U.S. Department of Energy

2012 GTAP Advisory Board Report

Office of Policy and International Affairs (PI), Office of Climate Change Policy and Technology (CCPT)

PI/CCPT has continued its work with GTAP to advance the development of GDyn-E, a multi-region, multi-sector recursive dynamic CGE built as a combined extension of the GDyn model and the GTAP-E model. It is a useful framework for evaluating climate and energy policy problems in a multi-country context in which international trade and investment flows are central features. The detailed representation of energy technology, flexibility in regional disaggregation, and the unique treatment of capital flows are the primary advantages of this model relative to others. The model is being used to evaluate the economy-wide and industry-level impacts of U.S. climate and energy policy proposals. The model is particularly useful in evaluating these impacts under different assumptions about international actions/reactions and explicitly captures investment and emissions leakage effects. A first application of GDyn-E examined the Copenhagen commitments within Annex I countries and the ensuing level and composition of carbon leakage (see Golub et al. 2011, "Analysis of Climate Policies with GDyn-E"). A second application of GDyn-E examines the global economic implications of a U.S. Clean Energy Standard (CES) in the context of unilateral versus global action (see Adkins et al. 2012, "Global Economic Analysis of a U.S. Clean Energy Standard").

PI/CCPT is also supporting GTAP-based modeling analysis related to climate and energy policy through the Climate and Energy Economics Project at the Brookings Institution. A research brief was produced using the G-Cubed model of the world economy, which is calibrated to GTAP data (see McKibbin et al. 2012, "Pricing Carbon in the U.S.: A Model-Based Analysis of Power Sector Only Approaches"). Other planned research briefs include the use of carbon pricing for revenue recycling and deficit reduction options and an examination of a U.S. Clean Energy Standard using a version of G-Cubed with a more detailed specification of the U.S. electric power sector.