

[< back](#)

Spillover Effects in the Presence of Structural Breaks, Persistence and Conditioned Heteroscedasticity

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[< Previous](#)

Abstract

The intention of this article is to develop an instrument to overcome the limitations caused by traditional analyses and present a combined STR — Smooth Transition Regression model (EGARCH, STRIGARCH, and STR-FIEGARCH) to analyze the contagion effects of the 2008 financial crisis. The proposed instrument will aid the analysis of contagion and the impact of changes in long-term interest rates on the returns of international stock indices and forecasting, with special emphasis on the effects caused by structural breaks, persistence, and conditioned heteroscedasticity. The methodology begins with unit root tests with one and two structural breaks. In the second step, the asymmetry will be analyzed considering the STR models, which will determine the asymmetry relationship between interest rates and the long term, so that in a later step, these asymmetries will be used in the composition of a volatility estimation model, being based on the ARCH models: (i) EGARCH and (ii) FIEGARCH. This study provides a useful instrument based on modeling techniques to make the decision-making process more efficient and objective, providing a choice of instruments that assess the effect of changes in interest rates on stock market indices when influenced by falls, with structural data and better forecasting performance. The results show that the developed mixture models obtained better performance in predicting the effect or impact of changes in interest rates on stock market indices when influenced by structural breaks. STR and the ARCH family are useful instruments that make the decision-making process clearer and more objective when choosing instruments that assess the spillover effect of long-term interest rates on the profitability of international financial indices.

[< back](#)[conditioned heteroscedasticity](#) ▾ [persistence](#)**JEL:** C22, C53, C58, F65, G01, G15

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