

Congress of the United States

December 13, 2021

House of Representatives

Select Subcommittee on the Coronavirus Crisis

2157 Rayburn House Office Building

Washington, DC 20515-6143

Good afternoon, Chairman James Clyburn, Ranking Member Steve Scalise, and members of the Select Subcommittee on the Coronavirus Crisis. I am Dr. Sebnem Kalemli-Ozcan, Neil Moskowitz Professor of Economics at the University of Maryland, College Park since 2012.

Thank you for the opportunity to appear before you to discuss the economic case for global vaccinations. Rolling out a vaccine to stop the spread of a global pandemic doesn't come cheap. Billions of dollars have been spent developing drugs and putting in place a program to get those drugs into people's arms. But amid an uneven distribution of vaccines – with poorer countries lagging far behind richer nations – the question is simply what is the economic cost of not vaccinating everyone?

My work, joint with my colleagues, originally released on January 26, 2021 at a press conference of the WHO, calculates the total economic cost of uneven global vaccinations and how much of this cost will be borne out by the rich countries such as the United States. Back in January 2021, with the projected progression of the pandemic at that time, we have estimated a 4 trillion USD global cost at the end of 2021, under the scenario of rich countries vaccinating all their citizens while poor countries were only able to inoculate half of their populations. 49 percent of this global cost is borne out by rich countries composed of the United States, Canada, Japan and the Europe. For the United States, the cost was 3 percent of its 2019 gross domestic product, 671 billion USD. As of now, the reality of vaccinations turned out to be worse than our assumptions, as rich countries were not able to vaccinate all their citizens and poor countries are nowhere near vaccinating half of their populations. With the ongoing pandemic, if we do not achieve global vaccinations, the economic costs we have estimated will only grow exponentially in 2022 and 2023.

To arrive at these economic costs, we analyzed 35 industries – such as services and manufacturing – in 65 countries and examined how they were all linked economically in 2019, before the pandemic. Figures 1 and 2 summarize these links schematically. For example, the construction sector in the U.S. relies on steel imported from Brazil, American auto manufacturers need glass and tires that come from countries in Asia, and so forth. We then used the data on COVID-19 infections in each country to demonstrate how the coronavirus crisis can disrupt global trade, curbing and delaying shipments of steel, glass and

other imports and exports, providing the very first account of possible global supply chain disruptions. In our economic-epidemiological model, the more that a sector relies on people working in close proximity to produce goods, the more disruptions there will be due to higher infections in that country. As all sectors in all countries linked globally, domestic supply chain disruptions become global instantly. We then modeled how vaccinations could help to alleviate these economic costs, by smoothing the supply chain disruptions, as a healthy and immune workforce is able to produce and deliver parts in time, increasing output. The figure 3 summarizes the economic-epidemiological model that our estimates are based on schematically.

Widespread vaccinations in wealthier nations will certainly help domestic businesses like restaurants, gyms and other services. But, industries such as auto, construction, wholesale and retail that depend on outside countries for materials, parts and supplies will continue to suffer if vaccines are not made available worldwide. Most international trade involves not finished wares but parts that are shipped from one country to another to be folded into products. Of the \$18 trillion worth of goods that were traded in 2019, so-called intermediate goods represented \$11 trillion, according to the Organization for Economic Cooperation and Development. In addition, if people in the developing countries remain out of work because of lockdowns required to choke off the spread of the virus, they will have less money to spend, reducing the sales of exporters in North America, Europe and East Asia. Thus, our work estimates the economic costs arising from the global supply chain disruptions, where a key reason for these disruptions is the ongoing pandemic. How could we predict these economic costs of supply chain disruptions that we are living through today in reality before it became evident and popularly known as `the container crisis` or the `great disruption` ? Why did we foresee that the problem would be much more widespread than a simple shortage of chips? This is because our economic costs take into account the full complexity of the global trade and production network as shown in figures 1 and 2.

Our research is an early warning sign, demonstrating the importance of making the vaccines globally available, not from a moral standpoint but from an economic one, as global supply chain disruptions will not get resolved until the pandemic is over everywhere. A significant portion of these costs are borne by the advanced countries, despite the fact that they might vaccinate most of their citizens. This is because these countries are tightly connected to unvaccinated trading partners, which consist of a large number of emerging markets and developing nations. Although the rich nations' relative economic costs are less than that of the poor ones as a percentage of their output, their larger sizes imply that they might bear up to 49% of the total global costs. Within the group of rich nations, the relative costs increase proportional to their economic exposure to unvaccinated trade partners.

Our research shows that vaccinating poor nations is not an act of charity but an act of economy rationally, with a high return on investing in global vaccinations. We have calculated a return to such investments of 166 times. This number is calculated as follows. In January 2021, the Covax facility — which was set up by the WHO, Gavi and the Coalition for Epidemic Preparedness Innovations to ensure equitable distribution of vaccines — had stated that the cost of vaccinating 20 percent of vulnerable populations in poor countries is 27 billion USD. Since the economic cost to rich countries of not

vaccinating the poor world can be as high as 4 trillion USD, a cost of 27 billion USD implies a return to investment of 166. If the United States closes this gap alone, it will imply a return of investment of 24 times given the 671 billion USD cost to the United States of not vaccinating its trading partners. As stated by Martin Wolf in Financial Times, February 9, 2021, cost of global vaccinations is a rounding error given the trillions of dollars in fiscal spending by rich nations. In May 19, 2021, International Monetary Fund stated the cost of vaccinating at least 40 percent of the population in all countries by the end of 2021 and at least 60 percent by the first half of 2022 to be 50 billion with an economic gain of 9 trillion USD to the world, where the 4 trillion gain accrues to rich nations, again implying a return of 80 times for rich nations, similar to our numbers calculated in January 26, 2021.

According to our model, in the absence of global vaccinations, the 2021 United States gross domestic product will be 3.14 percent lower than what could have been based on 2019 projections. The 2019 projections done by statistical agencies in 2019 meant to capture the counterfactual world of no pandemic. Survey of professional forecasters, International Monetary Fund and the Organization for Economic Cooperation and Development all predict 3.7 percent lower output for 2021 for the United States compared to what would have been the case in the absence of COVID. Hence, our estimate of 3.14 percent gap shows the heavy economic toll of not vaccinating the world for the United States.

Tedros Adhanom Ghebreyesus, director-general of the WHO said, as early as January 2021, that the longer we wait to provide vaccines, tests, and treatments to all countries, the faster the virus will take hold, the potential for more variants will emerge, the greater the chance today's vaccines could become ineffective, and the harder it will be for all countries to recover. This turns out to be the reality now with the emergence of new variants such as Omicron. No one is safe until everyone is safe. Our work is an economic counterpart to this argument that no economy recovers until everyone recovers since no economy is an island and world economies are interdependent on each other— full global economic recovery will come only when every economy recovers from the pandemic.

I want to finish by quoting John Donne who inspired us, in a similar way to his inspiration for Ernest Hemingway's famous novel, 'For Whom the Bell Tolls'. John Donne's quote highlights that no economy is an island: "No man is an island entire of itself; every man is a piece of the continent, a part of the main.... And therefore, never send to know for whom the bell tolls; it tolls for thee."

Thank you very much.

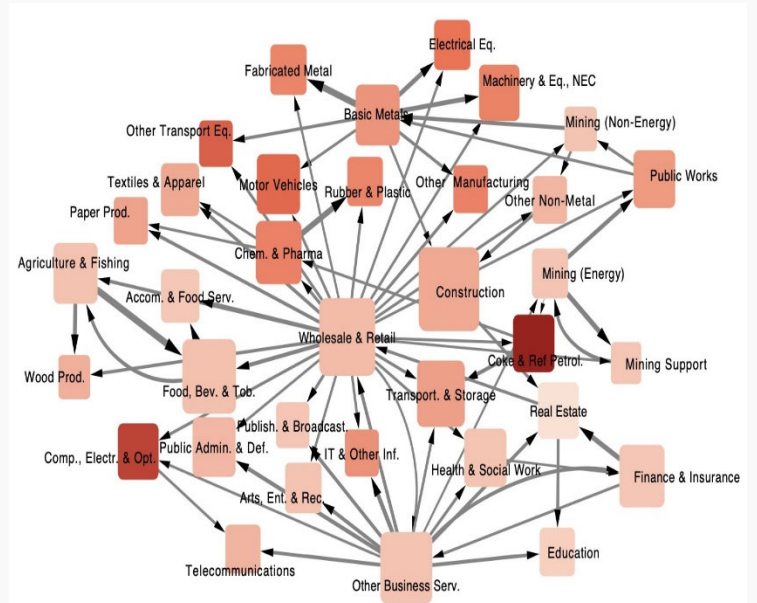
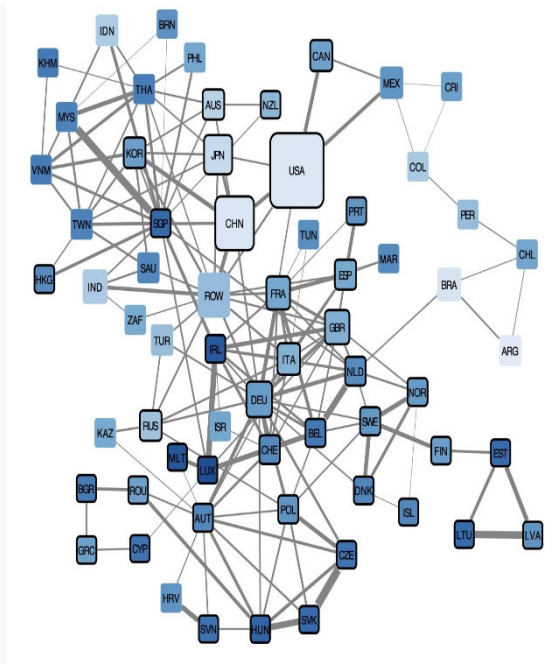
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**Figure 1 and 2: Country and Industry Trade Linkages**



**(a) International Trade Linkages**

**(b) Inter-Industry Linkages**

**Figure 3: Modelling the effects of the COVID-19 shock in a multi-country multi-sector open economy**

