

Which Are the SIFIs?

A *Component Expected Shortfall (CES) Approach* to Systemic Risk *

Georgiana-Denisa Banulescu[†] Elena-Ivona Dumitrescu[‡]

October 2012

Abstract

In this paper we propose a *component approach* to systemic risk which makes it possible to decompose the risk of the aggregate financial system (measured by *Expected Shortfall, ES*) while accounting for the level of firm's characteristics. Developed by analogy with the *Component Value-at-Risk* concept (Jorion, 2007), our new, simple and parsimonious method to identify systemically important institutions, labeled *Component ES (CES)*, presents several advantages. First, it relies on higher frequency (daily) publicly available data, which incorporates useful information for forecasting systemic risks, and it encompasses the popular *Marginal ES* measure. It hence does not consider the liabilities (not available in daily) to assess the systemically riskiness of a firm as the SRISK (Engle and Brownlees, 2011) does. Second, it allows us to select the riskiest financial firms on the market by directly ranking them according to their riskiness. The larger the contribution, the more systemically important the institution. Most importantly, our measure can be used not only to assess the contribution of a firm to systemic risk at a precise date (in-sample), but also to forecast its contribution in a certain period (out-of-sample). An empirical application on a set of financial institutions similar to that employed by Brownlees and Engle (2011) ascertains the ability of *CES* to identify the most systemically risky firms during the 2007-2009 financial crisis.

- *Keywords* : Systemic Risk, Component Expected Shortfall, Marginal Expected Shortfall, Forecasting
- *J.E.L Classification* : C22, C53, G01, G32

*We thank Christophe Hurlin for very enlightening discussions and useful comments on a previous version of this paper. We also thank Olivier Scaillet, Bertrand Maillet and the participants at the 11th CREDIT conference in Venice, 2012. The usual disclaimers apply.

[†]LEO, University of Orléans and Maastricht University, email: georgiana.banulescu@univ-orleans.fr

[‡]European University Institute and LEO, University of Orléans, email: elena-ivona.dumitrescu@eui.eu