

Data Science Lab 6

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FORECASTING MODELS

Traffic Time Series

Exponential Smoothing

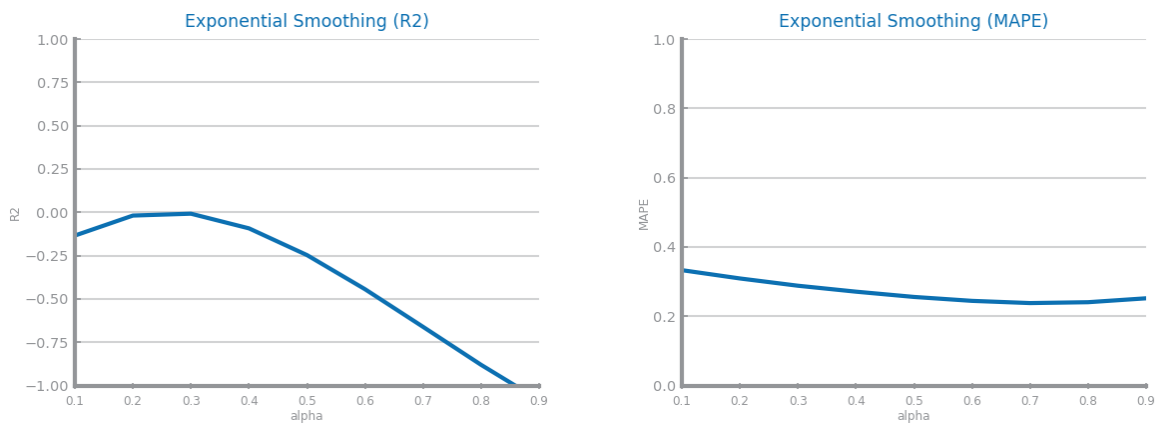


Figure 1: Exponential Smoothing R2 and MAPE study for Traffic Time Series



Figure 2: Exponential Smoothing R2 and MAPE evaluation results for Traffic Time Series

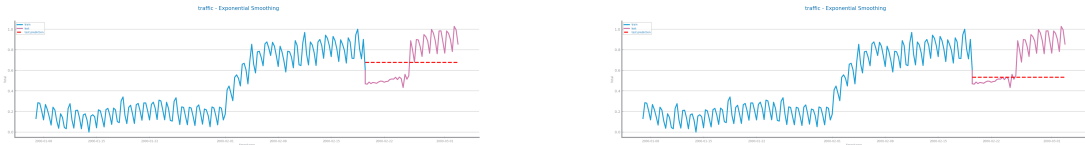


Figure 3: Exponential Smoothing R2 and MAPE forecasting for Traffic Time Series

Multi-layer Perceptron

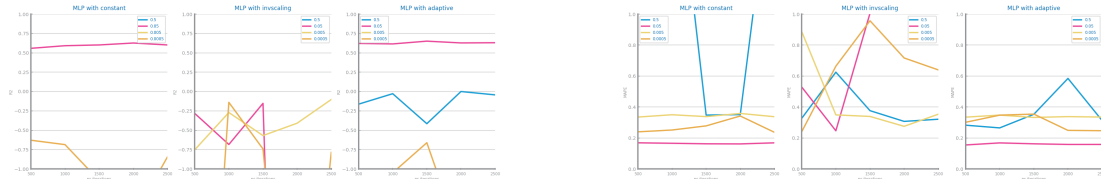


Figure 4: MLP R2 and MAPE study for Traffic Time Series

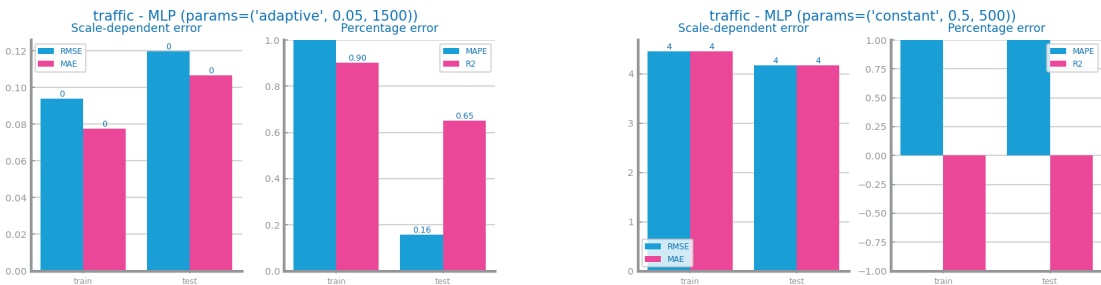


Figure 5: MLP R2 and MAPE evaluation results for Traffic Time Series



Figure 6: MLP R2 and MAPE forecasting for Traffic Time Series

ARIMA

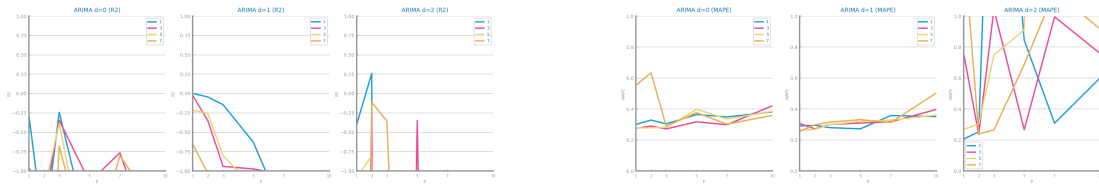


Figure 7: ARIMA R2 and MAPE study for Traffic Time Series



Figure 8: ARIMA R2 and MAPE evaluation results for Traffic Time Series

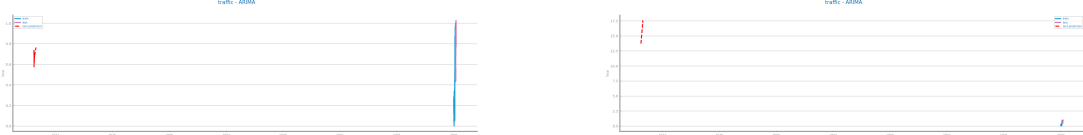


Figure 9: ARIMA R2 and MAPE forecasting for Traffic Time Series

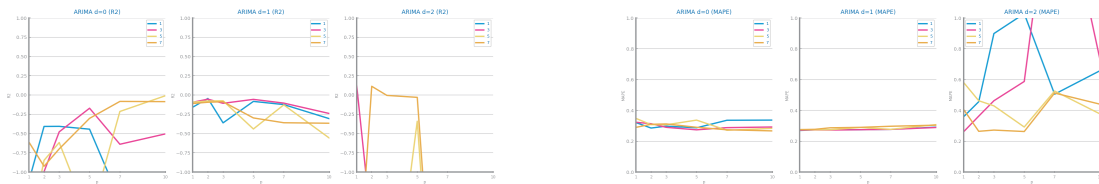


Figure 10: ARIMA with exogenous variables R2 and MAPE study for Traffic Time Series

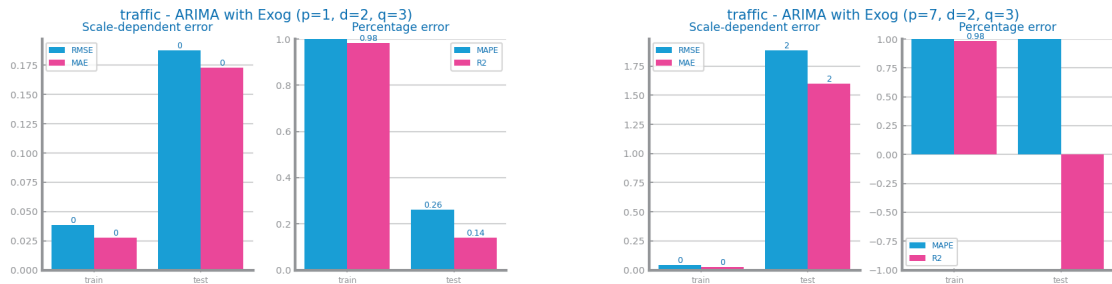


Figure 11: ARIMA with exogenous variables R2 and MAPE evaluation results for Traffic Time Series

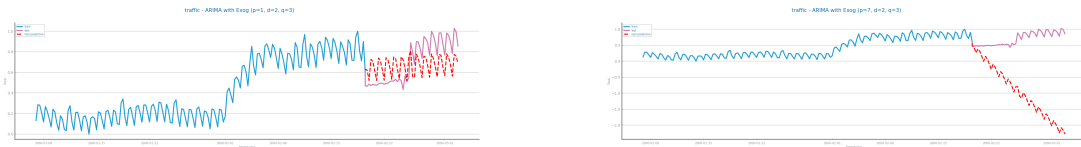


Figure 12: ARIMA with exogenous variables R2 and MAPE forecasting for Traffic Time Series

LSTM

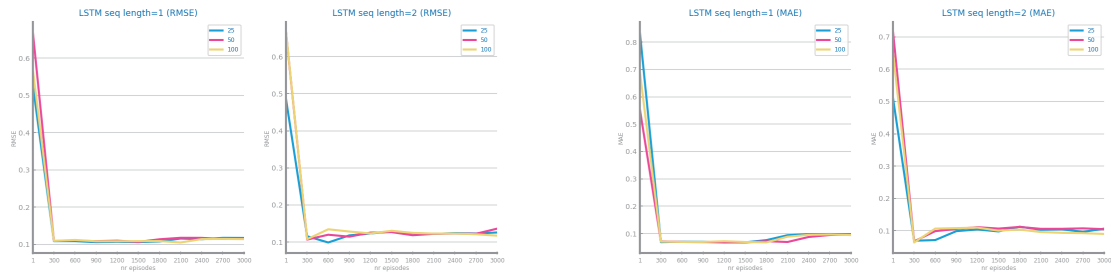


Figure 13: LSTM RMSE and MAE study for Traffic Time Series

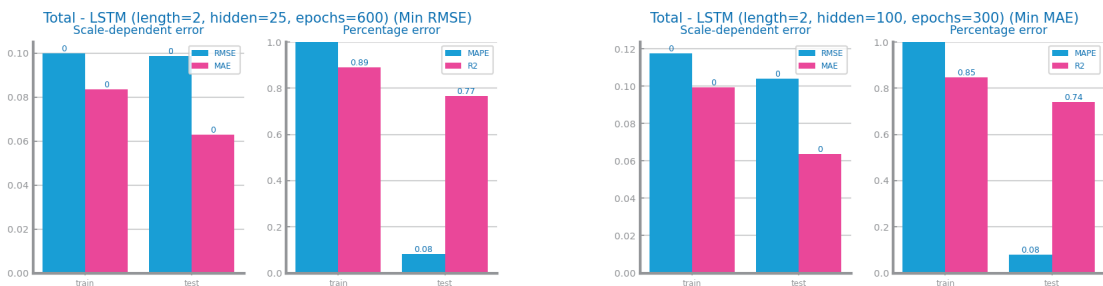


Figure 14: LSTM RMSE and MAE evaluation results for Traffic Time Series

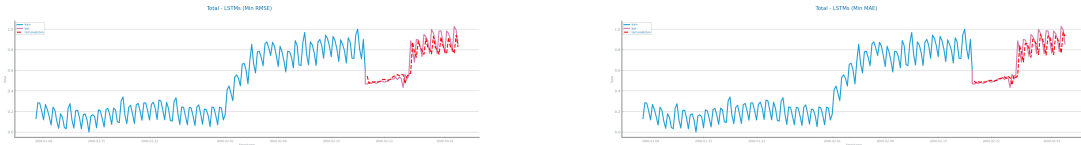


Figure 15: LSTM RMSE and MAE forecasting for Traffic Time Series

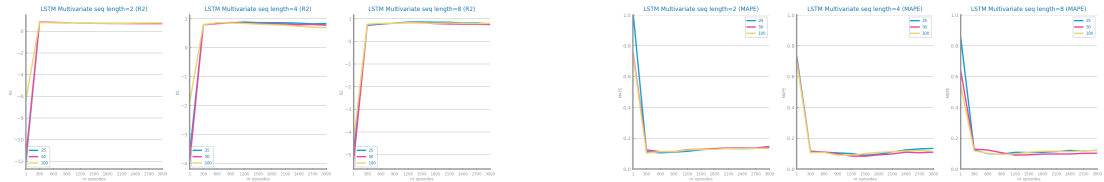


Figure 16: Multivariate LSTM R2 and MAPE study for Traffic Time Series

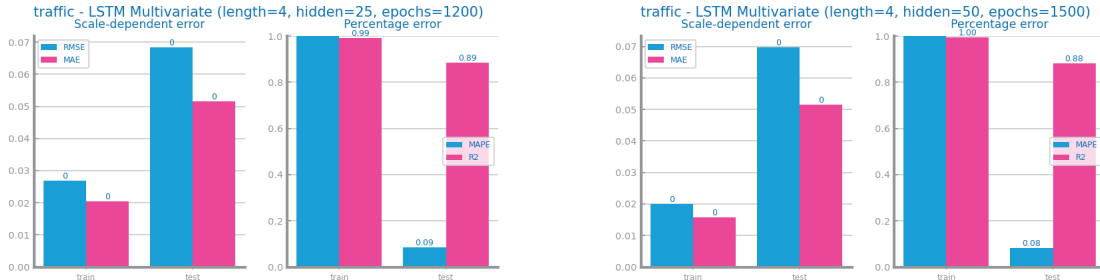


Figure 17: Multivariate LSTM R2 and MAPE evaluation results for Traffic Time Series

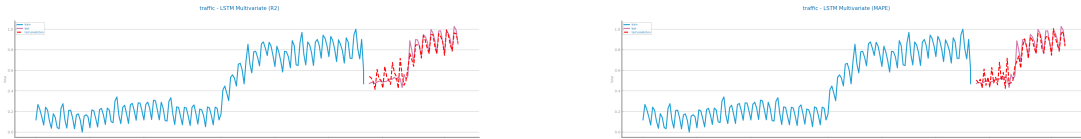


Figure 18: Multivariate LSTM R2 and MAPE forecasting for Traffic Time Series

Inflation Rate Time Series

Exponential Smoothing

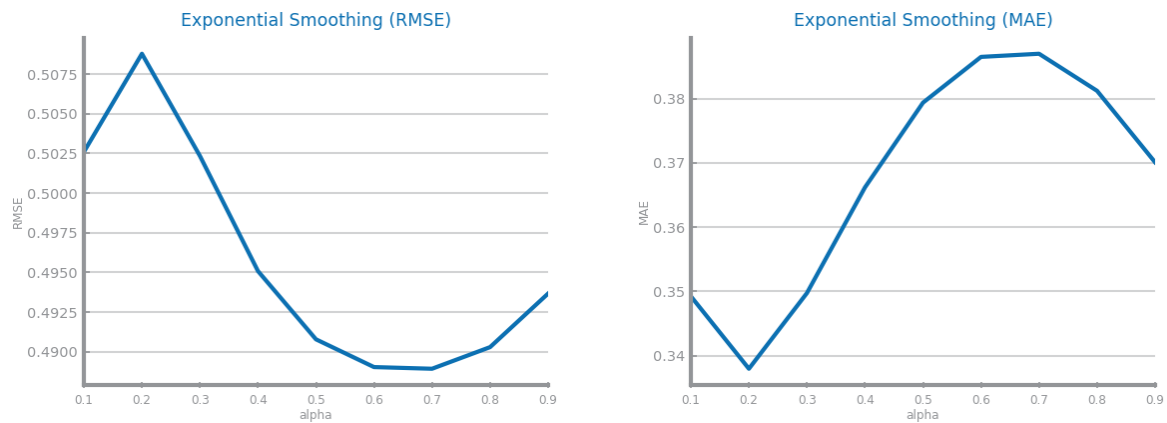


Figure 19: Exponential Smoothing RMSE and MAE study for Inflation Rate Time Series

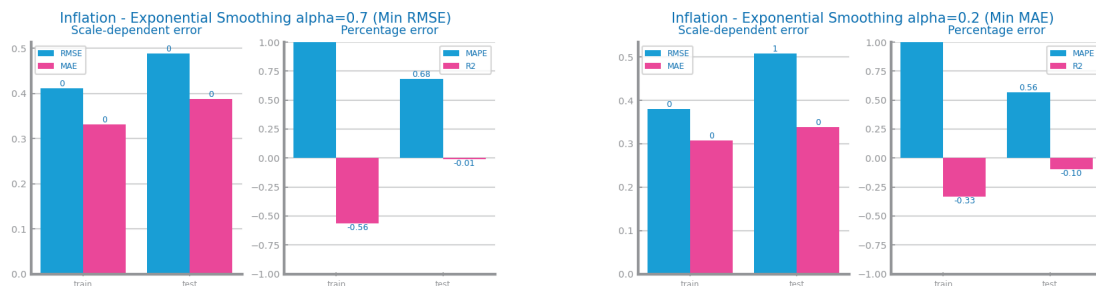


Figure 20: Exponential Smoothing RMSE and MAE evaluation results for Inflation Rate Time Series

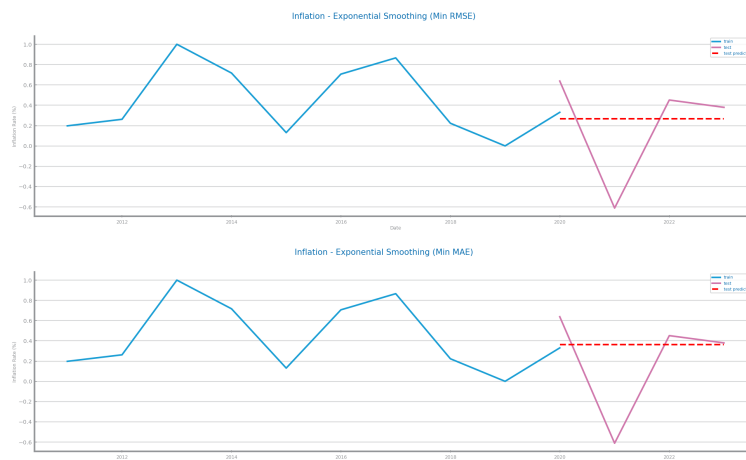


Figure 21: Exponential Smoothing RMSE and MAE forecasting for Inflation Rate Time Series

Multi-layer Perceptron

Used a lag of k=4 (years)

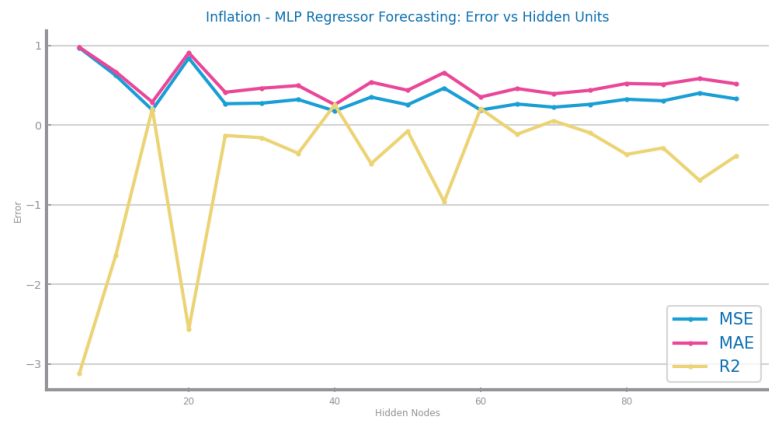


Figure 22: MLP RMSE, MAE and R2 study for Inflation Rate Time Series

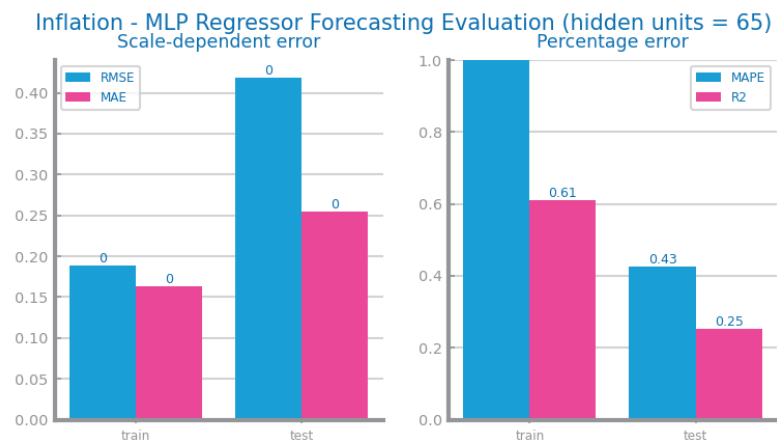


Figure 23: MLP R2 evaluation results for Inflation Rate Time Series

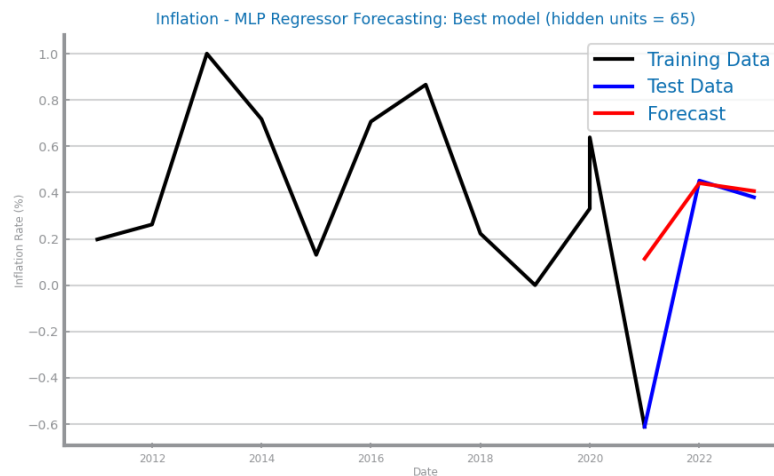


Figure 24: MLP Best model (based on R2) forecasting for Inflation Rate Time Series

ARIMA

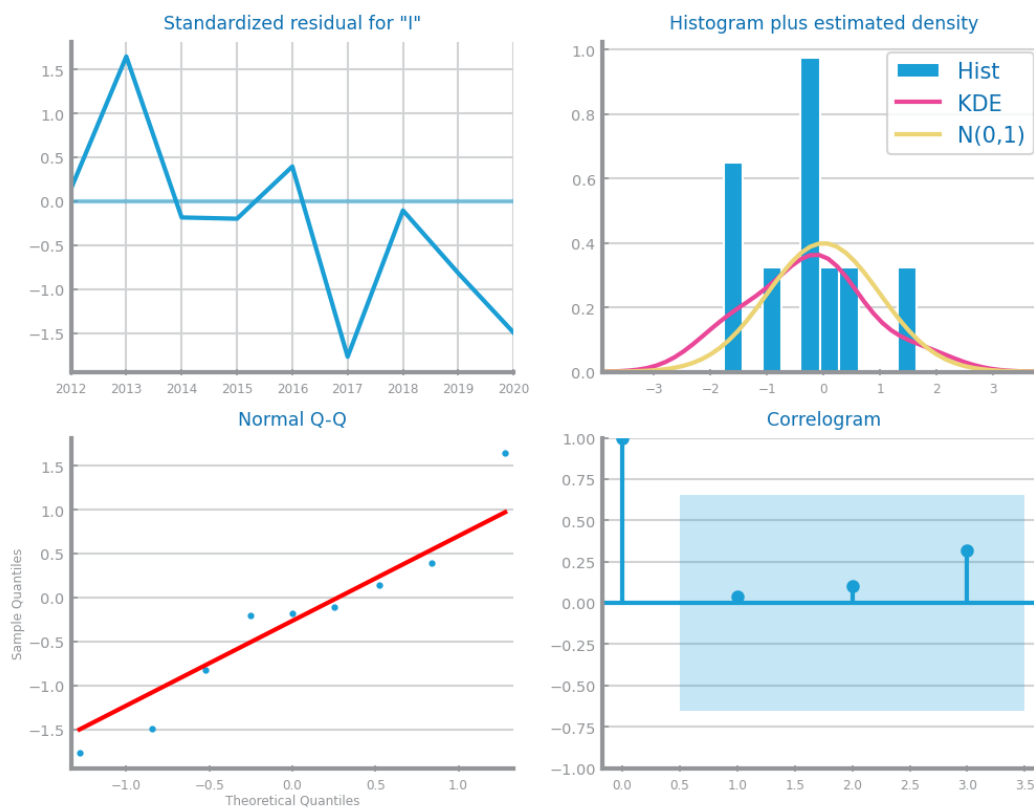


Figure 25: ARIMA diagnostics for Inflation Rate Time Series

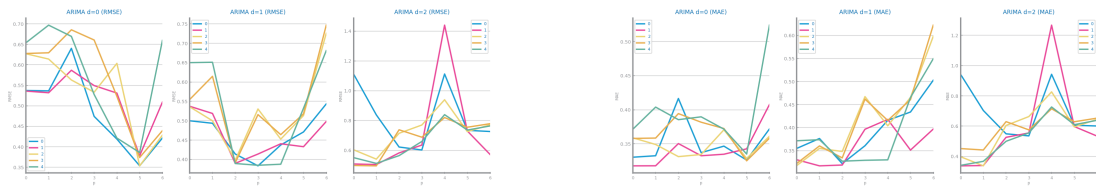


Figure 26: ARIMA RMSE and MAE study for Inflation Rate Time Series



Figure 27: ARIMA RMSE and MAE evaluation results for Inflation Rate Time Series

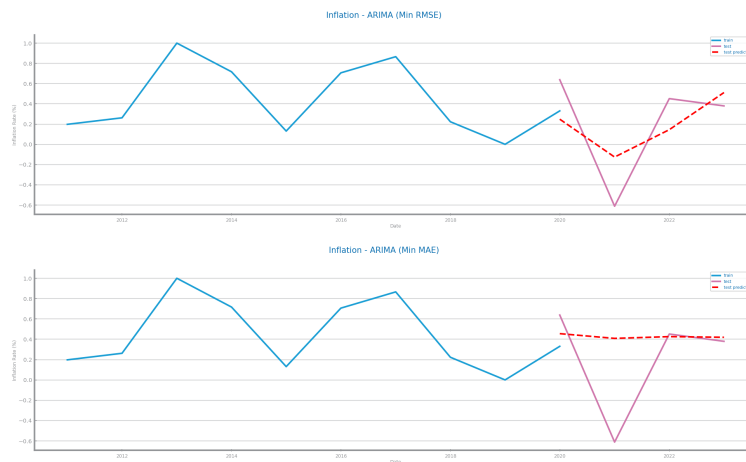


Figure 28: ARIMA RMSE and MAE forecasting for Inflation Rate Time Series

LSTM

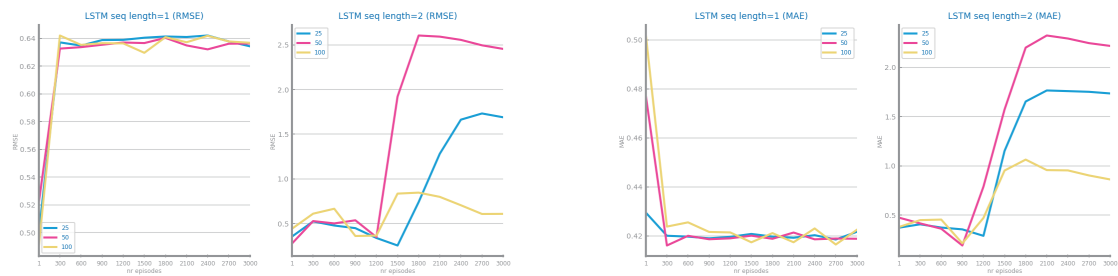


Figure 29: LSTM RMSE and MAE study for Inflation Rate Time Series

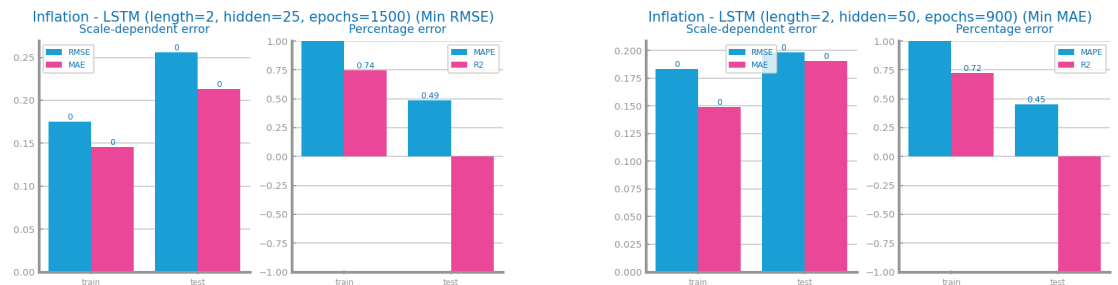


Figure 30: LSTM RMSE and MAE evaluation results for Inflation Rate Time Series



Figure 31: LSTM RMSE and MAE forecasting for Inflation Rate Time Series