Thoughts on [Billete de Villemeur & Leroux J (2019)] "Tradable climate liabilities…"

Coly Elhai (22 October 2023)

The theoretical purpose of insurance is to smooth utility over states of the world. If you value money more in one state of the world (you're hit by a hurricane) more than in another state of the world (no hurricane), then you might be willing to have less money in the good state (buy insurance) in exchange for more money in the bad state. Actuarially fair insurance will charge you a premium equal to however much you expect to get back: probability of bad event times cost of bad event. In practice, insurance companies can charge more than that amount because people are risk-averse, and so they're willing to pay more than expected damages for the security of knowing that the insurance payout will make the bad state less bad.

But, insurance doesn't make sense when you know for sure that you're going to be in the bad state. In that case, the actuarially fair insurance policy would have to charge you the full price of the bad event, so you're not any better off with insurance than you would be without it. With climate change, even though there is a lot of uncertainty in exactly how bad things will get, we know for sure that some places will be hurt much more than others. An actuarially fair insurance plan for climate change would charge small island nations and countries in South Asia far more for insurance than the relatively safe countries of the U.S., northern Europe, etc.

Of course, that's not what this paper is proposing. It proposes that countries' price for insurance is set according to their emissions, which are higher in exactly the places that expect to benefit least from the insurance plan. The paper acknowledges that this dynamic would make some countries unwilling to buy in. They say: "Because the mechanism operates transfers that are aimed at compensating harm rather than guaranteeing participation, some net contributors may not see participation as an improvement of their own condition over the business-as-usual scenario. This is the price to pay to correct for the inequalities generated by the spatial idiosyncracies of climate harm." What they don't acknowledge, as far as I can tell, is that pretty much all rich countries would opt out, because pretty much all rich countries emit a lot but have relatively low expected climate damages. All rich countries would conclude that such an insurance scheme would involve high premiums and low expected payouts, and so opt-out unless out of altruism or guilt.

This is exactly the issue at the heart of actual climate negotiations. This insurance plan amounts to a global carbon tax with proceeds to be paid out according to harm, where the only wrinkle is that the amount of the tax varies according to total climate harms instead of being some fixed amount (such as the social cost of carbon). The claim that beneficiaries are not known up front is basically untrue: we already know which countries will be harmed most by climate change, even if we don't know exactly how bad it will get, and they are not the countries with the highest emissions. High-emitting countries would refuse to join this insurance scheme for the same reasons that they refuse to support a global carbon tax. There has never and will never be a point at which the US is more interested in insuring against climate risk than Sub-Saharan Africa or South Asia.

One more issue: rich countries can and do self-insure. The US borrows in bad times and (in general) pays back its debts when times are good. This is something it is able to do because it is rich and lenders expect it to be able to pay its debts. Poor countries, and especially poor countries with large expected damages from climate change, can't do this because lenders see big risks that these countries won't be able to pay back any loans. That means that these countries either can't get loans at all, or pay very high interest rates for those loans. So again, the US and countries like it would opt out of a climate insurance program, while the countries that would benefit most are also the poorest and face the most climate risk.

There are plenty of other things that would make implementation of this idea difficult, including measuring what damages are due to climate change rather than other forces and actually enforcing payments. But, I think the key issue is that rich, high-emitting countries wouldn't want to participate, just like they resist paying poor countries for climate damages today. I see this as a nice idea in theory that relies on some very strong assumptions (e.g. that all countries face the same risk, that this risk is uncorrelated with the benefits of emitting, that no one country's emissions affect the global harm) and so would not fix the issue in the real world.

If you are interested in other work on theories of global climate action, Bård Harstad is a professor who visited Harvard last year and taught my class on environmental theory. He has a lot of very theoretical work looking at what kinds of mechanisms might get countries to opt-in to global climate agreements. I can try to summarize any that you are interested in- they might be unintelligible to you, since they are still somewhat unintelligible to me.