

Preface

This book presents the foundation of the micro-behavioral economics of global warming. An empirical model, named the G-MAP model (geographically scaled microeconomic model of adapting portfolios in response to climatic changes and risks), is developed and applied to observed decisions of agricultural and natural resource enterprises in sub-Saharan Africa and South America. Major findings from the five versions of the G-MAP model are explained coherently throughout the book: the G-MAP animal species, the G-MAP agricultural systems, the G-MAP natural resource enterprises, the G-MAP climate risk, and the G-MAP public adaptations.

The micro-behavioral economics of global warming and the G-MAP models are evaluated against the three alternative modeling traditions each of which is known to have some level of limitations in capturing adaptation behaviors. The first is the Agro-Economic Models (AEMs) that are based on crop simulations or field experiments on selected crops under elevated CO₂ conditions. The second is a family of econometric studies of grain yield changes caused by yearly weather fluctuations. The third is the Agro-Ecological Zone (AEZ) methods in which the impacts of global warming are entirely hinged upon the AEZ classifications.

The author casts a fresh look at the traditional economics of global warming by unraveling a great array of adaptation strategies adopted by individuals who manage agricultural and natural resource enterprises in sub-Saharan Africa and South America. The book demonstrates the nature of the micro-behavioral economics as a cohesive dynamic integration of multiple disciplines, including economics, psychology, climate science, ecosystem studies, agronomy, and animal science, into the decision-making framework of one who makes decisions. The G-MAP models will provide a guide map of adaptation strategies to humanity's enduring journey of battling global climatic changes in this century and beyond.

The author began working with Prof. Robert Mendelsohn at Yale University in the summer of 2001, and the fundamentals of the micro-behavioral economics were established by May 2006 through the present author's PhD dissertation at Yale University titled "Modeling Farmer Responses to Climate Change:

Measuring Climate Change Impacts and Adaptations in Livestock Management in Africa” (Seo 2006). The empirical model of the micro-behavioral economics was later named the G-MAP model (Seo 2010).

For the development of the field this book engages, Prof. Robert Mendelsohn has been the primary intellectual force in the background. The seed of the micro-behavioral economics was sown when the highly influential Ricardian analysis was published two decades ago by him and his colleagues (Mendelsohn et al. 1994). Professor William Nordhaus, a frontiersman in the economics of global warming and a distinguished scholar of the economics of many big social issues (Nordhaus 1977, 1991), has given over the years not a few kind encouragements and critical comments. Like many scholars in the profession, I am grateful for his far-sighted guidance. The World Bank supported both projects of climate change in Africa and Latin America from which rural household surveys that are used for this book were collected. In particular, I am thankful to Prof. Ariel Dinar, lead economist at the World Bank then.

This book will turn out to be a thought-provoking treatise to those who are grappling with the unprecedented challenges posed by the advance of global warming. To many more contemplative readers, this book will come as a witty essay on how human beings should get along with natural beings, presented through the looking glass of global warming (Thoreau 1854, Leopold 1949, Carson 1962).

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