FORECASTING WITH WAVELETS AND TRADITIONAL MODELS: A COMPARATIVE STUDY

Fábio Mariano BAYER[1]
Adriano Mendonça SOUZA[2]

- *ABSTRACT: The main purpose of this research is to compare and explore traditional models like ARIMA and exponential smoothing, likewise to propose a combined use of these forecasting techniques with the wavelet decomposition. The comparison is made by means a empirical study applied to the monthly tax revenue (ICMS) of the Rio Grande do Sul brazilian state. Among the exponential smoothing models the additive Holt-Winters model was used and for the ARIMA class models the SARIMA was used, because the series shows a seasonal behavior. These same models were used for to model and forecast each of sub-series of the wavelet decomposition. The forecasts were compared using differents forecasting horizons and was possible to observe that the use combined of the Holt-Winters algorithm and wavelets decomposition gave a better results to the forecasted values, principally to the horizons with steps of forecasting 2 and 12 months.*

- *KEYWORDS: Time series; Wavelets; comparison; Forecast; ICMS.*

---

1 Universidade Federal da Fronteira Sul - Campus Erechim, CEP: 99700-000, Erechim, RS, Brasil. E-mail: *fabiobayer@gmail.com*

2 Universidade Federal de Santa Maria - UFSM, Centro de Ciências Naturais e Exatas, Departamento de Estatística, CEP: 97105-900, Santa Maria, RS, Brasil. E-mail: *amsouza@smail.ufsm.br*