Tracking the economic impacts of COVID-19 one ship at a time

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COVID-19 saw global maritime trade collapse by as much as 10% in the first eight months of 2020—leading to losses of up to $412 billion, reveals recently published Oxford research, which used sophisticated

algorithms and tracking data to follow 100,000 vessels.

The research was also able to quantify the impacts of virus containment measures on economic activity across countries—in particular, the closures of schools and public transport led to drops in economic activity. But the study reveals, oil and manufacturing supply chains collapsed as the pandemic went global, leading to a widespread slump in port-level trade.

The Oxford team, led by Jasper Verschuur a graduate student in the Environmental Change Institute, shows the largest absolute losses were in ports in China, the Middle East and Western Europe—which experienced both supply and demand shocks during the first few months.

Using cutting-edge methodology, in which the daily movements of more than 100,000 maritime vessels were tracked, the team found manufacturing sectors were hardest hit, with losses of 11.8%.

Many sectors were not as badly affected, "Some supply-chains have been more resilient than others. The most resilient sectors are found to be the textiles (-4.1%), food and beverages (-5.8%) and wood and paper manufacturing (-6.3%) sectors."

The ECI's Professor Jim Hall says, "Looking at this satellite ship-tracking data during the COVID-19 pandemic is fascinating and alarming. You can see how national lockdowns have had impacts far beyond many countries' borders, through big shifts in the patterns of shipping trade. Never before have we been able to see, so precisely and so quickly, how an economic shock ripples through supply chains around the world."

Some small and developing nations were particularly hard-hit, "The largest percentage change in imports are associated with small

economies such as Turks and Caicos Islands, Bahrain, Anguilla, Federated States of Micronesia and Madagascar."

For many, the trade disruptions were reinforced by the drop in tourism. This study is one of the first sources of information on the impacts of small islands and low-income countries.

When combined with information about lockdown measures from the Blavatnik School's "COVID-19 Government Response Tracker," the study reveals the impact of individual lockdown measures on economic activity. According to the report, "We find a clear negative impact of COVID-19 related school and public transport closures on country-wide exports. Every day that a country had a full school closure led to a 4-7% drop in economic activity."

The information can help decision-makers in weighting the costs and benefits of introducing new lockdown measures. But, the researchers say, "Stay at home requirements and international travel bans had little effect on economic activity."

Jasper Verschuur says, "We can measure the economic impacts of the COVID-19 on a global scale in almost real time. Going further, we can use a similar approach to monitor how countries recover from the pandemic as they rebuild their economies, and identify where additional financial support is needed."

With support from the UN's Statistical Division, the team tracked the daily movements of more than 100,000 maritime vessels as they moved in and out of ports, and estimated whether they were loading or unloading goods. This allowed them to estimate maritime trade flows, a good proxy of the status of the economy, in all maritime countries on a daily time scale and compare it to the previous year.

Published in *PloS One*, the research was conducted using a new method to estimate the economic losses in near real-time on a global-scale, providing empirical evidence of the evolution of economic impacts as the pandemic unfolded and how the economic response differs between countries

More information: Jasper Verschuur et al. Global economic impacts of COVID-19 lockdown measures stand out in high-frequency shipping data, *PLOS ONE* (2021). DOI: 10.1371/journal.pone.0248818

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