Jensen's Alpha measured under skew-symmetry model for error term distribution

Navruzbek Karamatov[1] and Ryozo Miura[2]

[1] Graduate School of Economics and Management, Tohoku University
[2] Graduate School of Business Administration, Hitotsubashi University

Abstract

Due to its simplicity, initially developed asset pricing model in finance - Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Litner (1965) has been used extensively both in research field and industry, until the replacement by the multi factor models (Ross (1976) - APT, Fama and French (1993), Hou *et al,* (2015)). CAPM has been thoroughly studied by a number of papers based on a various international datasets yet controversies still go on about the validity of this one factor model. A study by Jensen (1968) cleared that CAPM is not able to explain abnormal returns and α - intercept term from a simple regression is used to account for this unobserved drivers. More importantly *Jensen's Alpha* is obtained as a mean value of residuals from a regression. However, LS is sensitive to outliers and this would make estimators to be prone to change. In reality, observed residuals have abnormality and not symmetrically distributed.

Can asymmetry in error term distribution affect *Jensen's Alpha*? This research tries to find the answer by applying robust Rank statistics in comparison with Least Squares to fit a simple linear regression into Nikkei 225 stocks.

Asymmetry is obtained through Generalized Lehmann's Alternative model (θ) as well as with Skew-t distribution (γ). In comparison with γ, θ across N225 stocks indicates a clear presence of asymmetry and it changes dynamically through time period. Relationship of *Jensen's Alpha* and θ is significant, and the magnitude is different depending on the situation in stock market. We constructed asymmetry indicator as well to explain Fama and French (1993) 6 portfolios. θ indicator from R residuals are statistically significant to explain portfolio returns along with other 3 factors.