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Testing for Unit roots and Granger non-causality in time series with multiple structural breaks. An international stock markets application

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Abstract

In the current paper, we analyze the relationship amongst the dynamics of a group of selected stock indices using daily data. In order to that, we explore the statistical properties of the series, in particular the existence of breaks and unit roots. Two questions of interest are whether or not there are markets that lead the others and which are them. The concept of Granger causality, as a proxy of causality, enables us to address these issues. Moreover, knowing that a market helps to forecast the movements of another market index provides valuable information for traders. Also, this information is useful for improving the knowledge on financial crisis transmission channels. The existence of multiple structural breaks generates problems on the unit roots and Granger non-causality testing. Given that, we design procedures to lead with those issues.

Keywords: Time series, unit root, Granger causality, stock markets.

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