Applied Mathematical Finance ›
Volume 19, 2012 - Issue 1

Original Articles

The Implied Market Price of Weather Risk

Wolfgang Karl Härdle & Brenda López Cabrera

Pages 59-95 | Received 07 May 2010, Accepted 28 Feb 2011, Published online: 17 Oct 2011

Cite this article https://doi.org/10.1080/1350486X.2011.591170

Full Article | Figures & data | References | Citations | Metrics
Reprints & Permissions | Read this article | Share

Abstract

Weather derivatives (WD) are end-products of a process known as securitization that transforms non-tradable risk factors (weather) into tradable financial assets. For pricing and hedging non-tradable assets, one essentially needs to incorporate the market price of risk (MPR), which is an important parameter of the associated equivalent martingale measure (EMM). The majority of papers so far has priced non-tradable assets assuming zero or constant MPR, but this assumption yields biased prices and has never been quantified earlier under the EMM framework. Given that liquid-derivative contracts based on daily temperature are traded on the Chicago Mercantile Exchange (CME), we infer the MPR from traded futures-type contracts (CAT, CDD, HDD and AAT). The results show how the MPR significantly differs from 0, how it varies in time and changes in sign. It can be parameterized, given its dependencies on time and temperature seasonal variation. We establish connections between the market risk premium (RP) and the MPR.

Key Words:

CAR process | CME | HDD | seasonal volatitity | risk premium

Previous article | View issue table of contents | Next article

Acknowledgement

We thank Fred Espen Benth and two anonymous referees for several constructive and insightful suggestions on how to improve the article.

Related research