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# Estimation of Dynamic Conditional Correlation Model

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## 1 Dynamic Conditional Correlation Model

Let the conditional correlation between two random variables $y_1, y_2$ with zero mean be defined as

$$\rho_{1,2,t} = \frac{E_{t-1}y_{1,t}y_{2,t}}{\sqrt{E_{t-1}y_{1,t}^2 E_{t-1}y_{1,t}^2}} \tag{1.1}$$

Let the conditional covariance matrix of our multivariate process be defined by

$$H_t = V_{t-1}(y_t) \tag{1.2}$$

The Constant Conditional Correlation model of Bollerslev [2] assumes time invariant conditional correlations between assets. So the covariance matrix of the CCC model is defined by

$$H_t = D_t R D_t \tag{1.3}$$

## 2 Estimation

The estimation of the DCC model consists of 3 steps.

$$Q_t = \lambda \epsilon_{t-1} \epsilon_{t-1}^T \tag{2.1}$$

## References

[1] Engle, Robert *Dynamic Conditional Correlation - a simple class of multivariate models.* Journal of Business and Economic Statistics, 2002.

[2] Bollerslev, D *Dynamic Conditional Correlation - a simple class of multivariate models.* Journal of Business and Economic Statistics, 1990.