Data Analytics Bootcamp - Project 1

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1 - INTRODUCTION

**Aim:**

The aim of this project is to analyse historical stock market data and attempt to draw insights relating the ways sectors within the S&P500 behave during, and immediately after, a recession. We will try to use those insights to predict future market behaviour. In addition we will seek to determine the factors which impact the length of a sector’s recovery, post recession.

**S&P 500:**

The S&P 500 is a group comprising the largest 500 publicly listed companies based on market capitalisation.

The S&P 500 is widely regarded as one of the best indicators of large company performance and of the performance of the stock market more broadly.

**S&P 500: Sectors**

The companies listed on the S&P 500 can be categorised using the following eleven sectors:

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Energy | (2) Material | (3) Industrials | (4) Consumer (Discretionary) |
| (5) Consumer (Staples) | (6) Health Care | (7) Financial | (8) Technology |
| (9) Communications | (10) Utilities | (11) Real Estate |  |

2 - DATA ACQUISITION

Our stock price data and sector performance data was obtained through Yahoo Finance.

## 

**Data Fields and Variables:**

**yfinance**: A python package that downloads market data from the Yahoo! Finance's API.

**yf.download()**: A function which can download the market data based on the selected time period.

With the adjustment of the start and end dates below, we were able to send a request to the Yahoo Finance website and acquire the data we needed for the relevant timeframe.

Once downloaded, the SECTOR data that the yfinance package provides includes:

|  |  |
| --- | --- |
| **Fields** | General field information. |
| **Date** | The date for this record. |
| **Open** | The opening price on that date. |
| **High** | The highest price on that date. |
| **Low** | The lowest price on that data. |
| **Close** | The closing date on that date. |
| **Adj Close** | Amended stock closing price after any corporate actions. |
| **Volume** | Traded volume on that date. |

Once downloaded, the INDIVIDUAL COMPANY data that the yfinance package provides includes:

|  |  |
| --- | --- |
| **Fields** | General field information. |
| **Symbol** | ID for the stock. |
| **Shortname** | Name of the stock. |
| **Longname** | Name of the stock. |
| **Sector** | Sector the stock belongs to. |
| **Industry** | Industry the stock belongs to. |
| **Currentprice** | The latest price of the stock. |
| **Marketcap** | The combined value of all shares for the company. |
| **Ebitda** | Earnings before interest, taxes, depreciation, and amortisation. |
| **Revenuegrowth** | The amount of money the company makes over a pre-determined time period compared to the previous, identical amount of time. |
| **City** | The register city of the stock. |
| **State** | The state of the stock. |
| **Country** | The city of the stock. |
| **Fulltimeemployees** | Number of full-time employees |
| **Longbusinesssummary** | Business summary of the company. |
| **Weight** | The percentage value of each stock in the **portfolio.** |

3 - ANALYSIS

To add to Chris’ word file:

Chart

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As we can through out historical recessions, consumer sectors recovered at the fastest rate, followed by Materials.

That means a recession is likely to restore and increase consumer and material demand.

Communications sector is the slowest to recover.

This can be explained that during a recession, food and essential services are of utmost importance compared to other sectors.

Questions:

Revenue growth per sector?

Marketcap per State?

Weight by Sector?

Has the market recovered after the Covid 19 recession?

Is the market on a bull or bear trend?

Is it still a good time to invest in the stock market? (Answers are at the end)

Limits:

Time constraint

Not enough data being observed for this study

All conclusions made are relative

Revenue growth per sector:

Chart, pie chart

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In terms of revenues, positive revenue growths are reported across all sectors. Positive revenue growth reported by companies in the Consumer Discretionary sector have been the largest contributor to the increase in the overall revenues.

This could be explained by the gains from Tesla of 12% in the last 9 days.

Consumer discretionary is a sector classification of non-essential consumer goods and services watched by analysts and investors.

Consumers tend to spend more on consumer discretionary products in economic growth phases, which are usually characterized by higher disposable income.’

Marketcap per State

Chart, pie chart

Description automatically generated

California has the biggest market cap. This can easily be explained and many of the world largest companies by market cap have headquarters in CA, e.g. APPLE, ALPHABET, TESLA, META, VISA, etc.

California is home to a very unique and diverse population. Perhaps nowhere else on Earth do you have such high concentrations of (bio)tech workers, entertainment industry leaders, agricultural innovators and other niche skill sets. That is why many big companies choose California as their bases.

Weight by Sector

Chart, pie chart

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Tech makes up almost a quarter (23.68%) of the S&P 500 weighting.

The S&P 500 is weighted by market cap, which is why the tech companies have such a dramatic influence.

The five most valuable U.S. companies — Apple, Microsoft, [Alphabet](https://www.cnbc.com/quotes/GOOGL), [Amazon](https://www.cnbc.com/quotes/AMZN) and [Facebook](https://www.cnbc.com/quotes/FB) — now account for 17.5% of the S&P 500. That means investors passively putting money into the most popular exchange-traded fund, the SPDR S&P 500 ETF, are heavily, and perhaps unintentionally, wagering on U.S. tech companies.

This could carry a risk as tech companies face unique threats as regulators in the U.S. and Europe scrutinize what they view as [anti-competitive practices](https://www.cnbc.com/2019/06/10/congressional-hearing-takes-on-antitrust-behavior-among-digital-giants.html).

Closing Price of S & P 500 and all sectors after Covid 19 recession

Chart, scatter chart

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Chart, scatter chart

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Chart, line chart

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This is approx. a 12 month period.

According to these plots, we can see an up trend across all sectors.

The stock market is in a bull run after Covid-19 Pandemic.

The stock market keeps climbing despite real-world turmoil (i.e. The US Presential election in Nov 2020, the capitol insurrection in Jan 2021,the 500,000 US Covid deaths early March 2021)

To the extent that there can ever be an explanation for what’s going on with the stock market, there are some straightforward financial answers here. The Federal Reserve [took extraordinary measures](https://www.vox.com/2020/3/23/21190712/federal-reserve-unlimited-quantitative-easing-coronavirus) to support financial markets and reassure investors it wouldn’t let major corporations fall apart. Congress did its part as well, pumping trillions of dollars into the economy across [multiple](https://www.vox.com/future-perfect/2020/7/7/21308450/extra-600-unemployment-stimulus-expiring-cares-act) [relief](https://www.vox.com/2020/12/21/22193134/covid-19-stimulus-deal-house-senate) [bills](https://www.vox.com/policy-and-politics/22231808/joe-biden-economic-stimulus-proposal). Turns out giving people money is good for markets, too. Tech stocks, which make up a significant portion of the S&P 500, soared. And with bond yields so low, investors didn’t really have a more lucrative place to put their money.

Another notable point we can see from the charts is that the market has gone up a lot, in record time. Since end of Covid recession, the S&P 500 has surged more than 90%. That’s the highest first-year bull market gains since 1945 and outpaced the average of 37.5% for all prior bull markets.

The speed of this bull market makes sense when one looks at how quickly the bear market of 2020 occurred: 33 days from peak to trough. Hats the fastest on record. And then the market recovered everything it had lost in fewer than five months, the third-shortest period in market history to recoup such a massive level of losses.

Bull markets that return more quickly are an indication that investors had less uncertainty and more conviction in an economic and earnings recovery.

We also note that there was a recent dip in Jan 2022.

If anything was responsible for the drop, it’s the sense that the Federal Reserve, which will release its interest-rate decision

We saw a turnaround in March 2022.

Despite the constant uptrend, S&P 500 still hasn’t risen back to its 200-day moving average. This indicates market participants still aren’t fully comfortable buying stocks at prices consistent with their longer-term trends. Perhaps the reason is because Ukraine and Russia are really still an issue.

Answers

Has the market recovered after the Covid 19 recession?

Last March, stocks plunged as the world faced the frightening spread of the Covid virus. Surprisingly, the market quickly rebound and the S&P500 is up more than 90% since the Covid recession.

Is the market in a bull or bear trend?

A new [bear market](https://www.investopedia.com/articles/investing/070115/4-ways-survive-and-prosper-bear-market.asp) begins when an index or other security falls 20% or more away from its peak or trough. Likewise, we have enters a [bull market](https://www.investopedia.com/terms/b/bullmarket.asp) when prices rise 20% or more from a bottom.

In an overall trend for the past 12 months, the stock market is obviously in a bull run.

However, there's no perfect way to label a bull or bear market. It's easier to focus on specific time frames or to consider the sequence of peaks and valleys on the price chart. Plus, with what is going on around the world at the moment, it is hard to predict whether the bull run will continue.

Is it still a good time to invest in the stock market? (Answers are at the end)

If you are a long term investor, then yes.

If you're looking to invest for your future -10, 20, or 40 years off , then now is always as good a time as ever to [buy stocks](https://www.fool.com/investing/how-to-invest/stocks/how-to-buy-stock/). Waiting for a pullback in stocks with a longterm view isn't going to make that much difference. How much is a 10% difference going to make on your buy price today in 40 years when your original investment has grown more than 10 fold?

And if you invest consistently over time, putting more cash into your investments every month or so you'll end up catching a correction or a [stock market crash](https://www.fool.com/investing/stock-market/basics/crashes/) on occasion.

Also, the overall uptrend from the charts supported this.

[Warren Buffett](https://www.fool.com/investing/2021/08/10/warren-buffett-says-do-this-to-build-wealth/) once said, "I make no attempt to forecast the market. My efforts are devoted to finding undervalued securities." For him, whatever the market is doing doesn't matter.