A New Approach to Valuing Risk-neutral Moments from Option Prices

This paper proposes a new approach to valuing risk-neutral skewness and kurtosis from option prices that enjoys several advantages over existing approaches. The first advantage is the use of an exact integration method that overcomes the sensitivity of risk-neutral moments to small changes in the cubic and quartic contracts defined in Bakshi, Kapadia and Madan (2003). The second advantage is that it builds upon and extends elements of the Bali and Murray (2013) approach to obtain separate risk-neutral moments using out-of-the-money call and put options separately. The risk-neutral skewness thus inferred is positive (negative) for the right (left) tail of the risk-neutral distribution. Finally, the risk-neutral kurtosis extracted via our approach is significantly lower than that from extant approaches, suggesting much lower crash risk than hitherto assumed in the literature. This has important implications for Value at Risk computations for investors holding option portfolios and for the capital adequacy requirements of investment banks.

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