

SPECIFICATION TESTS IN PARAMETRIC VALUE-AT-RISK MODELS

J. CARLOS ESCANCIANO

Indiana University, Bloomington, IN, USA

JOSE OLMO

City University, London, UK

Abstract

One of the implications of the creation of Basel Committee on Banking Supervision was the implementation of Value-at-Risk (VaR) as the standard tool for measuring market risk and of out-of-sample backtesting for banking risk monitoring. We stress in this article that the results derived from this exercise can be spurious if one does not carry out a previous in-sample specification test to determine the adequacy of the VaR model. We study in this paper specification tests that, unlike the existing ones, are able to control the type-I error probability. More concretely, we show that not taking into account the effect of estimating the parameters of the VaR model in the in-sample specification tests can lead to invalid inferences, which in turn may imply wrong conclusions about the out-of-sample backtesting procedures. The first aim of this article is to quantify the effect of estimating the parameters of the model and to stress its impact in specification tests, and the second is then to propose a corrected method taking into account such risk, and thereby to provide a valid econometric framework for measuring and evaluating market risk. The results are given for general dynamic parametric models and illustrated with a Monte-Carlo simulation for location-scale models and with an empirical application for *S&P500* Index.

Keywords and Phrases: Backtesting; Basel Accord; Model Risk; Risk management; Specification tests; Value at Risk.