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Roger Lee* (RL@math.uchicago.edu). *Hedging Variance Options on Continuous Semimartingales.*

For options on the realized variance of [the returns on] an underlying price process, we find robust model-free hedges and price bounds, in terms of European option prices. We assume only that the underlying price is a positive continuous semimartingale; this includes all stochastic volatility models without price jumps.

Specifically, for spot-starting and forward-starting variance calls, we find subreplication and superreplication strategies, hence upper and lower valuation bounds, universally valid for all positive continuous semimartingales. This extends Dupire's subreplication of spot-starting variance calls. The strategies hold Europeans statically and trade the underlier dynamically.

From a practical standpoint, we contribute toward the pricing and hedging of a contract that appeals to portfolio managers seeking to trade volatility. From a methodological standpoint, we establish and exploit the model-free replicability of general functions of price and variance, payable at general boundaries in price-variance space; and we witness again the emergence of the Black-Scholes model, even in the general semimartingale setting, due to the Dambis/Dubins-Schwarz time change by which quadratic variation becomes the business-time clock. (Received August 30, 2007)