Econ 409/447 Assignment 1

Due: January 15th, 11:59pm

1. (0 points) For this homework we will be asking you to produce exchange rate forecasts. I have posted the data you will need for this assignment on the course website under *JPYUSD.csv*. Please download and import this data into jupyter notebook.

2. ARIMA Forecast

   (a) Omitting the last 10 days of the time series, fit an appropriate ARIMA model to the data (this model used will likely be very simple).

   (b) Use your model to generate a forecast of JPY/USD exchange rates for the next 10 days. Plot the results.

3. Benchmark Forecast

   (a) Build another model with the same training data. Any method is acceptable, including a regression with trend, naive, prophet, holt-winters, etc. You can also choose an ARIMA model with different hyperparameters.

   (b) Generate a 10-step ahead forecast using this second method.

   (c) Compare the results of your benchmark and ARIMA forecasts with the actual asset price. Which tended to perform better?

4. **Optional** Exercise (ungraded)

   (a) Generate out-of-sample 1 day ahead rolling forecasts using each model. You may choose the size of the preceding window used to fit the model parameters.

   (b) Report the out-of-sample mean squared error for each model.