The Risk Map:  
A New Tool for Validating Risk Models  

Gilbert Colletaz*  Christophe Hurlin*  Christophe Pérignon**  

October 2012  

Abstract  

This paper presents a new method to validate risk models: the Risk Map. This method jointly accounts for the number and the magnitude of extreme losses and graphically summarizes all information about the performance of a risk model. It relies on the concept of a super exception, which is defined as a situation in which the loss exceeds both the standard Value-at-Risk (VaR) and a VaR defined at an extremely low coverage probability. We then formally test whether the sequences of exceptions and super exceptions are rejected by standard model validation tests. We show that the Risk Map can be used to validate market, credit, operational, or systemic risk estimates (VaR, stressed VaR, expected shortfall, and CoVaR) or to assess the performance of the margin system of a clearing house.  

JEL classification: G21, G28, G32  
Keywords: Financial Risk Management, Tail Risk, Basel III  
Companion Website: www.RunMyCode.org/CompanionSite/site2  

*University of Orléans, Laboratoire d’Economie d’Orléans, France. ** Deloitte - Société Générale Chair in Energy and Finance, HEC Paris, France. We are extremely grateful to an anonymous referee, John Cotter, Jorge Cruz Lopez, Laurent Frésard, Andras Fulop, Thomas Gilbert, Bertrand Maillet, Olivier Scaillet, and Stefan Straetmans, seminar participants at ESSEC, Free University of Berlin, HEC Paris, Maastricht University, Skema Business School, University College Dublin, University of Geneva, University of Glasgow, University of Lille 2, as well as to participants at the 2010 EconomiX Workshop in Financial Econometrics, 2011 Econometric Society European Meeting, 2011 French Finance Association Spring Meeting, 2011 SMU-ESSEC Symposium on Empirical Finance and Financial Econometrics, and 5th Annual Methods in International Finance Network Workshop for their comments. Pérignon gratefully acknowledges the financial support of the HEC Research Foundation. Emails: gilbert.colletaz@univ-orleans.fr, christophe.hurlin@univ-orleans.fr, perignon@hec.fr. Contact Author: Christophe Pérignon, Finance Department, HEC Paris, 1 Rue de la Libération, 78351 Jouy-en-Josas, France. Phone: +33 139 67 94 11.