



The Climate Casino: Risk, Uncertainty, and Economics for a Warming World

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Climate change is profoundly altering our world in ways that pose major risks to human societies and natural systems. We have entered the Climate Casino and are rolling the global-warming dice, warns economist William Nordhaus. But there is still time to turn around and walk back out of the casino, and in this essential book the author explains how. Bringing together all the important issues surrounding the climate debate, Nordhaus describes the science, economics, and politics involved—and the steps necessary to reduce the perils of global warming. Using language accessible to any concerned citizen and taking care to present different points of view fairly, he discusses the problem from start to finish: from the beginning, where warming originates in our personal energy use, to the end, where societies employ regulations or taxes or subsidies to slow the emissions of gases responsible for climate change. Nordhaus offers a new analysis of why earlier policies, such as the Kyoto Protocol, failed to slow carbon dioxide emissions, how new approaches can succeed, and which policy tools will most effectively reduce emissions. In short, he clarifies a defining problem of our times and lays out the next critical steps for slowing the trajectory of global warming.

The Climate Casino: Risk, Uncertainty, and Economics for a Warming World Details

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From Reader Review The Climate Casino: Risk, Uncertainty, and Economics for a Warming World for online ebook

George F Greenwald says

Having just been awarded the Nobel Prize for economics, William Nordhaus undoubtedly has a very good reputation in the field of economics. However, as an author, and as a scientist, he definitely shows off his weak sides to the reader.

He makes very good arguments for global climate change taking front seat in the survival of the world, and primarily on the cost of that change, primarily having to do with the rise of CO₂ in the environment.

Two serious problems with the book: 1. He repeats the information ad nauseam to the point of being difficult to keep the reader's interest; 2. Some of the suggestions for reducing the CO₂ in the environment are scientifically nonsense. Not poorly stated, but seriously wrong.

Not a book I would recommend for either people interested in economics or global climate change.

Samuelthunder says

Climate change is to be the defining issue of our time. Although scientists have been issuing warnings concerning the dangers of unmitigated carbon dioxide emissions for several decades now, to date little to no substantial action has taken place. As the world delays, the situation grows more dire, and the scale by which society must undergo dramatic readjustments becomes ever greater. How, then, have we landed in such a situation? Why have the warnings of climate scientists not been acted upon?

This, essentially, is the question that William Nordhaus's 2013 book, *The Climate Casino*, seeks to explain. The answer, as one may have guessed, lies not in the realm of natural sciences, but in politics and economics. Having received the Nobel Prize in economics in 2018 for his work in this field, if anyone should be writing a book on the subject, it seems Nordhaus is well-qualified.

What results is a rather slim book written for the layman that sets out the case for making climate policy based on sound economics – namely to adequately price carbon emissions. In clear, easy to digest prose it lays out the science behind why carbon dioxide and other greenhouse gases lead to a warming climate; the resulting impacts and uncertainties of a warming climate; what options are available to us to address climate change; what good climate policy should look like; and, finally, why politics has gotten in the way of necessary action.

It's a lot to cover, and finishing the book may not leave one an expert in any or all of the various topics, but certainly you should be able to pick up some new insights and leave with a more cohesive understanding of the climate change problem. It should be required reading in all high schools.

Richard Subber says

I think Prof. Nordhaus has given us a remarkable achievement: a solid, sobering, stimulating, scientific,

scary book on human-caused global climate change, that leaves no room for doubt about the prospect that climate change deniers are going to sweat more, like the rest of us, in coming decades.

This is not a book about Apocalypse. If anything, the Sterling Professor of Economics at Yale University writes with an even temper and drily matter-of-fact language that is a teensy bit annoying, given the massively dangerous, initial impacts of climate change and global warming that are already unavoidable. I think the principal value of *The Climate Casino* is that Nordhaus lays out the economic (cost/benefit) framework of policy considerations and possible remedial steps that the nations of the world, and mankind, can take to deal with the fact that we're putting too much carbon dioxide into the atmosphere.

In simplest terms, he says there are many things we can do to mitigate global warming....some are more costly than others and some are very expensive....some folks and some companies and some countries will have to pay more of the costs than others.

I was surprised to read his conclusion that humans can likely survive the initial moderate impacts of global climate change/warming without substantial social and economic disruption, if we start seriously working on it now—there is a big pricetag, but we can tolerate it.

(I mention, for the record, that Nordhaus carefully discusses the unpredictable, and more than trivially possible, catastrophic “tipping points” in climate disruption that might occur regardless of what we do or don't do—think Dennis Quaid and “The Day After Tomorrow”).

We're going to have to stop using coal around the world, or figure out how to burn it cleanly. And more generally, we're going to have to figure out how to require companies and individuals to pay the true cost of burning fossil fuels, that is, the present and future cost of the damage those fuels cause to our environment and to our grandchildren's prospects for survival.

It was remotely heartening to read Nordhaus' estimate that we have a reasonable chance of dealing with global warming if we get the ball rolling now, and make sure everyone pays the price.

This is the only planet our grandchildren will have to live on. We must do the right thing for them.

More reviews on my website:

<http://richardsubber.com/>

Fred Rose says

A very good book on climate change, not for the casual reader though. It's more about the economic impacts/risks (hence the casino analogy) and solidly based on good research models, which I liked. Much of it is from the Yale models, so I don't know how good those are, generally a variety of models is better. But it's a very readable book, and the view of things worth working on and things that are a waste of time/money was good. The author is a big proponent of carbon tax as the best way to deal with CO2 emissions, he makes a good case for them.

David says

I can recommend it for the general reader who is interested in how a number of ingredients come together to inform the consensus view of what needs to happen to address climate change: climate science, assessment of the impacts of climate change, scenarios of future greenhouse gas emissions, options for reducing emissions, public opinion, policy, and politics. It's a pretty comprehensive treatment of these and other topics from a fairly mainstream point of view, by someone who's been active in the field for decades.

Some of the details that Nordhaus leaves out are important. Probably most notably, many people even in the mainstream (me included) think that there are important pieces of policy that need to go along with Nordhaus's "just get the price of carbon right" approach.

Lucas Brandl says

This book provides a great overview of the science behind climate change and the imperative to respond through economic means like a carbon tax. There is a lot that is still unknown about climate change. For example there are going to be tipping points where higher temperatures create dangerous feedback loops and accelerate the process. However no one is sure at what point those tipping points will occur. Unfortunately even the two things that are considered a scientific consensus (that the Earth is getting warmer, and that humans are accelerating the process by adding greenhouse gases to the air) are considered highly debatable. Americans are more split on those two statements than they were 20 years ago and it is largely the result of the politicization of a scientific question. Many of the things Nordhaus proposes to raise the price of carbon through a tax or cap and trade seem like logical responses, but they feel almost unattainable anytime soon.

Lynn says

Though there are times it gets a bit slow (probably because it is by an economist) this is a thoughtful exploration of how we can limit the damage of climate change without bankrupting everyone. Everyone from both sides of the debate should read this book, which means probably no one from either side actually will.

Ricky Mon says

The Climate Casino is an unbiased, common sense and well-written guide to the effects, economics and policy options for dealing with carbon emissions and climate change. The book is simultaneously accessible and technical, presenting difficult science and economic concepts in readily understandable terms. Dr. Nordhaus should be commended for this important contribution. I hope he will provide revised versions as the science and analysis improves over time.

Kim Slack says

Sober analysis looking at data as economist and scientist is what is promised and delivered. The analogy of a casino is apt as he explains that there is still uncertainty in many elements of the the science and economics. What becomes very clear in this logical approach is that we're "throwing the dice" if we do nothing or not. But if we want the odds to be more in our favor, we better be looking very seriously at taxing carbon--like now.

I've read half a dozen books on climate change, this one is the one I chose for my book group, since it is

clear, not ideological and practical.

One part I liked: He explains how there have been many dis-information campaigns in the past, such as with the tobacco industry denying that smoking caused cancer. He shows the challenge we face now is much more immense, since the window for preventing much more costly adaptations is closing rapidly.

This book provides me the knowledge and language to speak out to my legislators and neighbors without sounding like an ideologue.

Leoncio Montemayor says

A good, well-explained book for those who are new to the field of climate-change economics. However, those with some previous working understanding will find it very easy and simple. However, the fact is that no matter the level of the reader, Nordhaus creates a stylistic narrative to explain the greatest externality of our time.

David Cooke says

I think this is a very solid intro to some of the challenges surrounding dealing with climate change, but it has some flaws. The biggest issue with it is really just that it's not capable of changing minds, though Nordhaus is very upfront about that in the beginning. But I think a bigger concern is just that it feels too abbreviated - on the one hand, he covers all the major territory and brings in a lot of ideas, but too often (particularly in areas involving skepticism about the science and everything to do with adaptation) he glosses over some areas where a quick rebuttal would be better. Obviously the other major issue is just that he's an economist and is in crazy love with carbon taxes, although after totally biffing on a section on transportation policy (seriously, he gets it wrong in a bunch of different ways) he ends up rounding out the chapter discussing how some of these non-ideal policies might actually be a productive (albeit flawed and insufficient) way of going about things.

I want this book to better because it's got a lot of good points to it. I think it makes a lot of the best arguments of the Skeptical Environmentalist but put in a more accurate and realistic picture. But the flaws really hurt its ability to change minds, even those who might be more open than the crazy conservative skeptics. I feel like too often he's too close to his argument and doesn't realize where it needs to be made more compelling, and that's kind of the fault of an editor. He also doesn't get the arguments around wildlife and ecosystem services right at all, which is a little frustrating. Similarly, the behavioral econ was only touched upon, and I think that is the sort of discussion that can undermine his major policy desire (carbon tax), so I wish maybe it had eeked through a bit more.

It's interesting to note that some people complained about the number of charts/graphs because they are very simple and illustrative, and if you're interested in reading about this issue from an economist, you should obviously be capable of dealing with them. And I think if you do have an open mind but want to think more about how one balances policy decisions in this area, this is definitely a book worth reading. But I just don't know that it is going to change anything.

Athul says

This is an excellent book—well worth reading, especially if you consider yourself a skeptic about climate change, but even otherwise. The author does an excellent and fair job of walking through the science on anthropogenic global warming—both the certainty that it is happening and the distinct lack of certainty about the impacts. For example, in one of the more reassuring parts of the book, he explains that the highly publicized 2C target is determined less by the science than by the optics or marketing of global warming. A 3C target might make more economic and environmental sense.

Indeed, one of the strongest features of the book is that the author integrates the economics of combating climate change throughout his discussion of the science. In particular, I found his treatment of the reasons to apply discounting in analyzing costs and benefits valuable, as well as his discussion of the merits of cap-and-trade schemes versus a straight carbon tax. If you seek a discussion of global warming that goes beyond the canned debates and virtue signalling that makes up most of the public treatment of the topic, this is your book.

Keith Akers says

This is a good but problematic book. Everyone concerned about climate change should be aware of it and the ideas it has, but some of these ideas are flawed, most notably what Nordhaus says about economic growth. What follows is my lengthy commentary.

The world has serious problems, such as climate change, peak oil, and resource depletion generally. Economists should be leading the charge on these types of issues, but except for the very few “ecological economists,” like Herman Daly, they say increasingly strange things about a parallel world which seems to have only a tangential relationship to the one in which we actually live.

A case in point is the recent book *The Climate Casino: Risk, Uncertainty, and Economics for a Warming World* (2013) by William Nordhaus. His book is quite insightful on several levels. *The Climate Casino* is a disturbing book, but unfortunately some of what makes it disturbing is not intentional on the part of the author.

On the positive side, his book is accessible to a reasonably smart person without any special technical knowledge. He believes that climate change is real and that we need to do something about it. He discusses “tipping points” in the climate that could dramatically escalate the impact of climate change. Another key point is that without international cooperation, dealing with climate change is much more difficult, if not impossible: “If you really thought that only half of all countries would participate [in a climate change pact], then aiming for [a maximum warming of] 2 degrees C is like hoping you can take Amtrak to the moon” (p. 218). It’s also impressive that he discusses the intricacies of negotiating a climate agreement across international boundaries, and in the face of intense partisan politics.

So this is by no means a useless book. But there are a number of very serious problems with his approach. Here are some issues:

1. Limits to Growth. The author doesn’t understand that there are basic limits on human activity, and that we’ve pretty much run into the limits to growth. He doesn’t really argue this point; he, like most other mainstream economists, just assumes that the economy is going to get a whole lot bigger. In fact, the economy is going to be so much bigger, *that future economic growth is going to help pay for the costs of*

dealing with climate change.

For Nordhaus, the economy of tomorrow is going to be vastly bigger than today's economy. Over the next half century to a century, poor and middle-income countries will improve 500% to 1000% (p. 145). On p. 80, he presents a chart which shows that the AVERAGE world per capita income will be \$55,000 in 2100, and \$130,000 in 2200, whereas today it is less than \$10,000. This means that the typical citizen of Chad or Somalia will, in 2200, have a better standard of living than I do today in the U. S. A. Even without factoring in population increases (9 billion? 12 billion?), this means the economy will be OVER 10 times bigger than it is today.

Nordhaus says: "This sounds like a fantasy, but it is the result of exponential growth of living standards" (p. 81).

Really?

Nordhaus is relying on future economic growth to pay for climate change mitigation and adaptation. We need some sort of explanation here. Most likely, it sounds like a fantasy because it *is* a fantasy. On the face of it, if the economy increases by a factor of 10, energy use will need to increase by a factor of 10, or perhaps (with hugely increased efficiency) an increase of a mere 3, 5, or 8 times over what we now use. Are we going to be burning 3, 5, 8, or 10 times the coal and oil that we now use? Or throw up huge quantities of solar panels and wind turbines? Or "decarbonize" the economy so that most of our wealth is going into things like poetry readings, massage therapy, or teaching?

Anyone who has been keeping up with the news knows that energy has become hugely more expensive in the past couple of decades; oil increased in price eight-fold between 1998 and 2013. Despite these *huge* increases in price, we have had only a *slight* increase in oil supplies, at a huge environmental cost as well (think Alberta tar sands, think Gulf oil spill).

Excuse me? Is this what economic growth is going to look like? Most likely, peak oil will occur fairly soon, and even maintaining the energy status quo will become quite difficult. Increasing energy supplies by a factor of 10, or even 3, needs some kind of explanation.

2. "No growth" alternatives. Nordhaus briefly considers a "no growth" alternative in trying to understand approaches to climate change. He acknowledges that the "no growth" alternative would have comparatively much lower greenhouse gas emissions(!), but feels that this is not acceptable because it would leave billions of people mired in poverty. The only way out for the poverty-stricken masses, he suggests, is through economic growth.

Nordhaus has completely distorted ecological economics. "No-growth," Nordhaus says, means "no new or improved products or processes—no growth in total factor productivity, to use the economist's technical language" (p. 81). Nordhaus footnotes prominent ecological economist Herman Daly, but it's fairly clear that he has not read Daly.

Daly specifically rejects this concept of a "no growth" economy. Daly says:

We define growth as an increase in throughput, which is the flow of natural resources from the environment, through the economy, and back to the environment as waste. . . . *While growth must end, this in no way implies an end to development*, which we define as qualitative change, realization of potential, evolution toward an improved, but not larger, structure or system. (Ecological Economics: Principles And Applications, Daly and Farley, p. 6, italics added).

Ecological economics *does not call for an end to economic development*, merely to physical growth.
(Ecological Economics: Principles And Applications, p. 64, italics added)

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The ecological economists clearly distinguish between productivity gains and total physical throughput. Total physical throughput is the problem. If you can make the economy bigger without increasing total physical quantities of materials and energy used, then hooray and more power to you.

3. Economic redistribution. Nordhaus sees economic growth as the only way to get the world's poor out of poverty. If Nordhaus had bothered to read Daly any further, he would have also seen that another key point of the ecological economists is that we need to redistribute the wealth. A lot of poverty in the world is simply due to the oppressive and increasing inequality. It is manifestly not the case that our only means to deal with poverty is to increase the size of the economy. We could redistribute some of the wealth out of the hands of the super-rich and give the poverty-stricken masses a stake in saving the planet.

4. Dealing with the climate in a declining economy. The really challenging problem — and one which I would much prefer to see economists address — is how to deal with climate change in a world of declining resources, instead of just assuming that economic growth will solve everything.

It's not impossible. When there is general recognition of a crisis situation, as when the Japanese attacked Pearl Harbor in 1941, the nation can rise to the occasion. A crisis will be needed to mobilize the country, but that will probably come soon enough. When resource depletion starts to bite and the economy starts to tank again, as it did in 2008, there will be a good opportunity to address the underlying problems.

We need to embrace limits rather than run from them. We will need to have buy-in from the lower classes, and that means income redistribution on a fairly massive scale. If there is assurance that our society will support those at the bottom — that we will not simply turn the poor into the homeless, as we are doing today — then it makes sense to ask people for wide-ranging changes in society and culture.

One effective way of combating climate change which will actually improve the economy is to eliminate livestock agriculture. Livestock agriculture is responsible for over half of all greenhouse gas emissions. Much of climate change is due to the radical changes in land use we have seen in the 20th century. The whole balance between plants (which respire oxygen) and animals (which respire carbon dioxide) has been upset, and the plant-animal imbalance is now responsible for a significant surplus of carbon dioxide. On top of that, all those cows are producing methane, a significant greenhouse gas. Switching away from livestock agriculture will substantially reduce medical expenses by removing the number one cause of disease in the Western world and a significant burden of society's expenses.

To really fight this thing we are going to need the maximum contribution of ideas and energy. This is where economists should come in, but it looks like they're part of the problem, not part of the solution. If you are *relying* on economic growth to pay for climate change, then your plan is fundamentally flawed.

Yofish says

Really more like 2.5.

I was really disappointed. The idea for the book seemed interesting: not really to talk about the science of

Global Warming/Climate Change, but rather to take an economist's point of view, to see how to deal with it, how to mitigate it, and how to avoid it. (He does accept that GW/CC is happening, is caused by human activity. But I don't think that matters much in what he's trying to do in the book.)

So there's stuff about whether regulation works, how Carbon taxes would work, how to get new technologies on line. There's also stuff about what the effects of GW/CC are (more about ocean acidification than I had really thought about) and what kind of economic effects they would have. He explained tipping points pretty well.

But.

There was so much glossing over of details. And repetition. And poorly described math-y stuff. And mysteriously labeled graphs. And, well, the writing is pretty bad in general. He seems obsessed with how we teach 8th graders to write: say what you're gonna say, say it, re-cap what you said. The prose is clumsy.

Maybe if I didn't have such high expectations (it's William frickin' Nordhaus!) I would have been more satisfied.

Hadrian says

Bill Nordhaus had specialized in environmental economics and modeling the effects of climate change, so his winning of the Nobel Prize with Ted Romer was a timely choice.

This book is written for an educated audience without much formal training in environmental science and economics and builds towards the scientific consensus that yes, the planet is warming, probably to levels not seen in the past five hundred thousand years, that this change is caused by human activity, that it will be costly to human society and other "unmanaged systems" in nature, and that the "balance of risks" is such that strong and immediate action is needed to reduce and halt emissions of greenhouse gases.

Nordhaus draws much from his own work, such as the Dynamic Integrated Climate-Economy model (or DICE model) of quantifying the effects of climate change, but also from many of his colleagues. His approach is in three distinct phases: 1) ecology, 2) economics, 3) politics.

In terms of ecology, Nordhaus classifies the effects of climate change as part of a spectrum of systems: "managed systems", which refer to most economic activity such as industry and healthcare, "partially managed" systems such as agriculture, forests, and other 'non-market' systems like coastal environments, and third, "unmanageable" systems like hurricanes, biodiversity, and ocean acidification. Nordhaus is more optimistic about the effects of climate change on "managed systems" because they are more the result of human management, and can be adapted, at significant cost, to a changing environment. Still more problems come with the other systems, where we don't really know how to deal with these changes, such as species loss or ocean acidification. He emphasizes because these systems are harder to quantify or measure, it becomes all the more crucial to avoid catastrophe with them.

Still, Nordhaus is more optimistic about human agriculture adapting, and this is one that worries me - where more developed societies with greater access to technology can deal with this, those "less developed" countries are at greater risk.

But to economics. I know the field is anathema to most, but I will try my best to parse Nordhaus' arguments

with the papers he cites and other details in the footnotes. In October 2018, the IPCC released a special report on global warming at a 1.5 °C, where emissions would need to reach a net zero by 2050 - or I have heard the use of a carbon 'budget', or limiting total cumulative emissions. This would be somewhere around 500 gigatons of CO₂, but I do not have the exact figure on hand.

The economic literature takes the form of a cost-benefit analysis and assigning a monetary-equivalent value to the environmental effects. This makes it easier to work within the Kaldor-Hicks compensation criterion - that is, policy actions are justified where the "winners" from a policy could compensate the "losers" so that no one is worse-off overall. Of course, environmental economics is such a vast issue that redistribution leads to eye-popping figures of costs of trillions of dollars between 2010-2050.

Second, there is the question of assigning dollar values to non-economic effects of climate change - which, interestingly enough, Nordhaus does not always do. He stresses their importance, but perhaps a species extinction or ocean acidification cannot be measured in this way. I understand why he's doing this, but again I wonder what this would do to the calculations of effects.

Third, there is the "discount rate", which is an attempt to measure present versus future costs and benefits, and I admit why any figures are chosen to represent human preferences is, I admit, beyond my ability to evaluate.

Fourth, and this is something I appreciated, is the question of 'tipping points', or single events that would cause a more dramatic change in the climate. This includes, but is not limited to, the loss of ice shelves in Greenland or Antarctica, or the release of methane hydrates from the ocean. Nordhaus says there are simply so many of these tipping points that we can't really rely on one alone as a factor, and so emphasizes the importance of climate mitigation.

But what is to be done? Nordhaus proposes a carbon tax on all emissions, starting with figures of about \$25/ton in 2020, and have the tax steadily rise over time. He also discusses the 'cap and trade' model favorably, but prefers the carbon tax, but *really* prefers for us to do *something*. Many other policies are lumped into the category "Second Best and Others", including emissions standards. Some policies with good intentions have bad effects when taken together, such as subsidies for lower energy emissions *and* a cap-and-trade regime.

The last section is on a political solution, and that's where I'm pessimistic for the near future.

I wrote more than I usually do for books, and please do not mistake this for unfounded or sniping criticism. Really as more of an engagement with his ideas, and clearly a reason to read his more scholarly work. Recommended.
