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Nonparametric, conditional pricing of higher order multivariate contingent claims

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Title:	Nonparametric, conditional pricing of higher order multivariate contingent claims
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Author:	Giannopoulos, Kostas
Abstract:	This paper describes and applies a nonparametric model for pricing multivariate contingent claims. Multivariate contingent claims are contracts whose payoffs depend on the future prices of more than one underlying variable. The pricing however of these kinds of contracts represents a challenge. All known models are adaptations of earlier ones that have been introduced to price plain vanilla calls and puts. They are imposing strong assumptions on the distributional properties of the underlying variables. In contrast, this study adopts a methodology that relaxes such restrictions. Following [Barone-Adesi, G., Bourgoin, F., Giannopoulos, K., 1998. Don't Look Back, Risk 11 (August), 100–104; Barone-Adesi, G., Engle, R., Mancini, L., 2004. GARCH Options in Incomplete Markets, mimeo, University of Applied Sciences of Southern Switzerland; Long, X., 2004. Semiparametric Multivariate GARCH Model, mimeo, University of California, Riverside], multivariate pathways for a set of underlying variables are constructed before the option payoffs are computed. This enables the covariances, in addition to the means and variances, to be modelled in a dynamic and nonparametric manner. The model is particular suitable for options whose payoffs depend on variables that are characterised by high nonlinearities and extremes and on higher order multivariate options whose underlying variables are more unlikely to conform to a common theoretical distribution.

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