A Financial and Economic Interpretation of Coronavirus: Part II

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This paper starts by discussing policy tools that are left in the Federal Reserve's standard tool kit. Then we turn our attention to joint action being taken by the Treasury and Federal Reserve and how these institutions are relying on the current stimulus bill. The final section discusses corporate bailouts and why we are opposed to them. We compare the current COVID-19 crisis to the 2008 financial crisis to help explain what we learned from that event and how we can use those tools to help us in the present.

1 What remains in the monetary policy toolkit

The Federal Reserve has reached the zero lower bound (ZLB) on interest rates, and as mentioned in the previous post, the Fed has taken steps in expanding its lending facilities. We first want to show some data that indicate the recent actions of the Fed are already helping the economy. We start by referencing data from two key variables in financial markets.

The first is the two-year nominal treasury yield. This is the rate at which the US government can borrow over a two-year horizon. While no one interest rate in itself is indicative of policy tightness, the two-year treasury is one common measure of the current stance of monetary policy. The second indicator is break-even inflation, this comes from the price difference of a nominal US government bond and US government bond that protects investors from inflation risk. Hence, it is a financial market-based measure of future inflation.

As shown in Figure 1, in mid March the two-year nominal treasury yield briefly rose before the Fed announced its crisis policies, and break-even inflation had fallen drastically. If monetary policy was appropriately accommodative then we should expect no upward pressure on the two-year treasury bill and inflation expectations to remain at previous levels. The economy was hit by a large supply shock, but it was also hit by a demand shock. While the federal funds rate had

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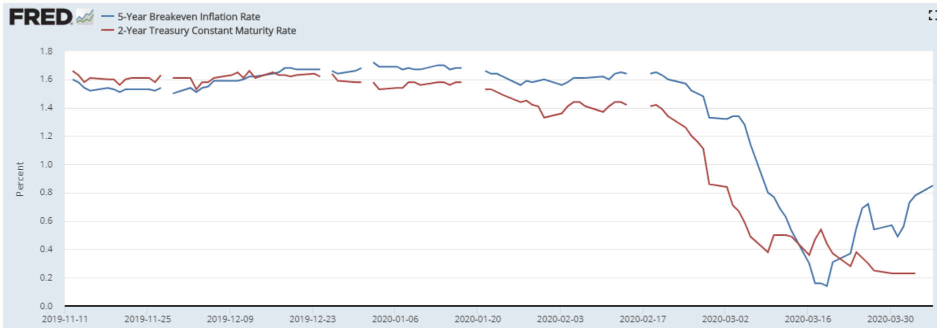

Figure 1: Two-year treasury yield and 5-year break-even inflation rate. When the crisis started to hit, breakeven inflation rates rapidly dropped, which indicates expectations about the future of the economy declined. As the Fed put its policies in place, they reversed that trajectory and break even inflation rates are now going back up–indicating that the economy will be better off than if the Fed did not step in.

remained constant, these markets were signaling monetary policy was too tight. In subsequent announcements of the Fed's expansion in credit facilities and quantitative easing (QE), treasuries have continued their trend down and inflation expectations are rising. Even so the government bond market is signaling that inflation will be below target, which leaves room for monetary policy to stabilize. It is important to note that these measures are both forward looking–they tell us where markets think we are going 2-5 years in the future. The fact that these measures are improving does not imply that the short run situation has improved.

Despite appearing to reach the limits of the standard toolkit, there are still ways the Fed can continue to use these policies in the three ways discussed below.

Negative interest rates: The first option for the Fed is to continue to use the federal funds rate as the primary tool of monetary policy by allowing the federal funds rate target to go below zero. One might expect savers to take their money from their savings and put it into physical cash rather than paying to store it, and the interest rates should be bounded at zero. In reality, there are a number of reasons why people choose not to hold cash. Some examples include bank regulations on minimum account requirements, storage fees, and risks associated with holding cash. It's possible technological innovation drives theses costs down and pushes the lower bound up to zero if rates are negative for an extended period of time, but thats a different discussion.

International experience shows that rates can go negative and be an effective tool. Federal Reserve studies simulate scenarios if the Fed had allowed negative rates in the 2008 financial crisis and find that the federal funds rate would have lifted off the zero in 2011 as opposed to 2015, the output gap could have been less negative, and inflation would have been more consistent with the Feds target through this time period. Hence, there would have been a more robust recovery if negative rates had been used. The author notes that these estimates may be high but negative rates remain a possible stimulus option within the current framework of the Fed. However, the Federal Reserve has been reluctant to push rates negative.

Quantitative Easing and Forward Guidance: Additional tools the Fed has at its disposal are quantitative easing (QE) and forward guidance. The Fed has already announced large scale asset purchases of around $700 billion during the current COVID-19 crisis, but has done little in the way of forward guidance. Forward guidance can come in many forms, but its primary function is to use communication to influence markets expectations about the future path on monetary policy. In practice, the implementation can come in a variety of ways. Central banks can promise to keep rates low for an extended period of time or until a particular date. They could tie future monetary policy movements to explicit economic objectives (e.g. interest rates wont rise until the inflation target is reached). The central bank may commit to do whatever it takes or as Paul Krugman[1] advised promise to be irresponsible. Central banks need to make this type of long-term commitment because people are forward looking, and if policies seem like a one off attempt help the economy, people may not think that it will help them that much in the future.

It wasnt until March 26, 2020 in an interview with the Today Show that the first real resemblance of forward guidance was mentioned. Fed Chairman Jerome Powell assured the interviewer that there is no limit to the Feds ability to make loans to support the flow of credit and this statement alone seems to have reassured credit markets. Forward guidance will be an important tool for the Fed to utilize, in combination with quantitative easing. As Krugman showed, it may be difficult for an inflation-targeting central bank to reach its inflation objective without radical commitments of policy makers.

Economists [2] have long argued that the future path of policy matters in determining the outcomes today. And while QE may have direct monetary policy effects it can also act as a signal to markets about the Feds future actions. Combining QE with statements about the future path of interest rates can help monetary policy be effective when it is constrained by the zero lower bound. In a similar vein Krugman's paper also distinguishes between permanent and temporary increases in the monetary base, by communicating that some portion or all of the QE will be permanent– the Feds actions may pack a larger punch.

The Fed's Framework: We'd be remiss to not talk about the Fed's operating framework given its popularity in conversation (even among top Fed officials[3]). The Fed's dual mandate requires it to pursue employment and price stability, but congress is not specific in how the Fed is allowed to pursue these objectives. In recent history, the Fed has mainly tried to achieve it's inflation objectives through targeting the inflation rate, and undoubtedly inflation-targeting has been a success

[1] Krugman's 1998 Brookings Paper

[2] Eggersston and Woodford's 2003 Brookings Paper

[3] FRBNY President John William's has spoken to the merits of price level targeting

story for the Fed and central banks around the globe. However, economic environments like the current one can impose serious constraints on that framework, so there are strong arguments for central banks to reconsider their policy objectives. We discuss some of the alternatives below.

One of the consequences of inflation-targeting is it lets bygones be bygones when it comes to past misses in the Fed's inflation target. This can create a problem when the Fed misses on its target in a recession. Peoples expectations are a key driver of inflation in the short run; if the Fed fails to generate inflation expectations, it can curb its ability to actually generate inflation. If, instead, the Fed targeted the price level directly (such as the CPI or PCEPI), it includes current misses into future policy. In this world, markets and economic participants know that the Fed will commit to future inflation, raising their expectations and hence generating inflation today.

The Fed doesn't necessarily have to target inflation–in fact it could target the level of people's nominal incomes (NGDPPLT). Explicitly targeting people's nominal income would create a more direct stimulus effect during recessions. Coupling these types of policies with forward guidance may tie the Fed's hands if it wants to remain credible, but it could allow policy to be more effective particularly at the ZLB. Price level targets and nominal income targets may be a big move for the Fed to make currently, but there are compromises between these policies and the current framework. Former Federal Reserve Chairmen, Ben Bernanke, has proposed a temporary price level target at the ZLB or the Fed could promise to keep inflation averaged at 2% over 5-year horizons. In fact, the Fed was planning on considering these options in the fall of this year. These policies may be difficult to implement in practice, but the Fed has already taken extraordinary risk in the past decade with it's balance sheet. So, a temporary price level target or average inflation target seem relatively less risky.

2 Joint Federal Reserve and Treasury Policies

The Federal Reserve and Treasury generally operate as distinct institutions that pursue separate policy goals. The Federal Reserve has historically sought to minimize unemployment and stabilize inflation by setting the appropriate federal funds rate. Since the 2008 financial crisis, Congress has mandated that the Fed also take a large role in financial regulation through stress testing. The Treasury's largest responsibilities are to manage the nation's debt and advise the legislative and executive branches regarding fiscal policy. Hence, the Fed and Treasury seem similar (they both are involved with the economy and financial markets), but they generally have pretty clear cut lines draw in between them in terms of how each institution can step into the economy. Recent policies have started to blur these lines. Below we discuss some of the market interventions the Fed is engaging in, highlight which parts are subject to the Treasury's approval, and discuss the risks (and who bears the risk) of each policy.

The joint coordination between the Federal Reserve and Treasury allows the Fed to lend to parts of the economy that otherwise may not have access to credit. They do this by creating a what is called **special purpose vehicle**. For each of these vehicles, the Treasury has been putting up tens of billion of dollars in equity, which will allow the Fed to make hundreds of billions of loans. The Treasury's position has been in the first loss position, which means in the event of default the Treasury takes on losses before the Fed starts to take losses. In that sense, the Fed is protected, but the Treasury (and tax payer) is at risk. Because of this structure, it is ultimately the Treasury that owns the special purpose vehicle with the Fed running most of the operations. **Nearly** $500 **billion has been set aside in the current stimulus bill for these types of operations** [4]

Here are some of the sectors[5] these policies are meant to reach and how they do it:

- **Municipals and States**: The Fed has recently opened up a Municipal Liquidity Facility[6] (MLF), which allows them to make loans to states and municipalities. The idea is to provide credit to local governments that need additional resources to get through the current crisis. Borrowing costs in these markets had been rapidly increasing [7], making it difficult for states and municipalities to finance operations in times of crisis. Allowing the Federal Reserve to purchase these assets, and ease credit conditions, through quantitative easing is illegal (to our understanding), which is why this is a policy that had to be coordinated with the Treasury using tax payer money. The Treasury made an initial equity investment of $35 billion upon which the Fed will be able to make $500 billion of loans.

- **Medium term corporate credit:** The Fed is extending its lending facilities to the corporate sector through two markets: the primary market and the secondary market. The primary market is where corporations sell bonds for the first time. After a bond issuance has been sold for the first time it may continue to trade in what is called the secondary market. These are the markets that corporations use to finance operations and keep their payroll going. If investors get scared to lend to firms, it becomes difficult for firms to continue functioning during the crisis. In Figure 2, we can see that borrowing costs were spiking for firms, which would likely lead to layoffs or decreases in operations. Once again, we see that the trajectory in this market changes when the Fed announces it's policy, indicating the policies have started to work as intended.

  - **Primary market facility**: Once again, the Fed can't legally go into the primary market without backing from the Treasury. Companies with investment-grade ratings can issue bonds to this vehicle with maturities of up to 4 years. Firms that get loans from this facility and defer payments cannot pay dividends or buy back shares. Hence, taking

[4] See: CNN article summary of the bill.
[5] This is an incomplete list, but is meant to capture the larger aspects and mechanics of these policies.
[6] See: Fed summary of this facility.
[7] Yahoo finance article and Bloomberg article.

Figure 2: Yields on AAA corporate bonds. We see further evidence that policies are working as intended are borrowing rates declined after the announcement (the peak occurs the same day as the policy announcement).

a loan from the Fed here imposes restrictions on what firms can do with their free cash flows. Additionally, if firms commit to maintaining employees, the loan may be forgiven. If the bond is downgraded (i.e. it is no longer investment grade), the term sheet does not specify exactly what happens. The European Central Bank has a similar facility and when a downgrade happens, they shift the to a different vehicle and take it off their original pool. The Fed may follow them in this policy.

  - **Secondary market facility**: The Fed will use the secondary market facility to purchase existing investment grade bonds. A difficulty with this facility is that the Fed has to somehow choose which bonds and ETFs to purchase. Why should one investment grade firm have their bond be purchased and another one not have their bond be purchased? It is not clear how to make this choice and they have not publicly stated how they will choose what to buy. The Fed can only use this facility once there has been a determination that there are unusual circumstances where it is difficult for firms to borrow and that will hurt the real economy.

- **Main Street Lending Program**: Finally, a main street lending program was just announced[8]. Programs the Fed normally engages in are primary dealer based (i.e. they work through the banking sector) and hence don't immediately get to small businesses. The purpose of this facility is to bypass that channel and quickly get cash to small and medium size businesses (fewer than $10,000$ employees or \$2.5 billion in revenue). The Treasury made a \$75 billion equity investment in this vehicle, which will allow the Fed to make up to \$600 billion in loans through this vehicle. The lending that will be allowed requires firms to retain employees for the first six months of the loan, which likely will be the duration of most of these loans.

  Since this facility was just announced, it is difficult to explain exactly what it will look like. Some important questions are not clear to us at the moment: for instance, how will the Fed decide which firms should get these loans and which ones should not? Allocating resources

[8] See: Treasury announcement

to specific sectors, firms, or individuals has historically been a questions for Congress and fiscal policy than monetary policy to decide.

So, who is funding the Treasury's position in this? The tax payer. The idea is for this to be a transfer from tax payers to local governments, corporations, and small businesses that will be fully repaid. Hopefully this get us to a good outcome sooner, and the tax payer gets repaid down the line. Whether or not that is the role the Fed should be playing is up for debate. We view these as policies the Treasury and Congress are implementing through the Fed, since the Fed has the expertise in intervening in financial markets. That type of interaction between the Treasury and the Fed is extremely unusual.

These policies seem complicated, but at their core all they are doing is trying to get cash to firms and people as soon as possible. This is not something the Federal Reserve has historically had to do, and hence they are coordinating with the Treasury. Overall, we think the Fed and Jerome Powell are being very proactive in trying to stimulate the economy, and are implementing some of the important lessons we learned about the role of central banks during the financial crisis.

3 Bailouts

There is rightfully some concern about large corporations (mostly airlines) going bankrupt and what the correct policy response is to that possibility. There is no reason to bail these large corporations out. We should be spending that money to help people who have been forced to shelter in place and have not had the means to create large savings buffers to withstand a shock like the current pandemic. If CEOs are making the argument that they need the bailout to help their employees, lets just cut out the middle man and directly help the employees.

These arguments are laid out concisely and convincingly by Jonathon B. Berk in two articles linked in the footnote to this page[9]. Everyone should read these two articles. They are short (literally a 60 second read) and written extremely well. The second one has been endorsed by over 100 professors at this point. It is extremely rare to see that many professors to agree on a given issue. We believe this direct quote highlights the core of the argument:

> "When you bail out a large corporation, the people you are actually bailing out are the investors in that corporation.
>
> Bailing investors out is grossly unfair. Investors knew when they made their investments that they would have to weather a storm or two.
>
> The potential to earn high returns when the economy is in good shape compensates them for this risk.

[9] Jonathon B. Berk article 1 and Jonathon B. Berk article 2

> Bailouts allow investors to keep all the profits in good times without bearing the losses in bad times. Instead, bailouts impose losses on taxpayers, including those most in danger of losing their paychecks."

Using bailouts of large companies as a policy tool is a bad tradeoff. It forces the tax payer to take on a risk they didn't agree to at a time they are least prepared to take it. Investors agreed to these risks, and have already been compensated for it by earning a risk premium on the assets they hold. Furthermore, if a company goes bankrupt, it doesn't fall off the face of the earth, it just means investors that gave that company debt don't get all of their money back. **This is how markets are supposed to work.**

In the event that we for some reason decide to give a bailout to a large airline, we need to impose a cost on the organization. For banks, that cost included much closer monitoring of their capital structure by the Federal Reserve through stress tests that restrict what they are allowed to do with their capital. In this case, airlines should have to subject themselves to some sort of capital constraint and closer monitoring by the government in the event they take any money from the Treasury.

4 Conclusion

The policy needs now are different than 2008, so we are seeing different policies be employed. This shock came from outside the real economy and financial system, whereas the previous shock came from the financial sector. How does that effect recovery? In the previous crisis, since the shock came from within the economy, we saw the fundamentals of the economy fell apart. Structurally, we had to reorganize the financial sector and labor markets to get on the path to recovery. Fundamentally, the economy did not have big structural problems, and we don't need to restructure the core of the financial system or real economy like last time.

A good analogy was recently given by Professor Manfred Keil[10]: we are currently implementing the equivalent of an induced coma on the economy. We have completely shut it down with hopes that we can quickly restart it and limit the damage of a traumatic event. By shutting everything down, we essentially hit the panic button and are forcing ourselves to bear a massive short run downturn. The severity and persistence of the downturn will largely be dependent on how effectively we are able to manage the health crisis, which is beyond the policies that the Fed can pursue.

[10] Professor Keil talk

5 Disclaimer

None of this should be interpreted as investment advice, but rather two graduate students' thoughts and interpretations of current events. We try to include relevant links where possible, so you can read into more detail on specific points. This is not an academic paper, and lacks proper citations for some of the ideas, but we try our best to give credit where credit is due. The goal of this is just to try to provide an interpretation of recent events for friends and family who do not spend their lives thinking about monetary and fiscal policy.