

Risk-averse inference using higher moment coherent risk measures

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The higher moment coherent risk measures are parameterized by a parameter $p \geq 1$ which denotes the norm used in their definition. The particular case $p = 1$ corresponds to the average value at risk but our interest is in the cases where $p > 1$. Since financial returns are recognised to be skewed and leptokurtic, it is desirable for a risk functional to incorporate the information of higher moments more directly in its definition hence using the higher moment coherent risk measures is believed to reflect more accurately the risk aversity to large negative outliers. We consider the conditional analogues of these higher order measures whereby the risk evaluation takes accounts for a set of exogenous random variables. We focus on inference using such conditional risk measures. Finding point estimators of the conditional risk can be done using methods from constrained convex optimization theory. Furthermore, we discuss the issue about confidence interval construction where jackknife-type methods can be utilised. We compare the performance of models that use higher moment coherent risk measures as a criterion with the models that use average value at risk. To this end, the residuals of the resulting regression models are examined carefully. Both simulated and empirical data will be utilised to illustrate the benefits of using the higher moment coherent risk measures by a risk-averse investor.

Key Words: Risk measure, regression, constrained convex optimization, jackknife.