

Sguardi sul Futuro

Prevenire e adattarsi ai cambiamenti climatici

Sergio Vergalli
intervista
Robert Pindyck

Vergalli

Okay. Good afternoon. We are here for the sixth interview of our series. The title is Free Fall from the Future. We Professor Robert Bediako from the Law School of Management at the Massachusetts Institute of Technology. Thank you very much, Robert, to be here for all with ASA. So we started our interview. Sorry, start. We were first question, you think, is it possible to pursue the net zero emission target by 2050?

Pindyck

No, I don't think it's possible. Well, let me put it this way. It's extremely unlikely we can ever be sure about things. You know, the future is uncertain. It was a lot about climate change. It's uncertain and emissions that are uncertain. But I think it's very, very unlikely that we will have near zero by 2050 in the next 30 years.

Vergalli

Okay. Thank you very much. Now, my second question is a question about the adaptation and mitigation. You recently published a book titled This Climate Future Adapting, Adapting to Climate Change. This book is a very interesting book about is that the climate's future is on the future and also the role of adaptation and also mitigation. So the book is online and it's possible to buy Buy Your Kindle at the moment.

And we read published in August about this. The question is, we're following that. We'll be focusing on the fight against the climate change. What is your opinion about the mitigation versus application strategies? Should there be a perfect balance between the two or should we prioritize one of them?

Pindyck

Well, right now I'm not quite sure what you mean by mitigation. If you mean reducing emissions, averting climate change or you mean something else by mitigation. What is your what do you mean by mitigation?

Vergalli

Mitigation. And are all the action that dictated to account in order to avoid that? Okay. Yeah.

Pindyck

Sure. You know, right now, all the discussion is about mitigation. Everything is about reducing emissions. As you said in the first question, can we reach net zero? And there's very little about adaptation. And I think that we need to do much more. Without hesitation, it's not a question of 5050. Right now, there's very little emphasis on adaptation. I think we're going to have serious climate change.

We are going to have increases in temperature, likely well beyond two degrees. And that means we're going to have to use adaptation much more.

Okay. Thank you. Another question is on the future. Which issue on other than climate change would you prioritize the for our future, for example, inequalities less developing countries, space economies, bioethics or other things.

So, you know, I've written a fair amount about this, about catastrophes, global catastrophes that we have to think about. And climate is certainly a potential global catastrophe. It could well be a catastrophe. We don't know. But there are others. An example is pandemics. COVID has not been terrible in the sense of the Spanish flu of 1918, 1919.

But it is quite likely, quite possible that the world will see other pandemics in the in the future much worse than COVID. And we're not ready for that. And we should be. There are other things. Nuclear terrorism is a real possibility. It would destroy the world economy, would do terrible things. Never mind nuclear war increases in nuclear weapons proliferation is a terrible problem right now.

Bioterrorism is a serious problem right now. So there are a whole variety of things that we have to worry about in addition to climate change that could be catastrophic, that we're really not thinking much about.

Vergalli

Okay. Thank you very much. Now we are going to more in depth in these questions as we start looking at something related to net zero emission. So we Professor Bediako, so we are working on this as we are trying to figure out some

answers to this. So first of use about the net zero emission, do you think it is possible to pursue the net zero emission target by 2050?

Pindyck

Well, as I said before, I think it's extremely unlikely that we will meet a net zero emissions target. I mean, we can talk about it. We can make it a target, but we're not going to reach it. And I think we have to be realistic about that. We're simply not doing enough. The world is not doing enough. And, you know, Europe is doing the most.

If you look at Europe and you look at CO2 emissions in Europe and UK and then to include the UK with Europe, it's doing the most and it's reducing emissions. I don't even think, however, that Europe will reach net zero by 2050, although it may come close. U.S. is doing much less, much, much less right now. There's almost no chance the United States will reach net zero.

And then you look at Asia, you look at not just Asia, but also Russia, Brazil, some of these large countries, Africa. And then you have Bangladesh, Pakistan, India, of course, China, Southeast Asia, Thailand, Vietnam and so on. Their emissions are increasing and are likely to continue to increase over the next ten years. There's just no way that we can realistically expect those countries to even come close to net zero by 2050.

So there's nothing wrong with a target. There's nothing wrong with saying we should we should try to reach net zero, but we have to be realistic about what's going to happen. We're not going to reach net zero. It's just exceedingly unlikely that we'll reach net zero. And so we have to think about what that means. What are we going to do, if indeed that's the case?

Vergalli

Okay. So now we would like to speak about more in depth about also adaptation and mitigation of this action in order to reduce CO2 emission and so on. So we have written a book on these titled Climate Future Advancing, Adapting to Climate Change, which is possible to read about mitigation also. Is it possible to maintain the temperature under the target?

These is possible to reach, which is the probability to reach of a target or to maintain the temperature under this ceiling. And also which are also the other option in order to to to be prepared in order to a possible increase of temperature. So if the question is related to this, is focusing on the five degrees climate change, what is your opinion about mitigation versus adaptation strategies to be a perfect balance between the two?

Or should we prioritize one of them?

Pindyck

Well, you know, I talk quite a bit about this in the book. The book is called Climate Future Averting and Adapting to Climate Change and in the book, I explain that almost all of the emphasis right now is on mitigation, reducing emissions. That's almost everything we're doing is reducing emissions. And that's good. That's nice, that's wonderful. But we have to be realistic.

And, you know, there's what we want to do and should do and what we will do. And as I said, the master to your previous question. Realistically, emissions are going to continue to increase globally over the next decade. We're not going to reach net zero in the next 30 years. And that means that is likely to be certain, but it's likely that temperatures will continue to increase and that the global mean temperature increase will be greater than the two degree limit that climate scientists have said is is serious.

That limit is quite likely, quite possible that the temperature increase in the next 30, 40, 50 years could reach 30 degrees Celsius or even more. We don't know, but it's possible and in fact, likely. And that means that we have to think about what we're going to do in that situation, and that's where adaptation comes in.

So as we expect the temperature to increase, we ask, well, what would that do? What would the impact of that? Would it cause, for example, would sea levels increase by how much would it lead to flooding? We don't know what would happen to sea levels. There's a huge amount of disagreement, but it's certainly possible that we will see an increase in sea levels and an increase in the frequency and severity of hurricanes.

And that could indeed mean that we will see flooding in low lying areas in countries like Bangladesh, Thailand, but also in cities like New York, Manhattan, which you might remember during Hurricane Sandy, southern Manhattan got

flooded. So we need to do adaptation. We need to adapt to that possibility. And that might mean building seawalls and dikes. Much of the Netherlands is below sea level.

If the Netherlands did not develop this dike system, the Dutch system of dikes, it would be underwater. And so we need to think about doing those kinds of actions to reduce the chance of flooding. Let me mention one form of adaptation that's very controversial and that environmentalists don't like and that is that that is climate engineering, atmospheric engineering.

What you do is you inject into the atmosphere, the upper atmosphere particles of sulfur or sulfur dioxide, which combines with water to create a haze of sulfuric acid. And what that does is it doesn't get rid of carbon dioxide, but what it does is it blocks the greenhouse effect. It prevents much of the warming effects of carbon dioxide.

So this kind of geological engineering, this kind of radiation management, injecting sulfur sulfur particles is something that is controversial because it does not deal with the buildup of CO₂, does not deal with the possibility of ocean acidifying ocean so that many environmentalists don't like doing anything to change what's in the atmosphere. But it's something that we need to think about and get ready to use should we face an impending catastrophe, climate catastrophe?

So that's an example of something that we need to do work on. We need to think about. And I talked a lot about this in the book and explain how that would be done and what the kinds of activities we would need to do now to get ready. So in the book, I talk about a variety of things that fall under this general area of adaptation.

Seawalls and averting flooding is one example. Geoengineering is another example. But there are others. And I think that, again, it's not a question of do 5050, should we have equal amounts? We do what we can to reduce emissions. But we have to know, we have to be realistic and expect that there's a good chance we're not going to meet the targets that we're talking about.

And therefore, we have to start working on adaptation to do much more than we're doing right now.

Vergalli

Okay. Thank you very much. So the third question is more about other problems is also related to so, you know, this series is called Free Fall. So in the future, we're speaking about the future. I am I studied a lot on one of your book of book is that was written about investment under uncertainty. Looking at the future and for me is very, very famous because I started on business so my research just started on this and in this book is we are speaking about the uncertainty in your new book, which is also very important for also this topic we are speaking about, though.

You're speaking about climate future. So we are looking about the climate change in the future and uncertainty. So they think these to ask which are other elements related to the future. So the question is which issues are there? When climate change? Would you prioritize them for our future? For example, inequality. Lesley Battle to countries space economy of bioethics which is.

Pindyck

Well look there, there are many things that are going to come up in the future, some of which involve ethical decisions, political decisions, many things. And, you know, we're now we can now clone animals. And presumably, if we wanted to, we could probably clone you. Is that ethical? I'm not going to give an opinion on that because I'm really that's not my expertise, but it's clearly something we'll have to be worried about and think about in the future.

I would say one thing about something like that and that is related to nuclear weapons is one of the biggest fears that I have is the possible military of nuclear war, which is becoming more and more real and more and more problematic as proliferation of nuclear weapons grows. And that is that if you look at history, what you see is that when you're able when people can do something, when they're able to do something, they will do it.

If countries are able to create nuclear weapons, they will. I think that people societies are able to clone, whether it's animals or people. Eventually they will just because they can. That's just my own thought about what is likely to happen. But in terms of what we ought to worry about, my concern is global catastrophes, potential global catastrophes. This is something I've written about quite a bit in the last five or eight years.

And how do we think about averting catastrophes and what do I mean by global catastrophes? I mean things that could affect the entire world and have a severe impact on world GDP, welfare around the world and so on. So a pandemic is a

good example of that. The Spanish Flu of 1918 wiped out, killed close to 4% of the population of Europe in the United States.

It was devastating, much, much worse than the COVID pandemic that we're dealing with we have been dealing with in the last two years. And if you look at what the biologists and virologists are saying, including the CDC, Centers for Disease Control, their reports, the development, the these new viruses are very, very likely to arise. And they could be much worse than the COVID pandemic that we're dealing with now.

So we need to do much more. I think the world needs to do much more. Theory of future pandemics. That's just one example of something. And, you know, climate change, of course, is also could be we don't know. It could be a catastrophic thing in the future. But here's something that I think is even more likely, and that is nuclear terrorism. I think it's quite likely that we will see in the next 20, 30 years terrorists getting a hold of a Hiroshima grade nuclear weapon and setting it off in one or more large cities in the US or Europe or somewhere else in the world. That would be devastating. It would be devastating not just because of the event itself.

It could kill hundreds of thousands of people, but because of what it would do to the global economy would have a devastating impact on the global economy. Then there's bioterrorism because, you know, terrible viruses can arise on their own. For example, the way Kolbert did or the way the Spanish flu did. But they can also be engineered. And as we get better and better at engineering harmful viruses and bacteria, terrorists can use that technology to engineer bad things, bad microorganisms that could spread and create havoc.

And we don't do anything about that. We don't talk about that. We don't like to think about those things. These are not things that are happy to talk about and people don't talk about it. So right now, the news is mostly about climate. It's fine. It's important to a secondary extent. It's about pandemics, but not enough. We don't worry enough about it.

We're not doing enough. And there's almost no discussion, very little about nuclear terrorism, bioterrorism, nuclear proliferation, the chance of nuclear war, these things, cyber attacks, cyber warfare. I mean, I could go on. You can use your imagination. These things don't get the attention the climate is getting. And that's unfortunate because I think the world has to be ready for other terrible things that are global in nature and could easily occur in the next 20, 30 years.

Okay. Thank you very much. So I have other question. So the moment if you agree, so buy that. Now we can finish this part, the Soviet Party's recorded part in general. I have a sample question to add. If you have time, we discuss. Yeah, after that, sure. We can also cut and paste and also add the visa sentences.

Be you answer if you agree at the end all the movie will be all the video will be sent to you in order to whoever your approval. Okay, so sure about this. I have a two questions. So the first one is about the about the catastrophes, what we can do. So and this time there is no information on this, no debate on visa and only solution is only adaptation.

So we have to adopt to also be certainly a nuclear terrorism and so on, which is where our possible reaction or we can do from the political point of view, which could be another. I'm more Ashkenazi and less individual and more in group of if there is a possibility. I don't know your opinion.

So what exact? I'm a little confused. What exactly are you thinking about here?

Vergalli

But we would expect it to catastrophes. We create what we can do. What what can we do?

Pindyck

Let me give you an example. Let's talk about nuclear terrorism. Yes. How would that happen? It would happen because once somebody gets high grade uranium, highly enriched U-235, enriched to 80, 90%, they can make a bomb very easy. So anybody with good engineering or physics background, if they were given enriched uranium, could create a bomb, right? Yes. The real problem is enriching uranium.

That's what we worry about, what's happening in Iran. We worry about the enrichment that they're enriching uranium to a high degree. Yeah. So let's suppose terrorists got a hold of enriched uranium. They bought it from North Korea. They bought it somewhere else. They did it themselves. Somehow they got the enriched uranium and create a bomb. What would they do?

Well, first of all, they could you know, we talk about North Korea sending a missile with their only set of missile. All they need is a boat, a fishing boat. Put the bomb on a boat. Bring the boat in near the United States to to the West Coast and set it off. That's all they have to do.

So but we need to do is gather much, much more intelligence. We need to find out much more about what's going on. We need to do much more to intervene, find out where uranium is being enriched and stop it. That might mean military action. That might mean tracking shipments of enriched uranium in order to prevent the kinds of terrible, catastrophic events that I'm talking about.

We're not doing enough right now. We're doing very little in this regard, and we need to do much more. So that's one example. You know, another example is pandemics. What do we do about pandemics? Well, one thing we can do is set up the infrastructure, set up the mechanisms to create new vaccines, rather than wait for the new virus.

You know, for example, monkeypox, this new thing that people are talk about, rather than wait for the next pandemic for a new a new back, a new virus or bacteria, start now to build up the resources to quickly create vaccines rather than have a delay, have everything in place so we can react quickly and produce many millions, hundreds of millions of doses of vaccine quickly.

We're not doing that. That costs money. And the payoff is uncertain because we don't know when the next pandemic will occur. But there's something we should be doing to prevent or to prevent the impact of another pandemic. So those are examples.

Vergalli

Okay. About the future. Another idea that I have in mind that is so looking at with technology, maybe with technological deltas or with energy transition, now the learning curve about the cost of a problem but actual cost for us photovoltaic, wind energy and so on are declining so they can have canal paths in order to substitute fossil fuels.

Even if we have a strong problem related to capacity. This is my point of view in the technologies. There is also nuclear fusion and that, I don't know, maybe could help. But if we we are able obviously very, very defensively probably to be a success in that and to optimize upcycling the these new technology which could easily your opinion about be for the future.

Pindyck

So yeah I would forget about fusion so just a mention to you, you know many, many years ago when I was an undergraduate, it was a long time ago I actually studied physics and I had planned to go to graduate school and then study plasma physics, the physics of controlled nuclear fusion. I'm very glad I didn't because economics is more fun and because fusion has gone nowhere and it's something that's completely hypothetical.

I'm talking about controlled fusion, not bombs. So it is extremely, extremely hypothetical at this point. It's not something that we're going to have available in the next 20 years, almost for sure. And we already have the technology for nuclear power, vision technology, and we now are developing much better, cheaper, safer nuclear reactors. And that's what we need. And by the way, this is also something I discussed in the book Nuclear the Use of Nuclear Power.

We're going to have to use nuclear power if we want to decarbonize the electricity sector, we're going to have to use nuclear power. And if we don't, we're just going to make life so hard that it won't happen. We won't succeed. We must use nuclear power is generally safe and the new technologies that are already coming about and are being developed will make it cheaper and safer still.

And it's something we must invest in. So nuclear fusion forget about. But nuclear, nuclear power, fusion reactors, those are things that we have to be spending money on. We have to plan to invest in and we have to rely on what Germany did. Deciding to get rid of it, shut down its nuclear reactors was stupid. And the result is they're using more cold than they would have had to otherwise.

This was a terrible, stupid decision. I still can't figure out why they're sticking to it now with what's going on in Ukraine and the incredible increase in the price of oil and gas. Shutting down nuclear reactors that were operating perfectly makes no sense. It's a shame that this has happened. So we're going to have to rely much more on nuclear power, not fusion, but traditional nuclear fusion power.

Vergalli

Okay. I think it's I think the question is, is I agree about the Ukraine war, which is your opinion about this problem related to the energy security, energy dependance of European Union, especially, obviously on a European Union, which is, can I say your opinion about this situation? So is a you said that at the moment today today they're still in the stream of the piper for former gas importer in Germany stopped the because of some problem related to maintenance of a pipeline.

We don't know if we can we will be able to restart production. One third of our total imports from Russia stopped from Gazprom. And so Europe at the moment is in big crisis. So this is related to so a big picture is very complicated because wherever our energy security. So the first question on this afternoon I have another one more wider on that problem related to stagflation.

So which is your opinion about the situation in Europe anyway, next month.

Pindyck

Or the next month? I mean, the next month I think prices will continue to stay high. Gas, oil, and there's very little that can be done. I think Europe has to begin figuring out how to reduce its dependence on natural gas and oil. Is that simple? Think again. Shutting down nuclear plants is the act absolutely the opposite of what they should be doing.

So you know, if they can restart those nuclear plants, that would be a good thing to do in the next month or next six months or next year. But the fact is that prices will be high. There may have to be rationing. People like that, you know, they like to drive their cars, they like to heat their homes.

They like to turn on the lights. They like to use energy. They don't like to be restricted. But this is life. It's going to be difficult and it probably will get more difficult. So they should do whatever can be done. Now, let's start with nuclear power at the very least.

Vergalli

Yeah. And distant. So it could be maybe on impulse in order to go I don't know it to change in our case also with defense in our cases changing a little bit, the independence of Italy, for example, from Russia, we are starting to increase the imports of for Algeria from outside of Bijan because we discovered. But I have to say that that is a problem to continue to exist in Italy because I'm looking at some documents in 2018, we have the same problem more or less you are problem accident in the in the pipeline from Russia blast is related to uh so the macro economies of India if your European young again so I remind

this point that so when we want to end every time there is a crisis and fortunately economical crisis have increasing before the frequency in the last year reaction of the macroeconomics is that to increase their money supply in order to knowing that we discovered after 2008 2007 in Europe 2020 after COVID 19, and that now varies a huge amount off.

And our money supply in the system and the visit worked until the inflation was very low. At the moment we have an inflation rate is totally driven by the shortage of energy. So what you able to see and that probably is that but in the same time of the central banks have started to reduce the money supply in order to only one in the control the probably the inflation on the other end probably because a huge amount of money can also create too some bubbles.

But these my opinion now a lot of amount of money means a huge size of the financial system that can move the and can create the some I can't say totally different with respect to the financial value of firm and the is real. You know if I look at the Dow Jones level today is higher than the 2008 level in 2008 that we had the bubble today is another situation.

So looking at the game of the situation, so we are in a situation in which inflation, war, probably also recession and the money supply rate is very, very high, you know, which could be very superior future policy in order to control a probable recession. If, according to your opinion, we are going to our recession.

Pindyck

You're asking if we're going to have a recession coming in the next year or two?

Vergalli

Yeah. First question. Yes. Which could be the very best solution, not from a political point of view. So which are money supply or policy? So which are made possible for us? Good.

Pindyck

So first of all, just a couple of things about inflation. So you said inflation in Europe is doing due entirely to energy. Oil and gas is partly due to energy, but is also due to increases in food prices that have nothing to do with energy. Grain

prices that have increased because of Ukraine, because of the war in part, and because of poor harvests in other parts of the world.

So it's also due to increases in food prices and it's also due to supply chain problems. For example, prices of cars, automobiles in the United States, in Europe, elsewhere have risen in part because automakers cannot get the chips they need to produce the cars. So the result is that used cars are more valuable, prices go up and new cars are in short supply and their prices go up.

So there are a number of reasons why we have inflation in the United States. The stimulus the stimulus spending has also been a cause for the stimulus spending on infrastructure. So has also been because in terms of what central banks can do naturally, they're going to try to cut back on on the current amount of money that's in circulation.

Interest rates are going to rise. Is this going to create a recession? I think that things will probably slow down relative to what they are today. I don't know whether we're going to actually see a recession, but we probably will see something in the way of a slowdown.

Vergalli

Okay. Okay. This is probably possible. So which could be very possible. So it's possible, again, to increase the amount not it is not possible to do know how to increase the money supply in order to boost economy. So which could be more possible reaction of the system in order to reduce a possible effect in the future, we will observe a new recession, which could be our weapons in terms of policymakers.

Pindyck

I mean, what's your policymakers do if we do enter into a recession? I mean, I think what will happen if we enter a recession is the first of all, that could be monetary easing moving in the other direction, depending on how severe the recession is. If it's a mild recession, we may not want to do anything because on May one, we may feel that reducing inflation is more important than than reducing the impact on GDP in the short run.

So it may be that we don't want to do anything. I think we have to see how things play out. I don't think it's possible right now to say this is what should be done. The other thing is in Europe, there's more of a social safety net than there is in the United States. So a recession in Europe is less harmful to people than it would be in the United States because of the safety net.

I think in the United States, we have to do more to fix the social safety net so that if we enter into a recession, it won't be as devastating to lower income families as it would be otherwise.

Vergalli

Okay. Okay. Thank you very much, Ehud Olmert. Thanks. It was a pleasure and an honor to speak with you. And also for we saw our interview. And so thank you very much.

Pindyck

My pleasure. And I hope you find the book and its future interesting to read.

Vergalli

Yeah. Thank you. Thank you. Thank.