Department of Business e Management
MSc. in Corporate Finance

Course of Financial Statement Analysis

The 2020 USA elections: an analysis of the possible consequences on relevant industries

SUPERVISOR
Prof. Saverio Bozzolan

CO-SUPERVISOR
Prof. Francesco Paolone

CANDIDATE
Alessandro Argo
Student number 761011

Academic Year 2020/2021

Table of contents

Introduction

The United States of America has represented the major economy in the last century; its financial market is considered to be the most developed and significant in the world. Events that affect the economy of the U.S. have then consequences that influence other countries worldwide.

On the 3^{rd} of November 2020 Joseph Robinette Biden Jr. became the 46^{th} president of the United States of America, beating the incumbent republican president Donald John Trump. On the 20^{th} of January 2021, the democratic president officially started his mandate. After the last elections, the democrats have also a strong majority in the House of Representative, while the Senate still remains in the control of the Republican party.

In the following years then, during the new administration, the United States of America will probably experience a completely different economic policy with respect to the one of the last four years carried out by President Trump.

In this work I will try to assess what the impact of this change in policy on the American economy will be, using the Standard & Poor 500 index as representative of the whole economy.

Previous studies have already analyzed the impact of the macroeconomic variables on the S&P 500, finding relationships between the equity market and main macroeconomic indicators like the Gross Domestic Product, the unemployment rate, and the Consumer Price Index.

However, in recent times research have started to focus the attention on the impact that news and social network content have on the price of securities on the financial market. In particular, twitter has attracted a lot of attention from researchers for the study of the public sentiments and for the construction of forecasting models.

In this work I will try to combine both the approaches in order to understand the impact that the Biden' policy may have on the financial market as a whole and on the single industries. The final aim is to provide a detailed estimation for the future evolution of the Standard & Poor 500 index and to identify the industries that are expected to underperform and overperform the index itself.

Chapter 1
Historical Approach

The US presidential elections have always been an event followed with high attention by all the market participants, from the companies to the investors. Politics is a factor that strongly impacts on the operativity of companies and so on the performance of the financial markets; therefore, the presidential elections, especially the ones of the United States of America represent without any doubt an event that will influence the global economy for a long period of time.

Not by chance, the companies themselves are used to allocating a huge number of resources in financing the candidate' electoral campaign that has proposals and initiatives that are expected to impact in a positive way on the relative industry. A clear example of this may be the Oil industry that has usually financed the republican party given the strong tradition of this political force in favor of petroleum energy source.

To understand the impact and the consequences that the new presidency may have on the stock market it will be useful to analyze the historical outcomes of the previous election in order to find any similarity with the ones of 2020 and formulate hypothesis.

Taking the Standard & Poor 500 as representative of the U.S. stock market, in this chapter an analysis of the political programs of the previous presidents and the impact they have had on the considered index will be proposed, in order to find any resemblance with the actual scenario and provide a first hypothesis of what will happen in the following four years.

In this chapter, the analysis will be based on a statistical approach and on a detailed analysis of the political and economic events that have moved the economy and so the stock market in the past years. The aim is to find any similarity and understand the general mechanisms of the market that will drive the economy for the next presidency.

In general terms, the US economy tends to follow an uptrend (looking at the S&P 500 index as benchmark), regardless of the party winning the election; the only years in which the S&P 500 has systematically shown lower performances are the election years, which is a clue of the fact that the financial market rather than being in favor of a political party it just hates uncertainty.

The evolution of the S&P 500 equity index is the result of the movements of each single component of the portfolio. Even if in the previous periods the USA stock market has been in a constant uptrend the various events that have impacted on it have had a different outcome on the single industries, with some of them that have benefitted more than others by these happenings.

Thereafter every relevant event tends to show a different outcome on the single industries, and the combined evolution of the single sectors will define the performance of the economy of a given country. Consequently, it is absolutely useful to divide the economy of the United States of America into its single components and analyze singularly what is the possible impact of the new elected president Joe Biden on each of them.

As already stated, the first analytical approach will be based on the outcome of the previous elections, using the S&P 500 as representative of the US economy, and dividing the index into its single industry components in order to understand in first loco the possible impact of the new government on the single sectors and then, weighting the single components, the global effect on the whole economy.

1.1 The outcome of the previous elections

In the short term the stock market is like a crazy guy gambling at the casino. The stock market can never be predicted and does not follow general and always-valid rules. What however is constantly true is that the stock market hates uncertainty. In the short term indeed the single events that are expected to impact the economy are reflected on the prices of the securities following only the general expectations of the single market participants. Only in the long run instead these events show the real impact on the economy and so influence in the correct way the financial system and its single components.

The United States of America have always represented the most developed and advanced economy in the world and since the crisis of 1929 the Standard's & Poor equity index is in a historical uptrend. The evolution of the index has of course never been constant, following instead a random path around the secular trend line with positive slope.

This gives another confirmation of the fact that in the short term the results of the presidential elections influence the market only on the basis of the expectations of the investors, while in the long term the political orientation and the initiatives of the single governments show correctly their results that are consequently priced in a proper way in the S&P 500.

In the following graph is indeed possible to see the evolution of such index under different presidents since the beginning of the 1926[1]:

[1] Graph downloaded from the following link: https://www.forbes.com/sites/kristinmckenna/2020/08/18/heres-how-the-stock-market-has-performed-before-during-and-after-presidential-elections/?sh=cbcd7454f868.

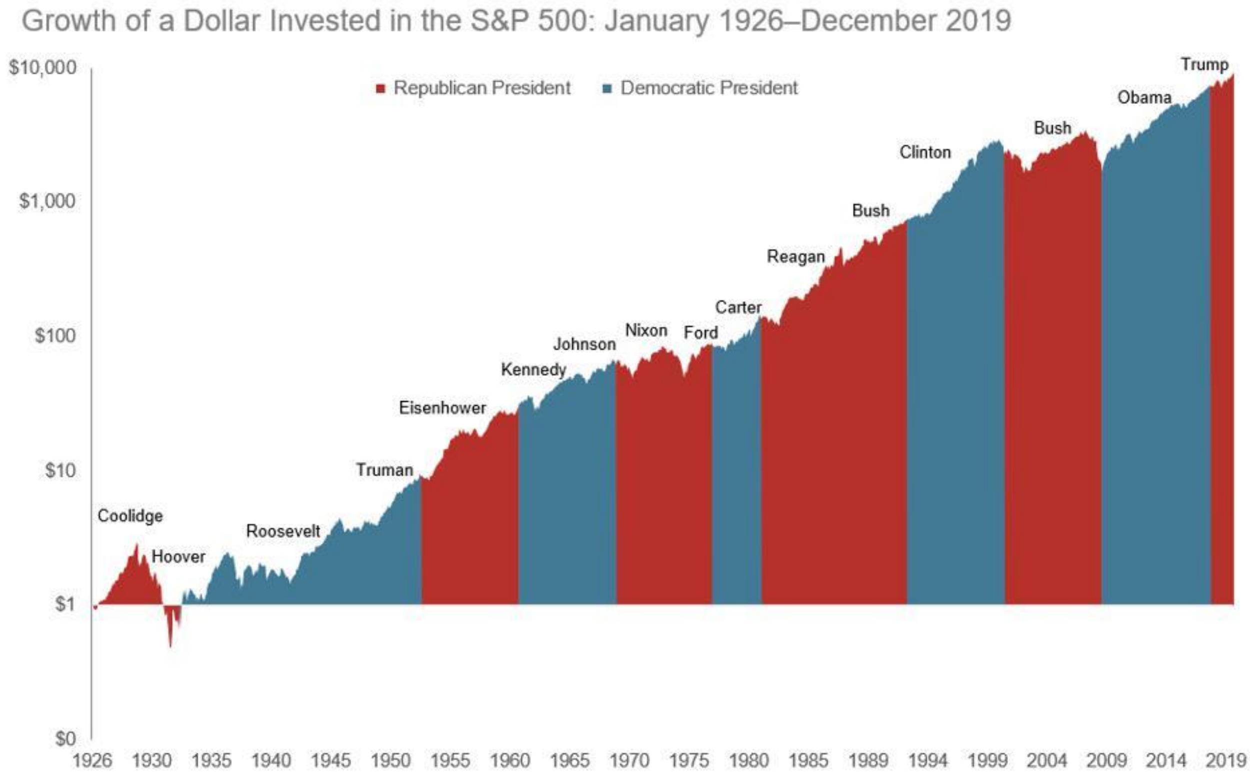

Figure 1.0.1: Historical evolution S&P 500

It seems from this graph that in the long run the American economy will always perform positively, no matter what the color of the party of the winning president is. What is instead true is that the color does matter for the single industries that compose the S&P 500

If we look at the short-term results of the index only taking into account the official winner of the elections, then the performance of the market seems to be better when the republican candidate wins, with the S&P 500 having better than average results in November (taking only into consideration election years) in this scenario.

Wins by the Democratic Party in a presidential election have been followed instead by weaker Novembers. Nonetheless, the S&P 500 went on to post above-average price gains, and more frequent increases, in Decembers after a Democratic presidential candidate wins.

In the next month of December if we have to base our forecast on the historical data then an increase in the price is likely to happen independently from the party the president belongs to. December represents a profitable month for the S&P 500, giving in 74% of the times positive gains. However, in election' years the 84% of the times the S&P 500 increased its value in the last month of the year.

Moving the analysis on the medium-term perspective instead, even if the market historically has reacted better to republican wins, a democratic president seems to have brought better results in the months following the election.

However, looking only at the party of the elected president is not enough. Besides the President, the government of the United Stated of America is made up also by the House of Representative and the Senate, and the party that obtains the majority in the Congress components impacts a lot on the development of the specific industries.

So, still considering the historical behavior of the market after the election, it seems that the best combination for its performances in the year after the election happened when the House of Representative was of the same party as the president, which is the actual scenario. With this settlement indeed, taking as sample the performances of the S&P 500 from 1926 until 2019, the index has set an average return of 10.6% against an average of 8.8% for all the other years.

It also follows that a split in power between Congress and the executive branch (which is not the actual scenario) has been second-best for stocks (8.6%), and a Congress unified in control against the president's party has posted the worst results (7.4%), on average.

In general terms however, during the mandate of a president, it becomes apparent that year three of a president's term is usually the strongest year for the market, followed by year four, then the second, and finally the first[2].

In the paper "Presidential Elections and Stock Market" proposed by Marshall Nickles, it is stated that a profitable strategy would be to buy on the first of October of the second year of mandate and to sell on the 31st of December of year four[3].

However, the historical behavior of the stock market is just one of the many tools to be used for predicting the possible outcomes of an election result; during the recent presidencies of Trump and Obama the theory of Marshall Nickles was indeed not verified, even if we consider the unexpected volatility created by the coronavirus.

Other studies have also identified the capability of the market to anticipate the results of elections: since 1928 when the S&P 500 shew positive returns then the elections saw the incumbent president as winner, while in cases of negative performance by the same index in the three months before the elections the incumbent loses.[4]

However, the above reported behavior of the index was not verified during the last elections: from August since November 2020 indeed the S&P 500 has been in a neutral trend, probably because of the high ambiguity in the expected result of the elections.

---

[2] Kristin McKenna. 2020. "Here's how the stock market has performed before, during, and after presidential elections". *Forbes*, August 18, 2020, https://www.forbes.com/sites/kristinmckenna/2020/08/18/heres-how-the-stock-market-has-performed-before-during-and-after-presidential-elections/?sh=cbcd7454f868.

[3] Marshall Nickles. 2004. "Presidential Elections and Stock Market", Graziano Business review, 2004, Volume 7.

[4] Kristin McKenna, 2020.

Moreover, the more likely the Biden' victory was the higher tended to go the index, confirming so the theory that "the market has no political color", the market only hates uncertainty.

So, performances of single industries depend on a multitude of factors, and the party who wins a presidential election is just one of them. Daniel Clifton, partner and Head of Policy Research for Strategas Securities, has reported some interesting statistics about partisan control of the White House and Congress: Since 1933, the highest returning partisan control combination for the S&P 500 has been a Democratic Senate, Republican House, and Democratic President where returns averaged 13.6% per year.

After 2020 election the actual scenario is a Democratic House, Democratic President, and a Republican Senate, therefore a reversal on both the components of the Congress would be needed. The actual mix of Republican Senate and Democratic house averages a 10.8% return and in history took place only in presence of a republican president.

"Under a Biden victory, the likely scenario is a Republican Senate, Democratic House and (of course) a Democratic President. Interestingly, this combination has not occurred since Grover Cleveland in the election of 1886!" Dan Clifton said.[5] Consequently, no historical example exists to provide a first glance estimation of what can happen after 2020 elections.

However, as already stated it is not only the composition of the government that influences the evolution of the stock market and the single industries, but the actions and initiatives that it takes together with a multitude of macroeconomic and microeconomic factors. What the congress composition does is to increase or decrease the capability of a president of implementing his initiatives.

The evolution of the S&P 500 in the past years has indeed been driven mainly by the effects of the initiatives and programs carried out by the single governments, rather than just the color of the party of the Senate and House of Representatives majority, or of the president itself. Each of these policies have had a different impact on the market index, and its reaction is the result of the impact that each of these policies have had on the single industries and companies that compose the Standard and Poor 500 index. Indeed, the evolution of the index for each single period is the result of the performance of the single economic sectors that compose it; on the basis of the developments of the single industries the S&P 500 moves.

[5] Ibidem.

In this analysis, the market index will be divided and analyzed by single industries which all have a different weight and influence on the benchmark. Here are shown the industries that compose the S&P 500 and their relative weight in the index[6]:

- Information technology: 27.60%
- Health care: 13.44%
- Consumer discretionary: 12.70%
- Communication services: 10.79%
- Financials: 10.34%
- Industrials: 8.47%
- Consumer staples: 6.55%
- Utilities: 2.73%
- Materials: 2.64%
- Real estate: 2.41%
- Energy: 2.33%

In total more than the 50% of the index is influenced by the Information Technology (including the communication service), health care, Consumer discretionary and the financial industries. These five industries made up the 74.87% of the index, so by analyzing the evolution and the factors that have influenced them it is possible to have a good overview and forecast of the possible evolution in the future.

Of course, the composition of the index has strongly changed in the years, and it will surely change in the future, with some industries expected to cover a more relevant role in the future like the renewable energy companies, which at the moment are almost not considered at all.

For analyzing the single industries included in the S&P 500 the same index has been divided into sub-indices, each of them with the stocks of the S&P 500 belonging to the single sector. Here are listed the indices used for representing the subgroups of the S&P 500:

- Financial industry: S&P 500 Financials
- Consumer discretionary industry: S&P 500 Consumer Discretionary
- IT industry: S&P 500 Information Technology
- Health care industry: S&P 500 Health Care
- Energy sector: S&P 500 Energy

[6] Tim Lemke. 2021. "What is the weighting of the S&P 500?". *The balance,* May 13, 2021. https://www.thebalance.com/what-is-the-sector-weighting-of-the-s-and-p-500-4579847.

- Consumer Staples industry: S&P 500 Consumer Staples

In the following graph are shown the compounded returns of the six selected industries during the Trump mandate which can be compared to the SPX return in order to understand which sectors have outperformed the index and which instead have performed worse than it has done[7]:

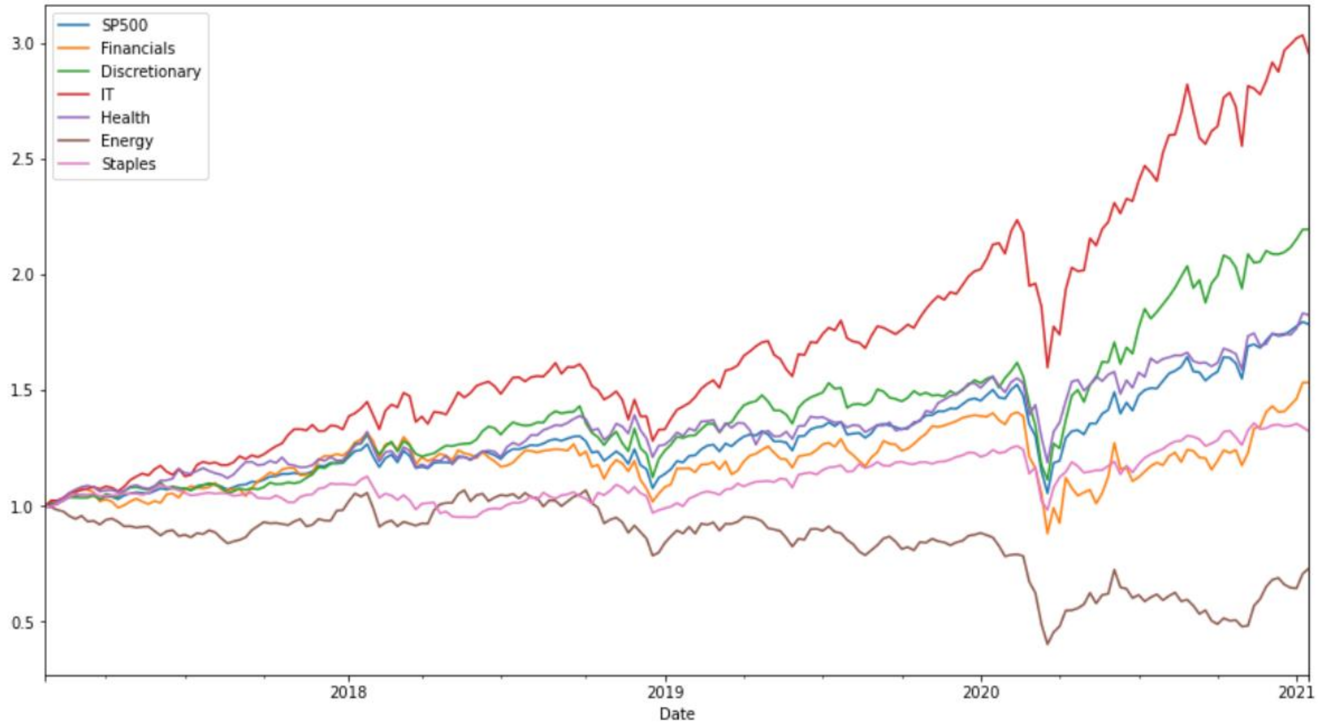

Figure 1.0.2: single industries' historical evolution under Trump' administration.

These are the returns ranked by best performing of the single industries during the Donald Trump mandate, considering weekly frequency from 20/01/2017 until 19/01/2021:

1. IT = 168.07%
2. Discretionary = 100.46%
3. Health = 69.63%
4. S&P 500 = 66.77%
5. Financials = 33.62%
6. Staples = 26.04%
7. Energy = - 41.07%

It is important to say that the S&P 500 has performed better under the Democratic presidency of Barack Obama, with a total compounded return of 172.57% (76.83% in the first mandate and 52.7% in the second mandate).

[7] Data have been downloaded from the platform investing.com.

However, as it will be shown in the following pages the evolution of the different industries has been different and this will give useful insight to understand how political initiatives can impact on the stock market.

As it is possible to see immediately, the industry that has best performed is the Information technology sector, followed by the consumer discretionary and the health industry, the only three industries that have overperformed with respect to the S&P 500 index and that have given the highest contribution for its appreciation in the last four years.

The other industries have instead underperformed with respect to the benchmark (S&P 500), even if all have reported positive returns with the exception of the Energy sector that has strongly been penalized by the Covid-19 Oil crisis.

In the following Table it is possible to compare the results of the Trump administration with the ones of his predecessor Barack Obama that is useful to understand the impact that the different policies of the two presidents may have on the stock market.

Returns by industry (Obama vs Trump)

Industry	**Trump**	**Obama**	**Obama 1st mandate**	**Obama 2nd mandate**
Financials	33.62%	223.08%	90.77%	68.85%
Cons. Discretionary	100.46%	330.9%	150.4%	68.73%
IT	168.07%	268.29%	108.2%	76.6%
Health care	69.63%	168.6%	59.2%	67.45%
Cons. staples	26.05%	128.08%	59.91%	40.54%
Energy	-41.07%	44.55%	45.51%	-2.86%
S&P 500	66.77%	172.57%	76.83%	52.7%

Table 1.1: returns by industry.

This comparison indeed will be very proficient for our scope given the fact that Trump and Obama have adopted two radically different political approaches and that Joe Biden strongly agrees with the 43rd president (Obama) and colleague for the initiatives proposed in his agenda.

The first data that takes the attention is the overperformance that Consumer Discretionary has had with respect to all the others in the years of Democratic presidency. During Trump administration instead this trend has been replaced by the IT sector, with the consumer discretionary going to the second place. Another curious thing is the fact that Financials have overperformed the S&P 500, despite the higher regulation that the Democratic president has adopted towards the financial industry after the 2008 sub-prime crisis.

In the following paragraph indeed will be reported a comparison of the evolution of the industries during the two different administrations together with an analysis that will describe which were the real factors that moved the industries evolution.

1.2 What has moved the market.

In this work the objective is to identify the reasons that have moved the single industries in their own directions and understand if these factors are strongly related to the government policy in order to create a complete and reliable forecast for the stock market during the Biden mandate.

The first approach to the analysis has been the calculation of the correlation that the S&P 500 and the subindices above listed have with other financial and macroeconomic variables.

The analysis has been divided into three different calculation approaches, based on the frequency and the time period taken into consideration for two reasons, the availability of macroeconomic variables that are disclosed on a different time-frame basis than the financial variables are, and the time horizon of consideration to understand the time of reaction of such correlations.

Thereafter, here is provided an analysis of the correlation between the S&P 500, its single components and several macroeconomic and financial variables that may explain the reasons of the behavior of the market in the past.

The first analysis concerns the period of the Trump' mandate, so from the 20th of January 2017 until the 19th of January 2021. Taking the Weekly return of the S&P 500 and the percentage change with the same frequency of other variables in the same period the correlation among them has been computed[8].

In the following Table are shown the correlation coefficients between the S&P 500 returns and the percentage change of other variables:

[8] Data have been collected from the platform https://www.investing.com/ and the official website of the Federal Reserve https://fred.stlouisfed.org/. Calculation have been directly done on python connecting the API of the program with the two websites.

Correlation map short term

	SP500	SP500_Financials	SP500_Discretionary	SP500_IT	SP500_Health	SP500_Energy	SP500_Satples	NASDAQ
Y5_treasury	0.42826	0.606086	0.332971	0.342105	0.317579	0.123513	0.228640	0.304992
Y10_treasury	0.37709	0.570031	0.292844	0.290645	0.246316	-0.015478	0.179425	0.260161
Y30_treasury	0.32970	0.504940	0.271039	0.241096	0.193346	-0.027588	0.130287	0.235836
EURUSD	0.03244	-0.023575	0.046626	-0.050240	0.070518	0.277462	-0.001946	0.041726
FED	-0.01304	-0.008910	-0.007021	-0.046802	-0.044299	-0.058130	0.052306	-0.056399
USD	-0.02339	0.062394	-0.046472	0.053719	-0.063134	-0.297158	-0.006507	-0.039194
bond_yield	-0.36970	-0.477296	-0.341600	-0.246248	-0.182808	0.055612	-0.147085	-0.315905
Russell2000	0.88349	0.740717	0.825284	0.720873	0.764520	0.723643	0.579287	0.868615
high_yield	0.754162	0.550839	0.713193	0.639241	0.607677	0.591824	0.590052	0.728361
GOLD	-0.01434	-0.109581	-0.022899	0.084002	0.050335	0.305126	0.043230	0.001091
ETF real ret.	0.489519	0.244459	0.446924	0.404894	0.402807	0.470151	0.341270	0.547024
TIPS	0.11770	-0.005459	0.083093	0.201065	0.151315	0.532392	0.063819	0.138871
VIX	-0.82247	-0.653342	-0.727098	-0.72834	-0.688626	-0.663006	-0.578543	-0.80911
BTC	0.09192	0.102697	0.044728	0.100964	0.080851	0.103029	0.033597	0.078013

Table 1.2:correlation map 1.

This result allows to understand the dynamics of the market and provides a synthetic and useful summary of the correlations that take place in influencing the price of the securities.

In order to identify the significant relationships, the above correlation coefficient have been statistically tested with the Pearson statistic test. In the following table are shown the correlation coefficient that have resulted significant to the test with a confidence level of 99%:

correlation significance

	SP500	SP500_Financials	SP500_Discretionary	SP500_IT	SP500_Health	SP500_Energy	SP500_Satples	NASDAQ
Dow Jones	relevant	relevant	relevant	relevant	relevant	relevant	relevant	relevant
Y5_treasury	relevant	relevant	relevant	relevant	relevant	relevant	relevant	relevant
Y10_treasury	relevant	relevant	relevant	relevant	relevant	relevant	NOT relevant	relevant
Y30_treasury	relevant	relevant	relevant	relevant	NOT relevant	NOT relevant	NOT relevant	relevant
EURUSD	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	relevant	NOT relevant	NOT relevant
FED	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	relevant	NOT relevant	NOT relevant
USD	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	relevant	NOT relevant	NOT relevant
bond_yield	relevant	relevant	relevant	relevant	NOT relevant	NOT relevant	NOT relevant	relevant
Russell2000	relevant	relevant	relevant	relevant	relevant	NOT relevant	relevant	relevant
high_yield	relevant	relevant	relevant	relevant	relevant	NOT relevant	relevant	relevant
GOLD	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant
ETF real ret.	relevant	relevant	relevant	relevant	relevant	NOT relevant	relevant	relevant
TIPS	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	relevant	NOT relevant	NOT relevant
VIX	relevant	relevant	relevant	relevant	relevant	relevant	relevant	relevant
BTC	NOT relevant	NOT relevant	NOT relevant	NOT relevant	NOT relevant	relevant	NOT relevant	NOT relevant

Table 1.0.3: correlation significance.

During this period, it is possible to see that the S&P 500 has shown a strong correlation towards the bond market, especially the treasury yields, and the high yields notes. This means that tendentially the stock market and the bond market tend to be correlated negatively in the short term, especially in periods of crisis when bonds are seen as a safer investment than the stocks.

The positive correlation between the bond yields and the stock index is showing that when the bond market appreciates then the stock market should react in the opposite way (depreciating). It is important to remember that in this calculation only financial variables are taken into account, while the macroeconomic factors will be analyzed on a wider period of time given also the fact that they are released on a quarterly basis.

Bitcoin has not shown any relevance in affecting the stock market or being influenced by it, which may be seen as a clue of the fact that cryptocurrencies are not seen as a refugee good as they are thought to be nowadays, even if GOLD has not shown any significant correlation too.

The second type of approach is run instead on a longer time horizon, considering the historical data from 2008 until 2021 on a monthly frequency. It is important to note that with this data-frame two different financial crisis have been considered, the sub-prime crisis of 2008 and the recent Covid-19; in this way it possible to take into account the relations of the variables during the whole economic cycles.

In the following correlation map, it is indeed possible to see the correlation among these variables[9]:

Correlation map macroeconomic factors

	SP500	Dow Jones	Financials	Discretionary m	IT m	Health m	Staples m	Energy	NASDAQ
Y5_treasury	0,286	0,296	0,381	0,216	0,250	0,137	0,037	0,400	0,269
Y10_treasury	0,313	0,331	0,380	0,256	0,290	0,143	0,050	0,407	0,305
Y30_treasury	0,299	0,312	0,320	0,250	0,311	0,153	0,041	0,372	0,305
EURUSD	0,439	0,399	0,388	0,383	0,386	0,362	0,360	0,321	0,402
FED	0,136	0,141	0,144	0,098	0,124	0,150	0,050	0,066	0,167
Russell2000	0,910	0,877	0,841	0,875	0,773	0,729	0,624	0,749	0,906
USD	-0,468	-0,432	-0,414	-0,404	-0,393	-0,384	-0,382	-0,369	-0,421
bond_yield	-0,353	-0,357	-0,380	-0,293	-0,345	-0,199	-0,078	-0,409	-0,369
high_yield	0,805	0,771	0,694	0,736	0,591	0,594	0,584	0,737	0,746
GOLD	0,042	0,010	-0,088	0,050	0,041	0,089	0,113	0,041	0,023
CPI	0,438	0,386	0,317	0,357	0,438	0,338	0,278	0,445	0,438
E(inflation)	0,247	0,235	0,271	0,203	0,156	0,235	0,201	0,266	0,197
Oil	0,563	0,548	0,451	0,462	0,515	0,327	0,343	0,716	0,533
M2	-0,406	-0,387	-0,383	-0,387	-0,235	-0,390	-0,458	-0,095	-0,303
IPI	0,345	0,371	0,317	0,307	0,237	0,227	0,263	0,350	0,290
unemployment	-0,327	-0,354	-0,286	-0,304	-0,181	-0,197	-0,275	-0,388	-0,259

Table 1.4: correlation map 2.

[9] Data have been collected from the platform https://www.investing.com/ and the official website of the Federal Reserve https://fred.stlouisfed.org/. Calculation have been directly done on python connecting the API of the program with the two websites.

In this case the significance of the correlation coefficients has been tested with the Pearson statistical test with the null hypothesis of being not significantly different from zero, with a confidence level of 97,5%.

The first thing that steads out from the table is the fact that also in the long term the bond market and the stock market seem to be negatively correlated, resulting with an appreciation of the bond market when the stock market falls. However, these relations are not very surprising and are already known by the literature.

What is interesting is the fact that with a longer period of time taken into consideration there are other factors that show a correlation with the stock market.

All the factors taken into consideration show a significant correlation with the S&P 500 if tested with the Pearson test (in the appendix is provided the table with the results of the test). However, in order to take into consideration only the significant factors as typical in the statistics studies only the coefficients higher than 0.4 in absolute value will be considered relevant.

In the following table are highlighted the correlation coefficients that are higher than 0,4:

Correlation significance									
Industry	**SP500**	**Dow Jones**	**Financials(m)**	**Discretionary(m)**	**IT(m)**	**Health(m)**	**Staples(m)**	**Energy(m)**	**NASDAQ(m)**
Y5_treasury(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
Y10_treasury(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	YES	NOT
Y30_treasury(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
EURUSD(m)	YES	NOT	NOT	NOT	NOT	NOT	NOT	NOT	YES
FED(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
Russell2000(m)	YES	YES	YES	YES	YES	YES	YES	YES	YES
USD(m)	YES	YES	YES	YES	NOT	NOT	NOT	NOT	YES
bond_yield(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	YES	NOT
high_yield(m)	YES	YES	YES	YES	YES	YES	YES	YES	YES
GOLD(m)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
CPI	YES	NOT	NOT	NOT	YES	NOT	NOT	YES	YES
E(inflation)	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
Oil	YES	YES	YES	YES	YES	NOT	NOT	YES	YES
M2	YES	NOT	NOT	NOT	NOT	NOT	YES	NOT	NOT
IPI	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT
unemployment	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT	NOT

Table 1.5: correlation significance.

Indeed, in the above-mentioned period the treasury and high yield bond, the FX rate EUR/USD, the US Dollar index, the Oil price, the inflation rate and the money supply M2 have reported a significant correlation with the equity index S&P 500.

If the negative correlation between the equity and the stock market is intuitive, the negative relation with the US dollar is less intuitive, which indicates that when the US dollar appreciates the stock market appreciates too. This can be interpreted as the fact that the more investors are attracted by US stocks the higher is the demand for the American currency, which inevitably appreciates against the other major currencies included in the basket of the US Dollar Index. At the same time when the Dollar appreciates, US stocks tend to be more expensive, so this creates a reduction in the demand for these securities that inevitably results in a depreciation of the S&P 500.

Not by chance indeed, considering the futures on the US dollar index it is possible to see exactly the same relation: when the market expects a depreciation of the US dollar then the stock market reacts registering negative returns.

Going more into details it is also possible to see that the price of Oil (in the analysis the price of Brent Oil is taken as representative variable) has a strong correlation towards the S&P 500 but an even stronger influence on the Energy industry.

These results are not very surprising but are really useful for understanding the impact that the Biden initiatives may have on the market. If the government is indeed able to influence the above-mentioned variables, then the stock market will be probably influenced too.

What seems instead surprising is the negative correlation reported with the money supply represented by the M2 variable. Usually, the market tends to react positively to the monetary stimuluses of the Federal Reserve, thereafter a positive correlation coefficient between the S&P 500 returns and the variation in the money supply would have been the expected result. However, as already stated, the FED intervenes in moments of necessity, thereafter the negative correlation is a clue of the fact that the money supply is increased when the stock market crashes and decreased instead in periods of uptrend.

After the financial stimulus of the FED in March, the stock market has seen a significant amount of newly printed money entering in the different asset classes. Goldman Sachs has indeed estimated that net flows into global equity funds hit a nominal record of $68 billion in the week ended on the 17th of March 2020[10]. The rise of the stock market in the following months was indeed largely due to bigger net inflows into the U.S. market, which coincided with the initial distribution of stimulus checks of up to $1,400 for qualified U.S. citizens as part of the $1.9 trillion COVID-19 relief package signed into law by President Joe Biden earlier this month, said analysts at Goldman Sachs, in a Friday note.

[10] William Watts. 2021. "Investors poured record $56.8 billion into stock-market funds as stimulus checks arrived". *Market watch*, March 20, 2021. https://www.marketwatch.com/story/investors-poured-record-56-8-billion-into-stock-market-funds-as-stimulus-checks-arrived-11616177039

The inflation rate is known for being positively correlated with stocks, and equity participation are thought to be a good protection in case of increasing prices. The positive trend of prices tends to affect the revenues of companies that, as long as the inflation is at a controlled level, will increase their earnings and so the value of equity participations. Consequently, this explains the positive correlation between stocks and inflation.

In the last analysis are instead provided the correlations among the stock market and the macroeconomic variables. This is probably the most significant analysis of this kind and given the fact that these macroeconomic variables are on a quarterly basis also the financial sample is considered with quarterly frequency, from 2009 until 2021[11].

In the correlation map below reported it is possible to see the correlation coefficients between the returns of the financial indices and the percentage changes of the macroeconomic variables taken into consideration:

.

Correlation map LT

	SP500(Q)	Financials(Q)	Discretionary(Q)	IT(Q)	Health(Q)	Energy(Q)	Staples(Q)	Russell2000(Q)
GDP	0.554383	0.454546	0.535292	0.426571	0.322540	0.532574	0.472147	0.593161
CPI	0.613777	0.476308	0.490438	0.577970	0.400390	0.682230	0.366914	0.618302
Consumer exp	0.586720	0.468895	0.564889	0.478499	0.352095	0.540761	0.474071	0.602984
Public exp	-0.364714	-0.357976	-0.313379	-0.197206	-0.216683	-0.414385	-0.374588	-0.472780
tax received	0.655278	0.638609	0.575982	0.469538	0.497653	0.542873	0.593147	0.649114
tax on corporate	0.467227	0.308040	0.456435	0.475270	0.390447	0.284445	0.405408	0.417335
EAT	0.227799	0.005002	0.249041	0.285335	0.186536	0.219360	0.095438	0.206738
Trade balance	0.476813	0.400725	0.445197	0.505630	0.399771	0.194589	0.389147	0.359451
Savings	-0.357476	-0.315612	-0.292325	-0.202874	-0.264536	-0.374461	-0.371997	-0.391319
USD_Q	-0.505179	-0.355690	-0.446800	-0.522009	-0.352215	-0.443379	-0.291429	-0.435233
Oil	0.744270	0.663047	0.676564	0.687603	0.417100	0.808623	0.423959	0.813529
FUND rate	0.297734	0.264025	0.297376	0.280758	0.067922	0.169498	0.227390	0.229859
M2	-0.340327	-0.112494	0.219280	-0.431996	-0.235037	-0.171614	-0.209179	-0.485743
IPI	0.390254	0.414087	0.346715	0.238894	0.211150	0.419159	0.387939	0.456880
unemployment rate	-0.315567	-0.356399	-0.234916	-0.144782	-0.157410	-0.459950	-0.326442	-0.397994

Table 1.6: correlation map LT.

All the correlation coefficients of the 15 variables above analyzed have been tested with the Pearson significance test with a confidence level of 97,5%, and all the macroeconomic variables seem to have a correlation with the S&P 500 and the Russell 2000 and so on the single industries comprised in the Standard and Poor 500. Therefore, the percentage change Gross Domestic Product, the inflation rate, the consumer expenditure, the public expenditure, the taxation, the trade balance, the US dollar exchange rate, the money supply M2 and the Oil price are all strongly correlation with the stock market returns.

[11] Data have been collected from the platform https://www.investing.com/ and the official website of the Federal Reserve https://fred.stlouisfed.org/. Calculation have been directly done on python connecting the API of the program with the two websites.

What is surprising is that despite the statistically significant coefficient of the corporate EAT and the FUND rate the two show a relatively low value and so seem to have a lower impact on the market with respect to the other factors.

In order to focus the analysis on the most significant variables, I will focus the attention on the factors that have reported a correlation coefficient higher than 0.4 in absolute value, which are GDP, Oil, inflation, tax rate, trade balance, Dollar index and consumer expenditure. Below is shown the behavior of such variables during the Trump mandate:

- GDP: + 0.07580
- CPI: + 0.117338
- Consumer exp: + 0.13577
- Public exp: + 0.30691
- tax on corporate: - 0.04417
- Trade balance: + 0.64983
- USD: - 0.10513
- Oil: - 0.08036
- FUND rate: - 0.87050
- M2: + 0.4461

All of these variables have a correlation with the stock market for several reasons.

For what concerns the Gross Domestic Product, it tends to be positively correlated with the S&P 500 since it is seen in general terms as an indicator of the health of the economy of a country, consequently a positive trend in the GDP will have a positive impact on the stock market, and at the same time an uptrend in the stock market means that companies are operating in a healthier economy.

The correlation with the private expenses and the savings also is quite intuitive, the more consumers spend the higher are supposed to be the earnings of companies, which inevitably will increase their valuation.

On the other hand, what seems to be less clear is the negative relation that the S&P 500 has with public expenditure: the higher are the investments of governments the worse companies tend to perform. The real explanation of this relationship is the fact that, as with the money supply, public expenditure tends to be a remedy to a weak economy phase: during an economic crisis, the different governments try to stimulate the economy by increasing the public expenditure. This means then that when the stock market crashes the public expenditure tends to be increased and this explains the negative value of the correlation coefficient.

Another surprising result is the positive relation between the taxes on corporate and the returns of the S&P 500. The more corporates pay in taxes the better the equity market performs. It may seem strange, but this positive relationship has been verified historically: In the 13 previous instances of tax increases since 1950, the S&P 500 has shown higher average returns, and higher odds of an advance, in times when taxes are increasing, according to Chisholm's research, which analyzed the data in the calendar year of the tax changes, plus the year prior and year after[12].

What is interesting is that this pattern holds true even when we drill down the index into key industries that compose it. "Economically sensitive sectors, like consumer discretionary, oddly have done better during years taxes increase. These counterintuitive odds suggest something else is going on—the market either discounts the increase in advance or the economy has received stimulus to offset it," says Chisholm[13].

The taxation does not influence however only the securities prices. Remembering that correlation is not necessarily causation, inflation did have a higher tendency to accelerate during years that taxes rose. As long as inflation is not excessively high, it can be seen as a sign of a healthy economy and expansionary economic cycle, potentially the result of fiscal stimulus at the same time.

Indeed, changes to the US tax code always happens for a reason. There is usually a lot of other action going on in Congress and generally in the economy, because there is an economic need driving all the measures. There's typically significant stimulus spending by the government, either in defense, infrastructure, or social welfare, as well as action from the Federal Reserve to curb inflation by raising rates.

All these expenditures, that as we have seen are beneficial to the financial market, can be financed by the government either by issuing new debt or by increasing taxes. "The stimulus is perhaps the critical factor that may be the reason for the higher-than-average returns—that is something investors really need to keep their eye on," says Chisholm. Thereafter it is probable that the positive impact of an increase in taxation on the stock market is due by the increase in the investment of governments, also seen as a sign of a recovery for the economy[14].

Understanding this relation is really important due to the intention of the new president in increasing the corporate taxes for the following years in order to finance the public spending plan proposed by Joe Biden himself. The only announce of the intention of increasing the taxes on the capital gain for the financial investment has indeed been enough to create a lot of turbulences on the S&P 500 during the month of April.

---

[12] "Fidelity viewpoints. 2021. History lesson from past tax hikes". *Fidelity*, April 13, 2021. https://www.fidelity.com/learning-center/trading-investing/tax-hikes-history
[13] Ibidem
[14] Ibidem

The "black gold" (Brent Oil) price also has shown a very high correlation with the S&P 500 and all the industries, especially the energy sector; therefore, understanding the reasons for this relation will be key to the reliability and accuracy of the model for forecasting the evolution of the index under the new Democratic presidency.

There could be two different explanations for the positive relation between the Oil price changes and the returns of the S&P 500. First, expectations of economic growth have an impact on oil prices as increased economic activity generates increased demand for commodities. Indeed, under a context of weak economic recovery from the most developed countries and tight oil markets, any positive news from the U.S. economy is immediately reflected in higher oil prices, given the expected higher demand for satisfying the economic recovery phase.

Second, it is probable that the development and expansion of commodities indices has allowed oil and other commodities to become a new investment asset whose level of risk/return is similar to that of stocks. This causes investors to trade oil in a fashion more similar to that of stocks, increasing the likelihood that the prices of both would move in tandem[15].

Furthermore, the observed strong positive relationship between oil and stocks means also that the US economy is heavily dependent on the oil, and so that an economic recovery can be always predicted by the rising in the oil prices. However, this will remain true until the United States will remain dependent on the oil for its functioning; as soon as the United States will be able to reduce this dependency to the Oil through the adoption of more fuel-efficient technologies and widespread shifts to alternative fuel vehicles, this relation will come to an end.

These variables have inevitably influenced positively the S&P 500. As it is shown from the above results all the variables depending on the correlation coefficient calculated have had an evolution that is in line with an increase in the price of the S&P 500, with exception to the oil prices.

These results are really significant because they are strongly related to the action of the government and so can be influenced by the proposals of the elected president Joe Biden. At this point we can take a look at the single industries and the level of the identified variables to understand if they have really had an impact on the evolution of the stock market during the mandate of Donald Trump.

Information technology

The information technology industry is the one that has best performed during the last four years; it has shown a total compounded return of 168.07% and during the covid-19 crisis it seemed to have been the one that has

[15] Institute of environmental diplomacy. 2021. "High correlation between S&P 500 and WTI crude Oil price". *IEDS University of Vermont,* 2021. http://www.uvm.edu/ieds/node/1120

suffered the fewest. The drop in the price during the crash of March has been indeed lower than the one of the S&P 500 and the NASDAQ Composite index has recovered the lost faster than the S&P 500.

As already shown in the previous paragraph all the macroeconomic and financial variables in the past years have contributed to the incredible run of the S&P 500 Information Technology index. However, beyond the factors already explained earlier there are also single events and variables that have made this industry outperforming the market.

First of all, as stated the blue chips of the information technology industry have been the first to recover from the huge market crash of March 2020. To understand the reasons linked to this we have to put ourselves in the market context of the last year, with the bond market at the lowest historical returns and a very high uncertainty regarding the real risk underlying the financial investments and the sort of the economy. In this context blue stocks have been considered safe investments able also to guarantee a stable and positive return and a good shield against the expected increasing inflation.

Given then the high growth expectations and the incredible available market potential that the IT stocks can enjoy they have benefitted from the inflow of cash in the financial market, and this confirms also the strong negative correlation they have with the bond prices.

This is a very important data because the new elected president Joe Biden is programming a new monetary stimulus and given the identified correlation between the money supply and the stock prices this can be one of the first variables that will influence the outcome on the stock market during the Biden government.

The capital gain of this industry is strongly supported by the growth expectations of the companies that work in it. The P/E ratio of the tech stocks is indeed at the level of 36 even higher than the double of the historical average of 15X of the benchmark index. The market capitalization of the stocks operating in the sector is also the highest with a total market cap of around 12,860 trillion of dollars (the second most valuable industry is the financials with 9,950 trillion of capitalization)[16].

Despite this, the fact that the IT sector has seen such a good expansion under the Trump administration seems quite unexpected given the first reaction of the CEOs of the biggest tech companies after the Republican president election. However, the president Trump has surely contributed to the strengthen of the sector. Basically, there are the following initiatives that have contributed to a positive impact of his administration on the information technology industry.

[16] Data obtained from https://finviz.com/groups.ashx?g=sector&v=120&o=pe.

The priority of the Republican president had been to invest and improve as much as possible the artificial intelligence. It outlined the need for "increasing access to Federal data and computing resources for America's AI researchers", "promoting a responsible approach to AI by encouraging transformative applications of AI, while continually improving outcomes for workers and users alike"[17] and having regulatory agencies establish guidance on AI development across technology and industrial sectors, and to come up with technical and safety standards for AI systems. Trump had explicitly manifested the intention of making the United States of America one of the dominant nations in the Artificial intelligence then.

"As the pace of AI innovation increases around the world, we cannot sit idly by and presume that our leadership is guaranteed," the White House said. "We must ensure that advances in AI remain fueled by American ingenuity, reflect American values, and are applied for the benefit of the American people."[18] This has been beneficial to many IT companies, from the innovative start-ups to colossuses like IBM, Amazon.com, Microsoft, Facebook, Apple and specialist companies working in the AI gaming sector.

The second factor that has strongly impacted is instead what has kept Trump busy for almost his whole mandate, and it is the trade war between the U.S. and China, especially for the heavy accuses moved by the American president against the Chinese companies of Huawei and ZTE, suspected of cyber espionage to U.S. data. This suspects led to the trade ban with China and the subsequent prohibition of US companies from trading with Chinese companies deemed a threat to US security.

In 2018 the Chinese colossuses Huawei and ZTE were inserted into a bill signed by President Trump that banned the use of the two Chinese companies' technologies across America's government. This leads to US officials encouraging other nations to follow suit, as well as touting considerations to further ban the use of technology from the two Chinese companies across the US. Furthermore, Chinese Information Technology companies had already suffered from a US trade ban due to the violation of the US trade sanctions against Iran and North Korea[19] (always because of a Trump initiative).

Of course, the Chinese companies were hit the most by this ban, with Huawei for example not being able anymore to get access to Google services like Android; but the ban, in its current form, also effects US tech firms. Given the growth of Huawei over the recent years and the market share the Chinese company had conquered in the smartphone retail selling market, it used to provide Google with a huge reach for its Android operating system

---

[17] Donald J. Trump. 2019. "President Donald J. Trump is accelerating America's leadership in artificial intelligence". February 11, 2019. https://trumpwhitehouse.archives.gov/briefings-statements/president-donald-j-trump-is-accelerating-americas-leadership-in-artificial-intelligence/.
[18] Ronald Moore-Colyer. 2019. "What has Donald Trump done for the tech industry so far?". *IT PRO,* September 27, 2019. https://www.itpro.co.uk/policy-legislation/34515/what-has-donald-trump-done-for-the-tech-industry-so-far.
[19] Ibidem.

and the services the American IT giant provides on top of it. Banning Huawei access to such services stands to damage Google's spread of its own services[20].

The same happened to US tech companies that provide components for smartphones and other electronics to Chinese companies. The telecommunication company Qualcomm partly blamed its failure to hit its financial targets in the third quarter of 2019 on the US trade ban, complaining its inability to ship as many mobile chips and modems as it previously had to China. Not only Qualcomm but also Intel has reportedly approached the Commerce Department to voice its concerns over the ban and the effect it created on American technology companies.

To reduce the negative impact the ban created on the tech industry in the U.S., the Trump administration came out with the option for American companies to apply for a license to deal with Huawei and other Chinese companies on the US trade blacklist. As a result, US tech companies could still have the scope to deal with banned Chinese technology firms, but they now have more hurdles to jump to come to a trade deal, and licenses are by no means guaranteed to be granted[21].

Despite these complications, the IT industry has noticeably outperformed the market benchmark and has performed much better in the last four years than it had done under the Obama administration. In the following graph it is possible to compare the return of the S&P Information Technology during the Obama administration and the Trump[22]:

[20] Ibidem
[21] Ibidem
[22] Data have been collected from the platform https//: investing.com/.

S&P 500 Information Technology Trump vs Obama

Figure 1.3: S&P 500 Information Technology comparison Trump vs Obama

However, the boom of the tech industry seems to be more correlated to the general trend of the preferences of consumers than to the dependency of single macroeconomic factors or political decisions, and this growth is expected to continue under the Biden administration.

As already stated, the incredible inflow of liquidity on the financial market has strongly favored the IT sector due to the incredible performance and reliability on the expectations of future growth of such stocks that have somehow substituted the zero-return bond market. Investors in time of uncertainty, especially in the last year, have started to look at these stocks as a sort of refugee investment. Companies with exceptional financial performances and credit ratings have been seen during the pandemic crisis as an alternative to the safe bond yields.

However, the uptrend of the IT industry has mainly been driven by the four tech giants and the payment service stocks, Microsoft, Apple, Alphabet have strongly outperformed the market. At the moment indeed these two companies (Apple, Microsoft) made up a very important percentage of the S&P Information Technology index and together with Amazon and Alphabet more than the 22% of the S&P 500. Thereafter, the performance of the industry has been also enhanced by the incredible performance of the three above mentioned companies. please appreciate the return of Apple, Microsoft, Alphabet compared to the S&P 500:

Returns of Apple, Microsoft, Google and S&P 500

Figure 1.4: returns of Apple, Microsoft, Google and S&P 500 from 2017 until 2021

As expected indeed the three stocks have all performed better than the Standard & Poor 500 index, especially Apple and Microsoft. The fact that two companies of a so high capitalization are included in the index S&P 500 Information Technology has without any doubt been a significant contributor to the extraordinary performance of the industry.

Beyond these companies the transition to digital payments have also benefitted to companies like Mastercard, Visa and Fiserv that have reported incredible financial performances and have contributed for the appreciation and overperformance of the S&P 500 Information Technology index.

Finally, it is then possible to conclude then that the appreciation and the performance of such industry has been mainly due by the general trend and the economic dynamics. Now under the Biden administration the biggest risk may be the increase in regulation even if at this moment it is not seen as a big problem. In the following pages I will analyze the possible effect of the Biden proposals on the sector.

Financials

The financials industry in the last decade has suffered from a macroeconomic environment that strongly penalizes the companies operating in this sector: banks are working in a context of zero interest rates and the investment funds struggle to generate a satisfying return.

During the Trump mandate these companies have slightly underperformed with respect to the S&P 500, even if before the Covid crisis they were performing pretty well, with a compounded return slightly above the representative index.

The monetary policy implemented in response to the Covid-19 crisis has put this industry in an even worse situation, the bank sector was expected to report huge losses and investors were expecting a dramatic liquidity crisis. The celeberrimus investor Warren Buffet had indeed sold the majority of its participations into banks supposing that the monetary policy, that will put interest rates at an even lower level, and the huge amount of liquidity on the market will condition the business of banks for a long period of time[23].

It is important to remark also the fact that the correlation with the bond market is not so clear due to the fact that from the 90s' the negative relation that linked the stock and the bond prices seems to have disappeared while it tends to show higher levels during market crash periods. This would mean that the Figure 1. of bonds as investments alternative to equity is verified principally during periods of crisis.

A study proposed by Ewan Rankin and Muhummed Shah Idil has indeed proven that the correlation between the stock prices and the bond yield tends to become positive in times of high uncertainty on the market, with investors that look for a sort of protection by investing in the bond market[24].

Another finding that is not very surprising is the correlation that the financial industry has shown towards the treasury rate which is the highest of all the sectors analyzed. Not by chance, the homeowners of US debt that have bought the highest number of treasury rates are the banks, mutual funds and insurance company of the United States[25]. This of course exposes the financial performances of the companies included in the S&P 500 Financials to the variations of the treasury yields.

Beyond these factors it is known that the financial industry is strongly sensitive to the regulation placed upon its activity. Ray Dalio, the CEO and founder of the hedge fund Bridgewater, has individuated indeed on the financial market a long-term trend that always ends up in a price bubble. In his theory the increase in prices is always stimulated by the deregulation on the financial industry and the increase in the leverage of investors, where loans are given with lower coverage criteria and investors start to allocate money in risker assets looking for a satisfying return in a context of few investment alternatives[26].

Therefore, the deregulation of the industry is supposed to be beneficial to the financial industry, giving to the financial companies a higher flexibility and operational freedom. During the Trump administration, the financial

---

[23] Theron Mohamed. 2021. "Warren Buffett dumped Goldman Sachs, JPMorgan, and other bank stocks last year. They've now surged to record highs, meaning the investor left billions on the table". *Business insider,* May 20, 2021. https://markets.businessinsider.com/news/stocks/warren-buffett-berkshire-hathaway-sold-goldman-sachs-jpmorgan-bank-stocks-2021-5-1030450343.

[24] Ewan Rankin and Muhummed Shah Idil. 2014. "A century of stock-bond correlation", Reserve Bank of Australia bulletin 2014.

[25] Kimberly Amadeo. 2021. "Who owns the US national debt?". *The balance,* April 30, 2021. https://www.thebalance.com/who-owns-the-u-s-national-debt-3306124

[26] Ray Dalio. 2009. Ray Dalio speech at Yale university. November 2009. https://www.youtube.com/watch?v=c3uD6sHwigg

sector has benefitted from a strong financial deregulation that has helped financial companies to generate positive returns in a context of low-level interest rates.

The Republican president has indeed adopted a completely different approach with respect to the one' of his predecessor, aiming at getting consensus from the U.S. community, vaunting of the historical pick of the S&P 500. During the Obama administration indeed, after the sub-prime crisis, the financial industry had suffered from a tighter regulation that came with the signature of the Wall Street Reform and Consumer Protection Act, also known as the Dodd-Frank rule.

Among the innovations the Dodd-Frank rule introduced, we remember the elimination of the Office of Thrift Supervision, assigning new responsibilities to existing agencies like the Federal Deposit Insurance Corporation, and the creation of new agencies like the Consumer Financial Protection Bureau (CFPB). The CFPB was charged with protecting consumers against abuses related to credit cards, mortgages, and other financial products[27].

With the Dodd-Frank rule also the Financial Stability Oversight Council and the Office of Financial Research were created which role was to identify threats to the financial stability of the United States. Furthermore, the Federal Reserve was given new powers to regulate systemically important institutions[28].

One very important provision for the activity of the financial companies was the Volcker Rule, which restricts banks from making certain kinds of speculative investments[29]. The act also repealed the exemption from regulation for security-based swaps, requiring credit-default swaps and other transactions to be cleared through either exchanges or clearinghouses. Other provisions affect issues such as corporate governance, 1256 Contracts, and credit rating agencies. From these regulator action it is quite evident the sensibility of the regulator towards the excessively speculative activity of the financial companies during the sub-prime crisis of 2008.

Dodd-Frank is generally regarded as one of the most significant laws enacted during the presidency of Barack Obama, however there are different beliefs regarding the effects of this rule on the market. In 2017, Federal Reserve Chairwoman Janet Yellen stated that "the balance of research suggests that the core reforms we have put in place have substantially boosted resilience without unduly limiting credit availability or economic growth."[30] Some critics have argued that the law had a negative impact on economic growth and small banks or failed to provide adequate regulation to the financial industry.

[27] Wikipedia. 2021. "Dodd-Frank Act". Last modified March 18, 2021. https://it.wikipedia.org/wiki/Dodd-Frank_Act#:~:text=Dodd%2DFrank%20Act%20%C3%A8%20il,Reform%20and%20Consumer%20Protection%20Act.
[28] Ibidem
[29] Wikipedia. 2021. "Volcker-rule". Last modified March 29, 2021. https://en.wikipedia.org/wiki/Volcker_Rule
[30] Janet L. Yellen. 2017. "Financial Stability a Decade after the Onset of the Crisis". August 25, 2017. https://www.federalreserve.gov/newsevents/speech/yellen20170825a.htm

When president Trump entered to the white house the regulatory approach towards the financial industry was changed in favor of a less strict regulation. President Trump had indeed signed into law the Economic Growth, Regulatory Relief, and Consumer Protection Act ("Act"), with the principal goals of promoting U.S. economic growth, recalibrating burdensome rules, and strengthening consumer protections.

The Act amends an array of banking, capital formation, and consumer protection standards. The Act revises several key provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act, leaving however unchanged the basic structure of the Dodd-Frank Act.

As we have said there was a common belief that the Dodd-Frank rule proposed by Obama could penalize the small financial companies. Therefore, the Act relieves regulatory burden by raising the primary asset threshold for application of enhanced prudential standards from $50 billion to $250 billion in total consolidated assets, so that fewer companies are subject to these standards[31].

Of course, the financial industry has not faced a favorable environment in the last decade, with the interest rates that were very low and a huge amount of liquidity flowing into the market and decreasing the returns of the securities.

Consumer Discretionary

The consumer discretionary industry is one of the most interesting industries to analyze over the past two presidencies. During the Obama administration indeed, it has been the best sector among the ones analyzed, outperforming the S&P 500 by more than 158 percentage points over eight years. During the Trump administration instead, even if it has performed better than the benchmark, the supremacy role has been substituted by the Information Technology industry.

The discretionary consumer is an industry that is composed by the companies that produce goods that are not essential to consumers, so during an economic depression this seems to be quite strange. It is not surprising indeed that the consumer discretionary industry strongly depends on the consumer expenditure and the trade balance.

It is remarkable that this positive performance has been enhanced after the Covid crisis. This data becomes less surprising if we consider that some of the companies included in the S&P 500 Consumer Discretionary are Amazon.com, Tesla, Nike and Starbucks. These stocks have been driven up mainly by their fundamentals, their performances, and their growth expectations.

[31] Wikipedia. 2021."Dodd-Frank Act". Last modified March 18, 2021. https://it.wikipedia.org/wiki/Dodd-Frank_Act#:~:text=Dodd%2DFrank%20Act%20%C3%A8%20il,Reform%20and%20Consumer%20Protection%20Act.

In this graph it is indeed possible to see the comparison of the above-mentioned companies with the S&P Discretionary and the S&P 500[32]:

Returns of Tesla, Amazon, Nike and S&P 500

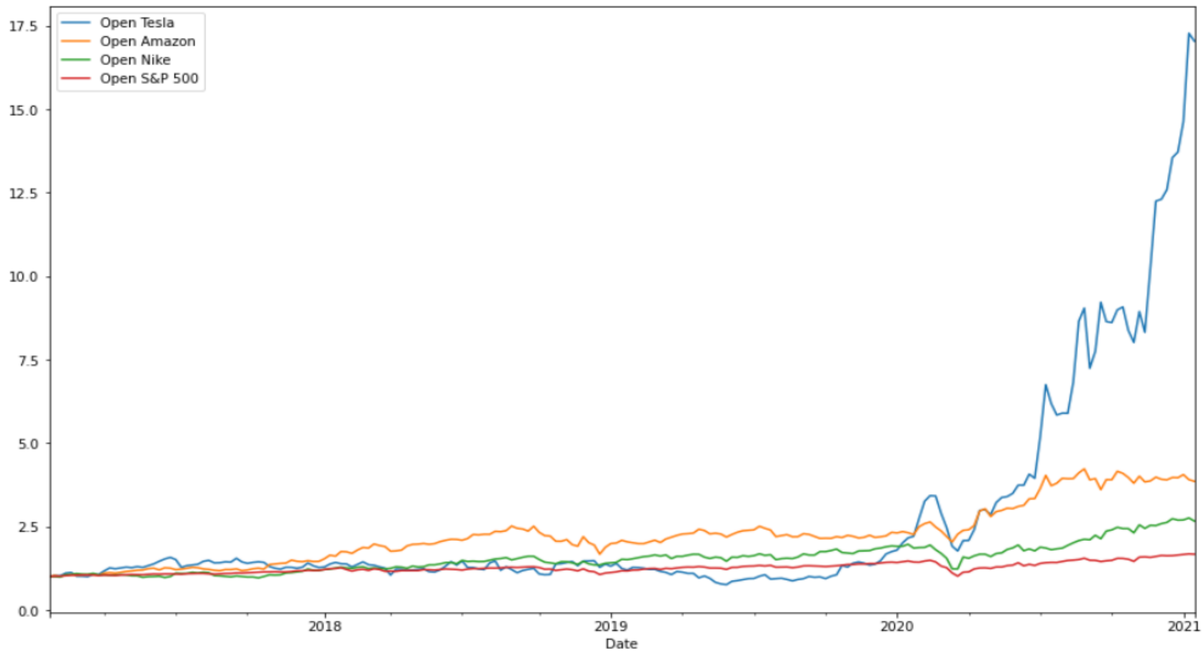

Figure 1.5: returns of Tesla, Amazon, Nike and S&P 500 from 2017 until 2021.

In this case then, as with the Information Technology industry, the incredible performance of some companies has made the index grow in a significant manner. To understand however the movers of the discretionary industry it is useful to analyze also what has driven the S&P 500 Discretionary index during the eight years of Obama presidency, when the index has outperformed the S&P 500 by more than 128 percentage points. During the Obama presidency indeed, the Discretionary industry has been the best performer, even overcoming the return of the S&P 500 Information Technology.

As reported above this industry strongly benefits from the increase in the consumer expenditure and during the Obama presidency the discretionary spending increased mainly because of the stimulus package approved in 2010 after the subprime crisis. The fact that these stimuluses tend to impact the most on the expenditure for goods that are considered discretionary is seen by the fact that Consumer Staple industry did not move a lot after 2010.

During the 44th presidency indeed "They (consumer discretionary stocks) did the best, but they were hurt the most," said Silverblatt of the sector that includes companies offering products and services that consumers can do without, and apparently did, during the recession. "You'll notice staples did not move so much,[33]" Silverblatt

[32] Data have been obtained from the platform https://investing.com/.
[33] Kate Gibson. 2016. "Obama's bull market: stock winners and losers". *CBS*, August 01, 2016. https://www.cbsnews.com/news/obamas-bull-market-the-winners-and-the-losers/.

added of the sector that offers more basic necessities, and advanced 13 percent during Obama's time in the White House.

"Consumer discretionary has done the best because of the gradual job improvement since he took office, as well as the low interest-rate environment which has permeated since he took office," said Russell. "When rates are low, people can refinance their homes, they can buy new homes, which has occurred in gobs, and they can buy cars."[34]

The reduction in the unemployment rate, the low interest rates and the monetary stimulus have been then variables that have favored the discretionary industry from 2009 until today. Indeed, the decreasing trend in the unemployment rate during the Obama mandate has seen its best evolution in the four years of the republican president Donald Trump when the unemployment rate reached the historical minimum value before the Covid-19 spread.

The continuation in the uptrend during the Trump administration was then also influenced by the historical maximum level of the wage per hour adjusted by inflation of the single individuals. As we have seen as soon as individuals feel richer, they will keep the spending for consumer staple goods at the same level but will immediately increase the quota for the discretionary goods, increasing so the revenues for these kinds of companies.

Healthcare

The healthcare industry has been one of the industries with the highest attention and unstable environment during the last years also because of the pandemic crisis. The S&P 500 Healthcare index has performed slightly better than the S&P 500 during the Trump presidency (69.63% against 66.67% of the SPX), reporting the third best return over the analyzed industries after the consumer discretionary and the IT industry. Under Obama instead the health industry, even if still the third best performer, has underperformed the S&P 500, with an overall return from 2009 until 2017 of 168.6%, against an S&P 500 return of 172.57%.

In the following graph it is possible to see the return of the index under the two different presidents[35]:

[34] Ibidem

[35] Data have been collected from the platform https://www.investing.com/.

S&P 500 Healthcare Trump vs Obama

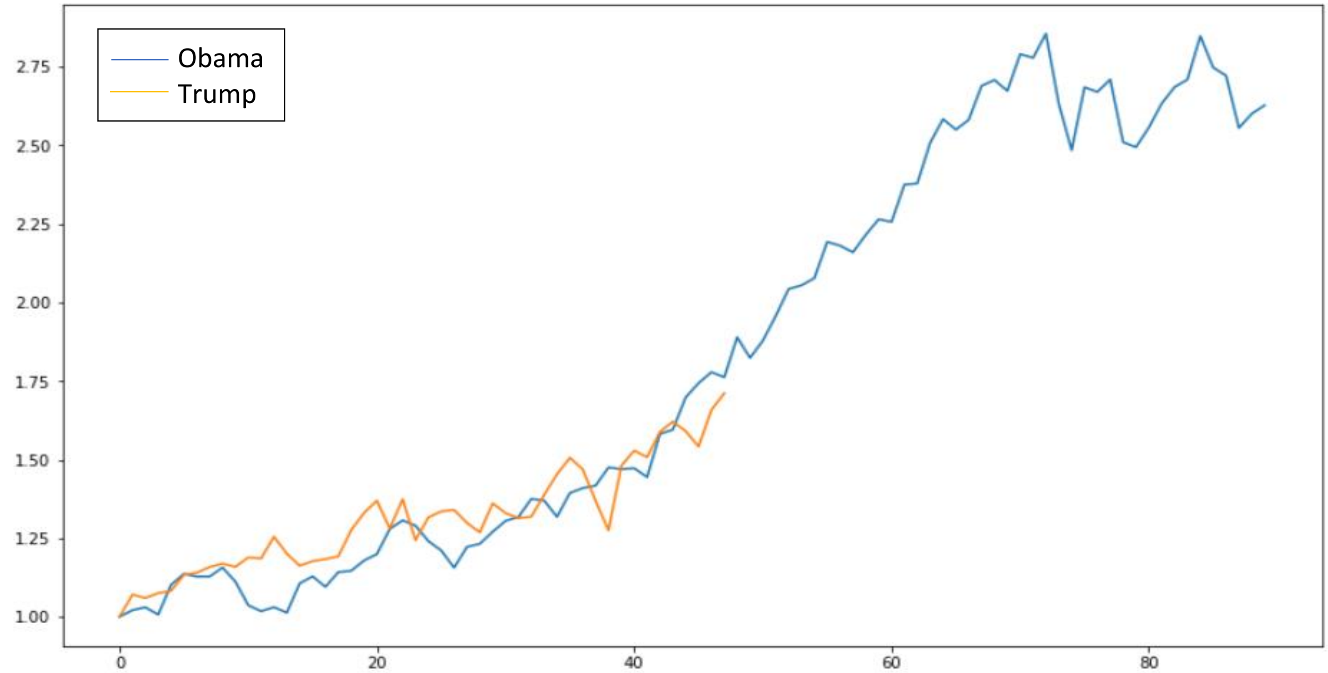

Figure 1.6: S&P 500 Consumer Discretionary Trump vs Obama.

The two presidents have adopted two opposite approaches towards the health industry, with President Obama much more in favor of a public health care and Donald Trump considering it instead a too expensive service for the government’s balance sheet.

President Donald Trump has indeed reduced a lot the public expenses for the health care services, which seems to have slightly penalized some companies that operate in this industry. As we know one of the first initiatives of the republican president was the abolition of the Obamacare, considered by the Republican party a too expensive program for the public finances. The Affordable Care Act also known as Obama Care was indeed officially abolished in March 2010.

However, despite the reduction in the public expenditure for the health industry the S&P 500 Health has performed better under the administration of the Republican president Donald Trump: as stated the total capital gain of the index under the Obama presidency has been of 168.6%, while under Donald Trump it has registered an appreciation of 62.76%. However, it must be considered the fact that Obama had been sitting in the white house for eight years while his prosecutor for just four years. By comparing the average annual return of the index, it is possible to see that it was slightly higher with the Republican government, 11.43% against 10.86%. The reduction in the spending quota for the health industry has been then not so negative for the private health companies.

The new elected president Joe Biden is strongly in favor of a health public system that guarantees higher services to the whole population. Thereafter it is useful to understand exactly how the two completely opposite politics of Obama and Trump has affected this industry. The health industry is characterized by different companies that work in different field of the same sector, so to better comprehend the effects that the initiatives had on the sector it is useful to divide the health care industry into the following subgroups:

1. Pharmaceuticals
2. Biotech
3. Health care providers
4. Medical devices

As representative of the four subgroups in the analysis the following ETFs will be taken:

- S&P Pharmaceuticals.
- S&P Biotech Select Industry.
- S&P Health Care Equipment.
- S&P Health Care Services

Here are reported the returns of the four ETFs for the overall period from January 2009 until January 2021 and for the two-single administration[36]:

Health care performance by sub-sector, comparison Obama vs Trump

	Obama	**Trump**	**After Obamacare**
Pharmaceuticals	223.44% (27,93%)	40.56% (10.14%)	143.9% (20.56%)
Health-care providers	231.56% (28,95%)	89.67% (22.42%)	142.53% (20.36%)
Medical devices	244.10% (30,51%)	136.60% (34.15%)	160.14% (20.02%)
Biotech	315.2% (39.4%)	140.33% (35.08%)	253.42% (36.2%)
S&P 500	172.57%	66.67%	96.64%
S&P Health Care	168.58% (21,06%)	69.63% (17.41%)	104.8% (14.97%)

Table 1.7: Performance by industry in the last two presidencies.

As it is possible to see all the sectors have had a positive performance independently from the government they were operating with. The only very disappointing performance has been reported by the pharmaceuticals industry under the Trump administration.

By comparing the average yearly return of the above listed indices, it is possible to say that the only subsector that has performed worse under the Obama administration than it has done with the Trump government is the medical devices one. Except from it the Biotech, Pharmaceuticals and health-care providers have all performed better with the democratic government.

The Pharmaceutical sector seems to be the one that has most suffered from the change in presidency and so the one most hit by the impact of the change in the policy of public health. The decision of Trump of decreasing the government expenditure for the public health, trying at the same time to guarantee the affordability of health care by decreasing the price of medicines has of course penalized the profit margins of pharmaceuticals distribution

[36] In brackets is reported the average annual return.

chains. Not by chance the biggest pharm distributor in the United States of America CVS has lost more than the 30% of its share price in the four years of the republican government.

Beyond Pharmaceuticals also health care providers and biotechnology companies have performed better during the Obama mandate. The reasons for this behavior may seem quite intuitive. The health care providers have indeed seen the demand for their services increased given the higher number of people that were now granted health care. The Affordable Care Act (ObamaCare) has indeed introduced two major standards: the obligation for health insurance companies to spend 80% of insurance premiums on medical care and improvements. (The ACA also aims to prevent insurers from making unreasonable rate increases)[37], which of course does not decrease the premiums for the insurance but increases by far the spending for the health care of the individuals, and so the revenues for the providers. The second one is instead the abolition of the time limit for the care of people with chronic health problems and the extension of the possibility to get a health insurance to people with previous illness.

Thanks to it more than 18 million of Americans were able to get a health care insurance. Seems then that the increased revenues for the health care providers were instead increased costs for the health care insurance companies[38]. The Obamacare has indeed had a strong impact also on the financial sector, strongly penalizing the insurance companies.

From these considerations it is possible to conclude that the political approach of the Democrats tends to be more favorable in general terms to the health industry, giving even higher advantages to some subsectors. But one thing is sure, with a health care insurance available to more people the companies that will be hit the most are the health insurance one.

The health industry has benefitted from the initiatives of the Democratic president Barack Obama since it has in general increased the market for these companies and so the demand for their services; however, as always on the market when someone is winning someone else is losing, and this better performance has been mainly paid by the health insurance companies.

Consumer Staples

The consumer staples industry under the Trump administration has been one of the worst performers, with a total capital return of 26.04%, underperforming the S&P 500 by 40.72 percentage points, reporting then the second worst return among all the analyzed industries.

[37] Debra Sullivan. 2019. "The pros and cons of the Obamacare", *Healthline*, August 16, 2019. https://www.healthline.com/health/consumer-healthcare-guide/pros-and-cons-obamacare#pros.
[38] Ibidem.

From the analysis above reported there seems to be a strong correlation between the Consumer staples performance and the tax rate. Another factor that may influence this industry, and that is expected to have a strong correlation towards it, is the consumer expenditure.

An important finding in the previous calculation however is the fact that the consumer staples index is the one that has reported the lowest correlation towards the inflation variable, both, on quarterly and on monthly frequency. Not by chance indeed the stocks of companies operating in such industry have always been considered a good investment shield against rising inflation. The interpretation of this result is then that they tend to be preferred in general to uncertain inflation periods, being less sensitive to the inflation cycles. Furthermore, they have reported also the lowest volatility of all the other subindices analyzed.

The consumer staples industry however is a particular case. Despite the disappointing returns generated during the four years of the Trump presidency it has performed pretty well during the eight years of the Democratic government of Barack Obama. From January 2009 until January 2017 indeed the S&P 500 Consumer Staples index has registered a capital gain of 128.08%, with an annual average return of 16.01%, definitely higher than the average annual return under Trump presidency of 6,51%.

In the following graph is indeed possible to compare the performance of the S&P 500 Consumer Discretionary under the two different presidencies:

S&P 500 Consumer Staples Trump vs Obama

Figure 1.7: S&P 500 Consumer Staples Trump vs Obama.

The reasons for this performance however are not much related to the different policy adopted by the two presidents but in the general trend of the market and preferences of the costumers. As already reported for the consumer discretionary also in this case the change in the trend can be linked to the performance of the IT sector.

The macroeconomic variables that have been identified to be correlated with this sector have indeed had an evolution that is in line with a positive expectation for the consumer staples industry. The reasons for this underperformance are then mainly due to the increasing supremacy of the tech industry on the financial market and on the general economic growth. The consumer tastes have shifted in favor of technological goods sacrificing the expenditure for consumer staples goods.

The indices representing the two industries are made up by stocks of companies operating in such sectors, and if we compare the two companies with the highest market capitalization, Coca-Cola inc. for consumer staples and Apple for IT, from 2015 it is possible to see that since 2017 (the year Trump took sit at the white house) a strong divergence of performance took place[39]:

Returns of Coca-Cola and Apple

Figure 1.8: returns of Coca cola and Apple.

"The defining secular trend will be the increasing rate of digitization of people, places and things. This malleable power of software will drive productivity growth across all industries – leading to more inclusive economic growth, far beyond the domains of consumer tech today. Techs spend as a percentage of GDP is projected to double over the next decade.[40]" Satya Nadella (CEO Microsoft) has stated.

[39] Data have been collected from the platform https://investing.com/.
[40] Business chief. 2020. "Executive summary Microsoft CEO Satya Nadella". *Business chief,* May 20, 2020. https://www.businesschief.asia/leadership-and-strategy/executive-summary-microsoft-ceo-satya-nadella

Seems then that tech goods are becoming much more essential in life of individuals, and this is giving the industry high growth margins and a very good profit stability, which inevitably attracts the interest and capital of investors looking for more stable and safe kinds of investments.

Apple Inc's iPhone is a product that many of us would struggle to live without. The iPhone market is mature, but related areas are performing well e.g., services and wearables. The individuals' expenditure is shifting from consumer staple and discretionary to tech products that are becoming essential in our lives. Also, in the business management technology Software companies like Adobe and Salesforce provide critical services to their clients.

Furthermore, payment companies like Visa, Mastercard, Fiserv and PayPal are benefiting from a shift away from cash, which derives also from the selling activity of all the other companies operating in industries different from the IT, included the consumer staple.

To understand the reasons of the disappointing results of the industry it is useful to decompose it in its four main subsectors:

1. Tobacco
2. Household products & personal care
3. Food
4. Beverages

Unfortunately, the four subsectors above individuated are all facing an unfavorable economic situation. As everyone knows, the tobacco sector is feeling the impact of declining sales and increasing regulation and the shift towards vaping appears to be more of a threat than an opportunity.

Household product companies have instead to deal with new own brand competition and with discount supermarkets aggressive on price, together with an increasing competition due to new entrants on the market.

Food and beverages companies have now to struggle with different habits and trends regarding the alimentary habits of consumers that are moving to healthier preferences abandoning packaged and low nutritional score foods, bringing the package food and beverages companies in very difficult situations, like Kraft-Heinz.

In conclusion, despite the consumer staples industry is still seen as a less volatile industry that offers protection in times of uncertainty, the conditions in with this industry has worked until now are not the most optimal.

Energy

In analyzing the performance of the energy industry, it is important first of all to precise that the components of the S&P 500 Energy are all companies that focus their business on the Oil production activities. In this index indeed are not comprised companies that operate in the field of renewable and green energy. Does not surprise then the downtrend in which the S&P 500 Energy companies are and neither does surprise the strong correlation they have towards the Oil price. Furthermore, the energy sector seems to be strongly correlated with the GDP, the inflation, the tax rate and the exchange rate of US dollar (represented in the analysis by the US Dollar index).

The reason for these correlations is related to the commercial activity of such companies. Of course, Oil strongly influences the cost structure of these firms, but at the same time also the US dollar exchange rate with respect to the mayor currencies of the world influences both the revenues and costs.

The sensitivity of the industry to these two variables has been evident during the crash of Oil in June 2015. From June 2014 until January 2015 the Oil price dropped by more than 70%, with the US Dollar index gaining instead roughly the 153% in the same period. Since the price of Oil is expressed in dollar, Brent oil tends to fall when the currency appreciates, and this is an already known relationship on the market.

In 2015 however it is important to remember that this macroeconomic trend on the US dollar exchange rate was due to the decisions of the FED that increased fundamental rates by 25 basis points, which inevitably caused in the long term an appreciation of the US dollar with respect to the other major currencies, especially the Euro.

During the Trump administration the commodity downtrend seemed to come to an end, with the Brent oil showing an appreciation until October 2018. However, this appreciation did not last long.

In the following graph it is possible to see the evolution of Oil, US Dollar index and the S&P 500 Energy index from the Obama election until the end of the Trump presidency:

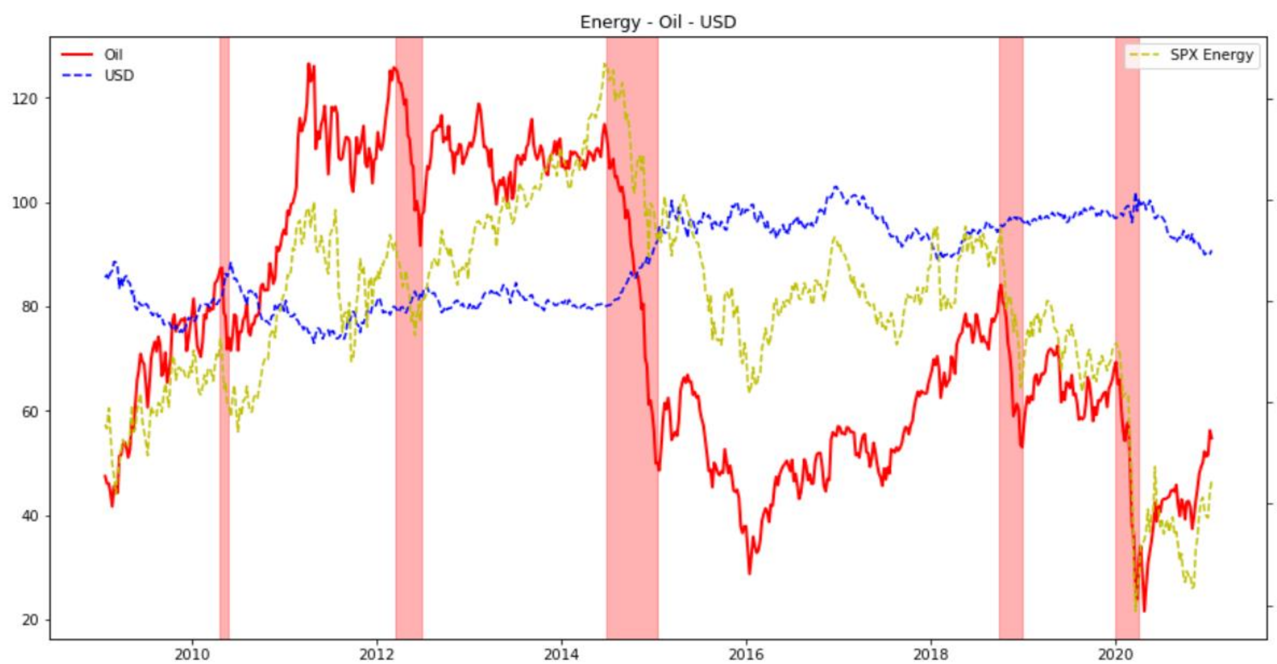

Figure 1.9: oil price development.

In the graph are highlighted the phases of Oil prices drops, and it is possible to see that in all the highlighted periods the US dollar index increased in value while the S&P 500 Energy followed the same direction of the Brent Oil. Of course, correlation is not causality, but the variables above reported are strictly correlated in their evolution and there is no doubt that the appreciation of US dollar due to the decrease in the fundamental interest rates set by FED has influenced the price of the "Black Gold" and so the performance of the energy industry.

As it has been shown in the correlation analysis the "Black Gold" is a variable that tends to have a considerable impact on the financial market, therefore it is useful also to understand what the drivers of its price are. In analyzing the events of mid 2014 it is possible to see that another factor that negatively influenced the oil price was the booming of shale oil production. Even if this revolution signed a good innovation for the sector lowering by far the break-even point and increasing the efficiency of American companies, it increased the supply of the commodity, bringing inevitably to a drop in the price. At the same time the amount in supply was also accompanied by the decrease in demand that was caused by a surprising slow-down in the economy of the most important oil-importing economies.

Beyond the USD exchange rate, the supply and the demand of oil, the third factor that drove the price drop was of course politics. In 2014 the OPEC decided to not increase the production of Oil in order to avoid any loss in sales for the decreasing economic activity. The decision was taken also in order to put the price of Oil at levels so low to be not sustainable for American companies, penalized by the higher production costs of the shale oil[41]. Thereafter it is possible to conclude that the main drivers of the commodity price are:

- US dollar exchange
- Supply and demand of Oil
- OPEC decisions
- Global economy
- Deals and treaties.

To understand the validity of this conclusion it is useful to see the evolution of these variables during the crash in oil price of the 2020. From the end of 2019 until the beginning of 2020 the Oil price dropped by more than 50% because of economic and political reasons: The construction of the North Stream 2 channel has been one of the reasons for the political frictions between United States and Russia.

After the sanctions given by the U.S. to Russia in March 2020, during the OPEC+ meeting Russia refused indeed to cut the production of Oil, increasing then the supply in a context of low demand which of course generated a

[41] Dave Mead and Porscha Stiger. 2015. "The 2014 plunge in import petroleum prices: What happened?". *US Bureau of labor statistics*, May 2015. https://www.bls.gov/opub/btn/volume-4/pdf/the-2014-plunge-in-import-petroleum-prices-what-happened.pdf

deep drop of Brent Oil to the level of 40 dollars per barrel. In this political context also the United Emirates of Arabia intervened in an aggressive manner by increasing even more the supply of oil and leading the price of Oil to the historical minimum level of $27 per barrel. Furthermore, with the diffusion of covid-19 in China and then in the whole world the general conditions of the global economy worsened, decreasing even more the demand, and bringing the futures on oil to negative levels in April 2020[42].

This is an important conclusion because it is possible to see that these variables are linked to the political and economic activity of the most important countries around the world, and consequently to the evolution of the American economy. Thereafter, the president Joe Biden may have a strong impact on the price of this commodity depending on the initiatives and the line of conduct he will implement.

The energy sector seems to be in a downtrend that began already during the Obama administration. This sector is strongly correlated to macroeconomic dynamics and so can be strongly influenced by the policies of the U.S. government.

The Energy index has reported a -16% under Obama administration and a -34.17% under the Republican presidency, despite the policy adopted by Donald Trump that was definitely in favor of the Oil companies, decreasing the polluting standards and withdrawing U.S. from the Paris treaty.

Of course, it has to be considered the fact that on the 20th of April 2020 the Oil future has reached even negative levels, but if we consider the evolution of the index until the beginning of February, excluding the effect of the pandemic the total capital gain of the index under the Trump administration is of 10.03%.

This data shows clearly how the Trump administration that was by far more in favor of Oil energy producer has influenced positively the industry, while the Obama administration more focused on the renewable energy transition had put these companies in a much more difficult environment. The energy industry will probably be one of the industries most influenced by the new presidency of the Democratic Joe Biden, given the strong concern of the new president towards the sustainable energy industry.

Events in the Middle East and the rest of the world are outside of U.S. control, and reducing the petroleum intensity of the economy is the only way to break this negative feedback effect of rising oil prices dampening economic growth. The policies that can improve energy security are those which encourage diversification of fuel sources,

[42] Wikipedia. 2020. “2020 Russia–Saudi Arabia oil price war”. Last modified February 13, 2021. https://en.wikipedia.org/wiki/2020_Russia%E2%80%93Saudi_Arabia_oil_price_war

particularly within transportation, which not only drives more than two-thirds of the nation's oil demand, but draws 94 percent of its energy from petroleum[43].

In conclusion as already stated from the previous presidencies it emerges that the stock market does not seem to care about the color of the elected president but are instead much more sensitive to the general economic trend and to the influence the policy of the government has on it.

There is no doubt that there are profound differences in both style and substance between Donald Trump and Joe Biden — just as there were between Barack Obama and Donald Trump. However, the curious thing is that financial markets do not seem to agree with this uncontroversial assessment. If we look at the compounded returns of the S&P 500 and the performances of the single industries the results at the end have been really similar with the S&P 500 registering a 12.38% annualized return for Obama, and 13.87% for Trump.

Under Obama the three best performing industries were Consumer Discretionary followed by Information technology and Health care. Under Trump the three best performers were exactly the same, but with the IT sector taking the place of the Consumer Discretionary.

Under Obama the worst performer were instead the consumer staples and the Energy industries, but the same has happened with the republican president Donald Trump. However, the industry that has seen a strong change in its performance under the two different presidents has been the Financials, despite the expectation of a boom thanks to the deregulation implemented by Trump.

Finally, one very important divergence between the Obama' and Trump' mandate has to do with dispersion. In the Obama' years, tech and consumer discretionary outperformed. But all sectors delivered positive returns and the sector dispersion did not appear excessive. In the Trump years, technology and consumer discretionary roared ahead, while the rest of the market delivered very pedestrian returns, with the divergence between the technology and energy sectors reaching extremes. In other words, while the drivers of the equity bull market might have remained the same under both Obama and Trump, under republican presidency the advance has become ever narrower.

Once the main drivers of the single industries have been individuated, in the following chapters I will try to understand how the Biden proposal will affect the macroeconomic variables and the general economic trend in order to forecast the evolution of the single industries and so of the S&P 500 for the next four years.

[43] US Energy administration information. 2020. "What is U.S. electricity generation by energy source?", https://www.eia.gov/tools/faqs/faq.php?id=427&t=3

Chapter 2
The current scenario

Once that the main drivers of the most relevant industries for the American economy have been individuated and the impact the previous political programs have had on them have been analyzed, we can move to the analysis of the actual scenario to understand how it can influence the analyzed indices.

As we have already concluded in the previous chapter under different presidencies the drivers of the market tend to remain the same in their composition. What the politics do is to influence the drivers themselves and so indirectly the stock market' prices.

Not by chance indeed the influence of the political initiatives at the beginning is never clear, and the market tends to reflect in the prices only the expected effect these measures will have on the economy, correcting then the valuation to the real values only in the long term.

In the following chapter a description of the current economic scenario will be provided. The analysis will first describe the macroeconomic variables, then the intentions and the proposals of the government through the technology of the Natural Language Processing (NLP), and lastly an analysis of the economy and the market from a financial perspective.

The aim of the analysis is to provide a detailed and precise description of the actual economic scenario with the widest possible perspective. Having a global picture of the actual scenario will provide the starting point for forecasting the possible evolution of the economy under the Biden' presidency.

2.1 The current macroeconomic scenario

Before the spread of the Coronavirus the United States of America were experiencing one of their best economic phases ever. Through the economic policy of the republican president Donald Trump the S&P 500 stock index reached the historical maximum price level; the unemployment rate was at the minimum level ever and the wage index of individuals consequently reached a very significant high point. All these conditions were favorable for the growth of the Gross Domestic Product that touched its historical peak during the fourth quarter of 2019.

However, this uptrend in the GDP already started its reversion at the end of 2019 before the spread of the virus in the United States of America. As soon as other countries like China closed their activities because of the initial spread of the pandemic the Gross Domestic Product of the U.S. started its contraction. The GDP can indeed be expressed as the sum of investments, consumer and public expenditure, and the trade balance.

The first variable that negatively impacted on the American economic production was the trade balance because of the dependence the United States of America have on the other economies. In the graph it is indeed possible to see the deep fall the trade balance had since the beginning of 2020 when the coronavirus was starting to spread in China which is the third major trade partner of the United States after Canada and Mexico[44].

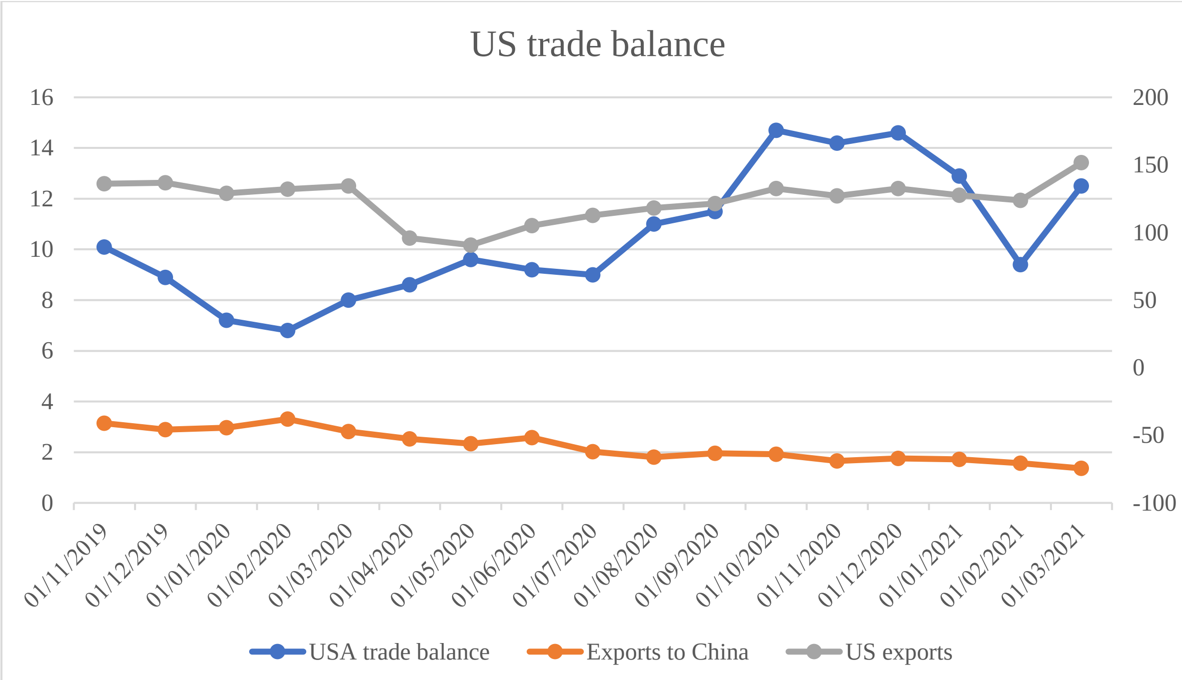

Figure 2.1: US trade balance.

In the graph it is shown that the exports to China started to decrease already in the month of November 2019 when the region of Wuhan was isolated under restrictions. After the month of February instead, when the lockdown measures started to be adopted also by other states different from China the trade balance of the United States of America started a marked downtrend mainly because of a higher proportionally decrease in the US exports.

However, the real effects of the virus started to take place in the following months, with the index of industrial production (IPI) falling in the month of February. The unemployment rate consequently rose from 4.4 to 14.8 in the month of March 2020 with the inevitable. drop in the wage level.

These variables affected the GDP by directly reducing the investments and private consumption. The final consequence of the economic shutdown was of course a decrease in the Consumer Price Index and so of the inflation level that started to fall since February 2020. This had as direct consequence a deep decrease in the Gross

[44] Data have been collected from the platforms https://fred.stlouisfed.org/ and https://www.census.gov/foreign-trade/statistics/highlights/toppartners.html.

Domestic Product of the United States of America. In the following graph is plotted the Gross Domestic product of the U.S. since the beginning of the pandemic[45]:

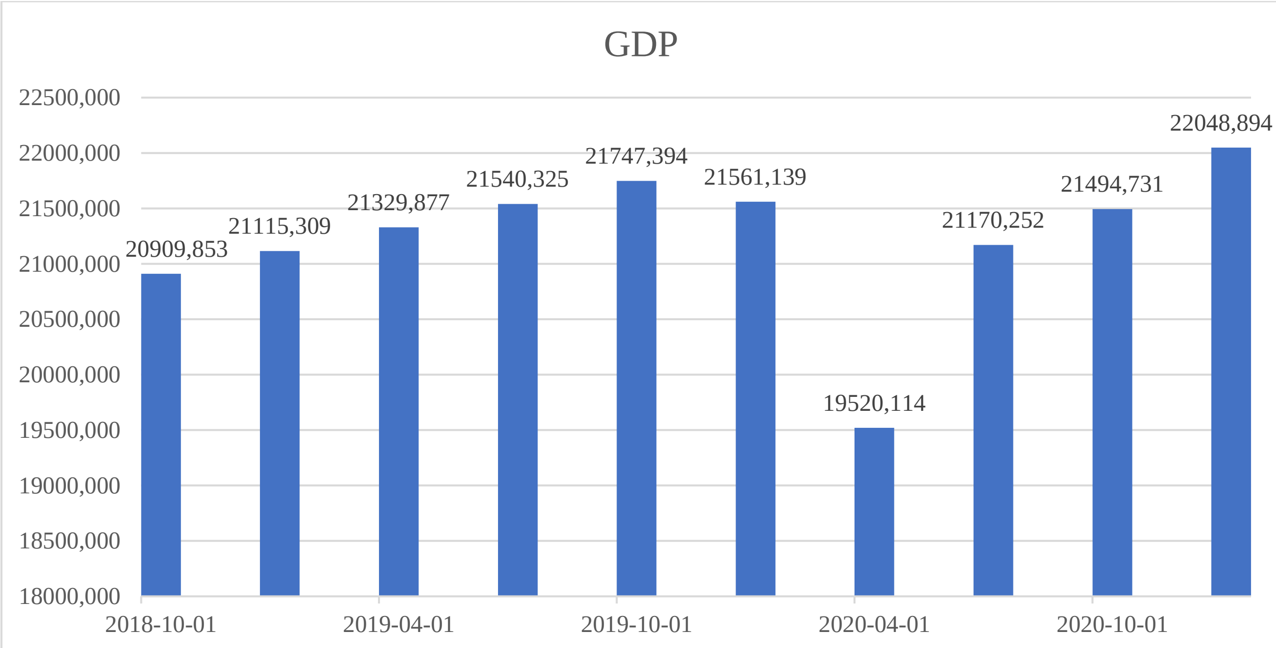

Figure 2.2: United states of America Gross Domestic Product.

In the first quarter of 2020, the GDP already reported a contraction of more than 5%. Such a deep drop is drastic to the economy, but it is nothing if compared to the second quarter of 2020 when the Gross Domestic Product of the United States of America shrank by 39.1 percentage points on annual basis[46], the highest decline in GDP ever experienced, even higher than the Second world war.

As we know, in periods of crisis and depression the government and the central banks must intervene in order to sustain the economy and give it the right incentives for the recovery. During the 2020 crisis the intervention of the FED and the US government has been the quickest ever happen in the history.

As always, the stimulus measures adopted by the FED have fallen into three basic categories:

1. interest rate cuts
2. loans and asset purchases
3. regulation changes.

[45] Data downloaded from FED data bank, https://fred.stlouisfed.org/.
[46] Scott Horsley. 2020. "3 months of hell, U.S. economy drops 32.9% in worst GDP report ever". *NRP*, July 30, 2020. https://www.npr.org/sections/coronavirus-live-updates/2020/07/30/896714437/3-months-of-hell-u-s-economys-worst-quarter-ever#:~:text=Ethics-,GDP%20Drops%20At%2032.9%25%20Rate%2C%20The%20Worst%20U.S.%20Contraction%20Ever,the%20Commerce%20Department%20said%20Thursday.

The loans and asset purchases come in general trough quantitative easing programs and repurchase operations where the Fed buys directly assets and specific lines of credit through the creation of entities called special purpose vehicles (SPVs). The Federal Reserve lends money to these SPVs that then purchase the object assets.

One of the simplest assets purchasing programs has been the quantitative easing (QE) program, in which the Fed directly buys assets like U.S. Treasuries and mortgage-backed securities (MBS). The QE was launched for the first time in the United States after the crisis of 2008; however, the Federal Reserve has officially restarted it on the 15th of March 2020 after the big market crash. The scale of the program is not exactly quantified, with the FED saying it would buy "in the amounts needed to support the smooth functioning of markets."[47]

On the 12th of March 2020 the Fed enormously expanded its repo operations by $1,5 trillion, then adding another $500 billion on March 16th to ensure there was enough liquidity in the money markets. Through the repo operations the FED has effectively been able to loan money to banks by purchasing Treasuries from them and selling them back to the banks at a later date. In repo operations indeed the two parties exchange low credit risk securities for a small period of time and use the asset itself as a collateral.

The second main instrument used by FED for the monetary policy is instead the fundamental interest rate that sets the minimum borrowing cost from the Federal Reserve. In March 2020, the Fed cut its benchmark interest rate twice, once by 0.50% and a second time by 1.00%. This incredibly lowered the FED funds rate from the range 1.50% to 1.75% to the zero lower bound range of 0.00% to 0.25%. This is notable because since the great recession the FED has never moved interest rates in increments greater than 0.25. On March 15, 2020, the Fed also cut its discount rate, another key interest rate, by 1.5%, down to 0.25%[48].

All these efforts combined had the aim of providing enough liquidity to the U.S. in order to avoid that the economy could suffer from a liquidity crisis like in the 2008. Under the Biden administration the FED is still carrying out programs of monetary stimulus for the economy.

Besides direct asset purchases, using the funds from the Treasury department the FED has set up several new lending programs. Through the CARES Act (see U.S. Fiscal Policy section for details) a number of Special Purpose Vehicles (SPV) were set up, which, as separate legal entities, have allowed the Federal Reserve to lend

[47] Jeffrey Cheng, Tyler Powell, Dave Skydmore. David Wessel, 2021. "What's the FED doing in response to the covid-19 crisis? What more could it do?". *Brookings's education,* March 30, 2021. https://www.brookings.edu/research/fed-response-to-covid19/
[48] Ibidem.

in ways it normally doesn't. All of these programs have been discontinued except for one, the Paycheck Protection Program Lending Facility (PPPLF)[49].

The PPPLF was launched on April 9, 2020, after the CARES Act, with the specific aim of helping small businesses. This program lends money to banks so that they can, in turn, lend money to small businesses through the Paycheck Protection Program. To further help the small businesses on April 30, 2020, the program expanded the types of lenders who could participate in the program. Also, here the FED has not defined a clear measure for the size of the program and there is no current limit to the amount of credit that can be extended through it, but it will stop extending credit on June 30, 2021.

The monetary stimulus programs approved after the covid crisis are very particular because of the exceptional support it gives to corporations. To support corporate bond market the FED created two facilities the Primary Market Corporate Credit Facility (PMCCF) created on March 23rd, 2020, to buy corporate bonds to ensure corporations can get credit and at the same time, the related Secondary Market Corporate Credit Facility (SMCCF), which bought up corporate bonds and bond ETFs on the secondary market. The SMCCF started purchasing bond ETFs on the 12th of May 2020 and said it would begin purchasing individual bonds to create a "broad, diversified market index" of individual U.S. corporate bonds starting on June 16, 2020. In this case the FED has established a limit in the dimensions of a combined maximum purchase of $750 billion, up from an initial $200 billion. The premise of these two programs was to make banks more willing to lend to corporations because they knew that in the case, they could sell the loans to the Fed. On the 31st of December 2020 the FED stopped both the programs and they will continue to be funded until their holdings are sold or mature[50].

Also on March 23, 2020, the Federal Reserve resurrected the Term Asset-Back Securities Loan Facility (TALF) which was stopped after the Great Recession. This program invested up to $100 billion in loans to companies taking asset-backed securities (ABS) as collateral. This included a variety of securities, such as those based on auto loans, commercial mortgages, or student loans. The Treasury Department's ESF made a $10 billion initial equity investment in the SPV. It stopped extending credit on December 31, 2020. This is particularly relevant, because for the first time the FED has started purchasing also very risky bonds in his Asset Purchasing Programs, and for the first time ever, also high yield bonds have been included in these programs.

Not by chance on April 9, 2020, the Fed announced the Main Street Lending Program. Through this program the American central bank set up an SPV to purchase up to $600 billion in small and medium-sized business

[49] Gabe Alpert. 2021. "U.S. COVID-19 Stimulus and relief". *Investopedia*, April 28, 2021. https://www.investopedia.com/government-stimulus-efforts-to-fight-the-covid-19-crisis-4799723.
[50] Jeffrey Cheng, Tyler Powell, Dave Skydmore, David Wessel, 2021.

loans. Under the plan, the FED has purchased a 95% stake of each loan, with the bank keeping 5%. The main objective of the program was obviously the reduction of the excessive credit risk exposure of banks, in order to avoid another banking system' collapse like the one of 20008. The program has purchased stakes in both new loans and loan extensions[51]. Under the CARES Act, the Treasury Department has planned to make a $75 billion equity investment in the SPV, but also in this case we have to remember that on the 30th of October 2020 the FED reduced the minimum size of the loans the program would purchase highlighting the extreme situation the economy was after the covid crisis. It continued to purchase stakes in loans until Jan. 8, 2021, and it will continue to be funded until its assets mature or are sold.

Another 500-billion-dollar program was launched on April 9 of 2020 through the Municipal Liquidity Facility (MLF) the FED started purchasing short-term notes issued by the 50 states and the District of Columbia, counties with at least 500.000 people and cities with at least 250.000 people. Under the CARES Act, the Treasury Department made an initial equity investment of $35 billion to the SPV. It stopped purchasing notes on Dec. 31, 2020, and the Fed will continue to fund it until its assets mature or are sold.

On March 20, 2020, the Fed relaunched a Great Recession-era program, the Primary Dealer Credit Facility (PDCF), which has given loans to primary dealers backed by a wide variety of securities as collateral. There was no set limit to the amount of credit it issued. The program ran until March 31, 2021.

To add even more liquidity to money markets, on the 28th of March 2020 the FED launched the Money Market Mutual Fund Liquidity Facility (MMLF). This program lent money to financial institutions to support the money market mutual funds. The MMLF was similar to the AMLF program launched in 2008 when the collapse of Lehman Brothers caused a major money market fund to fail[52]. The program did not have a specific lending limit but ended on March 31, 2021, with a total protection of debt credit of given $10 Billion.

On March 17, 2020, the FED launched the Commercial Paper Funding Facility (CPFF), which purchases commercial papers to ensure that those markets remain liquid. On March 23, 2020, the Fed broadened the variety of commercial paper it would lower the pricing of the debt it buys. This program is basically a relaunch of a program launched during the Great Recession when many businesses suffered from the liquidity lack of the commercial paper market. While it has set no limit on the amount it purchased, the CPFF stopped purchasing debt on March 31, 2021, and the SPV will continue to be funded until its assets mature. The Treasury Department made a $10 billion equity investment in the CPFF from its Exchange Stabilization fund.

[51] Ibidem.
[52] Ibidem.

These interventions are really significant for the recovery of the American economy. For the first time ever, the FED is intervening on the financial market by buying not only the government's bond but also the non-investment grade bond, also known as "high-yield bond", and by sustaining the private commercial debts of the corporations. This will inevitably have a strong impact on the financial market that will be reflected on the price of the securities in both, the stock, and the bond market.

As we have said the third instrument used for the implementation of the monetary policy is the regulation change. In order to provide the market more liquidity the Fed made different changes on the regulation, especially some technical changes to hold on to less capital so they can lend more. It even temporarily removed the asset restrictions it placed on Wells Fargo after their fake account scandal, so that Wells Fargo could lend more.

On the 16th of December 2020, the Federal Reserve announced that its policy of quantitative easing would continue "until substantial further progress has been made"[53] toward inflation and employment goals. The FED expects this progress to take years based on projections they also released that day. However, as we have seen in recent time the effect on the inflation have already been shown. In the second quarter of 2021 indeed, the United States have registered the highest increase in the Consumer Price Index in the history. In the following chapter we will see the expected outcome of this stimulus package on the macroeconomic variables.

On March 19, 2021, as programmed the Federal Reserve announced that it was letting its policy of relaxing bank reserve requirements expire on March 31, 2021. The policy, originally announced on May 15, 2021, temporarily allowed banks to exclude Treasuries and deposits with FED banks from their balance sheets for the purpose of calculating reserve requirements, allowing them to lend more in order to provide further liquidity to the market[54]. These kinds of policies indeed have the direct effect of increasing the monetary multiplier, exponentially increasing the amount of money printed to face the crisis.

However, the main initiatives implemented by the government were the relief packages. Three main relief packages plus a supplemental one was passed by the US government throughout March and April 2020, totaling nearly $2.8 trillion. After the passage of the so called "stimulus phase 3.5" (the supplementary package) in April, there was no substantial effective action on COVID-19 stimulus or relief from Congress for several months as each party proposed their own stimulus package.

---

[53] Gabe Alpert. 2021. "U.S. COVID-19 Stimulus and relief". *Investopedia*, April 28, 2021. https://www.investopedia.com/government-stimulus-efforts-to-fight-the-covid-19-crisis-4799723

[54] ABA' Editorial board. 2021. "Fed: Banks Demonstrated Financial, Operational Resilience During COVID-19". *ABA Banking Journal*, April 30, 2021. https://bankingjournal.aba.com/2021/04/fed-banks-demonstrated-financial-operational-resilience-during-covid-19/

The Democratic and Republican party had indeed two different points of view regarding the dimension of relief package: The Democrat-controlled House of Representatives passed the HEROES Act of $3 trillion in May 2020 while the Republican Senate Majority proposed but did not pass, the $1 trillion HEALS Act, in July 2020. Despite offers from the House Democrats to meet in the middle at $2 trillion, the Senate Republican majority refused to budge from their position, insisting on a smaller stimulus package. Finally, after the election of President Biden in November, a $900 billion stimulus bill was passed in December 2020, which then the elected President Biden said was a "down payment" on additional stimulus and relief to be passed in 2021[55].

During this period, President Trump have issued a plethora of executive actions attempting to provide aid during the pandemic, as have various executive branch agencies. The actions of Trump have then been continued with the new elected president Joe Biden. The most significant aid provided for defeating the Covid crisis by the democratic president is without any doubt the fifth major stimulus package, the $1.9 trillion American Rescue Plan, signed into law on March 11, 2021.

We will see in the sentiment analysis how all these fiscal policy initiatives are directly reflected in the news and the speech of the relevant government components. The analysis will surely take into account the impact that this has on the financial market in the short term.

To go deeper in the analysis in chronologic order the stimulus packages passed by the government were six, including the supplementary relief package “stimulus 3.5”. Each single package provided different amounts of fund with different aims and use destination. Here are provided the details of the various packages:

Stimulus and relief package 1

The first relief package, the Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020, also called Phase One, was signed into law by President Trump on the 6^{th} of March 2020. The total funds for the Phase one were of $8.3 billion with the following use destinations:

- Fund research for a vaccine.
- Give money to state and local governments to fight the spread of the virus.
- Allocate money to help with efforts to stop the virus's spread overseas.

[55] Nicholas Wu. 2021. “All Covid19 stimulus bills, visualized”. *USA Today*, March 17, 2021. https://eu.usatoday.com/in-depth/news/2021/03/11/covid-19-stimulus-how-much-do-coronavirus-relief-bills-cost/4602942001/.

It is possible to see how the initial focus of the government was of course to defeat the pandemic and limit the spread of the Coronavirus.

The effects of the stimulus were remarkable and immediate. As we know the financial market tends to move in the short term on the basis of the expectations of the future impact of present events. As soon as the intervention of the Federal Reserve was announced indeed the S&P 500 registered in three trading days a capital gain of 17.13% from the 23rd of March until the 26th of March[56].

Stimulus and relief package 2

The phase two was instead launched with the approval of the Families First Coronavirus Response Act (FFCRA), signed into law on the 18th of March 2020. It allocated $3.4 billion in relief and included the following provisions:

- Providing money for families who rely on free school lunches in light of widespread school closures.
- Mandating companies with fewer than 500 employees provide paid sick leave for those suffering from COVID-19, as well as providing a tax credit to help employers cover those costs.
- Providing nearly $1 billion in additional unemployment insurance money for states, as well as loans to states to fund unemployment insurance.
- Funding and cost waivers to make COVID-19 testing free for all.

The focus of the government from the phase two instead started to move to the direct sustainment of the economy, providing incentives to employers and to the small firms, which were the ones most hit by the stop of the economic activities[57].

Stimulus and relief package 3: The CARES Act

The third and by far the largest and so probably the most important relief package came in the "phase 3". On the 27th of March 2020 the Coronavirus Aid, Relief, and Economic Security Act also called CARES Act allocated 2,3 trillion of dollars for the following efforts:

- One-time, direct cash payment of $1,200 per person, plus $500 per child.
- Expansion of unemployment benefits to include people furloughed, gig workers, and freelancers until Dec. 31, 2020.
- Additional $600 of unemployment per week until July 31, 2020.
- Waived early withdrawal penalties for 401(k)s for amounts of up to $100,000 until Dec. 31, 2020.

[56] Gabe Alpert, 2021.
[57] Ibidem.

- Mortgage forbearance and a moratorium on foreclosures on federally backed mortgages for 180 days.
- $500 billion in government lending to companies affected by the pandemic.
- $367 billion in loans and grants to small businesses through the Paycheck Protection Program (PPP) and expanded Economic Injury Disaster Loan (EIDL) program.
- More than $130 billion for hospitals and health care providers.
- $150 billion in grants to state and local governments.
- Almost $60 billion for schools and universities.

This stimulus package was strongly based on restructuring the liquidity availability for individuals, with the aim of restructuring the purchasing power of families[58].

The additional stimulus and relief package 3.5

The supplementary stimulus package called Phase 3.5 was then signed into law on April 24, 2020. It appropriated $484 billion, mostly to replenish the PPP and the EIDL, and contains additional funding for hospitals and COVID-19 testing.

Another supplementary measure, the Paycheck Protection Program Flexibility Act of 2020, which modifies the PPP, was signed into law on June 5, 2020. It made the following changes to the program:

- It allowed businesses 24 weeks to spend the money, up from the initial eight-week period.
- It lowered the requirements for loan forgiveness: businesses now need to spend only 60% of their PPP funds on payroll instead of 75% previously.
- The payment deferment period was extended from six months, to when the borrower finds out the amount of their loan forgiveness.
- It allowed businesses that received PPP loans to delay paying payroll taxes.
- It allowed businesses loan forgiveness if they don't rehire workers who refused good-faith offers of re-employment or are unable to restore operations to levels before the COVID-19 pandemic.
- It gave businesses until the end of 2020 to restore their payrolls to pre-crisis levels.
- It increased the loan maturity of PPP loans taken out after June 5 to five years.
- It extended the time borrowers have to pay back unforgiven parts of the loan.

It is important also to remark that to these stimulus packages President Trump passed also other supplementary measures and executive orders. On the 4th of July 2020 through the approval of a third piece of legislation, the

[58] Ibidem.

deadline for small businesses to apply for the PPP was extended from June 30, 2020, to August 8, 2020. The Trump administration enacted a number of other measures to provide fiscal stimulus. Furthermore, on the 13th of March 2020, President Trump announced a state of emergency that freed up $50 billion in emergency aid for states, cities, and territories[59].

On March 17, 2020, Treasury Secretary Mnuchin extended the deadline for paying both individual and business taxes to July 15. The Treasury Secretary himself claimed that this effort would have freed up $300 billion in liquidity. On the 20th of March 2020, the date to file taxes was even extended to July 15.

On April 19, 2020, the Trump administration said businesses could delay payment of tariffs for 90 days if they have suspended operations during March and April and if they "demonstrate significant financial hardship." This measure had as main objective not only to avoid the failure of many small businesses but also to provide indirectly firms with further liquidity by delaying the date of payments.

Furthermore, four executive actions were signed by President Trump to provide additional COVID-19 relief on August 10, 2020. The first action created the Lost Wages Assistance Program (LWA), which would roll out a $400-per-week payment in unemployment benefits, of which 100 dollars paid by the state government and 300 dollars paid by the federal government. The program was set to last through Dec. 6, or until the funds are exhausted, and the benefits were meant to be available immediately, according to Treasury Secretary Mnuchin. The main purposes of these executive actions were to stimulate the consumer expenditure.

The total amount of 44 billion of dollars for the program was to be taken from the Federal Emergency Management Agency's (FEMA) disaster relief fund. President Trump said the states should use the remaining aid given to them under the federal CARES Act to fund these payments.

A second executive action extended the moratorium on payments and interest accrual on student loans held by the government until the end of 2020. The moratorium was previously set to expire on September 30, 2020. It was once again extended to Sept. 31, 2021, by the Department of Education.

A third executive action instructed the Department of the Treasury and the Department of Housing and Urban Development (HUD) to help provide temporary assistance to homeowners and renters. The action directed HUD to “promote the ability of renters and homeowners to avoid eviction or foreclosure.” Notably, the order did not extend the CARES Act's federal eviction moratorium, which expired July 24. The executive action also instructed the Federal Housing Financing Agency (FHFA), which oversees Fannie Mae and Freddie Mac, to "review all

[59] Ibidem.

existing authorities and resources that may be used to prevent evictions and foreclosures for renters and homeowners.[60]"

A fourth executive action deferred payroll taxes for Americans earning less than $100,000 per year for the period from Sept. 1, 2020, to Dec. 31, 2020. The taxes will still need to be paid back in 2021.

Stimulus and relief package 4

Still under the Trump administration on the 21st of December 2020, the U.S. Congress passed a further $900 billion stimulus and relief package. President Trump signed the bill on December 27, 2020, but at the same time he was pushing the Congress to increase the direct stimulus payments from $600 to $2.000. The content of the Act signed on the 27th of December included as main purposes the following points:

- Direct payments of $600 per person including for dependents 16 and under. The payments will be available to individuals making up to $75.000 per year.
- Eleven weeks of expanded unemployment benefits starting on December 27, 2020. The benefits would be expanded by $300 a week. The Pandemic Unemployment Assistance (PUA) program for self-employed and contract workers and the Pandemic Emergency Unemployment Compensation (PEUC) for people who have exhausted their unemployment have also been extended.
- $325 billion in help for small business loans including $284 billion in forgivable PPP loans, $20 billion for EIDL grant for businesses operating in low-income areas, and $15 billion for live cultural venues.
- An extension of the CDC eviction moratorium through January 31, 2021, now extended through June 30, 2021.
- $45 billion for transportation funding including $15 billion in airline payroll support, $14 billion for transit, and $10 billion for state highways.
- $69 billion to public health measures including $22 billion in aid to states for testing and tracing, $20 billion to the Biomedical Advanced Research and Development Authority (BARDA), $9 billion to the CDC and state governments for vaccine distribution, and $9 billion to support healthcare providers.
- $82 billion in education funding including a $54,3 billion K-12 Emergency Relief Fund and a $22,7 billion Higher Education Emergency Relief Fund.
- $25 billion in emergency rent assistance.
- $26 billion in nutrition and agriculture funding including a 15% increase in Supplemental Nutrition Assistance Program (SNAP) benefits and food bank funding.

[60] Ibidem.

This was the last executive order signed by President Trump under his mandate. On January 20, 2021, as soon as President Biden took place in the white house, he signed a number of executive orders including the following relating to stimulus and relief measures:

- The nationwide moratorium on evictions and foreclosures was extended until March 31, 2021.
- The deferral of federal student loan payments and interest was extended until Sept. 30, 2021.

On Feb. 16, 2021, President Biden extended the moratorium on foreclosures and evictions on homeowners with government-backed loans. He also extended the enrollment period for mortgage payment forbearance for government-backed loans until the 30th of June 2021 and extended the period of mortgage payment forbearance available to borrowers who entered forbearance before June 30, 2021, by up to six months. It is possible to see immediately the different approaches of the two presidents, with the Democratic strongly more focused on the citizens rather than to the companies. This order indeed provided directly more liquidity to the less protected classes of citizens and had the aim of course of increasing the consumer expenditure.

Stimulus and Relief Package 5: The American Rescue Plan

Of course, the main measure taken by Joe Biden in the first moths of presidency for defeating the Coronavirus crisis was the fifth Stimulus and relief package. On the 11th of March 2021, President Joe Biden signed the American Rescue Plan Act of 2021, launching a $1,9 trillion package of stimulus and relief proposals. In this Act Biden tried to focus mainly in increasing the liquidity to citizens rather than to the corporations. Some facets of the plan, such as raising the minimum wage to $15 an hour, had to be excluded in order to pass the plan using budget reconciliation, a Senate procedure that allows bills to be passed using a simple majority. Roughly $350 billion of the total funding will go to state and local governments. The key points of the plan as it was passed are the following:

- Direct cash payments of up to $1.400 for individuals earning less than $75.000 a year plus $1.400 per dependent. The amount of the payment decreases for people with income over $75.000, phasing out completely for individuals with an income of $100.000 a year.
- Increasing the maximum annual Child Tax Credit from $2.000 a child to $3.000 per child between the ages of 6 and 17, and $3.600 for each child under the age of 6. The increase will last for the next year and payments are phased out for couples making over $150.000 a year and individuals who are heads of households making over $112.500 a year.
- $300 a week in expanded unemployment insurance lasting through Sept. 6.

- $10.200 in unemployment benefits are free from federal taxes for households with incomes under $150.000 a year. That Figure 1. is doubled for married couples filing jointly. If you filed your taxes before March 31, 2021, the IRS announced it will adjust your tax return automatically in the spring and summer of 2021 if you didn't claim this exemption. States can choose to either follow suit and also withhold state taxes on these amounts or continue to require that all taxes be paid.
- $130 billion in funding for K-12 schools.
- $55,5 billion for the Centers for Disease Control and Prevention to administer and distribute vaccines, diagnose and track COVID-19 infections, and purchase testing and PPE supplies.
- $39 billion in funding for higher education.
- $30 billion in funding for public transit.
- $25 billion in emergency rental assistance.
- $25 billion for the Small Business Administration to make grants for "restaurants and other food and drinking establishments."
- $40 billion in funds for child-care, including $15 billion in child-care assistance and $25 billion to help child-care providers continue to operate and meet payroll.
- $15 billion to support airline industry workers.
- $7,25 billion in additional PPP funding, in addition to expanding which nonprofits can benefit from the program.
- A provision treating any student loan forgiveness passed between Dec. 31, 2020, and Jan. 1, 2026, as non-taxable income.

The actual macroeconomic scenario that Biden is facing is the direct consequence of the implemented monetary and government policy acted before his entrance to in the white house.

In brief as we have said the government has reacted by throwing an incredible amount of liquidity on the market and by decisively increasing therefore the public expenditure. The different macroeconomic variables analyzed in the previous chapter have then followed a certain evolution that is somehow been influenced by the decision of the USA government' board.

Thanks to these continuous stimuluses the macroeconomic variables have started to grow following the evolution of a healthy economy. The consumer expenditure has started increasing again, registering significant increase already in the month of May 2020, the stock market has continued to register positive returns, the unemployment rate has started to decrease even if it has not yet achieved the pre-crisis level and the IPI index is in an uptrend to.

However, Joe Biden comes to the White House when the Covid-19 crisis is at its full and a recovery plan for launching again the economic activity and allocating all the resources is strongly needed. In general terms the actual macroeconomic scenario is very inhomogeneous and uncertain: while the United States are starting to come out from the restrictions imposed by the diffusion of the pandemic some economies around the world are instead fighting against another virus surge.

The economy of the United States strongly depends on the trades with foreign countries. Since the spread of the Covid-19 indeed the exports of the United States of America have started to decrease but given the fact that the economic activity of the new continent has remained open more than the other countries have done the net exports of the United States of America have strongly suffered from it.

From the graph of the trade balance of the U.S. it is indeed possible to see that it is still in a downtrend that lasts from the month of January 2020. Without the resumption of the economy of the American trade partners the exports of the United States of America will struggle to reach the pre covid crisis levels.

In general terms the government tends to set its objectives in macroeconomic terms, trying to use its instruments in order to influence inflation, unemployment rate, the consumer expenditure and finally the Gross Domestic Product. In doing so it moves the other macroeconomic variables of the money supply, the interest rate level, the public expenditure and the tax rate.

Contrarily to the elected president Joe Biden, Donald Trump wanted to stimulate further the economy by lowering taxes and increasing the public deficit. The democratic president is instead pushing for the contrary policy, that is increase tax on corporates and privates in order to favor a wealth distribution and finance the new monetary stimulus of 1.9 trillion proposed by the democratic party.

This aims at financing the incredible public expenditure program of the actual government and reduce the economic inequalities of the United States of America. Of course, as we have seen in the previous chapter if the government increases taxes in order to finance a higher public expenditure it is a very good signal of recovery for the economy that is reflected in the price of the stock market. However, the economy of the United States does not depend only on the internal market, but it is strongly dependent on the trades it has with foreign countries.

The United States of America is a net exporter economy because of its need of satisfying the expansion of its system. However, the government cannot control the international economic situation which unfortunately is very uncertain.

As we have said the trade balance of the United States has not reached the pre covid levels yet. The reason may be probably linked to the fact that most of the countries with a significant trade relationship with the US are still struggling to fully reopen the economy.

While the imports have even overcome the levels of the pre-covid months of January 2020 the exports are only now achieving the levels of the pre-crisis economy. The trades toward the major partners of the Americans (Canada, Mexico, China and Japan) are coming back to the previous level, even if Japan still struggles to import again the same amount of American goods and services.

The situation seems then a situation of recovery, despite the virus is still spreading around the world blocking the economy of many countries, the U.S. does not seem to be in a concrete recession phase: the GDP is now coming back to the previous levels and the record of Trump seems to be close to be reached again.

However, this has some expenses. The stimulus package flows liquidity into the bank accounts of citizens with a very simple digital progress: the Federal Reserve will just simply adjust their books and deliver a form of computer currency to the Treasury Department. By doing so the FED is throwing an incredible amount of money in the economy, which usually brings as risk an exaggerated level of inflation.

Thereafter, after the Covid-19 crisis the macroeconomic variable that will experience the highest change will probably be the money supply. The balance sheet of the FED on the asset side has grown from the level of 4,151,630 million of dollars of the beginning of February 2020 to the actual value of 7,810,486, an increase of more than 88%[61], the highest in the history. This will of course have a significant impact on the United States economy, with the expected result of increasing first the money supply.

However, what we have not considered yet in this analysis is the reason why the Federal Reserve intervenes on the economy. As we know the final objective of the central banks is to control inflation by reaching a stable targeted level that for the majority of the CBs of developed economies is the 2%.

Please appreciate in the following graph the inflation rate computed as percentage change of the CPI index from January 2019 until May 2021[62]:

[61] Source of data https://fred.stlouisfed.org/series/WALCL
[62] Data have been downloaded from the FED data bank available at https://fred.stlouisfed.org/.

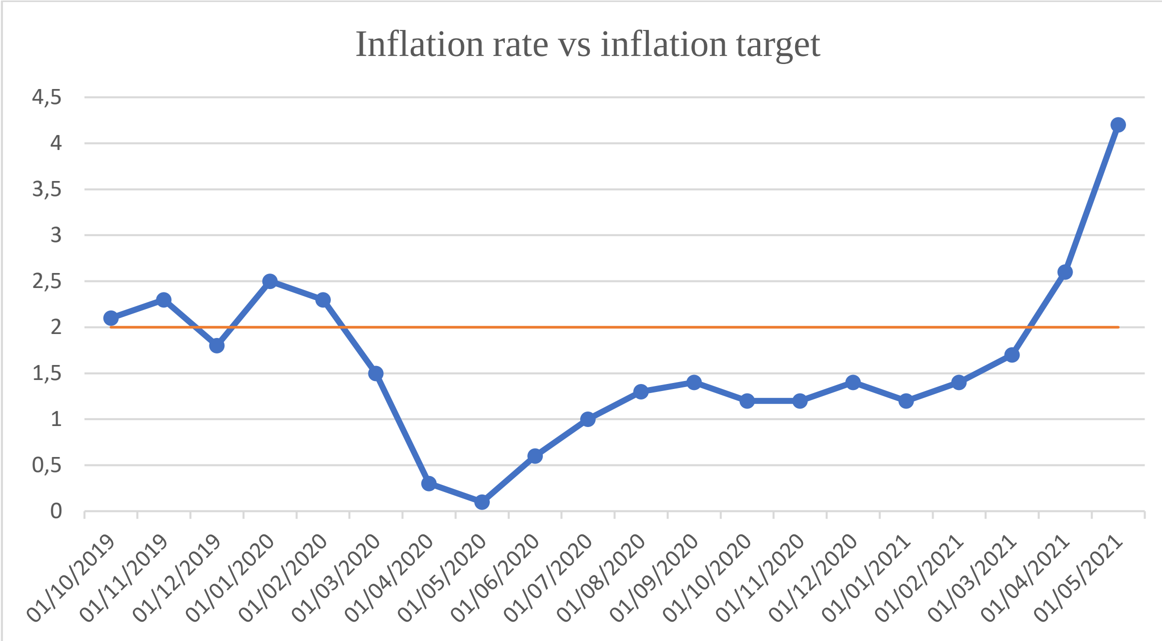

Figure 2.3: United States of America inflation rate.

It is possible to see that thanks to the FED intervention the inflation rate has soared from the approximate level of 0,4% to the achievement of the target 2%. In the last report the inflation rate has even reached the value of 4,3%; it is the highest percentage change in consumer price index ever registered since 2008. Seems then that the flow of liquidity on the market is starting to show its effects on the prices of goods, so in the following chapter we will try to understand what can happen now with the implementation of the fifth stimulus package all the relevant macroeconomic variables.

Furthermore, the almost 2 trillion dollars spending program will significantly increase the level of public debt. Indeed, the FED estimates that the American Rescue Plan will push the national debt to 108 percent of GDP this year, surpassing the record of 106 percent set just after World War II. This will probably have an impact on the Treasury yield that will be analyzed in the following chapter[63].

[63] Kate Davidson. 2020. "U.S. Debt Is Set to Exceed Size of the Economy Next Year, a First Since World War II". *Wall Street Journal,* September 01, 2020. https://www.wsj.com/articles/u-s-debt-is-set-to-exceed-size-of-the-economy-for-year-a-first-since-world-war-ii-11599051137

2.2 Market sentiment analysis.

The first thing to do for understanding the possible evolution of the macroeconomic variable and the financial market after the election of the president Joe Biden is to analyze the proposals of the president and the general sentiment of investors towards the single industry potentialities.

For this purpose, I have carried out two different approaches for the sentiment analysis. The first approach is based on the analysis of the tweets published by the president Joe Biden and the vice president Kamala Harris, both through their personal accounts (@JoeBiden for the president and @KamalaHarris for the vice president) and the official account of the president of the United States of America (@POTUS) and the first female vice president (@VP).

This kind of analysis is highly significant because it allows to understand the main topics the two candidates are focusing on and so which will be the financial and macroeconomic variables that will be more affected by the initiatives of the new government.

Different precedent studies have already highlighted the importance of the social network contents for the financial market. David Valle-Cruz, Vanessa Fernandez-Cortez, Asdrúbal López-Chau and Rodrigo Sandoval-Almazán in their study “Does twitter affect stock market decisions?” have analyzed how the polarity of tweets influences the behavior of financial indices during the period of the pandemic. They did find out a significant correlation between the polarity of the tweets of business accounts and the behavior of the financial indices, assigning to twitter also a predictive power for the financial market returns[64].

Dell Zhang, Andrius Mudinas and Mark Levene in their paper “Market Trend Prediction using Sentiment Analysis: Lessons Learned and Paths Forward” have identified the existence of Grenger causality between the sentiment on news of the major newspapers and tweets regarding the single companies. The study identified an accuracy of more than 70% in forecasting stock returns for periods longer than five days[65].

Venkata Sasank Pagolu, Kamal Nayan Reddy Challa, Ganapati Panda and Babita Majh in the paper “Sentiment Analysis of Twitter Data for Predicting Stock Market Movements” have found out that there is a strong correlation

[64] David Valle-Cruz, Vanessa Fernandez-Cortez, Asdrúbal López-Chau and Rodrigo Sandoval-Almazán. 2020. “Does Twitter Afect Stock Market Decisions? Financial Sentiment Analysis During Pandemics: A Comparative Study of the H1N1 and the COVID-19 Periods”. PhD diss., Universidade autonoma del estado de Mexico.

[65] Dell Zhang, Andrius Mudinas and Mark Levene. 2019. “Market Trend Prediction using Sentiment Analysis: Lessons Learned and Paths Forward”. PhD diss., Cornell university.

between the polarity of the tweets and the returns of the single stocks, and that the return is predictable. in 69,01% of the cases by analyzing the results of the Natural Language Processing[66].

Most importantly for our scope Tahir M.Nisar and ManYeung in the study "Twitter as a tool for forecasting stock market movements: A short-window event study" have analyzed the impact of tweets related to political events in the United Kingdom on the FTSE 100[67]. In the conclusion of the study, they found a significant relation between the political discussions on twitter and the performances of the UK financial market, recognizing also to the social network a predictive power for stock returns.

This preliminary research testifies the significance and the importance of news' and tweets' sentiment analysis for forecasting the evolution of equity assets.

The second approach is instead more directly based on the single industries relevant topics. In this case for understanding the sentiment of investors and for identifying the main topics that are affecting the performances of the single sectors I have carried out an analysis of the relevant news regarding the single industries and the four companies with the highest capitalization in each of the representative equity indices.

For what concerns the analysis of the news I have connected the API of Eikon Reuters to my program developed with python programming language. After this for each of the industry the first one hundred relevant news have been collected and analyzed through an algorithm settled with the use of the Python library NLTK.

Once we have already connected the program with the API of twitter.com for the collection of the tweets of the government Figure 1.s, I have collected the tweets filtered by hashtag with the name of the four most capitalized companies per industry. For each of this company 2000 tweets have been analyzed.

Through the use of the Natural Language Processing then the contents of the news and tweets have been classified as positive, negative or neutral. From these results a sentiment score for each industry have then been calculated.

Government tweets

Here I analyze the tweets of the above-mentioned accounts to identify the main topics the principal government' characters are talking about and focusing the most on.

[66] Venkata Sasank Pagolu, Kamal Nayan Reddy Challa, Ganapati Panda and Babita Majh. 2016. "Sentiment Analysis of Twitter Data for Predicting Stock Market Movements". PhD diss., School of Electrical Sciences Computer Science and Engineering Indian Institute of Technology.

[67] Tahir M.Nisar and ManYeung. 2018. "Twitter as a tool for forecasting stock market movements: A short-window event study". The journal of finance and data science.

The analysis will consider the tweets for all of the previous eighteen months, in order to understand how the importance of each topic has changed since the beginning of the electoral campaign of the actual democratic government.

In the following tables are listed the most frequently tweeted words by Kamala Harris and Joe Biden in the last 18 months. However, for what concerns the official accounts of the president it is active since the last elections, so January 2020, thereafter the frequency of analysis has been changed to two weeks periods.

@POTUS (President of the United States)

In the following table is provided the words' frequency for each tweet of the official account of the president of the United States of America. As already stated, given the lower frequency of the tweets and the fact that the account had been officially activated on the 13th of January 2020 in this case the frequency of analysis has been divided into two weeks frames.

Here are provided the 5 most posted words per period:

Tweets @POTUS

Date	**First**	**Second**	**Third**	**Fourth**	**Fifth**
May	jobs', 1.0	plan', 0.643	nation', 0.57	people', 0.5	celebrate', 0.357
April 16 - 30	climate', 1.0	covid', 0.75	vaccine', 0.625	vaccinated', 0.625	change', 0.625
April 1- 15	infrastructure', 1.0	jobs plan', 0.846	president', 0.538	future', 0.538	gun', 0.46
Mar. 16 - 30	rescue plan', 1.0	care', 0.78	americans', 0.667	affordable', 0.667	act', 0.67
March 1- 15	rescue plan', 1.0	country', 0.43	americans', 0.428	going', 0.4285	help', 0.428
Feb 16 - 30	rescue plan', 1.0	johnson', 0.834	vaccine', 0.834	president', 0.584	country', 0.584
Feb 1- 15	covid', 1.0	president', 0.7	minister', 0.6	office', 0.5	states', 0.5
Jan. 16 - 30	rescue plan', 1.0	country', 0.8	back', 0.8	americans', 0.8	work', 0.7
Jan. 1- 15	secretary', 1.0	covid', 0.875	americans', 0.625	president', 0.5	access', 0.5

Table 2.2: Tweets @POTUS.

The evolution of the topics is quite evident; when Joe Biden was elected the most tweeted words were secretary, Americans and president, letting us understand that in the first weeks the president was of course more focused on describing and organizing the governments and the role of its single partners.

This analysis is really significant, because we can see also that the word covid has constantly been among the first concerns for Joe Biden, however what has also been constantly in the tweets of the president of the United States of America is the concept of 'rescue plan'. The president has paid a constant attention for the recovery plan for the economy of his nation.

However, the definition of the plan starts to be clearer only looking at the secondly most frequently posted words. In the second half of February the word vaccine and Johnson started to stead out in the five most frequently said words by the president of the United States of America. The vaccination plan in America started already in January with the approval of the two mRNA vaccines of Pfizer and Moderna Co. Nevertheless, at the beginning of March the mono-dose classic technology vaccine from the company Johnson & Johnson got the approval from the FDA and this explains the attention the government was giving to the company by the end of February.

In the second half of February then the president of the United States of America has started focusing on the vaccination plan as the cornerstone for the reopening of the activities and so the recovery of the American economy.

Looking then at the temporary evolution of the topics we can see that the focus starts to switch. The rescue plan indeed starts to get a more detailed definition and seems to disappear from the most frequently posted words, substituted by words like jobs plan, vaccinated, infostructure, climate and future.

Seems then that the allocation of the funds is mainly focused on investments in infostructures, drivers for the climate change and most importantly the job creation. This is really significant for our scope of defining the sort of the United States industries in the short and long terms, given the fact that it allows to understand the real focuses of the government for the investment plans.

Understanding in which field the government wants to invest more is crucial for forecasting the possible impact a government may have on a sector. From this first analysis for example we can already understand that Joe Biden is more focused on giving money directly to the citizens which will probably increase the consumer expenditure and as we have seen in the previous chapter this can be particularly beneficial to the consumer discretionary stocks.

In the following chapter the sentiment analysis will be used to understand what the policy line of the new elected president will be and so the possible evolution of the financial market.

Vice president Kamala Harris (@VP)

In the following table is instead possible to see the words' frequency in the tweets of the official account of the vice president of the United States of America Kamala Harris:

Tweets @VP

Date	First	Second	Third	Fourth	Fifth
01/05/2021	jobs plan', 1.0	'job', 0.958334	'good', 0.7916	'million', 0.75	'women', 0.625
01/04/2021	women', 1.0	'rescue plan', 0.96	'million', 0.708334	'covid', 0.5416	'spoke', 0.5416
01/03/2021	california', 1.0	'million', 0.88	'country', 0.88	'pandemic', 0.88	'covid', 0.765
01/02/2021	supreme court', 1.0	'million', 0.963	'americans', 0.74	'california', 0.66	'covid', 0.52
01/01/2021	wildfire', 1.0	'california', 0.784	'fire', 0.39	'across', 0.353	'evacuation order', 0.3
01/12/2020	pandemic', 1.0	'trump', 1.0	'million', 0.8	'congress', 0.75	'act', 0.65
01/11/2020	black', 1.0	'justice', 0.92	'bill', 0.73	'police', 0.61	'supreme court', 0.71
01/10/2020	pandemic', 1.0	'covid', 0.94	'million', 0.8334	'americans', 0.78	'bill', 0.78
01/09/2020	pandemic', 1.0	'worker', 0.59375	'coronaviru', 0.5625	'americans', 0.53	'payment', 0.46875
01/08/2020	coronavirus', 1.0	'trump', 0.66	'women', 0.517	'pandemic', 0.45	'house', 0.448
01/07/2020	trump', 1.0	'impeachment trial', 0.37	'senate', 0.315	'trial', 0.22	'california', 0.22
01/06/2020	trump', 1.0	'house', 0.5	'california', 0.5	'clear', 0.4583	'americans', 0.4167
01/05/2020	california', 1.0	'fire', 1.0	'trump', 0.857	'must', 0.86	'make', 0.643
01/04/2020	trump', 1.0	'trump administration', 0.834	'california', 0.7222	'immigrant', 0.72	'house', 0.66
01/03/2020	trump administration', 1.0	'immigrant', 0.765	'women', 0.706	'must', 0.588	'familie', 0.588
01/02/2020	women', 1.0	'trump administration', 0.91	'black', 0.59	'bill', 0.54	'passed', 0.5
01/01/2020	women', 1.0	'trump administration', 0.71	'country', 0.66	'must', 0.66	‘attorney general', 0.57
01/12/2019	california', 1.0	'senate', 0.94	'country', 0.82	'administration', 0.765	'must', 0.765
01/11/2019	government', 1.0	'administration', 0.765	'shutdown', 0.765	'federal', 0.706	'bill', 0.7058

Table 2.3: Tweets @VP.

The topics on which the vice president focuses seems to be quite different from the ones of the President Joe Biden. While the twitter account @POTUS is focused more on economic issues the account of Kamala Harris as vice president seems instead to be more based on philanthropic and humanitarian topics.

The word California appears a lot of time in the tweets of the vice president because she has been the senator for the south-west state in the four years before the elections of 2020.

Despite the fact that the vice president is less focused on the economic issues it is possible to see also from her account the change in the focus of the government in the previous months. Of course, since November 2019 the words ‘Trump’ and ‘Trump administration’ were constantly cited. However, in the campaign period we can already start to see the focus of the proposals of the vice president.

The new government has indeed a strong attention for the human rights and strongly aims at guaranteeing rights to some social classes that can be seen as penalized, such as Afro-Americans and women. The words black and women indeed have been frequently twitted before Joe Biden was elected. This can have a strong impact on the labor market which will be analyzed in the following chapter.

However, what is instead much more significant for our purpose are the frequencies of words in the last months. It is very surprising to see how also in this case the word rescue plan is strongly accompanied by the words ‘jobs plan’ and ‘job’. It seems then very clear the intention of the government to focus the recovery plan mainly on the creation of new jobs. As stated, we will analyze in the following chapter what the consequences of this policy can be.

@JoeBiden (Joe Biden personal account)

In this table are listed the most frequently tweeted words on the personal account of Joe Biden:

Tweets @JoeBiden

Date	First	Second	Third	Fourth	Fifth
01/05/2021	'vaccinated', 1.0	'jobs', 1.0	'vaccine', 0.76	'CDC', 0.59	‘vaccinated', 0.5
01/04/2021	‘covid': 1.0	'work', 0.875	'vaccine', 0.8125	'rescue plan', 0.8125	'americans', 0.75
01/03/2021	‘covid': 1.0	'georgia', 0.882	'mask', 0.765	'team', 0.765	'work', 0.765
01/02/2021	‘us': 1.0	'going', 0.947	'vote', 0.947	'election', 0.79	'nation', 0.737
01/01/2021	‘vote': 1.0	'donald trump', 0.389	‘election', 0.33	'go', 0.26	'let', 0.26
01/12/2020	‘vote': 1.0	'election', 0.89	'donald trump', 0.74	'ballot', 0.62963	'vote early', 0.593
01/11/2020	‘vote': 1.0	'trump', 0.75	'head', 0.75	'donald trump', 0.75	'election', 0.7
01/10/2020	‘vote': 1.0	'donald trump', 0.789	'make', 0.737	'register', 0.579	'live', 0.579
01/09/2020	‘donald trump': 1.0	'trump', 0.689	'us', 0.483	‘americans', 0.448	'covid', 0.45
01/08/2020	‘donald trump': 1.0	'trump', 0.4	'nation', 0.4	'violence', 0.4	'now', 0.375
01/07/2020	‘nation': 1.0	'donald trump', 0.89	'demconvention', 0.722	'together', 0.667	'make', 0.612
01/06/2020	‘donald trump': 1.0	'years', 0.68	, 'us', 0.6	'make', 0.56	'nation', 0.56
01/05/2020	‘donald trump': 1.0	'nation', 0.44	'job', 0.411	'trump', 0.353	'make', 0.323
01/04/2020	‘donald trump': 1.0	'nation', 0.428	'trump', 0.4	'away', 0.343	'covid', 0.343
01/03/2020	‘donald trump': 1.0	'nation', 0.697	'crisis', 0.636	'us', 0.455	'trump', 0.364
01/02/2020	‘donald trump': 1.0	'crisis', 0.92	'country', 0.72	, 'covid', 0.68	'trump', 0.56
01/01/2020	‘crisis': 1.0	'covid', 0.889	'donald trump', 0.852	, 'nation', 0.481	'town hall', 0.44
01/12/2019	‘crisis': 1.0	'coronavirus', 1.0	'trump', 0.684	, 'now', 0.684	'donald trump', 0.684
01/11/2019	‘donald trump': 1.0	'campaign', 0.8	'thank', 0.7	, 'nation', 0.435	'now', 0.4

Table 2.4: Tweets @JoeBiden

This table is particularly meaningful given the fact that it allows us to understand what the focuses of the president during his electoral campaign were and which are instead the main after that he became the president of the United States of America.

It is indeed incredible to see how until January 2021 the name of his opponent in the elections 2020 under the words ‘Trump’ or ‘Donald Trump’ were constantly in the first three most cited words in the personal tweets of Joe Biden. Since January 2021 instead the interests shifted to the words like covid, vaccine, Georgia and rescue plan.

It is also enough clear the fact that the personal account of the president is less oriented to the definition of the political and economic programs and is more used for talking about public issues. However, it still gives us very significant data because it allows to see also which were his focuses before his election as 45th president of the United States of America.

Seems that Donald Trump has been a constant thought in the mind of Joe Biden. Thereafter, to focus more on the economic issues here is provided the table of the frequently "tweeted" word without considering the words 'donald trump', 'trump' and 'donald':

Tweets @JoeBiden (without trump, donald, donald trump)

Date	First	Second	Third	Fourth	Fifth
01/04/2021	covid', 1.0	'work', 0.875	'vaccine', 0.8125	'rescue plan', 0.8125	'americans', 0.75
01/03/2021	covid', 1.0	'georgia', 0.882	'mask', 0.765	'team', 0.7647	'work', 0.765
01/02/2021	us', 1.0	'going', 0.947	'election', 0.7895	'nation', 0.737	'pandemic', 0.6316
01/01/2021	election', 1.0	'go', 0.778	'let', 0.778	'nation', 0.66	'power', 0.612
01/12/2020	election', 1.0	'early', 0.708	'ballot', 0.70834	'make', 0.5416	'country', 0.4583
01/11/2020	head', 1.0	'election', 0.933	'plan', 0.867	'ballot', 0.8	'americans', 0.8
01/10/2020	make', 1.0	'register', 0.786	'live', 0.786	'election', 0.786	'plan', 0.7143
01/09/2020	us', 1.0	'americans', 0.9286	'covid', 0.9286	'election', 0.786	'nation', 0.7143
01/08/2020	nation', 1.0	'violence', 1.0	'covid', 0.875	'make', 0.6875	'safe', 0.6875
01/07/2020	nation', 1.0	'pandemic', 0.722	'together', 0.66	'make', 0.612	'us', 0.56
01/06/2020	us', 1.0	'make', 0.933	'nation', 0.9333	'back', 0.7333	'let', 0.6
01/05/2020	nation', 1.0	'job', 0.933	'make', 0.7333	'us', 0.7333	'going', 0.66
01/04/2020	nation', 1.0	'away', 0.8	'covid', 0.8	'country', 0.7333	'americans', 0.66
01/03/2020	nation', 1.0	'crisis', 0.913	'us', 0.65	'covid', 0.478	'americans', 0.435
01/02/2020	crisis', 1.0	'country', 0.783	'covid', 0.74	'together', 0.4348	'worker', 0.435
01/01/2020	crisis', 1.0	'covid', 0.889	'nation', 0.4815	'town hall', 0.44	'million', 0.41
01/12/2019	crisis', 1.0	'coronavirus', 1.0	'americans', 0.63	'worker', 0.63	'pandemic', 0.579
01/11/2019	campaign', 1.0	'thank', 0.875	'nation', 0.5416	'coronavirus', 0.4583	'country', 0.4583

Table 2.5: Tweets @JoeBiden (without trump, donald, donald trump).

It is possible to see indeed that since the beginning of the electoral campaign Joe Biden has focused a lot on the workers and his main concern was the creation of jobs and the defeat of the coronavirus pandemic. On the other hand, we know that his opponent was instead contrary to the allocation of excessive funds for the fight against the pandemic.

These results from the above table seem to also show a sort of concreteness from the president Joe Biden, given the fact that the account @POTUS has also shown in recent times as most frequently cited words the ones related to work, job creation and rescue plan.

The focus of the government is without any doubt then the fight against the virus and the creation of job places. At the moment indeed the US represents one of the countries with highest number and percentage of citizens vaccinated in the world. The cornerstone for the recovery plan of the American economy is then surely the vaccination of the population in the shortest time period as possible and the increase of the private expenditure through the creation of jobs, the liquidity flow with the stimulus package and the reopening of the activities.

@KamalaHarris (Kamala Harris' personal account)

In this table are listed the most frequently tweeted words on the personal account of Kamala Harris:

.

Tweets @KamalaHarris

Date	First	Second	Third	Fourth	Fifth
01/04/2021	'country', 1.0	'pandemic', 0.94	'work', 0.88	'rescue plan', 0.88	'million', 0.82
01/03/2021	'georgia', 1.0	'team', 0.52	'us', 0.4815	'americans', 0.44	'live', 0.37
01/02/2021	'work', 1.0	'country', 0.94	'elect', 0.88	'pandemic', 0.82	'covid', 0.765
01/01/2021	'election', 1.0	'thank', 0.67	'us', 0.667	'help', 0.62	'line', 0.619
01/12/2020	'election', 1.0	'americans', 0.84	'plan', 0.579	'nation', 0.53	'us', 0.473
01/11/2020	'country', 1.0	'make', 0.93	'us', 0.867	'election', 0.7333	'clear', 0.667
01/10/2020	'americans', 1.0	'live', 0.94	'country', 0.88	'us', 0.82	'coronaviru', 0.647
01/09/2020	'us', 1.0	'joe', 0.524	'make', 0.4762	'live', 0.4762	'let', 0.476
01/08/2020	'us', 1.0	'country', 0.857	'thank', 0.786	'let', 0.786	'americans', 0.71
01/07/2020	'eviction', 1.0	'justice', 0.8	'john lewis', 0.73	'country', 0.67	'crisis', 0.67
01/06/2020	'justice', 1.0	'black', 0.88	'still', 0.59	'coronavirus', 0.59	'must', 0.588
01/05/2020	'justice', 1.0	'george floyd', 0.956	'black', 0.91	'live', 0.73	'et', 0.59
01/04/2020	'coronavirus', 1.0	'et', 0.789	'americans', 0.737	'black', 0.63	'thank', 0.526
01/03/2020	'coronaviru', 1.0	'pandemic', 0.64	'health', 0.6	'crisis', 0.56	'nation', 0.52
01/02/2020	'coronaviru', 1.0	'pandemic', 0.94	'must', 0.89	'worker', 0.834	'crisi', 0.78
01/01/2020	'senate', 1.0	'women', 0.74	'must', 0.6956	'americans', 0.52	'let', 0.48
01/12/2019	'justice', 1.0	'nation', 0.8	'black women', 0.8	'make', 0.73	'iowa', 0.73
01/11/2019	'justice', 1.0	'children', 0.5625	'stay', 0.5625	'families', 0.4375	'make', 0.4375

Table 2.6: Tweets @KamalaHarris

The topics discussed on the personal account of the vice president Kamala Harris are instead less relevant for an economic analysis. We can see that also in this case the vice president is more focused on philanthropic topics. In May and June 2020, during the Afro-American community' riots for example, the most frequently cited words were George Floyd, justice and black.

However, also on the personal account of the vice president in the last moths the words rescue plan and work were frequently used, another clue of what the focuses of the government for the recovery phase are.

News sentiment analysis

The last part of the sentiment analysis approach will be instead based on the news related to the single industries. In recent times the focus of the research has moved to the forecasting power of news for the returns of securities. Kalyani Joshi, Bharathi H. N., and Jyothi Rao, professors of KJSCE, Mumbai, in the paper "stock trend prediction using news sentiment analysis"[68] concluded that stock trend can be predicted using news articles and previous price history. They highlighted that when some news with a positive polarity score is released there is an increase in the probability of seeing a higher price of the interested security in the following days. The random forest model estimated in their research showed an accuracy even higher than 90%.

Also, Dev Shah, Haruna Isah and Farhana Zulkernine in the study "Predicting the Effects of News Sentiments on the Stock Market" have highlighted the power of predicting stock returns for the pharmaceuticals industry by the use of the Natural Language Processing on related news' contents[69].

Consequently, the analysis of the news contents related to the single industry will be really meaningful for understanding the future behavior of the considered sectors during the Biden' administration.

The approach of the analysis will be the following: thanks to an algorithm I will collect the last one hundred news related to the industry representative of the indices listed in the previous chapter from Eikon Reuters. In the collection process, only the relevant news has been taken into consideration.

After having collected the news, through the NLP Python package "TextBlob" I will compute the polarity and subjectivity score of the single news through the technology of the Natural Language Processing. The polarity tries to express how positive the article is with a coefficient that ranges from minus 1 to 1, while the subjectivity expresses the level of objectivity of the article itself, the closer it is to 1 the more objective the article is.

After this we will analyze what are the most frequently appearing words in the positive articles and in the negative one, defining as positive the ones with a polarity score higher than +0.05 and as negative the articles with a polarity score lower than -0.05.

Consequently, the news with positive polarity score will be grouped and using "word-clouds" we will see the most frequently cited words in the articles with a good polarity score. The same process will be used for the negative news too. The analysis will be carried out on both, the single indices and the four most capitalized stocks included in the indices themselves.

---

[68] Kalyani Joshi, Bharathi H. N., and Jyothi Rao. 2016. "Stock trend prediction using news sentiment analysis". PhD diss., Cornell university.

[69] Dev Shah, Haruna Isah and Farhana Zulkernine. 2018. "Predicting the Effects of News Sentiments on the Stock Market". PhD diss., Institute of electrical and electronic engineering.

This analysis is really significant because it allows the identification of the issues that may represent opportunities or threats for the industry. As we know, the price of securities on the market is driven by the supply and demand of the investors and these two forces are driven by their sentiment. Consequently, this analysis will provide us the topics and trends that are considered as positive or negative directly from the investors' perspectives.

Consumer goods industry

The consumer goods industry in our analysis is divided into two sub sectors, the consumer discretionary and the consumer staples industry. As we have seen the two industries represented by the S&P 500 consumer discretionary index and the S&P 500 consumer staples index respectively have had two very different performances in the past years. The consumer discretionary has indeed strongly outperformed the S&P 500 index while the consumer staples index has instead significantly underperformed the benchmark even if still reporting positive returns.

In the following word-clouds, it is possible to compare the most frequently cited words of the most recent articles related to consumer industry collected from the Refinitive workspace. The articles have been divided into two groups, one with the positive news and another one with the negative ones.

Please appreciate the two word-clouds:

Figure 2.4.: positive news wordcloud consumer discretionary

Figure 2.5: negative news wordcloud consumer discretionary

It is possible to see that the consumer industry is already having positive expectations from the community because of the end of the pandemic and the reopening of the borders. The market is then expecting the industry to perform well thanks to the impact that the tourism can have on the revenues of the companies operating in the sector.

What seems surprising is the fact that "India" Figure 1.s among the most cited words in the positive articles. In the last month, the Asian emerging economy is struggling to perform well because of the spread of the new covid variant. The country is in a very difficult situation for facing the pandemic, however this is still seen as a positive factor for the industry.

Not by chance during the pandemic the consumer industry has been one of the industries that have performed the best. If we consider the fact that consumer staples are goods that have always a market and that the consumer discretionary index is also driven by companies like Amazon, we can understand that despite the lockdowns around the globe this industry in any case has an available market.

However, the word-cloud is significant not for understanding the single main topic now under the attention of the community, but for identifying the general variables that may affect the stocks themselves. In this case then what we can see is that the industry is strongly dependent on the decisions of the government for what concerns the restrictions and to the habits of people, the more they tend to go out the better should be for consumer goods industry. Consequently, at the moment the reopening of the borders and the restart of the touristic activity is seen as the main positive driver for this industry.

The negative factors can instead be linked to the regulation that can be set on some goods for the consumer industry. In the last years indeed the United States government is adopting a regulation line strongly in contrast with the alcohol sector. From the word-cloud of negative articles it is possible to see that the alcohol producer are probably the ones that will perform the worst.

Furthermore, the alcoholic industry has been strongly penalized during the pandemic due to the stop of restaurants and bars, but at the same time it will be also the last one to exploit the reopening of the same. At the moment indeed different federal states are still applying the limitation of alcohol consume allowed only if accompanied by food, which surely decreases the possibility of consumption and the demand for alcoholic beverages.

However, in general terms the sentiment towards this industry still remains positive, with the 71% of the analyzed news that have reported a positive polarity score. The average polarity score is indeed above the positive threshold at the level of 0.054, with a subjectivity score of 0.426.

To go deeper into the analysis as stated before here it is reported the analysis of the news regarding the stocks of the four companies operating in the consumer staples and discretionary industries with the highest market capitalization.

Consumer staples:

Consumer staples main companies' sentiment summary			
Walmart		**P&G**	
Positive	Negative	Positive	Negative
asda', 1.0 'update', 0.54 'brazil', 0.54 'acquisition', 0.46 'global', 0.385	india', 1.0 'update', 0.86 'covid', 0.6 'market', 0.6 'gamestop', 0.6	pg', 1.0 'health care', 0.875 'hygiene health', 0.75 'care ltd', 0.75 'board', 0.625	procter gamble', 1.0 'gamble co', 0.31 'hygiene', 0.276 'health care', 0.24 'care limited', 0.24
% positive news	68%	% positive news	58%
Subjectivity	0,406	Subjectivity	0,306
Polarity	**0,091**	**Polarity**	**0,068**
% positive tweets	36.8%	% positive tweets	21.3%
% neutral tweets	43.2%	% neutral tweets	63.2%
Coke		**Pepsi**	
Positive	Negative	Positive	Negative
'company', 1.0 'quarter', 0.7 'earnings', 0.6 'announce', 0.54 'q1', 0.54	'co files', 1.0 "files k'", 0.9 'co', 0.5 'ko', 0.5 'earnings', 0.4	'earnings', 1.0 'high', 0.857 'sugar', 0.857 'goes low', 0.857 'revenue', 0.743	'pt indofood', 1.0 'inc', 0.84334 'fritolay', 0.6766 'sukses makmur', 0.6766 'o', 0.417
% positive news	63%	% positive news	68%
Subjectivity	0,315	Subjectivity	0,363
Polarity	**0,082**	**Polarity**	**0,087**
% positive tweets	33.4%	% positive tweets	32.1%
% neutral tweets	48.7%	% neutral tweets	45.1%

Table 2.6: Consumer staples main companies' sentiment summary.

Consumer Discretionary:

Consumer Discretionary main companies' sentiment summary			
Amazon		**Tesla**	
Pos	Neg	Pos	Neg
us' 1.0 'market' 0.78 'sale' 0.78 'buffett' 0.78 'shareholder' 0.67	employees' 1.0 'covid' 0.8 'safety' 0.8 'online' 0.8 'inc' 0.6	elon musk' 1.0 'snl' 0.61 'musk' 0.56 'dogecoin' 0.44 'says' 0.33	china' 1.0 'emissions' 1.0 'volkswagen' 1.0 'ending' 1.0 'update' 0.5
% positive news	85%	% positive news	81%
Subjectivity	0,450	Subjectivity	0,428
Polarity	**0,124**	**Polarity**	**0,108**
% positive tweets	22.1%	% positive tweets	19.2%
% neutral tweets	73.3%	% neutral tweets	54.4%
Home Depot		**NIKE**	
Pos	Neg	Pos	Neg
hd' 1.0 'earnings' 0.6 "know'" 0.54 'supplier' 0.467 'report' 0.467	fourth quarter' 1.0 'yr yr' 0.78 'us' 0.78 'inc files' 0.53 'georgia' 0.44	us' 1.0 'wall' 0.67 'nke' 0.56 'inc' 0.556 'ends' 0.556	china' 1.0 'update' 0.8 'xinjiang' 0.8 "xinjiang'" 0.6 'inc' 0.5
% positive news	78%	% positive news	67%
Subjectivity	0,406	Subjectivity	0,406
Polarity	**0,075**	**Polarity**	**0,096**
% positive tweets	24.3%	% positive tweets	15.6%
% neutral tweets	61.3%	% neutral tweets	57.7%

Table 2.7: Consumer Discretionary main companies' sentiment summary.

From the above reported tables it is possible to see the main topics related to the threats and opportunities of the single companies that operate in the industry. Beyond the issues of the single companies what is significant for our analysis is the fact that in both the industries the most capitalized companies tend to show a positive polarity score. Considering the news, the scores for the consumer discretionary companies however tends to be higher than the ones for the consumer staples, suggesting a more positive sentiment towards the first cited industry. However, the consumer staples companies have a higher percentage of positive tweets. In general terms, for both the sectors the sentiment is positive.

Information technology

The tech industry is the one that is under the highest attention at the moment from the market, either because of the incredible performance in the past years and because of the attention regulators are giving to these companies. Here is provided the news analysis for the Information Technology industry.

Figure 2.5: Positive news wordcloud IT industry

Figure 2.6: Negative news wordcloud IT industry

Not by chance in the word-clouds emerges that all the positive news is mainly related to the financial results of the single companies and to their initiatives. In the positive articles words like ‘revenue’, ‘estimates’, ‘launch’ and ‘release’ are indeed the most frequent, which makes us suppose that as stated the increase in the price of these stocks is given by their performance strongly pushed up by the market trends of the tech industry.

The negative cloud is instead much more interesting. The most frequently cited words in negative articles are indeed “Google”, “regulator” and “Australia”. In recent times the Australian government is indeed talking about a regulation for the advertising revenues of Google and Facebook, and most of all it is accusing Google of practicing unfair practices on the data collection from users of Android systems[70].

It appears then very clearly that the only threat the positive trend of tech industry may have is the regulation. It is not new indeed the fact that regulators are by a long time complaining about the excessive power of these web colossuses, we will see under the Biden administration what are then the threats for the industry.

At the same time however the sentiment on the industry remains very positive, with the 85% of the news reporting a positive polarity score.

Information technology main companies' sentiment summary.			
Apple		**MSFT**	
Pos	Neg	Pos	Neg
'app store' 1.0 'trial' 0.54 'attack' 0.54 'atitrust trial' 0.491 'epic games' 0.491	'epic' 1.0 'eu' 1.0 'buffett' 1.0 'ic' 0.67 'discuss' 0.67	'cloud' 1.0 'us' 0.83334 'update' 0.5 'busiess' 0.5 'azure' 0.5	'corp' 1.0 'tech' 0.67 'bittita' 0.67 'acquire' 0.67 "perspectium"' 0.67
% Positive news	**80%**	% Positive news	**90%**
Subjectivity	0.42	Subjectivity	0,428
Polarity	**0.10**	**Polarity**	**0,131**
% positive tweets	19.6%	% positive tweets	33.0%
% neutral tweets	72.8%	% neutral tweets	49.4%
Visa		**Mastercard**	
Pos	Neg	Pos	Neg
'v' 1.0 'global' 0.82 'market' 0.7273 'ic' 0.636 'debit card' 0.636	'inc' 1.0 'earigs' 0.67 'profit' 0.41677 'files' 0.343 'v' 0.343	'payment' 1.0 'mobile moey' 0.77 'airtel africa' 0.69 'uited states' 0.6154 "mastercard"' 0.46	'inc' 1.0 'earigs' 0.86 'airtel africa' 0.86 'africa mobile' 0.86 'mobile moey' 0.86
% Positive news	**68%**	% Positive news	**71%**
Subjectivity	0,40	Subj	0,38
Polarity	**0,10**	**Polarity**	**0,09**
% positive tweets	17.2%	% positive tweets	16.9%
% neutral tweets	61.4%	% neutral tweets	64.7%

Table 2.8: Information technology main companies' sentiment summary.

In this case it is possible to see that the opportunities of the single companies derive from some singular initiatives. Furthermore, also in this case the sentiment for the tech stocks still remains positive, despite the regulation threats. The percentage of positive news is really high, especially for Apple and Microsoft, and the polarity score of all

[70]Chandler Thornton and Michelle Toh. 2021. "Australia passes new law requiring Facebook and Google to pay for news". *CNN*, February 25, 2021. https://edition.cnn.com/2021/02/24/media/australia-media-legislation-facebook-intl-hnk/index.html

the four companies is almost the double of the positive threshold 0,05. The percentage of positive tweets also seems high (77,25%).

The positive sentiment on the industry overall is confirmed by the average polarity score of the news collected from Eikon Refinitiv of 0,60, with a subjectivity score of 0,42. I would define then the sentiment on the industry as positive.

Energy

The energy sector is in a strong downtrend. It has been the only one reporting negative returns during the Trump mandate and it is in a marked historical downtrend due to the transition from oil-based energy production systems to the renewable sources.

Here are provided the word-clouds for the positive and negative articles concerning the energy industry:

Figure 2.7: wordcloud positive news Energy industry

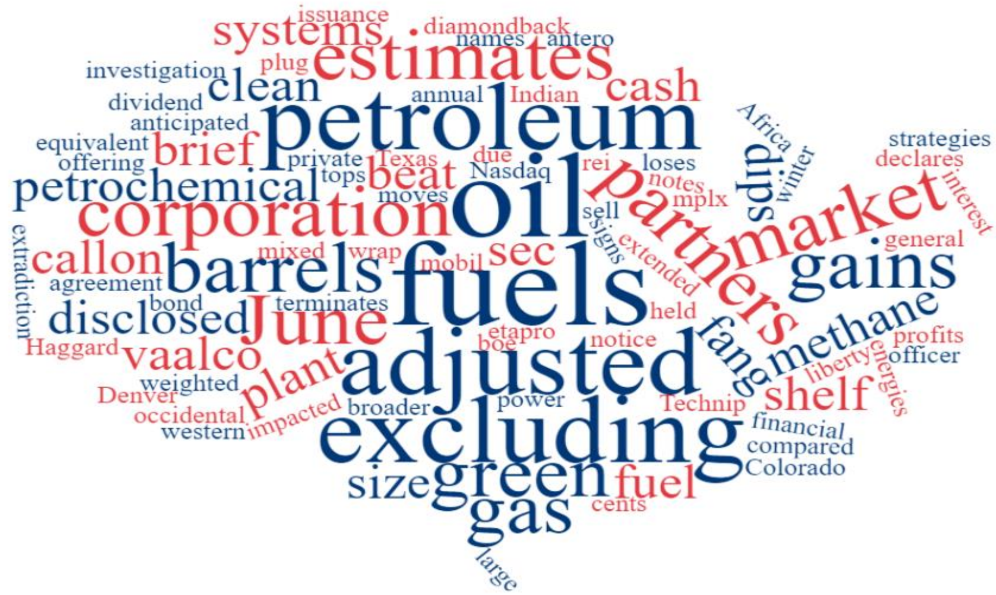

Figure 2.8: wordcloud negative news Energy industry

The two word-clouds do not give very significant information about the single industry trends and events that may influence the sorts of the sector in the future. In both the word-clouds indeed it is possible to see the high frequency of the words oil and petroleum; just another clue of the fact that the performance of the industry is probably mainly influenced by the movements of these commodities, which may indicate that analyzing the possible evolution of oil and natural resources like natural gas will be very significant for understanding the future evolution of the whole industry.

At the moment the biggest opportunity of the industry indeed seems the reopening of the economic activities that may give a support to the oil prices and so to the profit margins of companies. However, energy companies are inevitably facing a transition to the renewable energy sources and have to adapt to this trend. In the tweet analysis of the government Figure 1.s we have indeed also seen very frequently the word renewable, which let us imagine that the transition process with the Biden government will be even faster.

The sentiment on the industry is indeed mainly negative, with a positive news percentage of only 37%. Also, the average polarity score of 0.0452 is low, with a subjectivity score of 0.282.

Here is provided the sentiment analysis instead for the most capitalized companies in the sector:

Energy main companies' sentiment summary			
Exxon		**Chevron**	
Positive	Negative	Positive	Negative
'exxon', 1.0 'exxon mobil', 0.62 'update', 0.43 'oil', 0.4286 'imperial oil', 0.381	imperial oil', 1.0 exxon', 0.786 profit', 0.7143 oil ltd', 0.714 exxon mobil', 0.643	'says', 1.0 noble midstream', 1.0 cvx', 0.901 update', 0.54 midstream partners', 0.54	'profit', 1.0 cents', 0.8 co', 0.8 lng', 0.8 noble midstream', 0.8
% positive news	60	% positive news	62
Subjectivity	0,371	Subjectivity	0,408
Polarity	**0,060**	**Polarity**	**0,079**
% positive tweets	**36.0%**	% positive tweets	**15.2%**
% neutral tweets	**42.0%**	% neutral tweets	**39.0%**
Conoco		**EOG**	
Positive	Negative	Positive	Negative
'cop', 1.0 buzz', 0.6 oil', 0.6 move', 0.6 market', 0.5	'profit', 1.0 oil', 0.78 operational', 0.77 provides preliminary', 0.77 cop', 0.67	'resources', 1.0 estimate', 0.128 zacks analyst', 0.128 analyst blog', 0.128 blog highlights', 0.1276	'resources', 1.0 "k'", 0.2353 oil', 0.147 profit', 0.118 "resources'", 0.1176
% positive news	51	% positive news	58
Subjectivity	0,423	Subjectivity	0,420
Polarity	**0,058**	**Polarity**	**0,054**
% positive tweets	**7.2%**	% positive tweets	**15.4%**
% neutral tweets	**87%**	% neutral tweets	**70.2%**

Table 2.9: Energy main companies' sentiment summary.

The sentiment analysis on the single companies also confirms the general pessimistic situation in which energy companies are. The polarity score is just above the threshold of 0,05 and is not a good data if we consider that we are taking into consideration the biggest companies operating in the sector. The percentage of positive tweets also is low, with the average on the four most capitalized companies at 18,45%. Furthermore, the number of positive news is not very high, which confirms the negative sentiment investors have towards the Energy industry. In conclusion, the sentiment towards this industry is definitely negative.

Health care

As already stated, the health industry is one of the sectors with the highest attention in the last times for two reasons: the pandemic of 2020 and the reform in the public health system that Biden wants to implement. Here are provided the two word-clouds for the positive and negative news related to the healthcare industry:

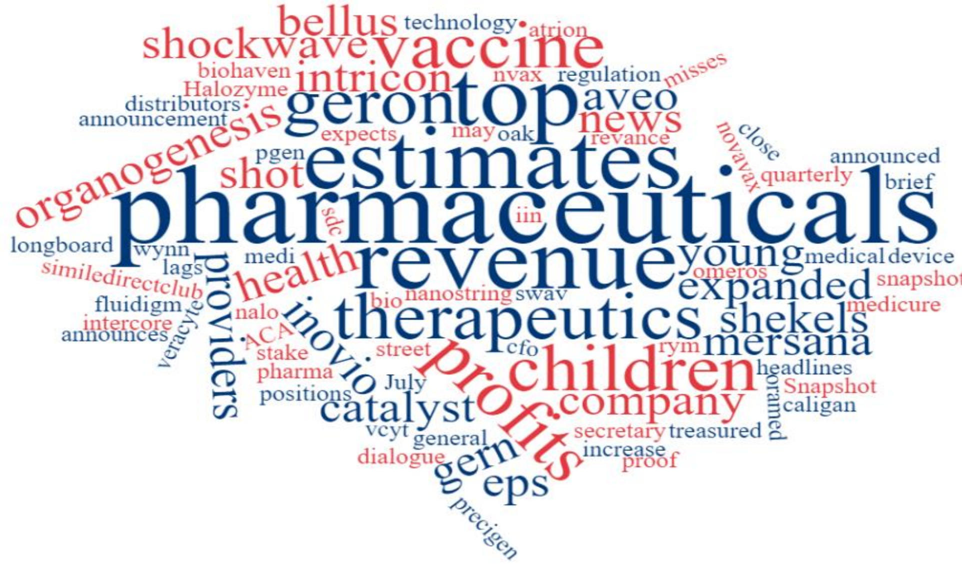

Figure 2.9: Positive news wordcloud Health-Care industry

Figure 2.10: Negative news wordcloud Health-Care industry

In this case the sentiment analysis of the industry news has been really significant confirming the results reported in the previous chapter. We have indeed identified the subsectors that have been most penalized by the Trump policy and that now can benefit from the Biden public health system revolution.

Not by chance the pharmaceuticals sector was the one most hit by the Trump administration, while now in the articles with positive polarity score the word pharmaceuticals is one of the most frequently used. The pharmaceutical sector is indeed expected to perform much better under the Biden administration given the higher margin it can count on in the sales of medicines.

In general, the health industry is seen to perform worse under Trump. The surname of the ex-president is indeed frequently appearing in the news considered negative by the NLP analysis. The word coronavirus instead appears in both, positive and negative news, with high frequency. This mean that the impact of the virus on the industry is ambiguous and that, as oil for energy, it is one of the major single industry drivers.

Furthermore, in the negative news we can see the word Indian. The terrible pandemic situation of India is indeed seen as a negative factor on the industry. Of course, this will push under pressure the health industry, but the impact of a foreign country health crisis on the US companies is to be understood.

In any case the expectations for the health industry still appear to be positive, with 82% of news having positive polarity score. Overall, the average subjectivity and polarity score have resulted to be 0.42 and 0.069 respectively, which define a positive sentiment towards the industry.

To have a clearer point of view about the sentiment for the health industry here is provided the analysis for the four most capitalized health companies, comprehending also the tweet sentiment analysis:

Healthcare main companies' sentiment summary summary.			
Johnson		**Pfizer**	
Positive	Negative	Positive	Negative
covid vaccine', 1.0 'covid', 0.8 'update', 0.7 'vaccine', 0.55 'p', 0.55	sec filings', 1.0 "form 4"', 1.0 'plug power', 0.615 'pricing', 0.46 'suburban propane', 0.46	covid vaccine', 1.0 'vaccine', 0.66 'covid', 0.5834 "edt"', 0.4167 'children', 0.4167	covid vaccine', 1.0 "jab"', 0.8334 'eu agrees', 0.8334 'agrees potential', 0.8334 'potential billion', 0.8334
% positive news	21	% positive news	21
Subjectivity	0.456	Subjectivity	0.431
Polarity	**0.127**	**Polarity**	**0.073**
% positive tweets	23.4%	% positive tweets	9.2%
% neutral tweets	52.8%	% neutral tweets	84.4%
Abbott		**Abbvie**	
Posotove	Negative	Positive	Negative
‘abt', 1.0 'buzz', 0.4 'test', 0.4 'beat', 0.4 'covid test', 0.4	laboratories', 1.0 'india', 0.7 'abt', 0.5 'limited', 0.4 "k"', 0.4	'host', 0.421 'united states', 0.421 'acquire', 0.263 'humira', 0.263 'dividend', 0.263	'allergan', 0.217 'abbv', 0.1739 'aesthetics', 0.130 'portfolio', 0.130 'soliton expanding', 0.130
% positive news	29	% positive news	69
Subjectivity	0.349	Subjectivity	0.4091
Polarity	**0.0593**	**Polarity**	**0.061**
% positive tweets	17.6%	% positive tweets	50.0%
% neutral tweets	41.2%	% neutral tweets	39.0%

Table 2.10: Healthcare main companies' sentiment summary.

The polarity score for the four companies with the highest capitalization is definitely positive, with all the companies with a polarity score higher than 0,05. Furthermore, "Johnson & Johnson" shows a very high polarity score and number of positive tweets, given the extremely positive expectations for the company with the release of the Covid-19 vaccine. The sentiment for the health care industry is then positive.

Financials

The financial industry is working at the moment in an historical phase that is very atypical. Financial institutions indeed have to face an economic environment with a huge amount of liquidity injected in the financial market and with the interest rates expected to remain at very low levels in the long run.

Here are provided the word-clouds for the positive and negative articles:

Figure 2.11: Positive news wordcloud financial industry

Figure 2.12: Negative news wordcloud financial industry

The recent events in China have indeed been seen as a threat for the US banks; the developments of Chinese banks are seen as a danger to the supremacy of the big American banks.[71] Furthermore, the initiative of the launch of

[71] Madhav Nalapat, “Xi Jinping banks on US-India ‘systemic issues’ to ensure PRC success”, 08/05/2021, https://www.sundayguardianlive.com/news/xi-jinping-banks-us-india-systemic-issues-ensure-prc-success

government-controlled cryptocurrency by the Chinese central bank surely will have an impact on the global financial industry.

Another very curious thing is the appearance of the word bank in the word-cloud of the positive news. Banks are probably seen then to be good performers for the following period. At the beginning of the pandemic indeed the credit loss banks would have suffered was not very clear. However, now that the vaccination plan is working and the coronavirus cases in the US are decreasing the damage suffered from the banking system is lower than expected. “The last time the banks were under a lot of pressure was during the financial crisis and the financial system kind of fell apart,” says Eric Compton, a senior equity analyst at Morningstar. “Now that we’re finally coming out of the pandemic, the story for the banks has really been that credit losses have not been that bad and government support has been enough. The financial system persevered through what otherwise could have been a fairly difficult environment.[72]”

Not only did the banks weather the storm, but they also played a prominent role in the economic recovery. In the U.S., for example, the banks distributed the PPP loans the federal government provided for small businesses. Their trading businesses and deal making advisory groups fueled their earnings, while their reserves ballooned.

“It’s almost been a year where the banks, many of which underperformed last crisis, overperformed this crisis,” Compton adds. “They were the dogs of the last crisis and now they’ve shined through this crisis.”[73]

However, despite the positive expectations on the banking sector the sentiment on the industry remains uncertain, with the percentage of news with positive polarity score at 55%.

Here is instead provided the sentiment analysis of the four most capitalized companies of the industry:

[72] HSN’ Editorial board.2021. “The World’s Largest Banks 2021: Banks Grew Larger During the Pandemic, With U.S. And Chinese Banks Dominant”. *Hellenic shipping news*, May 14, 2021. https://www.hellenicshippingnews.com/the-worlds-largest-banks-2021-banks-grew-larger-during-the-pandemic-with-u-s-and-chinese-banks-dominant/.

[73] Ibidem.

Financials' main companies' sentiment summary			
Berkshire		**JP Morgan**	
Pos	Neg	Pos	Neg
buffett' 1.0	says' 1.0	says' 1.0	chase' 1.0
'shareholder' 0.6	'buffett' 0.867	'chase' 0.75	"k'" 0.5
'warren buffett' 0.6	'munger' 0.4	'buffett' 0.75	'co' 0.5
'buffett says' 0.6	'warren' 0.267	'shareholder' 0.75	'update' 0.33
'says' 0.5	'bln' 0.267	'european super' 0.75	'deutsche' 0.33
% Positive news	68	% Positive news	83
Subjectivity	0,46	Subjectivity	0,365
Polarity	**0,12**	**Polarity**	**0,1126**
% positive tweets	34.6%	% positive tweets	69.2%
% neutral tweets	56.5%	% neutral tweets	20.2%
Bank of America		**Wells Fargo**	
Pos	Neg	Pos	Neg
bank' 1.0	bank' 1.0	bank' 1.0	company' 1.0
'market' 0.82	'primary market' 0.57	'global' 1.0	'live markets' 0.86
'remains top' 0.82	'ifr ig' 0.5	'wfc' 0.875	'co' 0.71
'top underwriter' 0.82	'ig close' 0.5	'fund' 0.875	'mn' 0.43
'securities remains' 0.74	'supply' 0.36	'profit' 0.875	'head' 0.43
% Positive news	67	% Positive news	72
Subjectivity	0,3536	Subjectivity	0,39
Polarity	**0,074**	**Polarity**	**0,087**
% positive tweets	43.6%	% positive tweets	79%
% neutral tweets	43.2%	% neutral tweets	17.2%

Table 2.11: Financials' main companies' sentiment summary.

It is possible to see that all the four companies report a good percentage of positive news and that the banks JP Morgan and Wells Fargo have reported incredibly positive results for the tweets and the percentage of positive news. This is another clue of the fact that the expectations for the banking sector are positive.

The financial industry seems to have a slightly positive sentiment from investors, with the companies with the highest capitalization reporting good average polarity score. However, the percentage of positive news for the entire industry, for BOA and Wells Fargo does not seem to be significantly high. Therefore, I would define the general sentiment on the industry neutral. The average polarity score for all the news is indeed slightly above the positive threshold at 0,0543.

2.3 The current financial scenario

The policy of the government and central banks of all the nations around the globe have influenced the financial market after the economic crisis of 2020. Following the incredible downfall of the S&P 500 in March 2020, when the index registered its negative record of minus 33% in just one day, the intervention of the Federal Reserve and of the United States' government generated an immediate positive reaction by the investors. On the 23rd of March the programs implemented by the treasury started to create optimism on the financial market, with the Dow Jones registering on the same day the historical daily record gain of 11.37%, while the S&P 500 and the NASDAQ composite rose by 9.4% and 8.1% respectively[74].

The gain happened soon after the FED announced the launch of the 2 trillion dollars stimulus package. Never in history indeed a central bank has intervened after a financial crisis so quickly and this generated a strong confidence in investors for the possibility of the American economy to recover with the supports provided by the central bank and the government.

Before analyzing the evolution of the stock market, it is important to know the path of the other financial variables. As already stated, the equity instruments tend to be the reflex of all the macroeconomic and financial events that affect the economic environment and the performances of corporations. Of course, the price of stocks does not reflect only the results of the underlying company but also the expectations the agents have regarding the potential evolution of it. However, also in this context what defines the growth opportunities of a company is the economic scenario in which it operates and the ability of the management to adapt to its change.

The first effects of the policy of central banks are reflected indirectly in first place on the forex market. Lowering the interest rates and increasing the money supply do surely have an impact on the exchange rate of the US Dollar. By analyzing indeed, the US Dollar index, it is possible to see that it has followed a very curious path during the moths of crush for the Covid-19 financial crisis.

In the initial phase of the market downtrend the American dollar has followed the same sort of the equity market, going thereafter in a strong devaluation pattern; however, on the 9th of March it has followed a trend reversion starting to appreciate against the major other currencies, but why this? The US Dollar index is influenced by the global demand of exchange other currencies with the American dollar. In that period many investors started to liquidate their position, and the fact that the US Dollar Index depreciated means that investors did not substitute their investments with other assets denominated in dollars. The devaluation was indeed mainly driven from the European investors that decided to withdraw from the American market; the EURUSD moved indeed from 1.143 to 1.068.

The US dollar tried to revert in the following weeks; however, after the announcement of the stimulus package the trend has overturned again. The incredible amount of liquidity injected on the market by the FED has inevitably increased the supply of dollars in the economy which of course has made the exchange rate of the

[74] CNN, 2020. "The Dow soars on hopes for government aid bill: March 24, 2020". *CNN*, March 25, 2020. https://edition.cnn.com/business/live-news/stock-market-news-today-032420/index.html

American currency fall against the other major currencies. The path of the US dollar is essential for understanding the demand of investors for dollar denominated assets. The depreciation of USDX (US Dollar index) after the announcement of the stimulus package indeed was not only due to the increase in the supply, but also to a relatively low demand for the American currency by the investors.

As we have seen the US Dollar index was also strongly correlated to the Oil price and the gold' price in a negative way. The down trend of the oil prices had begun already with the spread of the virus in China. The decrease in demand for the commodity due to the stop of the economic activity of the Asian economic power led the price of the "black gold" to the level of 50 dollar per barrel. This downtrend was then obviously accelerated when the virus started to spread in other countries.

In the month of March 2020, the Oil price followed a marked downtrend that led the price of the Brent Oil futures to even negative levels in the month of April. The recovery of Oil price started only in the end of the same month (April), when countries started to open again, and the economic activity of such economies restarted. The current price of Oil is at 60 dollars per barrel again, however, as we have seen in the previous chapter the oil process tends to reflect the situation of a global economic cycle. At the moment there are many countries that are still struggling to abolish the restrictions of covid 19 and allow their economies to open again at their full. Consequently, this let imagine at first glance a possible positive future evolution in the commodity price.

However, while in the first chapter we have seen that Oil could be used as an indicator for an economic recovery phase in this case instead it seems that the equity market has by far anticipated the recovery predicted by the increase in the Oil price.

In this analysis we are using the S&P 500 index as representative of the economy of the United States and here we try to assess if the index is really reflecting the underlying real economy.

The first approach to discover if the equity market is following the evolution of the real economy is by using the Buffett indicator. This indicator indeed is the simple ratio between the Wilshire 5000 price and the Gross Domestic Product of the United States of America. In simple words it should represent a sort of Price on revenues ratio for the whole American economy.

In the following graph is provided the evolution of the Buffett indicator since 1990[75]:

[75] graph obtained from: https://www.currentmarketvaluation.com/models/buffett-indicator.php.

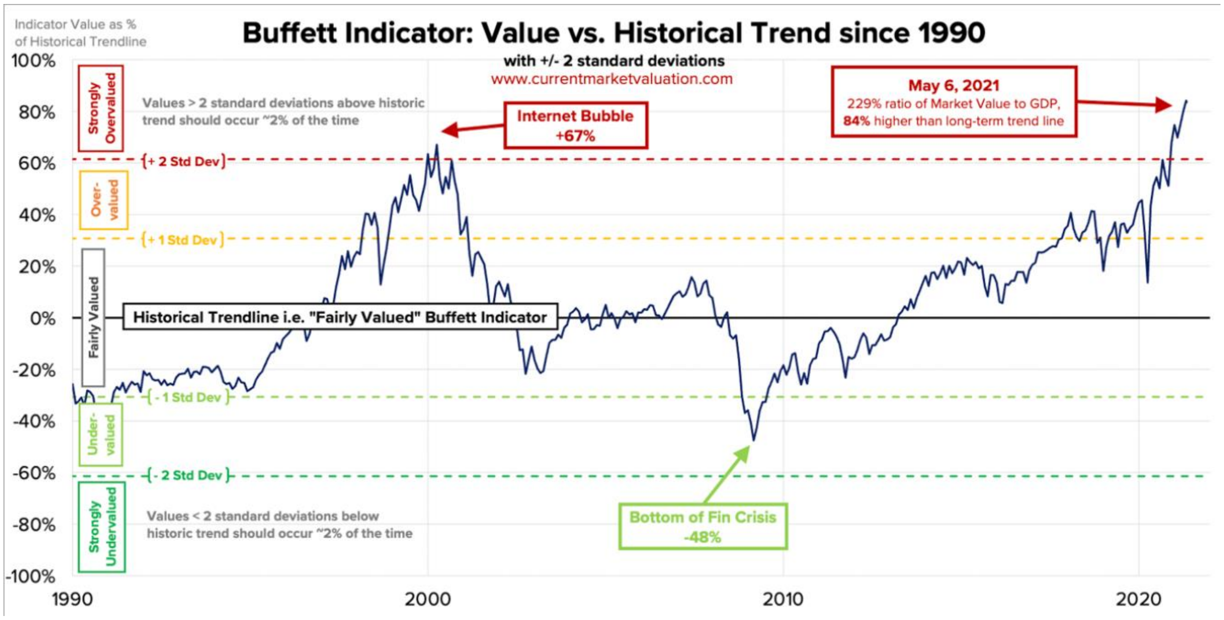

Figure 2.13: Buffett indicator (1990-2021)

As it is possible to see the index tends to follow a cyclical path, touching the minimum levels in moments of recovery. This ratio seems also to have efficiently forecasted the overvaluation of the tech stocks during the dot com bubble.

The index taken as representative of the stock market the Wilshire 5000 index, which takes into consideration also the small cap companies. In the following graph it is possible to see that the S&P 500 has even outperformed the Wilshire 5000 after the crisis of March 2020, which suggests that this optimism has been even higher for big cap stocks:

Figure 2.14: Wilshire 2000 vs S&P 500.

These data express at first glance a situation of overvaluation of the stock market. Consequently, the first issue to address in this case is to understand if the stock market is effectively overpriced or not. In this study I will provide a series of indicators and tools that can help to identify a situation of bubble for the S&P 500. This indicator is based on the following list of elements:

- How high are prices relative to traditional measures?
- Are prices discounting unsustainable conditions?
- How broadly bullish is sentiment?
- Are purchases being financed by high leverage?
- The regulation phase financial market is facing.
- The US dollar strength.

In the following chapter the actual level of these indicators will be compared to the ones of the past financial bubbles to understand what is the expectation that we can have in the short term.

How high are prices relative to traditional measures?

In order to better understand the performance of the S&P 500 it is useful to compare the actual performance measures with the historical ones. The most significant ratio to understand the valuation of a stock is the price on Earnings ratio, which expresses the amount of money investors are willing to pay in order to get one dollar of profits of the underlying company. The approach of the developed bubble indicator is to divide the historical valuation ratios into quintiles and express a situation of excessive valuation when the current value of the ratio is comprised in the fifth quintile range.

In the following graph is shown the Price on earnings ratio of the S&P 500 with quarterly frequency compared to the historical average and with past values:

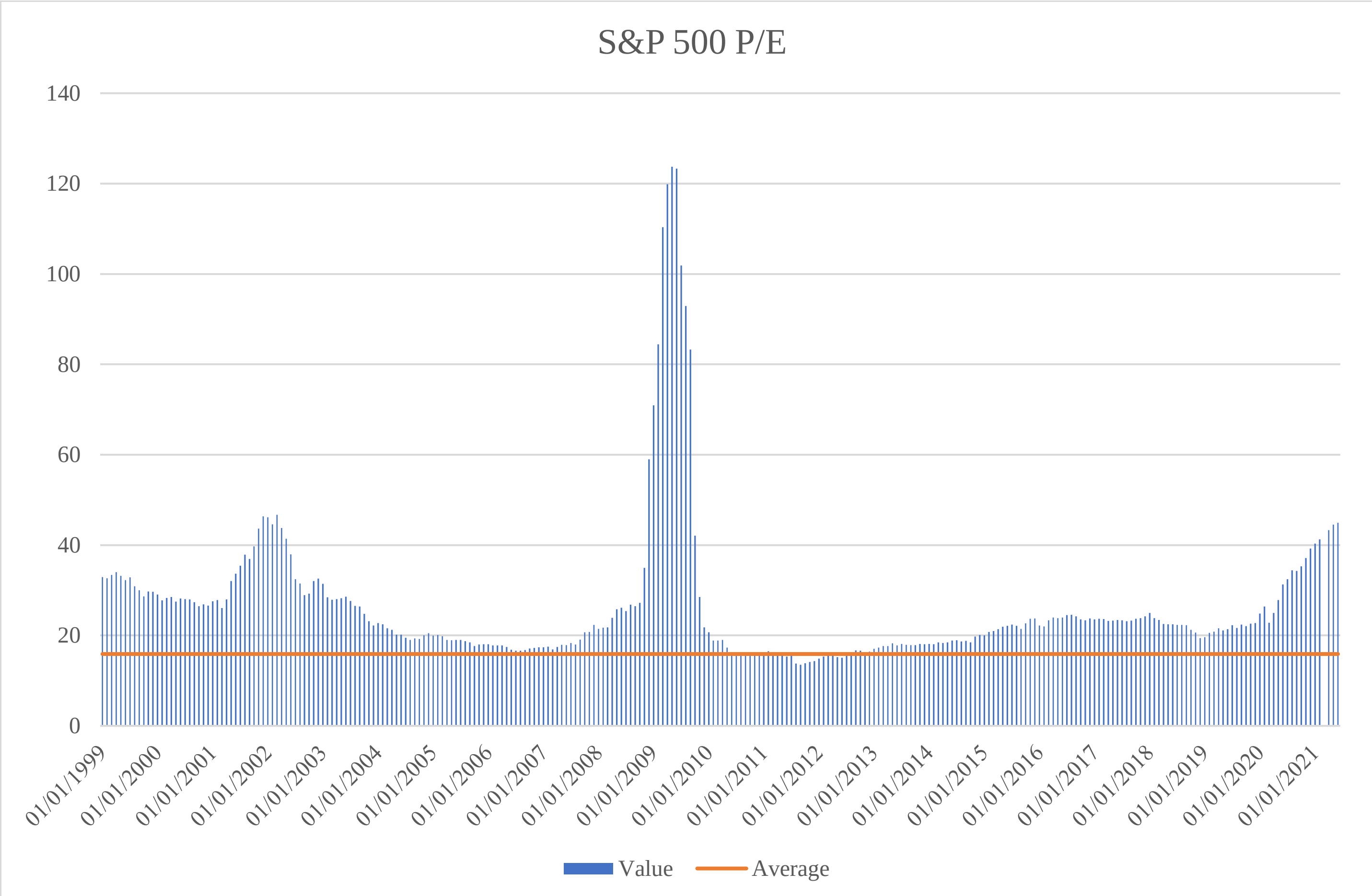

Figure 2.15: S&P 500 PE ratio.

It is possible to see that the index is currently trading at levels that are above the historical average level of 15.9X, at a current level of 44.97 which is positioned in the fifth quintile. At the moment the S&P 500 price on earnings ratio is also at levels that overcome the fifth quintile threshold.

The second ratio that will be analyzed for understanding if the index is trading at extremely high levels compared to the historical prices is the Price on Book value ratio, which expresses how much of the companies' assets investors believe are generating value for the companies.

Please appreciate the historical trend of the index from year 1999 compared to the historical average of 2.89X:

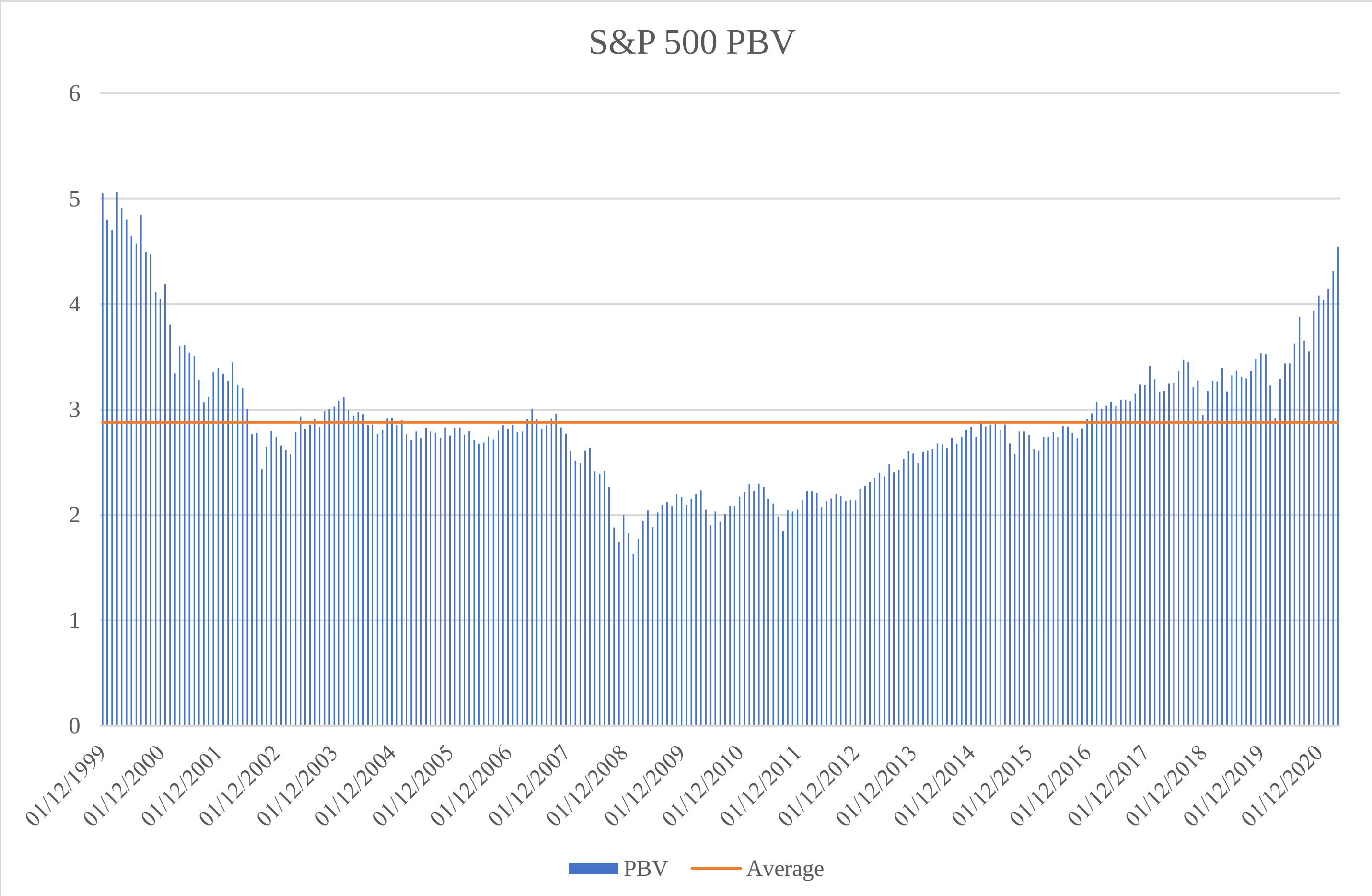

Figure 2.16: S&P 500 PBV ratio.

Also, in this case the index is trading at levels that are much higher than the historical average and at ratios positioned in the fifth quintile of the historical distribution.

It is also possible to see that the index was able to prevent efficiently the bubble of 2000, but for what concerns the PBV ratio it has not been able to identify the financial bubble of 2008.

These graphs express a situation of historical overvaluation for the S&P 500 and may let think about a possible trend reversion in the equity index.

Are prices discounting unsustainable conditions?

To understand if prices are discounting excessive growth expectations, I will take into consideration the Implied equity risk premium and the estimated growth rate by the analysts.

Once the growth rate has been fixed indeed, if prices reflect the valuation estimated through the discounted cash flow model, then for a given growth rate and a given cash flow the Equity risk premium defines how investors are confident about the real happening of the expected growth. The lower is indeed the ERP the higher is the investor trust.

However, in theory the higher is the expected return on an investment the higher should be the risk. Thereafter, in this analysis we will compare the implied ERP with the analyst growth rate to understand if given a certain growth rate investor are excessively over or under confident.

Consequently, I will use in this case as index of the overconfidence the ratio between the growth rate estimated by the analysts and the implied Equity Risk Premium. When this ratio is high then it explains a very high confidence of investors for the equity growth of the Free Cash Flow to Equity[76].

In the following graph is indeed possible to see the evolution of this index in the past:

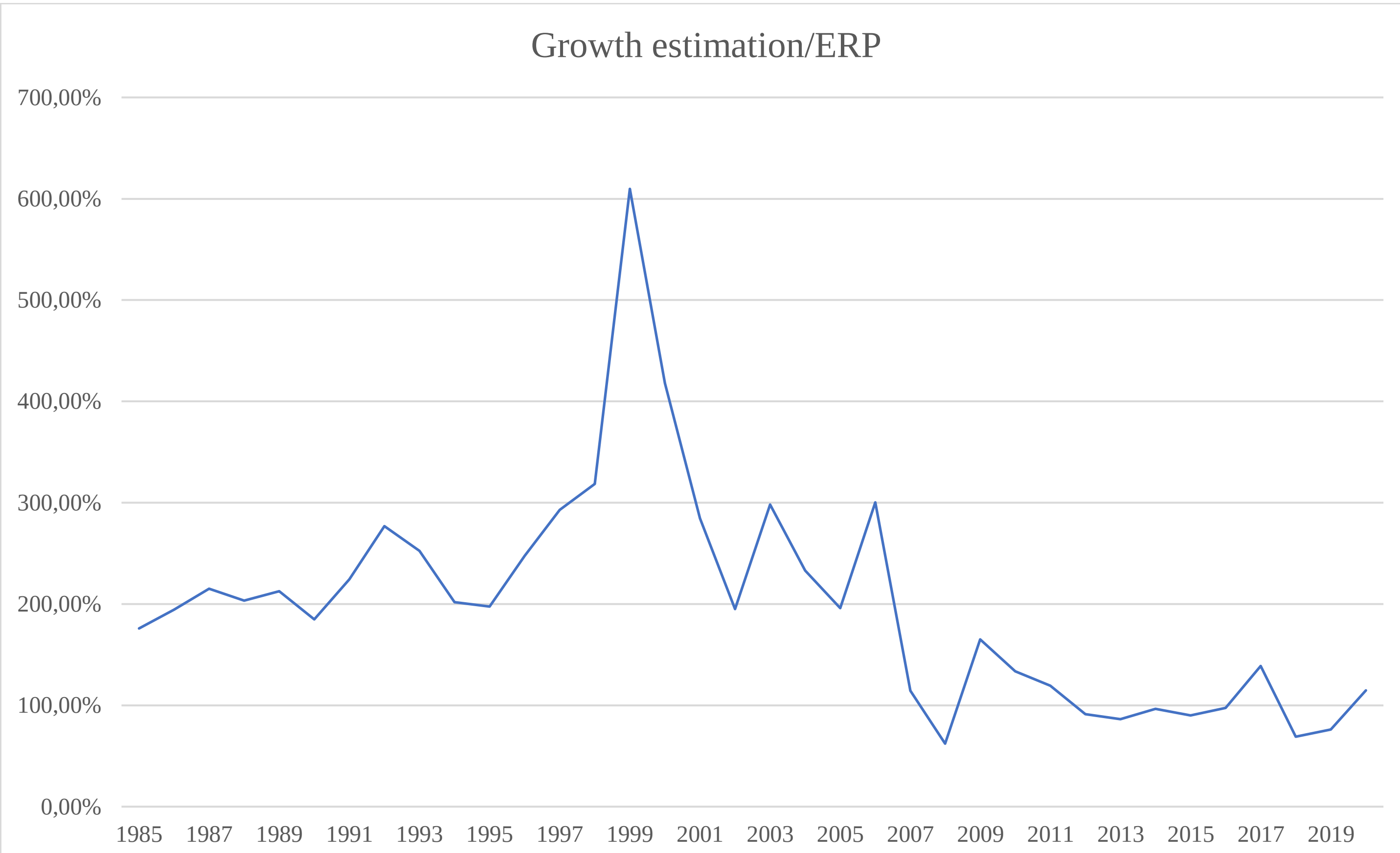

Figure 2.17: ratio Growth rate/ERP

Also, in this case the indicator has been efficient in predicting the crash of the dot com bubble in the 2000, but not so efficient in identifying a possible bubble risk for the 2008 sub-prime crisis. At the moment it seems that the market is not giving the analyst consensus on the growth rate a too low risk premium; the expected growth rate is indeed at the 5.42% and the ERP at the level of 4.72%, by far different from the ones of the dot com bubble of 12% as growth rate and 2.87% as implied Equity risk premium.

[76] The data for the computation of this index have been downloaded from the database of Damodaran.

Consequently, it seems that the American equity market at the moment is not discounting unsustainable growth conditions.

How broadly bullish is sentiment?

The market is then having very strong expectations for the United States companies. It is possible to find different indicators to express the actual situation of euphoria on the market. Another clue of this excessive uptrend in the market can be found in the sentiment analysis indicator in which is expressed the sentiment of the majority of investors developed by AAII institute.

The AAII bull indicator expresses the percentage of investors that have a bull sentiment towards the S&P 500. In the following graph it is possible to see the historical evolution of this index:

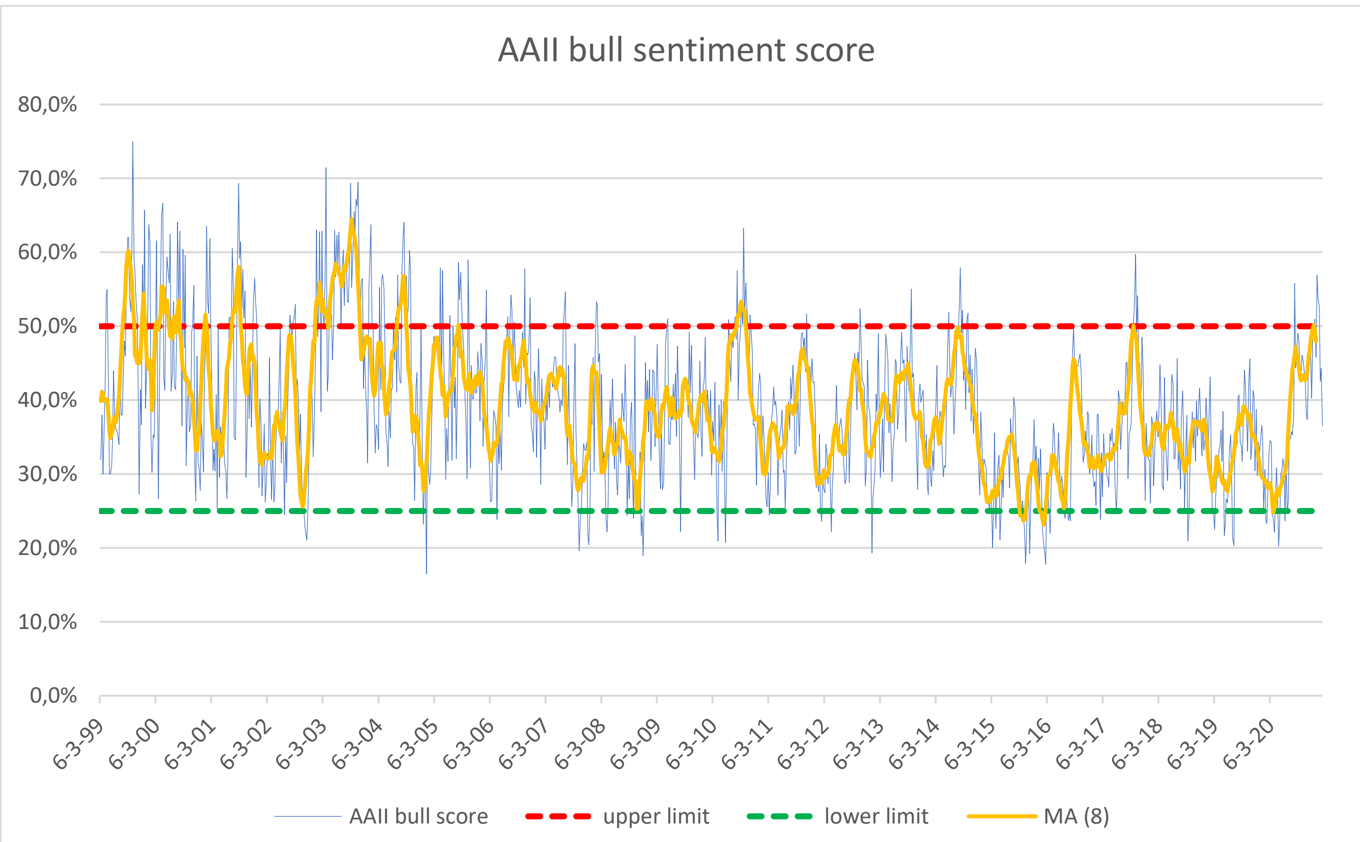

Figure 2.18: AAII bull sentiment indicator.

At the moment the sentiment on the S&P 500 is highly positive, with almost 50% of the investors that are bullish on the stock market. It may seem strange, but the higher is the bull sentiment on the market the more probable is a fall of the same. The reason is quite simple; imagining an extreme scenario where the percentage of bull investors is 100%, it is more probable a shift in the sentiment due to the disclosure of a relative negative news. It is possible to see then that the market is more sensitive to negative news disclosure in times of optimism, given the easiness in the change in sentiment.

The euphoria on the market can be also described by the number of IPOs that happen in a financial year. In periods of extreme euphoria indeed companies tend to exploit the overvaluation of the market to place the shares on the market at a higher price. Please appreciate in the following graph the historical number of IPOs happened per year:

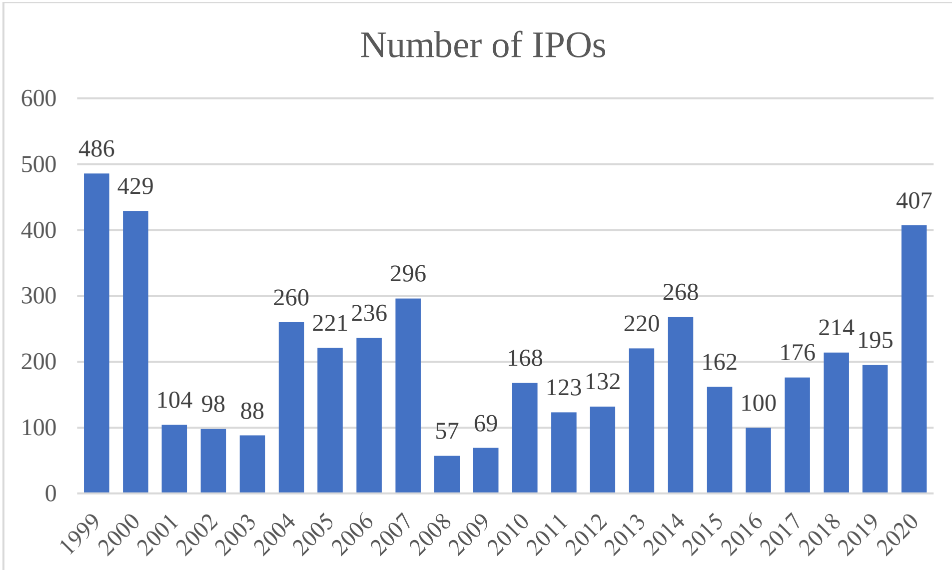

Figure 2.19: Number of IPOs.

It is possible to see that the actual level of IPO is at the same level of the stock market bubble of 2000. In the following table is instead possible to see how IPOs are distributed among sectors[77]:

[77] Data provided by EY, https://www.prnewswire.com/news-releases/liquidity-fueled-ipo-markets-break-records-in-q1-2021-301269205.html.

January 2021 – March 2021 global IPOs by sector

Sectors	Number of IPOs	Percentage of global IPOs	Proceeds (US$b)	Percentage of global capital raised
Consumer products	32	7.5%	8.0	7.6%
Consumer staples	19	4.4%	4.2	4.0%
Energy	33	7.7%	8.0	7.5%
Financials	18	4.2%	5.1	4.8%
Healthcare	78	18.1%	14.0	13.3%
Industrials	57	13.3%	6.3	5.9%
Materials	41	9.5%	4.2	4.0%
Media and entertainment	8	1.9%	0.5	0.5%
Real estate	16	3.7%	2.7	2.5%
Retail	10	2.3%	3.1	3.0%
Technology	111	25.8%	46.1	43.7%
Telecommunications	7	1.6%	3.4	3.2%
Global Total	**430**	**100.0%**	**105.6**	**100.0%**

Table 2.12: IPO by sector.

At the moment the industry with the highest interest and number of IPOs in the first quarter of 2021 is the technology sector. This expresses a current situation of extreme euphoria on the market, with a high attention to the Information Technology stocks.

Are purchases being financed by high leverage?

To understand the levels of leverage investors are using for financing their operations in this analysis the stock margin debt index will be used. This index represents the amount of money an investor borrows from the broker via a margin account. The higher is this ratio the more investors are making transaction using leverage.

Please appreciate the evolution of the index since 1999 in monthly frequency:

Figure 2.20: Stock margin debt.

In this case it is possible to see that the variable has reached its peaks during the dot com bubble, the subprime crisis and the crisis of 2018. When investors are buying with an excessive use of leverage indeed the effect of a downfall is amplified by "N" times. In a context then of overleverage it is much more reasonable to expect a strong correction of the market because of the amplified effect of a drop in prices. At the moment the indicator is by far above the levels of the earlier cited market crashes, thereafter from this point of view it indicates a situation of probable overvaluation of the market.

The level of regulation

As the economy the financial market tends to follow a cycle too. Before the creation of the bubble prices tends to be inflated by two factors that are excessive optimism and a loosening of regulation that brings also to a higher number of leveraged trades. Once these factors are brought to the extreme, they create the perfect conditions for the creation of a financial bubble.

In the following graph we plot the Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans to Large and Middle-Market Firms, which represents the level of standards required in order to allow the concession of a loan to large and middle market firms:

Net Percentage of Domestic Banks Tightening Standards

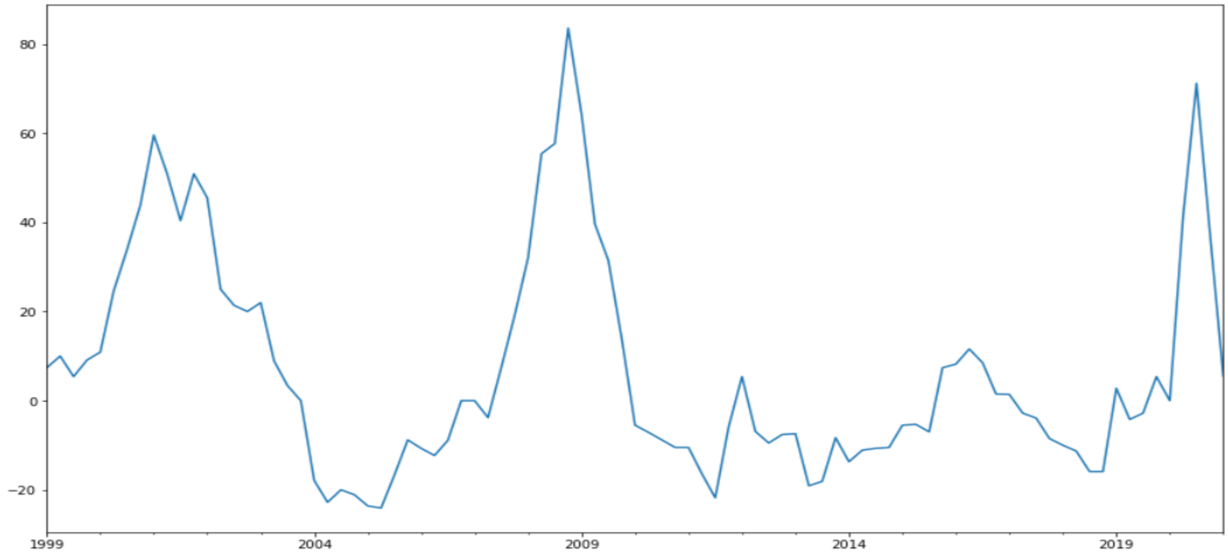

Figure 2.21: Net Percentage of Domestic Banks Tightening Standards.

It is possible to see that in periods of crisis the index tends to reach its peak. This would have been useful for predicting the market crash of the 2000, 2008 and even the one of March 2020. However, it seems that this indicator had already predicted the crisis of the covid 19 spread, while at the moment it represents still a level of recovery phase of the economy.

The US Dollar strenght

As it has been shown in the correlation analysis the US dollar exchange rate represents one of the major variables on the financial market able to influence the price of stocks. The other very important driver of the equity market is instead the interest rates level, therefore by analyzing the level of these two variables it is already possible to understand the phase in which the stock market is.

The financial stimulus of the government after the 2020 crisis has injected on the market an incredible flow of liquidity. Furthermore, the very low level of interest rates makes it very easy to get liquidity on the market, which inevitably makes the US dollar currency less strong with respect to other major currencies.

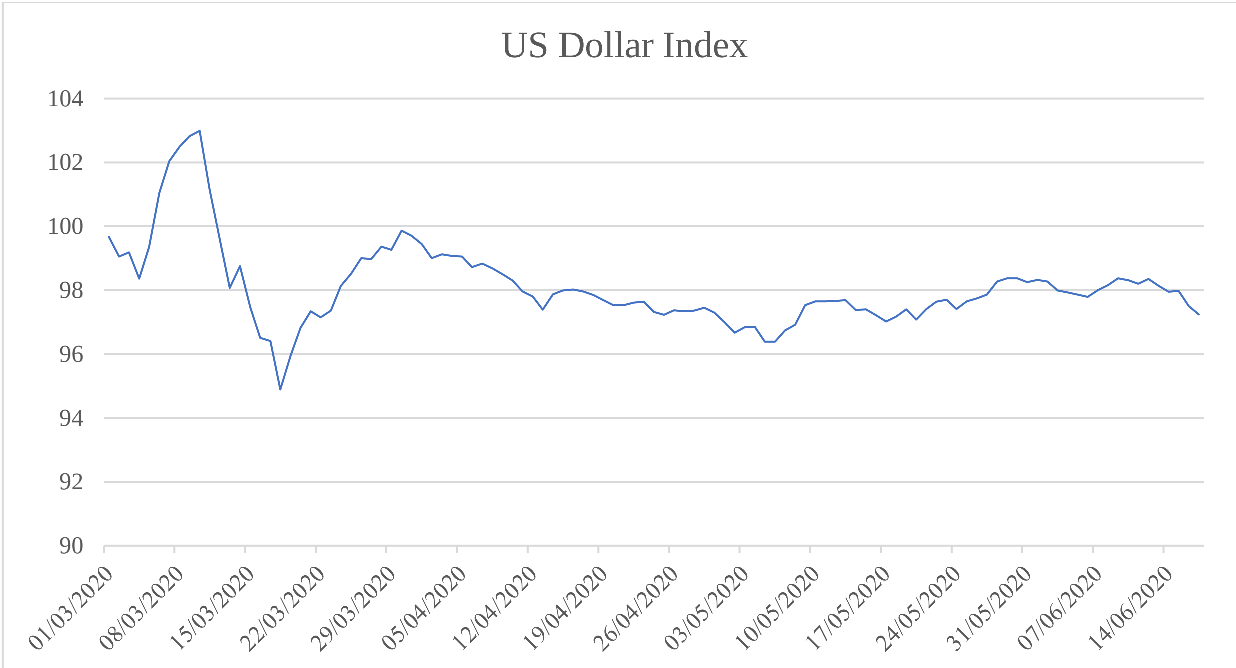

Figure 2.22: US Dollar Index evolution during pandemic 2020.

In the graph it is possible to see the strong depreciation faced by the US dollar index after the injection of liquidity from the FED during the whole year of 2020 and that is continuing today.

From the sentiment analysis provided in the previous paragraph we have seen that both Biden and the vice president Kamala Harris are constantly mentioning the word recovery and plan. This makes us understand that the financial stimulus will be one of the major concerns of the government for the following years, and of course this is fundamental for knowing the possible future evolution of the dollar index.

The reason why it is really important for understanding the possible evolution of the equities is that first of all as we have seen the dollar index is strongly negatively correlated with the S&P 500 and furthermore in this case the downtrend in the index has happened because of the strong injection of liquidity on the market. This means that investors have now to know where to allocate the new money, and on the basis of this the different asset classes will experience a depreciation or appreciation.

A weak dollar has indeed the effect of inflate other asset classes like Gold, stocks or other refugee goods like housing. On the other hand, a strong dollar creates a condition in which the profits' taking is more probable. Consequently, in the following chapter by analyzing these financial drivers I will try to assess the effect of the government' policy on the macroeconomic variables and on the stock market,

Chapter 3

Expectation on the evolution of the industries.

Once we have analyzed the current macroeconomic and financial scenario, we can analyze how the initiatives of the new American government can impact on the macroeconomic context and how it then will impact on the prices of the equity assets. For doing so then I will analyze in detail the Biden proposals and his initiatives and then we will see how they can impact on the macroeconomic context.

The macroeconomic approach will give us a starting point to understand the evolution of the United States of America economy. So, using a model, I will try to forecast the direction of the S&P 500 for the following period.

Afterwards, I will combine the effect of the macroeconomic variables and the trends identified in the second chapter through the Natural Language Processing analysis to analyze the possible evolution of the single industries taken into consideration.

3.1 Expected evolution of the macroeconomic context.

For starting to assess the probable impact on the stock market and on the different industries of the 2020 USA presidential election, it is fundamental to first analyze the electoral plan of the new elected president Joe Biden.

As it has been shown in the sentiment analysis in recent times the main government figures of Joe Biden and Kamala Harris are focusing their interests on the execution of the rescue plan. We have seen that the main topics regarding the recovery plan are the job creation, the infrastructure investments, and the covid-19 defeat through the vaccination plan.

The relief package has the final objective of decreasing the unemployment rate by the different investments that the president provides in the American jobs plan. The agenda of the democrat president can be analyzed looking at four different main issues:

- Infrastructure
- Taxes
- Health care
- Jobs and wages

For what concerns the infrastructures, after the approval of the $2 trillion relief package, President Joe Biden has proposed an investment plan for improving the nation's infrastructure and implement the green transition in the next 8 years. The 2 trillion dollars infrastructure investment plan represents one of the two major part the relief package is composed of.

The plan provides investment in different fields for helping the economy recovering from the Covid-19 pandemic and improve the conditions of the infrastructure system. The allocation of the funds is supposed to be the following[78]:

- Transportation: $621 billion.
- Home care services and work force: $400 billion.
- Manufacturing: $300 billion.
- Housing: $213 billion.
- Research & Development: $180 billion.
- Water: $111 billion.
- Schools: $100 billion.
- Workforce development: $100 billion.
- Digital infrastructures: $100 billion.

The investments in transportations will principally provide works on roads, bridges, public transit, rail, ports, waterways, airports and electric vehicles in service of improving air quality, reducing congestion and limiting greenhouse gas emissions.

The president is aiming at modernizing 20,000 miles of highway with a total initial fund of 115 billion dollars, plus other $20 billion allocated to the improvement of the roads' safety. Further $85 billion will be invested to modernize existing transit so as to help agencies to meet higher demand[79].

The spending includes $400 billion on a new federal program for clean energy research and innovation, $100 billion to modernize schools**,** $50 billion on repairing roads, bridges and highways in his first year in office, $20 billion on rural broadband infrastructure, and $10 billion for transit projects that serve high-poverty areas with limited transportation options[80]**.**

Also, $25 billion will be allocated to airports and other $17 billion to inland waterways, ports and ferries. Most of all the plan strongly focuses on the transition to green vehicles. The President is planning to increase the use of electric vehicles by providing rebates and tax incentives for the purchase of American-made electric cars.

---

[78]Tami Luhby, Katie Lobosco and Kate Sullivan. 2021. "Here is what's in Biden' infrastructure proposal". *CNN,* April 21, 2021. https://edition.cnn.com/2021/03/31/politics/infrastructure-proposal-biden-explainer/index.html
[79] Ibidem.
[80] Deborah D'Souza. 2020. "Comparing the economic plans of Trump and Biden". *Investopedia,* November 09, 2020. https://www.investopedia.com/comparing-the-economic-plans-of-trump-and-biden-4843240#infrastructure.

Furthermore, to increase the convenience of such vehicles Biden is planning to build new 500,000 charging stations by the year 2030.

For what concerns the digital infostructure the first objective of the government at the moment is to increase the total connection coverage across the country. During the pandemic of 2020 indeed, the government has understood how critical is in this moment technology for the economic progress. Now, the principal aim of the president is to provide access to the internet to all the Americans. At the same time Biden has also provided different investments in the new communication technology of the 5G[81].

The investment of $100 billion has then the double aim of improving the communication channels across the U.S. and facilitate the working conditions of companies. Of course, also in this case the objective is to implement a welfare program able to provide jobs to unemployed Americans.

Furthermore, Biden has allocated a total of 400 billion of dollars in the home care. This investment is part of his program for the public health-care system transformation. The health program of President Joe Biden aims principally at the guarantee of medical care for workers of weaker social classes. The current allotment for the Medicaid payments to poorer worker' classes will be indeed almost doubled thanks to the investment of 400 billion dollars.

As we have already seen in the previous chapter the Biden' health program tries to strengthen the Affordable Care Act in order to expand the Medicare to the largest number of people as possible. In brief Biden aims at decreasing the overall payments for the health insurance at the maximum of 8,5% of the annual income of individuals. Furthermore, he wants to decrease the requirements for the eligibility of the public health insurance. In total the government has allocated $400 billion to the project, and this is expected to be only the starting investment by the new elected president[82].

In the infrastructure investment plan is also provided a fund allocation to manufacturing investments. As we know since his electoral campaign Biden has strongly focused on the slogan "Buy American". The plan consists in making the new constructions completely made in U.S.A., with a 400 billion procurement investment "that together with the Biden clean energy and infrastructure plan will power new demand for American products, materials, and services and ensure that they are shipped on U.S.-flagged cargo carriers".

---

[81]"Lauren Feiner. 2021. "Biden infrastructure plan seeks hundreds of billions to beef up America's tech prowess". *CNBC*, March 31/03/2021. https://www.cnbc.com/2021/03/31/biden-infrastructure-plan-seeks-to-expand-broadband-access-investment-in-evs.html

[82] Marianna Sotomayor. 2021. "What's in, and out, of Biden's health care plan". *NBC,* May 26, 2021. https://www.nbcnews.com/politics/meet-the-press/blog/meet-press-blog-latest-news-analysis-data-driving-political-discussion-n988541/ncrd1030086

Furthermore, Biden is carrying out the "Make in America" program that aims at sustaining smaller American manufacturers and those owned by women and people of color with incentives and financing tools.[83] Under his plan, $50 billion of the money would be invested in semiconductor manufacturing and another $30 billion would go towards medical manufacturing to help shore up the nation's ability to respond to a future outbreak.

In sustaining the transition to green energy Biden also proposes to allocate $20 billion to manufacturers that focus on clean energy and to the support of regional innovation hubs. Other $46 billion should instead be allocated in the purchase of electric cars, charging ports, and electric heat pumps for housing and commercial buildings[84].

President Biden has already signed indeed an executive order that aims at supporting the American manufacturing. This order will change the rules regarding the federal spending on Made-in-US goods, sustaining sectors like equipment and materials for infrastructures producers.

In the infrastructure plan also the initiatives concerning research and development appear to be enough significant. The president is aiming at investing $300 billion for the development of a wide category of technologies, from electric vehicles to artificial intelligence. In this plan is also included the investment for the construction of a wider and more efficient 5G connection line[85].

In order to decrease the unemployment rate Joe Biden has also allocated $100 billion to the workforce development, providing resources for assisting students in the career initiation after the high school and to train workers for high demanded sectors such as clean energy and manufacturing. The investment also aims at creating new subsidized jobs and increase the minimum hourly wage[86].

The total cost of the American rescue plan is roughly $2 trillion. At this point the question is how Biden wants to finance this program.

At the beginning of 2020 because of the impact of covid the public deficit of the United States of America has increased to $3.7 trillion from $984 billion. The public debt in the same year has increased then going from $1.181 to $4.226 billion[87]. This is the highest increase in public debt ever experienced by the United States of America.

The sources of financing in this case are indeed two: taxes and debt.

---

[83] Joe Biden. 2020." THE BIDEN PLAN TO ENSURE THE FUTURE IS "MADE IN ALL OF AMERICA" BY ALL OF AMERICA'S WORKERS". https://joebiden.com/made-in-america/

[84]Tami Luhby, Katie Lobosco and Kate Sullivan, 2021

[85] Ibidem.

[86] Ibidem.

[87] Kimberly Amadeo. 2021. "US Budget Deficit by Year Compared to GDP, Debt Increase, and Events". *The balance,* March 05, 2021. https://www.thebalance.com/us-deficit-by-year-3306306

For what concerns the tax plan since his electoral campaign Joe Biden had a completely opposite point of view from the one of the incumbent president Donald Trump. The tax plan of the two candidates has played a key role in the electoral campaign, being the financial cornerstone for the feasibility of the democrats' plan, and probably the most significant proposal for corporations from the republican candidate. The incumbent president Donald Trump in the first mandate has adopted a very "firms-friendly" policy, with a strong cut on tax expenditures that led to an increase of the performances of the whole US stock market. In his electoral program the Republican candidate has stated that he is planning to extend the Tax cut and Jobs Act by 2025, and to keep cutting taxes from 2025 until 2030 for a total government expenditure of $1.3 trillion.

On the opposite instead Joe Biden plans to finance its program mainly by the increase on taxes for corporations: he plans to increase the top income tax rate to 39,6% from the actual 37%, the top corporate interest rate to 28% from 21%, and a tax rate on profits earned by foreign subsidiaries of US companies up to 21%. His plan provides also increased taxes on financial investments, with tax expenses on dividends and capital gains. It has been estimated that this proposal will cost to corporations 4 trillion between 2021 and 2030, and that 93% of this cost will be carried by taxpayers in the top 20% of households by income[88].

In brief the tax income for financing the relief package will basically be:

- **Corporate tax hike:** Under the current administration the tax rate will rise from 21% to 28%, However, before the Trump' presidency the tax rate has been as high as 35%.
- **Global minimum tax:** This proposal aims at avoiding companies to shelter profits in tax heavens countries. Joe Biden is proposing to increase the level of minimum taxation on corporations to 21%.
- **Tax on book income**: The book income represents the income large corporations report to their investors. The president will increase the minimum taxation on the income to 15%.
- **Corporate inversions:** Biden will also put a limit to merger and acquisition operations to avoid that U.S. companies avoid paying taxes by claiming to be a foreign company. The democratic President is also encouraging foreign countries to increase the minimum taxation[89].

However, the single tax revenues seemed to not be enough for financing the stimulus plan of the democratic government. In March 2021 indeed the U.S. government spent around $660 billion of dollars more than it has collected from taxes in the same month. The United States has spent $927 billion in the third month of 2021, more than the double it had spent in the same month of 2020. However, at the same time the tax revenues have remained almost equal compared to the previous year, pushing then the US deficit to historical records.

---

[88] Stephen Gandel. 2020. "Comparing the Biden and Trump tax plans: will you pay more?". *CBS,* October 30, 2020. https://www.cbsnews.com/news/biden-tax-plan-comparison-trump/

[89] Thomas Franck. 2021. "Biden targets global corporations to fund landmark infrastructure plan". *CNBC,* March 31, 2021. https://www.cnbc.com/2021/03/31/biden-infrastructure-plan-to-raise-taxes-on-global-corporations.html.

Only in the first six months of 2021 the deficit of the United States of America has indeed already reached the level of $1,7 trillion, an all-time high overcoming the previous record of 1,4 trillion reached in 2009[90]. The government is borrowing money from the financial market to cover the deficit; however, even if the interest rates are at historical low levels the federal debt is reaching extreme levels and is expected to grow even more in the following months. Only in March indeed the government has spent $330 billion in stimulus payments, and other expenses are expected to be made in the rest of the year.

The administration has stated that it intends to finance the 2 trillion rescue plan by raising taxes from corporations. However, at the moment the excessive spending of the government is creating some worries among the economists who state that an excessive deficit would spark inflation.

Some economists are arguing that the government should not act too quickly in stimulating the economy. For example, Nathan Tankus, research director of the Modern Money Network, said that the U.S. still has 8 million people more without a job than it did in 2020. “Filling that gap is going to require quite a substantial amount of government spending, and policymakers should not lose their nerve simply because the immediate crisis is waning,” Tankus said. “We learned the lesson from the financial crisis about the dangers of standing down too soon.[91]”

After the crisis created by the spread of the coronavirus, jobs and wages are a very important issue for the government. In the first three years of Trump presidency 6,6 million of jobs have been created. However, this record has been eroded by the Covid-19 spread.

President Biden is aiming at increasing again the number of jobs in the United States of America by a welfare policy. His investments in infrastructures have indeed the aims of providing jobs to the currently unemployed citizens. Since the beginning of his mandate, the US economy has added 1.572.000 jobs, according to the US Bureau of Labor Statistics, which represents the highest number of jobs created in the first 100 days of any presidency since records began in 1939[92].

While Trump has said to be favorable to an increase in the minimum wage but that he prefers to leave the competence to the single states, Biden has clearly proposed to increase the minimum wage to $15 and to implement a plan of short time compensation for facing the Covid-19 difficulties. Moreover, the Democratic

[90] Jeff Stein. 2021. “U.S. government spent $660 billion more in March than it collected in revenue, the third-largest monthly deficit on record”. *The Washington Post,* April 12, 2021. https://www.washingtonpost.com/us-policy/2021/04/12/deficit-stimulus-biden-spending/
[91] Ibidem.
[92] Jake Horton. 2021. “President Biden's claims on the US economy fact-checked”. *BBC,* May 11, 2021. https://www.bbc.com/news/57070054

candidate has proposed to create millions of new jobs for the middle class, emphasizing his attention for the citizens rather than to corporations.

Sarah Foster said that “the campaign estimates that would create 1 million new jobs in the auto industry by expanding factory floors, 250.000 jobs for plugging abandoned oil and natural gas wells, and another million jobs for updating homes, transit and buildings to be environmentally friendly and sustainable. While details are scarce, Biden also unveiled plans for a $700 billion manufacturing program to create what he estimates could be 5 million jobs by investing in American-made products.”[93]

By analyzing the agenda of the democratic president of the United States of America the intentions of Joe Biden are then enough clear. Biden is planning to increase the public expenditure and wants to finance his rescue plan through the issue of new debt and by the increase of the tax on corporates. The main objective of the president is to spread the wealth across the American population, taxing the richest citizens for providing more services and facilities to poorer social classes. This aims at reducing the unemployment rate, provide jobs to the weaker social classes and so increase the purchasing power of the poorer citizens.

This means that the main macroeconomic variables that will be moved by Biden’ policy are going to be the money supply M2, the government recipient and the government expenditure. Consequently, the first thing we have to address is the impact that these three main variables may have on the macroeconomic factors and the financial market.

In first instance I have estimated three different linear regressions on the S&P 500 equity index for the government receipts, the M2 money supply and the federal expenditure. For the estimation I have considered data from January 1990 with monthly frequency for a total of 377 observations. In the following table is reported the correlation matrix among the four variables:

Correlation map S&P 500, Recipent, M2, Outlay, Deficit					
	M2	*Recipient*	*Outlay*	*Deficit*	*S&P 500*
M2	1				
Recipient	0,690041	1			
Outlay	0,878216	0,541879	1		
Deficit	0,446007	-0,20478	0,711681	1	
S&P 500	0,93742	0,691697	0,803608	0,357734	1

Table 3.1: correlation map S&P 500, Recipent, M2, Outlay, Deficit

It is possible to see that except from the deficit, expressed as the difference between the recipient and the expenditure, all the variables show a significant correlation with the S&P 500. This data tells that the level of the

[93] Jeff Stein, 2021.

equity index is correlated to the macroeconomic development of the United States of America and in this case then, to the economic policy of the government. Here are provided instead the statistics for the three different regressions (the regression has been estimated also on the government deficit for having a clearer vision):

S&P 500 regression comparison

	M2	recipient	Outlay	Deficit
R^2	0,8787	0,4784	0,8036	0,357734
Adjusted R^2	0,8784	0,478	0,6457	0,127973
t-stat	52,06	18,52	18,52	7,4085
P-value	0,00	0,00	0,00	0,00

Table 3.2: SPX regression comparison.

It is possible to see that the R squared is high for all the three variables. This means that the three variables are enough efficient in expressing the volatility of the equity index. The only variable that has reported instead a low value of the R^2 is the Recipient. This can be interpreted as the fact that the equity market tends to be strongly correlated to the government expenditure and to the amount of liquidity that is in the economy but not so much to the revenues of the government.

All the t tests for the three variables express a significant relation between the S&P 500 and the money supply, the government' recipient and its expenditure. The empirical interpretation of the results is that there exists a significant relation between the equity market and the three variables, but the money supply and the government expenditure are more significant in influencing the volatility of the equity index.

Professor Maskay from the Illinois Wesleyan University in his paper "Analyzing the Relationship between change in Money Supply and Stock Market Prices" has already analyzed the relationship between the money supply shocks and the stock' prices, finding that M2 is able to positively influence the returns of the stock market[94]. Consequently, the first approach to evaluate the level of the S&P 500 will be the construction of a regression model using the money supply as explanatory variable.

From the correlation matrix it is also possible to see that the recipients and the M2 have a strong correlation. Thereafter, building a multifactor model with these two variables would not be significant in statistical terms, given the fact that both would explain the same relation and that it can create the problem of overfitting.

In the following graph it is possible to see the comparison between the real value of the S&P 500 and the value expressed instead by the regressive model considering only the money supply M2 as explanatory variable:

[94] Biniv Maskay. 2007. "Analyzing the Relationship between change in Money Supply and Stock Market Prices". PhD honors projects, Illinois Wesleyan University.

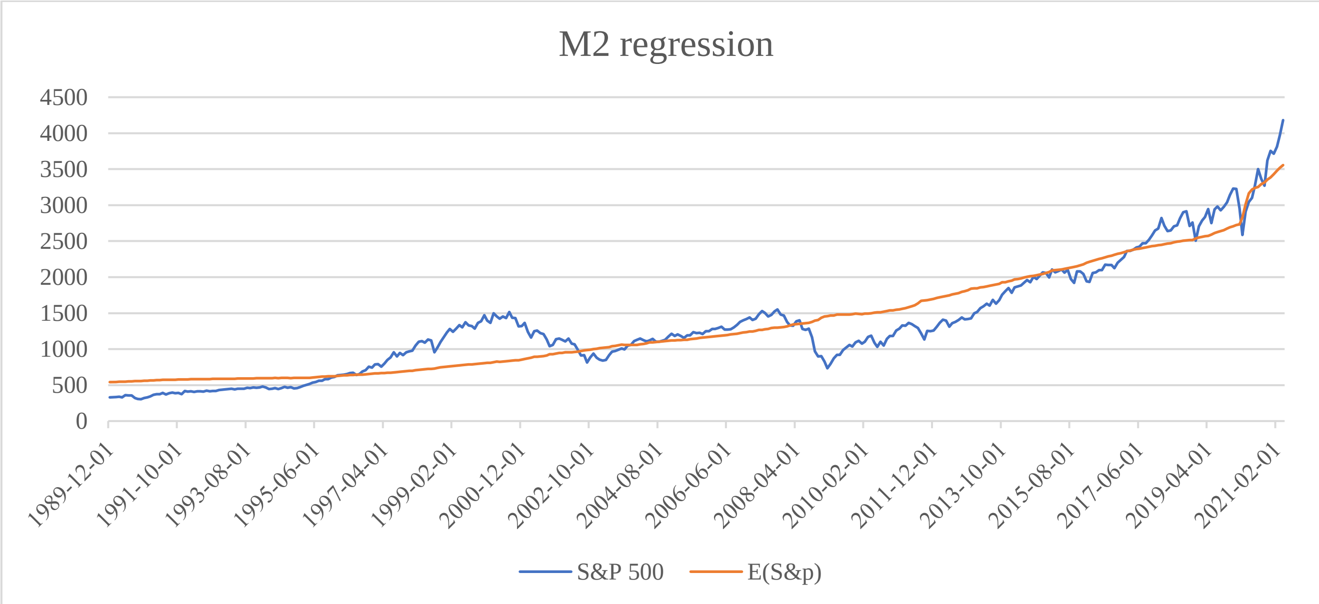

Figure 3.1: S&P 500 regressed on M2.

It is possible to see that the S&P 500 tends to move around the estimated line following cycles. At this moment the equity index seems to be overpriced and to not reflect exactly the macroeconomic policy of the government.

To provide another analysis of the comparison between the S&P 500 and the macroeconomic context instead of correlating directly the S&P 500 to the variables of the Biden' policy, I will start analyzing the possible impact of the government policy on the macroeconomic variables, and then the reflex they can have on the S&P 500.

In the following matrix is represented the correlation map between the Gross Domestic Product and the three variables of the M2, the Recipients and the outlay of the federal deficit:

Macroeconomic variables correlation map							
	GDP	*GDP Lag 1*	*M2*	*Receipt*	*Outlay*	*Deficit*	*S&P 500*
GDP	1						
GDP Lag 1	0,91685	1					
M2	0,963641	0,845156	1				
Receipt	0,72011	0,628493	0,709957	1			
Outlay	0,816716	0,691051	0,883869	0,581135	1		
Deficit	0,252828	0,195139	0,341549	-0,29765	0,603948	1	
S&P 500	0,909018	0,768749	0,938666	0,724	0,80375	0,233808	1

Table 3.3: macroeconomic variables correlation map.

In this case data have been collected for the same period but with a quarterly frequency, given the fact that the Gross Domestic Product is released only every three months.

It is possible to see that also in this case the M2 money supply has a very strong correlation with the GDP. Furthermore, what is interesting is also the strong correlation the money supply lagged by one period has with the Gross Domestic Product, which means that if we move the GDP one period forward it still tends to be correlated to the money supply of the previous period.

At the same time, the Gross Domestic Product and the Standard and Poor 500 index have reported a correlation factor of more than 0.9, which may be an indicator of the fact that the GDP is able to explain the level of the equity index S&P 500.

Ivan Sichkar in his study "Gross Domestic Product Behind the Stock Market Performance" have already tested the efficiency of GDP of the United States of America in expressing the level of the S&P 500. Analyzing data from 1953 until 2013 he has estimated a linear regression using the American Gross Domestic Product as independent variable for explaining the performance of the Standard & Poor 500 index. The regression showed a R^2 of 88,76% and a correlation of 0,94, concluding then that the GDP has a strong explanatory power for the U.S. equity market[95].

Thereafter a linear regression has been run between the equity index and the U.S. Gross Domestic Product. In the following table are shown the results of such regression:

Regression Statistics SPX - GDP	
Multiple R	0,915023
R Square	**0,837267**
Adjusted R Square	0,835944
Intercept	-578,147
slope	0,147485
t-stat B	**25,15627**
P-value	**2,51E-50**

Table 3.1: Regression statistics SPX – GDP.

The reported R^2 is high, which expresses a good adaptation of the model to the dependent variable. The t test on the slope also has reported a significant relation between the Gross Domestic Product and the level of the S&P 500. However, the impact the GDP has on the equity market results to be less than proportionate, for every point increase in the GDP the equity market is expected from the model to report an appreciation of the 14,75%.

At this point then we have to understand how predictable the GDP is from the variables Biden will affect with his new relief plan. Thereafter, as we have done for the S&P 500, here we report the statistics for the regressions

[95] Ivan Sichkar,. 2013. "Gross Domestic Product Behind the Stock Market Performance". ECNFIN.

calculated on the Gross Domestic Product and the money supply, the recipients, and the outlay all lagged by one period:

GDP regression model comparison			
	M2	**Recipient**	**Outlay**
Multiple R	0,97085	0,700845	0,822333
R Square	**0,94255**	**0,491184**	**0,676231**
Adjusted R Square	0,94208	0,487013	0,673577
Intercept	4282,578	5692,233	5692,233
X Variable 1	1,161649	0,033115	0,033115
t Stat	**44,73918**	**15,96283**	**15,96283**
P-value	**1,54E-77**	**1,16E-31**	**1,16E-31**

Table 3.5: GDP regression model comparison.

Also, in this case it is possible to see that the model estimated through the money Supply results to be the best one. The R^2 is very high at the level of 0.942, which means that the model is able to explain the 94,2% of the total volatility of the Gross Domestic product and the t test on the slope variable gives as result the existence of a significant relation between the money supply M2 and the Gross Domestic Product, Furthermore, the value of the slope explains a big impact of the money supply on the GDP.

This means that through this model we can efficiently predict the future level of the Gross Domestic Product, and the expectations of the Gross Domestic Product will be used to predict the level of the S&P 500 in the following quarters. In the following graph is reported the estimated value of the model against the effectively verified level of GDP:

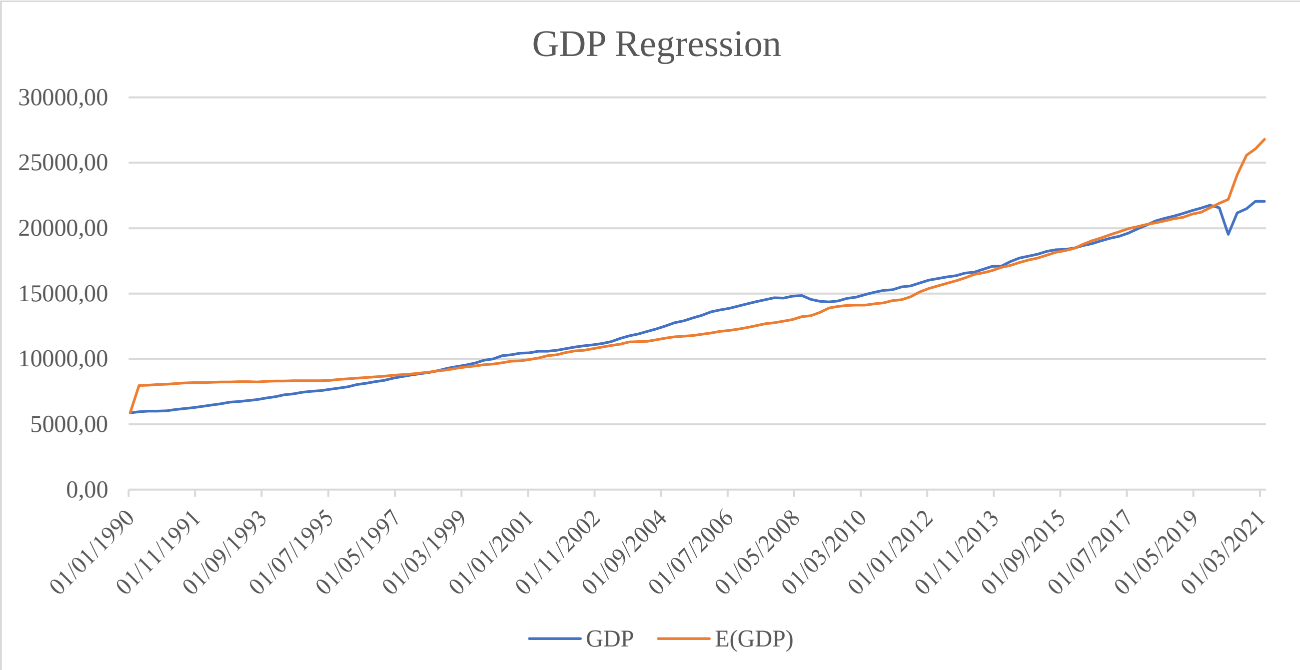

Figure 3.2: GDP regression

From the graph it is possible to see that from the amount of liquidity in the economy the GDP is expected to be at 26793,83 billion, which is 21,52% more than the current level of 22048,894.

In order to understand the efficiency of the model, also in predicting the values of the Gross domestic product for more than one quarter I have computed the correlation coefficient between the M2 and the GDP percentage change lagging the M2 by 1 and 2 periods.

Here are shown the results, with the significance of the relation tested with the Person' test:

Correlation lagged M2 - GDP			
	lag 0	**lag 1**	**lag 2**
rho	**-0,28798**	**0,276985**	**-0,00692**
count	124	123	123
Critical value	0.254	0.254	0.254
Significant	YES	YES	NOT

Table 3.2: correlation M2 GDP.

The very curious result is that the correlation coefficient at lag 0 is negative while becomes significantly positive when lagging the M2 by one period. This means that the money supply is a reaction to the decrease on the GDP and that an inflow of liquidity in the market tends to affect positively the economy. However, the effects of this monetary policy after one quarter does not seem to show effects anymore; consequently, the model is supposed to be efficient in predicting the Gross Domestic Product for a period not longer than 3 months.

Therefore, the forecast of the S&P 500 for the following quarter is estimated as the corresponding value expressed by the regression estimated between GDP and the S&P 500 for the forecasted level of Gross Domestic Product.

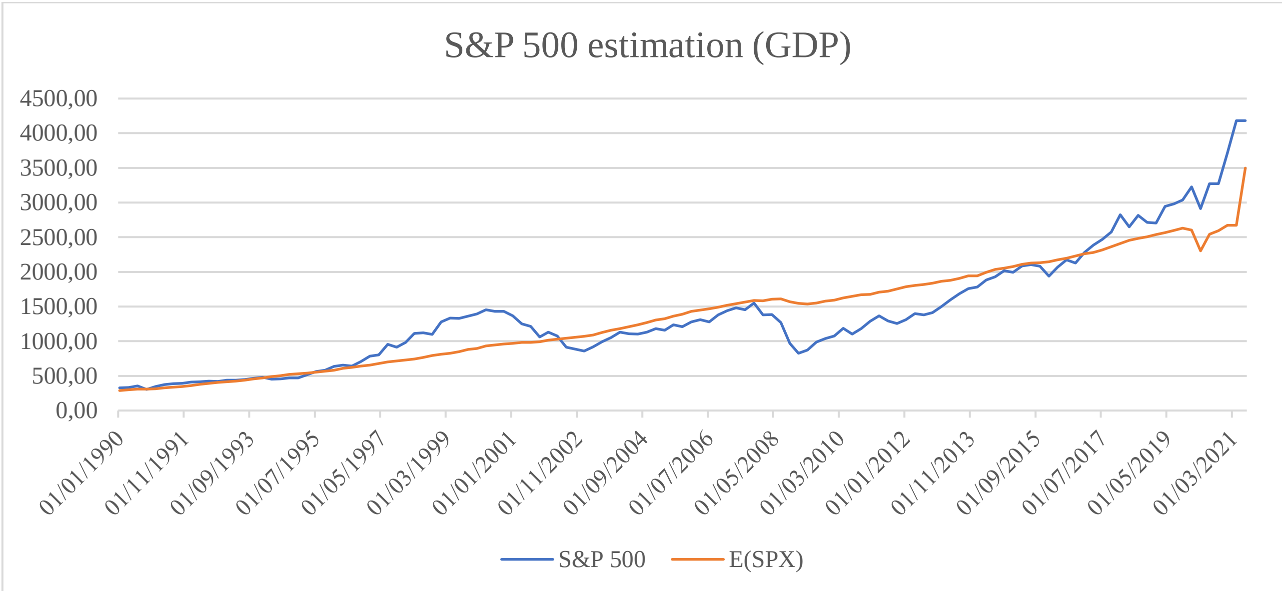

Figure 3.3: S&P 500 estimation from GDP.

As it is possible to see in the graph, from our analysis we expect in the future a spike in the Gross Domestic Product of the United States of America; however, it seems that this expectation has been already priced in the S&P 500 index that has soared in the first semester of 2021. Consequently, the analysis is explaining a situation of overreaction of the market given the expectations on the GDP.

In the second chapter we had already highlighted a possible situation of overvaluation of the stock market. At this moment indeed our forecast is a probable correction of the equity index in the following months. The reported results are telling us that the Gross Domestic Product is expected to increase in the following period given the policy of the new elected president Joe Biden, however these expectations have created a situation of apparent overpricing in the equity market.

The market is not reflecting the real economy since a long time. As we can see form the graph since the 2016 the stock market has started to move away from the values estimated on the basis of the macro variables. In this case the possible scenarios are two, a reversion of the stock market or an incredible performance of the real economy that will make the lines converge.

It seems then that the impact of the rescue plan of Joe Biden will be positive for the GDP that is expected to increase in the following quarters, however now this expected positive recovery of the USA economy has been largely priced in the equity prices, reporting even an overreaction in the S&P 500 index. Consequently, my expectations are for a good real economy evolution but for weak returns on the equity market.

In this analysis the final aim is to understand the impact that the Biden policy will have then on the single industries. In the previous chapter we have analyzed the sentiment investors have towards the single sectors, the main topics the government is focusing on and the opportunities and threats the industries are now facing.

To provide a more detailed analysis of the equity market, beyond the GDP I will analyze the levels of the equity index through the single macroeconomic variables.

Timothy A. Smith and Alcuin Rajan in their study "A regression model to predict stock market mega movements and/or volatility using both macroeconomic indicators & FED bank variables"[96] had already constructed a multiple regressive model using the GDP, the unemployment rate and the money supply for predicting the level of the S&P 500. They found out that the FUND rate has not got a significant explanatory power and that the model estimated through those three variables has an explanatory power of 0,95.

Melnichov from the University of Aberta in the paper "On linear regression analysis for modeling and forecasting of S&P500 Index", highlights the importance of the combination of industrial production index and the money supply M2 together with companies' fundamental ratios for predicting market returns. He also developed a trading algorithm able to beat the S&P 500 by 15% in the five years period from 2007 until 2012[97].

Pornprom Pruess and Pattaraporn Hiranto in their study "Multiple regression: Impacted variables to S&P 500"[98] found out that "S&P500 seems to have a high positive relationship with industrial production and unemployment rate and have a strong negative relationship with US currency strength, interest rate, and risk premium[99]" and concluded that a multiple regression using the interest rates and the US Dollar Index gives the best estimation for the level of the equity index.

Most importantly, Shiu-Sheng Chen in the empirical research "Predicting the bear stock market: Macroeconomic variables as leading indicators"[100] concluded that interest rates spread and inflation are the best variables for predicting the returns of the S&P 500, but that macroeconomic variables do a better job in predicting the level of the equity index. Money stocks, aggregate output, unemployment rates, federal funds rates, federal government debt, and nominal effective exchange rates were all significant for predicting market bearing phases.

---

[96] Timothy A. Smith and Alcuin Rajan. 2017. "A Regression Model to Predict Stock Market Mega Movements and/or Volatility Using Both Macroeconomic Indicators & Fed Bank Variables".
[97] Alexander Melnichov. 2012. "On linear regression analysis for modeling and forecasting of S&P500 Index". PhD diss., university of Alberta.
[98] Pornprom Pruess and Pattaraporn Hiranto 2019. "Multiple regression: Impacted variables to S&P 500". Independent research.
[99] (Pornprom Pruess and Pattaraporn Hiranto 2019, 2)
[100] Shiu-Sheng Chen. 2009. "Predicting the bear stock market: Macroeconomic variables as leading indicators". Journal of Banking and Finance, Volume 33, issue 3. Pages 211 – 223.

On the basis of these studies then, through a qualitative and a quantitative analysis we will try to understand which sector can outperform the S&P 500 during the Biden presidency.

3.2 Which industry will win?

The initiatives of Joe Biden are very different from the ones of his predecessor Donald Trump. The change in the government orientation will strongly influence the sorts of the different industries in the United States of America.

In the first chapter we have seen that during Trump and Obama administrations the best performers have remained the same, so Information technology, Consumer discretionary and health care. What has been different however was the order the three industries "classified" at the end of each administration. While under Obama the consumer discretionary had been the best performer followed by Information technology and health care during the Trump' mandate instead the tech industry has taken the place of the consumer discretionary.

In general terms the equity assets are driven by the market trends, however the government initiative can strengthen or weaken the impacts of such trends on the single industries. For example, we have seen that the Energy industry is in a not promising economic environment, with a negative overall sentiment and the oil that is falling in disuse; while with Trump the decreasing trend was slowed down, in this case at first glance the government is emphasizing the speed of the renewable transition and so the death of the oil sector. In the following pages we will understand which sectors are expected to overperform the S&P 500 in the following period.

Health care

The health-care industry is probably one of the industries that will experience the highest impact in the change of government. In the 2021 budget proposal, Trump had indeed already announced during the electoral campaign a strong cut on public heath, with a specific decrease of $900 billion for Medicaid (the federal plan that helps limited income people with medical costs) and 450 billion for Medicare (the federal health insurance plan). In order to guarantee the health care right and to compensate this strong funding cut, Trump had proposed a plan that aimed at decreasing general drug prices; we have already seen that this negatively influenced the pharmaceuticals sector.

On the other hand, Biden is intentioned to take steps back on the Obama Care Act (Affordable Care Act), which was canceled by his predecessor (Donald Trump). His plan is based on guaranteeing a public health insurance option for guaranteeing health care to the population (he says he will eliminate the 400% income cap on tax credit eligibility and lower the limit on the cost of coverage to 8,5% of income) and plans to lower the eligibility age for

Medicare form 65 years old to 60. This plan is estimated to cost $750 billion of dollars in the next decade if implemented, in this case the financial resources for this program will be provided by the increase in taxes[101].

The resources allocated to the health industry will then be much higher under the Biden administration. At the moment the number of people living in the U.S. without health insurance is estimated to be roughly 29 million. With the Affordable Care Act strengthen proposed by Joe Biden is expected to allow at least 6,8 million of citizens to purchase a health insurance plan without paying any monthly premium, while another 1, 3 million could sign up for a cost lower than $50 per month, according to an HHS estimate[102]. Currently, there are 7 million of people that have already applied for the free health plan.

The uncertainty on the health care industry is still high: Biden may shake up insurance coverage by offering a "public option" government plan and he is intentioned also to strengthen the Affordable Care Act under which companies are used to operating. Indeed, if on one hand this change should be positive for the profit margins of companies operating in the sector; on the other hand, health care companies have also to deal with a deeply changed environment from the one under which they used to operate during Trump' mandate.

In the sentiment analysis we have identified some key opportunities and threats. In the following table are reported the main issues regarding the health care companies and the sentiment scores for the industry:

Health care industry summary	
Opportunities	Pharmaceuticals
Threats	Covid Indian variant
Polarity	0,69
Polarity single companies	0,08
% Positive tweets	25,05%
% Positive news	82%

Table 3.3: Health care industry summary.

The sentiment towards the industry is very positive: the percentage of positive news is extremely high and the polarity score of them significantly overcomes the positive threshold of 0.05. At the moment the returns on the industry may be driven by the higher demand for health services thanks to the new government plan and the end of the pressure on the hospital due to the pandemic.

[101] Deborah D'Souza, 2020.
[102] Dylan Scott. 2021. "Exclusive: Nearly 7 million uninsured Americans qualify for free health insurance". *Vox*, April 01, 2021. https://www.vox.com/policy-and-politics/22360870/american-rescue-plan-act-premium-tax-credit-health-insurance

Given the Affordable Care Act proposals of Joe Biden I think that the biggest impact will be on the care service providers. As we have already stated the investments provided by the rescue plan of Joe Biden will strongly increase the number of people with access to health care and so the demand for these services.

We have seen in the first chapter that the field of health care that have most suffered the change in government when Donald Trump was elected were the pharmaceuticals and the health-care providers. The pharmaceuticals have indeed reported an annual return that was even lower than the half it reported during the Obama administration. With the change in the health care policy the availability for health care product is supposed to be much higher.

In this scenario the pharma distributors and the health care providers are supposed to perform better for several reasons: the pharma distributors will see the demand for medications increase given the higher availability of funds, while the health care providers will enjoy the same given the higher number of people with health care insurance and so the higher purchasing power for health care of citizens.

At the moment another threat to the stocks of the health industry is the proposal announced by Biden of making public the patents for the vaccine. In the word-clouds presented in the previous chapter the word pharma was indeed present among the negative news topics. The initiative of making public the patent for the vaccine will probably strongly hit the biotech sector.

In this industry the profits are usually protected by the patents until they expire. However, President Joe Biden has announced the intention of supporting a temporary waiver of covid-19 vaccine patents.

The move is expected to accelerate the vaccination plan and so the complete reopening of the economy., However, at the same time it threatens the innovation process for the pharmaceutical field. "Intellectual property is the lifeblood of biotech, it's like oxygen to our industry," said Brad Loncar, a biotech investor. "If you take it away, you don't have a biotech sector.[103]"

The reaction on the market after the announcement was indeed completely pessimistic; Frankfurt-listed shares in BioNTech closed down 12 per cent on Thursday while Moderna and Novavax pared losses after tanking on Wednesday in New York, trading 2.4 per cent lower and 1 per cent lower, respectively.

Such a regulation would have very strong consequences. The abolition of the patent in the short term would provide the opportunity of producing the vaccine to foreign companies too, which would mean that job places would be moved abroad. Furthermore, in the long-term biotech investors are afraid that if this solution is implemented once, then it can be used for many other crises, destroying then the value of patents. Donald Trump

[103] Nikou Asgari, Donato Paolo and Hannah Kuchler. 2021. "Pharma industry fears Biden's patent move sets precedent". *Financial Times,* May 06, 2021. https://www.ft.com/content/f54bf71b-87be-4290-9c95-4d110eec7a90

had already rejected this alternative during his mandate, stating that by doing so he would have also allowed other countries to take advantage of the efforts of the U.S. research.

OrbiMed's Borho said: "This is a unique circumstance. I think this will ultimately be narrow and just on the Covid-19 vaccines. I don't think the Biden administration wants to undermine broad patents for biotech or the pharma industry[104]."

However, the pandemic situation in India is worrying and the spread of the new Covid variant is creating many problems to the sanitary system in the Asian country. In my opinion the probability that such a waiver will be approved is low, so the perspectives for the biotech sector remain positive.

Furthermore, the pharmaceutical distributors have also the advantage of being independent from the abolition of the patents for vaccine. The vaccination plan of Joe Biden has seen the pharma distributors as the main facilities on which to base the vaccine distribution. In case of a public patent the availability of vaccines will increase, but it is probable that the supplying plan will remain the same.

The only field in health care that will be hit by this initiative will then be the Biotech industry. However, I think the likelihood of patents becoming public is really low, thereafter my expectations on the health care industry are very positive.

Consumer discretionary and consumer staples

In general, the consumer goods industry has been quite controversial in the previous years, with the consumer staples that has been very stable but has constantly underperformed the S&P 500 and the consumer discretionary that instead has been one of the best performers under both the presidency of Obama and Trump.

The consumer is poised to benefit from another round of stimulus measure. Historically low interest rates should help housing and home improvement stocks. However, consumer discretionary companies may be hit by the increase in tax rate proposed by President Joe Biden. Since Trump became president colossuses of this industry like Coca-Cola Co., P&G, Walmart and PepsiCo have all beneficiated from the cut on tax rate introduced by Republicans in 2017. All these companies have indeed reported very strong performances in the four years of mandate of Donald Trump.[105]

Nevertheless, even if this industry may be hit by the increase in federal tax another proposal of the democratic president may offset this loss: With the incredible monetary stimulus implemented by FED, and the intention of

[104] Ibidem
[105] Chris Hudgins. 2020. "Consumer companies paid lower tax rates under Trump, could see hikes with Biden". *SP Global*, October 27, 2020. https://www.spglobal.com/marketintelligence/en/news-insights/blog/the-commercial-real-estate-cre-sector-feels-the-impact-of-the-coronavirus

the new government of introducing new financial incentives, expectations on inflation are becoming always higher. In such a scenario companies that have higher chance of facing inflation are the ones that work in industries of low selling prices and mass consumption, like consumer discretionary companies. Companies that are also price makers in their own industry will have an even higher chance of success in a rising inflation economy. So, it comes that this industry is a potential winner under Biden' presidency, and colossuses above mentioned, leaders in food consumption good, like supermarkets and food chain distributors, will probably be the frontrunners.

Here I analyze the two industries separately.

Consumer discretionary

The consumer discretionary has performed incredibly well in the last 10 years. In this analysis we will see the estimated value of the S&P 500 Consumer Discretionary index representative of the industry on the basis of the fundamental drivers of the sector.

As we have seen in the first chapter the variables that are most correlated with the consumer discretionary industry are the government and the consumer expenditure. In the following tables are provided the values of the regression run between the S&P 500 consumer discretionary as dependent variable and the consumer and government expenditure as explanatory variables:

Regression comparison Consumer Discretionary		
	Outlay	**PCE**
Multiple R	0,789338	0,875993
R Square	**0,623055**	**0,767364**
Adjusted R	0,622014	0,766722
Intercept	-95,1792	-798,783
X Variable 1	0,001886	5,577657
t Stat	**24,46125**	**34,55547**
P-value	**1,07E-78**	**1,1E-116**

Table 3.4: Regression comparison Consumer Discretionary.

The analysis has been run using data from January 1990 until May 2021 with monthly frequency. As it is possible to see both the variables have reported a significant relation with the S&P 500 consumer discretionary index. The t-stat is above the P-value which explains a significant relation between the two variables; the R^2 also is significant for both the model, with the PCE explaining even more than the 75% of the volatility of the index.

In order to estimate then the value of the S&P 500 consumer discretionary I have estimated a two factors regression using both the variables above cited. In the following table it is possible to see the statistics for the proposed regression:

S&P 500 Cons. Discretionary	
Regression Statistics	
Multiple R	0,893193
R Square	0,797794
Adjusted R Square	0,796673
Standard Error	105,6074
Observations	364

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	15885145	7942572	712,152	5E-126
Residual	361	4026203	11152,92		
Total	363	19911348			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-236,491	15,77911	-14,9876	8E-40	-267,522	-205,461
Public expenditure	0,006459	0,011759	0,549291	0,583145	-0,01667	0,029583
PCE	0,063114	0,003573	17,66242	9,25E-51	0,056087	0,070141

Table 3.5: Regression statistics S&P 500 Consumer Discretionary.

As it is possible to see the R2 is very high at the level of 0.798, which explains a very good fit of the model to the analyzed variable. In the following graph is then possible to compare the estimated value of the index from the regressive model with the real value of the index:

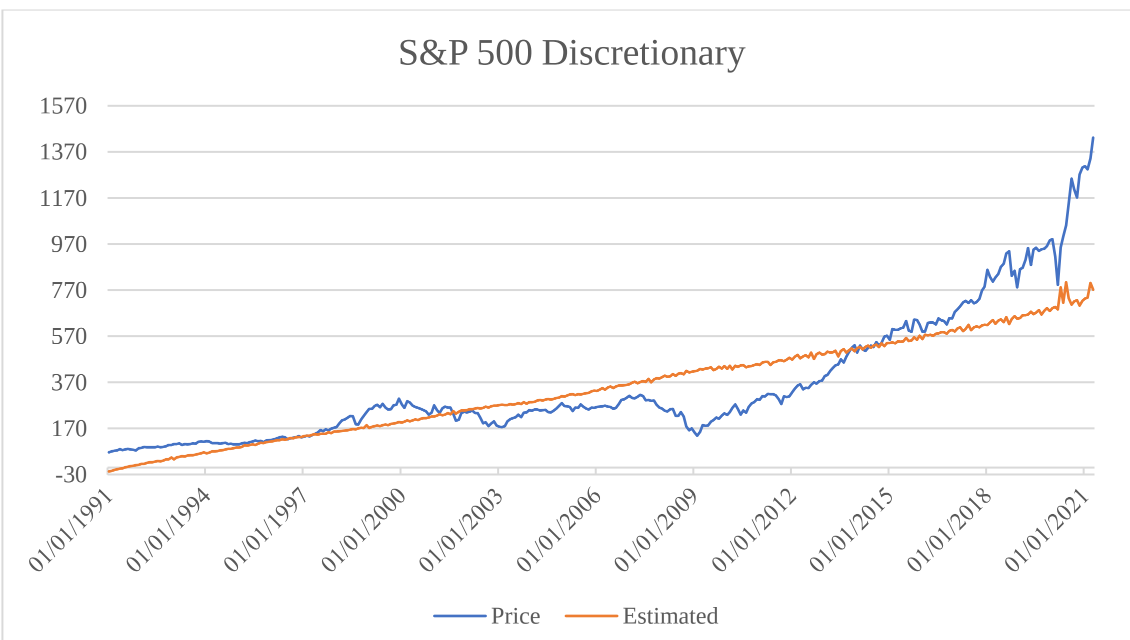

Figure 3.4: S&P 500 Consumer Discretionary estimation.

At first glance it may seem that the consumer discretionary companies are strongly overvalued with respect to the macroeconomic fundamentals. There has been a strong public opinion about the overvaluation of some of the companies included in this index like Amazon and Tesla and this result may be seen as a confirmation of the excessive valuation of such companies.

The interpretation of this result can be that the consumer discretionary industry is expected to well perform thanks to the Biden stimulus package, however these expectations have already been priced by the market.

From the model above it is also possible to expect an appreciation of the index due to the private consumer expenditure. The President Joe Biden in his rescue plan is proposing to provide $1.400 per person for each working family which added to the $600 approved in December sums at $2.000 per person, this is supposed of course to increase the purchasing power of people and so the private expenditure.

Furthermore, we have seen in the second chapter that in recent times the government Figure 1.s are focusing their attention on the job and wages plan. The government is indeed planning to increase the minimum hourly wage from 7,25 to 15 dollars which is more than the double[106.]

This plan is expected to increase the expenditure of lower income people. This means that the companies that are going to exploit the best this stimulus are the companies that sell low prices goods. In the consumer discretionary index then companies like Amazon and small retailers are the ones that are expected to perform better given the relief package investment plan.

Furthermore, with the opening of the activities also the tourism field will probably see an increase in the demand incentivized by the relief package. “Consumers could also use the stimulus funds for payments on a new car, a vacation, or other items that people have been holding off on buying for a year”, said Katie Thomas, who leads the Kearney Consumer Institute, an internal think tank at management consulting firm Kearney. "For people that are still employed, I think this will be a good reason to really kind of buy something that they maybe would have felt guilty buying before," she said in an interview[107].

As we have seen in the previous chapter the inflow of liquidity in the market through the different relief packages and especially the last one proposed by the current administration have started to show their effects on the inflation rate. In the future the expectations on inflation are becoming always higher, and an estimated higher Consumer Price Index can partially explain the level of the S&P 500 Consumer Discretionary. Consequently, the Biden’ policy may positively impact on the consumer discretionary goods also for the rising inflation.

[106] Katie Arcieri. 2021. “Biden-backed stimulus checks could give the retail sector a badly needed boost”, 20/01/2021, https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/biden-backed-stimulus-checks-could-give-the-retail-sector-a-badly-needed-boost-61958377
[107] Ibidem

In the following table are indeed listed the results obtained from the sentiment analysis of the second chapter:

Consumer Discretionary industry summary	
Opportunities	Tourism
Threats	Alcohol
Polarity	0.054
Polarity single companies	0.10075
% Positive tweets	20,3%
Main macro variable	Private expenditure, CPI
% Positive news	71%

Table 3.6: Consumer discretionary industry summary.

As it has been highlighted in the word-clouds the best opportunities for the consumer goods in general is the tourism that is about to restart with the summer season and the stop of the pandemic. The touristic platforms have suffered huge losses from the pandemic and a lot of activities have seen the number of customers decrease because of the complete stop of the travels.

Individuals are changing their tastes and risk appetites after the pandemic and with the implementation of the vaccination plan the expenditure for travelling will probably increase. "I've talked to folks in the travel sector, and they are seeing some optimism, some people starting to book for the back half of the year," Thomas said. "I think with the bigger stimulus checks, you'd really see a meaningful lift in some of those larger categories."

Mills concurred, saying many consumers have adjusted their risk appetite. More money will probably go toward vacations if this latest round of stimulus checks is approved "because people have kind of adjusted to what they are personally willing to do during the pandemic," he said[108].

Furthermore, the biggest impact on the industry will be probably created by the stimulus package. During the pandemic of 2020 many individuals have mainly used the stimulus money for paying their expenses, thereafter with the approval of the relief package 5, consumer discretionary companies will surely see an increase in the sales.

[108] Ibidem

Any lift in spending could directly benefit companies like Amazon, said Daniel Ives, managing director with Wedbush Securities, in an interview. The company didn't respond to inquiries, but with the U.S. essentially in a "semi-lockdown" over the next three to six months, Amazon is "front and center in terms of benefiting from these checks," he said[109].

The revenues of companies like Amazon, Walmart and Target Corp have soared during the pandemic, and this new stimulus package I think can create the same effect on the market. Tom Forte, an analyst with D.A. Davidson, has the same opinion about the possible future effects of the relief package. Beyond the three mentioned companies Forte said that discount retailers like Dollar General and more specialized e-commerce players like Etsy Inc. and Overstock.com Inc. could also benefit[110].

Furthermore, a sub-sector of the consumer discretionary that will surely suffer a strong impact from the Biden policy is the automakers. During the pandemic car companies have seen their revenues falling because of the cut on non-essential expenses from individuals. The expenses for cars and related products can then increase in the following period given the higher liquidity availability on the market.

Still, the investment plan of Joe Biden also focuses on the green energy transition. The sales of electric vehicles will be strongly incentivized by the government which has promised in the America Jobs Plan to provide tax credits and subsides for the purchase of such vehicles. The automakers can then see the sales of electric vehicles soaring. Consequently, Biden proposal for fuel economy standards will not only influence the energy sector, but the car industry too.

As we know the emission standards set by Obama were then offset by the Trump' presidency. The car industry has benefited from Trump standards, but now the business seems to be divided into two parts: on one hand traditional automakers are starting to move on the development of electric cars, on the other hand electric automakers are already establishing their role on the market and taking advantage. Therefore, a deep analysis of the impact on the green car industry is key for understanding where automakers will move their investments and attention.

Biden has stated that he aims at even increasing the limits imposed by his colleague and ex-president Barack Obama. The republican president has promised a total expenditure of $400 billion for the transition to clean

[109] Katie Arcieri, 2021.
[110] Ibidem.

energy, which includes also electric vehicles and batteries.[111] Green car producers will benefit also from the strong investment in infostructures expected from the democratic candidate' agenda.

Electric automakers will also benefit a probable increase in demand incentivized by the tax credit provided to electric car buyers of $7.500. Biden has also said he wants to set up a "cash for clunkers" rebate program that would encourage Americans to trade their older, polluting cars for new electric vehicles, which can give a further push to green car demand.

So, looking at the above reported information, it is possible to state that electric car industry is an already established business with a strong growth potential, that will see a probable boost in its development under the next government.

Another opportunity this industry has is represented by the approach Joe Biden has towards the international trades. The consumer goods industry has suffered during the pandemic due to the net decrease in exports, and a hostile trade policy like the one of the ex-president Donald Trump I think would not benefit this sector. Indeed, the trade war between China and USA has continuously influenced the market and the different industries in the last years.

During his mandate Trump has managed international trades on the wave of his motto "America first". He declared that as the president of United States he would have penalized all the countries that unfairly taxed US products or those who have a strong trade deficit.

On the other hand, Biden wants to carry out a more friendly policy, stating that he is intentioned to put at first US middle class and invest strongly into innovation and research. Biden said that intellectual property can be defended against China by alliances and coalition instead of putting unilateral tariffs, giving space to less aggressive expectations about his intention of managing international relations.

The position of the new elected president Joe Biden, however, is not so different from his republican rival' one. Donald Trump' slogan "America first" has been changed into "Buy American" by the democrat Joe Biden. This slogan aims at communicating the intention of focusing on the US economy first, aiming at recovering the damages generated by the strong crisis created by the virus emergency.

The signature of the commercial agreement among the 15 Asian countries, China included, has represented a key event for affirming the trade policy of the two candidates. Indeed, while Trump has adopted an international trade

[111] Reuters staff. 2020. "Factbox: What impact would a Biden presidency have on the auto industry?". *Reuters,* October 30, 2020. https://www.reuters.com/article/us-usa-election-autos-biden-factbox-idUSKBN27F2EX

strategy more based on protectionism during his mandate, president Joe Biden has clearly declared his intention of favoring American market through the improvement of international trades and treats.

"I'm not looking for punitive trade. The idea that we are poking our finger in the eyes of our friends and embracing autocrats makes no sense to me," Mr. Biden added. "We make up 25% of the world's trading capacity, of the economy of the world. We need to be aligned with the other democracies - another 25% or more - so that we can set the rules of the road"[112].

It seems then that while with Trump the made in US consumer goods were favored by the attempt of decreasing the competition of other countries with Biden this industry will have a strong support from the government but also an opening to the international trades.

Consumer staples

The consumer staples industry has been the most stable in the past decade but has not performed very well, reporting returns lower than the S&P 500 during the presidency of Obama and Trump. In the first chapter, I have identified as main drivers of the S&P 500 Consumer Staples index' returns the public tax recipient and the PCE.

Consequently, to evaluate the behavior of the interested index I have estimated a regressive model using the government recipient and the Private Consumer Expenditure Index as explanatory variables. In the following table are reported the statistics for the estimated regression:

[112] BBC. 2020. "Biden vows to set 'rules of the road' on trades". *BBC,* November 17, 2020. https://www.bbc.com/news/business-54958299

S&P 500 Cons. Staples	
Regression Statistics	
Multiple R	0,953056
R Square	0,908315
Adjusted R Square	0,907807
Standard Error	50,26567
Observations	364

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	9036277	4518138	1788,202	4,95E-188
Residual	361	912116	2526,637		
Total	363	9948393			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-132,372	7,711113	-17,1664	1,03E-48	-147,537	-117,208	-147,537	-117,208
Recipient	0,000116	4,17E-05	2,775541	0,005798	3,37E-05	0,000198	3,37E-05	0,000198
PCE	0,045967	0,001124	40,89336	1,47E-137	0,043757	0,048178	0,043757	0,048178

Table 3.7: Regression statistics Consumer Staples.

Also in this case, for both the variables the t-test for the significance of the relation between the outlay the PCE explains a significant relation among the variables with a confidence level of 99%. The model fits the variable pretty well with an R^2 of 0,908. It means that the 91% of the variability of the index is expressed by the regression.

Please appreciate the comparison between the estimated level of the index and its true evolution:

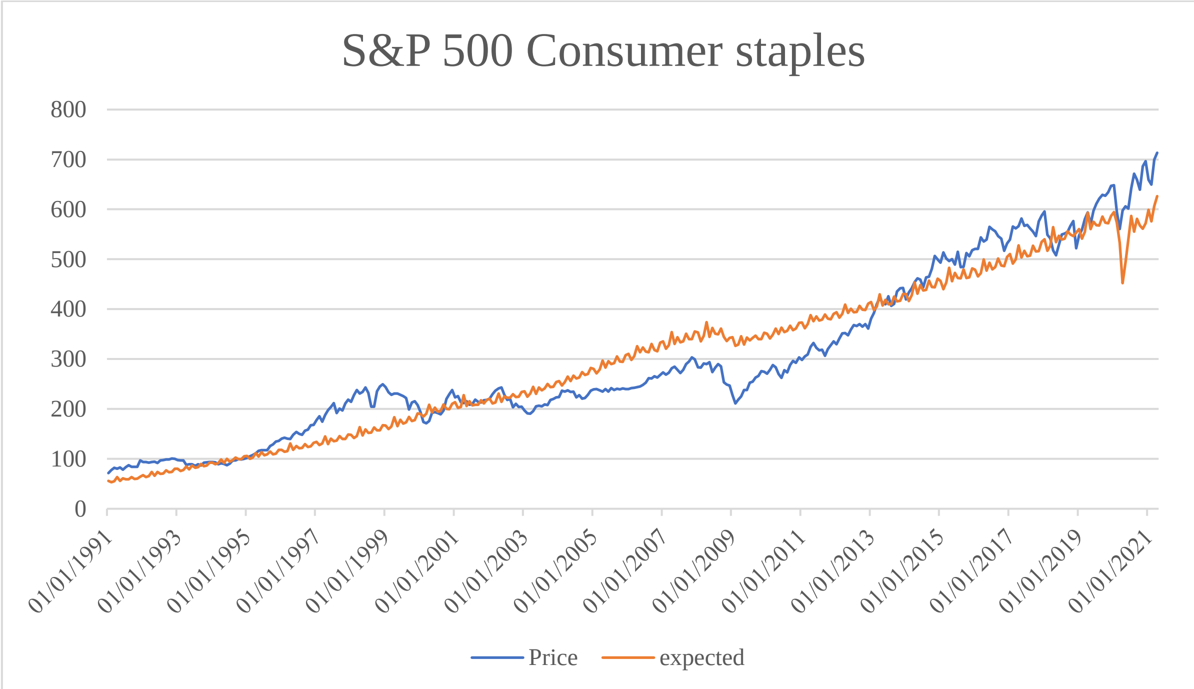

Figure 3.5: S&P 500 Consumer Staples estimation.

In the graph it is possible to see that the S&P 500 consumer staples is better priced by the market given the current macroeconomic environment and the expectations from the Biden' rescue plan.

In the following table are provided the main elements that stood out from the sentiment analysis that will help to analyze the possible future evolution of the Consumer staples industry:

Consumer Staples industry summary	
Opportunities	Tourism
Threats	Alcohol
Polarity	0.054
Polarity single companies	0.082
% Polarity tweets	30,9%
Main macro variable	Private expenditure, Recipient
% Positive news	71%

Table 3.8: Comsumer Staples industry summary.

The biggest opportunity of the industry is also in this case the reopening of the countries for the tourism. The reopening of the boarders and the touristic activities will probably impact as well on the consumer staples industry as it can do on the consumer discretionary. While the consumer discretionary can enjoy from the reopening of hotels and travels in the consumer staples activities like restaurants and food delivery companies will probably see their sales increasing.

In the last months of 2020 indeed, when the virus was starting to spread for the second time, the monthly retail and food services trades have started to decrease until reaching in December 2020 the level of $540.92 billion, falling by 0.7% with respect to the previous month.

In the following chart is possible to see the monthly retail and food services trades since the beginning of 2020:

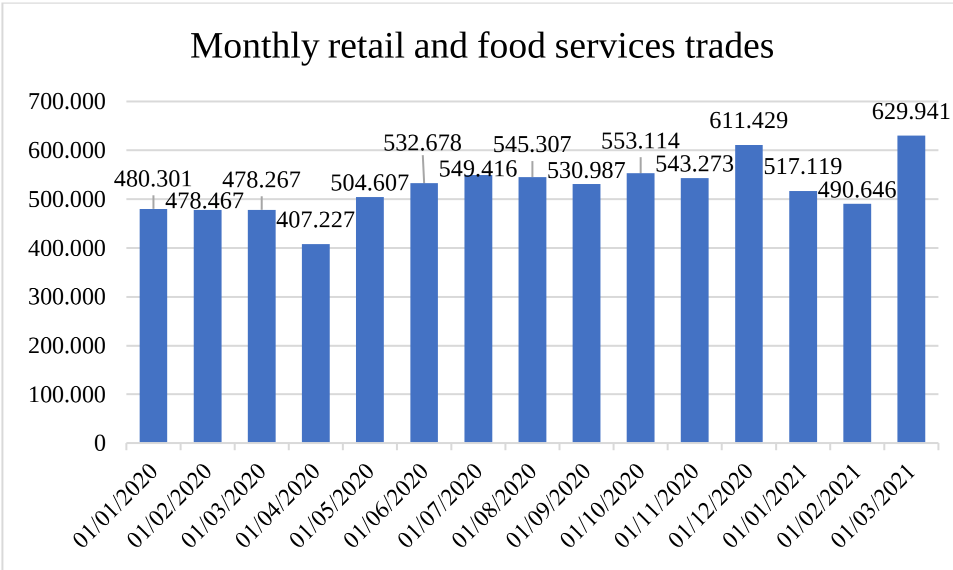

Figure 3.6: Monthly retail and food services trades

It is evident the increase that sales are experiencing since March 2021, when the government started to open again the activities.

Beyond the higher liquidity on the market consumers are expected to increase their expenses also thanks to the reduction in the unemployment rate. The creation of jobs and the increase in the minimum salary will make the effects of the relief package even more evident.

Matthew Shay, the CEO of the National Retail Federation has explained his support behind Biden's proposed stimulus plan, saying in a January 14 statement that "we support providing critical government assistance in the form of direct payments to families and individuals whose lives have been disrupted, further aid for small businesses across the country, and tools to keep businesses open and the economy growing[113]."

[113] Katie Arcieri, 2021.

"For a lot of individuals in that income bracket, these checks are likely to go for very basic necessities — rent, food, utilities," he said Product categories such as auto parts, home goods, electronics, food and discount items could see a particular increase in demand.

Thereafter food retailers, both restaurants and markets are expected to perform better in the following period. Forte, of D.A. Davidson, said that is much more probable that the majority of the funds will be received by lower income people. This means that discount retailers like Walmart, Dollar General and Dollar Tree Inc. could be the winners from the rescue plan[114].

In confirmation of this Doug McMillon, the CEO of Walmart, said in a first-quarter conference call that the stimulus spending provided a sales boost in categories such as apparel, televisions, video games, sporting goods and toys[115]. The same words were then said by the CEO of Best Buy Corie Barry, during a first-quarter call, vaunting an increase in the sales probably due to the spending of stimulus package money from customers.

Before the return to normality also home-related categories of goods can be preferred by consumers; thereafter, companies like Home Depot and Lowe's Companies that have already benefited from the pandemic thanks to their online commerce platform can see an increase in the revenues in the short term.

Kearney's Thomas added that consumers do remain price sensitive as they buy more items during fewer trips. "I think they will still want to find the best bang for their buck, like they are finding the right balance of function and fashion," she said. "We have so many options today, people can usually find that[116]."

The only treat at the moment of the consumer goods industry is the alcohol producers and companies that work in that field. In the short term with the closing of some activities and with the restriction on the alcohol consume due to the danger it can create for the spread of the virus the field is in a difficult environment. In the near future however, even if the situation may get better there still is the regulatory risk, with the U.S. government that in some states is adopting a regime that strongly limit the alcohol consumption.

In conclusion, the expectations on the consumer goods are positive, expecting however in the short term a correction in the price of the consumer discretionary stocks. In the long run instead, both the industries can perform very well, with the consumer staples industry that in my opinion is one of the most promising industries for the next years.

The polarity score of the industry is positive, with a 71% of news reporting positive content. The tweets on the four most capitalized companies also displayed really positive feedback and the prospects for these companies

[114] Ibidem
[115] ibidem
[116] Katie Arcieri, 2021.

are good, especially Walmart and Home Depot. Consequently, in the following period we expect a positive performance of the industry given the Biden policy.

Technology

In the last decade, the tech industry has been by far the best performer on the financial markets. The weight of these companies on the S&P 500 has constantly increased and the stock prices soared to extreme levels. Tech companies have also been one of the major donors for the electoral campaign of the democratic president Joe Biden, so here we analyze the possible impact of the election on the industry.

In the first chapter we have seen that the variables the S&P 500 information technology is more correlated with is the US Dollar index and the money supply. This data defines the IT industry as an industry that tends to be under the attention of foreign investors and that is strongly subject to the monetary policy of the central banks.

Consequently, in order to define an explanatory model for the valuation of the IT sector, here we provide the results obtained through the computation of a regressive model with the US dollar index and the M2 money supply as explanatory variables:

S&P 500 IT	
Regression Statistics	
Multiple R	0,911636
R Square	0,83108
Adjusted R Square	0,830174
Standard Error	186,7398
Observations	376

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	63994589	31997295	917,5703	9,2E-145
Residual	373	13007168	34871,76		
Total	375	77001757			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-1300,42	91,22022	-14,2558	4,1E-37	-1479,79	-1121,05
USD	11,45122	0,96283	11,89329	7,1E-28	9,55796	13,34447
M2	0,096927	0,002316	41,85046	5,6E-143	0,092373	0,101482

Table 3.9: Regression statistics S&P 500 Information Technology.

It is possible to see that also in this case the explanatory power of the model is high, with the R^2 at the level of 0,83. The t test of both the variables explains a significant relation between the USD, the M2 and the S&P 500

Information Technology index. In the following graph is provided the comparison between the estimated price of the index through the model and the effective behavior of it:

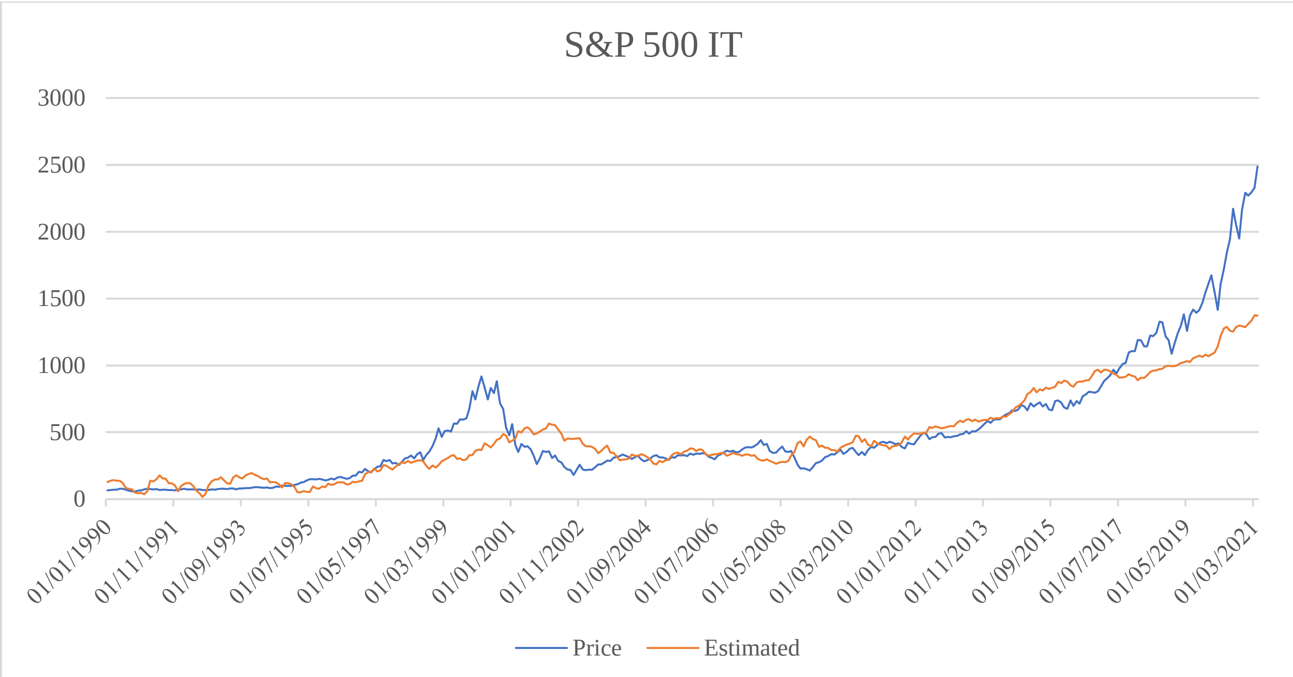

Figure 3.7: S&P 500 IT estimation.

The S&P 500 is strongly above the fundamental value estimated by the model. It is possible to see that while after the crash of March 2020 the information technology stocks were returning to their fundamental value, after the stimulus of the FED their price have started to skyrocket.

At the moment thereafter the information technology industry seems to be in my opinion overpriced, with a political environment that does not favor this kind of companies. To better understand the real valuation of the tech companies with respect to the fundamental value I will also analyze the NASDAQ composite index valuation.

However, in the S&P 500 Information Technology index are not included tech companies like Google and Facebook, considered instead in the communication service industry. Thereafter, to provide a more detailed analysis of the tech industry I have analyzed also the NASDAQ composite index. In the following table it is possible to see the results of the regression run between the NASDAQ index and the US Dollar index and the CPI:

NASDAQ Composite	
Regression Statistics	
Multiple R	0,942786
R Square	0,888846
Adjusted R Square	0,88825
Standard Error	866,0437
Observations	376

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	2,24E+09	1,12E+09	1491,351	1,2E-178
Residual	373	2,8E+08	750031,7		
Total	375	2,52E+09			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-6204,92	423,0522	-14,667	8,92E-39	-7036,79	-5373,05
US Dollar Index	52,08216	4,46532	11,6637	5,17E-27	43,3018	60,86252
CPI	0,580109	0,010741	54,00826	2E-178	0,558988	0,601229

Table 3.10: Regression statisitcs NASDAQ Composite.

As it is possible to see also this regression shows very satisfying results, with the R^2 at the level of 0.89. The t test on the two variables also explains a significant relation between the USD, the CPI and the level of the NASDAQ composite index.

In the following graph it is plot the comparison between the price of the index estimated by the model and the real value of the IXIC:

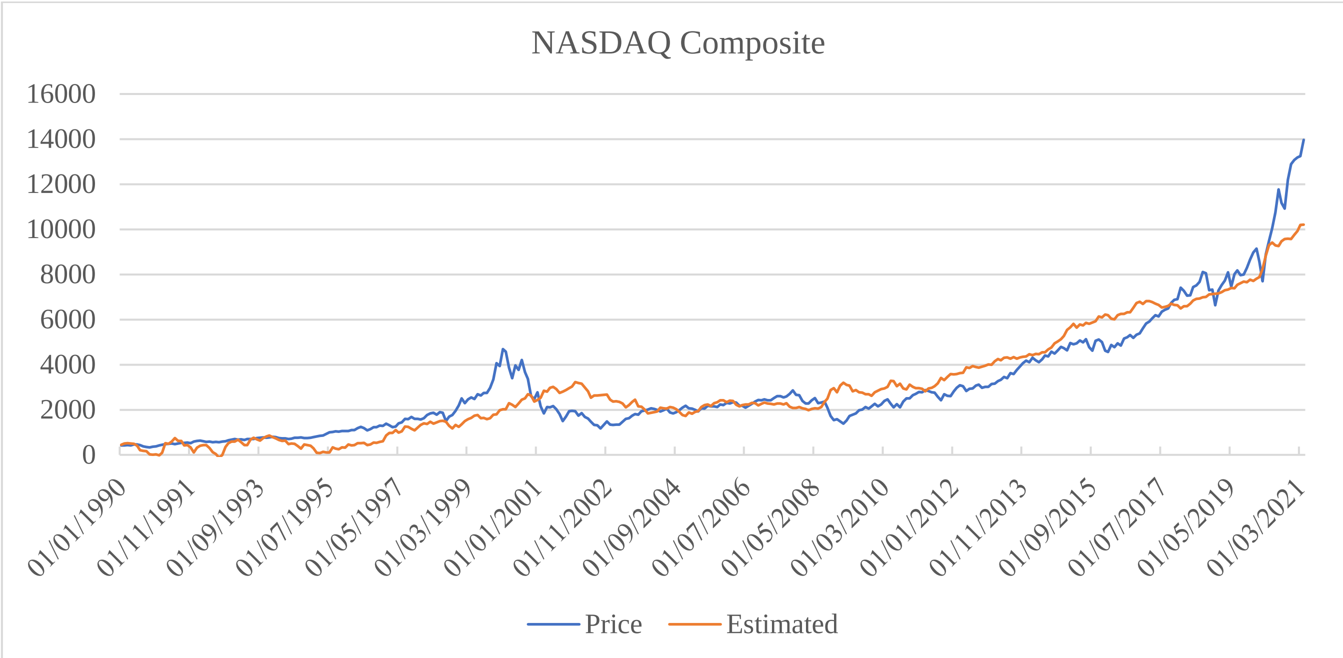

Figure 3.8: NASDAQ Composite regression.

It is possible to see that also in this case the index is significantly above the estimated level. At this point, given the threat to the industry and the extreme levels these stocks are trading at it is useful to analyze if we are in presence of a stock bubble.

In order to understand that we will provide the analysis run by the CEO of the hedge fund Bridgewater Ray Dalio[117]. The indicator proposed by Dalio is based on some factors that have already been used in the second chapter for analyzing the current value of the S&P 500. These factors are:

1. How high are prices relative to traditional measures?
2. Are prices discounting unsustainable conditions?
3. How many new buyers (i.e., those who weren't previously in the market) have entered the market?
4. How broadly bullish is sentiment?
5. Are purchases being financed by high leverage?
6. Have buyers made exceptionally extended forward purchases (e.g., built inventory, contracted forward purchases, etc.) to speculate or protect themselves against future price gains?

Each of these six influences is measured using a number of stats that are combined into gauges. The analysis is run on all the single stocks of the market. Then the results obtained for each stock are combined into indices grouped by securities and then for the entire market.

[117] Ray Dalio. 2021."Stock market bubble?". Published on February 02, 2021. https://www.bridgewater.com/research-and-insights/ray-dalio-stock-market-bubble

The statistical values obtained for each stock and index are then classified into percentiles and on the basis of the level of them each of the six influences expresses a probability of extremely high levels with an index that ranges from 1 to 4 with the following interpretation:

1. “No Bubble”
2. “Somewhat frothy”
3. “Frothy”
4. “Bubble”

In the following table is reported the level of the six indices for the tech companies:

Current Conditions Compared to Previous Bubbles

		Roaring 1920s	Dot-Com Bubble	2007	Today: Total Mkt	Today: Emerging Tech
1	Prices Are High Relative to Traditional Measures	Bubble	Bubble	No Bubble	Somewhat Frothy	Frothy
2	Prices Are Discounting Unsustainable Conditions	Bubble	Bubble	No Bubble	No Bubble	Frothy
3	New Buyers Have Entered the Market	Bubble	Bubble	Frothy	Frothy	Bubble
4	There Is Broad Bullish Sentiment	Bubble	Bubble	Frothy	Frothy	Bubble
5	Purchases Are Being Financed by High Leverage	Bubble	Bubble	Bubble	Somewhat Frothy	Bubble
6	Buyers/ Businesses Have Made Extended Forward Purchases	Frothy	Bubble	Bubble	No Bubble	Somewhat Frothy

Table 3.15: Ray Dalio’ bubble indicator.

It is possible to see that while the analysis does not evidence a situation of extreme levels on the total market it does predict a bubble for the tech stocks.

The inflation of tech stocks prices happened because information technology stocks had been seen by the investors as a sort of safer investment. With the FED lowering the interest rates and the amount of liquidity inflowed in the market the tech stocks have been seen as an alternative to the low performing bonds.

Furthermore, with the expectation on inflation that forecast a period of significant growth in prices stocks are seen as a safer investment that can provide a shield to the effect of inflation on nominal interest rates. In the following table is provided the synthesis of the sentiment analysis run in the second chapter:

Information Technology summary	
Opportunities	Market trend
Threats	Regulation
Polarity	0.06
Polarity single companies	0.10525
% Positive tweets	21,675%
Main macro variable	USD
% Positive news	85%

Table 3.16:IT summary.

Despite the estimated overvaluation of tech companies, the sentiment towards the industry still remains highly positive, with e very significant percentage of positive news and a very high polarity score for both the single biggest companies and the whole industry.

The trend on the sector is also very promising, with technological goods that are becoming now always more essential for the lives of people, and with the expenditure of individuals for tech devices that has soared in the last years.

However, as it is shown the biggest threat for the technology industry is represented by the regulation. At the moment the democrats have the control of the House of Representatives but a weak majority in the Senate. This means that the regulation initiatives of the Democrats are strongly probable to be taken into work, but experts say that an eventual change in tech regulation will take a long time to be really perceived by the economy. Furthermore, analysts do not think that there is a high interest in Washington to introduce limitations to the tech industry.

Leaders in the tech industry may see the Biden transition with both, optimism and trepidation: if on one hand the democrats want to expand federal oversight and use the Justice Department to pursue more antitrust litigation; on the other hand, it seems to be strongly in contact with these firms, with former Apple, Facebook and Google officials on Biden' tech advisory board, and a number of Amazon executives also listed on his agency review teams. Google, Microsoft, Apple, and Amazon have in fact all financed the blue party, in order to create a more "tech-friendly" environment and to keep in strict contact with the law makers in the case of a democratic victory.[118]

[118] Dan Patterson. 2020. "Here's how Biden will work with tech". *CBS,* November 09, 2020. https://www.cbsnews.com/news/biden-administration-big-tech-companies/

While smaller companies face a higher regulation risk at the moment, big tech companies are instead expected to not suffer a lot from the legislation initiatives of Joe Biden, thanks also to their strong influence on the White House. During the commitments made during the electoral campaign the candidate Joe Biden expressed some intentions for regulatory changes and given the majority in the congress the regulations will probably be passed in the Senate.

In any case, the first intention for the President is probably the regulation of the antitrust for the tech giants. Both, the republican and the democratic parties indeed in the congress have expressed the intention of regulating the anticompetitive effects of the tech giants. Last year the Democrats released a report to the House Judiciary Antitrust Subcommittee warning about the excessive concentration of digital companies. In 2020 the Department of Justice also filed a suit against Google blaming the company for monopolistic practices, while now the Australian government is accusing the same company of the violation of privacy on the data collection.

The Biden Department of Justice has indeed already identified different suits to regulate this context and will probably take new actions for regulating the competitive environment of the same[119].

The threat of regulation for the tech giants is not a new issue for the industry. During the Obama mandate the tech companies were accused of anticompetitive labor agreements, with the specific guilt of stagnating wages and poaching the executives among them.

This regulatory line was then continued by the republican president Donald Trump who filed on the 10th of December 2020 his first criminal wage-fixing prosecution, and in January of 2021, weeks before the inauguration, it brought the first criminal indictment for alleged “no-poach” agreements among competitors[120].

It is then probable that the Biden administration will continue with the regulation of the labor market for allowing workers to better compete for jobs and wages with the tech companies. Biden's recent nominations of Lina Khan and Tim Wu for significant positions in the administration seemed to indicate that he is serious about scrutinizing behemoths like Amazon, Apple, Facebook, and Google[121].

Furthermore, it is also enough plausible to see the Biden administration strengthening the fintech regulation after the incredible increase of the number of people able to invest on the financial markets. The fintech companies can already start to understand which may be the areas of major regulation for their offered services. For example, during his electoral campaign Joe Biden has clearly expressed the intention of increasing regulation on

---

[119] Jack Theis. 2021. “What Joe Biden means for the tech industry”. *Builtin,* March 02, 2021. https://builtin.com/operations/biden-tech-policies.

[120] Jones day. 2020. “DOJ Brings First Criminal Charges for Wage Fixing”. *Jones day,* December 01, 2020. https://www.jonesday.com/en/insights/2020/12/doj-brings-first-criminal-charges-for-wage-fixing

[121] Lauren Feiner. 2021. “Biden is loading up his administration with Big Tech’s most prominent critics”. *CNBC*, March 09, 2021. https://www.cnbc.com/2021/03/09/biden-loads-administration-with-big-techs-most-prominent-critics.html

cryptocurrencies and to implement initiatives that will allow minority social classes to get access to banking products.[122]

However, in my opinion what is important for the economic landscape in which these companies operate is the data privacy and cybersecurity. The Biden administration is putting the data privacy as one of the main priorities, with a probable very strong impact on the cybersecurity companies.

In recent times Democrats and Republicans in congress have pushed a lot for the protection of federal digital data. Furthermore, the presence of Kamala Harris as vice president will put the data security legislation in a sort of natural regulatory environment, given the strong experience of the vice president when she was California's attorney general and, in the Senate[123].

In conclusion, despite the positive sentiment towards the industry, my expectations for the tech industry are not positive. The price of stocks results to be overvalued and for some stocks it is also probable the presence of a bubble. Furthermore, despite the incredible positive market trend in which such companies are the economic environment for them has become more uncertain with the election of Joe Biden due to the regulatory policy of the democratic president. The forecast from this analysis is then a correction in the prices of the stocks of such companies.

Financials

The financial industry in cases of crisis is the one that suffers the most in the short term, given the strong dependence the industry has on the liquidity. After the start of the pandemic in February 2020 in the United States of America the expectations on the financial industry have indeed become significantly negative. The financial institutions have suffered from the crash of the financial market and the lack of liquidity on the market.

The banking sector was expected to face a situation worse than the one of the 2008 and without the intervention of the FED the entire financial market was thought to face big struggles for coming back to the previous levels. However, at the end of the pandemic the real loss suffered from the industry were lower than expected and so the confidence of investors turned to positive for the financial companies.

The stimulus of the Federal Reserve has strongly favored this sector, and in the first chapter indeed, we have seen that the highest correlations were with the unemployment rate, the M2 and the recipient of the government. Thereafter, I have estimated a three factors model to explain the behavior of the S&P 500 Financials. In the following table are reported the results of the regression:

---

[122] Jack Theis, 2021.

[123] Peter Jacobs, Hannah Pugh, and Jasmine Wang. 2021. "How Should the United States Protect Data?". *The regulatory review*, March 13, 2021. https://www.theregreview.org/2021/03/13/saturday-seminar-how-should-united-states-protect-data/

S&P 500 Financials	
Regression Statistics	
Multiple R	0,790626
R Square	0,625089
Adjusted R Square	0,622065
Standard Error	78,77018
Observations	376

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	3848395	1282798	206,7449	6,88E-79
Residual	372	2308164	6204,741		
Total	375	6156559			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	351,526	17,62072	19,94958	9,86E-61	316,8773	386,1747
M2	0,016183	0,001371	11,80437	1,57E-27	0,013487	0,018878
UR	-38,1613	2,40776	-15,8493	1,36E-43	-42,8958	-33,4268
Recipient	0,000174	6,47E-05	2,685037	0,007577	4,65E-05	0,000301

Table 3.17: Regression statistic S&P 500 Financials.

In this case we can see that the R squared is lower than the ones of the other estimated models, even if it is still a good level the model does not explain very efficiently the variability of the S&P 500 Financials index. In the following graph it is possible to see the comparison between the real value of the index and the one estimated with the model:

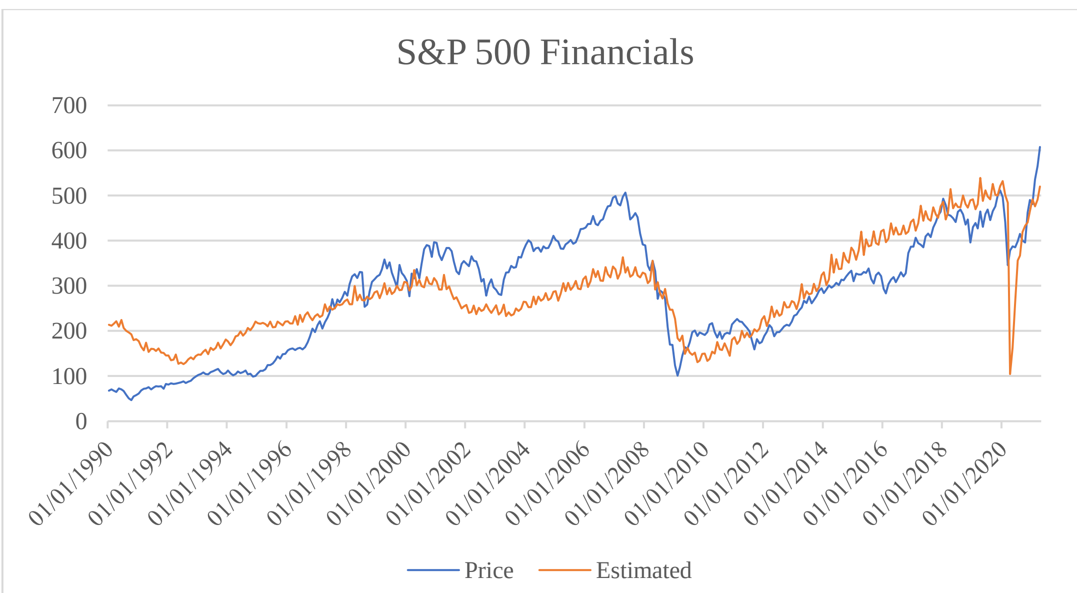

Figure 3.9: S&P 500 Financials estimation.

It is possible to see that the model had predicted a complete crash in the crisis of March 2020. The reason is the spike in the unemployment rate. What is significant in the model indeed is the relation that it explains between the financial industry and the analyzed variables.

The negative relation with the unemployment rate indeed is a clue of the fact that usually what makes the market crashing is the debt. When people lose their jobs and so they do not have enough liquidity for repaying the debt the financial system goes in troubles. The lack of liquidity in the U.S. is a strong problem, given the strong dependency of the system towards the credits.

The relation with the M2 is instead quite intuitive and is more and less the opposite of the relation with the unemployment rate. When the market receives a lot of liquidity instead the financial system has got enough resources for functioning.

The relation with the receipts is instead less clear. The receipts of the government are basically made up by taxes on corporates and individuals. As we have seen in the first chapter when the government increase the taxes on corporates the effect is a better performance of the financial market due to the stimulus the government can provide to the economy. This means that the financial industry tends to benefit from the investments of the government, and with the American Jobs Plan of Joe Biden in the following period then also the financial industry is expected to perform better.

In the following table are reported the results of the sentiment analysis:

Financials industry summary	
Opportunities	Rescue plan
Threats	China competition
Polarity	0.0543
Polarity single companies	0.0984
% Positive tweets	56,6%
Main macro variable	M2, UR, Recipient
% Positive news	55%

Table 3.18: Financial industry summary.

In the sentiment analysis of the news indeed the biggest opportunity that has been highlighted for the financial industry is the rescue plan proposed by Biden. In this case the effect on the financial industry can be double. In the tweets analysis we have seen that the rescue plan word was being replaced by the word ‘jobs plan’. This means that the financial industry will enjoy not only an increase in the amount of liquidity on the market but also an expected decrease of the unemployment rate, which will both have a positive impact on the sector.

However, financial industry can also be hit from the increase in regulation proposed and strongly supported by democrats. If the Trump presidency has been beneficial to financials because of his deregulation policy in this environment the industry may suffer from the excessively expansionary monetary policy proposed by democrats, and from the intention of Biden-Harris administration to overturn the deregulatory agenda implemented by their predecessor to further strengthen consumer and workers protection.[124]

Financials would have probably had an easier life with the regulation issue if Trump had been reelected. The republican candidate indeed had clearly proposed in his agenda to loosen the Dodd-Frunk rules keeping his politics of deregulation, while Joe Biden wants instead to strengthen them. An increase on these rules would mean for banks lower freedom in capital allocation, higher capital requirements and security margins, more proprietary trading and reducing derivative investments. These proposals will of course increase consumers' protection, but at the same time will decrease operativity freedom for financial players, reducing their profit capability.[125]

During the Trump administration the financial industry was expected to perform well due to the deregulation put into place by the republican president, however, this has not happened. Thereafter, the regulatory approach of the government is not sure to be a negative factor for the sector.

In the political agenda of the new elected president Joe Biden the regulation of the financial industry is not a priority. However, given the important role banks are having in the recovery phase of the American economy it does not exclude that also the financial industry will be impacted by the new government initiatives.

At the moment according to a study proposed by Sherman & Sterling the financial industry may be subject to regulation in the following fields:

- ❖ Additional COVID-19 Related Actions
- ❖ Consumer Protection Related Matters
- ❖ FSOC's Approach to Nonbank Financial Institutions
- ❖ Money Market Regulation
- ❖ FinTech Scrutiny
- ❖ Credit Access and Housing Finance Reform
- ❖ Climate Change
- ❖ Bankruptcy Policy

---

[124] Edelman. 2020. "Planning for a Biden presidency: impact on financial services". *Edelman*, 2020.. https://www.edelman.com/us-election-2020/sector-implications/financial-services

[125] Michael Hirsh. 2020. "Watch out Wall Street: Biden may be coming for you". *Foreign policy magazine,* November 13, 2020. https://foreignpolicy.com/2020/11/13/watch-out-wall-street-joe-biden-financial-banking-regulation/

For what concerns the Covid-19 related action of course the main topic is the relief plan and the investments the government will do when implementing it. The stimulus package of the Democratic government will strongly go in support of the small companies and increase the wages of individuals. As we have seen this is supposed to be a positive factor for the financial industry which performs better when the market is not suffering liquidity' lacks.

Furthermore, it is probable that in implementing regulation for consumer protection matters the legislator will put greater interest in consumer lending practices, use of "disparate impact" analysis in enforcement, and greater scrutiny of artificial intelligence (AI), machine learning (ML), and algorithms in credit underwriting practices. The Biden Administration could also pursue legislation to limit predatory interest rates on non-residential consumer lending and seek to reverse the current administration's efforts to remove regulatory burdens applicable to payday lenders and debt collectors.

The Financial Stability Oversight Council (FSOC) is expected to have a much more central role during the Biden' mandate. The FSOC will likely revisit its nonbank SIFI designation priorities and procedures by considering the growth of nonbanks in the mortgage market and in wholesale short-term funding; the asset management industry's increasing significance to financial markets and the broader economy; and various FinTech issues, including "stablecoins" and payments.

After the liquidity crisis experienced in the pandemic of 2020 a reform on the money market regulation is also expected. The Financial Stability Board (FSB) has set up a steering group to "better understand the role that vulnerabilities stemming from nonbank financial institutions played in those events and to define a work program to address such vulnerabilities during 2021. The regulation will probably be driven by the aim of avoiding short term credit crises, reducing the level of credit exposure institution can have.

The last meaningful expected regulation from this government is instead the Credit Access and Housing Finance Reform. Biden has pledged to strengthen and expand the Community Reinvestment Act, the 1977 law that requires banks to meet the credit needs of their communities, including low- and moderate-income neighborhoods. President Biden aims at expanding the CRA regulation also to non-banking and fintech lenders.

The provision of basic banking services through the U.S. Postal Service has generated attention in the past year. Postal banking, which was identified in a 110-page policy document released by the Biden-Sanders Unity Task Force prior to the Democratic National Convention this summer, is part of a larger effort to expand equitable access to banking and financial services, especially for "unbanked" and "underbanked" communities that may currently lack access to physical banking locations.

Biden is also considering a plan for using Fannie Mae and Freddie Mac, two government sponsored enterprises, for expanding homeownership. In addition, Biden, as a candidate, had proposed reversing Trump-era policies that weaken fair lending and fair housing protections for homeowners.

Summing up the impact of the Biden presidency on the financial industry may come from two different factors, the regulation, and the rescue plan. The implementation of the rescue plan is expected to have positive consequences on the financial industry, while the impact of the regulation is still not very clear. On one hand Biden is expected to increase the standards of activity of these companies, which will surely reduce the freedom in their activity. On the other hand, this would increase the trust of investor in a sector that has strongly suffered from the financial crisis.

As highlighted from the regression instead, the Biden policy will impact in a positive way for all the three variables analyzed. The rescue plan is indeed expected to have as main consequence the increase in the money supply and the decrease in the unemployment rate, which will both be beneficial to the financial industry. At the same time the new elected president has clearly stated the intention of increasing the tax rate, so also from the recipients the S&P 500 Financials can see a boost in valuation.

The sentiment on the industry indeed is slightly positive; however, in my opinion given the prospects of the banks and the imminent rescue plan investments the expectations for the financial industry in the following period remains positive.

As we have seen in the second chapter the sentiment on the industry is slightly optimistic, thereafter in my opinion the possible evolution of the S&P 500 Financials can be positive but with returns that will not overcome the S&P 500. Furthermore, from the proposed analysis I believe that banks are supposed to be the best performers in the field.

Energy

This industry is in front of a very uncertain future: while Trump was more focused on the development of old energy resources in favor of economic performances, Biden has clearly revealed his intention to reach the zero-carbon emission by 2050. On the first day of presidency the president had indeed retaken part to Paris Agreement, which Trump resigned from.

This uncertainty has strongly penalized the energy industry, which is not coming from an easy period. It has been among the worst performing sectors of the past decade, driven in large part by low crude and natural gas prices and analysts expect some volatility until uncertainties, mostly pertaining to the oil price outlook, ease.

In this environment most energy risks will stem from regulatory policy rather than congressional action, according to analysts[126]. Regulation of the oil and gas industry will likely increase, though it will take time. Many states rely on the significant revenues from oil and gas production, a reality that may make restrictions on the industry more difficult under current economic conditions.

Still, renewable energy, including wind and solar, is probably the biggest energy winner, according to UBS[127]. Natural gas, meanwhile, will remain an important bridge fuel and relatively cleaner alternative to coal for U.S. power generation, which should limit risks.

With the change in presidency the perspectives for the Energy industry are not very prosperous. In the following table is provided the summary of the sentiment analysis carried out in the second chapter:

Energy industry summary	
Opportunities	Economy re-openings
Threats	Renewable transition
Polarity	0.045
Polarity single companies	0.06275
% Polarity tweets	18,45%
Main macro variable	Oil, CPI
% Positive news	37%

Table 3.11:Energy industry summary

The polarity score of the news is negative and the percentage of positive news is low. Furthermore, with the transition in presidency the movement for the renewable energy will push the industry at even lower levels. In the following table are provided the statistics for the regressive model estimated for the S&P 500 Energy index on the Oil price and Consumer Price Index, which were the most relevant variables highlighted in the first chapter to influence the price of the representative index:

[126] Jessica Menton. 2020. “What stocks could be the biggest winners and losers under a Biden presidency”. *USA Today*, November 09, 2020. https://eu.usatoday.com/story/money/markets/2020/11/09/joe-biden-stock-market-economy-stimulus/6165111002/
[127] Ibidem

S&P 500 Energy	
Regression Statistics	
Multiple R	0,94922
R Square	0,901019
Adjusted R Square	0,900489
Standard Error	57,25435
Observations	376

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	11130381	5565190	1697,708	4,68E-188
Residual	373	1222717	3278,061		
Total	375	12353097			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-271,909	17,31821	-15,7008	5,25E-43	-305,963	-237,856
Oil	3,850192	0,133002	28,9484	2,05E-97	3,588665	4,11172
CPI	2,05214	0,100756	20,36745	1,56E-62	1,854019	2,250261

Table 3.2012: S&P 500 Energy regression statistics.

Please appreciate in the following graph the comparison between the estimated price of the index through the model and the effective valuation of the same:

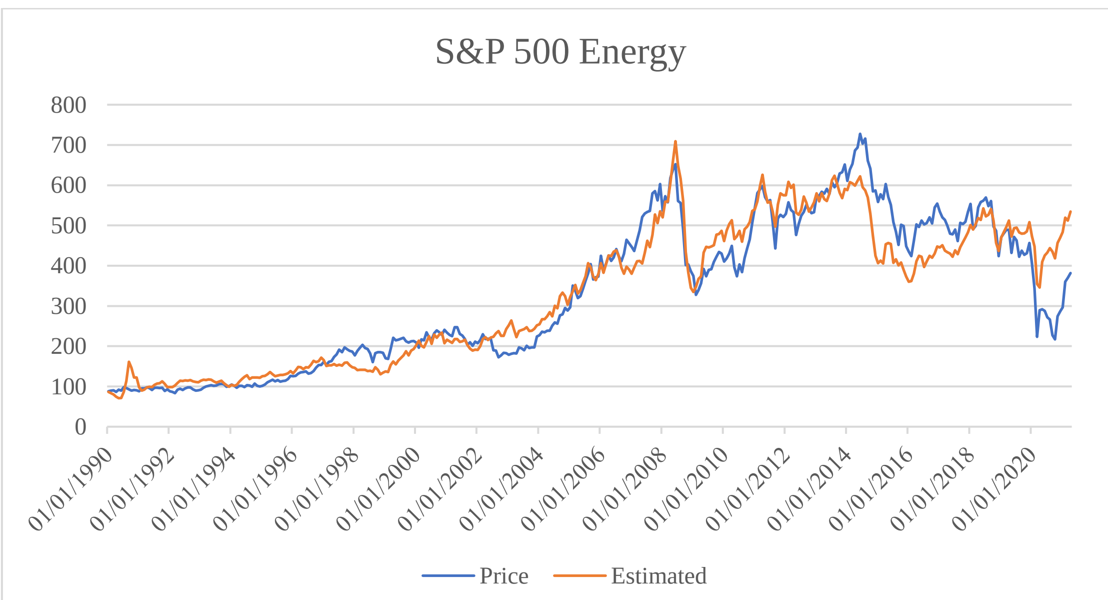

Figure 3.10: S&P 500 Energy regression.

As it is possible to see the market has already priced the expected downtrend of the Oil companies. The transition to renewable energy will reduce the demand for oil and in the long term it will even make the demand almost null.

Energy stocks tied to fossil fuels have underperformed the broader market recently, and this down trend is expected to be even stronger at the lights of the proposals of the democratic president. However, it is probable that oil industry will still have life under Biden presidency, since any efforts at sweeping changes by Biden could be limited because of the fragile state of the U.S. economy. Consequently, in the short term the oil industry is not expected to report very low performance.

Nevertheless, democratic party seems to give high attention on the issue of renewable transition. The candidate Joe Biden mentions several times climates changes in his plan, with his highest aim of making the US economy a clean energy economy at 100%. His main points are the followings[128]:

- Rejoin the Paris Climate Agreement, make climate change part of foreign policy, trade negotiations, demand a worldwide ban on fossil fuel subsidies.
- A carbon pollution-free power sector by 2035.
- Upgrade and modernize U.S. buildings and infrastructure.
- Zero-emissions public transportation options for all cities by 2030.
- $400 billion investment in climate innovation and research.
- Tax incentives/credits.
- 500,000 new EV public charging outlets and use federal procurement to increase demand for American-made, American-sourced clean vehicles.
- Methane pollution limits.
- No ban on fracking, but he does plan to ban new permits for oil and gas drilling on federal land and offshore.

President Biden has put his team to work reviewing dozens of actions taken by former President Donald Trump, aiming to reverse orders that he says harm the environment or endanger public health. The first initiative for the achievement of the green objectives is on the regulation of the emissions of cars, tracks, and SUVs. The president has promised to develop rigorous new fuel economy standards and to strongly incentive the transition to all light and medium-duty vehicles electric.

The plan should also concern the Oil and gas producers and distributors, increasing the emission and safety standards. President Joe Biden aims at reducing the oil and gas drilling at federal level and reduce the methane emissions from the production of oil and gas.

The methane leaks are a very dangerous factor for the warming phenomenon of the atmosphere. In 2018, with the policy of Donald Trump, the methane accounted for the 10% of the total nation’s gas emission according to the

[128] Athy Bussewitz and Tom Krisher. 2021. “Biden’s climate steps could have big impact on energy firms”. *AP News*, January 21, 2021. https://apnews.com/article/joe-biden-donald-trump-technology-public-health-climate-f8ba1a8e7982227fd27f492f22d771b4

U.S. Environmental Protection Agency. Of these emissions the oil and gas producer were responsible for the 30% in total[129].

The Democratic president Barack Obama had already increased during his mandate the standards for the methane emissions, requiring oil producers to inspect their plants and equipment at least twice per year and to adjust immediately any found leak. Trump instead abolished this rule.

Joe Biden has declared the intention of reintroducing the Obama' standards, despite the explicit opposition of BP, Chevron Shell and ExxonMobil due to their strong investments sustained for reducing the methane emissions in the last years. However, in my opinion if the new elected president will only reestablish the monitoring standards introduced by Barack Obama the impact will not be so big, given the strong capability these companies already have in reducing the polluting effects.

"Texas' Permian Basin is one of the largest sources of methane emissions in the world," noted Emma Pabst, an advocate with Environment Texas. "Reinstituting these rules will have a significant impact on our state's climate and environment. Requiring oil and gas companies to address methane leaks along the production line sends a clear message that our Environmental Protection Agency is no longer giving out free passes to pollute[130]."

What worries oil companies is instead the intention of Joe Biden of extending the regulation also to older wells. In this case the most hit companies would be the independent producers of oil, who, given the low quantity of oil barrels produced per day, would see their average production cost surge because of the high cost of compliance.

"We are very concerned about, especially for our members, our independent producers, that if there's a heavy Washington-bound approach that handcuffs the industry from finding solutions to this methane question, that would be a mistake," said Dan Naatz of the Independent Petroleum Association of America.[131]

As already said the new administration is aiming at going back to the path that Barack Obama was undertaking. While Trump had undone the standards introduced by his predecessor on the greenhouse gas emissions for automobiles, Joe Biden has promised to reintroduce them.

However, this initiative is supposed to take time before being effectively put into place. David Friedman, a former acting administrator of the National Highway Traffic Safety Administration, one of the agencies that sets such auto standards, said he thinks it will take until the 2023 model year for stricter standards from Biden to take effect. During the Trump administration the Obama-era standards for model years 2021 to 2025 were cut from 4,7%

[129] Ibidem.
[130] Ibidem
[131] Ibidem

annual fuel efficiency gains to 1,5%, weakening one of the nation's biggest efforts to fight climate change. By doing so President Trump contended that the measure would have made cars more affordable and safer.

However, if on one hand the automotive companies have already understood that the change is coming and have already developed the technologies for moving their products to electric, the oil producers are simply seeing the demand for their production cut without having alternatives. Also, in this case then depending on the time the new regulation needs to be effectively perceived the oil industry will see a reduction in their revenues.

If these initiatives will reduce the demand for oil, Joe Biden is also considering some action that will strongly reduce the future production of oil. The democratic president has indeed directed the Interior Department for stopping all the leasing for the oil and natural gas exploration in the Arctic National Wildlife refuge. Furthermore, in reviewing the Trump' rules, the president has also ordered a moratorium of 60 days on the new oil and gas drilling permits on the federal lands.

These seem to be only the initial intention of the new administration; it is indeed enough probable that given the initial actions of the president the drilling activity will be stopped on the whole federal lands. Today's initial suspension could give way to emergency suspension that lasts much longer, essentially ending lease sales," said Kevin Book.[132]

However, in my opinion this change will never happen as long as the U.S. economy will rely on the oil for its functioning. In the case of a stop in the production of oil indeed the United States will have to fill the gap between the production and the needs by increasing the imports of oil. In such a scenario country like Saudi Arabia and Russia will see their oil businesses soar due to the less stringent standard on the oil production.

Nevertheless, another clue of the fact that in the future the production of oil from the U.S. is destined to be significantly reduced during this presidency is the issue of the Keystone XL, a pipeline of 1,700-mile pipeline that was to carry oil from Alberta, Canada to the Texas Gulf Coast.

The pipeline project had a significant role during the Trump' mandate because it represented a dilemma between the global warming and the jobs creation. As soon as Biden has entered the white house the president has signed an executive order for stopping the construction of the pipeline. By doing so more than 1.000 jobs were given away; however, this explains the strong intention of the democrats to drive in the following four years the United States economy to be independent from oil.

[132] ibidem

If on one hand the initiatives of Biden can help the United States to achieve the ambitious aims of a clean economy on the other hand, they can create a strong economic damage by killing companies that have already suffered from the pandemic.

In my opinion in the short-term oil companies will still have a business and the impact of the Biden policy will not be very marked. However, the conclusion from this analysis is that during this administration the S&P 500 Energy will very likely perform badly, with a neutral return in the short term and a negative return instead in the long term.

Conclusions

In this work the macroeconomic and the sentiment analysis approach have been combined to understand the possible evolution of the United States of America' economy during the Biden' administration. The tweets' analysis has allowed for the identification of the main economic initiatives of the new administration, while the news' sentiment analysis allowed for the identification of the industries that have the highest expectations from the public investors and the identifications of the opportunities and threats for the same.

These results have been used to understand how the macroeconomic scenario will change after the implementation of the policy of the new administration. The analysis then of the future economic scenario, together with the sentiment analysis, have been used to assess the probable evolution of the S&P 500 and the single industries included in it.

From the analysis it has emerged that this policy is expected to impact positively on the Gross Domestic Product of the United States of America, forecasting a strong increase of the GDP in the following period.

On the other hand, the S&P 500 level instead explains a situation in which the market has already priced the expected recovery of the economy. In the following period indeed, the analysis highlights low expected returns from the financial market but positive performances for the real economy.

The final aim of the analysis is to identify how the single industries included in the S&P 500 will impact on the equity index in order to understand which sector will outperform the benchmark. From the results it has been highlighted that the health care industry and the consumer goods industry all have positive expectations.

Furthermore, I expect a change in the order of the performances: while during the Trump administration the IT sector has considerably overperformed with respect to the others in the analysis the S&P 500 Information Technology has resulted to be significantly overpriced. Despite then the positive environment the IT sector is in, I expect the consumer goods industry to be the winner from the Biden' administration, with a strong optimism on the consumer staples companies.

The financial industry is expected to positively perform thanks to the boost the liquidity provided by the rescue plan will give to the sector. However, the benefits of the monetary policy of the new administration can be offset by the regulatory approach proposed by the new elected president.

On the other hand, the energy industry is projected to be the main loser: the Biden' administration will surely support the transition process to clean energy sources and the global economic environment explains a remarkable downtrend for the sector.

Bibliography

News and magazine articles

- ABA' Editorial board. 2021. "Fed: Banks Demonstrated Financial, Operational Resilience During COVID-19". *ABA Banking Journal,* April 30, 2021. https://bankingjournal.aba.com/2021/04/fed-banks-demonstrated-financial-operational-resilience-during-covid-19/
- Athy Bussewitz and Tom Krisher. 2021. "Biden's climate steps could have big impact on energy firms". *AP News,* January 21, 2021. https://apnews.com/article/joe-biden-donald-trump-technology-public-health-climate-f8ba1a8e7982227fd27f492f22d771b4
- BBC. 2020. "Biden vows to set 'rules of the road' on trades". *BBC,* November 17, 2020. https://www.bbc.com/news/business-54958299
- Business chief. 2020. Executive summary Microsoft CEO Satya Nadella". *Business chief,* May 20, 2020. https://www.businesschief.asia/leadership-and-strategy/executive-summary-microsoft-ceo-satya-nadella
- Chris Hudgins 2020. "Consumer companies paid lower tax rates under Trump, could see hikes with Biden". *SP Global,* October 27, 2020. https://www.spglobal.com/marketintelligence/en/news-insights/blog/the-commercial-real-estate-cre-sector-feels-the-impact-of-the-coronavirus
- CNN, 2020. "The Dow soars on hopes for government aid bill: March 24, 2020". *CNN,* March 25, 2020. https://edition.cnn.com/business/live-news/stock-market-news-today-032420/index.html
- Dan Patterson. 2020. "Here's how Biden will work with tech". *CBS,* November 09, 2020. https://www.cbsnews.com/news/biden-administration-big-tech-companies/
- Deborah D'Souza. 2020. "Comparing the economic plans of Trump and Biden". *Investopedia,* November 09, 2020. https://www.investopedia.com/comparing-the-economic-plans-of-trump-and-biden-4843240#infrastructure
- Debra Sullivan. 2019. "The pros and cons of the Obamacare". *Healthline,* August 16, 2019. https://www.healthline.com/health/consumer-healthcare-guide/pros-and-cons-obamacare#pros.
- Dylan Scott. 2021. "Exclusive: Nearly 7 million uninsured Americans qualify for free health insurance". *Vox,* April 01, 2021. https://www.vox.com/policy-and-politics/22360870/american-rescue-plan-act-premium-tax-credit-health-insurance
- Fidelity viewpoints. 2021. "History lesson from past tax hikes". *Fidelity,* April 13, 2021. https://www.fidelity.com/learning-center/trading-investing/tax-hikes-history
- HSN' Editorial board.2021. "The World's Largest Banks 2021: Banks Grew Larger During the Pandemic, With U.S. And Chinese Banks Dominant". *Hellenic shipping news,* May 14, 2021.

https://www.hellenicshippingnews.com/the-worlds-largest-banks-2021-banks-grew-larger-during-the-pandemic-with-u-s-and-chinese-banks-dominant/.

- Institute for environmental diplomacy. 2021. "High correlation between S&P 500 and WTI crude Oil price". *IEDS University of Vermont*, 2021. http://www.uvm.edu/ieds/node/1120
- Jack Theis. 2021. "What Joe Biden means for the tech industry". *Built in,* March 02, 2021. https://builtin.com/operations/biden-tech-policies.
- Jake Horton. 2021. "President Biden's claims on the US economy fact-checked". *BBC,* May 11, 2021. https://www.bbc.com/news/57070054
- Jeff Stein. 2021. "U.S. government spent $660 billion more in March than it collected in revenue, the third-largest monthly deficit on record". *The Washington post,* April 12, 2021. https://www.washingtonpost.com/us-policy/2021/04/12/deficit-stimulus-biden-spending/
- Jeffrey Cheng, Tyler Powell, Dave Skydmore. David Wessel, 2021. "What's the FED doing in response to the covid-19 crisis? What more could it do?". *Brookings's education,* March 30, 2021. https://www.brookings.edu/research/fed-response-to-covid19/
- Jessica Menton. 2020. "What stocks could be the biggest winners and losers under a Biden presidency". *USA today,* November 09, 2020. https://eu.usatoday.com/story/money/markets/2020/11/09/joe-biden-stock-market-economy-stimulus/6165111002/.
- Jones Day. 2020. "DOJ Brings First Criminal Charges for Wage Fixing". *Jones day,* December 01, 2020. https://www.jonesday.com/en/insights/2020/12/doj-brings-first-criminal-charges-for-wage-fixing
- Kate Davidson. 2020. "U.S. Debt Is Set to Exceed Size of the Economy Next Year, a First Since World War II". *Wall Street Journal,* September 01, 2020. https://www.wsj.com/articles/u-s-debt-is-set-to-exceed-size-of-the-economy-for-year-a-first-since-world-war-ii-11599051137
- Kate Gibson. 2016. "Obama's bull market: stock winners and losers". *CBS,* August 01, 2016. https://www.cbsnews.com/news/obamas-bull-market-the-winners-and-the-losers/.
- Katie Arcieri. 2021. "Biden-backed stimulus checks could give the retail sector a badly needed boost". *SP Global*, January 20, 2021. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/biden-backed-stimulus-checks-could-give-the-retail-sector-a-badly-needed-boost-61958377
- Kimberly Amadeo. 2021. "US Budget Deficit by Year Compared to GDP, Debt Increase, and Events". *The balance,* March 05, 2021. https://www.thebalance.com/us-deficit-by-year-3306306
- Kimberly Amadeo. 2021. "Who owns the US national debt?". *The balance,* April 30, 2021. https://www.thebalance.com/who-owns-the-u-s-national-debt-3306124

❖ Kristin McKenna. 2020. “Here’s how the stock market has performed before, during, and after presidential elections”. *Forbes,* August 18, 2020. https://www.forbes.com/sites/kristinmckenna/2020/08/18/heres-how-the-stock-market-has-performed-before-during-and-after-presidential-elections/?sh=cbcd7454f868.

❖ Lauren Feiner. 2021. “Biden infrastructure plan seeks hundreds of billions to beef up America’s tech prowess”. *CNBC,* March 31, 2021. https://www.cnbc.com/2021/03/31/biden-infrastructure-plan-seeks-to-expand-broadband-access-investment-in-evs.html

❖ Lauren Feiner. 2021. “Biden is loading up his administration with Big Tech’s most prominent critics”. *CNBC,* March 09, 2021. https://www.cnbc.com/2021/03/09/biden-loads-administration-with-big-techs-most-prominent-critics.html

❖ Marianna Sotomayor. 2021. “What's in, and out, of Biden's health care plan”. *NBC,* May 26, 2021. https://www.nbcnews.com/politics/meet-the-press/blog/meet-press-blog-latest-news-analysis-data-driving-political-discussion-n988541/ncrd1030086

❖ Michael Hirsh. 2020. “Watch out Wall Street: Biden may be coming for you”. *Foreign policy magazine,* November 13, 2020. https://foreignpolicy.com/2020/11/13/watch-out-wall-street-joe-biden-financial-banking-regulation/

❖ Nikou Asgari, Donato Paolo and Hannah Kuchler. 2021. “Pharma industry fears Biden’s patent move sets precedent”. *Financial Times,* May 06, 2021. https://www.ft.com/content/f54bf71b-87be-4290-9c95-4d110eec7a90

❖ Peter Jacobs, Hannah Pugh, and Jasmine Wang. 2021. “How Should the United States Protect Data?”. *The regulatory review,* March 13, 2021. https://www.theregreview.org/2021/03/13/saturday-seminar-how-should-united-states-protect-data/

❖ Reuters staff. 2020. “Factbox: What impact would a Biden presidency have on the auto industry?”. *Reuters,* October 30, 2020. https://www.reuters.com/article/us-usa-election-autos-biden-factbox-idUSKBN27F2EX

❖ Ronald Moore-Colyer. 2019. “What has Donald Trump done for the tech industry so far?”. *IT PRO,* September 27, 2019. https://www.itpro.co.uk/policy-legislation/34515/what-has-donald-trump-done-for-the-tech-industry-so-far.

❖ Scott Horsley. 2020. “3 months of hell, U.S. economy drops 32.9% in worst GDP report ever”. *NRP,* July 30, 2020. https://www.npr.org/sections/coronavirus-live-updates/2020/07/30/896714437/3-months-of-hell-u-s-economys-worst-quarter-ever#:~:text=Ethics-,GDP%20Drops%20At%2032.9%25%20Rate%2C%20The%20Worst%20U.S.%20Contraction%20Ever,the%20Commerce%20Department%20said%20Thursday.

❖ Stephen Gandel. 2020. “Comparing the Biden and Trump tax plans: will you pay more?”. *CNBS,* October 30, 2020. https://www.cbsnews.com/news/biden-tax-plan-comparison-trump/

- Tami Luhby, Katie Lobosco and Kate Sullivan. 2021. “Here is what’s in Biden’ infrastructure proposal”. *CNN*, April 21, 2021. https://edition.cnn.com/2021/03/31/politics/infrastructure-proposal-biden-explainer/index.html
- Theron Mohamed. 2021. “Warren Buffett dumped Goldman Sachs, JPMorgan, and other bank stocks last year. They've now surged to record highs, meaning the investor left billions on the table”. *Business insider,* May 20, 2021. https://markets.businessinsider.com/news/stocks/warren-buffett-berkshire-hathaway-sold-goldman-sachs-jpmorgan-bank-stocks-2021-5-1030450343.
- Thomas Franck. 2021. “Biden targets global corporations to fund landmark infrastructure plan”. *CNBC,* March 31, 2021. https://www.cnbc.com/2021/03/31/biden-infrastructure-plan-to-raise-taxes-on-global-corporations.html.
- Tim Lemke. 2021. “What is the weighting of the S&P 500?”. *The balance,* May 13, 2021. https://www.thebalance.com/what-is-the-sector-weighting-of-the-s-and-p-500-4579847.
- William Watts. 2021. “Investors poured record $56.8 billion into stock-market funds as stimulus checks arrived”. *Market watch,* March 20, 2021. https://www.marketwatch.com/story/investors-poured-record-56-8-billion-into-stock-market-funds-as-stimulus-checks-arrived-11616177039

Thesis and dissertations

- Alexander Melnichov. 2012. “On linear regression analysis for modeling and forecasting of S&P500 Index”. PhD diss., university of Alberta.
- Biniv Maskay. 2007. “Analyzing the Relationship between change in Money Supply and Stock Market Prices”. PhD honors projects, Illinois Wesleyan University.
- David Valle-Cruz, Vanessa Fernandez-Cortez, Asdrúbal López-Chau and Rodrigo Sandoval-Almazán. 2020. “Does Twitter Afect Stock Market Decisions? Financial Sentiment Analysis During Pandemics: A Comparative Study of the H1N1 and the COVID-19 Periods”. PhD diss., Universidad Autonoma del estado de Mexico.
- Dell Zhang, Andrius Mudinas and Mark Levene. 2019. “Market Trend Prediction using Sentiment Analysis: Lessons Learned and Paths Forward”. PhD diss., Cornell university.
- Dev Shah, Haruna Isah and Farhana Zulkernine. 2018. “Predicting the Effects of News Sentiments on the Stock Market”. PhD diss., Institute of Electrical and Electronic Engineers.
- Ewan Rankin and Muhummed Shah Idil. 2014. “A century of stock-bond correlation”..Reserve Bank of Australia bulletin 2014.
- Ivan Sichkar. 2013. “Gross Domestic Product Behind the Stock Market Performance”. ECNFIN.
- Kalyani Joshi, Bharathi H. N., and Jyothi Rao. 2016. “Stock trend prediction using news sentiment analysis”. PhD diss., Cornell university.
- Marshall Nickles. 2004. “Presidential Elections and Stock Market”. Graziano Business review, 2004, Volume 7.
- Pornprom Pruess and Pattaraporn Hiranto. 2019. “Multiple regression: Impacted variables to S&P 500”. Independent research.
- Shiu-Sheng Chen. 2009. “Predicting the bear stock market: Macroeconomic variables as leading indicators”. Journal of Banking and Finance, Volume 33, issue 3. Pages 211 – 223.
- Tahir M.Nisar and ManYeung. 2018. “Twitter as a tool for forecasting stock market movements: A short-window event study”. The Journal of Finance and Data Science.
- Timothy A. Smith and Alcuin Rajan. 2017. “A Regression Model to Predict Stock Market Mega Movements and/or Volatility Using Both Macroeconomic Indicators & Fed Bank Variables”.
- Venkata Sasank Pagolu, Kamal Nayan Reddy Challa, Ganapati Panda and Babita Majh. 2016. “Sentiment Analysis of Twitter Data for Predicting Stock Market Movements”. PhD diss., School of Electrical Sciences Computer Science and Engineering Indian Institute of Technology.

Websites contents

- Dave Mead and Porscha Stiger. 2015. “The 2014 plunge in import petroleum prices: What happened?”. *US Bureau of labor statistics,* May 2015. https://www.bls.gov/opub/btn/volume-4/pdf/the-2014-plunge-in-import-petroleum-prices-what-happened.pdf.
- Donald J. Trump. 2019. “President Donald J. Trump is accelerating America’s leadership in artificial intelligence”. February 11, 2019. https://trumpwhitehouse.archives.gov/briefings-statements/president-donald-j-trump-is-accelerating-americas-leadership-in-artificial-intelligence/.
- Edelman, 2020. “Planning for a Biden presidency: impact on financial services”. *N.d.* Accessed May 07, 2021. https://www.edelman.com/us-election-2020/sector-implications/financial-services
- Gabe Alpert. 2021. “U.S. COVID-19 Stimulus and relief”. *Investopedia,* April 28, 2021. https://www.investopedia.com/government-stimulus-efforts-to-fight-the-covid-19-crisis-4799723
- Janet L. Yellen. 2017. “Financial Stability a Decade after the Onset of the Crisis”. August 25, 2017. https://www.federalreserve.gov/newsevents/speech/yellen20170825a.htm
- Joe Biden. 2020.” THE BIDEN PLAN TO ENSURE THE FUTURE IS “MADE IN ALL OF AMERICA” BY ALL OF AMERICA’S WORKERS”. *N.d,* Accessed 1May 10, 2021. https://joebiden.com/made-in-america/
- Ray Dalio. 2009. Ray Dalio speech at Yale university. November 2009. https://www.youtube.com/watch?v=c3uD6sHwigg
- Ray Dalio. 2021. “Stock market bubble?”. February 02, 2021. https://www.bridgewater.com/research-and-insights/ray-dalio-stock-market-bubble
- U.S. Energy information administration. 2020. “What is U.S. electricity generation by energy source?”. *N.d.* Accessed April 15, 2021. https://www.eia.gov/tools/faqs/faq.php?id=427&t=3
- Wikipedia. 2020.“2020 Russia–Saudi Arabia oil price war”. Last modified February 13, 2021. https://en.wikipedia.org/wiki/2020_Russia%E2%80%93Saudi_Arabia_oil_price_war.
- Wikipedia. 2021. “Dodd-Frank Act”. Last modified March 18, 2021. https://it.wikipedia.org/wiki/Dodd-Frank_Act#:~:text=Dodd%2DFrank%20Act%20%C3%A8%20il,Reform%20and%20Consumer%20Protection%20Act.
- Wikipedia. 2021. “Volcker-rule”. Last modified March 29, 2021. https://en.wikipedia.org/wiki/Volcker_Rule

Department of Business e Management
MSc. in Corporate Finance

Course of Financial Statement Analysis

The 2020 USA elections: an analysis of the possible consequences on relevant industries.

(Summary)

SUPERVISOR

Prof. Saverio Bozzolan

CO-SUPERVISOR

Prof. Francesco Paolone

CANDIDATE

Alessandro Argo

Student number: 761011

Academic Year 2020/2021

Summary

Introduction

The United States of America has represented the major economy in the last century; its financial market is considered to be the most developed and significant in the world. Events that affect the economy of the U.S. have then consequences that influence other countries worldwide.

On the 3rd of November 2020 Joseph Robinette Biden Jr. became the 46th president of the United States of America, beating the incumbent republican president Donald John Trump. On the 20th of January 2021, the democratic president officially started his mandate. After the last elections, the democrats have also a strong majority in the House of Representative, while the Senate still remains in the control of the Republican party.

In the following years then, during the new administration, the United States of America will probably experience a completely different economic policy with respect to the one of the last four years carried out by President Trump.

In this work I will try to assess what the impact of this change in policy on the American economy will be, using the Standard & Poor 500 index as representative of the whole economy.

Previous studies have already analyzed the impact of the macroeconomic variables on the S&P 500, finding relationships between the equity market and main macroeconomic indicators like the Gross Domestic Product, the unemployment rate and the Consumer Price Index.

However, in recent times research have started to focus the attention on the impact that news and social network content have on the price of securities on the financial market. In particular, twitter has attracted a lot of attention from researchers for the study of the public sentiments and for the construction of forecasting models.

In this work I will try to combine both the approaches in order to understand the impact that the Biden' policy may have on the financial market as a whole and on the single industries. The final aim is to provide a detailed estimation for the future evolution of the Standard & Poor 500 index and to identify the industries that are expected to underperform and overperform the index itself.

Chapter 1

For analyzing the possible effects of the Joe Biden' policy on the whole economy and on the single sectors I have started with the study of the historical behavior of the Standard & Poor 500 index as representative of the whole economic system, and of the following equity indices representative of the single relevant industries:

- Financial industry: S&P 500 Financials

- Consumer discretionary industry: S&P 500 Consumer Discretionary
- IT industry: S&P 500 Information Technology
- Health care industry: S&P 500 Health Care
- Energy sector: S&P 500 Energy
- Consumer Staples industry: S&P 500 Consumer Staples

In the following table it is possible to compare the results of the Trump administration with the ones of his predecessor Barack Obama that is useful to understand the impact that the different policies of the two presidents may have on the stock market.

Returns by industry				
Industry	**Trump**	**Obama**	**Obama 1st mandate**	**Obama 2nd mandate**
Financials	33.62%	223.08%	90.77%	68.85%
Cons. Discretionary	100.46%	330.9%	150.4%	68.73%
IT	168.07%	268.29%	108.2%	76.6%
Health care	69.63%	168.6%	59.2%	67.45%
Cons. staples	26.05%	128.08%	59.91%	40.54%
Energy	-41.07%	44.55%	45.51%	-2.86%
S&P 500	66.77%	172.57%	76.83%	52.7%

Table 1.1: returns by industry.

The table shows that the S&P 500 has performed better during the republican administration if compared to the second mandate of Barack Obama, but that has instead reported a lower return if compared to the first four years of the democratic administration.

To understand the real drivers of the single industries the historical analysis has been carried out by taking into consideration two different approaches. In first instance I have tried to assess which macroeconomic variables are strongly correlated to the S&P 500 index and to the single sub-indices representative of the industries analyzed in this work. The result of this calculation is provided in the tables 1.2, 1.4, 1.6. It is possible to see how the GDP, the CPI, the public and private expenditure, the tax on corporate, the trade balance, the US Dollar index, the oil price and the M2 have all shown a significant correlation towards the equity market.

After having identified the single financial and macroeconomic factors that may have influenced the single sectors and so the whole economy, I have analyzed more in detail what were the drivers directly influenced by the last two presidents Barack Obama and Donald Trump that may explain the performances of the single indices. This approach has given a complete view of how politics and economic factors together can influence the sorts of the relevant industries.

Analyzing the previous presidencies, it emerges that the stock market does not seem to care about the color of the party the elected president belongs to but are instead much more sensitive to the general economic trend and to the influence the policy of the government has on it.

There is no doubt that there are profound differences in both style and substance between Donald Trump and Joe Biden — just as there were between Barack Obama and Donald Trump. However, the curious thing is that financial markets do not seem to agree with this uncontroversial assessment. If we look at the compounded returns of the S&P 500 and the performances of the single industries the results at the end have been really similar with the S&P 500 registering a 12.38% annualized return for Obama, and 13.87% for Trump.

Under Obama the three best performing industries were Consumer Discretionary followed by Information technology and Health care. Under Trump the three best performers were exactly the same, but with the IT sector taking the place of the Consumer Discretionary.

Under Obama the worst performer were instead the consumer staples and the Energy industries, but the same has happened with the republican president Donald Trump. However, the industry that has seen a strong change in its performance under the two different presidents has been the Financials, despite the expectation of a boom thanks to the deregulation implemented by Trump.

Finally, one very important divergence between the Obama' and Trump' mandate has to do with dispersion. During the "Obama' years", tech and consumer discretionary outperformed, but all sectors delivered positive returns and the dispersion among the industries' performances did not appear excessive. In the Trump years, technology and consumer discretionary roared ahead, while the rest of the market delivered very pedestrian returns, with the divergence between the technology and energy sectors reaching extremes. In other words, while the drivers of the equity bull market might have remained the same under both Obama and Trump, under republican presidency the advance has become ever narrower.

Once the main drivers of the single industries have been individuated, in the following chapters I will try to understand how the Biden proposal will affect the macroeconomic variables and the general economic trend in order to forecast the evolution of the single industries and so of the S&P 500 for the next four years.

Chapter 2

After that the main drivers of the most relevant industries for the American economy have been individuated and the impact the previous political programs have had on them have been analyzed, we can move to the analysis of the current scenario to understand how it can influence the analyzed indices.

Before the spread of the Coronavirus the United States of America were experiencing one of its best economic phases ever. Through the economic policy of the republican president Donald Trump the S&P 500 stock index reached the historical maximum price level; the unemployment rate was at the minimum level ever and the wage index of individuals consequently reached a very significant high point. All these conditions were favorable for the growth of the Gross Domestic Product that touched its historical peak during the fourth quarter of 2019.

However, this uptrend in the GDP already started its reversion at the end of 2019 before the spread of the virus in the United States of America. As soon as other countries like China closed their activities because of the initial spread of the pandemic, the Gross Domestic Product of the U.S. started its contraction.

In the first quarter of 2020, the GDP already reported a contraction of more than 5%. Such a deep drop is drastic to the economy, but it is nothing if compared to the second quarter of 2020 when the Gross Domestic Product of the United States of America shrank by 39,1 percentage points on annual basis, the highest decline in GDP ever experienced, even higher than the Second world war.

The reaction of the FED was immediate, and as always, the stimulus measures adopted by the American central bank have fallen into three basic categories:

1. interest rate cuts
2. loans and asset purchases
3. regulation changes.

In March 2020, the Fed cut its benchmark interest rate twice, once by 0.50% and a second time by 1.00%. This incredibly lowered the FED funds rate from the range 1.50% to 1.75% to the zero lower bound range of 0.00% to 0.25%.

The loans and asset purchases came through quantitative easing programs and repurchase operations where the FED buys directly assets and specific lines of credit through the creation of entities called special purpose vehicles (SPVs). The Federal Reserve lends money to these SPVs that then purchase the object assets.

The measures implemented by the FED for the recovery after the pandemic crisis came under the shape of stimulus packages. Under Donald Trump the relief packages launched by the government were the following:

- Stimulus and relief package 1 (Coronavirus Preparedness and Response Supplemental Appropriations Act), 6th of March 2020, $8,3 billion.
- Stimulus and relief package 2 (the Families First Coronavirus Response Act FFCRA), 18th of March 2020, $3,4 billion.
- Stimulus and relief package 3 (The CARES Act), 27th of March 2020, $2,3 trillion.
- The additional stimulus and relief package 3.5, on April 24, 2020, $484 billion.
- Stimulus and relief package 4, 21st of December 2020, $900 billion.

Much more significant for the scope of this analysis is instead the stimulus and relief package 5 approved by Joe Biden on the 11th of March 2021. The American rescue plan represents the most important measure implemented by the new administration for financing the recovery of the U.S. economy after the Covid-19 crisis. By understanding indeed in detail, the actions included in the relief and stimulus package 5 it is possible to assess the probable impact this act will have on the economy and so on the financial market.

For this purpose, I have analyzed the proposals of the president and the general sentiment of investors towards the single industry' potentialities with a double approach for the sentiment analysis.

The first approach is based on the analysis of the tweets published by the president Joe Biden and the vice president Kamala Harris, both through their personal accounts (@JoeBiden for the president and @KamalaHarris for the vice president) and the official accounts of the president of the United States of America (@POTUS) and the first female vice president (@VP).

In the analysis of the tweets of the government' figures it has emerged that the new administration is strongly focusing on the implementation of the rescue plan. While before being elected the most frequently "tweeted" words by Kamala Harris and Joe Biden were 'trump', 'administration' and 'vote', since January 2021 the word 'rescue plan' has constantly been among the most cited words by both the President and the Vice-president.

However, in the last months the same word ('rescue plan') has been substituted by the words 'jobs', 'infrastructure', 'vaccine' and 'climate'. It appears then obvious the definition of the policy of the new government based on the creation of new jobs through a strong investment in infrastructure and on the reopening of the activities through the implementation of an efficient vaccination plan. All these trends will be used in the third chapter for analyzing the possible impact the new administration will have on the single industries.

The news' sentiment analysis has instead been carried out thanks to an algorithm able to collect the last one hundred news related to the industry representative of the indices listed in the previous chapter from Eikon Reuters. In the collection process, only the relevant news has been taken into consideration.

After having collected the news, through the NLP Python package "TextBlob" I have computed the polarity and subjectivity score of the single news through the technology of the Natural Language Processing. The polarity tries to express how positive the article is with a coefficient that ranges from minus 1 to 1, while the subjectivity expresses the level of objectivity of the article itself, the closer it is to 1 the more objective the article is.

After this I have analyzed what are the most frequently appearing words in the positive articles and in the negative one, defining as positive the ones with a polarity score higher than +0.05 and as negative the articles with a polarity score lower than -0.05.

Consequently, the news with positive polarity score will be grouped and using "word-clouds" we will see the most frequently cited words in the articles with a good polarity score. The same process will be used for the negative news too. The analysis has been carried out on both, the single indices and the four most capitalized stocks included in the indices themselves.

Through this approach I have been able to identify the main opportunities and threats of the single industries and mathematically estimate the sentiment investors and the whole market have towards the single sectors.

This analysis has allowed for the identification of the industry with the most optimistic expectations from the investors and for the identification of the most relevant market trends that may represent opportunities or threats for the single sectors. The results of this examination will be shown in the next pages together with the possible impact they may have on the considered equity indices.

Furthermore, in order to have a complete view of the current economic scenario I have analyzed the first impact these economic initiatives have had on the financial market.

The first effects of the policy of central banks are reflected indirectly in first place on the forex market. In the initial phase of the market downtrend the American dollar has followed the same sort of the equity market, going thereafter in a strong devaluation pattern. However, the incredible amount of liquidity injected on the market by the FED has inevitably increased the supply of dollars in the economy which of course has made the exchange rate of the American currency fall against the other major currencies.

The path of the US dollar is essential for understanding the demand of investors for dollar denominated assets. The depreciation of USDX (US Dollar index) after the announcement of the stimulus package indeed was not only due to the increase in the supply, but also to a relatively low demand for the American currency by the investors.

As shown in the first chapter the US Dollar index was also strongly correlated to the oil' price and the gold' price in a negative way. In the month of March 2020, the oil' price followed a marked downtrend that led the Brent Oil futures to trade at even negative levels in the month of April.

The recovery of the "black gold" started only in the end of the same month (April), when countries started to open again, and the economic activity of such economies restarted. The current price of Oil is at 60 dollars per barrel again, however, as we have seen in the previous chapter the oil process tends to reflect the situation of a global economic cycle. Consequently, this let imagine at first glance a possible positive future evolution in the commodity price.

Nevertheless, while in the first chapter we have seen that Oil could be used as an indicator for an economic recovery phase in this case instead it seems that the equity market has by far anticipated the recovery predicted by the increase in the Oil price.

In this analysis we are using the S&P 500 index as representative of the economy of the United States and here we try to assess if the index is really reflecting the underlying real economy. In order to understand at first glance if the equity index is trading at extreme levels, we have compared its value to the ones of financial bubbles on the basis of the following criteria:

- ❖ How high are prices relative to traditional measures?
- ❖ Are prices discounting unsustainable conditions?
- ❖ How broadly bullish is sentiment?
- ❖ Are purchases being financed by high leverage?
- ❖ The regulation phase financial market is facing.
- ❖ The US dollar strength.

The first, the third and the fourth criteria highlight a situation of a possible overvaluation of the equity market, with the levels of the same in ranges similar to the ones of the financial dot com bubble of the 2000. Prices are very high compared to the historical measures; the sentiment of investors is excessively bullish, and the stock margin debt is at historically high levels.

On the other hand, the other criteria instead do not highlight a situation of extreme valuation of the S&P 500; consequently, with this information it is not possible to conclude with high probability that the financial market is trading at extreme levels. In the following pages I will analyze more in detailed the fundamental valuation of the equity assets, providing a forecast for the mentioned indices in the short and in the long run.

Chapter 3

Once we have analyzed the current macroeconomic and financial scenario, we can examine how the initiatives of the new American government can impact on the macroeconomic context and how it then will impact on the prices of the equity assets. For doing so then I will analyze in detail the Biden proposals and his initiatives and then we will see how they can impact on the macroeconomic context.

As it has been shown in the sentiment analysis in recent times the main government figures of Joe Biden and Kamala Harris are focusing their interests on the execution of the rescue plan. We have seen that the main topics regarding the recovery plan are the job creation, the infrastructure investments, and the covid-19 defeat through the vaccination plan.

The relief package 5 has the final objective of decreasing the unemployment rate by the different investments that the president provides in the American jobs plan. The plan provides investment in different fields for helping the economy recovering from the Covid-19 pandemic and improve the conditions of the infrastructure system. The allocation of the funds is supposed to be the following.

- Transportation: $621 billion.
- Home care services and work force: $400 billion.
- Manufacturing: $300 billion.
- Housing: $213 billion.
- Research & Development: $180 billion.
- Water: $111 billion.
- Schools: $100 billion.
- Workforce development: $100 billion.
- Digital infrastructures: $100 billion.

The total cost of the American rescue plan is roughly $2 trillion and summed to the previous expenses sustained by the government for the execution of the other relief packages it is a significant expenditure for the United States of America.

At the beginning of 2020 because of the impact of covid the public deficit of the U.S. has increased to $3,7 trillion from $984 billion. The public debt in the same year has increased then going from $1.181 to $4.226 billion. This is the highest increase in public debt ever experienced by the United States of America. At this point the question is how Biden wants to finance this program.

Joe Biden plans to finance its program mainly by the increase on taxes for corporations: he plans to increase the top income tax rate to 39,6% from the actual 37%, the top corporate interest rate to 28% from 21%, and a tax rate on profits earned by foreign subsidiaries of US companies up to 21%. His plan provides also increased taxes on financial investments, with tax expenses on dividends and capital gains. It has been estimated that this proposal will cost to corporations 4 trillion between 2021 and 2030, and that 93% of this cost will be carried by taxpayers in the top 20% of households by income.

In brief the tax income for financing the relief package will basically be:

- **Corporate tax hike:** Under the current administration the tax rate will rise from 21% to 28%, However, before the Trump' presidency the tax rate has been as high as 35%.
- **Global minimum tax:** This proposal aims at avoiding companies to shelter profits in tax heavens countries. Joe Biden is proposing to increase the level of minimum taxation on corporations to 21%.
- **Tax on book income**: The book income represents the income large corporations report to their investors. The president will increase the minimum taxation on the income to 15%.
- **Corporate inversions:** Biden will also put a limit to merger and acquisition operations to avoid that U.S. companies avoid paying taxes by claiming to be a foreign company. The democratic President is also encouraging foreign countries to increase the minimum taxation.

However, the single tax revenues seemed to not be enough for financing the stimulus plan of the democratic government. In March 2021 indeed the U.S. government spent around $660 billion of dollars more than it has collected from taxes in the same month. The United States has spent $927 billion in the third month of 2021, more than the double it had spent in the same month of 2020. However, at the same time the tax revenues have remained almost equal compared to the previous year, pushing then the U.S. deficit to historical records.

Only in the first six months of 2021 the deficit of the United States of America has indeed already reached the level of $1,7 trillion, an all-time high overcoming the previous record of $1,4 trillion reached in 2009. The government is borrowing money from the financial market to cover the deficit; however, even if the interest rates are at historical low levels the federal debt is reaching extreme levels and is expected to grow even more in the following months. Only in March indeed the government has spent $330 billion in stimulus payments, and other expenses are expected to be made in the rest of the year.

By analyzing the agenda of the democratic president of the United States of America the intentions of Joe Biden are enough clear. The President is planning to increase the public expenditure and wants to finance his rescue plan through the issue of new debt and by the increase of the tax on corporates. The main objective of the president is to spread the wealth across the American population, taxing the richest citizens for providing more services and facilities to poorer social classes. This aims at reducing the unemployment rate, provide jobs to the weaker social classes and so increase the purchasing power of the poorer citizens.

This means that the main macroeconomic variables that will be moved by Biden' policy are going to be the money supply M2, the government' recipient and the public expenditure. Consequently, the first thing we have to address is the impact that these three variables may have on the macroeconomic factors and the financial market.

I have estimated three different linear regression models between the S&P 500 and the three macroeconomic variables above listed and by regressing the equity index on the money supply M2 I have been able to obtain a very good model with an R^2 of 0,88. From this first estimation the Standard & Poor 500 index seems to be overpriced and to not reflect the underlying macroeconomic condition (Figure 3.1).

The second estimation has been instead more complex: I have started to analyze the possible impact these three variables (M2, the government' recipient and the public expenditure) may have on the Gross Domestic Product and then the significance of the GDP in explaining the behavior of the S&P 500. From the regression estimated between the SPX and the Gross Domestic Product (with the GDP as explanatory variable) I have obtained an R squared of 0,83.

Once I have assessed the capability of the GDP in explaining the level of the equity index, I have assessed the potential of the M2, the government recipients, and the public expenditure in explaining and predicting the level of the Gross Domestic Product. Consequently, the three variables have all been lagged by one period and three different regressive models have been estimated using the U.S. GDP as independent variable. All the three regressions have reported positive results, the M2 has reported an R squared of 0,9426, while the recipients and the public expenditure an R^2 of 0,49 and 0,68 respectively.

Consequently, I have estimated the level of the GDP for the next quarter using the current level of the money supply M2 and in the following graph is reported the result:

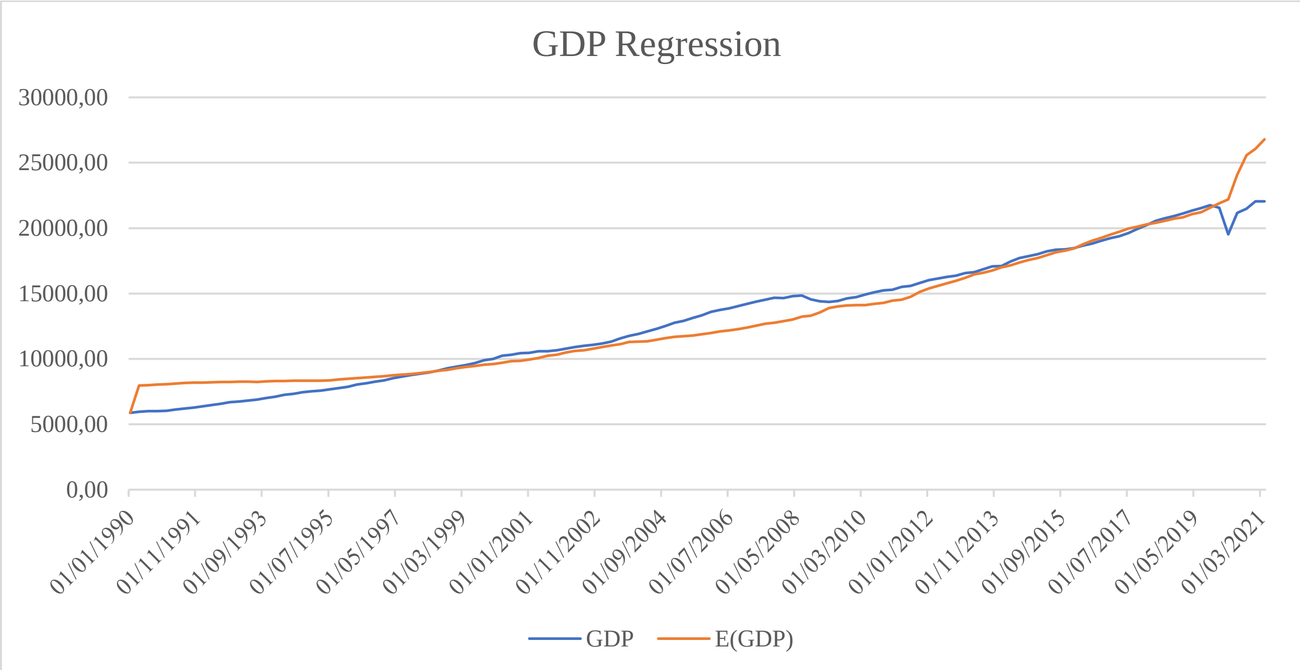

Figure 3.2: GDP regression.

As it is possible to see the model predicts a much higher level of the Gross Domestic Product; therefore, the first result of the analysis predicts a good performance of the real economy. Once we have assessed the estimation for the real economy, I have tried to forecast the impact of it on the financial market. On the basis of the regression run between the GDP and the S&P 500 I have estimated the level of the S&P 500 using the forecasted GDP as explanatory variable.

In this case the result is very interesting, with the SPX that seems to have already priced the economic recovery and that is trading at levels that are considered by the model as excessive with respect to the actual macroeconomic scenario (Figure 3.3). Therefore, my expectations from the results of the analysis are a good performance of the real economy but a weak performance instead at least in the short term for the financial market.

The approach for the analysis of the single industries has been the following: for each of the sector a regressive model run on the macroeconomic variables that have been highlighted as relevant in the first chapter have been used to understand if the representative indices are trading at levels that reflect the current macroeconomic scenario. This approach has been used to understand the possible evolution of the single indices in the short term. After that, I have analyzed for each of the sector how the Biden' policy may impact on it and how the opportunities and threats individuated through the news sentiment analysis of chapter 2 can influence the evolution of the single industries.

In the following table are reported the main macroeconomic factors, the threats, the opportunities for each industry, the polarity score and if the industry is trading above or below the estimated level:

summary results by industry						
Industry	**Consumer staples**	**Consumer Discretionary**	**Healthcare**	**Information Technology**	**Financials**	**Energy**
Opportunities	Tourism	Tourism	Pharmaceuticals	Market trend	Rescue plan	Economy re-openings
Threats	Alcohol	Alcohol	Covid Indian variant	Regulation	China competition	Renewable transition
Polarity score	0.054	0.054	0,69	0.06	0.0543	0.045
Main macroeconomic variable	Private expenditure, Recipient	Private expenditure, CPI	N/A	USD, CPI	M2, UR, Recipient	Oil, CPI
Valuation	Correct	Overvalued	Correct	Overvalued	Correct	Undervalued

Table 4.1: summary results by industry.

The above presented table reports a good summary of the results obtained through the analysis, with the consumer goods, the healthcare industry and the financial industry that report good polarity scores and a correct market valuation, which explains a favorable expectation for the near future.

The information technology industry, despite the highest polarity score reported seems to be overpriced, so despite the positive market trend these companies are in, in the short-term a correction in the S&P 500 Information Technology index is expected.

The energy industry is instead in the worst situation. Despite being slightly underpriced, the polarity score for the oil companies is very low and the market trend seems to explain a very pessimistic scenario for the industry.

The consumer goods industry is expected to benefit from the Biden policy for several reasons. The imminent rescue plan will surely increase the purchasing power of individuals and many analysts expect an increase in the private expenditure of consumers. As we have seen indeed from the regressive models this industry positively depends on the private expenditure, so the first positive impact will come from the implementation of the America jobs plan of the new government.

With the incredible monetary stimulus carried out by the FED, and the intention of the new government of introducing new financial incentives, expectations on inflation are becoming always higher. In such a scenario companies that have higher chance of facing raising prices are the ones that work in industries of low selling prices and mass consumption, like consumer discretionary companies. Companies that are also price makers in their own industry will have an even higher chance of success in a rising inflation economy, this increases the optimism towards the consumer goods industry.

Furthermore, a sub-sector of the consumer discretionary that will surely suffer a strong impact from the Biden policy is the automakers. The sales of electric vehicles will be strongly incentivized by the government which has promised in the America Jobs Plan to provide tax credits and subsides for the purchase of such vehicles. The automakers can then see the sales of electric vehicles soaring. Consequently, Biden proposal for fuel economy standards will not only influence the energy sector, but the car industry too.

Despite the positive sentiment towards the tech industry, my expectations for the sector are not optimistic. The price of stocks results to be overvalued and for some stocks it is also probable the presence of a bubble. Furthermore, despite the incredible positive market trend in which such companies are the economic environment for them has become more uncertain with the election of Joe Biden due to the regulatory policy of the democratic president. The forecast from this analysis is then a correction in the prices of the stocks of such companies for the short term, but a continuation of the positive performances in the long run.

For what concerns the financial industry, the biggest highlighted opportunity for the sector is the rescue plan proposed by Biden. In this case the effect on Financials can be double. In the tweets analysis we have seen that the rescue plan word was being replaced by the word 'jobs plan'. This means that the financial industry will enjoy not only an increase in the amount of liquidity on the market but also an expected decrease of the unemployment rate, which will both have a positive impact on the sector.

However, this sector can also be hit from the increase in regulation proposed and strongly supported by democrats. If the Trump presidency has been beneficial to financials because of his deregulation policy in this environment the industry may suffer from the excessively expansionary monetary policy proposed by democrats, and from the intention of Biden-Harris administration to overturn the deregulatory agenda implemented by their predecessor to further strengthen consumer and workers protection.

Summing up the impact of the Biden presidency on the financial industry may come from two different factors, the regulation, and the rescue plan. The implementation of the rescue plan is expected to have positive consequences on the financial industry, while the impact of the regulation is still not very clear. On one hand Biden is expected to increase the standards of activity of these companies, which will surely reduce the freedom in their activity. On the other hand, this would increase the trust of investor in a sector that has strongly suffered from the financial crisis. Furthermore, from the proposed analysis I believe that banks are supposed to be the best performers in the field.

The perspective instead for the Energy industry are far from being positive. The new administration is aiming at going back to the path that Barack Obama was undertaking. While Trump had undone the standards introduced by his predecessor on the greenhouse gas emissions for automobiles, Joe Biden has promised to reintroduce them.

The transition to renewable energy proposed by Biden will not only reduce the demand for oil but will also reduce in its implementation the production of the commodity. The democratic president has indeed directed the Interior Department for stopping all the leasing for the oil and natural gas exploration in the Arctic National Wildlife refuge Kevin Book.

However, in my opinion this change will never happen as long as the U.S. economy will rely on the oil for its functioning (not earlier than year 2030 as stated by Joe Biden in his agenda). In the case of a stop in the production of oil indeed the United States will have to fill the gap between the production and the needs by increasing the imports of petroleum. In such a scenario, countries like Saudi Arabia and Russia will see their oil businesses soar due to the less stringent standard on the oil production.

If on one hand the initiatives of Biden can help the United States to achieve the ambitious aims of a clean economy on the other hand, they can create a strong economic damage by killing companies that have already suffered from the pandemic.

So, in my opinion in the short-term oil companies will still have a business and the impact of the Biden policy will not be very marked. However, the conclusion from this analysis is that during this administration the S&P 500 Energy will very likely perform badly, with a neutral return in the short term and a negative return instead in the long term.

Conclusions

In this work the macroeconomic and the sentiment analysis approach have been combined to understand the possible evolution of the United States of America' economy during the Biden' administration. The tweets' analysis has allowed for the identification of the main economic initiatives of the new administration, while the news' sentiment analysis allowed for the identification of the industries that have the highest expectations from the public investors and the identifications of the opportunities and threats for the same.

These results have been used to understand how the macroeconomic scenario will change after the implementation of the policy of the new administration. The analysis then of the future economic scenario, together with the sentiment analysis, have been used to assess the probable evolution of the S&P 500 and the single industries included in it.

From the analysis it has emerged that this policy is expected to impact positively on the Gross Domestic Product of the United States of America, forecasting a strong increase of the GDP in the following period.

On the other hand, the S&P 500 level instead explains a situation in which the market has already priced the expected recovery of the economy. In the following period indeed, the analysis highlights low expected returns from the financial market but positive performances for the real economy.

The final aim of the analysis is to identify how the single industries included in the S&P 500 will impact on the equity index in order to understand which sector will outperform the benchmark. From the results it has been highlighted that the health care industry and the consumer goods industry all have positive expectations.

Furthermore, I expect a change in the order of the performances: while during the Trump administration the IT sector has considerably overperformed with respect to the others in the analysis the S&P 500 Information Technology has resulted to be significantly overpriced. Despite then the positive environment the IT sector is in, I expect the consumer goods industry to be the winner from the Biden' administration, with a strong optimism on the consumer staples companies.

The financial industry is expected to positively perform thanks to the boost the liquidity provided by the rescue plan will give to the sector. However, the benefits of the monetary policy of the new administration can be offset by the regulatory approach proposed by the new elected president.

On the other hand, the energy industry is projected to be the main loser: the Biden' administration will surely support the transition process to clean energy sources and the global economic environment explains a remarkable downtrend for the sector.