

Predicting Turning Points in Business Cycles by Detection of Slope Changes in Dynamic Linear Model

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Abstract

A Bayesian statistical method to predict the turning points in the business cycle is presented under the assumption of causal priority of the leading composite index to the business cycle. The underlying process of the leading composite index is described by the dynamic linear model with random level and slope, where the random slope distorted by random shocks at each turning point. The turning point is detected by observing a large value of the posterior probability that one of the previous slope components following a random walk process has been interrupted by a random shock before the current time period. Besides, the intensity of the change causing an imminent turning in the business cycle is quantified by estimating the size of the random shock. The application result of this method to the U.S. leading composite index is comparable to the best result of the previous studies.

Keywords

Business cycle, Leading composite index, Turning point forecast, Dynamic linear model, Kalman Filter