

Economic costs of inequitable vaccine distribution across the world

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Cem Çakmaklı, Selva Demiralp, Sebnem Kalemli-Ozcan, Sevcan Yesiltas, Muhammed A. Yıldırım 15 February 2021

Countries around the world are beginning to vaccinate their populations against Covid-19. This column calculates the global economic costs from the absence of an equitable distribution of vaccines, with a focus on international trade and production linkages. Under the scenario where advanced economies are vaccinated universally within four months in 2021 but only 50% of the population is vaccinated in emerging markets and developing economies by early 2022, it finds that the global economic costs might be as high as \$3.8 trillion. Up to 49% of these costs are borne by advanced economies.

“No man is an island entire of itself; every man is a piece of the continent, a part of the main; if a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as any manner of thy friends or of thine own were; any man's death diminishes me, because I am involved in mankind. And therefore never send to know for whom the bell tolls; it tolls for thee.”

John Donne

The COVID-19 pandemic had a drastic impact in 2020. Based on the update to the IMF's October 2020 forecasts (IMF 2021), the world economy is expected to have contracted by 3.5% in 2020. In our recent work (Çakmaklı et al. 2021), we focus on one particular channel – international trade and production linkages – and calculate the global economic costs that would arise in the absence of equitable distribution of vaccines.

Under the scenario where the advanced economies (AE) are vaccinated universally within four months in 2021 but only 50% of the population is vaccinated in emerging markets and developing economies (EMDEs) by early 2022, we find that the global economic costs might be as high as \$3.8 trillion. More importantly, up to 49% of these costs are borne by advanced economies. These estimates are calibrated from country-specific data as of end of 2020 regarding the course of the pandemic. The global suffering of people around the world reminds us of John Donne's eloquent expression that “no man is an island”. Our findings reveal an economic counterpart to this expression where “no economy is an island”. The economic interdependencies of countries imply that the economic drag in one country has immediate and grave consequences for the others. The economic losses of the pandemic can only be mitigated through multilateral coordination ensuring the equitable access of vaccines, tests, and therapeutics.

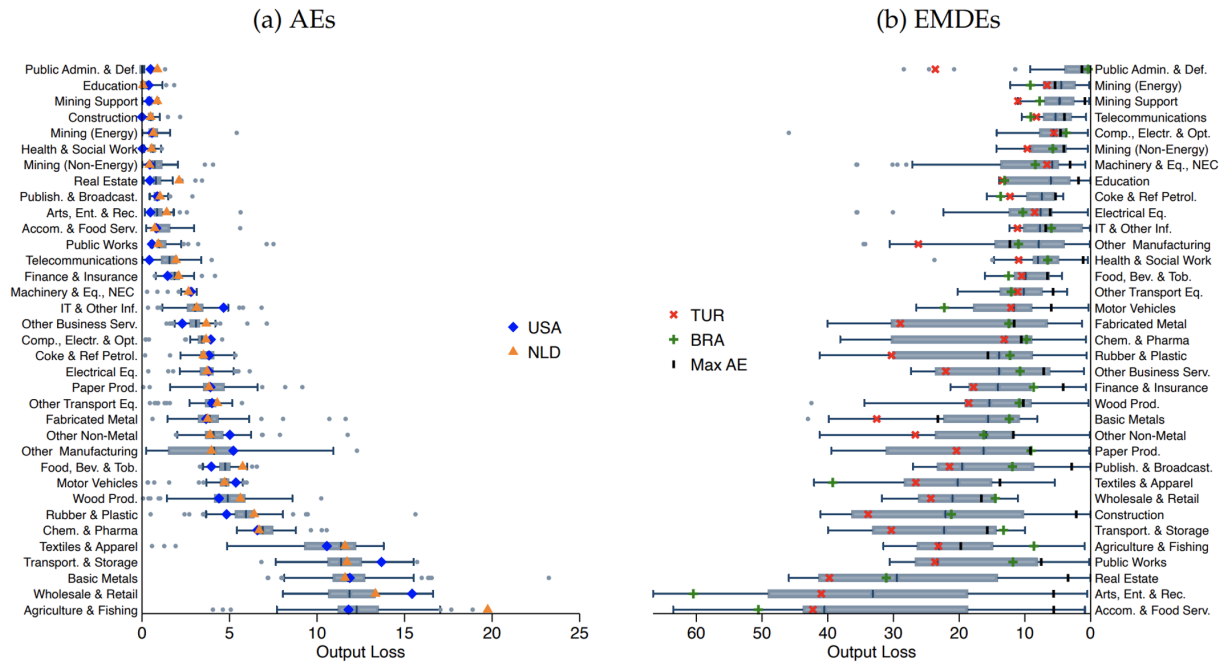
Watch Sebnem Kalemli-Özcan, one of the authors of this column, discuss the potential impact of vaccine delays in developing countries in a Vox video [here](#).

One of our key findings is that AEs still suffer from the economic costs of the pandemic even if they effectively vaccinate their populations and totally contain the pandemic. These costs stem from their trade linkages with unvaccinated countries. The trade linkages lead to a decline in exports to unvaccinated countries or in imports from unvaccinated countries. Both are amplified through international and domestic input-output linkages. The decline in exports of final and intermediate goods reflects the fact that unvaccinated countries still suffer from low domestic demand at home and cannot buy as many goods and services from AEs. Similarly, the declines in imports of final and intermediate goods from EMDEs reflect the lower levels of production in these unvaccinated countries. Since such goods are inputs to the production in AEs in certain sectors and sectors are linked to each other, the costs spread throughout the economies of AEs.

We assume strong complementarities between sectors and that global supply chains are fixed in the short run under price stickiness. Hence, there is no reallocation of labour across sectors or substitution between intermediate inputs. We believe these assumptions can characterise reality in the short run under a health shock, and could be rationalised by the approach of Baqaee and Farhi (2020a, 2020b), who provide a general framework. Consistent with these assumptions, we use pre-pandemic trade and production network data from 2019. Hence, our findings deliver upper bound estimates on the global costs of insufficient vaccinations in EMDEs going forward for 2021. We obtain these estimates by linking the existing trade and production networks with an epidemiological model. Country-specific infection dynamics determine the extent of demand and supply shocks, both domestic and foreign.

The empirical framework, calibrated to 65 countries and 35 sectors, implies that the economic costs are proportional to the openness of the countries with extensive sectoral heterogeneity as shown in Figure 1.

Figure 1 Cross-country heterogeneity in terms of sectoral economic costs



Notes: For a given sector listed in the y-axis, this figure illustrates horizontal box-plots of output loss across AEs, and EMDEs in Panel (a) and Panel (b), respectively. The sectors are ranked according to the median of output loss in both panels. We measure the sector-level economic costs as the percentage change in GDP of the corresponding country for a given sector during the pandemic relative to the counterfactual of global vaccinations. Sectors are classified following the 2-digit OECD ISIC codes.

The key takeaways from the figure are the following:

- The overall sectoral costs borne by the unvaccinated EMDEs (panel b) are significantly larger than the vaccinated AEs (panel a) in each sector. These losses are also larger than the ones we report for EMDEs in our earlier work (Çakmaklı et al. 2020), which analyses these losses only using the demand shocks.
- The sectoral costs for the unvaccinated countries are the highest for those sectors that are more severely affected from the domestic pandemic conditions such as accommodation and food services, arts and entertainment, or real estate (Panel b). The economic costs in these sectors primarily reflect the decline in demand due to the ‘fear factor’ in these countries where most people engage in voluntary social distancing. This is a typical sectoral ranking for pandemic-related losses as highlighted by the closed economy literature (e.g. Gourinchas et al. 2020).
- When we turn to AEs that are vaccinated at a faster pace, in panel (a) we observe a starkly different sectoral ranking in terms of losses. Because the domestic drag from the pandemic is eliminated in these countries, the sectors that bear the highest economic costs are those that are more exposed to trade with unvaccinated countries, either directly or through input-output linkages, such as agriculture and fishing, wholesale and retail, or basic metals industries.

- In order to give a glance about the sectoral costs with respect to trade exposure, we plot a couple of countries with different levels of trade openness. The idea is to visually illustrate whether those countries that are more open to trade suffer larger sectoral costs. Among AEs, we observe that the sectoral costs are generally higher in the Netherlands compared to US, for example, consistent with more trade exposure. A similar picture emerges when we compare the sectoral costs for two EMDE countries. Turkey is more open to trade relative to Brazil. Consequently, sectoral costs borne by Turkey, are generally higher than those of Brazil.

Conclusion

Our research demonstrates the importance of making the vaccine globally available, not from a moral standpoint but from an economic one, by illustrating the large economic costs in the absence of global vaccinations. Ironically, a significant portion of these costs will be borne by the advanced countries, despite the fact that they might vaccinate most of their citizens by the summer of 2021. This is because AEs are tightly connected to unvaccinated trading partners, which consist of a large number of EMDEs. Thus, the devastating economic conditions in these countries under the ongoing pandemic can cause a non-negligible drag on the AEs as well. Even though AEs relative costs are less than that of EMDEs as a percentage of their GDPs, their larger sizes imply that they might bear up to 50% of the total global costs. Within the group of AEs, the relative costs increase proportional to their exposure to unvaccinated trade partners.

World Health Organization Director, Dr. Tedros Ghebreyesus, and the President of the European Commission, Dr. Ursula von der Leyen, noted that “[n]one of us will be safe until everyone is safe”. Our findings extend this argument to the economies by showing that no economy fully recovers until every economy recovers.

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Endnotes

¹ Bonadio et al. (2020) analyses the effects of COVID as a supply shock within international production network.

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Topics: Covid-19, International trade

Tags: COVID-19, vaccination rollout, trade and production linkages, global economic costs

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