Variance Risk Premia

PETER CARR
Bloomberg L.P. and Courant Institute New York

LIUREN WU
Zicklin School of Business, Baruch College New York

Abstract

We propose a direct and robust method for quantifying the variance risk premium on financial assets. We theoretically and numerically show that the risk-neutral expected value of the return variance, also known as the variance swap rate, is well approximated by the value of a particular portfolio of options. Ignoring the small approximation error, the difference between the realized variance and this synthetic variance swap rate quantifies the variance risk premium. Using a large options data set, we synthesize variance swap rates and investigate the historical behavior of variance risk premia on five stock indexes and 35 individual stocks.