Pecunia

Jill Baker, Yousef Sersy,
Josue St.Louis, Elizabeth Ogando

Executive Summary

Our group wanted to make a foreign exchange calculator that could provide predictive analysis and answer the following questions:

- What is the current exchange rate between USD and other currencies?
- What is predicted exchange rate between USD and Euro in one year?
- How volatile is the exchange rate?

We felt we mostly answered these questions and with more time we could have dived deeper into the data.

Brief summary of findings

We had discovered a 95% chance that the exchange rate of USD to Euro will be between .90 and 1.25 in one year.

We also found that in September of 2022 there was a short period where the USD was stronger than the Euro.
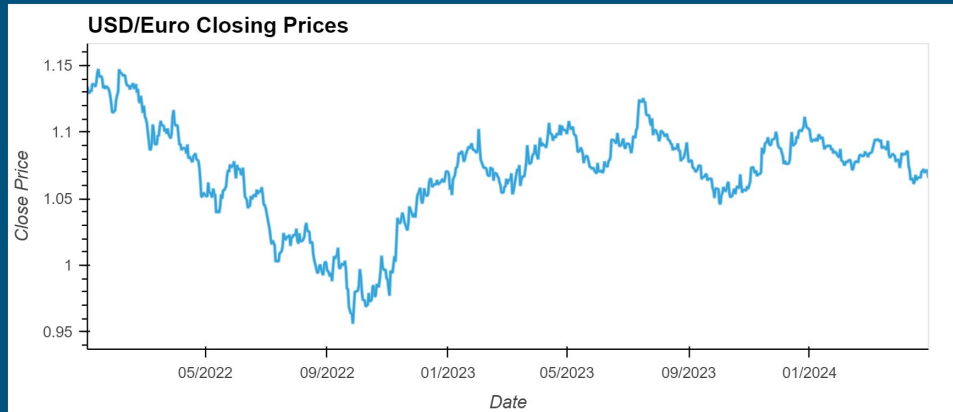
Concept

- To calculate a current exchange rate we researched and discovered an API provided by ExchangeRate to retrieve the current data for a variety of currencies.
- For historical analysis and predictions we found a historical source for exchange rates on NASDAQ.
- We then provided analysis using statistical methods to learn more and present the data.

Data Techniques

- The current exchange rates are in a JSON format which we saved into a python list.
- The Data that we downloaded from NASDAQ was in a csv file and was cleaned by clearing nulls, correcting the format, dropping columns and adjusting column names.
- Our biggest hurdle was finding sources for the data.
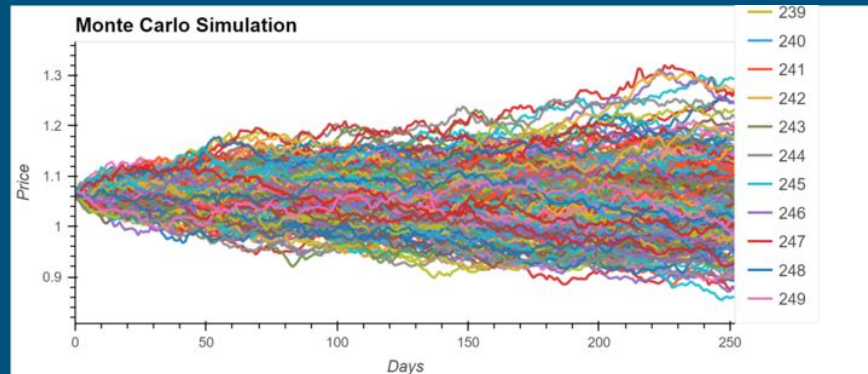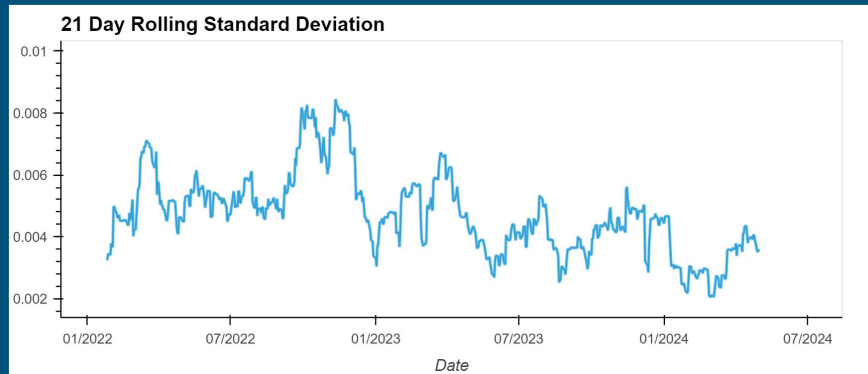- We didn't find any unexpected errors.

Approach

Tech Used

- IpWidgets for the form
- Holoview and HVplot for Diagrams
- API call to get current exchange rates
- Pandas statistical methods for analysis

Tasks and Roles

- Yousef did historical
- Josue did predictive
- Elizabeth did data cleaning
- Jill did form

21 Day Rolling Standard Deviation

Monte Carlo Simulation

Approach continued

- Challenges
  - We had some issues with connecting and bring everyone's code together.
  - We ran into an issue making the Monte Carlo simulation work.
  - Issue getting forms to work and look acceptable.
- Successes
  - Seeing the functionality come together and make a solid product.
  - We make a good and fun team with complimentary skills.

Next Steps

- Make a Geoplot that recommends vacation spots where USD has the best value.
- Build a prediction model to find places with good retirement value.
- Expanding on more currencies.
- Broaden date ranges for historical data.
- More specific Prediction calculator.

Links

- https://github.com/yousefsersy/Project-1---Pecunia.git

Questions?