Simple Approaches to Examine Economic Impacts of Water Reallocations from Agriculture

Abstract

Facing an anticipated shortage declaration on the Colorado River and resulting water cutbacks for agricultural use, rural stakeholder groups are concerned about how cutbacks will affect their local economies. Local farm groups and county governments often lack the analytical tools to measure such impacts. While one can learn much from sophisticated large-scale hydro-economic models, few have invested the resources needed to develop this modeling capacity. Data, cost, and time limitations have been barriers to conducting such research. This poster introduces three basic modeling approaches, using relatively low-cost and accessible data, to examine local economic impacts of water reallocations from agriculture. An empirical application estimates the effect of agricultural water reductions to Pinal County, Arizona, the county that would be most affected by surface water cutbacks triggered by a Colorado River Shortage Declaration. Water cutbacks to Pinal County agriculture are modeled using two variants of a “rationing” model. Rationing models have the benefit of easy interpretation and very modest data requirements. The third approach is an input-output (I-O) model whose assumptions build off those of the simpler rationing models. The I-O model provides more detailed information about the impacts on different rural stakeholder groups (e.g. farmers, agricultural workers) as well as information about how contractions in agricultural production affect non-agricultural sectors and the local tax base. Given imminent water cutbacks, information that is expedient and easy to interpret is critical for current policy-making.