Empirical Comparison of Extreme Value Theory Vis-À-Vis Other Methods of VaR Estimation Using ASEAN+3 Exchange Rates

DLSU Business & Economics Review, 20.2 (2011), pp. 9-22

14 Pages
Posted: 30 Jun 2015

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Date Written: June 1, 2011

Abstract

This study applies Extreme Value Theory in calculating Value-at-Risk (VaR) of portfolios consisting of foreign exchange exposures of ASEAN+3 countries. This paper addresses the issue that traditional VaR models assume normality of the return distribution. Empirical evidence confirms the stylized facts that financial asset returns are typically negatively skewed and fat-tailed. Moreover, risk management concerns itself with the distribution of the tails, or events in the extremes of the distribution. Estimation of magnitude and the likelihood of extreme events should be given greater attention than central tendency characteristics. Thus, this paper proposes the application of Extreme Value Theory in computing an "Extreme VaR" to directly focus on the behavior of the tail of return distribution. The modeling is done on daily exchange rates returns of ASEAN+3 countries from January 24, 2004 to January 31, 2010.

Keywords: Extreme Value Theory, Value-at-Risk, ASEAN 3, foreign exchange

JEL Classification: G11, G32

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