Containment policy certainly reduces death, but does it also mitigate recession?

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Project proposal by Shuyi Yang

Inspirations:

- Bloom, David E. & Mahal, Ajay S., 1997. "Does the AIDS epidemic threaten economic growth?," Journal of Econometrics, Elsevier, vol. 77(1), pages 105-124, March

- Alexander Hassan, Tarek & others, "Firm-level Exposure to Epidemic Diseases: Covid-19, SARS, and H1N1", NBER Working Paper No. 26971,Issued in April 2020

And especially

- Eichenbaum, Martin S., Rebelo, Sergio & Trabandt, Mathias, "The Macroeconomics of Epidemics", NBER Working Paper No. 26882, Issued in March 2020, Revised in April 2020
    - Containment largely saves lives at the cost of exacerbating the recession caused by the epidemic
    - Starting containment late or ending it early will negatively yield additional costs

Point of interest

- While strict containment measure severely disrupts economic activities in the short run, it might reduces the overall economic damage of the epidemic due to the human lives saved.

- The Trump administration had been reluctant towards a large-scale lockdown nationwide, fearing it for causing unfathomable economic percussions. The project seeks to debunk this reasoning

Goal

- Extend the results of the theoretical papers with empirical evidence
- Qualitatively explore the relationship between the strength of the epidemic containment and post-epidemic economic recovery
- Hopefully help determine the optimal containment policy anticipating future epidemics

Data on Economic indicators

- Ideally to study COVID-19 the project requires the BEA economic indicators by state on 2020's first quarter. However, these data are expected to be released by the end of June and thus not readily available.
- A promising alternative is the weekly economic index (WEI) developed by Daniel Lewis and Jim Stock to track the economic status during the epidemic. Its calculation method is available and data released on a weekly basis
- Another approach is to study the 2009 swine flu pandemic instead. The economic data are available and complete, but that epidemic might not be comparable in severity and lethality to the current COVID.

Data on epidemics and containment

- Whichever epidemic to study, these information are quite ready on CDC sites; so data collection should not be quite a problem.

- There is a need, however, to arbitrarily measure the containment response by each US state. Potential standards include the swiftness and strength of implementation, depending on the details of the containment policies

Method

- The base idea is a regression of post epidemic economic growth on the level of containment employed during the epidemic with confounding parameters
- Each observation is essentially a US state
- The project plans to use tree-based methods due to the multiple occurences of categorical parameters, including the containment level itself

Underlying theory

- Simply enough, the containment induces two sides of effects:
  - On one side, the containment introduces a negative shock on the economy; this can be based on the SIR-macro compound model developed by Eichenbaum, Rebelo and Trabandt; this is a social-welfare maximization model that incorporates the basic SIR epidemic model.
  - On the other side, as the SIR model indicates, the containment reduces life losses, which may eventually benefit the economic recovery; this component is yet to be explored.

Expectations

- Hopefully, the study can generate evidence that supports the claim that the containment saves not only lives, but also the economy as well.

- Thus it is expected to find that the states with quicker response and more organized containment should experience quicker recovery from the epidemic-caused recession.

- Note that as Eichenbaum et al. stated, a late but draconian containment does not work as well. This need to be take into account when evaluating the containment measures.

Expected issues

- Exactly 50 observations in the forms of 50 states; data of foreign countries and regions were measured by different institutions under different circumstances, possibly with different scales, and therefore importing more observations is challenging

- A great deal of effort is required to relatively remove the other effects on post-epidemic economic recovery . Even so confounds can be easily left out and make the results completely false.