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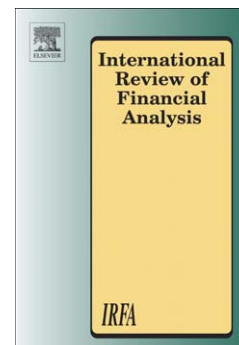
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The contagion effect in European sovereign debt markets: A regime-switching vine copula approach[☆]

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Abstract

Multidimensional dependence in financial markets has motivated the conception of copulas as a tool to analyze nonlinear connections. However, the dynamics generating the dependence structure is still considered unchanged, whether during turmoil or stable periods, and the curse of dimensionality prevents researchers from detecting the regime shifting that may connect financial markets. In this paper, we develop a tractable Markov regime-switching C-vine and D-vine under the symmetrized Joe-Clayton copula, capable of detecting lower and upper tail dependencies separately. Application is conducted on twelve government bonds, the U.S. and eleven European bonds belonging to the Eurozone. Results show that the regime-switching copula models explain the dynamics of data dependence better than the single-regime copula, which indicates the presence of a contagion effect. Furthermore, for Eurozone bond markets, the contagion remains in its high state since the global financial crisis of 2008 and European sovereign debt crisis of 2009, with a transmission path from core to stressed countries.

Keywords: Financial contagion, Markov chain, Regime-switching, Vine copula

JEL: G15, C34, C58

1. Introduction

The study of dependence in financial markets has motivated many researchers in the last decade, especially after the last U.S. born global financial crisis of 2008 and the Eurozone sovereign debt crisis of 2009. Indeed, dependency among financial assets is an important aspect in asset allocation, portfolio diversification, risk management, and *financial contagion*, which refers to crises transmission between countries. Alike Forbes and Rigobon (2002), we define the contagion as “*a significant increase in cross-market linkage after a shock to one country or group of countries*”, thereby the interdependence between financial markets differs during turmoil and normal periods.¹ Dewandaru et al. (2016) studied the shocks transmission mechanism across borders, and concluded the presence of two distinctive channels, pure and fundamental-based contagion. Either way,

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¹There are different definitions of contagion in the financial literature. While some researchers (*e.g.*, Allen and Gale, 2000) define it as a simple transmission of shocks across countries, others (*e.g.*, Kenourgios et al., 2011; Bekaert et al., 2014; Horta et al., 2016) specify it as a strengthen in that transmission.

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