Measuring Systemic Risk: An International Framework*

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Abstract

We propose a *time* and *cross-sectional* methodology for estimating systemic risk in case of a Global (Regional) financial crisis. This quantity, denoted Global (Regional) Systemic Expected Shortfall (SES), is defined as the aggregate amount of capital that financial institutions need, in order to offset a certain fraction of liabilities, when in aggregate the Global (Regional) financial system is undercapitalized. Each financial institution's SES is a combination of three main components: the market capitalization, the total amount of liabilities and the appropriate capital adequacy ratios. We empirically study the joint combination of these components for a sample of 1981 financial institutions that belong to the main G-20 economies, screened at the beginning of December 2011. The findings of the paper are many: (i) We derive a parametric and a non-parametric generalized version of the Marginal Expected Shortfall (MES) able to take into account asynchronicity issues that arise in international analysis. (ii) We study the relationship between percentage variation of market capitalization and liabilities with leverage (LVG) and the (generalized) non-parametric MES, during a "demo" period of crisis (July 2007 to December 2008). (iii) We derive appropriate capital adequacy ratios for financial industries/subindustries able to take into account divergences across accounting standards. (iv) We compute each financial institution's SES in case of a Global (Regional) financial crisis, at the beginning of December 2011. (v) We compare several specifications of SES with an extended version of SRISK.

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