

# Response to COVID-19: Assessment of the Bubbles in U.S. Stock Market

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## ABSTRACT

At present, COVID-19 pandemic has profound influence on every aspect of human society. Due to economic globalization, the pandemic exert negative impact on real economy of all countries, and inevitably lead to higher unemployment rate. International stock market also fluctuate frequently. However, uncommon phenomenon has been noticed in the U.S. stock market. After 3 days' market crash in March, 2020, the US stock has kept trading higher. Therefore, this research identifies the current stock market's opportunities and risks under the background of the global pandemic situation. Some investors contend that in the stock market there lies great opportunities, owing to the negative effects of periodicity and pandemic, while others claim that it is the fake boom that releases wrong signals for investors due to the Fed's policy. Through the research on GDP and employment rate under pandemic, FED's intervention under pandemic and further impacts, the impact of real estate on the stock market, and stock index, this study aims to explore whether there lies a potential stock market bubble under its current prosper appearance. The results indicate that the U.S. is suffering from a high unemployment rate, potential great GDP loss, stock market bubbles, high inflation rate, the risk of overvaluing, etc. This study reveals that a bubble exists in the U.S. stock market. Therefore, the investors need to recognize the potential risks and conduct a reasonable portfolio.

**Keywords:** Covid-19, U.S. Stock market, Price bubble

## 1. INTRODUCTION

The world is now facing a continuous mutation of viruses, even reaching a fourth wave, that continues to sweep through human economies, testing the limits of the medical system. On the one hand, as viruses are evolving and adapting to human civilization, humans are also adapting to viruses and changing their lifestyles and habits. Accordingly, consumer behavior and economic expectations have shifted. Takeout, online classes, remote working, etc. are ways to protect ourselves from the epidemic and keep the economy running. Nonetheless, the social structure has had fundamental changes. Historically, as the economy recovers from the impact of the epidemic, there is always a boom and a re-expansion of the economy, however, history does not simply repeat itself. According to the basic principle of the market, unemployed people would have decreasing

purchasing power. In this way, related industries and companies will be jeopardized to some extent. Consequentially, the value of these companies to investors will lower down, and the stock price will drop as well. However, owing to a series of coping strategies by the Government and the FED, the stock market seems to be a quite steady bull market at present. Considering the specialty of COVID-19 pandemic, through the investigation on four major aspects: GDP and employment rate under pandemic, FED's intervention under pandemic and impacts, impacts of real estate on the stock market, stock index, respectively, this article examines whether the turning point for the U.S. stocks market is coming.

## **2. GDP AND EMPLOYMENT RATE UNDER PANDEMIC**

The performance of the financial market is closely related to the performance of economics. In other words, the financial market could be seen as the weather forecast of economics. In a healthy economic environment with a low unemployment rate, the consumption from downstream stimulates the demand of means of production, therefore stimulating the supply of means of production from the upper stream. In such situations, the relationships between demand and supply are balanced, then, a healthy financial circle is formed. As for a public company, in a healthy economic environment, the demand from its customers is comparatively steady. Therefore, a company can maintain healthy cash flow to support its daily operations, and it will have extra money to invest in innovation and expansion, which might require it to hire more labor and eventually help it become more profitable. Finally, in reflection of the business performance of the company and the public's expectation of its future performance, its stock price will rise. Since the virus is highly contagious, the mass population was locked inside their homes for public safety concerns. As the result, the healthy balance of supply and demand was broken.

Del Rio-Chanona et al. used quantitative methods to make predictions of COVID-19's effects on the U.S. economy's supply and demand, more specifically, to estimate the impact at the level of individual occupations and different industries. The research factors in the work-from-work scenario when classifies industries. Referring to past similar events to estimate the demand shocks, the research predicts that the U.S. consumption would fall sharply and endanger around 20% of U.S. economy's GDP, leading to an increase of unemployment rate around 23% and a decline in people's wage income of 16%. The shock on different fields and industries was on different levels, according to the data shown in the Opportunity Insights Economic recovery tracker [1]. Among the six tracked categories, the Groceries sector is the only one that increased consumption, and unexpectedly, the Healthcare sector fell by 58% [2].

COVID-19 has had a comprehensive negative impact on global economics. According to the US Bureau of Labor Statistics, in the U.S. economic sector, after the breakout of the pandemic, in April 2020, the U.S. unemployment rate reached 14.7%, the highest rate observed since data collection began in 1948. Though through different means of control that galvanize the U.S. economic recovery, the unemployment rate in May 2021 (5.8%) is still higher than in February 2020 (3.5%). Moreover, the labor force participation rate declines to 60.2% in April 2020- the highest rate since the early 1970s. From the closest data collected, the labor force participation rate raises back to 61.6% in May 2021- 1.8% lower than the labor force participation rate in

January 2020, before the pandemic and economic recession. In addition, an unprecedented rapid decline in nonagricultural payroll employment is noticed during the first three months of the pandemic outbreak from January 2020 to April 2020: it declined by 22.1 million, with employment falling to 86 percent of its pre-recession level. Even till May 2021, the total employment remains below the pre-recession level of 7.3 million. Among all sectors, the entertainment and hospitality sector has lost the largest number of employment opportunities since January 2020, and those who are still employed in this sector have consistently exhibited some of the highest unemployment rates throughout the pandemic till today. Additionally, the education services and government sectors exhibited the second and third largest job losses, although the unemployment rates for those last employed in these sectors were relatively low.

The COVID-19 pandemic has had a disparate impact on nearly 250 million full-time jobs among different population groups. Although all population groups were affected, findings show that female workers typically experienced relatively higher unemployment rates and relatively sharp declines in labor force participation during the pandemic. In addition, people with lower educational levels typically experience relatively higher unemployment rates and lower labor force participation rates throughout the outbreak.

In addition to the increased unemployed rate during the pandemic, U.S. GDP suffered great damage as well. Walmsley et al. show the estimated data of the possible U.S. economic outcomes with the impacts of the COVID-19, under the modified GTAP model. To conclude the research results, the estimated U.S. GDP losses could be 4.3 USD trillion (20.3%) annually. The unemployment rate could increase 22.4% on a three-month basis; if the mandatory closure extends to six months, the unemployment rate is likely to increase even more than doubled, which is exceeded those of China and the ROW, since the U.S. economy more relies on the production of non-essential industries and fields. However, the research data does not take account into the possible counter-effect fiscal or monetary policies [3].

## **3. FED'S INTERVENTION UNDER PANDEMIC AND FURTHER IMPACTS**

In this section, the Federal Reserve System's (Fed) responses to the pandemic and impacts caused by its intervention to the financial market will be mentioned.

Fears of the COVID-19 pandemic escalated and prompting stay-at-home orders and other restrictions on companies and consumers resulted in a significant drop in economic activity of uncertain duration. In the aspect of stocks, the VIX index, which is used to assess risk and measures stock market implied volatility, has risen to 82% by mid-March from an average of roughly 15%,

indicating considerable future uncertainty[4]. Standard financial market connections like those between stock prices and Treasury rates broke down, leveraged financial corporations are forced to sell more, and heightened illiquidity in the Treasury market arose. In addition, the research written by Watkins illustrated the government intervention under COVID-19 and how the central banks reacted to the Modern Monetary Theory. The research revealed the weakness of the market that the over-dependence on markets led to a situation that governments couldn't minimize the impacts of the crisis. Watkins considered the financial relations of the market and through data, the policies Fed made to respond to COVID-19 such as purchasing Treasury Securities. He highlighted that the government has to apply the Modern Monetary Theory under the threat of pandemics [5]. To accommodate the increasing demand for general liquidity, the government also gradually decreased interest rates and tried to let the financial market function as usual.

The Fed intervened in the situation to minimize the economic harm caused by the pandemic including nearly \$2.3 trillion in loans which are used to support financial markets. Since March 3, 2020, the Fed lowered the goal for the federal funds rate and dragged it down to 0% to 0.25% [6]. As changes in the federal funds rate will set in motion a cascade of events that have an impact on other short-term interest rates and also long-term rates, the aim of lowering the rate is to reduce the cost of loans such as the lending on mortgages. Individuals and corporations are encouraged to spend more because of cheaper borrowings. The purchase stimulates economic activities, and it leads to growth in the overall amount of money. In order to support loans, it is more likely for banks to lend to consumers who are more credible and have enough assets under the situation of low-interest rates. Loans are encouraged and loans contribute additional money to the money supply. During the financial crisis in 2008, the Fed lowered interest rates and pumped money into the economy to enhance economic activities. It resulted in a high money supply and causes inflation.

Purchasing securities is another tool for the Fed to support market functioning. The Fed announced plans to buy \$500 billion in Treasury bonds and \$200 billion in mortgage-backed securities. And later, they made purchases open-ended. After the policy was introduced, stocks rebounded quickly and covered the decline. The S&P 500 achieved a 16% increase, and the increase of the Nasdaq Composite was 44%. Financial functioning improved, and the Fed reduced the number of purchases to \$80 billion in Treasury securities and \$40 billion in mortgage-backed securities. Based on data provided from the central bank, the total amount of bond purchases is \$8.5 trillion, and \$7 trillion of it was purchased through the Fed's QE program [7]. The purchases aided in keeping interest rates low and offered assistance to markets who received negative impacts crucially from the pandemic crisis but with high potential stock markets.

In June, Fed announced to increase the Interest on Excess Reserves (IOER) to 0.15% and the Overnight Reverse Repurchase (ON RRP) to 0.05%. What Fed sees is that the economy still recovers, and it recovers quickly. Companies want to recruit people but there are not enough people. At the same time, the unspoken concern is that companies do not wish to expand more. As a result, inflationary pressures may arise if demand continues to surpass expectations. According to CNBC, the annual inflation rate was increased from 5% to 5.4% from May to June which was the highest record since 2008 [8]. The Fed had to respond to the current pressure of the inflation rate, so the two key market interest rates increased. The money "printing" from Fed caused global inflation which is out of control and a serious asset price bubble appeared. This made the monetary policy kidnapped by the financial market because once the Fed raises interest rates, the current bubble financial market may collapse. And if the interest rates are not increased, the inflation rate is unrestrained. Although increased interest rates essentially increase the loan interest, if the real economy is positive and companies make money, stocks will naturally be more valuable. The U.S. raised interest rates in historical events because the stock market would not be affected, and the market was supported by a strong real economy. However, this time is because of the inflation rate. The stock market surged in bubbles because the excessive discharge of pump-priming caused too much hot money to promote growth and it is an artificial bull market created by funds. The stock market lacks real economic support and if applies increased interest rate, it will surely crash. The cost of funds will increase, the leverage of funds will decrease and flow the capital return back, resulting in a decline in the stock market funds. Besides, the cost of corporate loans increases, and companies will reduce loan funds. The corporate profits decreased, and the corporate income expectation decreases which results in lower stocks. Increasing interest rates leads to an increase in the interest paid to foreign countries because of a large amount of Treasury debt which increased the burden of Fed's policies.

#### **4. IMPACT OF REAL ESTATE ON STOCK MARKET**

Rising house prices may be a harbinger of stock market bubbles. There may be a positive correlation between the property market and the stock market. The property market and the stock market may rise and fall together because they are both affected by the macroeconomic situation. They are two dependent variables of the same independent variable. As for the stock market, the stock price is the current discount of future profit expectations. When the economic situation is good, the investors' expectations are generally high, and when the economic situation is depressed, the investors' expectations are generally low. From the perspective of the property market, real estate, as a pillar

industry of the traditional economy, connects many upstream and downstream industries, and the prosperity of real estate is closely connected with the economy. Generally speaking, when the economic situation is good, people's income will increase, liquidity will increase, and the funds flowing into the two markets will increase. The opposite is true when the economy is in a downturn.

Therefore, if the house prices of America are rising, stock market bubbles may appear. There are two important indicators to determine whether the real estate market is already full of bubbles. First, the supply of real estate inventory in the United States; Second, bank lending in the United States.

According to the data released from December 2019 to September 2021, the accelerating U.S. housing market shows no signs of cooling down, Average house prices in the United States rose 19.7% year-on-year, which refresh a new record in the U.S. This is the biggest increase in nearly 30 years [9]. COVID-19 is a core reason for the house prices increasing. However, the imbalance between supply and demand caused by insufficient real estate construction in the United States over the past decade is the main reason. In the next few years, the shortage of real estate in the United States will continue, and the annual growth rate of house prices will remain between 10% and 15%. According to the data of the American Association of Realtors, the sales volume in the United States was about 6 million units in 2020, but its inventory was only 1.07 million units in December 2020, which was only 1.9 months of supply [10]. At the same time, The low supply cannot be alleviated in a short time. There are three reasons. First, the land of builders needs to be accumulated for a long time, and the building cycle is very long; Second, there is a serious shortage of labor in the United States, and now there is a big gap in construction workers; Third, there are problems in the supply of raw materials, and the prices of construction materials such as wood, copper, and steel have soared.

The supply of the housing market is less than demand, which implies the price of the house will increase right along. What cannot be ignored is that after the outbreak of COVID-19, Mortgage interest rates decreased. It will stimulate people to borrow more money to buy houses, and the price of houses will rise. Another reason why housing prices will rise is that people can't go out during the epidemic, people do activities at their homes, which increased the demand for large houses. People's attitudes towards consumption also changed because of COVID - 19. Previously, people were more inclined to spend money on entertainment. After the epidemic, people are more inclined to invest in real estate and create a more comfortable living environment.

During the epidemic, the Democratic Party is actively promoting the two trillion dollars stimulus plan and hopes to send more checks to the people. However, only one-third of the people can stimulate consumption

because most people want to use the money to repay long overdue mortgages, rent, utilities, etc. And unlike the rich people who will put money into the capital market, for low - and middle-income people, stocks are a means of value-added, and housing consumption is a basic demand. Therefore, after receiving the government's relief funds, in addition to their daily expenses, these people tend to save money and use it to improve their housing. In addition to the above reasons, the reason for the rising house prices in the United States is the liquidity of the market. In early June this year, the size of the Fed's balance sheet exceeded \$8 trillion for the first time. Since the outbreak in March last year, the total assets of the Federal Reserve have soared from \$4 trillion to \$8 trillion. The money will flow to the stock market and real estate market, pushing stocks and house prices up.

As mentioned above, housing prices will not stop increasing in a short time, It will rise for a long time. Housing prices and stock prices have a positive relationship, for this reason, Under the influence of rising house prices, the share price will continue to rise, there may be bubbles in the stock market.

## 5. STOCK MARKET

### 5.1. P/E ratio

The Price-to-Earning (P/E) ratio compares the price of a stock to its EPS (earnings per share), which reflects how much value the company is generated for each share of stock. Therefore, the P/E ratio, which compares the price per share to the value generated per share, typically reflects how overvalued a stock is. On July 12, 2021, the current P/E ratio of the entire market reached 38, meaning the price of stocks is 38 times higher than the earnings generated by the companies represented by the market. This level is higher than the market before the 1929 stock crash, which only reached 34 at its peak. Actually, throughout the history of the U.S. stock market, this level of P/E ratio is only met in 2000, which is then followed by the dot-com bubble that devastated NASDAQ by 75%. The following graph shows the level of P/E ratio from 1920 to 2021 [15].



**Figure 1** P/E ratio calculated by CAPE method from 1920 to 2021 [15].

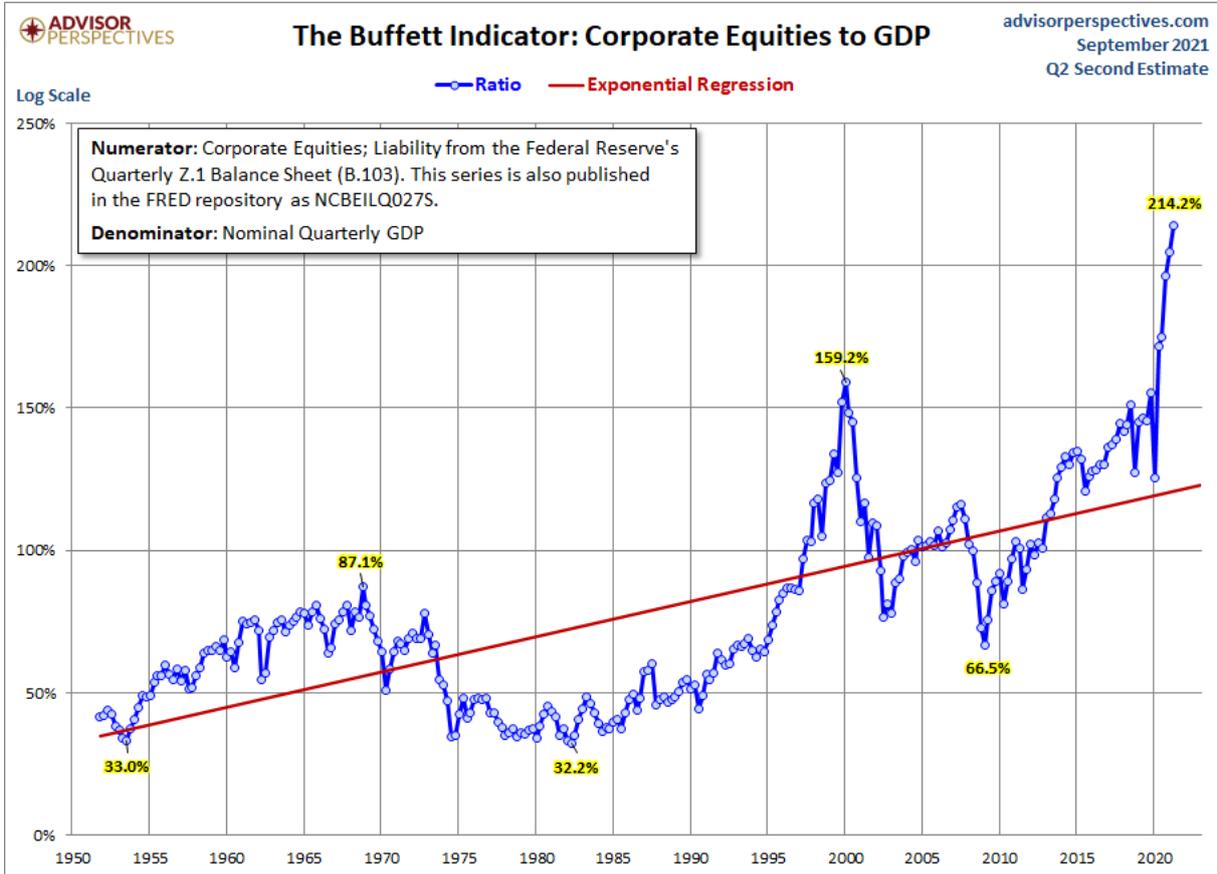
Figure 1 reveals how the current P/E level is in a dangerously high position. There is only 4% out of the

past 140 years that there is a level of P/E ratio like this. This high level of P/E ratio reflects that the market is currently strongly over-valued.

**5.2. Buffett Indicator**

The Buffett indicator is an indicator proposed by Warren Buffett. It is the ratio of the total market cap of the U.S. stock market to the nominal GDP of the U.S., so

it reflects the overall capital in the stock market to the GDP. It can directly reflect the overall stock valuation, and Warren Buffett states that it is "probably the best single measure of where valuations stand at any given moment". The Buffett indicator currently stays at 228%, which is the highest level of this indicator throughout history. The latest highest point was 159%, which was followed by the dot-com bubble [16].

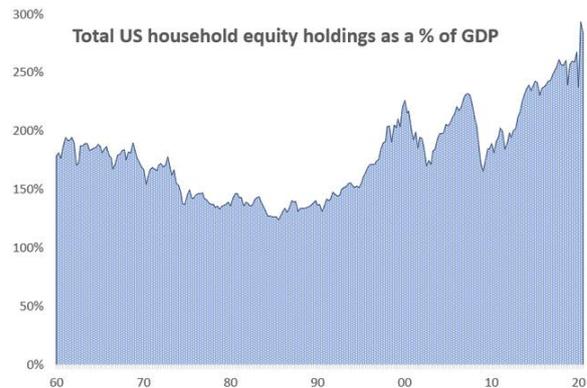


**Figure 2** Historical value of the Buffett Indicator from 1950 to 2021. The line of best fit according to exponential regression was drawn to reflect the overall trend of the indicator [16]

Figure 2 shows the historical data of the Buffett. Its relative position to the trend-line is 84% above it, which is not only the highest but also higher than the level before the dot-com bubble. This indicator is in agreement with the P/E ratio that the current stock market is extremely over-valued.

**5.3. Total U.S. Household Equity**

According to the Federal Reserve in Figure 3, the total amount of the US households' stock holdings as a percentage of GDP have surged to a new high of over 270%.



**Figure 3** The total US household equity holdings as a % of the US GDP from 1960 to 2020 [17]

This value is not only the highest in history, but it also looks very dangerous when compared to the data in 2001 and 2008, which are the two of the biggest financial crises in U.S. history. This ratio displays that, currently, U.S.

households put a very large proportion of their money in the stock market; therefore, it is likely that there is a bubble in the current stock market.

## 6. CONCLUSION

To conclude, there are potential bubbles in the market. To be more specific, first, though the unemployment rate is gradually decreasing, it still faces new challenges such as not enough people going back to those vacant jobs, and possibly other uncertainties domestically and internationally. Second, any new policy changes would cause a crash, because the current surge is artificial and inflationary. Third, the price of real estate would not be back to normal, because a relatively low point in a short time, and the increasing price of housing is a signal of the bubble. Fourth, the P/E ratio and Buffett Indicator are both high, demonstrating the whole market is largely overvalued. Therefore, investors must be cautious when they try to enter the stock market at this special time slot, while there are potential bubbles in the market. This research provides clear analysis of the current U.S. stock market, with the purpose to remind investors of the potential risks. It is also an effective indication of market trend in the near future.

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