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Variance dispersion and correlation swaps

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(Submitted on 1 Apr 2010)

In the recent years, banks have sold structured products such as worst-of options, Everest and Himalayas, resulting in a short correlation exposure. They have hence become interested in offsetting part of this exposure, namely buying back correlation. Two ways have been proposed for such a strategy : either pure correlation swaps or dispersion trades, taking position in an index option and the opposite position in the components options. These dispersion trades have been set up using calls, puts, straddles, variance swaps as well as third generation volatility products. When considering a dispersion trade using variance swaps, one immediately sees that it gives a correlation exposure. Empirical analysis have showed that this implied correlation was not equal to the strike of a correlation swap with the same maturity. The purpose of this paper is to theoretically explain such a spread. In fact, we prove that the P&L of a dispersion trade is equal to the sum of the spread between implied and realised correlation - multiplied by an average variance of the components - and a volatility part. Furthermore, this volatility part is of second order, and, more precisely, is of volga order. Thus the observed correlation spread can be totally explained by the volga of the dispersion trade. This result is to be reviewed when considering different weighting schemes for the dispersion trade.

Comments: 14 pages, 0 figure.

Subjects: **Pricing of Securities (q-fin.PR)**Cite as: [arXiv:1004.0125v1](https://arxiv.org/abs/1004.0125v1) [q-fin.PR]

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From: Antoine Jacquier Mr. [[view email](#)]

[v1] Thu, 1 Apr 2010 13:00:44 GMT (12kb)

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