Analyze and Predict the Aftermath of the 2020 Stock Market Crash on the US Economy

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Abstract: The paper mainly focuses on the US stock market and the corresponding impacts on the US economy. Firstly, the stock market crash in 1987 and 2020 will be compared, and the potential factors as well as its aftermath—including policy reactions, financial contagion, debt level unemployment rate, and risk premium rate—will be identified and scrutinized. Secondly, the relationship between these factors and the economy will be examined, along with other related certain factors being pinpointed. Last but not least, based on the identified factors, feasible suggestions will be proposed on how to help recover the economy in the near future.

1. Introduction

Recently, there has been increasing concerns about whether the undergoing stock market crash would continue in the near future and thus drag the US economy into the recession. On March 12, 2020, the stock market suffered the biggest stock market decline since the Black Monday in 1987. While there are many connects between those two events according to Serwer (2020) [1], such connection makes people ponder if the two crashes are truly alike. As the aftermath of the stock market crash in 2020 is still unknown, it is worth comparing and analyzing the stock market crash in 1987 and the one in 2020.

This paper is inspired by a journal written by Mishkin and White (2002) [2]. Their journal is mainly focused on the United States and aims to identify the stock market crashes for the last century, by using a narrative approach to discuss the aftermath and monetary reaction to the crashes. Mishkin and White also raised questions on the relationship between stock market crashes and several variables including policy reactions, the interest-rate spreads (credit markets) and GDP. In this paper, the relationship between the stock market crashes and the mentioned variables will be examined. A few more variables are also added to further compare the situation in 1987 and 2020.

The paper attempts to discover and compare the reasons for the stock market crashes in 1987 and 2020. The Fed reaction in monetary policy, change in GDP before the crash, the unemployment rate after the crisis, financial contagion, debt level and the interest rate spread are to be examined and compared. After obtaining and analyzing these variables of 1987 and 2020 respectively, the correlation to the 1987 economy will be discussed and the relationship of those variables to the 2020 economy will be illustrated. Eventually, suggestions will be proposed on the recovery of the future economy.

2. Method: Comparison between 1987 and 2020

Fundamentally, it is worth comparing the different economic situation in five years before 1987 and 2020 to examine whether they have a similar trend in the change of GDP.

From Figure 1, it indicates that unlike big increase occurred in GDP before 1987, the GDP% is stable during 2015-2020. Another question is aroused by this observation – since their economic situations are much different from one another, do they also have different causes of the stock market crash and different consequences on the society?

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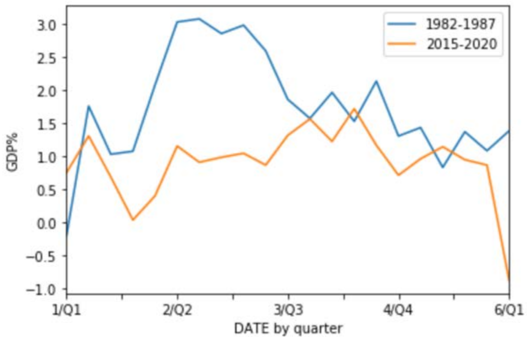

Figure 1 GDP comparison between 1982-1987 and 2015-2020

Table 1 Reasons for the stock crash in 1987 and 2020

Reasons	1987	2020
Common	Stock market at a high position	
Differences	Portfolio insurance	COVID-19 pandemic
	Plummeted money supply	Oil price slumped

Various factors can be attributed to the stock market crash. There are common as well as differences between the stock market crash in 1987 and 2020.

2.1 Causes for the stock market crash in 1987

In the early 1980s, the stock market was performing very well with an unexpected rapid growth, indicating an unstable growth and overvalue of the financial derivatives. Different from the causes for 2020 stock market crash, there were three major causes for that in 1987. First of all, the Wall Street started to use immature computer trading programs called portfolio insurance without any prior testing. They liquidated the stocks automatically when hit a certain price level of loss and thus pushed the stock prices lower. Such system triggered and executed more and more stop-loss orders, which eventually had a negative impact on the overall stock market. Secondly, before the Black Monday in 1987, the Federal Reserve (1988) [3], intended to suppress the inflation, plummeted the money supply by more than half. This resulted in a sudden rise in the interest rate and a fall in the stock prices.

2.2 Special reasons for the 2020 stock market

The financial crisis in 1987, which was triggered by the internal financial problems including the overvalue of the market, are different from the current situation. Nevertheless, the 2020 stock market crash is triggered by the sharp decrease in oil price and the pandemic of COVID-19. With the fear of the novel virus that spread globally, the stock market crashed the day after closing at a record high in the mid of February. At that time, the major affected area was just shifted from China to Europe especially in Italy, and the European stock market plunged shortly due to the impact of the virus. Only 2 weeks later, the US stock market continued to fluctuate and decrease further when the outbreak of COVID-19 began in the United States, especially in the New York Area, the heart of the US economy. Meanwhile, the Russia–Saudi Arabia oil price war began in the early March, resulting in a more severe stock market crash in the next 2 weeks.

In essence, the stock market crash is not a sign of any disruption in the internal financial system, but an event triggered by a health crisis and worsen by the oil price war. It is the first time in the US history to deal with a crisis caused by the pandemic – people have to stay at home, constraining their ability to consume and to make money. Various stores and public places are forced to be closed for an indefinite period of time without any income while they still need to pay the rent. Unlike what happened in 1929 and 1987 when only a portion of people is influenced by the financial crisis, everyone’s lives in 2020 have been largely affected by the coronavirus, and such novel virus makes people wonder when their normal daily life can be back on track.

2.3 Different policy reactions

Since the major causes for 2020 stock market crash are different from that in 1987, it is expected to have a different policy reaction and impact on several aspects of the economy (see Table 2).

Table 2 Policy reactions in 1987 and 2020

Monetary Policy	1987	2020
Conventional approaches	Supported the liquidity shortage	Fed cut rate to near zero
Unconventional approaches	N/A	Helicopter money

2.3.1 Conventional Approaches

Unlike the slow action by the Fed in 1987, the Federal Reserve has been taking emergency actions to support the US economy in the recent months. Starting from the mid of February 2020, the stock market slumped sharply in just a few weeks. On March 15th, 2020, it announced to the public to cut the target interest rate near zero, following by cutting the rate by half percentage earlier that month. The quick response of the Fed, after learning the lesson from the past events, is very different from 1987.

In 1987, the Fed made helpful actions to rescue the stock market as well as the credit market from further slashing. After noticing the fact of the liquidity shortage for the firms that even with a great financial strength, the Chairman of the Fed, Alan Greenspan, announced that the Federal Reserve was ready to provide liquidity to support the economic and financial system if necessary. Such action stabilized the risk premiums as lenders were not so worried about the default risk that they might be exposed to, and also built the investors' confidence in the stock market. In consequence, the stock market recovered completely within 2 years. What the Fed did in 1987 was very similar to it does right now – a quick response intended to sustain the credit market and to provide the stock market a buffer from further loss.

2.3.2 Unconventional Monetary Policy – Helicopter money

While there was no innovative action implemented in 1987, the authority took quick and unconventional actions to help those who are in need. In the mid of March, the Treasury secretary announced to send a thousand-dollar check to all eligible adult citizens with the next few weeks. It is the first time in history to send helicopter money directly to every American, and such way of stimulating consumption plays an important for the vulnerable group in face of the health crisis. For instance, in case the food shortage happens, even unemployed people can either store the food or keep the check for future use.

Although this unprecedented approach of sending out checks can pump more liquidity into the financial markets, there are concerns too. Since the wide spread of the virus prevents people from going out and making consumptions, it is possible to leave excess liquidity on the table but not enough consumption. If that happens, the helicopter money may fail to stimulate the real economy. Nevertheless, this approach can build the confidence in the stock market because if people don't spend the money on consumptions, they are likely to put the money on investments. Since the bond rate is relatively low, long-term investors may speculate that stocks in some sectors such as airlines and hotels are at very cheap price and it is a good time to invest them in the long run. Hence, the helicopter money is an essential stimulus to help recover the stock market.

2.4 Financial Contagion in global stock markets due to Globalization

The stock market reflects how people view the future economy and profits of the public companies. So, when the stock price goes down, it shows that people have a negative outlook on the financial health of companies. Especially starting from Early March this year, three stock indices had a big drop by about 10%. When the stock price decreased rapidly, it could create a financial contagion. Figure 2 explicitly illustrates that the stock indices have been changing to the same direction.

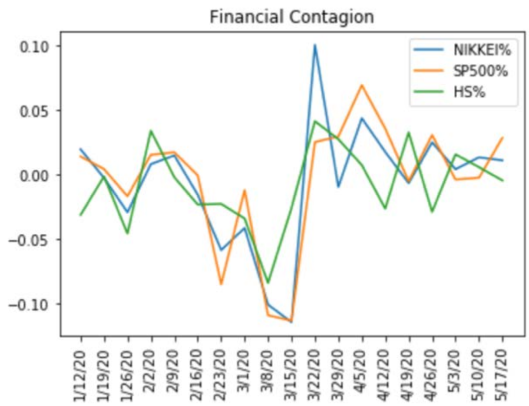

Figure 2 GDP comparison between 1982-1987 and 2015-2020

Such observation makes sense due to the following reasons. First, since the global economy has been closely connected, any company hit by the shock could have a ripple effect on the overall situation. For example, Alibaba, a China-based company, went IPO in the US stock market. At the beginning of 2020 when the economy stagnated in China because of the COVID-19, the stock price of Alibaba fell by 8.7% from January to February (data from Yahoo Finance). Since the market cap of Alibaba is relatively large compared to others in the same sector – customer services and retail – so the drop in their stock price would negatively affect the overall performance of this sector and consequently influence the overall US stock market. With the development of globalization, companies in various regions are becoming more closely interacted than before, and thus they could affect each other more. Second, the investors tend to think the stock market as a whole rather than separate them based on different regions. As the coronavirus is no longer a regional virus but becomes a pandemic, investors start to worry about the impact of the outbreak worldwide and how bad it could influence the economy and the financial market in their own countries. At this time, the economy of the world has been affected by the pandemic, so the overall performance of different stock markets tends to be more alike each other.

Both of the reasons above can be thought as the product of globalization, a process of developing international impact and interacting with each other in culture, politics and economy. At first, a closer cultural globalization acted as a catalyst for the spread of the virus. After the virus became a pandemic, the political and economic globalization were disrupted – the international relation became tense than ever and the global economy was expected to go into a recession. In short, this health crisis made the economy worse in one region; however, due to globalization, an economic shock that hit one place would also negatively influence another. In other words, globalization gives impetus to the financial contagion worldwide, and such impetus can be fatal for the global economy at this time.

2.5 Debt Level

Around 1980s, the world’s debts started rising fast as interest rates began, but the scale of debts is still considered to be at a relatively low level. In comparison, as the global economy continues to expand, regulators lower the lending standard and the global debt burden reaches its all-time high in 2020. Debt accounts for 75% of the US GDP, which is higher than that in 2008.

The greater the percentage of public debt on GDP, the higher the default risk will be occurred. Sectors such as auto and transportation take a large portion of the debt. However, these sectors are the ones largely affected by the pandemic. Airline companies can be a representative. Since the virus prevents people from traveling from one place to another, traveling bans had been announced by many countries and thus many flights were either cancelled or delayed. Therefore, if those airline companies levered heavily on debt to expand their business, then the government needs to spend more money to bail them out during the pandemic.

3. Aftermath of the two stock market crashes on the economy in various aspects

3.1 Impact on the labor market—Unemployment rate

Figure 3 Historical unemployment rate in the US

From Figure 3, we can conclude that the 1987 recession didn't affect the labor market immediately. In comparison, the unemployment rate jumped from 4.4% to 14.7% from March to April, which is a record high in history. This unusual phenomenon is partly because the massive job cuts in airline companies. According to CNN Business (2020) [4], roughly 750,000 pilots, flight attendants, baggage handlers, mechanics and others will soon be among the most at-risk for losing their jobs. In the meantime, many small businesses, especially in the customer and retailing sector, are at the edge of bankruptcy. Even big retailing companies including J.C. Penny and J. Crew filed for bankruptcy. Nathan Bomey (2020) [5] claimed that 230 stores planned to be closed and there is no stopping sign for bankruptcies in the following month. This results more people to lose their jobs in the coming weeks or months.

3.2 TED Spread (risk premium rate)

Figure 4 Comparison among TED spread, GDP and stock market index in 2015-2020

TED spread is the difference between US Treasury Bills and the three-month LIBOR based on US dollars, whereas T-Bills are normally considered as risk free rate, served as a benchmark in measuring risks. On the other hand, LIBOR is the average interest rate for global banks to borrow and lend from each other. So, a higher LIBOR rate suggests that a bank has to pay more to receive the interbank loan, which might be caused by the potential default risk or a short of liquidity among the global banks. TED spread is that it is a representative indicator of the credit risk of the global financial banking system. In 2008, Fred (2008) [6] demonstrated that TED spread reached its record high at 4.6% when Lehman Brothers collided, compared to around 1% a month before the collapse. Hence, from both the theoretical and practical aspects, TED spread is indeed a crucial indicator to foresee the condition of the risk market (see Figure 4).

Comparing Figure 1 with the historical episodes analyzed by Mishkin and White (2002), the real GDP tends to be the most stable data among those three. No matter how the stock market index and the spread fluctuate, the real GDP either remains around the same level (1929, 1946, 1970, 2020) or slightly increases with the time frame (1903, 1907, 1917&1920, 1937, 1940, 1962, 1973, 1987, 1990, 2000). Meanwhile, it always holds for S&P 500 (Dow Jones) and the spread to be inversely proportional. However, during the first quarter of 2020, the spread and S&P 500 are both slumping sharply, both having a negative percentage change – this is abnormal for the economy to have negative return on the stock market while the interest rate spread remains at a low level. Such data claims a fact that unlike 2008 with an unhealthy financial condition of the firms, the initial financial system in 2020 appears to be not severely affected by the stock market crash.

This also indicates that even though the stock market is not performing so well, the credit market is still under good operation and is able to borrow and lend the liquidity. Such indication arouses the interest to further examine the relationship between the stock market and the overall economy: are they indeed closely related to each other or there are some other factors play an important role in the change in GDP?

4. Discussion

Stock market and the economy is always thought to be closely related and affected each other. Nonetheless, from the table, it can be concluded that the change in stock market index, Nasdaq, is not very closely correlated to the GDP performance. So, the stock market crash is not expected to have a large impact on the future economy. Additionally, the increase in the debt level and the unemployment rate have the most negative impact on GDP. Meanwhile, those two variables are positively correlated to each other. Therefore, fixing either the debt level or the unemployment rate would be a crucial step to recover the overall economy.

	TEDRATE	GDP%	UNRATE%	NASDAQ%	Debt level%
TEDRATE	1.000000	0.115116	-0.137300	-0.441411	0.161358
GDP%	0.115116	1.000000	-0.657719	-0.097449	-0.682084
UNRATE%	-0.137300	-0.657719	1.000000	0.030932	0.555800
NASDAQ%	-0.441411	-0.097449	0.030932	1.000000	-0.286955
Debt level%	0.161358	-0.682084	0.555800	-0.286955	1.000000

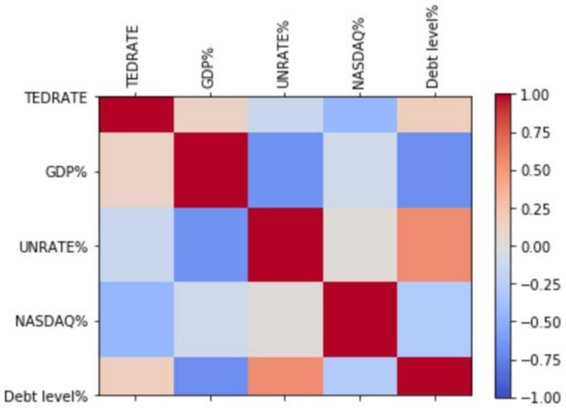

Figure 5 Correlation among the percent change in TED spread, GDP, unemployment rate, NASDAQ and the debt level.

Such relationship can be more directly observed from the heatmap. Positive correlation exists between the change in unemployment rate and the change in debt level. On the other hand, negative correlations also exist: When there is an increase in the percent change of unemployment rate or debt level, the GDP will decrease. This map corroborates the fact that in order to improve the GDP, taking actions to decrease the unemployment rate and debt level is important (see Figure 5).

Fred Economic Data (2020) [7] claimed that more than 20 million jobs lost in April 2020, which accounted for 14.7% unemployment rate, whereas the second-high employment rate, occurred in December 1982, was 10.8%. If the unemployment rate is too high, it would drag down the overall

GDP. Unlike any financial crisis happened in the last hundred years in the US, the rising unemployment is due to the pandemic, which is considered as a temporary health crisis. However, the problem is that if such virus continues to spread among people, the economy would be very difficult to recover in the short term. Hence, the next question is – how to lower the speed of virus spread while recovering the economy? If the social distancing continues being in effect, the restaurants, entertainment places and many more customer services will have to be closed. So, a more economical way of lowering the speed of virus spread should be taken into action effectively: TTQ. TTQ stands for testing, tracing and quarantine, which is to keep infected people in one place for a period of time and prevent them from contacting others who are not infected. Such way separates the infected and the healthy ones, so that the daily operation of the city would not be interrupted by the social distancing. That is to say, TTQ is much less costly for the economy than social distancing.

Another effective method to help increase the GDP is to lower the debt level. Bloomberg (2020) [8] reported that the Federal debt held by public was 35 percent of GDP during the financial crisis in 2008, whilst it is now projected to be 100 percent and will continue to climb to around 107 percent in the next five years. In 2008, the main debt level was largely lifted by the mortgage based on the New York Fed report (2019) [9], whereas the estimated deficit in 2020 is mainly composed by the emergency funding in response to the pandemic. Therefore, an essential approach to reduce the debt level is to understand how to take the spread of virus under control.

Besides TTQ, a rather time-consuming but more effective in curing the infected group is to develop a COVID-19 vaccine. The US government has been advocating pharmaceutical companies to develop vaccines and espousing them with sufficient funding, which is considered as part of the emergency funding. While a COVID-19 vaccine is one of the best methods to control the pandemic as well as recover the economy, the vaccine development process is typically a long game. Asher Mullard (2020) [10] suggested that the current speed of vaccine development pipeline is amazing, but it is still uncertain when exactly the vaccine can be used in a mass production. Simply put, in order to lower the debt level, TTQ or a COVID-19 vaccine would be necessary; however, it is a contradiction since either of them needs the support of the government funding, which would further increase the deficit. Despite such fact, during the health crisis, developing the vaccine or a TTQ is still important because it will help recover the economy for the long term: without social distancing, people can go to work as usual and the economic activities will be restarted.

Due to the pandemic, restaurants and manty public places were forced to be closed; companies suffered big losses and thus cut their employees’ salary; airline companies received bailout from the government – all of those formed an economic shock to the labor market and brought about a record high unemployment rate in April 2020. On the other hand, the emergency funding, which is a main composite of the US debt level, was thrusted by the pandemic as well. Therefore, effectively controlling the spread of the virus is a crucial step to decrease the unemployment rate and to lower the debt level, thus helping the economy to recover as soon as possible.

5. Conclusion

After comparing the stock market crash in 1987 and 2020, it is conclusive that the causes of the two events have commonality as well as some differences. The aftermath of the 2020 stock market crash on the economy is also analyzed, which leads to a critical question: do any of those variables closely connected with the future performance of the US economy? The stock market index is usually thought as a signal for the future economy, but after computing the correlation between these factors and the percentage change in GDP, the stock market performance and the future economy are found to be uncorrelated to a large extent. Instead, two important variables are proved to have a large and negative impact on the overall economy: unemployment rate and the debt level. Feasible suggestions are then proposed on how to decrease the two factors, so as to help recover the economy.

6. Limitations

Improvements are expected in two aspects of this article. Firstly, the three stock market indexes are all calculated in nominal terms, which would have differences compared with real stock market movements. Secondly, the overall economy is composed by both the public and private sectors. According to US Small Business Administration (2019) [11], small businesses, those of which are certainly not big enough to go IPO, created two-thirds of net new jobs and generated 44% of the US economic activity. The crisis for small businesses would bring about an increasing unemployment rate and a lower economic growth. Therefore, not only the stock market, but small businesses would also have a significant effect to the future economy. The research, in a way, would not be perfectly completed if not discussing the performance of private companies, though mostly their data is not accessible to the public. Additional studies on the private sectors are welcome to complement the paper.

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