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Directional Predictability Tests

This article proposes new tests of predictability for non Gaussian sequences that may display general non linear dependence in higher order properties. We test the null of martingale difference against parametric alternatives which can introduce linear or non linear dependence as generated by ARMA and all-pass restricted ARMA models, respectively. We also develop tests to check for linear predictability under the white noise null hypothesis parameterized by an all-pass model driven by martingale difference innovations and tests of non linear predictability on ARMA residuals. Our Lagrange Multiplier tests are developed from a loss function based on pairwise dependence measures of model residuals. The new tests have standard pivotal null asymptotic distribution and we discuss consistency against parametric and non parametric alternatives. We provide finite sample analysis of the properties of the new LM tests and investigate the predictability of several series of financial returns. We confirm that our tests are able to detect predictability in NYSE, AMEX, and NASDAQ returns while allowing for higher order dependence which cannot be properly addressed by previous methods based on serial independence assumptions.

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