Reopening the Coronavirus-Closed Economy

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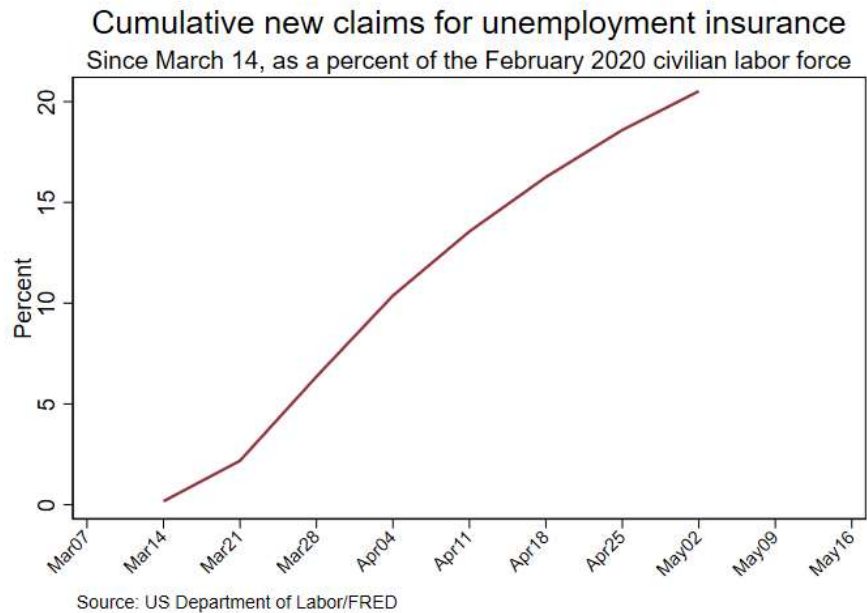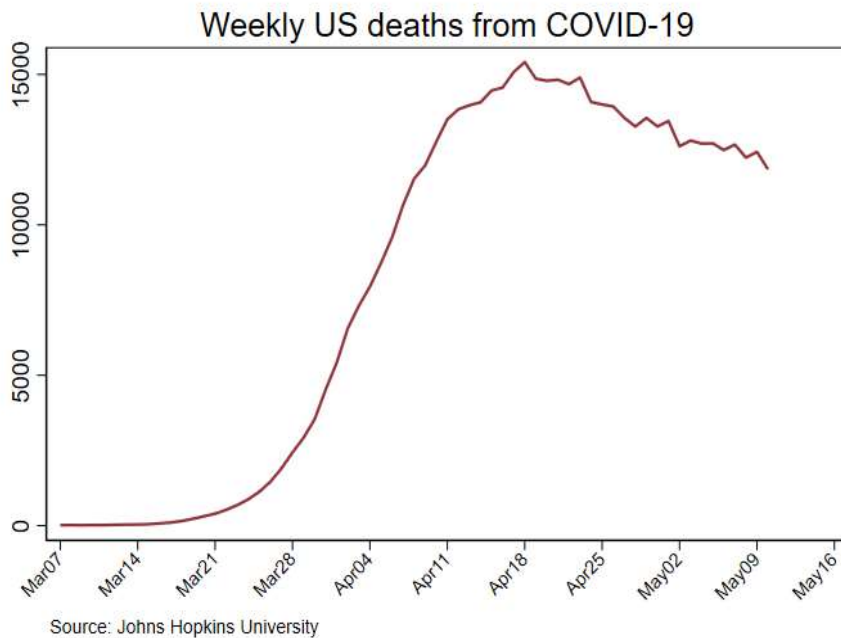
A B S T R A C T

The COVID-19 pandemic and resulting shutdown of much of the United States to attempt to contain the SARS-CoV-2 virus produced a sudden and unprecedented economic contraction. The questions the nation face today are how and when to reopen the economy and get people back to work, while also achieving public health goals. This note briefly reviews the main considerations in answering these questions, drawing from the economic research conducted over the past eight weeks.This research can and should help the public and policymakers evaluate the difficult choices that lie ahead of us so we can avoid the worst case outcome – large numbers of deaths and a prolonged, deep, and painful recession.

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Introduction

The partial economic shutdown that began in mid-March 2020, along with additional non-pharmaceutical interventions (NPIs) such as social distancing, are "flattening the curve" of measured infections and deaths, but at a tremendous economic cost. As the figures below show, weekly deaths in the US peaked in mid-April, but have subsequently declined only slowly. Since the first week in March, more than 20% of the US labor force filed for unemployment insurance, and the April unemployment rate of 14.7% is a level not seen since the Great Depression.

Weekly US deaths from COVID-19

Source: Johns Hopkins University

Cumulative new claims for unemployment insurance
Since March 14, as a percent of the February 2020 civilian labor force

Source: US Department of Labor/FRED

In the early days of the epidemic, decentralized decisionmakers – governors, mayors, and leaders of major institutions like universities – shut down major portions of the economy in response to concerns over the exponential growth of the epidemic and the threat of potential deaths. Now, the policy challenge is how to reopen the economy and get people back to work while achieving public health goals.

This note makes four key points:

1) ***Non-economic NPIs play a critical role in getting people back to work.*** There are important non-pharmaceutical interventions that, while individually limited, collectively hold the potential to substantially reduce the spread of the virus. These include social distancing; testing, contact tracing and quarantine; wearing masks; and having adequate personal protective equipment for workers in jobs that are unavoidably high-contact. None are a silver bullet, but collectively they can reduce the probability of transmission outside the workplace and thereby make room for getting people back to work and back to something more closely resembling normal economic activity.

2) ***Low-contact, high-value workplaces should be reopened quickly, and returning workers must feel safe.*** Many jobs are either low-contact or can be made so by suitable modifications of the workplace. In some cases, those modifications are low cost, like encouraging work-from-home, while in other cases they might entail some productivity reductions to facilitate worker distancing at work. When coupled with low-contact forms of transport to work, such jobs can be reopened quickly.

3) ***Some high-contact activities might need to be suspended indefinitely.*** Certain high-contact activities might require a hiatus until a vaccine and/or effective treatment is developed. These include both economic activities (for example, live fans at professional sports) and activities with less or no economic component.

4) ***Avoid a second dip that could induce severe long-term damage to workers and the economy.*** While reopening the economy is urgently needed, doing so in a way that leads to a second wave of deaths and a subsequent second shutdown could result in damage that is lasting and profound. Such damage has largely been avoided to date because of federal fiscal support and aggressive actions of the Federal Reserve. There are reasons to be pessimistic, however, that these levels of support would either be available or as effective in a second wave of deaths and closings, which could lead to those temporarily unemployed now becoming long-term unemployed without a job to return to, waves of bankruptcies, and severe strains on credit markets.

Research Background: Epidemiological-Economic Models

Today's most urgent questions – when and how best to reopen the economy – must be addressed in a way that projects an internally consistent set of public health and economic outcomes. What are the consequences of reopening now, as opposed to (say) waiting until deaths decline further? Among NPIs that have similar effects on the paths of infections and deaths, are some more economically desirable than others? How can one most effectively reopen the economy while achieving some public health objective, whether flattening the curve or sharply reducing infections and deaths? It might be possible to answer some of these qualitatively, but to compare one policy to another or to provide a quantitative assessment requires a quantitative model.

Economists therefore have been conducting expedited research that merges and informs epidemiological and economic models, creating a new family of models that did not exist until March 2020. For decades, central banks have used quantitative models of the economy and the financial system to guide monetary policy-making under non-pandemic circumstances and to help central bankers balance the tradeoff between growth and inflation. Today's new family of epidemiological-economic models aim to provide quantitative guidance about how best to reopen the economy by providing an internally consistent framework for assessing the effect of specific NPIs on measures of public health, such as infections, hospitalizations, and deaths, and on measures of economic activity, such as employment, hours, income, and output.

Epidemiological-economic model have two components. Currently, the epidemiological component is the workhorse model of the epidemiological community, a Susceptible-Infected-Recovered (SIR) model. In a SIR model, the virus spreads through a population by susceptible individuals coming into contact with infected individuals, who (with some probability) can transmit the virus. The infected either recover or die. This simple framework is typically extended to include testing and/or quarantines and different groups (e.g., different ages, a particularly important extension for COVID-19 because mortality risk increases sharply with age).

The economic component of the existing models are in many cases a workhorse of the macroeconomics community, an intertemporally optimizing agent model which is similar to a stripped-down version of dynamic stochastic general equilibrium (DSGE) models that are among the suite of macro models used by central banks. In other cases, the economic models are closer to accounting frameworks that keep track of changes in jobs, income, and production resulting from various NPIs. The epidemiological and economic models are linked through the actions of individuals who shop (consume), work, save, and take voluntary and/or mandated actions aimed at protecting their lives. Although this field of economics is not yet two months hold, it has yielded some important insights to guide a smart reopening.

Some Early Lessons from This Research

Non-economic public health interventions can facilitate economic reopening

Certain NPIs hold the promise of being effective in reducing the spread of the virus while having limited direct negative economic impact. For example, testing, tracing, and quarantine holds the potential for substantially reducing the spread of infections, with direct implications for economic activity limited to its financial cost and the labor force consequences of identified isolated workers being temporarily unable to work at the work site. Wearing a mask is annoying and might reduce worker productivity in some jobs, but it can reduce transmission while allowing workers to do their jobs. Measures aimed at especially protecting the elderly could impact the conduct of work among those engaged in elderly services but impose little restrictions on other aspects of economic activity.

Other NPIs directly limit economic activity, but do so in specific, targeted ways that can substantially reduce the spread of the virus. For many, mass events like professional sports, theater, flower and auto shows, state fairs, flea markets, and festivals are sources of pleasure and entertainment. But while they boost the economy, they are actually relatively small parts of overall consumption: in 2019, all paid admissions to motion picture theaters, spectator sports, and other live entertainment comprised less than 0.6% of total personal consumption expenditures. We would miss cheering for our favorite teams, and the

vendors at sporting events and concerts would be impacted disproportionately, but restricting live attendance at such mass events could have significant epidemiological benefits at a limited economic cost.

NPIs that significantly slow or reverse the spread of the virus without imposing significant restrictions on the ability to work make room for reopening the economy. Every NPI on its own is imperfect: testing and quarantine, for example, requires widespread quick-turnaround testing and compliance with and incentives for self-quarantine. But no NPI needs to be perfect, instead they collectively need to work together to reduce transmission.

Support worker and consumer confidence

Many workers and consumers are frightened by the virus and the prospects of their getting infected and sick. An order that allows shopping malls to reopen is only effective if shoppers and sales associates are comfortable returning to work. Reassurances that it is safe to return to work and shopping in turn need to be credible and have a scientific basis: reopening a mall followed three weeks later by an outbreak spread at that mall is hardly a basis for establishing the long-term confidence needed for consumers to spend and workers to return.

Heterogeneity of workplace exposure

Some industries, like restaurants, air travel, and health care and elder services, have high levels of personal proximity. But many industries are characterized by either low personal proximity or a limited number of workplace contacts. In some office jobs, personal proximity can be significantly reduced by workers alternating between coming into the office and working from home. Other industries, such as those engaged in retail sales, are amenable to workplace modifications that reduce the probability of transmission while allowing near-normal economic activity. In high-risk settings in which close personal proximity is unavoidable, such as hospitals and home health care, personal protective equipment (PPE) can help to protect both workers and patients or clients.

Uncertainty is massive, and matters

Because of the early absence of testing and the ongoing shortage of tests, we still know neither the fraction of the population that have had the virus nor the true infection fatality rate. Knowing those rates would significantly help guide reopening policy: if a significant fraction of the population has already been exposed, even if they have only partial immunity then high-contact parts of the economy can be reopened more quickly than otherwise. Absent such information, it is prudent to proceed slowly, as if the infection fatality rate is high – but that prudence comes at a significant economic cost.

The information gap about the true infection fatality rate can be filled by a combination of virology and serology tests, applied to truly random samples of the population. The purpose of these tests is not to identify the infected to get them to self-isolate (although that could be a side benefit), rather, it is to provide a basis of knowledge to inform state and Federal officials as they weigh reopening options. Unfortunately, the various road maps that advocate for widespread testing, including calls for immunity passports and virology testing in the workplace, do so in the context of identifying and isolating the infected and their contacts. Moreover, widespread testing that has been conducted is often not random and instead involves elements of self-nomination, needing to show up at a clinic, exclusions, or other factors that make the results difficult to interpret. Truly random testing is urgently needed to inform reopening policy.

There is also considerable scientific uncertainty about the virus itself and how it is spread. As our understanding of how the virus spreads evolves, protective measures will also need to evolve. Adopting new protective measures will require both following the science and communicating the science effectively and reliably to the public.

Another highly uncertain aspect of the pandemic is when an effective treatment and/or vaccine will become available. A basic principle of economics under uncertainty is that there is option value to avoiding irreversible decisions until that uncertainty is resolved. Preserving the option of saving many lives from a treatment or vaccine implies taking a conservative path initially that focuses on suppressing the spread until a vaccine becomes available.

The Deaths v. Jobs Debate and the Value of a Statistical Life

Reopening the economy is sometimes cast as a choice of weighing public health costs of the shutdown against its public health benefits. Framing the problem as a tradeoff between deaths and jobs can lead to a discussion of the monetary value of life and how to factor that value into the tradeoff. Some economists have gone so far as to do back-of-the-envelope calculations estimating the value of lives that might be saved from the shutdown. While there is a general recognition among modelers of the computational convenience of placing a dollar value on life, there is at the same time concern that focusing on that value can be misleading, for at least three reasons.

First, the value of a statistical life (VSL) is designed for assessing the value of small (marginal) changes in mortality risk. For example, when the Department of Transportation proposed requiring new cars to have dashboard displays for backup cameras, it conducted a study to assess the camera's reduction in the already-small probability of a fatal backup accident. The expected number of lives saved was small, but the camera and screen were not particularly expensive, and when a value of a statistical life was used to monetize the lives saved, the camera and display passed the cost-benefit test. But the COVID-19 crisis is not small, either in deaths or costs. Nonmarginal analysis can be done in principle but that requires making debatable modeling assumptions about responses to non-marginal risks.

Second, adopting a value of life can frame the discussion as one of lives vs. jobs. But that framing misses the important point that many NPIs can reduce infections and deaths while imposing small economic costs; moreover, the question of reopening is not just one of whether but how.

Third, by focusing the debate on the VSL, one implicitly is assuming that it is possible to measure the economic costs of NPIs and of delayed reopening. But the true costs of the shutdown are arguably at least as uncertain as any estimate of the value of a statistical life. It is relatively straightforward to add up the lost wages and production associated with delaying, for example, reopening by a month. It is more difficult to quantify the long-term costs to students whose spring semester has been missed or compromised, or who might need to engage in distance learning in the fall. If plummeting sales turn into bankruptcies and loss of connections between workers and jobs, those currently laid off could become long-term unemployed, with deteriorating labor market skills and persistent diminished long-term prospects for earnings. And, to date, the blow of the economic crisis has been softened by massive borrowing. At some point, the US could face fiscal constraints and the costs of this borrowing will fall on future generations. These long-term costs are potentially massive but are exceedlingly difficult to quantify.

Looking Ahead

After an abysmal second quarter, many professional economic forecasters expect a rebound in the third and fourth quarters. As can be seen in the chart, however, the 60 economists surveyed in April by the Wall Street Journal project a recovery that, by the end of 2021, still leaves the economy roughly 4 percentage points below where it had been projected to be before the pandemic hit. The expected collapse in the second quarter is significantly deeper and sharper than the collapse in the financial crisis. While these forecasters project a faster recovery than from the financial crisis, they also foresee a large persistent negative effect, and nearly a quarter of the surveyed economists suggest that, two years after the initial collapse, things could be worse than two years after the financial crisis.
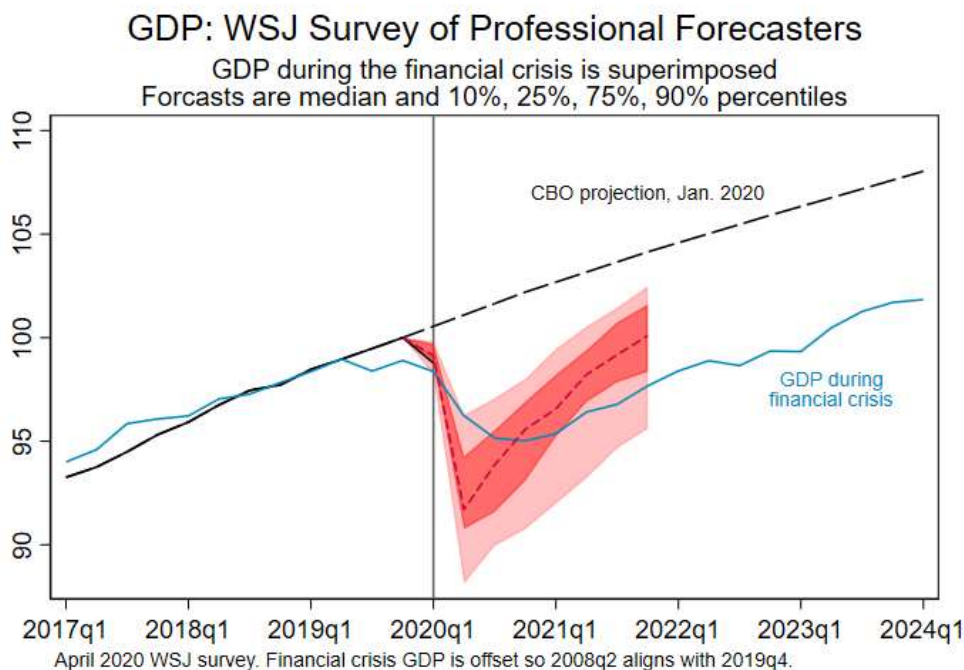
To avoid a repeat of the slow recovery from the financial crisis requires a recovery that is not just fast, but durable.

The economic shutdown was not the result of a centralized plan or guidance from Washington, rather, it was the result of decentralized institutional leaders – state and local officials and leaders of large institutions – who responded to the threat of deaths by a widespread curtailing of non-essential economic activity. As the population recognized the threat posed by the virus, individual choices further curtailed economic activity. If death rates start to rise over the summer or the fall, it is plausible that this scenario could be repeated, turning the short-term unemployed into long-term unemployed and severely testing federal fiscal and monetary capacity. This worst-case scenario raises the specter of many deaths combined with a prolonged deep recession, with long-term economic consequences comparable to or worse than the financial crisis.

The epidemiological-economic models suggest that this worst case is possible – but also that it can be avoided. Avoiding this worst-case outcome involves getting people back to work and relying heavily on NPIs that either impose small costs on productivity, like testing, tracing, and quarantine, or impose

modest productivity costs, like shields and masks at work. In moderate-contact economic activities, like retail shopping, workplace modifications might need to be more substantial and costly to provide for lower density of shoppers and workers. And a small number of activities, such as attending sporting events, parties, and outings to bars might need to be curtailed entirely or supplanted by remote versions (like online religious services) until a vaccine arrives.

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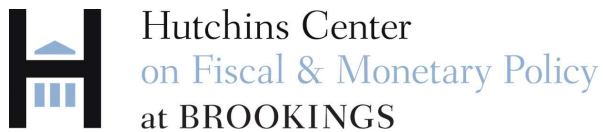
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