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The Food Assistance National Input-Output Multiplier (FANIOM) Model and the Stimulus Effects of SNAP

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USDA's Economic Research Service uses the Food Assistance National Input-Output Multiplier (FANIOM) model to represent and measure linkages between USDA's domestic food assistance programs, agriculture, and the U.S. economy. This report describes the data sources and the underlying assumptions and structure of the FANIOM model and illustrates its use to estimate the multiplier effects from benefits issued under the Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamp Program).

What Is the Issue?

An increase in SNAP benefits provides a fiscal stimulus to the economy during an economic downturn. When resources are underemployed, the increase in SNAP benefits starts a multiplier process in which inter-industry transactions and induced consumption effects lead to an economic impact that is greater than the initial stimulus. An input-output multiplier (IOM) model, such as FANIOM, tracks and measures this multiplier process.

IOM and macroeconomic models have been used for assessing the multiplier effects from government expenditures authorized under the American Recovery and Reinvestment Act of 2009 (ARRA), a Federal response to the recession that began in 2008. There is potential for confusion and misinterpretation of reported multiplier effects from different models. This report clarifies differences in model assumptions and multipliers. It examines the different types of multipliers for different economic variables that are estimated by IOM and macroeconomic models, and considers alternative estimates of the jobs impact.

What Did the Study Find?

FANIOM provides a framework for calculating different types of multipliers for different variables at the national level. Multipliers are calculated for production, GDP, and employment, and they are adjusted to domestic market effects by netting out the share of new demand met by imports. A type I multiplier includes the direct and indirect effects from a fiscal stimulus, while a type II multiplier also includes the induced effects from the labor income and the type III multiplier also includes the induced effects from capital income.

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The type III GDP multiplier is the appropriate multiplier for assessing the impact of government expenditures on economic activity (GDP and production) during an economic downturn. The type I employment multiplier (with import adjustment) is the appropriate multiplier for assessing the jobs impact from government expenditures. The jobs impacts from the FANIOM model for the type II and type III multipliers are consistent with other input-output multiplier models, but higher than estimates from macroeconomic models and from empirical analysis of data on the quarter-to-quarter change in employment relative to a change in GDP.

The FANIOM analysis of SNAP benefits as a fiscal stimulus finds that:

- An increase of \$1 billion in SNAP expenditures is estimated to increase economic activity (GDP) by \$1.79 billion. In other words, every \$5 in new SNAP benefits generates as much as \$9 of economic activity. This multiplier estimate replaces a similar but older estimate of \$1.84 billion reported in Hanson and Golan (2002).
- The jobs impact estimates from FANIOM range from 8,900 to 17,900 full-time-equivalent jobs plus self-employed for a \$1-billion increase in SNAP benefits. The preferred jobs impact estimates are the 8,900 full-time equivalent jobs plus self-employed or the 9,800 full-time and part-time jobs plus self-employed from \$1 billion of SNAP benefits (type I multiplier).
- Imports reduce the impact of the multiplier effects on the domestic economy by about 12 percent.

How Was the Study Conducted?

At the core of the FANIOM model are data from the U.S. Bureau of Economic Analysis (BEA), Benchmark Input-Output Accounts for 2002. Data from BEA National Income and Product Accounts are used to specify the induced effects from household income (labor and capital). Employment data from the U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, and U.S. Department of Agriculture are used in estimating the jobs impact. The GAMS software was used to calculate the FANIOM multipliers.