

Modeling Australian Excess Return through Quantile Regression and Asymmetric Laplace Distribution by Scale Mixture of Normals

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Abstract

In this paper, we extend the analysis of asymmetric Laplace distribution (ALD) by expressing as a mixture of scale-mixture normals. To construct the ALD, the normal distributions are mixed with an exponential distribution. We modify the ALD to an asymmetric classical Laplace distribution (ACL). With the normal-mixture representation, we can simply use the Bayesian approach to implement the regression model with ACL error. Since the skewness parameter is defined on the $]-0,1[$ interval, we can implement the quantile regression through ACL by fixing the skewness parameter at a desired quantile. We apply our model and method to analyze the Australian excess returns through the regression model with ACL error (where we attempt to estimate the skewness parameter) and the quantile regression.

Keywords: Bayesian Inference; Quantile Regression; Asymmetric Laplace Distribution; Scale Mixture of Normals; Excess Return.