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Author: Stefan Straetmans, Sajid M. Chaudhry

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Tail Risk and Systemic Risk of US and Eurozone Financial Institutions in the Wake of the Global Financial Crisis

Stefan Straetmans*[a] and Sajid M. Chaudhry[b]
[a] *School of Business and Economics, Maastricht University, The Netherlands*
[b] *School of Management, Swansea University, United Kingdom*

Highlights

1. We use extreme value analysis to estimate tail risk and systemic risk proxies
2. We compare tail risk and systemic risk both across time and across the Atlantic
3. Tail risk and systemic risk gradually increase over time for both continents
4. Tail risk and systemic risk is higher in the US than in Europe

Abstract

We evaluate multiple market-based measures for US and eurozone individual bank tail risk and bank systemic risk. We apply statistical extreme value analysis to the tails of bank equity capital losses to estimate the likelihood of individual institutions' financial distress as well as individual banks' exposure to each other ("spillover risk") and to global shocks ("extreme" systematic risk). The estimation procedure presupposes that bank equity returns are "heavy tailed" and "tail dependent" as identifying assumption. Using both US and eurozone banks allows one to make a cross-atlantic comparison of tail risks and systemic stability. We also assess to what extent magnitudes of tail risk and systemic risk have been altered by the global financial crisis. The results suggest that both tail risk and systemic risk in the US are higher than in the eurozone regardless of the considered sample period.

Keywords: Banking, Systemic Risk, Asymptotic Dependence, Multivariate Extreme Value Theory

JEL Classification: G21, G28, G29, G12, C49

1. Introduction

The banking and economic crisis that emerged in 2007 has reminded everybody that financial stability should not be taken for granted. The negative impact on the real economy has been smoothened, though, by the sustained efforts of central banks and national governments to stabilize the financial system. Thus, financial and systemic stability have regained central bankers' and supervisory authorities' attention as one of their top priorities.

This paper compares US and eurozone financial stability both from an individual bank risk as well as a systemic risk perspective. The cross-Atlantic perspective makes sense because banking consolidation and financial deregulation seem to have been stronger in the US than in the eurozone during the last 10 to 15 years (Group10, 2001). On the one hand, the removal of US regulatory barriers to universal and cross-state banking has led to the emergence of large and complex banking organizations (LCBOs) that have not only become "too big to fail" but also "too complex to fail". In contrast, the European banking market is still more fragmented despite the introduction of the single currency. Eurozone retail banking is generally less integrated than wholesale banking and banks' capital market-related activities. This relatively lower degree of European banking market integration may be due to cross-country legal and tax barriers, differing national supervisory rules, cultural differences or geographic distance (Berger et al., 2003; Heuchemer et al., 2009).

∗Corresponding author.
Email addresses: s.straetmans@maastrichtuniversity.nl (S.Straetmans), s.m.chaudhry@swansea.ac.uk (S.Chaudhry)