Gold Price Prediction

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Goals

The goal of this project is to produce a predictive model for gold price by examining indicators of uncertainty or stress in capital markets. The model is built upon the common understanding that individual investors flee equity markets to gold in periods of uncertainty or distress.

Challenges

The largest challenge has to do with lack of data. Many of the features used are only available for the past 10-15 years. The price fluctuations I want to track are tied to the overall market cycle which takes approximately 7 years. In the last 15 years only 2 economic downturns have occurred.

A secondary challenge is the irregular length of the business cycle.

Success Criteria

Root Mean Squared Error (RMSE):

Baseline = 0.008861

Modeling Approach

Because this is a time series problem and interpretability is important, I used the ARIMAX model.

For this model, features were carefully scaled and stationality was accessed.

Seasonality was not found.

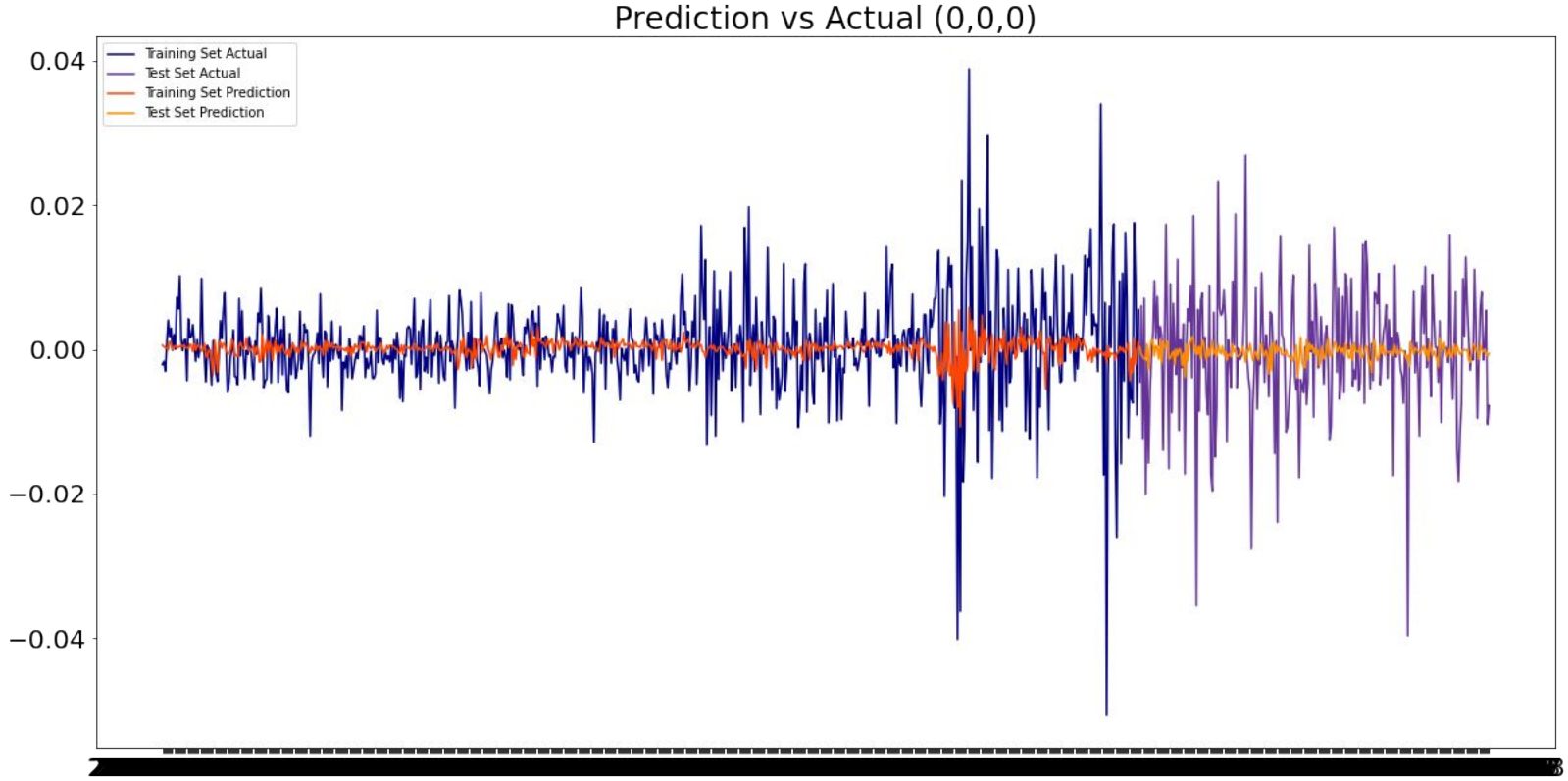
Findings

The most effective model (by AIC) was shown to have a PDQ of (0, 0, 0)

This is not good because models with a PDQ of (0, 0, 0) are referred to as ‘white noise’ or a ‘random walk’

RMSE for this model’s test was 0.008781

Baseline RMSE was 0.008861


Prediction vs Actual (0,0,0)
Training Set Actual
Test Set Actual
Training Set Prediction
Test Set Prediction
0.04
0.02
0.00
−0.02
−0.04

Next Steps

- Simplify, bianarize outcome.
- Sentiment Analysis