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Measuring Banking Systemic Risk Conditional Value-At-Risk and Conditional Coherent Expected Shortfall in Taiwan Using Vector Quantile GARCH Model

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Abstract : In this study, the systemic risk change of Taiwan's banking sector is analyzed during the financial crisis. The risk expose of each financial institutions to the whole Taiwan banking systemic risk or vice versa under financial distress are measured by conditional Value-at-Risk (CoVaR) and conditional coherent expected shortfall (CoES). The CoVaR and CoES are estimated by using vector quantile autoregression (MVMQ-CaViaR) with the daily stock returns of each banks included domestic and foreign banks in Taiwan. The daily in-sample data covered the period from 05/20/2002 to 07/31/2007 and the out-of-sample period until 12/31/2013 spanning the 2008 U.S. subprime crisis, 2010 Greek debt crisis, and post risk duration. All banks in Taiwan are categorised into several groups according to their size of market capital, leverage and domestic/foreign to find out what the extent of changes of the systemic risk as the risk changes between the individuals in the bank groups and vice versa. The final results can provide a guidance to financial supervisory commission of Taiwan to gauge the downside risk in the system of financial institutions and determine the minimum capital requirement hold by financial institutions due to the sensibility changes in CoVaR and CoES of each banks.

Keywords : bank financial distress, vector quantile autoregression, CoVaR, CoES
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