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The FEDs monetary policies during the COVID-19 pandemic and their redistributive effect.

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Abstract:

Triggered by the COVID-19 pandemic, the U.S. Federal Reserve Bank implemented historically drastic monetary policies not only to ensure smooth and functioning market operations but also as a means to enable the U.S government to hand out fiscal relief packages worth trillions. Therefore, it is interesting to see if these monetary, fiscal, and regulatory interventions had a significant redistributive effect. For that, official market data and monetary data from the Federal Reserve of St. Louis were evaluated and analysed with the application of the theory of the Cantillon effect. While the Cantillon effect holds up, the different indicators show a redistributive effect but of which, not all can be explained by the Cantillon effect. It appears that the high PCE inflation is instead a mixture of shortages and fiscal spending, while the asset price inflation is where the Cantillon effect can easily be recognised today.

Keywords:

Monetary policy, FED, Inflation, Redistribution, Cantillon effect

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1. Introduction

The interest in the ideas and issues found in this papers question it is trying to tackle became more prominent over the last two years and rapidly accelerated in the past six months. The issue is exceptionally loose monetary policies and their effects on socio-economic wealth distribution. The last two years have been unprecedented, with the COVID-19 pandemic causing market phenomena that sometimes border on lunacy from a casual observer's point of view. Events like the oil futures going negative, shocking market corrections, and oil shortages like the West has not seen since the 70s. The most perplexing thing during this time was that with all this disruption, price increases, wealth and business destruction, luxury goods producers such as Rolex, Bentley and Hermes are all celebrating tremendous successes.[1] Extreme price developments on the grey market for watches, particularly in the case of Rolex, makes one wonder.[2] Why does it seem that despite all of this economic turmoil during the global lockdowns, there seem to be more champagne parties than ever? While this is undoubtedly an exaggerated way of putting things, at least personally, these decadent spending habits seemed to have grown, not shrunk. All of this is just a vague perception or anecdotal "evidence"; however, this perception is the motivation for trying to investigate what exactly happened.

When looking for extraordinary measures taken to combat the downward economic pressures of government policies trying to tackle the COVID-19 pandemic, it does not take long to notice the extraordinary monetary policies several central banks worldwide have taken. At the beginning of the pandemic Olivier Blanchard, the former chief economist of the IMF, laid out three roles of fiscal policy in this pandemic. The first two very much being in the gist of fiscal stimuli to support the active measures that help with pandemic relief, such as tests drugs etc. and the second being that of giving financial support to companies and individuals to avoid mass bankruptcies. And last but not least the third role highlighted by Blanchard is the: “support

[1] Chabot 2022.
[2] Milton 2022.

of aggregate demand, to make sure that the economy operates as close to potential as it can."[3] It is this role which does not sound like mere welfare for individuals who were hurting financially in this pandemic, but to influence the economy by creating demand which is not there. Loose monetary policy it is.

This paper will focus on the Federal Reserve Bank in the USA and its monetary policy in reaction to this unexpected new market environment that kicked off in March 2020. Here, this paper wants to research the effects their monetary policy has had on the socio-economic structure of the USA. The goal is to inquire about the size and the kind of effect the FEDs monetary policy had. Moreover, since monetary policy is inherently about the distribution of money and its velocity to stabilise the economy and employment, it is precisely that on which the focus will be on, a look at where the money was introduced and where it ended up at, which neatly ties in with the research question:

What are the potential redistributive effects of the FEDs monetary policy, from March 2020 onwards, through its effects on different classes of assets, namely stocks, housing, and commodities?

It is the expansionary monetary policy of the FED which is the focus of this paper; therefore, this paper will focus mainly on the Federal Reserve Bank as an actor. It will, however, also talk about the government and their interventions in the market as a regulator and spender. To achieve that, economic data will be evaluated with the economics frame laid out in the following segment, which will go over explanations of essential economic concepts of high importance for this thesis. The explanations of these concepts are drawn from the works of Ludwig von Mises, Murray Rothbard and Thomas Sowell. Furthermore, the thesis will apply the Cantillon effect theory and analyse the data through its lens to see if this effect can be seen.

[3] Blanchard 2020.

2. Literature Review of Economic Concepts

2.1. Scarcity vs Shortage

An essential aspect of the theoretical basis of this work is the dynamic between scarcity and shortage, as Thomas Sowell wrote on this issue:

> "One of the crucial distinctions to keep in mind is the distinction between an increased scarcity—where fewer goods are available relative to the population—and a "shortage" as a price phenomenon. Just as there can be a growing shortage without an increased scarcity, so there can be a growing scarcity without a shortage."[4]

A great example of this, given by Sowell, is how, in 1906, after an earthquake and fire which destroyed more than half of the housing in the city, there was still no housing shortage. Incentives for reconstruction and renting out rooms existed due to a lack of price control. The market was allowed to function and allocate the remaining housing supply among the people whose housing was destroyed and decided to stay in San Francisco, overall, 100 thousand people. Without any price controls, these people could find houses for prices they were willing to pay. In the short run, it led to an uptick in the price of housing. However, due to the lack of price controls on the housing market, the market, in the short term, provided housing space by people who rented out rooms in their housing and the long-term incentives for the reconstruction of housing aplenty with the profitability of housing projects not being stifled by price controls. That is because if the government, out of the goodness of their heart, were to say in such a moment that one should not take advantage of people who lost their housing and that, thus, housing prices should be capped, it would lead to a situation that ignores the reality of the fact of a shrunk supply of housing space.[5]

[4] Sowell 2015, 47.
[5] *ibid.*, 47–48.

Consider the following example: the owner of a three-bedroom apartment, with each bedroom being 15 square meters big, wants to rent two rooms to house people who lost their housing. Let us assume that before the destruction of half the housing, a regular price for 30 square meters of the room was 100$, i.e., each room would have been rented out for 50$ before that. Now the owner sees the opportunity to help people by housing them while also being incentivised to do so at a price they value more than having their apartment on their own. So 150$ for 30 square meters or 75$ for each room now is for what the owner would rent out their space. The government, however, sees this and stops it. The argument is that price gouging is amoral and that even lower than pre-supply destruction prices should still apply, i.e., 40$ for each room. If that goes into effect, the owner might not see the benefit being big enough. However, if the owner still decides to rent out the apartment, the chance of both rooms being occupied by fewer people is higher due to the affordability of space, thus maybe not "price gouging" people but just more people being crowded out by other market participants who under regular price adjustments would not occupy as much space.[6] [7]

Additionally, it is essential to note the difference in effect price controls have depending on the nature of a given good. For example, Sowell explains that price controls on perishable goods will have different effects than those on non-perishable goods. While both disincentivise production in the longer run, in the shorter run, non-perishable goods will be more easily affected due to them being easier to store and thus withheld from the market. Thus, price controls on strawberries could not lead to as big of a strawberry shortage as price controls on gasoline would lead to a shortage.[8]

[6] *ibid.*, 38.
[7] Mises 2006, 51.
[8] Sowell 2015, 49.

2.2. Inflation

An essential aspect of the topic at hand is that of inflation, which is the one aspect where there cannot be any room left for confusion; thus, the following segment will try to dissolve any confusion that may arise. Inflation is a contentious topic. But why? Is it not easy? The CPI is relatively clear about the current level of inflation, is it not? Well, this point is where many heated debates have been started already.

On the one hand, there is the adherence to inflation as a phenomenon of increasing the money supply and, on the other hand, a focus on the increase in the price of goods and services. The big difference lies in viewing inflation as a price phenomenon and a money supply phenomenon; this will have a tremendous impact on how armchair economists would like to structure the economy and economic policies. For example, Mises views inflation as the following:

> "When a government increases the quantity of paper money, the result is that the purchasing power of the monetary unit begins to drop, and so prices rise. This is called inflation. Unfortunately, in the United States, as well as in other countries, some people prefer to attribute the cause of inflation not to an increase in the quantity of money but, rather, to the rise in prices."[9]

The merit of that statement is that if a government does nothing to the money supply and prices rise due to a lack of supply, that is not inflation. Using the tools that monetary policy offers in such a situation, namely lowering the supply of money or reducing the amount of credit that is given by raising the interest rate, will do nothing but lower demand. While it will bring down the prices it will not make anything more affordable. It is a shortage and cannot be attributed to any monetary policy; the same applies to trade embargos on foreign governments and resulting

[9] Mises 2006, 55.

fuel cost increases. The only way to sustainably curb these price increases that are caused by supply side issues, is to solve the supply side issues and create logistical, regulatory and production solutions and not make money more expensive. Prices can rise due to a myriad of factors, as described in the section about scarcity and shortages.

However, these causes are not inflation in the sense of monetary policy and their effect on prices. However, a straightforward statement everyone can agree upon is: "When people have more money, they tend to spend more."[10]. Now, if people have more money, but nothing else has changed, meaning a larger amount of money is chasing the same amount of goods, then prices will go up. That is also the reason why creating more money to solve the issue of unaffordability and price rises is not to print more money, it will just create more price issues. This is a matter of supply and demand in that unless the amount of goods has gone up, the result will be shortages or price adjustments.

An excellent thought experiment of how such an increase would take place is given by Murray Rothbard and the Angel Gabriel, who has his heart in the right place but understands nothing about economics. The experiment goes as follows: Gabriel decides that he wants to finally give in to people always wishing for more money because everyone has been complaining for a long time about this issue. So, overnight, Gabriel decides to double everyone's amount of money. What will be the consequence of that? People will see that they have double the amount of money to spend, so they will go out with more demand as they now believe in having the capacity to get more goods. However, as everyone has had their money increase the same, all it will do is double the prices; as demand has doubled with the same amount of goods, the prices will have to adjust quickly. In the end, nothing has changed; the purchasing power of people has stayed the same[11].

[10] Sowell 2015, 366.
[11] Rothbard 2008, 46.

Even though everybody's money supply has been doubled, not everyone will be affected the same by this miraculous increase. There will be some who will, in the end, be better off than others; those are people with a high time preference in their demand. The ones who are the first in front of the store in the morning, the ones that buy the same goods for prices which were discovered with half the money supply. These individuals will have significantly benefitted, while those who slept in or waited till the lines got shorter lost out on this brief moment when prices have not increased yet[12]. This, however, is not how it usually works. There is no universal distribution. Usually, the money supply that is increased enters a particular space in the economy, from which it then spreads into one part of the economy at a time[13].

This means that the prices will not adjust everywhere at the same time as filling a glass of water; there is no constant level that predictively rises or lowers as the water gets poured in or is taken out; thus, the "price level" as it is frequently called is not a precise description[14]. There will always be just particular price increases, but no general price level increases at the same time. That is also why localised CPI measurements exist. Money gets spent differently in different areas, leading to delays or accelerations of newly introduced money arriving at a certain point in the economy. This is not only limited to geographical locations; frankly, modern economic integration has removed many of these rigid physical limitations and applies to sectors and goods.

These uneven benefits are somewhat apparent in that sectors, goods, and areas further away from the point where new money was introduced into the economy will not gain as much of a benefit; it may even be to their detriment.

> "The expansion of the money supply has caused inflation; but, more than that, the essence of inflation is the process by which a large and hidden tax is imposed on much

[12] *ibid.*, 47.
[13] *ibid.*, 49–50.
[14] Mises 2006, 59.

> of society for the benefit of government and the early receivers of the new money. Inflationary increases of the money supply are pernicious forms of tax because they are covert, and few people are able to understand why prices are rising."[15]

The nature of inflationary policy being that of a hidden tax might sound harsh, and calling it pernicious on the side of Rothbard could even be called inflammatory. But the fact of the matter is that inflation, throughout history, has many times been used by governments to spend money without telling their citizens about the nature of how these expenditures have been financed. The ripple effect will take longer to formulate the repercussions, while declaring new taxes to fund government expenditures will certainly receive opposition. Not only are the effects of taxes immediate and easy to point out, but they are also easier to understand, and that is not to say that inflationary monetary policy led by a central bank, such as the FED, is not impossible to understand.

However, it is considerably vaguer and more complicated than plain tax increases. Seeing a statement about how a wealth tax or a high-income tax, whatever a high income is, is way more transparent than reading a statement about dollar roll and coupon swap transactions, agency-backed mortgage-backed securities, overnight repurchase agreements or overnight reverse repurchase agreements. Which statement will the average Joe Schmoe understand without falling into a rabbit hole of having to do lots of research? Not the latter. In a way, it is thus a tax most people do not have the time or the will to understand because they have to work, because their purchasing power is diminishing after all. Thus, the government gets away with irregular taxation without asking for it. Another reason why "death and taxes" is a pertinent statement as to what is assured in life.

[15] Rothbard 2008, 53–54.

2.3. Taxes

Since it has now been established that inflation works as a tax in the way that it enables the government to spend money, what about the economic impacts of taxes and the amount of spending power the government can gain through different levels of taxation? Needless to say, a government that imposes a minimal amount of tax has a minimal amount of money to spend. On the other hand, a government that imposes a very high level of tax will probably suffocate the economy and shrink its revenue.

A small piece of a giant cake might end up being bigger in absolute terms than a big piece of a small cake. In that sense, it does not follow that a tax increase of 10% will increase revenue by 10%; it might cause the exodus of taxpayers and sometimes even cause the overall revenue to go down.[16] What follows from the line of thought is that if high taxation can cause revenue to go down due to capital outflows and impede economic growth, and that if inflation indeed is a form of taxation, then high inflation can have the same effect. And in fact, what happens when there is a prolonged period of high inflation is that capital is allocated where these local inflationary effects do not diminish it, and real economic growth ends up being stifled. The government's numbers might be higher, but what to do with 10 trillion reichsmarks? Buy a loaf of bread?

[16] Sowell 2015, 426.

3. Cantillon

Richard Cantillon tried to answer the question in which way and in what proportion the increase of money raises prices, and for that, the Austrian School of Economics has taken his theories to heart. He discovered the regulation of markets by prices which are discovered by supply and demand with equilibrating tendencies. With Cantillon seeing the government's influence on the money supply as the primary disruptor of market equilibrium[17]. Furthermore, he came to the conclusion that both behaviours of consumption and production would change in negative ways with an artificial change of interest and the money supply by the government.[18]

3.1. Money Non-Neutrality

A key concept laid out by Cantillon, necessary to understand the Cantillon effect, is his view of non-neutral money. The idea is that money will have a different effect depending on when and where it is spent, which is in stark contrast to the idea that money is neutral and that such factors do not influence any transaction. Cantillon highlights how the injection point of new money and its use have a crucial influence on the outcome of the injection. Just because a state has increased the money supply by 50% does not mean that prices will adjust similarly. He notes that the money supply and prices are not in a harmoniously proportionate relationship unless the supply increases by the same amount as the money it keeps both in equilibrium. In such a scenario, everybody would have kept the same purchasing power, and it would not have changed the flow of money, and where it is spent, it would be a zero-sum game[19].While this is a genius way of viewing money, it comes with certain caveats, such as the impossibility of making sense of all transactions and following each ever-so-tiny economic development, which was caused even by a small injection. It is spent, exchanged, lent, exported, imported, and

[17] Thornton 2006, 45.
[18] *ibid.*, 46.
[19] *ibid.*, 48.

hoarded in so many ways and so many times that it is effectively chaos and trying to predict every ripple that occurs when throwing a stone into water is a problem, we have yet to solve.[20]

While this is a genius way of viewing money, it comes with certain caveats, such as the impossibility of making sense of all transactions and following each ever-so-tiny economic development, which was caused even by a small injection. It is spent, exchanged, lent, exported, imported, and hoarded in so many ways and so many times that it is effectively chaos and trying to predict every ripple that occurs when throwing a stone into water is a problem, we have yet to solve.[21]

The information problem might make perfect predictions impossible, and it might even be bad-mouthed as unscientific. While it does not pretend to make precise statements about what will happen to the 10th decimal, it does clarify what sort of effects will come into place after new money is injected. It may not be possible to predict how many ripples a stone will cause but depending on how many stones are thrown and how big these are, one can predict which stone will create more and more significant ripples. It is an argument derived from logic; this might not fulfil a macroeconomist's need for precise prediction. If that, however, is the metric, the ability to make precise predictions repeatedly, then the work of countless macro-economists throughout the last century was scientific, in appearance only.

3.2. Cantillon Effect

Returning to the issue of injecting new money into the economy, it is essential to note that depending on who received this new money first will affect the way what is produced, traded, and consumed. He was the first to make this argument, and while it has been picked up by figures such as Mises and Rothbard, he came up with this notion. The example that Cantillon gives in his work "An Essay of Economic Theory" is that of a state that has struck gold. As he

[20] Cantillon 2015, 150.
[21] *ibid.*

goes on with the thought experiment, he is quick to highlight that the miners would be the first to profit from this new influx of money and that they, in their newfound wealth, would change their spending consumption habits with the excess money that is not able to be consumed now being invested by lending it.[22] This is the first described effect of what happens when new money is injected into an economy. The second effect is that this money inescapably will increase the price of goods.

Additionally, he notes that: "Increased money will bring about increased expenditure, and this will cause an increase of market prices in the good years and to a lesser degree in bad years."[23] Which is an important point as it already hints at how the velocity of money plays a role in the increase of prices, as when there is an economic downturn, the velocity is generally lower. Thus upward price developments are less pronounced as the money reaches different parts of the economy more gradually. This leads to more money being necessary to reach the same effect of stimulating the economy. Since the money has a lower turn-over rate, two money units can have less of a stimulating effect to the economy than one, as long as the one unit is circulating through the economy at over twice the rate.[24] However, this does not mean that no price increase will happen; it will just occur more or less gradually, but it will occur.[25] An important influence on that is.

Back to the miners. With their newfound gold, these lucky who find themselves in first beneficiaries of the newly injected money will spend it on consumption and, as noted above, will change said consumption. Said consumption will be higher, and of a different kind of goods, with excess capacity, the goods in question will be more expensive. Cantillon makes an example of the gold miners hiring artisans who did not have any demand for their services before the injection. In this scenario, the miners have the deepest pockets and the share of what

[22] *ibid.*, 147.
[23] *ibid.*
[24] *ibid.*, 137.
[25] *ibid.*, 148.

the overall consumption in a state is worth; theirs will become bigger and bigger as non-benefactors of this injection will be crowded out by rising prices.[26] Certain goods they could afford before can turn out to be too expensive if the miners have a taste for them since their demand will increase the prices while the rest has not changed the absolute amount of the money they hold.

The way it then changes the production within this economy is described as the following:

> "These high prices will encourage farmers to employ more land to produce the following year, and these same farmers will profit from the increased prices and will increase their expenditure on their families like the others."[27]

The losers in this scenario are the landlords of said farmers, as the terms which have been set before the injection are now out of balance since the rent has now lost relative worth, with them having to bear the costs of increasing production from the farmers, but not yet able to cost the fruits of their tenants increased earnings, not until the contract is re-negotiated and adjusted in price to the new money supply. A contemporary example would be taking on a low-interest rate credit to buy a house during a high inflationary market environment. If the price increase caused by the money supply increase is 25% with a loan of 5% interest, then the effective interest rate is -20% and the new homeowner gets paid to hold a credit which will continue to evaporate. The party that sets the deal before the eventual devaluation of money is the one loosing out, with real interest rates effectively making credits a way to earn money.

An effect of this diminished purchasing power is the emigration of people who cannot bear the cost of living anymore. Those who stay will eventually have their wages increased as the money injected reaches their part of the economy, with their wages being increased and their purchasing power lifted again. However, what are the miners to do about such an increase if

[26] *ibid.*, 149.
[27] *ibid.*

they cannot even pay for the adjusted price for the artisan's service? Of course, as more gold is extracted from the mines, the prices will further readjust. Nevertheless, as Cantillon describes, such a situation will incentivise the first beneficiaries of this effect to import goods and services instead of buying them locally, from places where their relative purchasing power is still above compared to where they live.

> "When the overabundance of money from the mines has diminished the number of inhabitants in a state, accustomed those who remain to excessive expenditures, raised the prices of farm products and the wages for labor to high levels, and ruined the manufactures of the state by the purchase of foreign products by property owners and mine workers, the money produced by the mines will necessarily go abroad to pay for the imports. This will gradually impoverish the state and make it, in a way, dependent on foreigners to whom it is obliged to send money every year as it is extracted from the mines. The great circulation of money, which was widespread in the beginning, ceases; poverty and misery follow and the exploitation of the mines appears to be only advantageous to those employed in them and to the foreigners who profit thereby"[28]

The fact that this paragraph was written over 300 years ago is astounding. It is not only highly relevant and functions as a good explanation for the economic history of colonial powers in the past, as Cantillon notes the parallels of this order of events in Portugal's and Spain's history in the new world, but also how resource-rich countries today, that do not have developed sizeable secondary or tertiary economic sectors, are overly reliant on imports and have a tremendous socio-economic imbalance. A prime example of this happening today is Lagos in Nigeria, where imported ice cream, which most of us in Europe will see as a little treat, will be prohibitively expensive for large swaths of the population. Lagos is incredibly wealthy, but

[28] *ibid.*, 149–150.

instead of letting that wealth drip into the local economy, it is being extracted and sent into the global market without developing the local economy in beneficent ways.

A different kind of injection of money into a market would be that of trade, by keeping a positive trade balance by adding value to materials that are either imported or locally extracted via manufacturing or other value-adding activities. In contrast, the imports are kept at a lower value than the exports; while this will increase the amount of money, it does so differently than the gold mine and creates different incentives. The economy will develop, and the prices will also grow as income grows. However, the consumption expenditures are not on top of the list as, in that scenario, investment is incentivised. Instead of relying on a literal gold mine, one has to use investment opportunities. Thus, the velocity of money in this scenario is slower concerning consumption goods than in the previous example.[29] As the nation's wealth rises and prices as well, just as with the gold mine, there will be an incentive to buy goods and services for cheap in markets abroad. This will reduce the trade balance so that capital in and outflow are constantly changing and avoid any of the pitfalls of a high or low trade balance. A state can try to maintain a close to or even neutral trade balance in a beneficial trade of goods cheaper elsewhere due to different comparative advantages[30].

[29] *ibid.*, 150.
[30] *ibid.*, 151.

4. Methodology

4.1. Nature and Goal of Research

The research methods in this paper will be qualitative, which is in line with the unpredictability of the exact consequences the injection of new money has. While economics are at the heart of this thesis; the political and institutional aspects would be thoroughly swept under the rug if it would turn into an econometric analysis of the FEDs monetary policy and its effects on the equity markets, but that is not the goal of this thesis. Instead, the goal is to look at the data collected through the lens of the economic concept that is the Cantillon effect and apply the economic concepts described and discussed in the literature review in a consistent manner, in such a way that the following research question can be answered:

> What are the potential redistributive effects of the FEDs monetary policy, from March 2020 onwards, through its effects on different classes of assets, namely stocks, housing, and commodities?

This thesis hypothesises is that the expansionary monetary policy of the FED has caused redistributive effects, which follow what Richard Cantillon's economic theory, and an Austrian school conception of economics suggest would happen with such policies, i.e., those early benefactors will have enjoyed a disproportionate benefit to the detriment of others, in a redistribution from everyone to those sectors which disproportionately benefitted from the FEDs monetary policy.

4.2. Data Selection

First, this thesis will take a detailed look at the FOMCs press releases beginning in March of 2020 due to the relevance of the date and the beginning of the COVID-19 pandemic and go through each press release till June 2022, highlighting policy changes, as well as what the FOMC is highlighting in their press release. Such highlights include current events, the state

of the economy is in and any other additions the FOMC is newly mentioning in each press release.

In addition to the FOMC press releases, this thesis will analyse the FOMCs economic projections from the same period as the FOMC press releases, which are released quarterly. The data in focus is the median economic projection made by Federal Reserve Board members and Federal Reserve Bank presidents. The variables in focus are the median FOMC meeting voting results of the following:

- Change in real GDP
- Personal Consumption Expenditures Inflation (PCE)
- Federal Funds Rate (FFR)

All of these are projections from the fourth quarter of the previous year. For each projection, the maximum time frame will be considered; for example, a projection made in 2020 will reach 2022 and the long-run projection. To evaluate the FOMC projections and their precision, other data will include the change in real GDP, PCE Inflation and the Federal Funds Rate. These metrics are necessary to conclude whether the FOMC was precise with their projections, which is of high relevance as they are a vital piece of the decision-making process of this institution.

While the Consumer Price Index is a widely used method to measure inflation, this paper will not be focusing on it, because of the FEDs focus on PCE inflation and them basing their projections on this measurement and not the CPI. One could criticise the FED for relying on an index that results in a lower inflation number, but in the end when one wants to evaluate their policies, this is what they will be basing it on.

Other essential data in direct relation to the FEDs monetary policy, which will be collected and evaluated, is the M2 money supply as well as the velocity of the M2 money supply, the monetary base: currency in circulation, the total assets of the FED and the overnight reverse repurchase agreements (total securities sold). The collection, evaluation and visualisation of this data will make clear the size of the FED's expansionary monetary policy. In addition, it helps to highlight essential timeframes concerning other topics such as current events and the state of the economy.

The decision was made not to include M1 because of a change by the FED as to what counts into the M1 money supply; the sudden increase of 10.8 trillion USD is nothing more than an accounting change, which has added savings deposits to be counted as M1 stock. It is a significant change in how M1 is seen, but it is not adding 10.8 trillion USD into the economy in one day.[31]

To see possible impacts on the market the FEDs monetary policy has had, these indicators will be used:

- S&P 500
- S&P GSCI Crude Oil
- S&P GSCI Natural Gas
- S&P GSCI All Metals
- S&P GSCI Wheat

While the S&P 500 is the only stock index used, its wide range acts as a good representation of the overall performance of stocks. The other indices are of major commodities and are of

[31] The FRED Blog 2021.

interest due to the nature of commodities being at the start of the production chain and the implications their market performance has for the rest of the economy.

All of this data will help to create a picture of how the FOMC performed with their projections, how extensive the FEDs monetary policy was during this time, and the performance of the stock market and commodities during this time. To get an understanding of the socio-economic ramifications and the possible redistribution of wealth that could have occurred in the United States during the COVID-19 pandemic and the expansionary monetary policy of the FED and the U.S. Government, the following data was selected and evaluated:

- Checkable Deposits and Currency Held – Q1 2020 vs Q1 2022
- Loans Held – Q1 2020 vs Q1 2022
- Assets Held – Q1 2020 vs Q1 2022
- Financial Assets Held – Q1 2020 vs Q1 2022
- Share of Total Net Worth – Q1 vs Q1 2022

The data selected covers four groups in the category of wealth percentiles: 1st to 50th Wealth Percentiles, 50th to 90th Wealth Percentiles, 90th to 99th Wealth Percentile and the 99th Wealth Percentile.

The last set of data that is key to this thesis' issue of expansive monetary policy, government interventions and redistributive issues is the U.S. mean sales price of existing homes and how this mean sales price has changed starting with the pandemic. The choice was made due to the inherently interconnected nature of the housing market and the federal funds rate, due to low interest rates and availability of credits heavily impacting the housing market. However, this indicator is not only of interest due to its interconnectedness with the FFR but also due to the inherent social ramifications the price of housing has for the purchasing power of the general population.

4.3. Data Analysis

The market data and the data covering the immediate effects of the FEDs policy changes will be presented in figures covering the period of the COVID-19 pandemic and the subsequent shift in monetary policies. The data that has been selected will be analysed through the lens of the Cantillon effect. The market data will stand independently without any quantitative analysis to find correlations. However, apparent trends and essential dates during which policy changes or international events occurred will be highlighted, after which the question arises if there are any observable trends in the collected data and if these trends are in line with what the economic concepts and mechanisms outlined in the literature review suggest would occur with these policies and if the Cantillon effect can be recognised in the data at hand.

5. Data Analysis

5.1. FED Press Releases

15.03.20: In response to the Covid-19 pandemic and the expected strain on the economy, the FOMC's target range for the federal funds rate is 0-0.25%. This Federal Reserve press release states that the FOMC will monitor public health and other global developments to support the economy best. In line with the FOMC stating their willingness to use their complete set of tools, a plenitude of measures was announced that day. The FOMC unanimously set the interest rate on excess reserve balances at 0.10%. Additionally: "The Federal Open Market Committee voted to authorise and direct the Open Market Desk at the Federal Reserve Bank of New York, (…), to execute transactions in the System Open Market Account (SOMA) in accordance with the following domestic policy directive."[32] The abovementioned directives are a target range for the federal funds rate between 0-0.25 percent and the increase of SOMA Holdings of Treasury securities by $500 billion and agency mortgage-backed securities (MBS) by $200 billion via the Desk. Furthermore, the Desk was directed to conduct overnight reverse repurchasing operations (longer if holidays/weekends are in between), with a rate of 0.00 percent. These operations were constricted by the treasury securities held in the SOMA and with a: "counterparty limit of 30$ billion a day"[33]

23.03.20: Eight days after the paradigm shift that was the last FOMC press release, the changes are not as extreme yet still worthy of highlighting. One of these changes is the changed phrasing regarding the SOMA and the increase of treasury holdings/MBS, namely: "in the amounts needed to support the smooth functioning of markets for Treasury securities and agency MBS". This is a significant change in phrasing.[34]

[32] Federal Reserve Bank 2020a, 3.
[33] *ibid.*
[34] Federal Reserve Bank 2020b, 3.

29.04.20: During this FOMC press release, the FOMC recognises the steep decline of economic activity caused by the measurements to curtail the virus. In addition, at this time, weak demand and extremely low oil prices are acting as a downwards pressure on consumer price inflation.[35] Therefore, one day after this press release, the effectively unlimited purchase of MBS, commercial MBS (CMBS) and Treasury securities by the Desk for SOMA is effective.[36]

10.06.20: On June 10, the FOMC, in their press release, talked about how the Covid-19 pandemic will incur serious economic risks and problems over the medium term. The only change of policy by the FOMC in this press release is to allow the desk: "Effective June 11, 2020, (...) modest deviations from stated amounts for purchases and reinvestments, if needed for operational reasons."[37]

29.07.20: After the summary of economic projections from June 10, the FOMC has stayed on course with their policies and has not changed one. However, in their press release, it is noted that the economic future of the U.S. will rely heavily on the course the virus takes.[38]

16.09.20: The FOMCs verdict in this press release is that the economic activity has picked up compared to prior months but stays below levels prior to the pandemic, with the positive financial conditions reflecting policies supporting the U.S. economy and credit flow Significantly the FOMC states the goal: "to achieve inflation moderately above 2 percent for some time so that inflation averages 2 percent over time and longer-term inflation expectations remain well anchored at 2 percent."[39] Furthermore, the FOMC stopped reinvesting principle payments from CMBS into agency CMBS.[40]

[35] Federal Reserve Bank 2020c, 1.
[36] *ibid.*, 3.
[37] Federal Reserve Bank 2020d, 3.
[38] Federal Reserve Bank 2020e, 1.
[39] Federal Reserve Bank 2020f, 1.
[40] *ibid.*, 3.

05.11.20: There has been no change in the FOMCs policies and no significant change in their language.[41]

16.12.20: During this press release, one policy change was announced, namely, the increase in the SOMA holdings of Treasury securities to at least $80 billion per month and agency MBS at least $40 billion per month.[42]

27.01.21: In this press release, the FOMC highlights the slowdown of recovery and the importance of vaccination progress with its expected positive impact on the pandemic. There are no changes in policy.[43]

17.03.21: With no change in policy, the only significant part of this press release is the slightly better indicators of economic activity.[44]

28.04.21: There has been no policy change, and the FOMC highlights good progress in vaccinations and strengthened indicators of economic activity. The FOMC also mentions rising inflation due to transitory factors[45]. This inflation, however, is still in line with the FOMCs long-term goal due to prior years having inflation below the 2% target smoothing out the average inflation over time.[46]

16.06.21: The FOMC again highlights the rise in inflation and its transitory nature and the vaccination progress reducing the spread of COVID-19 being a beneficial factor. Two changes to the announced FED policies are increasing the offering rate for overnight repo agreements from 0.00% to 0.05% and increasing interest paid on required and excess reserve balances from

[41] Federal Reserve Bank 2020g, 1–3.
[42] Federal Reserve Bank 2020h, 1–2.
[43] Federal Reserve Bank 2021a, 1.
[44] Federal Reserve Bank 2021b, 1.
[45] Federal Reserve Bank 2021c, 1.
[46] Federal Reserve Bank 2021d, 1.

0.10% to 0.15%. The FOMCs reasons that it will "foster trading in the federal funds market at rates".[47]

28.07.21: The FOMC is still talking about continuous economic improvement and transitory inflation. A notable policy are the: "overnight repurchase agreement operations with a minimum bid rate of 0.25% and with an aggregate operation limit of $500 billion; the aggregate operation limit can be temporarily increased at the discretion of the chair."[48]

22.09.21: The notable change in this press release is the move from rising to elevated inflation, which is again attributed to transitory factors.[49] Furthermore, the FOMC states that if economic progress continues as expected, the FOMC might consider slowing down the scope of asset purchases.[50] This statement marks a shift in the FOMCs rhetoric in that it is the first mention of reducing the scope of the FED's policies meant to secure their long-term policy goals. In line with this change of rhetoric, the FOMC increased the per-counterparty limit for reverse repurchase agreement operations from $80 billion to $160 billion per day.[51]

03.11.21: "Supply and demand imbalances related to the pandemic and the reopening of the economy have contributed to sizeable price increases in some sectors"[52] The FOMC notes a "sizeable" increase in inflation caused by "transitory factors". Additionally, "substantial progress" towards the Committee's goals is noted, in line with the prior press release, giving a reason for the FOMC to size down the scope of monthly net asset purchases.[53] This change is reflected in reducing the increase of SOMA holdings from $80 billion per month of treasury securities to $70 billion and reducing the monthly purchase of agency MBS from $40 billion to $35 billion beginning in mid-November. Furthermore, the FED announced a monthly reduction

[47] *ibid.*, 3.
[48] Federal Reserve Bank 2021e, 1.
[49] Federal Reserve Bank 2021f, 3.
[50] *ibid.*, 2.
[51] *ibid.*, 3.
[52] Federal Reserve Bank 2021g, 1.
[53] *ibid.*, 3.

of SOMA holdings purchases in steps of $10 billion for Treasury securities and $5 billion for agency MBS. Eventually leading to the FED planning on purchasing $60 billion of Treasury securities and $30 billion of agency MBS, in December 2021.[54] The Committee expects these steps to be sufficient but is prepared to adjust depending on incoming data at a future time.[55]

15.12.21: As expected, the FED increased the SOMA holdings of Treasury securities by $60 billion and agency MBS by $30 billion.[56] However, in January, the Committee decided to reduce the scope of net asset purchases to $40 billion for Treasury securities and $20 billion for agency MBS.[57] This policy change is caused by supply chain issues impacting the economy and the effects of the pandemic continuing to cause elevated levels of inflation.[58]

26.01.22: In the first press release of 2022, the FOMC comes out positively, mentioning solid job gains and a substantially shrunk unemployment rate.[59] Overall, the economy is doing well, according to the FOMC, with the outlook that easing the pandemic and supply chain issues will support employment, economic activity, and a reduction in inflation. In addition, a new risk of COVID-19 variants is mentioned. Regarding the federal funds rate, the FOMC expects that raising the target range will soon be a good course of action, as well as ending net asset purchases by the end of March. Continuing with lowering the increase of net asset purchases, for February, the FOMC announced the purchase goals of $20 billion worth of Treasury securities and $10 billion worth of agency MBS.[60]

16.03.22: In the first press release after Russia's invasion of Ukraine, the dominating theme is price pressures. There is no mention of COVID-19 apart from its persisting "supply and demand imbalances".[61] The FOMC expects the rising energy prices and broad price pressures caused

[54] *ibid.*
[55] *ibid.*, 2.
[56] Federal Reserve Bank 2021h, 1.
[57] *ibid.*, 2.
[58] *ibid.*, 1.
[59] Federal Reserve Bank 2022a, 1.
[60] *ibid.*, 3.
[61] Federal Reserve Bank 2022b, 3.

and accompanied by the invasion of Ukraine to harm the economy and the target level of inflation. As a reaction to these circumstances and as already foreshadowed in the last press release, the FOMC agreed to raise the primary credit rate from 0.25% to 0.5% and the interest on reserve balances from 0.15% to 0.4%[62]. The repo and reverse repo rates have also been impacted, with the repo rate being doubled to 0.5% and the reverse repo rate increasing from 0.05% to 0.3%.[63]

15.06.2022: This press release has all the worries about inflation rolled into one: "Inflation remains elevated, reflecting supply and demand imbalances related to the pandemic, higher energy prices, and broader price pressures."[64] As in the prior press release the FED still expects upwards price developments caused by energy prices and supply chain issues related to China. The FOMCs policy changes reflect the perceived direness of the situation. Among the policy changes are setting the interest rate on reserve balances at 1.65% and the primary credit rate at 1.75%, with the FED funds rate target being 1.5-1.75%. Repo operations now run at a rate of 1.75%, but still with the same limit of 500 billion USD. Reverse repo operations were raised in a similarly strong manner to, 1.55% and with the same counterparty limit as before (160 billion USD).[65] Overall the past 4 months have brought a strong shift in monetary policy.

[62] *ibid.*, 2.
[63] *ibid.*, 1.
[64] Federal Reserve Bank 2022c, 1.
[65] *ibid.*, 3.

5.2. Monetary Scale of FED Policies

5.2.1. Monetary base: currency in circulation

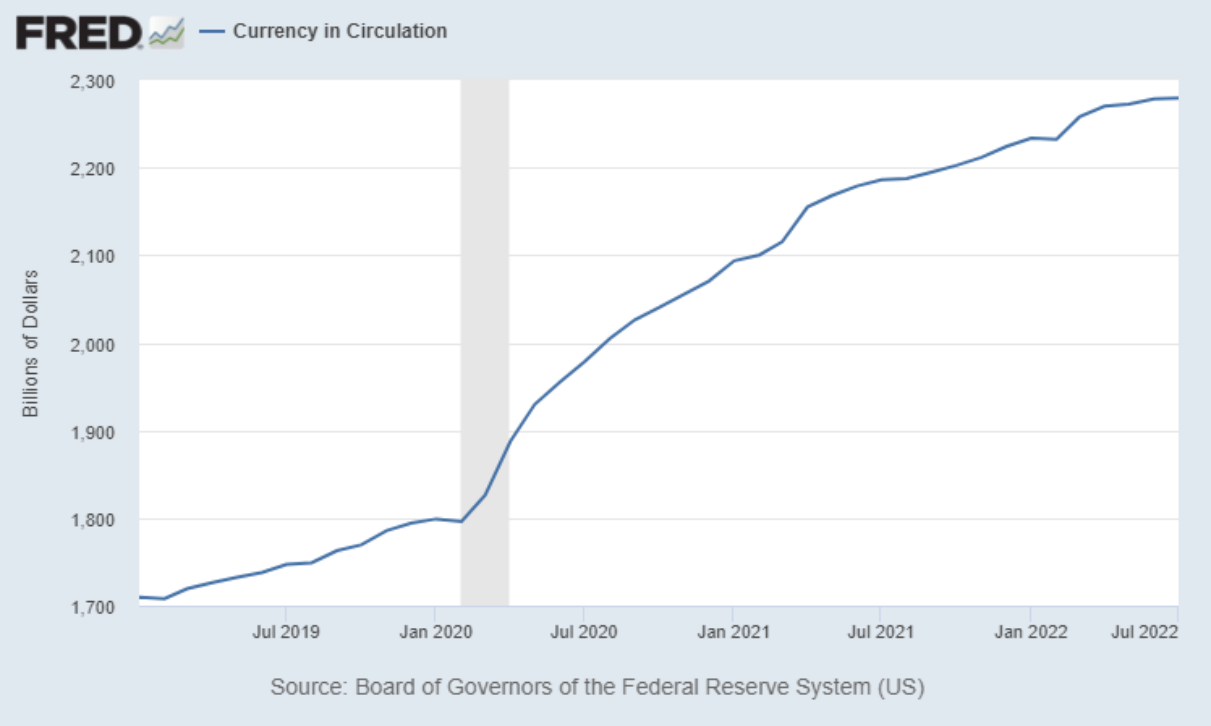


Figure 1 [66]

Figure 1 shows the amount of currency in circulation over the timespan from early 2019 to early July this year and when looking at the increase of currency in circulation, it is helpful to put the growth rate into context with the growth rates from January 2019 to 2020. January 2020 to 2021 and lastly, January 2021 to 2022. 2019 to 2020 saw an increase of 5.2% while, in stark contrast, 2020 to 2021 saw an increase of 16.5%, and the year-to-year growth rate of currency in circulation more than tripled. The growth rate for 2021 to 2022, however, that one was at 6.6%, it has decelerated a lot, but it is still elevated.

Overall, an increase of 435 billion USD in circulation might not seem like a significant amount anymore, with all the trillions that are thrown around nowadays; however, this is highly liquid,

[66] Board of Governors of the Federal Reserve System (US) 2022b.

meaning that it has a fast velocity and moves through the economy quickly in stark contrast to M2 money, this will quickly find its way to the cashier.

5.2.2. M2 Money Supply

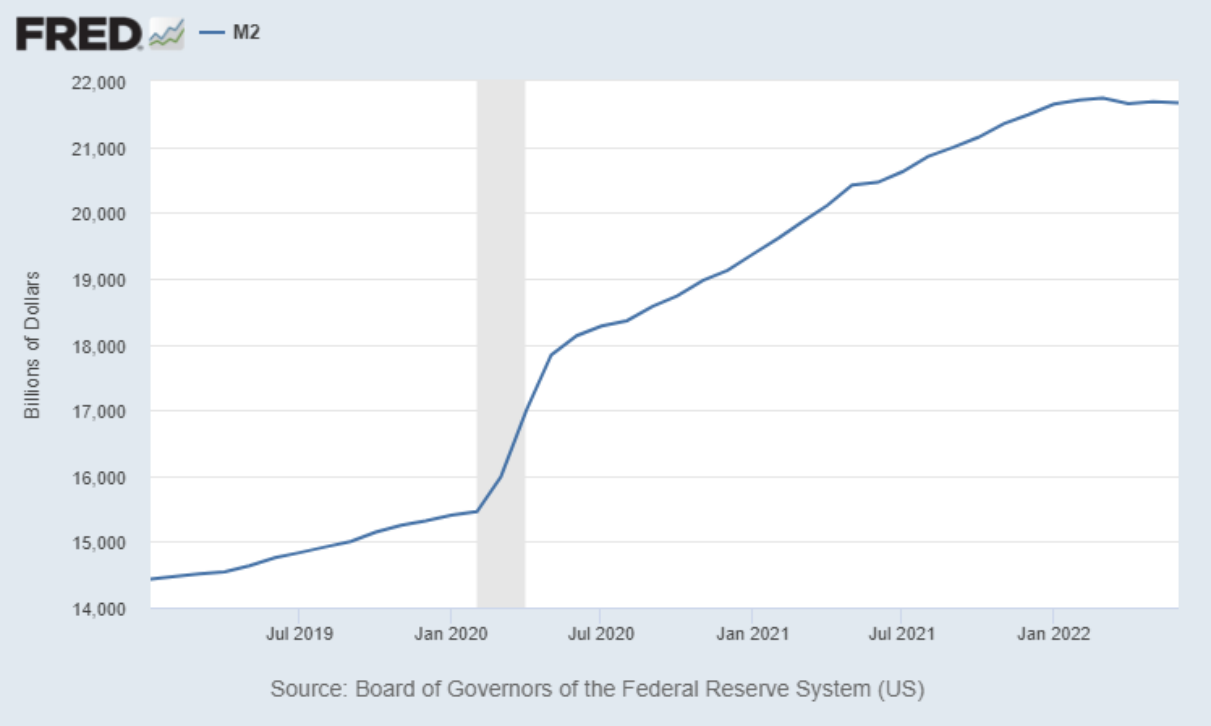


Figure 2 [67]

Let us now put the growth of the M2 money supply into the same year-to-year growth context. When looking at figure 2, from January 2019 to 2020, there has been a growth in the M2 money supply of 6.5%, which is three times the rate of the target inflation rate, but since M2 generally has a lower velocity than other forms of money, it poses no issue. Moving on to the 2020 to 2021 growth rate, it sits at an astounding 25.2%, which is quite the jump; not even the 2008 financial crisis had such a jump in growth of M2, and that crisis was a liquidity crisis. Well, liquidity sure was not a problem in 2020. However, from 2021 to 2022, the growth rate halved to 12.2%, considerably lower than in 2020. Overall, the M2 money supply rose by 6.25 trillion USD to 21.7 trillion.

[67] Board of Governors of the Federal Reserve System (US) 2022a.

5.2.3. Velocity of the M2 Money Stock

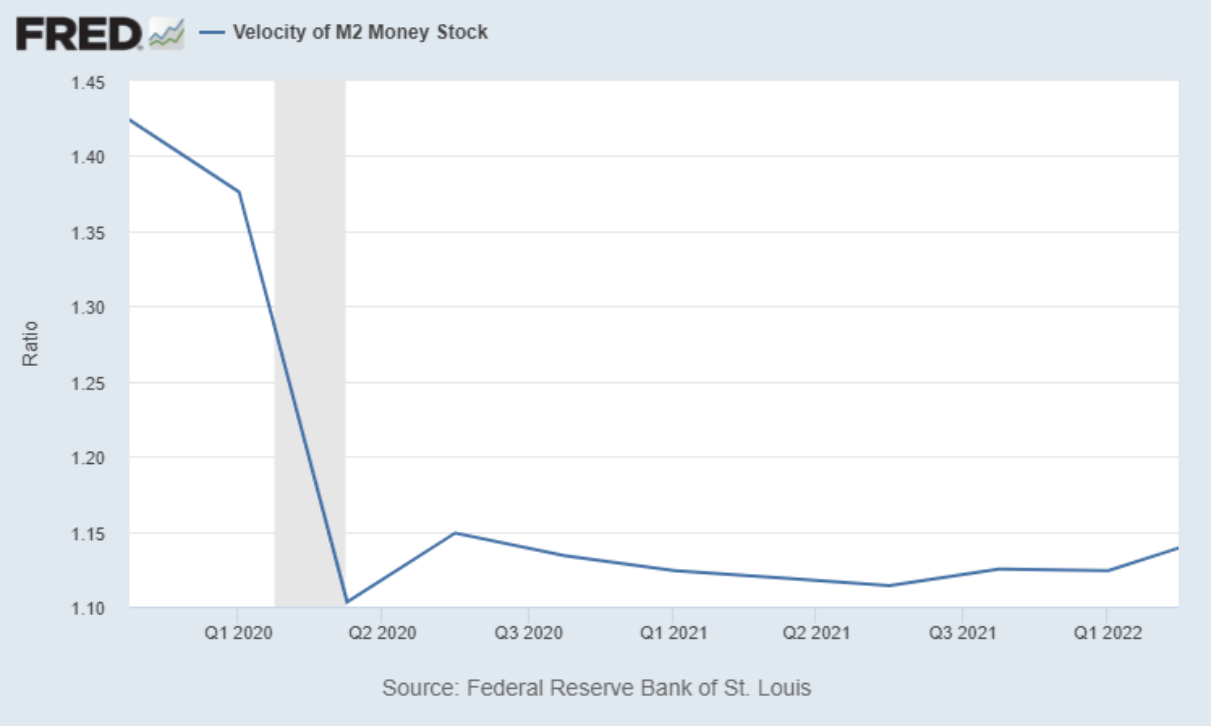


Figure 3 [68]

Let us have a look at the velocity of M2 as seen in figure 3. In Q4 of 2019, the velocity of M2 was at 1.424, implying that 1 USD is being turned over 1.424 times. For Q1 2020, that rate was at a lower level but still at 1.376, but not by much. In Q2 2020, however, with the impact of the pandemic and the restrictions on the economy and society being in full swing, the velocity of M2 ground to a halt at a rate of 1.103. The following years are all on the same level and culminating in the last reported ratio of 1.122, which is not the historical low of Q2 2020, but extremely low, nonetheless.

[68] Board of Governors of the Federal Reserve System (US) 2022c.

5.2.4. Total assets of the FED

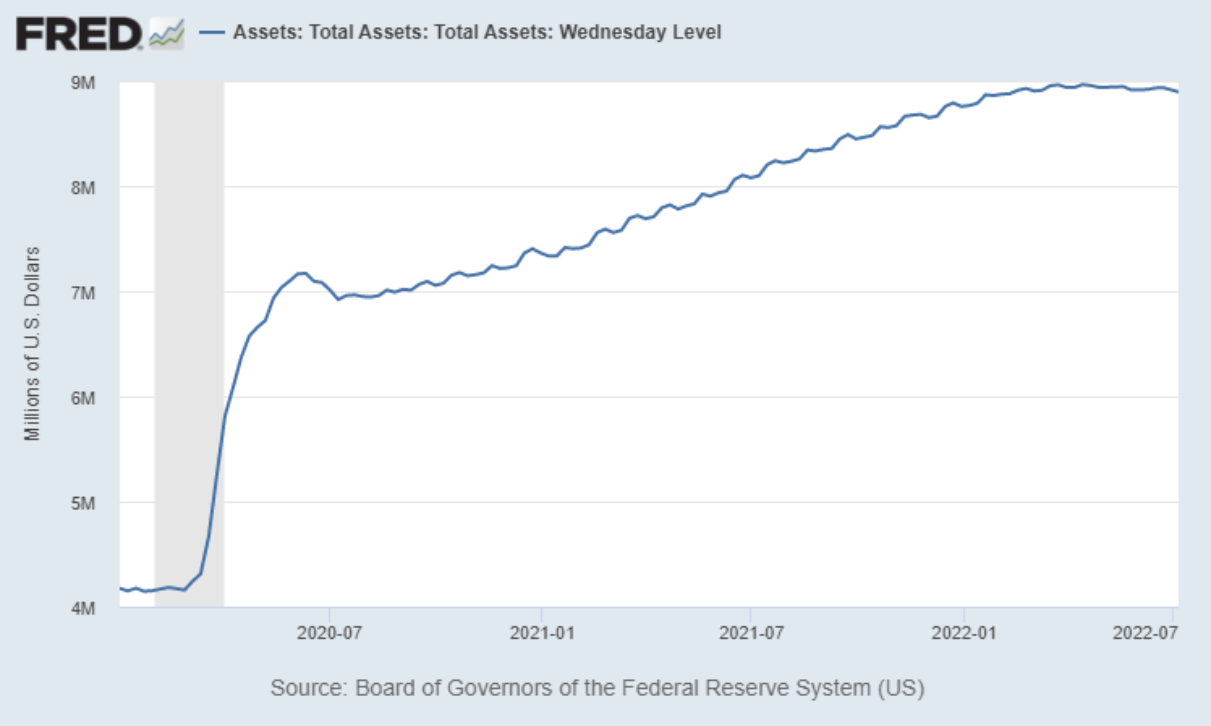


Figure 4 [69]

Figure 4 nicely depicts the drastic developments of how the FEDs total assets grew. As seen in Figure 4 from the 1st of January 2020 to the height of the FEDs balance sheet on April 13 of 2022, the expansion was of 114.8%. Overall, over 4.79 trillion USD have been added to the FEDs balance sheet. The First significant Jump can be seen from the 26th of February 2020 to May 6th, 2020, with the FED increasing the amount of assets they are holding by 61.6%, to overall 6.72 trillion USD. It is around this time that the FEDs monetary policy really becomes apparent on their balance sheet, with an observable increase each week, that falls in line with the FOMCs press releases and their open market operations goals. And even though the FED has started to pivot their policy, the total assets only reduce very slowly as the securities they are holding are starting to be fulfilled.

[69] Board of Governors of the Federal Reserve System (US).

5.2.5. Overnight Reverse Repurchase Agreements

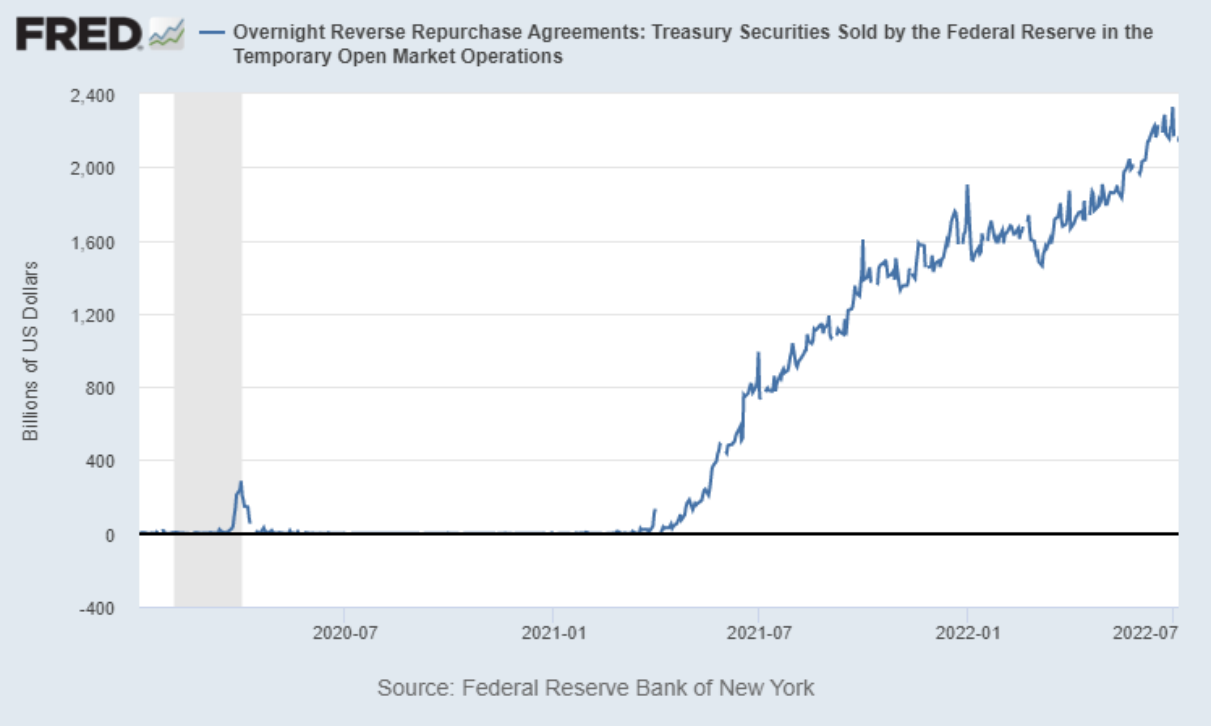


Figure 5 [70]

Figure 5 shows to a great extent the stark changes in Reverse Repo Agreements. It is in March 2020 that the overnight reverse repurchase agreements are gaining in volume. Until then the FED did not make any significant use of them. Their volume jumped from near zero to 237 billion USD at the end of March 2020. After that initial increase, the FED has not done any significant reverse repo, that is, until March 2021, when the volume starts to pick up again. From zero USD on the 1st of March to 104 billion USD by the end of it and 183 billion one month later. The timeframe from April to the end of December 2021 sees a growth in reverse repo operations like never seen before, reaching a total of 1.9 trillion USD just before the new year. The first quarter of 2022 the volume of these reverse repo operations has started to reduce to a temporary low on March 7th, at 1.46 trillion USD. After this low the trend has been of an

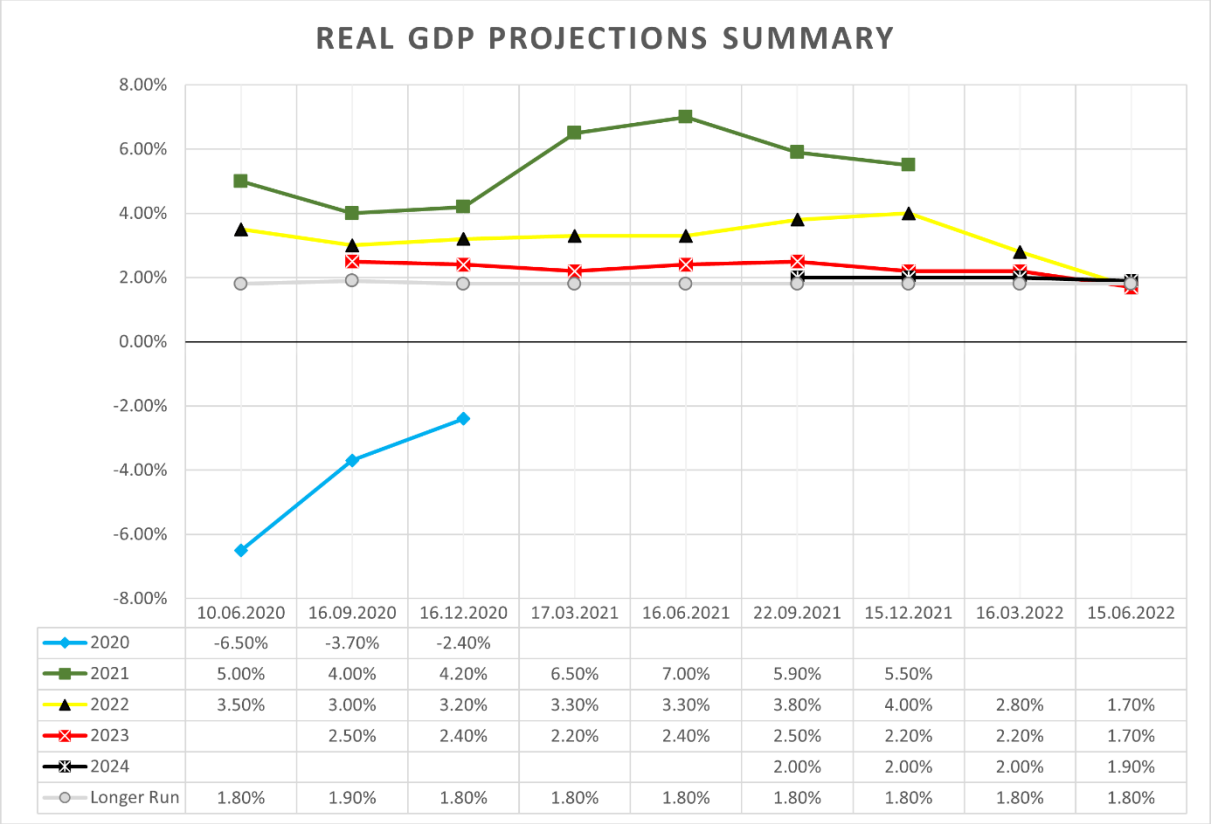
[70] Federal Reserve Bank of New York 2022.

upwards direction, with the volume at the beginning of July being at 2.16 trillion USD, setting an even higher historical high.

5.3. FOMC projections

This segment is a compilation of the median projections of Table 1. from the different quarterly projections spanning the time from 10.06.2020-15.06.2022.

5.3.1. Real GDP Projections/Devlopments



	10.06.2020	16.09.2020	16.12.2020	17.03.2021	16.06.2021	22.09.2021	15.12.2021	16.03.2022	15.06.2022
2020	-6.50%	-3.70%	-2.40%						
2021	5.00%	4.00%	4.20%	6.50%	7.00%	5.90%	5.50%		
2022	3.50%	3.00%	3.20%	3.30%	3.30%	3.80%	4.00%	2.80%	1.70%
2023		2.50%	2.40%	2.20%	2.40%	2.50%	2.20%	2.20%	1.70%
2024						2.00%	2.00%	2.00%	1.90%
Longer Run	1.80%	1.90%	1.80%	1.80%	1.80%	1.80%	1.80%	1.80%	1.80%

Figure 6 Source: Board of Governors of the Federal Reserve System (US)[71] [72] [73] [74] [75] [76] [77] [78]

[71] Board of Governors of the Federal Reserve System (US) 2020a.
[72] Board of Governors of the Federal Reserve System (US) 2020b.
[73] Board of Governors of the Federal Reserve System (US) 2020c.
[74] Board of Governors of the Federal Reserve System (US) 2021a.
[75] Board of Governors of the Federal Reserve System (US) 2021b.
[76] Board of Governors of the Federal Reserve System (US) 2021c.
[77] Board of Governors of the Federal Reserve System (US) 2021d.
[78] Board of Governors of the Federal Reserve System (US) 2022d.

2020: The three GDP projections for 2020 started with a bleak outlook in which a negative GDP of -6.5% is projected. However, as the year went on and more data came in, the outlook was less negative and was adjusted to a projection of -3.7% (16.09.2020) and -2.4% at the end of the year (16.12.2020).

2021: The projections for 2021 are comprehensive in range. The projections from 2020 are less positive than the 2021 projections. The projection of 5% for 2021 (10.06.2020) is changed by a whole 1% to 4% by September 2020, with a slight upward movement by December to 4.2%. The projections for 2021 from the same year are for a strong recovery, with the expectation of 6.5% and 7% GDP growth, in the first half of the year. The September projections do not reflect that much of a recovery, though it is still expected to be firm with 5.9% and 5.5%. These projections are that of a hot economy recovering from a pandemic.

2022: From June 2020 to June 2021, the projections for 2022 are for healthy GDP growth, with the average projection from 2020 being 3.23%. Projections from 2021 start on the same level, with 3.3% being projected in March but moving up to a stronger 4% by December. In March 2022, however, the projection for 2022 is moving down to 2.8%, with the projection made in June 2022 being even lower at 1.7%. This is a correction of 2.3% downwards from December 2021, reflecting the less positive global economic developments.

2023: Over the years, the projections for 2023 are all somewhat similar and ranging from 2.2-2.5%; the only outlier is the projection of 1.7% for 2023 made in June 2022, reflecting the current sentiment.

2024: The projections for 2024 are in a stable range from 1.9-2%, which is close to the long-run projections.

Longer Run: The long-run projections have remained unchanged throughout the years, always at 1.8%. A projection made for the long term, thus reflecting what the FED is aiming for under normal conditions.

Real GDP Developments:

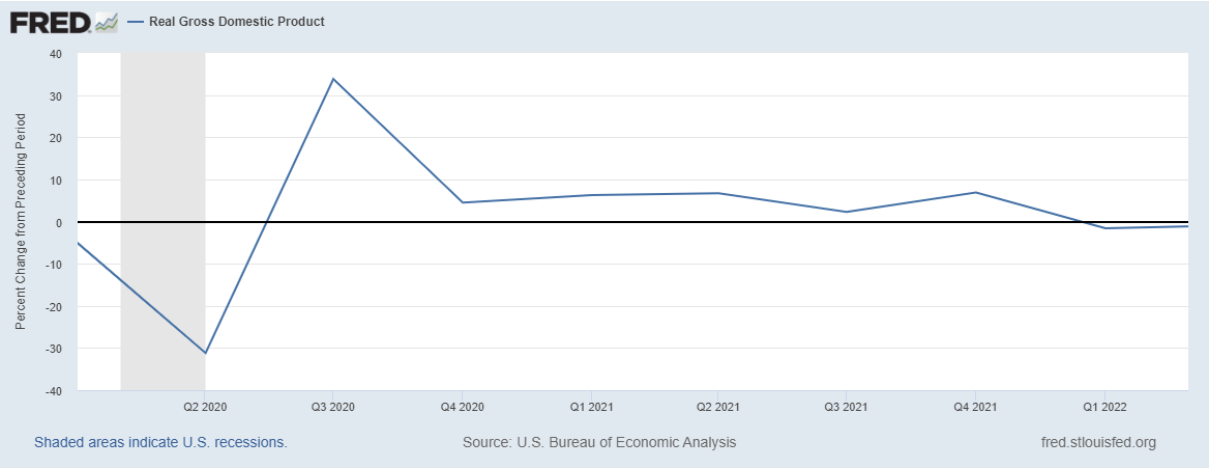
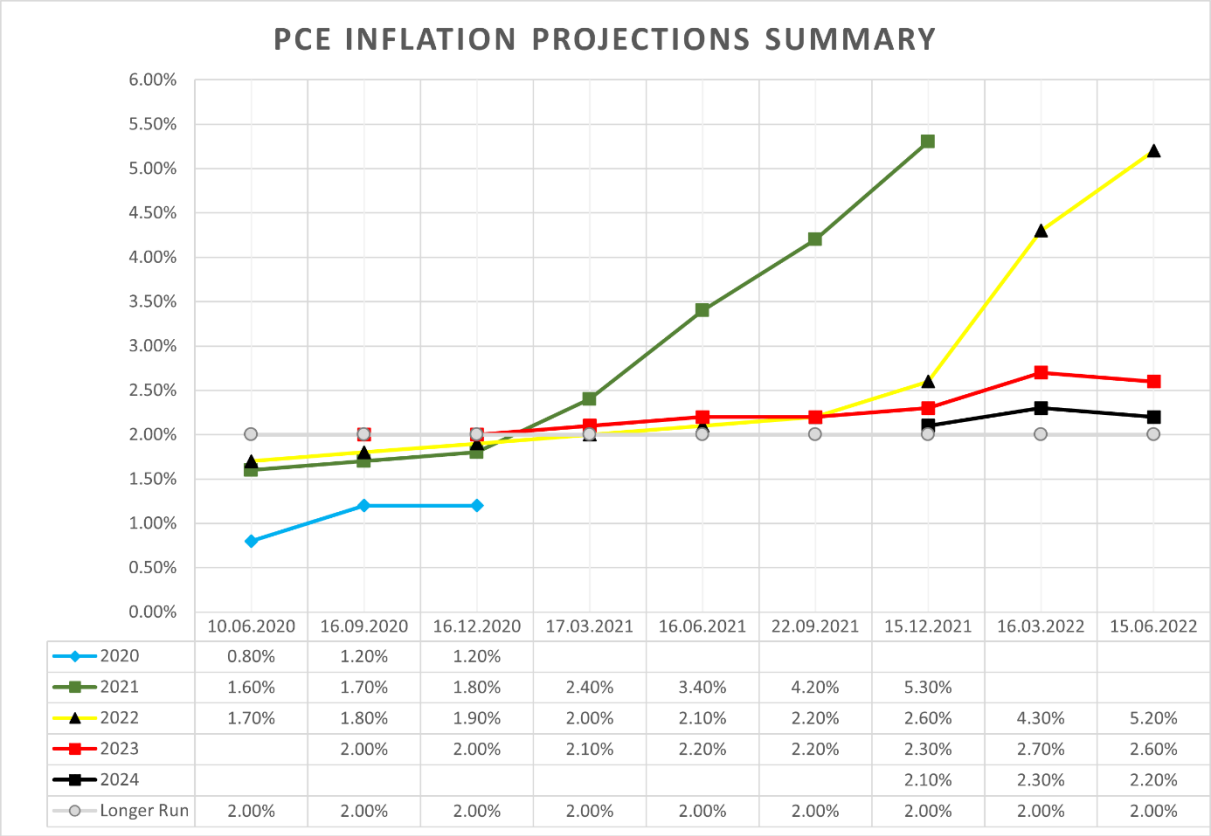


Figure 7 [79]

Looking at the FOMCs projections for real GDP growth in the U.S. economy and comparing that with the actual growth in real GDP, as seen in Figure 7, shows that up until September, the projections have been pretty accurate. However, with Q1 of 2022 having had a decline in real GDP of -1.6%, the FED was not able to correctly project the negative change in real GDP.

[79] U.S. Bureau Of Economic Analysis 2022.

5.3.2. PCE Projections/Developments



	10.06.2020	16.09.2020	16.12.2020	17.03.2021	16.06.2021	22.09.2021	15.12.2021	16.03.2022	15.06.2022
2020	0.80%	1.20%	1.20%						
2021	1.60%	1.70%	1.80%	2.40%	3.40%	4.20%	5.30%		
2022	1.70%	1.80%	1.90%	2.00%	2.10%	2.20%	2.60%	4.30%	5.20%
2023		2.00%	2.00%	2.10%	2.20%	2.20%	2.30%	2.70%	2.60%
2024							2.10%	2.30%	2.20%
Longer Run	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

Figure 8 [80] [81] [82] [83] [84] [85] [86] [87]

Examining the PCE projections as seen in Figure 8 it can be said that there is not much to say about the FOMCs 2020 projections, which over the second half of 2020, move from 0.8% to 1.2%. In 2020 the projections for 2021 were close to the target inflation level, at 1.6%, 1.7% and 1.8% in different projections, reflecting the expected economic recovery from the pandemic as the economy slowly opens up again and the real GDP recovers. As time goes on, however, the PCE inflation projections rise to 2.4% in March 2021, with this being the first notable jump in the PCE inflation projections. After this point, there are significant adjustments in the

[80] Board of Governors of the Federal Reserve System (US) 2020a.
[81] Board of Governors of the Federal Reserve System (US) 2020b.
[82] Board of Governors of the Federal Reserve System (US) 2020c.
[83] Board of Governors of the Federal Reserve System (US) 2021a.
[84] Board of Governors of the Federal Reserve System (US) 2021b.
[85] Board of Governors of the Federal Reserve System (US) 2021c.
[86] Board of Governors of the Federal Reserve System (US) 2021d.
[87] Board of Governors of the Federal Reserve System (US) 2022d.

projections, with an increase of 1% to 3.4% in June 2021, 4.2% in September and 5.3% in December.

The 2022 projections start off at a moderate level, with inflation being projected between 1.7% and 1.9%. In 2021 the projections continued to rise slightly by 0.10%, with each new projection reaching 2.2% by the projection made in September 2021. After that point, the PCE Inflation projections climb to 2.6% in December 2021, 4.3 % in March 2022 and 5.2% in June 2022. This reflects the change of sentiment regarding the "transitory" inflation pressures. For 2023 there was the expectation in 2020 to meet the target level of 2% inflation, which has slightly changed in 2021, with it slowly moving up to 2.3% by the end of 2021. In 2022 the projections are moving up even more to 2.7% in March and 2.6% in June, reflecting the current situation in the summer of 2022 and the thus adjusted projection. The 2024 projections are that of a healthy level of inflation, ranging from 2.1-2.3%. The long-run expectations reflect the FEDs' goals for inflation at a stable 2%.

It is notable that the FOMC expects low inflation numbers for the following year of a projection. With the projection from December 2020 to 2021 being 1.8% and 5.3% a year later, the accuracy of the FOMCs projections is questionable at this point. A similar pattern occurs with the June 2021 projection for 2022, with it being 2.1%. This projection, again, does not hold up and sits at 5.2% in June 2022. Time will be the judge of their current projections for 2023.

PCE Inflation Developments:

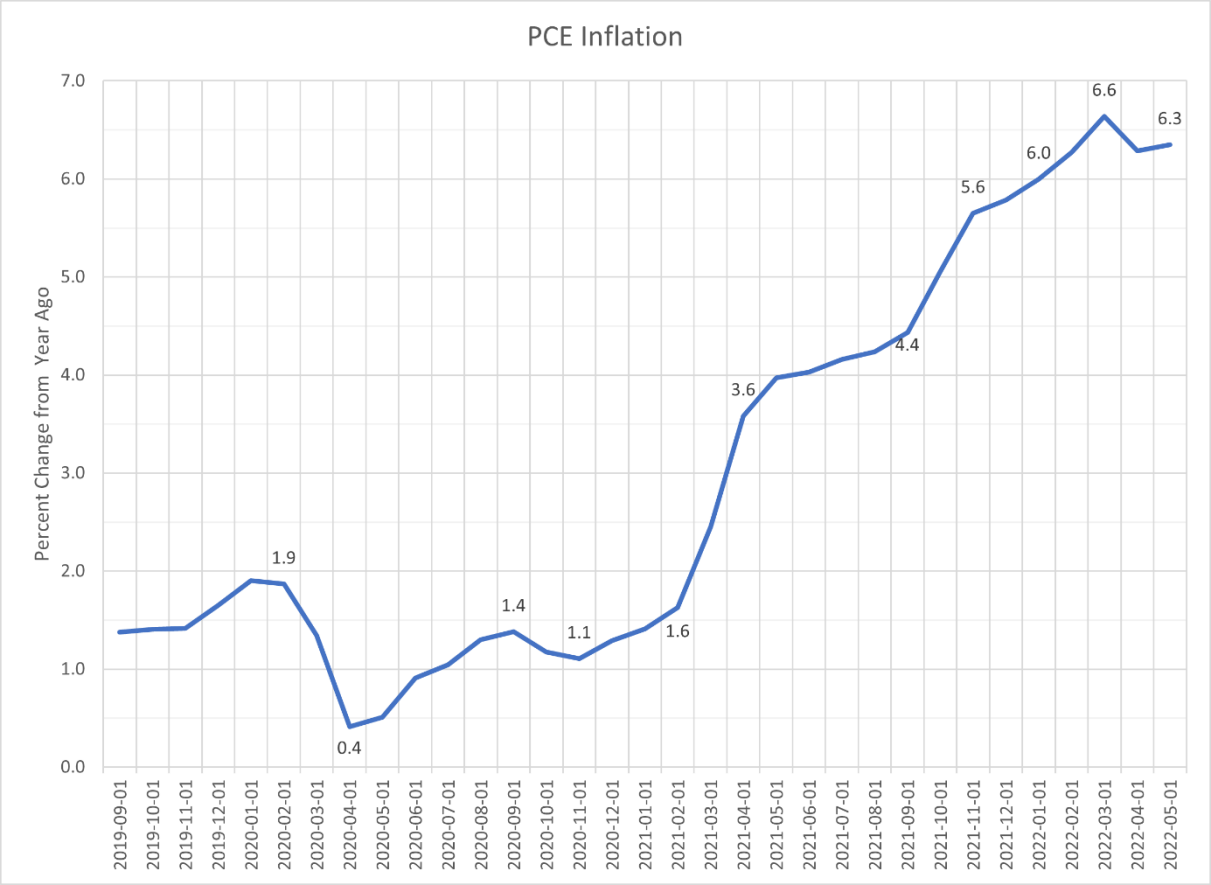


Figure 9 [88]

The Figure 9, put together with data from the Bureau of Economic Analysis, displays the year-to-year change in PCE inflation. Until March 2020, the PCE inflation was below the target levels of inflation, however, at levels that were expected. With the advent of the COVID-19 pandemic, however, as the FOMC in their press conferences around that time pointed out, the slowdown of economic activity and change in consumption habits created a disinflationary pressure, which bottomed out in April 2020 at 0.4% and steadily rose back up again to pre-pandemic levels throughout the year of 2020. It was from February 2021 to April 2021 that the so-called "transitory inflation" started to rear its head. With a jump from 1.6% inflation in February to 3.6% in April. This can be explained with the measurement of year-to-year inflation, meaning that since April 2020 had a low PCE Inflation of 0.4%, higher inflation in

[88] U.S. Bureau Of Economic Analysis.

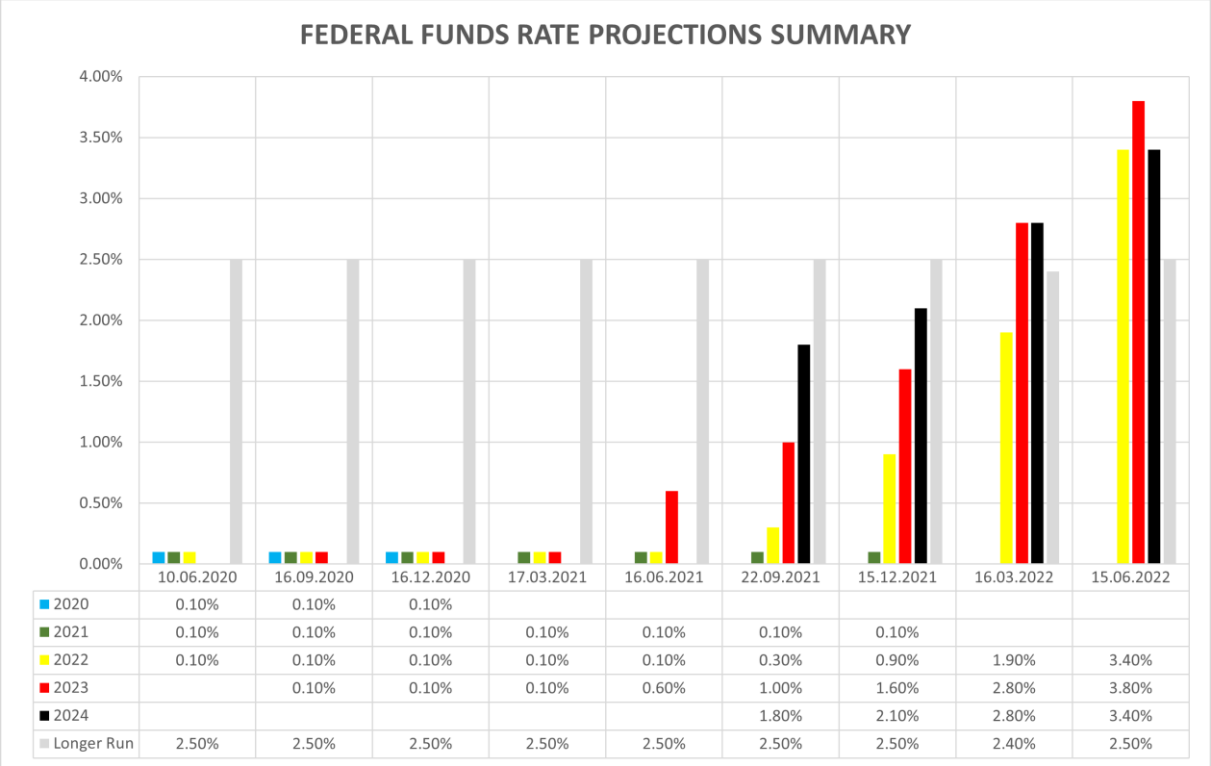
the following year is not unexpected if the factors causing the unusually low inflation are gone. And if one were to look at the median inflation, it would average out at the target level of inflation the FED is aiming for. So, while this is a big jump in inflation, it shouldn't have been unexpected but actually even aimed for. From this point forward, the inflation is consistently moving upwards, with the year-to-year inflation in May 2021 being 4% and 6.3% in May 2022. While the inflation number for May 2021 goes along with the FED's narrative of transitory inflationary pressures, as stated in their press release, the numbers for 2022 do not hold up to the narrative of transitory inflation.

Comparing the PCE Inflation projections with the actual PCE inflation paints a picture that is not in favour of the FOMCs collective projection skills. Generally, the projections are at target levels of PCE inflation until the measured levels change. This can be seen in the projections for 2021 made in 2020, which were below the target level of inflation. The only month in 2021 which is within the range of predictions made in 2020 is February; the rest of the year is marked by steadily rising inflation, with the FED adjusting their projection for 2021 while the year goes on.

One might even say it is not much of a projection but rather the current level of inflation and a positive bias about the next year’s levels of inflation. One projection which seems to be especially unfounded is the projection made in December 2021 for 2022. The FOMC just projected the year-to-year PCE inflation for 2021 to be 5.3%; at the same, the projection for 2022 is at 2.6%, a number slightly above the target level of inflation. This would mean that the FED believes the, at that time, projected FFR for 2022 of 0.9% and slowing down their asset purchases will be enough to reduce the PCE inflation from 5.7% to 2.6%, with an effective rate of -4.8% and tapering. That is a rather interesting view. Of course, three months and a war started by Russia later, the projections for 2022 have been doubled, with the narrative in the press releases being that the war in Ukraine is considerable inflationary pressure. When looking

at the data, it is clear that inflation was already on its way. "Putin's price hikes" are definitely a factor in the rising inflation but not the main driver. More on that in the section about outside factors.

5.3.3. Federal Funds Rate Projections/Developments



	10.06.2020	16.09.2020	16.12.2020	17.03.2021	16.06.2021	22.09.2021	15.12.2021	16.03.2022	15.06.2022
2020	0.10%	0.10%	0.10%						
2021	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%		
2022	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.90%	1.90%	3.40%
2023		0.10%	0.10%	0.10%	0.60%	1.00%	1.60%	2.80%	3.80%
2024						1.80%	2.10%	2.80%	3.40%
Longer Run	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.40%	2.50%

Figure 10 [89] [90] [91] [92] [93] [94] [95] [96]

As presented in Figure 10, during the whole years of 2020 and 2021, the projections for these two years stay the same, a federal funds rate of 0.1%. The projections for 2022 are wide in range, from a 0.1% projection made in June 2020 to a projection of 3.4% in June 2022. The shift of sentiment slowly started to occur in September 2021, at which point the projection was moved up to 0.3%. After that slow shift, the sentiment moved rapidly, with the projection for

[89] Board of Governors of the Federal Reserve System (US) 2020a.
[90] Board of Governors of the Federal Reserve System (US) 2020b.
[91] Board of Governors of the Federal Reserve System (US) 2020c.
[92] Board of Governors of the Federal Reserve System (US) 2021a.
[93] Board of Governors of the Federal Reserve System (US) 2021b.
[94] Board of Governors of the Federal Reserve System (US) 2021c.
[95] Board of Governors of the Federal Reserve System (US) 2021d.
[96] Board of Governors of the Federal Reserve System (US) 2022d.

2022 being 0.9% in December 2021, which marks a three-times increase from the projection just three months prior. The sharp rise in the projections continues as in March 2022 it rises to 1.9% and 3.4% in June 2022.

In June of 2021, it was the first time that the FOMC predicted a federal funds rate above 0.1%, namely, 0.6% for 2023, which is a notable increase of 50 basis points from March 2021 for, at that time, two years into the future. In the September 2021 projection, the trend of a projected increase continues, with it going up to 1% and then with a bigger jump to 1.6% in December 2021. In March 2022, the projection for 2023 increases by 1.2% and stands at 2.8%, which marks a big shift and the biggest increase in these projections. However, in June 2022, the FOMC projected the federal funds rate to be at 3.8% in 2023, another increase.

The 2024 projections, which start in September 2021, are at a projected rate of 1.8% and are moving closer to the long-term goal of around and above 2%. In December 2021, this projection slightly increased to 2.1% and then increased further in March 2022 to 2.8%, the same projection made for 2023 at that time. In June 2022, the projected rate rises once again to 3.4%, being the same projected rate as for 2022 at that time. The long-run projections are at a constant 2.5%, reflecting the FOMC's long-term goals.

Like the other predictions, the shift is swift, with steep readjustments in the projected FFR in a short amount of time. Just a little over a year ago, the prediction was that the FFR in 2023 would be 0.6%, which is nearly three times less than the current target FFR of 1.5-1.75%.

FFR Developments:

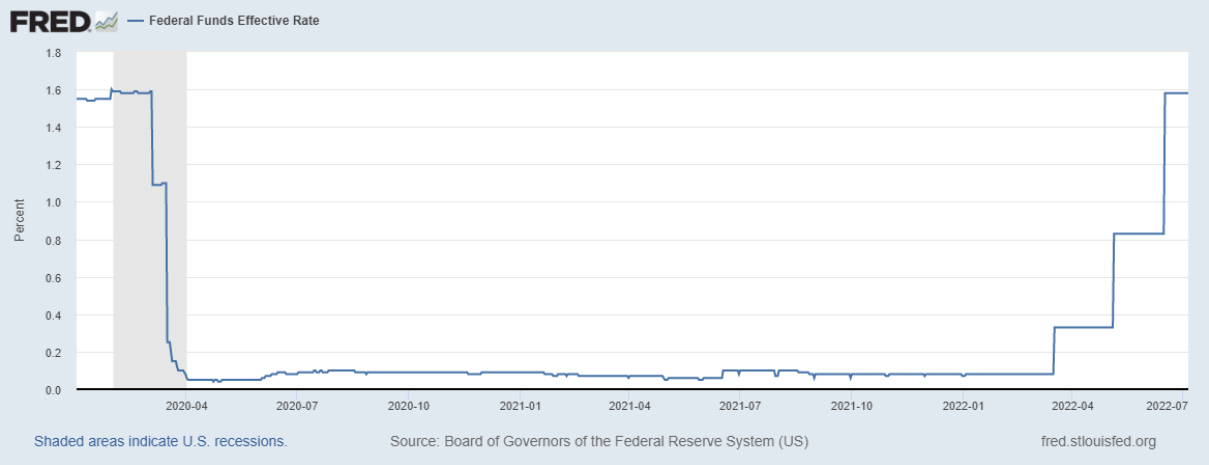


Figure 11 [97]

When observing the actual FFR as shown in Figure 11 and comparing it with the projections, as seen in Figure 10, one the differences are quite clear. Regarding the preciseness of the FOMCs projections, it can be said that up until March 2022, these projections are widely off and present a sentiment that inflation is going to be transitory, thus having no need to adjust the FFR and tighten monetary policy to combat said inflation. Not only is the shift sudden, but also stark, and at this point in time, it is even questionable, due to the wider economic predicaments we find ourselves in if the projected FFR for 2023 and 2024 will be met. Because at this point, the shifts in sentiment have not been projected into the discourse at all. Going from transitory pressures and a projected FFR of 0.20% for 2022 to 1.9% in six months is a huge shift, especially when, up until then, there was no sign of it in the FOMCs discourse at all. It would seem like they have not expected the inflationary issues to stick around and even worsen.

[97] Board of Governors of the Federal Reserve System (US).

5.4. Market Data

5.4.1 Developments by Wealth Percentage

USD in Millions	1st to 50th Percentiles	50th to 90th Percentiles	90th to 99th Percentiles	99th Percentile
Checkable Deposits and Currency Held Q1 2020	109,158	393,102	405,978	220,170
Checkable Deposits and Currency Held Q1 2022	276,374	1,177,604	1,502,834	1,331,033
Increase	167,216 (153.187%)	784,502 (199.567%)	1,096,856 (270.176%)	1,110,863 (504.548%)

Figure 12 [98] [99] [100] [101]

When looking at Figure 12, the development of checkable deposits and currency held from Q1 2020 to Q1 2022, it is notable that, just like in all the other categories shown in this table, there has been growth in all four percentile groups. However, when looking at which percentile group has gained the least in absolute and relative terms, it is clear that the 1st to 50th percentiles have gained the least with an increase of "just" 153% and 167 billion USD. This is a significant cash increase in a very short time, but it dwarfs in comparison to the 504% growth the 99th percentile experienced a total gain of ~1.1 trillion USD. What the 99th percentile gained in liquidity in 2 years is ten times more than the 1st to 50th wealth percentiles of the population held before the expansive monetary policies of the FED during these two years.

Another strong development is the difference in growth between the 50th to 90th and the 90th to 99th. Both groups started off at around 400 billion USD in liquidity, with a difference of just around 13 billion USD. This difference has grown to a whopping 325 billion USD, with the percentage growth rate of the 50th to 90th percentile being closer to that of the 1st to 50th than to the 90th to 99th. The 90th to 99th have massively increased their liquidity, which is the biggest in

[98] Board of Governors of the Federal Reserve System (US).
[99] Board of Governors of the Federal Reserve System (US).
[100] Board of Governors of the Federal Reserve System (US).
[101] Board of Governors of the Federal Reserve System (US).

absolute terms. The 99th, however, is just short of 170 billion USD, even though the 99th percentile had nearly half as much liquidity as the 90th to 99th before the pandemic started.

USD in Millions	1st to 50th Percentiles	50th to 90th Percentiles	90th to 99th Percentiles	99th Percentile
Loans Held Q1 2020	5,013,600	6,829,210	2,976,547	799,268
Loans Held Q1 2022	5,722,218	7,522,721	3,634,240	802,572
Increase	708,618 (14.1339%)	693,511 (10.1551%)	657,693 (22.3982%)	3,304 (0.41337%)

Figure 13 [102] [103] [104] [105]

Looking at Figure 13, how the volume of loans has increased in that time, it is surprising that the most significant increase in the volume of loans in relative terms has taken place in the 90th to 99th percentiles, with an increase of 22.3%, which is over a third more than the second biggest relative increase of 14.1%, which occurred in the 1st to 50th percentiles and more than double that of the relative increase that took place in the 50th to 90th percentiles which stands at 10.1%. In absolute terms, the increases of these three groups are on a similar level of around 700 to 650 billion USD. The one big, or shall we say small, outlier in this category is the 99th percentile which has increased their volume of loans only by 3,3 billion USD to 802 billion USD; of course, this number is small in comparison to the others, but one has to keep in mind that the size of the population is significantly smaller and that the absolute amount of loans these individuals are holding would be crushing for any individual from the other groups.

[102] Board of Governors of the Federal Reserve System (US).
[103] Board of Governors of the Federal Reserve System (US).
[104] Board of Governors of the Federal Reserve System (US).
[105] Board of Governors of the Federal Reserve System (US).

USD in Millions	1st to 50th Percentiles	50th to 90th Percentiles	90th to 99th Percentiles	99th Percentile
Assets Held Q1 2020	6,880,037	37,944,509	43,149,848	31,671,752
Assets Held Q1 2022	9,647,946	47,142,765	56,307,569	45,731,755
Increase	2,767,909 (40.231%)	9,198,256 (24.2413%)	13,157,721 (30.4931%)	14,060,003 (44.3929%)

Figure 14[106] [107] [108] [109]

Next up, as presented in Figure 14, is the increase in assets held by each group. Unsurprisingly, the group with the lowest amount of assets held in Q1 2020 and Q1 2022 is that of the 1st to 50th percentile. The order has not changed. It seems unintuitive that percentagewise, the 1st to 50th percentiles have enjoyed the second biggest asset increase, at 40.2%, just after the 99th percentile and 4% lower than their percentage growth. Of course, the overall amount of assets is still around 4.5 times less, but in relative terms, this group has enjoyed the second biggest relative increase in assets. All the while, the 50th to 90th and 90th to 99th percentiles were not able to gain as much in relative terms, with their increases at 24.2% and 30.5%, respectively. These two groups' increase in assets is still many times bigger than that of the 1st to 50th percentiles, however, interestingly enough, the 1st percentile was able to not only have a bigger relative increase of assets, but even in absolute terms, the 1st percentiles assets have grown more than any other percentile group. While their overall assets are not yet bigger than any other groups, they are catching up quickly with the 50th to 90th percentiles in this category.

[106] Board of Governors of the Federal Reserve System (US).
[107] Board of Governors of the Federal Reserve System (US).
[108] Board of Governors of the Federal Reserve System (US).
[109] Board of Governors of the Federal Reserve System (US).

USD in Millions	1st to 50th Percentiles	50th to 90th Percentiles	90th to 99th Percentiles	99th Percentile
Financial Assets Held Q1 2020	1,888,855	22,232,071	32,648,074	26,492,072
Financial Assets Held Q1 2022	2,501,515	27,199,820	42,508,771	39,347,146
Increase	612,660 (32.4355%)	4,967,749 (22.345%)	9,860,697 (30.203%)	12,855,074 (48.5242%)

Figure 15 [110] [111] [112] [113]

From overall assets to financial assets. Regarding the relative increase of financial assets, as summarised in Figure 15, the same order as last time is still in effect. The most significant relative increase was enjoyed by the 99th percentile (48.5%), with the 1st to 50th percentiles being in second place (32.4%), the 90th to 99th in third place (30.2%) and the 50th to 90th in last place (22.3%). Looking at the big gap in relative increase between the 99th percentile and the other groups, one has to wonder what the different kinds of financial assets are that their relative increase has such a better performance than the other groups. Clearly, not all financial assets are made equal.

When looking at the absolute increase that happened in these two years, the 1st to 50th percentiles, expectedly, gained very little in absolute terms when compared to the other groups. However, when comparing the absolute growth between the 1st to 50th and the 50th to 90th percentiles, the latter has grown around eight times more, again, in absolute terms, than the 1st to 50th percentiles, with the 90th to 99th percentiles' absolute growth being 16 times bigger and the 99th percentiles absolute growth being 20 times bigger, standing at a whopping 12,85 trillion.

It is essential to consider the proportion that financial assets make up of the overall assets held by each percentiles group. For example, looking at the proportion of financial assets of the overall assets in the 99th percentile during the Q1 of 2020, it can be seen that assets other than

[110] Board of Governors of the Federal Reserve System (US).
[111] Board of Governors of the Federal Reserve System (US).
[112] Board of Governors of the Federal Reserve System (US).
[113] Board of Governors of the Federal Reserve System (US).

financial ones made up 5,17 trillion USD of 31,67 trillion USD. In Q1 of 2022, that amount of non-financial assets is at 6,38 trillion USD, meaning that other financial assets "only" grew by 23%, which is way less of an increase than the 48% that their financial assets have grown. It appears that non-financial assets are growing faster for all the other groups compared to the 99th percentile. With non-financial asset growth being proportionately bigger than financial asset growth in a way that, were they less invested in the financial markets, they would have performed better. The percentage growth of non-financial assets was at 32% for the 90th to 99th percentiles, performing 1.8% better than their financial assets. A similar trend can be seen with the 50th to 90th percentiles, where the non-financial asset growth was at 26%, which is 3.7% higher. This trend is really pronounced in the group of the 1st to 50th percentiles, which grew their financial assets by 32% but their non-financial assets by 43%, thus making up most of their asset growth.

	1st to 50th Percentiles	50th to 90th Percentiles	90th to 99th Percentiles	99th Percentile
Share of Total Net Worth Q1 2020	1.80%	29.90%	38.60%	29.70%
Share of Total Net Worth Q1 2022	2.80%	28.10%	37.30%	31.90%
Relative Change/Absolute Change	+55.55%/+1%	-6.02%/-1.8%	-3.36%/-1.3%	+7.4%/+2.2%

Figure 16 [114] [115] [116] [117]

Moving on to Figure 16 and summarizing the share of total net worth owned by the different groups. While the absolute changes appear small, the relative changes of the different shares, are significant. Seeing that the 50th to 90th and 90th to 99th percentiles have lost 6.02% and 3.36% of their share of total net worth paints a picture of the middle and upper middle class losing their shares, while the bottom and top are gaining. The absolute change of 1% might not

[114] Board of Governors of the Federal Reserve System (US).
[115] Board of Governors of the Federal Reserve System (US).
[116] Board of Governors of the Federal Reserve System (US).
[117] Board of Governors of the Federal Reserve System (US).

appear big, but it will have had a significant impact on the bottom 50 percentiles as it is an increase of 55.5%.

That is no pocket change, that is going to be noticeable. On the flip-side of the coin, we can see the 99th percentile gaining 2.1% in absolute terms, while they have increased their share of the total net worth by 7.4%. The Middle is Hurting and experiencing a noticeable loss in relative net worth, while the bottom and top are gaining ground. It is also noteworthy that the 99th percentile increased their absolute share of total net worth by more than double (2.2%) than the bottom 50 percentiles (1%).

5.4.2. Housing

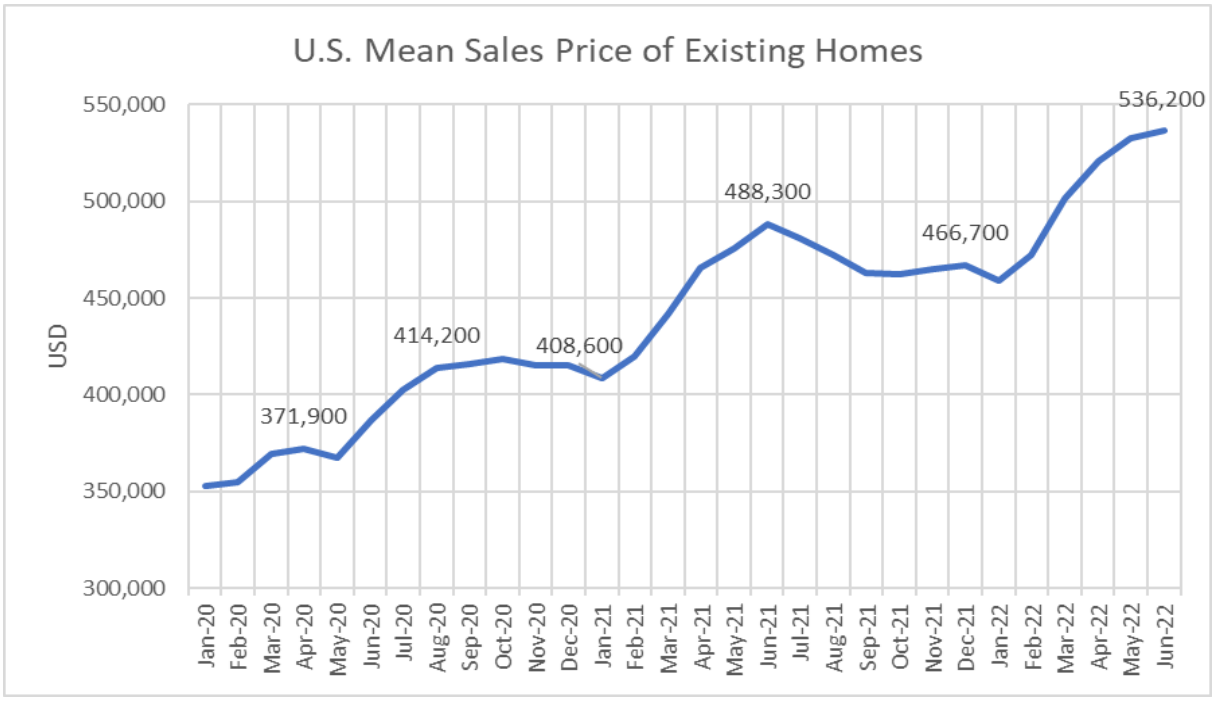


Figure 17 [118]

A good measure of the effect the FED's low-interest rate policy had on the wealth of individuals in the U.S. is the housing market and the developments occurring with the ever-changing U.S. means sales price of existing homes. Looking at that metric, it is clear as day that the trend is upwards, if not to the sky, with the mean increasing by 53% in the timespan from

[118] Nation Association of Realtors.

January 2020 to June 2022. These are drastic price developments. Moreover, even as the FED has started to pivot its monetary policy, the mean sales prices have increased. Something that is counter-intuitive, as even the announcement of a rising FFR sends up the interest rates in the credit market, thus raising the price of money and lowering the supply of new credit. Less money should be chasing the same amount of goods, lowering the prices.

5.4.3. S&P 500

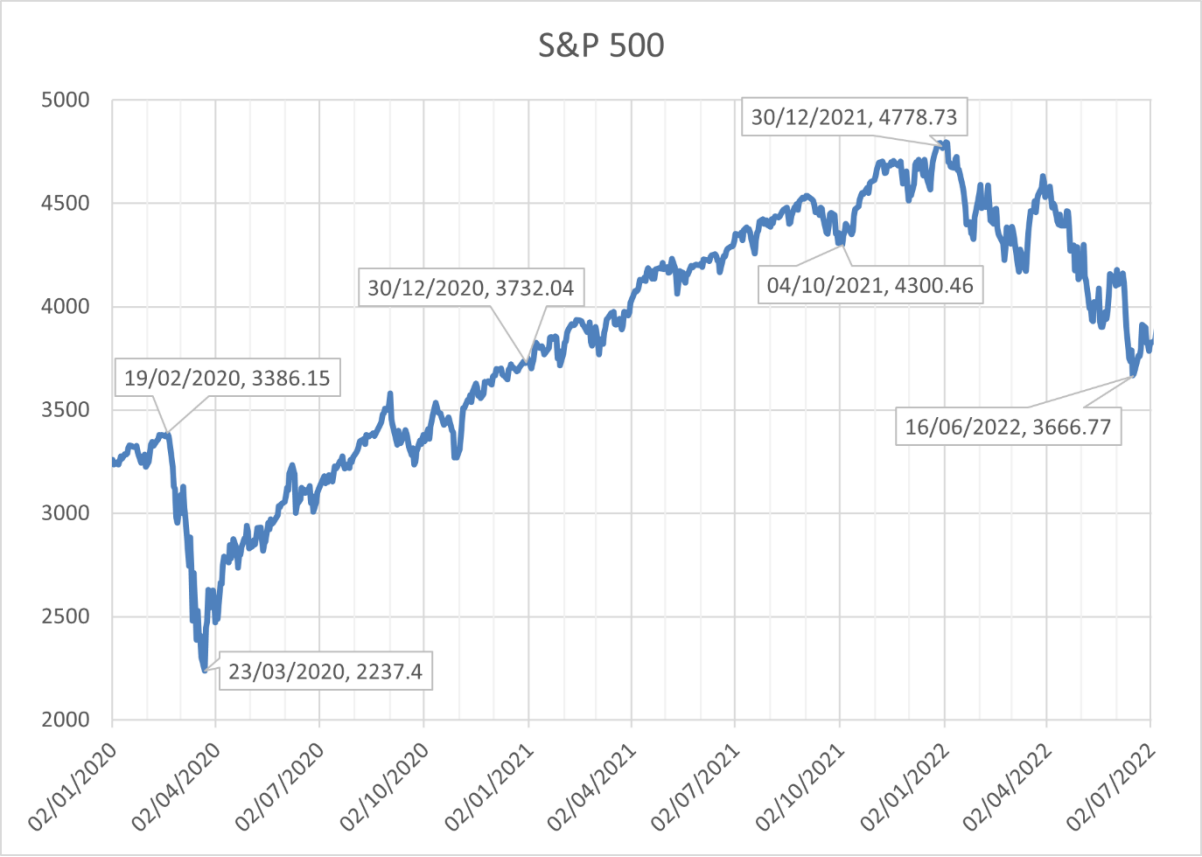


Figure 18 [119]

Let us turn to market data to see the FEDs monetary policy's possible effect on the economy. On the 19th of February 2020, the S&P 500 was going strong at 3386 index points; this quickly turned sour in the following weeks as more troubling news about COVID-19 came out, and the markets began to worry. The height of that worry was during the middle of March 2020 when the WHO famously declared the pandemic. At that time, the FOMC set the agenda

[119] S&P Global.

for the next two years during their meeting. That agenda being: extremely loose monetary policy to support the economy and prevent deflationary pressures from taking over. During this time, the so-called V-shaped recovery took place. The stock markets, which were experiencing historical drops, soon recovered to pre-pandemic levels. In just five months, the stock markets recovered.

Furthermore, as can be seen in the S&P 500 index, the monetary policy fulfilled its goal to lift the markets, closing the year comfortably above pre-covid levels. This recession and the quick recovery was a golden opportunity for savvy investors who saw the drop coming. Throughout these two years, the trend was upwards, as the S&P 500 followed up historic highs with more historic highs. This trend was interrupted when in September 2021, inflation was rising quicker than the FOMC previously projected. However, this slump hit its low in early October 2021 when the FOMC started to push the idea of transitory inflationary pressures, which were of no worry to the markets. The crucial time was from this point till the end of the year when it was to be seen if this holds true and if these inflationary pressures indeed are just transitory.

At the end of 2021, the S&P 500 hit its high, for now, and started a downwards movement, just as the FOMC announced their pivot in the policy. The expansionary monetary policy was to be tightened. As a result, the open markets operations slowed down, and the FFR went up. Since then, there has not been a change of direction, both in the FEDs monetary policy and the S&P 500. The rates are about to go up again, and the stock markets will continue to go down. Overall, from its low in March 2020 to its high at the end of December 2021, from the announcement of the beginning of expansive monetary policy to the announcement of its end, the S&P 500 index rose by 113.6.

5.4.4. Commodities

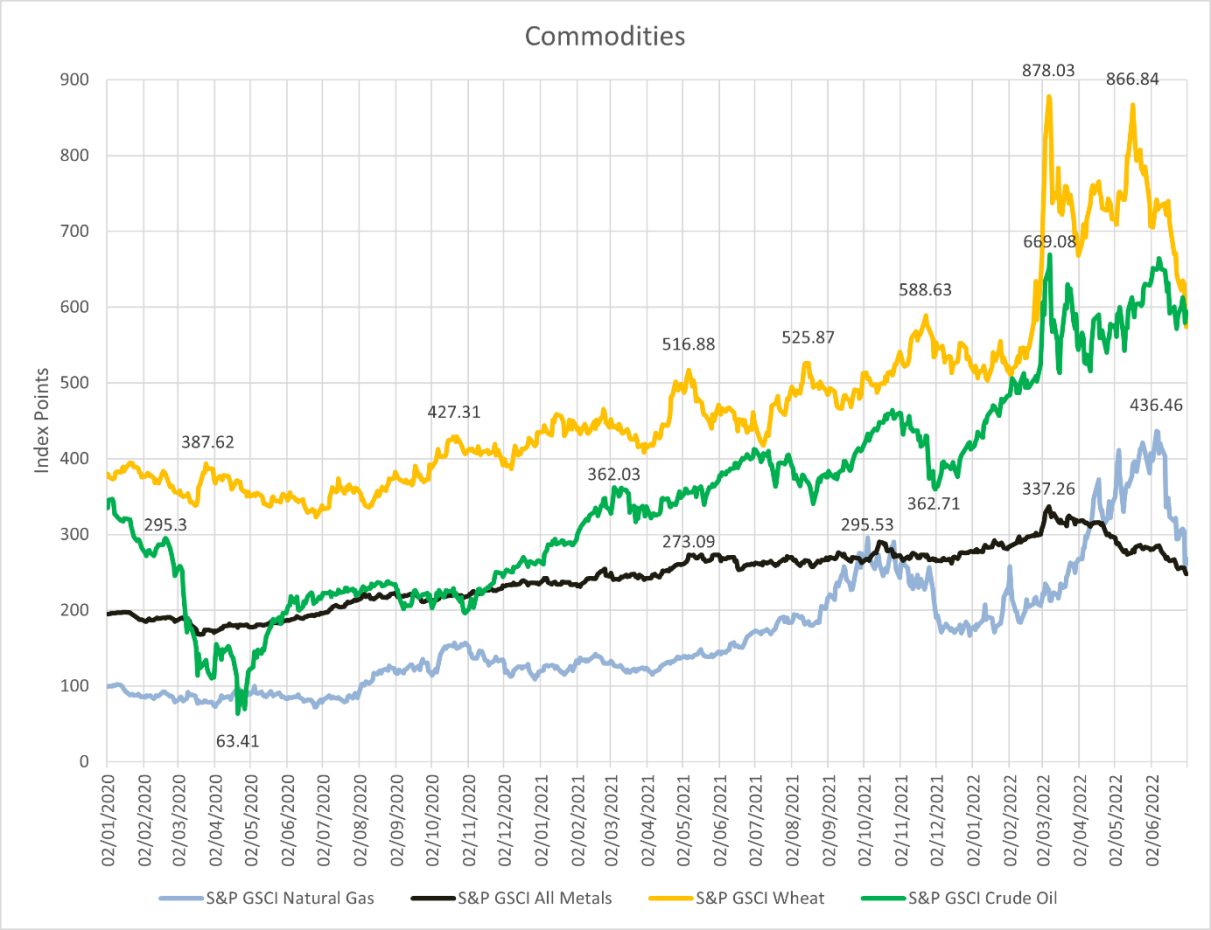


Figure 19 [120] [121] [122] [123]

Looking at the price developments of commodities, the pandemic crash that occurred in the stock market in March 2020 is not as pronounced. However, this cannot be said about Crude Oil, as the S&P GSCI index crashed from 295.3 points on the 20th of February to 63.41 points on the 21st of April. A 78.5% decrease can undoubtedly be described as free falling. Even though the recovery from the bottom to a healthier level of 200 index points was quick, it just took one and a half months; it nearly took a year, till the 1st of February 2021, for the index to return to pre-COVID shock levels. After the COVID shock and the futures market for crude oil going negative, the recovery, as observable in early November, the upwards trend started to

[120] S&P Global.
[121] S&P Global.
[122] S&P Global.
[123] S&P Global.

take off. From the 2nd of November to the 25th of June, the GSCI Crude Oil Index doubled to 405 Index points. Throughout 2021 the index continues to rise, and while there are downturns, it always bounces back. A notable jump occurs from the beginning of December to the 22nd of February 2022, when the index reaches over 500 points. 140 index point increase alone is noteworthy, but what follows is worse than any economic crisis. Putin invades Ukraine on the 24th of February 2022, a day that will not be forgotten by many. What follows is not only immense human suffering but also a shock to the commodities markets, which sends many commodities to the sky, as can be seen in GRAPHX; wheat and Oil markets had an extreme reaction to the war, going up to all-time highs. What follows is the commodities markets being dominated by news of the war.

Observing the GSCI Wheat index will show that throughout the last two years, there have been no big crashes; there have been sharp downturns, yes, but those were always followed up shortly after by an ever so higher peak. Generally, the movement is steadily upwards, reaching historically high levels, for the wheat markets then to go parabolic with the Ukraine war and reaching historically high levels.

The GSCI All Metals Index shows how unaffected metals were overall by the sudden drop in demand during the pandemic shock, with the index having a slight downturn but no crash like the crude oil markets. The index shows a 78.5% increase from its lowest during the downturn on the 20th of March to just before the invasion by Russia. Compared to the other commodities, this is not as much of an increase, but still a considerable increase. Like small NBA players, they will still be taller than average. In stark contrast to the other indexes, the all metals index has a relatively negligible jump with the start of the war and starts a downward trend right afterwards.

The GSCI Natural Gas index shows no effects on the natural gas market during the pandemic shock and does not show any movements until the end of July 2020, when it starts to rise from

84 index points to 157 index points on the 30th of October, which is an increase of 86.4%. Just for it to drop to 108 index points and continue on that level, with a slight rise in February, till April 2021. In April, a strong upwards trend starts, reaching its peak early October, with the index nearly tripling. At the end of November, the GSCI Natural Gas index behave similarly to the GSCI Crude Oil index. In little over a week from the 29th of November to the 6th of December, the index sinks 33%, after which the war is soon to start with the natural gas markets now being highly volatile.

6. Outside Factors

For this part, let us examine some variables not connected to monetary policy and the fiscal policies they enabled, i.e., the demand side of the issue; this part is about the supply side issues and the factors which have negatively impacted the supply of goods. Examples of such issue-creating topics are the war in Ukraine and all the disruptions that have led to environmental and energy production policies and government interventions.

Starting with the war in Ukraine and what many have already called Putin's price hike, the idea of it singlehandedly causing the sharp spike in inflation that we have witnessed in the past five months must be seen in critical light as there are many factors at play. While the war is of course a considerable factor, it is not the only one. While it is true that this attack on Ukraine has caused the commodity markets to act in entirely unpredictable ways, it is not like these developments are instantly passed on to the consumer. Price increases driven by a lowered supply, just as monetary inflation, need time to arrive at the point where the general consumer notices them. Moreover, it is also not the case that up until the invasion of Ukraine, the market situation was normal; quite the opposite. The commodity markets might not have been as volatile, but they indeed were on a steep upwards trend, with many having doubled and some even more than that, as the section about commodities has shown. Furthermore, it is not like gas prices were low before the invasion. Gas prices have been consistently rising way before

the 24th of February, but that does not change the fact that the Ukraine war has worsened an already bad situation.

However, so far, something that has not been telegraphed into the discourse is the secondary issue arising from a shortage of natural gas and oil. This is the lack of by-products of the refinery process. One must look around, and everywhere there will be materials that originate in the refinery process; we are thoroughly dependent on petrochemical products. Therefore, oil and gas prices affect every product, and through nitrogenous fertiliser, even our food. There is, of course, the issue of operational energy costs for farmers, and a price increase will inevitably influence the price of the end-product, in that energy costs will directly increase the production price. A lower supply of fertiliser, however, will lead to lower production output, directly leading to a rise in costs and a lower quantity. This lower supply of fertiliser and rising costs have plagued farmers worldwide, especially since July of 2021 when China banned fertiliser exports.[124] And right now, it is being worsened by around 21.5% of the trade volume of nitrogenous fertiliser being restricted by giant export bans.[125]

It is particularly interesting when these shortage issues converge with each other due to regulations, such as environmental fuel standards imposing the use of diesel exhaust fluids (DEF), which reduce the exhaust of environmentally harmful substances, by enforcing it with sensors which will have to sense the DEF before the motor can even start.[126] That is, however, not the rest of the regulations creating supply side issues and pushing up prices. Since the change in administration in the U.S., the Biden administration has shown through its actions that it cares about climate change and while aiming to reduce emissions is indeed a well-intentioned endeavour, it has now come back to haunt them. Of course, the long-term benefits of such policies are great; however, the topic of this thesis is not the environment and its man-

[124] Bown and Wang 2022.
[125] Laborde 2020.
[126] Apthorp 2022.

made effects on it but supply and demand issues representing themselves in inflation measurements. Thus, the well-meaning nature of the following policies has to be ignored.

The Biden administration has continuously worked to reduce the capabilities and raise the regulations on the American oil and gas industry. Testaments to that are the cancellation of the Keystone pipeline project, which would have supplied the U.S. with 830,000 barrels per day of oil from Canadian tar sands.[127] This, of course, would not have made a big difference with the war in Ukraine, but it is just one of many decisions that dampened U.S. oil production leading up to it. There was also the cancellation of drilling for oil in Alaska, with the understandable goal to protect the local wildlife and environment,[128] or the decision to halt oil and gas leases just two days before the invasion.[129] Furthermore, not only were individual projects halted or leases stopped but methane emissions regulations were put in place, which was aimed at the oil and gas industry, again, in the name of climate change.[130] All of these cancellations and regulations were put in place to follow a worthwhile goal, but it does not change the fact that the U.S. has worsened the current situation with these past decisions, it also goes to show that if the situation gets bad enough, that the Biden administration is willing to throw their environmentalism overboard. Like they recently did, when they overturned their decision not to drill in the arctic.[131]

[127] Ajmera 2021.
[128] Davenport *et al.* 2021.
[129] Daly 2022.
[130] Brady 2021.
[131] *Los Angeles Times*, 12 July 2022.

7. Discussion

The Fed injected trillions into the market. Many measures are at historic highs, with the scales of this operation being unprecedented. Right now, with over 2.25 trillion USD, there is as much currency in circulation as never before[132] , and even though that is a historical metric, the treasuries sold each day in the reverse repo market exceed all of the currency in circulation at around 2.3 trillion USD.[133] The M2 money supply has risen by 21.7 trillion USD, which is also a historic high, and it increased by 25.2% in the time span of 2020 to 2021 alone, which is unprecedented. However, this M2 money, which, thanks to a change in regulations of transaction limits on savings deposits, should be more liquid than before, [134] is at a nearly all-time low velocity with a velocity ratio of just 1.122. All the while, the FED has been buying up securities like there is no tomorrow and increasing their balance sheet to a historical height on 13 April 2022 of overall 8.965 trillion, an increase of 111.3%,[135] from when the COVID-19 pandemic was declared, and the monetary policy was shifted to accommodate the restricted economy. All the while, the FOMC press releases and projections were overly optimistic in their outlook on all metrics. From projecting inflation way below the levels, the US is currently experiencing, to projecting low-interest rates for at least another year and a positive outlook for the current year's real GDP. That was until September 2021, when the FED started to slowly pivot and then suddenly, not so much. Inflation was transitory until it was not, the GDP was going to be good until it was not, and the rates were projected to be low for quite some time, until this projection suddenly changed as well. The shifts in narrative certainly have been sharp.

But how did it affect the markets and wealth distribution? Looking at how the markets performed, it is quite clear that their upshoot in March has been due to the FEDs monetary

[132] Board of Governors of the Federal Reserve System (US) 2022b.
[133] Federal Reserve Bank of New York 2022.
[134] The FRED Blog 2021.
[135] Board of Governors of the Federal Reserve System (US).

policy and lowering of the interest rates. During the time of cheap money and quantitative easing, the equity markets, commodities and housing markets only knew one direction, and that was upwards. While there have been slight downturns here and then in regards to commodities, this is generally attributable to outside factors described in the previous chapter, which makes sense as commodities are probably the one category out of the three that is not going to be undisturbed by outside influences, quite the opposite, as the invasion of Ukraine has shown that a bad situation can always get worse, especially in regards to commodity prices.

While all of these developments unfolded in the middle of the town square, causing quite the commotion, there have been more pernicious developments going on in the background. When one turned on Bloomberg TV during this time of loose monetary policy, it was a craze of everything going up. An amazing housing market, an amazing stock market, and commodities were going wild. All these developments discussed above were widely reported but one not so much, which is how the socio-economic situation changed.

As seen in figures 12 to 16, inequality grew. The upper 1 percent has increased their standing in all metrics, leaps ahead of the rest of the wealth percentiles. The only metric in which the upper 1 percent did not lead the way was in the volume of loans that they increased in their holding, which could have arguably benefitted them during times of "elevated inflation". Other developments in this regard are that the 50^{th} to 99^{th} percentiles lost in nearly all measures taken into account in this thesis, with the only measure where they got ahead of the bottom 50 percentiles being the volume of checkable deposits and currency held. In that regard, they faired well; however, in all the others, not so much. Their assets experienced less of a relative growth than both the bottom 50 percentiles and the upper 1 percent, with their total share of wealth declining, while the bottom 50 percentiles grew their share by 1% and the upper 1 percent by 2.2%. When talking about the redistributive effects the FEDs monetary policy could have had, the different impacts that price increases have on households of varying degrees of wealth must

be taken into account as well, as heating costs in the winter or a full tank of gasoline are going to make up more or less of a household's budget depending on their income. In that sense, it is not only about what different wealth percentiles were able to grow more on the stock market or housing market than others did, but what they are losing more to rising prices than others do. In a way, even without these developments on the stock market, the effect on the wealth of different groups would have been disproportionate, to begin with.

However, since the recent price increases and shortages are not only attributable to the FEDs monetary policy, it stands to show if this is what it in regards to price increases, as the low velocity of M2 and the vast volume of the reverse repo market currently show, there is much more in store and a lot of currency to flow into the economy left.

8. Conclusion

In the end, when taking Cantillon into account, many things that one could have expected to happen happened. The idea that those closest to the point of injection of the new currency would benefit the most from it, driving up prices for certain goods due to their changed consumption behaviours, has come to fruition. Looking at the change of assets held by the different wealth percentiles and looking at how the rise in all asset classes happens to coincide with the start of a period of expansionary monetary policy as well as seemingly ending with the end of precisely that policy, it sure does seem like those that were rising the tidal wave that was the FEDs monetary policy have tremendously benefitted from and in stark contrast to those who were not able to make the same use of it.

To conclude, there has been an extensive redistributive effect with wealth being siphoned from the middle and upper middle class due to them seemingly benefitting less in relative terms of these policies than the upper 1 percent, arguably due to already existing equity holdings from before the pandemic, and the bottom 50 percentiles. What is yet to see, however, is if Cantillon stands corrected in that due to the low velocity of money, the inflationary

pressures of the M2 money supply will not be of concern as long as the US is in this economic downturn. The question is how much of the current rise in prices of consumer goods is attributable to the monetary policy. This question does not arise with the stock or housing market as they are too strongly attached to the financial markets into which the new currency was injected. In this regard, the inflation of these prices certainly falls in line with what Cantillon would suggest would happen.

It is the future inflation and the accompanying redistribution of relative wealth that has to be awaited because by the looks of the M2 supply and its low velocity, we have not seen everything yet. The question is what is to come when the economic downturn seemingly ends and economic activity picks up again. Following Cantillon's logic, the velocity of money would have to go up, and inflationary pressures would rise. That, however, is a question for another time and historically speaking, for such inflationary pressures to become widely apparent, it may take years.

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