Lab 6.6

Part 1: Economic Indicators

Analysis:

Began by pulling data from the Alpha Vantage website using the API and given key. First extracted the ‘Real\_GDP’ data. One column included both a date and a value together in a dictionary so I separated the column into two using the comma as a delimiter. Data type was all object type, but I changed the data type of the new ‘date’ column in an attempt to extract a date stamp from it, but it didn’t work for me. Exported the data into a csv then into a Power BI file where I then removed the excess bits from the columns of both the date and the new ‘value’ column and transformed the data types of the columns.

Back to python, pulled News\_sentiment data thinking that would be helpful, but it’s just a list of articles expressing sentiment. Instead, pulled retail\_sales as I felt like this was the best indicator of the wellbeing of the economy anyway. Format was the same as the real gdp data, so I followed the same steps.

Questions:

1. How have GDP and Consumer Sentiment changed during the pandemic? What was the general trend before 2020 and how has it changed from 2020 onwards?
   1. The GDP did not show much of a change considering the progression around 2020. There was a small decrease for the year 2020 specifically, but by 2021 the GDP returned to its trending upward trajectory showing that this small blip had little to no lasting impact.
   2. Consumer sentiment measured by retail sales shows a different story. The trend actually shows an increase in sales at the 2020 mark which appears to continue into the years after.

A screenshot of a graph

Description automatically generated

1. What are the limitations of using this data to try to understand how the pandemic has affected the economy?
   1. The main limitation is going to be that one indicator is not enough to get an accurate picture of the economy. The increase in retail sales may just be due to the fact that a lot of people were stuck at home because of the pandemic and they had more time to shop online and a desire to engage in hobbies.

Part 2: Cryptocurrencies

Analysis:

The Alpha Vantage data relating to cryptocurrencies was lacking somewhat, so others in the class discovered a similar website where we could use an API to gather data. CCData is the website so we looked through the documentation. The API key was surprisingly hard to access, so others shared theirs with me. A couple of us felt that Bitcoin and Ethereum were sufficiently emblematic indicators of the state of the market. After gathering this data, it was apparent it would be hard to use as is, so I changed the ‘timestamp’ columns on both into a datetime format. Then I exported the files to csv’s and imported them into Power BI where I removed any duplicated based on the timestamp. I considered the reported High and Low values of the market to see if it may have diverged drastically somewhere, I also considered the Open and Close values, but the data is statistically similar to the highs and lows.

Questions:

1. What has happened in the cryptocurrency market in the last few years?
   1. The cryptocurrency market in the last few years has grown exponentially, dipped back down to rates similar to 2018 around the beginning of 2022, then began to rise back up again near the start of 2023 and has reached its highest peak in recent months. Bitcoin and Ethereum show similar progression and I would hedge a guess to say that the other cryptocurrencies are remarkable similar too.
2. Has the pandemic had an effect? What was the general trend before 2020 and how has it changed from 2020 onwards?
   1. Causation in this case is difficult to parse out as 2020 didn’t show much change, but the market value shot up in 2021. Whether it’s due to the pandemic or not is unclear. Prior to 2020, the market was seeing an uptick with the end of 2017 showing the first significant rise in market value. 2018 to the end of 2020 showed a slight decrease from the initial high but remained rather steady throughout. Then 2021 brought record high values, it dropped down throughout 2022, then 2023 saw it begin to rise again and now in 2024 the value is higher than it’s ever been. Whatever the cause, the post 2020 market is showing overall growth compared to prior years.
3. What are the limitations of using this data to try to understand the cryptocurrency market?
   1. One limitation already mentioned is that the causation in relation to the pandemic is unclear. It may be trending upwards as more people enter the market. Also, this data relates to the value of the product and not necessarily the health of the market overall. But, value is perceived so it’s not a bad marker to gauge from.

