Quantitative Finance > Statistical Finance

Weighted-indexed semi-Markov models for modeling financial returns

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(Submitted on 11 May 2012)

In this paper we propose a new stochastic model based on a generalization of semi-Markov chains to study the high frequency price dynamics of traded stocks. We assume that the financial returns are described by a weighted indexed semi-Markov chain model. We show, through Monte Carlo simulations, that the model is able to reproduce important stylized facts of financial time series as the first passage time distributions and the persistence of volatility. The model is applied to data from Italian and German stock market from first of January 2007 until end of December 2010.

Comments:	arXiv admin note: substantial text overlap with arXiv:1109.4259
Subjects:	**Statistical Finance (q-fin.ST)**; Data Analysis, Statistics and Probability (physics.data-an)
Cite as:	**arXiv:1205.2551v1 [q-fin.ST]**

Submission history

From: Filippo Petroni [view email]
[v1] Fri, 11 May 2012 15:18:58 GMT (318kb,D)

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