

Fuzzy coefficient volatility (FCV) models with applications

A **Thavaneswaran**, K Thiagarajah, SS Appadoo - Mathematical and Computer Modelling, 2007 - Elsevier

Fuzzy coefficient volatility (FCV) models with applications

A. Thavaneswaran^a, K. Thiagarajah^b and S.S. Appadoo^c

^aDepartment of Statistics, University of Manitoba, Winnipeg, Manitoba, Canada

^bDepartment of Mathematics, Illinois State University, Normal, IL, USA

^cDepartment of Supply Chain Management, University of Manitoba, Winnipeg, Manitoba, Canada

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Abstract

Recently, Carlsson and Fuller [C. Carlsson, R. Fuller, On possibilistic mean value and variance of fuzzy numbers, *Fuzzy Sets and Systems* 122 (2001) 315–326] have introduced possibilistic mean, variance and covariance of fuzzy numbers and Fuller and Majlender [R. Fuller, P. Majlender, On weighted possibilistic mean and variance of fuzzy numbers, *Fuzzy Sets and Systems* 136 (2003) 363–374] have introduced the notion of crisp weighted possibilistic moments of fuzzy numbers. In this paper, we propose a class of FCV (Fuzzy Coefficient Volatility) models and study the moment properties. The method used here is very similar to the method used in Appadoo et al. [S.S. Appadoo, M. Ghahramani, A. Thavaneswaran, Moment properties of some time series models, *Math. Sci.* 30 (1) (2005) 50–63]. The proposed models incorporate fuzziness, subjectivity, arbitrariness and uncertainty observed in most financial time series. The usual forecasting method does not incorporate parameter variability. Fuzzy numbers are used to model the parameters to incorporate parameter variability.

Keywords: Possibilistic mean; Possibilistic variance; Fuzzy coefficient autoregressive model

8 Citations:

1.Option valuation model with adaptive fuzzy numbers

K Thiagarajah, SS Appadoo, A Thavaneswaran - Computers and Mathematics with Applications, 2007 - Elsevier

In this paper, we consider moment properties for a class of quadratic adaptive fuzzy numbers defined in Dubois and Prade [D. Dubois, H. Prade, Fuzzy Sets and Systems: Theory and Applications, Academic Press, New York, 1980]. The ...

2.Application of possibility theory to investment decisions

SS Appadoo, SK Bhatt, CR Bector - Fuzzy Optimization and Decision Making, 2008 - Springer
Abstract Carlson and Fuller (2001, Fuzzy Sets and Systems, 122, 315–326) introduced the concept of possibilistic mean, variance and covariance of fuzzy numbers. In this paper, we extend some of these results to a nonlinear ...

3.The possibilistic moments of fuzzy numbers and their applications

A Saeidifar, E Pasha - Journal of Computational and Applied Mathematics, 2009 - Elsevier
In statistics, measures of central tendency and measures dispersion of distribution are considered important. For fuzzy numbers, one of the most common and useful measures of central tendency is the mean of fuzzy numbers, ...

4.Some applications of possibilistic mean value, variance, covariance and correlation

C Carlsson, R Fuller - bmf.hu
Some applications of possibilistic mean value, variance, covariance and correlation ... IAMSR,Abo Akademi University, Lemminkainengatan 14B, FIN-20520Abo, Finland e-mail: christer.carlsson@abo.fi

5.Weighted possibilistic moments of fuzzy numbers with applications to GARCH modeling and option ...

A Thavaneswaran, SS Appadoo, A Paseka - Mathematical and Computer Modelling, 2009 - Elsevier
Carlsson and Fuller [C. Carlsson, R. Fuller, On possibilistic mean value and variance of fuzzy numbers, Fuzzy Sets and Systems 122 (2001) 315–326] have introduced possibilistic mean, variance and covariance of fuzzy numbers and ...

6.Practical Study on the Fuzzy Risk of Flood Disasters

L Feng, G Luo - Acta Applicandae Mathematicae: An International Survey ... - Springer
Abstract The simplest way to perform a fuzzy risk assessment is to calculate the

fuzzy expected value and convert fuzzy risk into non-fuzzy risk, ie, a crisp value. In doing so, there is a transition from the fuzzy set to the crisp ...

7. An Autoregressive Model with Fuzzy Random Variables

D Wang - Springer

In time series analysis (cf. [1]) the p-order autoregressive (AR(p)) process is a fundamental aspect for time series modelling. It has been a basic model for deriving out other important time series model such as ARCH model and ARIMA ...

8. Pricing Currency Options in a Fuzzy Environment

W Xiao, W Zhang, W Xu, Y Wu - Computing, Communication, Control, and Management, 2008. ..., 2008
- ieeexplore.ieee.org

Owing to the vague fluctuation of financial markets from time to time, the pricing parameters of currency option may occur imprecisely. In this case, it is natural to consider the fuzzy environment of exchange rate markets. In this ...