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John Hull , Alan White

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John Hull and Alan White*

Joseph L. Rotman School of Management
University of Toronto
105 St George Street
Toronto, Ontario
Canada M5S 3E6
Phone number: 416 978 8615

hull@rotman.utoronto.ca   awhite@rotman.utoronto.ca

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ABSTRACT

As has been pointed out by a number of researchers, the normally calculated delta does not minimize the variance of changes in the value of a trader's position. This is because there is a non-zero correlation between movements in the price of the underlying asset and movements in the asset's volatility. The minimum variance delta takes account of both price changes and the expected change in volatility conditional on a price change. This paper determines empirically a model for the minimum variance delta. We test the model using data on options on the S&P 500 and show that it is an improvement over stochastic volatility models, even when the latter are calibrated afresh each day for each option maturity. We also present results for options on the S&P 100, the Dow Jones, individual stocks, and commodity and interest-rate ETFs.