

# Value at Risk using High-Frequency Data

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*First version - Preliminary and Incomplete*

## Abstract

The objective of this paper is to investigate the use of high-frequency (HF) data for risk measurement. We evaluate an intraday Value at Risk at different horizons based on irregularly time-spaced HF data by using a Monte Carlo simulation approach. A UHF-GARCH model (Engle, 2000) is used to specify the joint density of the marked point process of durations and high-frequency returns. A by-product of our study is represented by the testing of the predictive abilities of the UHF-GARCH model under a risk management framework. We use HF data on the Royal Bank stock traded on the Toronto Stock Exchange and on the IBM stock initially used by Engle (2000) to introduce the UHF-GARCH model. Preliminary results show that the UHF-GARCH model performs well out-of-sample even in the simplest case when the normality is assumed for the distribution of the error term, provided intraday seasonality has been removed prior to the estimation.

*Keywords:* Value at Risk, High-Frequency Data, UHF-GARCH, Filtered Historical Simulation, Autoregressive Conditional Duration Model

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