Economic Recovery from the COVID-19 Recession: Does This Time Differ?

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ABSTRACT

The 2020 COVID-19 economic recession has differed from past recessions when comparing macroeconomic factors such as unemployment rate, industrial growth, and inflation. By creating and analyzing data sets with these factors overlaid onto the business cycles ranging from 1948 to 2021, the COVID recession showed negative spikes in the former two rates whilst inflation rose during the period; this breaks the recurring pattern of low inflation during a recession once more. Upon such an analysis, it is inferred that the COVID recession showed a short but more significant economic impact through directly affecting the labor market. In natural response, the U.S government enacted expansionary monetary and fiscal policy. These policies have prevented the U.S economy from entering a deep recession but can lead to stagflation due to the possibility of repeating health and labor shocks together with associated cost-push shocks.

Introduction

This paper studies the past recessions of the US economy to compare the economic recovery process of the coronavirus recession with other cases. By analyzing aggregated variables of production, inflation, and unemployment from 1948 to 2021, data reveals that the coronavirus recession showed brief yet more substantial economic impacts in comparison with the past eleven recessions. The US economy experienced a higher unemployment rate, a lower output growth, and was hit with more deflationary pressures during the coronavirus recession. The coronavirus shock led to active and expansionary monetary and fiscal policies that significantly helped alleviate the liquidity constraints of firms and households. However, unlike the other recessions, the recurrent variants of coronavirus kept health concerns serious and the related labor market uncertainty unresolved and extremely risky. In addition, after the health shock concerns being mitigated, supply-sided shocks related to economic recovery, such as supply-chain issues and commodity price increases, can emerge to enhance the likelihood of high inflation. After all, all firms start adjusting their prices responding to the expanded money supply and ensuing economic recovery, and economic agents anticipate commodity prices to further increase. This uncertainty can have significant and complex impacts on the process of post-recession recovery.

In labor markets, workers have the choice to work in a risky and uncertain situation, and it is optimal for them to require higher compensation for taking health risks and a safer work environment. Otherwise, their incentive to supply labor is misaligned, and voluntary unemployment may increase. Furthermore, due to the short-term, generous subsidies can increase the degree of moral hazard problem by which workers resist returning to their workplaces. Thus, the coronavirus renders that firms must face higher operational costs, increasing inflationary pressure via cost-push channels. In addition to the conventional monetary channel of inflation resulting from expansionary policies, this cost channel can amplify the likelihood of the US economy migrating to a higher inflation regime.

Consistent with this hypothesis, data shows that the post-recession average inflation for the coronavirus recession is 0.43% per month, with the most recent monthly inflation being 0.78% as of November 2021, whereas the other recovery periods mark merely 0.27% of the monthly inflation rate on average. Thus, due to

the aftermath of coronavirus as well as monetary and fiscal policies, inflation appeared to increase sharply compared to other post-recession episodes. The average unemployment rates of the economic recovery from the coronavirus recession and other recessions were 6.93% and 6.85%, respectively. Thus, economic employment statistics after recessions show little difference between the coronavirus case and other events. According to the hypothesis above, the unemployment rate may increase if sufficient wage increases do not follow. On the other hand, if wages significantly increased, this could create extra inflationary pressure that may be hard to easily subside, which is often referred to as the cost-push inflation.

Unemployment Rate over Business Cycle

Output Growth over Business Cycle

Inflation over Business Cycle
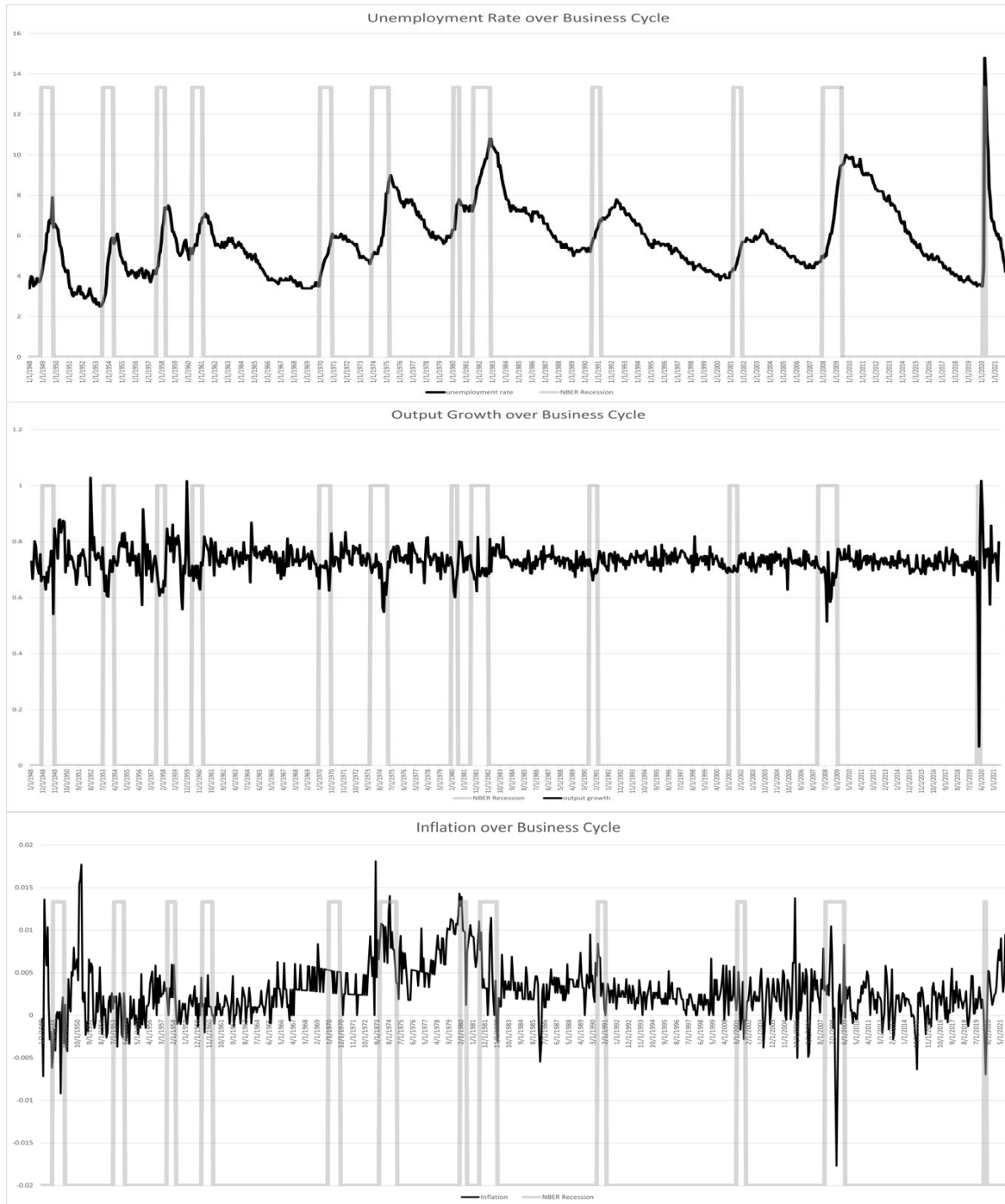
Figure 1. Key Macroeconomic Variables over Business Cycles

Note: This figure displays unemployment rate, output growth, and inflation between January 1948 and November 2021. Gray areas refer to the economic recessions published by the National Bureau of Economic Research (NBER). All data series are at monthly frequency and available to download from the Federal Reserve Bank of St. Louis, Data Repository, or the FRED (https://fred.stlouisfed.org). The series of UNRATE and CPIAUCLS, from the BLS measure the unemployment rate and consumer price index, respectively. The INDPRO series comes from the Board of Governors of the Federal Reserve System and measures aggregate industrial production. All data are seasonally adjusted.

Data also suggests that the unemployment rate of the coronavirus recovery period is very similar to those from other economic recovery events, which suggests that increases in the labor and other operational costs can contribute to the increases in inflationary pressures. Analyzing the data, this is indeed the case in that the labor cost incurred by firms to produce one unit of output significantly increased recently. With regard to economic production, the monthly output growth rates were on average 1.07% for the coronavirus economic recovery, which is higher than 0.64% per month for the other post-recession periods. Thus, at this stage, inflation appears to be positively associated with higher output growth than other economic recovery post recessions, which alleviates concerns for a slow recovery. However, the level of inflation rate turns out to be relatively high and similar to the inflation rate during the 1970s and the early 1980s, during which the combination of cost-push inflation and belated monetary policy reactions led to a period of slow economic growth and high inflation, or stagflation.

Taken together, economic policies enacted to remedy the coronavirus recession appear to be effective in shortening the duration of economic recession and bolstering economic growth in the short run. However, policymakers may have ignored the possibility of consecutive health shocks and the associated persistent changes in life-work patterns of workers, which in turn increase economic uncertainty. This channel negatively affects the labor market and price stability. Therefore, policymakers should carefully manage expectations of economic agents so that tightening the economy for the next year or so will have minimal impact on the economy's financial stability, and the expected inflation and the related risk premium should be gradually tamed down. The rest of the paper proceeds as follows. First, the next section describes the data used in the paper, and the following section reports and discusses the main findings.

Data and Motivation

This section describes the data used in the paper. First, all data used in this paper are available to download from the Federal Reserve Bank of St. Louis web page (https://fred.stlouisfed.org) or the FRED. For the national economic indicators, unemployment rate, real output growth, and inflation rate are selected, following influential macroeconomic studies such as Lucas (1996). All data series are of monthly frequency, seasonally adjusted, and cover January 1948 and November 2021. In the FRED, data series are available up to the period up to early 2024, yet to focus on the effect of the recession, I selected the period before the year 2022 in which the Federal Reserve began actively targeted inflation, which is opposite to quantitative easing that puts more inflationary pressure.

For the unemployment rate and inflation rate, this paper used the UNRATE and CPIAUCLS series that measure the unemployment rate and consumer price index, respectively. The inflation rate is computed as the annual arithmetic growth rate of the consumer price index. The industrial production index (INDPRO) series comes from the Board of Governors of the Federal Reserve System and measures aggregate real output. To remove the effect of price changes that mechanically affect the output level, the INDPRO index adjusts for inflation using the base index at 100 in 2007. Finally, the output growth rate is the annual growth rate of the industrial production data. Figure 1 plots the time series of the three series together with economic recessions

marked by gray areas. The National Bureau of Economic Research (NBER) determines business cycle peaks and troughs, and in the figures, the value of one is assigned for economic recessions.

Figure 1 shows that the unemployment rate sharply increases during recessions, the real output growth rate decreases, and inflation tends to decrease or slow down, consistent with the definition of recession. In March-April 2020, at the onset of the coronavirus pandemic, the unemployment rate reached 14.8%, the real output growth declined by 13.59%, and the inflation rate was -0.7%. Furthermore, the economy was in a situation full of uncertainty regarding the fatality of the coronavirus, according to various news media and articles. To illustrate this point, a popular measure of economic uncertainty, the VIX index is plotted between 2019 and 2020 in Figure 2. The VIX index utilizes the prices of S&P 500 Index call and put out-of-money options to compute the 30-day implied volatility of the U.S. stock market. A high value of the VIX index describes an uncertain economic environment, and Figure 2 shows sharp increases of the VIX index to over 80 from 13.7 around February to April 2020. Facing the unprecedented episode, policymakers reacted fast. Due to the prompt and active policy responses from both the fiscal side (Covid-19 Economic Relief) and the monetary side (massive asset purchases and liquidity injections by the Federal Reserve Banks), the recession period was significantly shortened, and economic recovery began quickly. However, as mentioned earlier, the main culprit of this recession is a coronavirus that can keep producing new shocks from recurring variants that can negatively impact the recovery process. The following section investigates this issue.
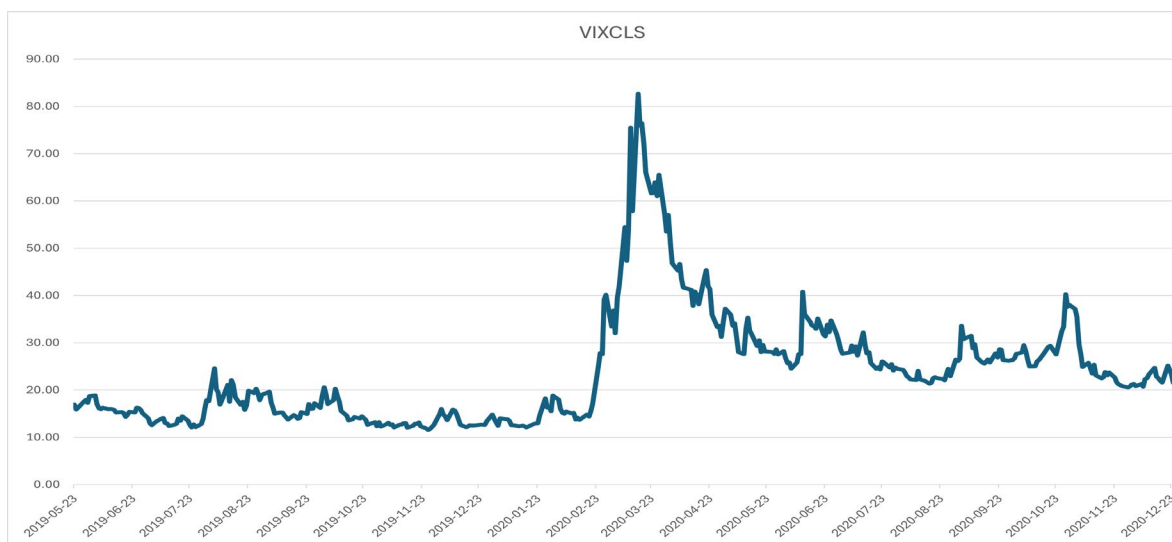
Figure 2. VIX Index during the period of May 2019 to December 2020

Note: This figure plots the time series of the VIX index over the period of May 2019 and December 2020. Data is of daily frequency and downloaded from the Federal Reserve Bank of St. Louis web page (https://fred.stlouisfed.org).

Main Results and Discussion

This section presents the main empirical results of the paper. The left panels of Figure 3 summarize the behavior of the key national economic indicators during the coronavirus recession and other recessions. The coronavirus recession has a more severe economic downturn than other recessions. In case of the unemployment rate, the
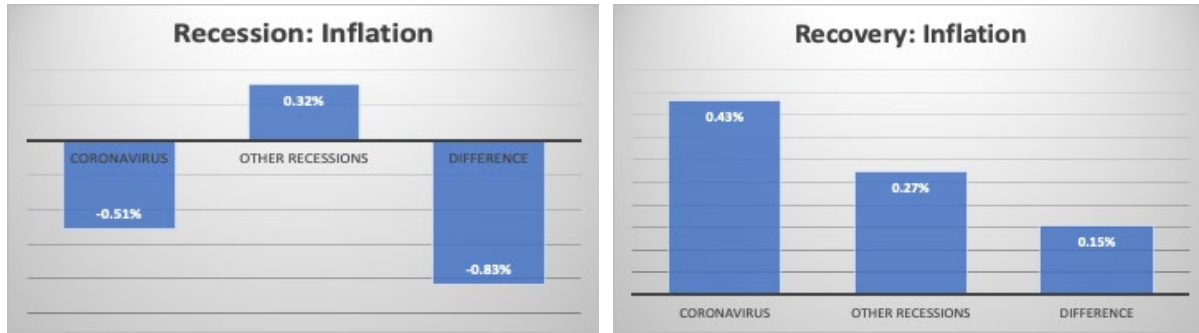
coronavirus recession recorded 9.6% unemployment rate, yet the average unemployment rate for the other recessions is 6.25%, yielding the difference of 3.35% with t-statistics of 21.8. For the output growth, the coronavirus recession experienced -8.71%, significantly lower than the average output growth from the other recessions, -0.82% with the difference of -7.89% (t-statistics: -50.1). The degree of deflation for the coronavirus recession is more significant as well. In sum, the Covid-19 pandemic is a short yet severe adverse shock to the economy.

The right panels of Figure 3 show the average value of the unemployment rate, real output growth, and inflation rate since the end of each recession for the next 16 to 18 months, which captures the recovery period. During the recovery period, the significant differences between the coronavirus and other recessions prevail in inflation and output growth. However, the unemployment rate does not decrease further in case of the coronavirus recession. In fact, unlike the other recession episodes, unemployment increased from 6.25% during the recession to 6.85% when the economy was recuperated from the recession.

Inflation can occur for various reasons, and the labor cost increase is one of the key factors. On the contrary, the unemployment rate of the coronavirus recovery period is close to the average value of other economic recovery events. It is suspected that increases in labor and other operational costs contribute to inflationary pressures. According to the recent release from the US Bureau of Labor Statistics (BLS) on December 7, 2021, the business sector's unit labor costs (data series: PRS84006111, Percent change from quarter one year ago) for the third quarter, 2021 jumped to 6.5% from 1.3% for the second quarter. Health concerns and substantial subsidies can decrease labor supply. Demand for labor by firms decreases during the recession, yet a short recession implies a fast and strong revival. Thus, an increase in labor demand and a decrease in labor supply will lead to higher wages and resulting cost-push inflation.

As advised by Friedman and Schwarz (1963), easy monetary policy and expansionary fiscal policy usually make sense to provide sufficient liquidity when the degree of economic downturn is severe. However, the coronavirus recession has an idiosyncratic effect on labor market, and the dynamic responses of the key macroeconomic variables can differ from other recessions.
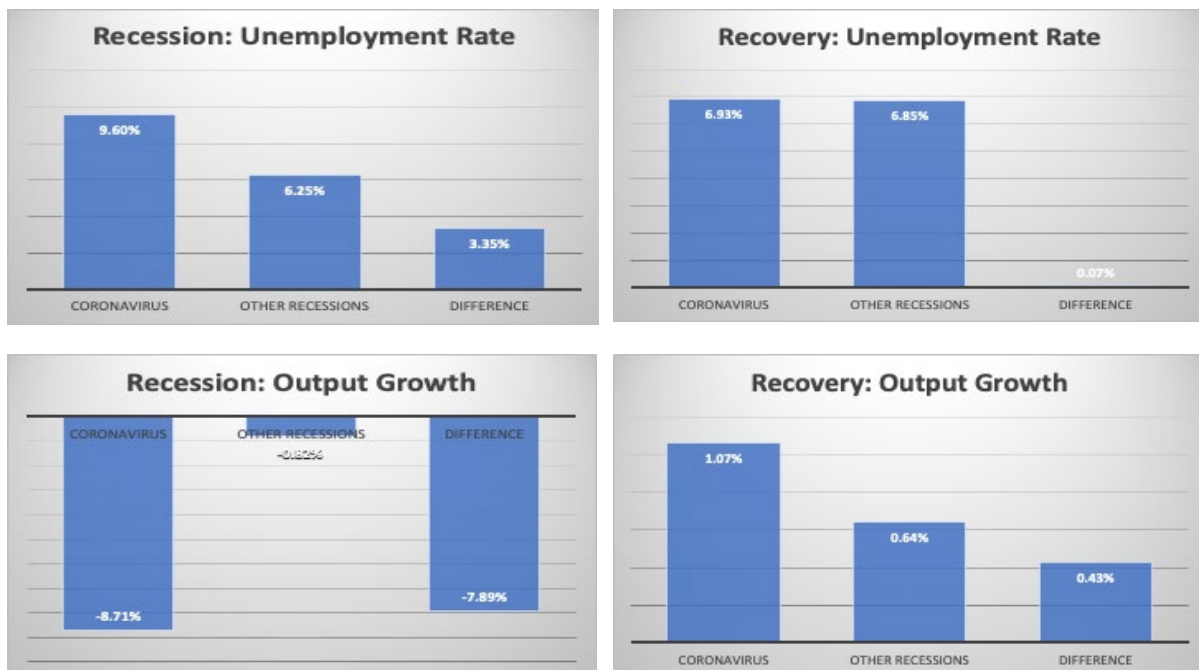
Figure 3. Comparisons of the Coronavirus Recession and Other Recessions In and Out of Recession Periods

Note: This figure displays the average values of the key national economic indicators (unemployment rate, output growth, and inflation) during the recession (Left panels) and for the first 16 to 18 months of the economic recovery period (Right panels). Economic recovery is assumed to begin immediately after the terminal month of recession recorded by the NBER. The first bar in each sub-figure shows the average value of coronavirus recession, and the second refers to the average of other recessions, and the final bar computes the difference of the two values. All the numbers are in percentage terms and monthly values. Sources of the data are the same as Figure 1.

Using a macroeconomic model employing aggregate demand and supply, I attempt to predict the directions of economic variables from the most recent coronavirus shock to the economy. In particular, I evaluate government policies and their impacts by using the related macroeconomic theories in which the aggregate demand (AD) and aggregate supply (AS) determine output (Y) and inflation (π). Aggregate demand consists of aggregate consumption, investment, government expenditure and net exports. AD describes how quantities of commodities and services demanded vary as the general level of price changes (i.e., inflation). There exist various models to derive the AD curve formula but the common components in the models contain the interest rates and the role of monetary policy affecting consumption and investment demands, according to Mankiw (2020).
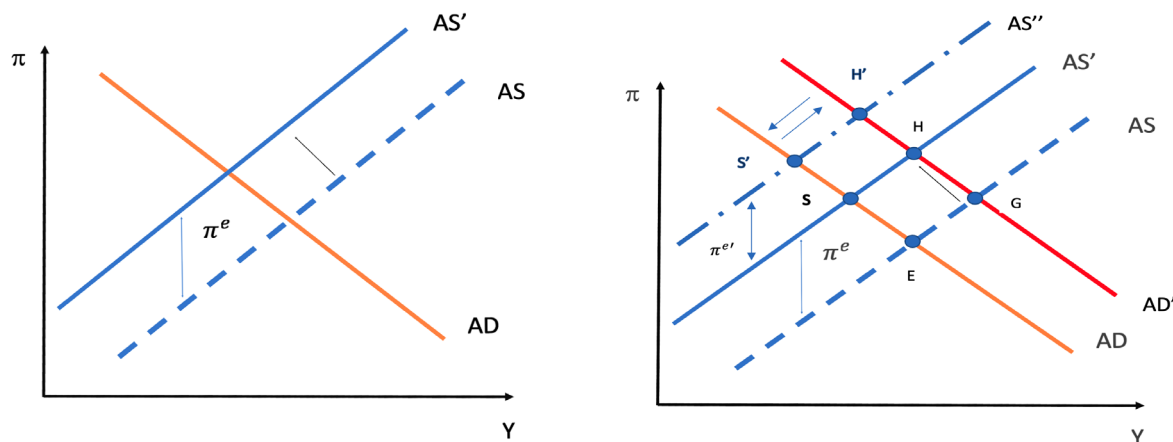
Figure 4. Changes in Aggregate Demand and Aggregate Supply

Note: This figure displays graphical illustrations of the effects of higher expected inflation (π^e) on aggregate output (Y) and inflation (π). The left panel shows the result when there is no shift in aggregate demand (AD), and the right panel depicts cases in which aggregate demand can change between AD and AD'. For the aggregate supply (AS), the right panel describes three possible cases (AS, AS', and AS''), depending on additional changes in expected inflation ($\pi^{e'}$).

If inflation or the expected inflation is rather rigid and slowly changing in the short run (i.e., sticky inflation or sticky expectation), a higher interest rate lowers investment demand and consumption demand. If monetary policy is effective in determining inflation by affecting the short-term interest rate, high inflation makes the central bank raise the interest rate to lower the aggregate demand to cool down the economy. There are numerous studies studying the efficacy of monetary policy via the short-term interest rate, following the pioneering work by Taylor (1993). Recently, Kim (2023) uses a Markov switching model to study such channel using the data ranging 1978 to 2022. A low inflation and recession event leads to opposite actions by the central bank, hence a lower interest rate leading to increases in investment and consumption demands. Thus, the slope of AD curve is negative. The AS refers to firm behaviors supplying output (Y) given inflation (π). The positive slope is known as the Phillips curve, resulting from imperfect information, slow price adjustments or sticky transactions, as explained in Jones (2013) and Mankiw (2020). Citing his early works, Lucas (1996) emphasizes that cost shocks can increase expectations about inflation (π^e) for each level of Y. The left panel of Figure 4 shows this effect that increases in expected inflation shift AS curve to the left (AS'), which results in increases in actual inflation (π) and decreases in output (Y). This is basically a stagflation event. The right panel in Figure 4 adds aggregate demand side to reflect the reality that the post-coronavirus period experiences expansions in consumption and investment demand.

Without the recurrent virus concern and the ensuing cost-push shocks, AS remains the same, and the resulting output-inflation pair moves from point E to point G in which both π and Y increase. However, with recurrent virus concerns and related cost increases, as mentioned earlier, aggregate supply curve can shift from AS to AS' or even worse AS''. Then, the equilibrium moves to H and H' on which inflation rapidly increases with decreases in output. This basically produces a stagflation phenomenon. Without taming the expected inflation, if the Federal Reserves decided to continuously implement contractionary monetary policy, this may move the aggregate demand curve from AD' back to AD, which means that the equilibrium shifts from H (H') to S (S'). This reduces inflation at the expense of decreases in output and therefore potential welfare losses. Therefore, the results suggest that managing public expectations with reputation is critical at this point. Even if the coronavirus shock disappears, the related surge in costs, and some policy coordination should matter to tame public expectations of inflation. However, as mentioned earlier, when the economy is getting recovered from the shocks, the likelihood of stagflation is nontrivial and may increase if the supply side of the economy is unstable.

Conclusion

Recessions exert enduring effects on the economy, with economic policies and the reactions of economic agents shaping long-term outcomes. The recovery from the recent coronavirus-induced recession is ongoing, with inflationary pressures remaining elevated. As of April 2024, the annual inflation rate stands at 3.4%, a notable decrease from the 9.1% recorded in June 2022, according to the Bureau of Labor Statistics. This indicates that monetary policy has effectively reduced inflation, although it has yet to reach the Federal Reserve's target of 2%. Consequently, the Federal Reserve has cautiously maintained the target interest rate between 5.25% and 5.5%, which exceeds both the current and expected inflation rates. Empirical evidence suggests that the economic dynamics during the COVID-19 period differ significantly from those of most other recessions, with

labor market disruptions potentially leading to stagflation. According to economic models, contractionary policy measures aimed at reducing aggregate demand must be carefully implemented to avoid adversely impacting aggregate supply functions, thereby ensuring a smooth transition to full recovery.

Acknowledgments

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