

A General Framework for Determining Factor Use, Factor Rents, and Goods Prices in a Multisectoral Model

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The need to deal with pending resource shortages motivates the explicit inclusion of factor constraints and factor rents in input-output models. The framework described in this paper accommodates any number of goods, factors, and technologies for the production of each good, and it has the following properties. All quantities, rents, and prices are determined simultaneously in a single computation; unlike most input-output models, more than one technology at a time may be used to produce a given good; and rents and prices, like quantity results and the choices among technologies, depend on the level and composition of consumption demand. For concreteness, the paper reports results of two empirical studies about the future demand for food, both involving endowments and requirements for land and water (among other factors), with dryland and irrigated agriculture practiced under different climatic (geographic) conditions.