Skewness Tests for the Common Factor Model

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Abstract

This paper proposes a testing procedure to identify whether an asymmetric property of economic time series is caused by the common factors or not. To this end, I apply the test of skewness proposed by Bai and Ng (2005) to the common factor model. I show that the statistics have the standard null distributions when N and T go to infinity under $T^{1/4}/\min(\sqrt{N}, \sqrt{T}) \to 0$ where T is the dimension of time period and N is the dimension of cross section. Simulations show that the finite sample properties of the proposed tests are almost the same as Bai and Ng (2005). We apply the proposed tests to U.S. macroeconomic time series and find that there are the skewed common factors. However, these are canceled out each other and observed macroeconomic time series behave symmetrically.

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