**John Torpey** 00:03

Welcome to International Horizons, a podcast of the Ralph Bunche Institute for International Studies that brings scholarly expertise to bear on our understanding of a wide range of international issues. My name is John Torpey, and I'm director of the Ralph Bunche Institute at the Graduate Center of the City University of New York.

**John Torpey** 00:21

Today we examine the problem of vaccinating the world's population in the face of limited supply and the fact that the world's wealthy countries have bought up much of the available supply of vaccines. And in order to explore that issue, we are fortunate to have with us today two economists who have recently done a study of this problem, Selva Demiralp and Sevcan Yeşiltaş; two economists at Koç University in Istanbul who are co-authors of that study. Selva Demiralp is Yapi Kredi Professor of Economics at Koç University. She was previously an economist at the Federal Reserve Board here in the US between 2000 and 2005, after which she joined the economics department at Koç. Over the past decades, she's had extensive interactions with several central banks, including the Federal Reserve, European Central Bank and the Central Bank of Turkey. Her research and views on the Turkish economy have appeared in major international media outlets such as The Wall Street Journal, The New York Times, The Financial Times and The Economist. And we're also fortunate to have with us today Dr. Sevcan Yeşiltaş, who is Assistant Professor of Economics and Finance at Koç University. She received her bachelor's degree in economics from Boğaziçi or Bosphorus University in 2006. Her master's degree in economics from Bilkent University, also in Turkey. And her PhD in economics from Johns Hopkins University in 2016. During her doctoral studies, she worked as a consultant for the National Bureau of Economic Research, the NBER, and for the World Bank. Her research is on the areas of applied microfinance, international finance and corporate finance and has been published in journals such as the Journal of International Economics. Thank you both for taking the time to be with us today Selva Demiralp and Sevcan Yeşiltaş. And I and I hope I'm doing a reasonable job with your with your names.

**Selva Demiralp** 02:37

Yeah, perfect. Thanks a lot for having us today here.

**John Torpey** 02:40

Great to have you both with us. So, recently as I mentioned in my introduction, you recently authored a study of the economic consequences of not vaccinating the entire world's population against COVID-19. Maybe you could just start by telling us how the study came about, who sponsored it, and what you found.

**Selva Demiralp** 03:01

Sure, so let me start first, and then I can pass it to Sevcan. So we started about one year ago when COVID became the new normal for our lives, because just around March when it hit Turkey, in about two weeks, they closed schools and we started teaching remotely. We just couldn't think about anything else but COVID-19. And we just couldn't focus on any other research either. So at that point, we said, "okay, why don't we put together a research paper where we calculate the costs of COVID-19 for the Turkish economy." And our goal at that point was to come up with the most optimal lockdown policy because that was the main topic back then. Should you save lives? Or should you save economies? If you consider a lockdown, how long should be the lockdown. So those were the issues at that time. And we wanted to come up with a model back then, so we started. Almost all economists started working on this topic. And we wanted to borrow models, epidemiological models, and look at the way the virus spreads to the economy and how certain lockdowns, by closing certain sectors, is going to affect supply channel and the demand channel.

**Selva Demiralp** 04:29

So our research for the Turkish economy highlighted the role of exports for a small open economy like Turkey, because it wasn't just the domestic dynamics in Turkey, but how much the foreign demand for Turkish exports will be affected that would contribute to total costs of the pandemic for the Turkish economy. So we started thinking about the spillovers of this effect on advanced economies because if Turkey cannot export, let's say steel to Germany, then it's not just going to affect Turkish economy, because our export revenues declining, but it's also going to affect German economy because if they cannot buy that steel from Turkey, they won't be able to produce cars. So we said, okay, maybe these international interactions are going to add a whole new dimension to this study. And at that point -- I mean, this is around November of last year -- the news about the first vaccine came out. And soon it was found out that manufacturing and the distribution of vaccine is not going to be very straightforward. And at the beginning, there's simply not going to be enough supply. So at that point, we said: "Why don't we look at the costs of an equitable distribution of vaccine? And in particular, how much would advanced economies bear if their trade partners are not vaccinated?"

**Selva Demiralp** 05:58

So that brought us to the paper that we are talking about today. And it's an academic paper, we have to make certain assumptions because there's still tremendous uncertainty about the course of the pandemic, and, say, the manufacturing and the inoculation programs. So under certain assumptions that say, rich countries vaccinate half of all their population in about four months, in the first four months of 2021, and emerging markets and developing economies, lower income countries, can only vaccinate half their population for the entire 12 months of 2021. In this scenario, we calculated a total cost of about $3.8 trillion. And what is more important, more striking is that even the advanced economies who are going to get vaccinated and eliminate the pandemic at home, they will still bear about half of that cost, which is about $1.9 trillion. So that is an eye opener in our view, because it shows the urgency to manufacture more vaccines and distribute them to the rest of the world. About the details, let me now pass to Sevcan and she can tell us the details about our work.

**John Torpey** 07:22

Great! Sevcan?

**Sevcan Yeşiltaş** 07:23

Yeah, thanks a lot. I would like to dig deeper and I would like to mention about the extent of the sectoral costs because of the inequitable distribution of the global vaccines. So, thanks to the work done by epidemiologists, and also economists, we know that there is an effect of heterogeneity on the infection part; the jobs, occupations and sectors where close proximity is required are going to have high infection rates. I mean, that certain sectors are going to be affected more than other sectors. To be specific, by nature, the services sector is affected more relative to the manufacturing sector because services sector is a sector that requires close proximity. As Selva mentioned, there is also another economic dimension really related to international trade and production networks that work through highly complex sector linkages.

**Sevcan Yeşiltaş** 08:25

Therefore, we want to bring that and then want to marry these two dimensions; sectoral heterogeneity in infection dynamics and sectoral heterogeneity in trade and production networks. And to compete sector economy costs, we have an SIR model (Susceptible, Infectious or Recovered model) that we borrowed from the epidemiologists. We bring a very rich data from every country. We do it for 65 countries and 35 sectors. We have our zeros basic reproduction numbers for every country. And then we combine those epidemiological sites using real-time data on infection dynamics from John Hopkins University with economic data on trade and production networks that comes from the OECD on multi-sector, multi-country economic linkages that tells how each sector is in each country imports and exports beats other sectors in other countries.

**Sevcan Yeşiltaş** 09:33

So we try to estimate, as Selva mentioned, several scenarios and several different specifications. And among them the most realistic one is in the first four months of 2021 when advanced economies are fully vaccinated, whereas emerging market and developing economies vaccinate only half of their population by 2021. And we provided some key findings. Countries and sectors` that have stronger trade linkages with unvaccinated counterparts are more severely affected. And such trade linkages refer to a decline in their exports, because emerging markets are not fully recovered, and they cannot demand as much exports from advanced economies and a decline in their imports of final and intermediate goods from emerging market countries because they are still suffering from the pandemic conditions. And when you look at the big picture, we see that emerging markets and developing economies are clearly hit harder.

**Sevcan Yeşiltaş** 10:41

But even advanced economies are hardly hit from the prolonged pandemic. Specifically, within emerging market developing economies, the sectoral costs are the highest for those sectors that are more severely affected from the domestic pandemic conditions, which are the sectors: accommodation and food services, arts, entertainment and real estate. And the economic costs in these sectors primarily reflected declining demand due to the fear factor in these countries where most people engage in voluntarily social distancing. So this is a similar picture that we have been actually seeing throughout 2020 since the outbreak of pandemic.

**Sevcan Yeşiltaş** 11:26

And if you want to return to advanced economies that are vaccinated at a faster pace according to our assumption, we have a completely different picture. Because the domestic threat from the pandemic is eliminated in these countries -- thanks to universal vaccination within their borders -- the sectors that suffer from the highest economic costs are those that are more exposed to trade with unvaccinated countries, either directly or through highly complex inputs and outputs linkages. Which are these sectors? They are agriculture and fishing, wholesale and retail, or basic metal industries. And in order to further highlight the role of trade openness in explaining the extent of COVID-related sectoral economic cost, we wanted to compare two countries within each group of vaccinated and unvaccinated countries. And among vaccinated ones, in advanced economies, we observed that the sectoral costs are generally higher in Netherlands compared to U.S., since Netherlands is more open to trade relative to the United States. And similarly, when we compared the sectoral costs for two emerging market and developing economies: Turkey is more open to threats relative to Brazil, so sectoral costs borne by Turkey are generally higher than those of Brazil. So I don't want to go into further details but I think it's more than enough to convey the key message related to the extent of the economic costs related to the inequitable distribution of the global COVID vaccines.

**John Torpey** 13:05

Right. So thank you very much for that. And of course, your study obviously does focus primarily on the question of the economic costs to the rest of the world of not vaccinating countries that at the moment probably have no vaccine, probably would have a difficult time buying it; there are cost issues, supply, of course, are still an issue, although more vaccines are coming online. But, there's also a moral side to this. You've essentially offered a rationale for the wealthy countries to be involved in the project of vaccinating everybody around the world. But that's also a moral question. And I wonder how you think about that? Maybe economists aren't supposed to think about the moral side of things so much if they're not Albert Hirschman or Adam Smith. But I wonder what you would say about the moral side of this question?

**Selva Demiralp** 14:05

So, equitable distribution of vaccines is primarily a moral responsibility, and there's absolutely no question about that. But we also know that moral motives may not be sufficient to generate enough funds in initiatives such as COVAX to manufacture and distribute more vaccines. What is the COVAX initiative? Let's just remind the listeners. So very short time ago, this was a facility that was put together in order to generate enough funding to manufacture 2 billion doses of vaccines to vaccinate 20% of the world population. And they said the total costs of producing 2 billion doses of vaccines is about $38 billion. However, only $11 billion were collected in the fund. So clearly, the moral story, the moral incentives are not strong enough to motivate the rich world to contribute to this facility.

**Selva Demiralp** 15:13

So what we wanted to do was to highlight that it is actually for the economic benefit of the rich countries to contribute to such efforts. That this is not an act of generosity, but an act of economic rationality because, on the one hand, we are talking about $27 billion that are needed in order to manufacture enough vaccines to inoculate 20% of the population. On the other hand, we're talking about billions and trillions of dollars that the rich countries have to bear if their trade partners are not vaccinated. So yes, we are all behind the moral arguments. But as economists, we are also trying to contribute to these efforts by showing that there is a strong economic motivation behind investing in a facility like COVAX. Because if your trade partners are not vaccinated, you want to be able to export as much goods and services to your partners. And also, you want to be able to import these intermediate goods that you use, for example, steel that you buy from Turkey, in order to buy, in order to produce the car that you put together at home.

**Selva Demiralp** 16:29

So if the supply chains -- this is a technical concept -- but you buy an input in order to produce the final good at home. If there are disruptions in the supply chains, then it is going to affect your production in a vaccinated country as well. And you won't be able to shield yourself from the pandemic, even though you vaccinate your local population. So we tried to avoid the word fairness. And we say equitable distribution of vaccines, because it's a tricky concept. I mean, in economics, we have this notion called Pareto optimality, which means that if you start from an initial distribution of assets, a Pareto optimal adjustments requires all parties to gain from that. So if one party gains and the other party loses, it's not going to be optimal. And so status quo is going to be harder to change. So when it's a limited supply of vaccines, it's hard to make any economic argument to say rich countries should hand in their limited vaccine supply to the poorer countries before they even vaccinate themselves. But by calculating the economic costs of inequitable distribution of vaccines, we illustrated that it is actually Pareto optimal to move the support of the rich countries to invest in a facility like COVAX, because they will earn more in terms of export revenues and effective supply chains. So if sufficient funds are collected to manufacture and distribute more vaccines, then all countries will gain, both from a moral and an economic perspective.

**John Torpey** 18:09

This is something that the G7 is addressing this very day, right? And Joe Biden has announced that he's going to contribute $4 billion from the United States for this reason. There's also a public health dimension to this issue, right? We know that the more the virus replicates, the more opportunities it has to mutate, and it may become more transmissible or more likely to cause serious illness in the process. And as international travel revives, these strains of the virus will circulate around the world, as have the UK and South African variants. So do you think people understand that they are protecting themselves by getting everybody else vaccinated? I mean, there's a lot of discussion about the adequacy of the messaging that's coming out of the US administration, for example, about the effectiveness, really, of the vaccines. But this is another question that I think, in fact, isn't really part really of the public discussion just yet.

**Selva Demiralp** 19:12

This is a very critical topic, indeed. And thanks for bringing this up. The new variants make the rollout of mass vaccinations more complicated, and it also raises question marks about the effectiveness of existing vaccines. And in the absence of global and synchronous vaccinations, there is a real risk that the new variants of the virus will arrive. And it will also challenge how well existing vaccines will work. So your point should definitely be highlighted to emphasize the mutual interest in contributing to efforts such as COVAX. I need to emphasize this one more time, because in our paper, we haven't incorporated the variants into our analysis, because, clearly, the pandemic outlook is changing very rapidly, and it's hard to foresee and incorporate everything into academic work. We tried to put it together in a very short period of time. Nevertheless, we can't catch up with the mutations and the variants. But the variants of COVID-19 virus in the presence of inequitable vaccine distribution would clearly increase the economic costs that we have estimated. Because so long as there are variants and the vaccine becomes less effective, then there should be even stronger incentives for the rich world to utilize the existing formula for the vaccine and vaccinate the global population as soon as possible. Because, if the pandemic is prolonged, everybody is going to suffer, it's not just going to be the unvaccinated poor income countries. But vaccinated countries, unfortunately, won't be able to eliminate the economic drag. Yes, the health problem might be minimized, but as you pointed out, even the health problem may continue for a longer period of time. And more importantly, the economic costs are going to be unbearable, unfortunately.

**John Torpey** 21:08

So, the other question I wanted to ask here is what are the prospects of actually getting everybody in the world vaccinated? As I think I already mentioned, more vaccines are coming online. We already have the Moderna and Pfizer vaccines, a Russian vaccine has been approved. China is using one. There's some more questions about the safety and efficacy of the Chinese vaccine. But in any case, the FDA here in the United States seems likely soon to approve the Johnson & Johnson vaccine, which is a one shot vaccine, which is a good thing. And there are, of course, all these problems with Moderna and Pfizer vaccines in the sense that they require two shots. I shouldn't say they are problems, they are hurdles that make the situation more complicated. They require two shots, and they have to be refrigerated at very low temperatures, that makes it hard for them to be distributed at all in the poor and warmer parts of the world. So by when do you think it's reasonable to expect that everybody in the world could be vaccinated? You mentioned there are some manufacturing assumptions you have to make, and there are lots of uncertainties in this process. But can you give us a sense of how you think this is going to play out?

**Sevcan Yeşiltaş** 22:34

Sure. As you stated, there are many unknowns ahead of us regarding the course of pandemic. But to start with, I think I should give you the recent numbers regarding the vaccine rollouts. Yes, as of today, the biggest vaccination campaign in history is under way. And according to data collected by the COVID-19 vaccine tracker of Bloomberg [School of Public Health at Johns Hopkins University], as of today, around 200 billion doses have been administered across 87 countries, and the latest rates was roughly 6.5 billion doses a day. But I think the speed of vaccination rollouts is rather slow. And the world is still far away from the global herd immunity in order to minimize the economic costs that we have mentioned so far. And if we want to win our fight against the pandemic, herd immunity should be achieved in all countries across the globe, as Selva stated. And because as we always underline that nobody will be safe until everyone is safe.

**Sevcan Yeşiltaş** 23:43

And I think at this point, global cooperation and solidarity will be the only chance for us to defeat the virus everywhere. And it is essential, I think, to start a sustainable global recovery. And related to this, EU, which is the largest donor to the World Health Organization took an important step: with its member states, the EU launched the Team Europe and announced a global recovery package of €38.5 billion. This aims to help partners across the world address the immediate health, emergency and humanitarian needs as well as strengthen health systems and support the economy recovery and social protection. Specifically, Team Europe has announced over €850 million for COVAX vessels that Selva mentioned before to help to secure 1.3 billion doses of vaccination for 92 low and middle-income countries, which are expected to receive vaccinations at a later stage -- unfortunately, by the end of the year -- and support of EU's efforts to make the COVID-19 vaccines a global public good.

**Sevcan Yeşiltaş** 25:13

We have to talk about the manufacturing of the vaccines. So, in order to enable individual vaccine manufacturers to make the necessary investments in production facilities as well as to speed up the development and the production of safe and effective vaccines, the EU Commission so far has signed advanced purchase agreements and has secured 2.3 billion doses of vaccines. And I think these advanced purchase agreements might play an important role in the equitable distribution of vaccines in the sense that they offer the EU member states the possibility to redirect or donate part of their vaccines to other countries until COVAX facilities are able to supply large enough volumes directly from companies.

**Sevcan Yeşiltaş** 26:11

Yes, besides there are many unknowns in the course of pandemic. Unfortunately, there are many challenges we face in the equitable global distribution of vaccines. Why this is the case? Because healthcare and procurement systems are fragile and underfunded. Health workers are limited. Unfortunately, there is a lack of sufficient and appropriate cold chain equipments, a lack of manufacturing capacity, and there are some export restrictions. And I think all these together seem to have a negative impact on the access to COVID-19 related technologies. So another great challenge I think is the manufacturing of the vaccines at a great global scale. And I believe intellectual property is a key factor in building a framework that enables collaboration between the developers of the vaccines and the production of the vaccines. How it might work? Developers of vaccines can enter into the manufacturing agreements, and they can transfer technology and expand production with their license. For example, there is the possibility to grant mandatory licenses, which are those granted by governments without the patent owner's consent. And this is a legitimate tool for the countries in need as they are in the middle of the pandemic. However, some countries conveyed difficulties with regard to the implementation of such flexibilities. So therefore, all countries in the world need to get together and they have to be ready to discuss ways of overcoming these difficulties along the way of manufacturing and delivering the vaccines to where they are needed, right?

**Sevcan Yeşiltaş** 28:07

And we know that unfortunately, this won't be the last pandemic the world may have to deal with in the near future. So measures are highly needed that preserve the incentives to innovate and invest into the research related to health. And I think at this point, close public and private cooperation and intellectual property are both key elements of this equation that we need to solve properly. And last point I would like to emphasize is that governments should act to counter misinformation. Misnformation and hesitancy regarding COVID-19 vaccines. And they should be transparent about the safety and possible side effects. And the governments should engage with local communities to ensure a rapid and universal vaccination within their borders. And I think this is one of the important aspects that local governments should put an emphasis on.

**John Torpey** 29:06

Yes, thank you. That's a very important point for us here in the United States, as you probably know, as well. There's certain communities that have historical reasons to be skeptical about the way the medical community operates in the United States. But there's also a lot of concern about the effectiveness again of the messaging and what people are saying about the effectiveness of the vaccines. As these new variants have arrived, that has kind of undermined the clear message that the Pfizer and Moderna vaccines were the 90% range for stalling the likelihood, the possibility, really, of serious illness. And it's true that the UK variant is perhaps a little less effectively addressed by the vaccines we have but it still basically keeps people from getting very sick and dying. So, we have an issue about getting the message out. And I don't know how big a problem this is in other parts of the world, but that's obviously a major source of concern.

**John Torpey** 30:11

So, the larger issue or another issue that you get into here, I think, is this whole question of what's been kind of called "vaccine nationalism" and the kind of geopolitical dimension of these set of issues. You know, Russia and China have both developed vaccines, they're sending them out to other parts of the world, and using this as a kind of indication of their scientific prowess and their prestige as countries. And I saw yesterday that even Cuba has now developed its own vaccine, which is kind of astonishing for such a small and relatively poor country. And, why did they do that? Well, they probably wanted to be autonomous when it came to vaccinating their own populations. Emmanuel Macron mentioned this yesterday when he talked about the G7 stance towards the support for the COVAX initiative. And I wonder how you see this kind of geopolitical dimension playing out. And, apropos Turkey, where's Turkey getting its vaccines from? From Russia, from the United States, from the UK? China? Yeah. Well, interesting. Tell us tell us about that.

**Sevcan Yeşiltaş** 31:35

Okay. I think, frankly, we are not experts on this issue. We are not sure political scientists. So I won't be able to give deep insights regarding this political dimension of this issue. But I definitely agree with what you stated. We know that nationalism and competition against neighbors prevails in times of crisis. And now, we are facing a global crisis of these magnitudes with several dimensions like never seen before. So that all countries in the world need to get the vaccine at the same time in order to vaccinate their entire population. And, as you stated, at the very beginning of the pandemic, United States and China led the vaccine competition, the vaccine race, not Russia. But we know that there is a view of Putin to show that Russia remains in the battle of scientific power, right?

**Sevcan Yeşiltaş** 32:42

So I think the political dimension is indeed central in this race to save the entire planet from COVID-19. And I think for the great powers the stakes are enormous. The skins in the game are really huge. And Putin's announcements, early announcements than expected, I believe reflected his desire to put Russia back in this scientific power race that is being played out mainly between the United States and China. And yes, we know that China is still behind the United States. But I think it is not surprising that Russians call their vaccine Sputnik V, which aims to remind the Sputnik's moments. I know, you know, but for the listeners, the Sputnik moment refers to what happened back in 1957, when the Russians launched Sputnik I, the first man made satellite launched around the Earth. And at the time, the Soviet Union was far behind the United States in space technology. But by launching this satellite, I think they had managed to give Americans the feeling that their country had been passed in the space race. And, we know that President Putin announced the approval after less than two months of formal testing, which is way earlier than we expected. I think the speed at which Russia moved to rollout vaccines makes us question that Moscow is putting a national prestige before solid science. But on the other hand, we know that European countries would like to be able to prove that research on COVID is the symbol of multilateralism that needs to be considered in the fight against COVID-19. Therefore, European politicians have been constantly on the line with the following message from the very starting point of the COVID-19 outbreak. The message is the following: "as we search for efficiency and progress, we didn't budge one inch in quality and safety. The Europeans do not compete against anyone. We don't sacrifice quality for the sake of propaganda." So this clearly shows us the way how these two different countries approach to the usage of the vaccine rollouts in the fight against the COVID-19 pandemic.

**John Torpey** 35:33

Selva, do you want to add anything?

**Selva Demiralp** 35:40

Yes. (So I was just on mute.) Vaccine nationalism is clearly our focus. In our work, we just wanted to approach it from an economic point of view, because we wanted to show the costs of vaccine nationalism, how it is going to hurt the nations and how focusing just on your domestic gains in this global event, is actually going to hurt you in the end. So, our prologue in the paper is a quote from John Donne that "no man is an island." And we generalize it to our framework and say: "no economy is an island." That the sufferings of other countries is going to affect you as well. And the connections, the trade connections that you have, are going to lead to costs that you will have to bear because of your locally focused decisions.

**John Torpey** 36:45

Great. Well, thank you very much. This has really been a very eye opening and helpful discussion. That's it for today's episode of International Horizons. I want to say thanks to Selva Demiralp and Sevcan Yeşiltaş for sharing their insights about the costs to the world economy, that is to say to us, of not vaccinating everybody on the planet and how we're going to maybe achieve that goal.

**John Torpey** 37:13

Remember to subscribe and rate International Horizons on SoundCloud, Spotify and Apple podcasts. I want to thank the Otto and Fran Walter Foundation for its support for our Europe-related programming. I also want to thank Hristo Voynov for his technical assistance and to acknowledge Duncan Mackay for sharing his song International Horizons as the theme music for the show. This is John Torpey saying: Thanks for joining us and we look forward to having you with us for the next episode of International Horizons. Thanks very much.

**Selva Demiralp** 37:48

Thank you