Applying Machine Learning Models to Predict Dollar to Euro Exchange Rates - Final Capstone Proposal

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I will be attempting to predict currency exchange rates from US Dollars to Euros. This has potentially significant financial benefits for currency traders. There would also be potential financial benefits for travelers, allowing them to optimize timing when exchanging funds for a trip. Similarly, ex-pats, or those with income in one currency and expenses in another, would also be able to optimize the currency conversion.

I will primarily use the Currency Exchange Rates dataset found on Kaggle to source data on the dollar to euro values from 2008 to 2018. I will use time series modeling, testing parameters of the ARIMA model, to predict the exchange rate using a 70/30 split for training and testing. This will create a rather bare bones model as it takes no other factors into account (economic, political, societal).

From there, I will add additional data to the project by collecting stock exchange information as a means of accounting for economic conditions around each currency. The S&P 500 from the US, CAC 40 from France, and DAX from Germany will be used to create features for additional supervised learning models. Data from Germany and France were selected as they are the largest individual economies in the euro-zone. This data will be gathered from Yahoo Finance.

My research indicates that predicting exchange rates is a very challenging undertaking, so I anticipate significant error rates. Additionally, the data I have outlined will provide for a very small number of attributes. Creating useful features from the data will likely be my biggest challenge.

Datasets:
Kaggle
https://www.kaggle.com/thebasss/currency-exchange-rates
Yahoo Finance
https://finance.yahoo.com/quote/%5EFCHI/history?period1=1219042800&period2=1534489200&interval=1d&filter=history&frequency=1d
https://finance.yahoo.com/quote/%5EGDAXI/history?period1=1219042800&period2=1534489200&interval=1d&filter=history&frequency=1d