Realized Daily Variance of S&P 500 Cash Index: A Revaluation of Stylized Facts*

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In this paper the realized daily variance is obtained from intraday transaction prices of the S&P 500 cash index over the period from January 1993 to December 2004. When constructing realized daily variance, market microstructure noise is taken into account using a technique proposed by Zhang, Mykland and Aït-Sahalia (2005). The time series properties of realized daily variance are compared with those of variance estimates obtained from parametric GARCH and stochastic volatility models. Unconditional and dynamic properties concerning the realized daily variance are examined, the relationship between realized variance and returns is investigated, and the stylized facts concerning realized daily variance are reevaluated with this long dataset. While many properties are similar to what have been reported based on artificially constructed five-minute returns, three distinct results stand out in our empirical analysis. First, we find evidence that both the realized standard deviation and the realized log variance are not covariance stationary, but nonetheless have memory parameter less than unity. Second, we document a positive and statistically significant risk-return trade-off. Finally, we find a monotonically decreasing news impact function.

Key Words: High frequency data; Integrated variance; Microstructure noise; GARCH; Stochastic volatility; Long range dependence; Intertemporal CAPM.