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# On the application of the dynamic conditional correlation model in estimating optimal time-varying hedge ratios

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# Notes

<sup>1</sup> Bautista ([2003](#)) uses the DCC of Engle to obtain the dynamic correlation between the interest rate and the exchange rate in the Philippines in order to observe its structural changes. Recognizing the dynamic conditional correlation, we instead use this approach, incorporated with ECM, to obtain the variance matrix so as to analyse the hedging effectiveness of foreign currency futures, which is then compared with OLS and other multivariate GARCH hedges.

<sup>2</sup> The hedge ratio is calculated as the ratio of the covariance between spot and futures prices to the variance of the futures price.

<sup>3</sup> For discussions of other hedging strategies, readers can refer to Chen et al. ([2003](#)).

<sup>4</sup> Bollerslev ([1990](#)) decomposes the covariances into SDs and correlations and assumes CCCs between financial variables. Engle and Kroner ([1995](#)) instead propose the BEKK (named after Baba, Engle, Kraft and Kroner) multivariate GARCH model to ensure time-varying second moments and a positive-definite conditional-variance matrix. Its disadvantage is that the parameters cannot be easily interpreted.

<sup>5</sup> Kroner decomposes the conditional variance matrix into a matrix of conditional variances and a matrix of conditional correlations. The first moment of the exchange rate is assumed to be zero.

<sup>6</sup> The minimum variance hedge ratio is calculated as the ratio of the covariance between spot and futures prices, normalized by the variance of the futures price, to the first moment of the exchange rate. By using the first moment of the exchange rate, the minimum variance hedge ratio is calculated as the ratio of the covariance between spot and futures prices, normalized by the variance of the futures price, to the first moment of the exchange rate.



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