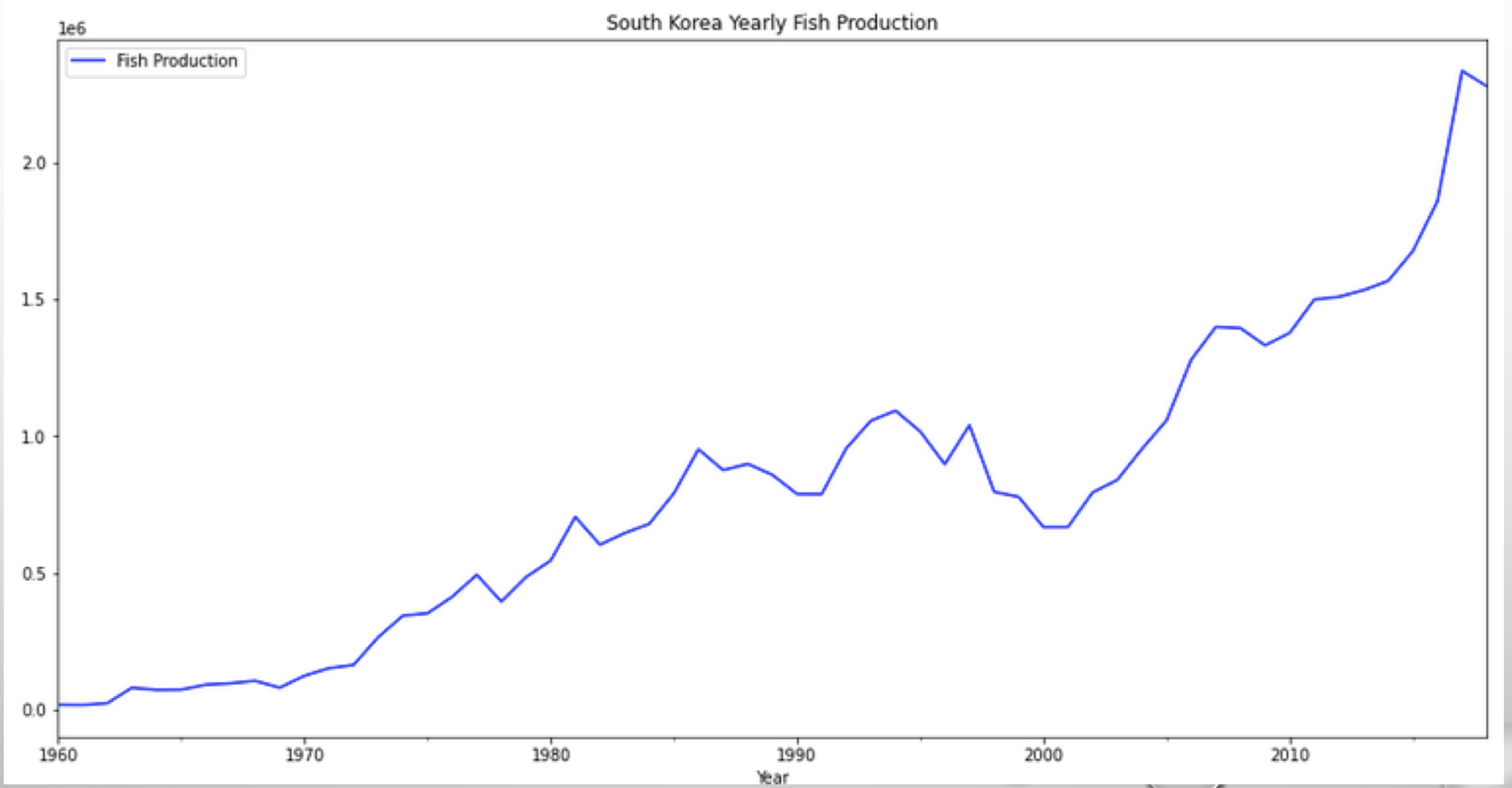
TIME SERIES APPLICATION

SOUTH KOREA AQUACULTURE YEARLY PRODUCTION

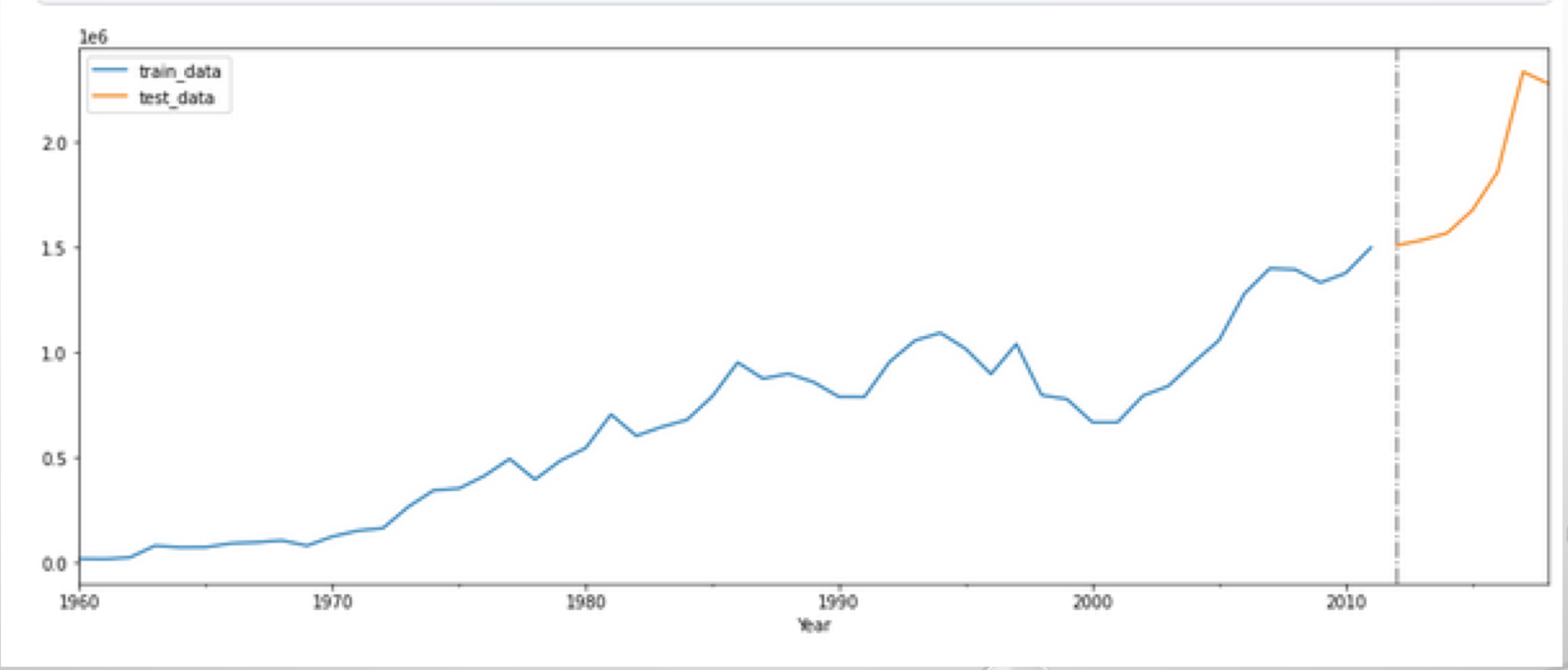
STUDY FRAMEWORK

1. Clean the data and observe a trend over time
2. Decompose the time series observations
3. Split the data into the training and test periods
4. Check the stationarity of the training data
5. Run ACF and PACF to decide inputs for AR and MA
6. Build ARIMA models
7. Build a rolling forecast model
8. Forecast the fish production over the test period
9. Compare the forecasts from the models and actual observations

S. KOREA YEARLY AQUACULTURE PRODUCTION



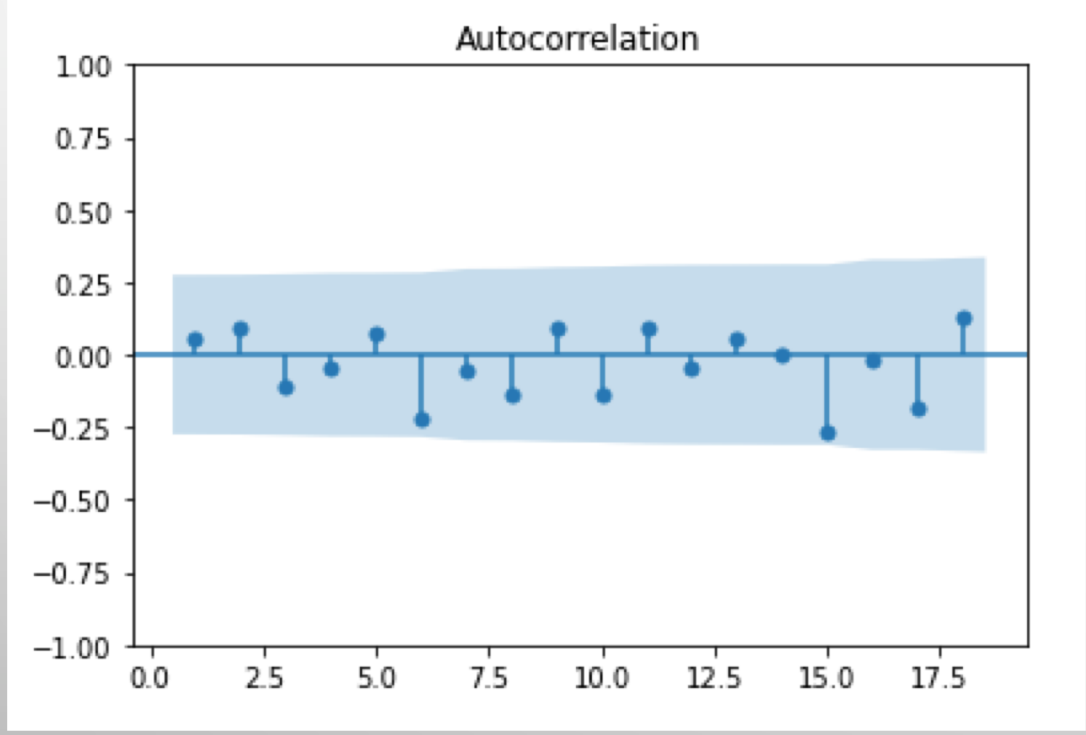
TRAINING(1960-2011) AND TEST (2012-2019) PERIODS



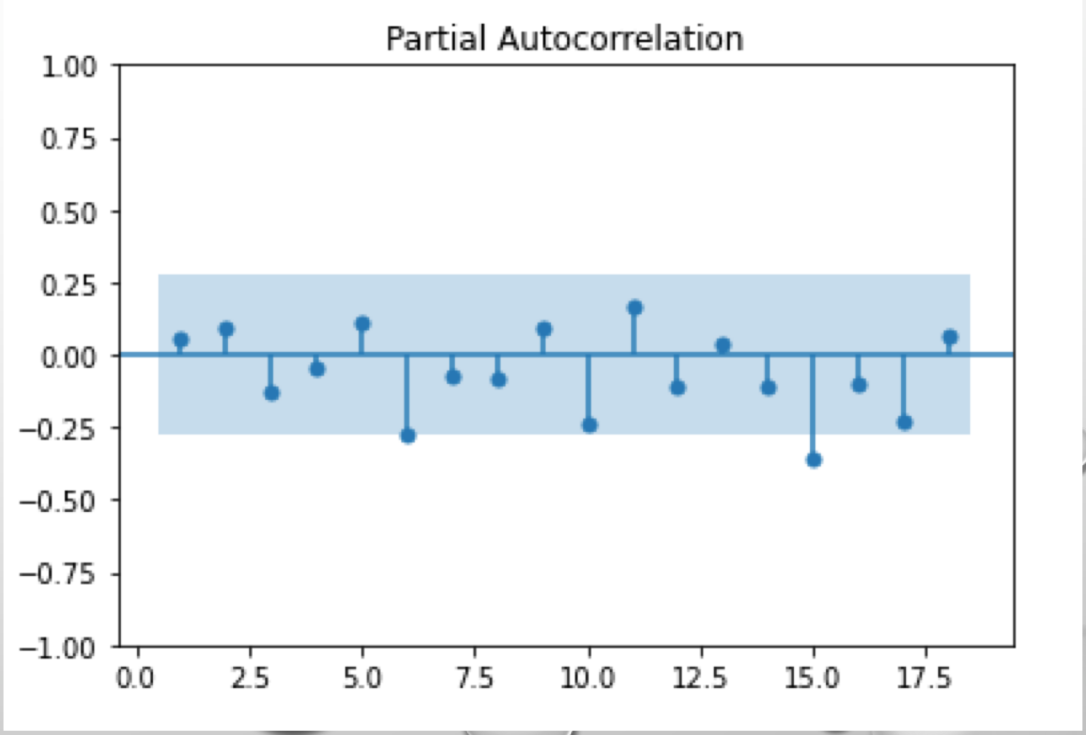
STATIONARITY TEST

After one time difference operation, the Augmented Dickey-Fuller Test is passed. Using this information as the value of *d* in ARIMA model.

ACF TEST



PACF TEST

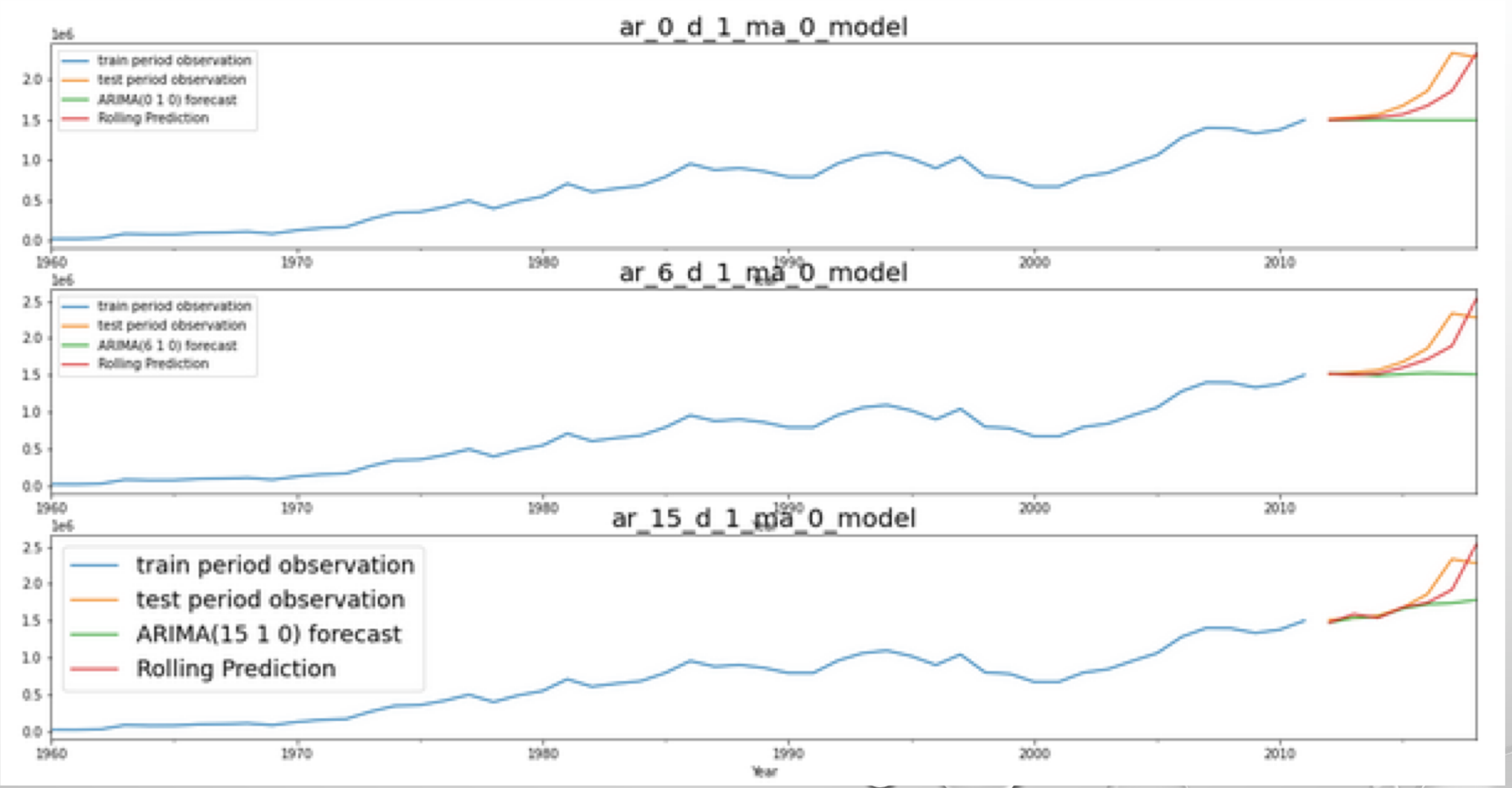


BUILD TIME SERIES MODELS

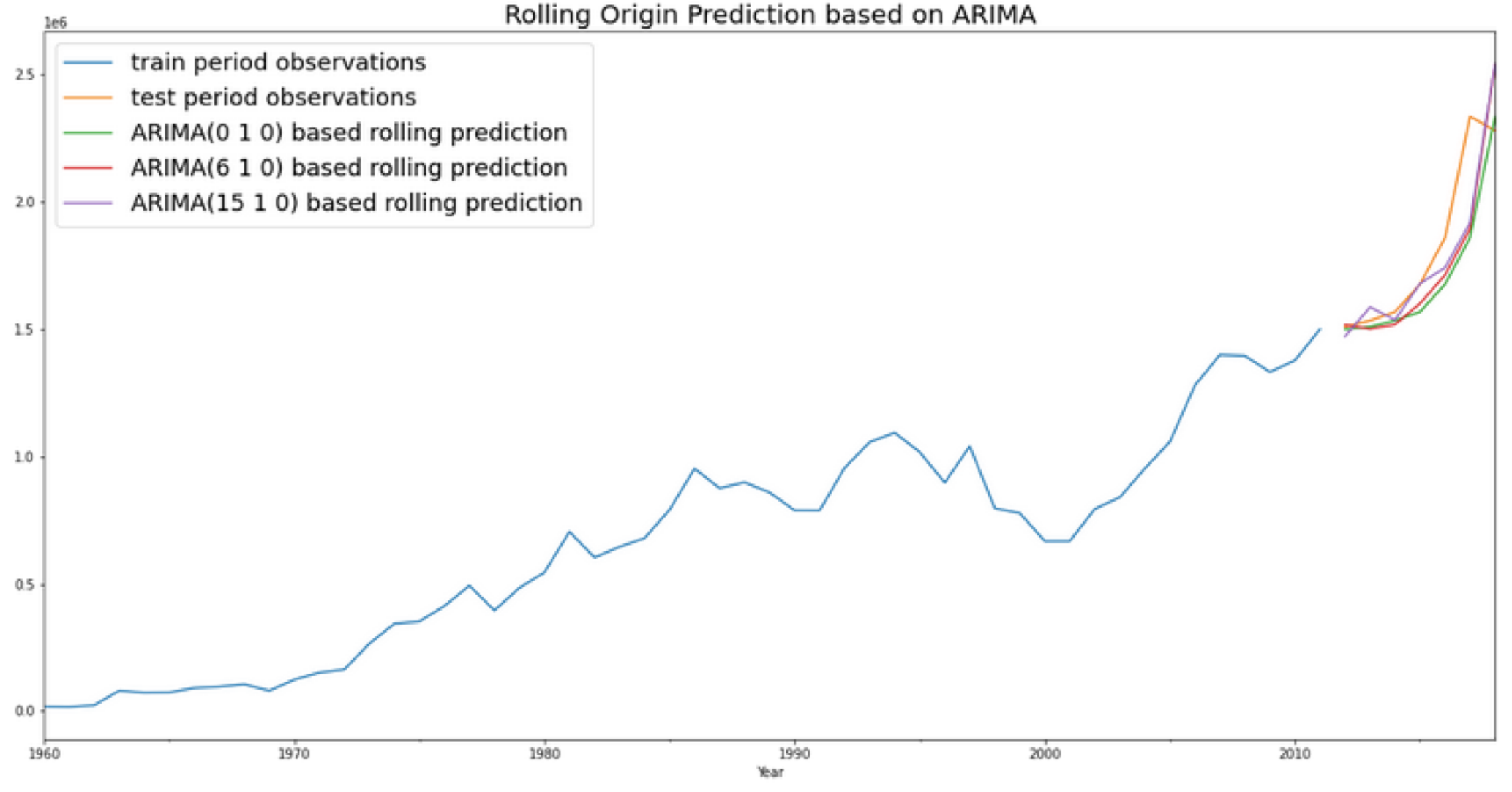
- ARIMA(0 1 0)
- ARIMA(6 1 0)
- ARIMA(15 1 0)
- Rolling forecasting original model

MODEL PERFORMANCES COMPARISON

Finding: With this data, the rolling origin forecasting based on ARIMA performs better than ARIMA itself.



ROLLING ORIGIN FORECASTING COMPARISON



Data Source: from Kaggle
https://www.kaggle.com/datasets/sergegeukjian/fish-and-overfishing

Python Code:
https://www.kaggle.com/code/amikang/s-korea-aquaculture-time-series-prediction