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BOOK REVIEW

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***Risk and Resilience in the Era of Climate Change*, by Vinod Thomas.** Singapore: Palgrave Macmillan, 2023. Pp. xxxi+201.

"Climate is an angry beast, and we are poking at it with sticks."
—Wallace Broecker

17 November this year will go down in history as the day when for the first time (in 174 years, ever since record-keeping started in 1850) global temperatures averaged more than 2°C above pre-industrial levels. Apart from this short-term spike, the year 2023 is on track to become the hottest year on record. Furthermore, long-term warming of 1.3°C has already happened and we are perilously close to the 1.5°C "safe" target. Some climate tipping points have already been triggered and several others are going to occur when the 1.5°C threshold is breached, as is very likely. According to a recent UNEP report, even if all countries fully implement their national climate plans (known as Nationally Determined Contributions, or NDCs), warming will be limited to 2.5–2.9°C at best. This poses huge risks to human civilization. It is in this context that this insightful and compact book becomes extremely important. As opposed to lengthy tomes on the subject, in nine tightly written chapters divided into two parts, Thomas comprehensively addresses the risks climate change poses and also how to build resilience to it.

The first chapter provides an overview of the book by way of distilling it into seven cross-cutting messages. The next four chapters comprising Part I examine risk and resilience in a broad sense, that is, risks to the world's social, economic and political order, and the interplay between risk and resilience. This part begins with a comprehensive discussion of the concept and definition of risk and the distinction between risk and uncertainty. Whereas the former is quantifiable in terms of probability distributions of adverse outcomes, the latter is not. One may term the former as "known knowns" whereas the latter is "known unknowns", i.e., we do not know these probability distributions or worse, ascribe the wrong probabilities.[1] A third type of uncertainty which the book does not mention is "unknown unknowns" namely, adverse outcomes that we do not even know about, let alone their probability. An analogy from the field of medicine would be disease X, the threat from an unknown virus. Combining all these dimensions of risks in the context of climate change calls for "recognizing a shift in the nature of the risk from a low-probability but high-impact situation to a high-probability and high-impact one" (p. 3).

What is interesting is that Thomas expands the scope of risks to include those from geopolitical tensions, economic and financial shocks, pandemics and more. He rightly points out that, while these different types of risks compete for attention and scarce resources, "often they have common roots and crisscross each other; their solutions often feature synergies as well" (p. 5). For example, he cites evidence that pathogenic human diseases have been exacerbated by global warming—218 out of 375 or 58 per cent of human pathogenic diseases were worsened by the impact of climatic hazards. This insight is valuable

and unique and stands in contrast with other studies of climate change risk and resilience that fail to take a holistic view.

In this context, his discussion of the takeaways from the global fight against COVID-19 is instructive. Vast sums of money and scientific resources were deployed in a very short time to successfully combat the pandemic. Economic stimulus packages by the world's largest economies amounted to as much as US$15 trillion in the year 2020 alone. In comparison, the world is struggling to raise even US$100 billion annually in climate finance for developing countries, though one can argue it is a far greater existential threat (and one for which there is no vaccine!). What the response to the pandemic shows is that "where there is a will there is a way." The lack of will to act with a similar urgency lies in the mistaken notion that climate change is a problem in the future. Thomas shows the fallacy of this view by marshalling facts and figures on climate trends, extreme weather event disasters and beyond. As the opening paragraph of this book review shows, climate change is *not* a problem in the distant future. It is happening now and will get considerably worse within the lifetime of the next generation which is already born. Therefore, the time to act is now.

Part I goes on to discuss the interrelated concept of resilience. As Thomas argues "(R)isk and resilience go together" (p. 29). He defines resilience as "the ability of a system to withstand, cope, and recover from shocks" (p. 54). In doing so, he broadens the concept of resilience, which is typically used in the context of ecology, namely, the ability of an ecosystem to maintain its normal patterns of nutrient cycling and biomass production after being subjected to a shock. Thomas generalizes this idea to "societal responses to daunting problems" (p. 54).

Furthermore, resilience is to some extent endogenous—it can be enhanced by adaptation which also reduces risk and vulnerability. Thus, "(A)daptation … is taking steps to adjust to adverse events, including measures to reduce damage" (p. 21). For example, building houses on stilts in coastal areas in Indonesia increases their resilience to storm surges and also reduces the risk of damages.

Part II of the book focuses specifically on climate change. It begins by asking why climate change is such an intractable ("wicked") problem and flags issues such as (i) the inertia of a fossil fuel-based world economy (emissions are still going up in countries that have put forward zero-emission pledges), (ii) lack of a coordinated global governance system (the fractious nature of the UNFCCC process even after twenty-seven meetings of its signatories) and (iii) failure in messaging (climate change is the biggest story journalism has never successfully told). Moving on from here, Thomas demolishes the shibboleth that environmental protection is inimical to economic growth or what he calls the "persistently false dichotomy" of environment versus development. As Partha Dasgupta and Karl-Göran Mäler showed decades ago, proper accounting of nature as a capital asset (the resource base of the economy) is necessary for sustainable economic growth. Not accounting for it sends a wrong signal for pursuing GDP growth at the expense of depleting natural capital, which eventually undermines the growth process itself.

This part of the book is prescriptive in nature, as it should be since it lays out a course of action to tackle risk and build resilience. To begin with, Thomas lists four measures which all countries should undertake in an ideal world (the "first best" of economics textbooks), namely: (i) stop using the faulty, gross measure of economic growth (GDP) and account for depletion of natural capital; (ii) adopt carbon pricing, for example, via a significant carbon tax (he points out Singapore has such a tax but its level needs to be much higher); (iii) place a quantitative restriction on fossil fuels and eliminate subsidies on them, and on the other hand subsidise clean energy; and (iv) make all development projects pass a climate test and require that they be accompanied by legal covenants on mitigation and adaptation. He also calls for "vast climate financing" by rich countries to low-income ones "facilitated by an unprecedented alliance among MDBs, especially the IMF, World Bank, Asian Development Bank and New Development Bank which have strong climate mandates" (p. 158). But Thomas is not a starry-eyed idealist and acknowledges that all this is a tall order. Thus, in the concluding chapter, he details the nuts and bolts of decarbonization

such as those in the blueprint for net zero emissions by the International Energy Agency. He also makes a strong pitch for carbon pricing by all countries even if it is initially differentiated by income level. Climate finance (or the lack of it) is of course the big elephant in the room and on this he has no magic bullet to offer.

This book is an interesting combination of intellectual rigour and practical advice, perhaps due to the author's own background as a development practitioner cum scholar. But given the rapidly deteriorating situation on the climate front, it is unfortunately shooting at a moving target. The term "climate change" itself is now dated and must be replaced by "climate emergency". This paradigm shift would call for a whole new book or at least a revised and updated version of this one.

NOTE

1. The most compelling example of this "Knightian uncertainty" is equilibrium climate sensitivity (ECS), namely, the temperature response to a doubling of CO2 concentration in the atmosphere. This is a known unknown in the sense that we do not know the probability distribution of ECS. As Martin Weitzman showed, ascribing a "thin tail" normal distribution to ECS (i.e., there is very little probability in the tails), when in fact it could be a right-skewed "thick tail" distribution such as a Pareto distribution can lead to a catastrophic underestimation of damages. In other words, the risk of very high temperatures is underestimated. The Weitzman postulate is that, under limited conditions concerning the structure of uncertainty and preferences, society has an infinitely large expected loss from high-consequence, low-probability events. Under such conditions, standard economic analysis cannot be applied (Weitzman 2009).

REFERENCE

Weitzman, Martin L. 2009. "On Modeling and Interpreting the Economics of Catastrophic Climate Change". *Review of Economics and Statistics* 91, no. 1: 1–19.

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