

# Wavelet Transform for Estimating the Memory Parameter in Long Memory Stochastic Volatility Model

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**Abstract:** We consider semiparametric estimation of memory parameter in long memory stochastic volatility models. It is known that log periodogram regression estimator by Geweke and Porter-Hudak (1983) results in significant negative bias due to the existence of the spectrum of non-Gaussian noise process. Through wavelet transform of the squared process, we effectively remove the noise spectrum around zero frequency, and approximate the spectral density of squared process to that of long memory process only. We propose wavelet-based regression and local Whittle estimators. Simulation studies show that wavelet-based estimation is an effective way in reducing the bias. We present empirical applications to foreign exchange rate returns.

**KEY WORDS:** Spectral density of wavelet transforms, Gaussian semiparametric estimation, Long range dependence.