

Macroeconomic Consequences of COVID-19 for the U.S. Economy: Implications for Fiscal Policy

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Abstract

The COVID-19 outbreak hit the world economy with unprecedented consequences, which induced governments to intervene in the market and facilitate the recovery process. The bailout plans of advanced economies, though appropriate for short-term recovery, may have long-term adverse effects on budget discipline and inflationary expectations. Indeed, massive government interventions and bailouts will lead to huge amount of fiscal deficits, which may create inflationary expectations. The goal of this paper is twofold. First, it tries to estimate the effects of COVID-19 on economic growth, unemployment rate, consumption expenditures, industrial production, and GDP growth. Second, it tries to measure the long-term effects on budget deficit, and expected inflation, using Vector Error Correction (VEC) model with quarterly data for the period of 2009:1-2020:4 for the U.S. economy. The VEC model used in this study is superior to the VAR models used in previous studies. The estimated results in this study indicate that the budget deficit effect of this bailout will last at least for a period of five years and inflationary expectations will be lingering in the medium-term.

Keywords: Macroeconomic shock • COVID-19 • Fiscal policy • Vector Error Correction Model (VEC) • Inflationary expectations • Budget deficit

Introduction

The global economy experienced a huge decline of 3% in its GDP, while advanced economies were hit worse with a decline of 5.8%. The COVID-19 pandemic encompasses both supply and demand shocks. Over ten-week period, from mid-March to late May more than 40 million Americans filed for unemployment insurance. Preliminary data suggest that the U.S. real GDP growth fell by 31% in the second quarter of 2020, with most important spillover effects on hospitality sectors, airlines, and automobile industry. However, stock market in recent months showed a sign of positive trend, but many economists believe that this trend reflects irrational exuberance rather than improvements in macroeconomic fundamentals. It may take more than five years for the U.S. economy to return to the pre-crisis level of economic growth and unemployment rate. To cope with this situation, central banks around the globe changed the monetary policy focus from cutting interest rates to Quantitative Easing (QE).

The COVID-19 outbreak encompassed not only a demand shock by lockdowns and lack of confidence among consumers, which led to a sharp fall in consumption expenditures, but also created a massive supply shock due to the rise in risk and uncertainty, and expected economic slowdown, which led to lower investment, industrial production, and GDP growth. While several advanced economies.

tried to return to normal by huge bailout programs, the medium and longterm consequences, particularly, the fiscal implications of those plans were not considered due to immediate need for a rapid recovery. Among advanced economies, the U.S. government intervention, through injecting 1.9 trillion dollars to the economy, was the highest level of QE. This huge bailout plan may create a severe budget deficit the medium and long-term, entailing in inflationary expectations with severe consequences for fixed income workers.

Though several studies have measured the effects of COVID-19 on macroeconomic variables, none of them has measured the effects of this pandemic on fiscal policy and budget discipline. The aim of this paper is twofold: first, it attempts to estimate the effects of COVID-19 outbreak on industrial production, unemployment, consumption expenditures, and GDP growth. Second, it tries to respond how the pandemic affects the fiscal deficit and inflationary expectations in the medium and long-term. Indeed, one of the novel features of this paper is that it attempts to estimate the effects of outbreak on fiscal policy. As shown in the literature review, previous studies have mainly focused on the effects of the shock on real output, unemployment, inflation, trade, and stock market; and the long-term effect on budget deficit has not been studied. In addition, this study is different from others as it uses a Vector Error Correction (VEC) model, which is superior to VAR models used by others. Since there are trends in some of observed variables, it will

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be desirable to separate long-run relations from short run components of data generation process. Vector Error Correction (VEC) models offer a convenient framework for separating long-run, and short-run components of data generation process [1].

The rest of the papers are organized as follows. Section 2 reviews the literature on the topic. Section 3 explains the data and methodology. Section 4 discusses the estimated results of the VEC model. Section 5 concludes and provides policy implications.

Literature Review

Baqaei, Farhi, Mina and Stok consider economic consequences of second wave of shutdowns. They use an age based SIR model and implement employment and unemployment by age for different sectors. They show with government shutdowns the effective rate of death dropped significantly [2].

Bekaert, Engstrom and Ermolov implement aggregate demand and supply shocks for inflation and GDP growth for the U.S. economy through a non-Gaussian approach. They find that two-thirds of the decline in 2020:Q1 GDP can be attributed to a negative aggregate demand shock. However, the contraction during the second quarter is mainly due to aggregate supply shock. The VAR analysis suggests a very slow recovery path, with aggregate supply recovering faster than aggregate demand [3].

Boissay & Rungcharoenkitkul estimate the annual output loss of between 5% to 9% for the U.S., and between four to 4.5% for the global economy. In worst scenarios, the output loss can jump to 11% for the U.S. and 8% for the global economy [4].

Chudik et al. use a threshold-augmented multi-country regression model to quantify the impact of COVID-19 shocks on the economy. Their results indicate that global recession will be long lasting and no country will be able to escape its impacts regardless of their mitigation strategy. They find that U.K., and U.S. are likely to experience deeper and long-lasting effects, while China and emerging Asian countries will perform better in the near term [5].

Djurovic, Djurovic and Bojaj explore three economic scenario shocks of how pandemic may affect the economy of Montenegro. They use a Bayesian VAR approach and show that the supply side is hit through employment, while the demand side through capital stock. Their results show a great cost to GDP, employment, and capital stock [6].

Ebrahimi, Igan and Peria measure the effects of COVID-19 on inflation using factors such as panic buying and hoarding, migrant workers number, reliance on imported goods, and hoarding equilibrium in international trade. They find for advanced economies there is no evidence of inflation, except for food prices. They also find that measures of inflation expectations show no obvious pattern of upward move in the next year [7].

Jackson et al. argue that economic fallout from the pandemic could have severe results for labor dislocation, economic growth; and global trade will fall by an annual rate of 9% in 2020[8].

Lenza, and Primiceri use a VAR model with variables such as unemployment rate, real personal consumption, price index, and core price index, and data for the period of 1998:12 to 2020:5.

They study the dynamic response of the VAR to a positive unemployment shock. Their results indicate that the real economy slows down and then partially recovers. Prices also experience downward pressure consistent with a demand shock [9].

Ludvigson, Ma and Ng try to quantify the macroeconomic impact of costly disasters in United States, using a VAR model with quarterly data for the period of 1980:1 to 2020:4. They find that the shock leads to a cumulative loss of 20% for industrial production, and 39% for employment [10].

Matoo and Mensbrugghe stimulate the effects of COVID-19 on gross domestic product and trade using a General Equilibrium (GE) model. A baseline global pandemic scenario envisages a growth rate of 2.5% for developing countries and 1.8% for industrial countries. The declines are almost 4% below the world forecasts. The biggest negative shock is observed in trade and tourist services [11].

Milani estimates a global VAR model and exploit dataset on existing social connections across countries. He finds that in early phases, perception of Coronavirus risk is affected by pandemic shocks. Unemployment is particularly responsive to health shocks in U.S. and Spain, while unemployment fluctuations are attenuated almost everywhere else [12].

McKibbin and Fernando explore the global macroeconomic effects of alternative scenarios of how COVID-19 might evolve in the year ahead, highlighting the role of spillovers. Their results show that even a contained outbreak could significantly impact the global economy in short-run[13].

Ozili and Arun examine the impact of social distancing policies on economic activities and stock market indices. They use daily data from March 23 to April 23 for North America, Europe, Africa, and Asia; and find that the number of lockdowns significantly affect the level of economic activities. They also show international travel restrictions have a negative significant impact on the level of economic activities and stock market indices. Finally, they show that fiscal policy had a positive impact on stock prices [14].

Pagano et al. consider the effects of the pandemic on the U.S. stock market and highlight its different impact on asset pricing implications of companies' exposure to social distancing. Using daily stock returns for NASDAQ, their results indicate that disaster resilience is priced in equity market and that COVID-19 crisis has greatly affected how financial market prices respond to disaster risk [15].

Rogoff argue even with all efforts by central banks and fiscal authorities responses to this outbreak, returning to 70% or 80% capacity seems a dream for the U.S. economy. The problem is that we are experiencing not only a demand shock, but also a massive supply shock. Propping up the demand may contribute to flattering contagion by helping people to stay locked down, but there is a limit on how much this can help the economy, if say, 20%-30% of workforce is in self-isolation for much of the next two years. Even if the economy restarts, the damage to business and debt markets will have lingering effects, particularly given the fact that the global debt was already at its highest record, before the pandemic started [16].

Discussion

The estimated results for the above model are presented in Tables 2 and 3 for linear and non-linear specification, respectively. The estimated results for one standard deviation increase in COVID suggest that the industrial production and real GDP growth initially slows down and then partially recovers in the medium-term. The estimated results suggest a loss of 9% for industrial production and 7.5% for unemployment rate for 2025. In addition, the GDP growth is expected to initially decrease and then partially recovers to a growth of 2.5% in 2025. Expectedly, consumption expenditures show the highest level of loss (14% to 15%), as consumers' confidence is unlikely to return to pre-crisis level soon. The finding is quite rational because consumption has decreased considerably compared to other macroeconomic variables since the onset of COVID-19 recession. The most important finding here is that the budget deficit continues to decrease slowly in the medium term, reaching to 5% in 2025, indicating the sluggish recovery in fiscal discipline. This trend creates high inflationary expectations, which is expected to increase during the time; and presumably will reach to 5% in 2025.

Table 1. Cumulative effects of COVID-19 losses with linear model.

Time period	Industrial Production	Unemployment	Consumption Expenditures	GDP growth	Budget Deficit	CPI Inflation
1-year	-18%	12%	-22.34%	-3.1%	-18%	2.5%
2-year	-13%	10%	-21.60%	-3%	-15%	3.2%
3-year	-11%	9.7%	-19.72%	-2.8%	-13.4%	3.7%
4-year	-9%	8.6%	-17.34%	1.4%	-11.9%	4.2%
5-year	-8.50%	7.8%	-15.56%	2.5%	-9.6%	5.1%

Table 2. Cumulative effects of COVID-19 losses with non-linear model.

Time period	Industrial Production	Unemployment	Consumption Expenditures	GDP growth	Budget Deficit	CPI Inflation
1-year	-18%	11.5%	-21.36%	-3.2%	-17.6%	2.60%
2-year	-14%	10.8%	-18.73%	-2.9%	-16.5%	3.40%
3-year	-13%	9.9%	-17.19%	-2.3%	-14.7%	3.80%
4-year	-10%	8.7%	-16.45%	1.7%	-11.9%	4.20%
5-year	-9%	7.5%	-14.23%	2.6%	-9.4%	4.50%

Policy Implications

The effects of COVID-19 pandemic on the U.S. economy have been unprecedented since the great depression. Although, a range of rescue plans have been adopted by the central banks and treasuries around the globe, these measures are not enough in pulling the economy out of a deep recession because we are confronting not only with a demand shock but also with a massive supply shock. We used a VEC model in this study to measure the medium-term effects of COVID-19 shock on a series of macroeconomic variables including industrial production,

unemployment, consumption expenditures, GDP growth, budget deficit, and inflation expectations. The estimated results suggest that this pandemic will have long-lasting consequences for the economy, which will last at least for the next five years.

Contrary to the findings of Ebrahimi, Igan and Peria, Lenza, and Primiceri, we find that inflation expectation will have an upward trend in the medium-term, reaching an unprecedented level of 5% in 2025 after decades. Though, budget deficit continues to decrease slowly, it will be lingering in medium-term, reaching to 9% in 2025. Consistent with Bekaert, Engstrom and Ermolov we find a very slow recovery path; where GDP growth initially decreases, and then partially increases to 2.5% in 2025. However, aggregate supply recovery is faster than the aggregate demand as expected because consumers' confidence will not return to pre-crisis level, at least until the health situation is recovered and mitigation measures are completely removed.

We show that even with nonlinearity results are almost the same as with linearity model. The COVID-19 shock could lead to 9% reduction in industrial production in medium term. Though, the budget deficit will dampen during the time, we will observe a 9.4% budget deficit to GDP ratio after a period of five years. In addition, inflation rate will rise to 4.5% in non-linear model compared to 5.1% in the linear model in the medium-term. Expectedly, the largest impact of the crisis is observed on the consumption expenditures with a fall of 14.2% in the medium-term. This is clearly reasonable because consumers confidence will not turn back to pre-crisis level till the epidemic crisis is not completely over and social distancing and barrier measures are still in place.

The results here suggest that while cutting interest rate can help to return the economy on a growth path, but it is not enough to save the economy from the adverse outcomes in the medium and long-term. The fact that this is not only a demand shock, but also a supply shock manifested in a sharp drop in industrial production and GDP growth, makes it harder to cope with those consequences. Large assets purchases or Quantitative Easing (QE) cannot be seen as the only solution to the COVID-19 pandemic. Indeed, a fiscal discipline can decrease the dependency of the government on bailout plan. The past experiences have shown that bailout and helicopter money are not the most effective tools and have long-term adverse outcomes for the debt and budget discipline. The longer-term response would be a high investment in the health care system, which can avoid future pandemics. Indeed, human capital is one of the main drivers of economic growth, which requires more investment and attention from governments.

As shown in this quantitative study, the fiscal deficit effects of the pandemic will be staggering in medium and long-term and require more attention to fiscal discipline. A more effective consolidated fiscal policy can reduce the pressures on monetary policy and helicopter money, which creates inflationary expectations. Indeed, a one sided response will not be able to reverse the negative macroeconomic outcomes of this pandemic. A more successful strategy requires more fiscal reforms, and global cooperation in the scientific areas for combatting the pandemic. Indeed, this crisis is different from other disasters, as they have not had so many implications for macroeconomic variables such as budget deficit in the medium-term.

Therefore, the remedy requires different policies and strategies. Afiscal discipline in tandem with a consolidated monetary policy can help us to recover faster.

Conclusion

There are, some caveat to this study. First, COVID-19 is different from previous disasters and historical data may over or underestimate the effects on macroeconomic variables. Second, our data covers post 2009 financial crisis, which may have affected our results. Therefore, one way to improve the results is to expand data back to pre-2009 financial crisis. Third, we have focused on the medium-term here and the results may be different in the longterm. Finally, since the distribution of COVID-19 cases is heavily tailed, it is reasonable to question whether asymptotic inferences based on normal errors are appropriate. Nonetheless, different models suggest steep declines in economic activity. Finally, another way to improve this study is to use different estimation methods including fixed effects random effects models to control for specific variables such as age, gender, and race to increase the efficiency of the estimated coefficients.

References

1. Luetkepohl, Helmut. "Vector Autoregressive Models, European University Institute, Working Paper EUI ECO." (2011).
2. David, Baqaee, Emmanuel Farhi, Michael J. Mina, and James Stock. "Policies for a Second Wave." (2020):1-45.
3. Bekaert, Geert, Eric Engstrom, and Andrey Ermolov. "Aggregate Demand and Aggregate Supply Effects of COVID-19: A real-time analysis." *SSRN*. (2020): 3611399.
4. Boissay, Frederic and Phurichai Rungcharoenkitkul. "Macroeconomic Effects of COVID-19: An Early Review." Bank for International Settlements (BIS). 2020.
5. Alexander, Chudik, Kamiar Mohaddes, Mohammad Hashem Pesaran and Mehdi Raissi, et al. Economic Consequences of COVID-19: A counterfactual multi-country analysis. (2020).
6. Djurovic, Gordana, Vasilije Djurovic, and Martin M Bojaj. "The Macroeconomic Effects of COVID-19 in Montenegro: A Bayesian VARX approach." *Financial Innovation* 6 (2020): 1-16.
7. Ehsan Ebrahimi, Deniz Igan, and Soledad Martinez Peria. The Impact of COVID-19 on Inflation: Potential Drivers and Dynamics, International Monetary Fund, Special Note Series on COVID-19. (2020).
8. James, K Jackson, Martin A Weiss, Andres B Schwarzenberg and Rebecca M Nelson, et al. Global Economic Effects of COVID-19, Congressional Research Service. (2020):R-46270.
9. Lenza, Michele, and Giorgio E Primiceri. How to Estimate a VAR after March 2020. . National Bureau of Economic Research. 2020: w27771.
10. Ludvigson, Sydney C, Sai Ma, and Serena Ng. COVID-19 and the Macroeconomic Effects of Costly Disasters. National Bureau of Economic Research. 2020: w26987.
11. Maliszewska, Maryla, Aaditya Mattoo, and Dominique Van Der Mensbrugghe. "The Potential Impact of COVID-19 on GDP and Trade: A Preliminary Assessment." *World Bank Work* 9211 (2020).
12. McKibbin, Warwick and Roshen Fernando. "The Global Macroeconomic Impacts of COVID-19: Seven Scenarios." *Asian Econ Pap* 20 (2021):1-30.
13. Milani, Fabio. "COVID-19 Outbreak, Social Response, and Early Economic Effects: A global VAR Analysis of Cross-Country Interdependencies." *J Popul Econ* 34 (2021): 223-252.
14. Ozili, Peterson K, and Thankom Arun. "Spillover of COVID-19: Impact on the Global Economy." *SSRN* (2020):3562570.
15. Pagano, M, C. Wagner and J. Zechner. "Disaster resilience and Asset prices. COVID Economics: Vetted and Real-Time Papers." (2020).
16. Rogoff, K. Mapping the COVID-19 Recession, Harvard University Project. (2020).

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