

Asymmetric Loss Functions and Combination of Forecasts with Applications in Equity Premium Prediction



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by

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Abstract

Combination of forecasts methods has arisen and emerged as a significant and best approach to produce the effective forecasts in average and to extract important and valuable information from the models rather than methods focused on selecting the best individual forecasts. The combination of forecasts techniques has a significant and critical role in the financial and economic implementations of analysis and decision-making process.

The discount mean square forecast error (DMSFE) method achieved better forecasts in the combination of forecasts literature. Motivated by DMSFE method, a novel combination of forecasts methods, called the Discount Asymmetric Square Loss Function (DASLF), the Discount Linex Loss Function (DLLF), the Discount Lin-Lin Loss Function (DLLLLF) and the Discount General Entropy Loss Function (DGELF) are proposed to maximize forecast accuracy and boost the efficiency of forecasts combination methods based on minimizing the forecast error. The proposed methods are implemented to equity premium data sets employing fourteen economics variables covering the periods from 1957:Q1 to 2017:Q4. To evaluate the performance and efficiency of the proposed method, the findings compared to the several combination of forecasts methods including the Kitchen sink, the SIC, the POOL- AVG, the POOL-DMSFE, the Diffusion index and the Sum-of-parts. The empirical results indicate that the proposed methods the DASLF, the DLLF, the DLLLLF and the DGELF outperform the POOL-DMSFE method as well as the competing methods based on the R^2_{OS} statistics metric that measures and evaluates the MSFE of the competing method and utility gains metric.

The quantile regression approach outperforms several combination forecasts techniques, prompted by a quintile method, proposing novel approaches to linex regression based on

fixed weights, called linex regression Fixed Weight with parameter $\alpha = 1$ (FW1), linex regression Fixed Weight with parameter $\alpha = 2$ (FW2), linex regression Positive Fixed Weight (PFW1) and (PFW2) and linex regression Minus Fixed Weight (MFW1) and (MFW2). The key objective of the proposed method is to improve the predictability of the forecasts combination by reducing the forecast error and increasing the accuracy of the forecasts. The proposed linex regression approaches are implemented to equity premium data sets utilizing the fifteen significant economic predictors. Linex regression fixed weights FW1, FW2, PFW1, PFW2, MFW1 and MFW2 are compared to different forecast combination approaches including mean, median, trimmed mean, DMSFE(1), DMSFE(0.9), cluster(2), cluster(3) and principal components. The MSFE ratio and the encompassing test are employed. Furthermore, the economic evaluation of combination of forecasts and the presented linex regression approaches are achieved based on the performance fee. The experimental findings demonstrate that the linex regression MFW1 and MFW2 approaches outperform the mean regression benchmark and deliver superior forecasts.

There are two redundant:

Working papers to be submitted for publication:

- a) Najlaa Jassim and Spyridon Vrontos, Predictability of Equity Premium Employing Combinations of Forecasts based on Asymmetric Loss Functions.
- b) Najlaa Jassim and Spyridon Vrontos, Predictability of Equity Premium Using Linex Loss Function.