



Quantitative Finance >

Volume 4, 2004 - Issue 5: Special Issue Title: New Directions in Option Pricing

464 | 17

0

Views | CrossRef citations to date | Altmetric

Original Articles

A note on skewness and kurtosis adjusted option pricing models under the Martingale restriction*

Emmanuel Jurczenko, Bertrand Maillet * & Bogdan Negrea

Pages 479-488 | Received 01 Nov 2003, Accepted 01 Oct 2004, Published online: 23 Aug 2006

Cite this article <https://doi.org/10.1080/14697680400020309>

Sample our
Economics, Finance,
Business & Industry Journals
**>> Sign in here to start your access
to the latest two volumes for 14 days**

Full Article

Figures & data

References

Citations

Metrics

Reprints & Permissions

Read this article

Share

Abstract

Several authors have proposed series expansion methods to price options when the risk-neutral density is asymmetric and leptokurtic. Among these, Corrado and Su (1996) provide an intuitive pricing formula based on a Gram-Charlier Type A series expansion. However, their formula contains a typographic error that can be significant. Brown and Robinson (2002) correct their pricing formula and provide an example of economic significance under plausible market conditions. The purpose of this comment is to slightly modify their pricing formula to provide consistency with a martingale restriction. We also compare the sensitivities of option prices to shifts in skewness and kurtosis using parameter values from Corrado and Su (1996) and Brown and Robinson (2002), and market data from the French options market. We show that differences between the original, corrected and our modified versions of the Corrado and Su (1996)

original model are minor on the whole sample, but could be economically significant in specific cases, namely for long maturity and far-from-the-money options when markets are turbulent.

Acknowledgement

We are grateful to Charles Corrado and Mikael Rockinger for help and encouragement in preparing this work. Thanks also to Thierry Chauveau, Thierry Michel, the two referees and the editor-in-chief for helpful remarks, corrections and suggestions. This work was completed while the second author was a Visiting Researcher at the LSE-FMG. The usual disclaimers apply.

Notes

E-mail: ejurczenko@escp-eap.net, bmaillet@univ-paris1.fr and negrea@univ-paris1.fr

See Jurczenko et al ([2002b](#)) for a complete comparison between the various models using statistical expansions.

We explicitly refer here to the standard notations used for instance by Baxter and Rennie ([1996](#)) or Hull ([2003](#)). We thank the second referee for pointing out some possible confusions with other notations.

See also Brenner and Ecom ([1997](#)) in the context of option pricing with Laguerre polynomial series.

Adopting a very similar approach, Kochard ([1999](#)) indeed obtains an equivalent formula to [equation \(10\)](#).

In the [Figures \(1–4\)](#), skewness and kurtosis have been fixed at -0.7 and 3.53 for the modified Corrado and Su ([1996](#)) model parameter representations (which are mean parameter values of implied moments when backed out from French CAC 40 long term options market for the period 01/97 through 12/9 using the Jarrow and Rudd ([1982](#)) model—see Capelle-Blancard et al [2001](#) for details). Other parameters are those of the Corrado and Su ([1996](#)) case study, also reported in Brown and Robinson ([2002](#)).

These values are realistic in the sense that they correspond to mean parameter values when backing-out implied moments corresponding to the Jarrow and Rudd ([1982](#)) model on the CAC 40 options on the French market for the period 1997–1999 (see Capelle-Blancard et al 2001, for details).

See Capelle-Blancard et al 2001, for details on the database, filters, optimization criterion and routines.

In Figures 5 and 6 French CAC 40 long term options for the period 10/97 through 12/98 have been used to estimate the error terms and related density probabilities (see Capelle-Blancard et al 2001 for details on the database, filters, optimization criterion and routines). For easy representations, Figure 7 and 8 illustrate estimations on sub-samples.

We thank Charles Corrado, the two referees and the editor-in-chief for pointing out these two drawbacks.

Related research

People also read

Recommended articles

Cited by
17

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources
by email

 Sign me up

  

  

Copyright © 2026 Informa UK Limited

[Privacy policy](#)

[Cookies](#)

[Terms & conditions](#)

[Accessibility](#)



Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG