discrete adjustment process might be more appropriate. In this context, the error correction term, in different regimes, turns on and off. This is explicitly modeled as a threshold model, where series are cointegrated only if they deviate too significantly from the equilibrium (BVECM). This approach has been found useful to model, for instance, policy rules and fixed adjustment costs. In this paper we discuss the asymptotic properties of these models. We also provide Monte Carlo simulation exercises and an empirical application to illustrate the validity of the theoretical results and the empirical usefulness of these models.

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