

# Tracing the Impacts of Food Assistance Programs on Agriculture and Consumers

## A Computable General Equilibrium Model

Kenneth Hanson  
Elise Golan  
Stephen Vogel  
Jennifer Olmsted

### Introduction

In 1999, the U.S. Department of Agriculture spent approximately \$33 billion on domestic food and nutrition assistance programs, including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Child Nutrition (School Lunch and Breakfast) programs, and the Food Stamp Program (fig. 1). These food assistance programs directly affect the health and well-being of recipient households. However, the impact of the programs does not stop there: food assistance programs have economic ramifications that extend beyond recipient households. Food assistance programs supplement household food budgets, triggering changes in household consumption expenditures and labor supply decisions. Likewise, because they are funded through taxes, food assistance programs affect nonrecipient household income, expenditures, and labor supply decisions. Eventually, changes in household expenditure patterns and labor supply decisions affect the general level and distribution of production and income throughout the economy. The level and distribution of economic activity in turn affects poverty levels and the need for food assistance programs.

The interaction between food assistance and the general economy depends on the economic interaction among households, industry, the government, and the rest of the world. This interaction involves a complex system of relationships and economic transactions. A Computable General Equilibrium (CGE) model describes this complex system. The Food Assistance CGE model developed at USDA's Economic Research Service (ERS) describes the U.S. economy, focusing on the relation-

ships between food assistance programs, households, and general economic activity. It provides a mechanism for examining the impact of food assistance programs on general economic activity, and vice versa.

In this report we describe the Food Assistance CGE model and discuss the contributions an economywide framework makes to the analysis of food assistance programs. We also report on two simulation experiments, both of which demonstrate the strength of the Food Assistance CGE model in analyzing the impact of food assistance programs on the general economy. The first simulation experiment traces the impact of a reduction in Food Stamp Program funding. The second experiment simulates the conversion of food stamp benefits from vouchers to cash.

### What Is a CGE Model?

A single-country CGE model is a set of equations describing the economic interaction between households, producers, the government, and the rest of the world. The circular flow diagram (fig. 2) describes the core of a CGE model. It depicts the market transaction between the two primary sets of actors in the economy: households and firms. The core circular flow diagram illustrates that, as owners of factors, households supply labor and capital services to firms, while receiving payment from them in the form of wages and capital income. Households also purchase goods and services from firms, which, in return, receive payment.

The market transaction between households and firms is driven by the desire of households to maximize utility