Nvidia Stock Prediction with Time Series Models

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Business Problem & Overview

Business problem

2021 is called the year of cryptocurrency. The popularity of cryptocurrency caused a shortage in the graphics card market. At the same time, it leads increasing of stock price of a graphics card supplier, Nvidia. This project aims to provide an updated time series forecasting for investment banks to predict better Nvidia future stock price.

Overview

Nvidia closing stock price is main dependent variable which predicted in this project, and AMD previous day closing stock price, Google trend data, graphics card market share, and Nvidia Earnings Date, Estimates & History were chosen for exogenous variables. For time series forecasting model, ARIMA and ARIMA with exogenous variables were tested on daily closing price of Nvidia.

Data - Nvidia Closing Stock History
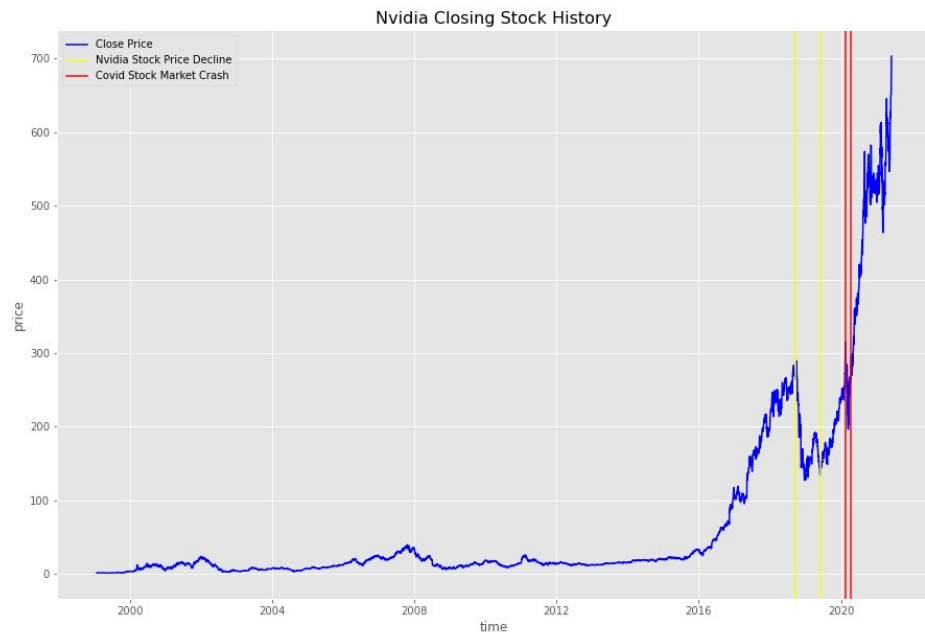
- **09/16/2018 ~ 06/01/2019**
  - Slowing global economy
  - Trade war
  - Poor future expectation
- **02/20/2020 ~ 04/07/2020**
  - 2020 stock market crash

Data – Exogenous Variables

Relationship Betweeen Close and Exogenous Variables

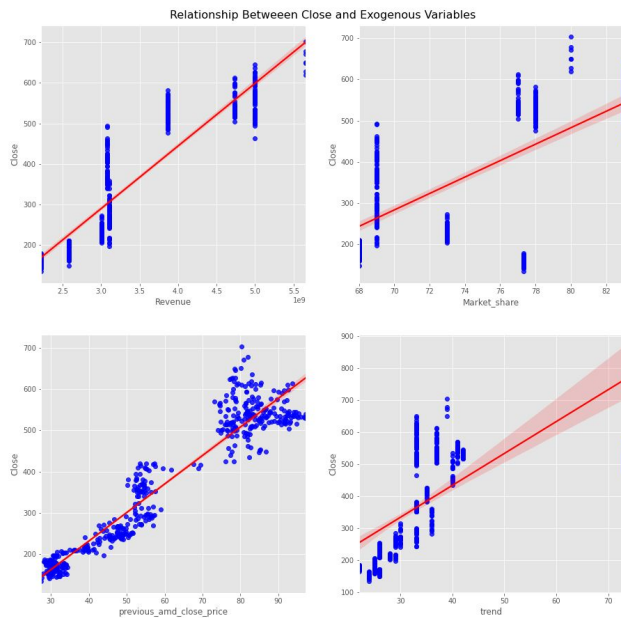- **Exogenous Variables**

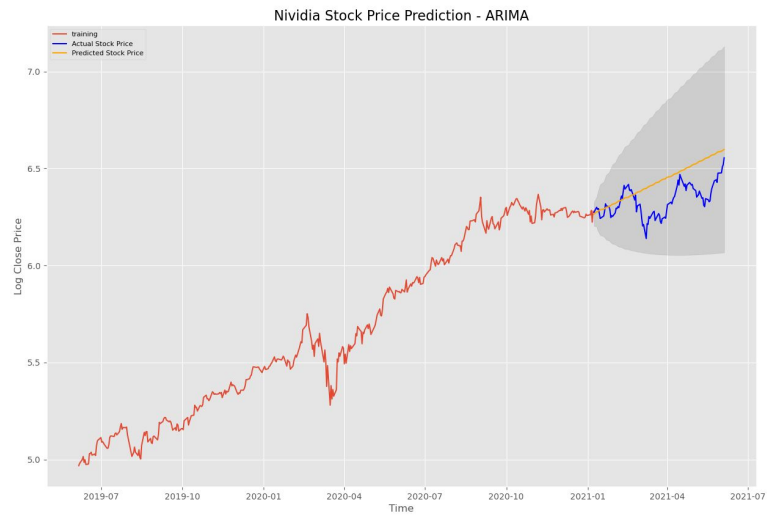 - Positive Relationship

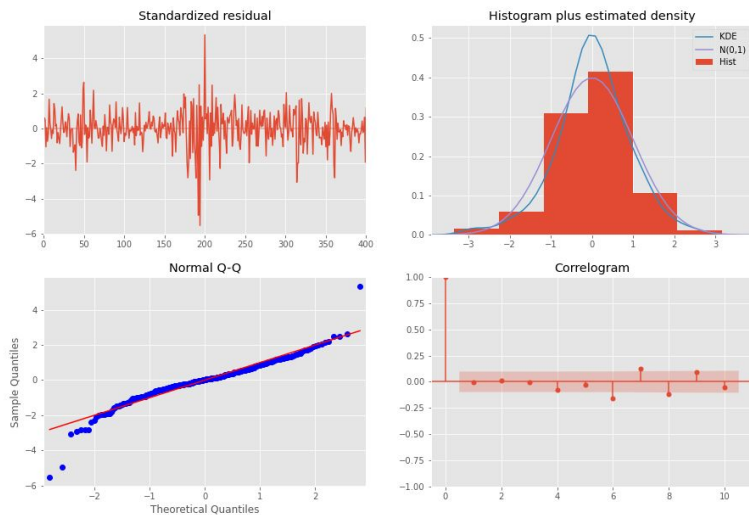   - Revenue

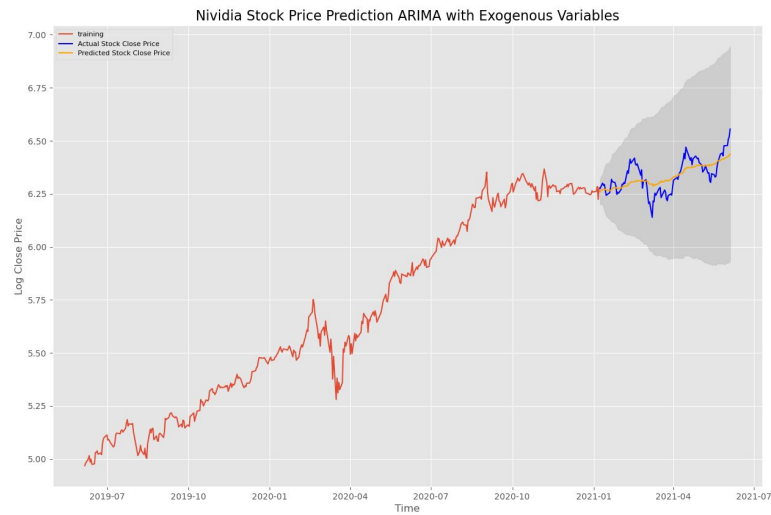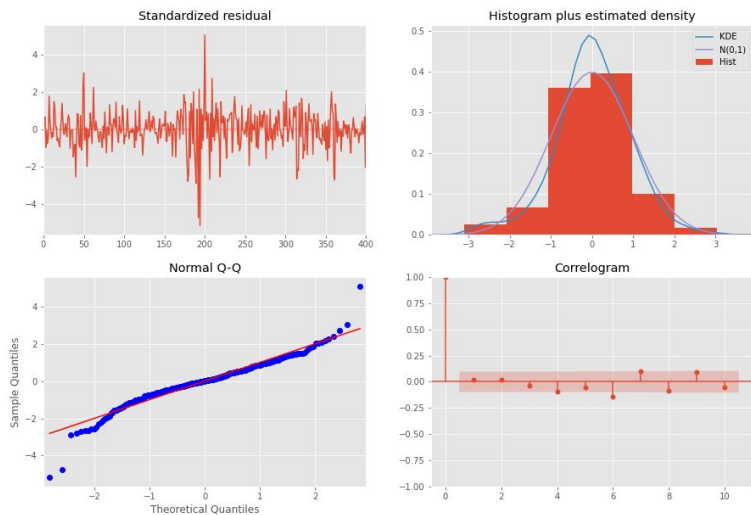   - GPU Market share

    - Previous day AMD stock close

    - Google trend

Model 1 – ARIMA

Model 2 – ARIMA with Exogenous Variables

Conclusion

Model Compare(*Best model)

	ARIMA	ARIMA with Exogenous Variables
RMSE	0.13	0.05
%RMSE	0.0203	0.0086

Conclusion

- I chose ARIMA with Exogenous Variables model because its RMSE is higher than ARIMA model.

- The project will help investment banks to predict Nvidia's future stock prices.

Next Step

- Test with LSTM and Prophet model

- Find other exogenous variables