

# Some Generalizations of the Black-Litterman Approach for the Skew Normal Market

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## Abstract

**Abstract.** In this report, we extend the Black-Litterman model for the skew normal market by applying conditional value-at-risk as an alternative risk measure to obtain the optimal portfolio. Furthermore, we modify the model of the location parameter  $L$  by using the covariance matrix of the market and  $L \sim N(\mu_0, \tau Cov(X))$ . In this case, we introduce a non-orthogonal formulation to the skew normal case, which correlates the prior model and the views.

**Keywords.** Black-Litterman model, skew normal distribution, conditional value-at-risk, non-orthogonal formulation.