

The Role of Options Market in Discovering Risk during the Subprime Crisis

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The current paper examines how risk has discovered in the options and stocks markets around the recent sub-prime crisis when means of indicating risk were strongly desired. As the options markets explicitly price the risk of the underlying asset, the market is expected to take the major role in risk discovery. In the present article, we measure the risk by the moments of the return distribution. Volatility, skewness, and kurtosis are estimated from both stock and option prices to examine the markets' risk informativeness.

To the best of our knowledge, we are the first to study the informational role of options markets employing the implied moments in intraday basis. As the crisis has especially destabilized the banking sector, our focus of the study will be particularly on risk discovery of the stock price of global systemically important banks.

We compute the risk-neutral moments every five minutes from the options market and calculate the realized moments in same frequency from the underlying stock returns. The moment estimates obtained from option prices are derived by the methodology of Bakshi, Kapadia, and Madan (2003). By further utilizing information share approach, we find some evidence of the increasing role of options market in discovering risk after the crisis.

Information share estimates tell that the level of contribution in risk discovery by options market varies greatly over time. The role of risk discovery is switching between the two markets. In one day the risk discovery might solely take place in stock market, and in another day it might dominantly takes place in options market.

Our analyses in sub-periods show that the distribution of the information share has not been constant over time. The distribution has been shifted from the right tailed (mode in the lowest category) to the left tailed (mode in the highest category). The finding implies the transition of the risk discovery function from the stock market to the option market.

Our findings provide some evidence of the increasing importance of options market as a risk discovery function. Further we find that the market activity variables cannot explain the dynamics of the information shares.