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An asymmetric dynamic conditional correlation analysis of linkages of European financial institutions during the Greek sovereign debt crisis

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Abstract

This article employs the asymmetric dynamic conditional correlation (DCC) model to assess impacts of the recent sovereign debt crisis on the time-varying correlations of five European financial institutions holding large amounts of Greek sovereign bonds (National Bank of Greece, BNP Paribas, Dexia, Generali, and Commerzbank). Contrary to the results of preceding studies, we find significant increases in the correlations between several combinations of the financial institutions' stock returns after the inception of the sovereign debt crisis, indicating contagion effects. Moreover, our findings show that the parameter of the standardized negative residuals is statistically significant in the case of DCC estimates between two specific institutions. This suggests that the conditional correlation of stock returns between the two institutions is more significantly influenced by negative shocks than by positive innovations to return.

Keywords:

European sovereign debt crisis

financial contagion

dynamic conditional correlation

JEL Classification:

F30

G01

G15

Notes

1. Ghezzi, Pascual, and Engles (2011). This analyst report lists up the estimated top 40 holders of Greek government bonds and Greek debt.

2. We recognize that using daily closing price data may result in an underestimation of the correlations between stock markets with non-synchronous trading hours. Nonetheless, using monthly or weekly data, we would be constrained by much smaller samples, which may be inefficient, especially with time-varying parameter approaches such as the asymmetric DCC used in this study. See Martens and Poon (2001) for more detailed discussions on potential issues of using daily stock prices.