Method Perforemances

- Exponential smoothing

MSTA: Holt-Winter's method with additive seasonality model
CH4: Holt's linear exponential smoothing model
GMAF: Holt-Winter's method with multiplicative seasonality model
ET12: Holt-Winter's method with additive seasonality model

- ARIMA

According to the trend and seasonality of the data, we choose the ARIMA(p,d,q)(P,D,Q)s models. Then selecting the best model using AIC, we got ARIMA(1, 1, 1)(1, 0, 1, 12), which also pass the test.

- Regression

Comparing the different models, we deduce that the model with all 11 monthly indicators and time performance has the best result. overall the linear regression assumption seems to be reasonable.