

Poisson Autoregressive and Moving-Average Models for Forecasting Non-stationary Seasonal Time Series of Tourist Counts in Mauritius

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This paper aims at developing Poisson autoregressive and moving-average models while incorporating transcendental covariates corresponding to the seasonal impulses for non-stationary time series of large counts. These models are implemented to analyse the non-stationary monthly time series of tourist arrivals in Mauritius over the period of twenty five years (Dec 1985 – Dec 2010). The regression effects of the covariates are estimated using efficient generalized quasi-likelihood approach and the correlation parameters are consistently estimated using the method of moments. The optimal model selection for forecasting is made using the diagnostics based on portmanteau type statistic. The forecasting model is also validated using out-sample series over the years 2011 and 2012.

Key Words: Count time series, non-stationarity, Poisson models, seasonal variations.