USDA Economic Research Service
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Updated (Preliminary) Estimates of the SNAP Multiplier

Erik Scherpf
Pat Canning
USDA Economic Research Service

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SNAP as an Economic Multiplier

- SNAP is the largest food assistance program of the U.S. Department of Agriculture
  - 2019: $60 billion in 2019
  - 2022: nearly $120 billion
- In addition to its primary goal of reducing food insecurity, SNAP acts as an automatic stabilizer during economic downturns
- SNAP spending can boost economic activity in local economies
  - SNAP generates income for those involved in production, distribution, marketing and sales of goods purchased with SNAP benefits, which is in turn spent on more goods and services
  - This creates a multiplier effect whereby each SNAP dollar generates more than dollar in economic activity

Summary

- Build on approach in Canning & Stacy (2019) to estimate the economic multiplier effect of an additional $1 billion in SNAP benefit payments using Social Accounting Matrix
  - SAM based on input-output model using 2016 data
  - Canning & Stacy found a SNAP multiplier effect of 1.5
- Estimate demand system using household microdata
  - Departure from Canning and Stacy (2019) which estimated demand system on aggregate time series data
  - relies on pre-pandemic data
- SNAP multiplier will soon be updated using 2021/2022 data

Social Accounting Matrix

- Social Accounting Matrix (SAM) is a fully integrated economic accounting system that summarizes all transactions and transfers between economic agents
- ERS Food Environment Data System Social Accounting Matrix (FEDS-SAM)
  - Extension of an input-output model
  - Based on empirically estimated *marginal* consumption and saving behaviors of two representative households: SNAP-recipient and non-SNAP-recipient households
  - Modeling marginal behavior captures household responses to *new* government spending

FEDS-SAM baseline model

– Fixed Price Multiplier

  - unique expenditure and savings elasticity parameters for each consumer good and for household savings

– No ‘crowding out’

– Fiscal stimulus during a period of full employment or rising interest rates may lead to increasing labor costs and increased competition for scarce capital resources.

– Income effects are main driver of multiplier

Key Assumptions of the SAM Multiplier Model

1. Slackness in factor markets: supply of labor and production capacity exceed demand for these inputs

2. Additional labor and capital added in response to new spending is *equally productive* as the factors already in use

3. New spending scenarios do not change existing *relative prices* in factor, commodity, and product markets

➢Assumptions 1 and 3 more difficult to justify in current economy

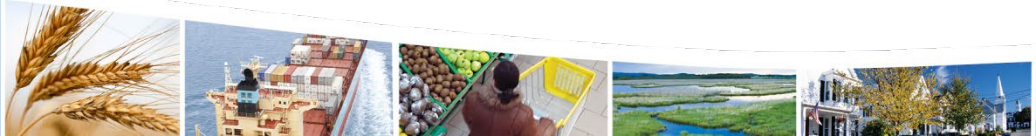
– However, SNAP tends to flow to pockets of the economy still marked by slackness

Some Previous Research on Federal Spending Multipliers

- Moody's Analytics model (Blinder and Zandi, 2015): increased spending on food stamps had the highest multiplier of any of the ARRA stimulus programs (1.74)

- Pender et al. (2019) estimated that $10,000 increase in SNAP spending at the county level translated to an increase of between 0.4 and 0.5 jobs (or 40,000 to 50,000 jobs per billion spent) between 2001-2014.

- Hanson (2010) used a Food Assistance National Input-Output Multiplier (FANIOM) model to estimate a SNAP multiplier of 1.79 on GDP



Moody Analytics Fiscal Multipliers (2022)

$ change in GDP in 2022Q1 for a once-and-for-all $1 change in federal spending or revenue in 2021Q1

Federal spending	
Supplemental Nutrition Assistance Program (SNAP)	1.61
Supplemental Unemployment Insurance	1.49
Work-Share Unemployment Insurance	1.37
Aid to State and Local Governments	1.34
Low Income Home Energy Assistance Program (LIHEAP)	1.31
Transportation Infrastructure Spending	1.29
Defense Spending	1.24
Child Care (Universal Child Care Act)	1.19
Universal Pre-K (3- and 4-year-olds)	1.17
Home and Community-Based Eldercare	1.17

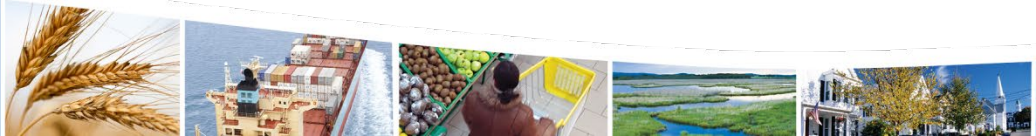
Zandi and Yaros (2021). Macroeconomic Impact of Home and Community-Based Services Expansion. Moody's Analytics Analysis.

Structure of FEDS-SAM Multiplier Model

- Endogenous Sectors in the multiplier model
  - Sectors which are allowed to adjust in the short-term in response to the new spending scenario
    - Domestic industry production
    - Aggregation of industry output into commodities and products
    - Households (SNAP & non-SNAP)
- Exogenous Sectors
  - Government and capital markets
- International Sector treated as aggregate endogenous sector
  - Allow imports to meet some of the new direct and induced consumption expenditures
  - Maintain size of overall US trade deficit relative to total volume of international trade
    - No evidence of relationship between SNAP enrollment and trade deficit

Data

- Bureau of Economic Analysis (BEA) National Income and Product Accounts
- Bureau of Labor Statistics (BLS) Consumer Expenditure Survey (2015-2019)
- 2016 BLS Make and Use Tables

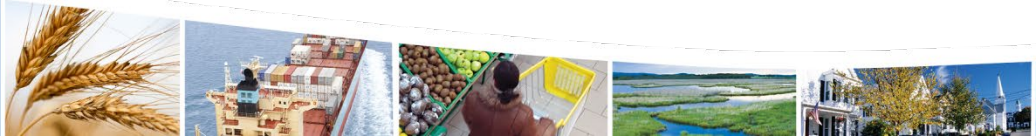


Steps in Estimating the Multiplier

- Estimate LES Demand System using CE household data for SNAP and non-SNAP recipient households
  - uses CE-PCE concordance

- Inverse variance weighted LS adjustment in the household LES parameters estimated from CE data in order exactly fit the 2016 PCE data compiled by BEA

- Derive the multiplier effect of a given injection of government spending (i.e., increase in SNAP benefit payouts) using the SAM



Structure of FEDS-SAM Multiplier Model

FEDS-SAM schematic

		Activities (A1…A202)	Commodities (C1…C201)	Products (P1…P15)	Factors (F1…F8)	Households (H1 H2)	International I	Government (G1 G2)	Capital C	Exogenous (E1 E2)	Total
		Endogenous						Exogenous			
A1 … A202 C1 … C201 P1 … P15 F1 … F8 H1 H2 I	Endogenous	T						x			y
G1 G2 C E1 E2	Exogenous	1									
Total		y′									

Structure of FEDS-SAM Multiplier Model

- **T** captures all endogenous transactions in the model
  - 202 industries, 201 commodities, 15 consumer products, 2 households, and 1 aggregate int'l sector
  - includes household MPC's and MPS's, production coefficients within the 'Activities' block, and the various income and commodity flow parameters between the different subaccounts
- **x:** a vector that consolidates exogenous inflows into the endogenous accounts
  - 2 government entities and one aggregate capital sector
  - 2 exogenous household accounts (committed expenditures)
- **l: "leakage block"**
  - a vector that consolidates outflows from the endogenous sector
- **y** and **y':** total inflow and outflow vectors, respectively
- SAM accounts must balance inflows and outflows: **T + x = y** and **T+l = y'**

SAM Multiplier Model

- Dividing each element in **T** by its corresponding column total in **y'** converts the endogenous block into a technical and behavioral parameters matrix: $\boldsymbol{A = Ty^{-1}}$
- The multiplier for an exogenous injection of spending **x** is derived as follows:

$$\boldsymbol{Ay + x = y}$$

$$\boldsymbol{x = (I - A)y}$$

$$\boldsymbol{y = (I - A)^{-1}x}$$

$$\boldsymbol{y = Mx}$$

where **M** is the fixed-price multiplier matrix

- For this scenario, **x** is an inflow vector representing a hypothetical SNAP enrollment change of an additional $1 billion in SNAP benefit payouts
  - i.e., new benefits to households that were previously not participating in SNAP.

Linear Expenditure System

HH expenditure in the FEDS-SAM is characterized by a Linear Expenditure System:

$$p_i q_i = p_i \gamma_i + \beta_i \underbrace{(M - p_1\gamma_1 - p_2\gamma_2 - \cdots - p_{14}\gamma_{14})}_{Supernumerary\ Income}, i = 1, \ldots, 14$$

- p_i is the price and q_i is the quantity demanded of commodity group i
- γ_i is committed, or subsistence, expenditure on commodity group i
- β_i is marginal expenditure on commodity group i
- M is 'income' (total expenditure)
- $\sum \beta_i = 1$ and $\gamma_i > 0, i = 1, \ldots, n$
- LES estimated for both SNAP and non-SNAP households

LES Results – Marginal Expenditures β_i

	No SNAP	SNAP
Accommodations	0.024*	0.005*
Clothing and Footwear	0.021*	0.026*
Financial & Insurance	0.070*	0.060*
Food at Home	0.044*	0.092*
Food Away from Home	0.051*	0.043*
Furnishings	0.043*	0.034*
Healthcare	0.019*	.0155*
Housing and Utilities	0.131*	0.160*
Motor Vehicles	0.264*	0.318*
Other Durables	0.006*	0.004*
Other Nondurables	.0321*	0.066*
Other Services	0.203*	0.130*
Recreation Services	0.035*	0.012*
Recreational Goods	0.056*	0.036*

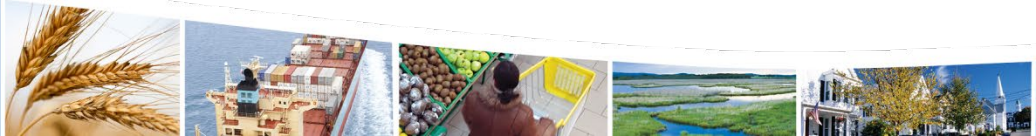
* significant at .01 level

LES Results

- High marginal propensity to spend on Motor Vehicles and Parts for both SNAP and non-SNAP households
- Parker et al. (2013), using CE survey, found high MPC out of the 2008 Economic Stimulus Payments of 2008
- A significant part of Parker et al.'s (2013) high MPCs came from spending on **motor vehicles**
- Orchard, Ramey & Weiland (2023) find that Parker et al. (2013) found that micro MPC estimates from CE survey generated implausible macro counterfactuals

Marginal Propensity to Spend on Food at Home

- A key parameter in our model is the MPC food-at-home (FAH) among SNAP recipient households
- LES results suggest ~10 cents of every additional dollar of income is spent on food-at-home
- Other research that has looked specifically at marginal spending out of SNAP benefits puts the MPC FAH out of SNAP higher in the range of 0.15 to 0.50
- Using difference-in-differences we estimate the MPC out of SNAP to be ~ 0.30



$1 Billion Injection Vector based on LES parameters

SNAP-induced household expenditures and savings of new SNAP households

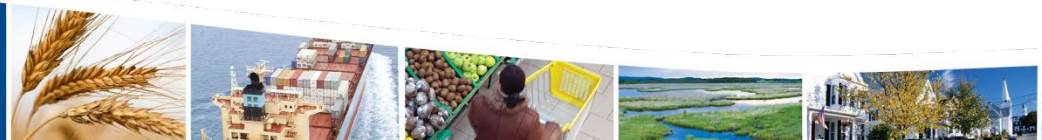
Product	New SNAP Households
	$million
Food and beverages at home	300.0
Food services	27.3
Clothing and footwear	44.8
Other nondurable goods	89.4
Motor vehicles and parts	12.5
Furnishings and durable household equipment	60.1
Recreational goods and vehicles	100.1
Other durable goods	39.7
Housing and utilities	94.5
Health care	121.3
Recreation services	28.6
Accommodations	13.5
Financial services and insurance	15.1
Other services	39.8
Personal Savings	0.0

SNAP Multiplier

- The new SAM model—based on micro LES estimates—yields a SNAP multiplier of ~1.4
  - Canning & Stacy (2019) found a SNAP multiplier of ~1.5
- The $1 billion of new SNAP benefits generates ~12,000 jobs
  - Canning & Stacy (2019): ~13,500 jobs
- Higher marginal spending on **motor vehicles & parts**—an import-intensive category—leads to greater 'leakage' and hence lowers multiplier.
  - Import share of domestic availability ~41%
- Lower marginal spending on domestically provided services like **healthcare**

Future Work

- Incorporate additional representative households into the model
  - Disaggregate non-SNAP recipient households by income quintiles
  - More accurately reflect heterogeneity of expenditures across the income distribution
- Build out the SAM model to a Computable General Equilibrium Model
  - Move capital account to endogenous sector
  - Short-run price adjustments
  - Better capture effect of changes in SNAP when economy is at or near full employment (e.g., crowding-out effect)



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