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Conclusions

In this thesis we have presented a model that combines the logistic smooth transition autoregressive with a periodic autoregressive time series model in order to deal with periodicity that is found in electricity load series. Furthermore, a modeling cycle procedure was developed, including a linearity test and two evaluation tests (no error autocorrelation and no remaining nonlinearity) based on auxiliary regressions (LM type test).

Although the model incorporates periodic behavior in a non linear framework, one drawback is that the number of parameters to be estimated increases faster depending on the periodicity involved. The areas that are plausible to use the model for forecasting or exploratory purposes are the ones with high frequency data like financial and electrical market.

The results showed that the model is working well in the first three days for the univariate format. After that it seems that the results are worse to those obtained when the STAR model was estimated. However, the difference was not that significant.

For the vector format, in the half hours 47, 48 and 1 to 11, the linear model is the best. For the rest, in most of the half hours the STPAR is the best model. However, we could say that the performance is slightly better than the STAR.

The linearity test is well sized and has good power in medium samples. That was the same conclusion for the other tests under the null hypothesis of non remaining linearity and no error autocorrelation. Thus, initially, it seems to be a useful tool for a time series practitioner.

Referring to future work, others load series from all over the world will be tested in order to verify the performance of the model. Secondly, a simple neural network and a naïve method will be included to compare the results with the models tested here.