

# Deliverable of Research Project 8: Report on the Option Pricing Performance of Different Option Pricing Models

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The deliverable comprises one published paper and one working paper as follows:

Kanniainen, J., B. Lin, and H. Yang (2014), “Estimating and Using GARCH Models with VIX Data for Option Valuation”. *Journal of Banking and Finance*, 43, 200-211.

This paper uses information about the VIX index to improve the empirical performance of GARCH models for option pricing by extracting daily spot volatilities from the series of the VIX in pricing multiple cross-sections of options and using a joint Maximum Likelihood Estimation with returns and VIX data in estimating models.

Yang, H. and J. Kanniainen (2015), “Jump and Volatility Dynamics for the S&P 500: Evidence for Infinite-Activity Jumps with Non-affine Volatility Dynamics from Stock and Option Market”. *Working paper*.

This paper estimates different model specifications, including the finite/infinite-activity Lévy jumps in the return and variance processes and the non-affine variance dynamics, and compare them in goodness of fit and option pricing.

This deliverable identifies robust models that are able to capture the volatility and jump risks embedded in the option prices, and uses the information of the VIX index to improve the option pricing performance. Moreover, these models can be applied to the valuation and risk management of variable annuities.