An asymptotically normal out-of-sample test of equal predictive accuracy for nested models

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Abstract

This paper proposes a modification of Clark and West's (2007, J. Econom.) adjusted out-of-sample t-test. The alternative model is still estimated with a fixed-length rolling window, but the benchmark is estimated with a recursive window. The resulting statistic is asymptotically normal even when the models are nested. Moreover, the alternative model can be estimated using popular model selection methods, such as the AIC or BIC. This paper also presents a new bootstrap procedure based on Romano and Wolf's (2005, Econometrica) StepM to compare multiple models while controlling family-wise error, and demonstrates this procedure by analyzing Goyal and Welch's (2008, Rev. Finan. Stud.) excess returns dataset.

Keywords: Forecast Evaluation, Martingale Difference Sequence, Model Selection, Family-wise Error, Multiple Testing, Bootstrap, Reality Check

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