UNIVERSITÁ DEGLI STUDI DI MILANO-BICOCCA

International Economics

Course of Financial Markets

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Effect of Covid-19 emergency on US financial system

Summary

US Financial system 2
Federal Reserve System 2
U.S. Treasury........ 4
Financial Markets........ 4
Stock Market 4
Debt Market 5
Money Market 6
Foreign Exchange Market........ 6
How the outcome of Covid-19 has impacted on Financial Markets........ 7
How the emergency has affected the country's banks system? 10
US Government response to COVID-19 13
Assitance for workers and families 13
Assistance for small businesses 14
Assistance for state and local governments........14
Preserving jobs for industries 15
What is the FED doing to support the US economy and financial markets? 15
Supporting households and consumers........17

US Financial system

The American financial system is characterized by the presence of a multitude of different entities that interact with one another and with their activities, not only they affect the American economy, but they also influence the global financial system.

These organizations are:

- Federal Reserve system
- US Treasury department
- commercial banks
- credit unions
- savings institutions such as savings banks and savings and loans associations
- financial markets, which can be divided into the stock market, the bond market and the money market
- insurance companies
- other minor financial institutions

Federal Reserve System

The **Federal Reserve System** (Fed) is the central bank of the US. There are three key entities that drive the Federal Reserve System: the Board of Governors, the Federal Reserve Banks (Reserve Banks) and the Federal Open Market Committee (FOMC).

The functions of the Federal Reserve system:

(a) conducting the nation's monetary policy;

(b) supervising and regulating banking institutions and protecting the credit rights of consumers;

(c) maintaining the stability of the financial system;

(d) providing certain financial services to the US government, the public, financial institutions and foreign official institutions.

The **Board of Governors** oversees and provides general guidance to the 12 Reserve Banks and shares with them the responsibility for supervising and regulating certain financial institutions and activities.

The Federal Reserve banks operate independently but under the supervision of the Federal Reserve Board of Governors.

The main tasks of the **12 regional Reserve Banks** include:

(a) supervising and examining state member banks (state-chartered banks that have chosen to become members of the Federal Reserve System), bank and thrift holding companies, and nonbank financial institutions;

(b) lending to depository institutions to ensure liquidity in the financial system;

(c) supervising and regulating member banks and bank holding companies;

(d) serving as banker for the US Treasury;

(e) acting as depository for the banks in its own District.

The **FOMC** is the organism of the Federal Reserve System that sets national monetary policy. It takes all decisions regarding the conduct of open market operations, which affect the federal funds rate (the rate at which depository institutions lend to each other), the size and composition of the Federal Reserve's asset holdings and communications with the public about the likely future course of monetary policy.

The Federal Reserve operations are financed primarily from the interest earned on the securities it owns securities acquired in the course of the Federal Reserve's open market operations. After payment of expenses and transfers to surplus (limited to an aggregate of $10 billion), all the net earnings of the Federal Reserve Banks are transferred to the U.S. Treasury.

Commercial Banks channel most financial transactions and services in the US. They are either federally or state chartered. Federally chartered banks (known as national banks) are regulated by the **Office of the Comptroller of the Currency (OCC)** and must join of the Federal Reserve System and the Federal Deposit Insurance Corporation (FDIC). State-chartered banks are regulated by the FDIC and banking authorities in the specific state in which they operate. The number of commercial banks in US regulated by FDIC is of 4,518, with a total asset in 2019 of almost $18,7 trillion.

The 4 most valuable banks in US are:

	Total asset 2019	Return on average assets	Market share
JPMorgan Chase & Co.	$2.74 Trillion	1.22%	14.65%
Bank of America	$2.38 Trillion	1.14%	12.72%
Citigroup	$1.96 Trillion	0.98%	10.48%
Wells Fargo & Co.	$1.89 Trillion	1.09%	10.11%

By adding up the market shares of these 4 major US banks, it can be observed that they control about 47.96% of the entire market in which they operate with a total asset of $8.96 trillion.

The **Office of the Comptroller of the Currency (OCC)** is an office of the American Treasury Department. The main function of the OCC is to regulate the national banking system and agencies of foreign banks.

An insurance protection for depositors at most commercial banks and mutual savings banks is provided by the **Federal Deposit Insurance Corporation (FDIC)**. In the past FDIC oversaw administrating two federal deposit insurance funds: the Bank Insurance Fund (BIF) and the Savings Association Insurance Fund (SAIF). These two funds were abolished in 2006 and merged to create the Deposit Insurance Fund (DIF).

When a bank or a saving institution fails, the FDIC ensures that the customers have timely access to their insured deposits and other services. The basic limit of federal deposit insurance coverage is currently $250,000 per depositor.

Credit unions are non-profit, co-operative financial institutions, that provide traditional banking services to all members who join in it. Since they are exempted from Reserve requirements, they have larger operating margins than banks, which allow them to pay higher interest rates on deposits, while also charging lower fees for other services, such as checking accounts and ATM withdrawals. Credit unions in the United States may either be chartered by the federal government ("federal credit unions") or a state government.

Savings institutions refer to savings banks and savings and loan associations (S&Ls) and are generally known as thrifts. Thrifts accept deposits from and extend credit primarily to individuals. Thrifts are regulated by the Office of Thrift Supervision (OTS) and deposits are insured with the FDIC.

U.S. Treasury

The **U.S. Department of the Treasury** is the executive branch of the federal government that manages national finances. It funds the U.S. debt through selling Treasury bills, notes, and bonds. The Department is responsible for a wide range of activities such as advising the President on economic and financial issues, encouraging sustainable economic growth, and fostering improved governance in financial institutions.

United States Treasury securities are government debt instruments issued by the United States Department of the Treasury to finance government spending as an alternative to taxation.

There are four types of marketable treasury securities:

- Treasury bills→ short-term government debt with a maturity of maximum one year
- Treasury notes→ have a fixed interest rate and a maturity between 1 and 10 years
- Treasury bonds→ long-term government debt with a maturity greater than 10 years
- Treasury Inflation Protected Securities (TIPS)→ security indexed to inflation, so that it can adjust its price to maintain its real value.

The government sells these securities in auctions conducted by the Federal Reserve Bank of New York, after which they can be traded in secondary markets.

Financial Markets

The US financial markets are one of the most highly developed markets worldwide. Its equities markets, debt markets, money markets, foreign exchange markets play a fundamental role in affecting other countries' financial markets.

Stock Market

At the end of 2019 the total market capitalization of the American stock market was $37.69 trillion, which related to US 2019 GDP is about 152.50%.

The place, where almost 24 million of daily trades happen, is in New York City: the **New York Stock Exchange (NYSE)**. Other smaller stock markets are in Boston, Philadelphia, Cincinnati, Chicago, San Francisco and Los Angeles.

Stocks that are not sold on a formal exchange are traded in the over-the-counter (OTC) markets, between which the most known is the National Association of Securities Dealers Automated Quotation system **(Nasdaq)** with a total daily dollar volume of about $180 billion.

Securities markets are regulated by the Securities and Exchange Commission (SEC).
The **Securities and Exchange Commission (SEC)** protects investors and maintains the integrity of the securities markets. SEC is empowered with broad authority over all aspects of the securities industry.

Market Capitalization Indexes over GDP

Market Cap to GDP is a long-term valuation indicator for stocks. Two of the most used market capitalization indexes are the Wilshire 5000 Index and the S&P 500.

The **Wilshire 5000 Index** is a market-capitalization-weighted index and is intended to measure the total market capitalization of most publicly traded companies based in the United States. Considering its relation over GDP, after reaching its minimum of 1.043 on the 23rd of March, between April and May it was able to make a comeback to an average of 1.304.

The **S&P 500** is a market capitalization-weighted index that measures the stock performance of 500 large companies listed on stock exchanges in the United States. It captures approximately 80% of the available total market capitalization. Considering its relation over GDP, in the second half of March, as for the Wilshire 5000 Index, the S&P index has also dropped to 0.112. Now it is slowly recovering and getting back to a level of 0.14.

Debt Market

There are many debt securities that are of different nature.

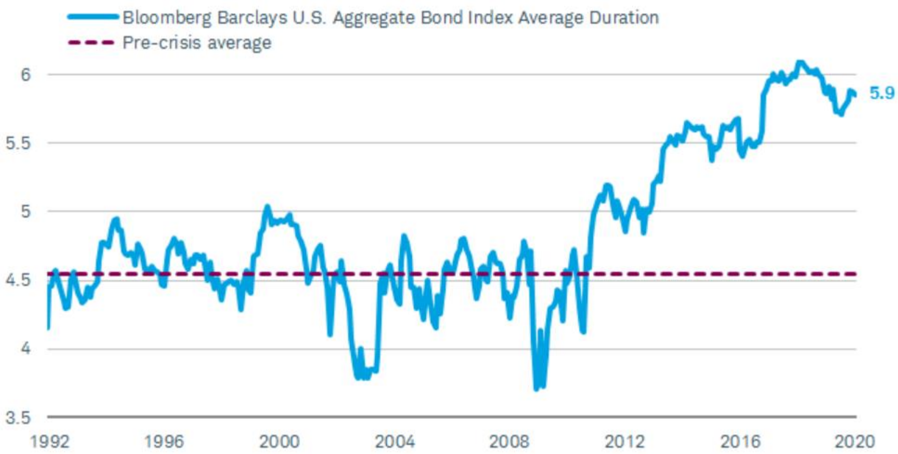
Bonds are debt securities with maturities of longer than one year and must be registered with the SEC. They may be issued by governments or by private sector companies.

Municipal securities are debt securities such as bonds and notes issued by states, cities and counties or their agencies to help financing public projects and the construction of infrastructures. This type of securities is regulated by the Municipal Securities Rulemaking Board (MSRB), which is subject to oversight by the SEC.

Every bond, depending on its level of risk and on the rating given by a rating agency, can have either investment grade quality or a speculative grade quality.

One of the most known debt market indexes, which is used to state the debt market condition, is:

- **Bloomberg Barclay's Aggregate Bond Index (AGG)**
  The AGG is an aggregate index that includes securities that are of investment-grade quality (i.e. grade BAA if rated by Moody's, grade BBB if rated by Standard&Poor's) or better, have at least one year to maturity and have an outstanding par value of at least $100 million. The index includes government securities, mortgage-backed securities (MBS), asset-backed securities (ABS) and corporate securities.



In this graph we can observe the average duration of Aggregate Bond index. After 2008 crisis the average duration was 3.70. From 2011 till nowadays the average duration of this bond index has sharply grown, reaching its maximum of 6.2 around 2018. The latest recorded value of 5.9 is from the 31 of January. From that point we can surely assume that the average duration of the Aggregate Bond index has dropped between a value of 5 and 5.5, if not even lower, due to the pandemic and markets contraction.

Money Market

Money markets provide liquidity for investors to obtain or lend funds on a short-term basis. Debt instruments with maturities of one year or less are traded in money markets. These instruments include commercial paper, bankers' acceptances, treasury bills, government agency notes, local government notes, interbank loans, time deposits and international agency paper. There is neither a government regulator nor an SRO (self-regulatory organization) for the money markets.

Foreign Exchange Market

The Treasury Department monitors and conducts foreign exchange operations through the Federal Reserve System. As there is no exchange control in the US, no specific license is required to operate in foreign exchange. Foreign exchange is also known as Forex Market or FX.
This market determines the exchange rate for currencies around the world and the latest data comes from the 2019 Bank for International Settlements' survey that registered the FX market as a $6.6 trillion-daily market.
The most traded currency by value is the US Dollar, with a percentage of daily trades of 88.3% in April 2019. American banks also own a leadership position in the ranking of the top 10 currency traders with a total market share of 37.59%.

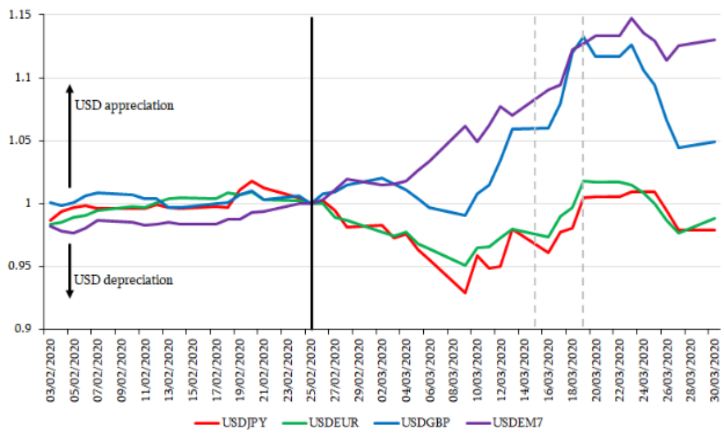
Top 10 currency traders

% of overall volume, June 2019

Rank	Name	Market share
1	JP Morgan	9.81 %
2	Deutsche Bank	8.41 %
3	Citi	7.87 %
4	XTX Markets	7.22 %
5	UBS	6.63 %
6	State Street Corporation	5.50 %
7	HCTech	5.28 %
8	HSBC	4.93 %
9	Bank of America Merrill Lynch	4.63 %
10	Goldman Sachs	4.50 %

How the outcome of Covid-19 has impacted on Financial Markets

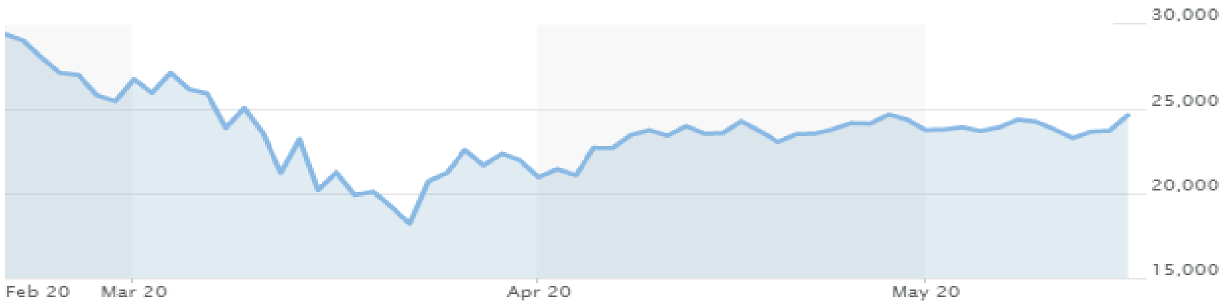
Coronavirus disease 2019, known as COVID-19, is a novel infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The COVID-19 pandemic started to spread to the United States on January 19, 2020 and by the end of March it has reached all 50 U.S. states. As of May 24, 2020, the U.S. has the most confirmed active cases and deaths in the world and its death rate is 20% of the USA total cases, the tenth-highest rate globally.



The spread of COVID-19 has led to **large foreign exchange (FX) moves** and both the scale of the epidemic and the speed of its global spread makes the current situation unique, even if large FX moves happened in past crises too. The uniqueness comes from the yield curve inversion because on 25th February 2020 it was driven by a sharp fall in longer-term yields and was brief. In contrast looking at the US yield curve in 2006/2007, it was associated with rising short-term interest rates, and elongated.

Considering the **Dow Jones Industrial Average (DJIA)**, a stock market index that measures the stock performance of 30 large companies listed on stock exchanges in the United States, the impact of COVID-19 on Financial Markets started at the end of February. The value of the index is the sum of the price of one share of stock for each component company divided by a factor that changes whenever one of the component stocks has a stock split or stock dividend, and this generates a consistent value for the index. As a matter of facts, on 27 February 2020, DJIA dropped 1191 points, a drop in the index's history that is one of the largest single-day point drop and Dow Index has continuously decreased until the 23rd of March when it has dropped to just under 20000. Global stock markets lost $6 trillion in value over six days from 23 to 28 February 2020.

Dow Jones Industrial Average



(https://www.marketwatch.com/investing/index/djia)

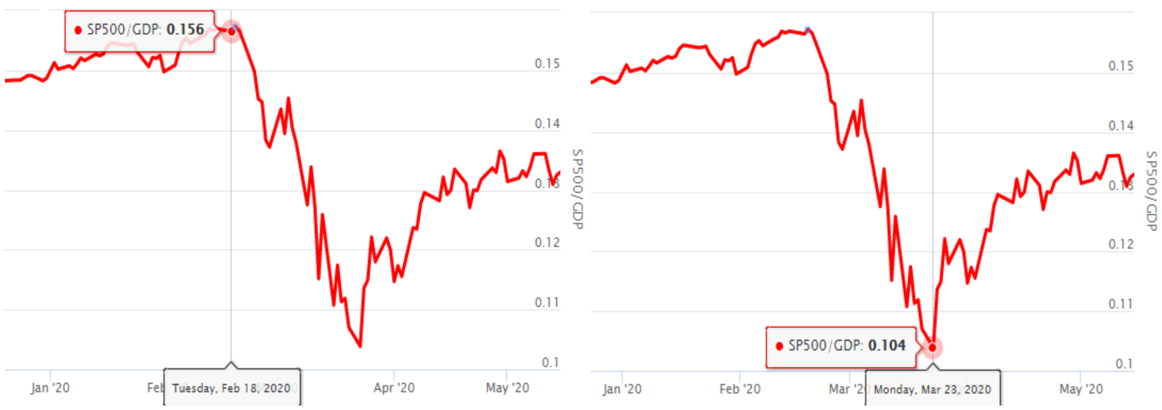
Even though Dow index is one of the most followed equity indices, many consider it an inadequate representation of the overall U.S. stock market when it's compared to the S&P 500 Index (broader market indices) for three reasons:

1. It only includes 30 large cap companies;
2. It's not weighted by market capitalization;
3. It does not use a weighted arithmetic mean.

In order to completely and deeply analyse how covid-19 impacted on stock markets, other indices such as S&P 500 Index needs to be studied.

S&P 500 to GDP Ratio

18/02/2020 23/03/2020

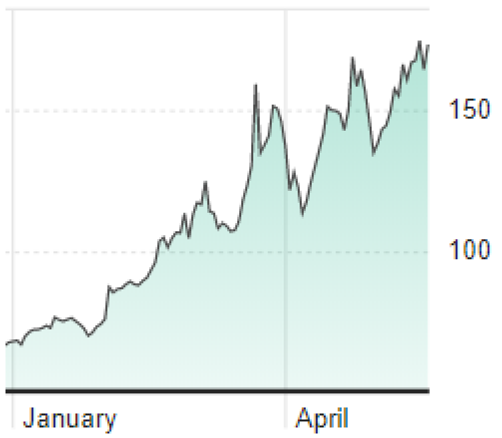


(https://www.longtermtrends.net/market-cap-to-gdp/)

The graphs above show the peak (0.156) and the minimum point (0.104) reached by the S&P 500 index respectively on 18th of February and 23rd of March 2020, and between February 20 and March 19, the S&P 500 index fell by 28% (from 3,373 to 2,409). The decrease is strongly related to the pandemic, as a matter of facts the climax of anxiety started to spread in February and the first decisions of lockdowns were announced at the end of February 2020. Despite the overall decrease in the most important indices, if the stock market is divided in major sectors characterized by the type of the firms included, it could be deeply understood which type of business was benefited (or was disadvantaged) by the Covid-19. The analysis is made on a firm, taken as an example of the overall trend of the sector, per each type of stock market:

"Work from Home" Stocks

Zoom Video Communications Inc



Zoom Video Communications Inc is a video-first communications platform with a market cap. of $49,3B. In the COVID-19 pandemic, over the last 6 months, its quote in the markets has changed of +149.40%. Starting from -8.67% (a quote just under 80) in December 2019 to now, the trend has increased with some slight fluctuations.

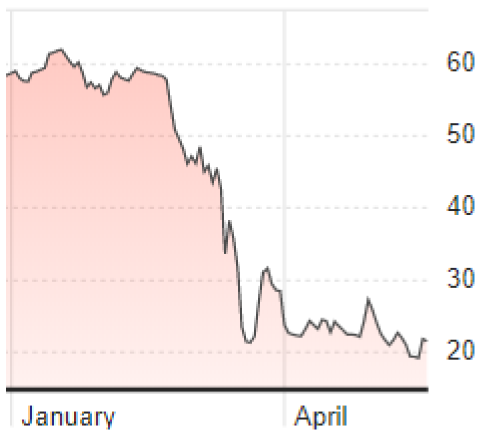
"Stay at Home" Stocks

Netflix Inc

Netflix Inc is a streaming entertainment service company, which provides subscription service streaming movies and television episodes over the Internet and sending DVDs by mail, and it has a market cap. of $199.8B. Over the last 6 months, its quote in the markets has changed of +49.02%. From +2.83% in December 2019 to now the trend has increased with just one noticeable fall at the start of March 2020 due to the greater awareness of Covid-19.

Airline Stocks

Delta Air Lines Inc



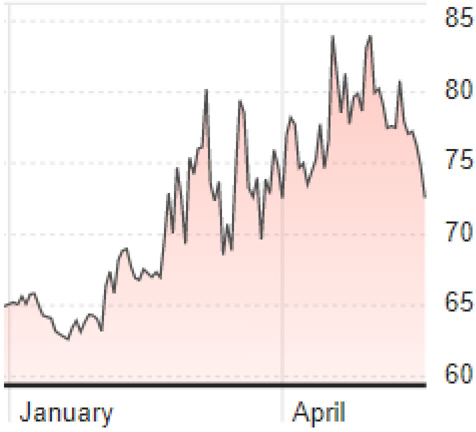
Delta Air Lines Inc provides scheduled air transportation for passengers and cargo, and it has a market cap. of $12.2B. Over the last 6 months, its quote in the markets has changed of -61.87%. From December 2019 to now the trend has decreased precipitously with a noticeable fall in March 2020 due to the greater awareness of Covid-19, from $38.54 to $23.17 in just seven days.

Oil

Oil is the most important commodity in the market, and over the last 12 months the price has changed of -48.22%. It has decreased from just over $60/barrel on January 2020 to just under 10$/barrel on April 2020, when most of the global population was in lockdowns. Now the price is slowly increasing.

Biotech Stocks

Gilead Sciences Inc



Gilead Sciences Inc is a biopharmaceutical company, which engages in the research, development, and commercialization of medicines in areas of unmet medical need. Over the last 6 months, its quote in the markets has changed of +11.25%. From February 2020 its quote has continuously increased with some fluctuations and on 30th of April it has reached a peak of $85.47.

Cruises, Concerts & Theme Park Stocks

Carnival Corp

Carnival Corp engages in the operation of cruise ships and it has a market cap. of $7.7B. Over the last 6 months, its quote in the markets has changed of -68.26%. From February 2020 to now the trend has decreased sharply reaching a minimum point of $8.005 at 2nd of April.

Hotel Stocks

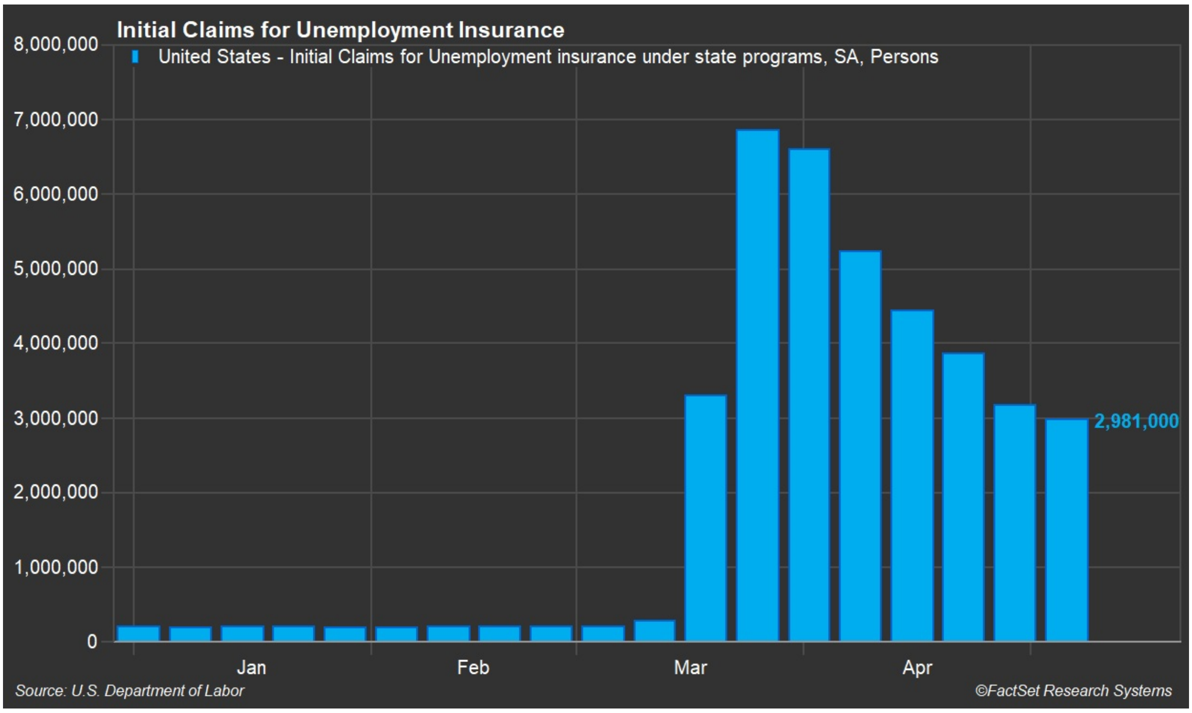
Hilton Worldwide Holdings Inc

Hilton Worldwide Holdings Inc engages in the provision of hospitality businesses and it has a market cap. of $19.0B. Over the last 6 months, its quote in the markets has changed of -24.86%. From 13th of March to 18th of March 2020 the trend has decreased precipitously with a noticeable fall due to the greater awareness of Covid-19, from $80.85 to $58.01.

(Graphs and data are taken from https://edition.cnn.com/business/markets/coronavirus)

How the emergency has affected the country's banks system?

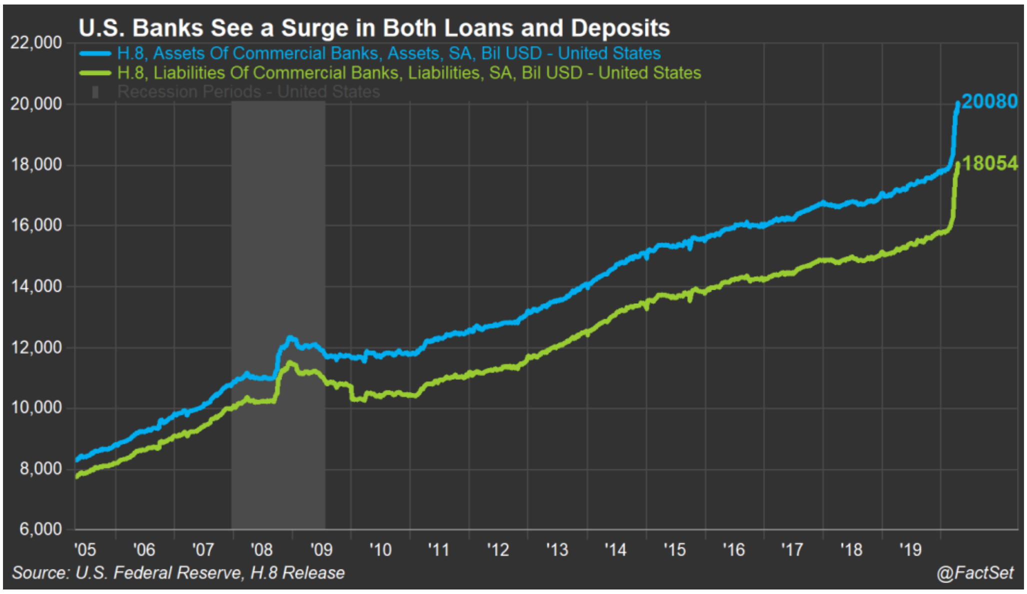
During the crisis of 2008, the economy entered a recession due to issues that originated in the financial system. In contrast, the COVID-19 crisis is fueled by other factors. The impact of the current critical situation is evident in the real economy; such that the collapse in travel sector and in business activity. The features most worrying are what concern the job losses and the business closure. In fact, from mid-March, a very negative peak was recorded in the unemployed sector; as it can be observed in the chart below, the tallest column almost touches the 7 million of claims for unemployment insurance. Despite a slight recovery this month, the effects on the banks' balance sheet is expected still critical; banks have customers who are now unable to make loan repayments and pay credit card bills and they try to face the impact on retail credit costs, including mortgages.



The S&P Global forecasts effectively zero growth in the U.S. for 2020 and this scenario seems to lead to bad expectations on the credit quality of banks' loan portfolios. The banking system must support the most adversely impacted companies even if it means to reach significant deterioration of their loan portfolios and sharp increases in the cost of credit. In addition, the banks should provide help to the larger companies in order to meet their funding needs and to be able to access independently the capital markets.

Luckily, as the U.S. regulators confirmed, the banks have enough capital and liquidity to support their corporate and retail customers through this difficult time. They are better prepared than ever operationally to handle this crisis. Since the global financial crisis, US banks have built up substantial levels of capital and liquidity in excess of regulatory minimums and buffers. Speaking of numbers, the largest banking organizations hold $1.3 trillion in common equity and $2.9 trillion in high-quality liquid assets.

According to what Federal Reserve has released, total assets of commercial banks in the U.S. were up 17.0% year-over-year for the week ending April 15, while liabilities surged 18.7% compared to a year ago. The double-digit growth in these metrics is evident in the graph.



For this reason, in the months ahead banks will become agencies for channeling state aid: Governments will sell hundreds of billions of dollars' worth of their bonds to the banks; central banks will buy them from the banks, effectively funding. In return, banks will extend interest payment and other debt-service holidays to mortgage borrowers and corporations and keep credit lines open. These new challenges concern a shift in payments from physical to online, an explosion of new loan applications and a difficult loan receivables environment.

The effects on the U.S. major banks:

Citigroup

	NET INCOME	EARNING PER SHARE(EPS)	REVENUES
FOURTH QUARTER 2019	$5.0 billion	$2.15 per share	$18.4 billion
FIRST QUARTER 2020	$2.5 billion	$1.05 per share	$20.7 billion

The table above shows the sharp drop in profits which corresponds to almost -50% with respect to the previous quarter, after accounting for provisions of 4.9 billion to face the coronavirus epidemic. Referring to the data provided on April 15th, the Net income decline is driven by higher loan loss reserves by reflecting the impact of changes in the economic outlook on estimated lifetime losses under the new Current Expected Credit Loss standard (CECL). Despite the EPS value which is dropped to $ 1.05 per share, the American investment bank posted a 12% increase in revenues, to 20.7 billion, from the previous 18.6 billion, exceeding expectations.

Bank of America

	NET INCOME	EARNING PER SHARE(EPS)	REVENUES
FOURTH QUARTER 2019	$7.0 billion	$0.74 per share	$23 billion
FIRST QUARTER 2020	$2.5 billion	$0.40 per share	$22.8 billion

Also, in this case, the Net income decreased a lot with a decline of - 45% in profits due to a provision expense of $ 4.8 billion for COVID-19 related reserve build. The reduction in income is like that in the Citigroup. In contrast, the revenue is not raised, but it dropped from $ 23 to $ 22.8 billion.

JPMorgan Chase & Co.

	NET INCOME	EARNING PER SHARE(EPS)	REVENUES
FOURTH QUARTER 2019	$8.5 billion	$2.57 per share	$29.2 billion
FIRST QUARTER 2020	$2.9 billion	$0.78 per share	$29.1 billion

The sharp drop in profits is evident also here; the Net income is down over 65%. On the contrary, the share of revenues remained almost equal to the previous quarter. The provision for credit losses was $8.3 billion driven by reserve builds which reflect deterioration in the macro-economic environment because of the impact of COVID-19 and continued pressure on oil prices.

To sum up, despite April's market rebound, uncertainty remains over the trajectory of global growth. A lot will depend on the extent to which economies can successfully reopen. For this reason, investors should remain prudent and expect further volatility. The record outflows of the first quarter of the year have been more than recuperated from US high yield. In addition, about half of the flows into US high yield since the end of March have been into ETFs and so, the money may not yet have returned.

US Government response to COVID-19

The U.S. Treasury Department plans to borrow nearly $3 trillion between April and June to bankroll the federal response to the coronavirus pandemic. It's an unprecedented level of deficit financing to match the historic economic hit caused by the virus. In a single quarter, the government will borrow more than twice as much as it did all last year. The government had expected an influx of cash during the April to June quarter, as businesses and families paid their income taxes. But the tax filing deadline was pushed back until July.

Meanwhile, with the economy cratering and unemployment climbing to levels not seen since the Great Depression, Congress has authorized trillions of dollars in relief payments, unemployment benefits and loans to small businesses, as well as money for vaccine research and coronavirus testing.

The Treasury Department said it expects to borrow another $677 billion between July and September.

Despite the surge in federal debt, the government's borrowing costs remain low. The Federal Reserve has promised to buy as much Treasury debt as necessary to weather the pandemic.

On the other hand, US Government launched different assistance programs in response to the pandemic. One of these programmes is called the CARES Act and provides fast and direct economic assistance for workers and families, small businesses, state and local governments and preserves jobs for industries.

Assitance for workers and families

Through Economic Impact Payments and other means, the Treasury Department is ensuring that American people receive fast and direct relief in the wake of the coronavirus pandemic. The CARES Act provides for Economic Impact Payments to American households of up to $1,200 per adult for individuals whose income was less than $99,000 and $500 per child under 17 years old – or up to $3,400 for a family of four. Additionally, the IRS will use the information on the forms to apply to this program to generate $1,200 Economic Impact Payments to Social Security recipients who did not file tax returns in 2018 or 2019. Recipients will receive these payments as a direct deposit or by paper check, just as they would normally receive their benefits.

Assistance for small businesses

The Paycheck Protection Program is providing small businesses with the resources they need to maintain their payroll, hire back employees who may have been laid off, and cover applicable overhead

The Paycheck Protection Program established by the CARES Act, is implemented by the Small Business Administration with support from the Department of the Treasury. This program provides small businesses with funds to pay up to 8 weeks of payroll costs including benefits. Funds can also be used to pay interest on mortgages, rent, and utilities.

Funds are provided in the form of loans that will be fully forgiven when used for payroll costs, interest on mortgages, rent, and utilities (due to likely high subscription, at least 75% of the forgiven amount must have been used for payroll). Loan payments will also be deferred for six months. No collateral or personal guarantees are required. Neither the government nor lenders will charge small businesses any fees

Forgiveness is based on the employer maintaining or quickly rehiring employees and maintaining salary levels. Forgiveness will be reduced if full-time headcount declines, or if salaries and wages decrease.

The Paycheck Protection Program prioritizes millions of Americans employed by small businesses by authorizing up to $349 billion toward job retention and certain other expenses.

Small businesses with 500 or fewer employees—including non-profits, veterans' organizations, tribal concerns, self-employed individuals, sole proprietorships, and independent contractors— are eligible. Businesses with more than 500 employees are eligible in certain industries.

Small businesses and eligible nonprofit organizations, Veterans organizations, and Tribal businesses described in the Small Business Act, as well as individuals who are self-employed or are independent contractors, are eligible if they also meet program size standards.

Assistance for state and local governments

Through the Coronavirus Relief Fund, the CARES Act provides for payments to State, Local, and Tribal governments navigating the impact of the COVID-19 outbreak.

The CARES Act established the $150 billion Coronavirus Relief Fund.

Treasury will make payments from the Fund to States and eligible units of local government

The CARES Act requires that the payments from the Coronavirus Relief Fund only be used to cover expenses that:

- are necessary expenditures incurred due to the public health emergency with respect to the Coronavirus Disease 2019 (COVID–19);
- were not accounted for in the budget most recently approved as of March 27, 2020 (the date of enactment of the CARES Act) for the State or government; and

- were incurred during the period that begins on March 1, 2020 and ends on December 30, 2020.

Preserving jobs for industries

The CARES Act offers meaningful financial support to American businesses and job creators so they can better support employees and be prepared to get back to business as soon as possible. Employers of all sizes that face closure orders or suffer economic hardship due to COVID-19 are incentivized to keep employees on the payroll through a 50% credit on up to $10,000 of wages paid or incurred from March 13, 2020 through December 31, 2020.
To enhance cash flow so that businesses can better maintain operations and payroll, employers and self-employed individuals can defer payment of the employer share of the Social Security tax they otherwise are responsible for paying to the federal government with respect to their employees. The deferred employment tax can be paid over the next two years—with half of the required amount to be paid by December 31, 2021 and the other half by December 31, 2022.

What is the FED doing to support the US economy and financial markets?

Near-Zero Interest Rate

The FED has **cut its Federal funds rate** bringing it down in a range between 0 and 0,25% stating that the rate will be raised again only when the economy will overcome the recent events and it will be on his way to achieve its maximum employment and price stability goals.
This move is important because the Federal funds rate is a benchmark for other short term rates and in many cases it is able to affect also longer term rates. In this way loans will be less expensive and that will stimulate the economic system.

Supporting financial market functioning

In order to restore the smooth functioning of the market the FED started purchasing a big amount of securities to provide liquidity to the market.
That measure was initially assumed to be limited to a certain amount of securities but on
March 23 the FED decided to start an illimitated **Quantitative Easing**.
This unprecedented action is aimed to boost the money supply from banks to business.
It is also important because it sends a message to the investors and it try to reduce the uncertainty that characterized the markets in the last period.
Uncertainty is always negative because it leads investors to adopt irrational behaviours and so to increase markets volatility. Markets volatility always carry out negative consequences for the economy.
On March 17, the FED announced the establishment of a **Primary Dealer Credit Facility** which provides the offer of low interest rate loans up to 90 days to 24 large financial institutions known as primary dealers.
These debt will be collateralized by a broad range of investment grade debt securities and a broad range of equity securities.
This action will be in place for at least six month and it could be extended.
The FED also backstopped the money market mutual fund by establishing a **Money Market Mutual Fund Liquidity Facility .**
This action will make loans available for suitable financial institutions.
This loans will be secured by high quality securities purchased by the money market mutual funds.
Because of the COVID-19 a lot of investors, businesses and households withdrew from the money market mutual fund and they started to redeem their securities but the current market situation made difficult for

them to sell them.
This action is made in order to help the market to meet the demand of redemption leading financial institutions to buy this securities.

Encouraging banks to lend

The FED improved condition at which it will lend money to banks.
The FED lowered the rate at which it lends money to eligible financial institutions through its **discount window**.
The FED improved conditions at which these money are borrowed by reducing the rate to 0.25 and by expanding the loan term to 90 days.
FED **temporarily relaxed regulatory requirements**.
After the financial crisis banks had to hold part of their capital as **TLAC** (Total Loss-Adsorbing Capacity) in order to prevent future losses.
Now the FED in encouraging banks to use this capital in order to continue their activity of lending capitals to creditworthy households and businesses.
Another action put in place by FED is the temporarily **reduction of the community bank leverage ratio**. The leverage ratio in a bank is the relationship between its own capital and the average total consolidated assets.
By temporarily reducing this ratio the FED gives to banks the opportunity to focus on lending money to creditworthy households and businesses.

Supporting corporations and businesses

The FED established the **Primary Market Corporate Credit Facility**.
The PMCCF allows the FED lend directly to corporation through the purchase of new bonds or the by providing loans.
Furthermore, the borrowers have the opportunity to defer interests and payments correlated to these actions for six months in order to be able to pay employees and suppliers.
FED in this way supports directly the eligible high rated US corporation providing them the liquidity they need to continue their activity.
The importance of this operation need to be analysed not only in this respect but even through the indirect effects it has.
Employers will be paid and so they won't contribute to a drop in demand of good and services and suppliers will be able to have liquidity too and in this way you also in part avoid the spread of panic through the investors.
The FED will established a **Secondary Market Corporate Credit Facility** too.
Through the SMCCF the FED will purchase on the secondary market corporate bonds previously issued.
The SMCCF will enter further money on the market but it is important because it will make possible for business to access to credit in order to give them always more resources to keep going with their operations.
The FED keeps supporting businesses and households in a direct way with the introduction of the **Commercial Paper Funding Facility** .
Commercial paper is a market characterized by unsecured short term debts used to support a wide range of economic activities.
Through the CPFF the FED will buy commercial papers lending money directly to corporation and it will do that postponing the maturation of the credit in order to reduce the risk that eligible issuers will not be able to repay.
These action is important because it also provide time to businesses, It gives them time to recover and to pay their debt when they will actually have the financial stability to do that.
Another important action to help the economic system is the **Small Business Administration's Pay check Protection Program (PPP) .**
This measure is purposed to help first of all small activities through the concession of loan with two years of

maturity and an interest rate of the 1 %. Loan payments will be deferred for six months and it does not require personal guarantees or collateral.
The most important aspect of the PPP is the fact that the loan will be fully forgiven if the money are used for payroll costs, interest on mortgages, rent, and utilities.
This is an action of great importance because it helps small businesses to continue their activity and to maintain their employers. Small businesses are the most financially fragile businesses and they are very important for the economy of the State.
Furthermore, this is another example of how the FED is helping the households through the businesses. In this way the FED is trying to avoid drops in the demand of good and services.
The FED decided to help some businesses that were too big for PPP and too small for corporate credit facilities or that were not eligible for this programs.
The FED decided to do that expanding the scope and the eligibility of the lending programs through the introduction of new kind of facilities**: New Loans Facilities ,Expanded Loans Facilities and Priority Loans Facilities.**
In order to participate businesses has to have up to 15000 employers or up to 5 billion dollars revenues.
These loans have a maturation of 4 years and are characterized by the fact that lenders retain part of the money in order cover risks.
In the first two facilities lenders retain only 5% of the loans while in the third they retain the 15%.
That's because the third loans in aimed to help riskier businesses.

Supporting households and consumers

In this situation the FED decided also to help in a more direct way households, consumers and small businesses through the introduction of **Term Asset-Backed Securities Loan Facilities.**
In order to explain how this action works we first need to understand what Asset-Backed securities are.
When a consumer makes a loans these one become part of the lender's balance sheet and it can be sold to a special purpose vehicle which turn this debt into an Asset-Backed security that can be sold on the market .
The TALF is aimed to lend to the owners of eligible Asset-backed securities (such as auto loans, student loans , insurance premium finance loans etc) new loans.
This action is done in order to support lending's to consumers despite the difficult situation.

Supporting State and municipal borrowing

The municipal bond market has been one of the market that suffered the most.
Investors start selling their securities making always more and more difficult for municipal governments to borrow.
This is the reason why the FED established the **Municipal Liquidity Facility**.
Through this action the FED started to lend to counties with at least 500 000 residents and cities with at least 250 000 resident and it will do that through the purchase of investment-grade notes tied to future tax revenues with maturity of less of 3 years.
The FED also included in the collaterals eligible for the Money Market Mutual Fund Liquidity Facility highly rated municipal debt with maturities up to a year and it did the same for the Commercial Paper Funding Facilities.
This action is purposed to stimulate banks' investment in this market in order to provide even more liquidity.