

## **FAST AND LOCAL: HOW DID LOCKDOWN POLICIES AFFECT THE SPREAD AND SEVERITY OF COVID-19?**

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June 8<sup>th</sup>, 2020

On 11th January 2020, China reported the first death due to COVID-19, that of a 61-year-old man who had visited a seafood market in Wuhan, a city in Hubei province in central China. By the middle of May 2020, a few months later, close to 300,000 deaths have been registered across the world. The health and economic effects of COVID-19 have been unprecedented. This paper studies how the responses of governments around the world to this crisis have impacted the development of the global pandemic.

More precisely, we analyse whether lockdowns mitigated the surge in infections and reduced mortality, which type of lockdown measure works best, and how effective lockdowns have been in developing vs developed countries. Our data cover 184 countries from December 31st 2019 to May 4<sup>th</sup> 2020, and contain information on the day when lockdown measures were taken, along with confirmed cases, and deaths.

Endogeneity issues pose major barriers to assessing the causal effects of such Non-Pharmaceutical Interventions on the spread of a disease. Omitted variable bias, reverse causality and measurement errors, in particular, need to be addressed in order to have a chance to establish causal relationships. We do this here by exploiting the panel structure of our dataset. This dataset, in effect, with its broad international reach, allows us to control for country fixed effects and day fixed effects. Furthermore, we also control for the within-country evolution of the disease either by using a lagged outcome or by controlling for the number of days since the first case was reported in the country.

We obtain several important results:

1. Lockdowns are overall effective at curbing the spread of the disease and at reducing deaths (after about 30 days). But the harsher is not the better: partial lockdowns are as effective as stricter ones, but at a lower cost.
2. Based on the trend in our data, we evaluate that about 650,000 deaths have been averted through lockdowns globally.
3. However, this effect comes mostly from developed countries. We find no positive impact of lockdowns in developing countries.
4. Internal measures within countries are the ones that mattered: closing borders has had virtually no effect.

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5. There is a speed premium in the sense that countries that acted earlier were quicker at 'flattening the curve'.

While extreme measures have been taken by countries as an emergency response, there are clear lessons from this first large pandemic of modern times. Organizational structures and decision-making processes that favor quick responses and targeted lockdowns should be priorities. For similar reasons, these features would help in case we enter into a 'lockdown-release-lockdown' phase, a situation that cannot be ruled out in early May 2020 with the apparently low prevalence of infections across countries. One obvious caveat of our study is that the long-term efficacy of lockdown measures will only be known when they have been lifted and we have had time to observe whether the pandemic remains contained or not ([Bonardi et al, 2020](#)). If we are right that one key result of internal lockdown measures is that it changed individuals' daily behaviors, there could still be hope.

### References

Bonardi, J.P., Bris, A., Brühlhart, M., Danthine, J.P., Jondeau, E., Rohner, D., Thoenig, M. 2020. The case for reopening the economies by sector. *Harvard Business Review*, May 19<sup>th</sup>, 2020.

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This paper has been published as a pre-print in Covid Economics, with the following reference:

Bonardi, J.P., Gallea, Q., Kalanoski, D., Lalive, R. 2020. Fast and local: How did lockdown policies affect the spread and severity of the Covid-19? *Covid Economics – Vetted and Real Time paper*, Issue 23, May 28: 325-351.

It can be accessed [here](#).

[A longer version of the paper \(with all technical details\) can be found here.](#)

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