A New Approach to Volatility Derivatives

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Abstract / Resumo:
We show how to establish links between options on price and options on volatility, notably exploiting the skew, that contains information on price/volatility correlation. We make use of
1) static positions in vanilla options
2) Delta hedged positions in vanillas, which converts a payoff that depend on the final underlying price into a quadratic variation related quantity

To remove part of the path dependency of the link in 2), the Delta hedge is performed in business time (corresponds to the Dambis-Dubins-Schwarz time change). We illustrate the method with volatility swaps, options on realized variance and forward volatility swaps.