â€˜Core Modelsâ€™ in Input-Output Based Disaster Impact Models

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In this paper we discuss some new developments in disaster impact studies, a field of economics that aims at estimating the economic costs of disasters such as floods, earthquakes or extreme draughts. Costs traditionally are divided into two parts, the so-called direct and indirect costs. Direct costs are related to lost production capacity as a consequence of damages to buildings or infrastructure. Indirect costs are related to the disruption of economic flows of goods and services following a disaster. The challenge is to connect both types of costs into one integrated system with an explicit time dimension for the recovery and reconstruction period.

Up to now several types of input-output (I-O) based models have been proposed to estimate the impact (basically the sum of direct and indirect costs) of a specific disaster. We discuss some of these, thereby focusing on models that belong to the class of so-called â€˜adaptiveâ€™ I-O models. We signal that these models often are quite complex, which makes it difficult to understand their overall structure. In particular, standard questions regarding the role of price and quantity restrictions over time often are difficult to address.

We argue in this paper that I-O based models in disaster impact studies often have a specific internal structure. To understand this structure, we propose the introduction of a so-called â€˜core modelâ€™, which serves as a model in-between the set of traditional I-O models and the highly specialized disaster models. We show that in particular in addressing issues concerning price and quantity behaviour over time the core model can be most useful. Some numerical examples will be included.